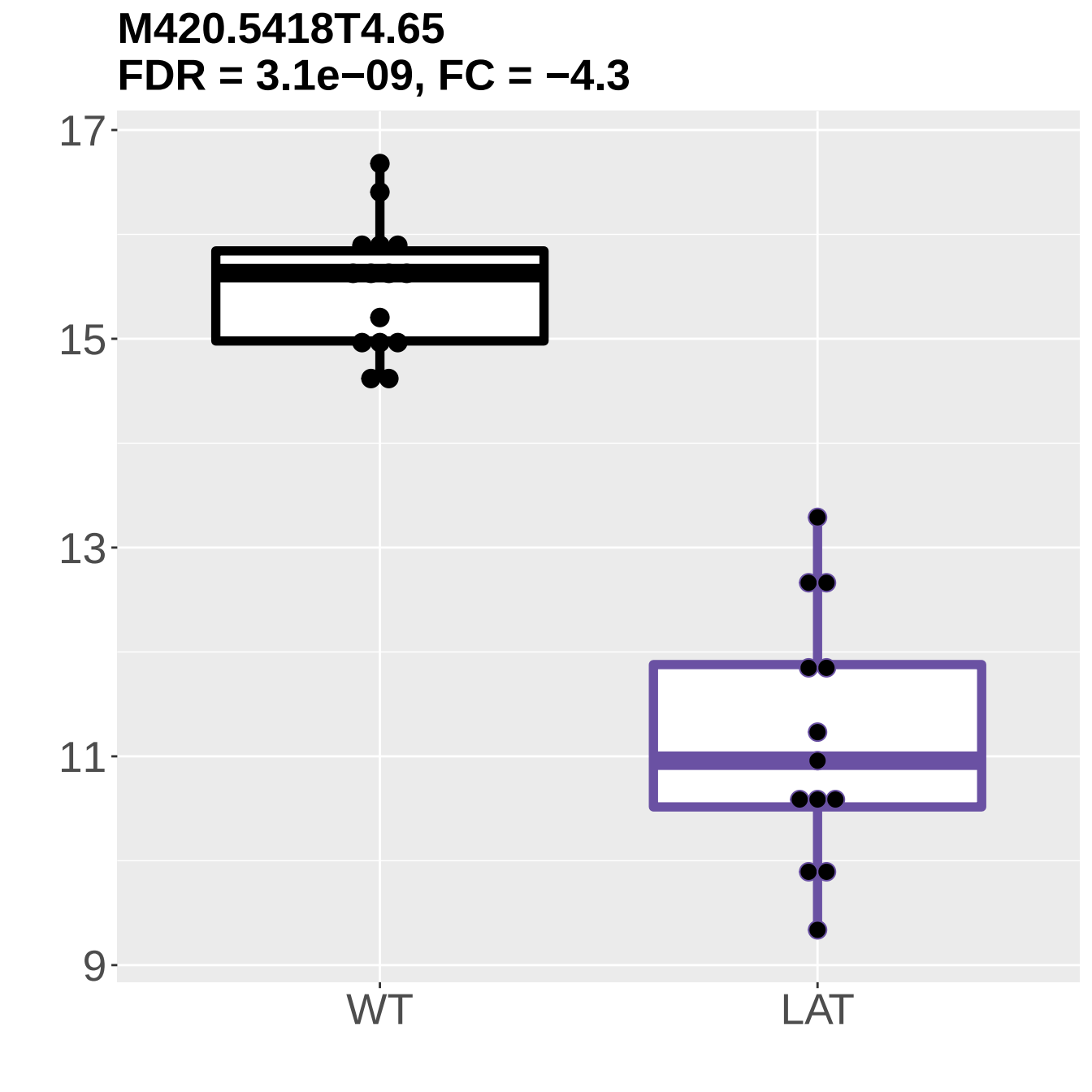
M420.5418T4.65
FDR = 3.1e−09, FC = −4.3
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15
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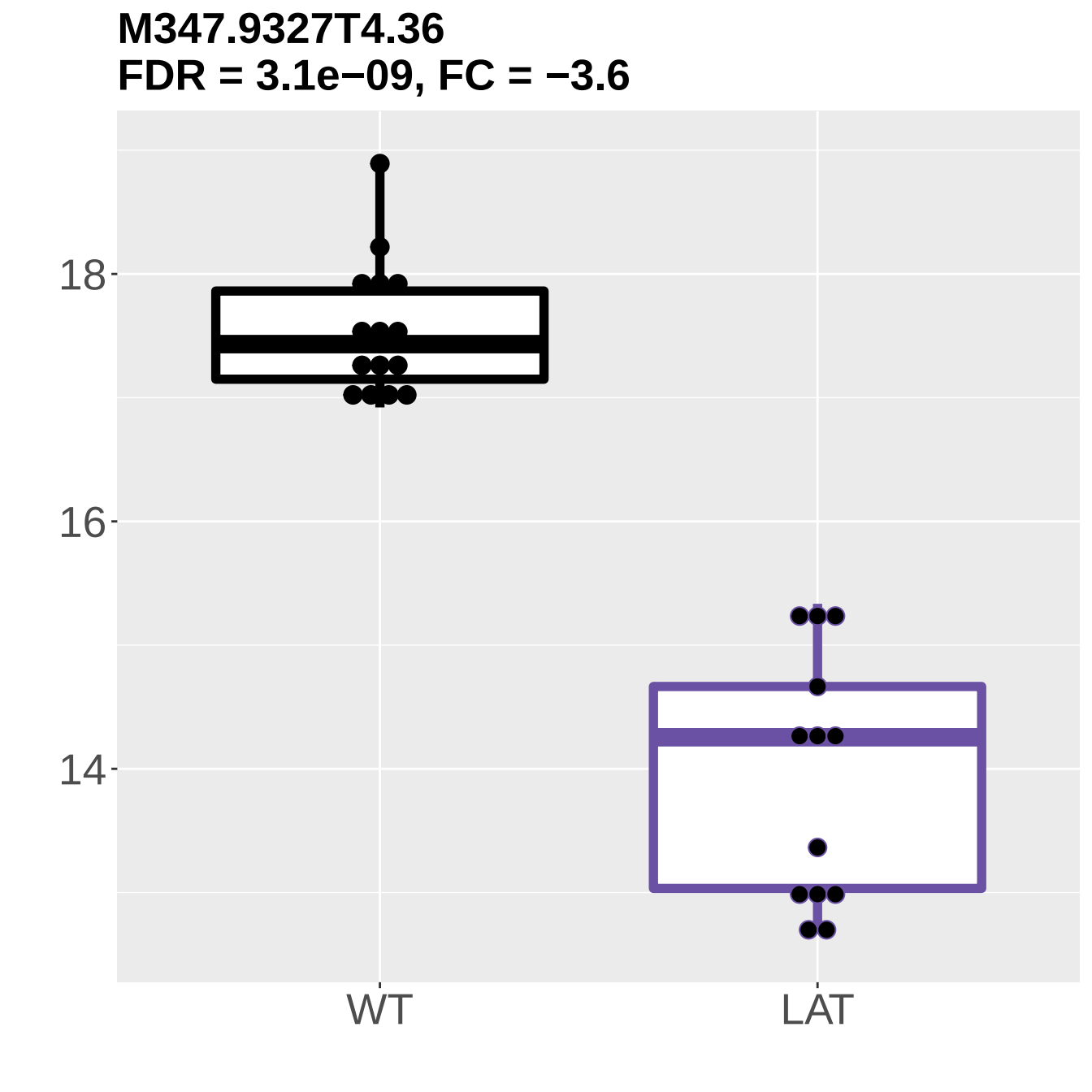
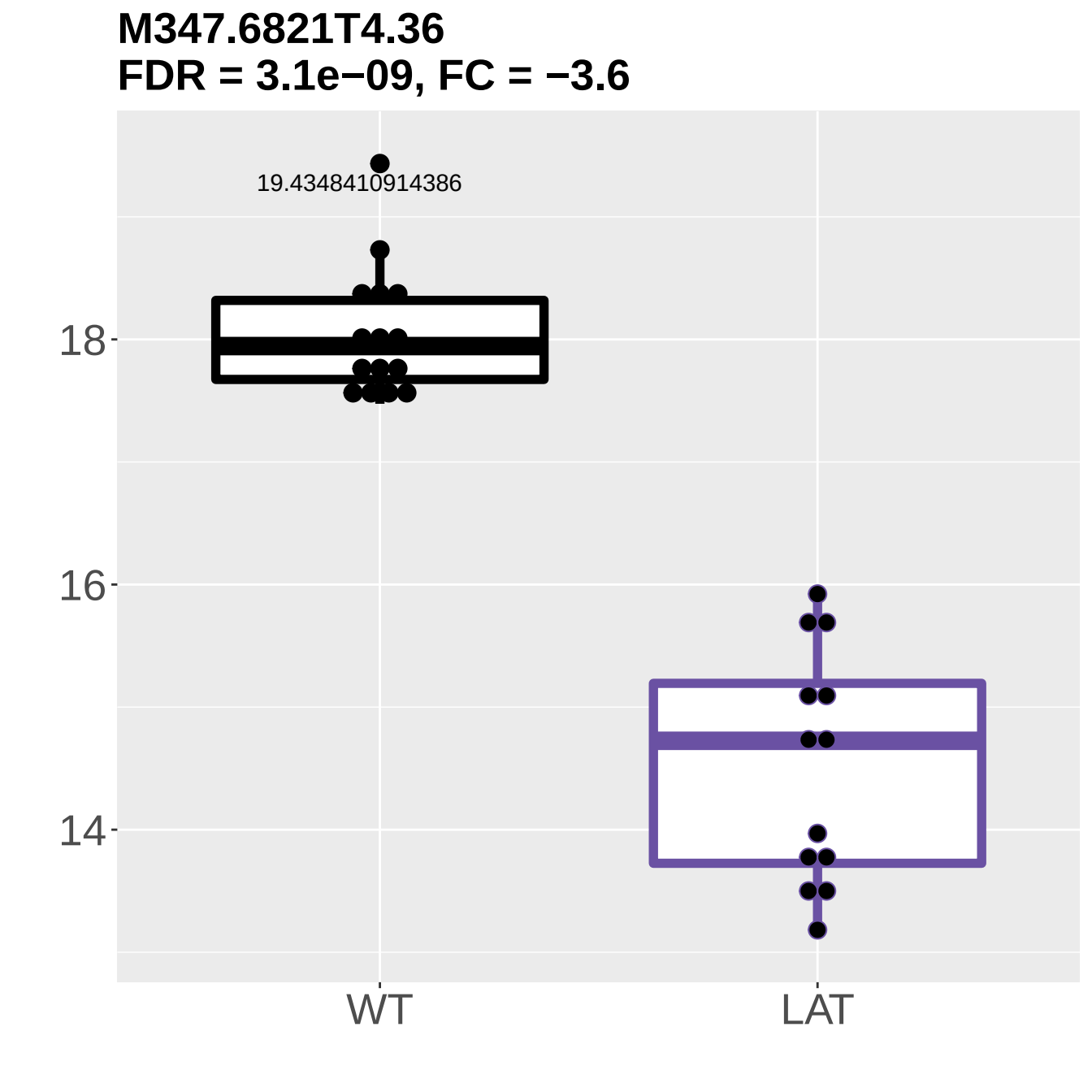
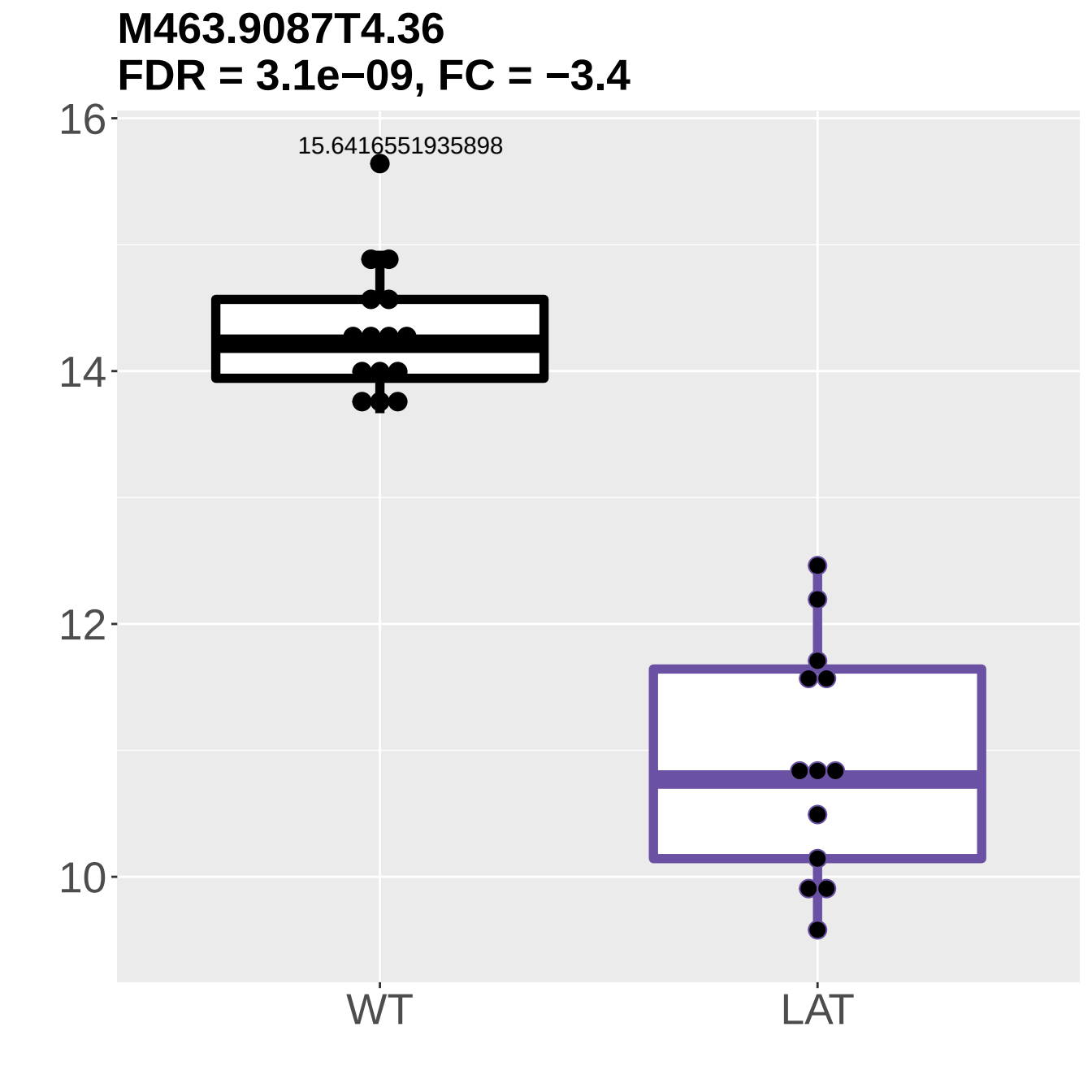
9
WT
LAT


M347.9327T4.36
FDR = 3.1e−09, FC = −3.6
18
16
14
WT
LAT


M347.6821T4.36
FDR = 3.1e−09, FC = −3.6
19.4348410914386
18
16
14
WT
LAT


M463.9087T4.36
FDR = 3.1e−09, FC = −3.4
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14
12
10
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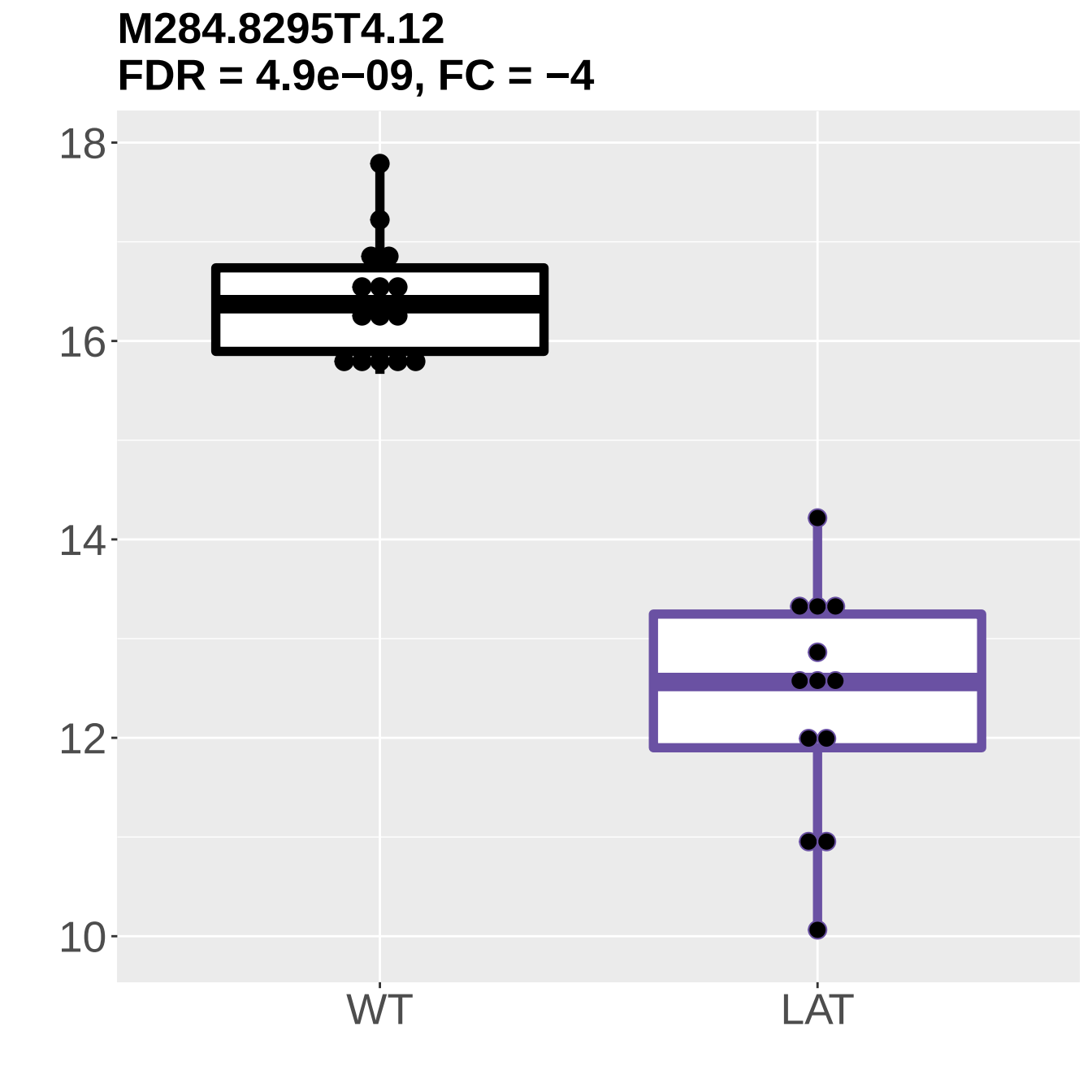
WT
LAT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FDR = 4.9e−09, FC = −4
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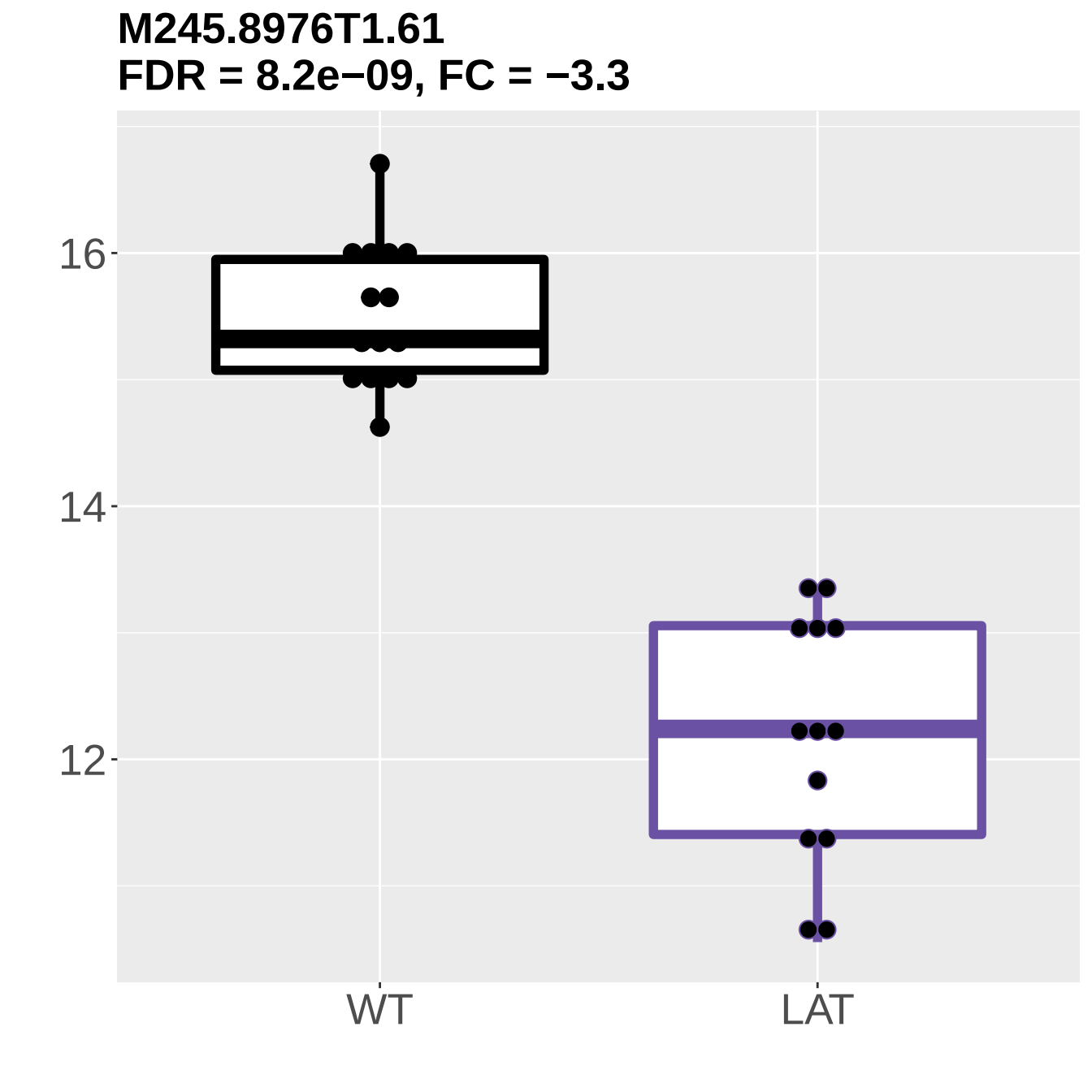
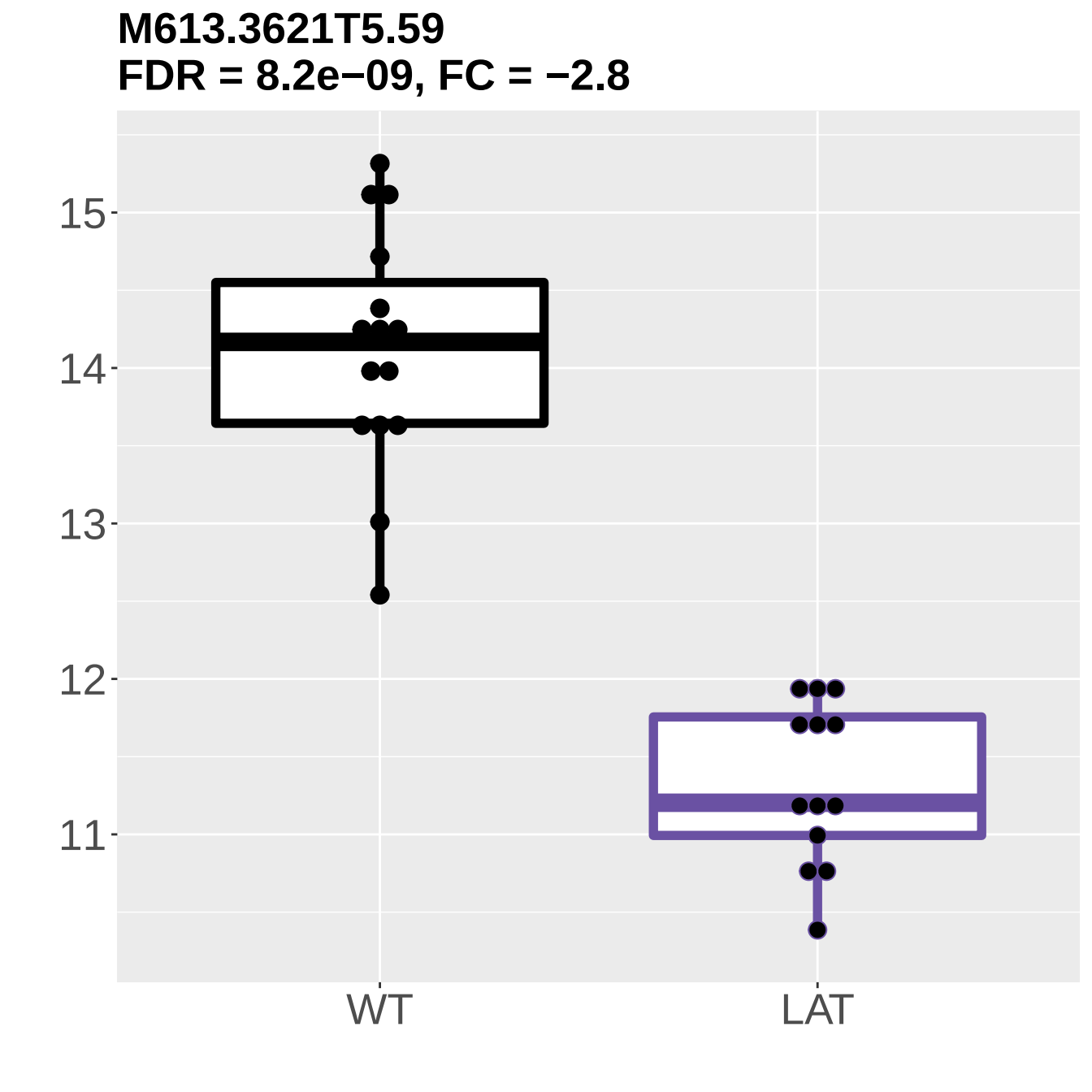
16
14
12
10
WT
LAT


M245.8976T1.61
FDR = 8.2e−09, FC = −3.3
16
14
12
WT
LAT


M613.3621T5.59
FDR = 8.2e−09, FC = −2.8
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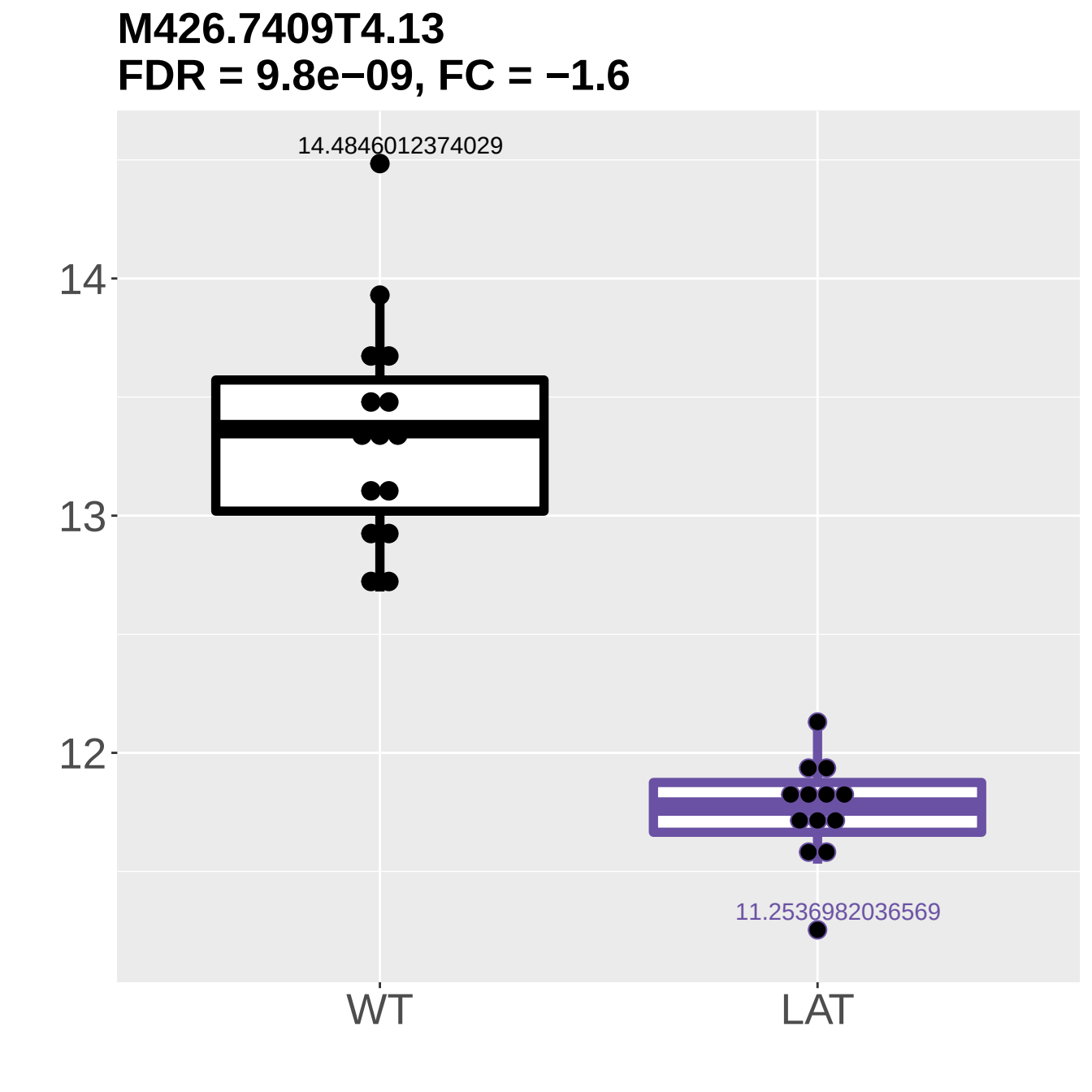
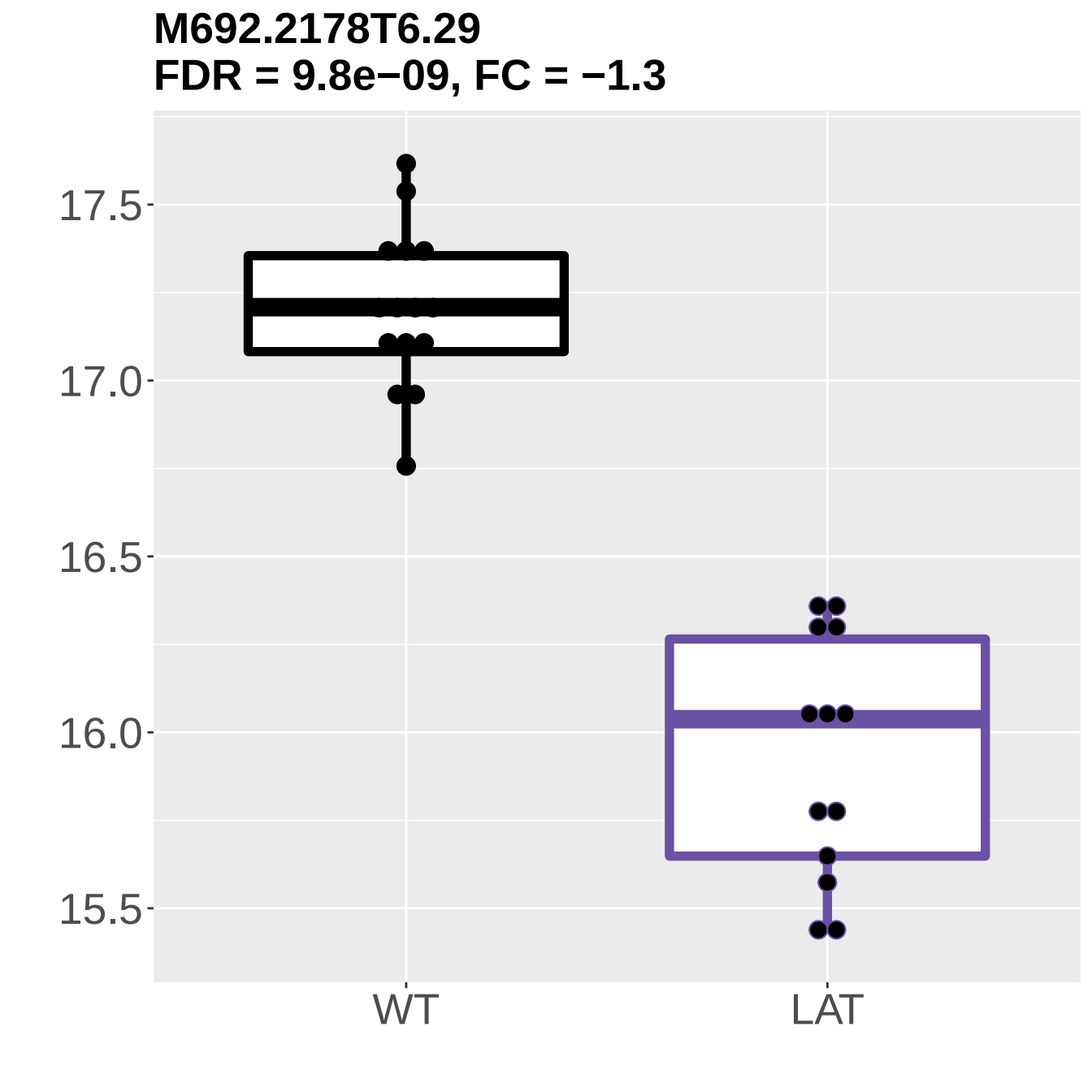
14
13
12
11
WT
LAT


M426.7409T4.13
FDR = 9.8e−09, FC = −1.6
14.4846012374029
14
13
12
11.2536982036569
WT
LAT


M692.2178T6.29
FDR = 9.8e−09, FC = −1.3
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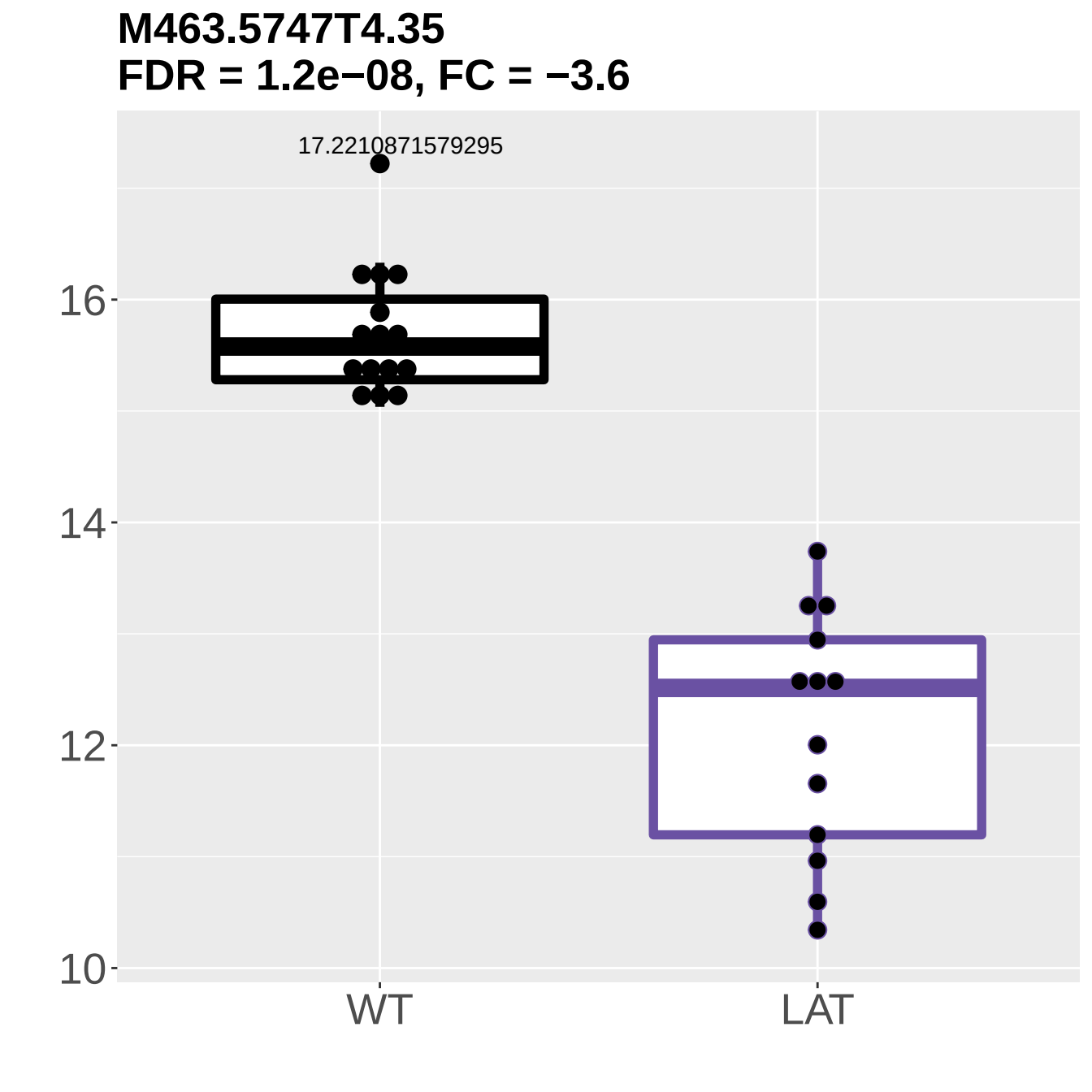
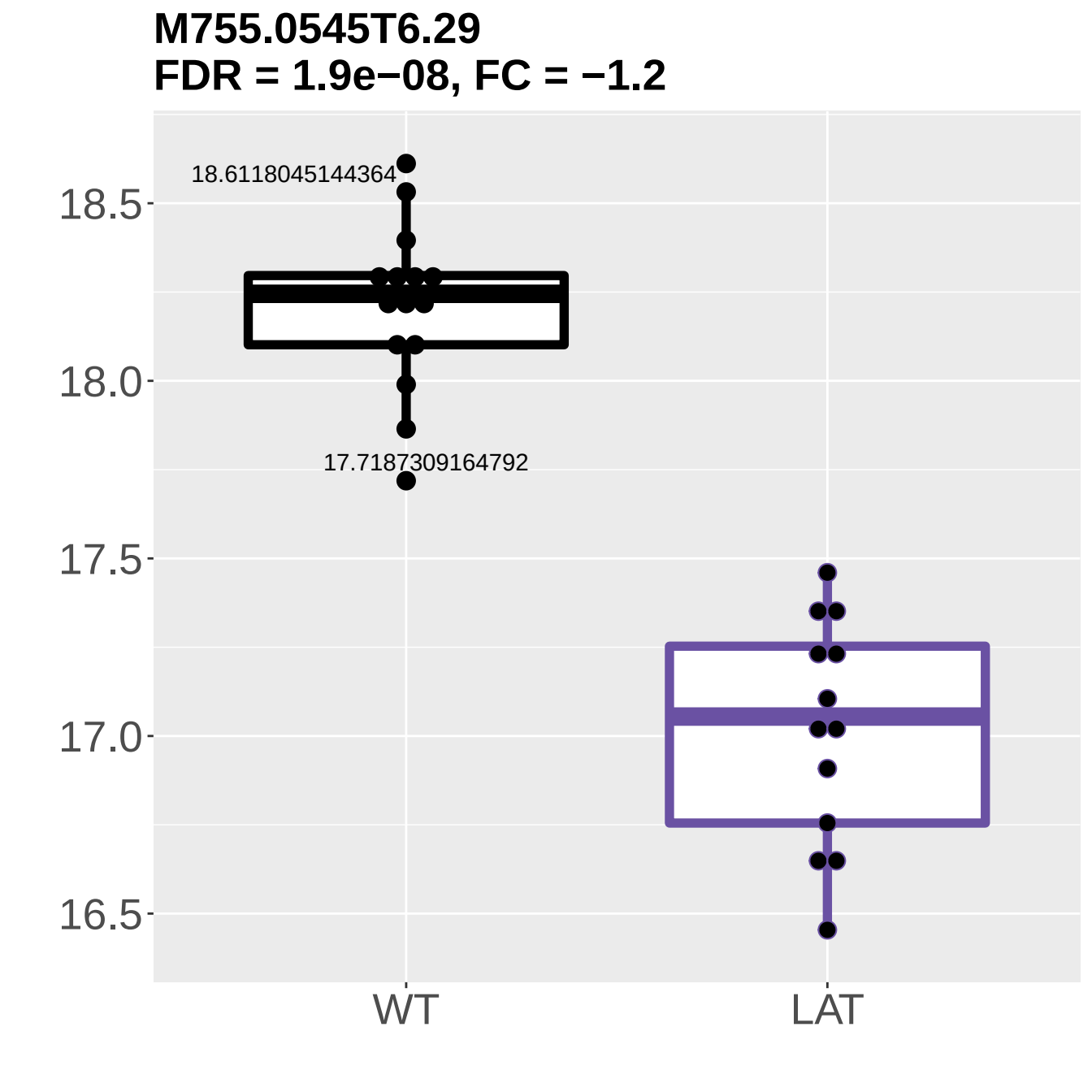
17.0
16.5
16.0
15.5
WT
LAT


M463.5747T4.35
FDR = 1.2e−08, FC = −3.6
17.2210871579295
16
14
12
10
WT
LAT


M755.0545T6.29
FDR = 1.9e−08, FC = −1.2
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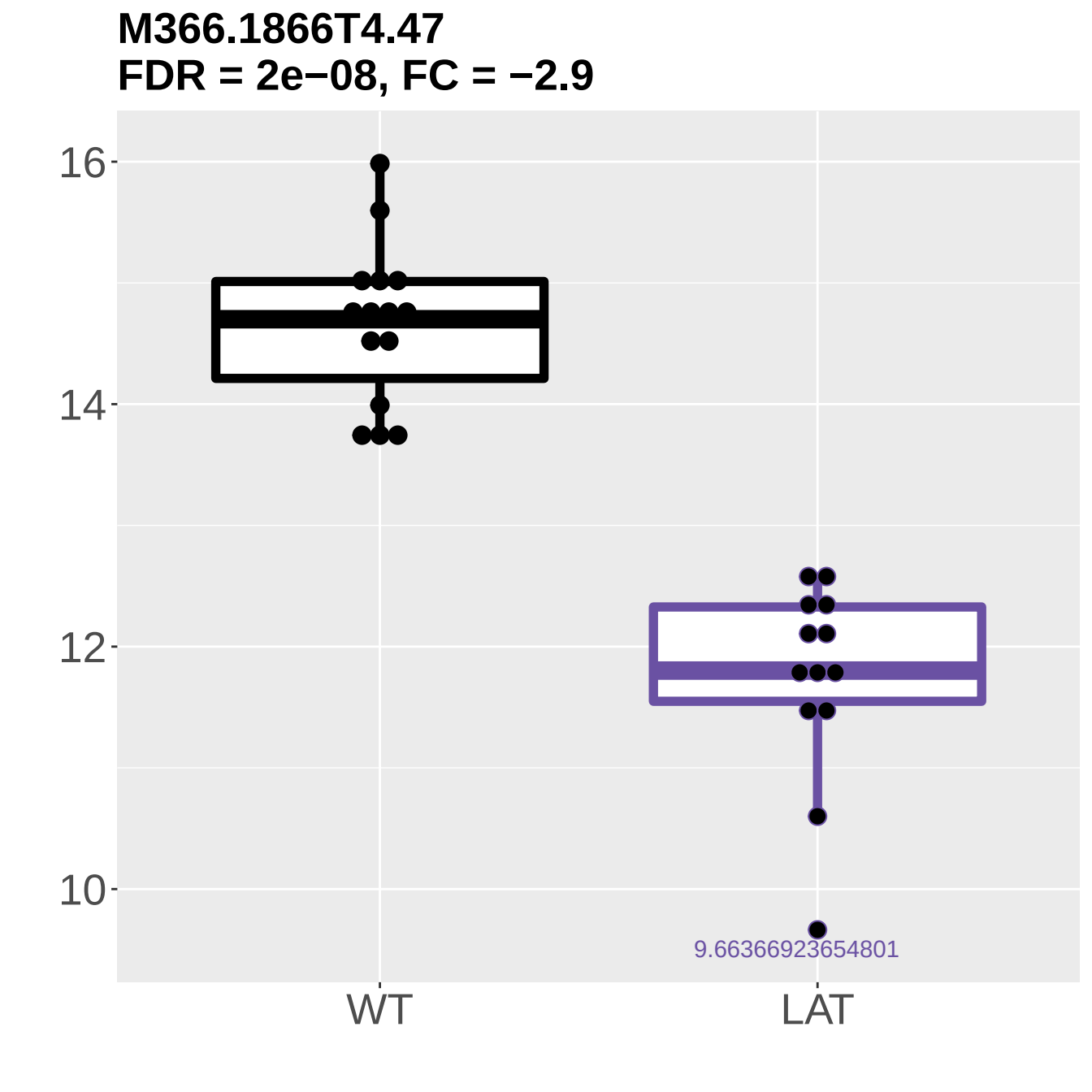
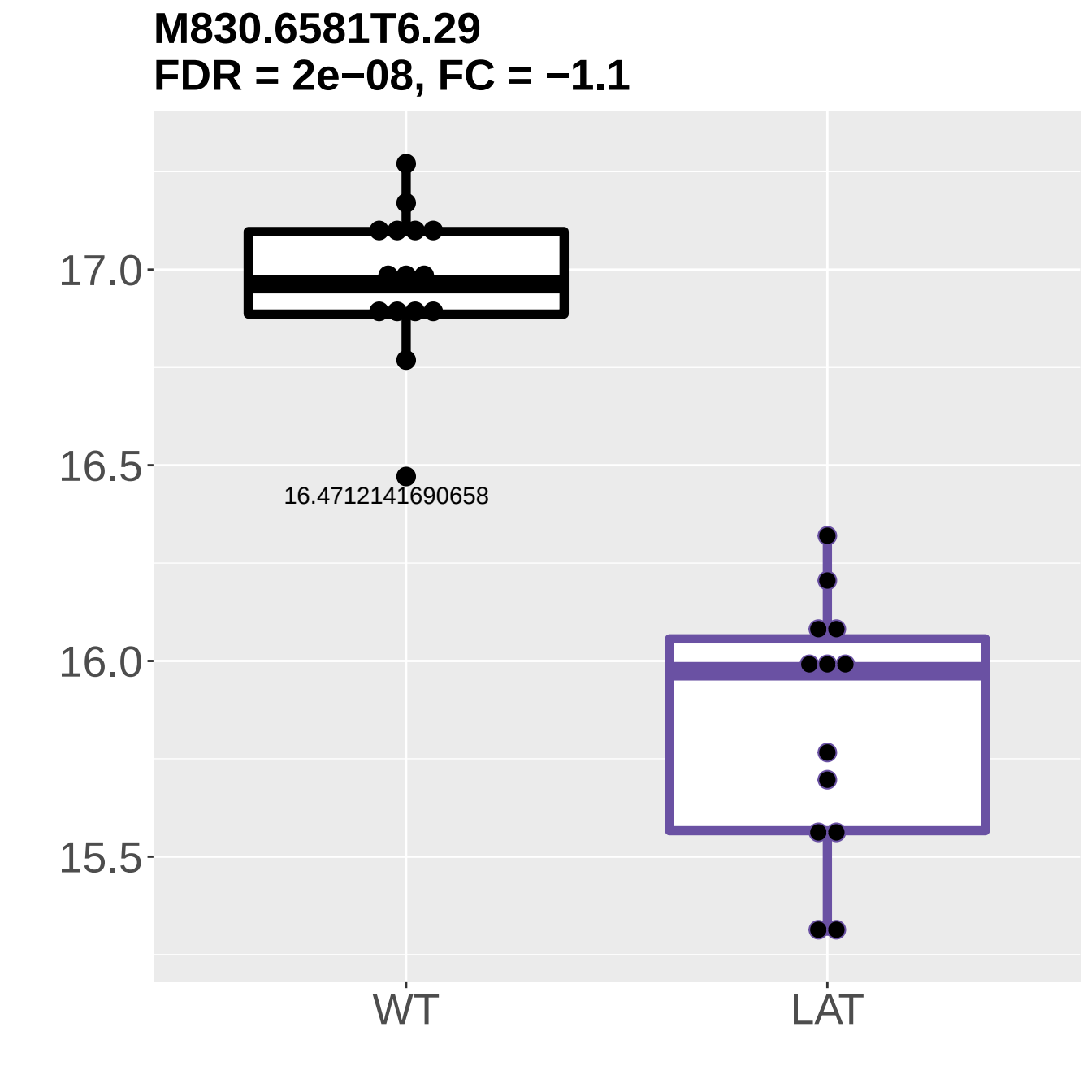
17.7187309164792
18.5
18.0
17.5
17.0
16.5
WT
LAT


M366.1866T4.47
FDR = 2e−08, FC = −2.9
16
14
12
10
9.66366923654801
WT
LAT


M830.6581T6.29
FDR = 2e−08, FC = −1.1
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16.5
16.0
15.5
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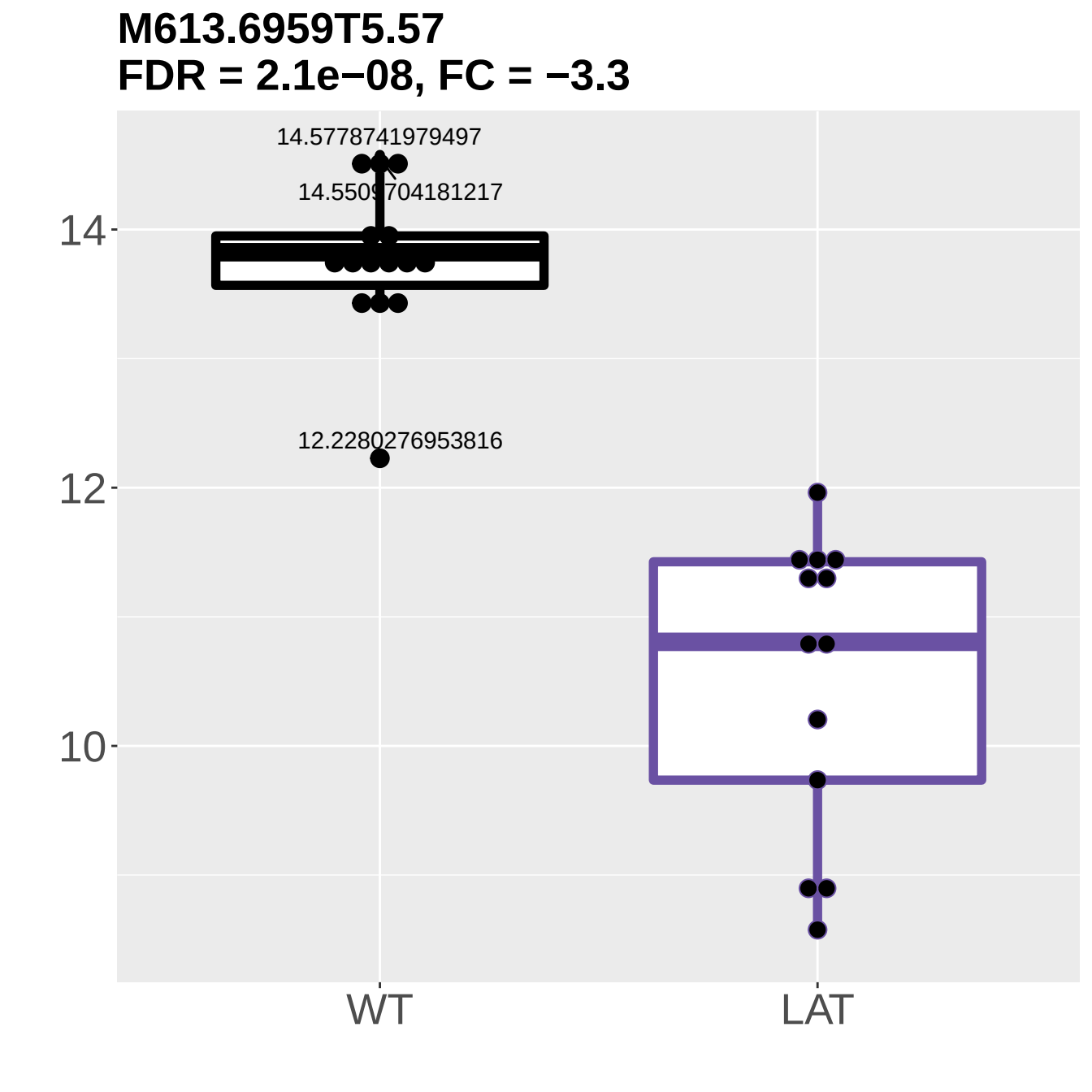
WT
LAT


M613.6959T5.57
FDR = 2.1e−08, FC = −3.3
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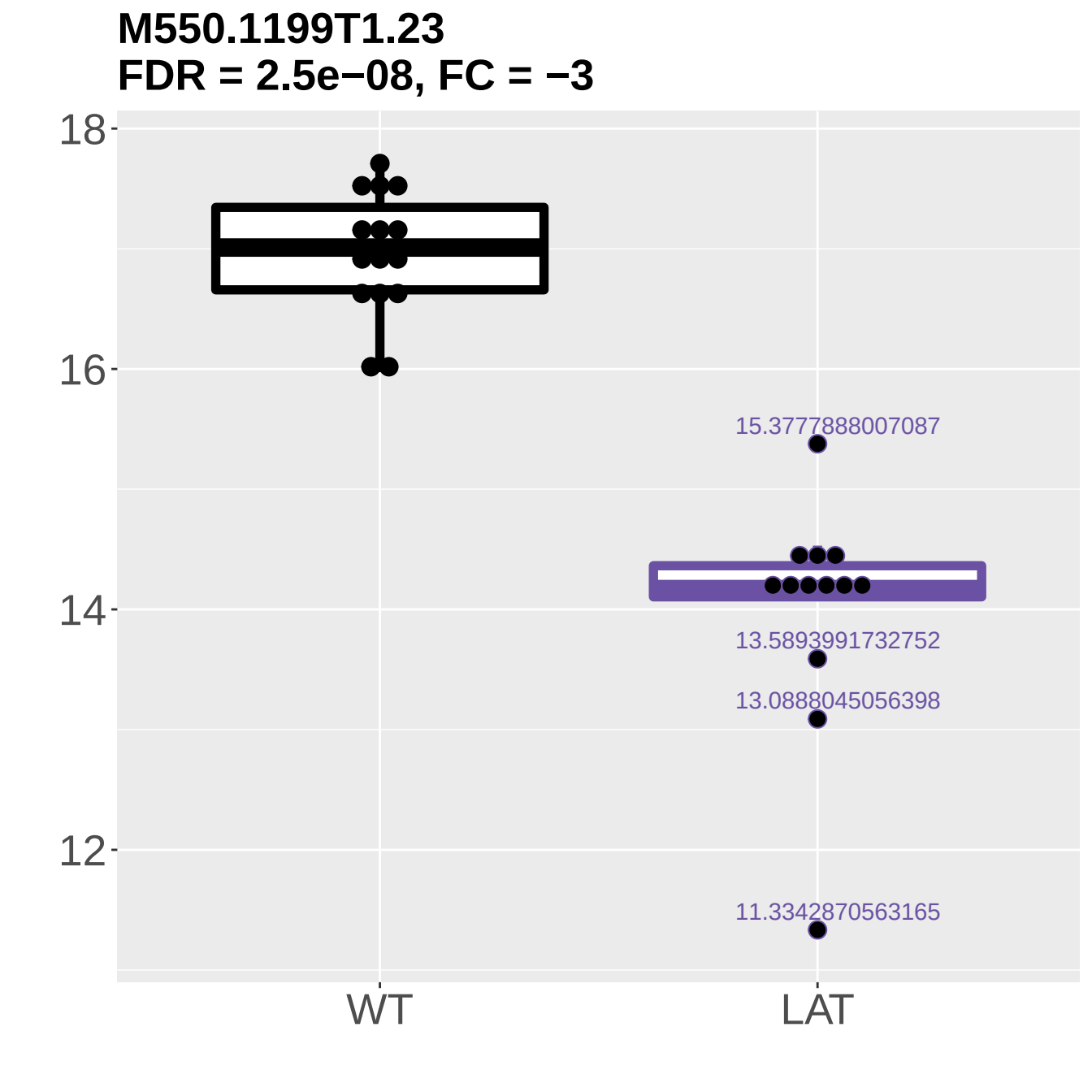
14.5509704181217
12.2280276953816
14
12
10
WT
LAT


M550.1199T1.23
FDR = 2.5e−08, FC = −3
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16
14
12
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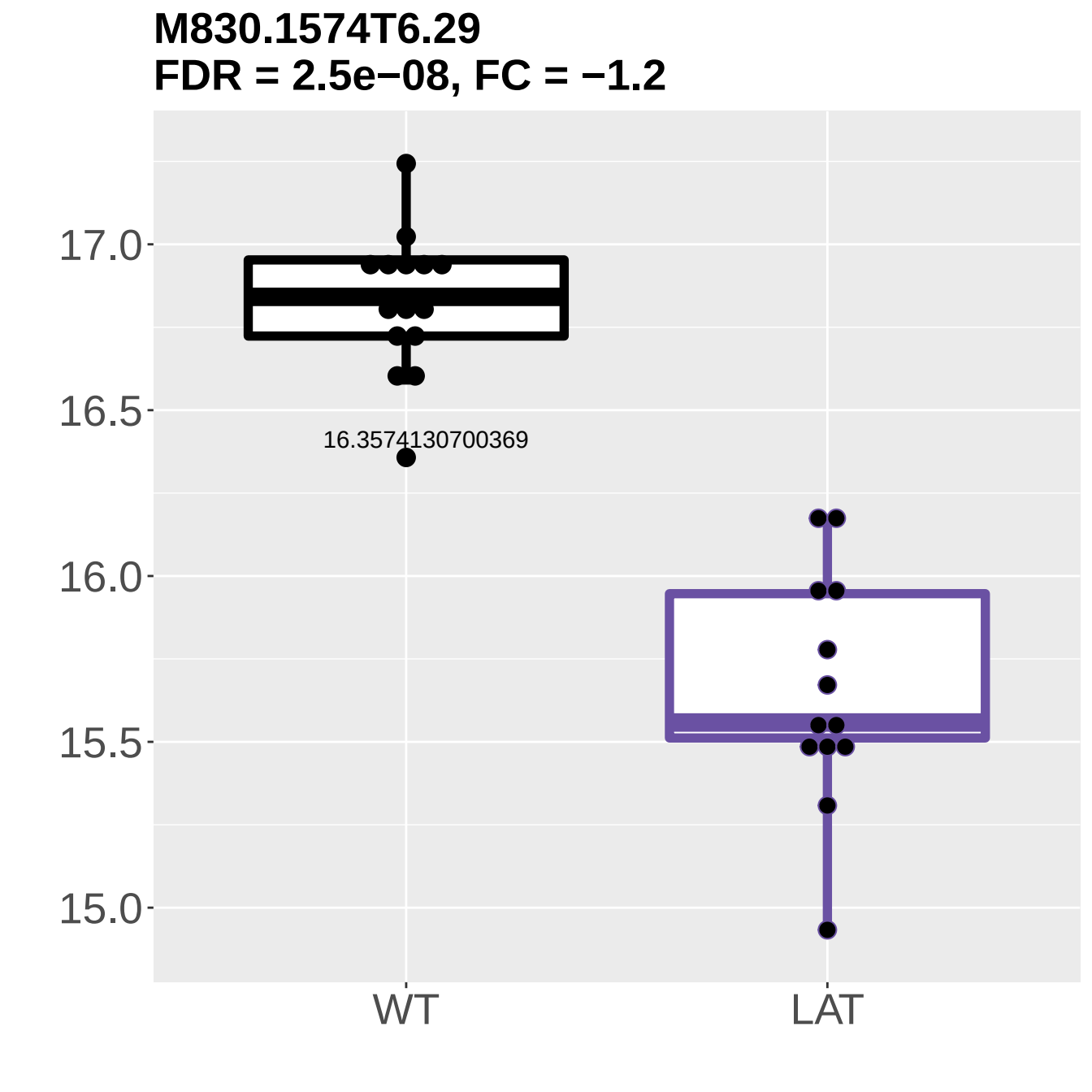
13.0888045056398
11.3342870563165
WT
LAT


M830.1574T6.29
FDR = 2.5e−08, FC = −1.2
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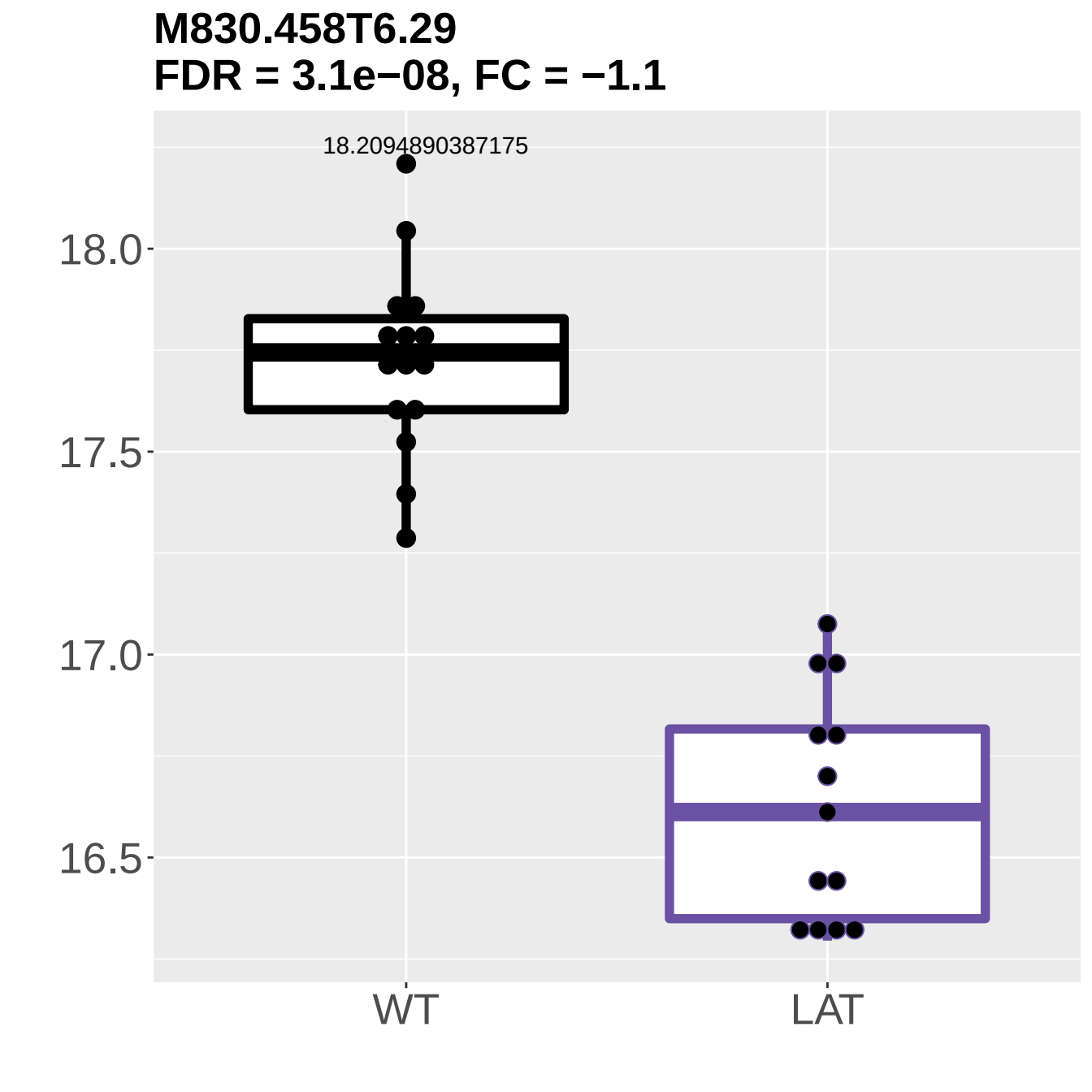
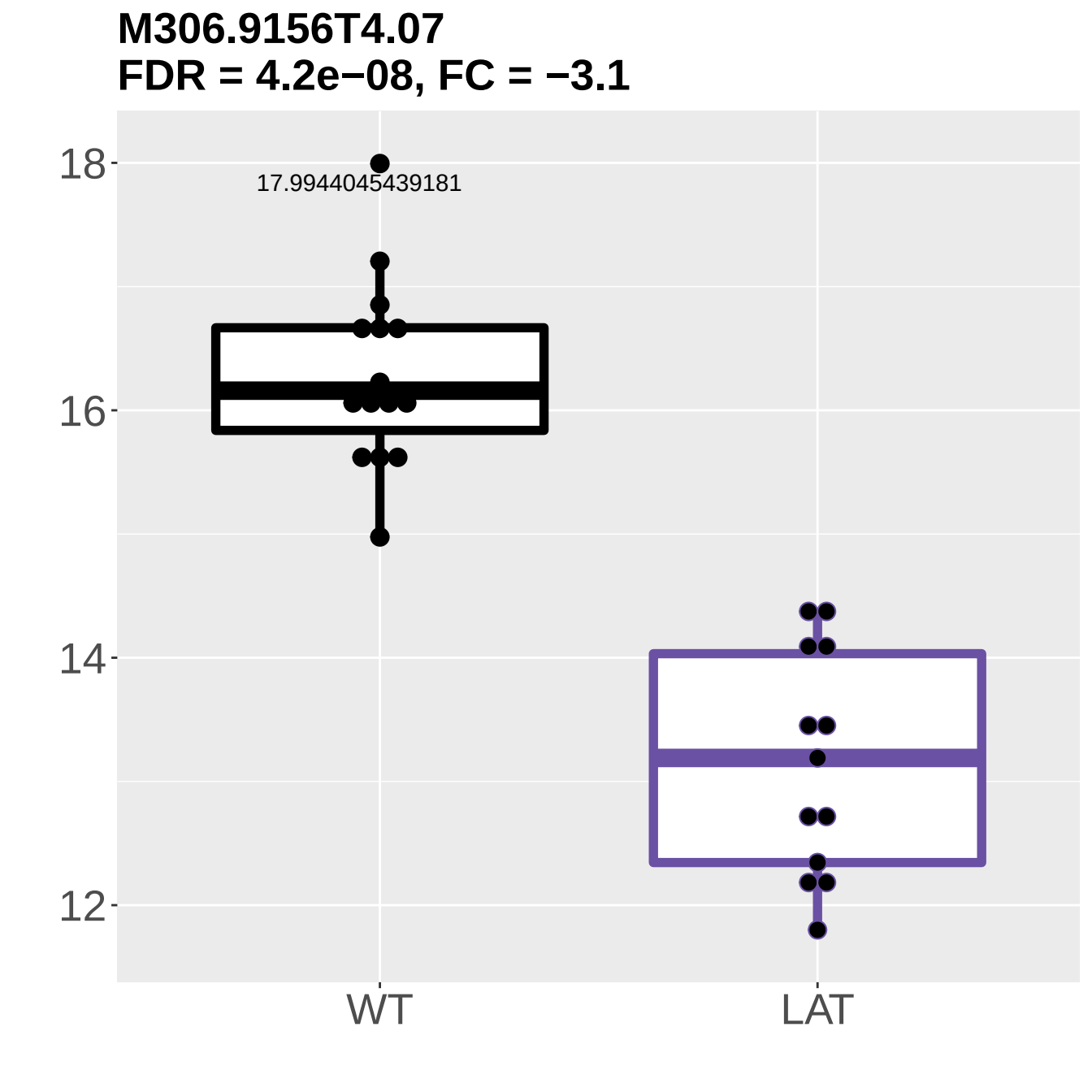
16.5
16.0
15.5
15.0
16.3574130700369
WT
LAT


M830.458T6.29
FDR = 3.1e−08, FC = −1.1
18.2094890387175
18.0
17.5
17.0
16.5
WT
LAT


M306.9156T4.07
FDR = 4.2e−08, FC = −3.1
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16
14
12
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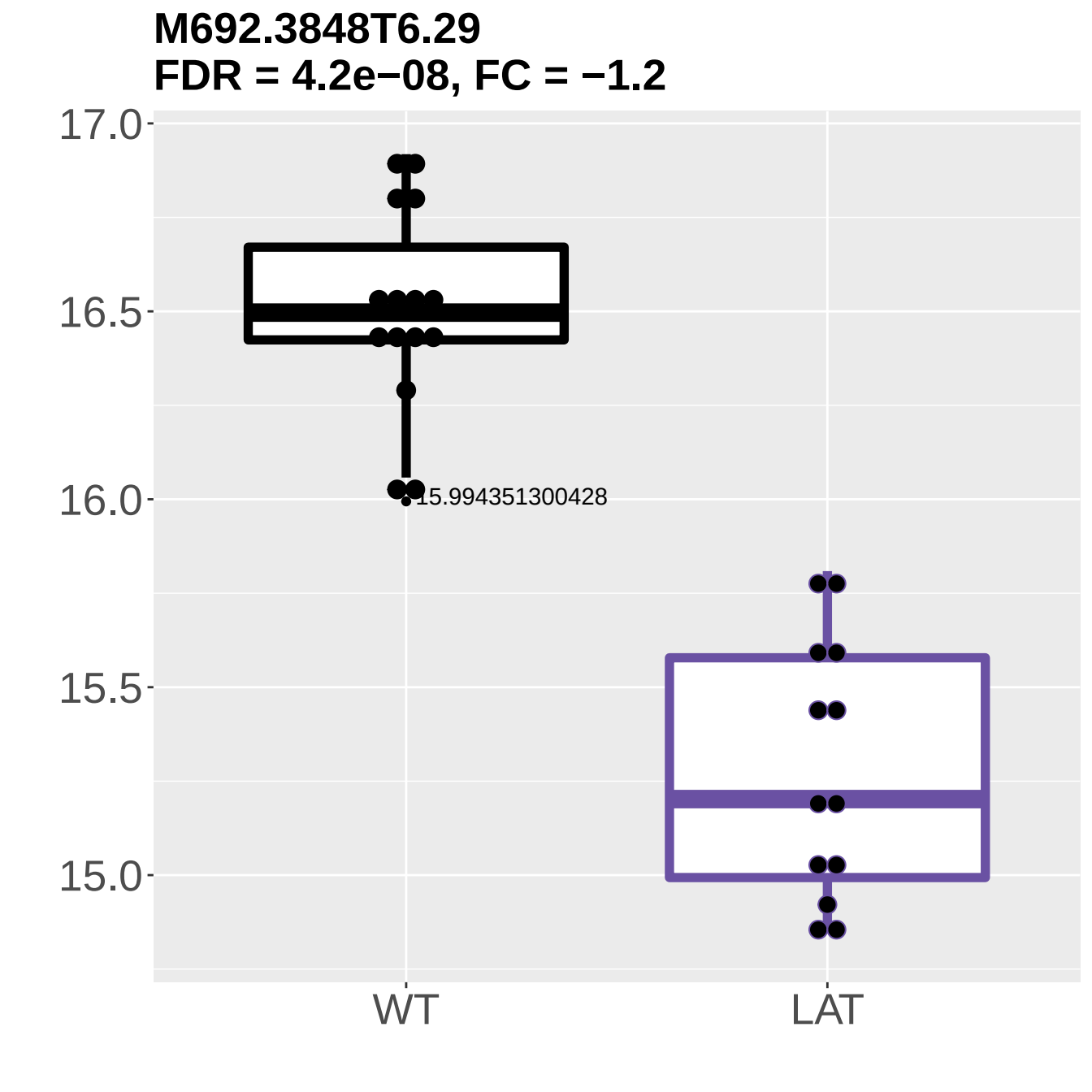
WT
LAT


M692.3848T6.29
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15.0
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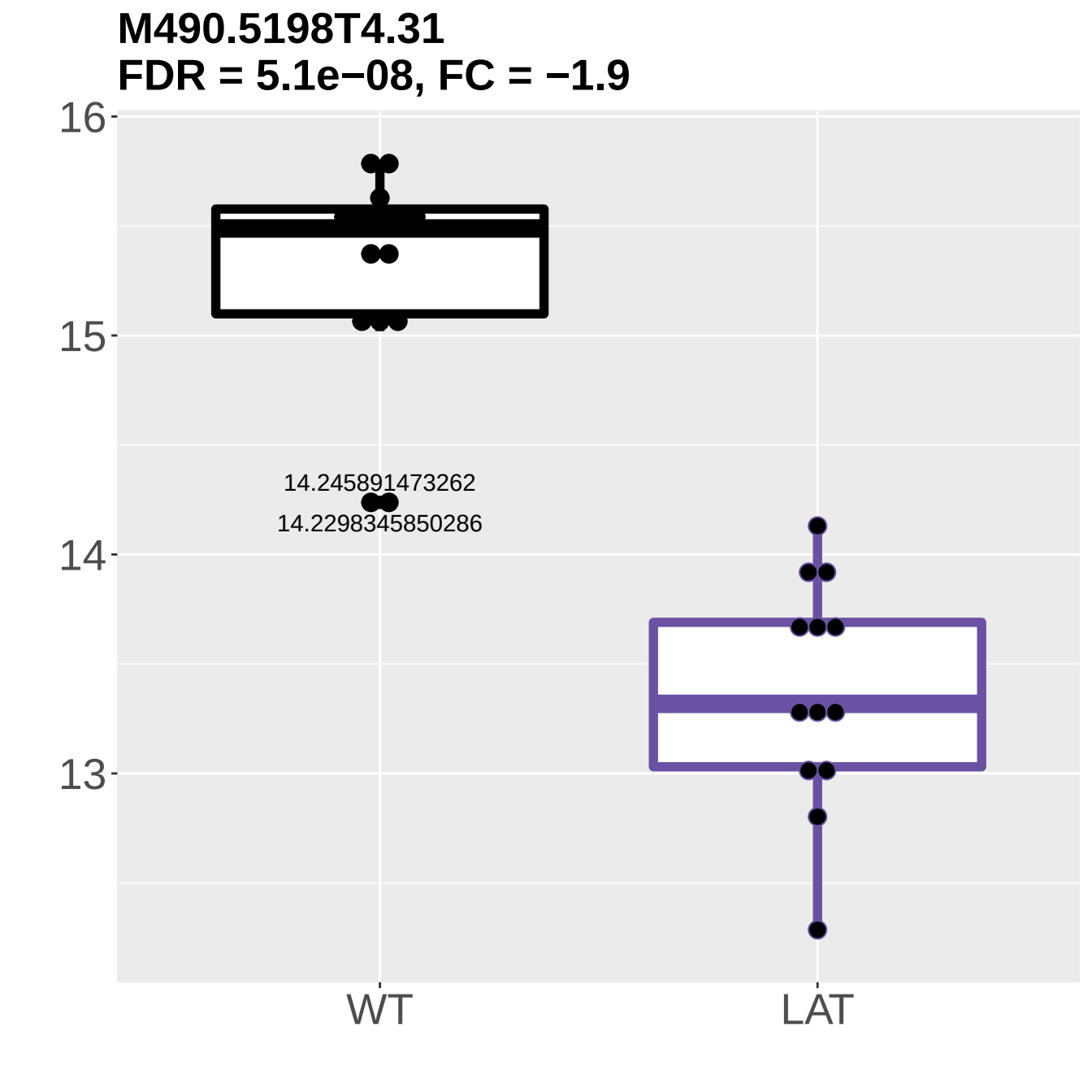
WT
LAT


M490.5198T4.31
FDR = 5.1e−08, FC = −1.9
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15
14
13
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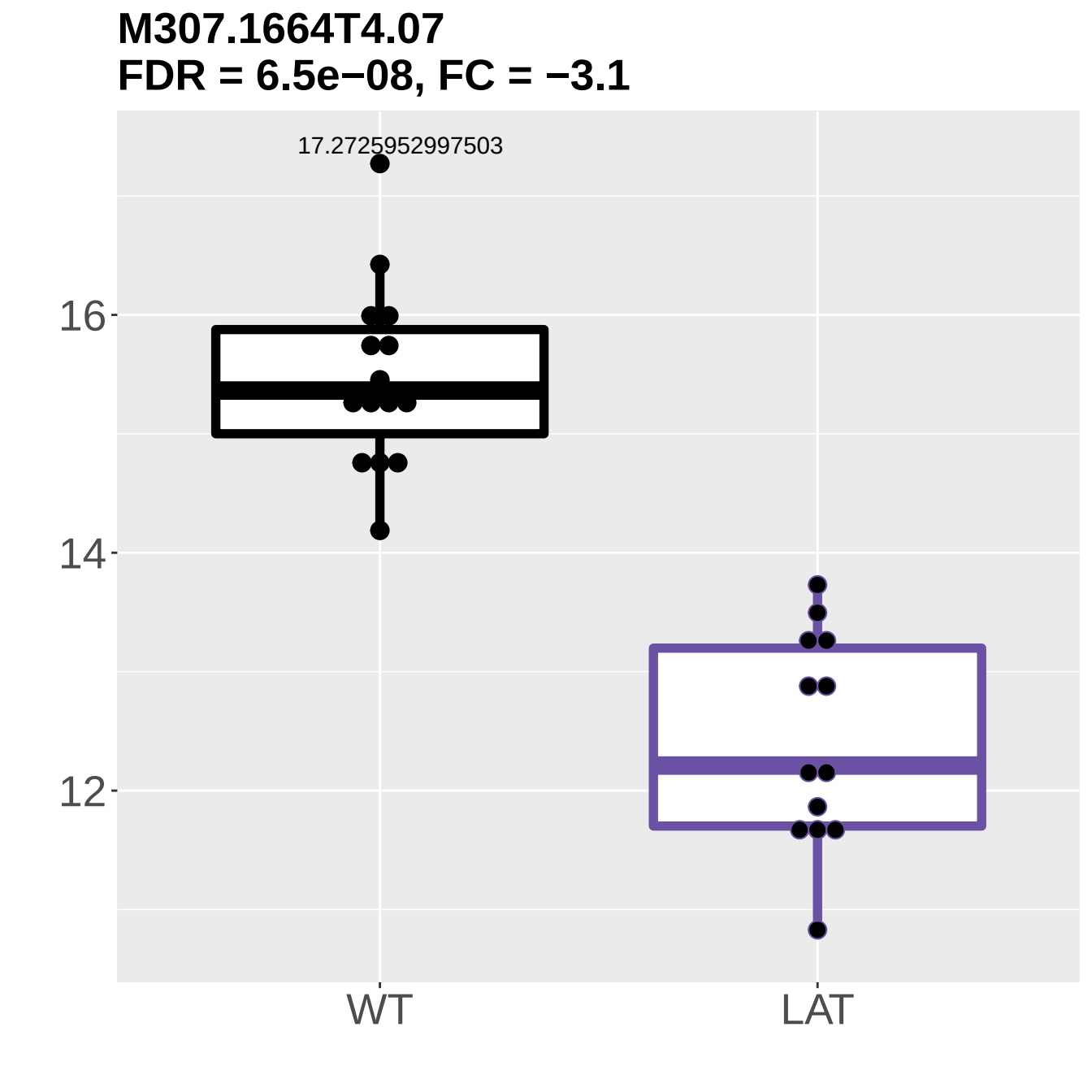
WT
LAT


M307.1664T4.07
FDR = 6.5e−08, FC = −3.1
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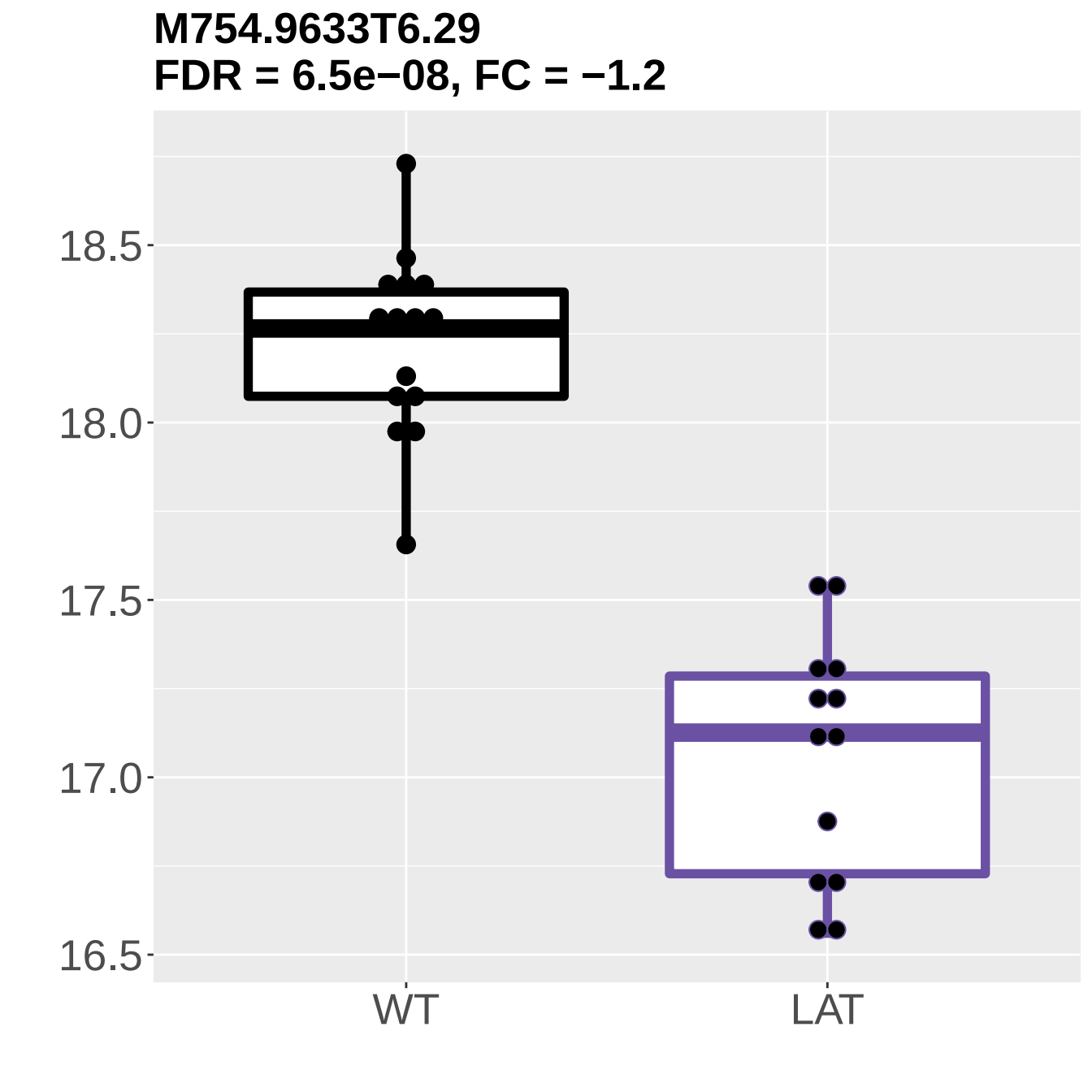
16
14
12
WT
LAT


M754.9633T6.29
FDR = 6.5e−08, FC = −1.2
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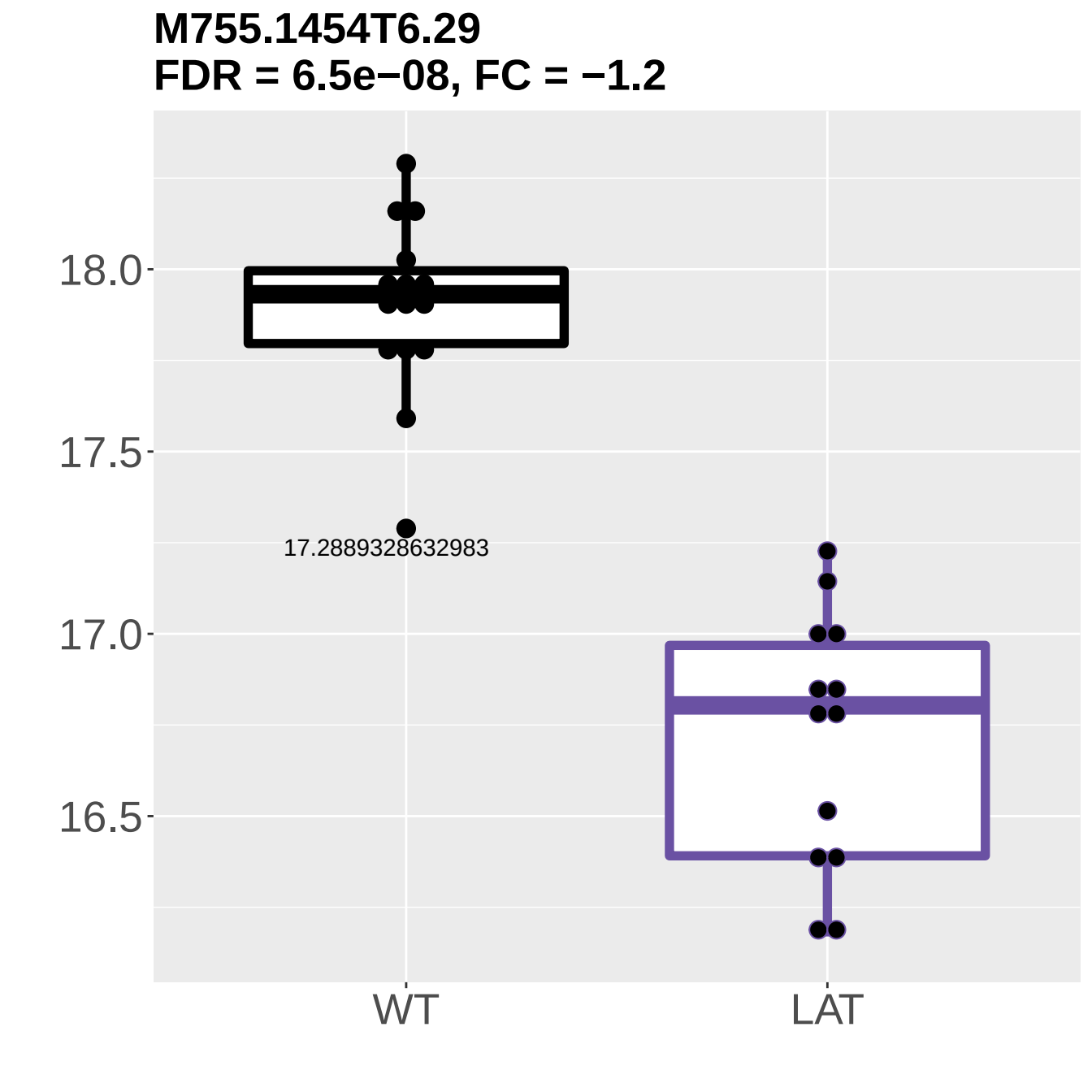
17.5
17.0
16.5
WT
LAT


M755.1454T6.29
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17.0
16.5
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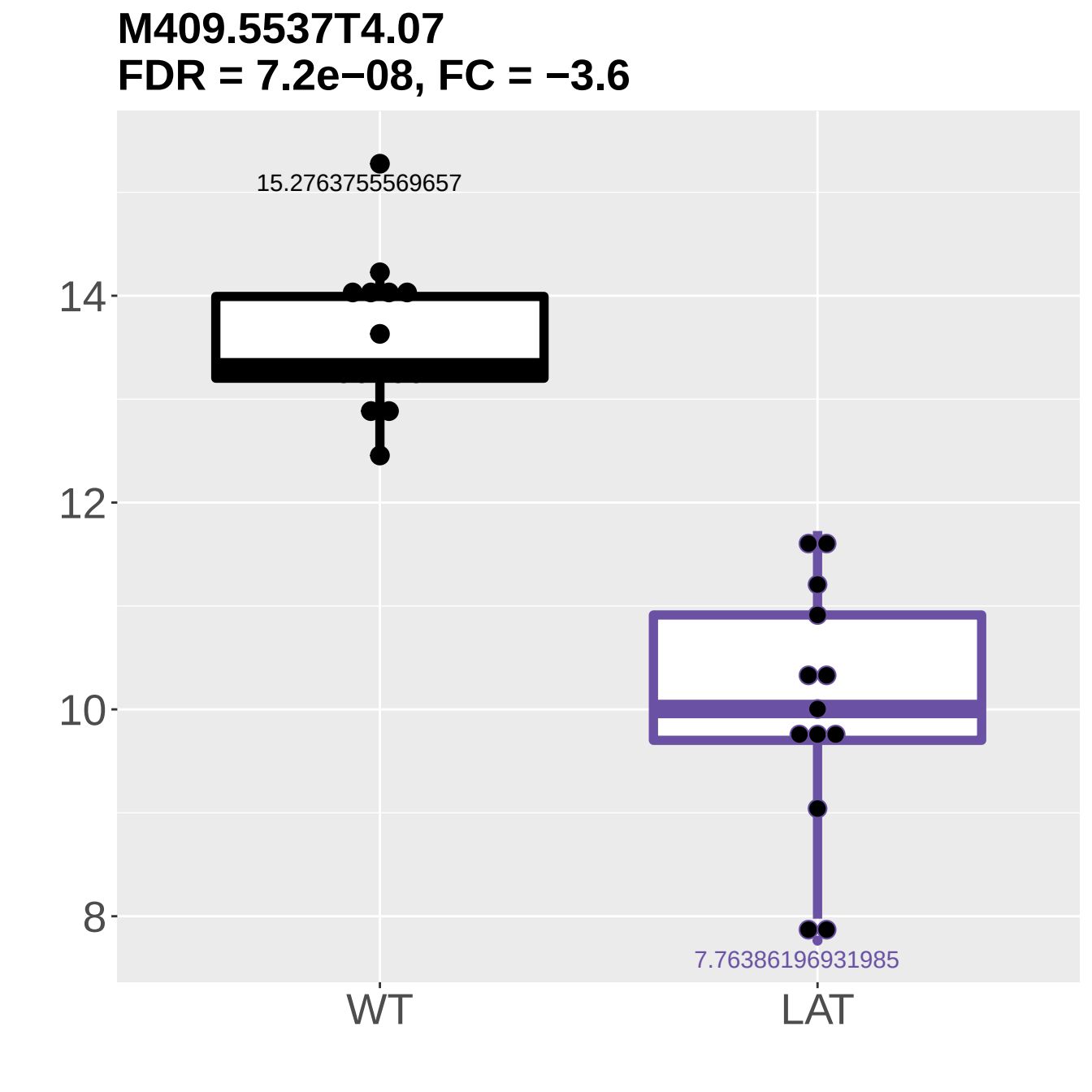
WT
LAT


M409.5537T4.07
FDR = 7.2e−08, FC = −3.6
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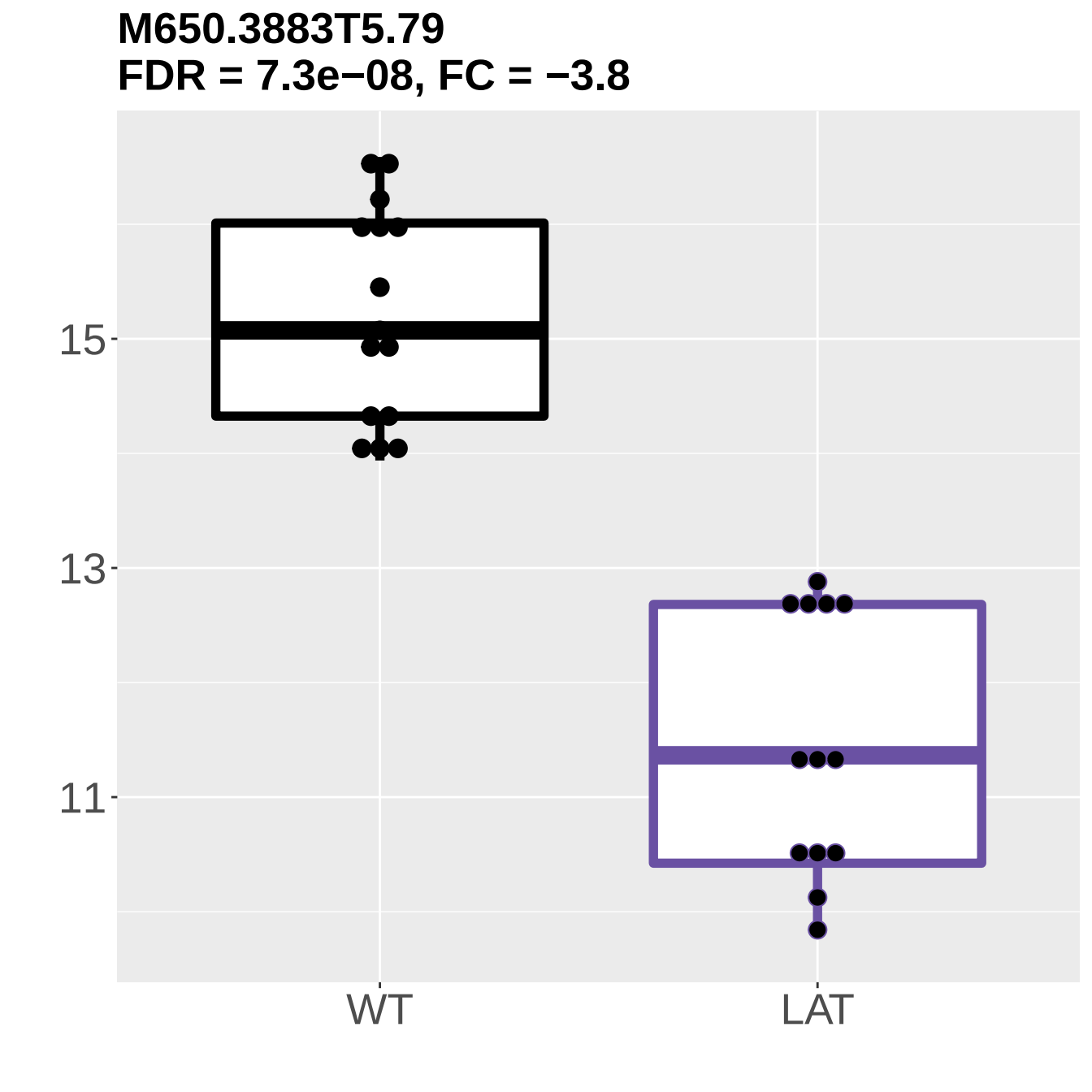
8
7.76386196931985
WT
LAT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FDR = 7.3e−08, FC = −3.8
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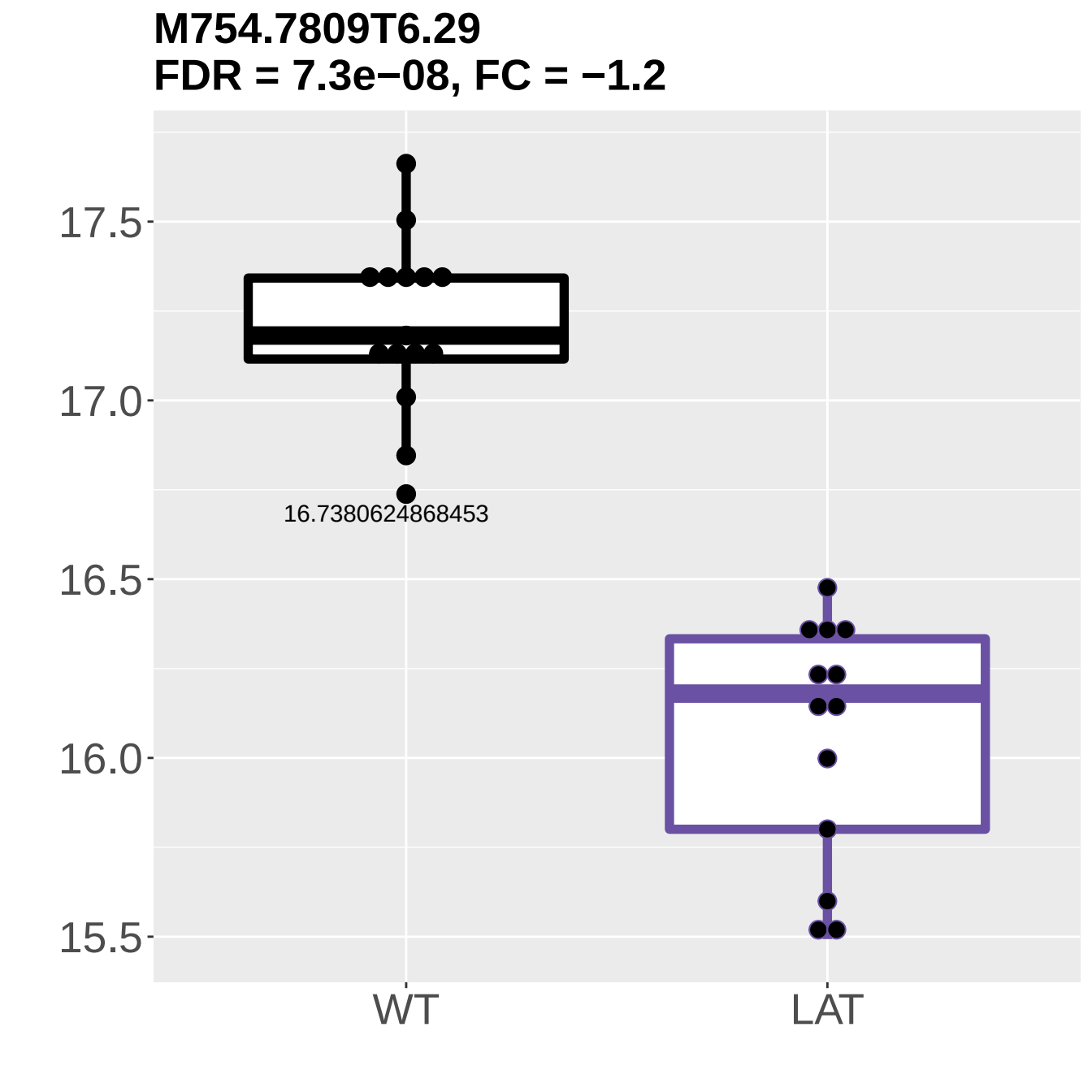
13
11
WT
LAT


M754.7809T6.29
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16.0
15.5
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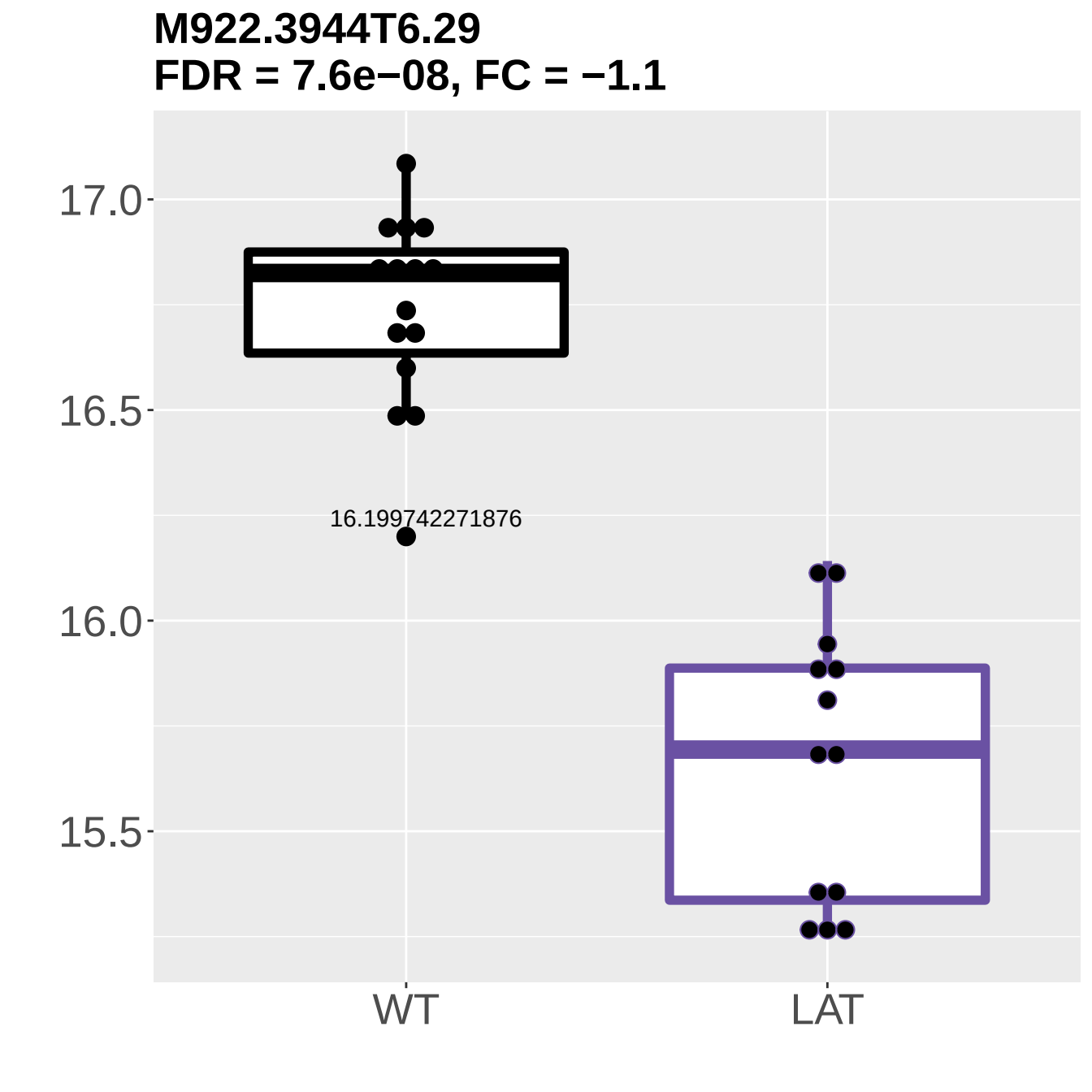
WT
LAT


M922.3944T6.29
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16.0
15.5
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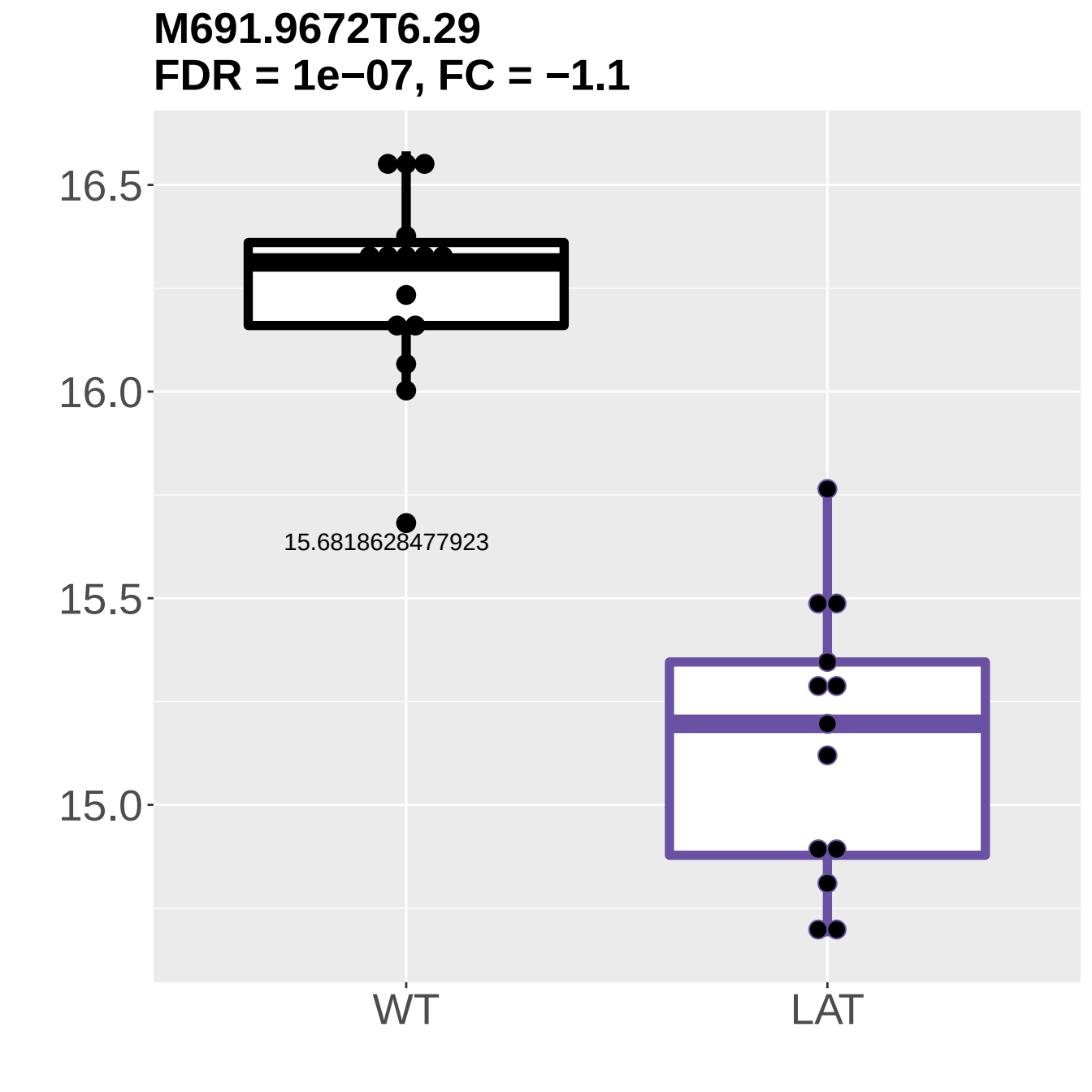
WT
LAT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15.0
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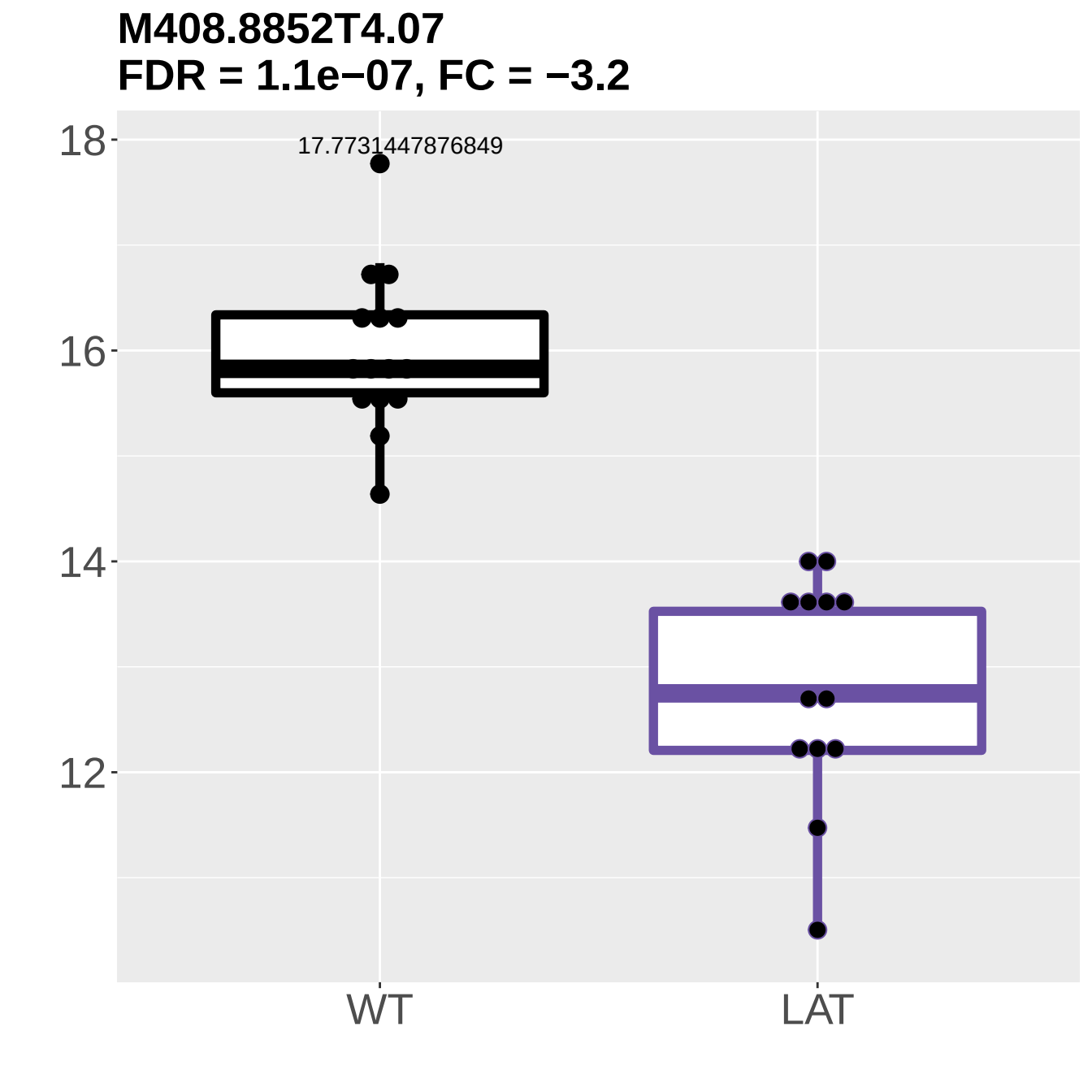
WT
LAT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16
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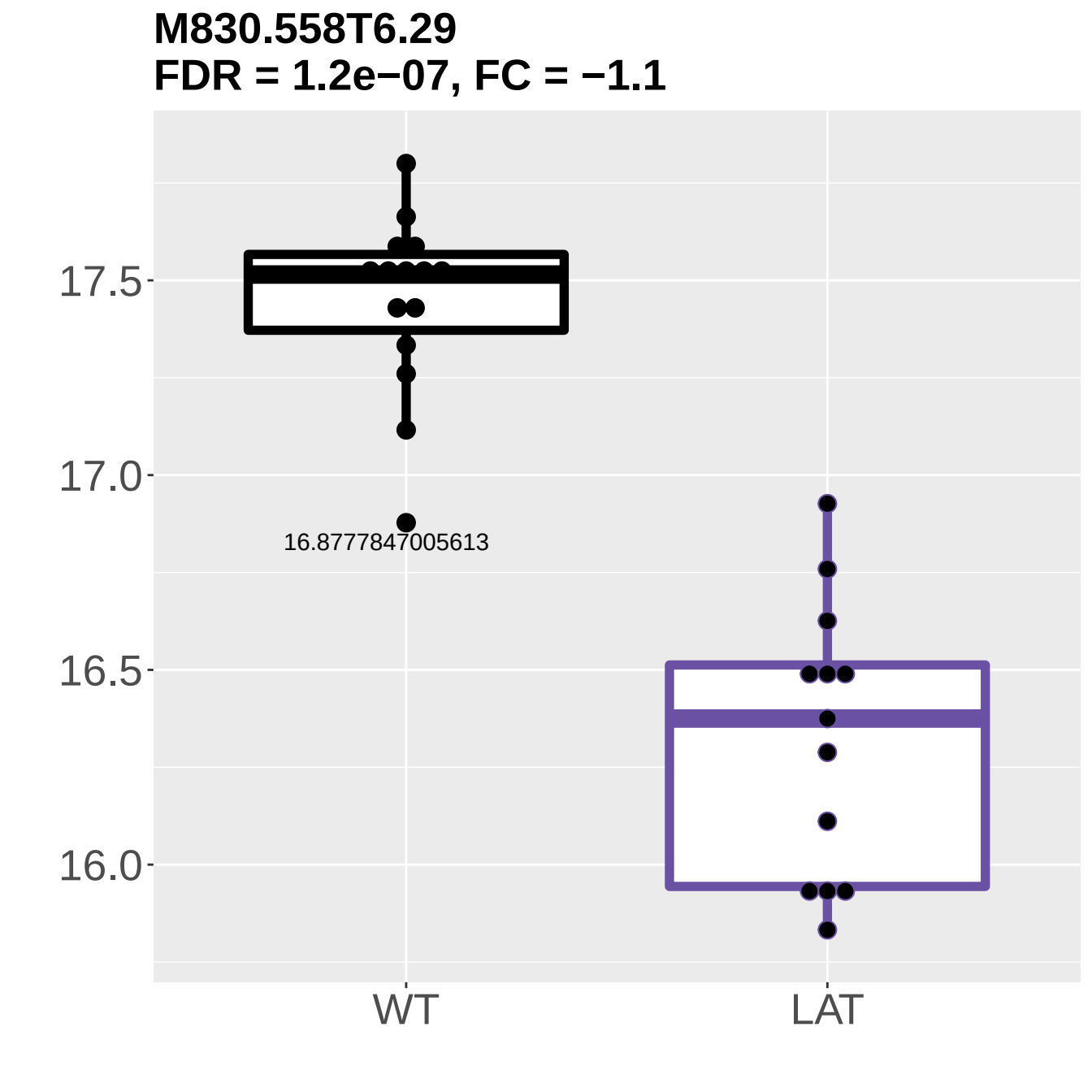
WT
LAT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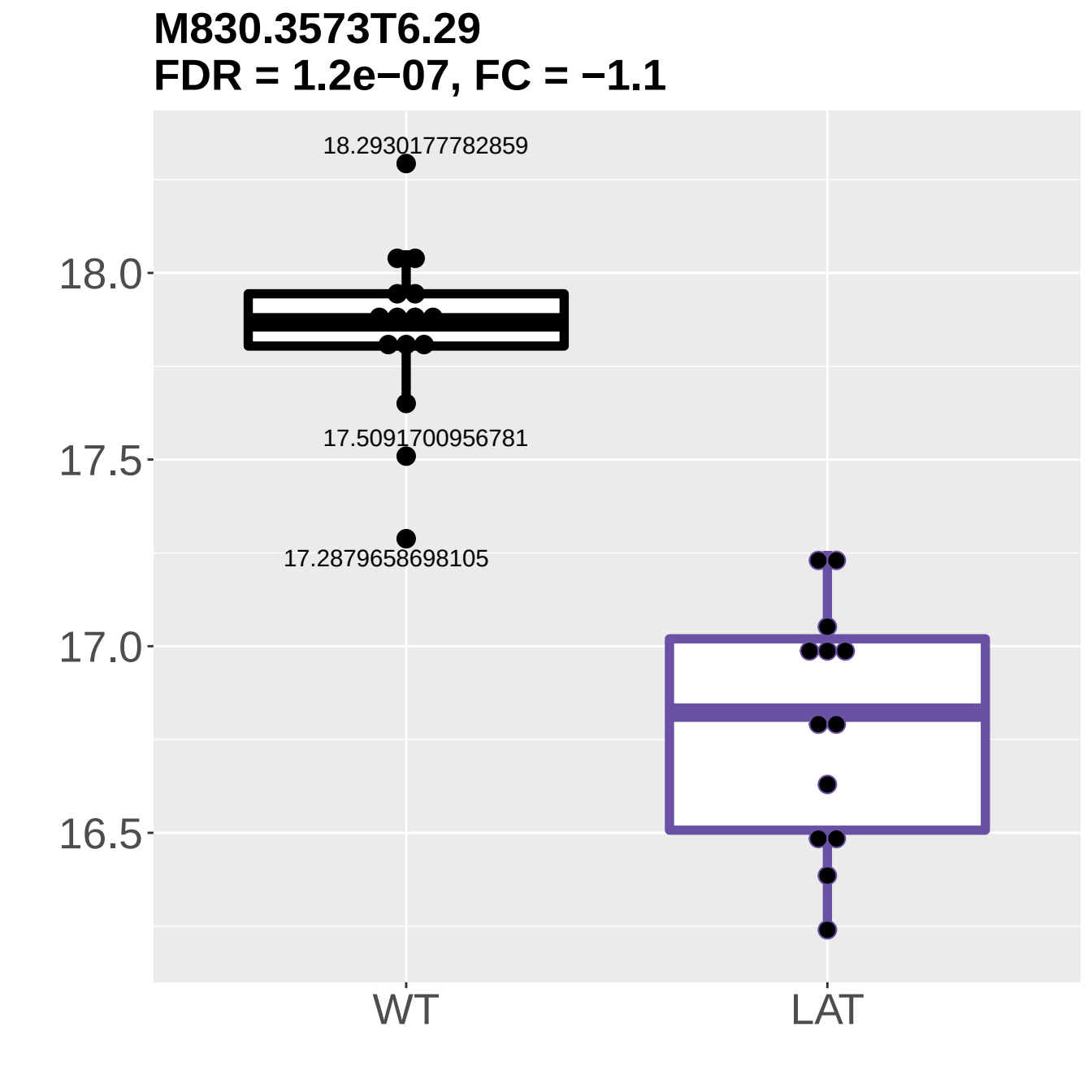
WT
LAT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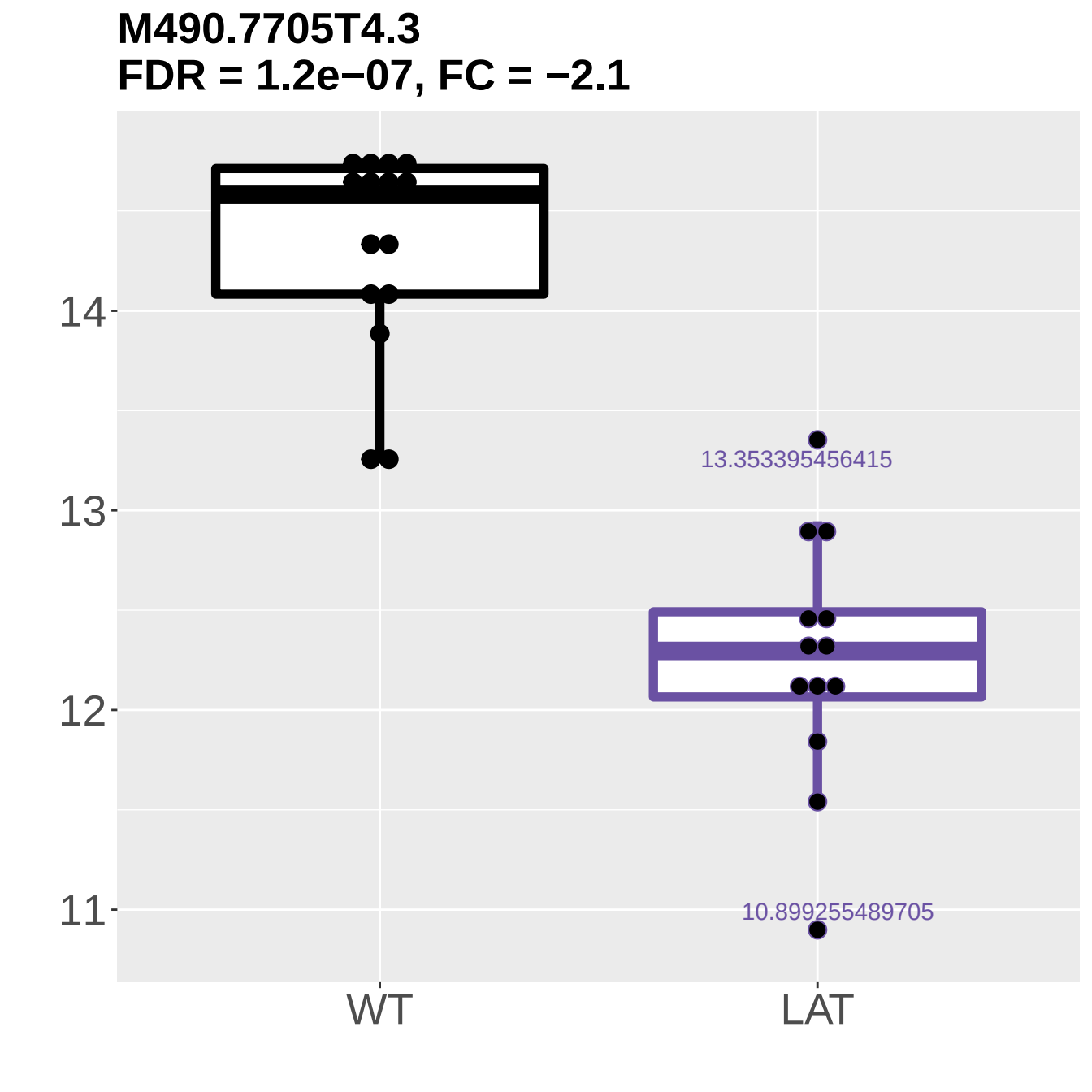
17.0
16.5
WT
LAT


M490.7705T4.3
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13
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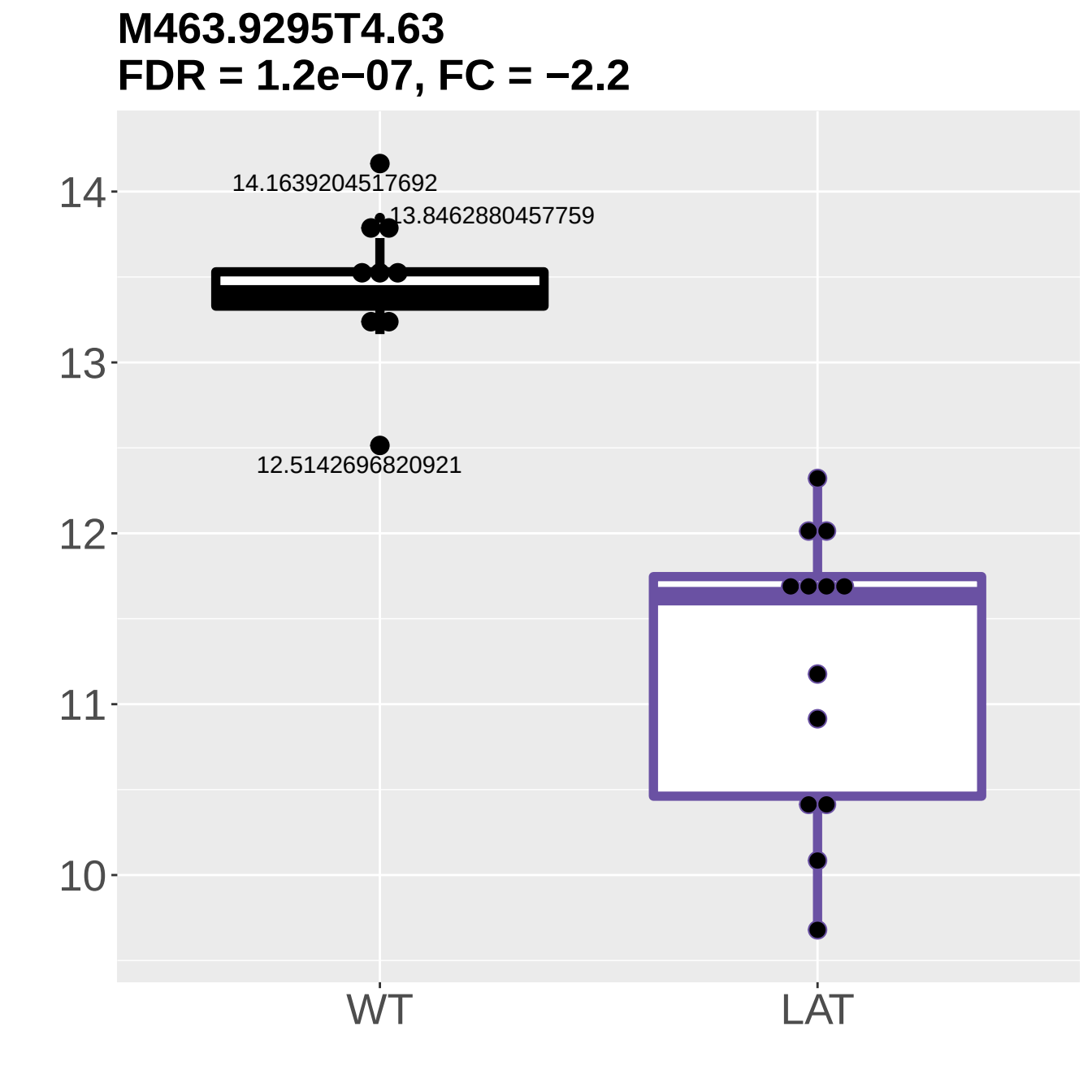
WT
LAT


M463.9295T4.63
FDR = 1.2e−07, FC = −2.2
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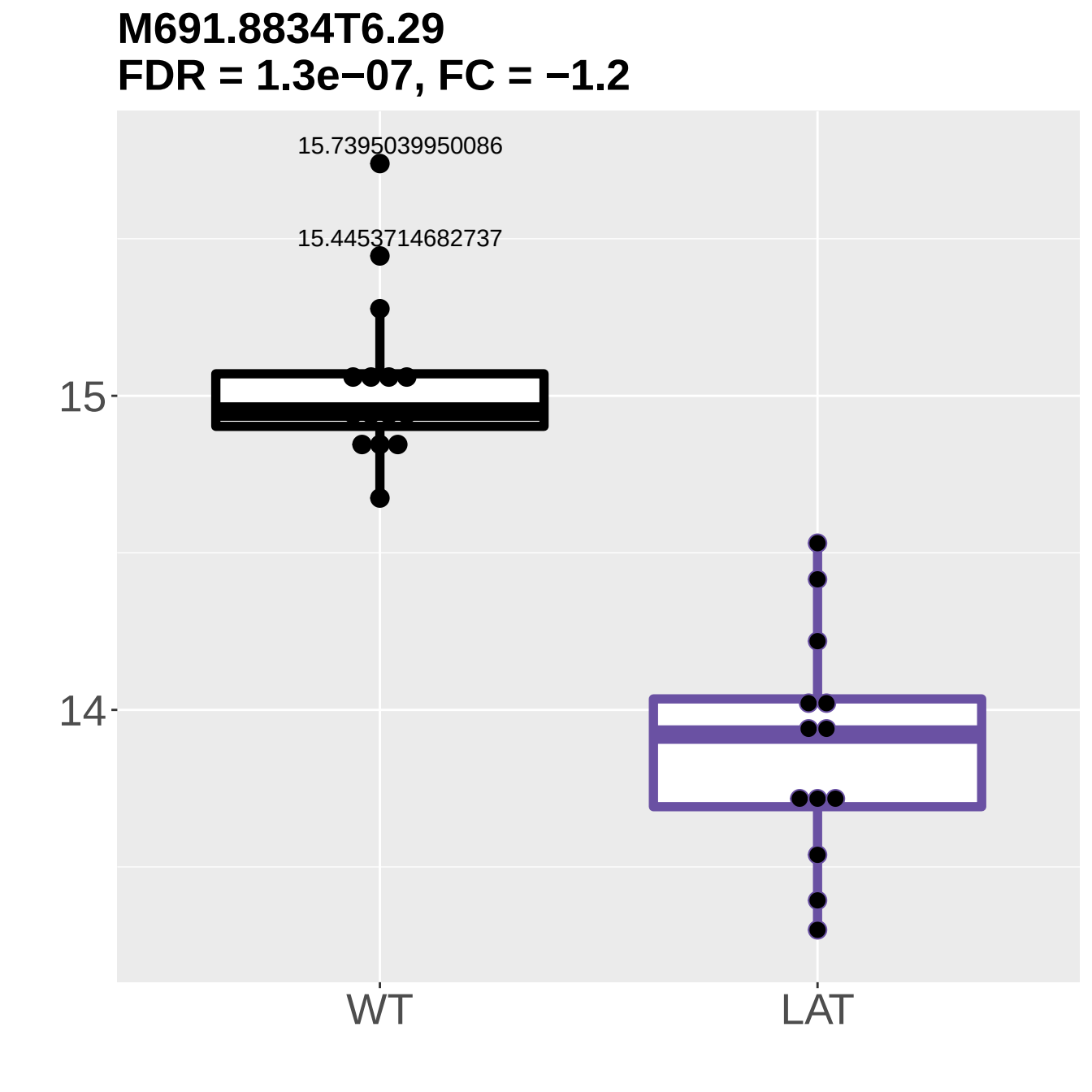
13
12
11
10
WT
LAT


M691.8834T6.29
FDR = 1.3e−07, FC = −1.2
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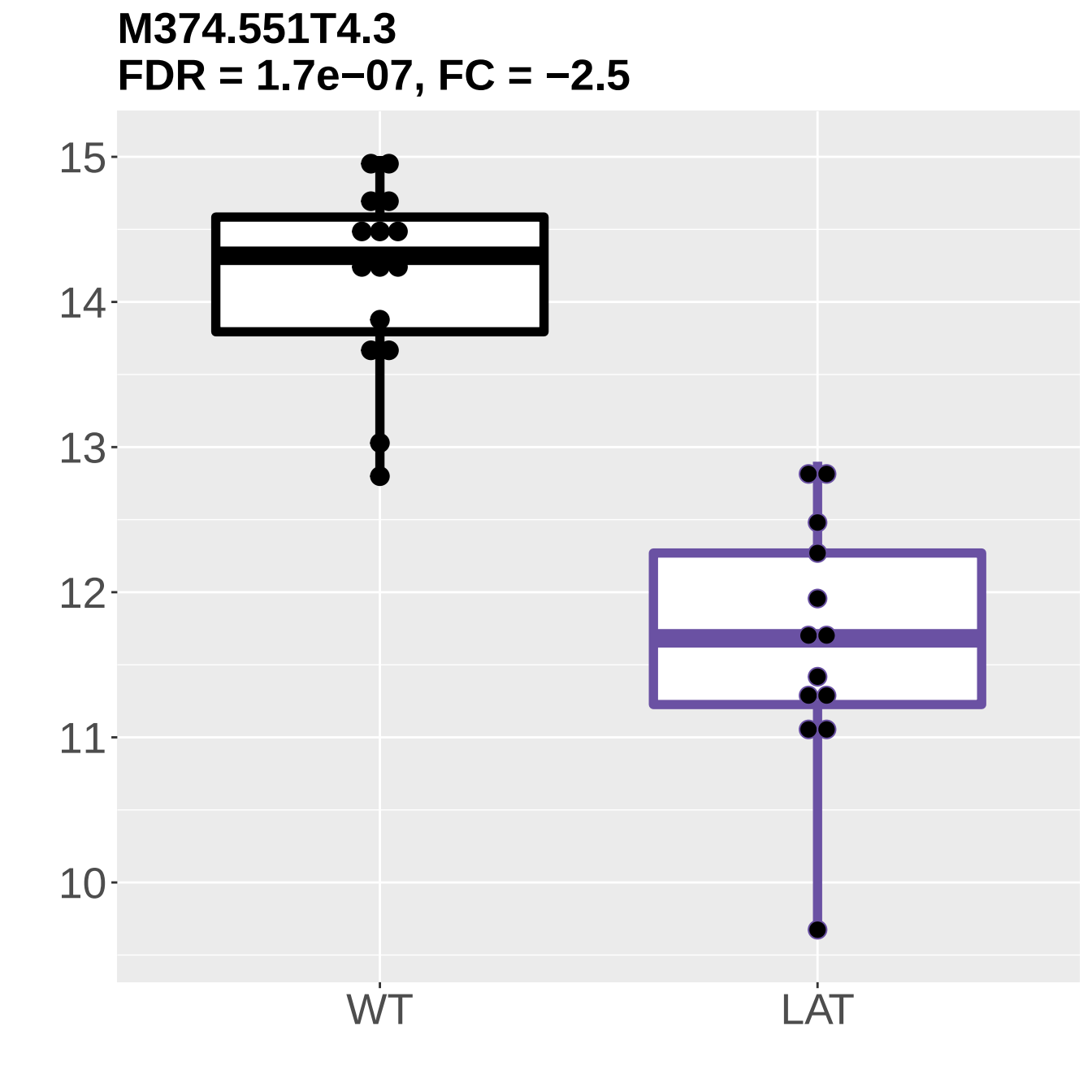
15.4453714682737
15
14
WT
LAT


M374.551T4.3
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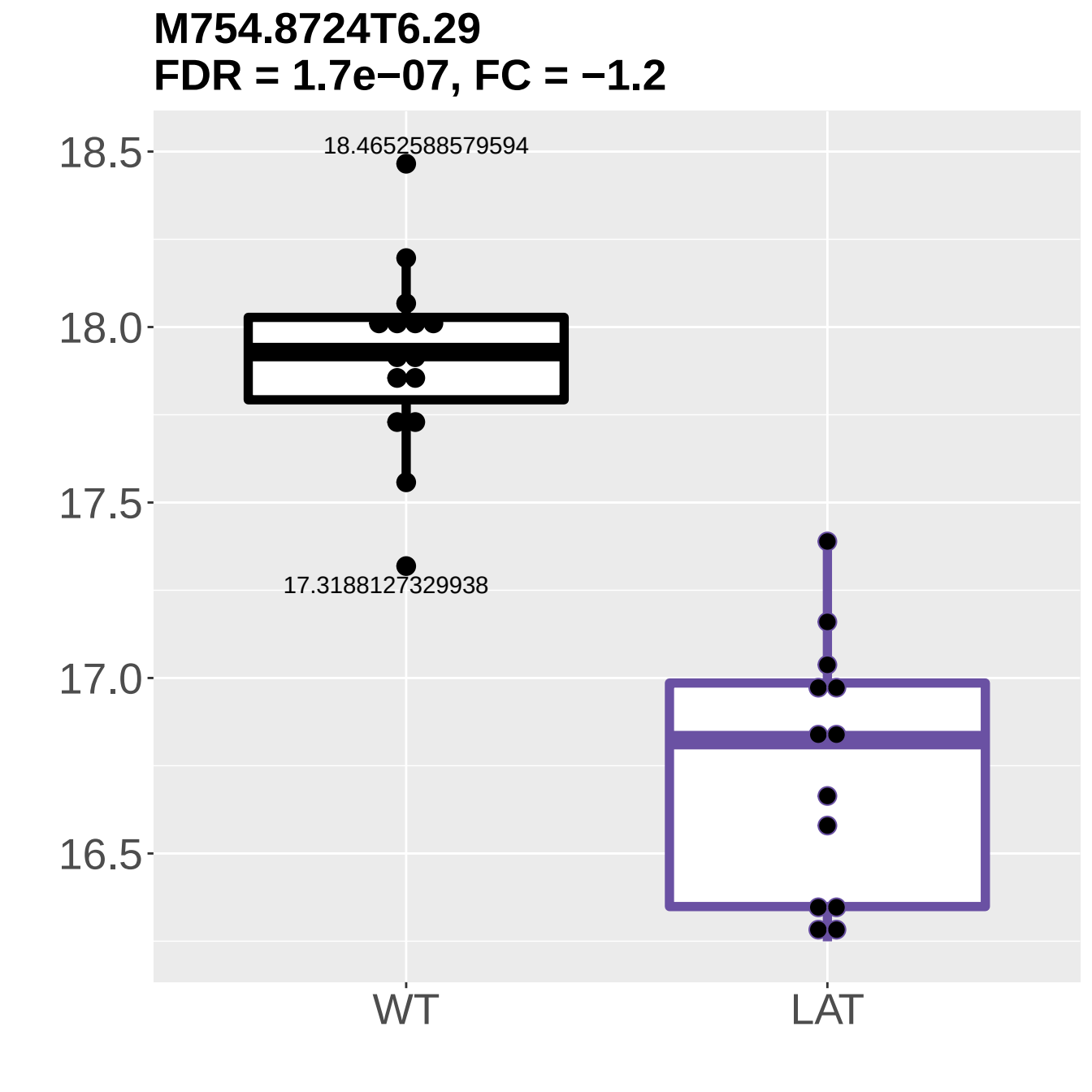
14
13
12
11
10
WT
LAT


M754.8724T6.29
FDR = 1.7e−07, FC = −1.2
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17.0
16.5
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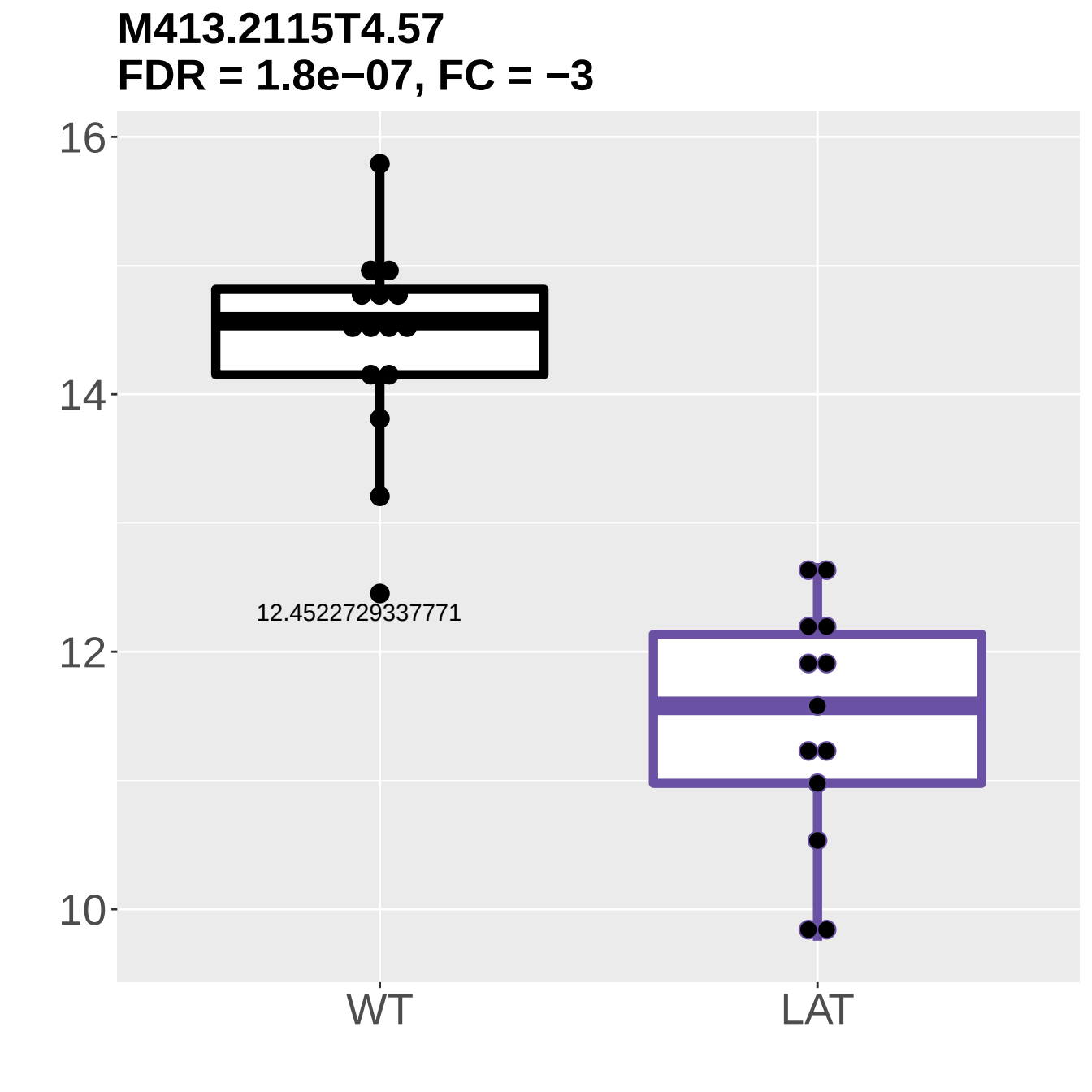
17.3188127329938
WT
LAT


M413.2115T4.57
FDR = 1.8e−07, FC = −3
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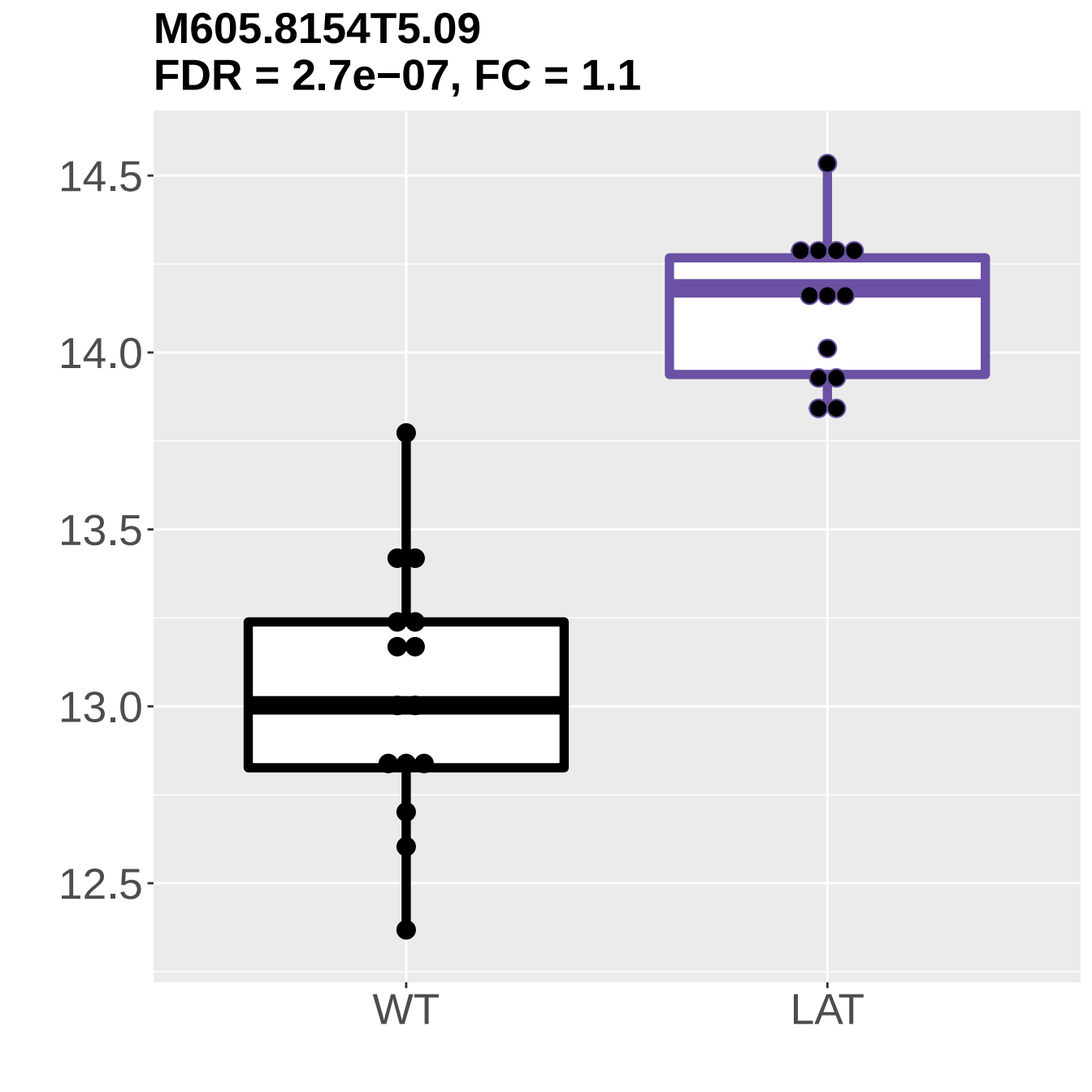
14
12
10
12.4522729337771
WT
LAT


M605.8154T5.09
FDR = 2.7e−07, FC = 1.1
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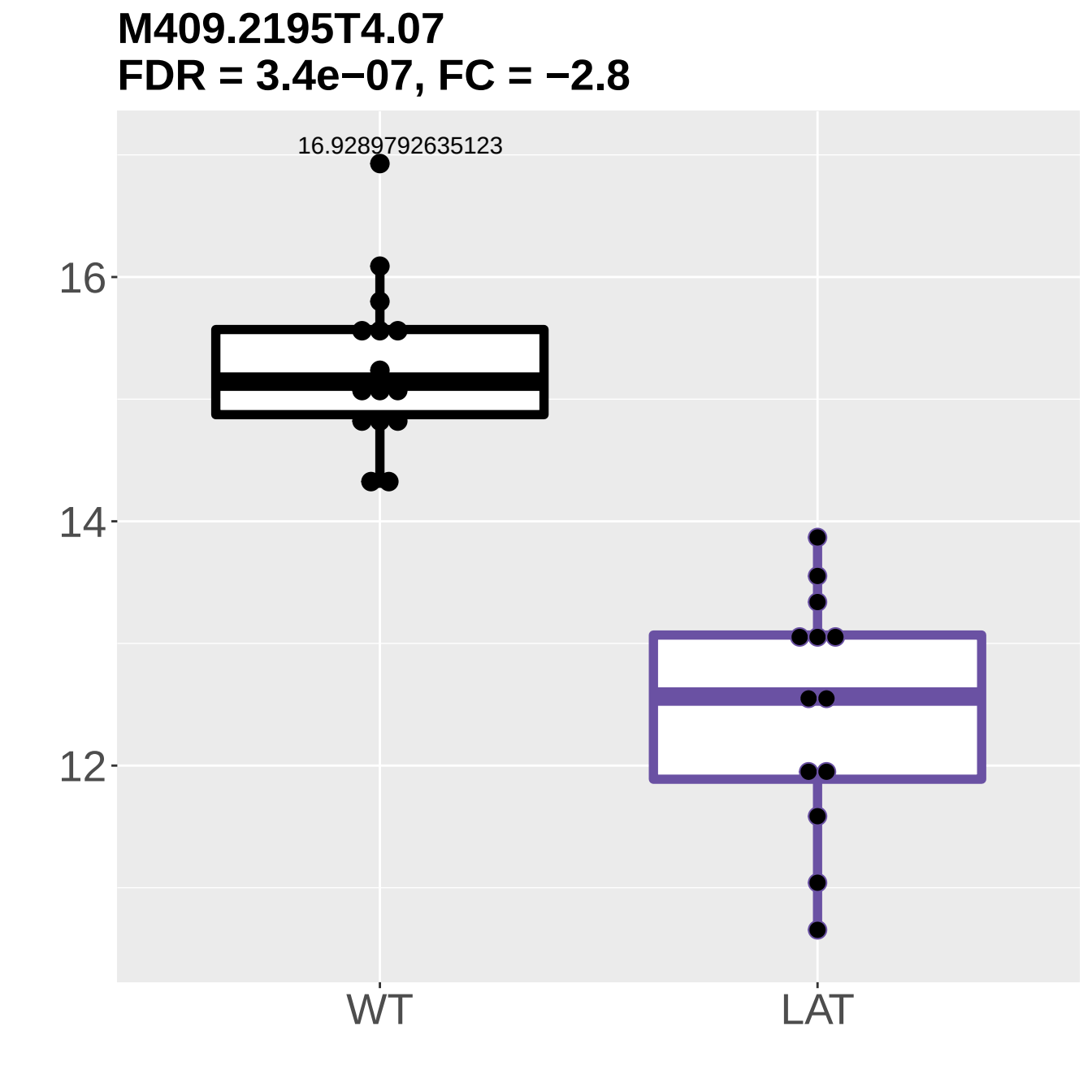
13.5
13.0
12.5
WT
LAT


M409.2195T4.07
FDR = 3.4e−07, FC = −2.8
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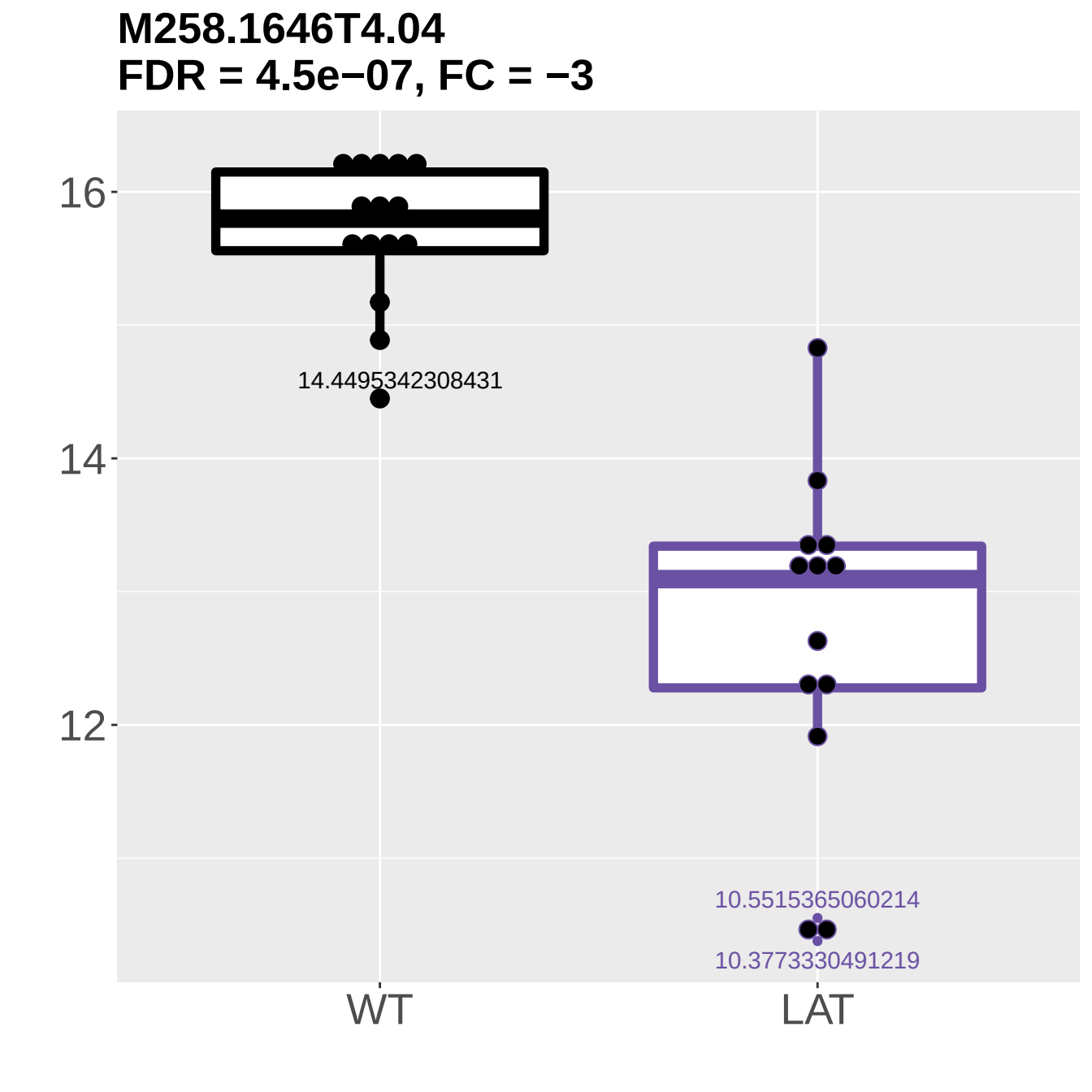
16
14
12
WT
LAT


M258.1646T4.04
FDR = 4.5e−07, FC = −3
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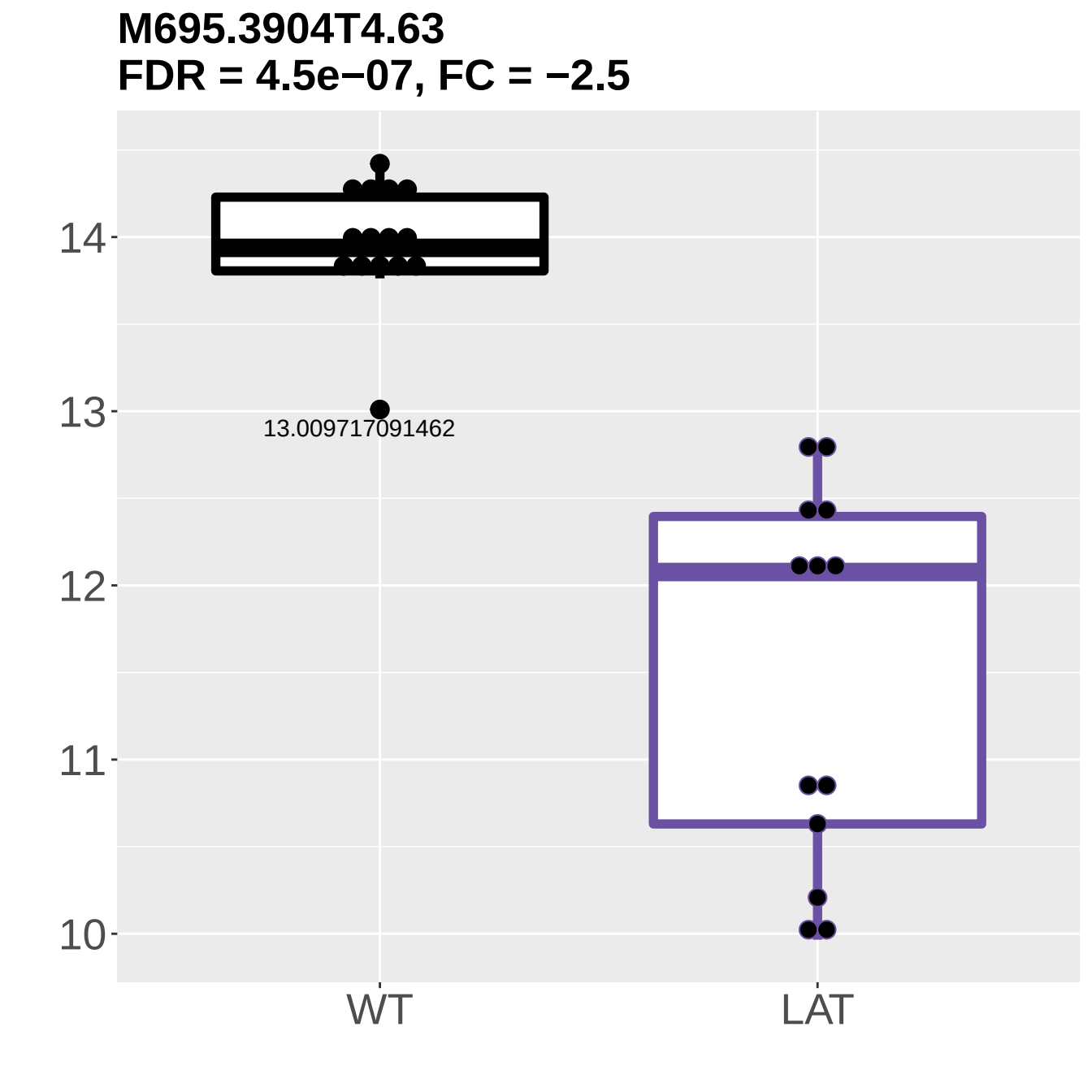
14
12
14.4495342308431
10.5515365060214
10.3773330491219
WT
LAT


M695.3904T4.63
FDR = 4.5e−07, FC = −2.5
14
13
12
11
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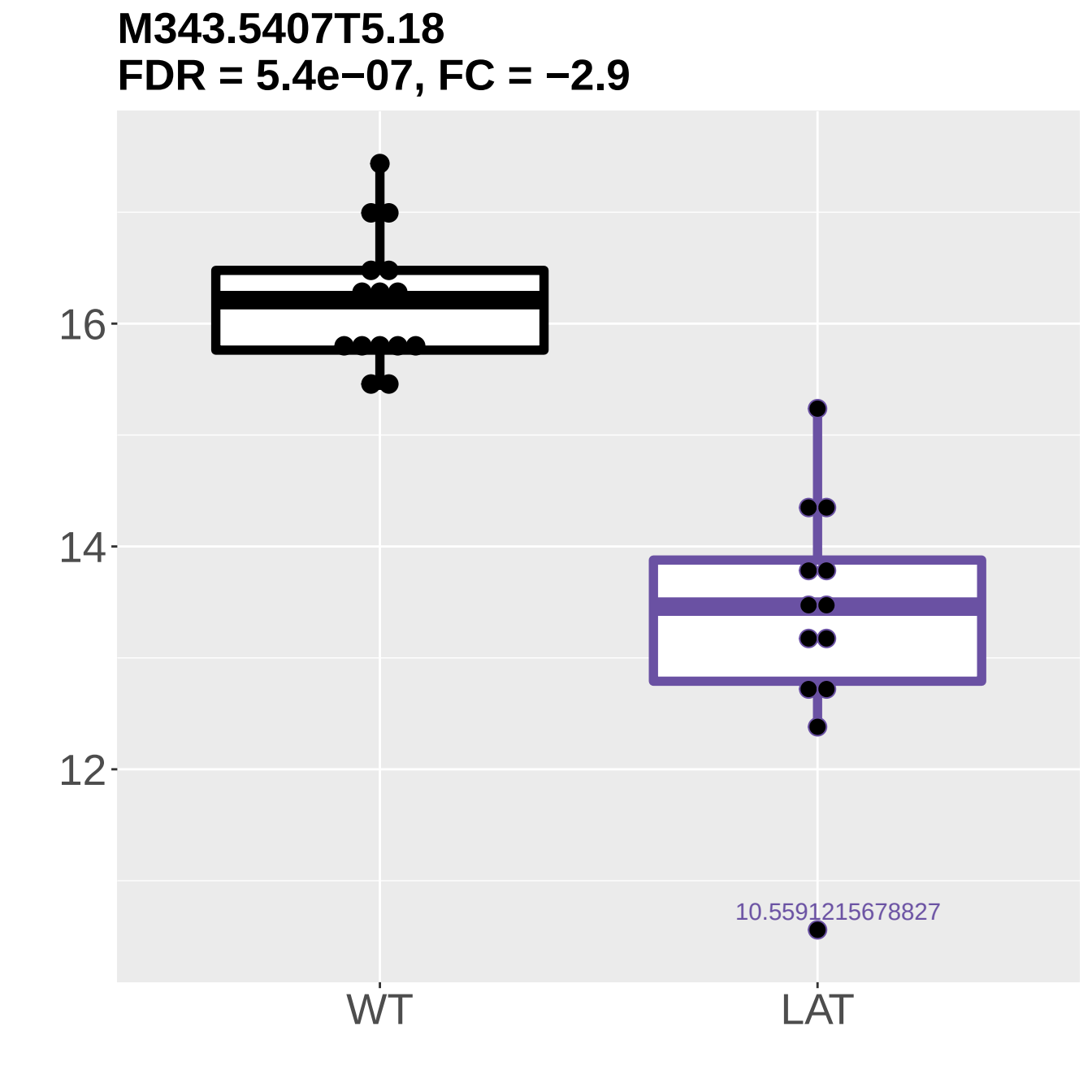
WT
LAT


M343.5407T5.18
FDR = 5.4e−07, FC = −2.9
16
14
12
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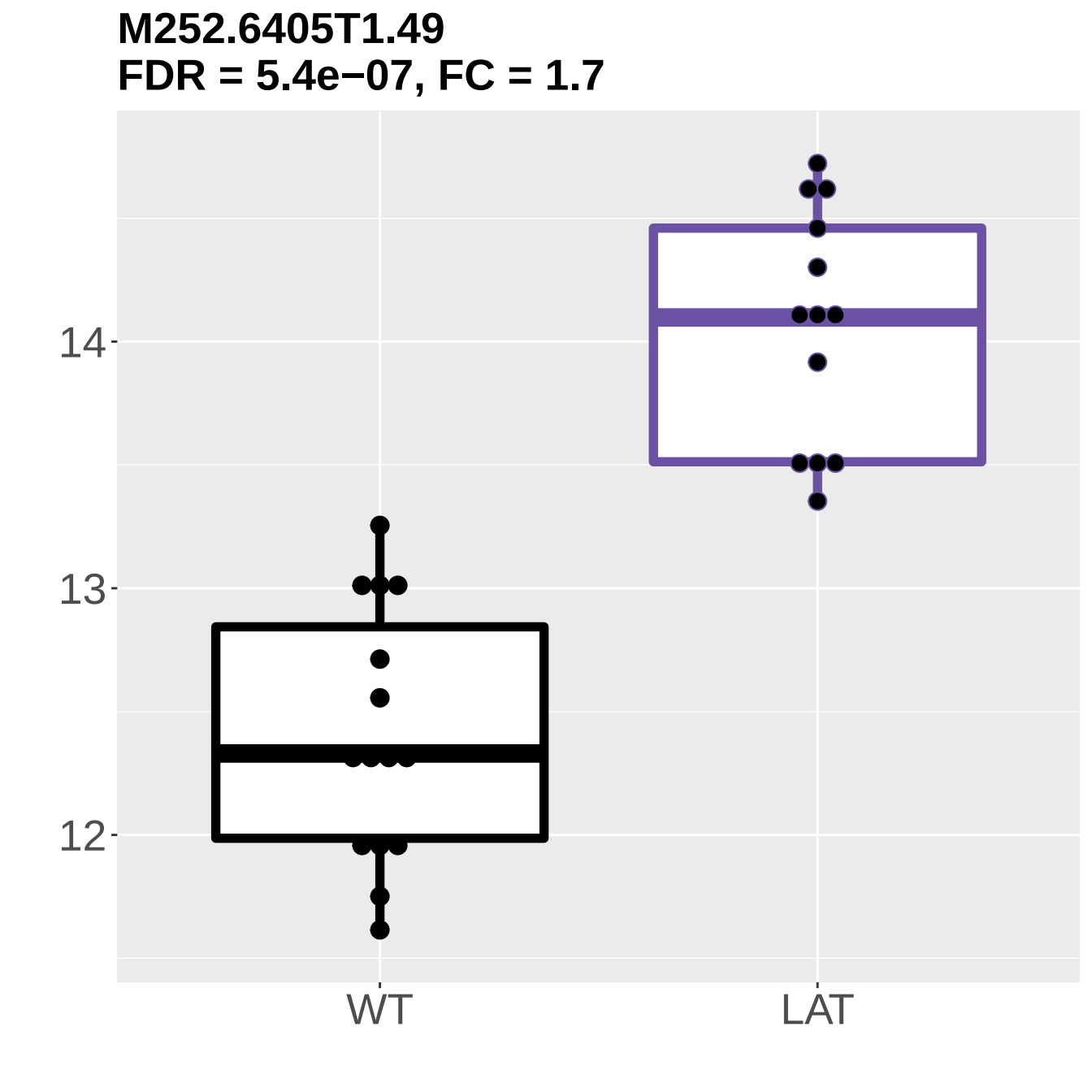
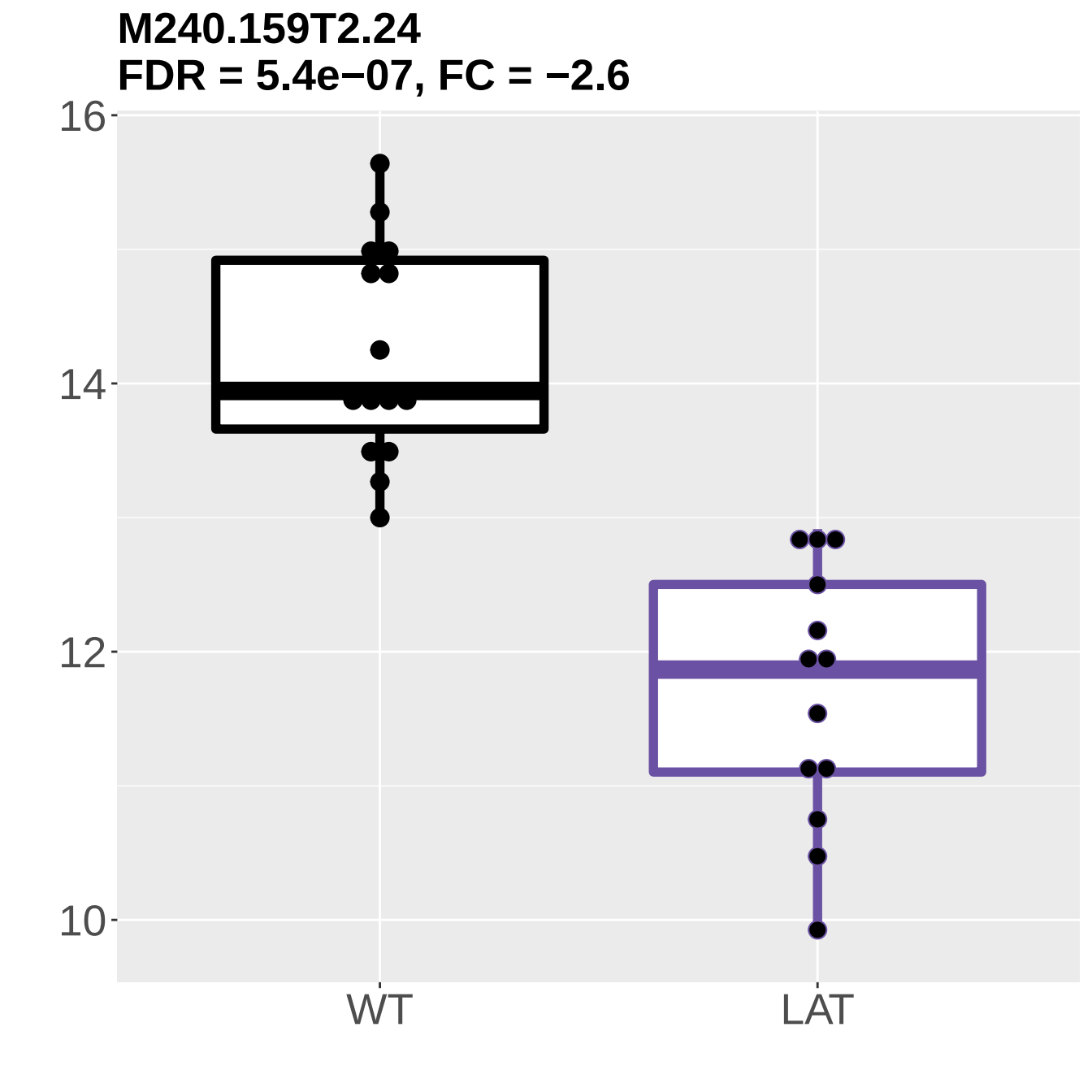
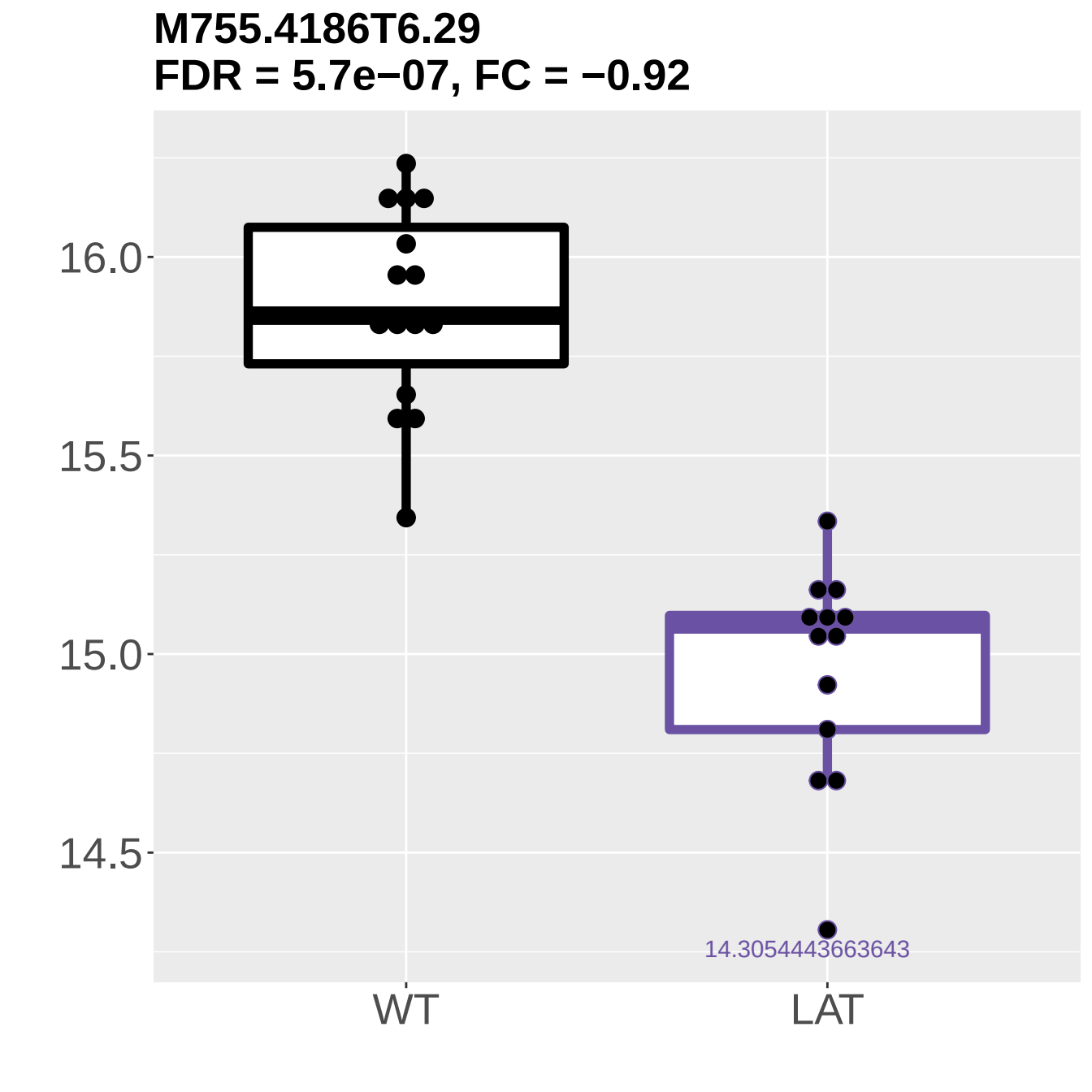
WT
LAT


M252.6405T1.49
FDR = 5.4e−07, FC = 1.7
14
13
12
WT
LAT


M240.159T2.24
FDR = 5.4e−07, FC = −2.6
16
14
12
10
WT
LAT


M755.4186T6.29
FDR = 5.7e−07, FC = −0.92
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WT
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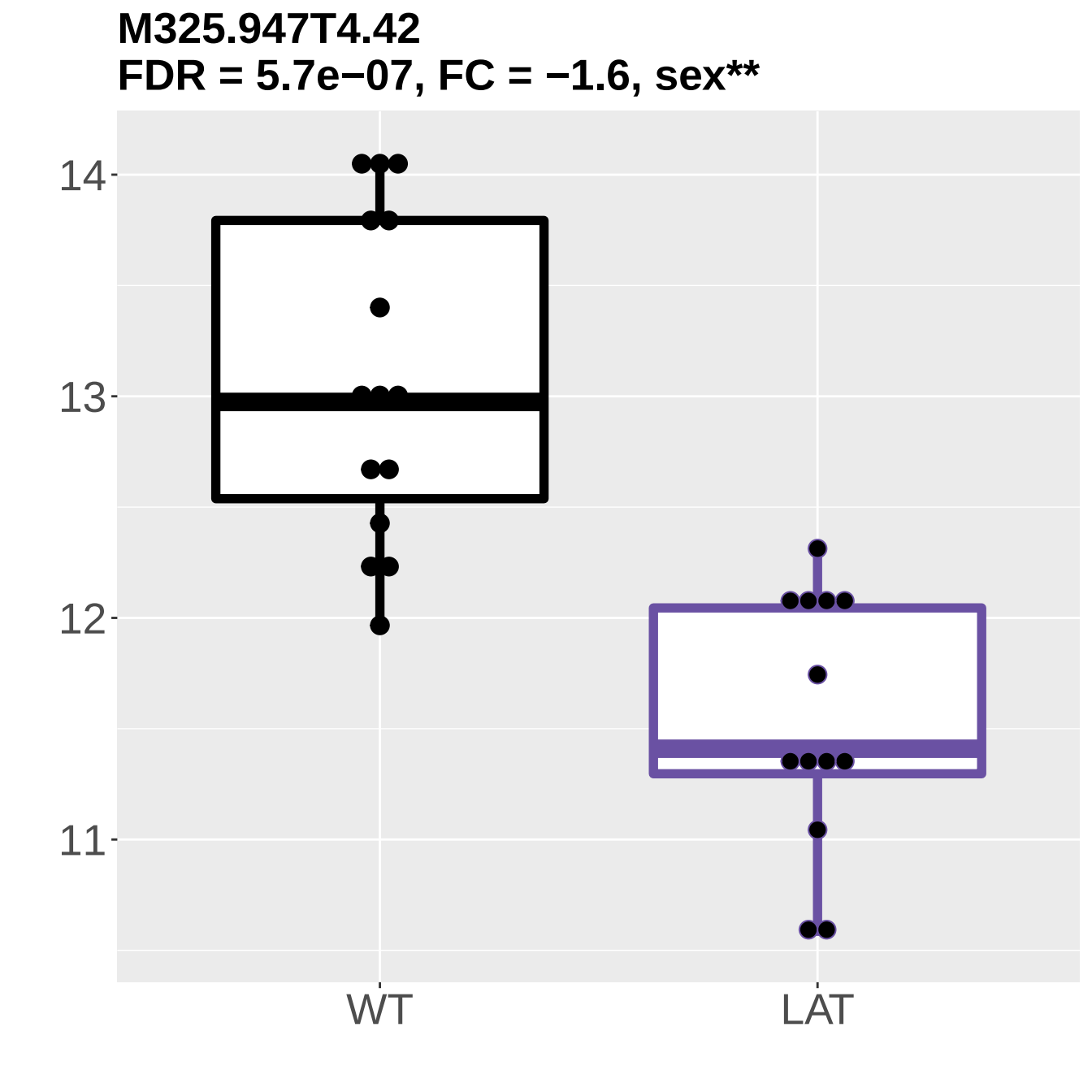
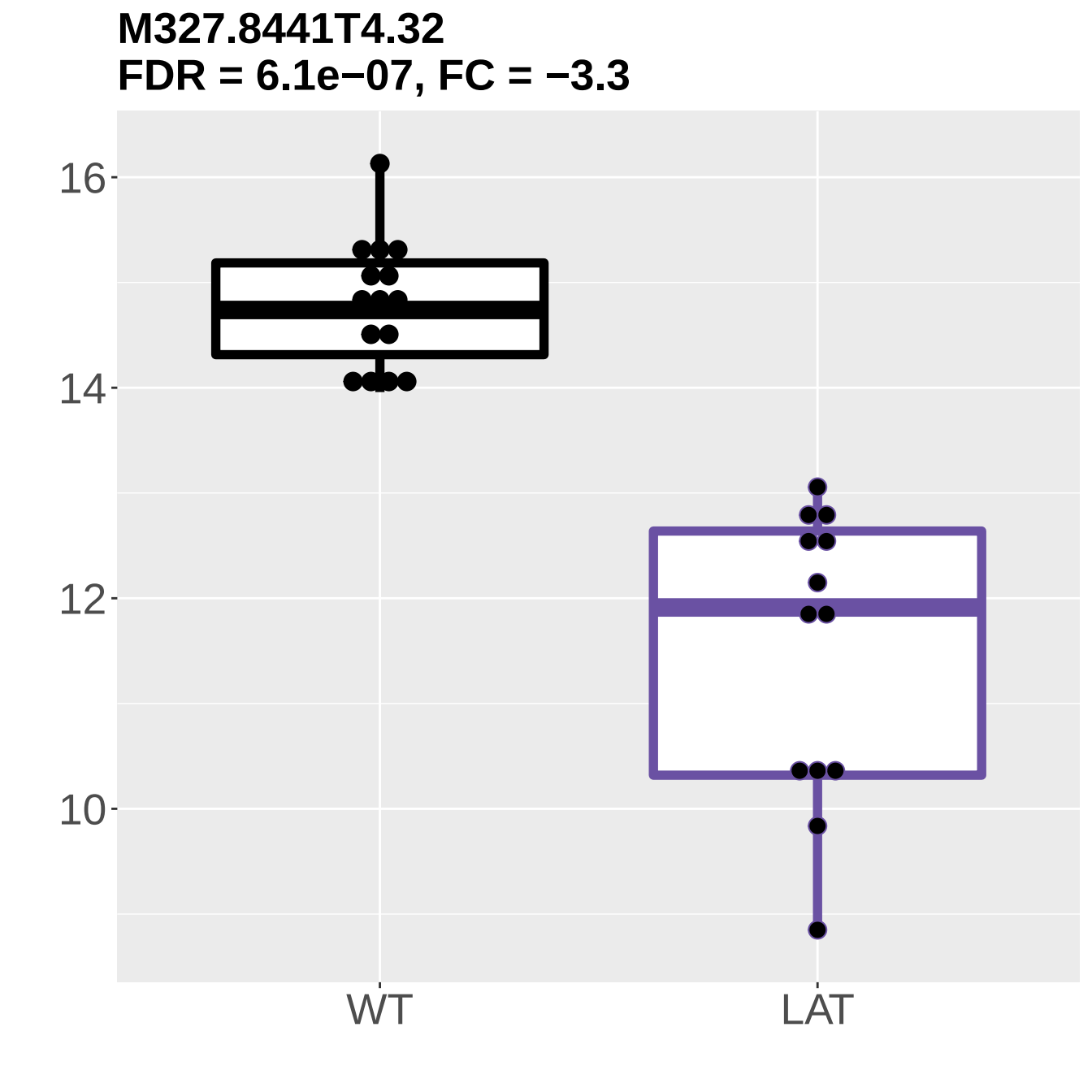

M325.947T4.42
FDR = 5.7e−07, FC = −1.6, sex**
14
13
12
11
WT
LAT


M327.8441T4.32
FDR = 6.1e−07, FC = −3.3
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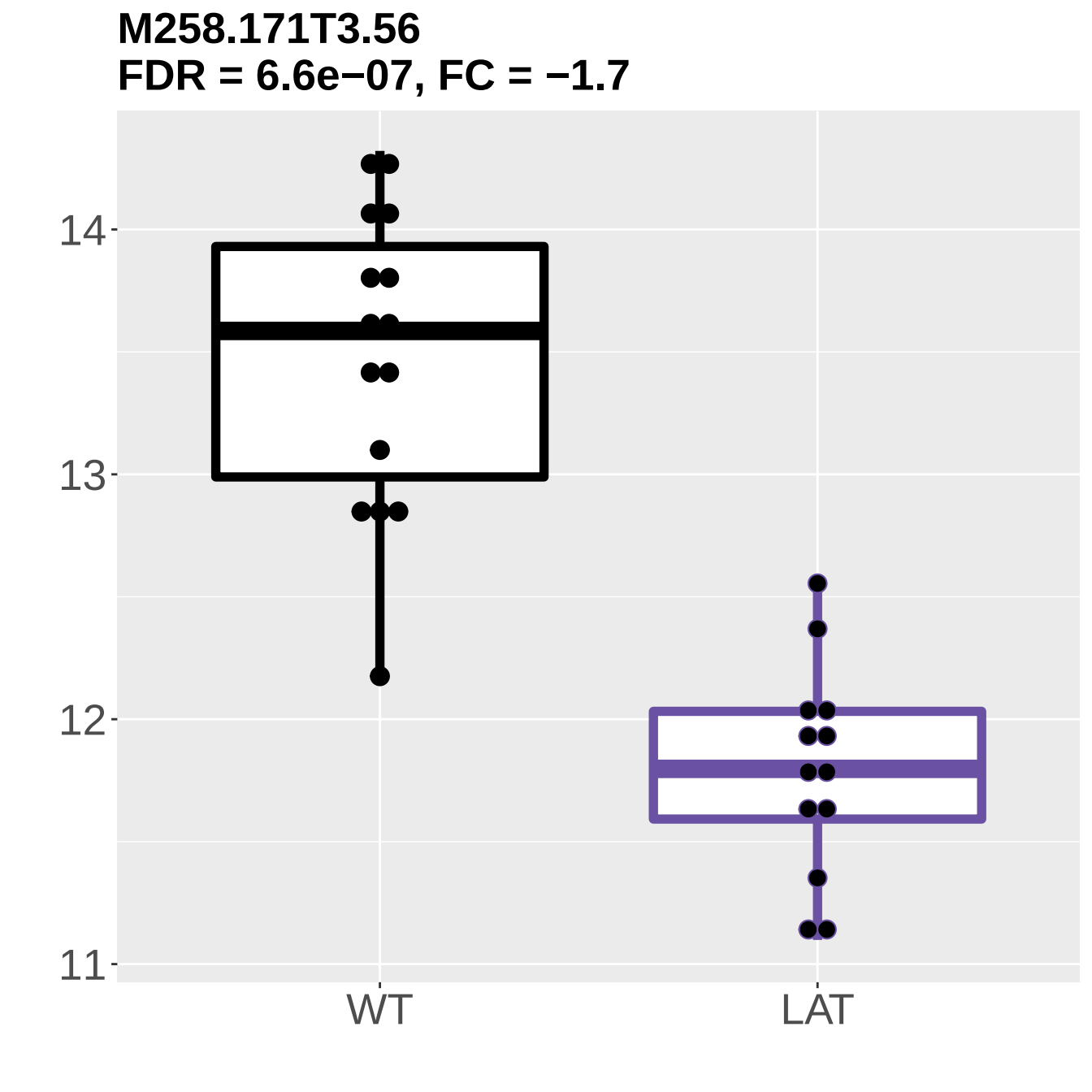
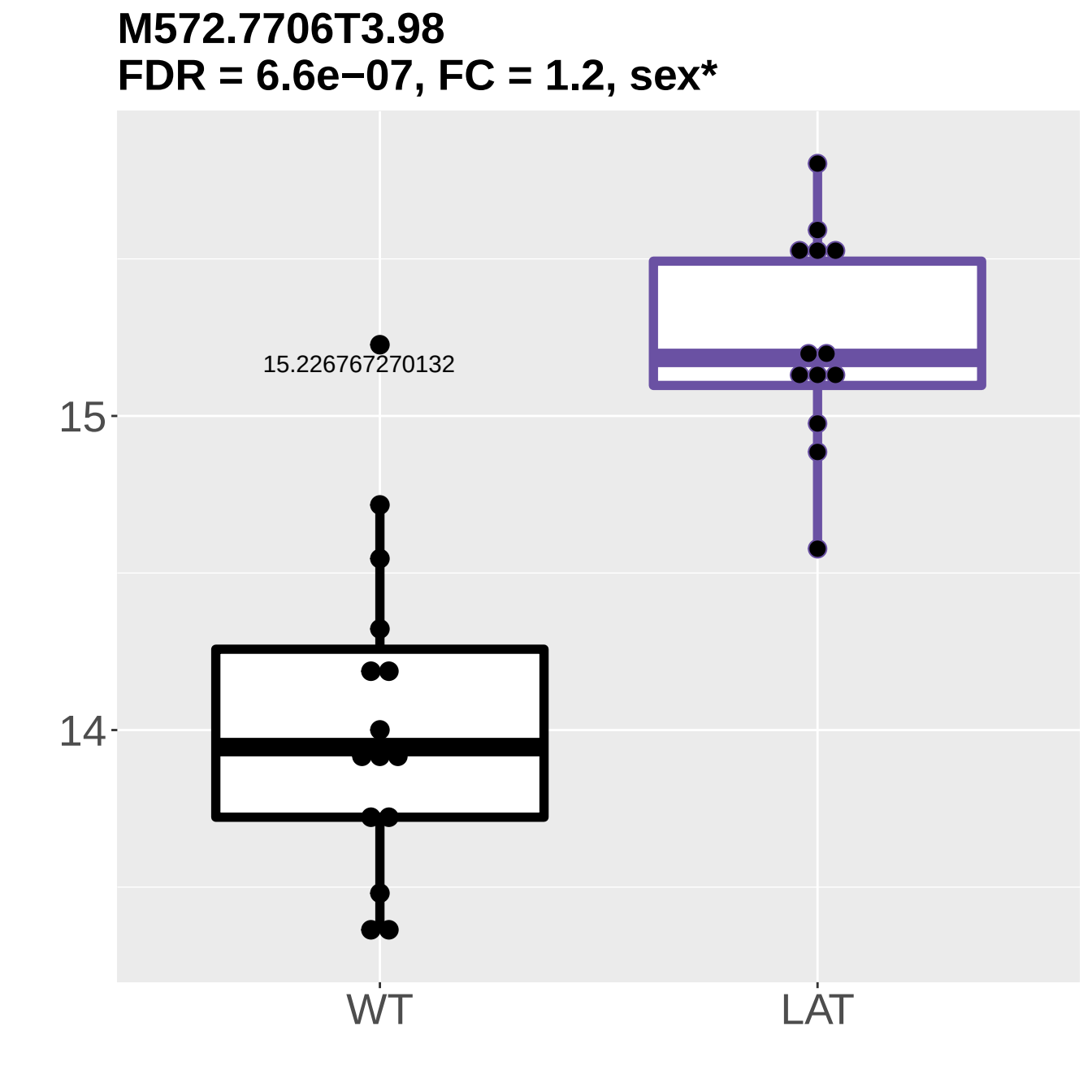
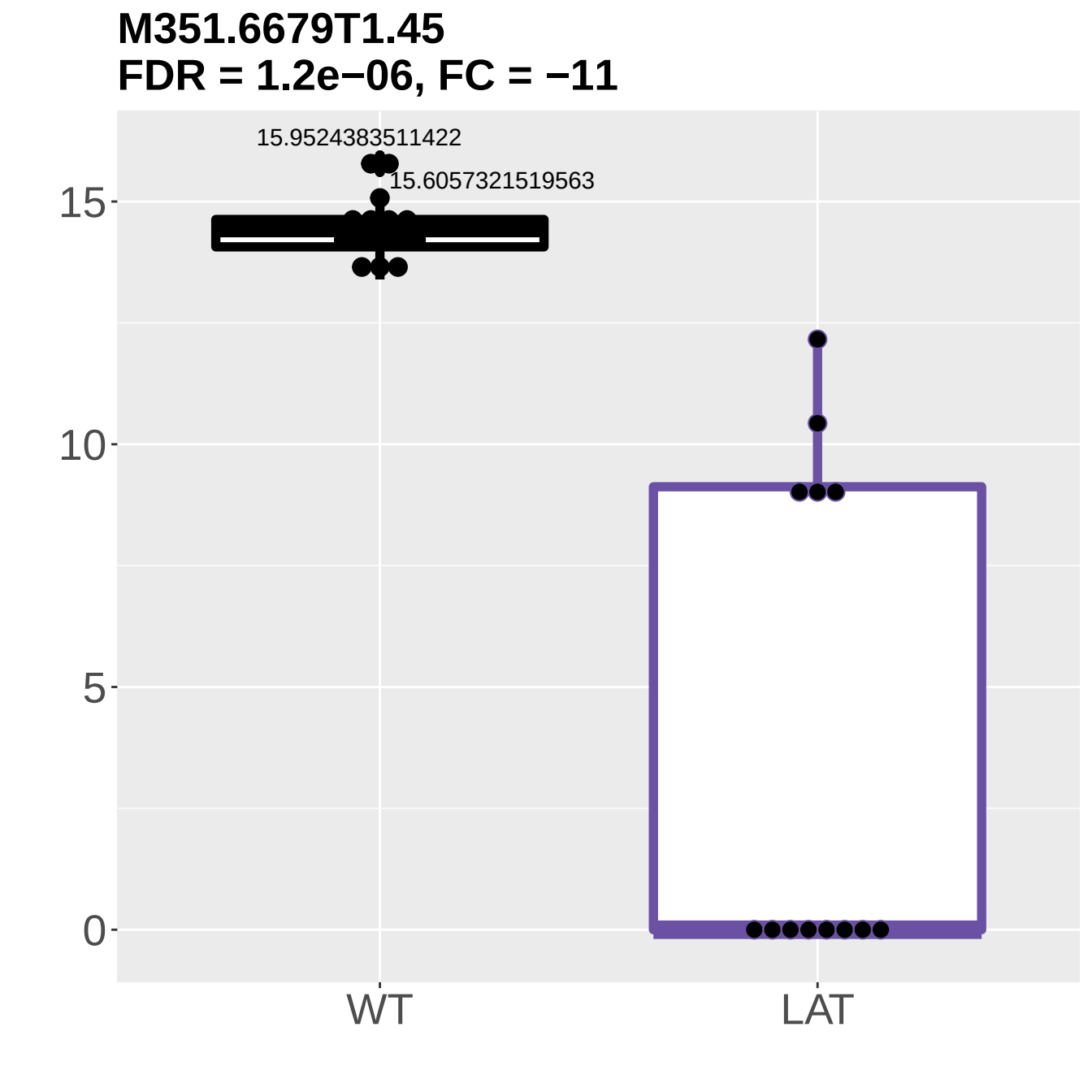
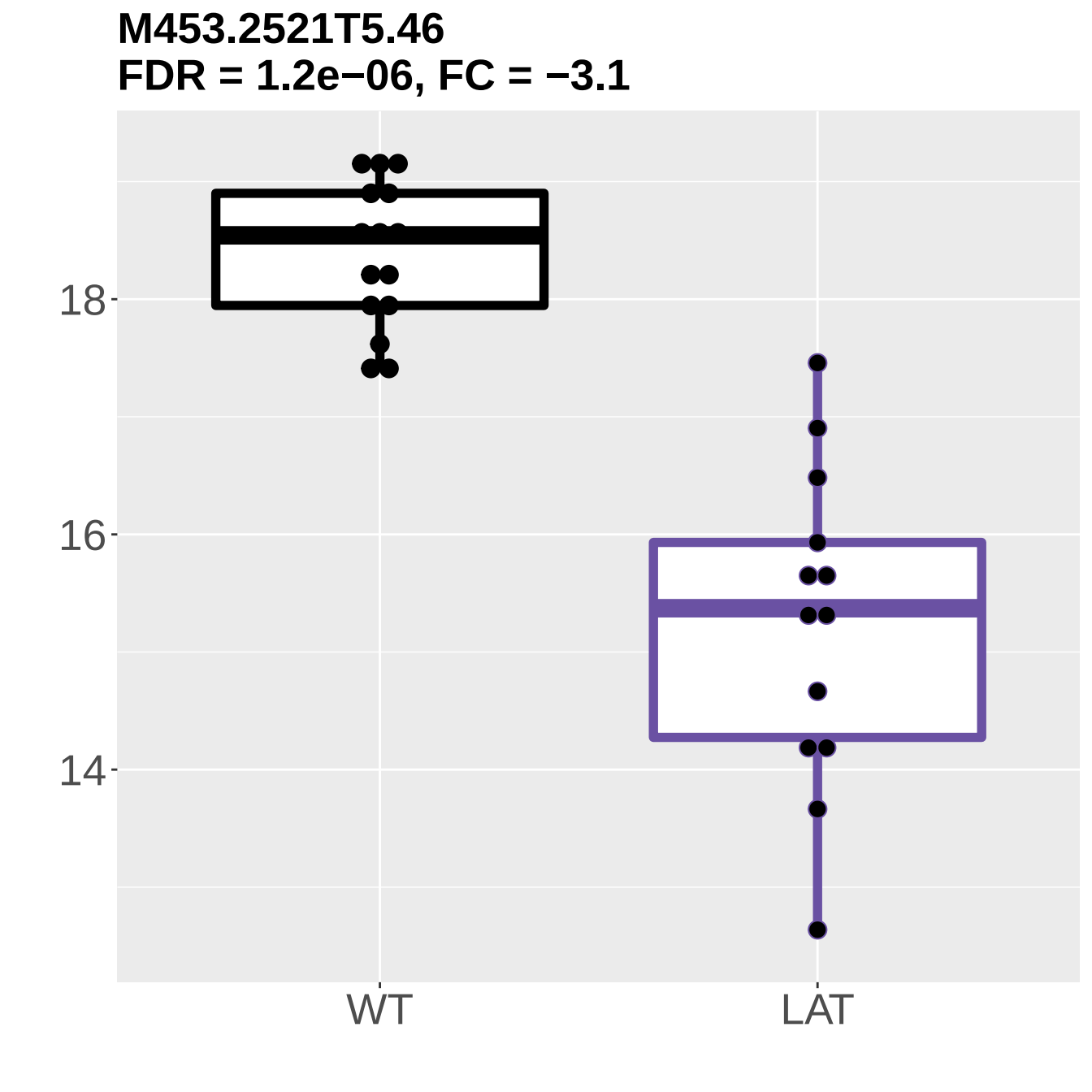
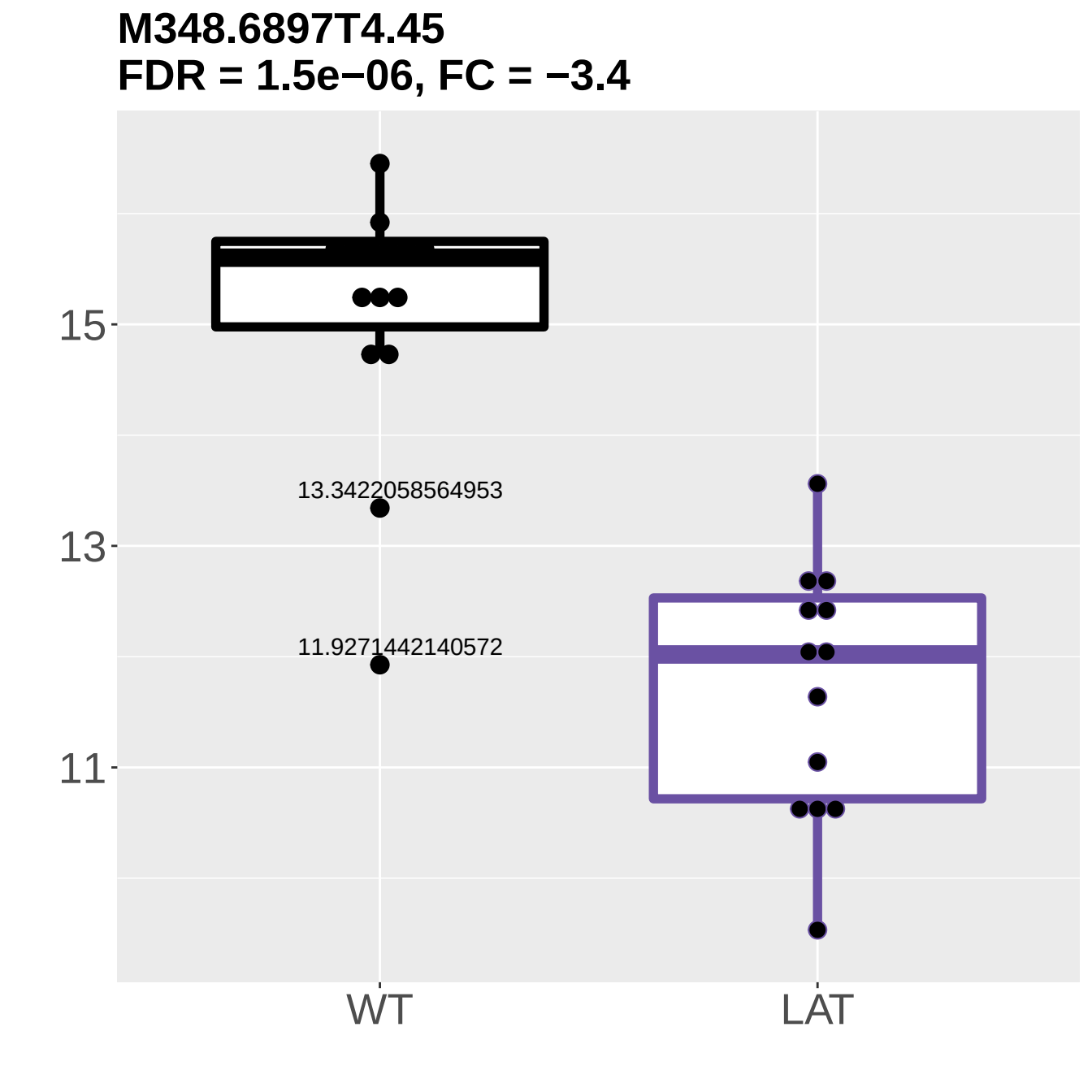
WT
LAT

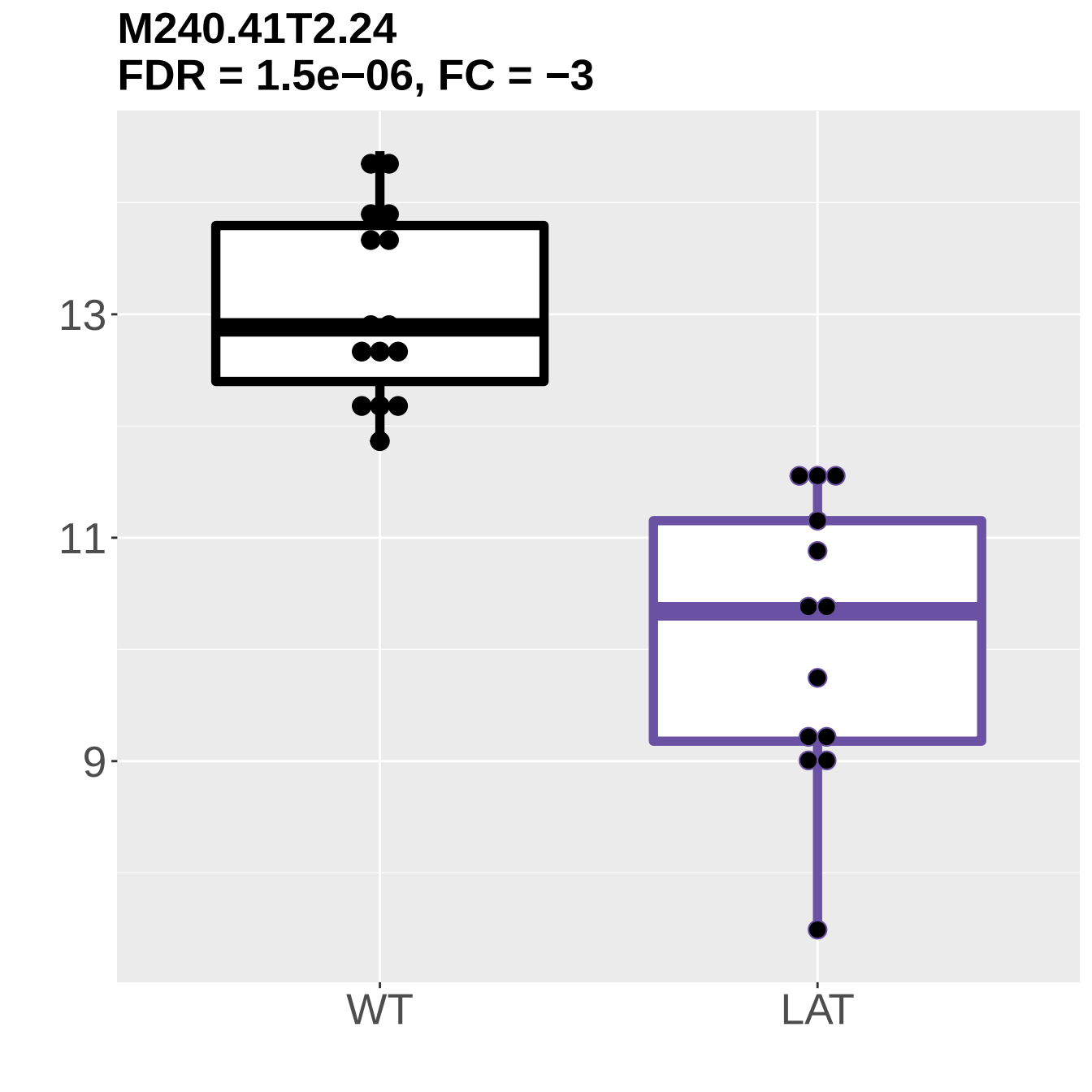

M258.171T3.56
FDR = 6.6e−07, FC = −1.7
14
13
12
11
WT
LAT

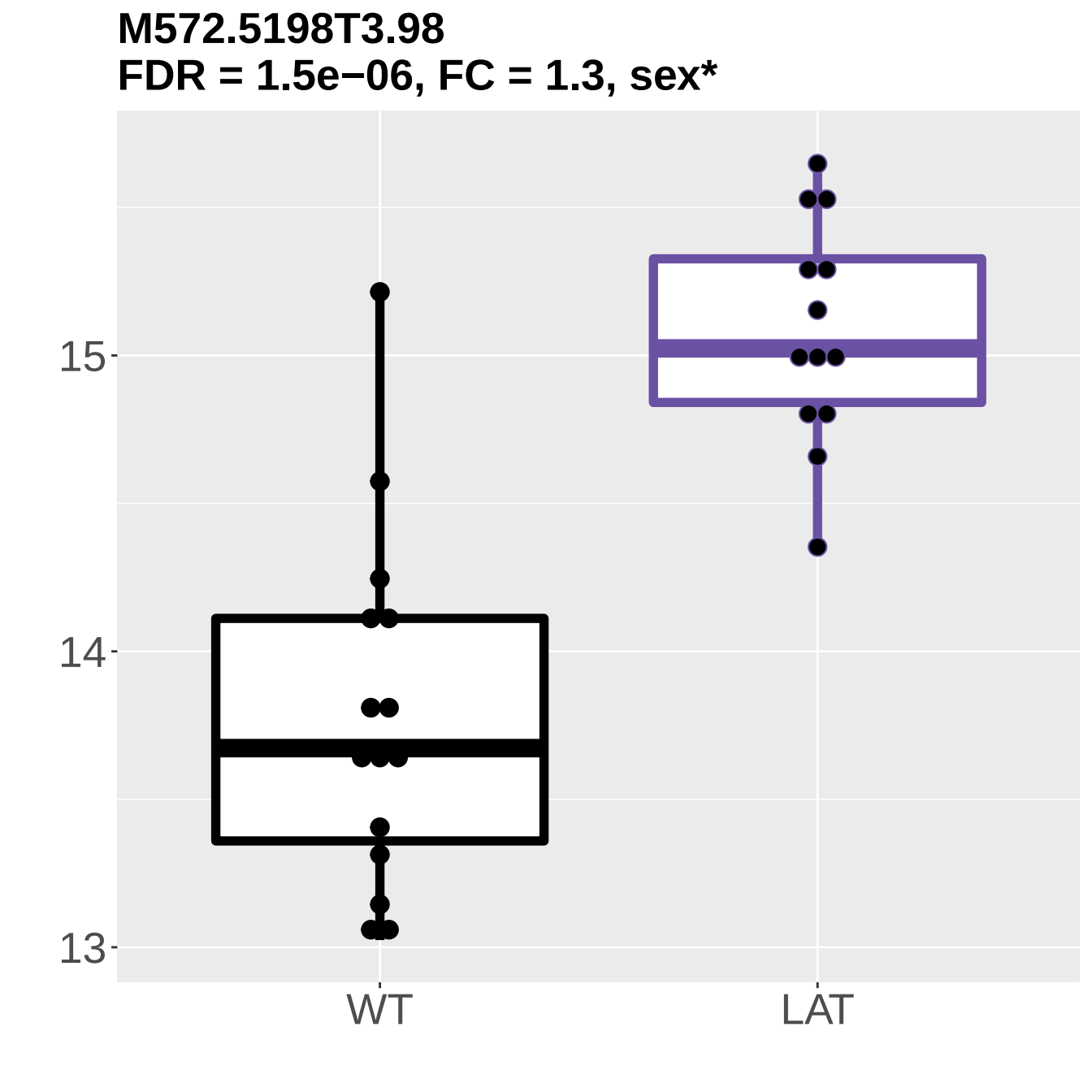

M572.7706T3.98
FDR = 6.6e−07, FC = 1.2, sex*
15.226767270132
15
14
WT
LAT

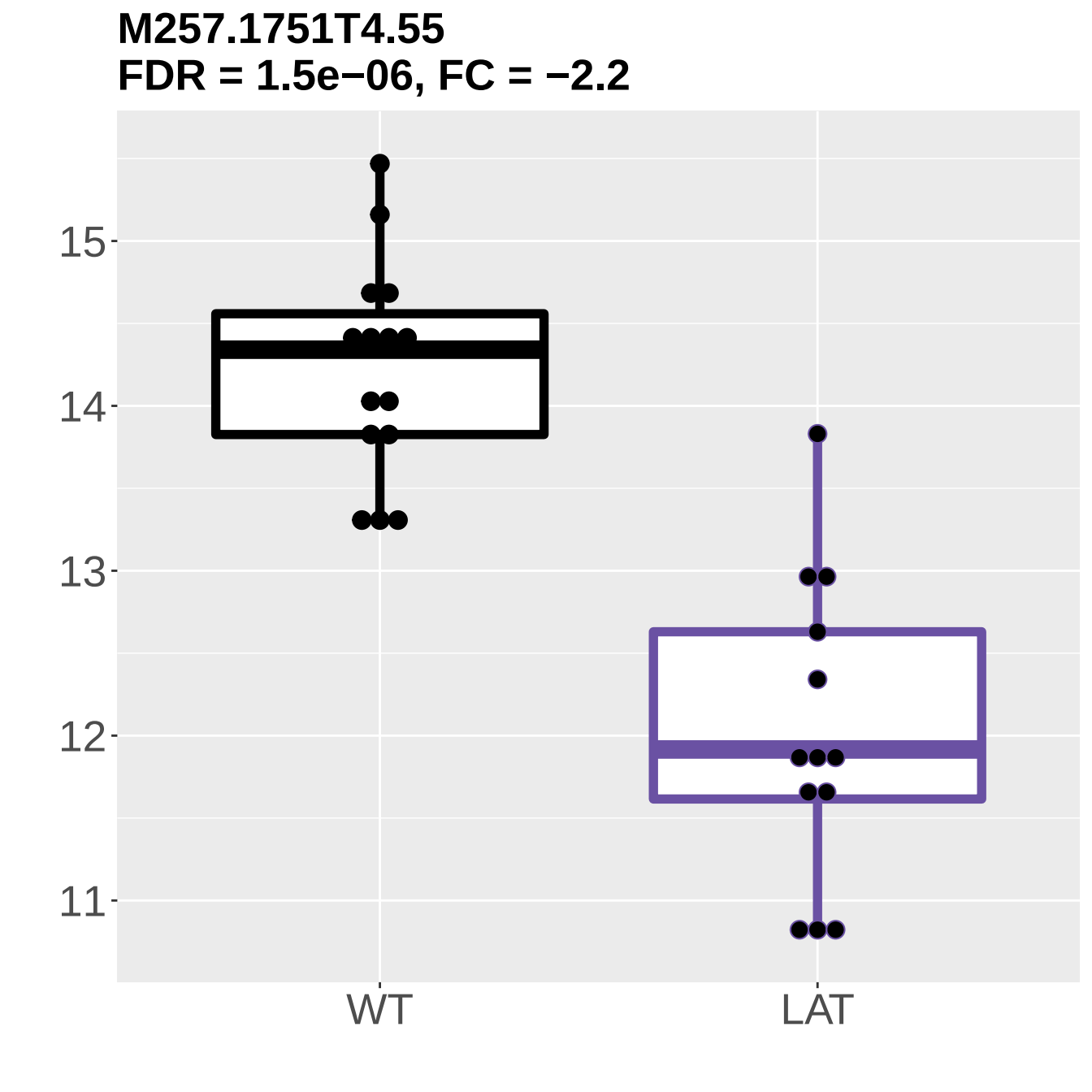

M351.6679T1.45
FDR = 1.2e−06, FC = −11
15.9524383511422
15.6057321519563
15
10
5
0
WT
LAT

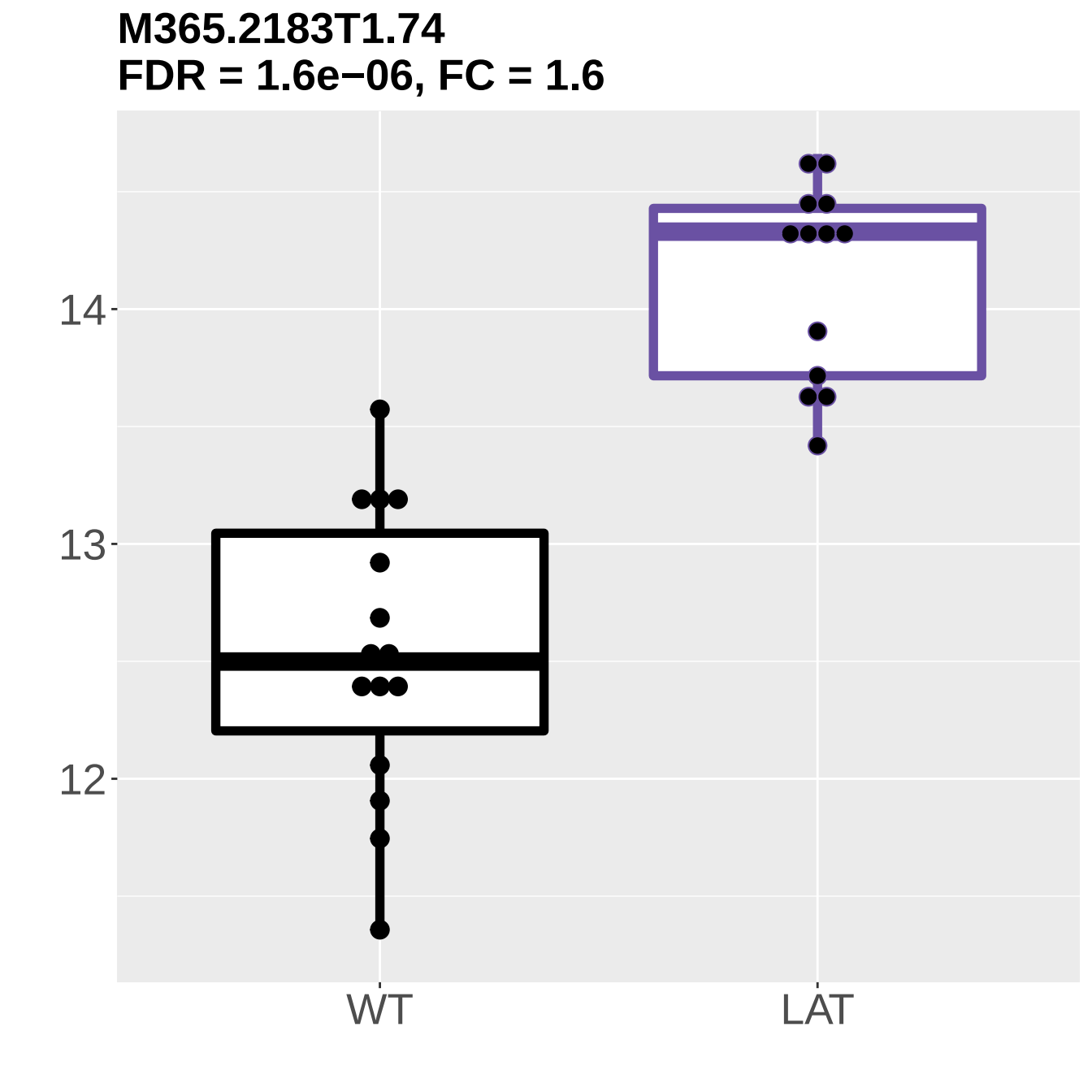

M453.2521T5.46
FDR = 1.2e−06, FC = −3.1
18
16
14
WT
LAT

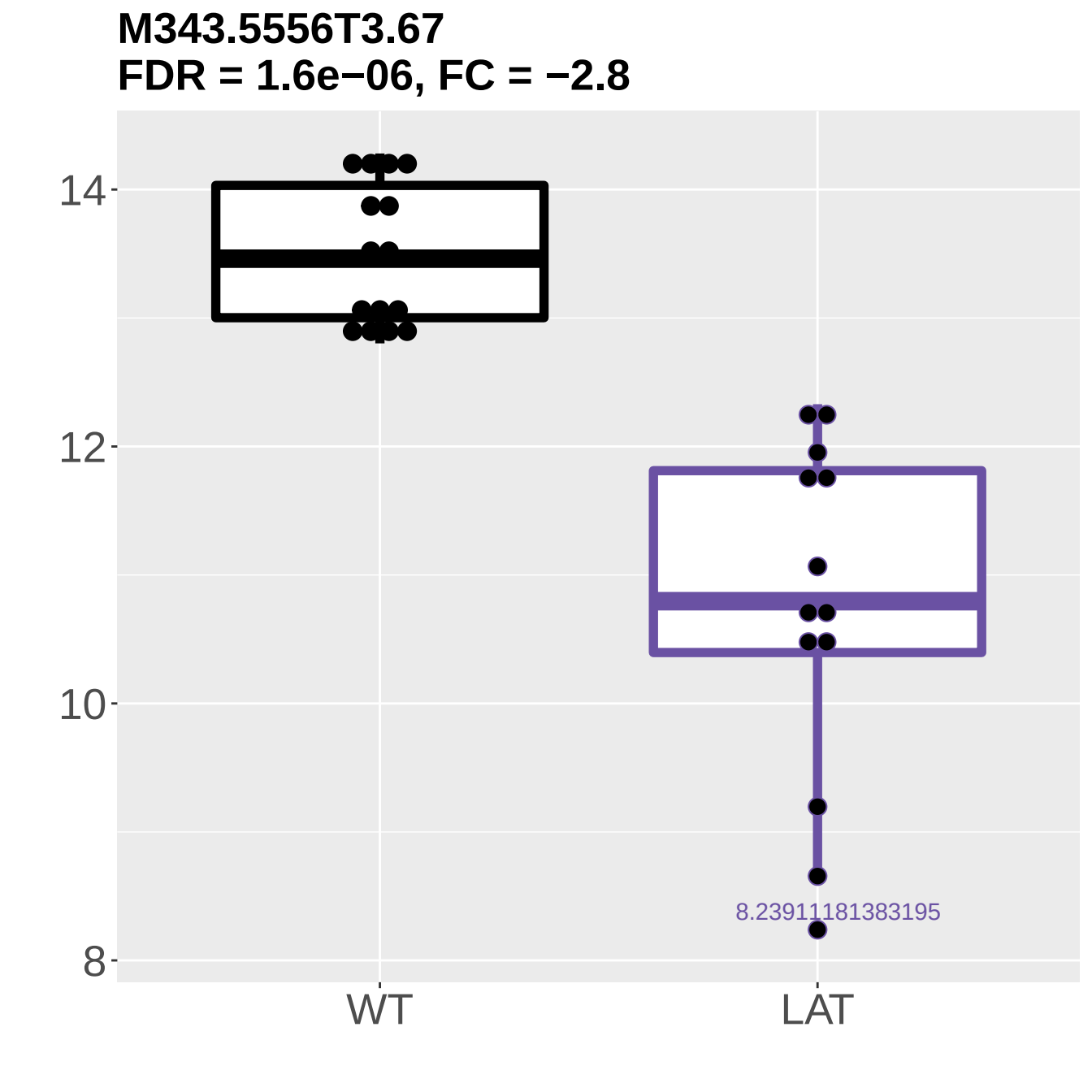

M348.6897T4.45
FDR = 1.5e−06, FC = −3.4
15
13
11
13.3422058564953
11.9271442140572
WT
LAT


M240.41T2.24
FDR = 1.5e−06, FC = −3
13
11
9
WT
LAT


M572.5198T3.98
FDR = 1.5e−06, FC = 1.3, sex*
15
14
13
WT
LAT


M257.1751T4.55
FDR = 1.5e−06, FC = −2.2
15
14
13
12
11
WT
LAT


M365.2183T1.74
FDR = 1.6e−06, FC = 1.6
14
13
12
WT
LAT


M343.5556T3.67
FDR = 1.6e−06, FC = −2.8
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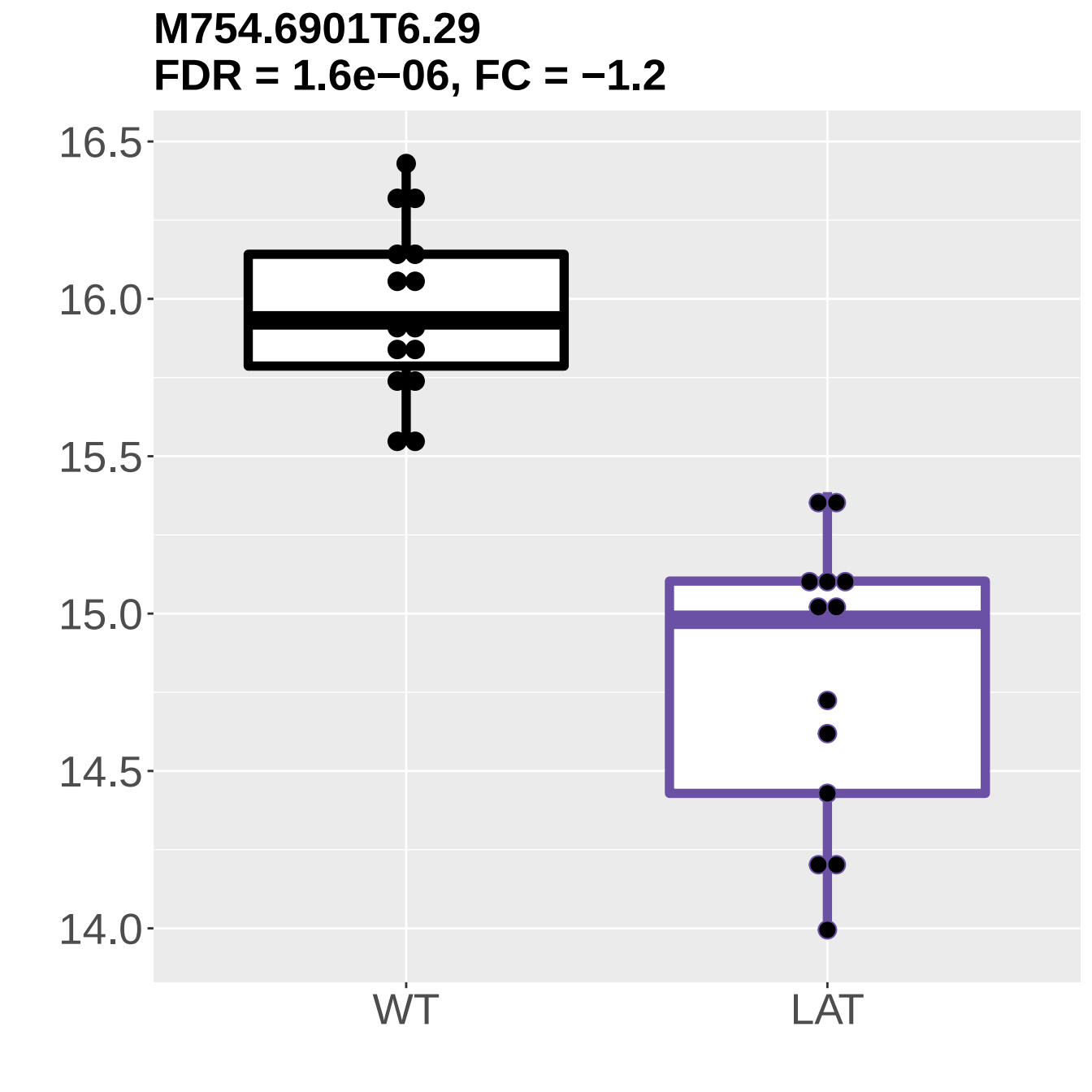
12
10
8
8.23911181383195
WT
LAT


M754.6901T6.29
FDR = 1.6e−06, FC = −1.2
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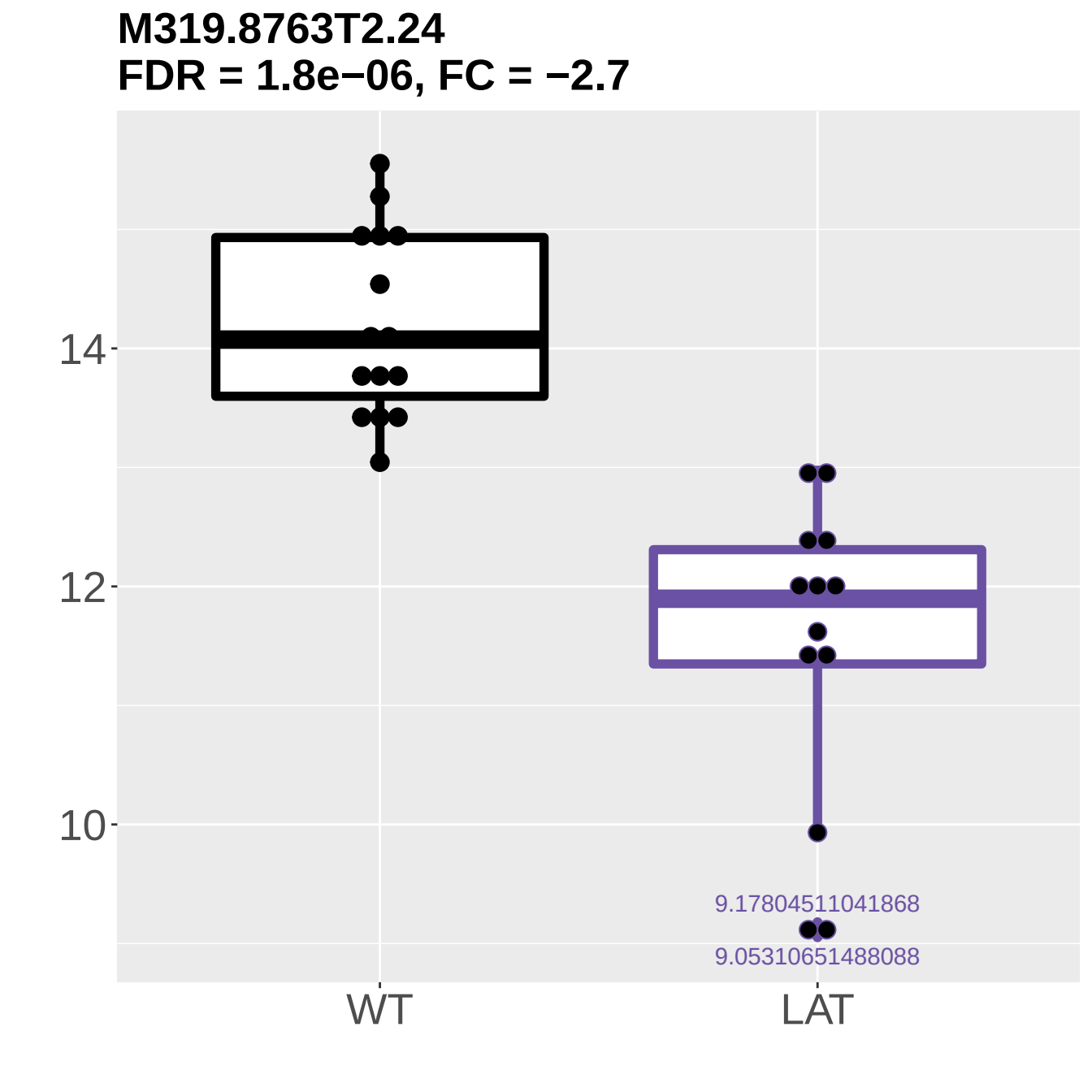
16.0
15.5
15.0
14.5
14.0
WT
LAT


M319.8763T2.24
FDR = 1.8e−06, FC = −2.7
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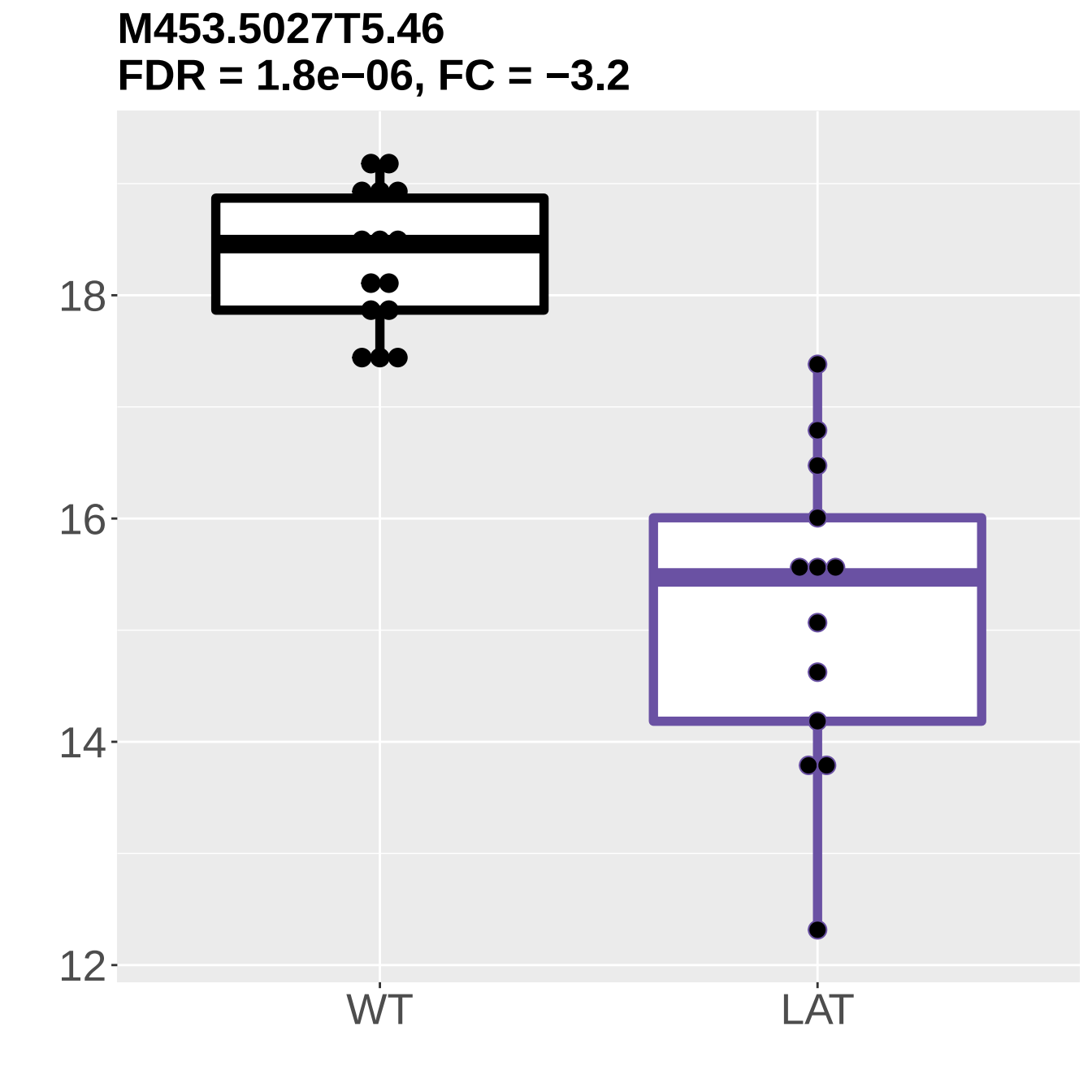
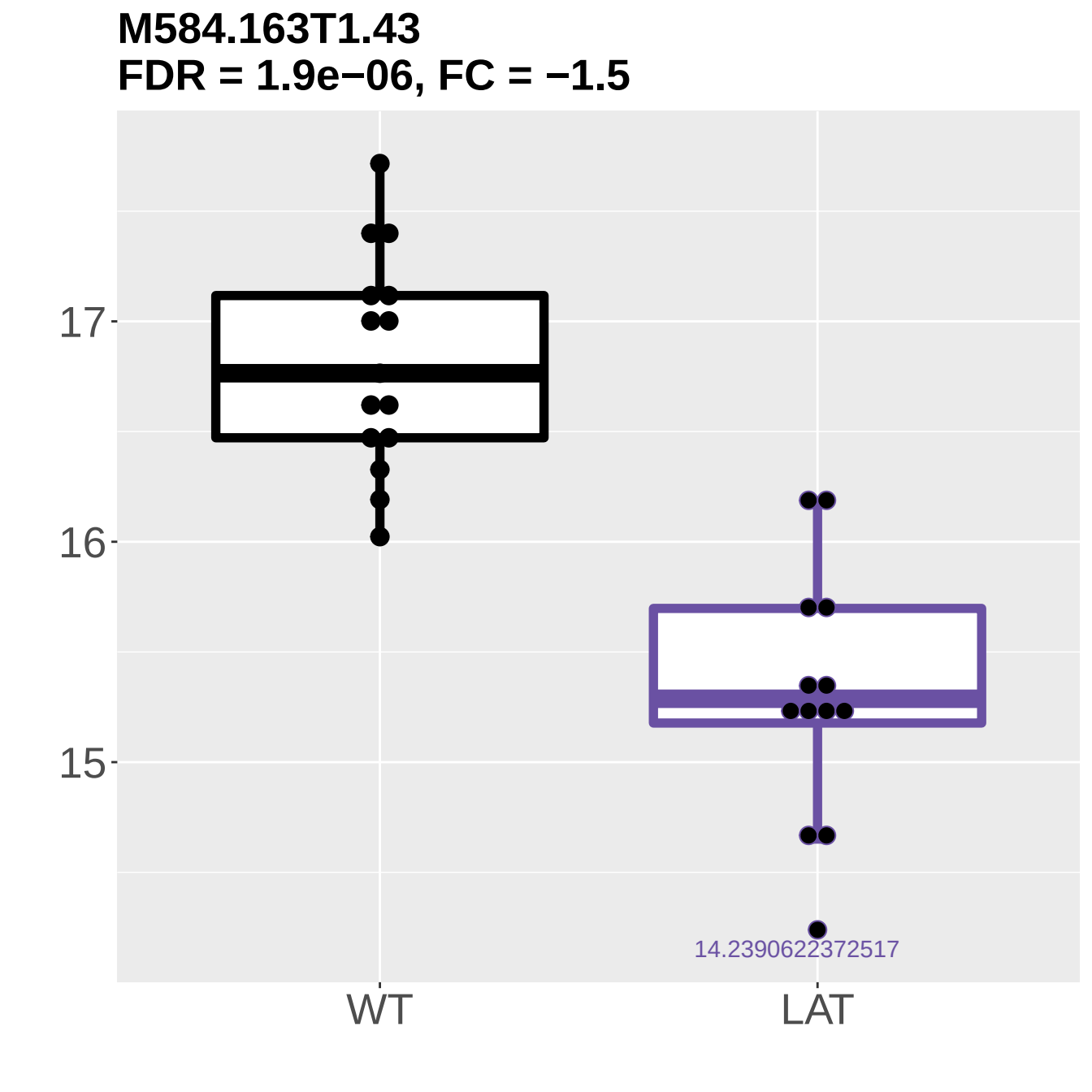
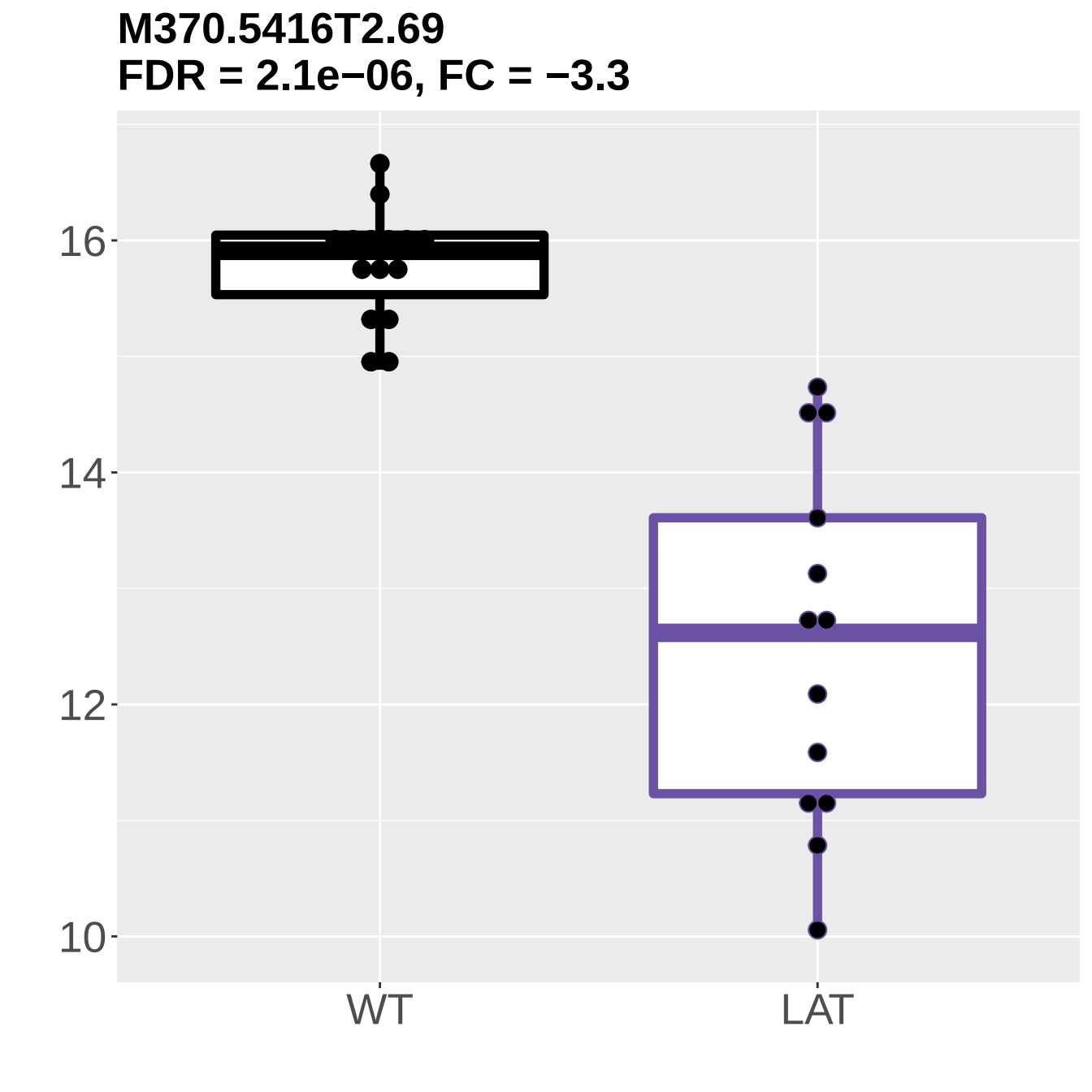
12
10
9.17804511041868
9.05310651488088
WT
LAT


M453.5027T5.46
FDR = 1.8e−06, FC = −3.2
18
16
14
12
WT
LAT


M584.163T1.43
FDR = 1.9e−06, FC = −1.5
17
16
15
14.2390622372517
WT
LAT


M370.5416T2.69
FDR = 2.1e−06, FC = −3.3
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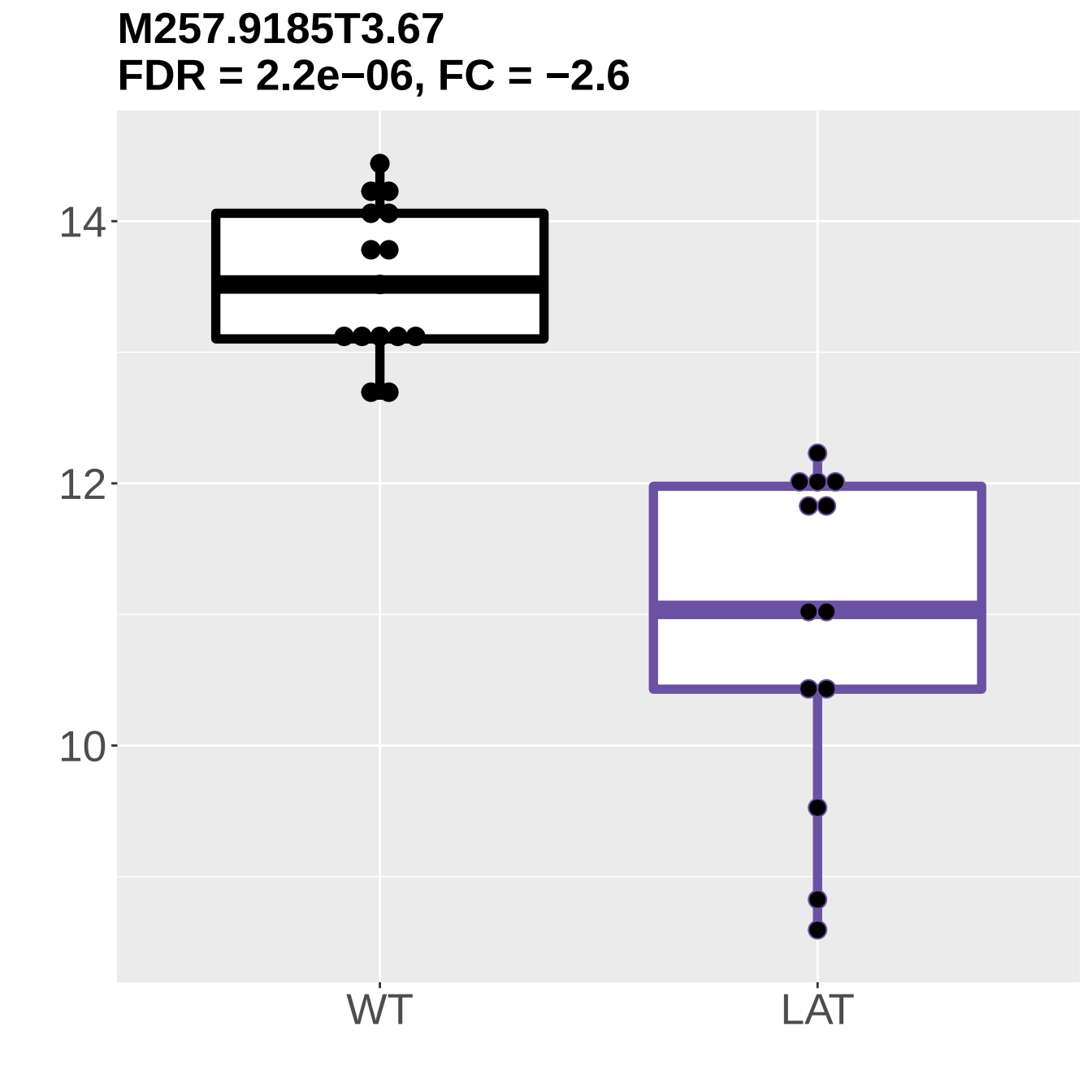
14
12
10
WT
LAT


M257.9185T3.67
FDR = 2.2e−06, FC = −2.6
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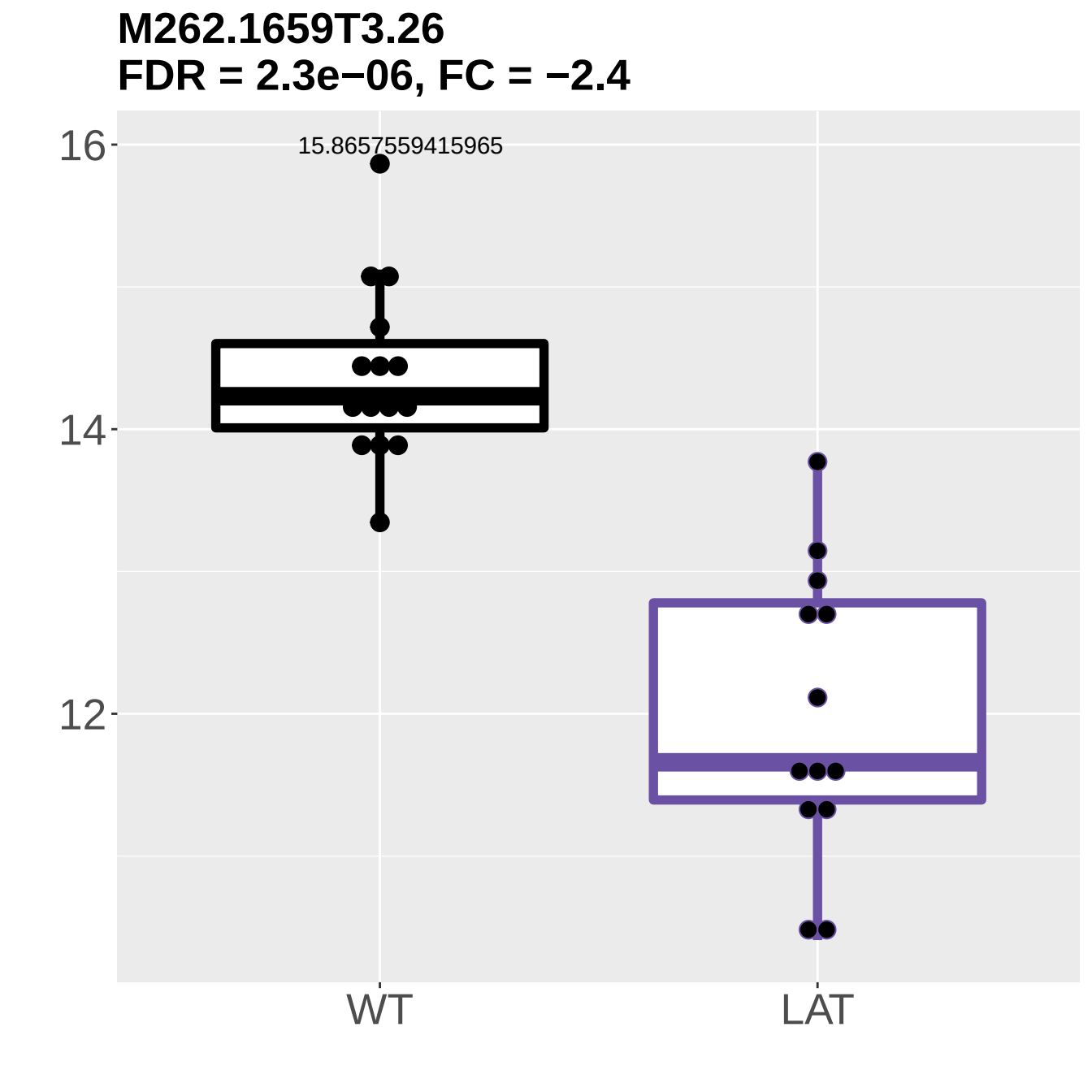
12
10
WT
LAT


M262.1659T3.26
FDR = 2.3e−06, FC = −2.4
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14
12
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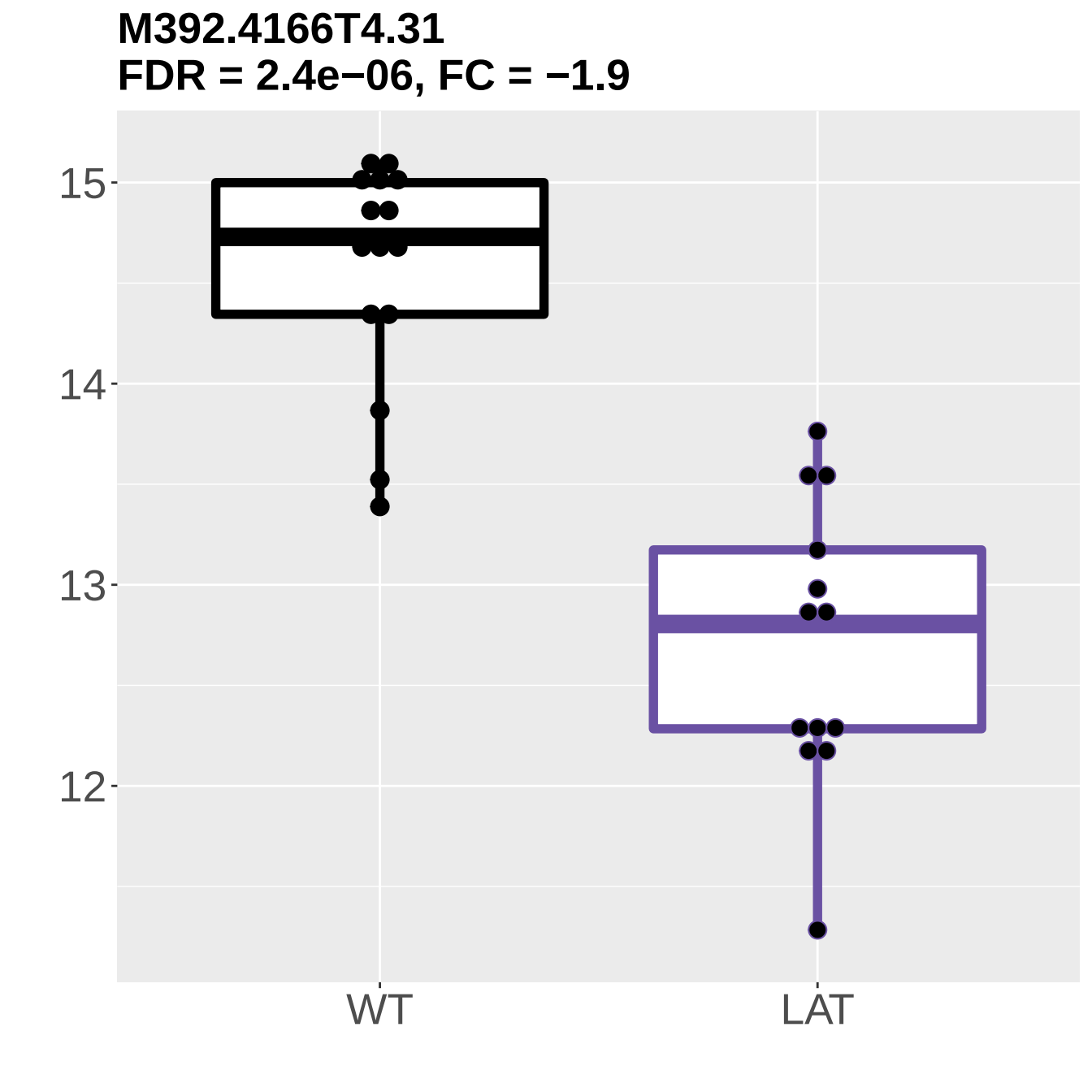
WT
LAT


M392.4166T4.31
FDR = 2.4e−06, FC = −1.9
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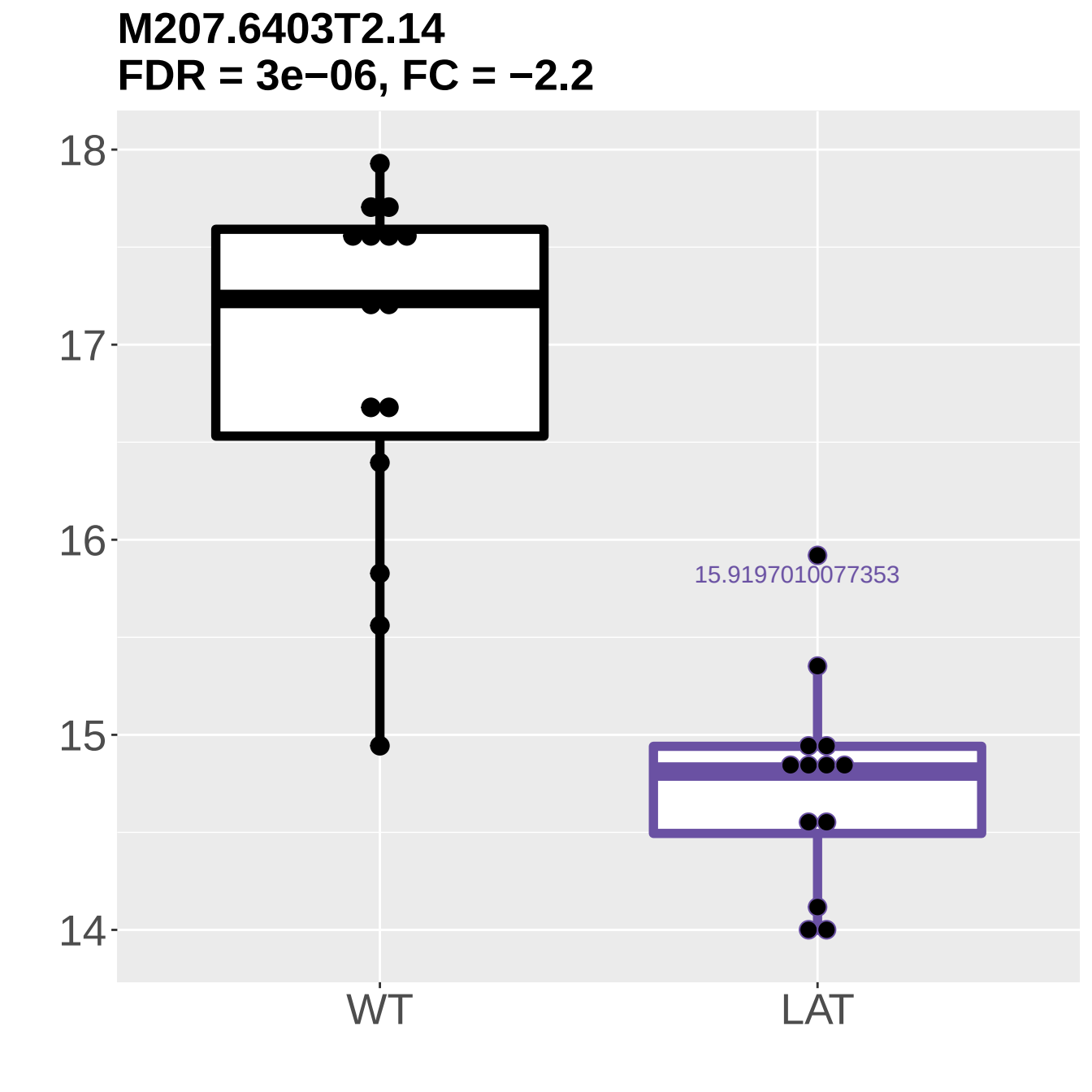
14
13
12
WT
LAT


M207.6403T2.14
FDR = 3e−06, FC = −2.2
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17
16
15
14
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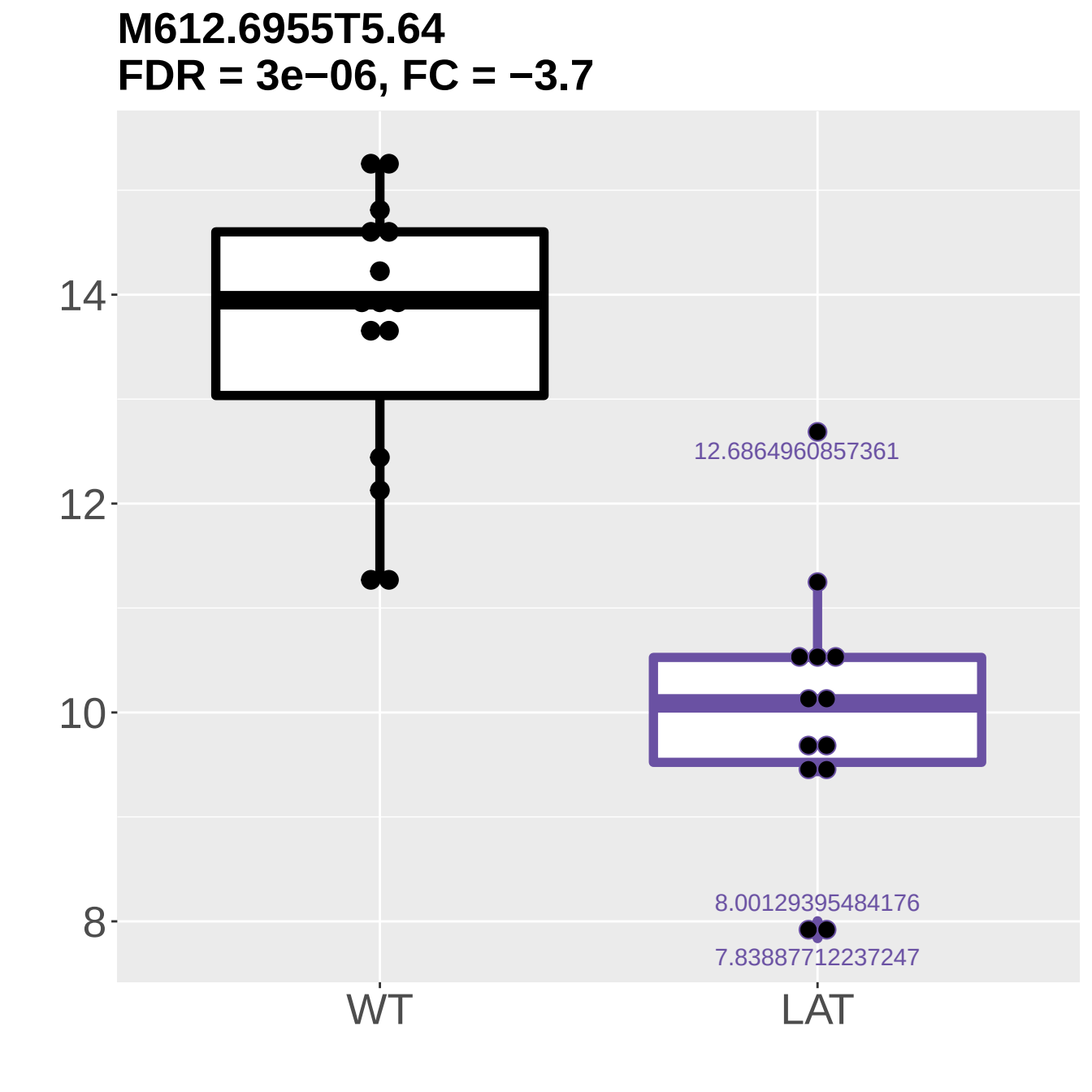
WT
LAT


M612.6955T5.64
FDR = 3e−06, FC = −3.7
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12
10
8
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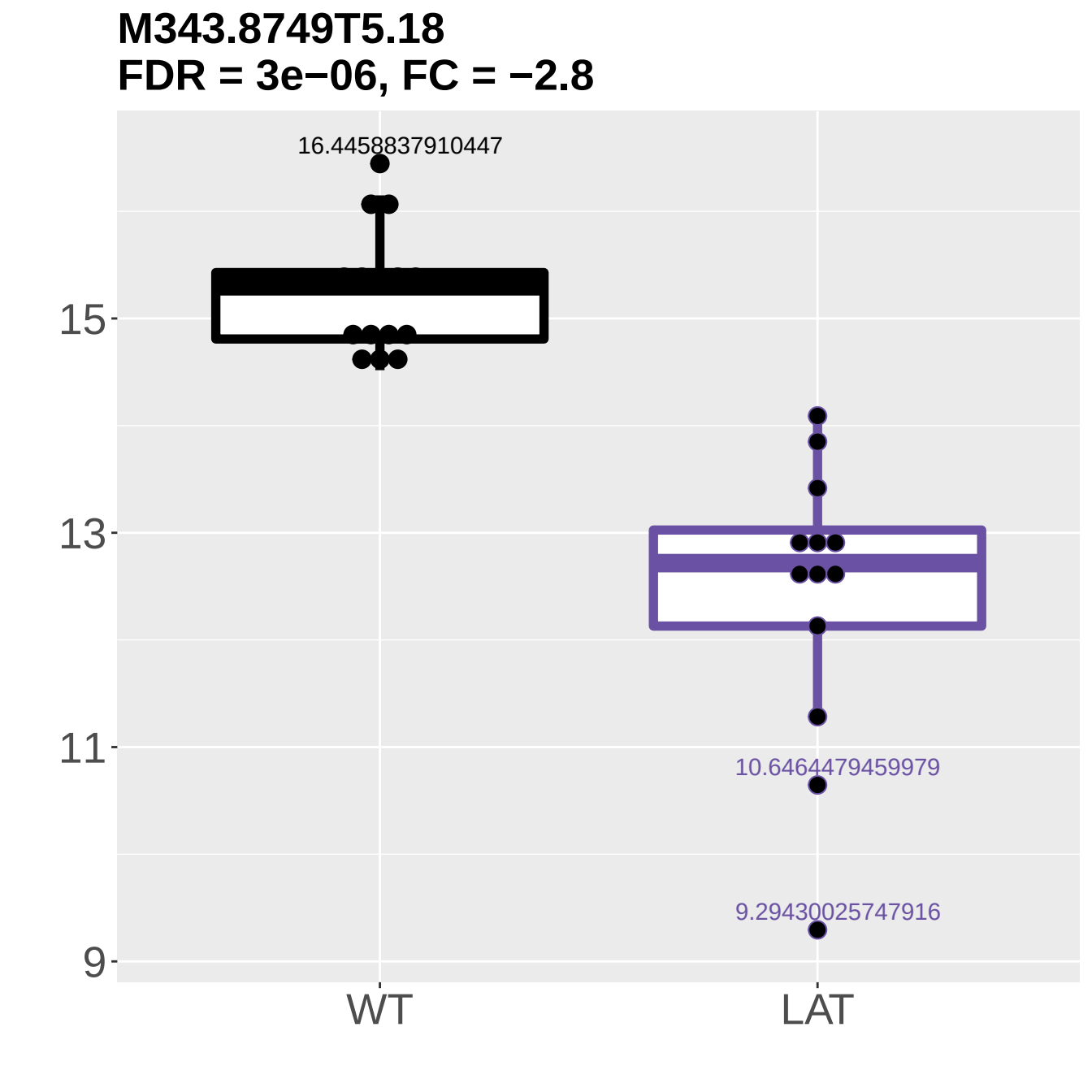
7.83887712237247
WT
LAT


M343.8749T5.18
FDR = 3e−06, FC = −2.8
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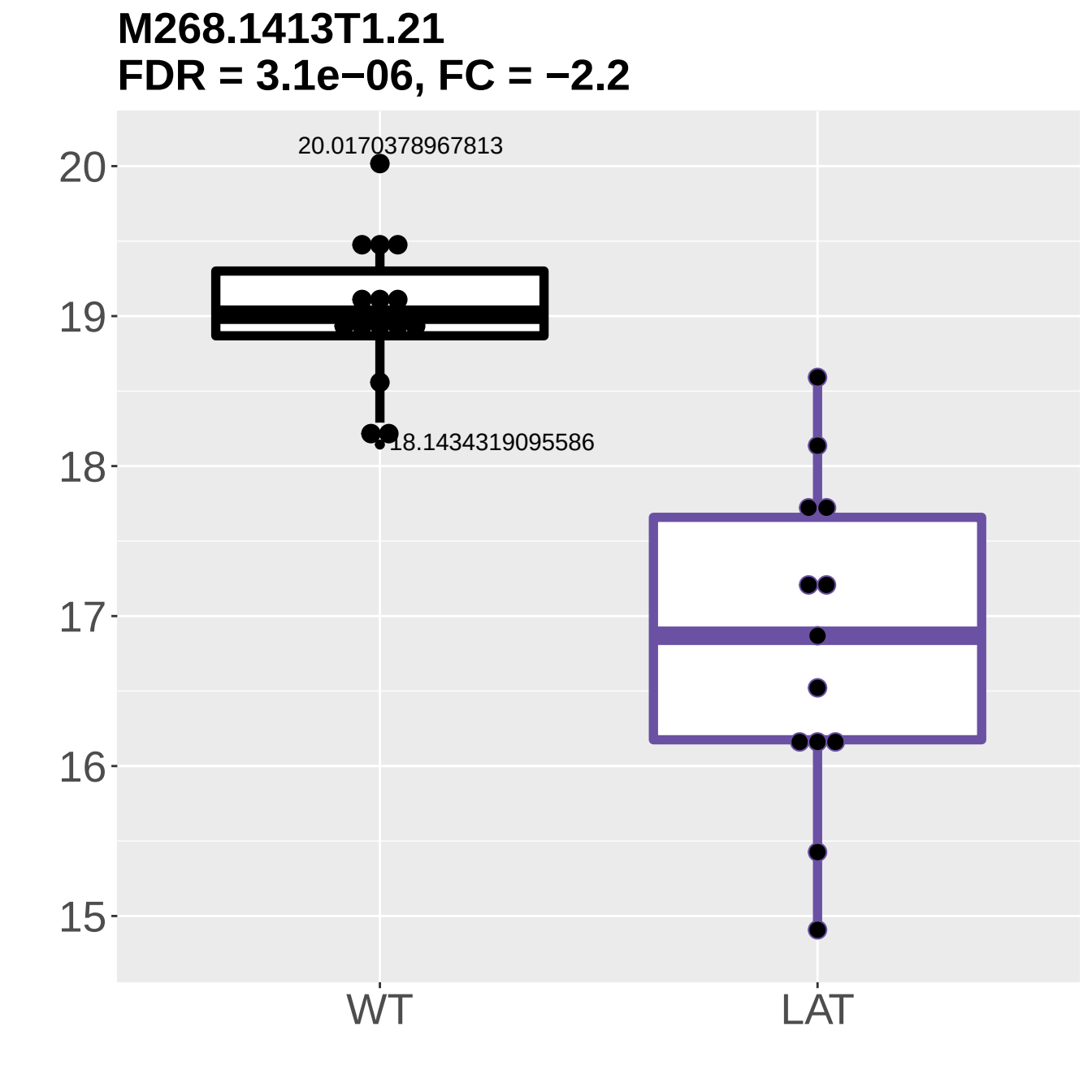
15
13
11
9
10.6464479459979
9.29430025747916
WT
LAT


M268.1413T1.21
FDR = 3.1e−06, FC = −2.2
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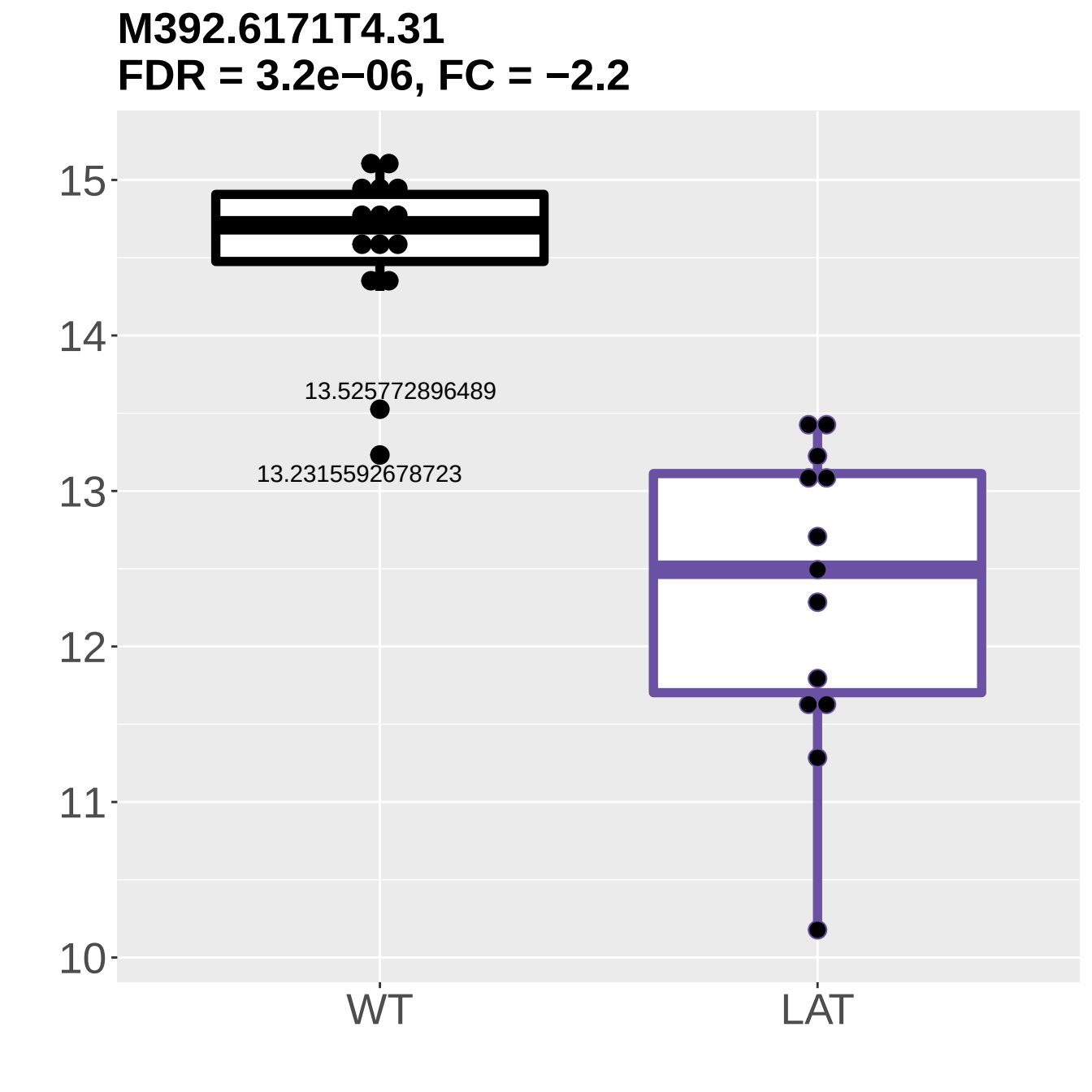
18.1434319095586
20
19
18
17
16
15
WT
LAT


M392.6171T4.31
FDR = 3.2e−06, FC = −2.2
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14
13
12
11
10
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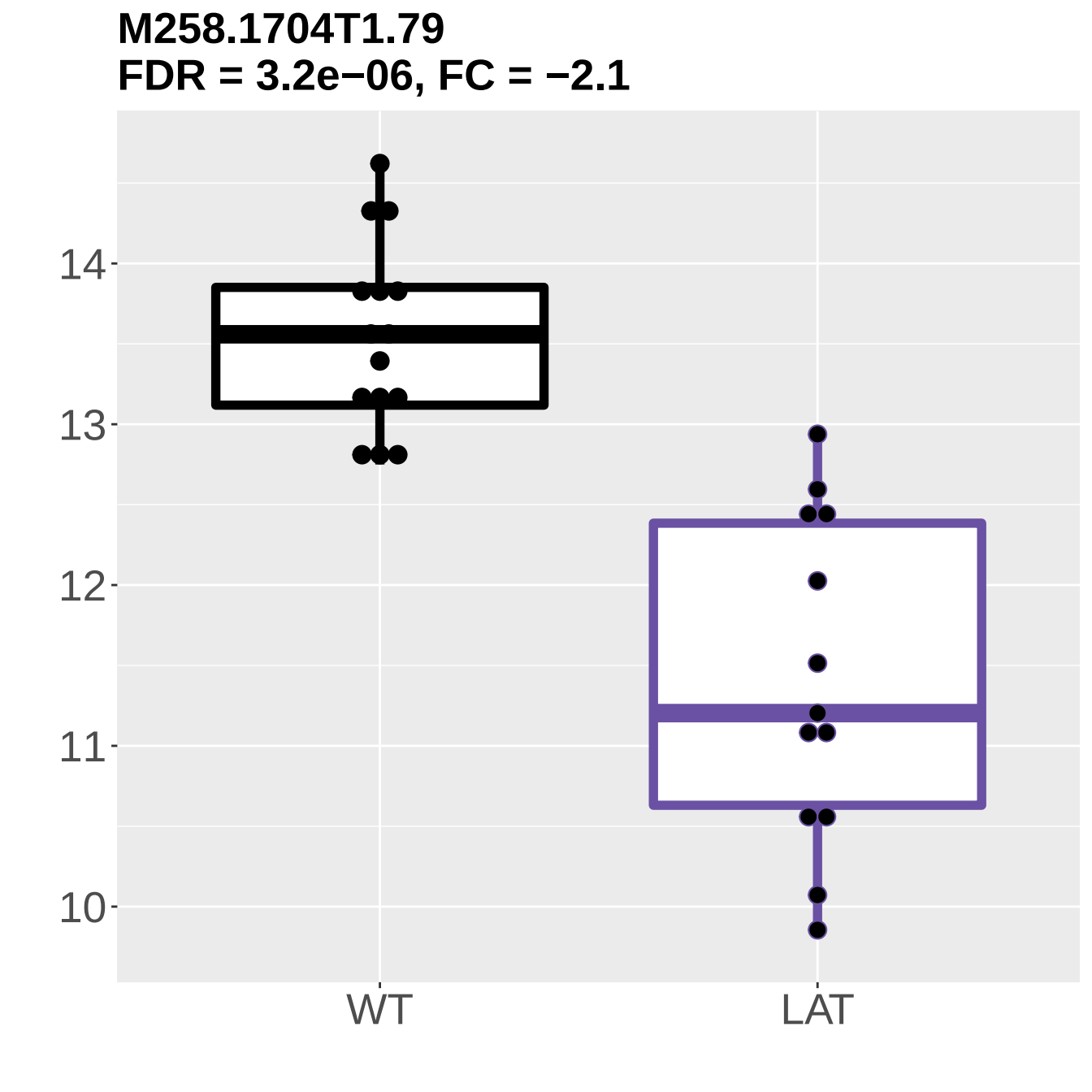
13.2315592678723
WT
LAT


M258.1704T1.79
FDR = 3.2e−06, FC = −2.1
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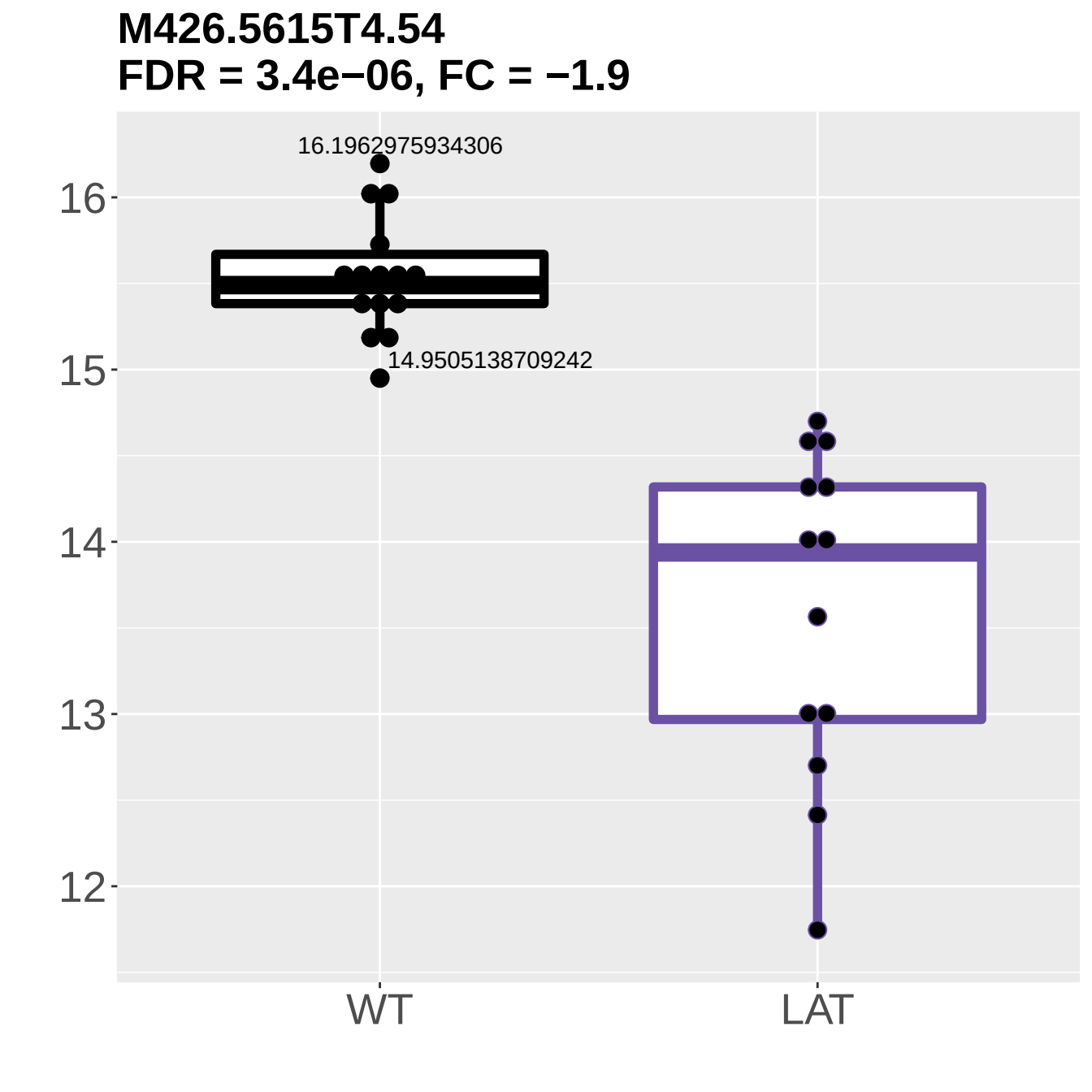
13
12
11
10
WT
LAT


M426.5615T4.54
FDR = 3.4e−06, FC = −1.9
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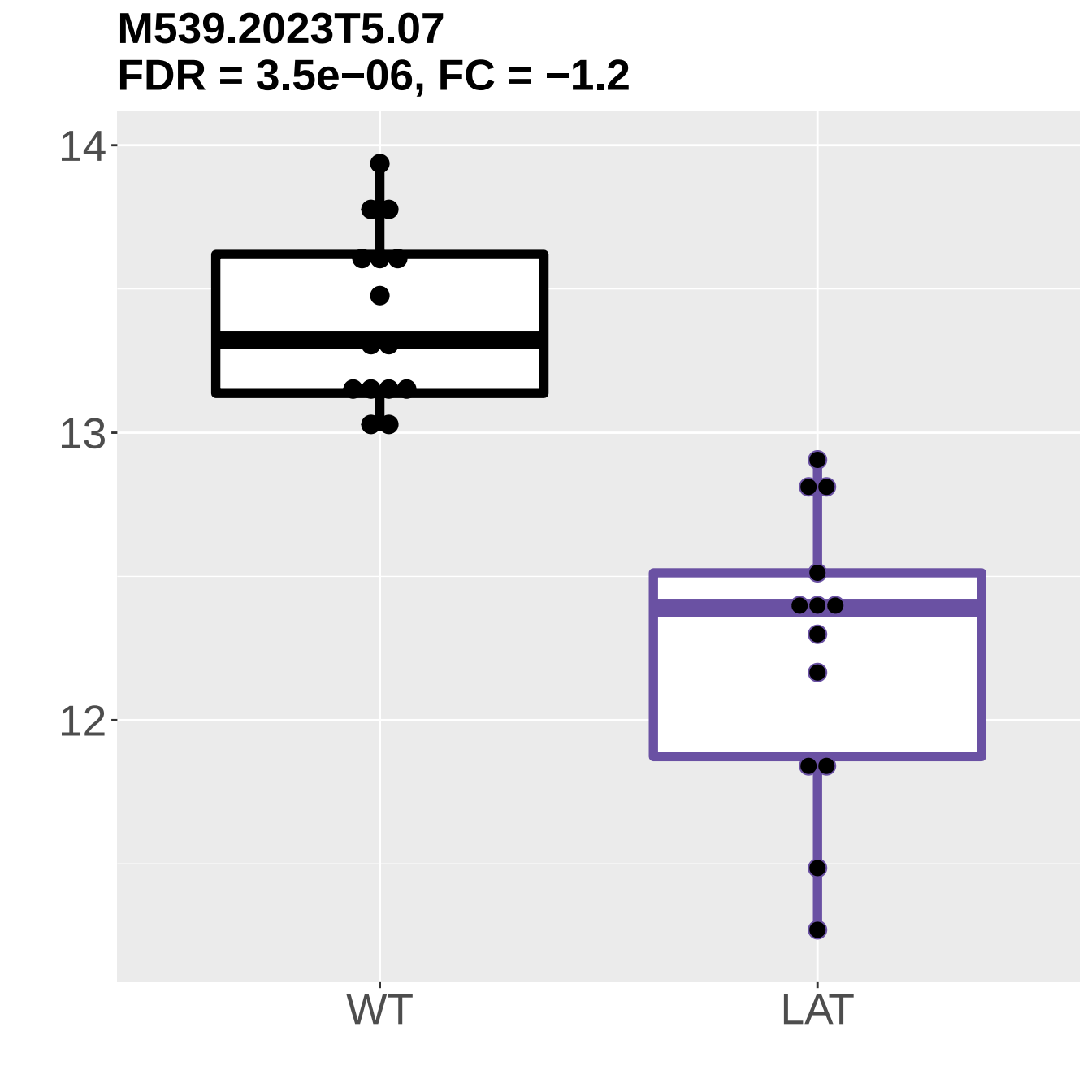
14.9505138709242
16
15
14
13
12
WT
LAT


M539.2023T5.07
FDR = 3.5e−06, FC = −1.2
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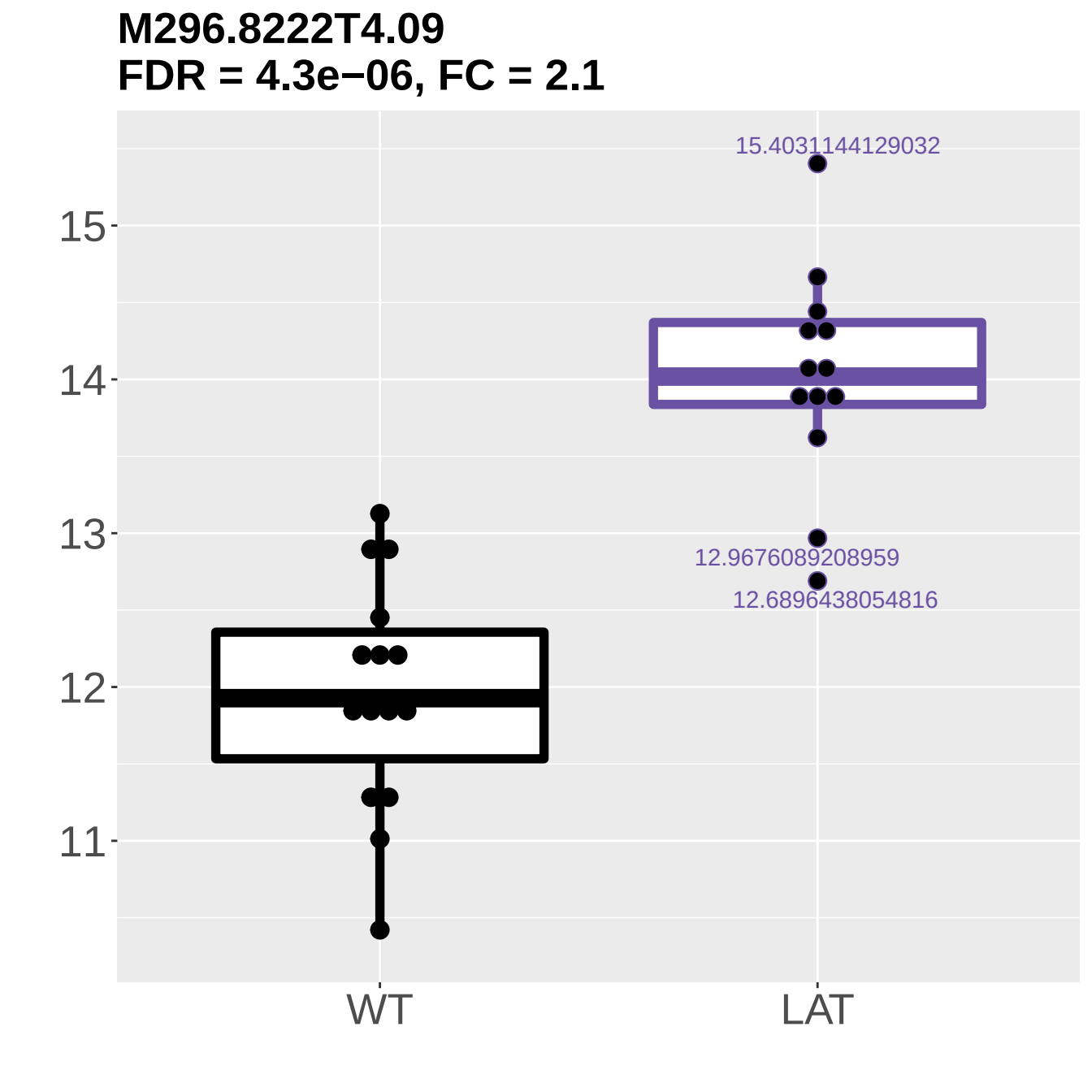
13
12
WT
LAT


M296.8222T4.09
FDR = 4.3e−06, FC = 2.1
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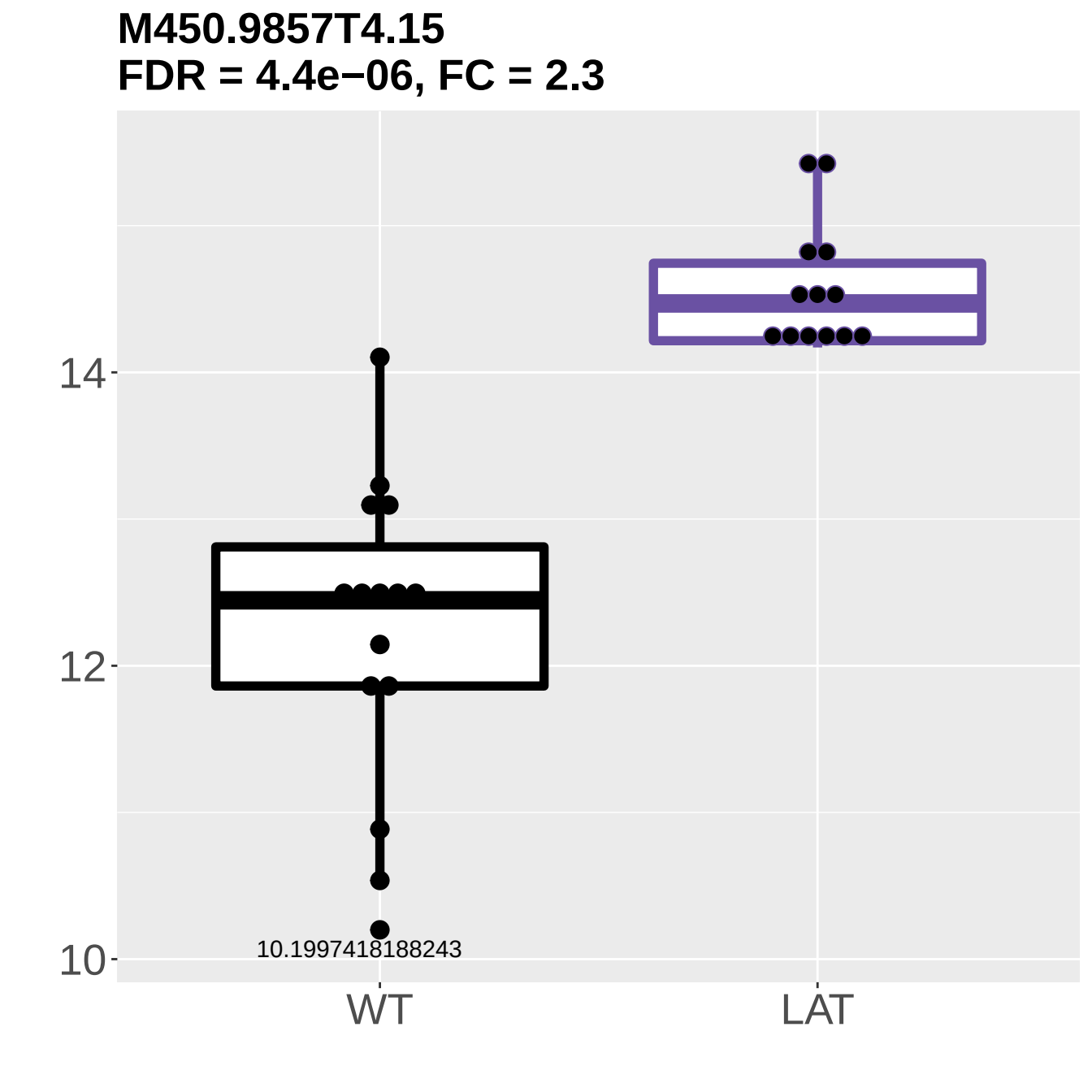
12.9676089208959
12.6896438054816
15
14
13
12
11
WT
LAT


M450.9857T4.15
FDR = 4.4e−06, FC = 2.3
14
12
10
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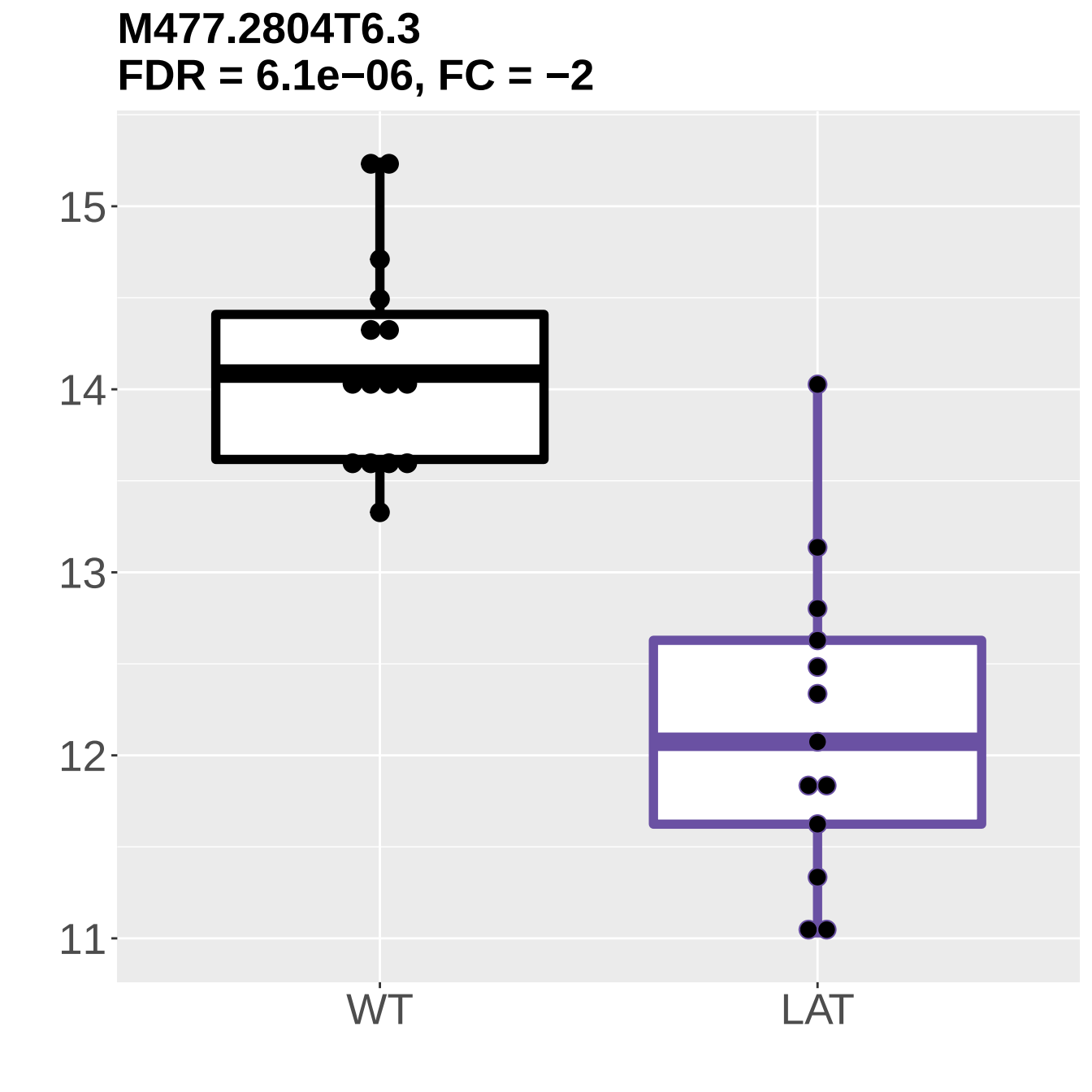
WT
LAT


M477.2804T6.3
FDR = 6.1e−06, FC = −2
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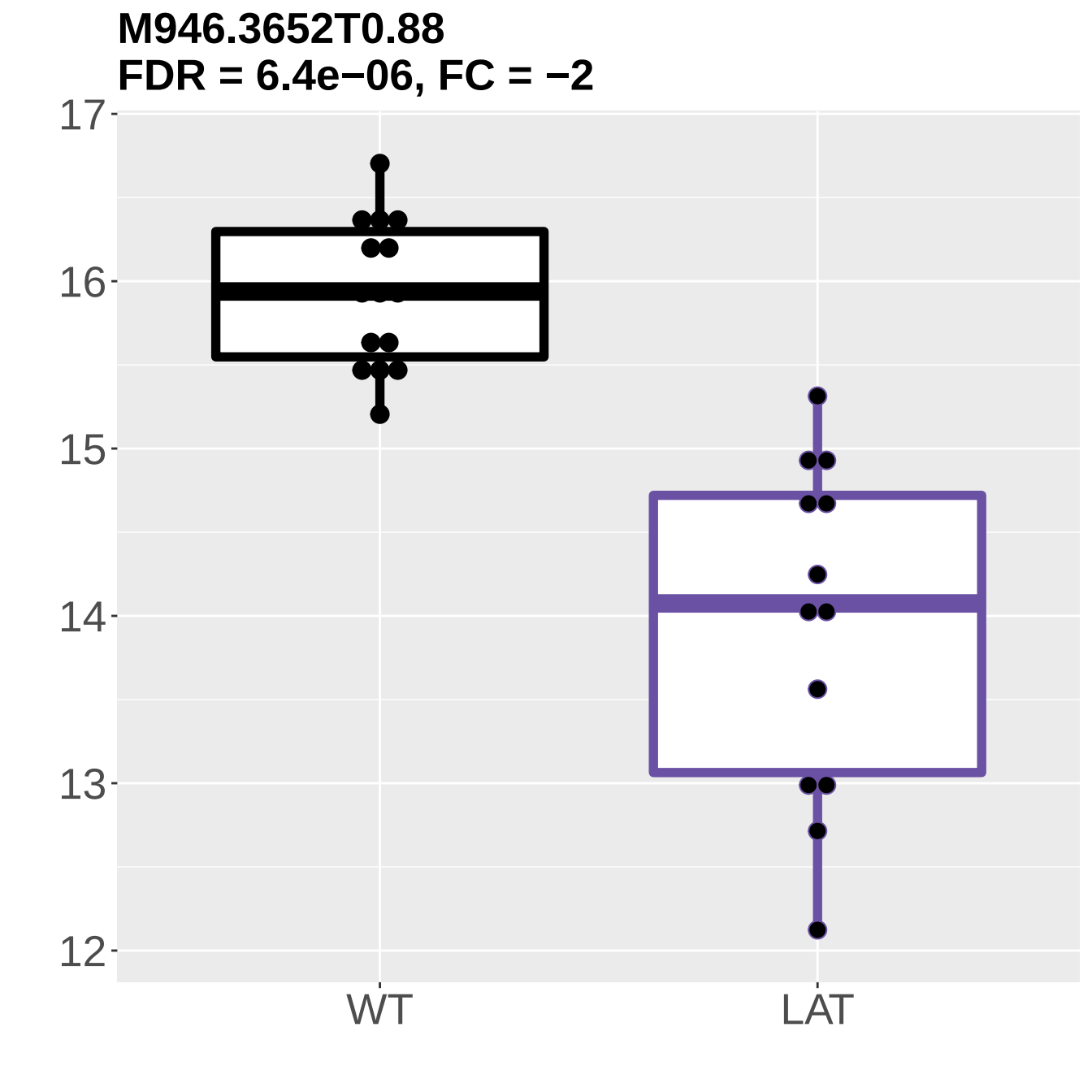
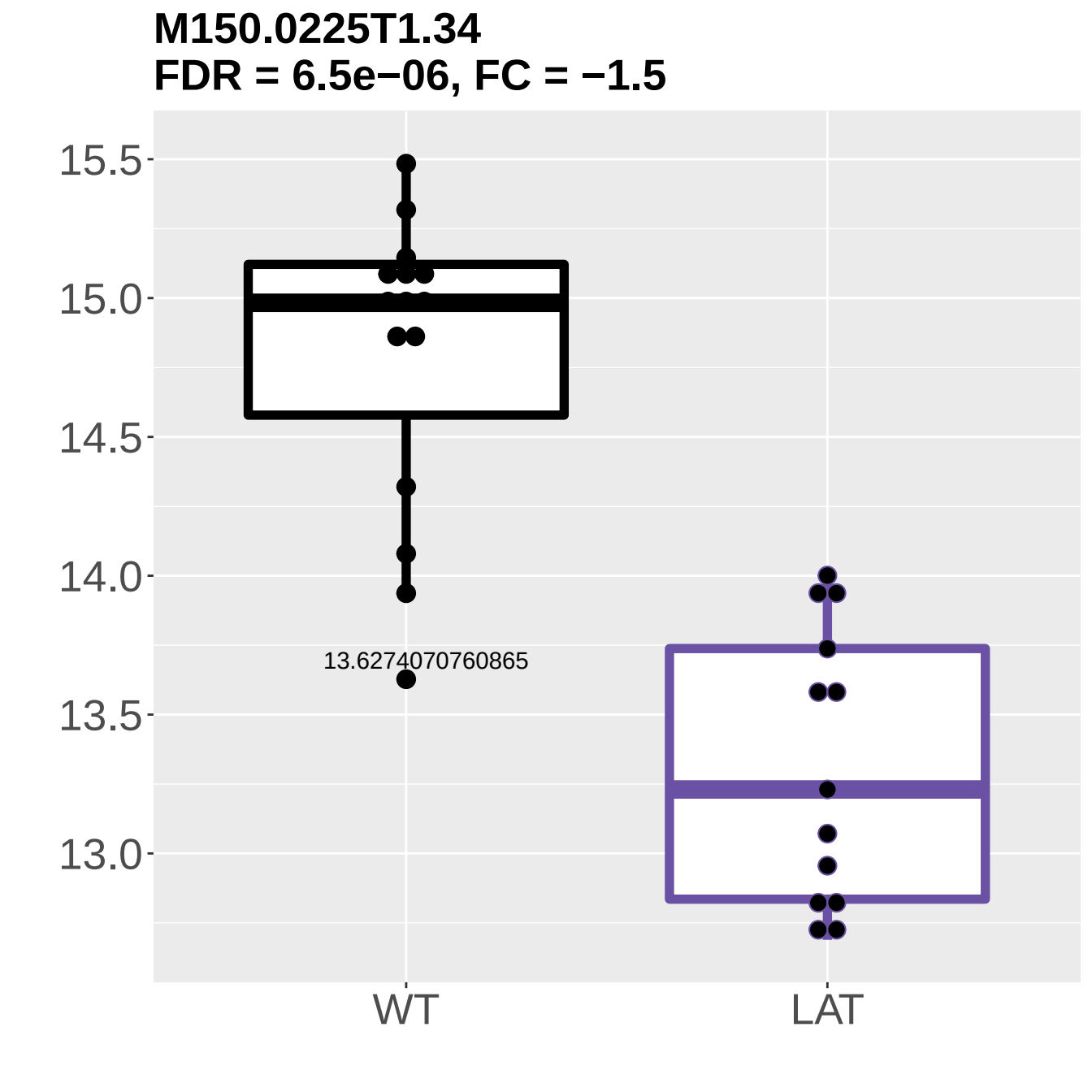
14
13
12
11
WT
LAT


M946.3652T0.88
FDR = 6.4e−06, FC = −2
17
16
15
14
13
12
WT
LAT


M150.0225T1.34
FDR = 6.5e−06, FC = −1.5
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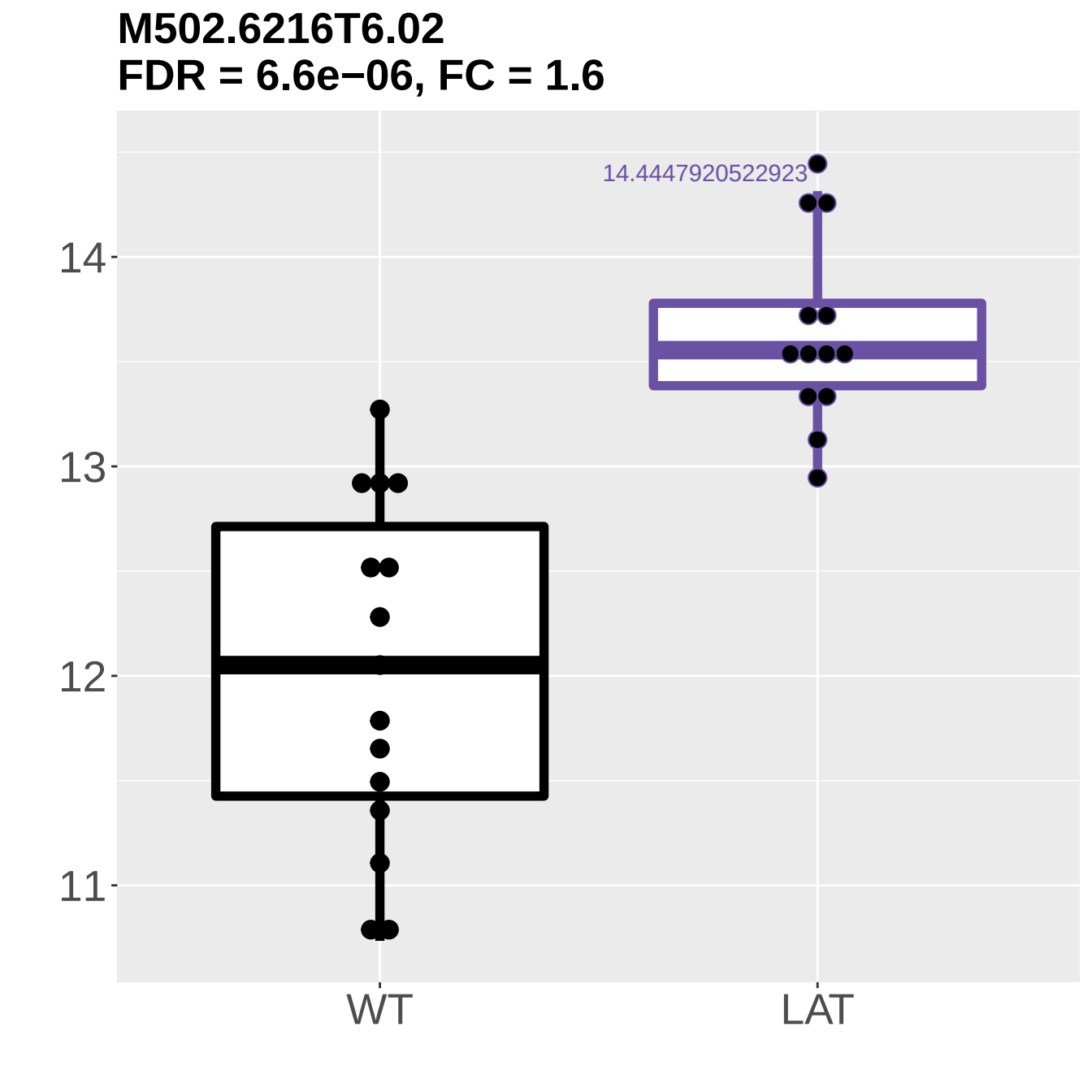
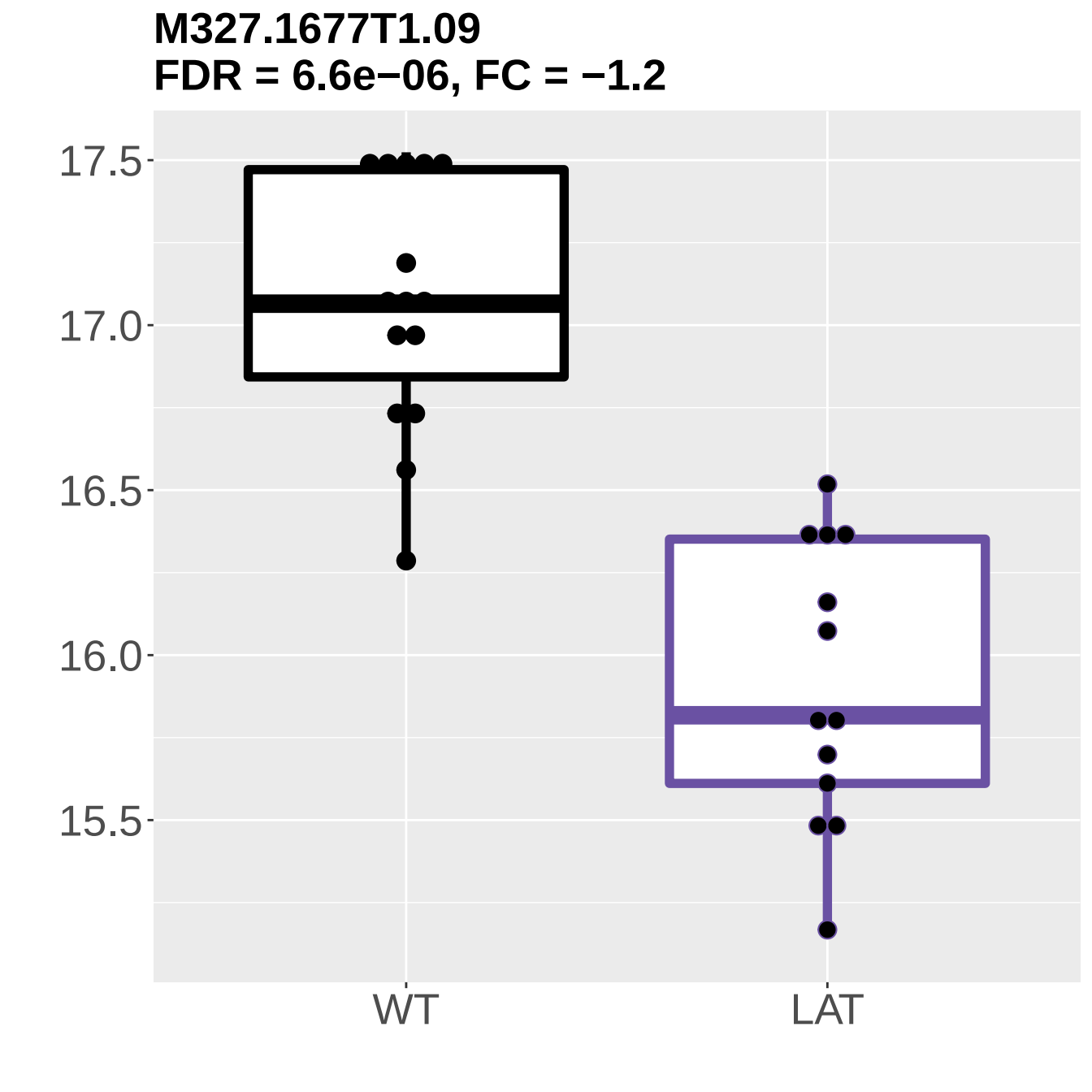
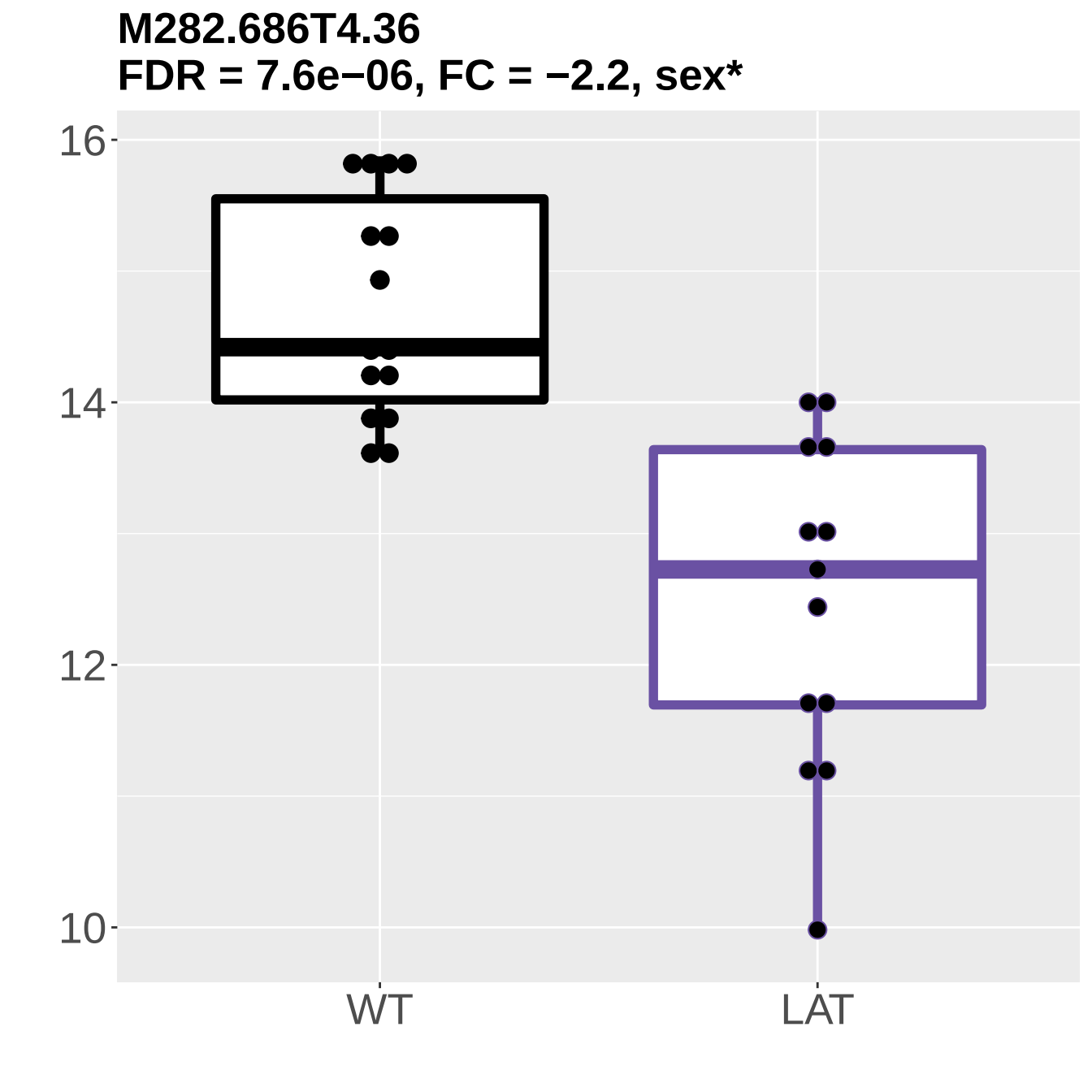
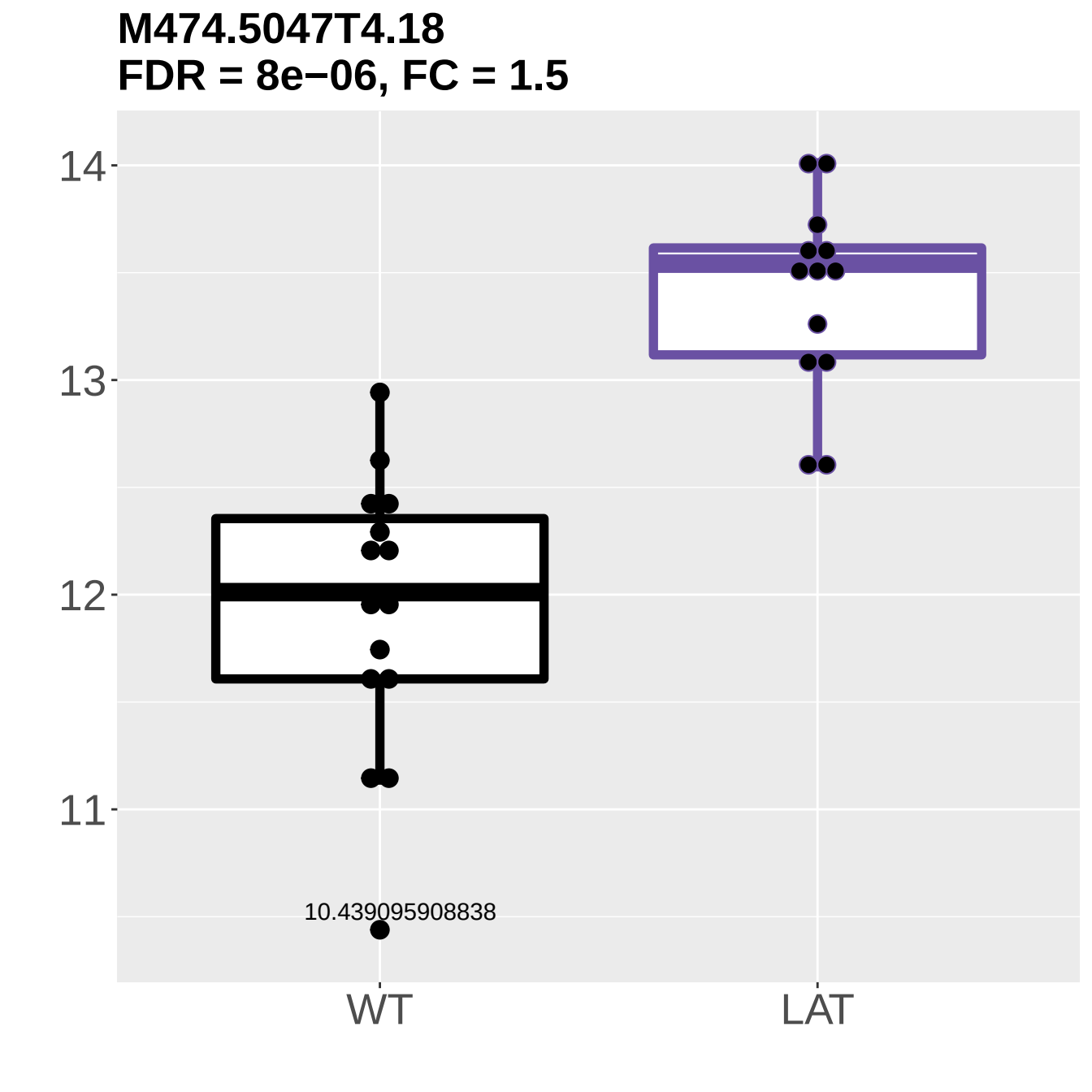
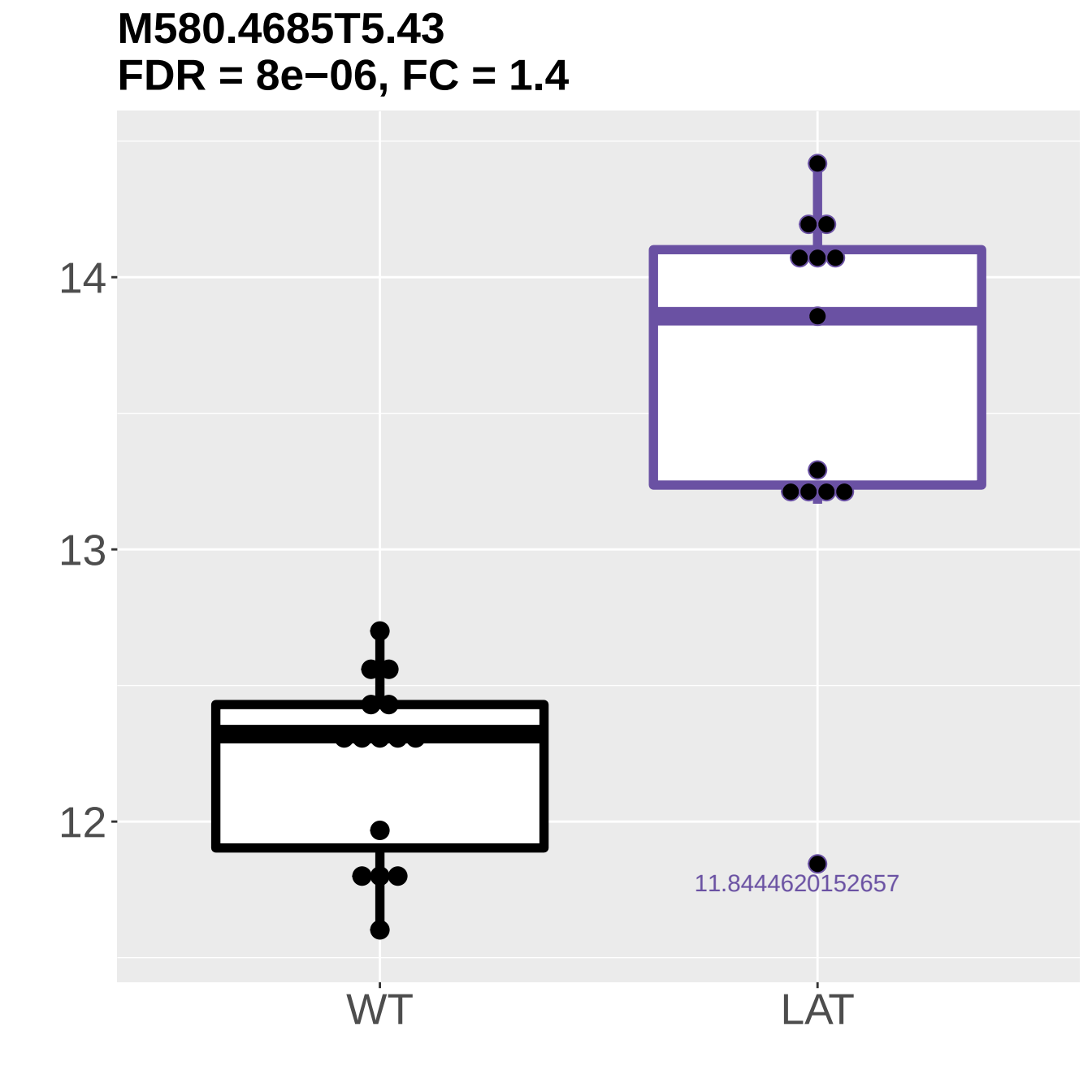
14.5
14.0
13.5
13.0
13.6274070760865
WT
LAT

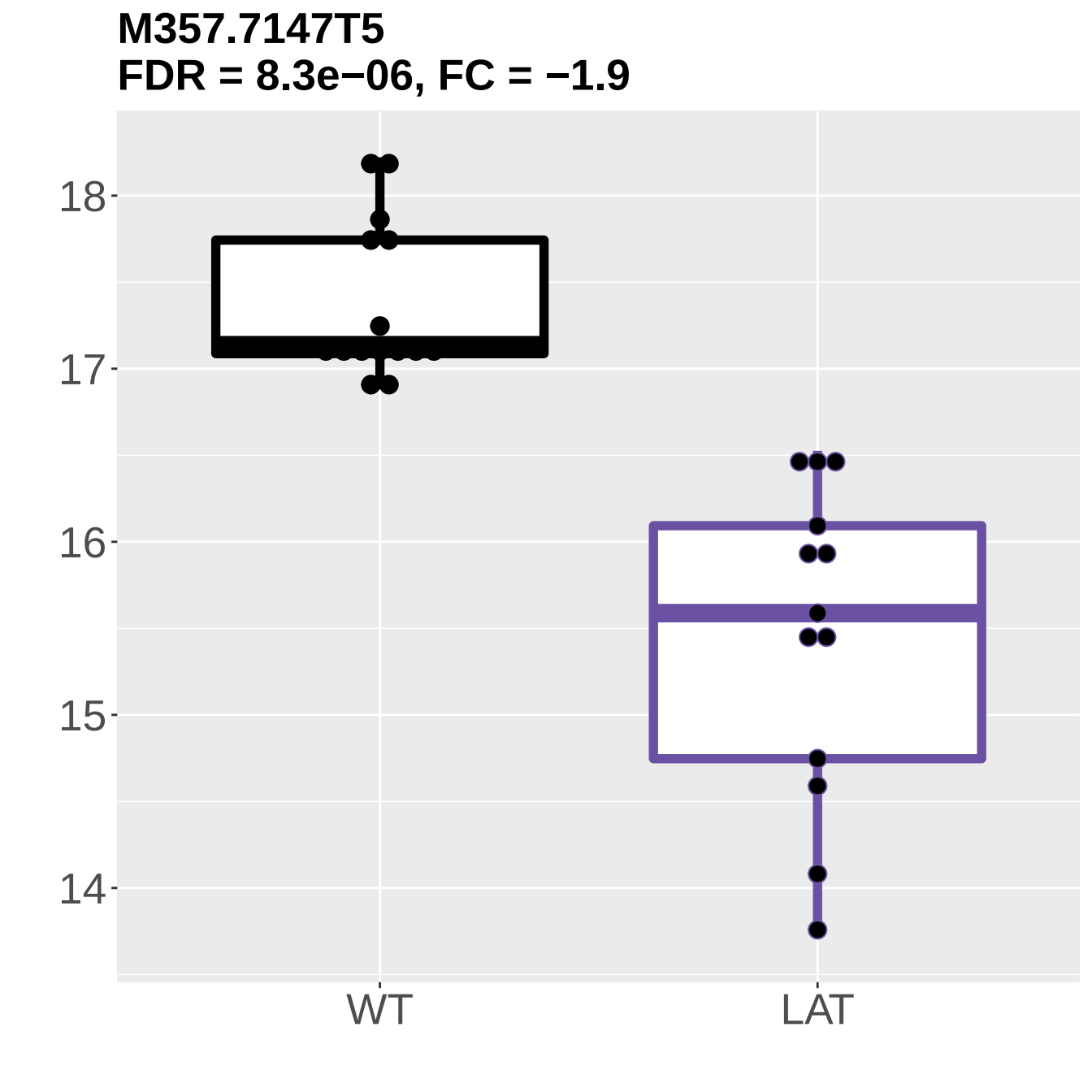

M502.6216T6.02
FDR = 6.6e−06, FC = 1.6
14.4447920522923
14
13
12
11
WT
LAT

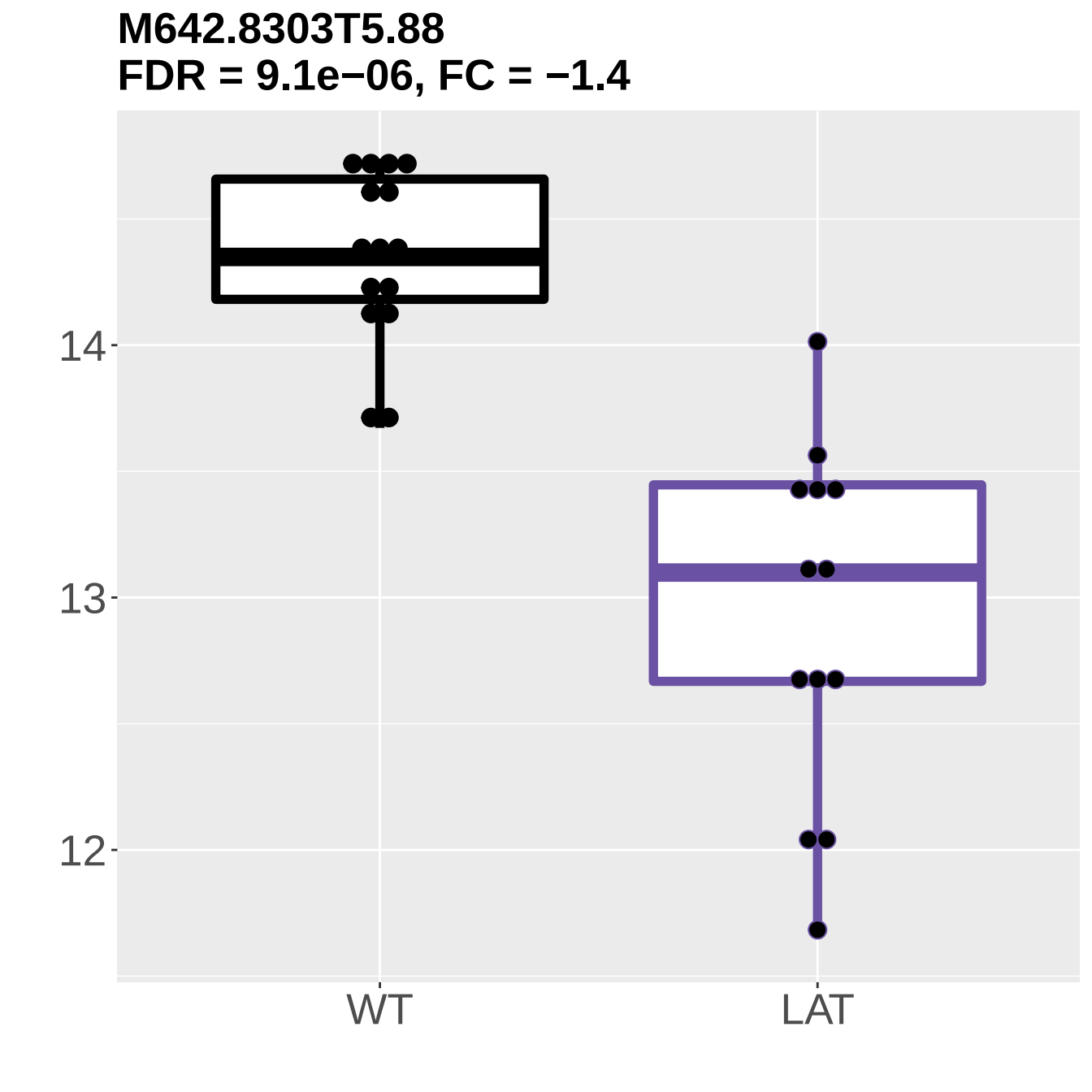

M327.1677T1.09
FDR = 6.6e−06, FC = −1.2
17.5
17.0
16.5
16.0
15.5
WT
LAT

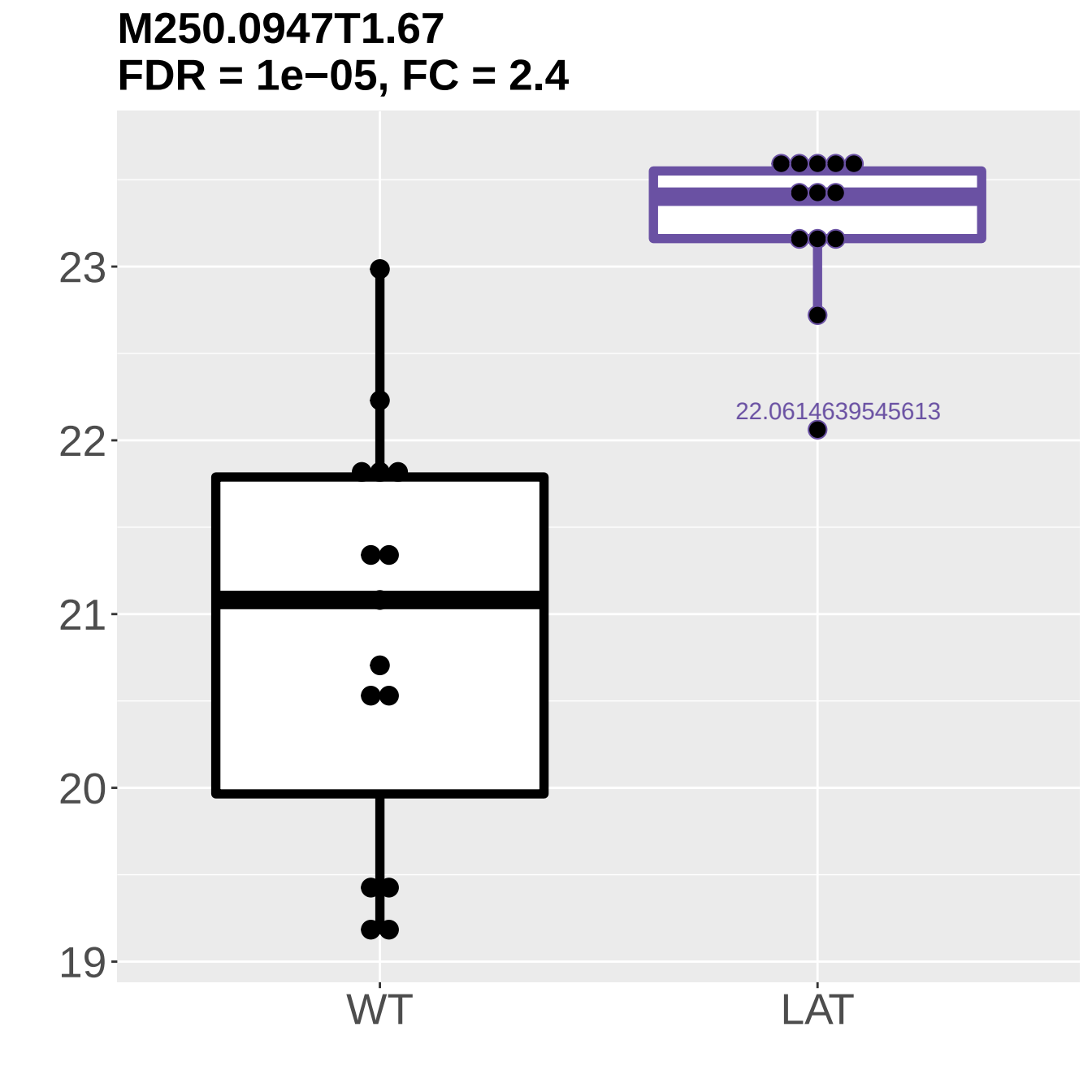

M282.686T4.36
FDR = 7.6e−06, FC = −2.2, sex*
16
14
12
10
WT
LAT

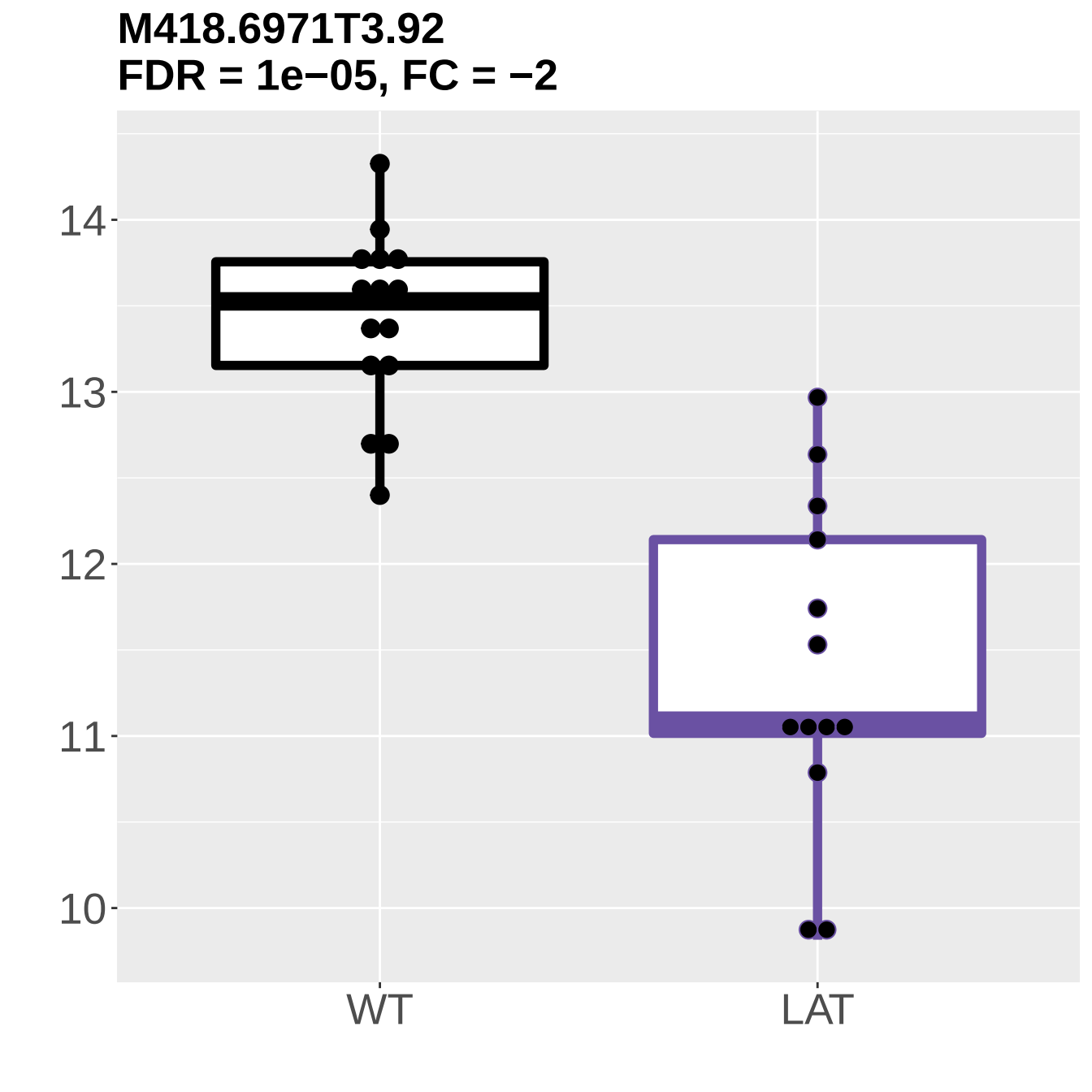

M474.5047T4.18
FDR = 8e−06, FC = 1.5
14
13
12
11
10.439095908838
WT
LAT

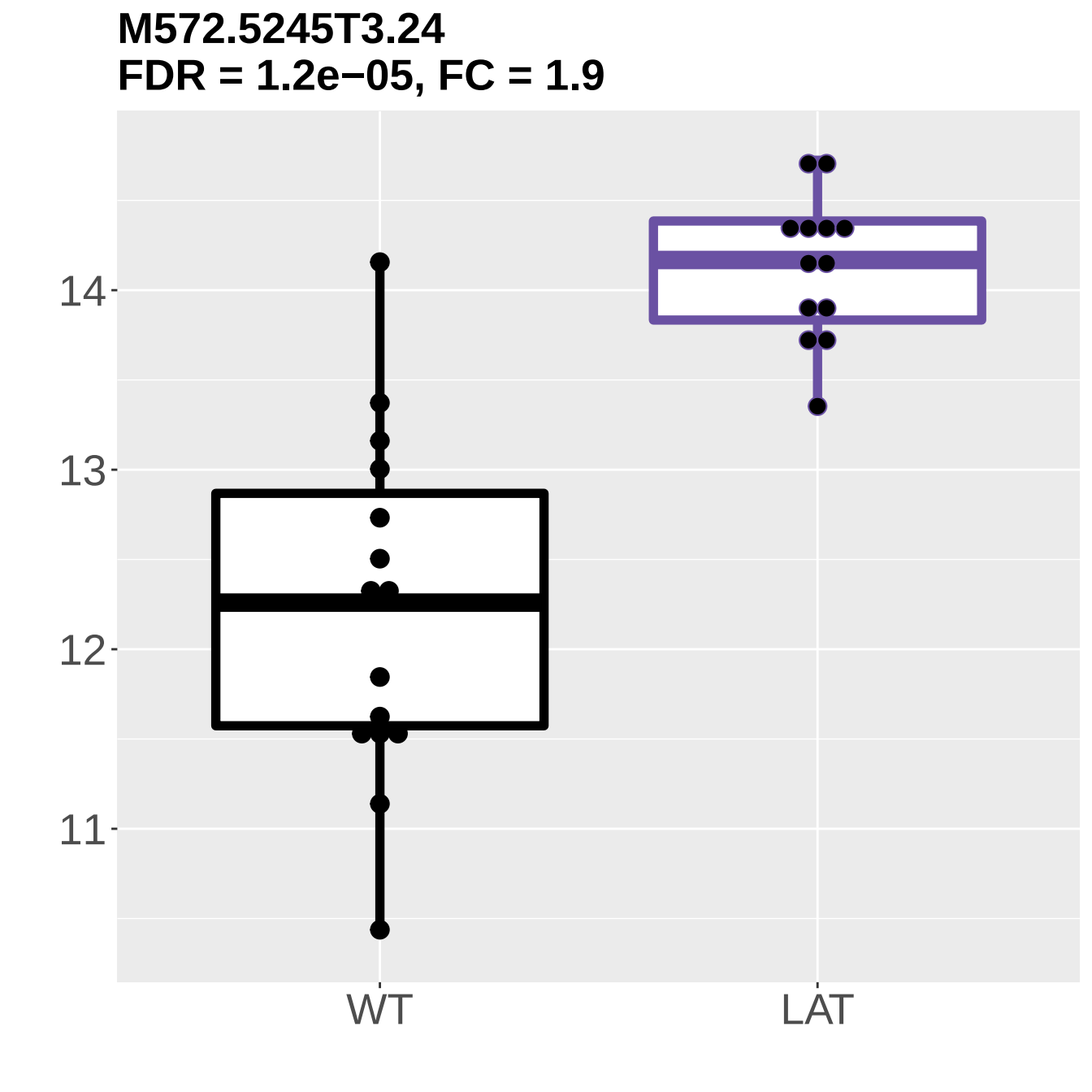

M580.4685T5.43
FDR = 8e−06, FC = 1.4
14
13
12
11.8444620152657
WT
LAT

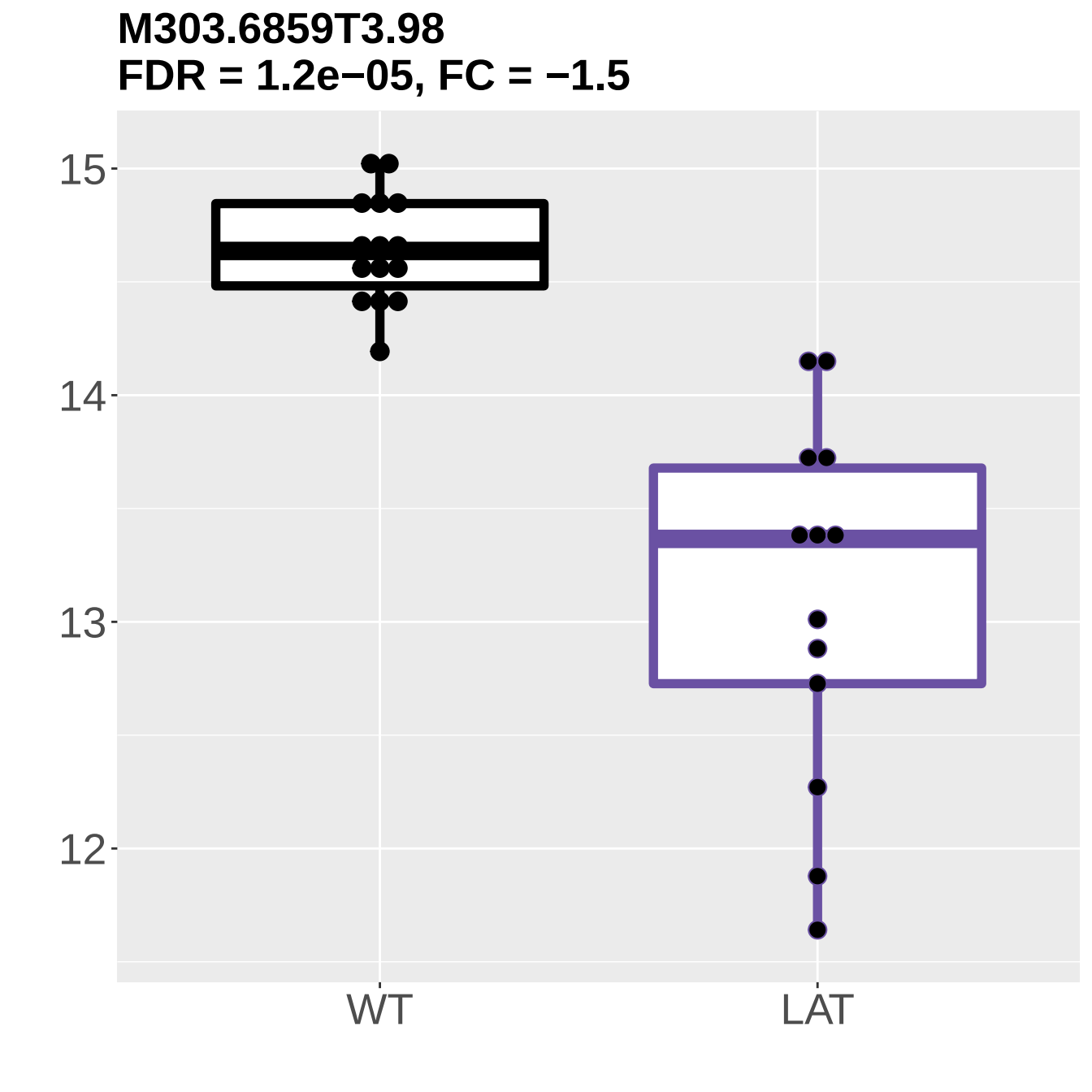

M357.7147T5
FDR = 8.3e−06, FC = −1.9
18
17
16
15
14
WT
LAT

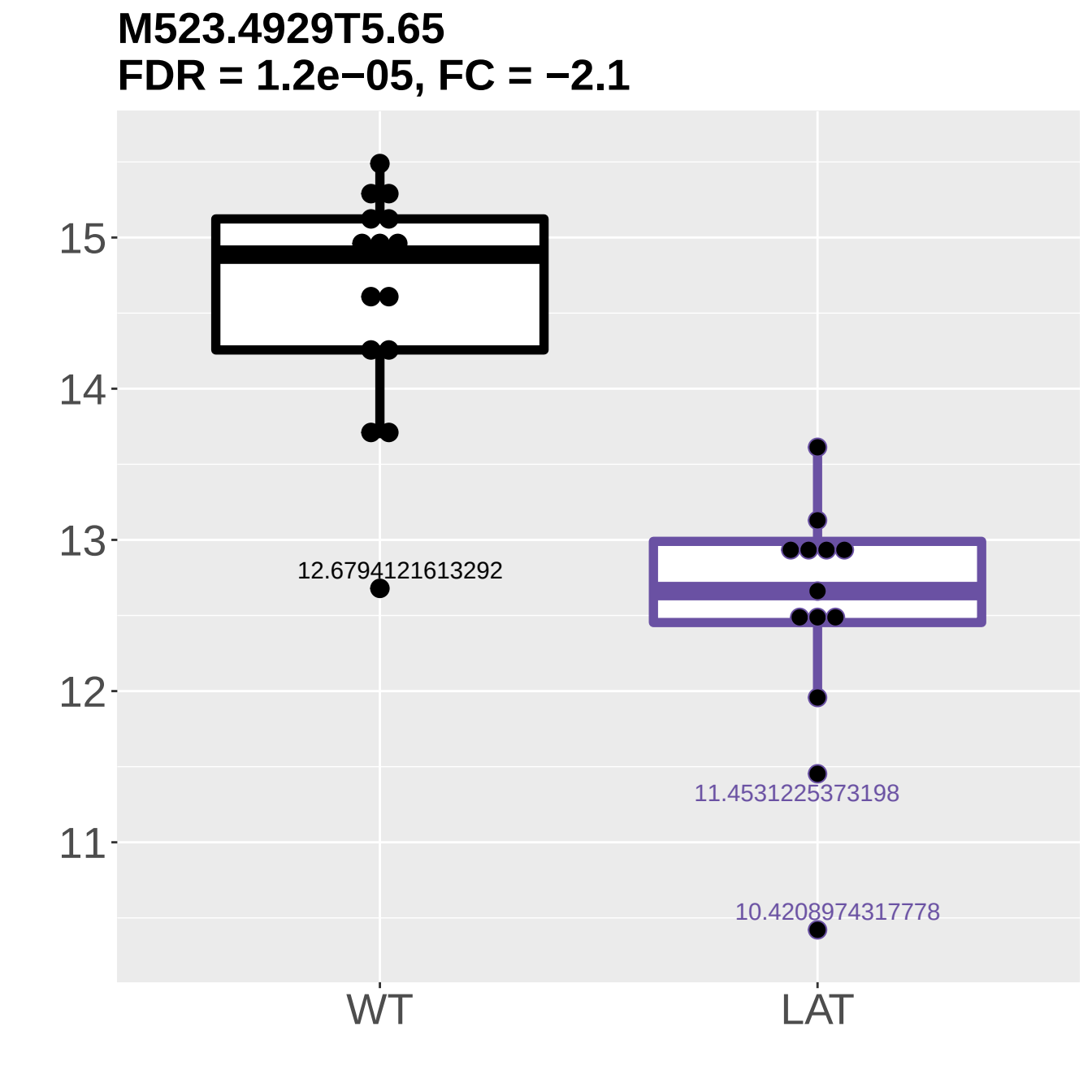

M642.8303T5.88
FDR = 9.1e−06, FC = −1.4
14
13
12
WT
LAT

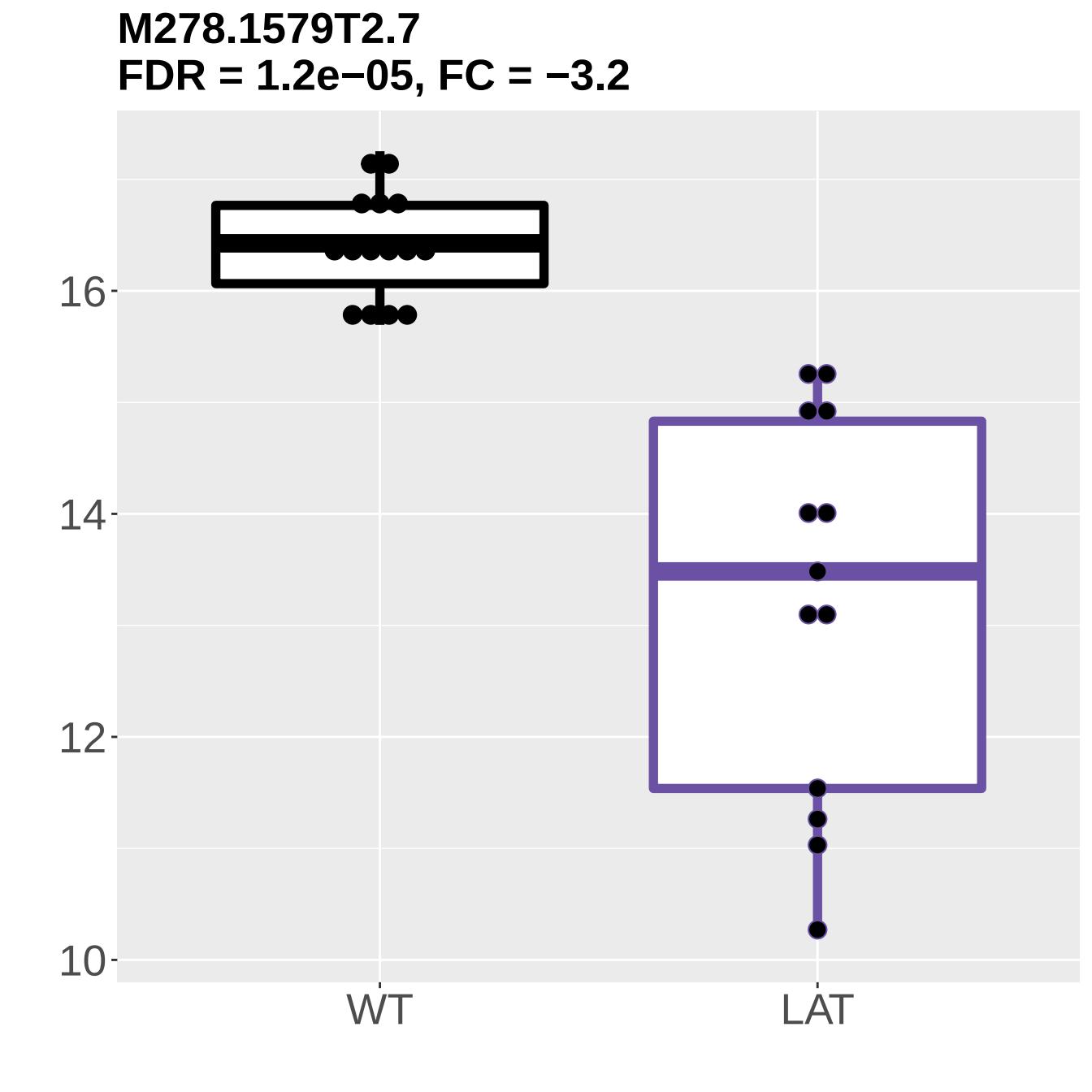

M250.0947T1.67
FDR = 1e−05, FC = 2.4
23
22
21
20
19
22.0614639545613
WT
LAT

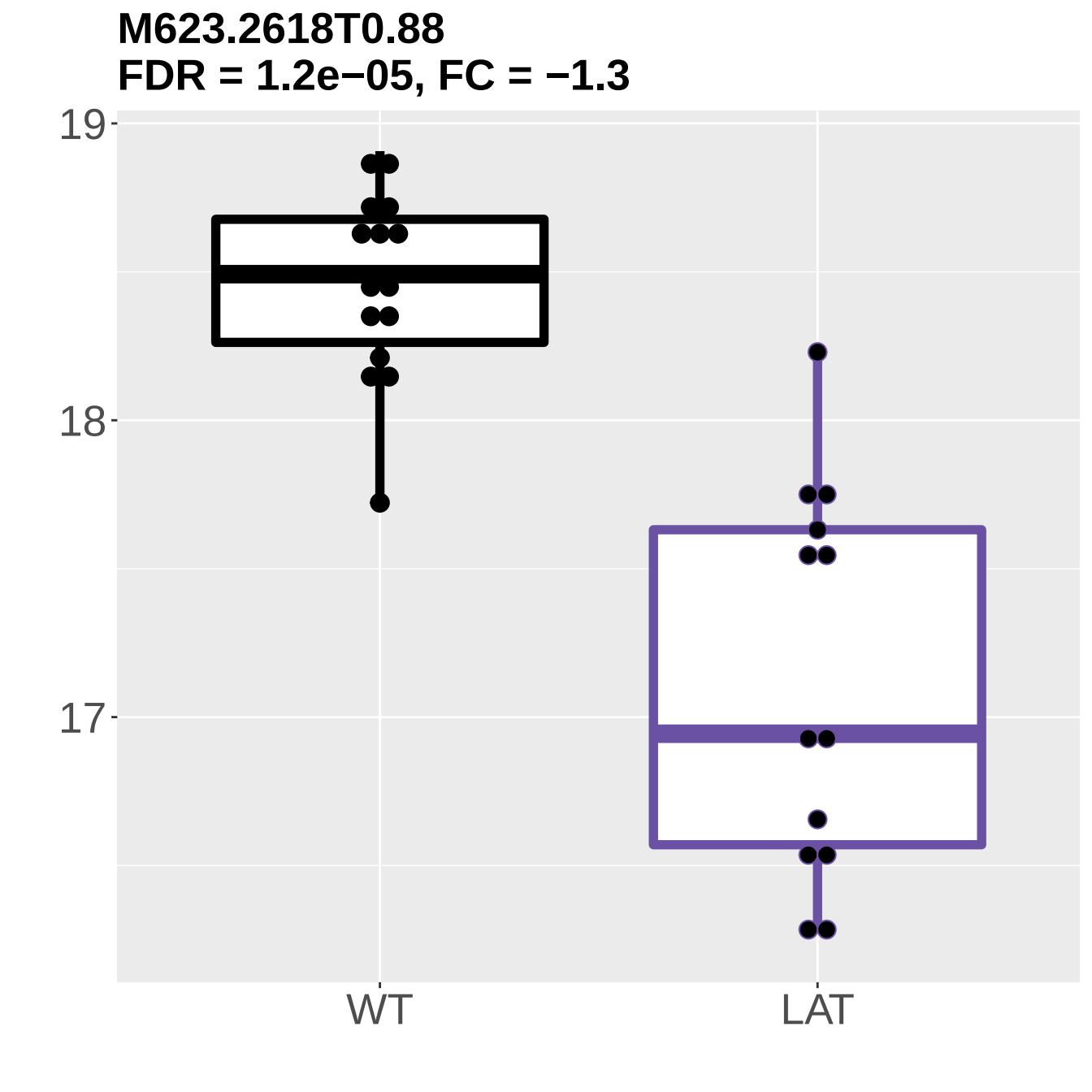

M418.6971T3.92
FDR = 1e−05, FC = −2
14
13
12
11
10
WT
LAT

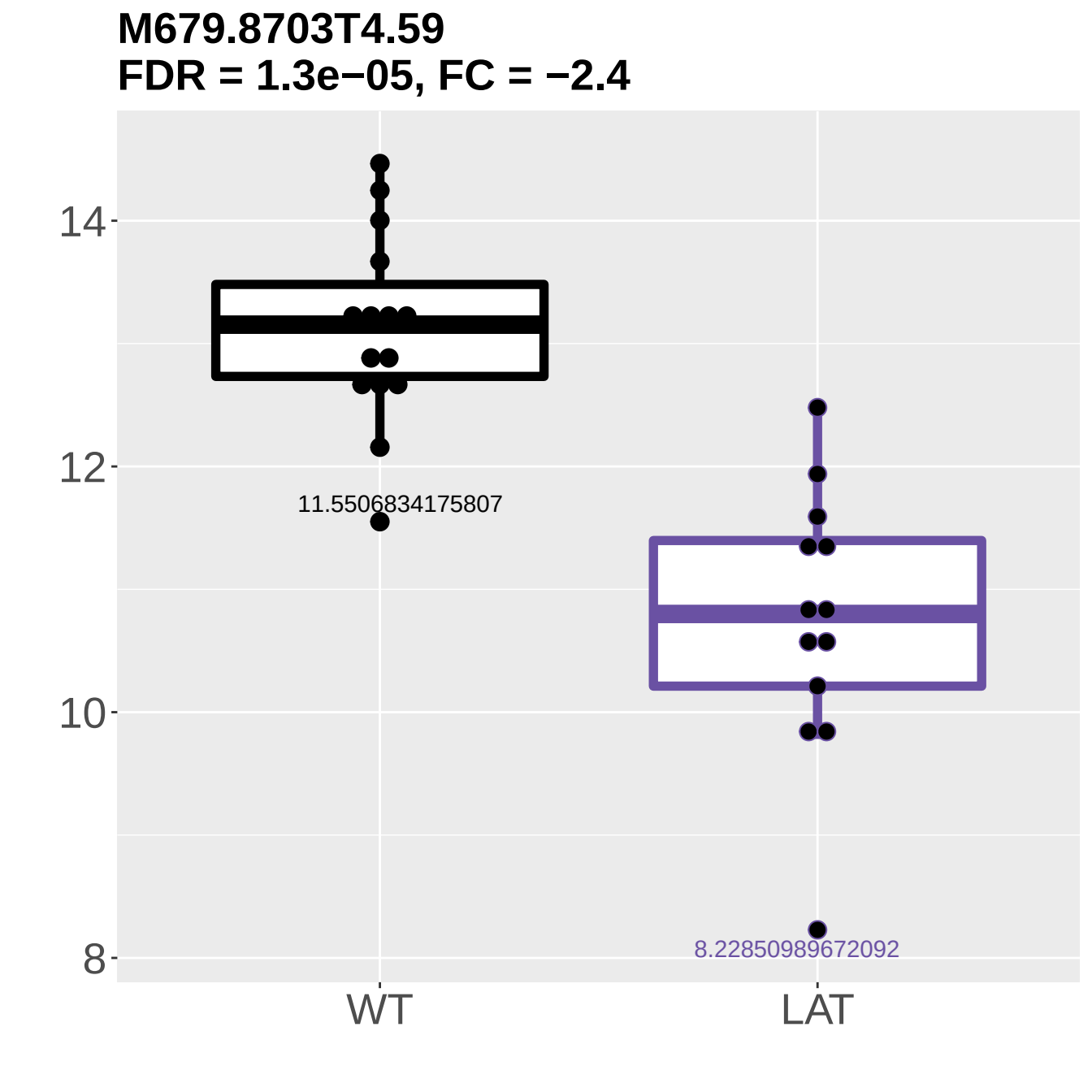

M572.5245T3.24
FDR = 1.2e−05, FC = 1.9
14
13
12
11
WT
LAT

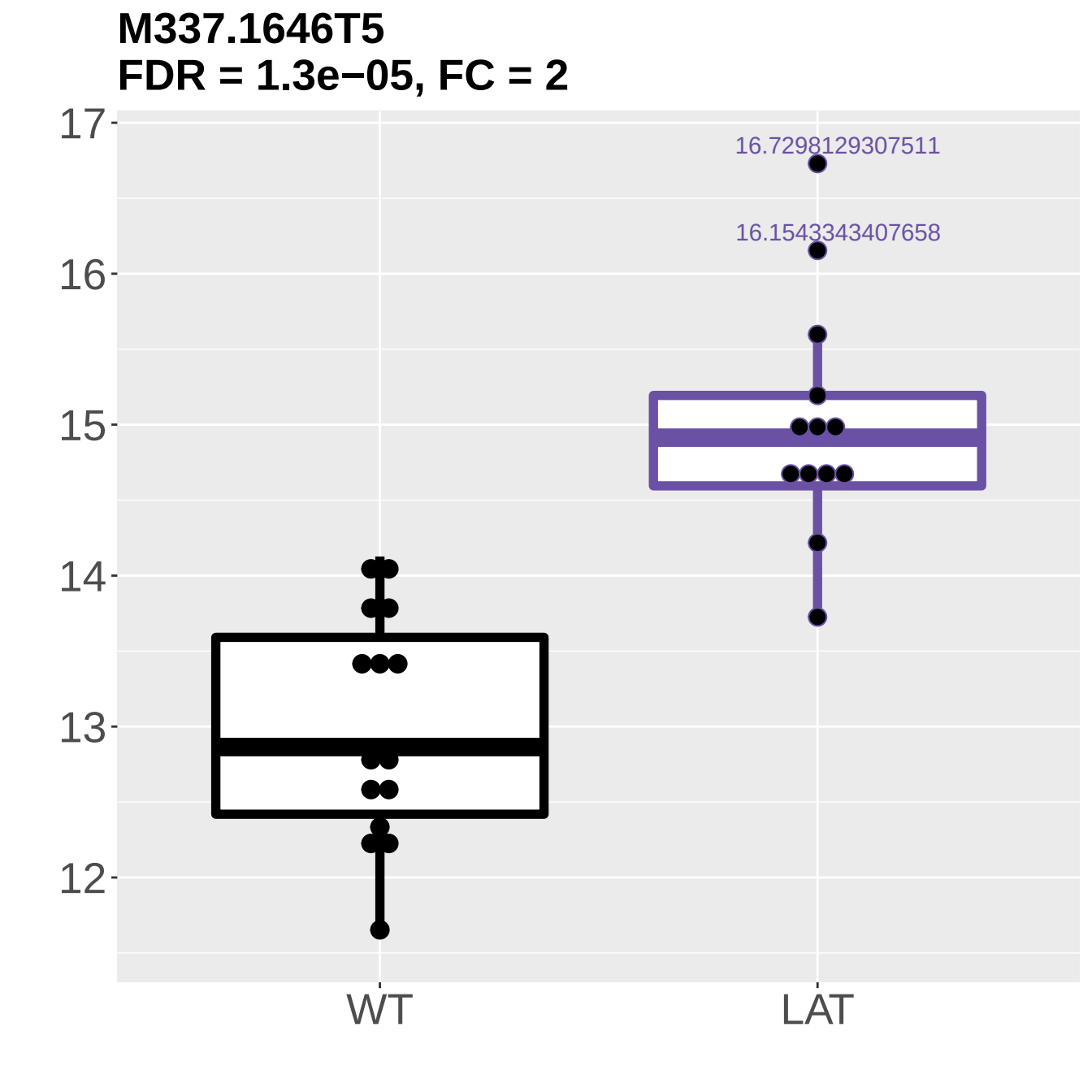

M303.6859T3.98
FDR = 1.2e−05, FC = −1.5
15
14
13
12
WT
LAT

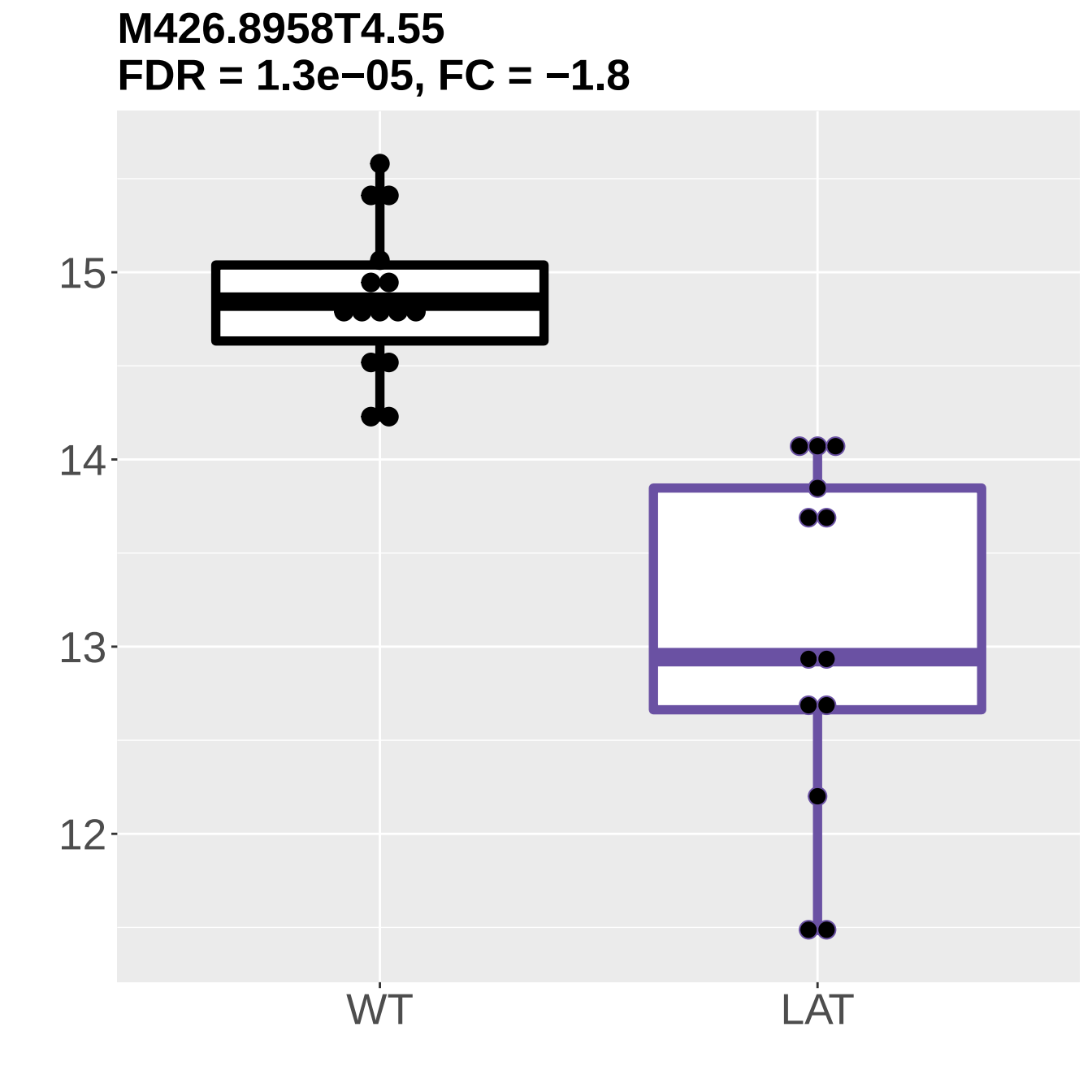

M523.4929T5.65
FDR = 1.2e−05, FC = −2.1
15
14
13
12
11
12.6794121613292
11.4531225373198
10.4208974317778
WT
LAT

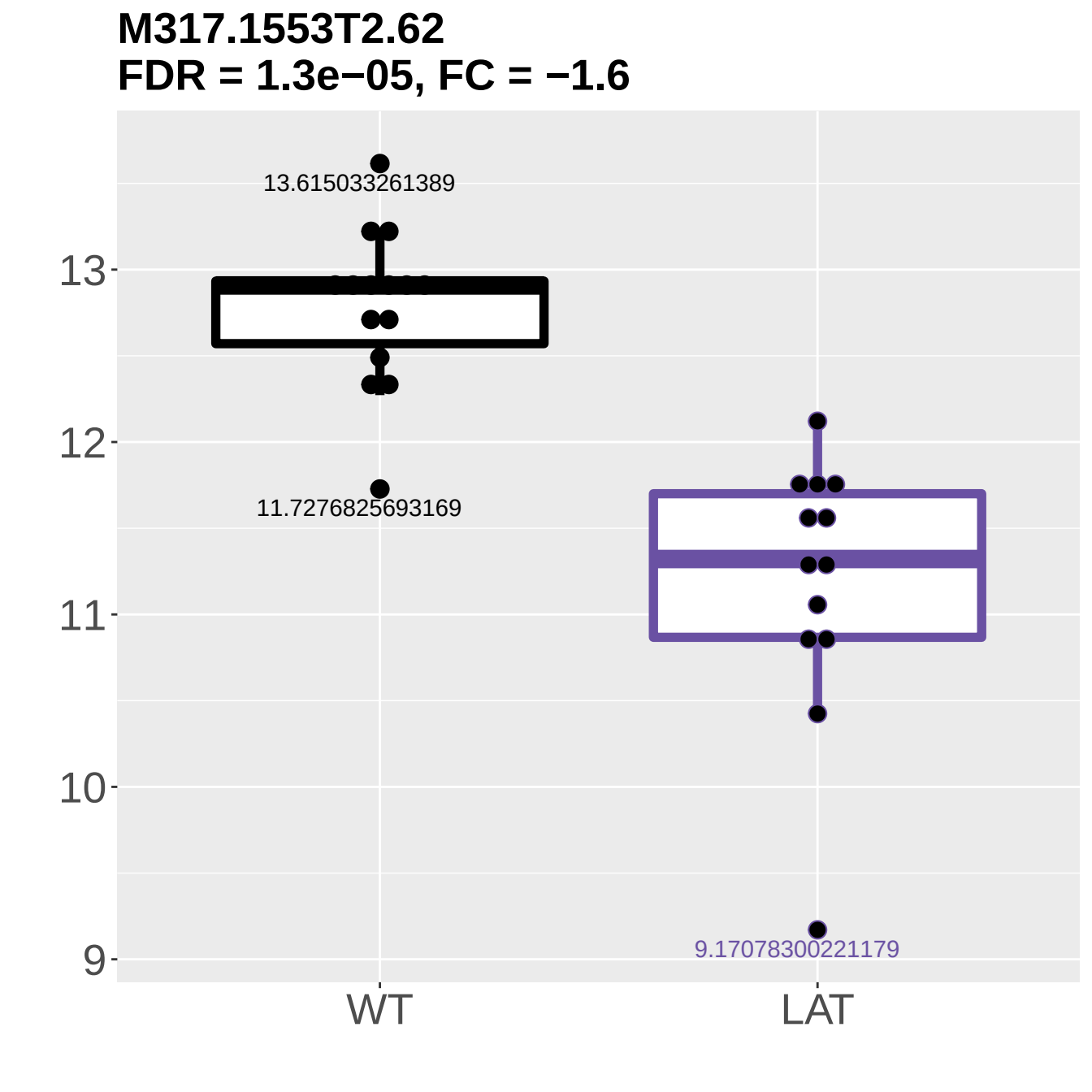

M278.1579T2.7
FDR = 1.2e−05, FC = −3.2
16
14
12
10
WT
LAT

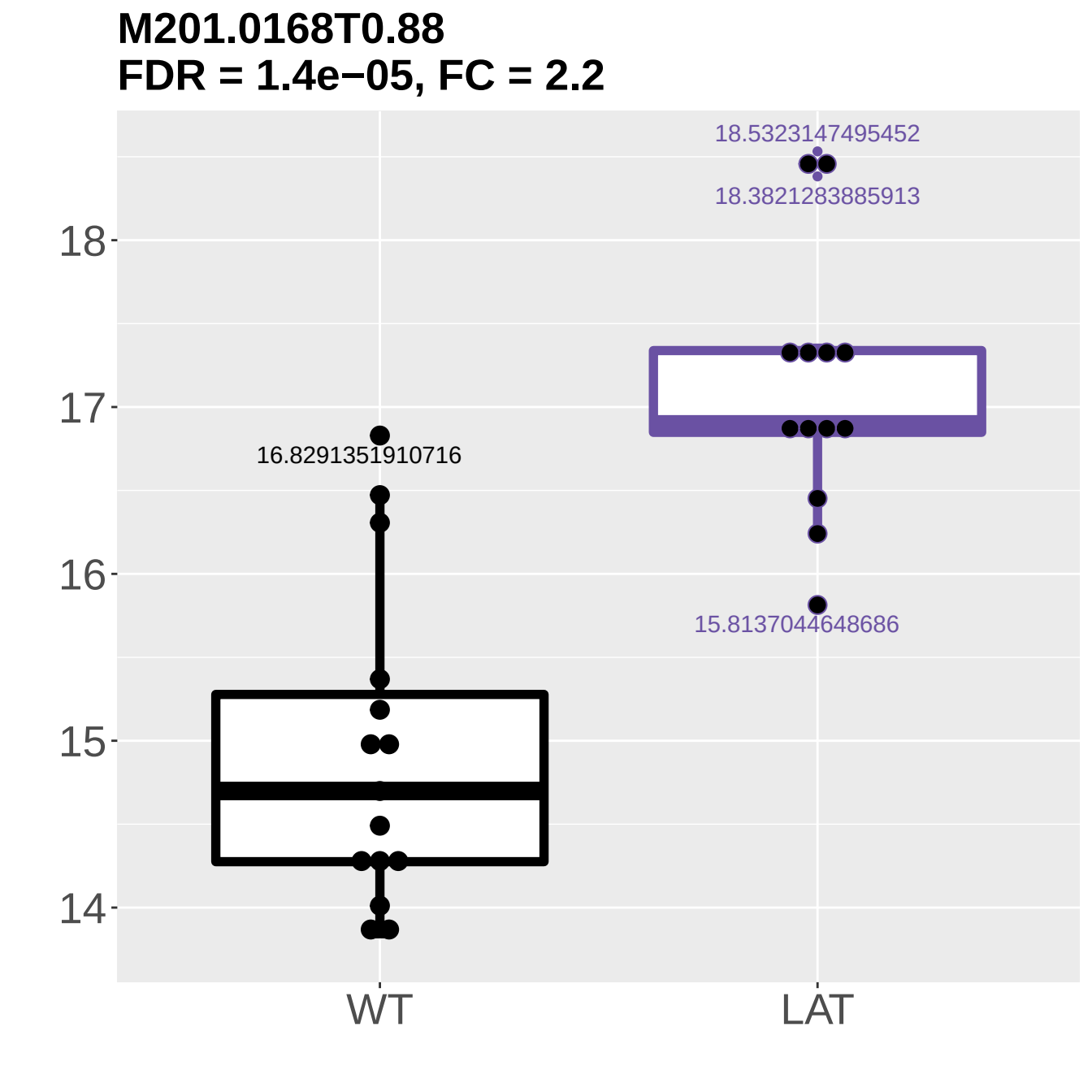

M623.2618T0.88
FDR = 1.2e−05, FC = −1.3
19
18
17
WT
LAT


M679.8703T4.59
FDR = 1.3e−05, FC = −2.4
14
12
10
8
11.5506834175807
8.22850989672092
WT
LAT


M337.1646T5
FDR = 1.3e−05, FC = 2
17
16
15
14
13
12
16.7298129307511
16.1543343407658
WT
LAT


M426.8958T4.55
FDR = 1.3e−05, FC = −1.8
15
14
13
12
WT
LAT


M317.1553T2.62
FDR = 1.3e−05, FC = −1.6
13.615033261389
11.7276825693169
9.17078300221179
13
12
11
10
9
WT
LAT


M201.0168T0.88
FDR = 1.4e−05, FC = 2.2
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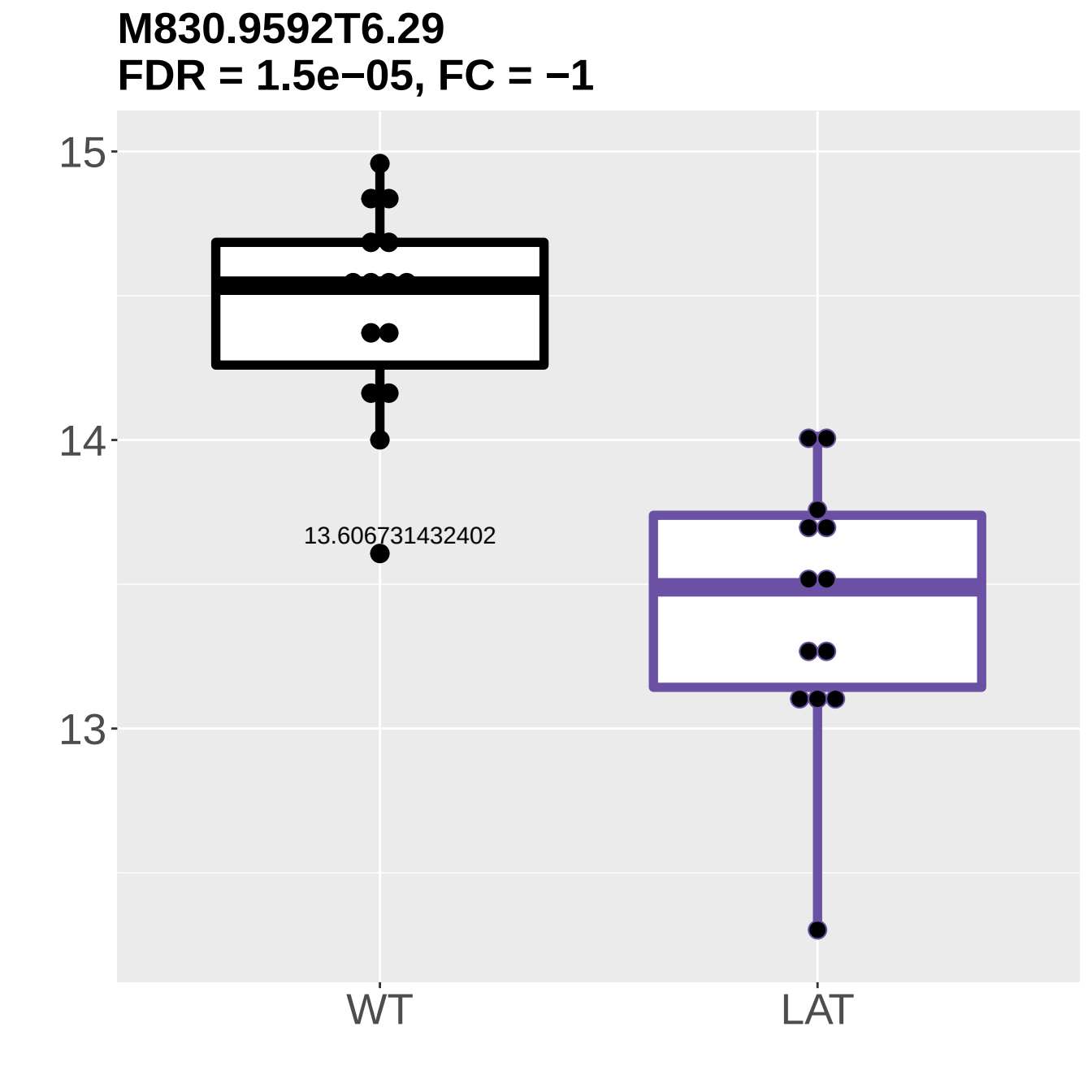
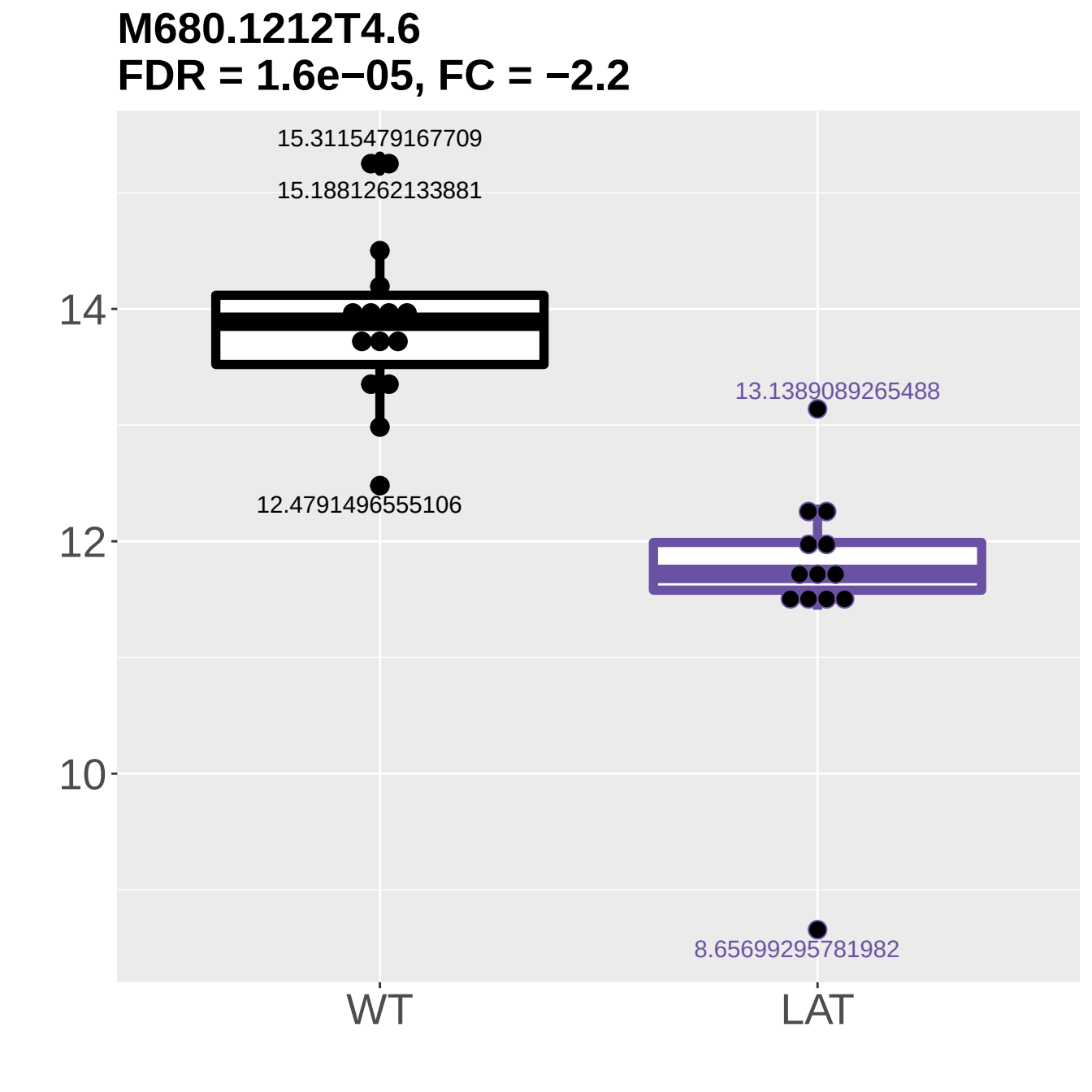
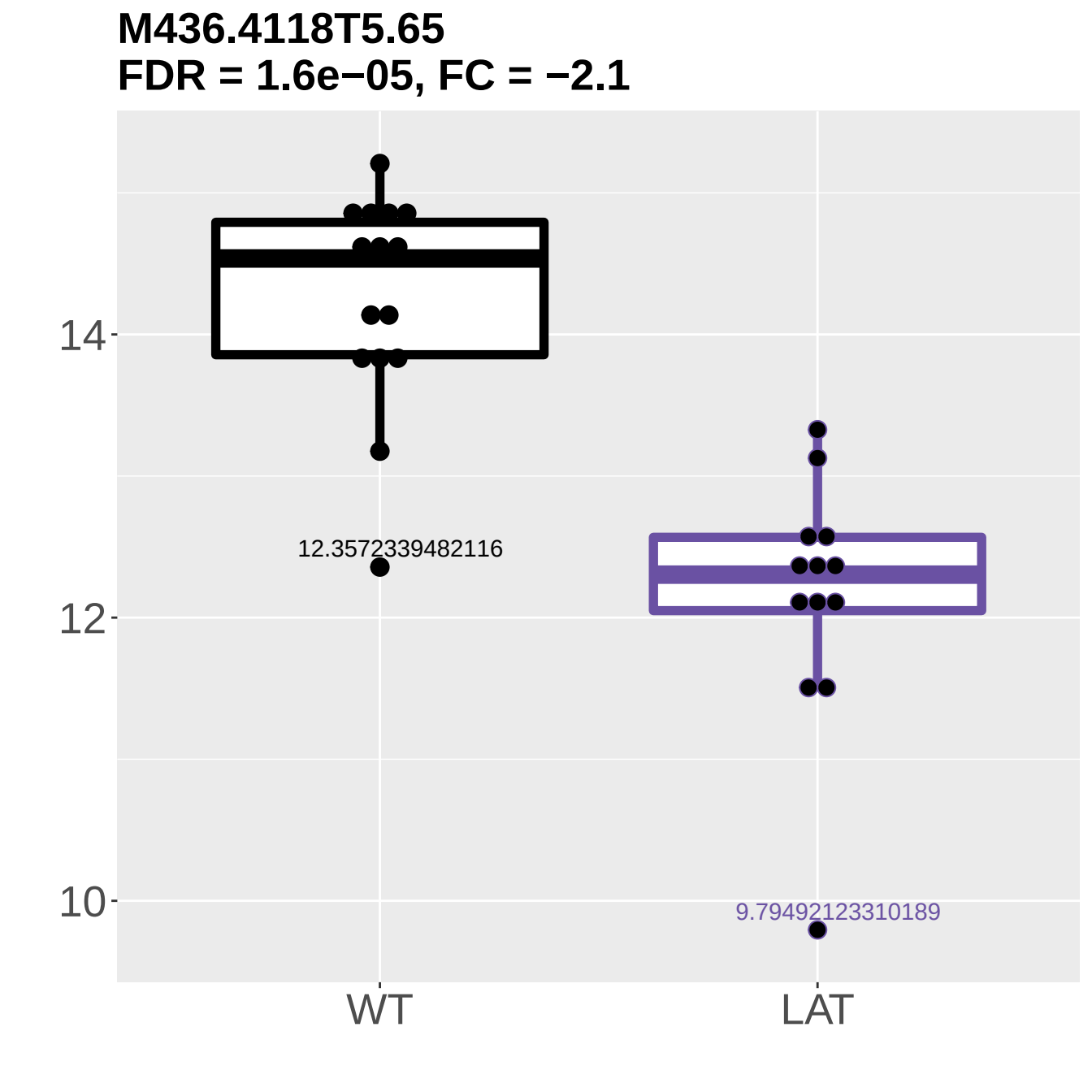
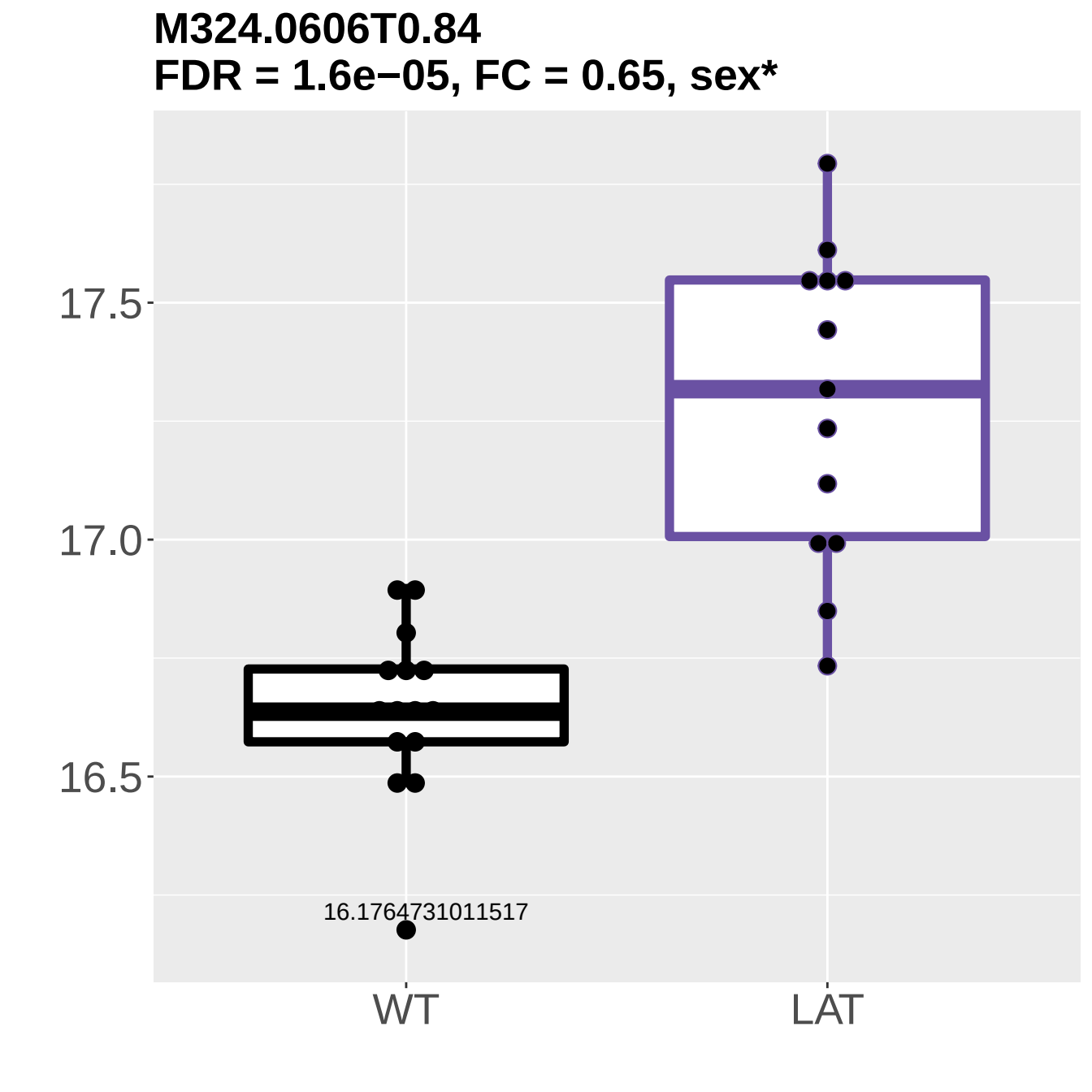
18.3821283885913
16.8291351910716
15.8137044648686
18
17
16
15
14
WT
LAT


M830.9592T6.29
FDR = 1.5e−05, FC = −1
15
14
13
13.606731432402
WT
LAT


M680.1212T4.6
FDR = 1.6e−05, FC = −2.2
15.3115479167709
15.1881262133881
12.4791496555106
13.1389089265488
8.65699295781982
14
12
10
WT
LAT


M436.4118T5.65
FDR = 1.6e−05, FC = −2.1
14
12
10
12.3572339482116
9.79492123310189
WT
LAT


M324.0606T0.84
FDR = 1.6e−05, FC = 0.65, sex*
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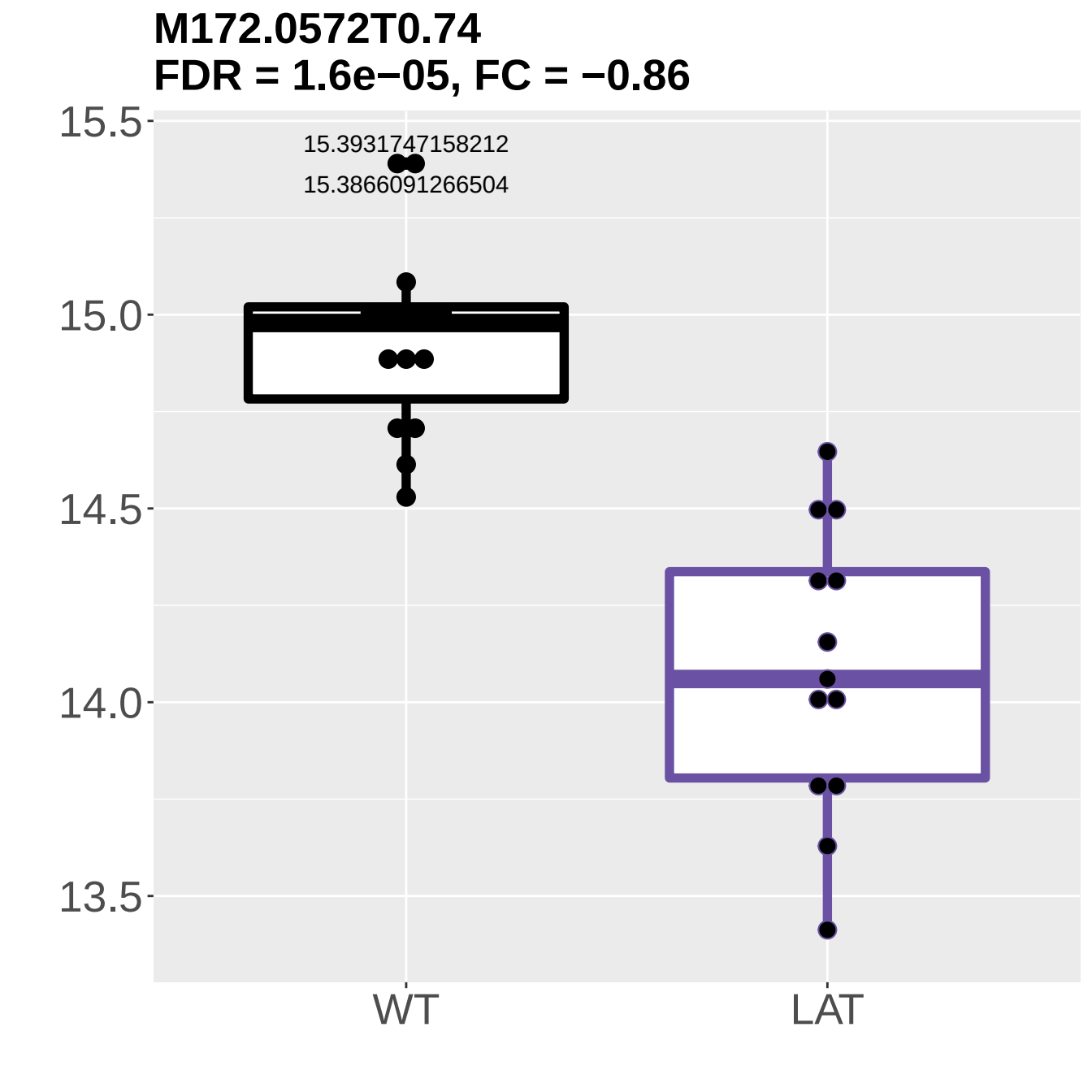
17.0
16.5
16.1764731011517
WT
LAT


M172.0572T0.74
FDR = 1.6e−05, FC = −0.86
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15.0
14.5
14.0
13.5
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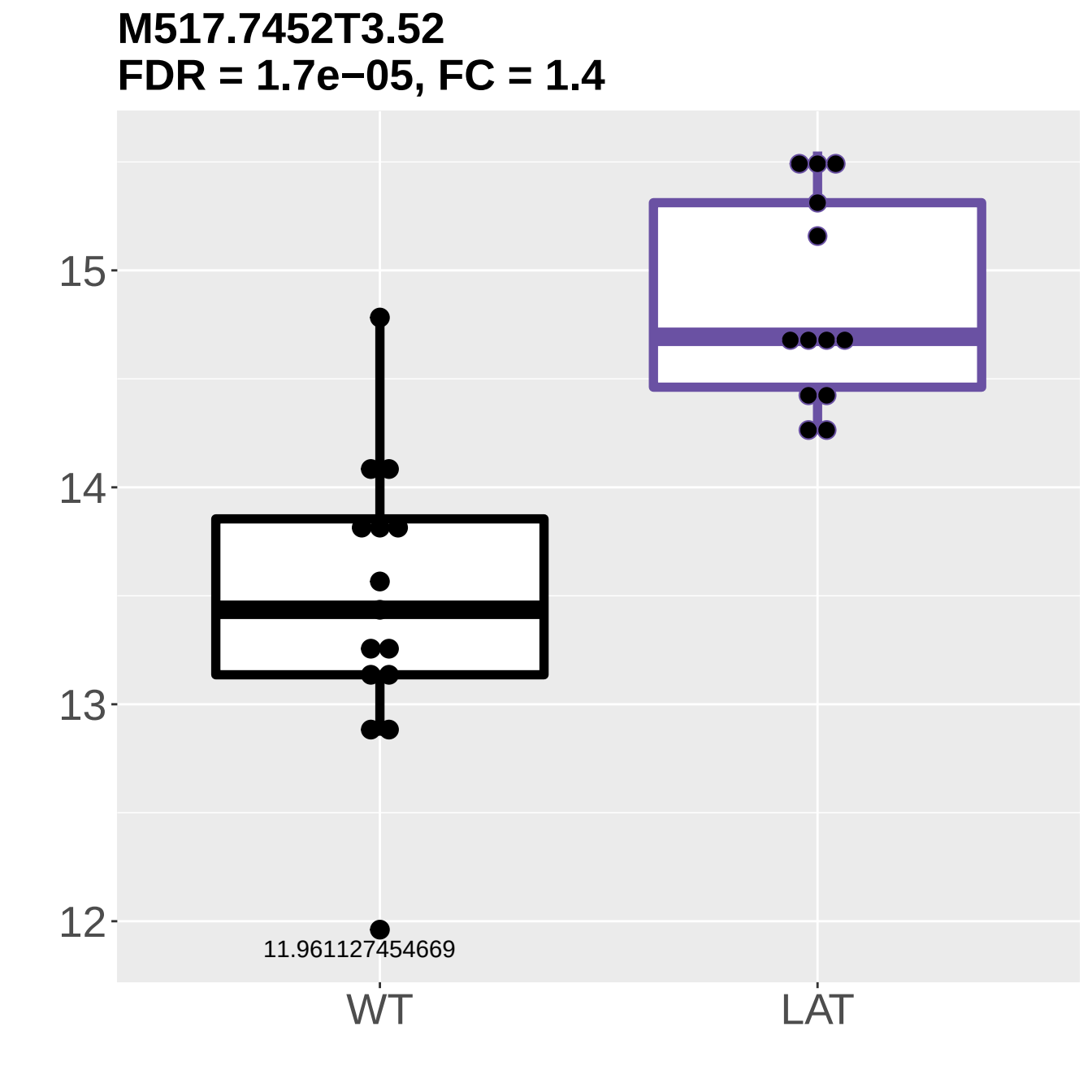
15.3866091266504
WT
LAT


M517.7452T3.52
FDR = 1.7e−05, FC = 1.4
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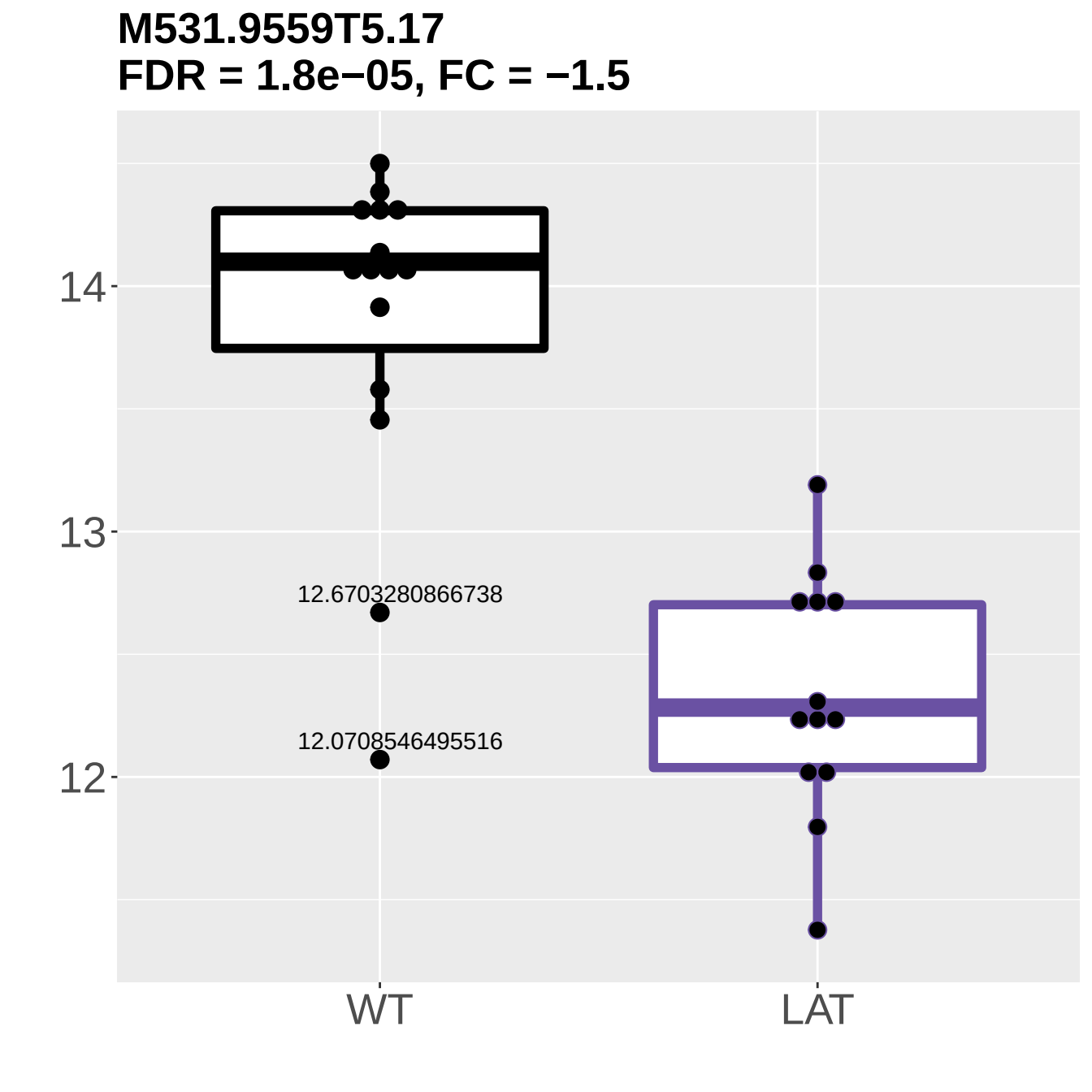
14
13
12
11.961127454669
WT
LAT


M531.9559T5.17
FDR = 1.8e−05, FC = −1.5
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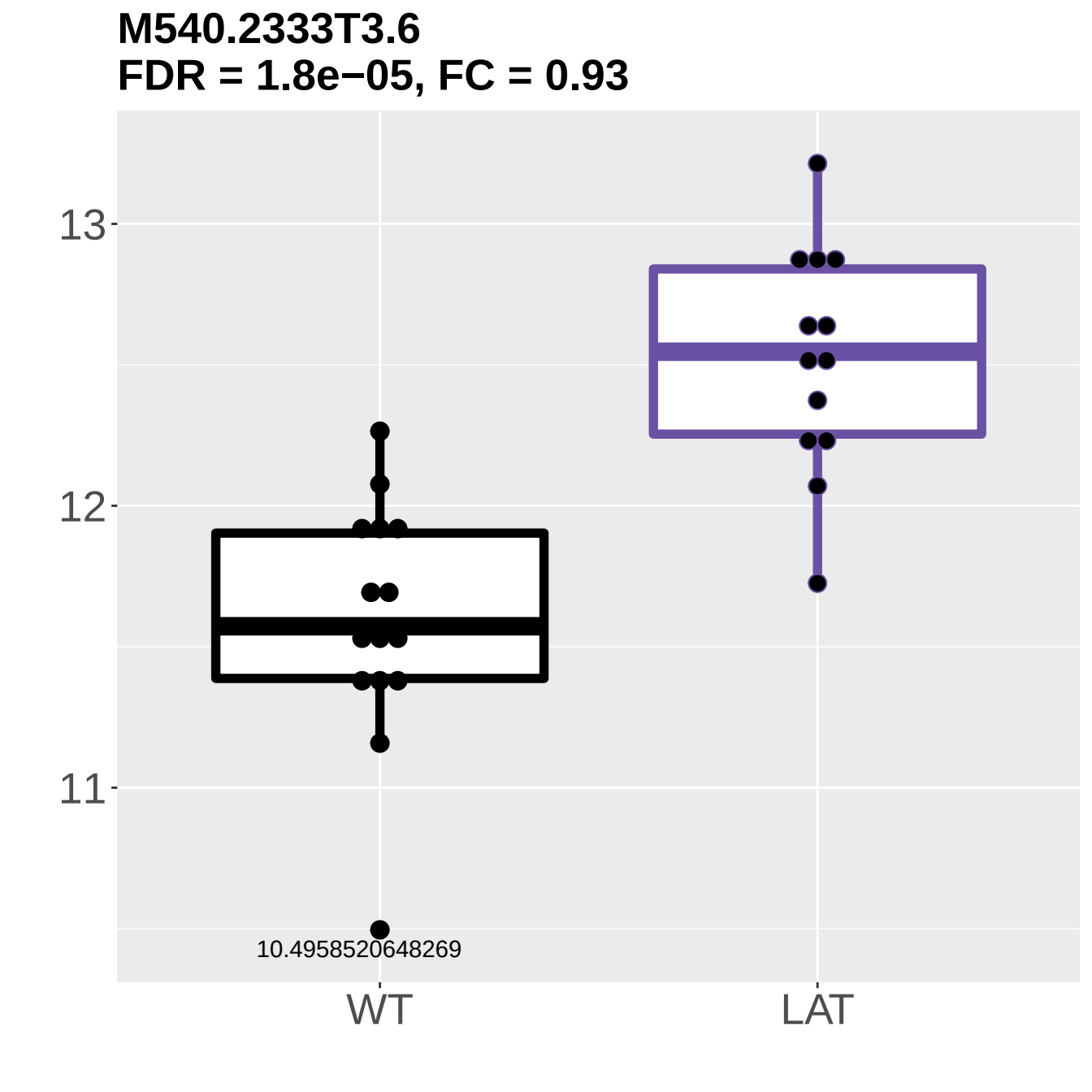
13
12
12.6703280866738
12.0708546495516
WT
LAT


M540.2333T3.6
FDR = 1.8e−05, FC = 0.93
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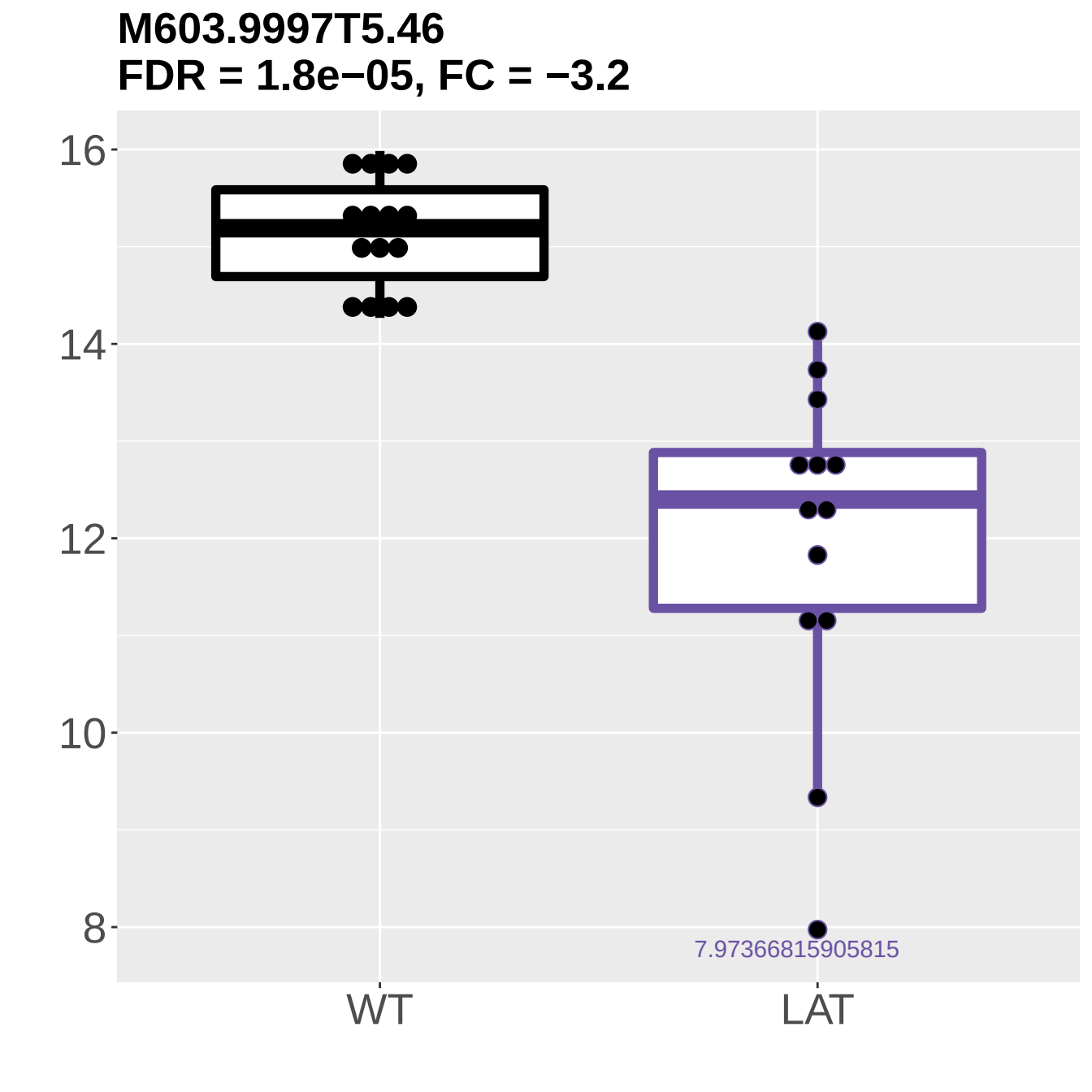
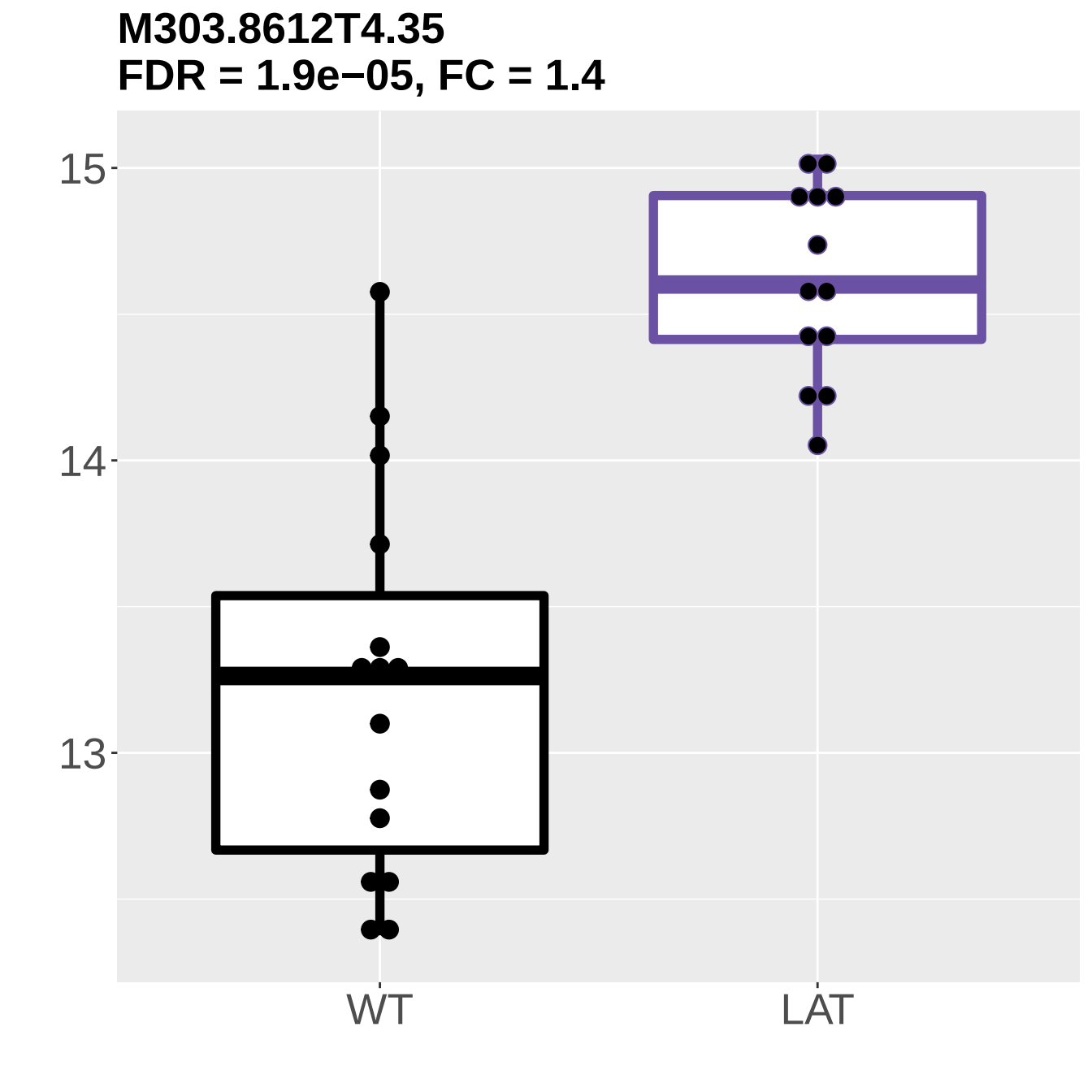
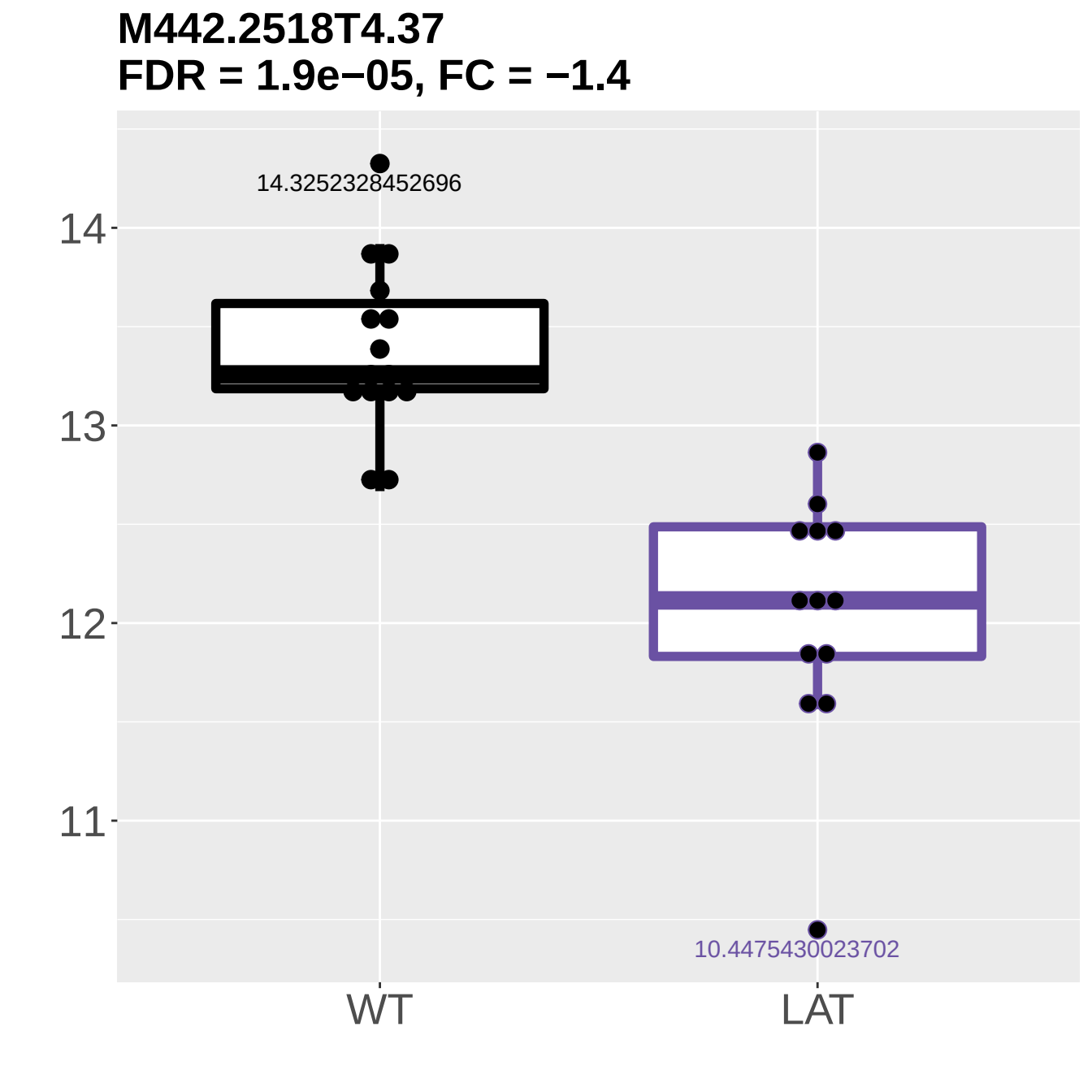
12
11
10.4958520648269
WT
LAT


M603.9997T5.46
FDR = 1.8e−05, FC = −3.2
16
14
12
10
8
7.97366815905815
WT
LAT


M303.8612T4.35
FDR = 1.9e−05, FC = 1.4
15
14
13
WT
LAT


M442.2518T4.37
FDR = 1.9e−05, FC = −1.4
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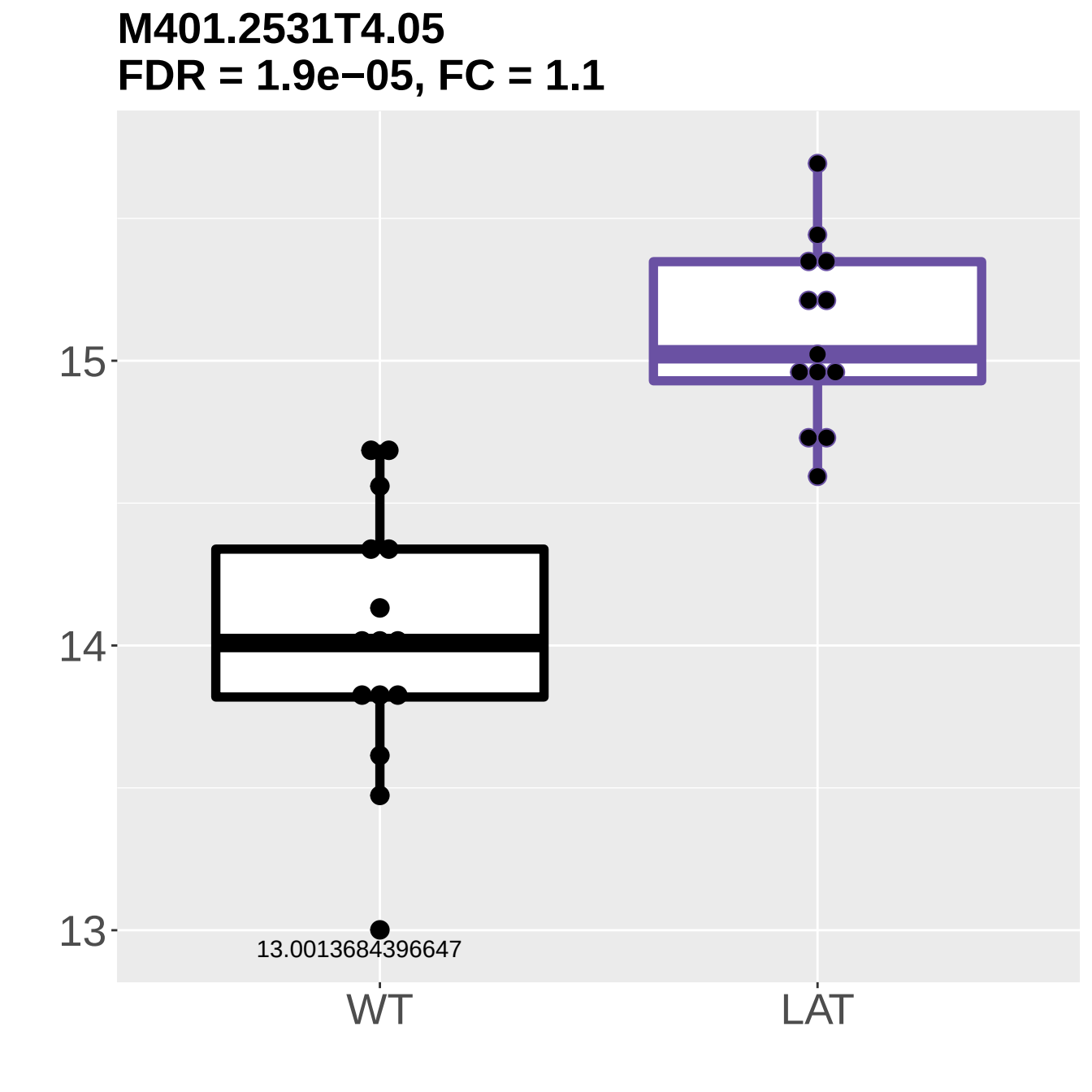
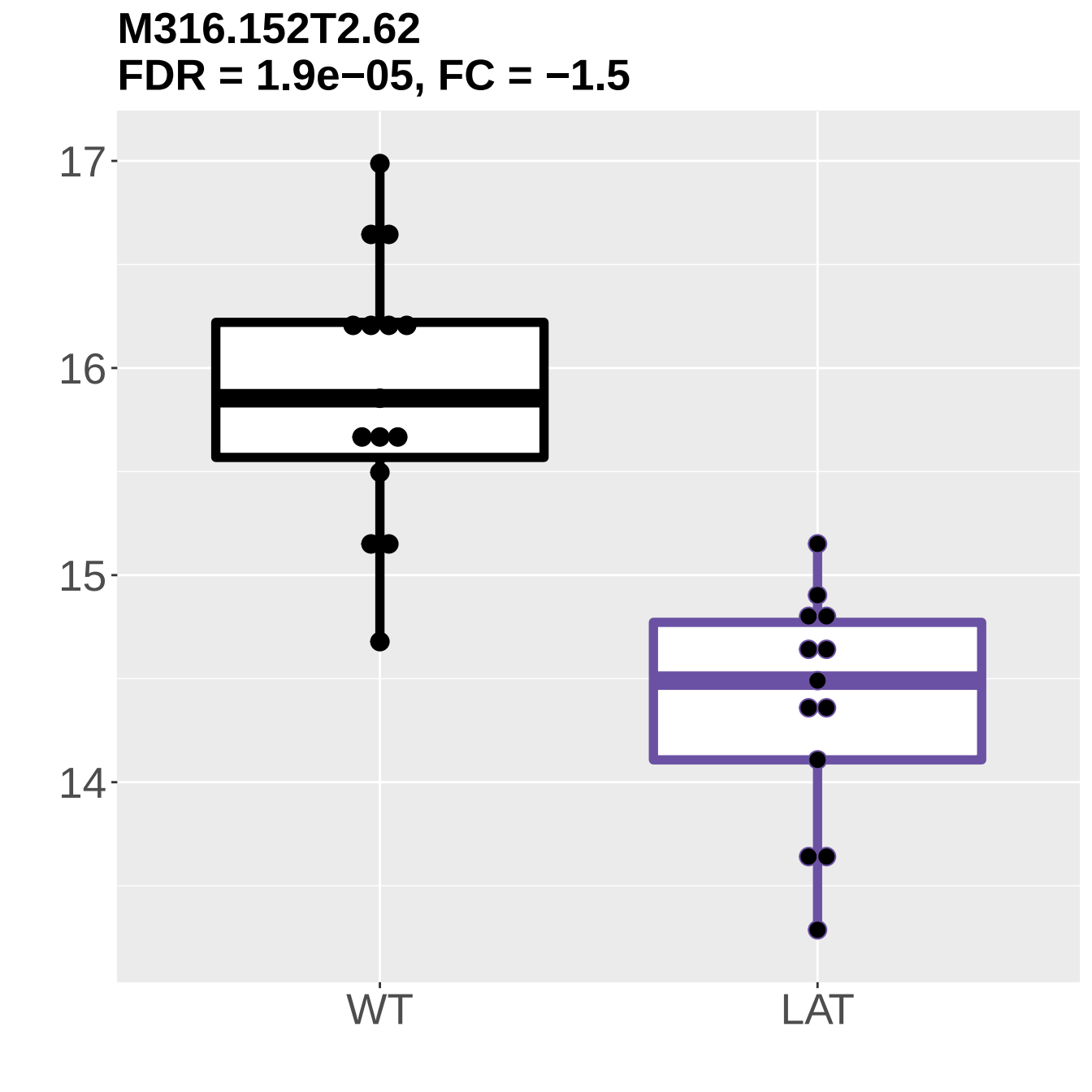
14
13
12
11
10.4475430023702
WT
LAT


M401.2531T4.05
FDR = 1.9e−05, FC = 1.1
15
14
13
13.0013684396647
WT
LAT


M316.152T2.62
FDR = 1.9e−05, FC = −1.5
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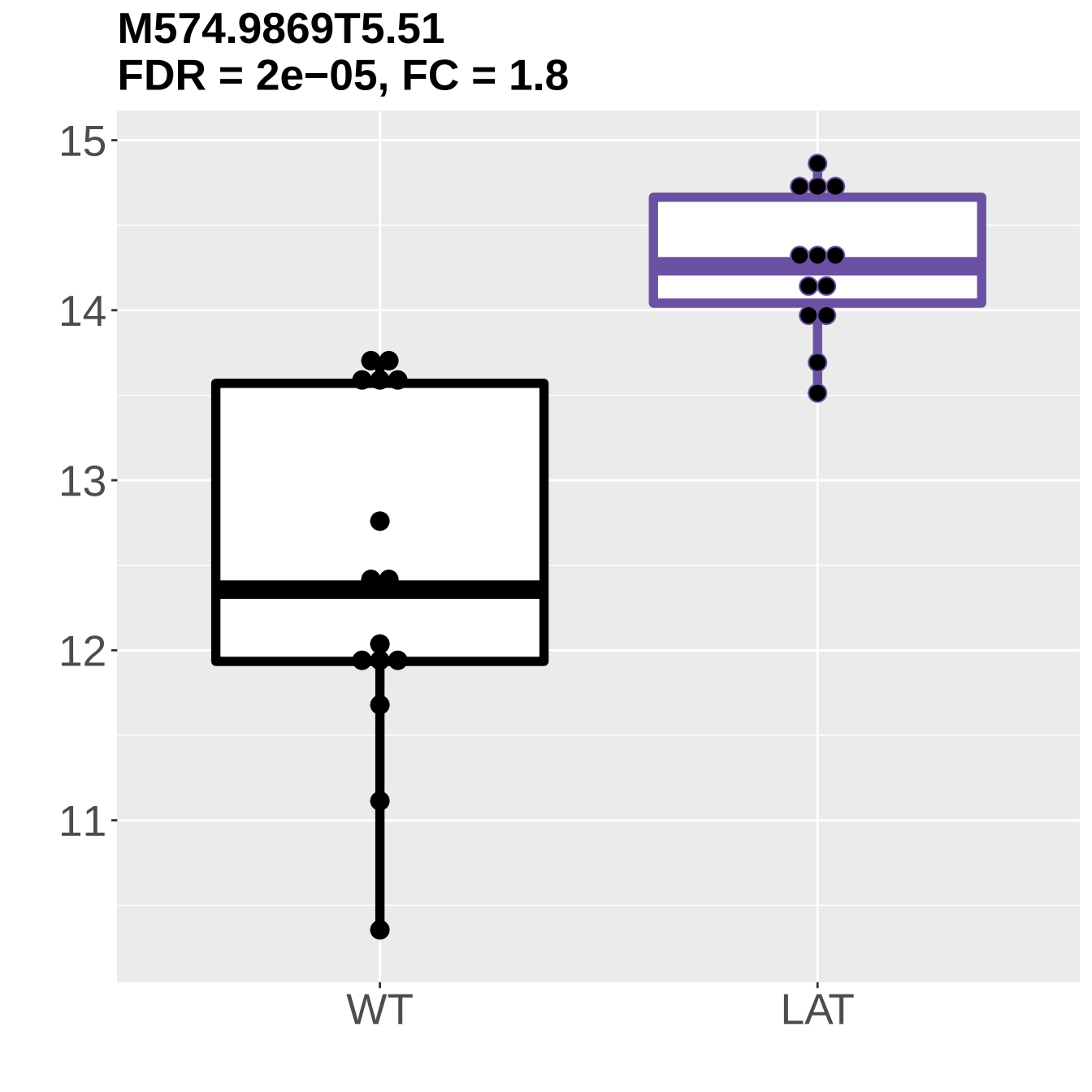
16
15
14
WT
LAT


M574.9869T5.51
FDR = 2e−05, FC = 1.8
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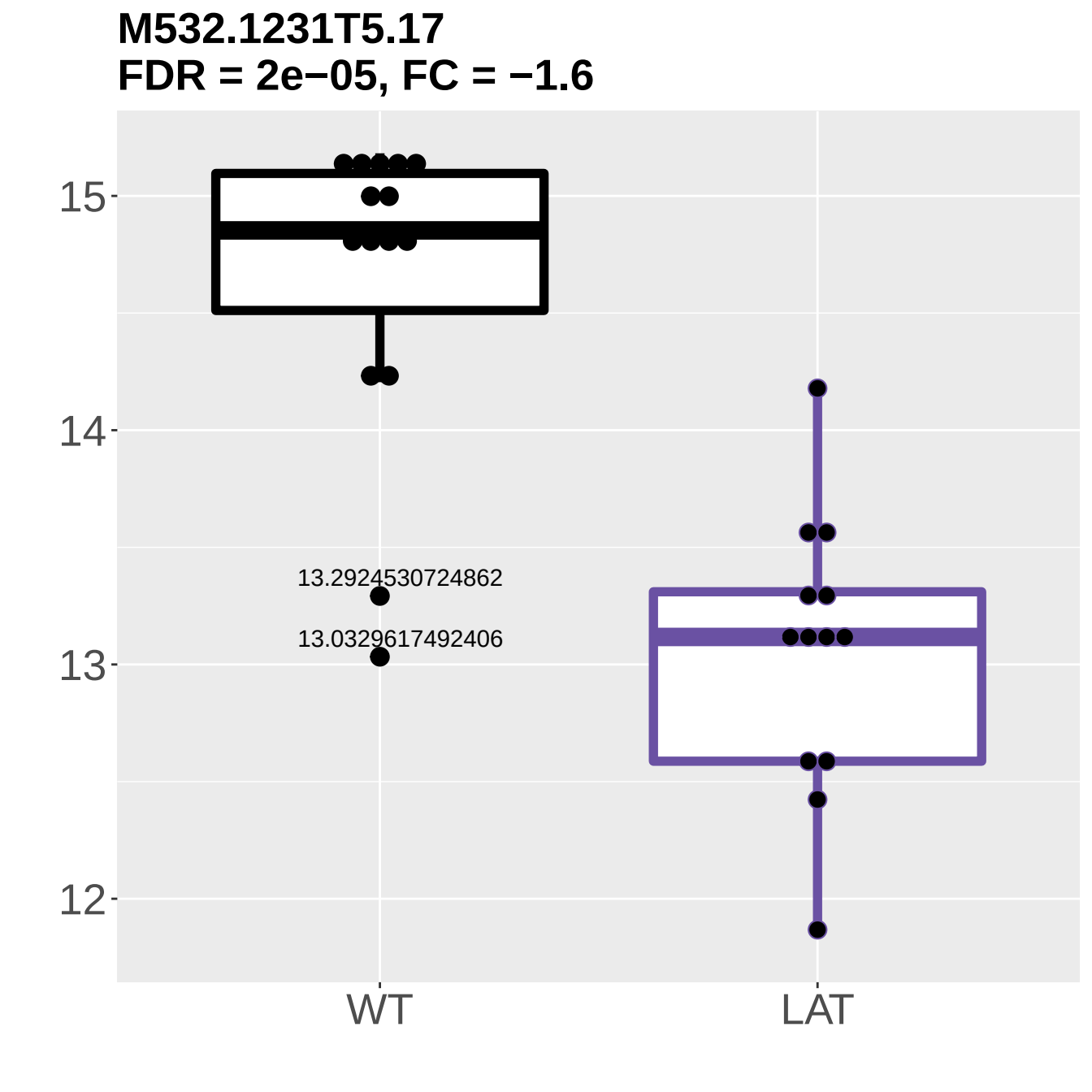
14
13
12
11
WT
LAT


M532.1231T5.17
FDR = 2e−05, FC = −1.6
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14
13
12
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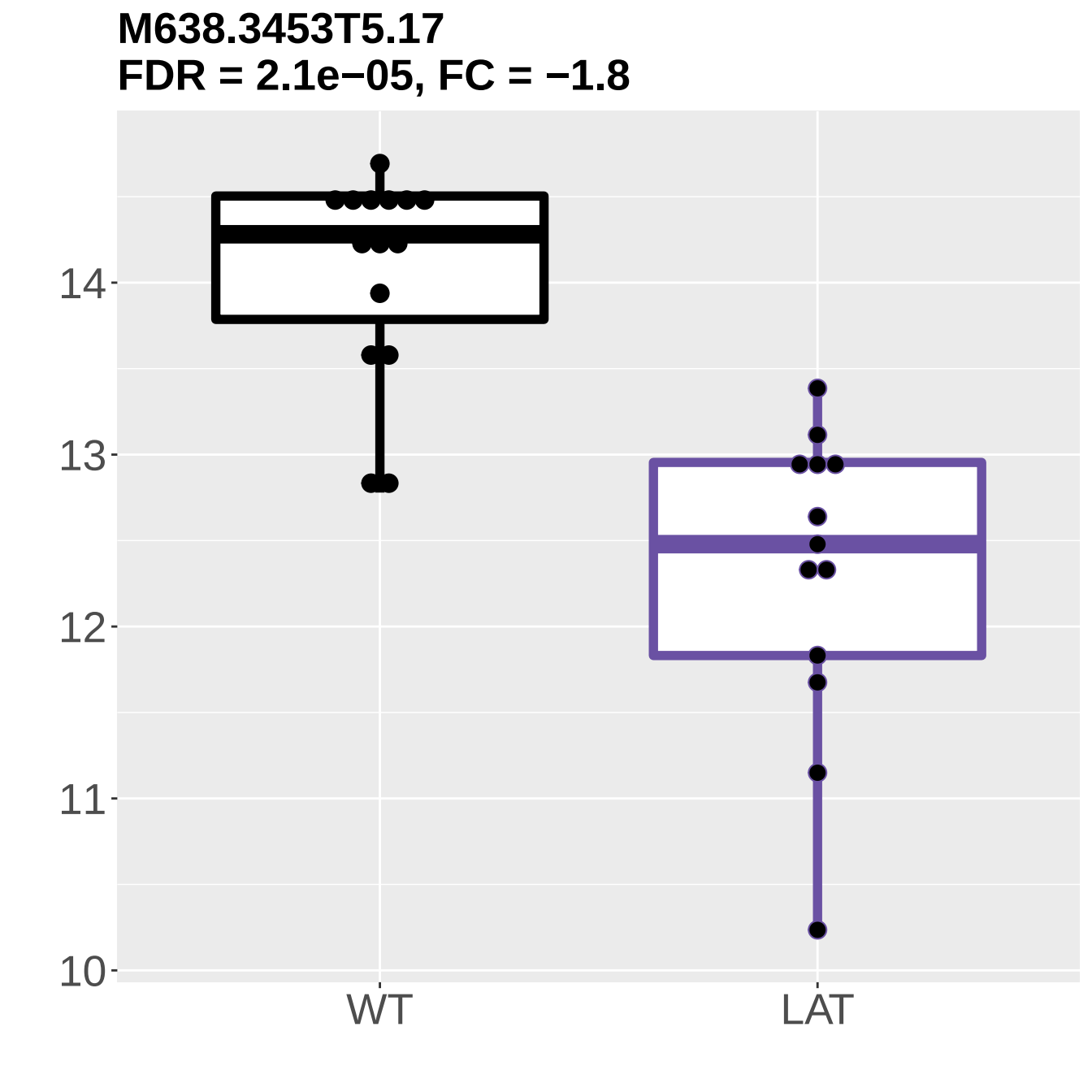
WT
LAT


M638.3453T5.17
FDR = 2.1e−05, FC = −1.8
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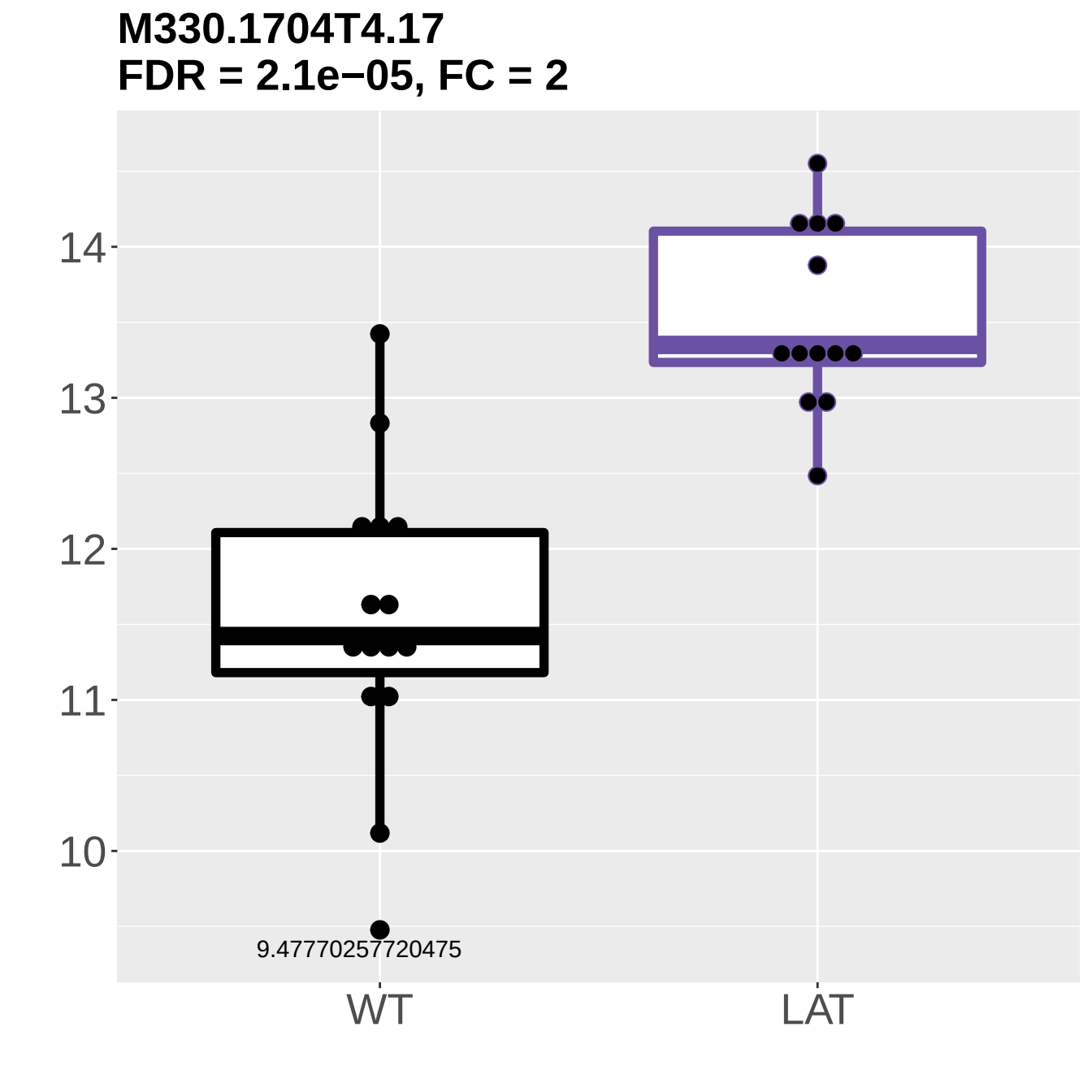
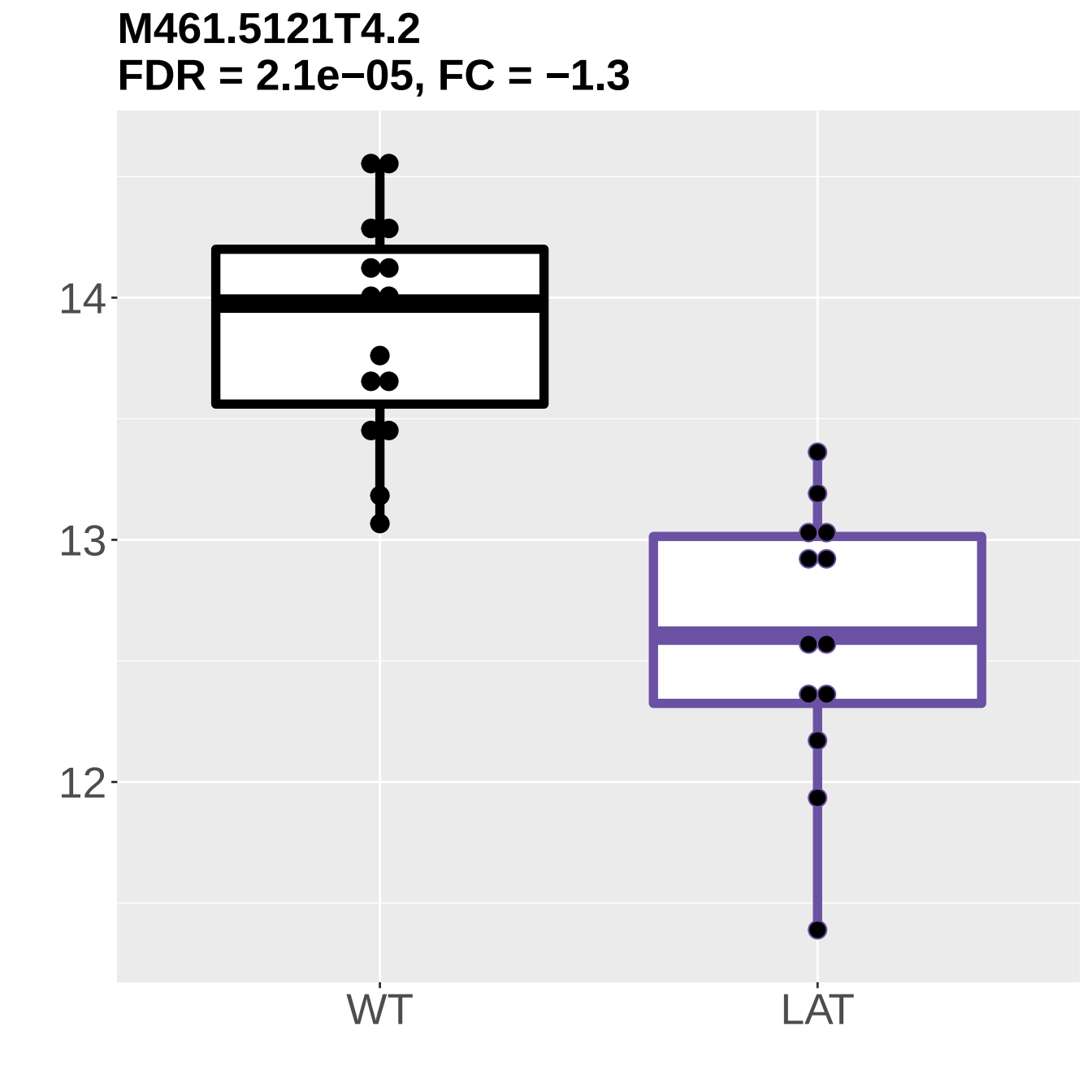
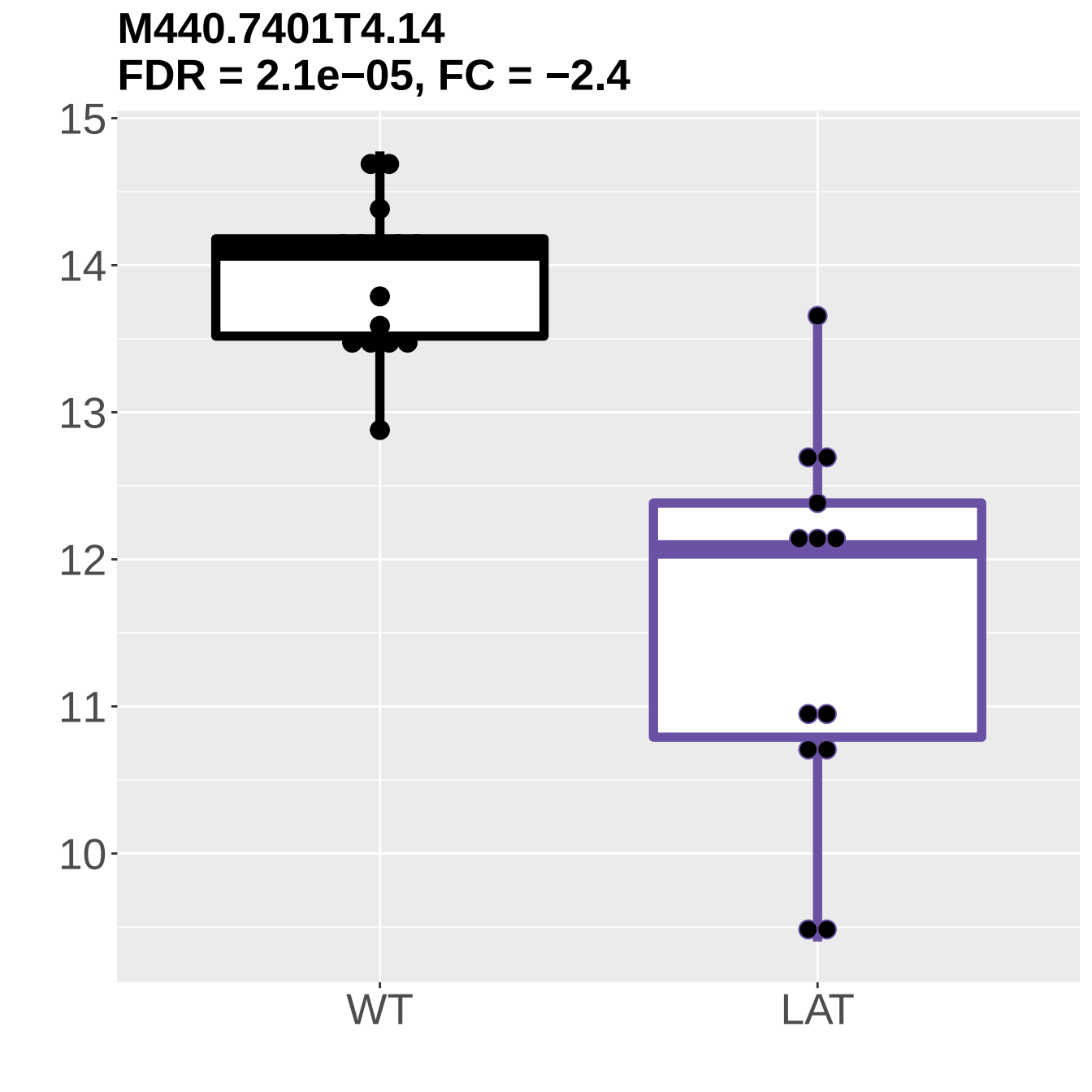
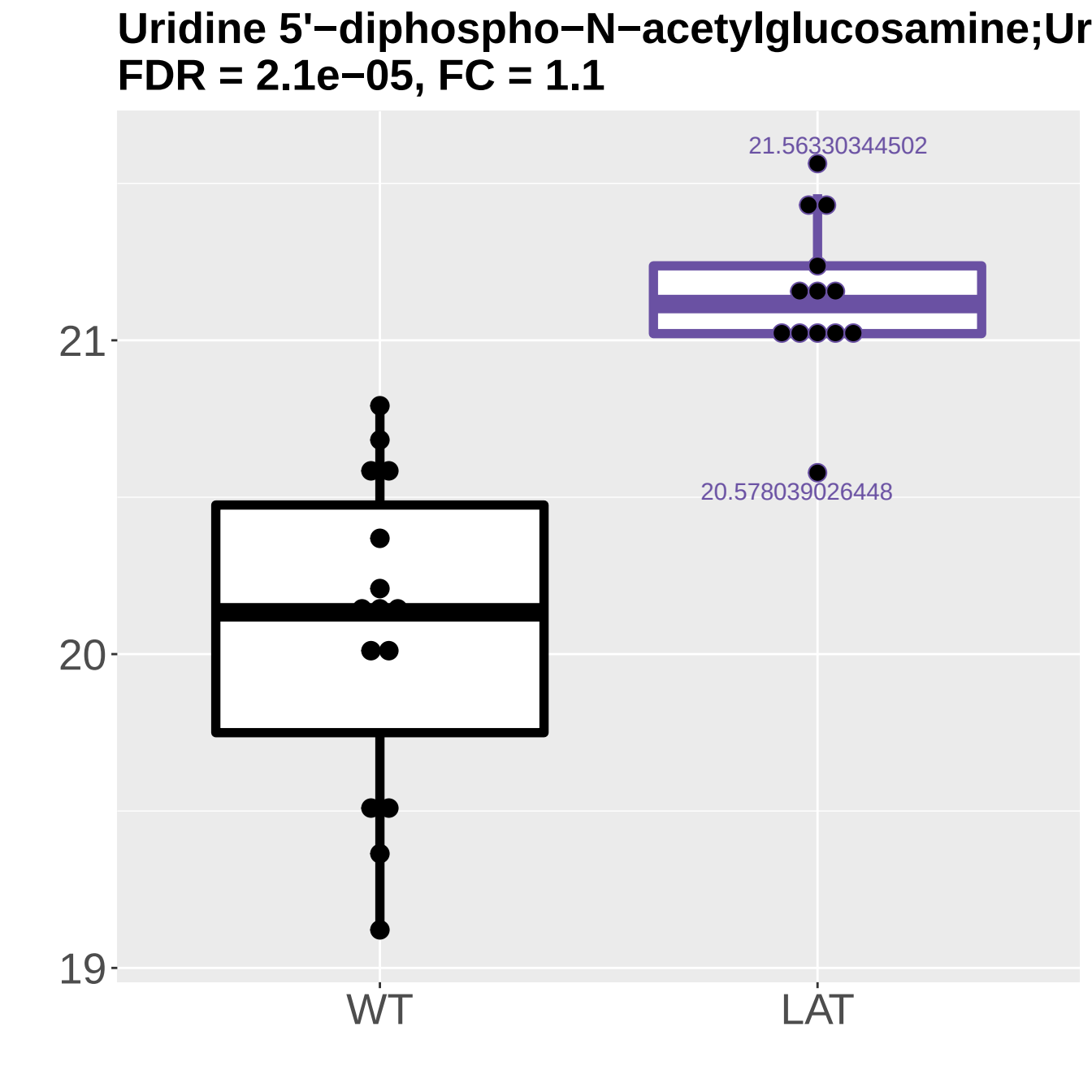
13
12
11
10
WT
LAT


M330.1704T4.17
FDR = 2.1e−05, FC = 2
14
13
12
11
10
9.47770257720475
WT
LAT


M461.5121T4.2
FDR = 2.1e−05, FC = −1.3
14
13
12
WT
LAT


M440.7401T4.14
FDR = 2.1e−05, FC = −2.4
15
14
13
12
11
10
WT
LAT


Uridine 5'−diphospho−N−acetylglucosamine;Ur
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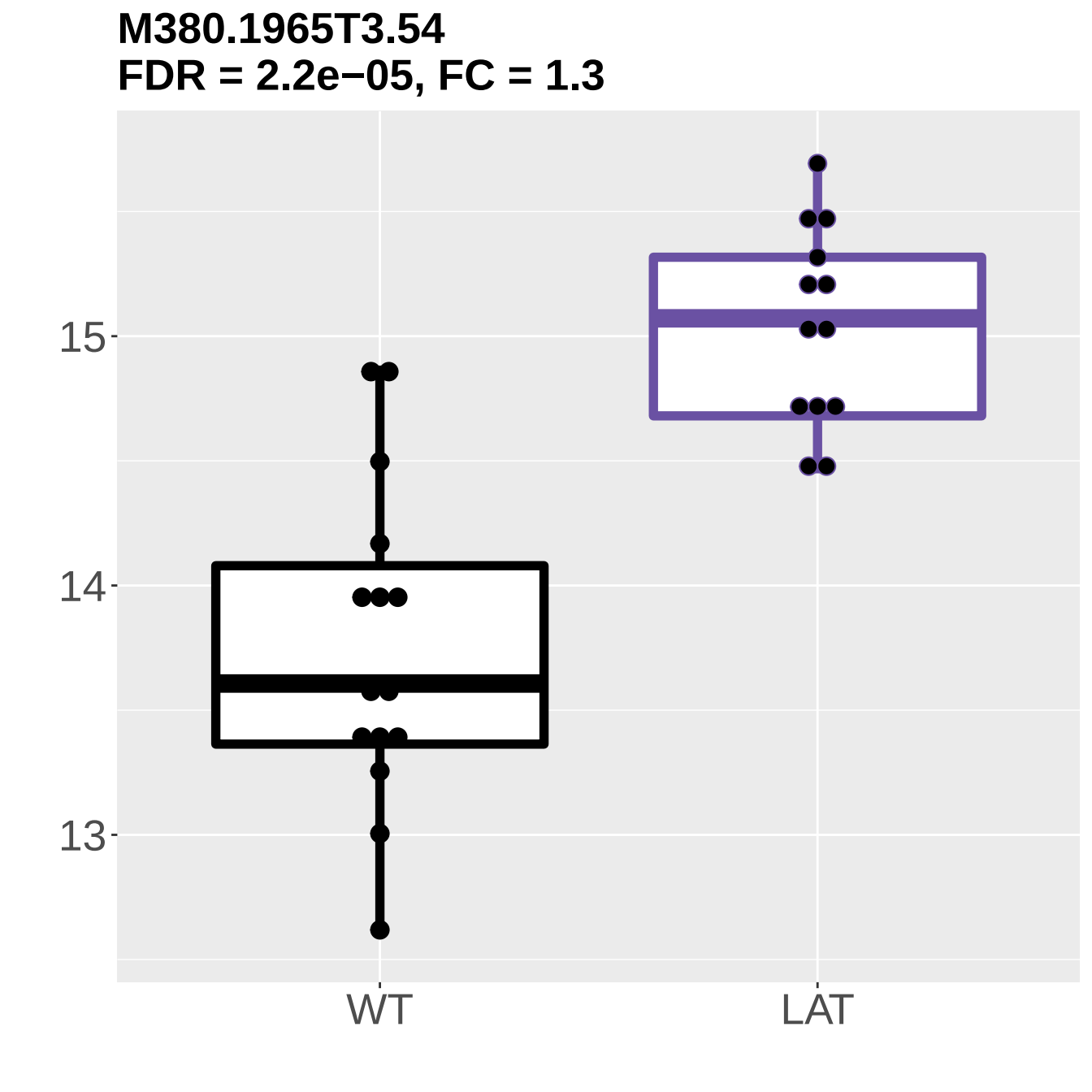
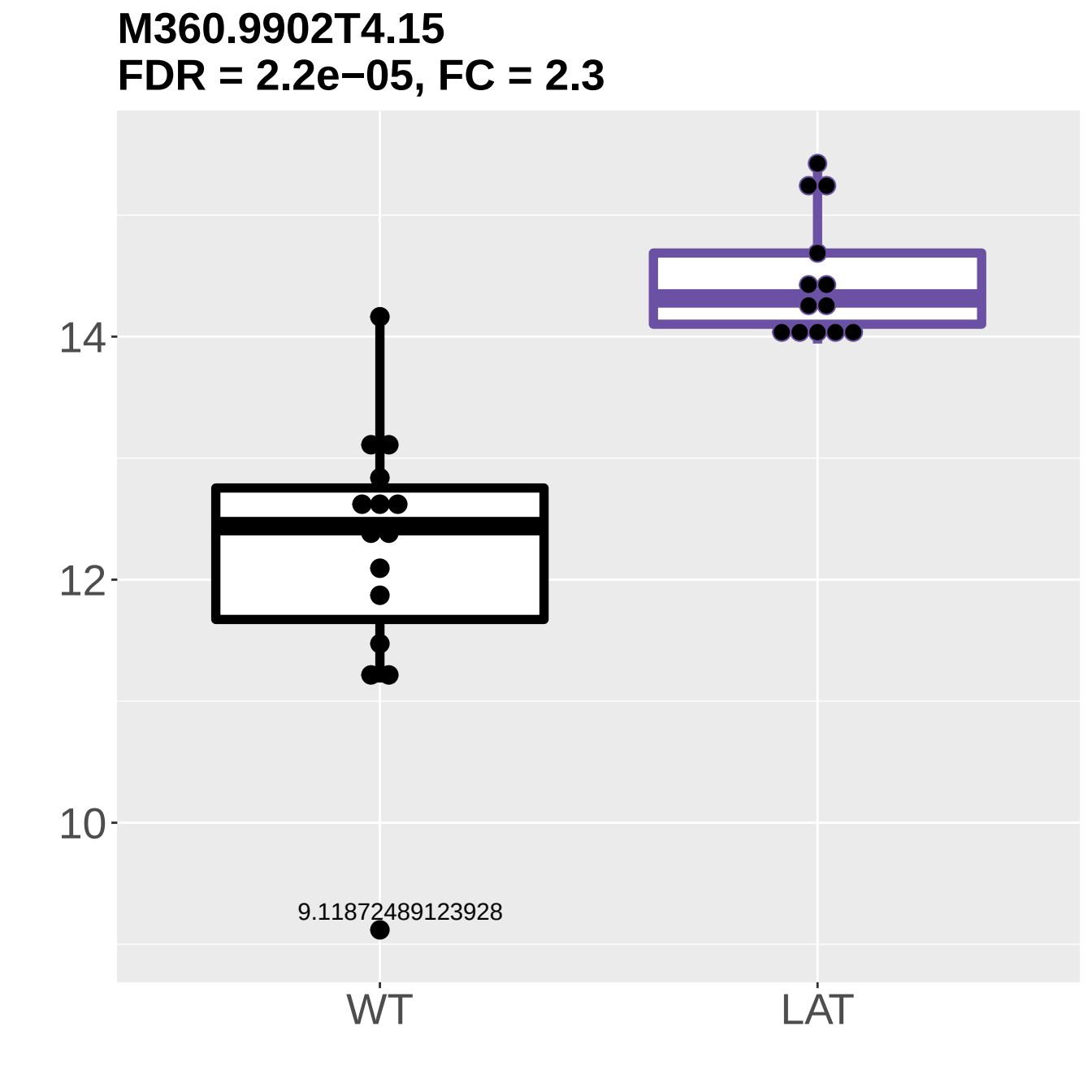
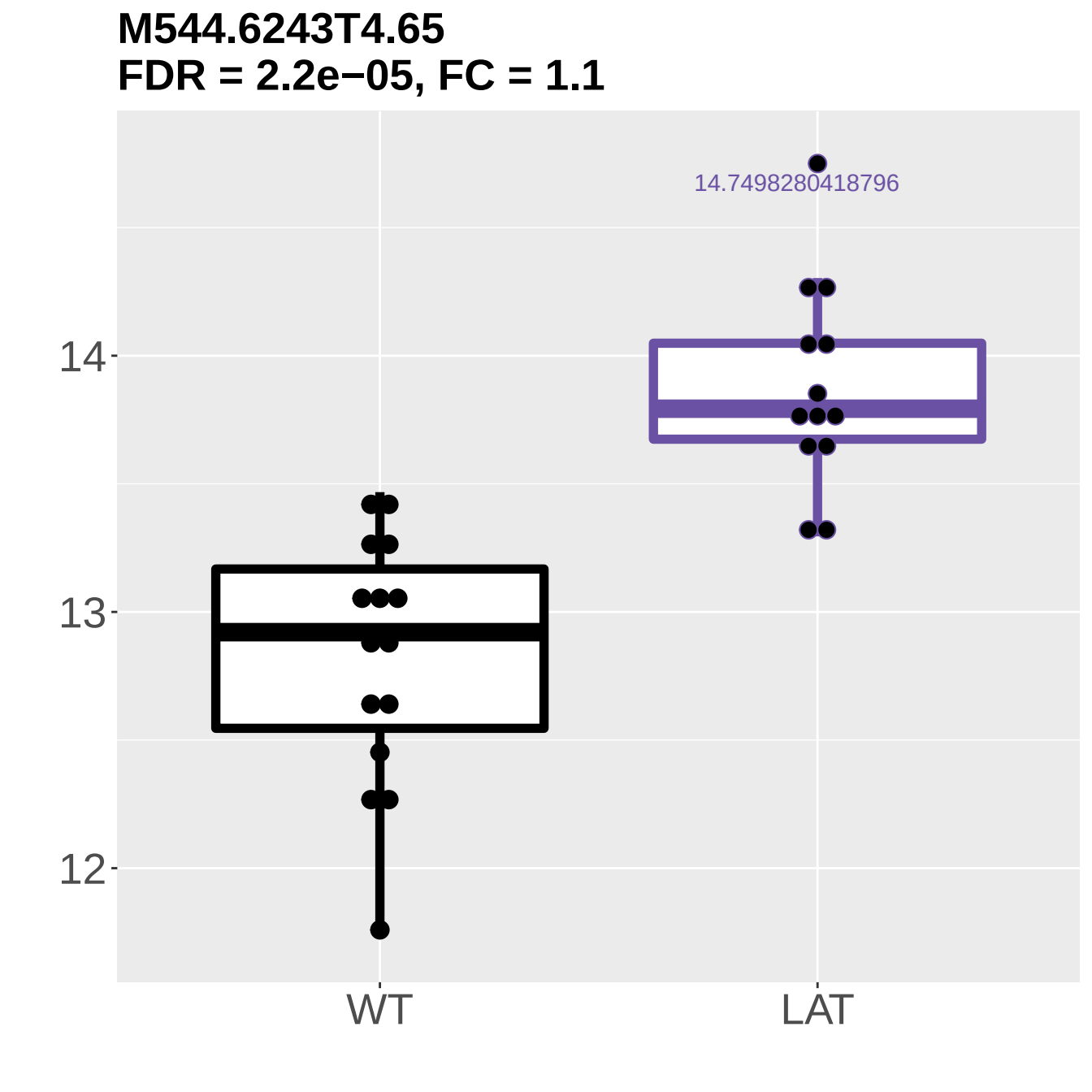
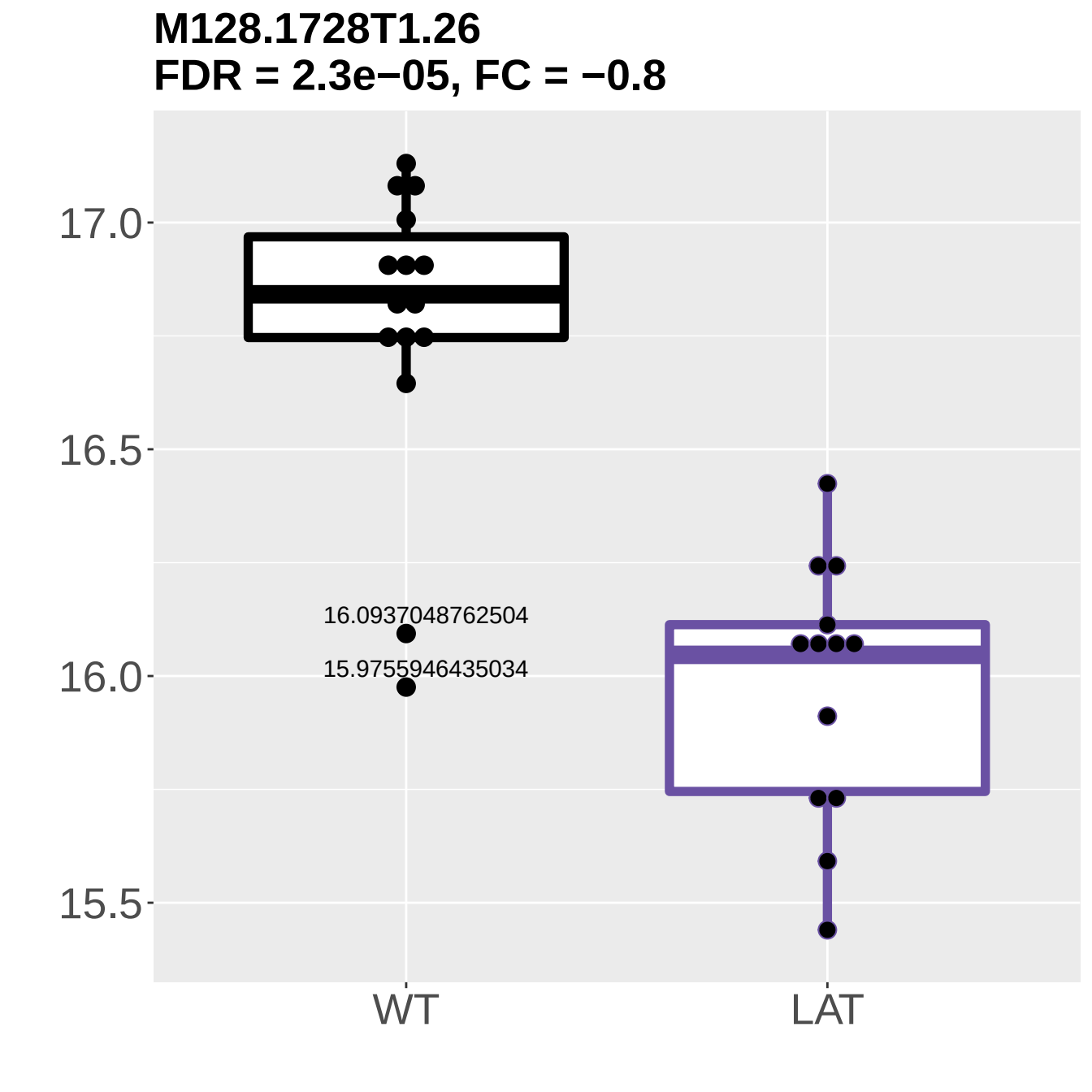
20.578039026448
21
20
19
WT
LAT


M380.1965T3.54
FDR = 2.2e−05, FC = 1.3
15
14
13
WT
LAT


M360.9902T4.15
FDR = 2.2e−05, FC = 2.3
14
12
10
9.11872489123928
WT
LAT


M544.6243T4.65
FDR = 2.2e−05, FC = 1.1
14.7498280418796
14
13
12
WT
LAT


M128.1728T1.26
FDR = 2.3e−05, FC = −0.8
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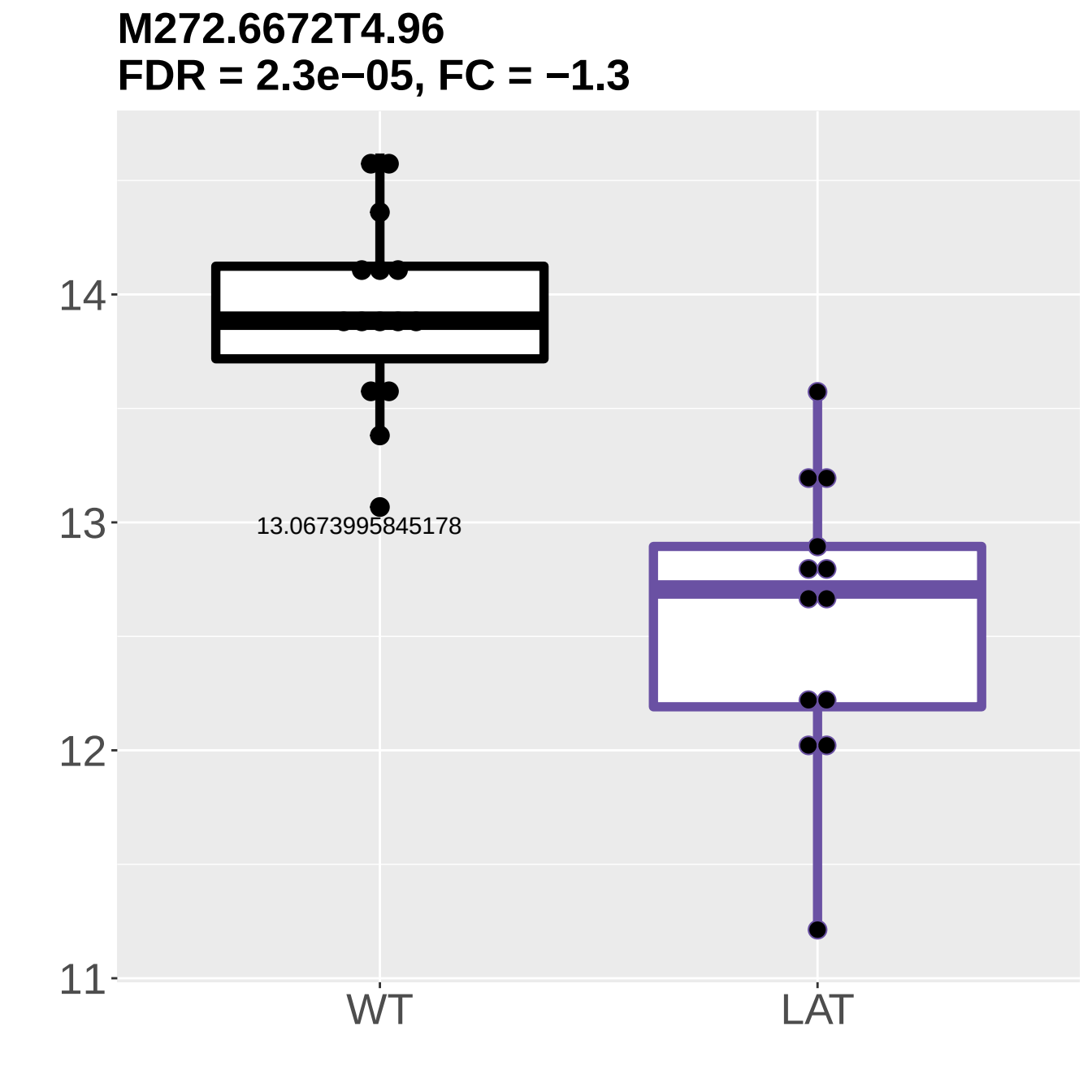
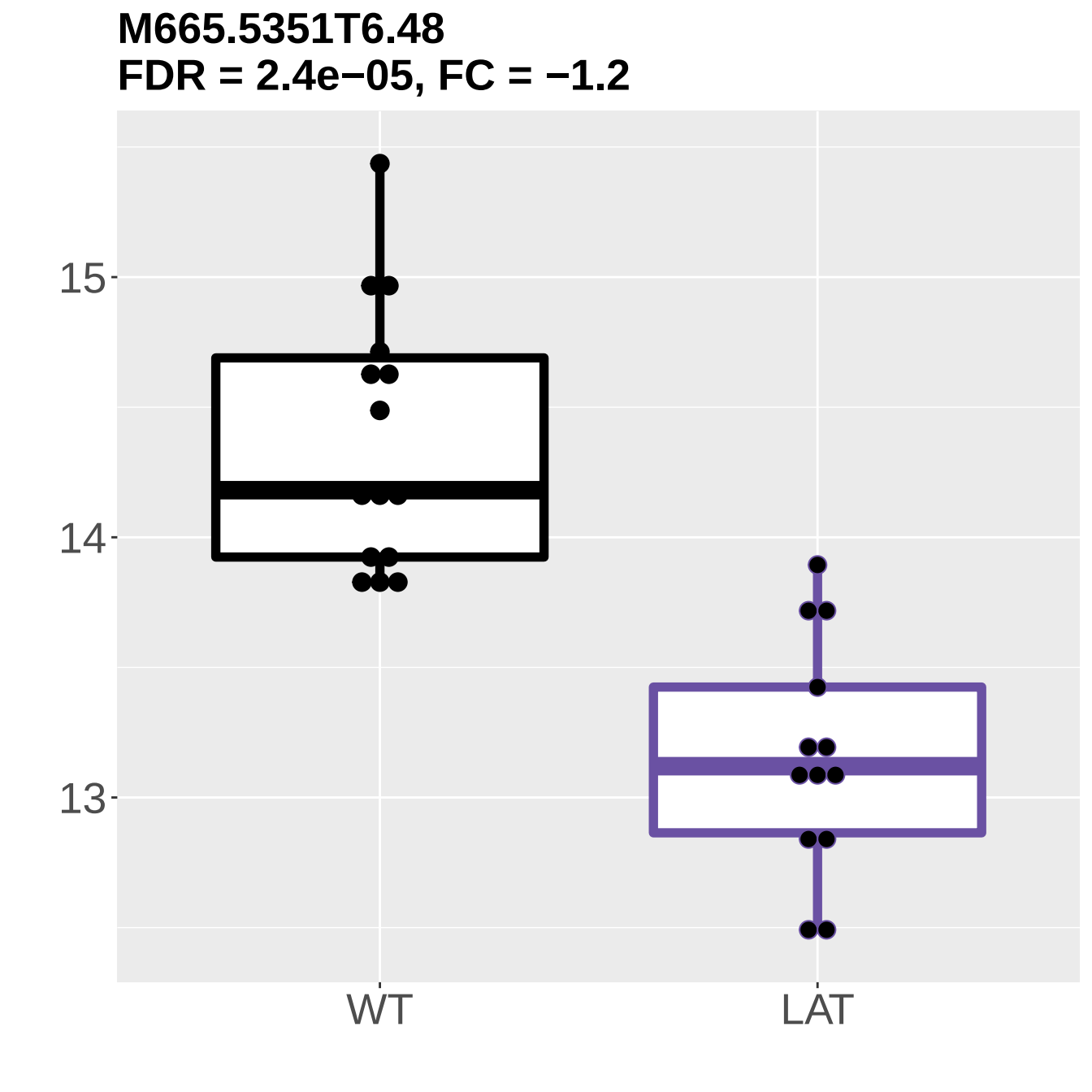
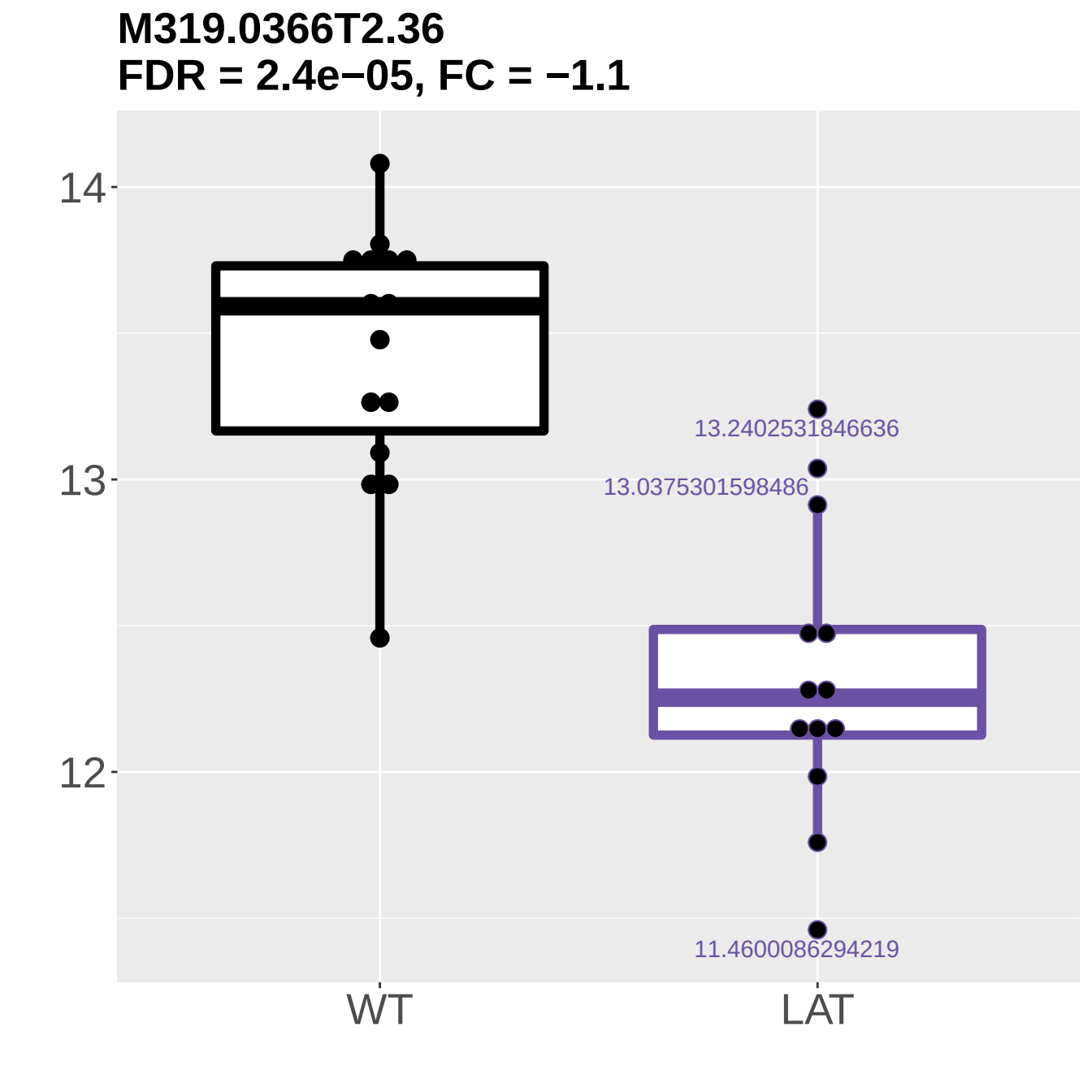
16.5
16.0
15.5
16.0937048762504
15.9755946435034
WT
LAT


M272.6672T4.96
FDR = 2.3e−05, FC = −1.3
14
13
12
11
13.0673995845178
WT
LAT


M665.5351T6.48
FDR = 2.4e−05, FC = −1.2
15
14
13
WT
LAT


M319.0366T2.36
FDR = 2.4e−05, FC = −1.1
14
13
12
13.2402531846636
13.0375301598486
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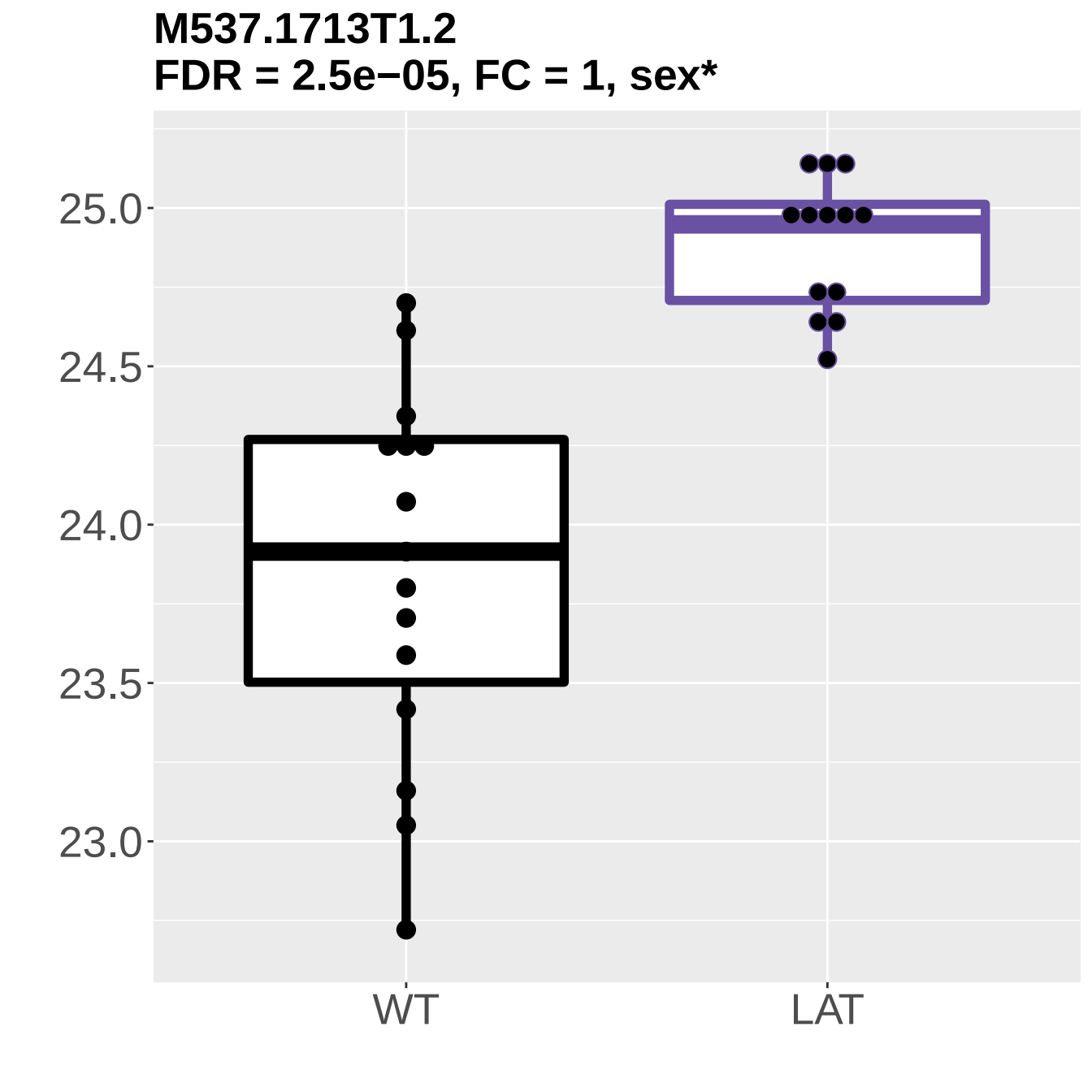
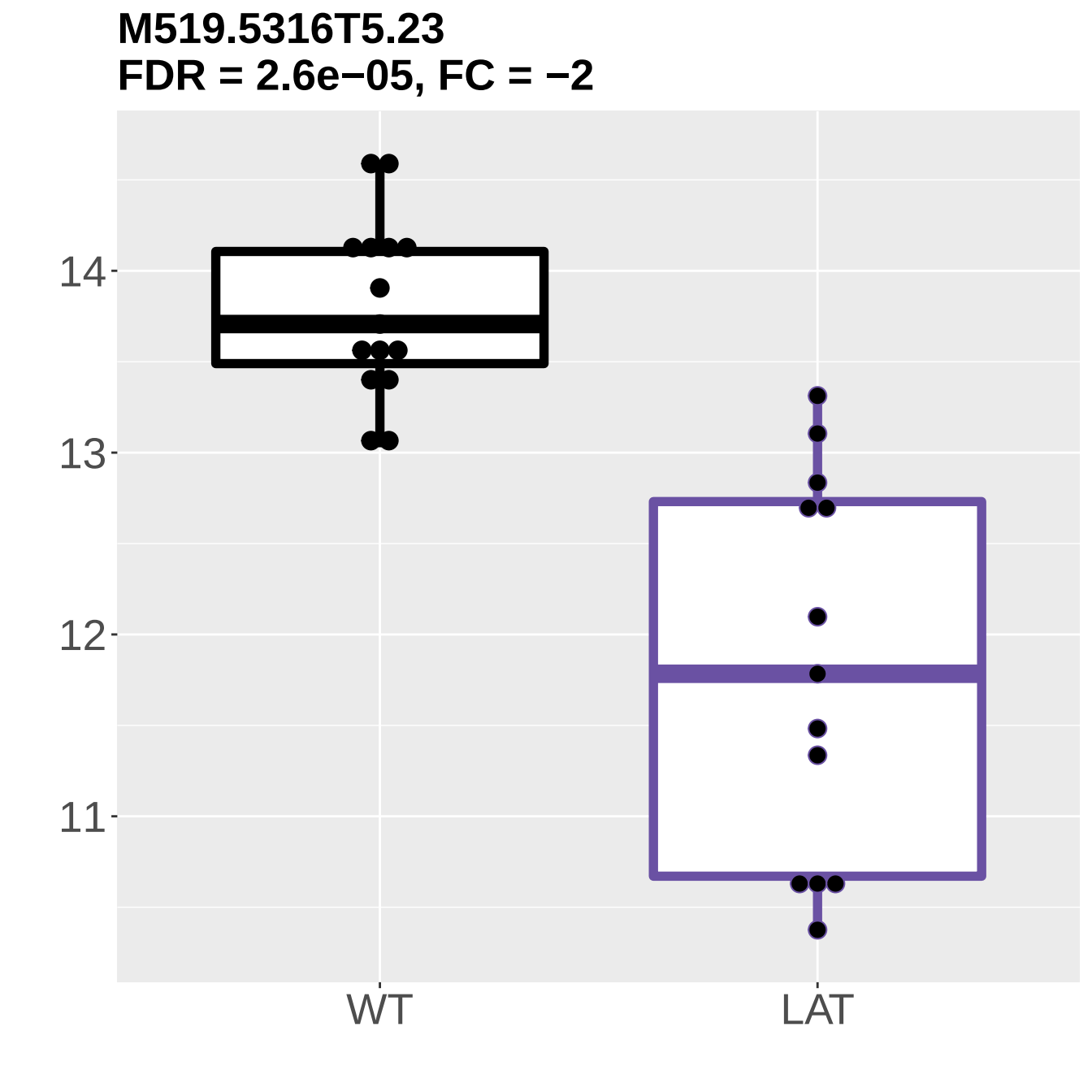
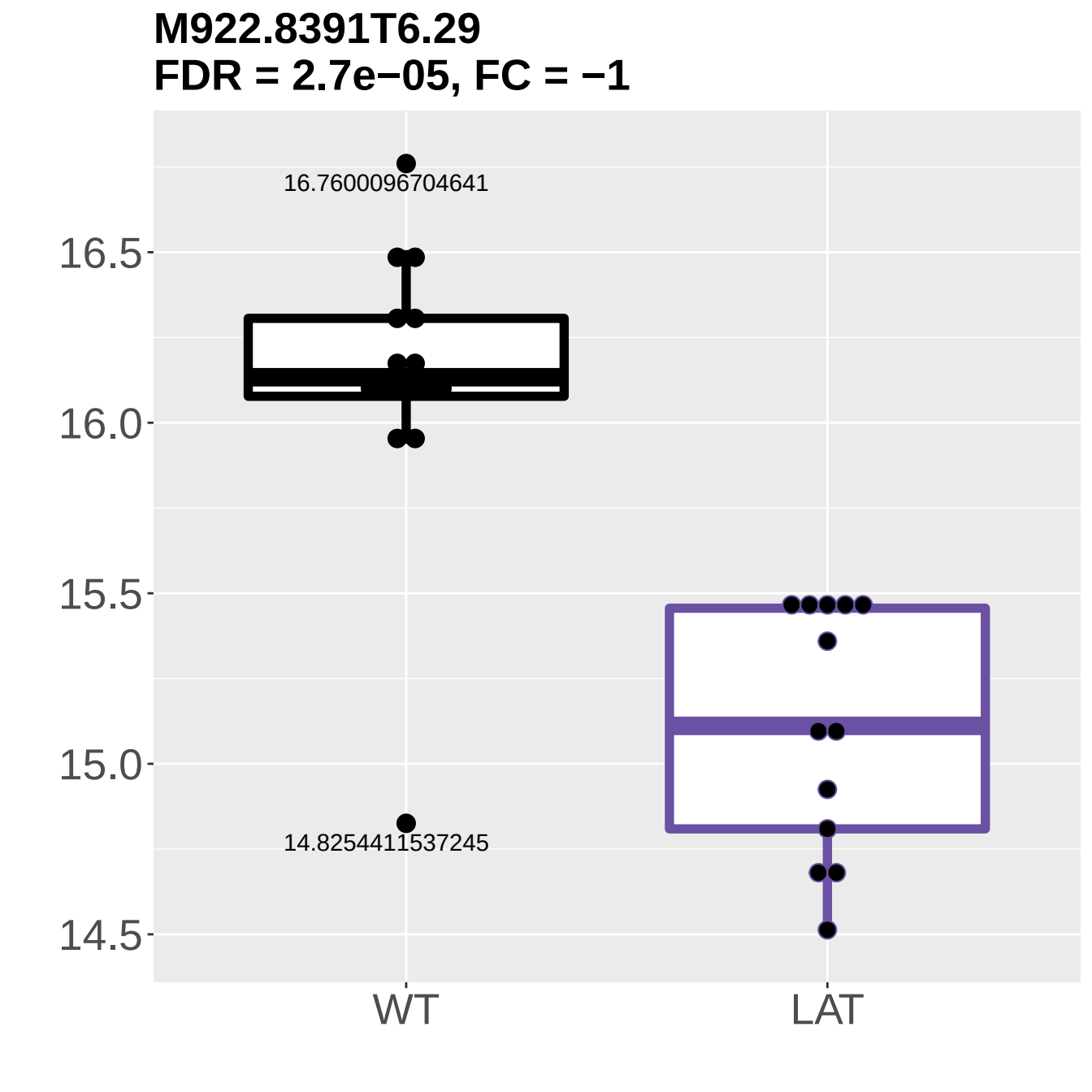
WT
LAT


M537.1713T1.2
FDR = 2.5e−05, FC = 1, sex*
25.0
24.5
24.0
23.5
23.0
WT
LAT


M519.5316T5.23
FDR = 2.6e−05, FC = −2
14
13
12
11
WT
LAT


M922.8391T6.29
FDR = 2.7e−05, FC = −1
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14.8254411537245
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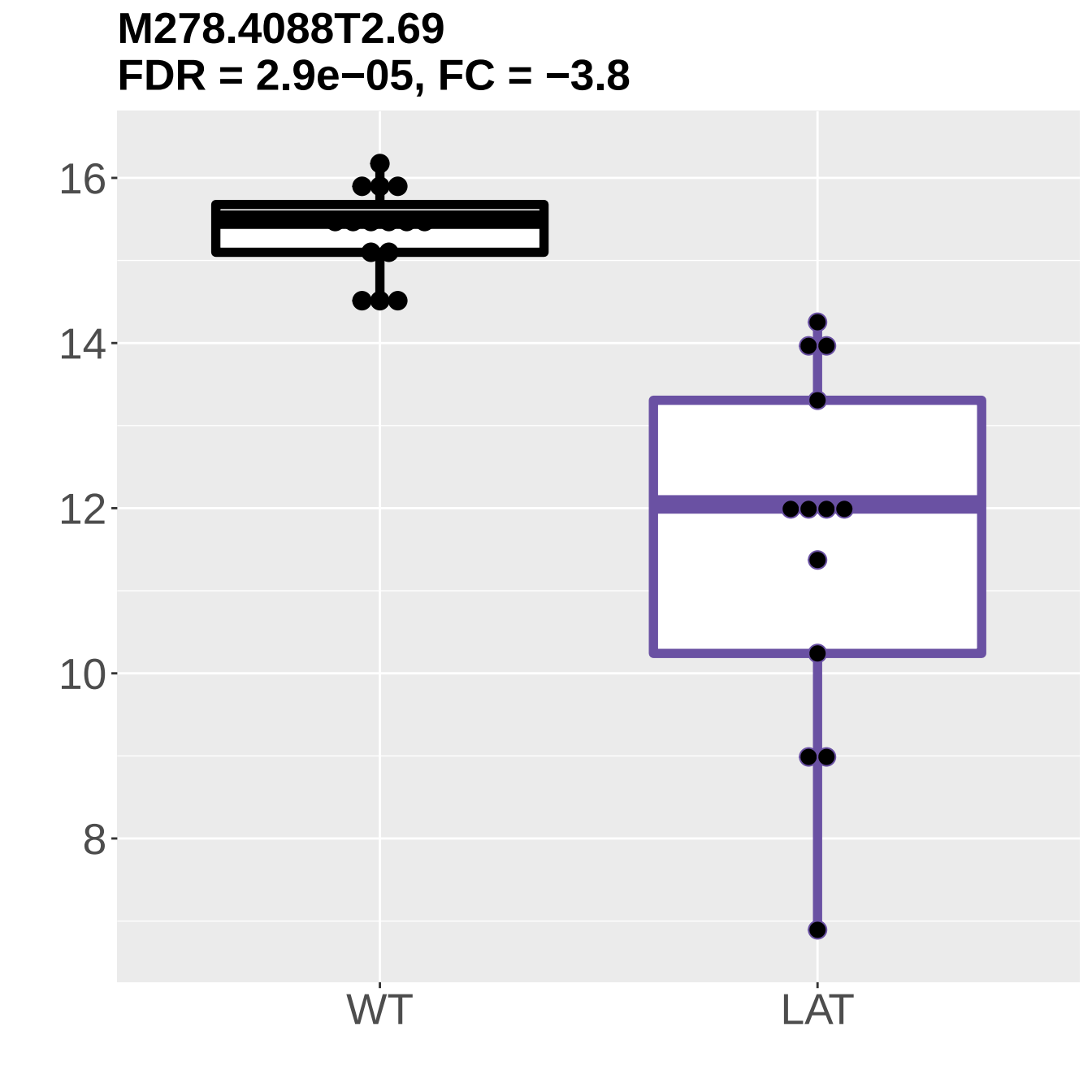
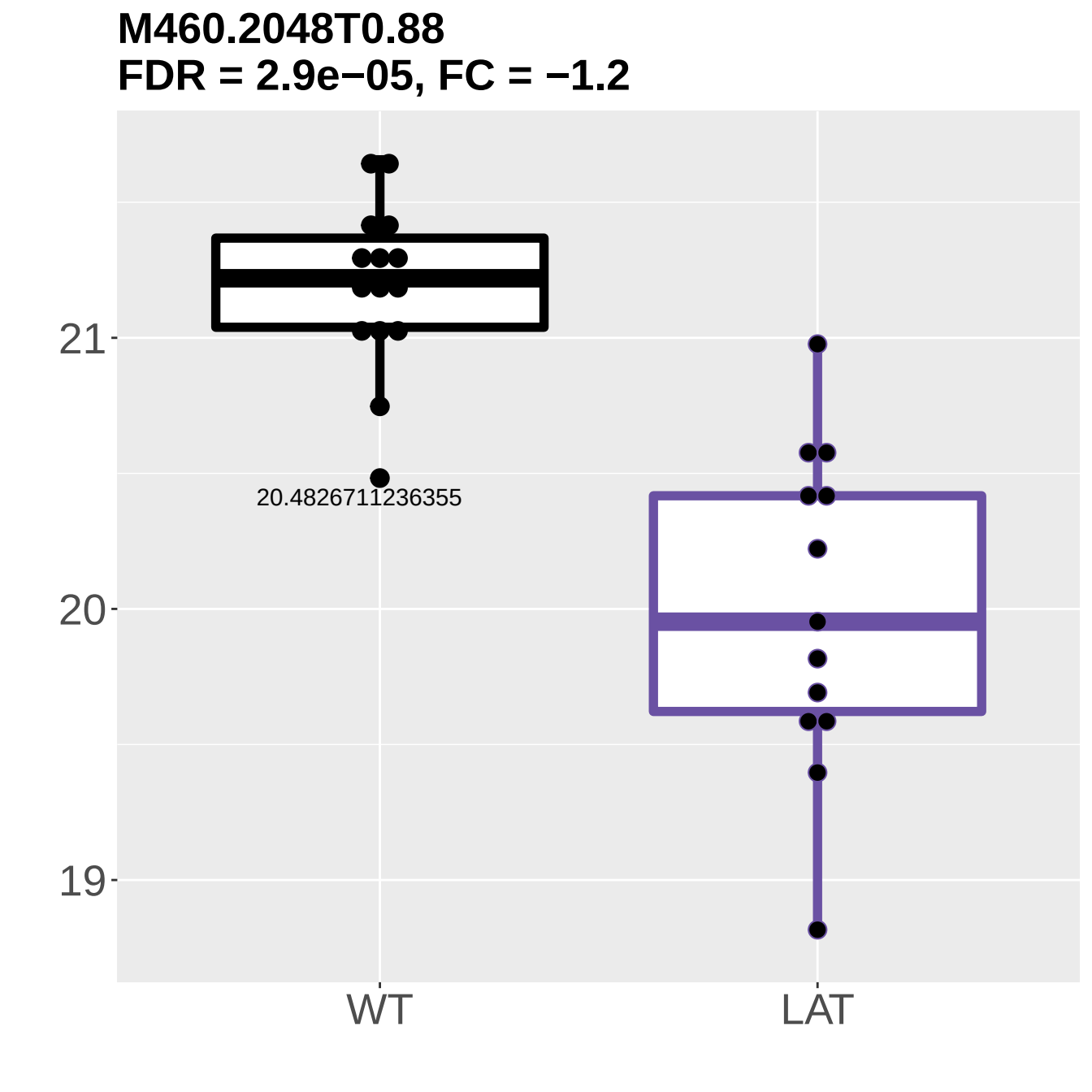
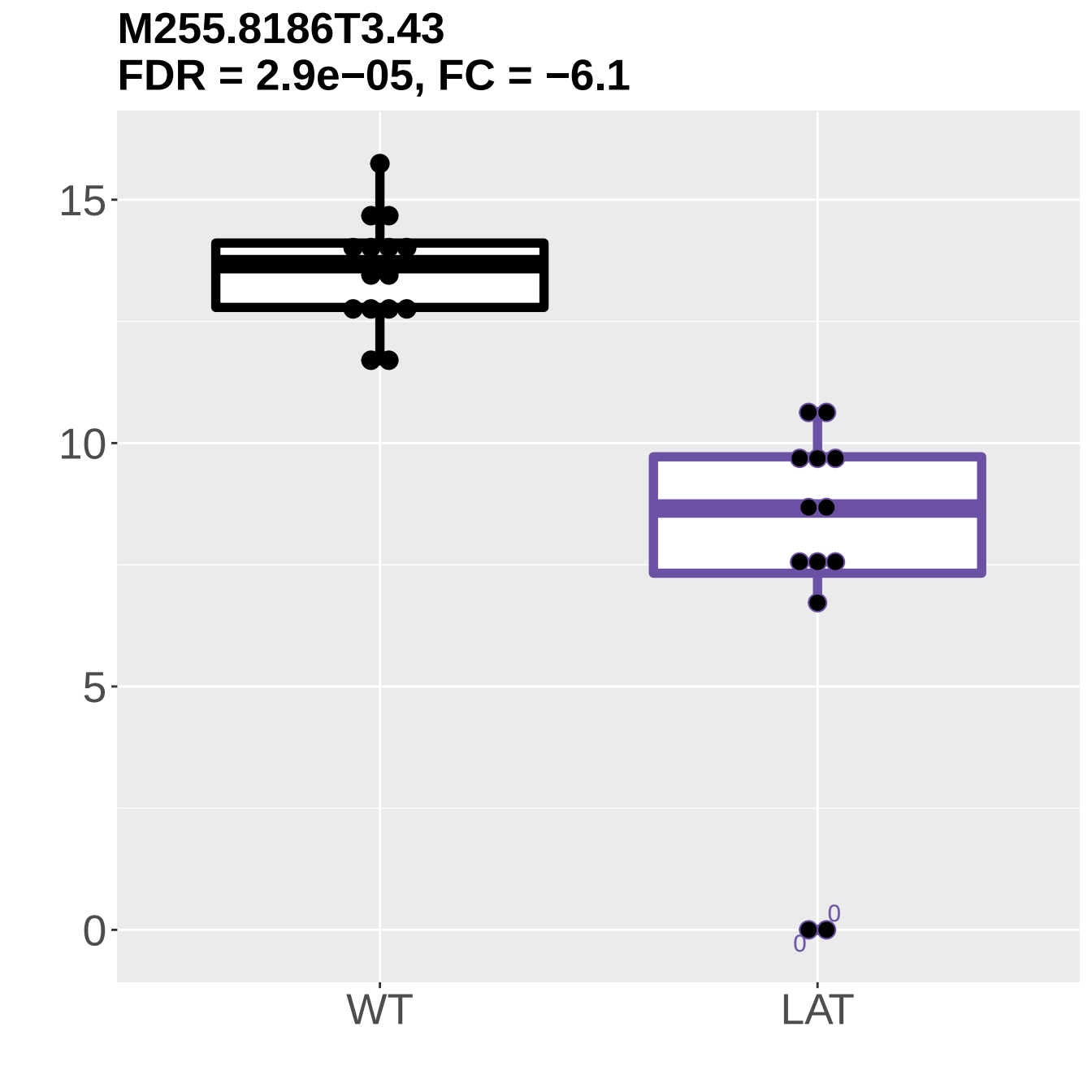
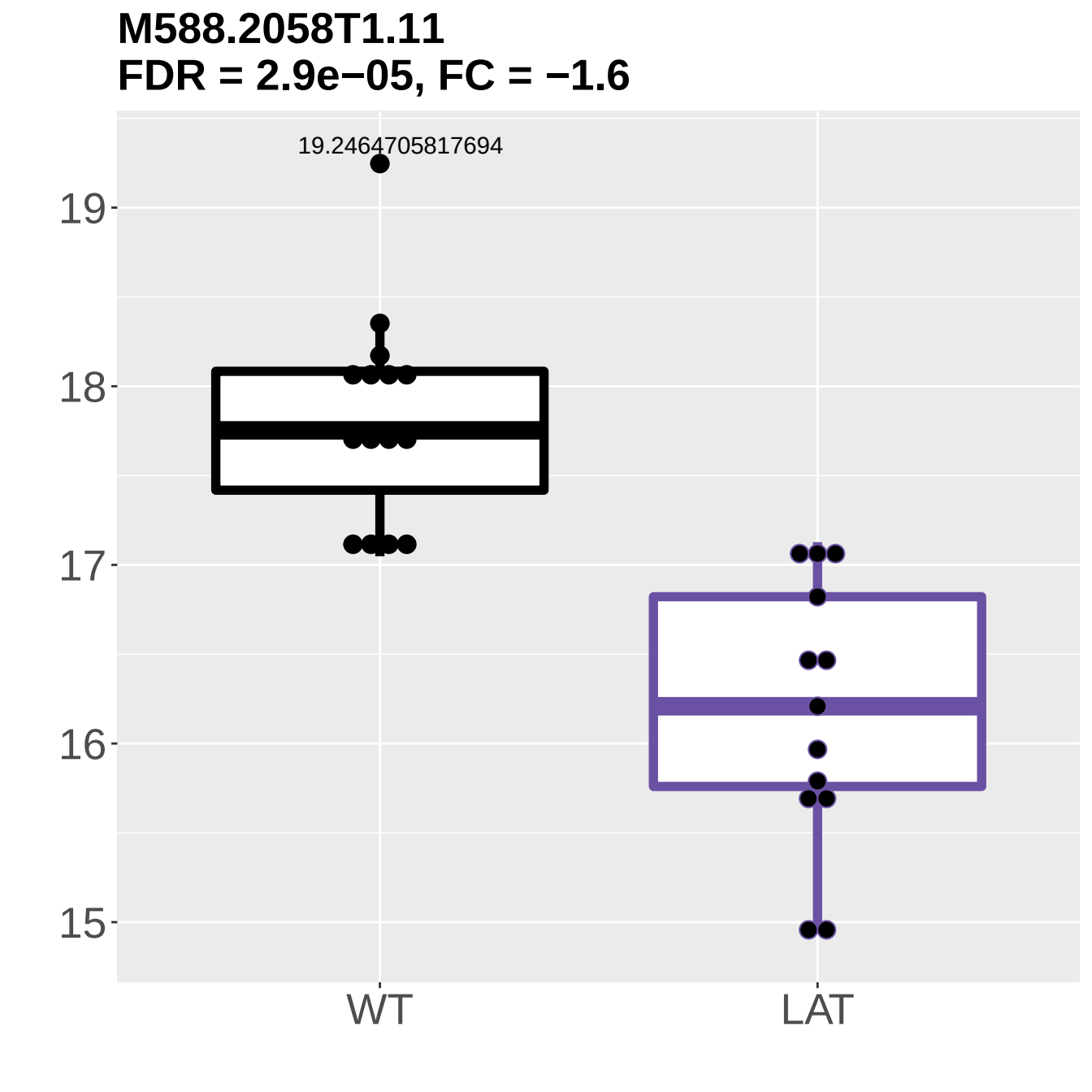
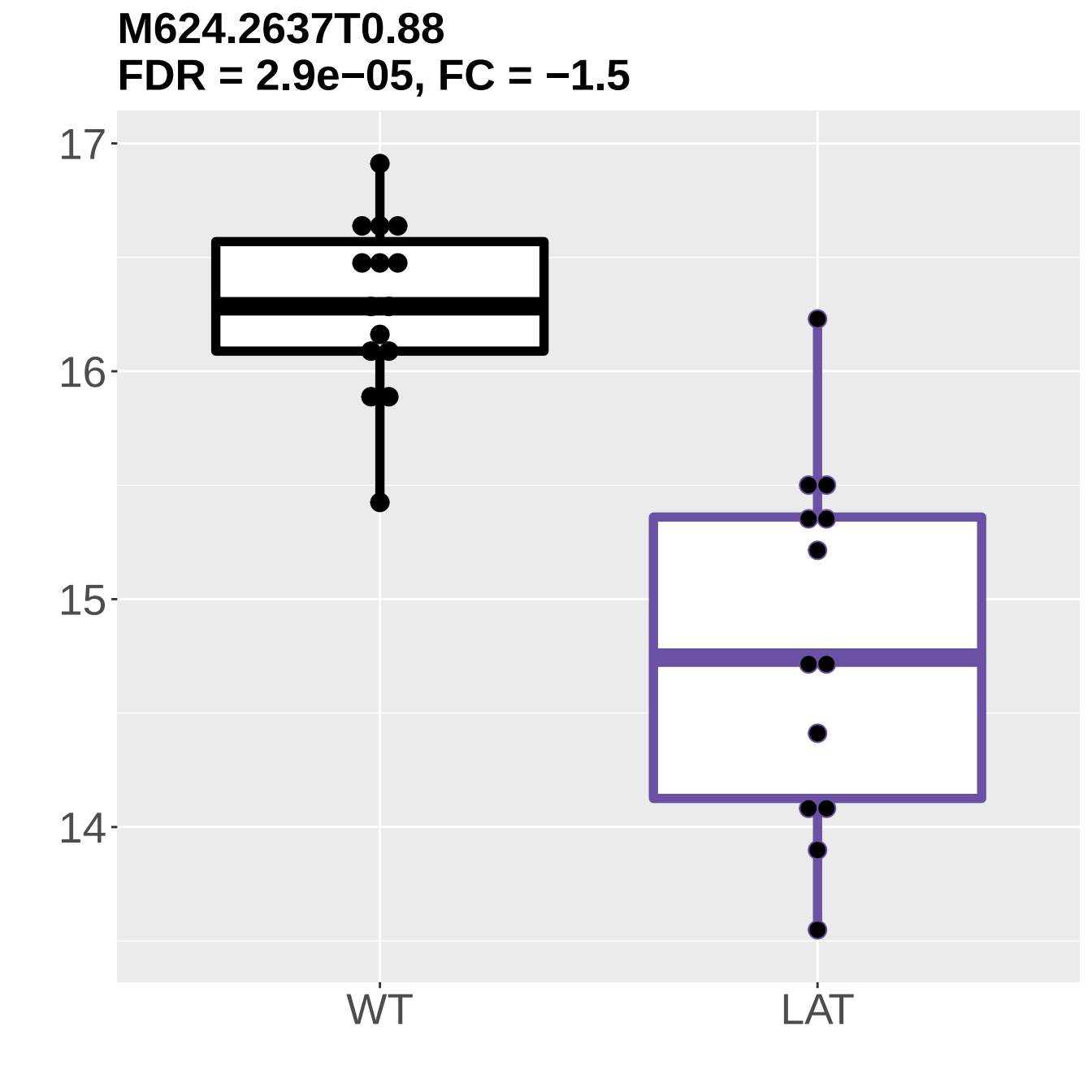
15.0
14.5
WT
LAT

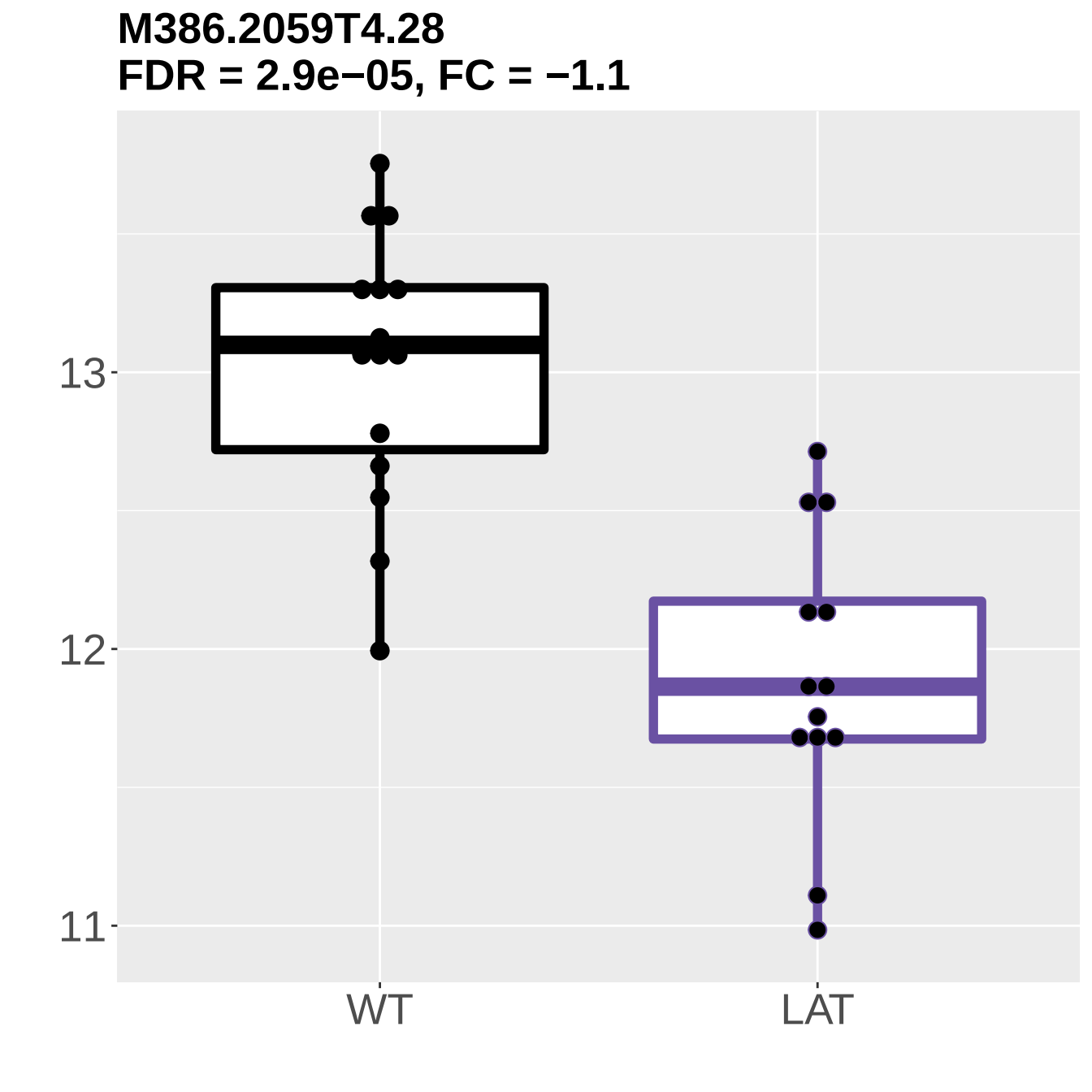

M278.4088T2.69
FDR = 2.9e−05, FC = −3.8
16
14
12
10
8
WT
LAT

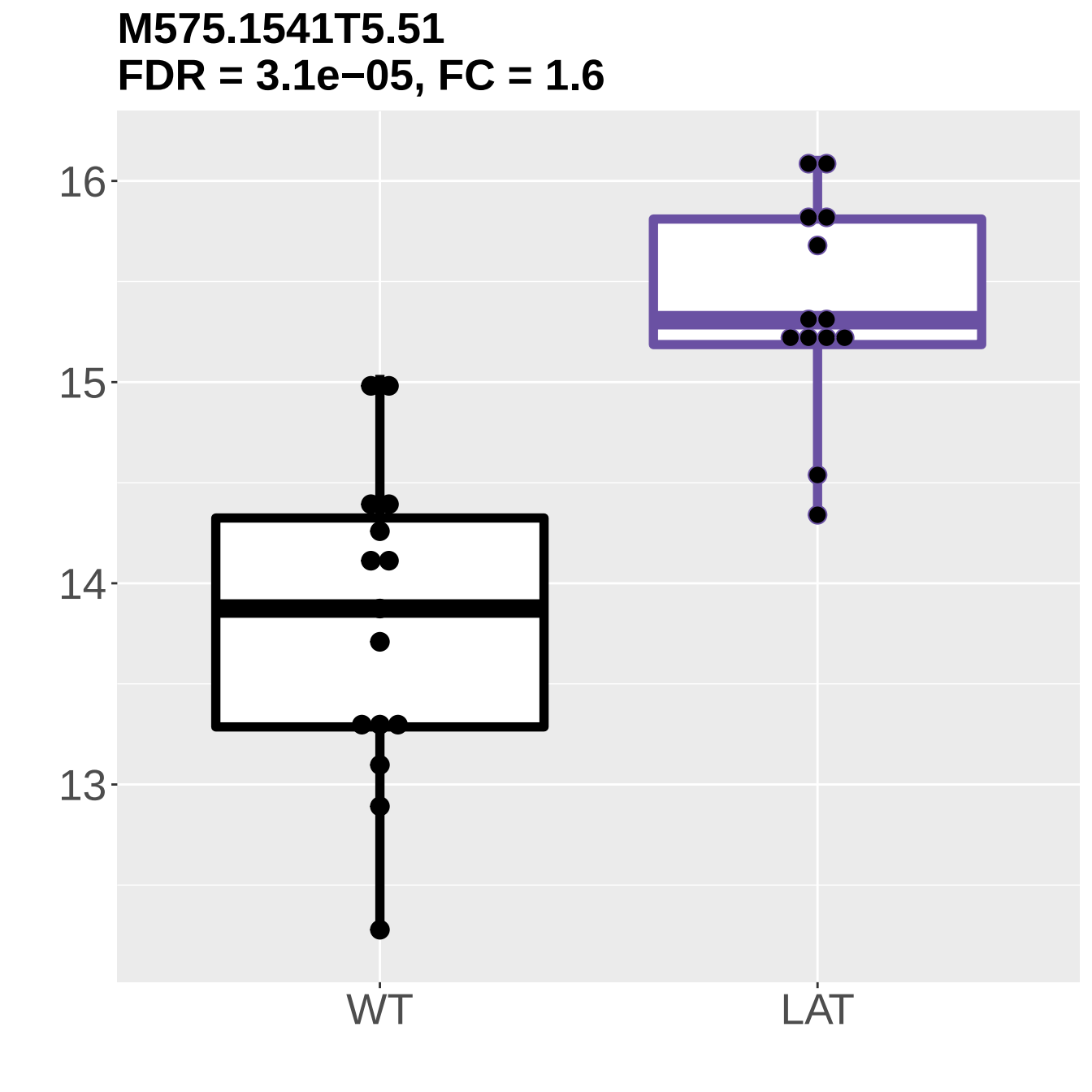

M460.2048T0.88
FDR = 2.9e−05, FC = −1.2
21
20
19
20.4826711236355
WT
LAT

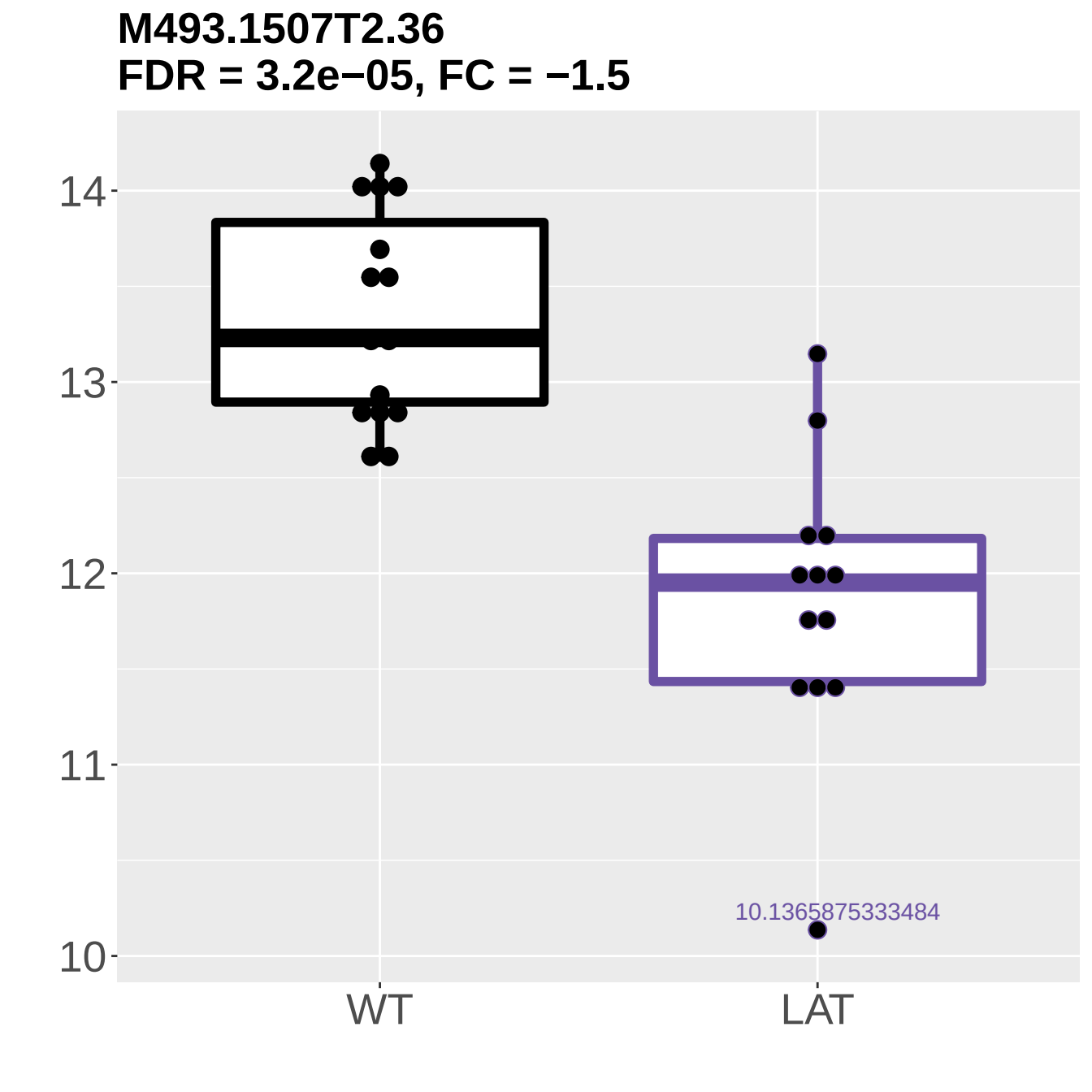

M255.8186T3.43
FDR = 2.9e−05, FC = −6.1
15
10
5
0
0
0
WT
LAT

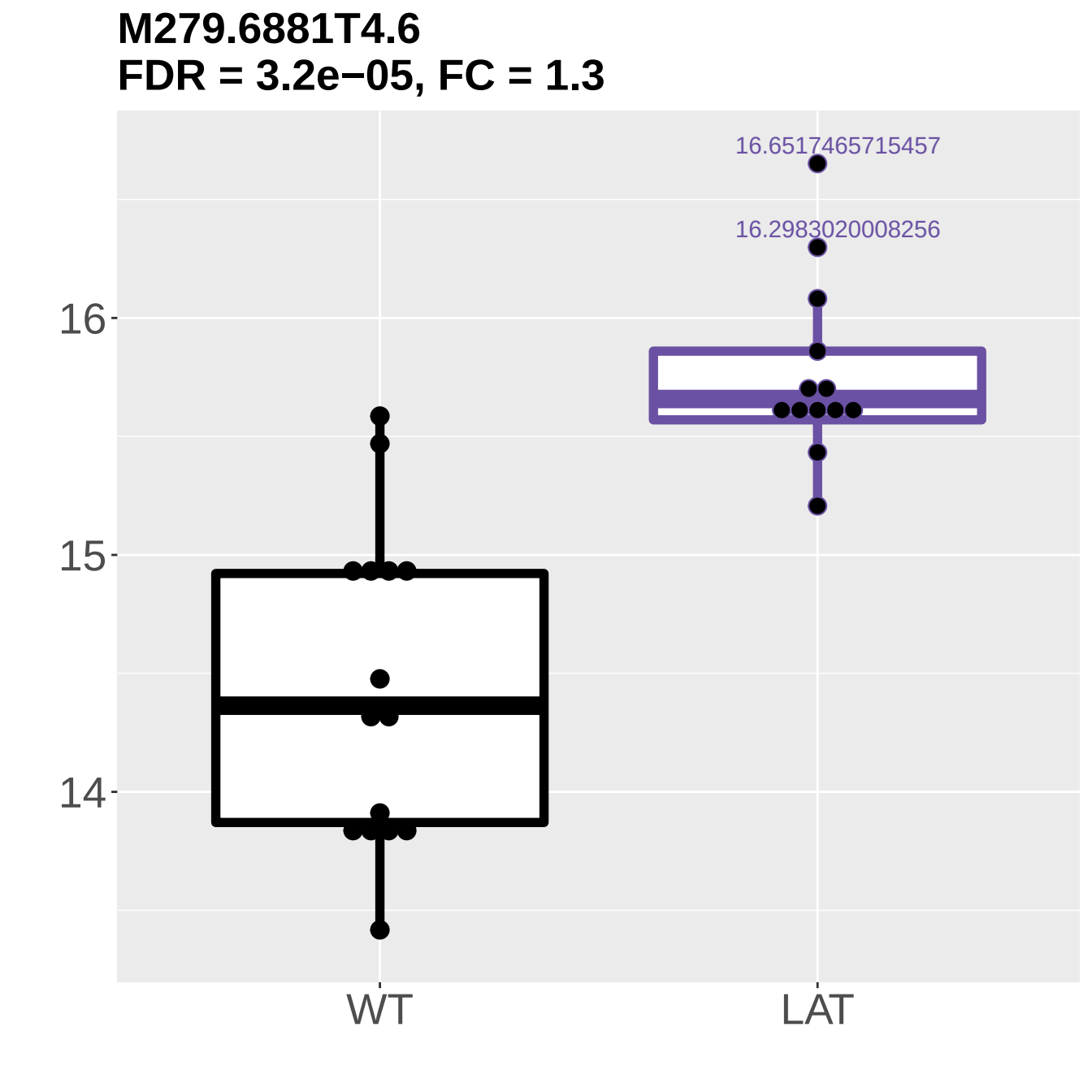

M588.2058T1.11
FDR = 2.9e−05, FC = −1.6
19.2464705817694
19
18
17
16
15
WT
LAT

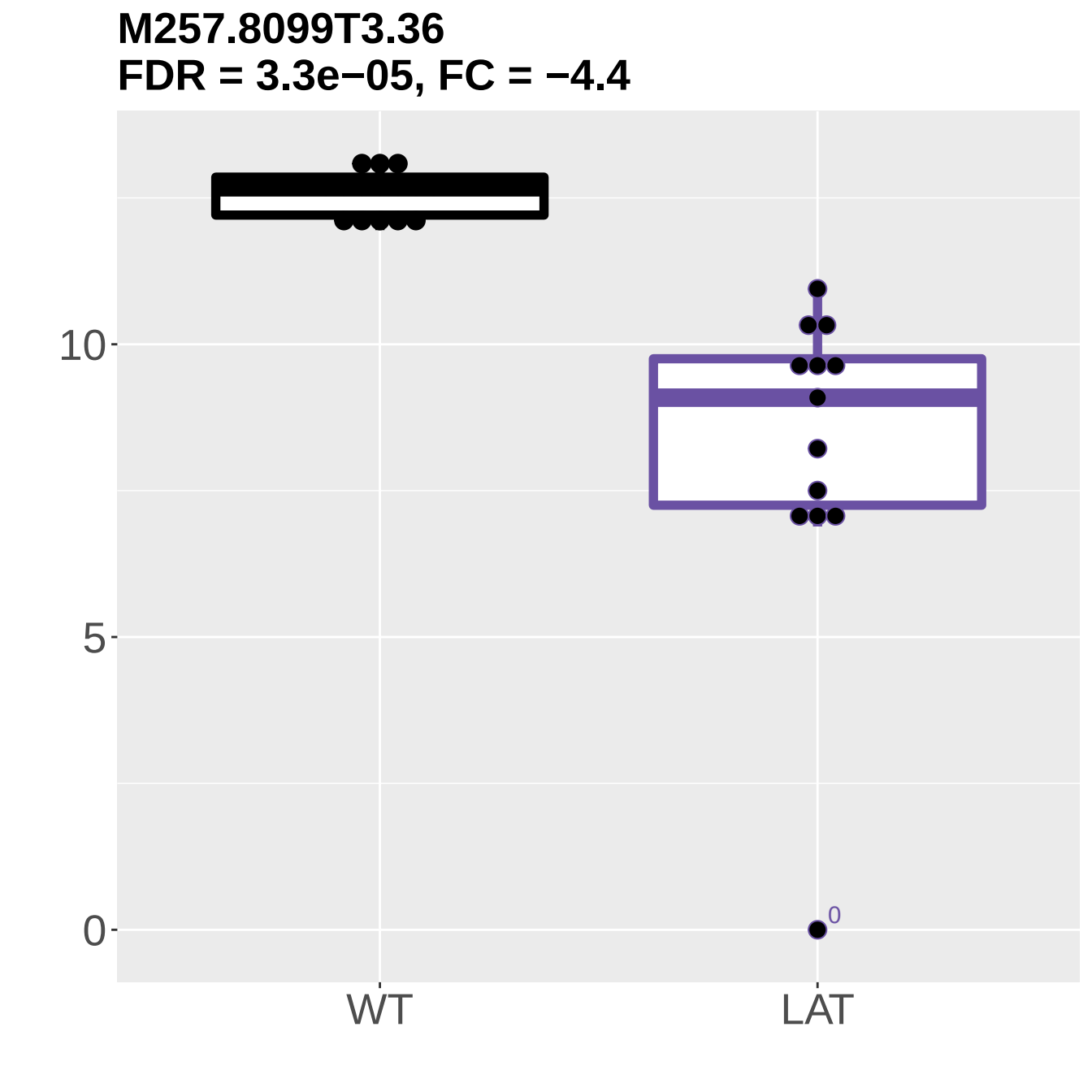

M624.2637T0.88
FDR = 2.9e−05, FC = −1.5
17
16
15
14
WT
LAT

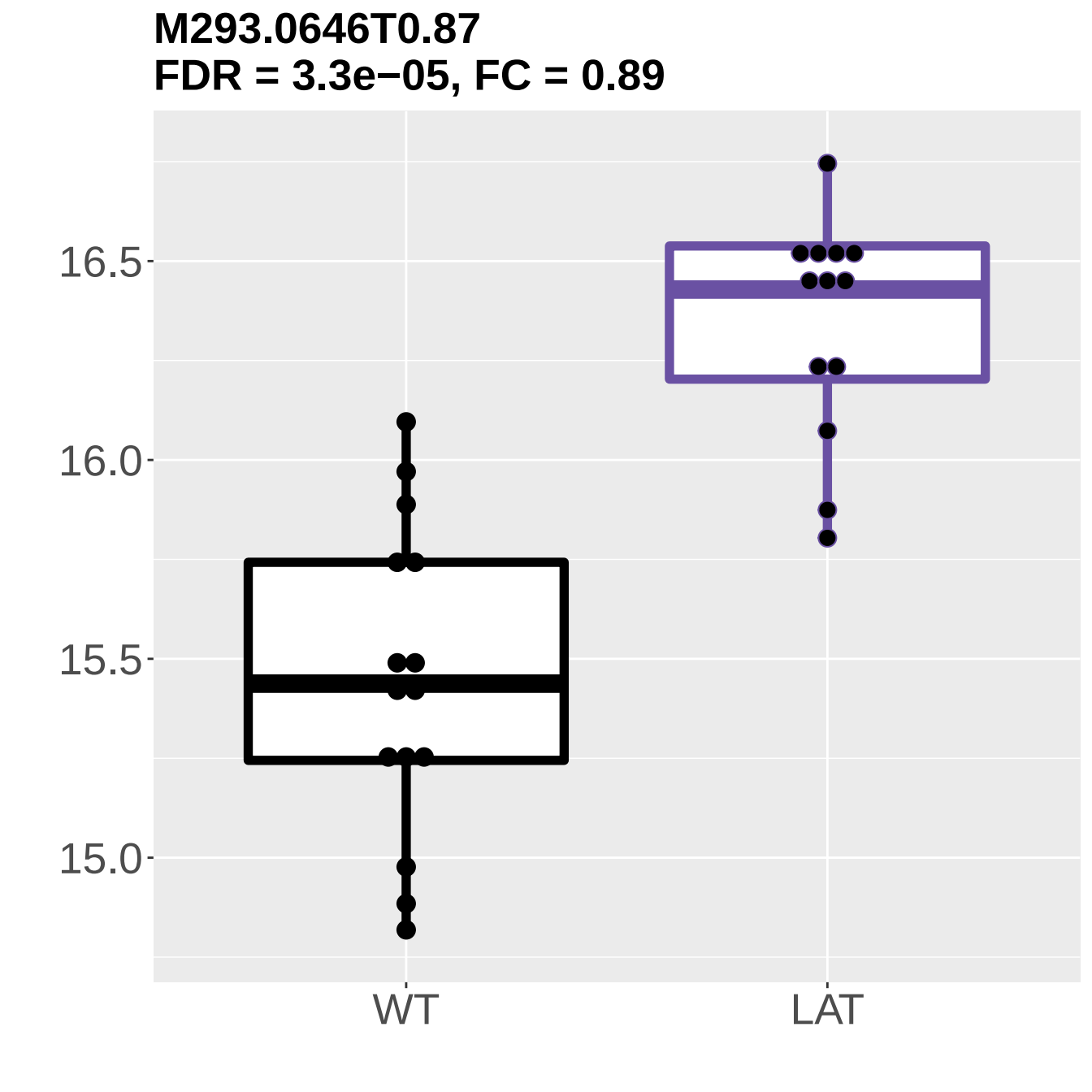

M386.2059T4.28
FDR = 2.9e−05, FC = −1.1
13
12
11
WT
LAT


M575.1541T5.51
FDR = 3.1e−05, FC = 1.6
16
15
14
13
WT
LAT


M493.1507T2.36
FDR = 3.2e−05, FC = −1.5
14
13
12
11
10
10.1365875333484
WT
LAT


M279.6881T4.6
FDR = 3.2e−05, FC = 1.3
16.6517465715457
16.2983020008256
16
15
14
WT
LAT


M257.8099T3.36
FDR = 3.3e−05, FC = −4.4
10
5
0
0
WT
LAT


M293.0646T0.87
FDR = 3.3e−05, FC = 0.89
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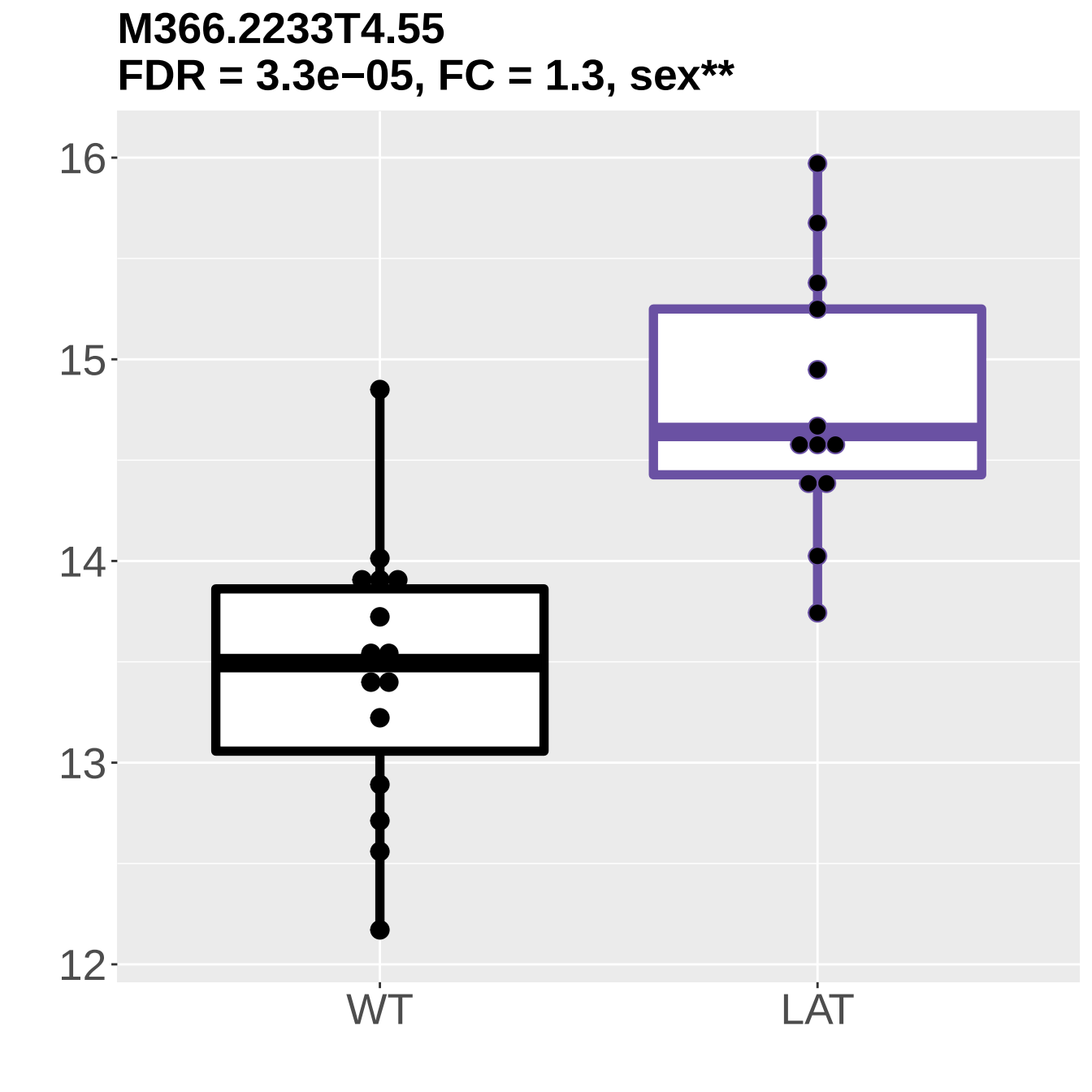
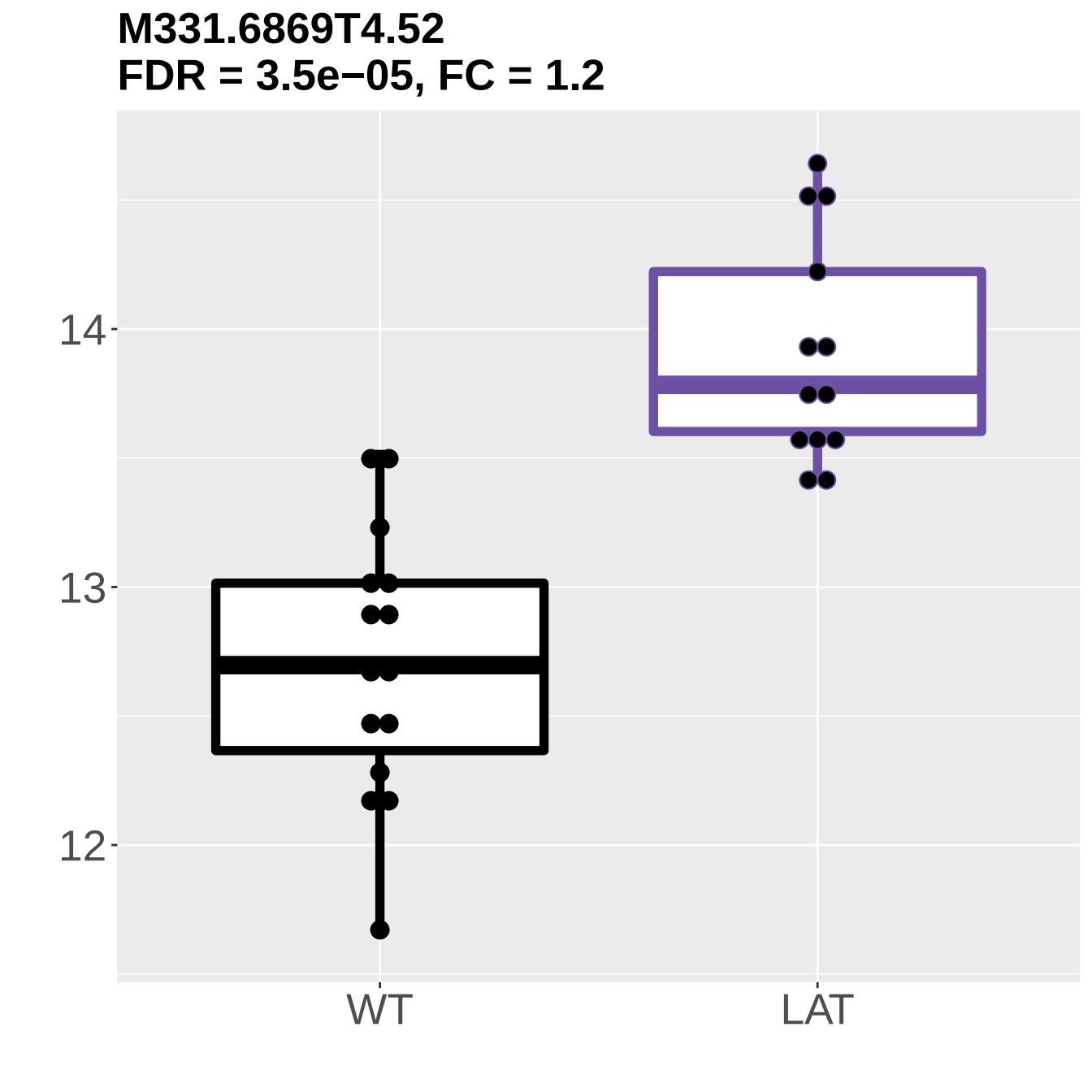
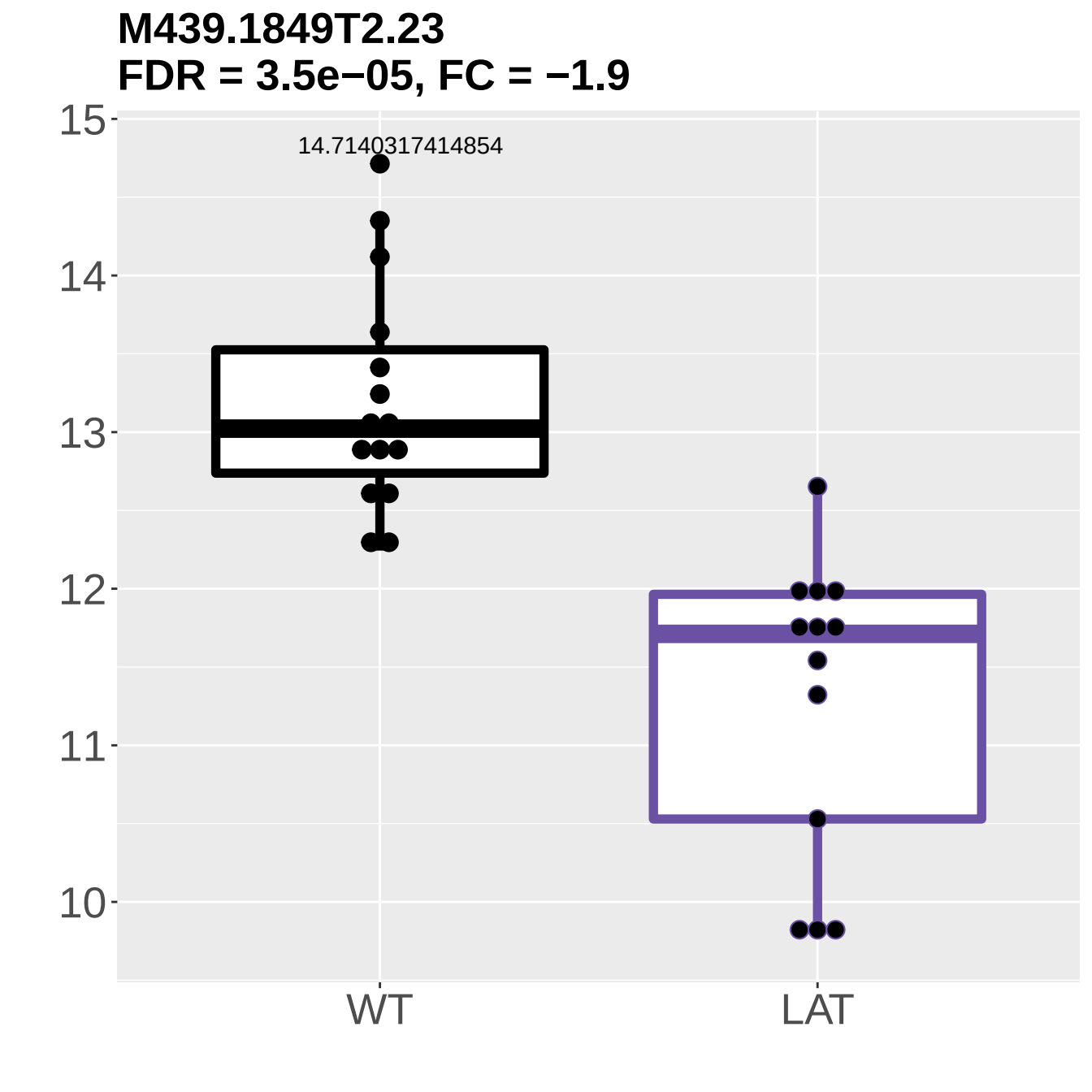
16.0
15.5
15.0
WT
LAT


M366.2233T4.55
FDR = 3.3e−05, FC = 1.3, sex**
16
15
14
13
12
WT
LAT


M331.6869T4.52
FDR = 3.5e−05, FC = 1.2
14
13
12
WT
LAT


M439.1849T2.23
FDR = 3.5e−05, FC = −1.9
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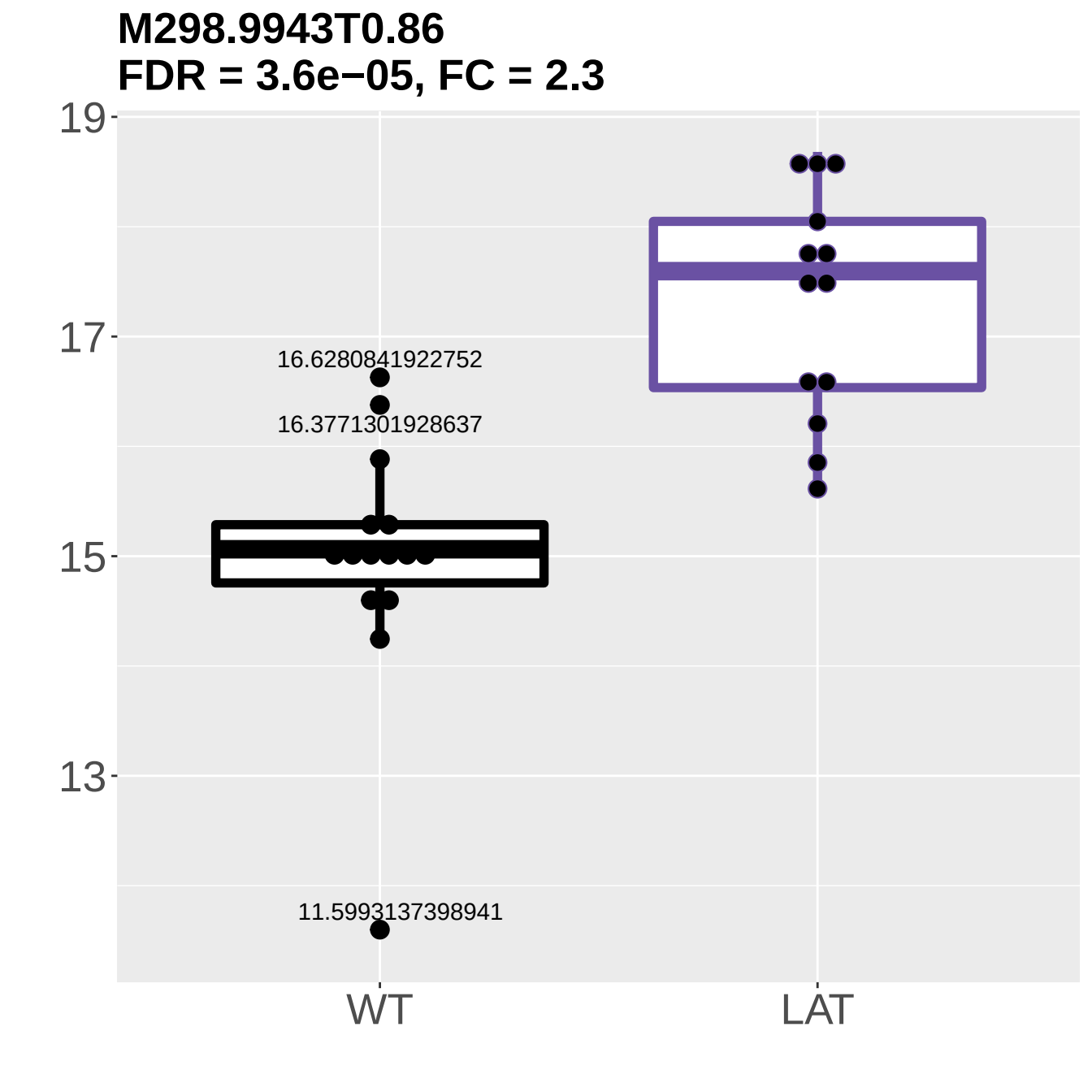
14
13
12
11
10
14.7140317414854
WT
LAT


M298.9943T0.86
FDR = 3.6e−05, FC = 2.3
19
17
15
13
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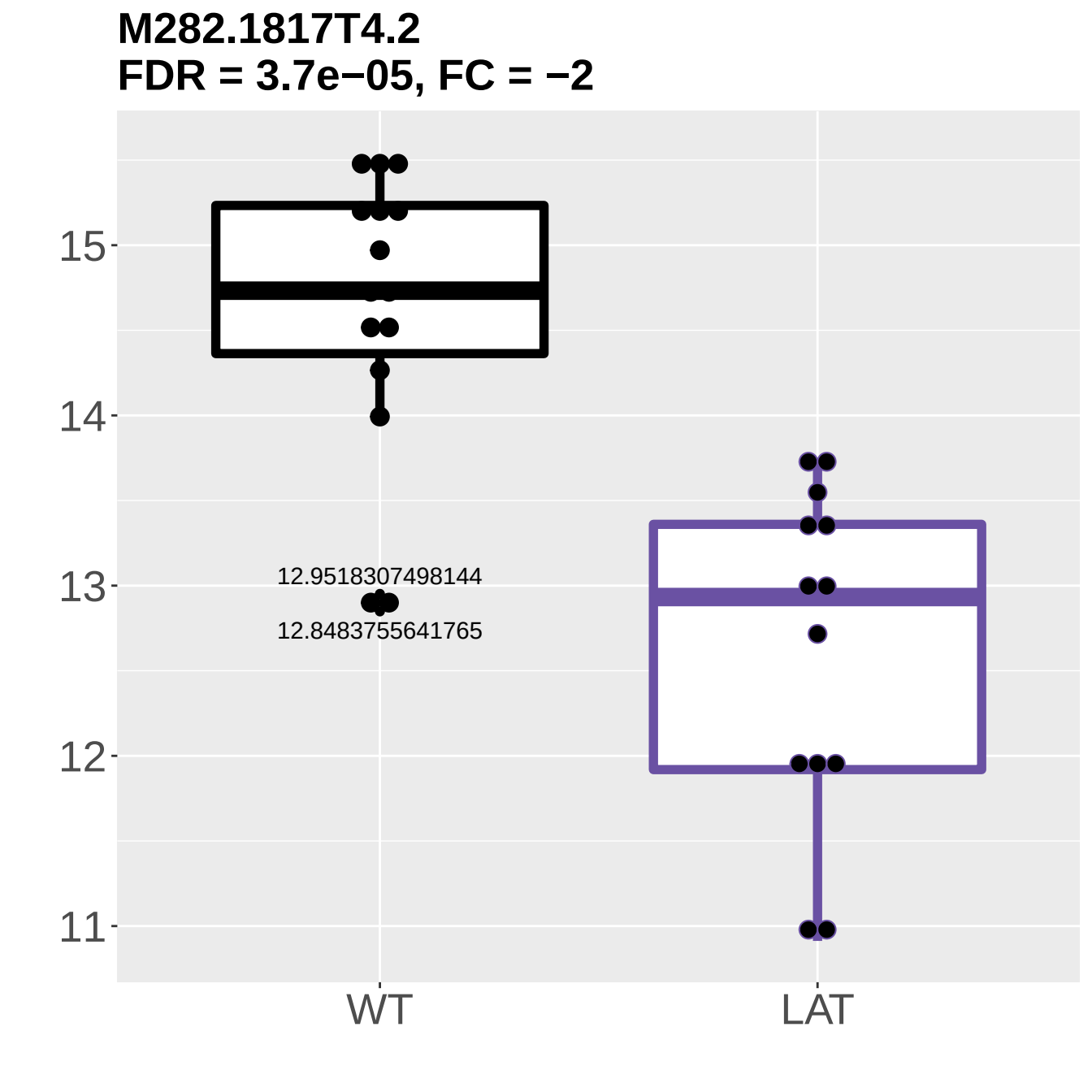
16.3771301928637
11.5993137398941
WT
LAT


M282.1817T4.2
FDR = 3.7e−05, FC = −2
15
14
13
12
11
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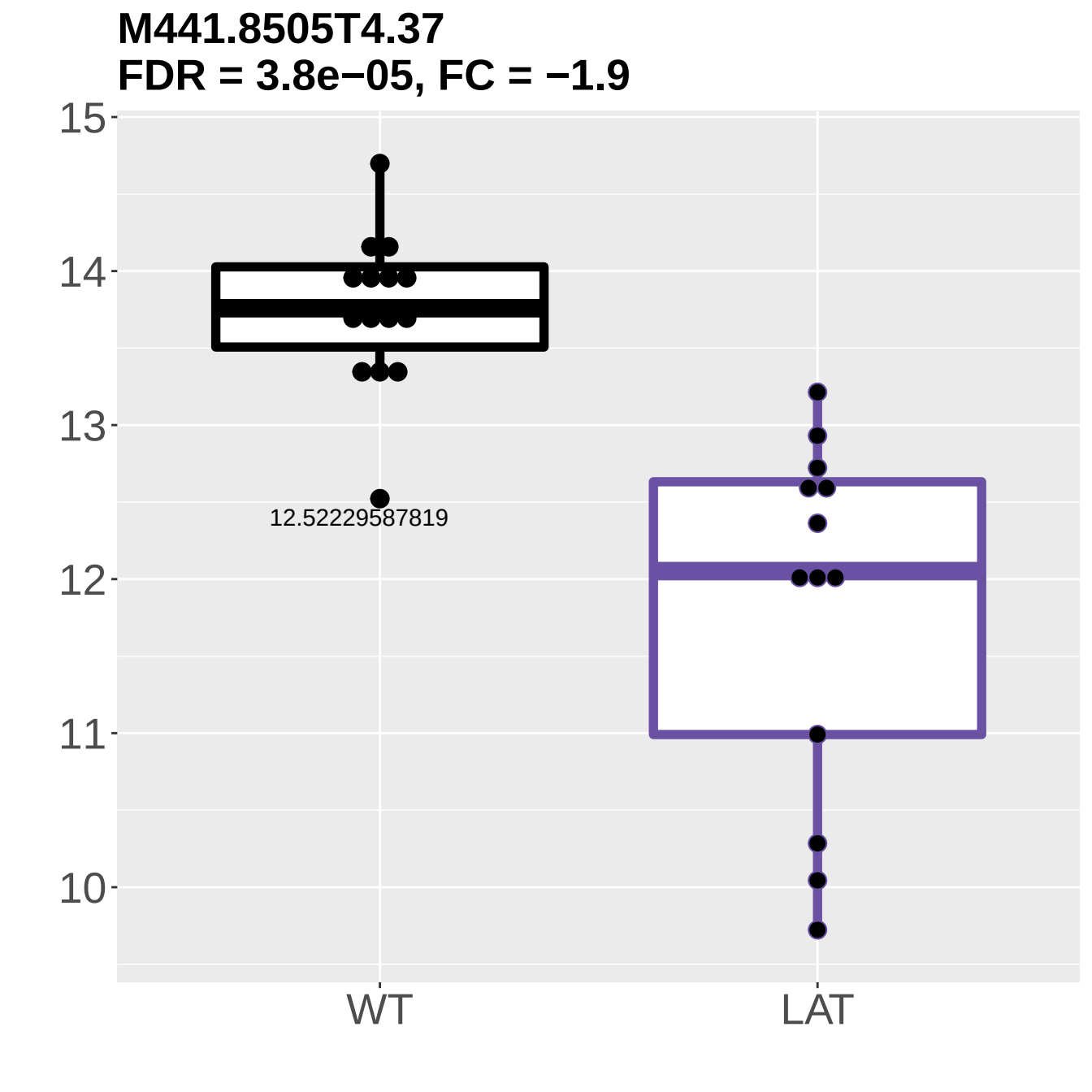
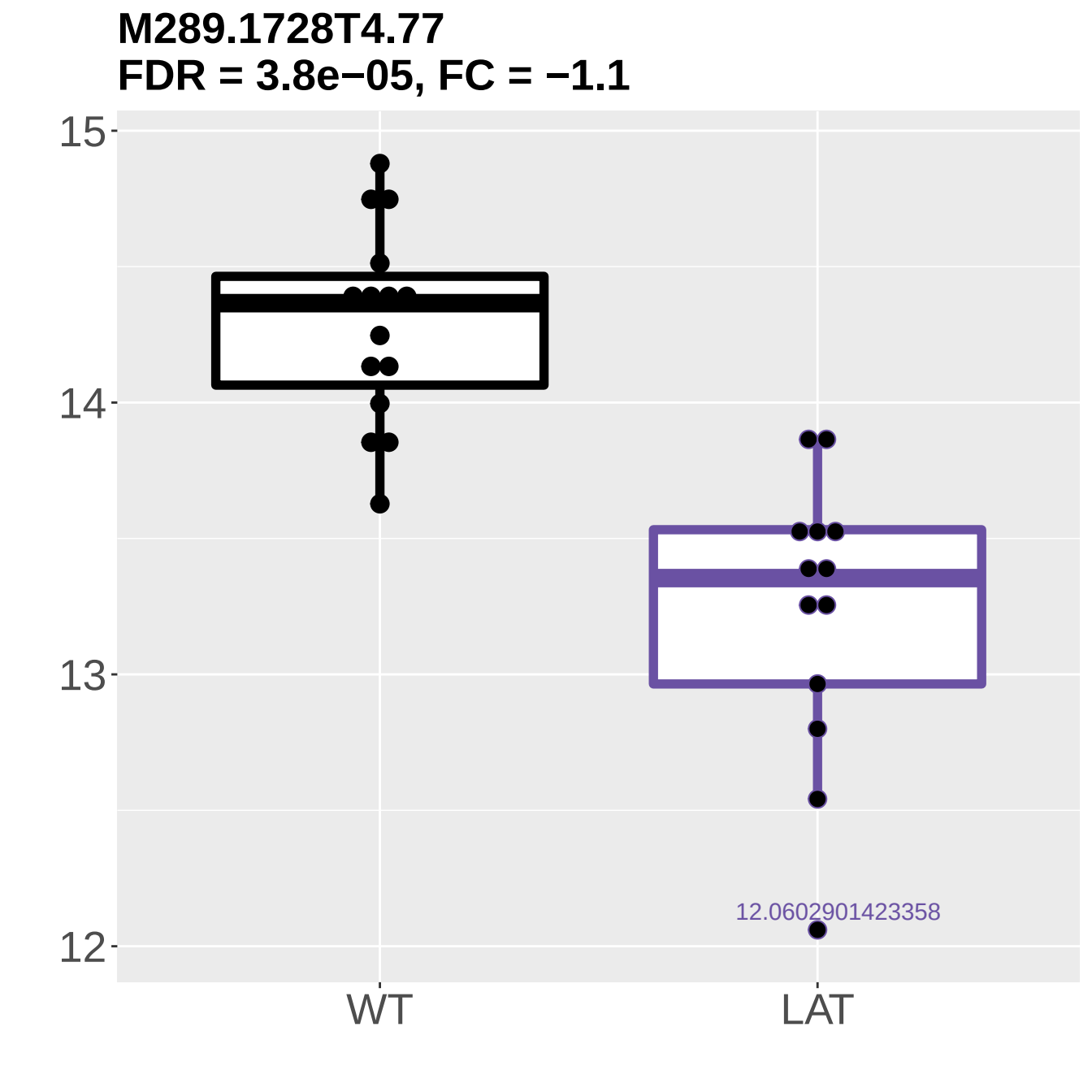
12.8483755641765
WT
LAT


M441.8505T4.37
FDR = 3.8e−05, FC = −1.9
15
14
13
12
11
10
12.52229587819
WT
LAT


M289.1728T4.77
FDR = 3.8e−05, FC = −1.1
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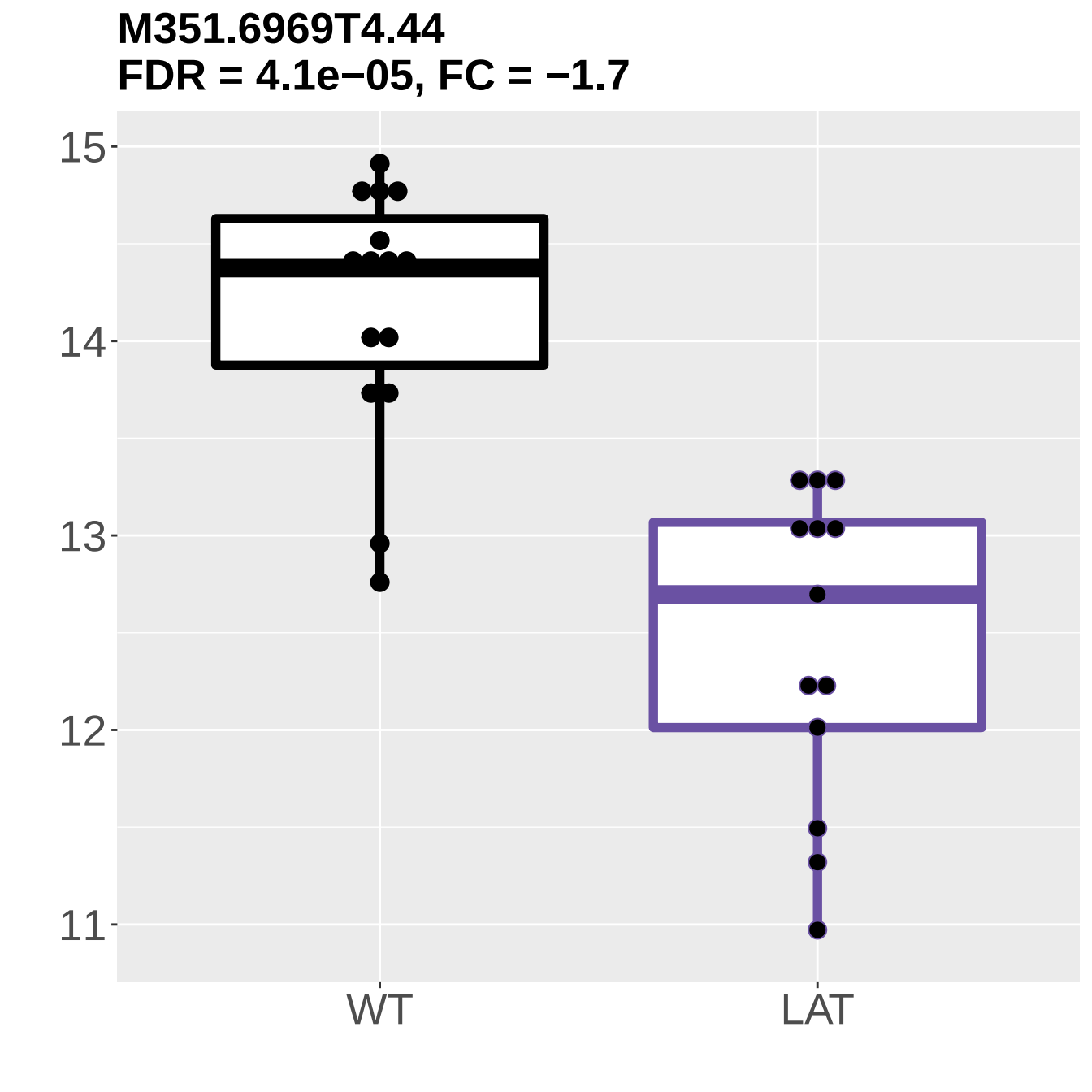
14
13
12
12.0602901423358
WT
LAT


M351.6969T4.44
FDR = 4.1e−05, FC = −1.7
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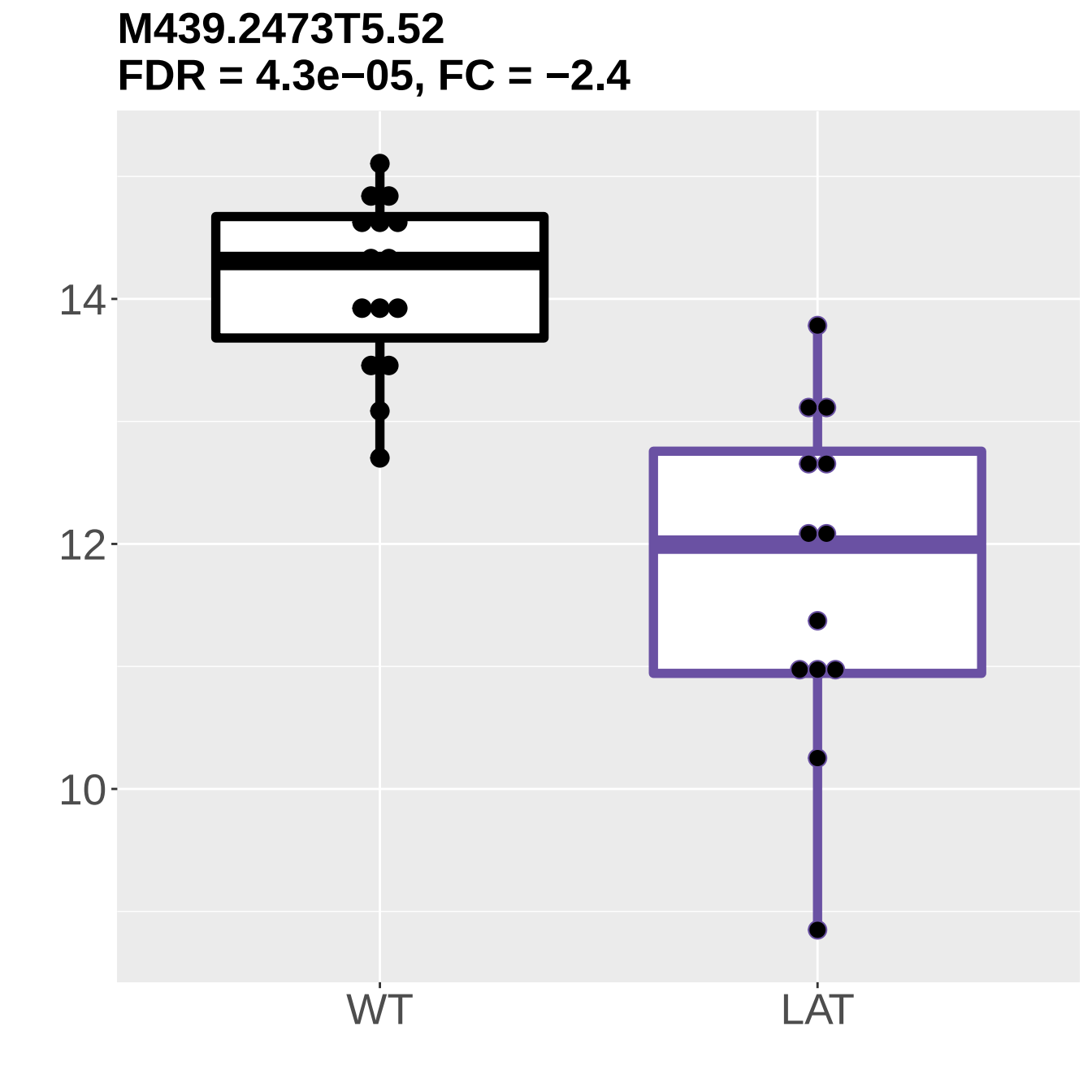
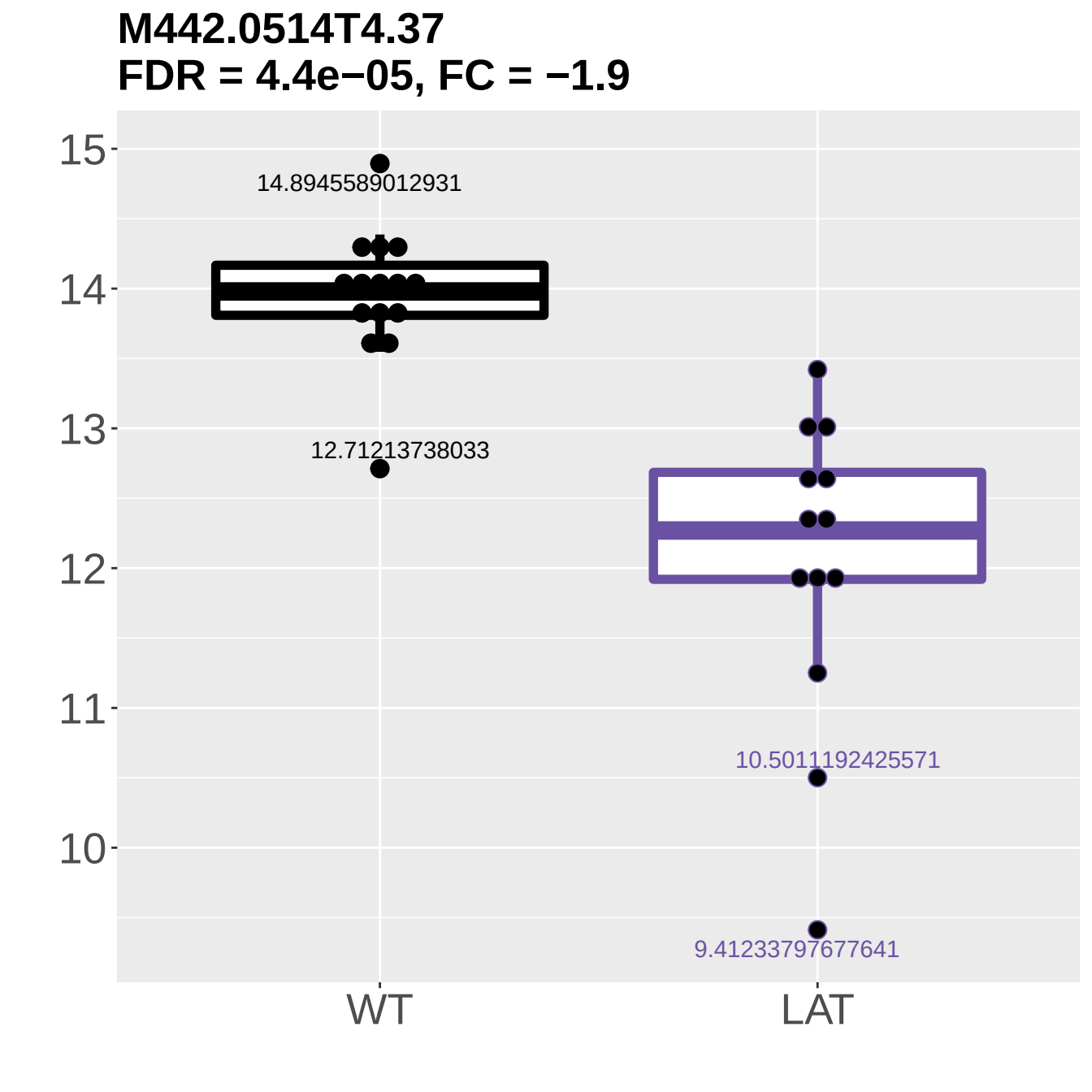
14
13
12
11
WT
LAT


M439.2473T5.52
FDR = 4.3e−05, FC = −2.4
14
12
10
WT
LAT


M442.0514T4.37
FDR = 4.4e−05, FC = −1.9
15
14
13
12
11
10
14.8945589012931
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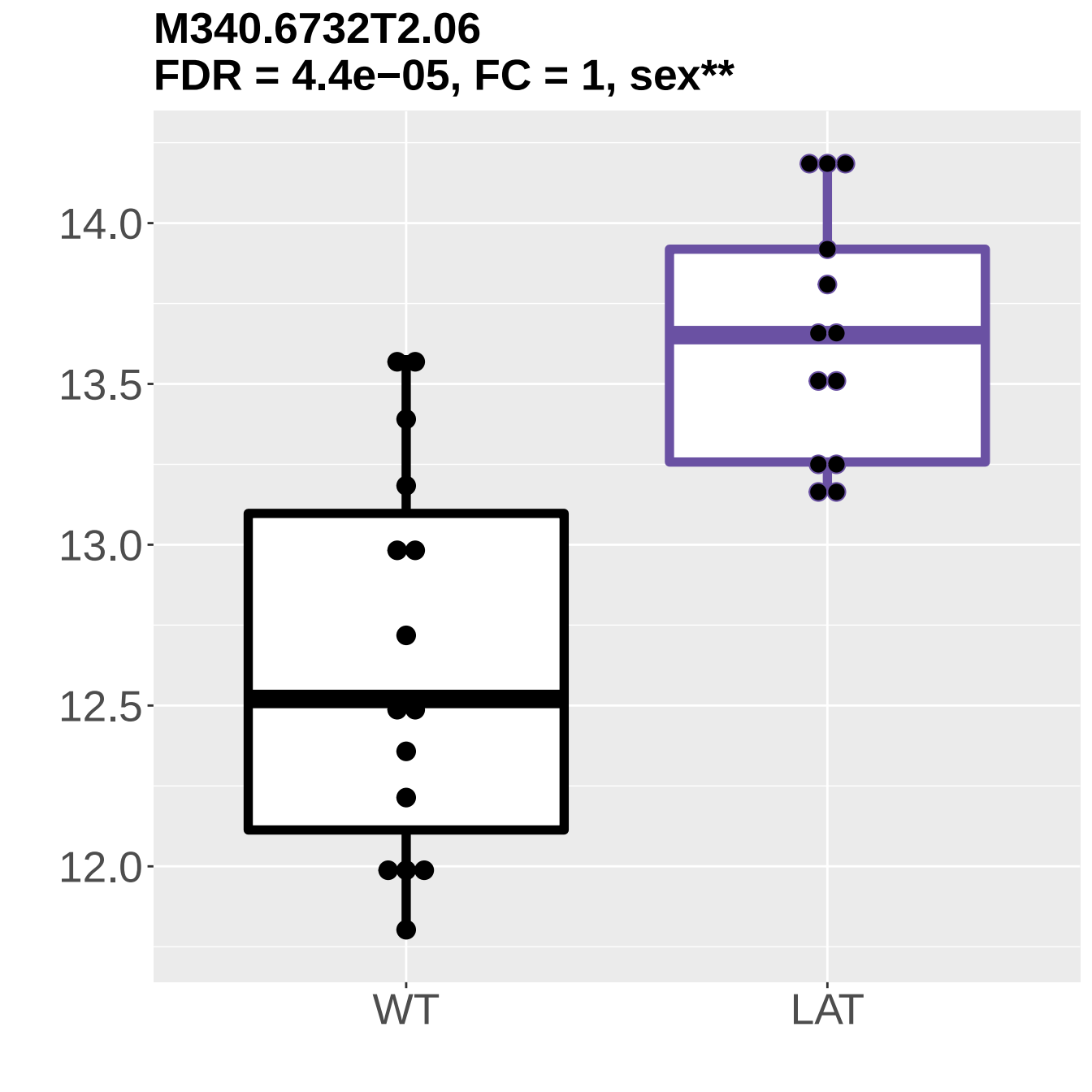
10.5011192425571
9.41233797677641
WT
LAT


M340.6732T2.06
FDR = 4.4e−05, FC = 1, sex**
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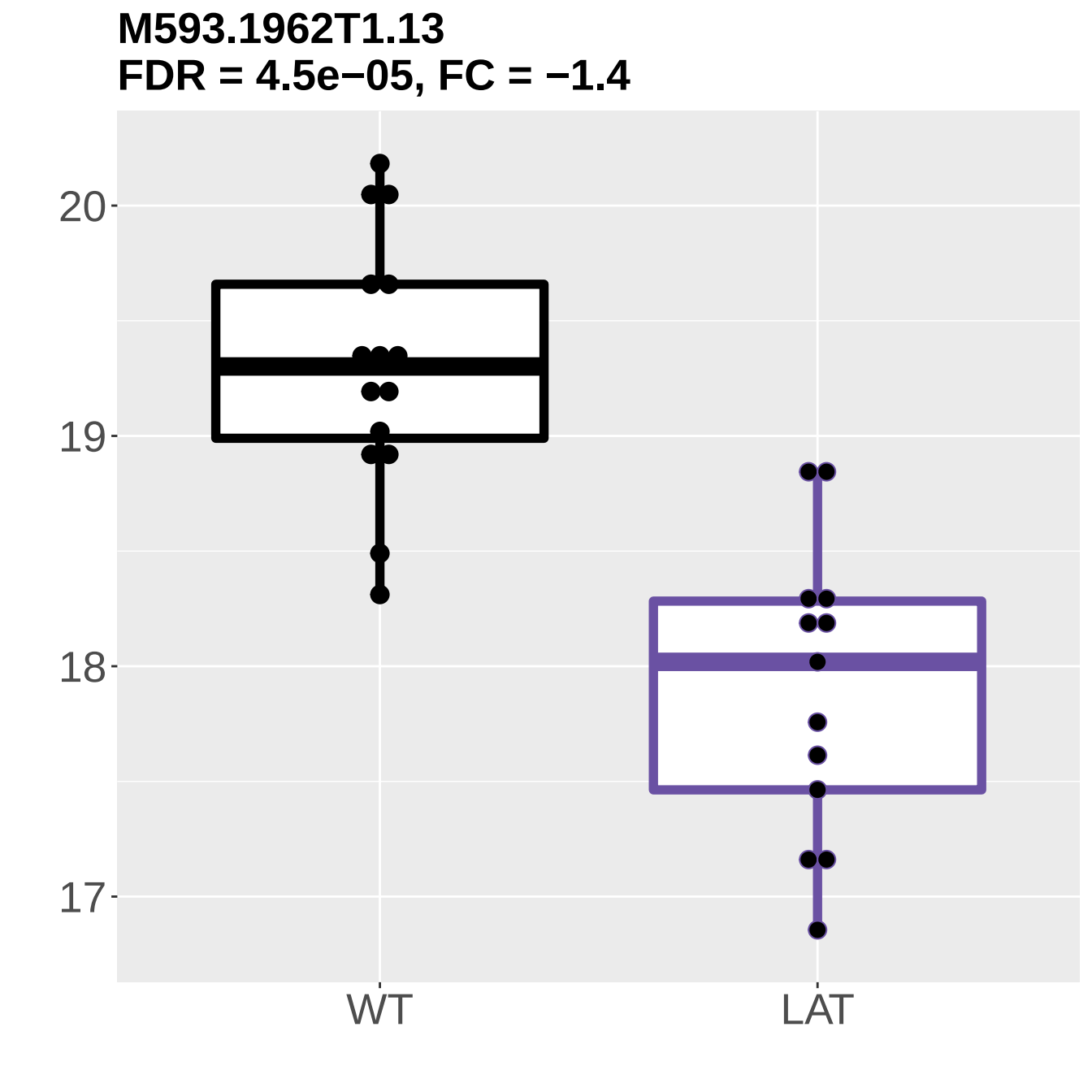
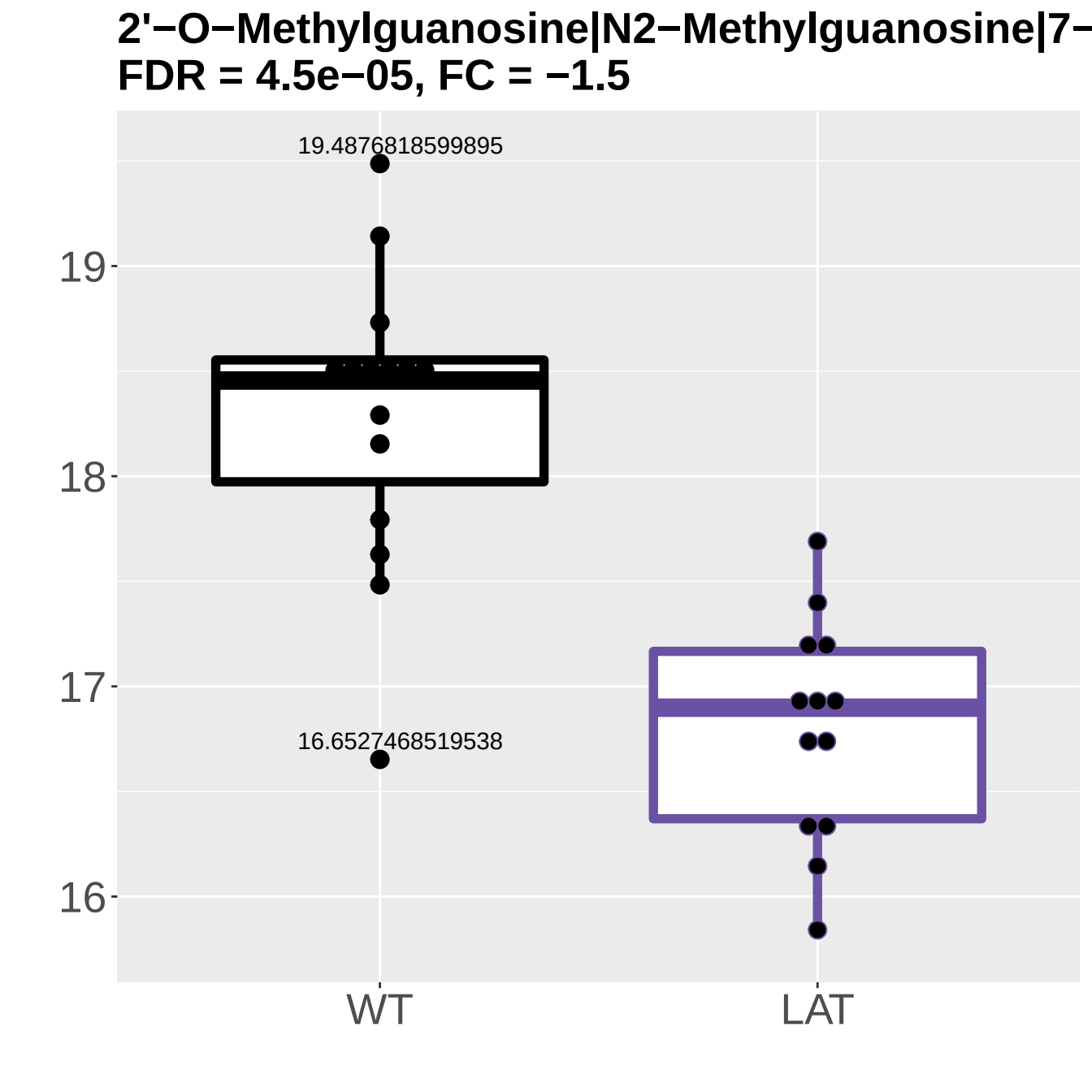
13.5
13.0
12.5
12.0
WT
LAT


M593.1962T1.13
FDR = 4.5e−05, FC = −1.4
20
19
18
17
WT
LAT


2'−O−Methylguanosine|N2−Methylguanosine|7−
FDR = 4.5e−05, FC = −1.5
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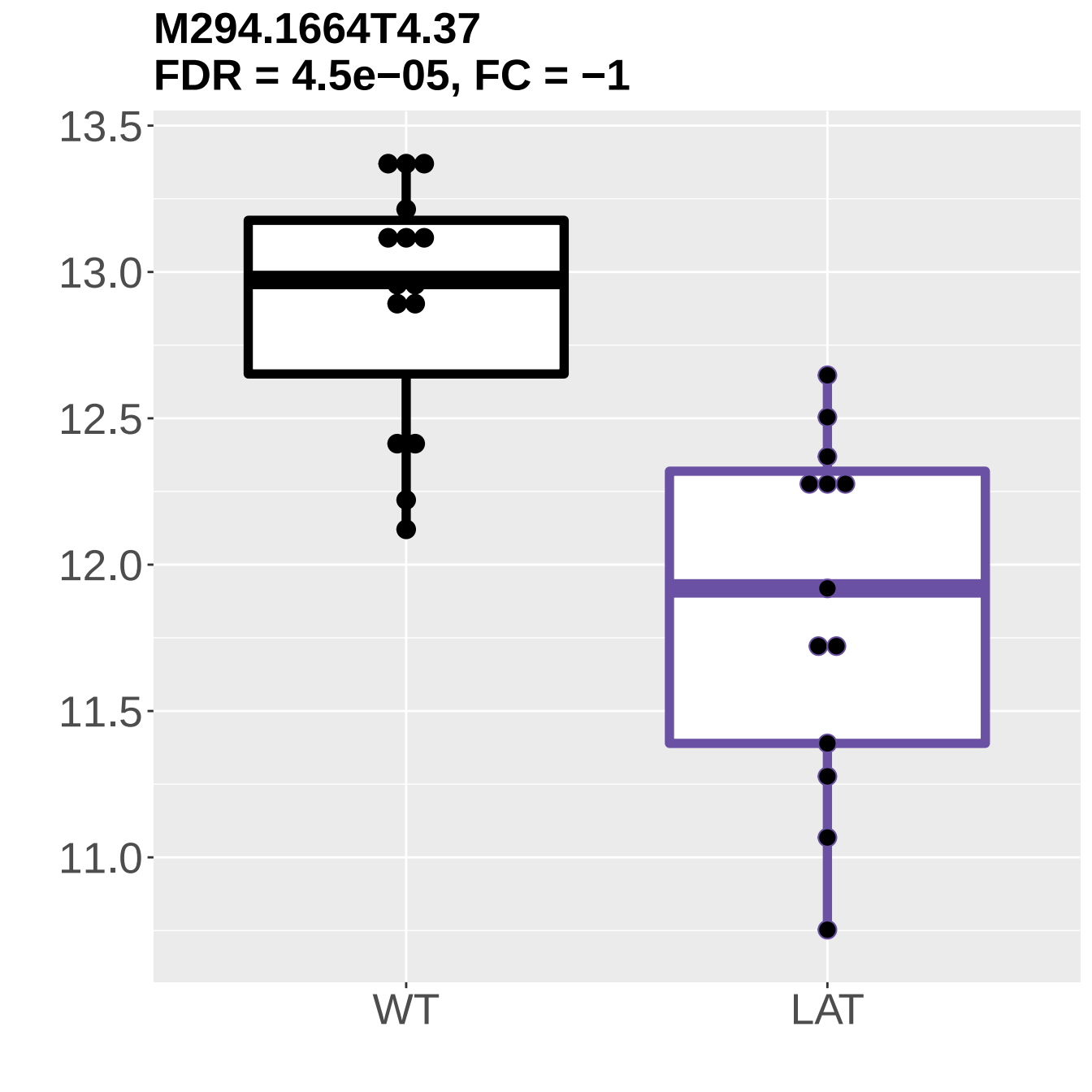
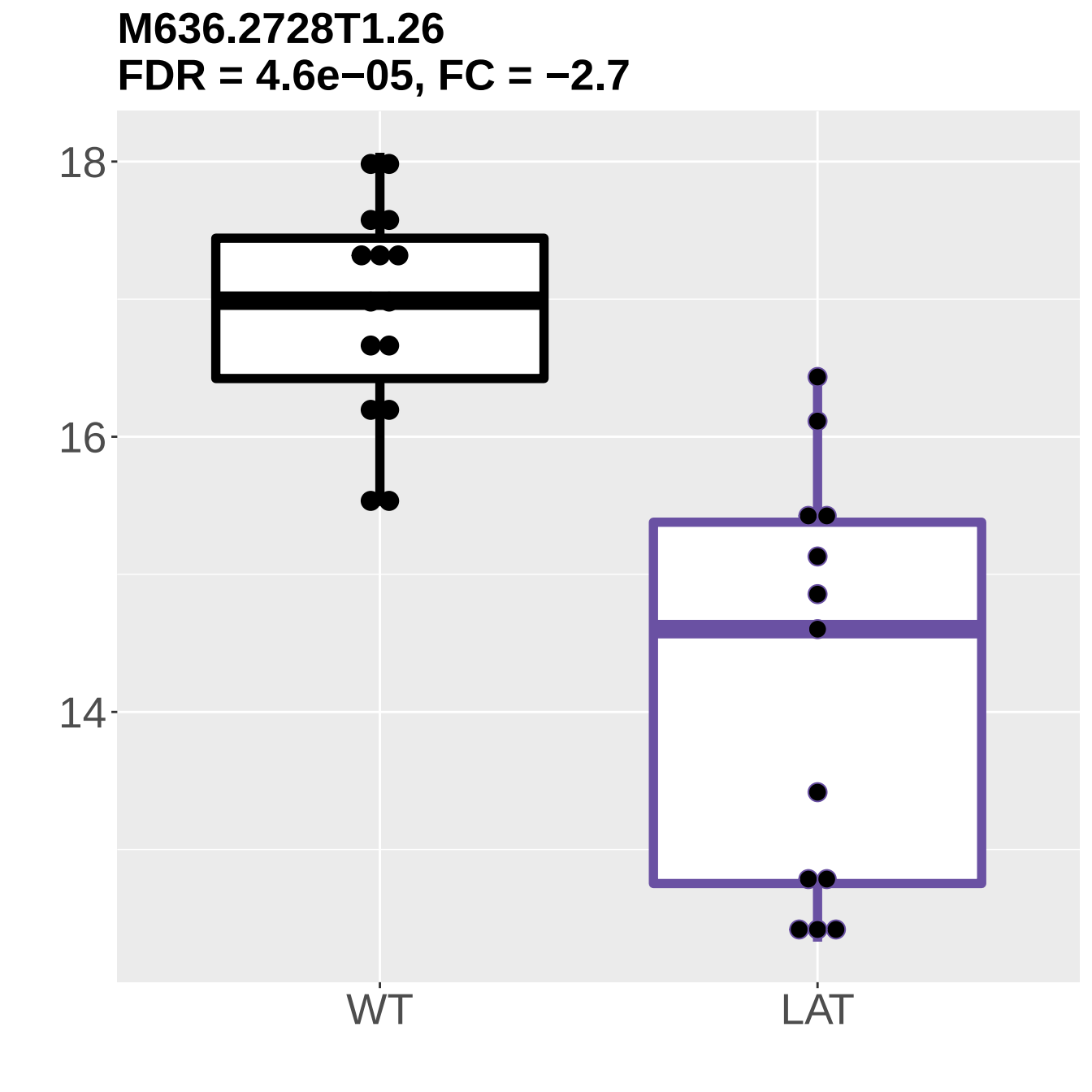
16.6527468519538
19
18
17
16
WT
LAT


M294.1664T4.37
FDR = 4.5e−05, FC = −1
13.5
13.0
12.5
12.0
11.5
11.0
WT
LAT


M636.2728T1.26
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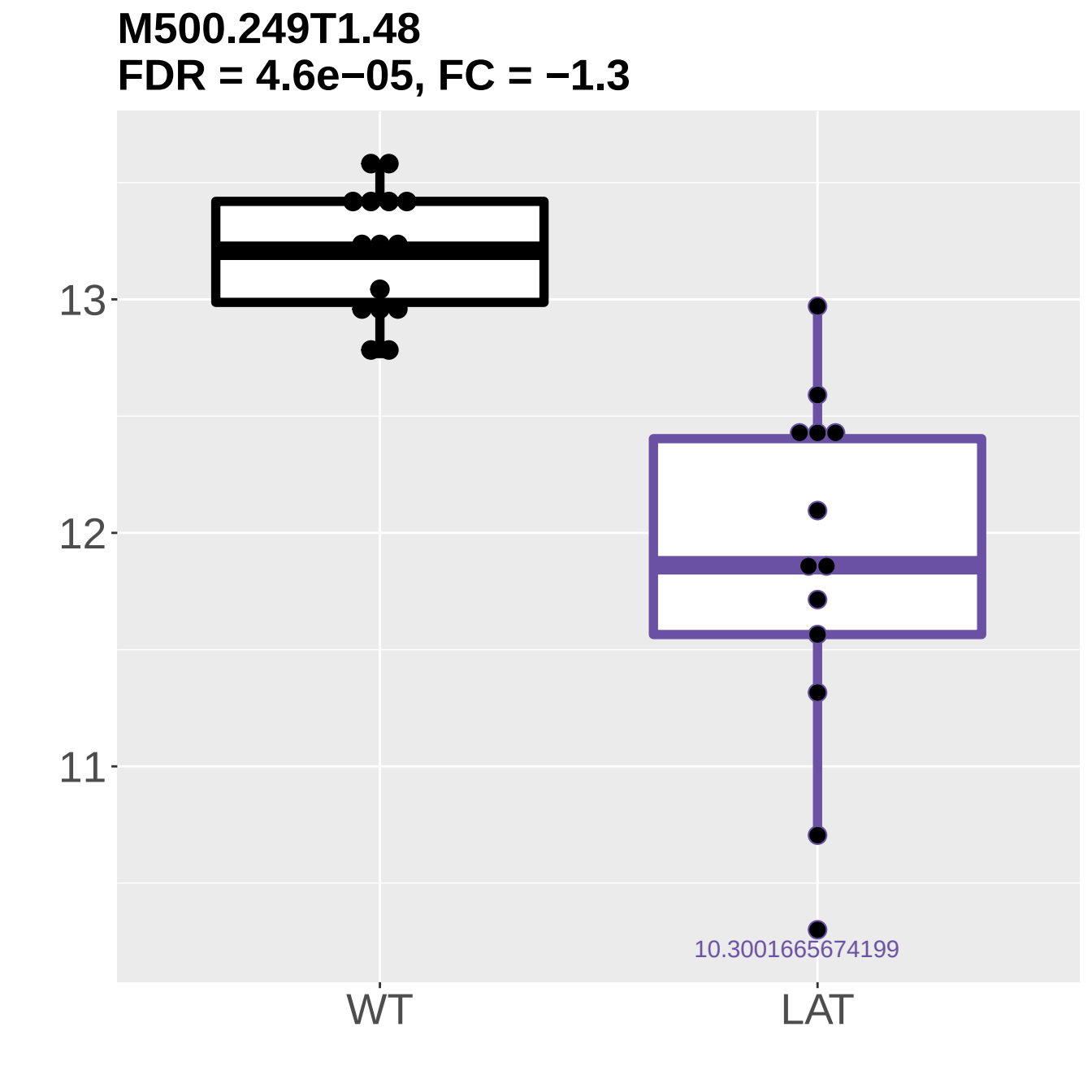
18
16
14
WT
LAT


M500.249T1.48
FDR = 4.6e−05, FC = −1.3
13
12
11
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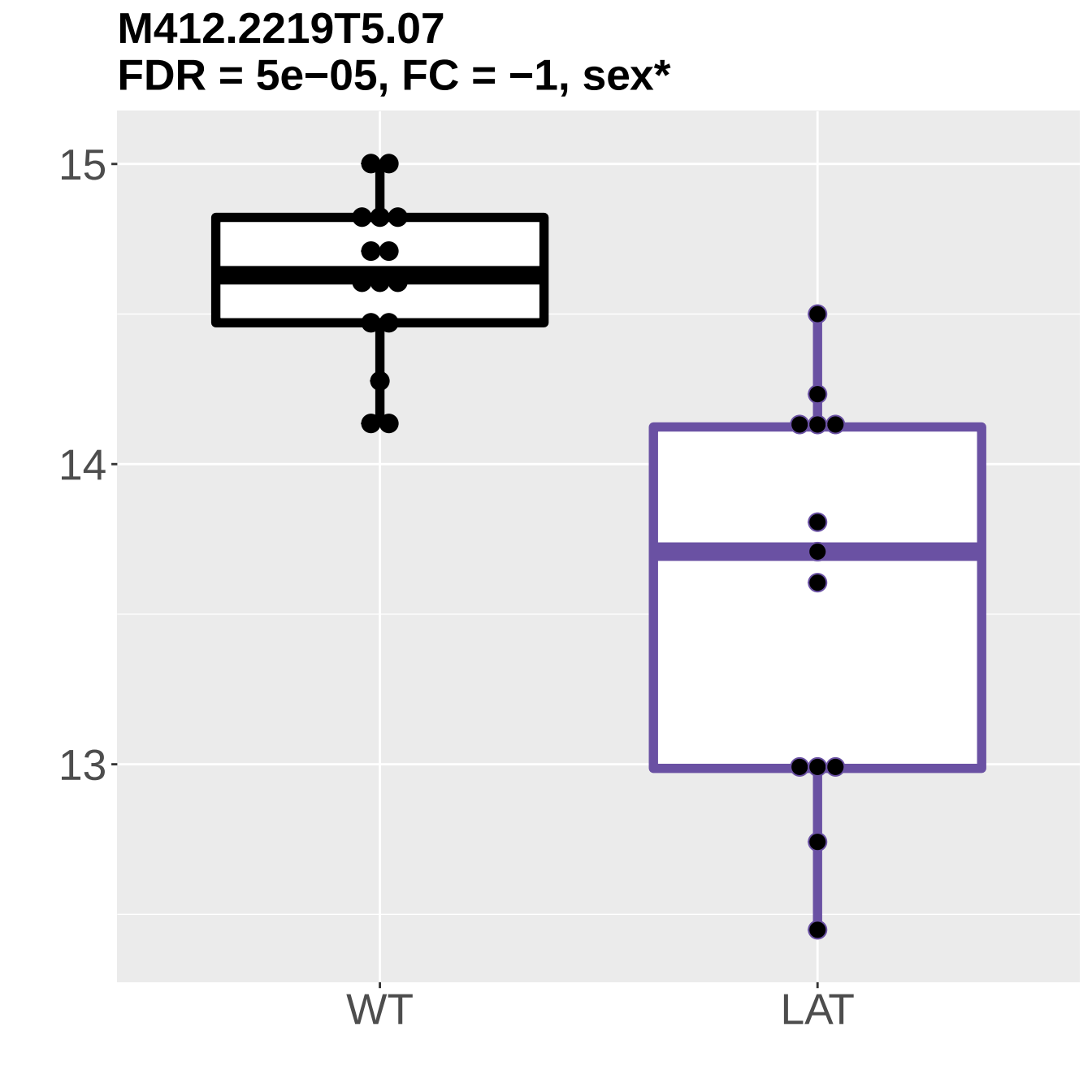
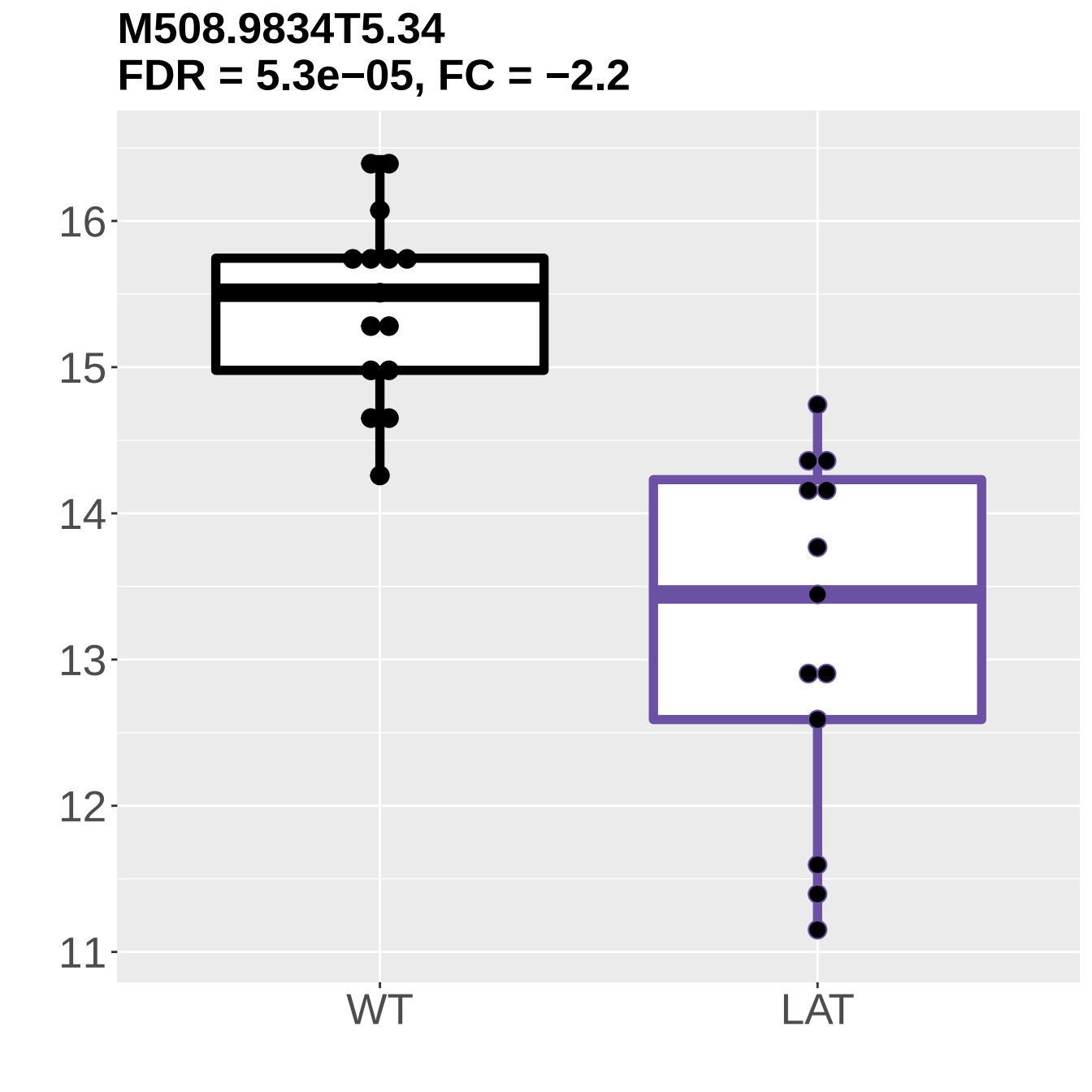
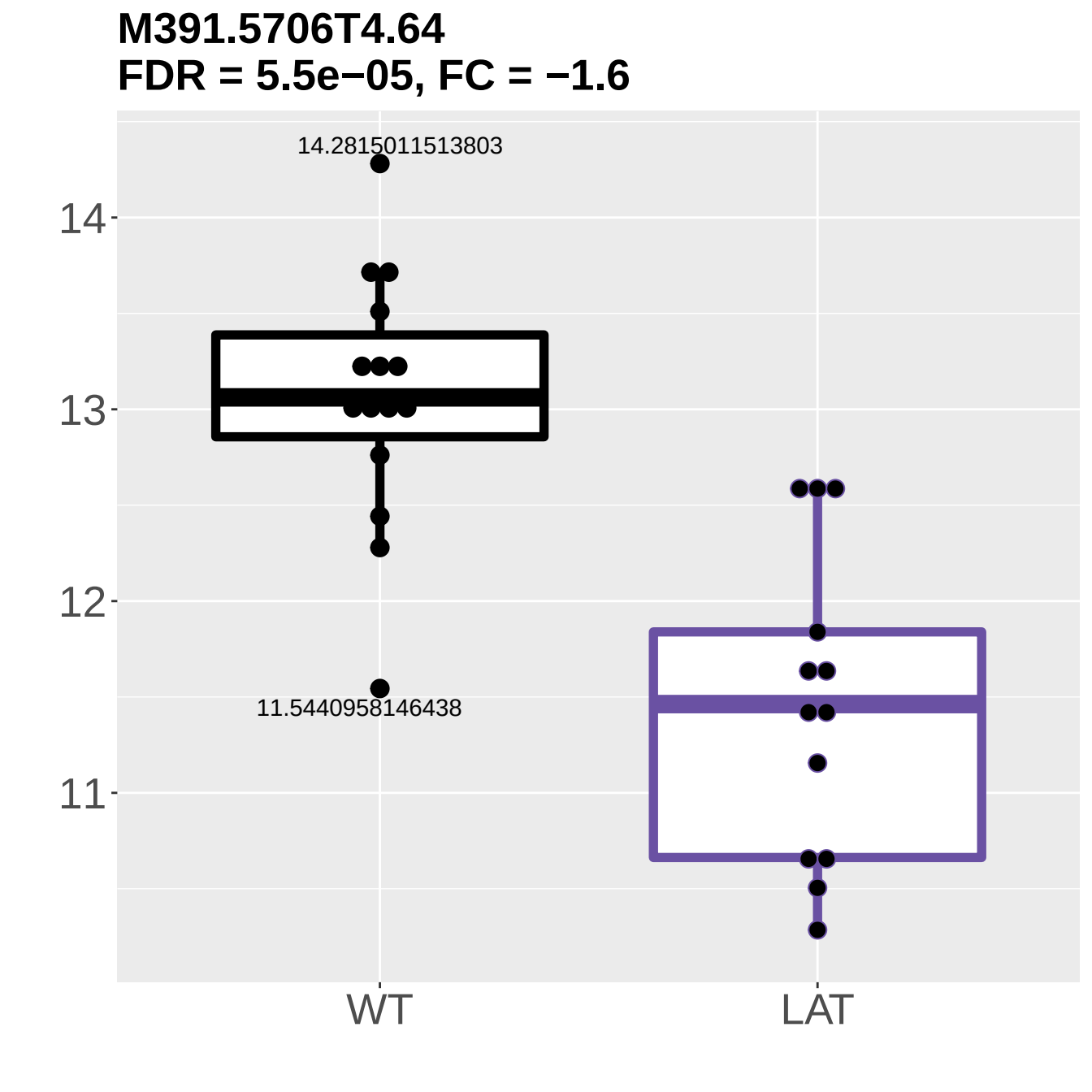
WT
LAT


M412.2219T5.07
FDR = 5e−05, FC = −1, sex*
15
14
13
WT
LAT


M508.9834T5.34
FDR = 5.3e−05, FC = −2.2
16
15
14
13
12
11
WT
LAT


M391.5706T4.64
FDR = 5.5e−05, FC = −1.6
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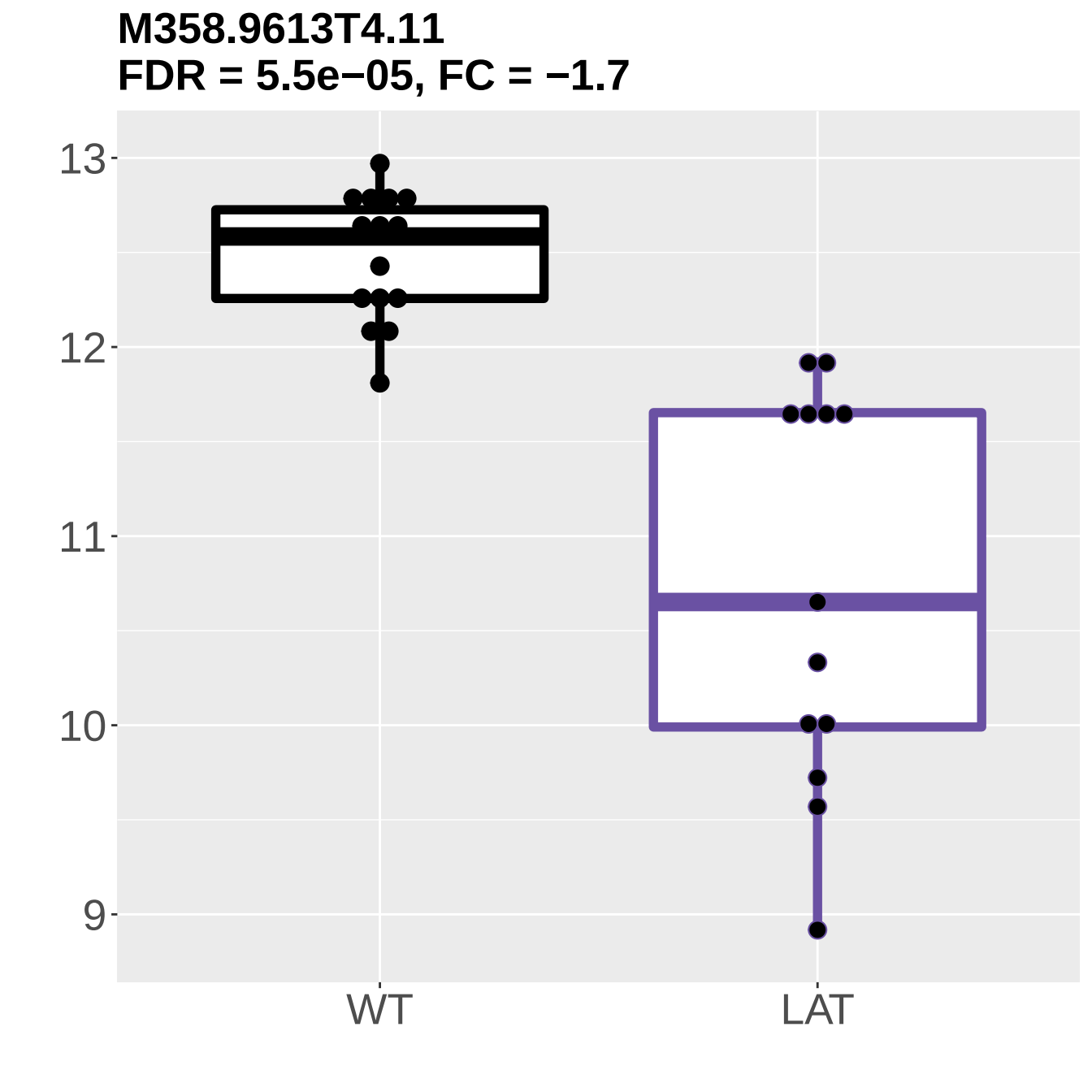
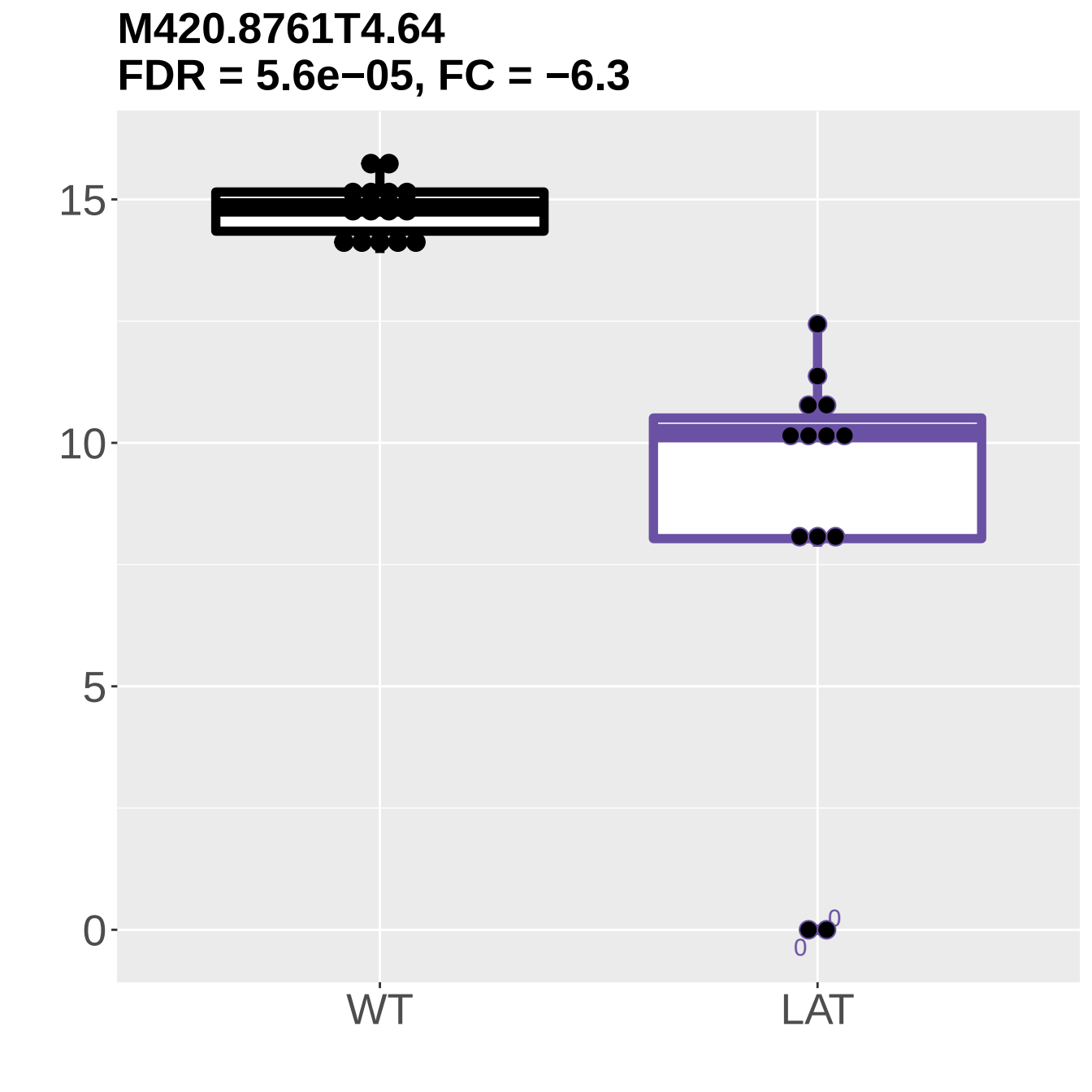
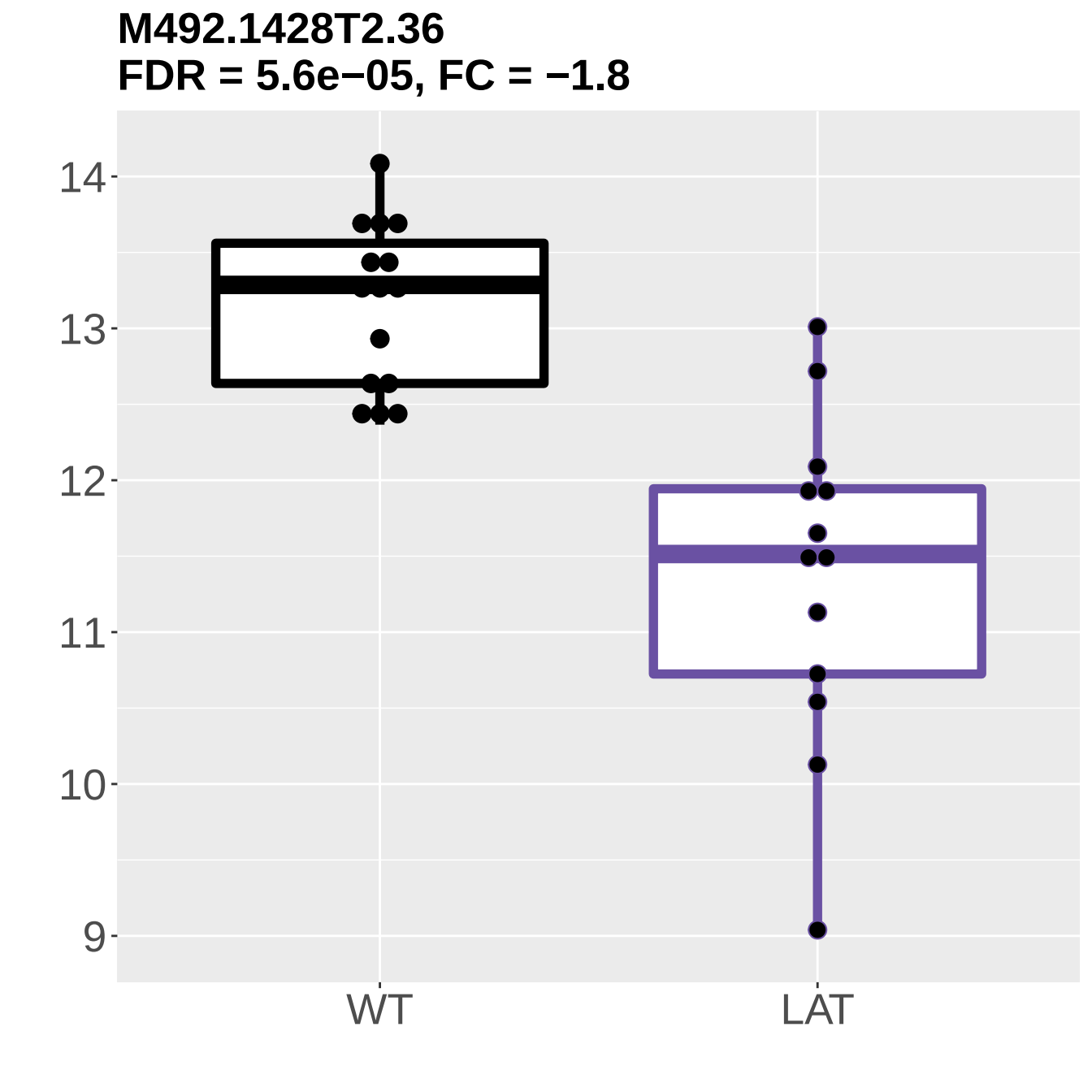
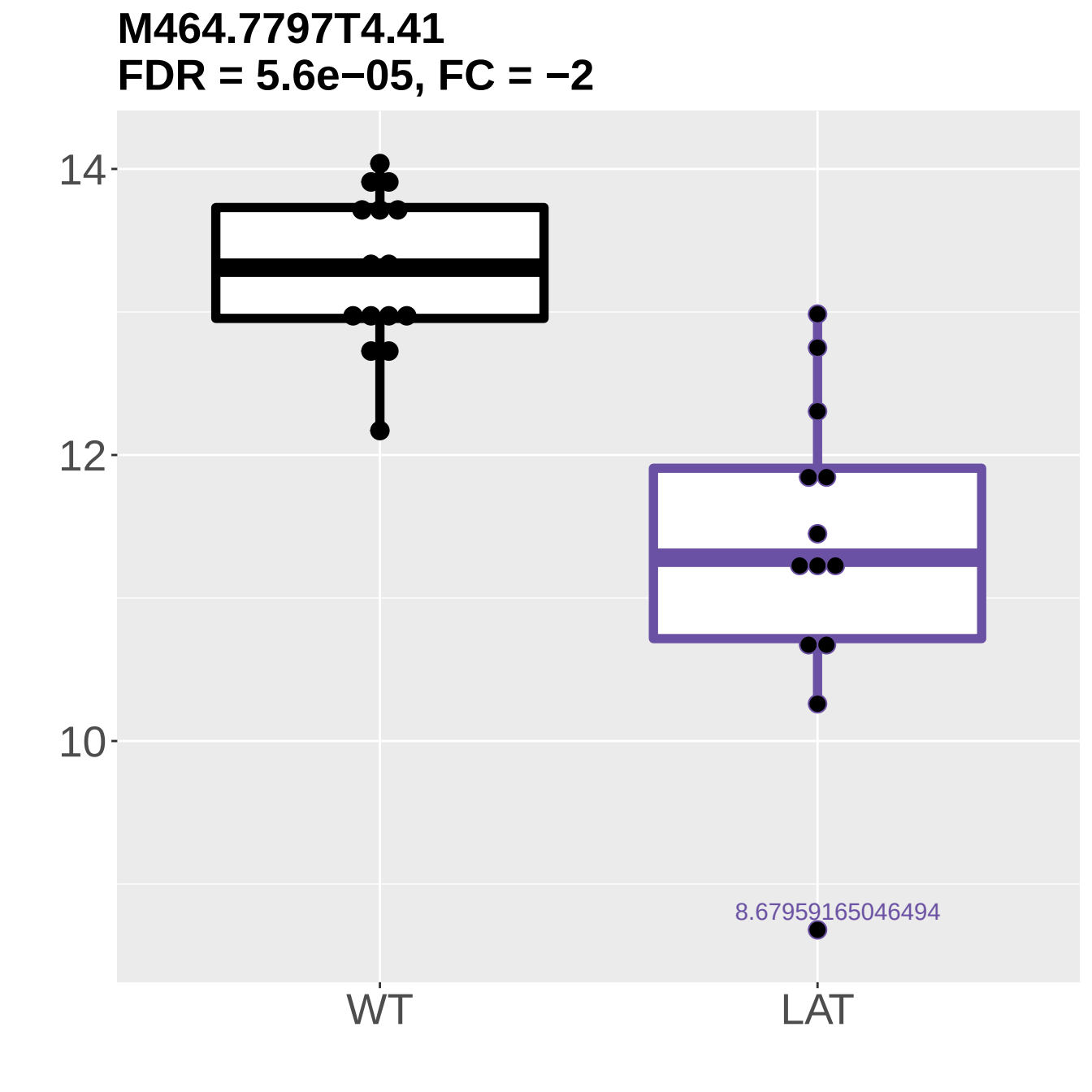
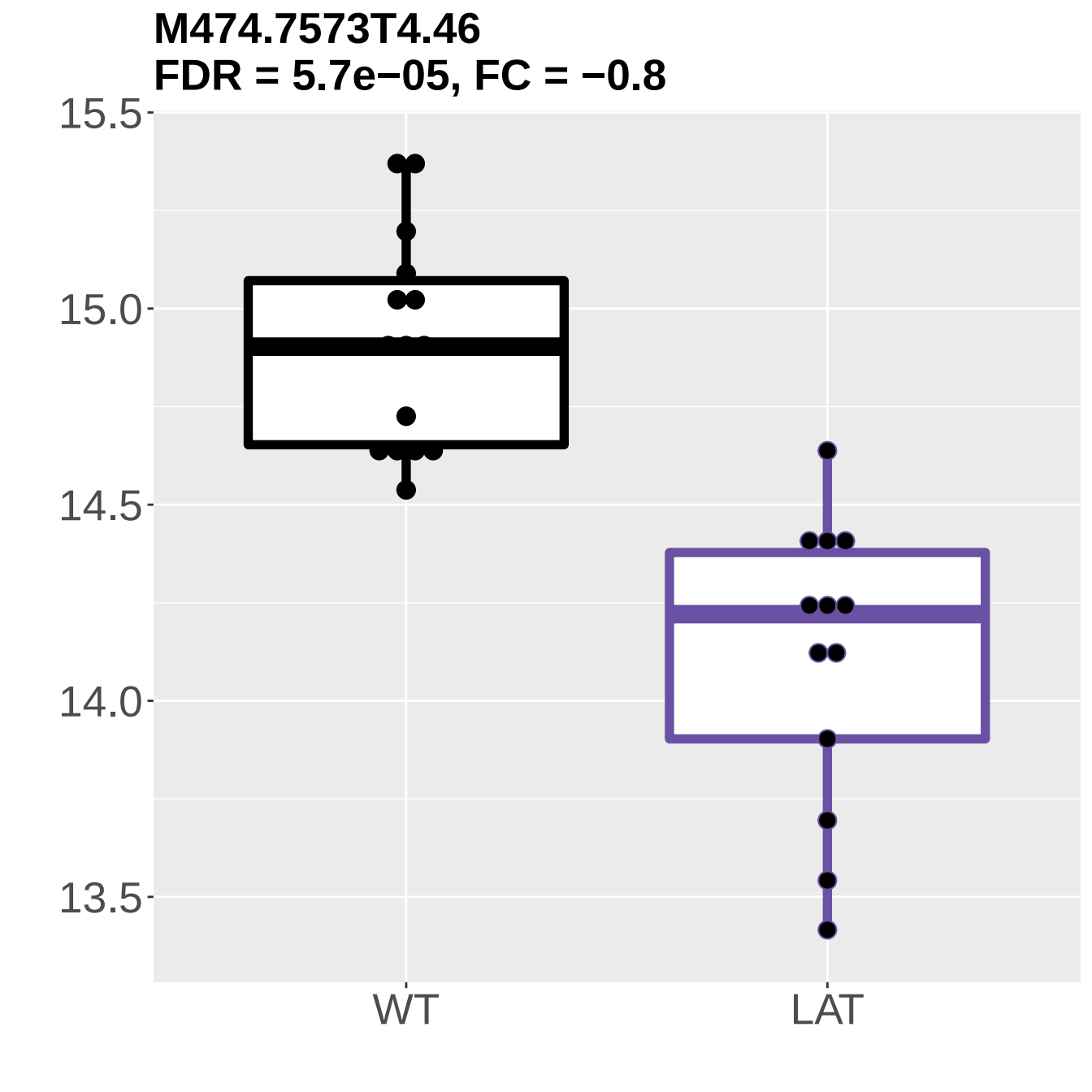
11.5440958146438
14
13
12
11
WT
LAT


M358.9613T4.11
FDR = 5.5e−05, FC = −1.7
13
12
11
10
9
WT
LAT


M420.8761T4.64
FDR = 5.6e−05, FC = −6.3
15
10
5
0
0
0
WT
LAT


M492.1428T2.36
FDR = 5.6e−05, FC = −1.8
14
13
12
11
10
9
WT
LAT


M464.7797T4.41
FDR = 5.6e−05, FC = −2
14
12
10
8.67959165046494
WT
LAT


M474.7573T4.46
FDR = 5.7e−05, FC = −0.8
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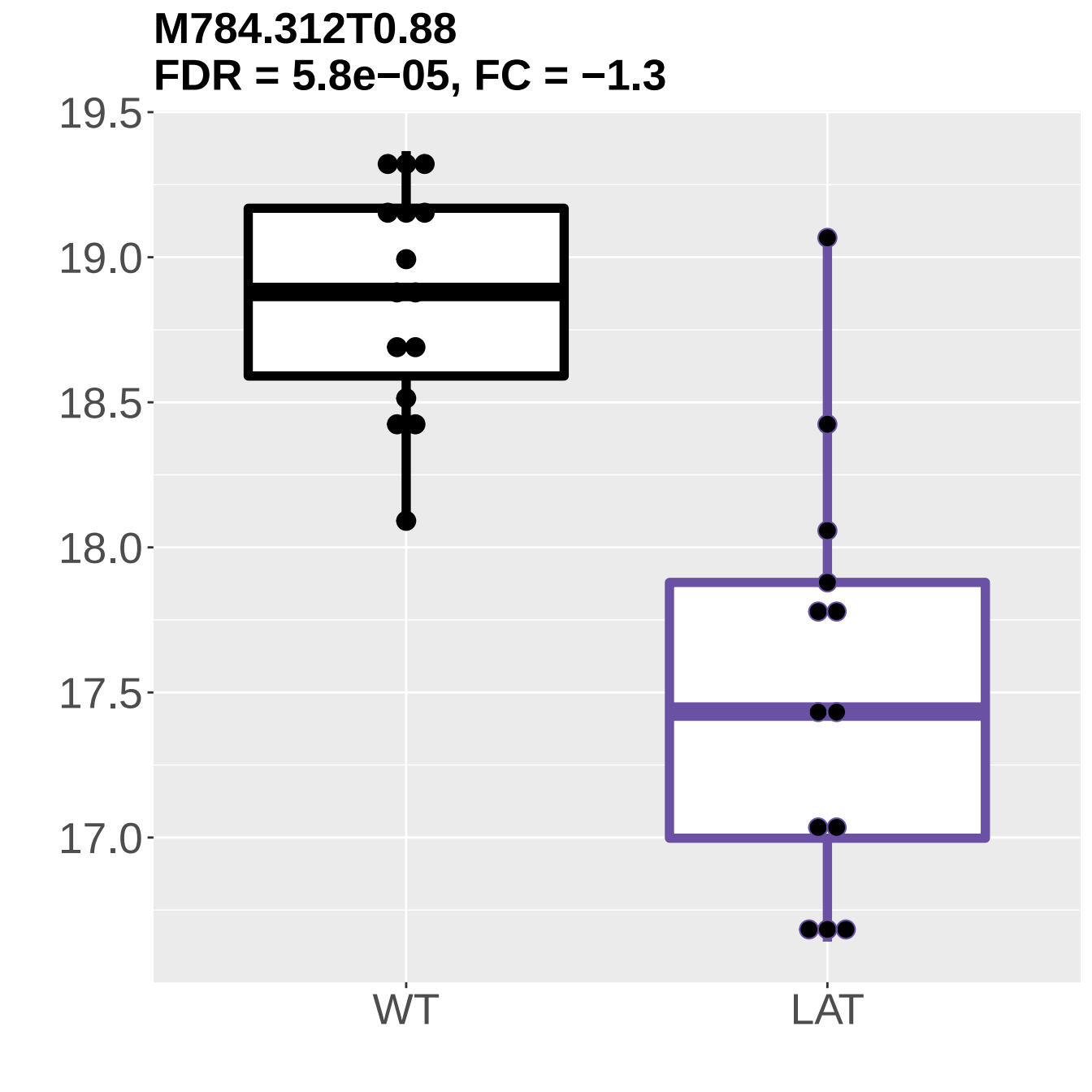
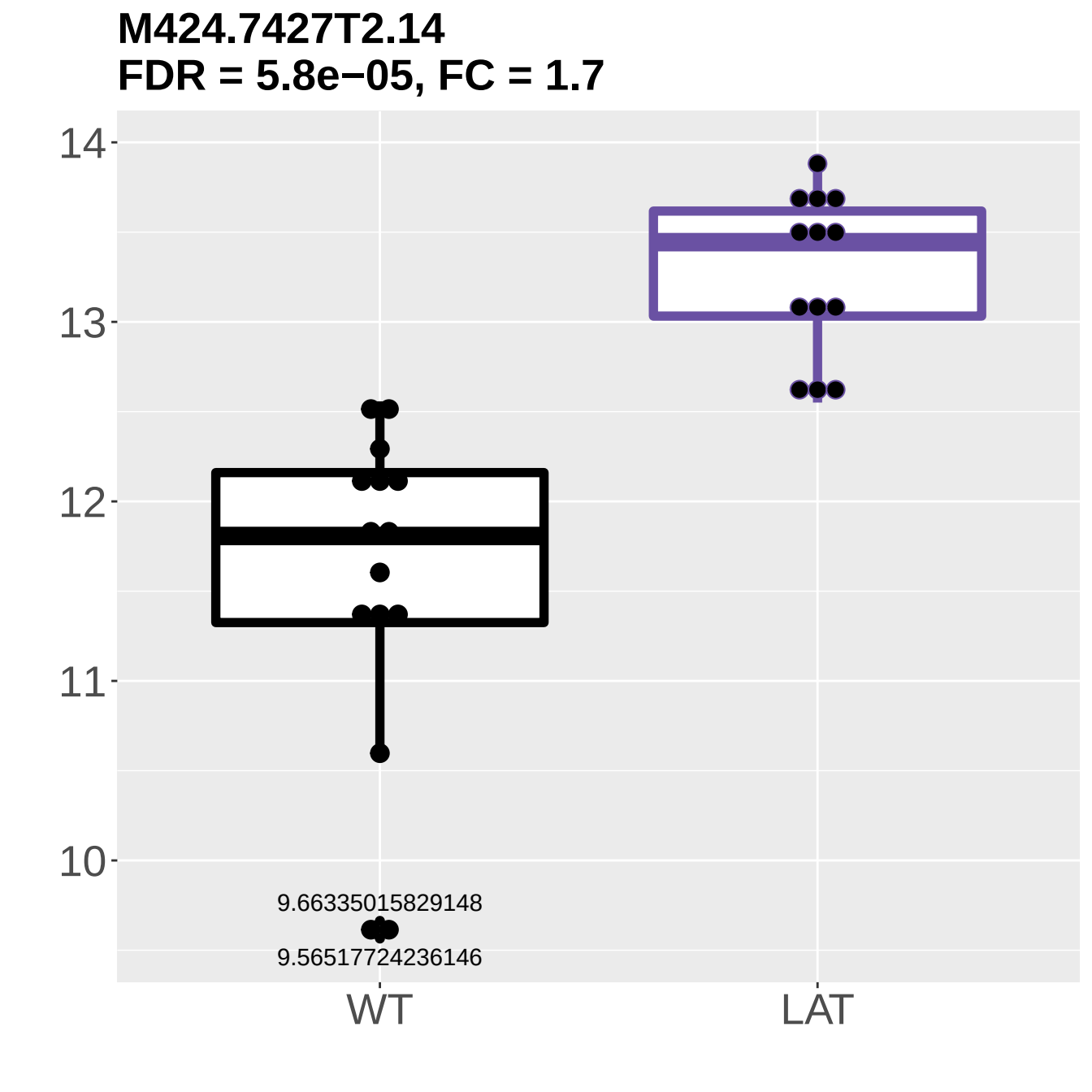
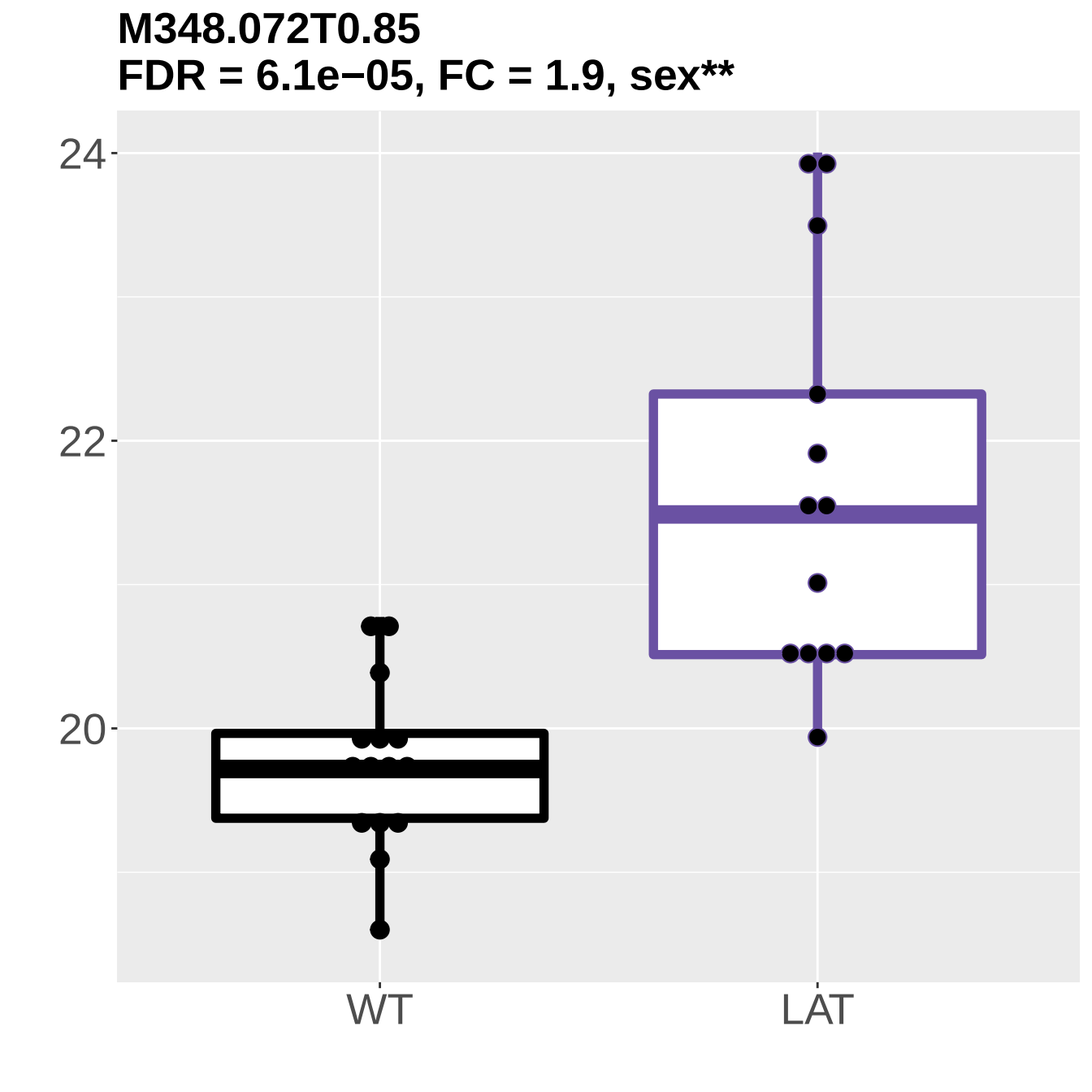
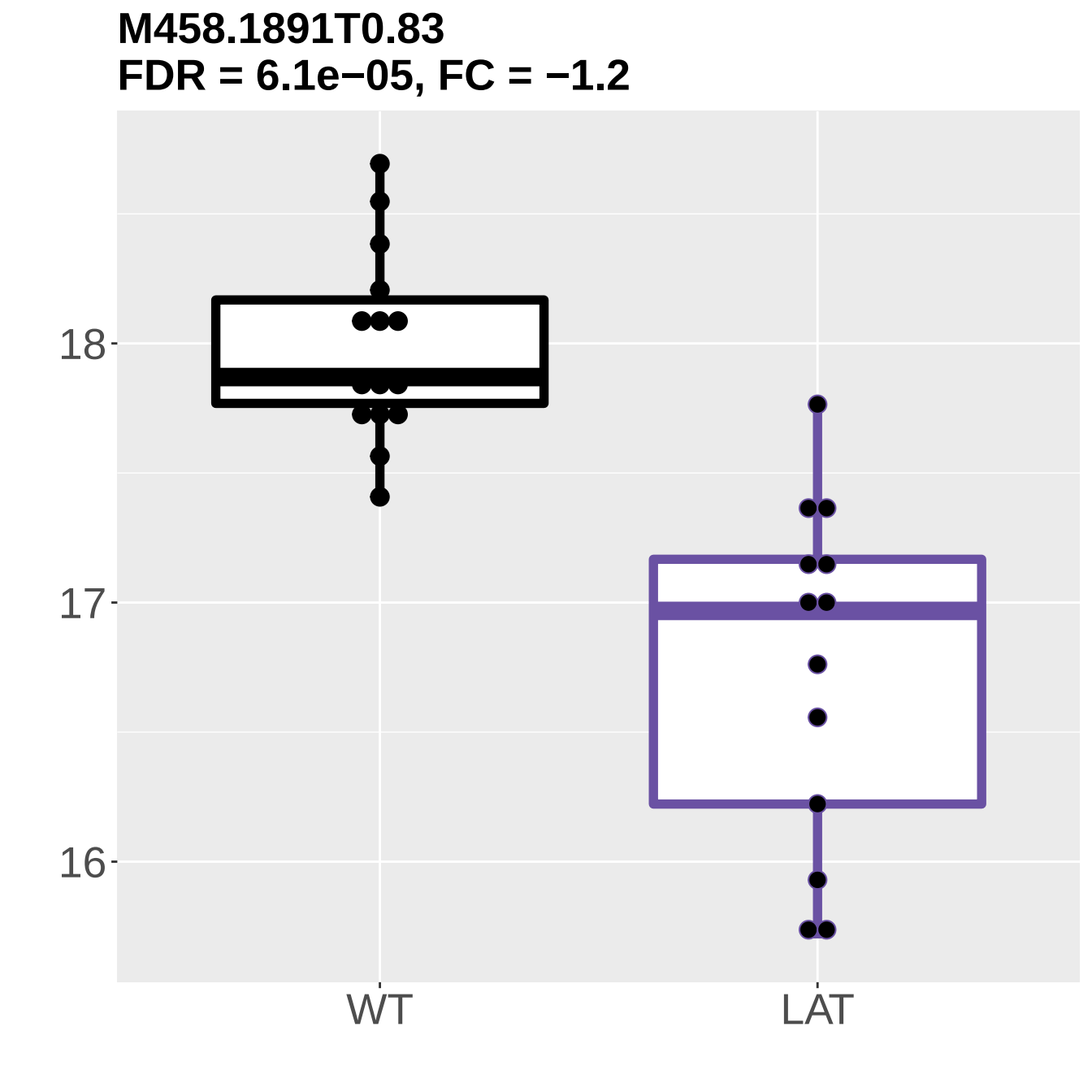
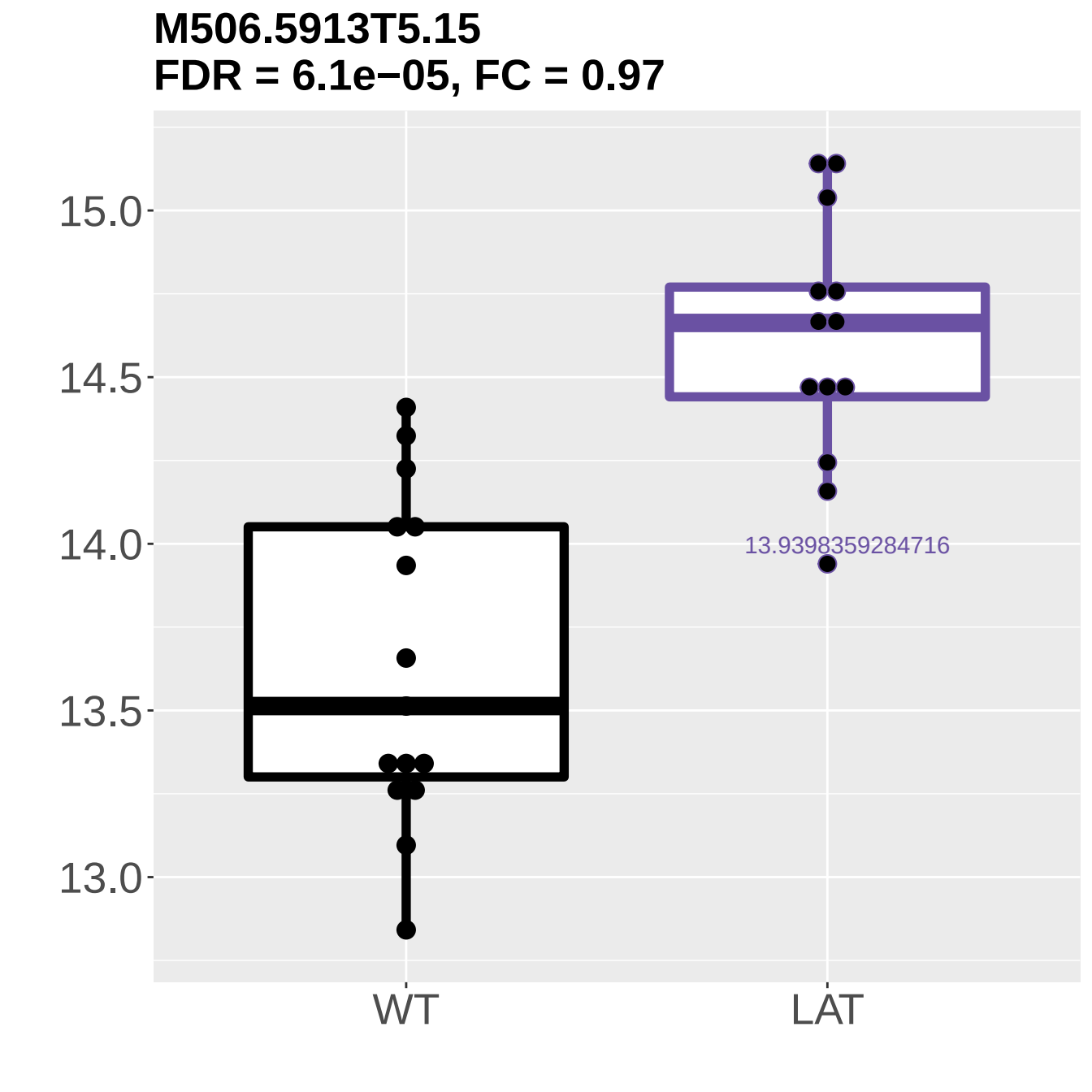
15.0
14.5
14.0
13.5
WT
LAT

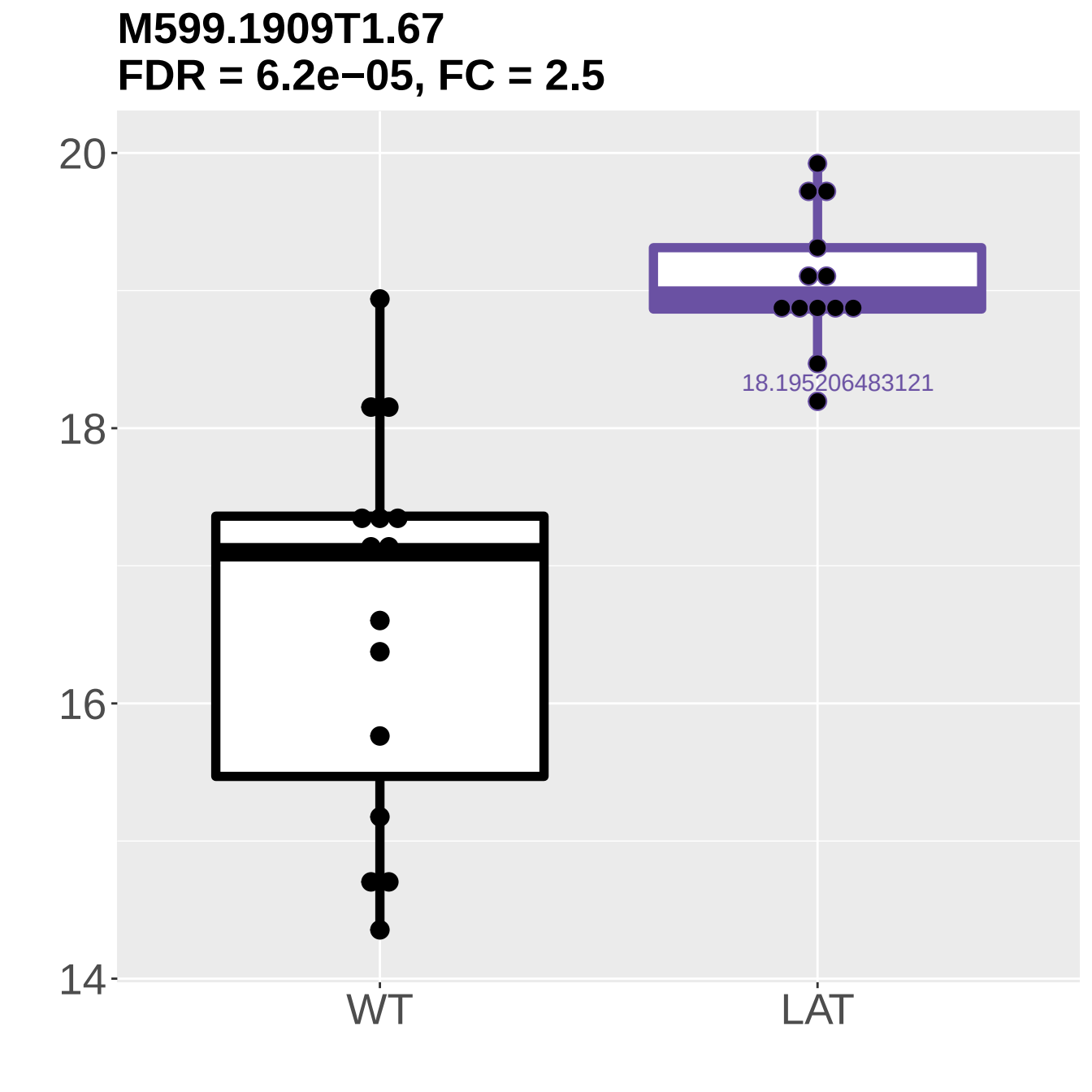

M784.312T0.88
FDR = 5.8e−05, FC = −1.3
19.5
19.0
18.5
18.0
17.5
17.0
WT
LAT

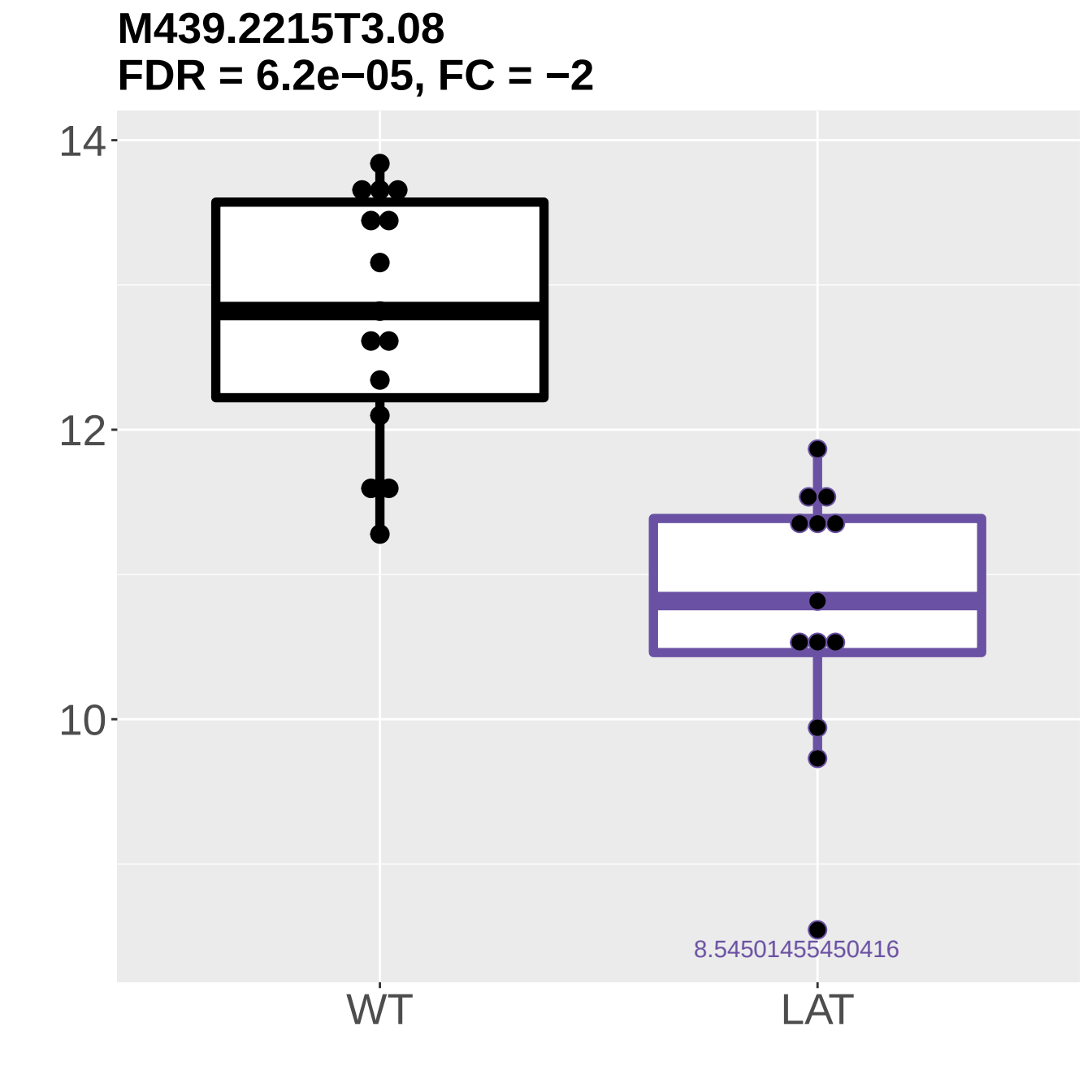

M424.7427T2.14
FDR = 5.8e−05, FC = 1.7
14
13
12
11
10
9.66335015829148
9.56517724236146
WT
LAT

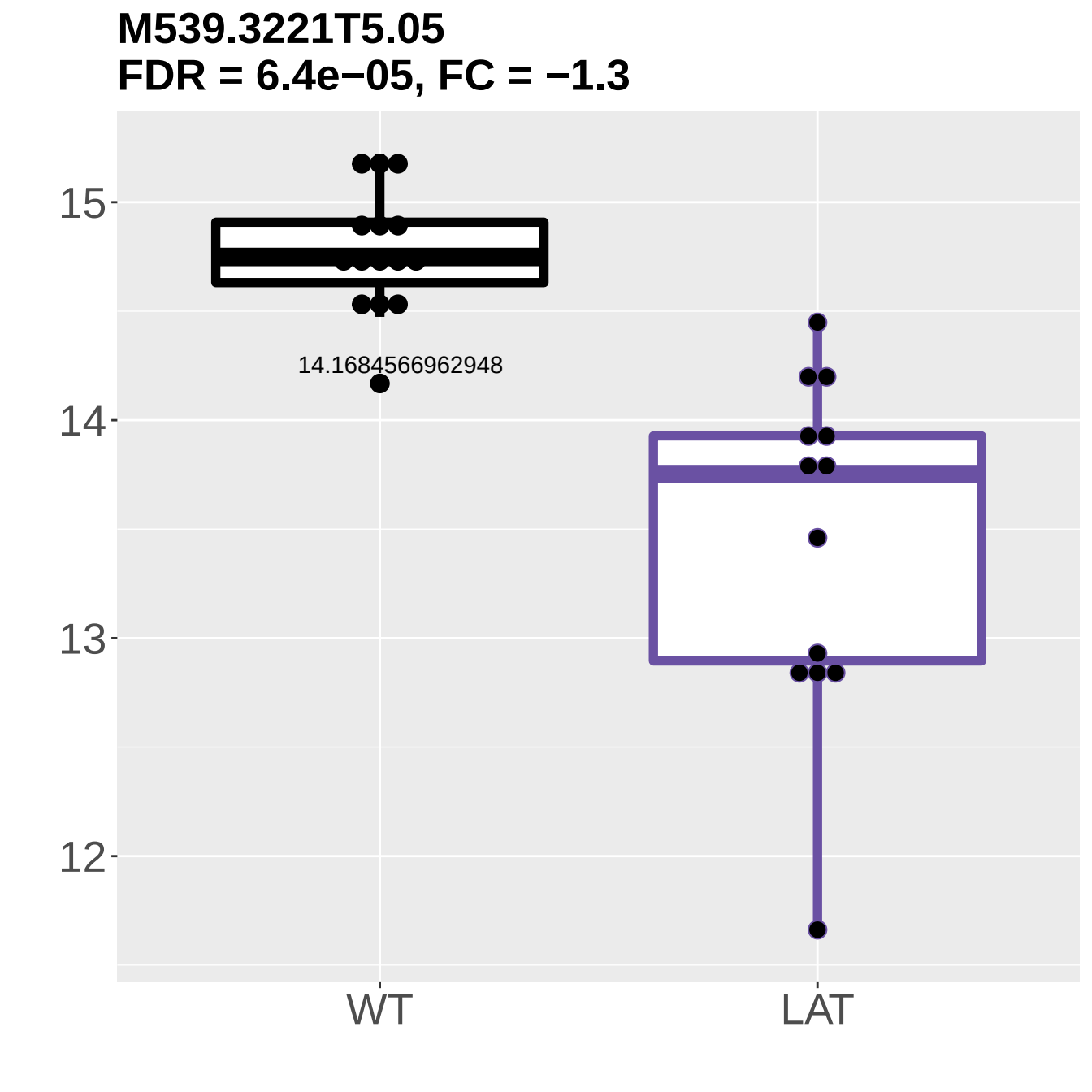

M348.072T0.85
FDR = 6.1e−05, FC = 1.9, sex**
24
22
20
WT
LAT

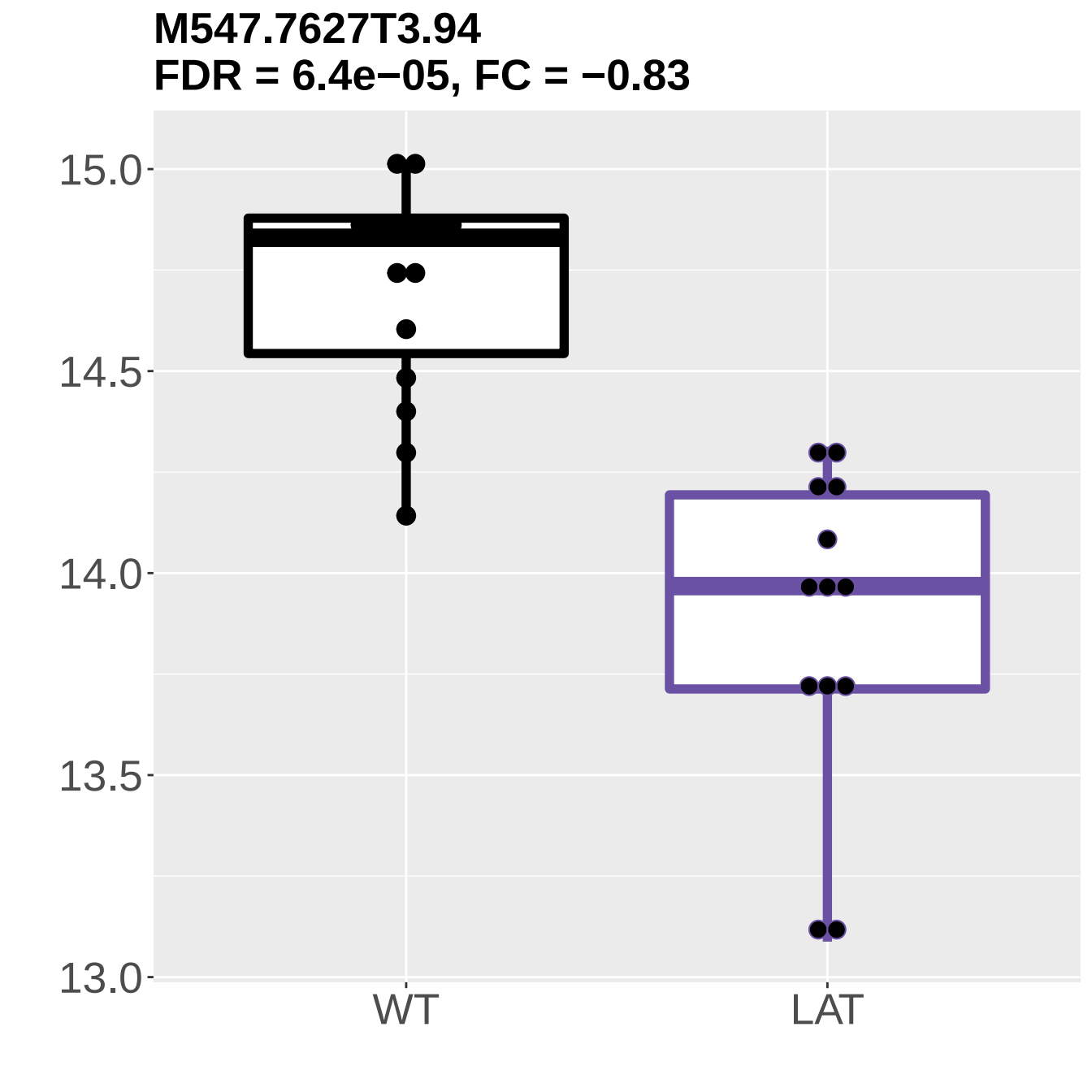

M458.1891T0.83
FDR = 6.1e−05, FC = −1.2
18
17
16
WT
LAT

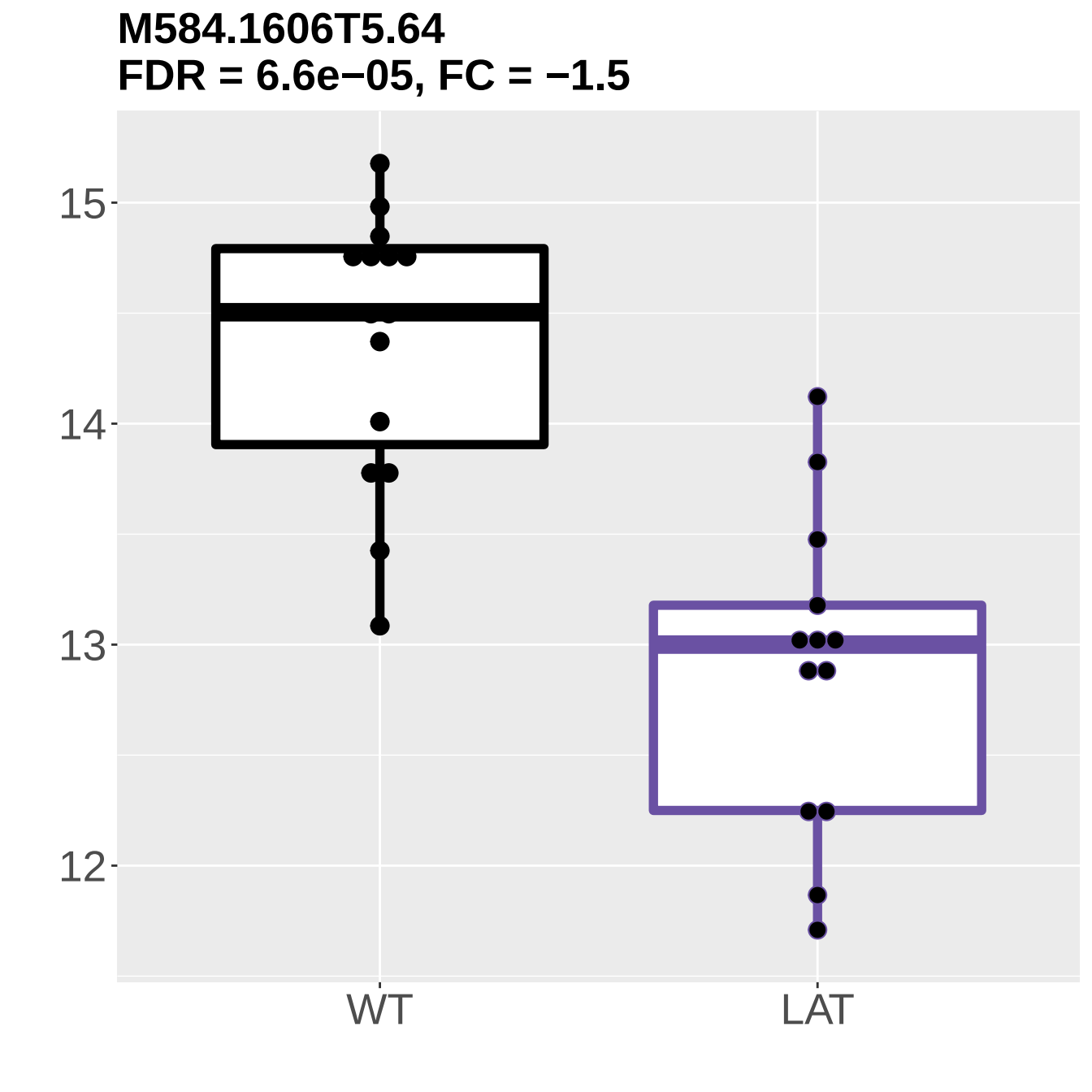

M506.5913T5.15
FDR = 6.1e−05, FC = 0.97
15.0
14.5
14.0
13.5
13.0
13.9398359284716
WT
LAT

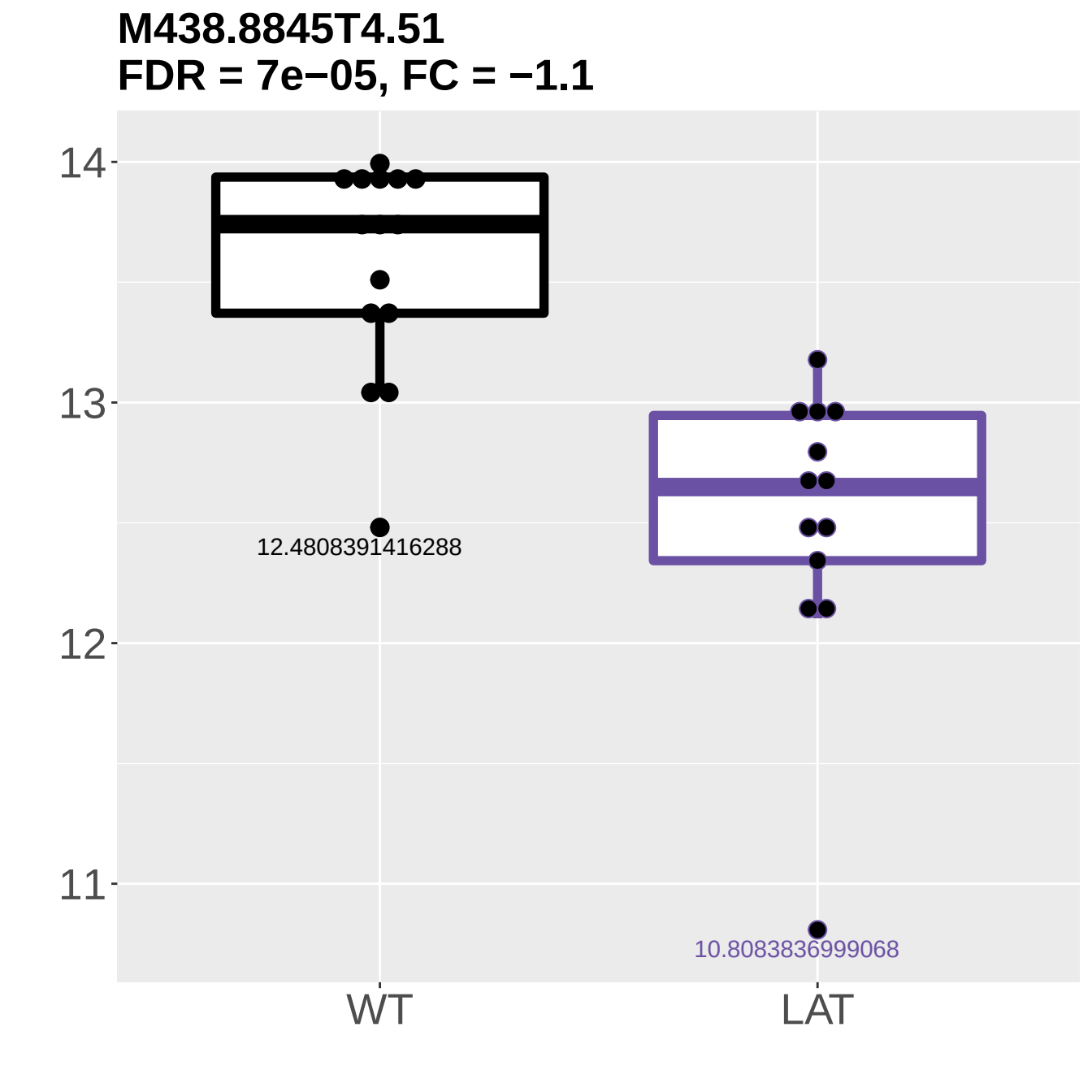

M599.1909T1.67
FDR = 6.2e−05, FC = 2.5
20
18
16
14
18.195206483121
WT
LAT

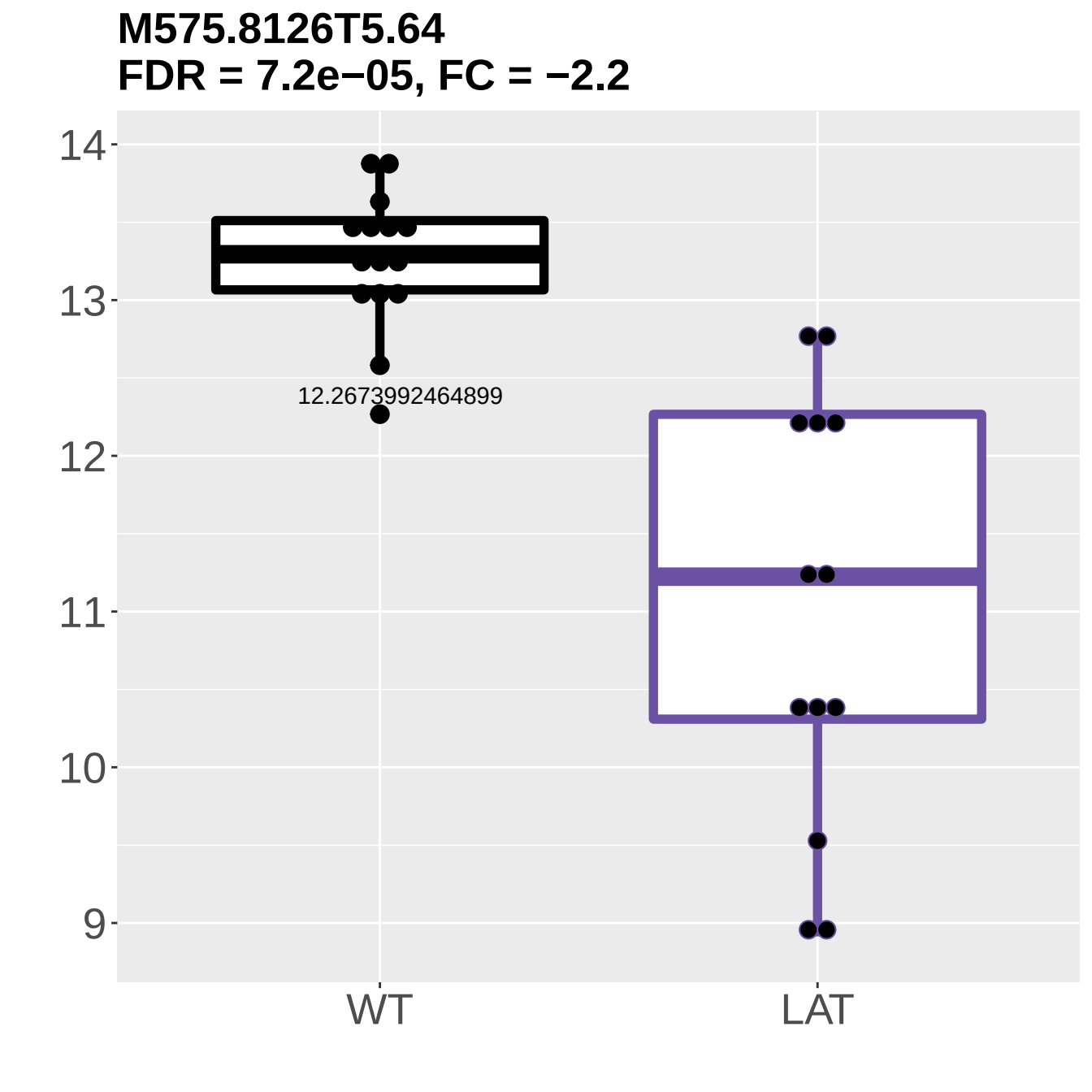

M439.2215T3.08
FDR = 6.2e−05, FC = −2
14
12
10
8.54501455450416
WT
LAT

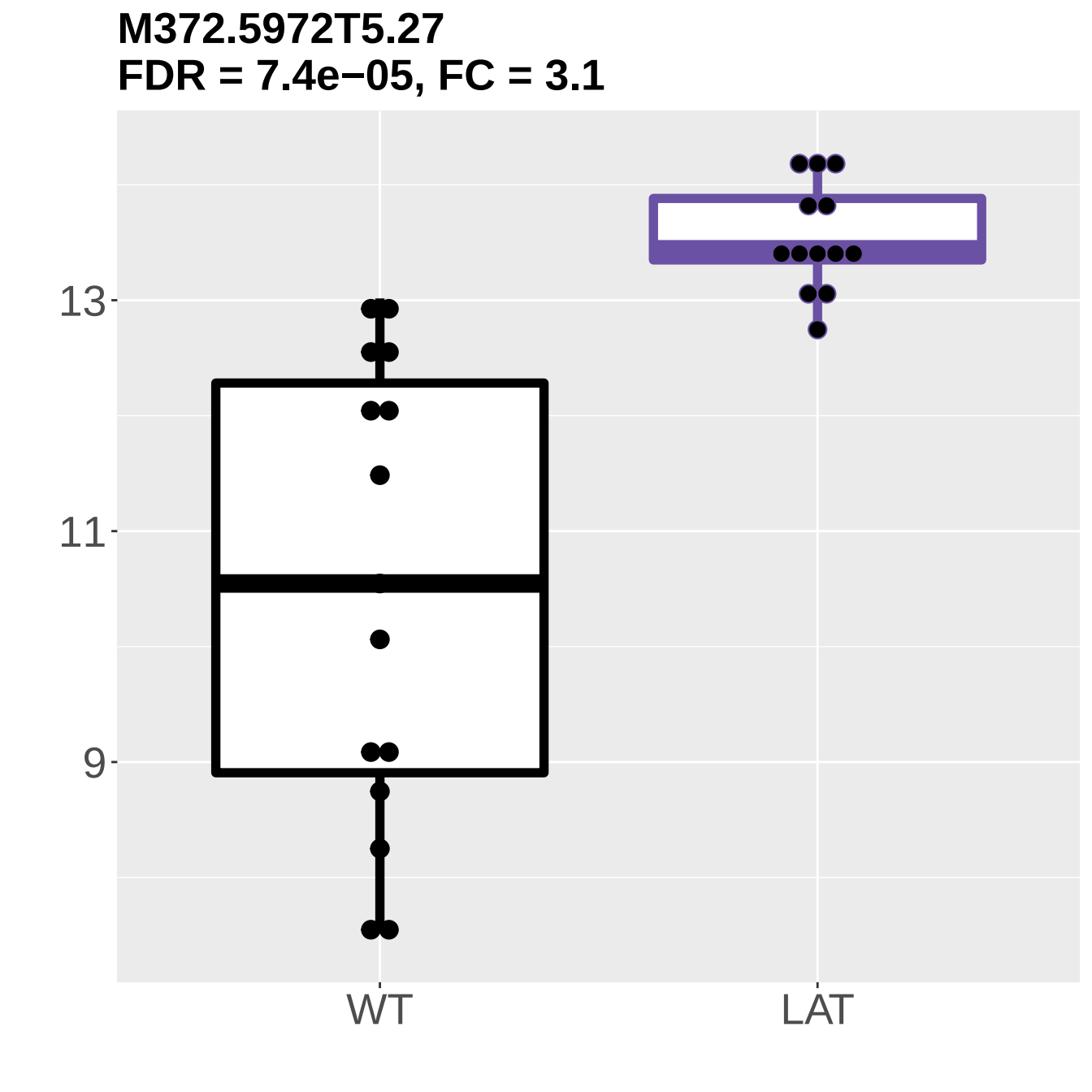

M539.3221T5.05
FDR = 6.4e−05, FC = −1.3
15
14
13
12
14.1684566962948
WT
LAT

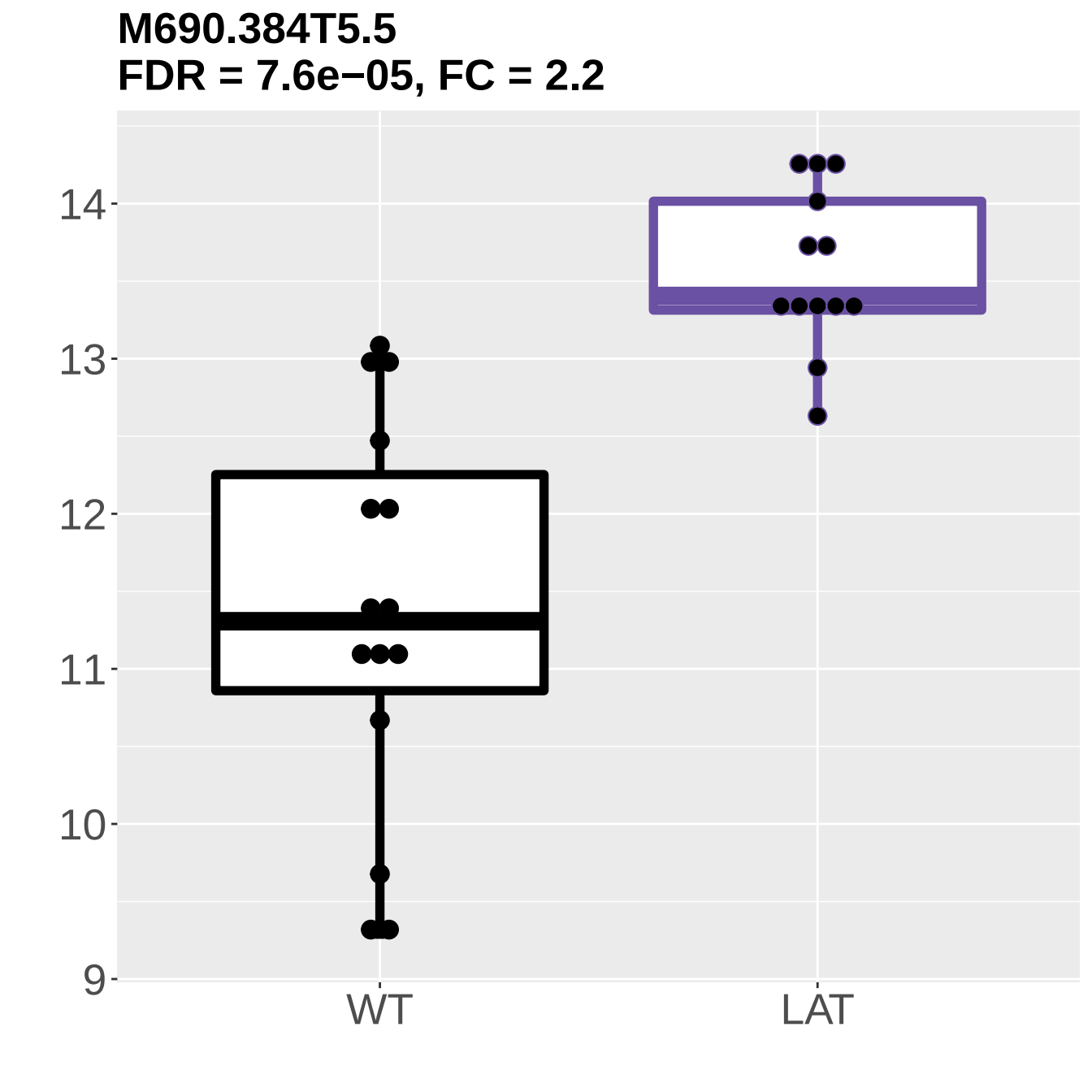

M547.7627T3.94
FDR = 6.4e−05, FC = −0.83
15.0
14.5
14.0
13.5
13.0
WT
LAT

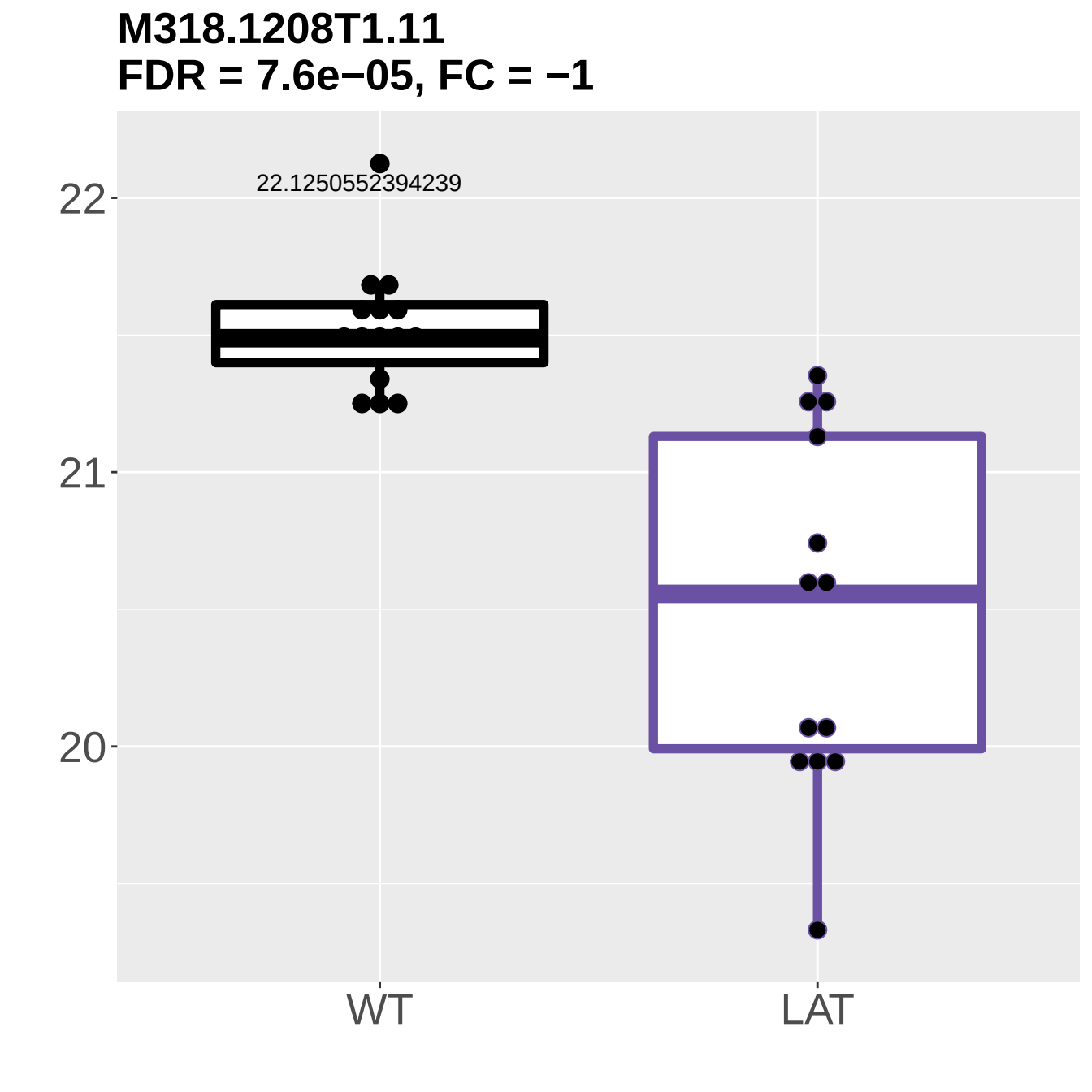

M584.1606T5.64
FDR = 6.6e−05, FC = −1.5
15
14
13
12
WT
LAT

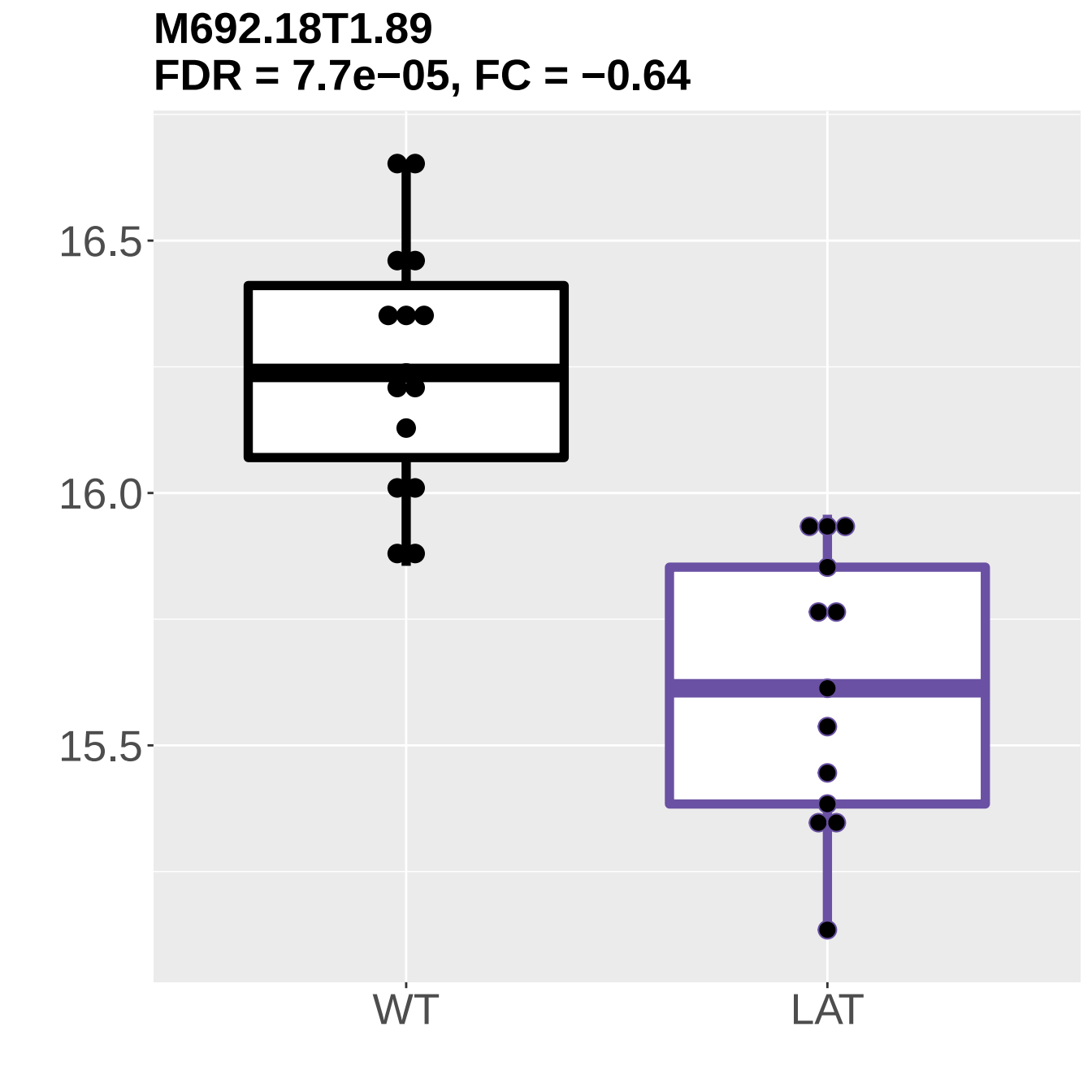

M438.8845T4.51
FDR = 7e−05, FC = −1.1
14
13
12
11
12.4808391416288
10.8083836999068
WT
LAT

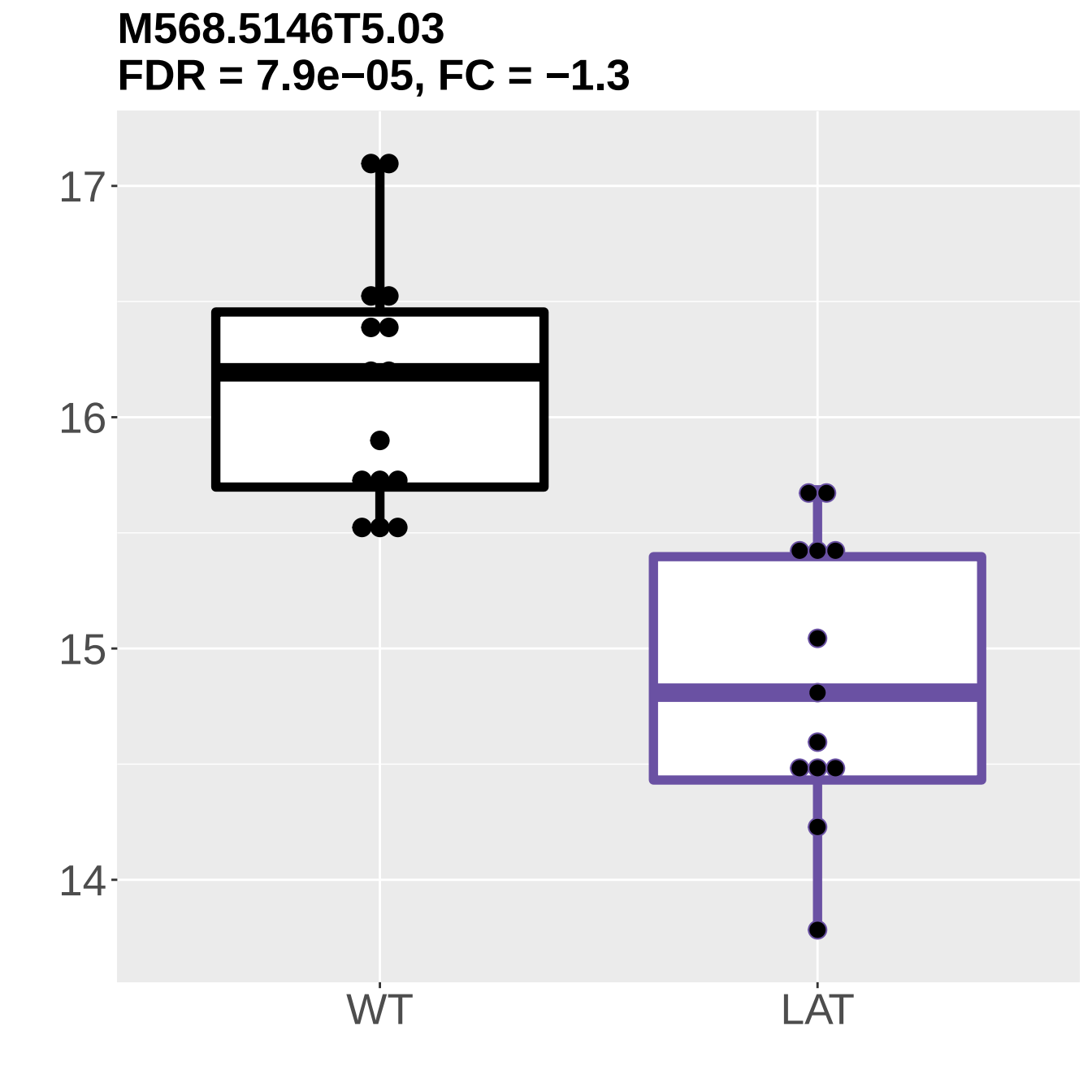

M575.8126T5.64
FDR = 7.2e−05, FC = −2.2
14
13
12
11
10
9
12.2673992464899
WT
LAT

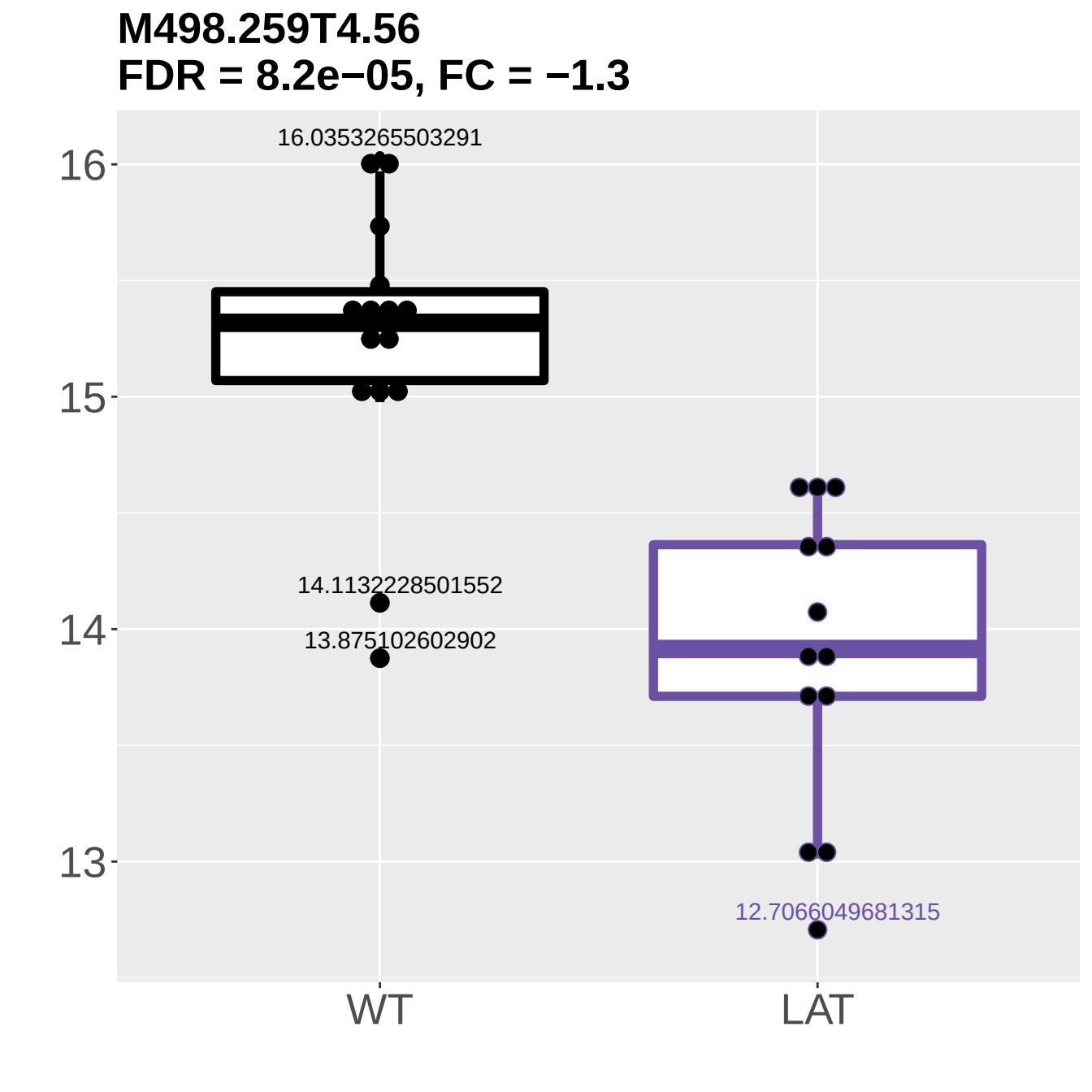

M372.5972T5.27
FDR = 7.4e−05, FC = 3.1
13
11
9
WT
LAT

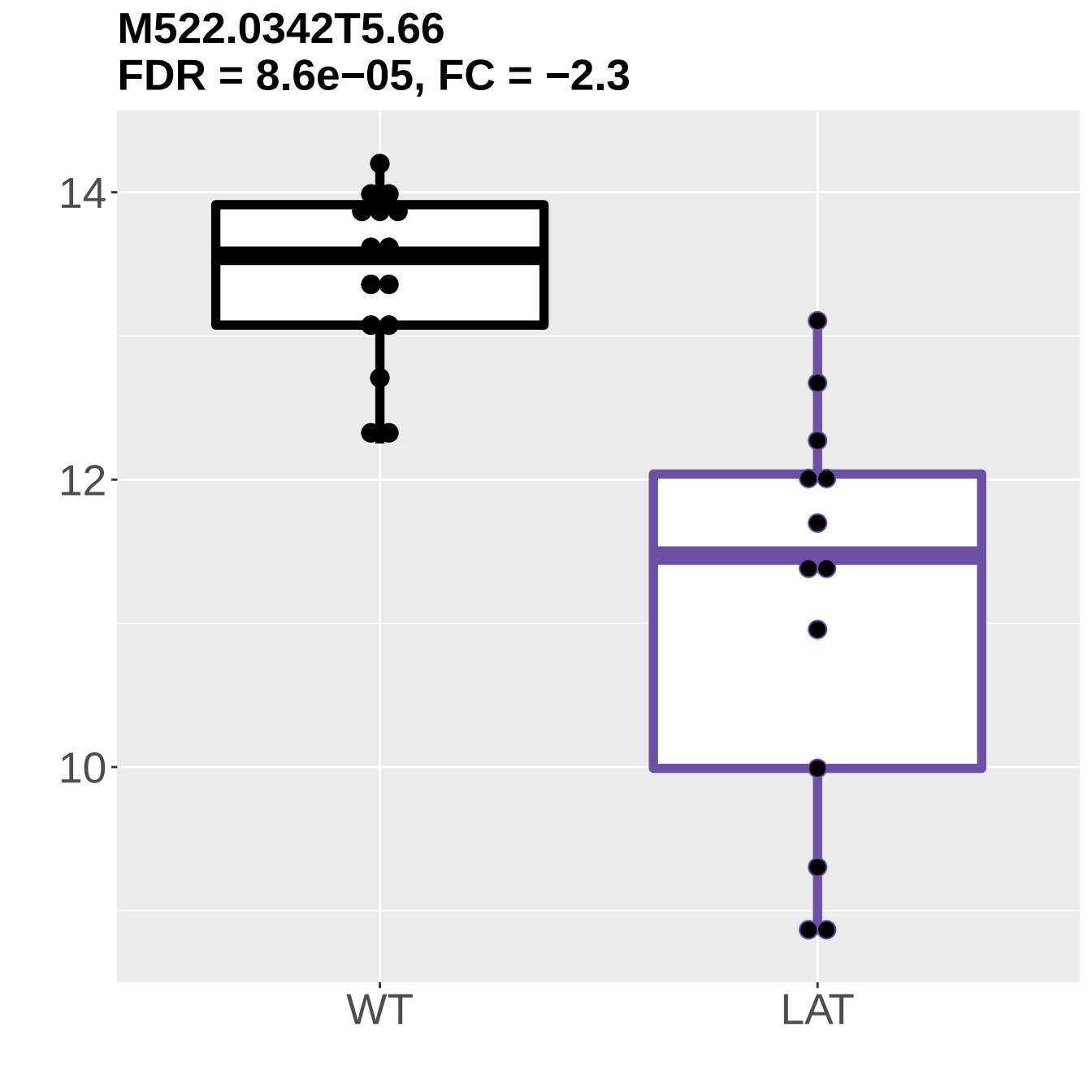

M690.384T5.5
FDR = 7.6e−05, FC = 2.2
14
13
12
11
10
9
WT
LAT

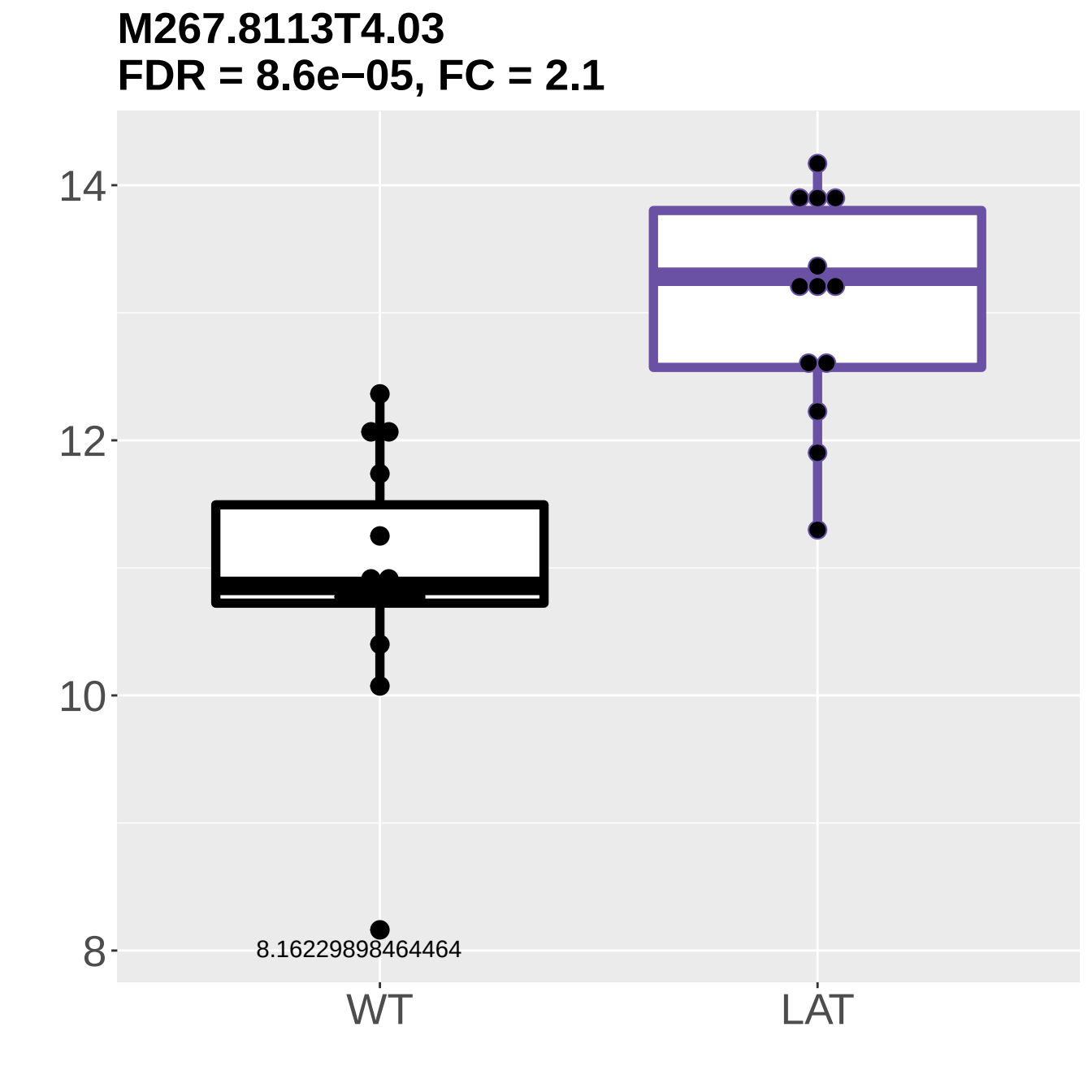

M318.1208T1.11
FDR = 7.6e−05, FC = −1
22.1250552394239
22
21
20
WT
LAT

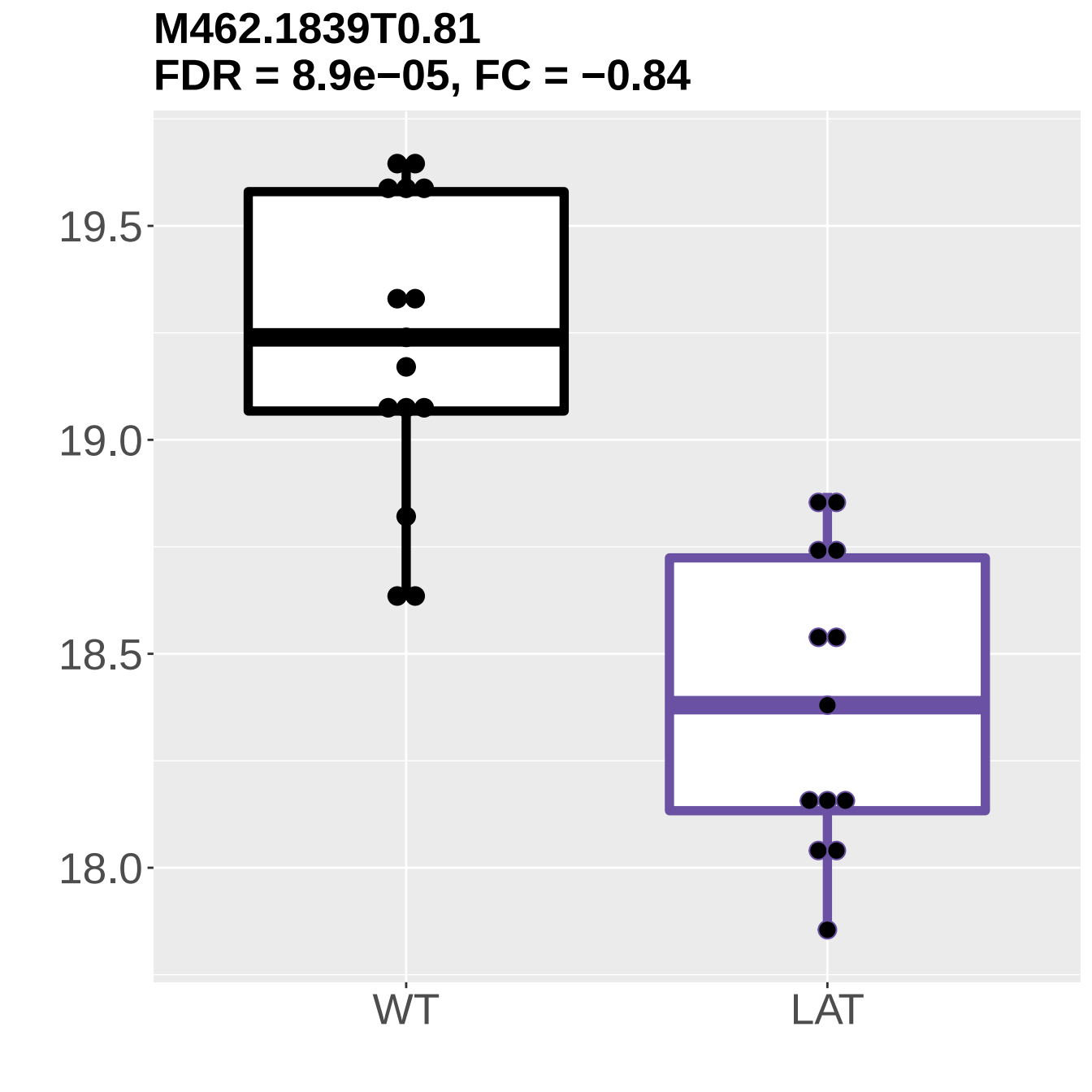

M692.18T1.89
FDR = 7.7e−05, FC = −0.64
16.5
16.0
15.5
WT
LAT

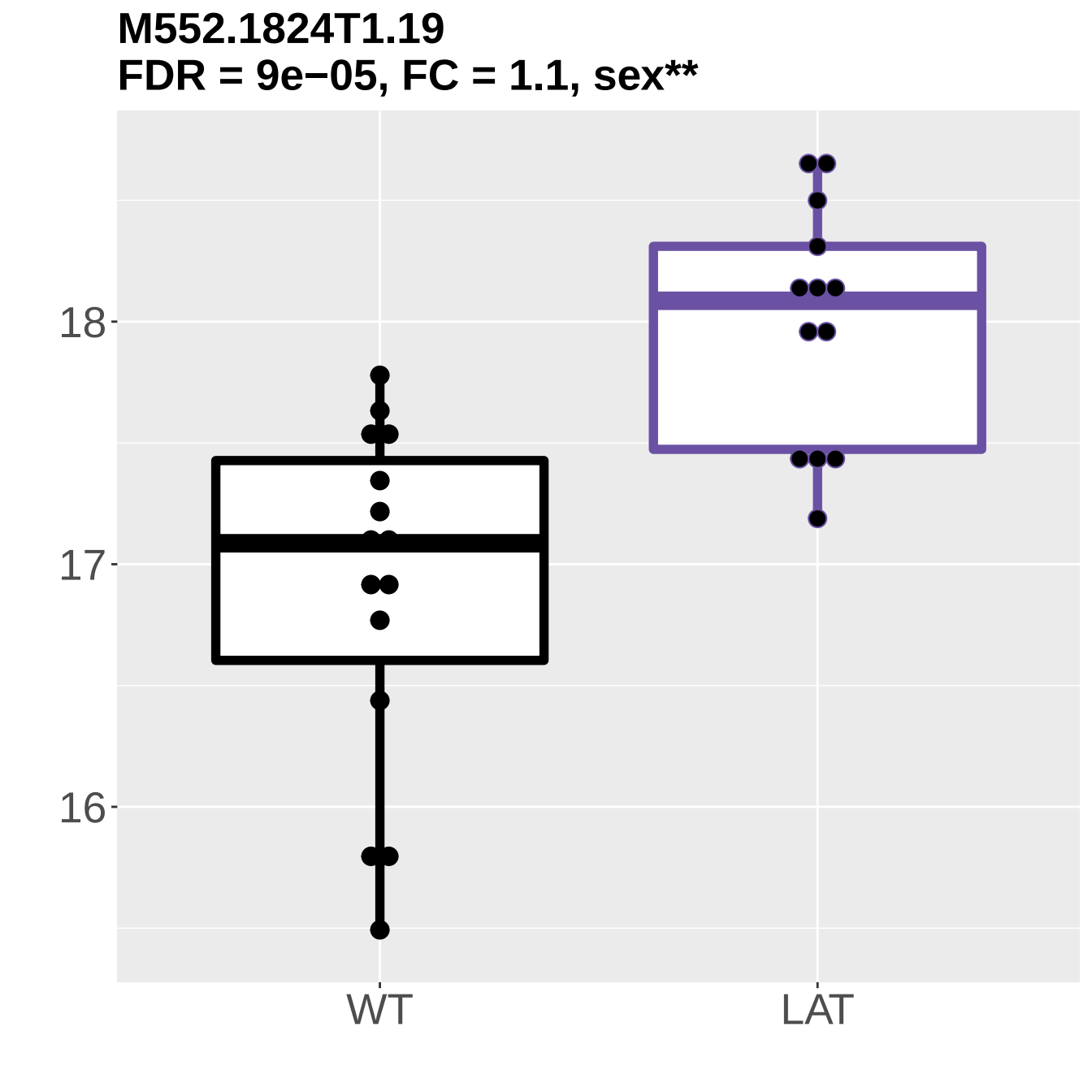

M568.5146T5.03
FDR = 7.9e−05, FC = −1.3
17
16
15
14
WT
LAT

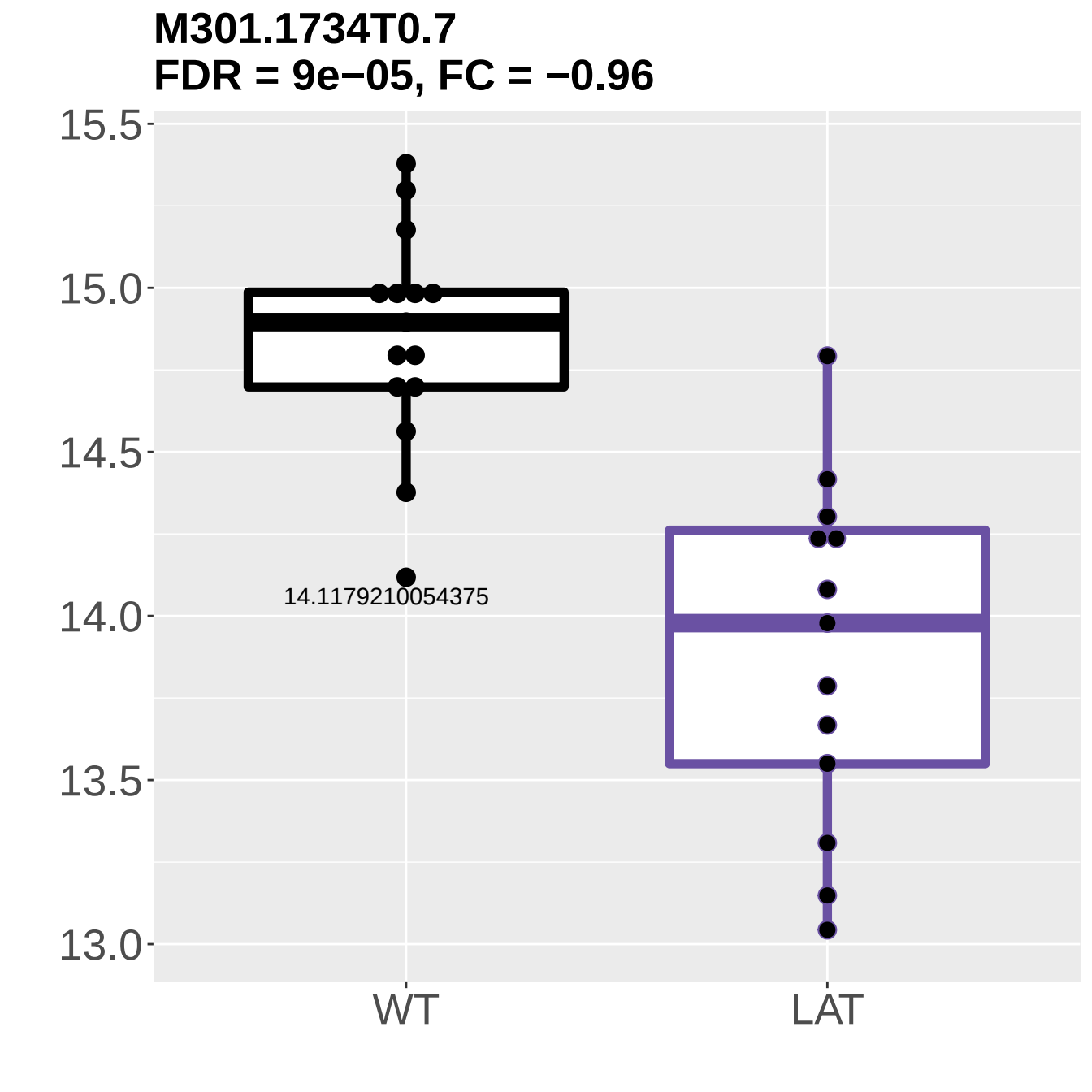

M498.259T4.56
FDR = 8.2e−05, FC = −1.3
16.0353265503291
14.1132228501552
13.875102602902
12.7066049681315
16
15
14
13
WT
LAT

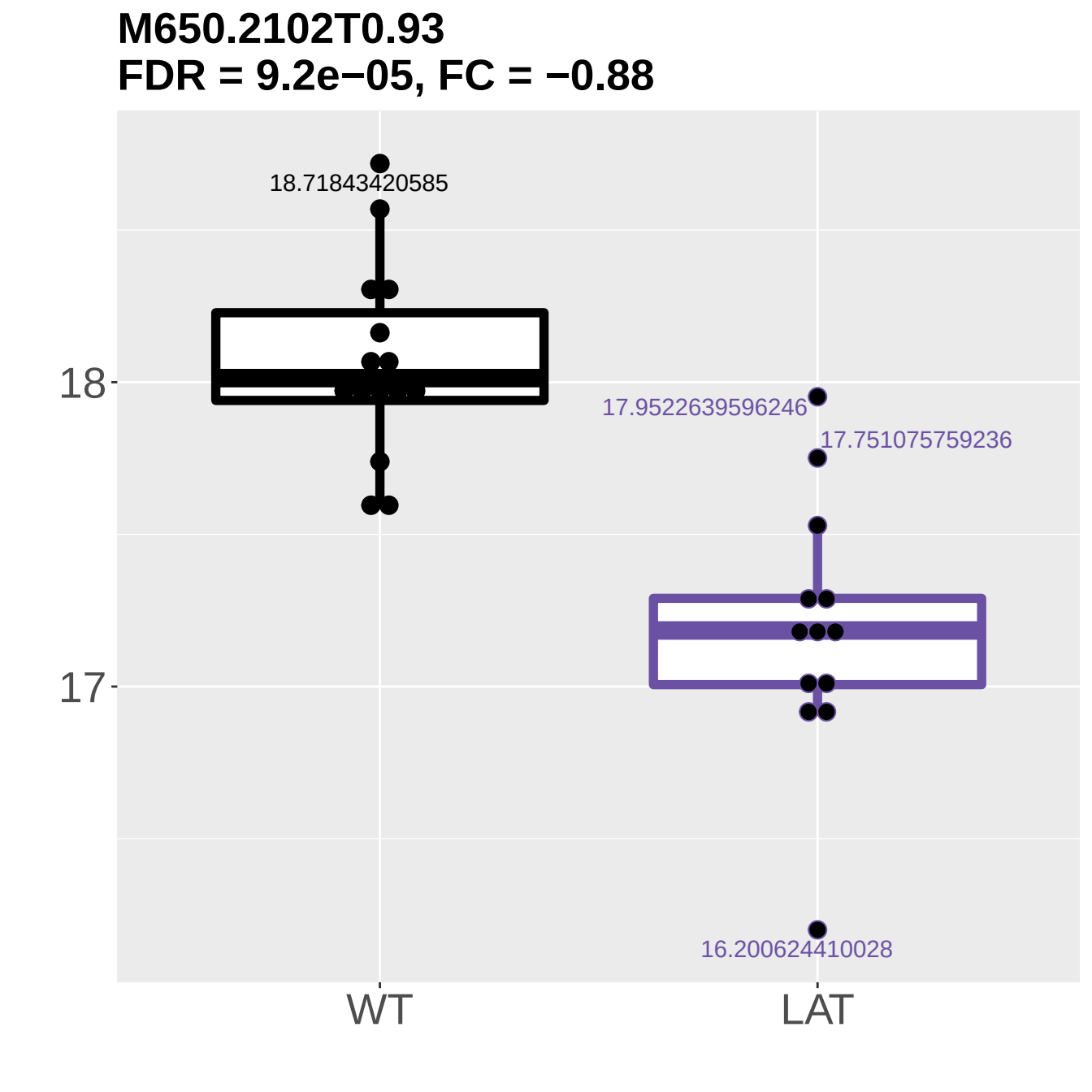

M522.0342T5.66
FDR = 8.6e−05, FC = −2.3
14
12
10
WT
LAT

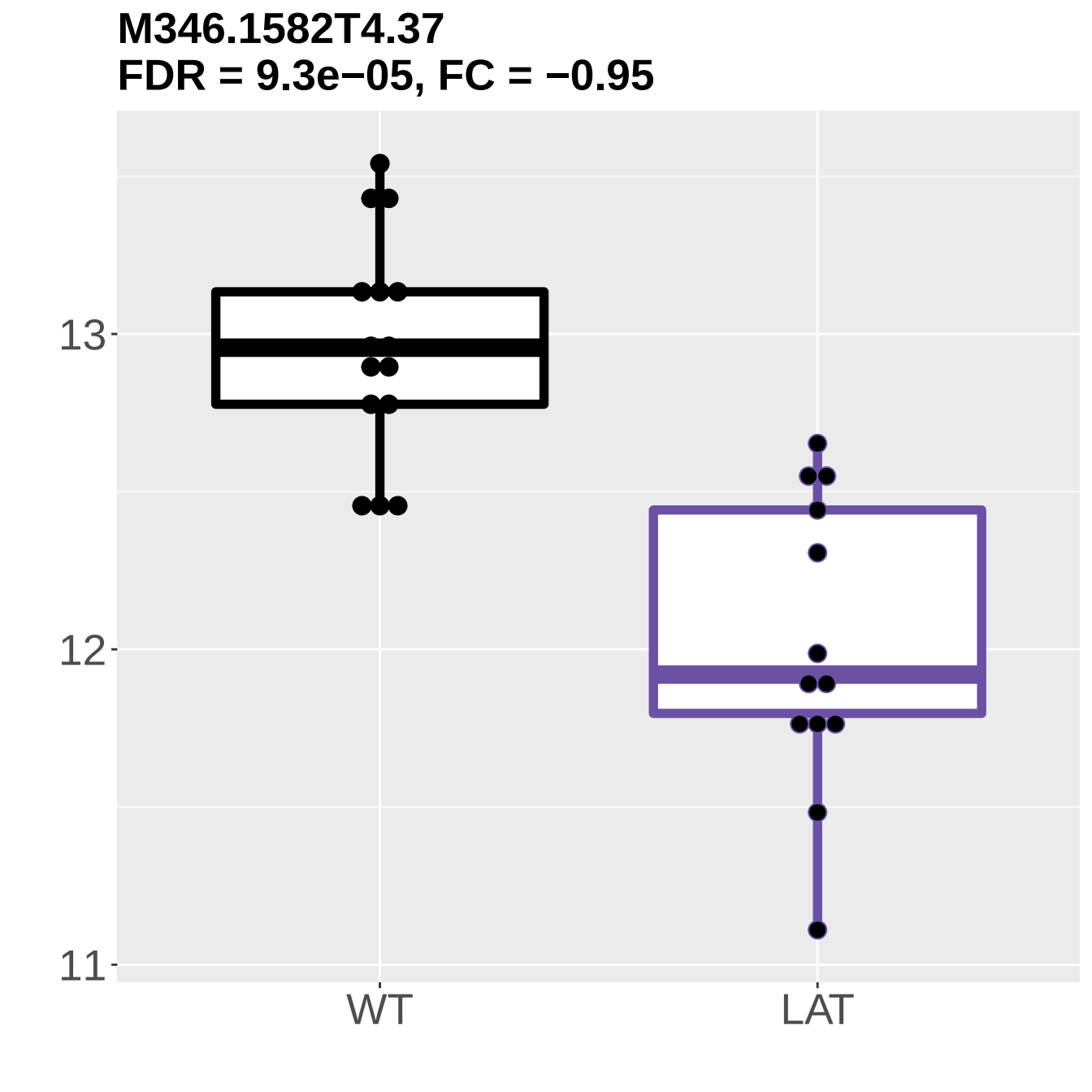

M267.8113T4.03
FDR = 8.6e−05, FC = 2.1
14
12
10
8
8.16229898464464
WT
LAT

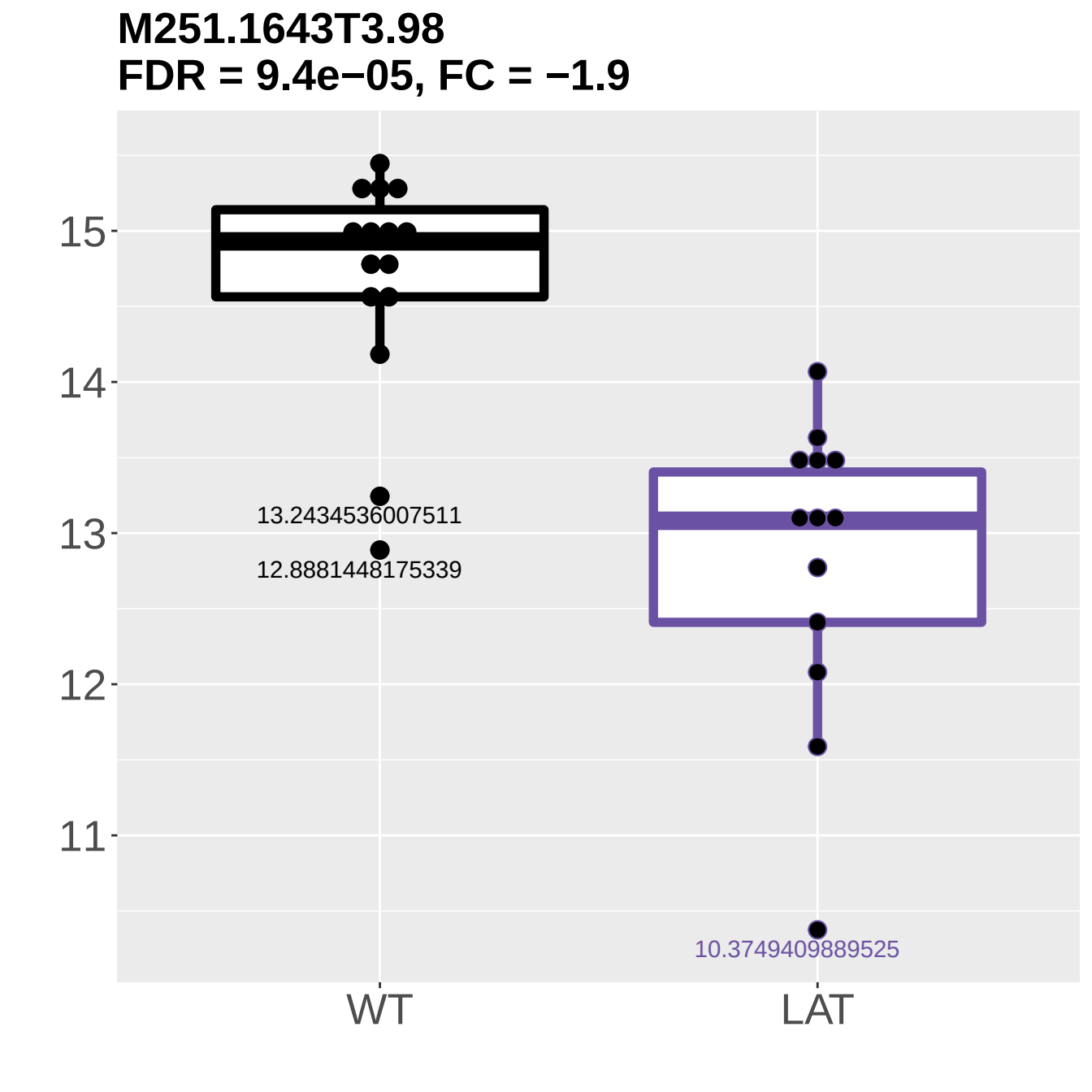

M462.1839T0.81
FDR = 8.9e−05, FC = −0.84
19.5
19.0
18.5
18.0
WT
LAT

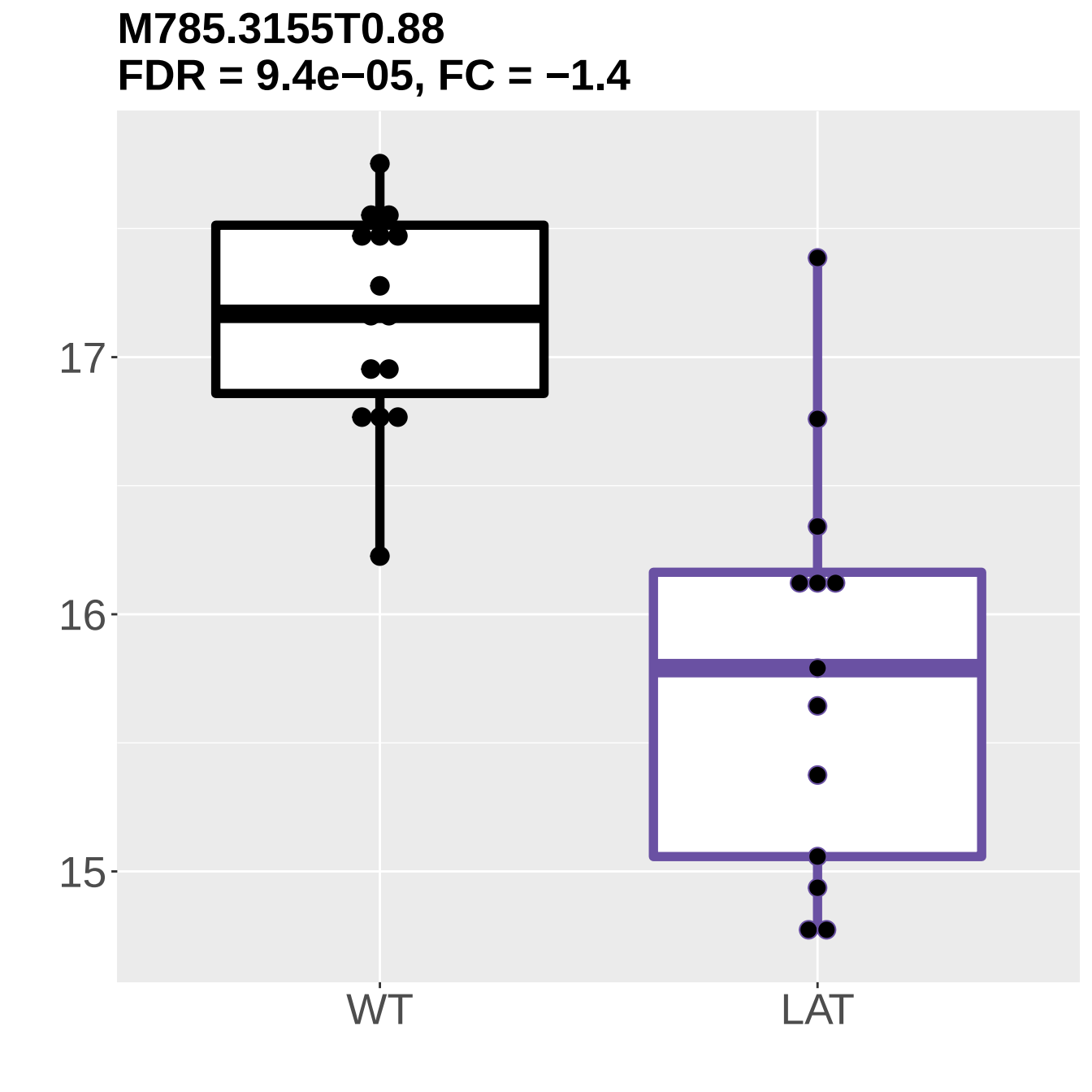

M552.1824T1.19
FDR = 9e−05, FC = 1.1, sex**
18
17
16
WT
LAT

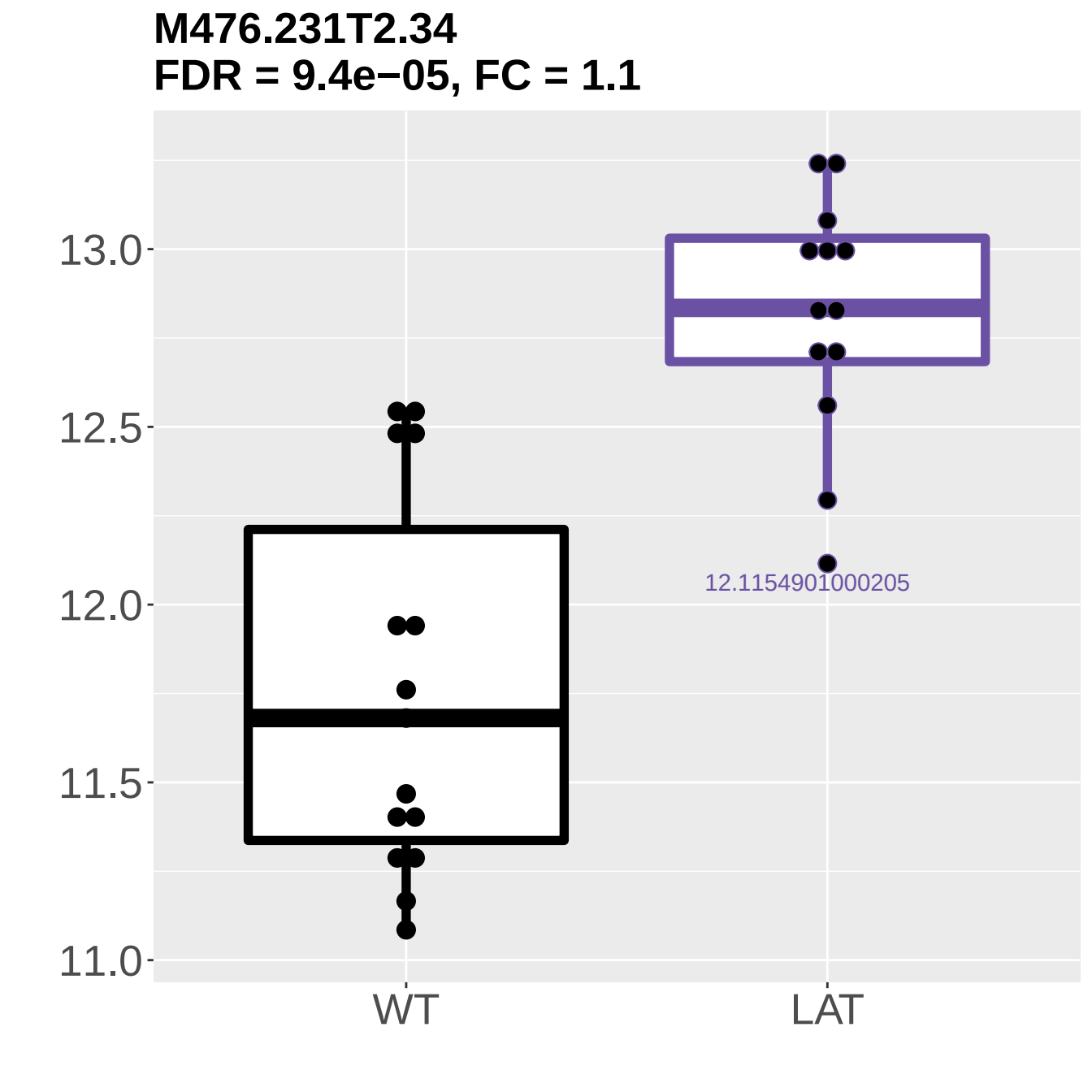

M301.1734T0.7
FDR = 9e−05, FC = −0.96
15.5
15.0
14.5
14.0
13.5
13.0
14.1179210054375
WT
LAT

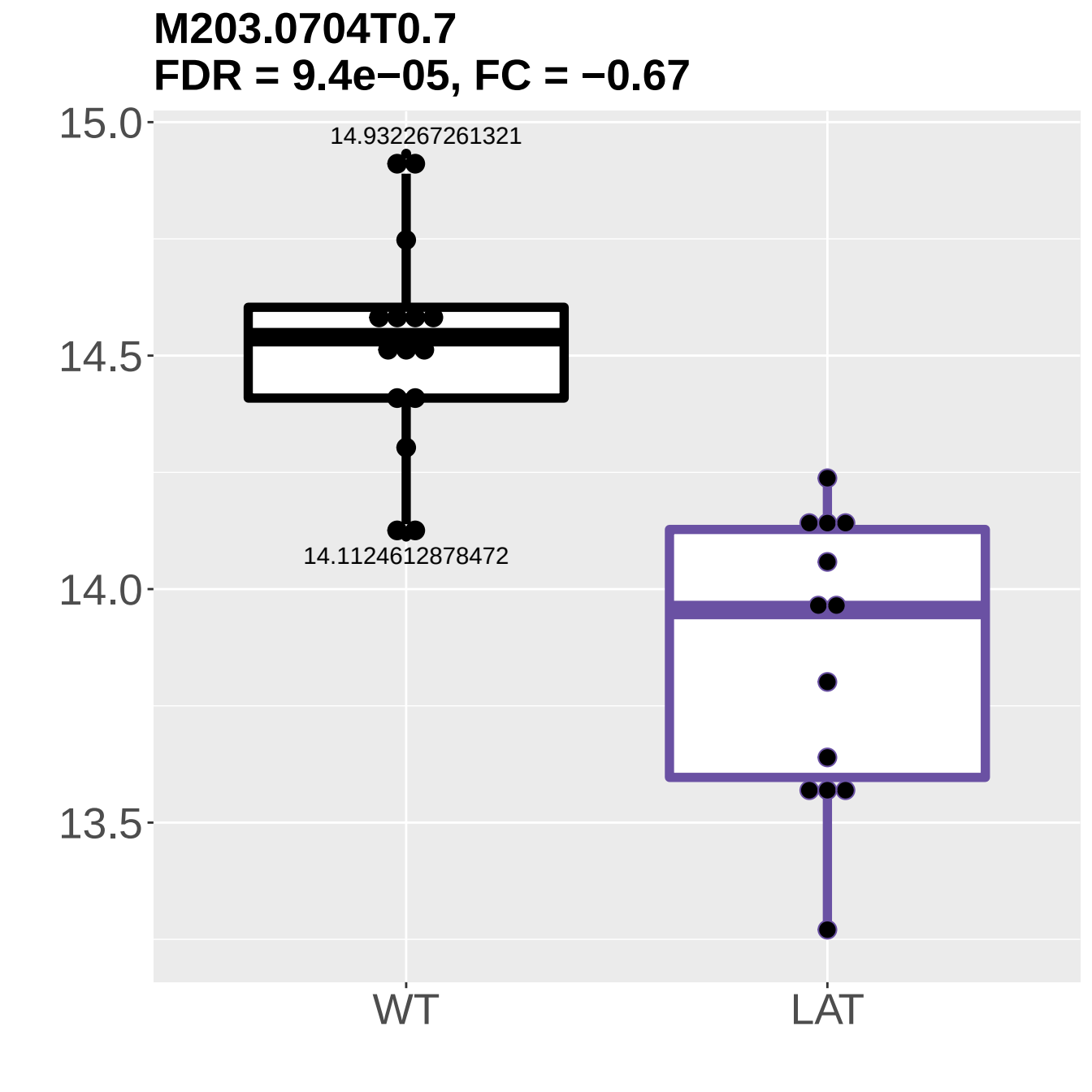

M650.2102T0.93
FDR = 9.2e−05, FC = −0.88
18.71843420585
17.9522639596246
17.751075759236
16.200624410028
18
17
WT
LAT


M346.1582T4.37
FDR = 9.3e−05, FC = −0.95
13
12
11
WT
LAT


M251.1643T3.98
FDR = 9.4e−05, FC = −1.9
15
14
13
12
11
13.2434536007511
12.8881448175339
10.3749409889525
WT
LAT


M785.3155T0.88
FDR = 9.4e−05, FC = −1.4
17
16
15
WT
LAT


M476.231T2.34
FDR = 9.4e−05, FC = 1.1
13.0
12.5
12.0
11.5
11.0
12.1154901000205
WT
LAT


M203.0704T0.7
FDR = 9.4e−05, FC = −0.67
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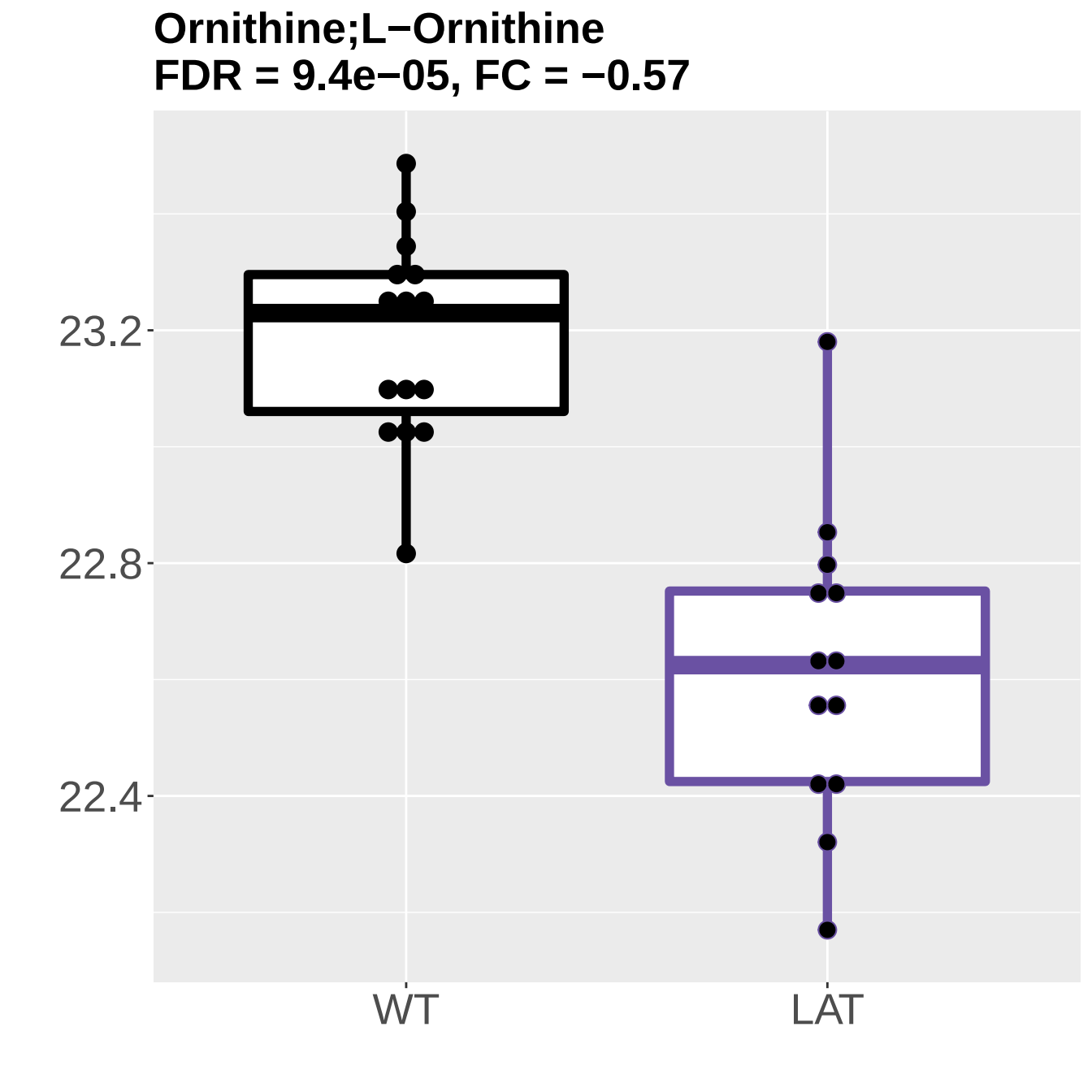
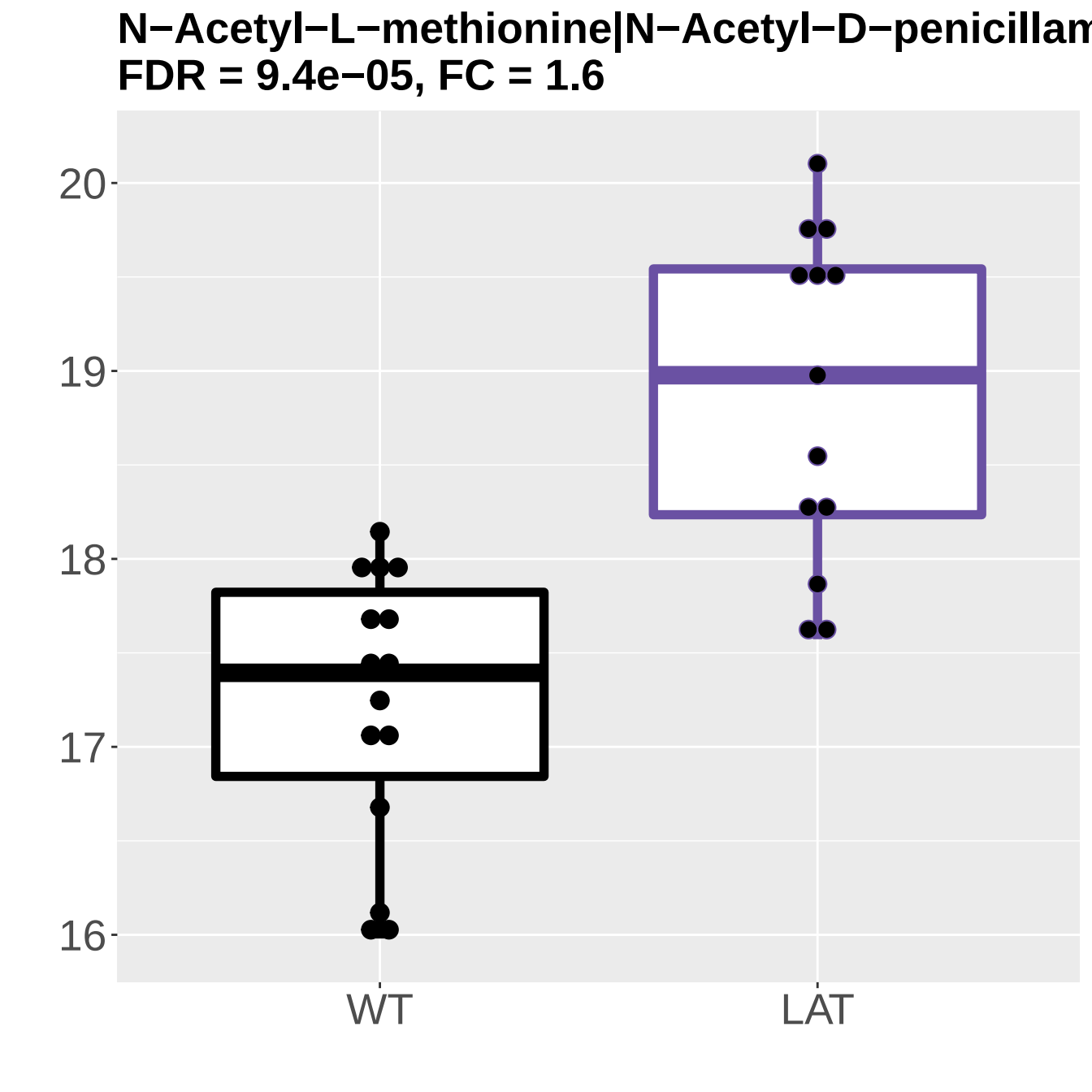
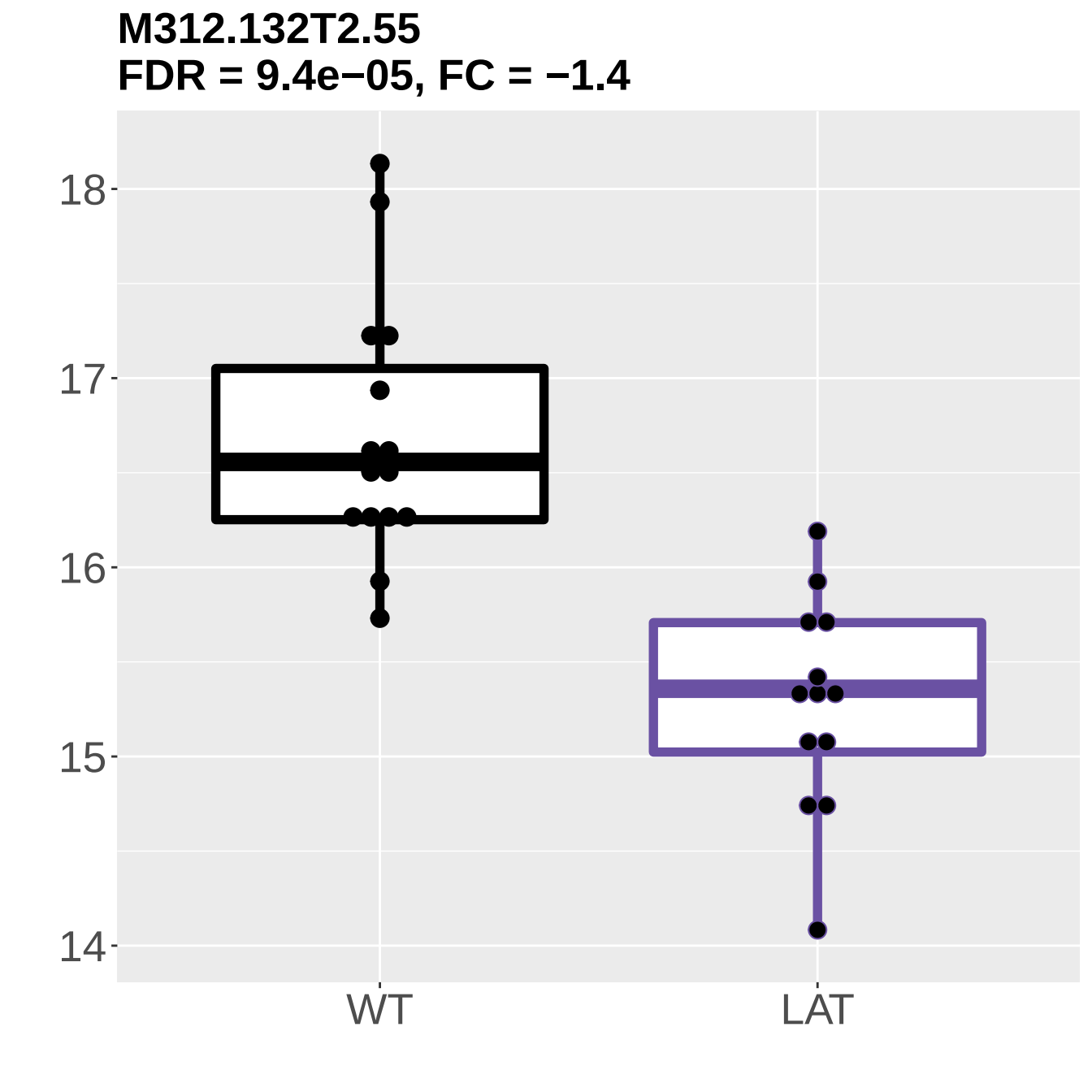
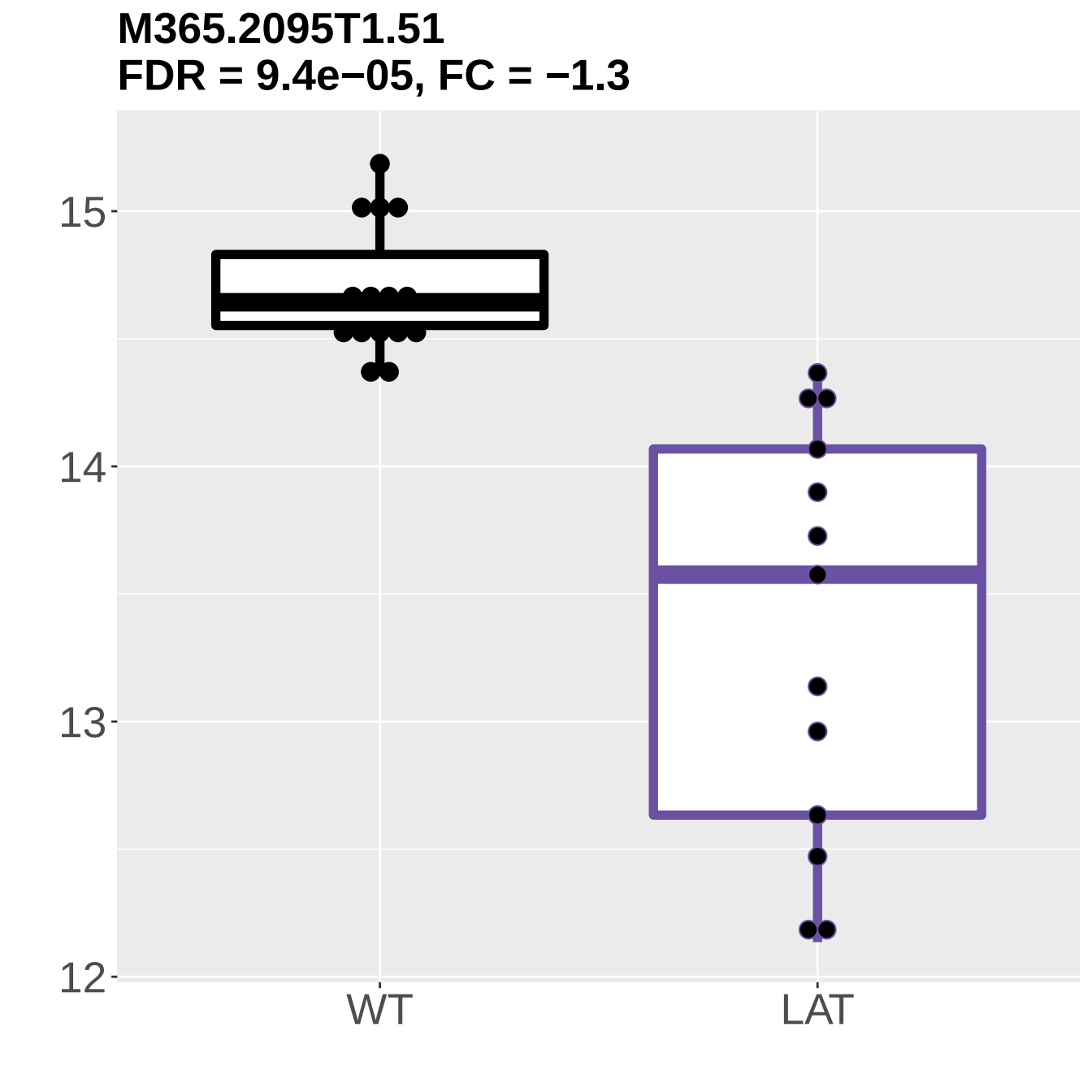
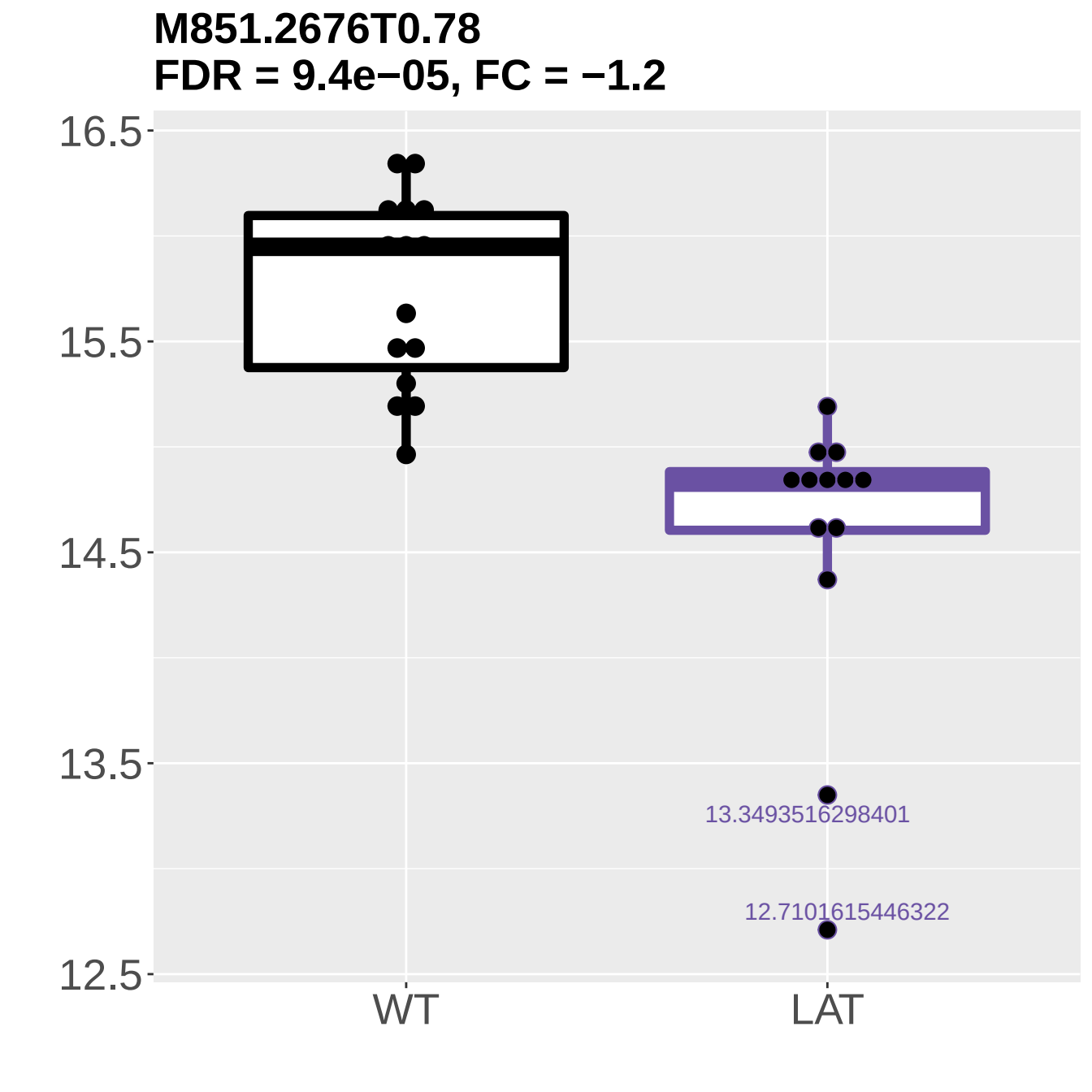
14.5
14.0
13.5
14.932267261321
14.1124612878472
WT
LAT

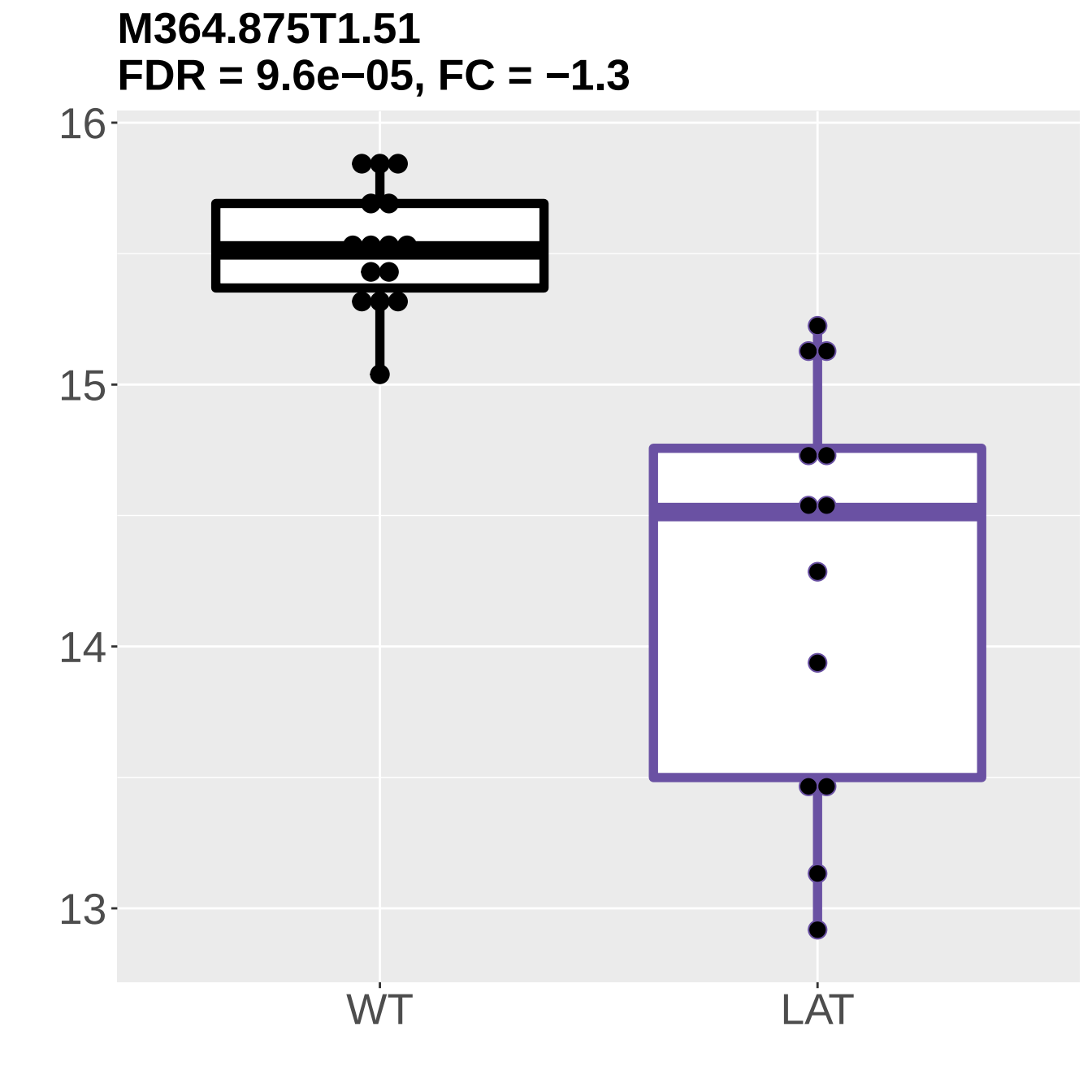

Ornithine;L−Ornithine
FDR = 9.4e−05, FC = −0.57
23.2
22.8
22.4
WT
LAT

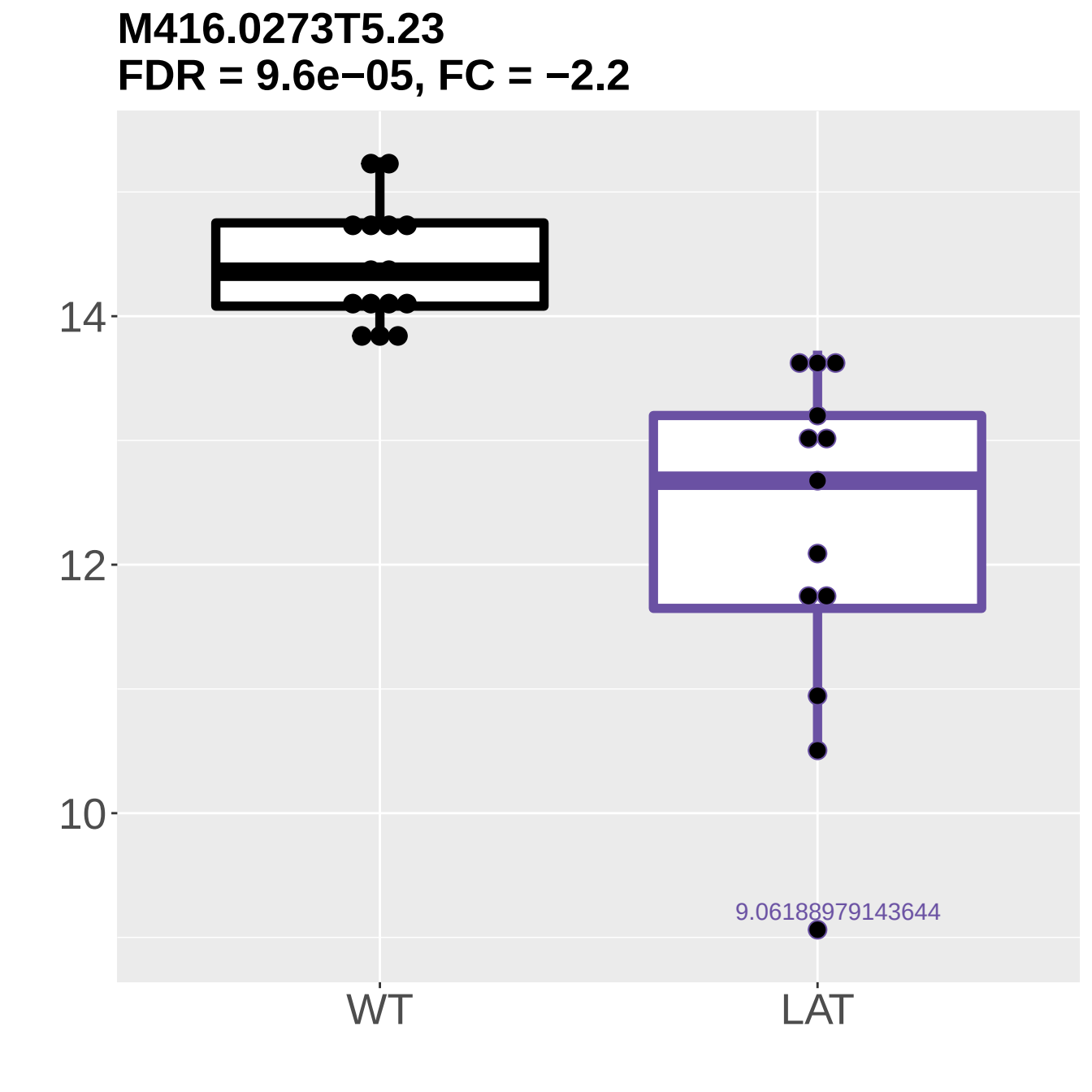

N−Acetyl−L−methionine|N−Acetyl−D−penicillam
FDR = 9.4e−05, FC = 1.6
20
19
18
17
16
WT
LAT

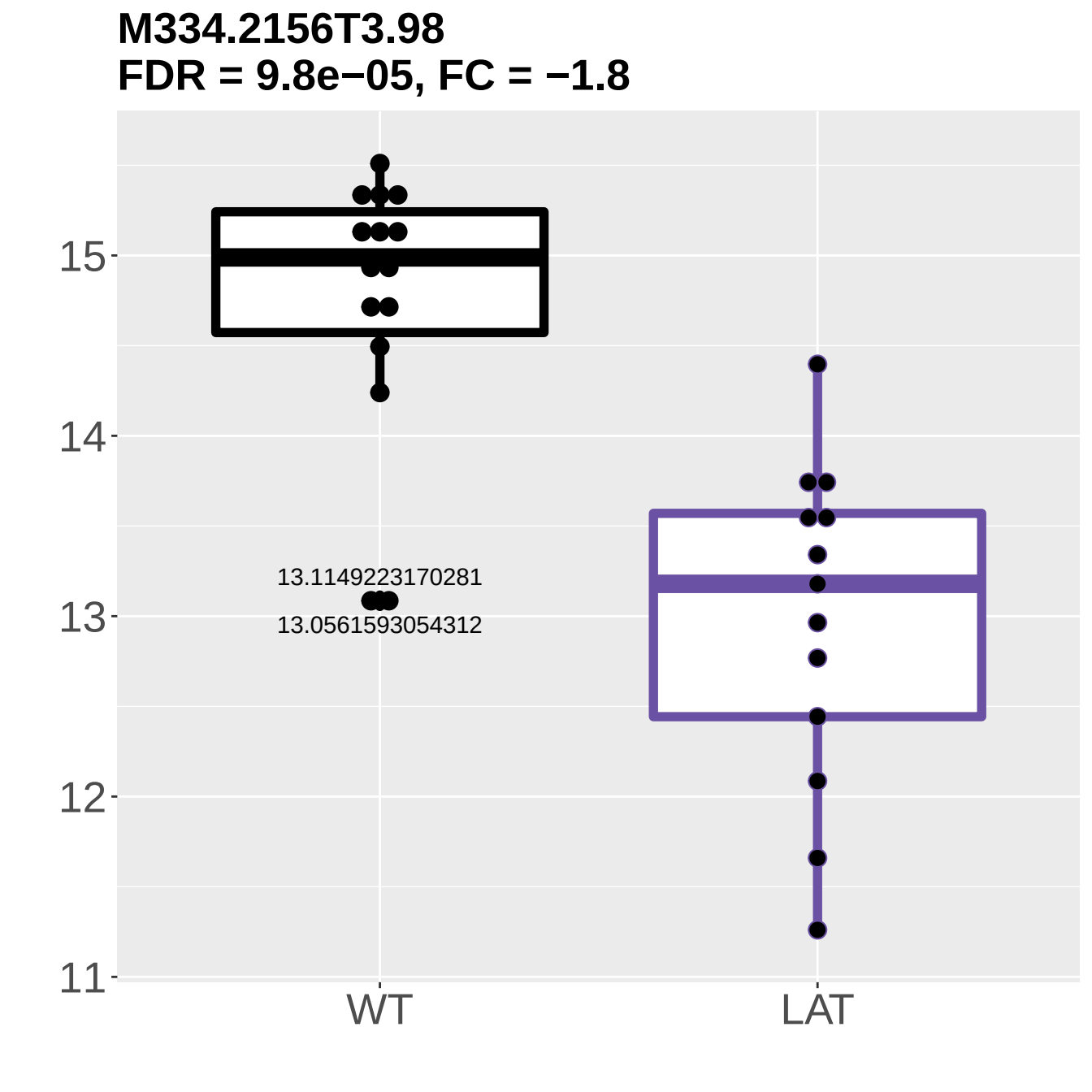

M312.132T2.55
FDR = 9.4e−05, FC = −1.4
18
17
16
15
14
WT
LAT

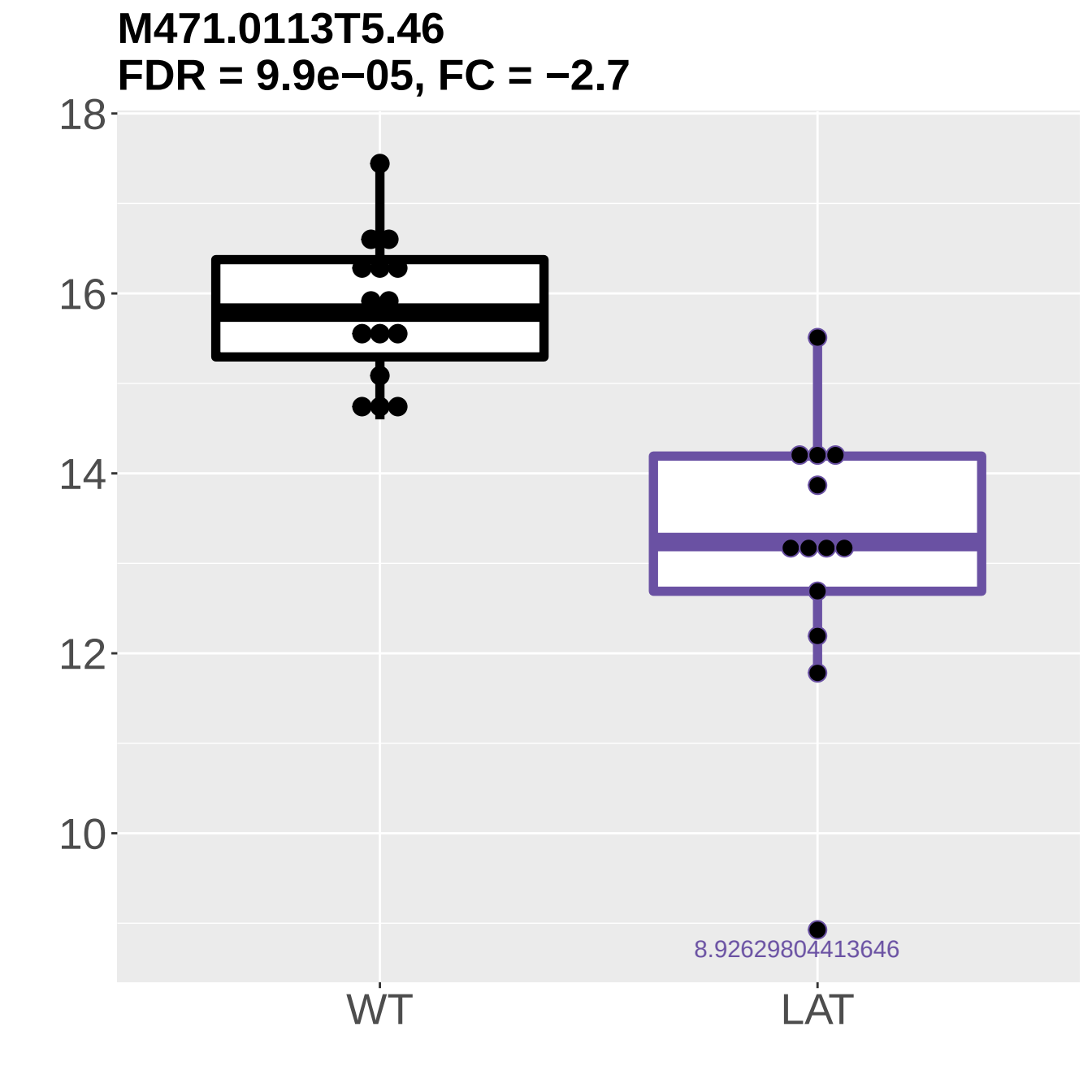

M365.2095T1.51
FDR = 9.4e−05, FC = −1.3
15
14
13
12
WT
LAT

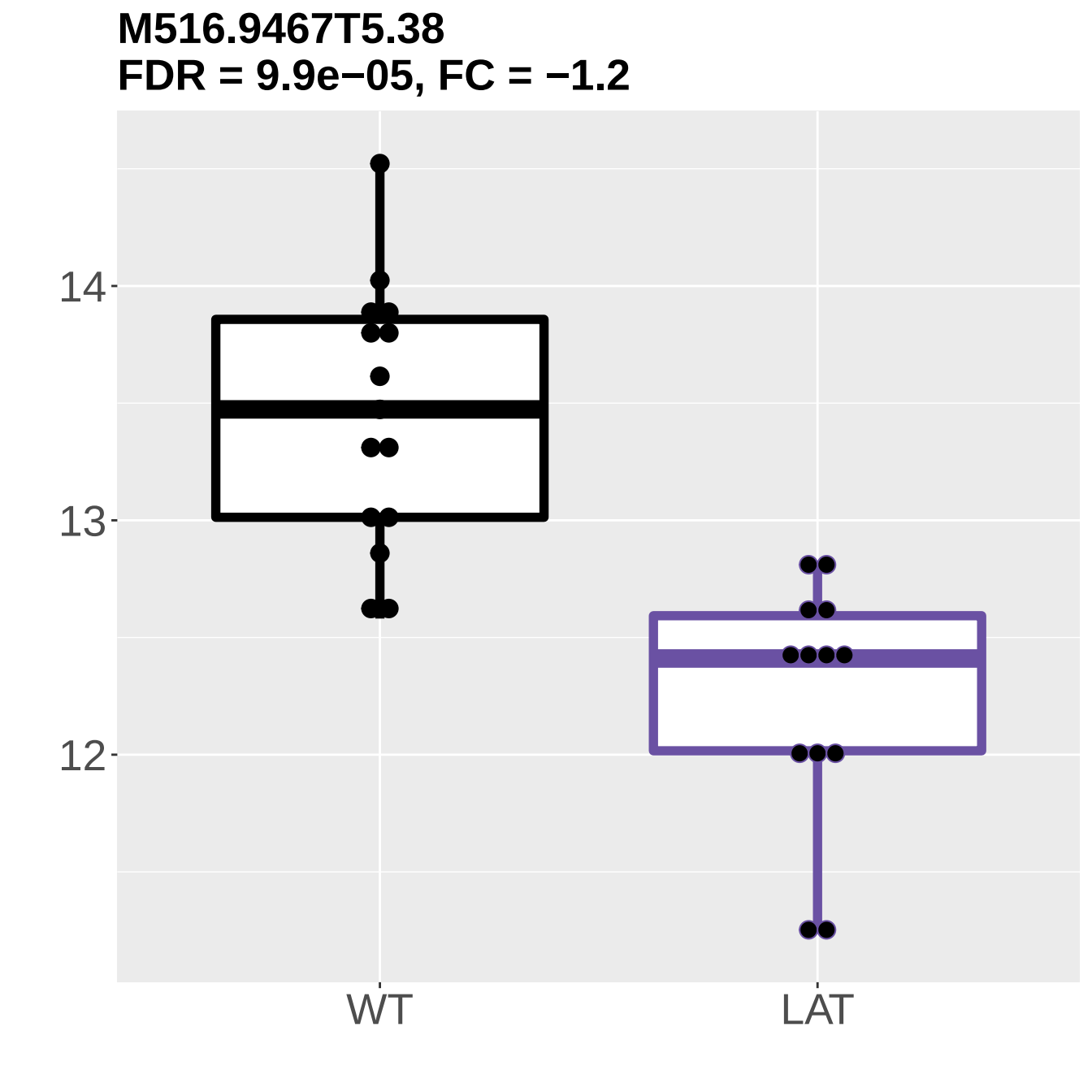

M851.2676T0.78
FDR = 9.4e−05, FC = −1.2
16.5
15.5
14.5
13.5
12.5
13.3493516298401
12.7101615446322
WT
LAT

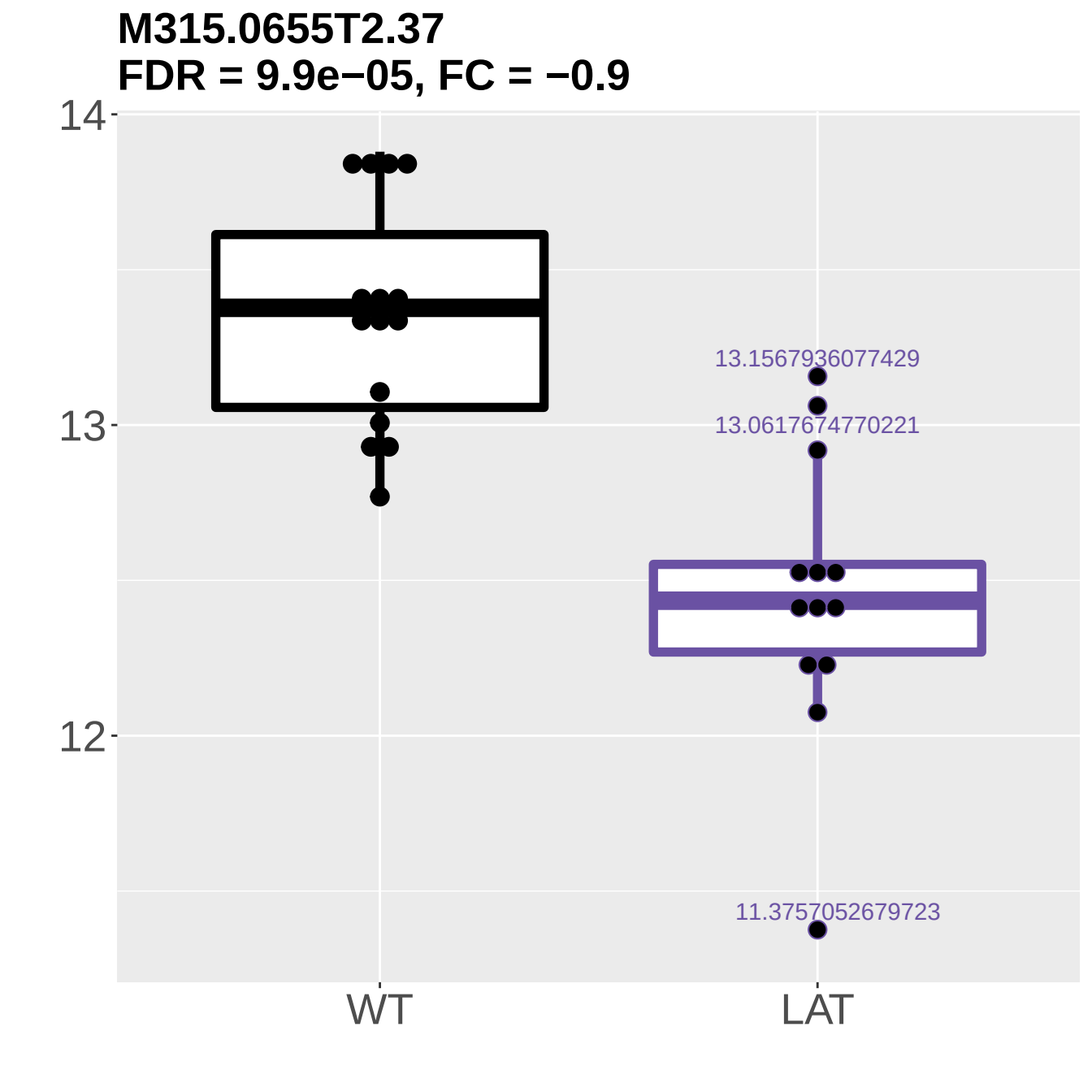

M364.875T1.51
FDR = 9.6e−05, FC = −1.3
16
15
14
13
WT
LAT

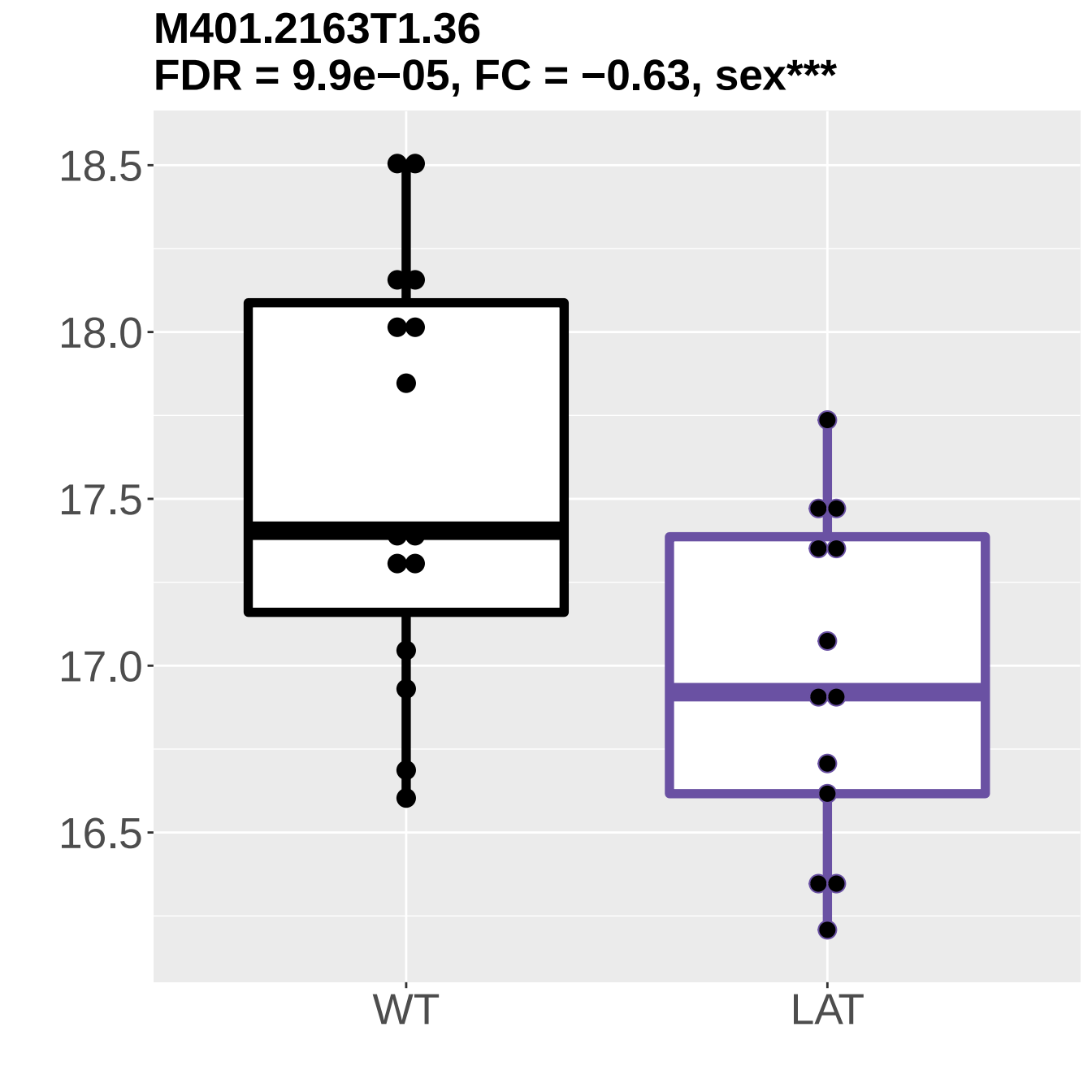

M416.0273T5.23
FDR = 9.6e−05, FC = −2.2
14
12
10
9.06188979143644
WT
LAT


M334.2156T3.98
FDR = 9.8e−05, FC = −1.8
15
14
13
12
11
13.1149223170281
13.0561593054312
WT
LAT


M471.0113T5.46
FDR = 9.9e−05, FC = −2.7
18
16
14
12
10
8.92629804413646
WT
LAT


M516.9467T5.38
FDR = 9.9e−05, FC = −1.2
14
13
12
WT
LAT


M315.0655T2.37
FDR = 9.9e−05, FC = −0.9
14
13
12
13.1567936077429
13.0617674770221
11.3757052679723
WT
LAT


M401.2163T1.36
FDR = 9.9e−05, FC = −0.63, sex***
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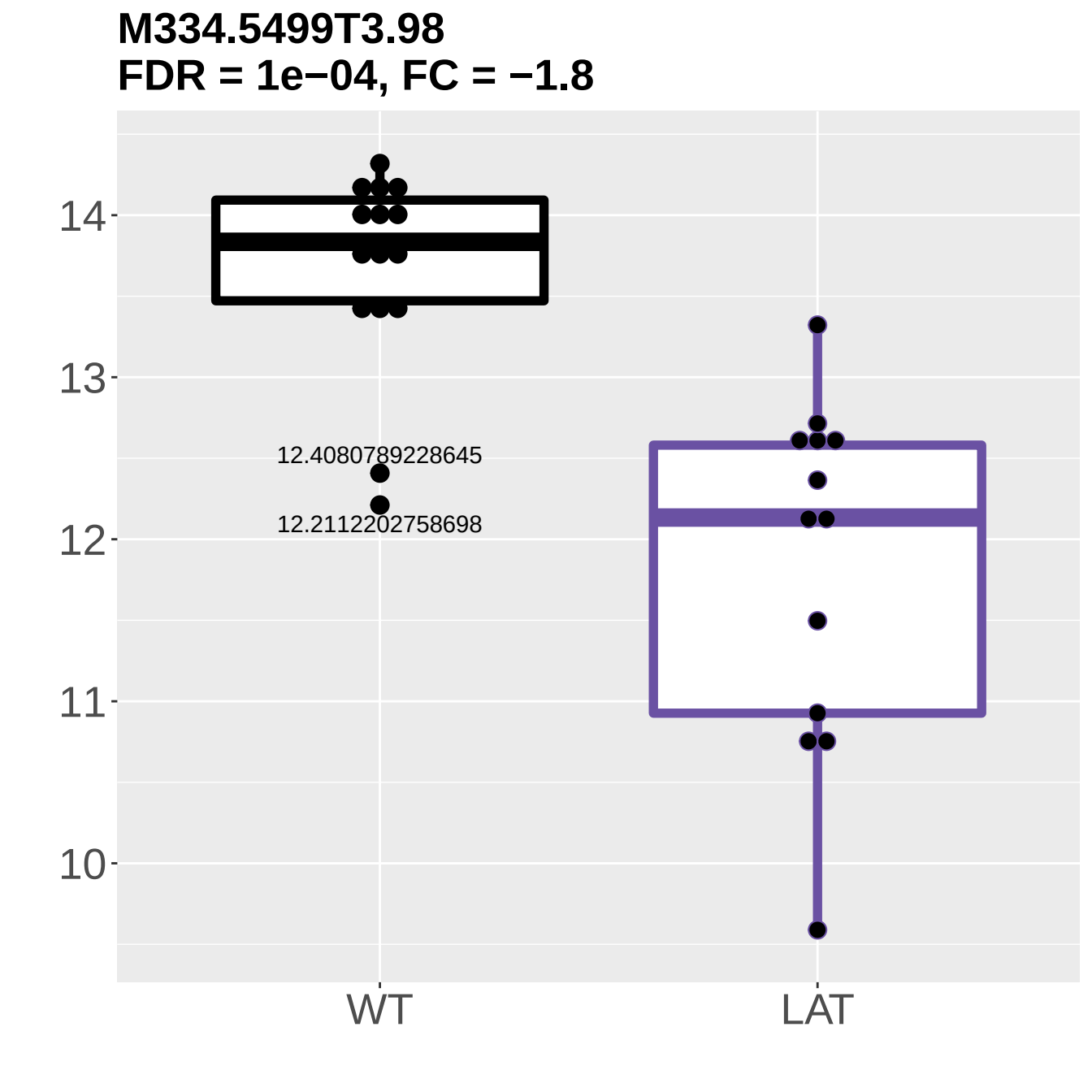
18.0
17.5
17.0
16.5
WT
LAT


M334.5499T3.98
FDR = 1e−04, FC = −1.8
14
13
12
11
10
12.4080789228645
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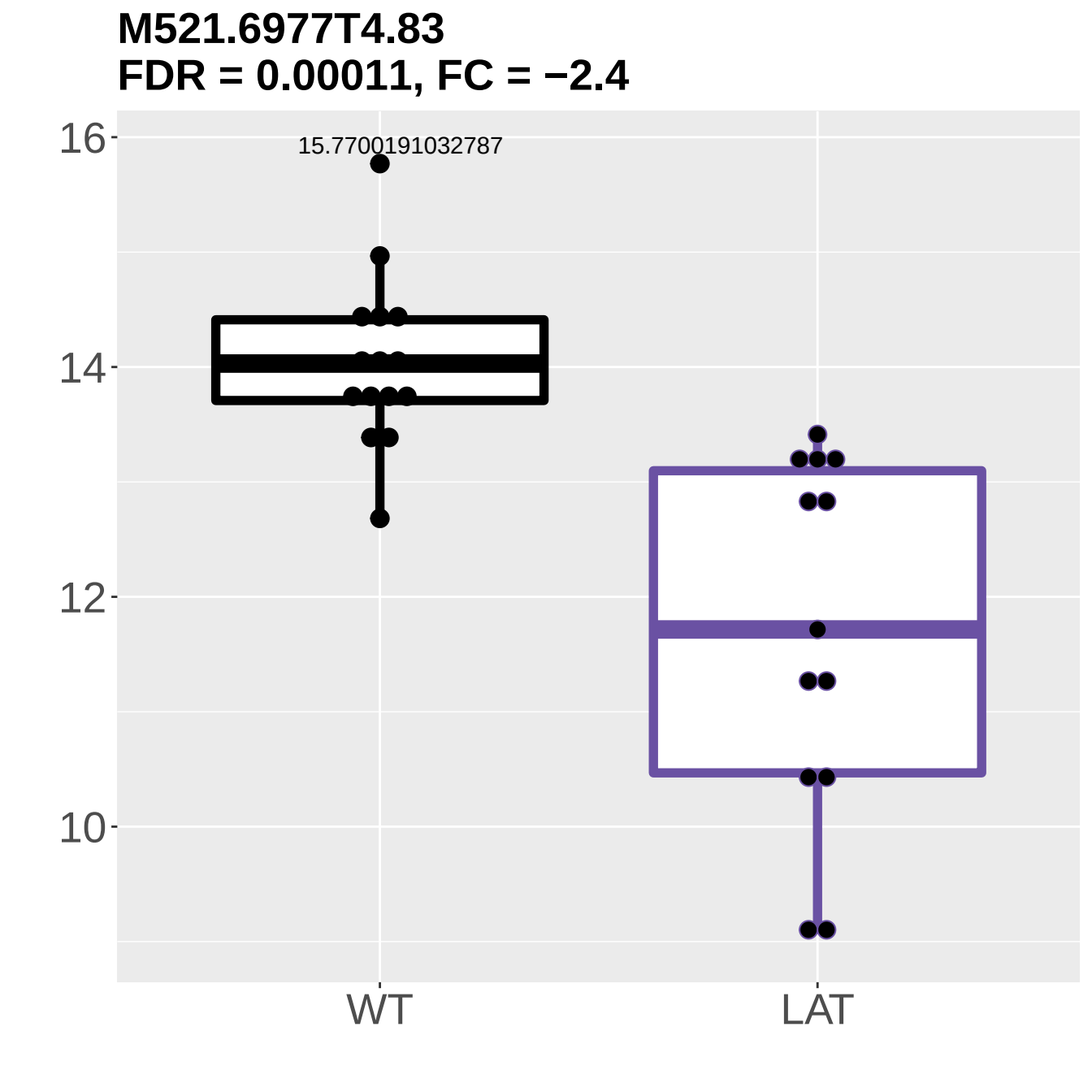
M521.6977T4.83
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WT
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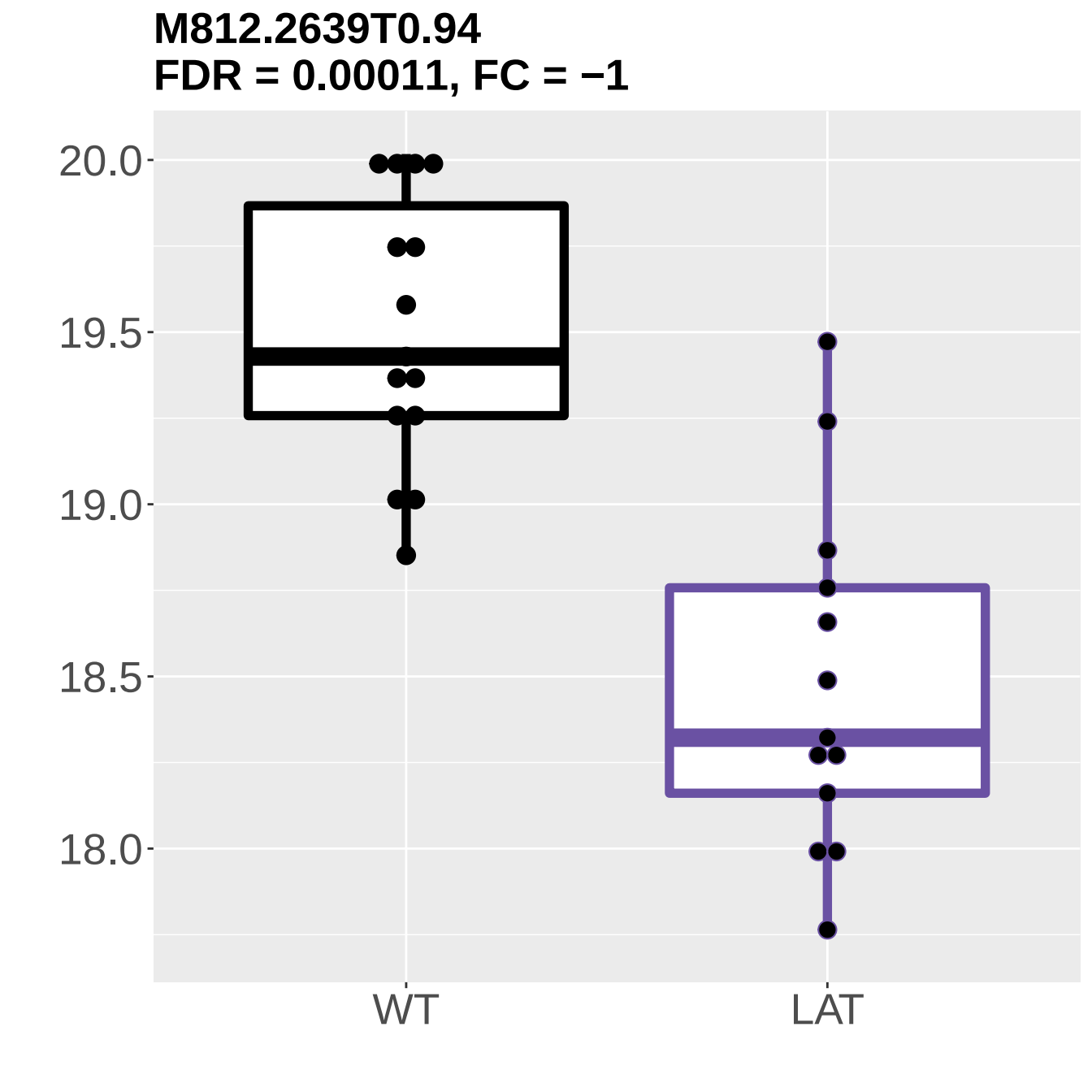
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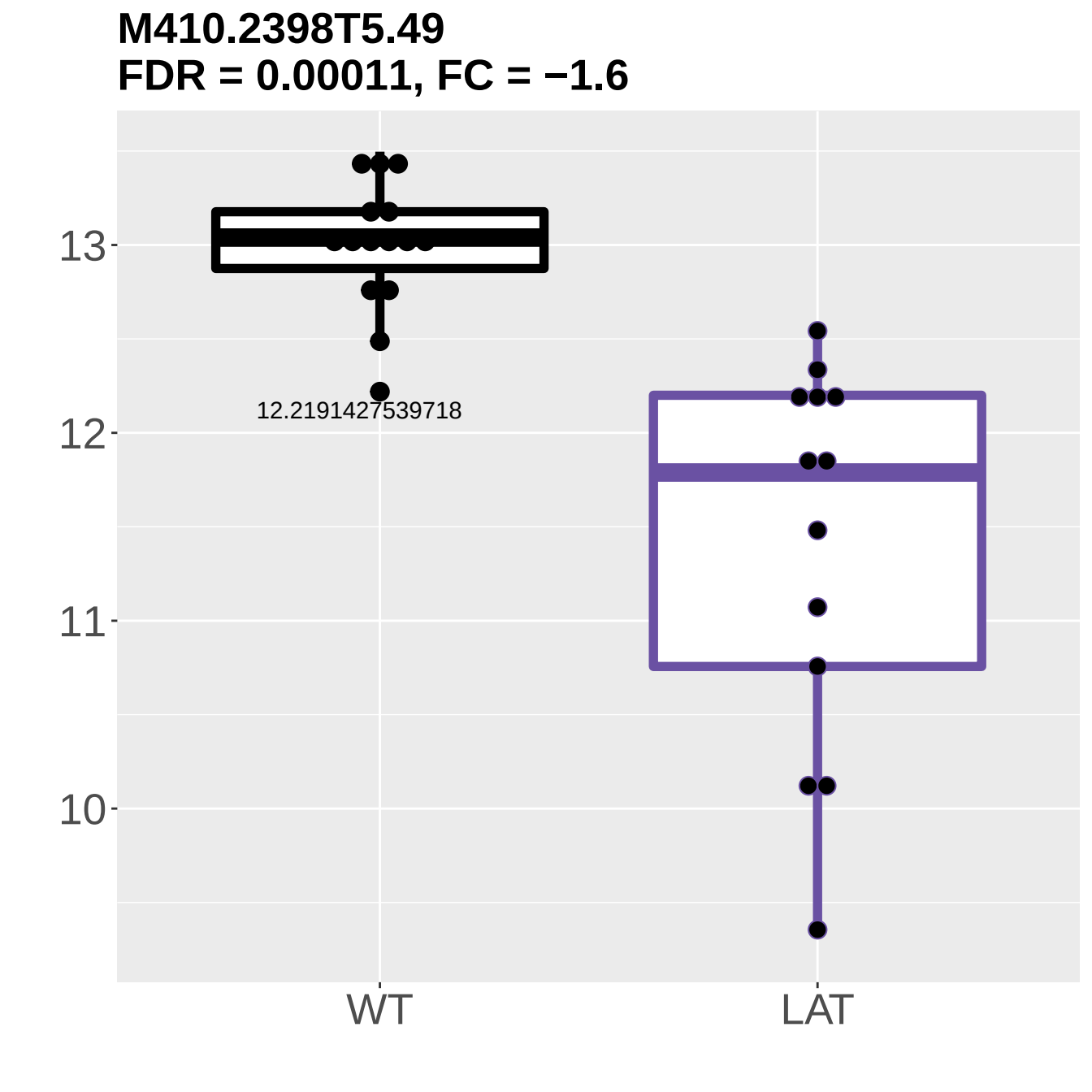
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12
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WT
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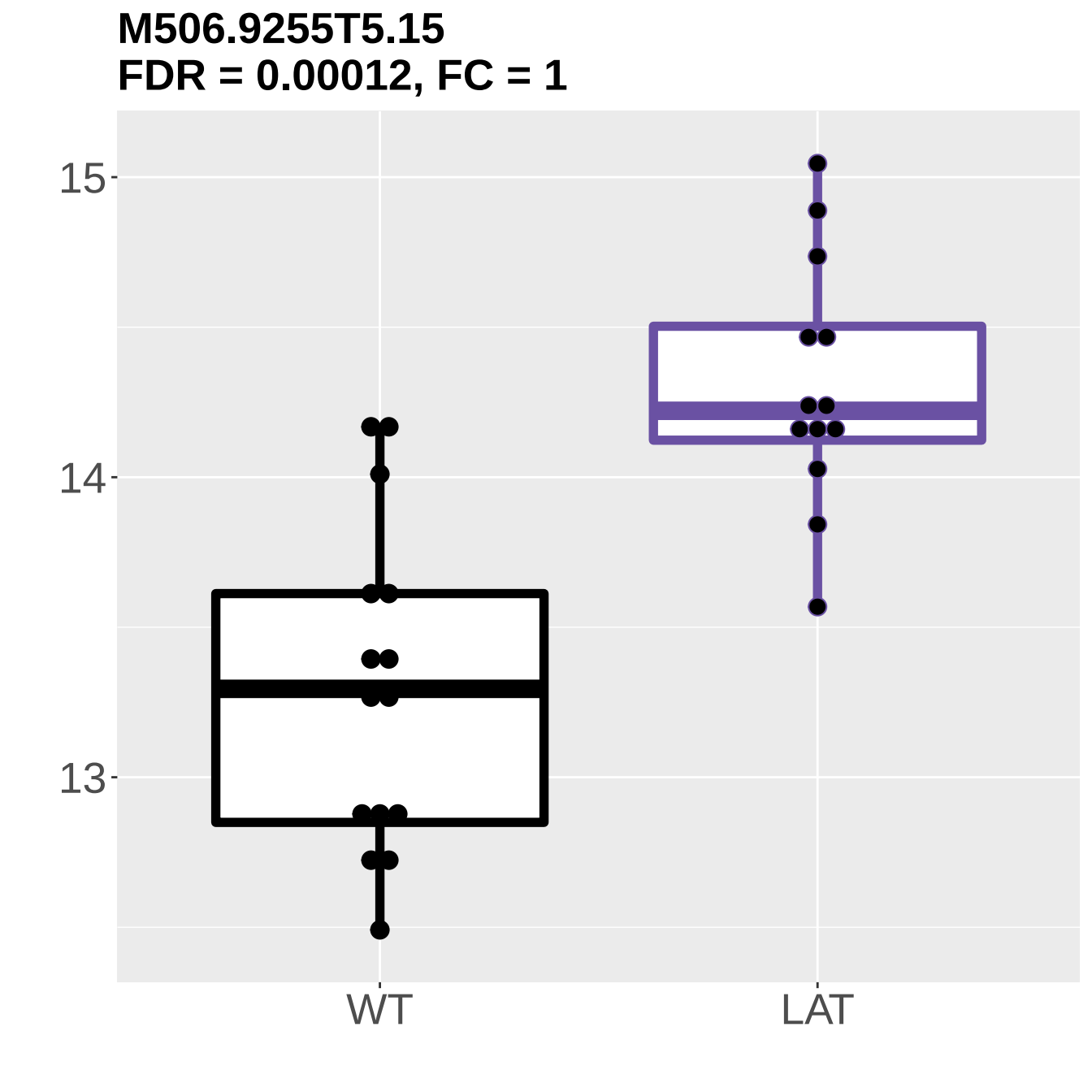
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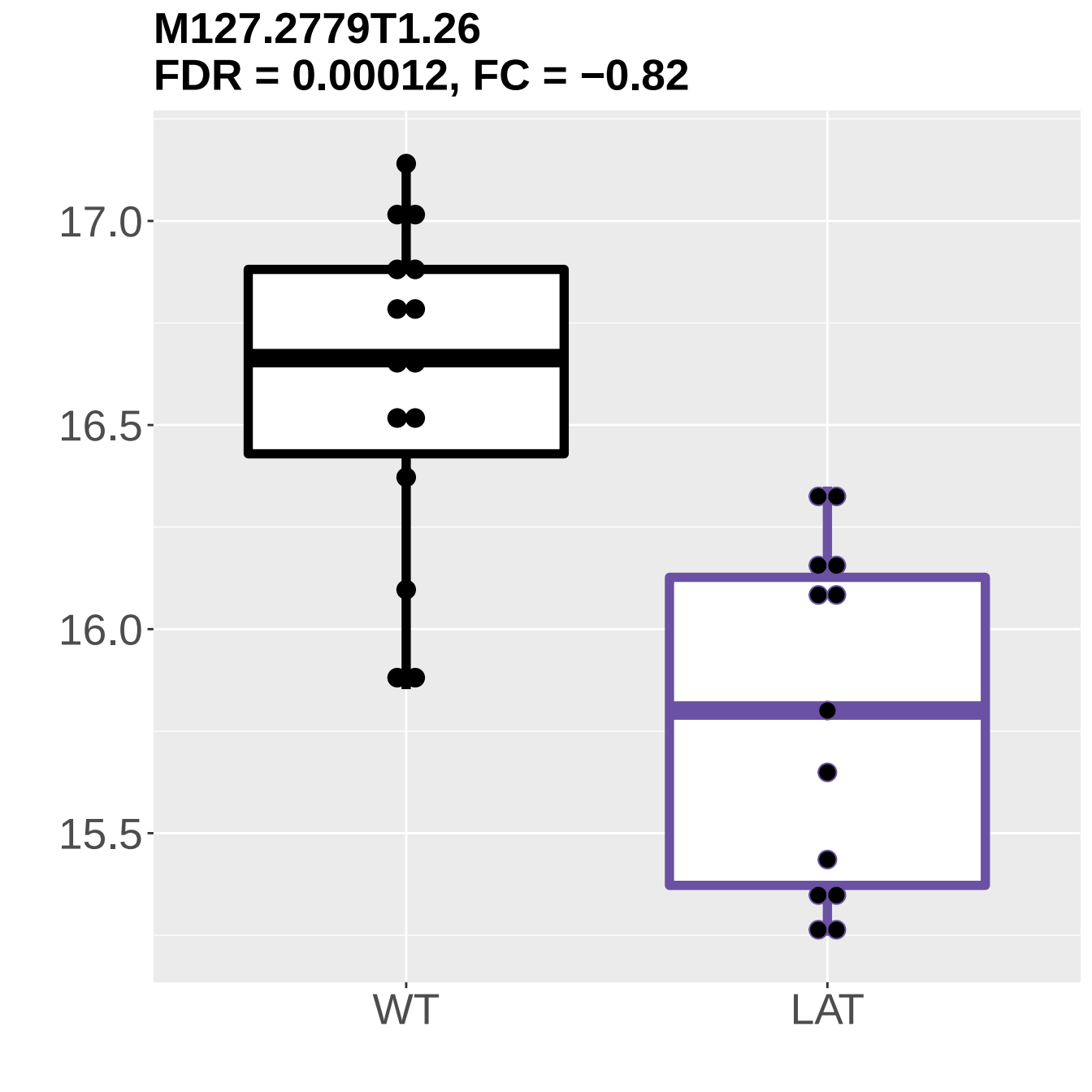
13
WT
LAT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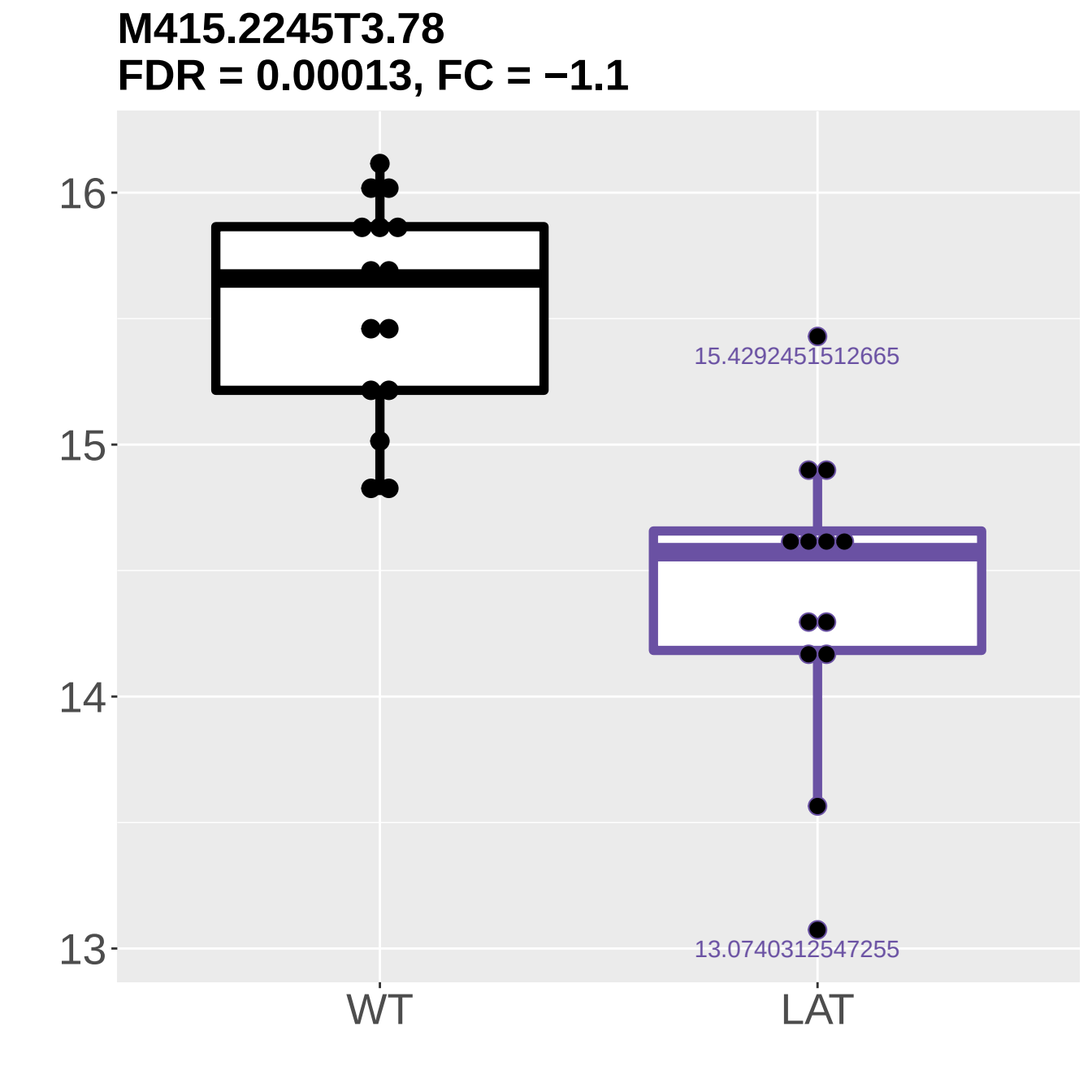
M415.2245T3.78
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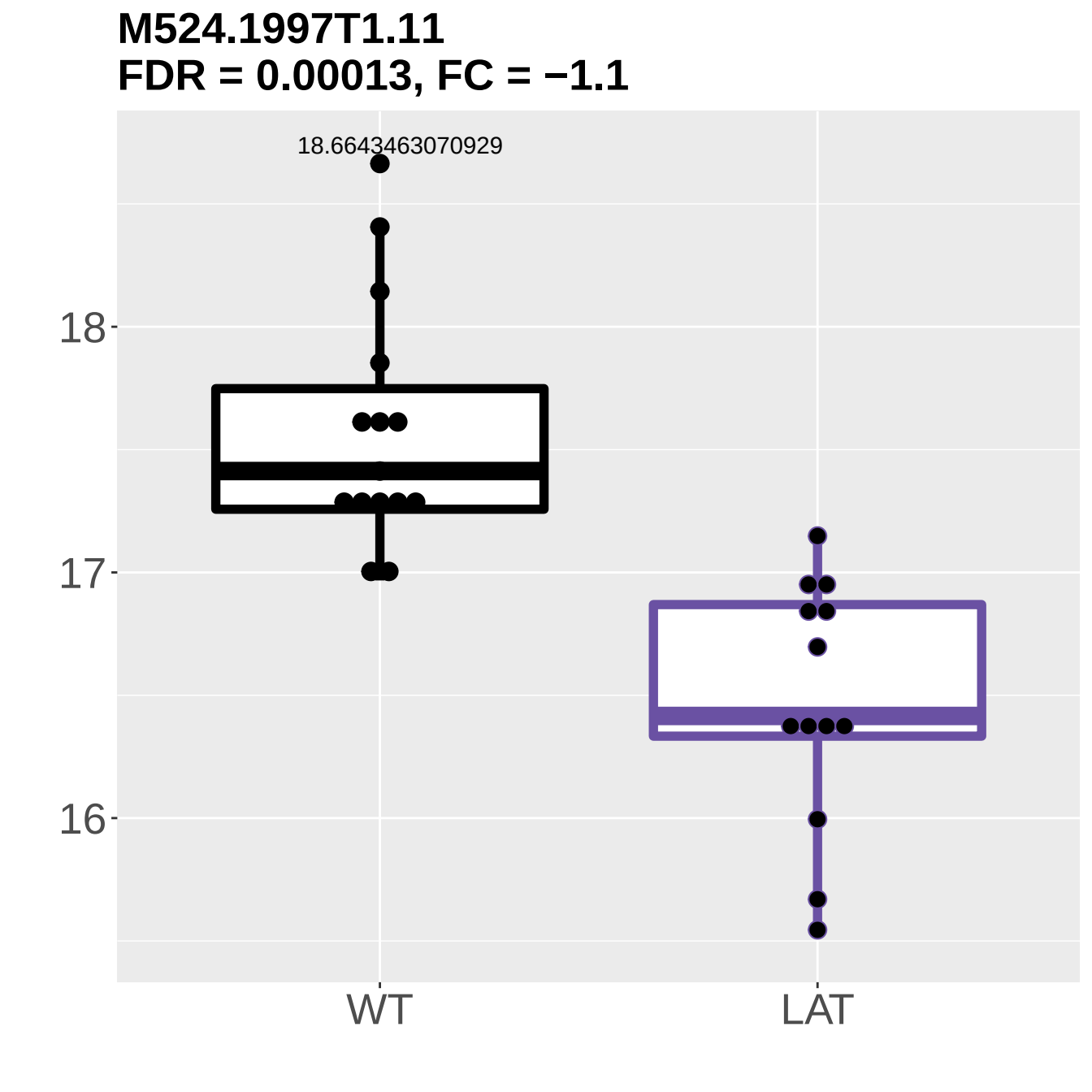
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16
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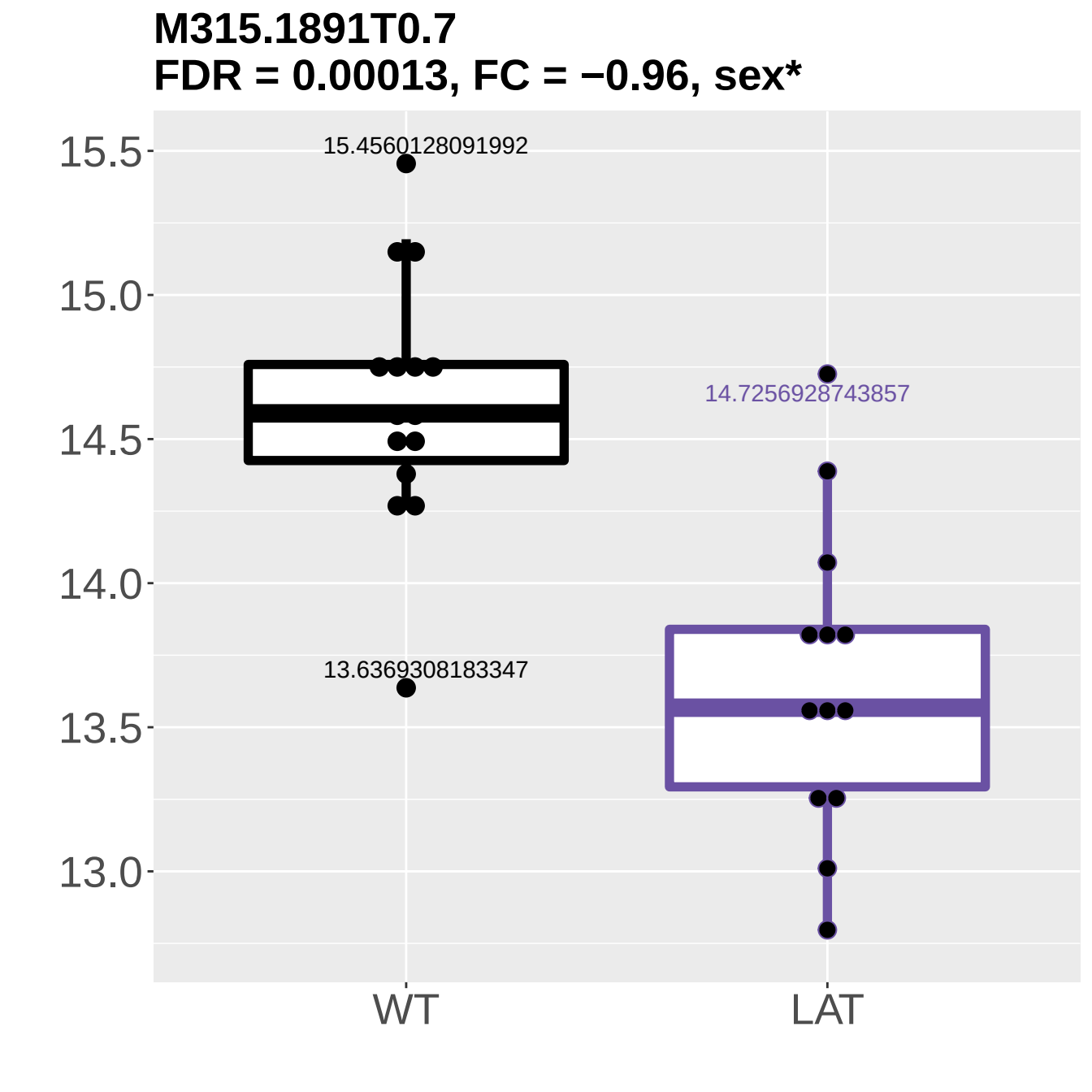
M315.1891T0.7
FDR = 0.00013, FC = −0.96, sex*
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15.0
14.5
14.0
13.5
13.0
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WT
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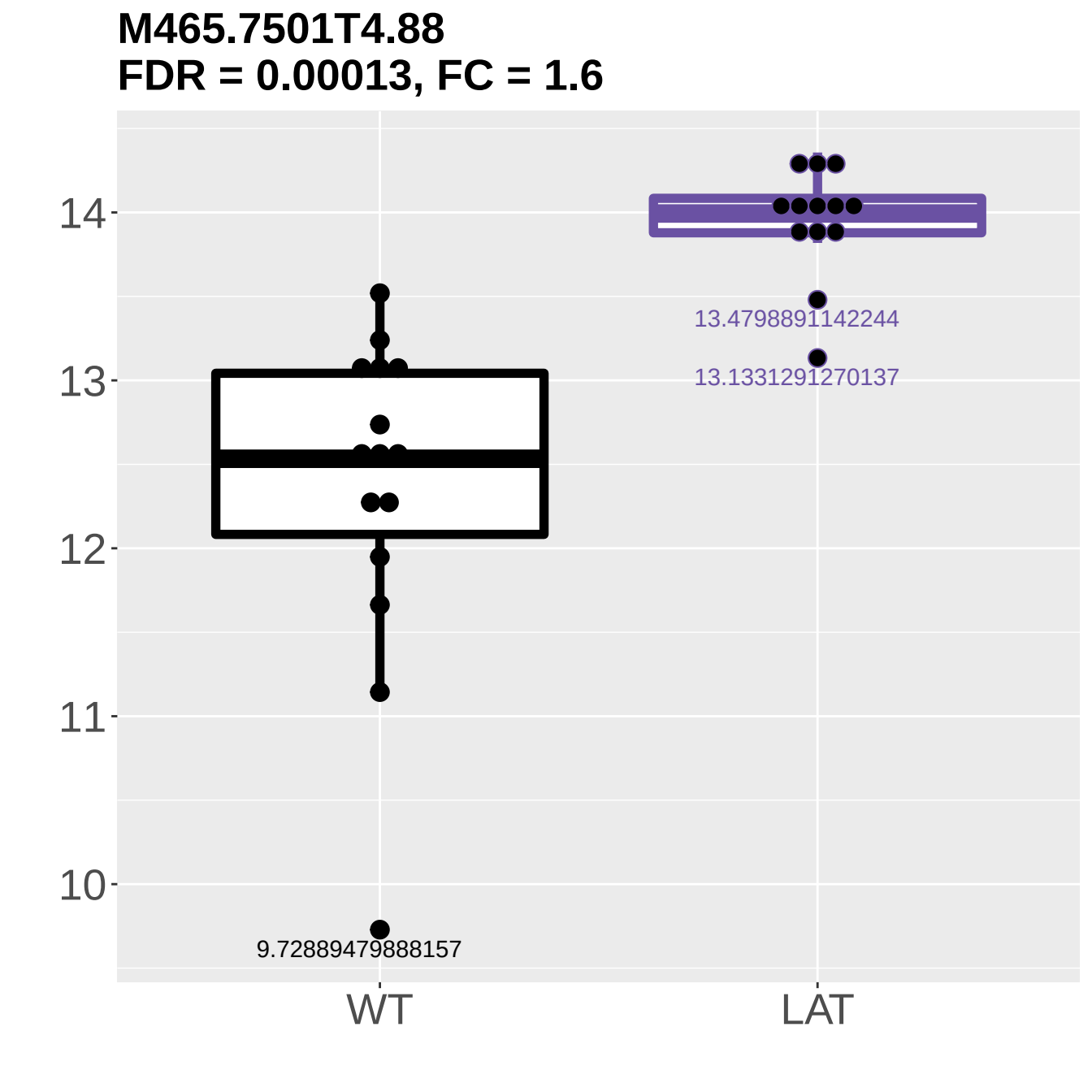
M465.7501T4.88
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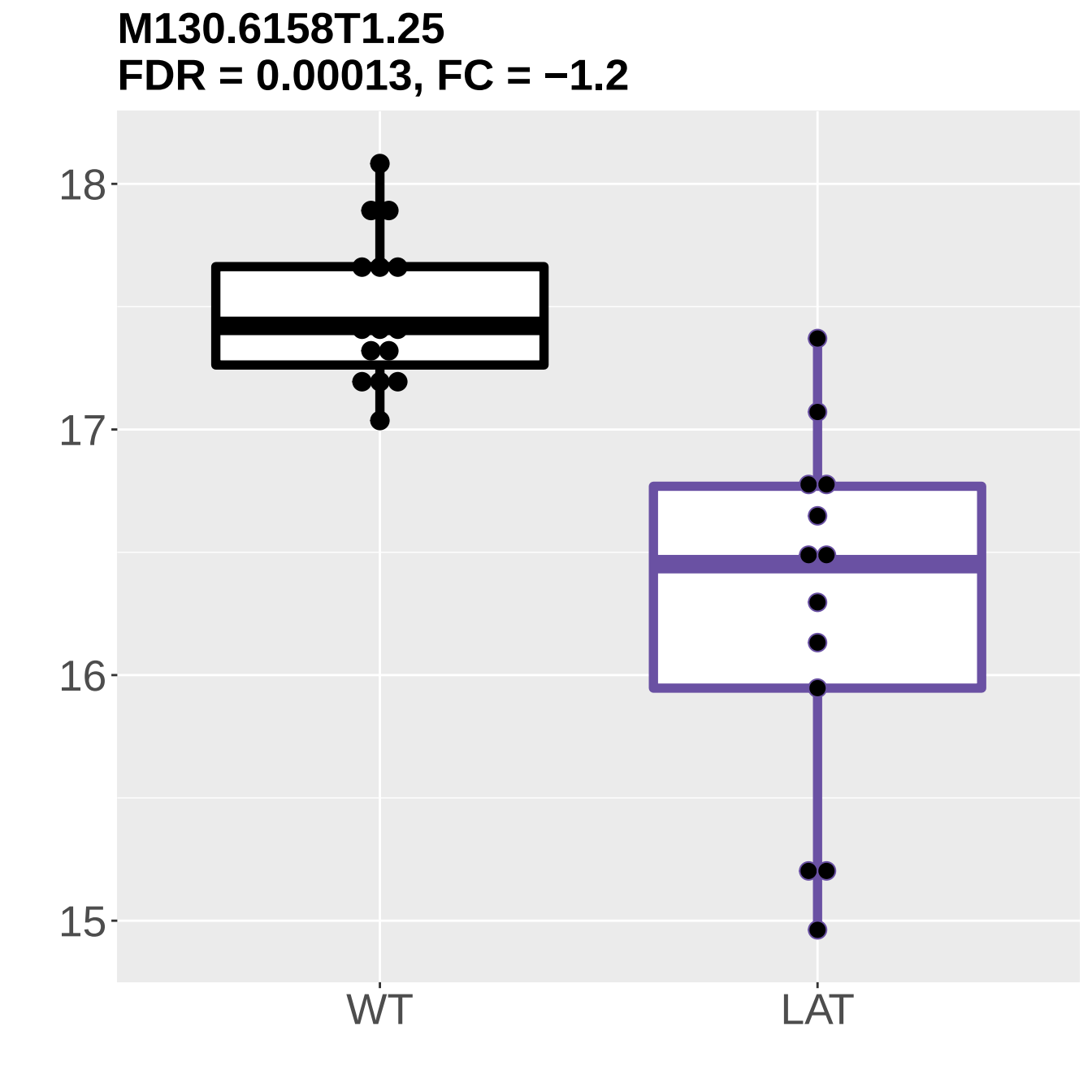
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WT
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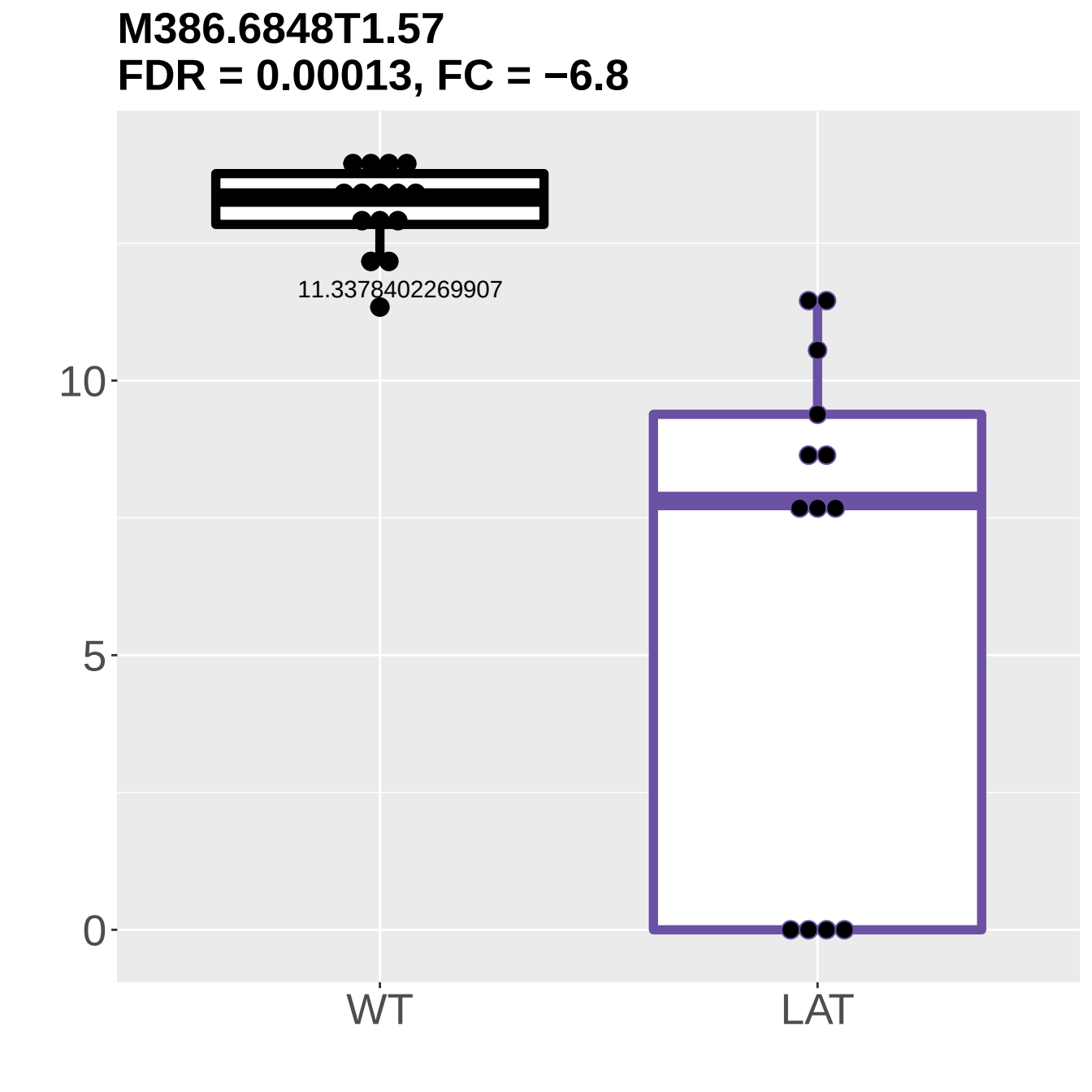
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FDR = 0.00013, FC = −6.8
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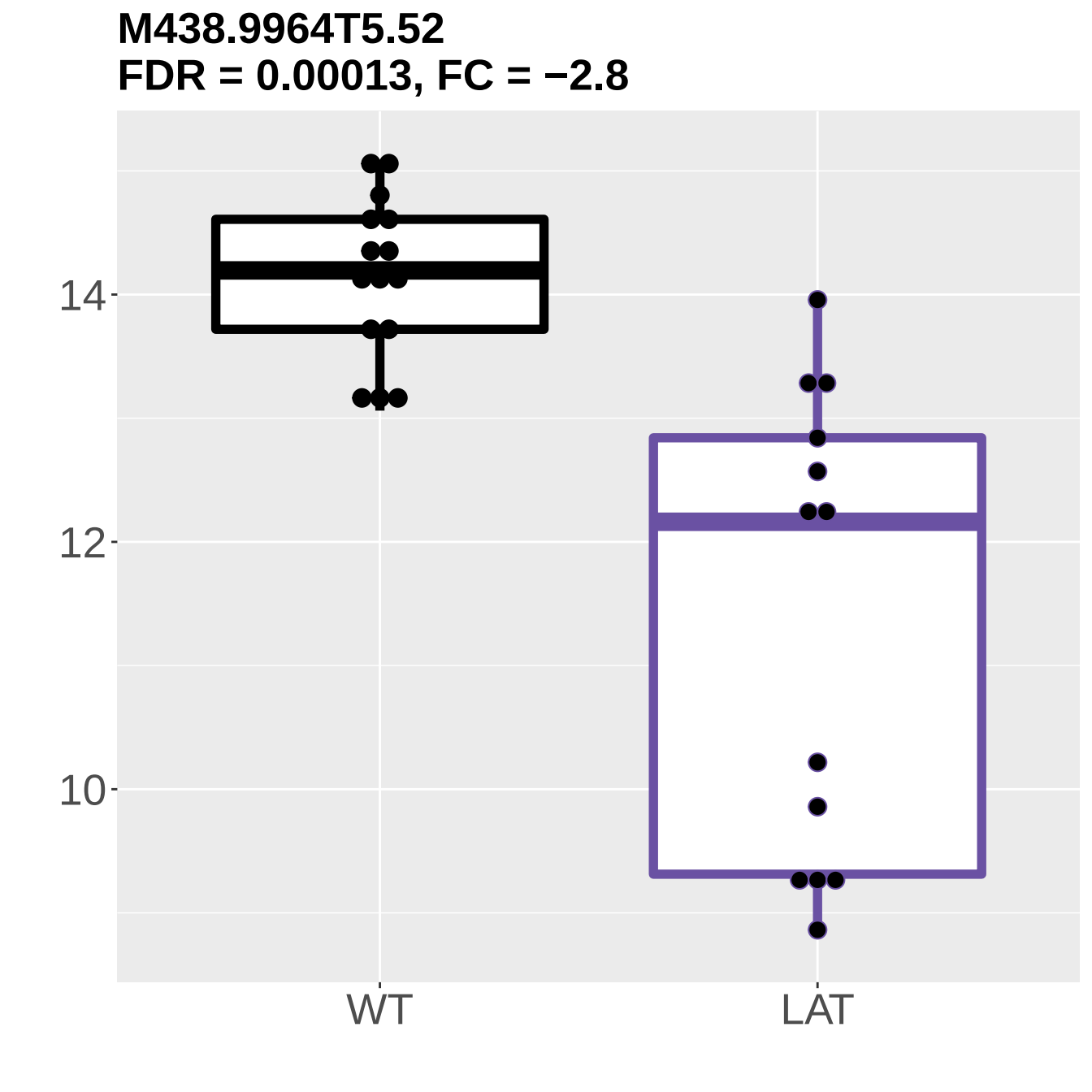
10
5
0
WT
LAT


M438.9964T5.52
FDR = 0.00013, FC = −2.8
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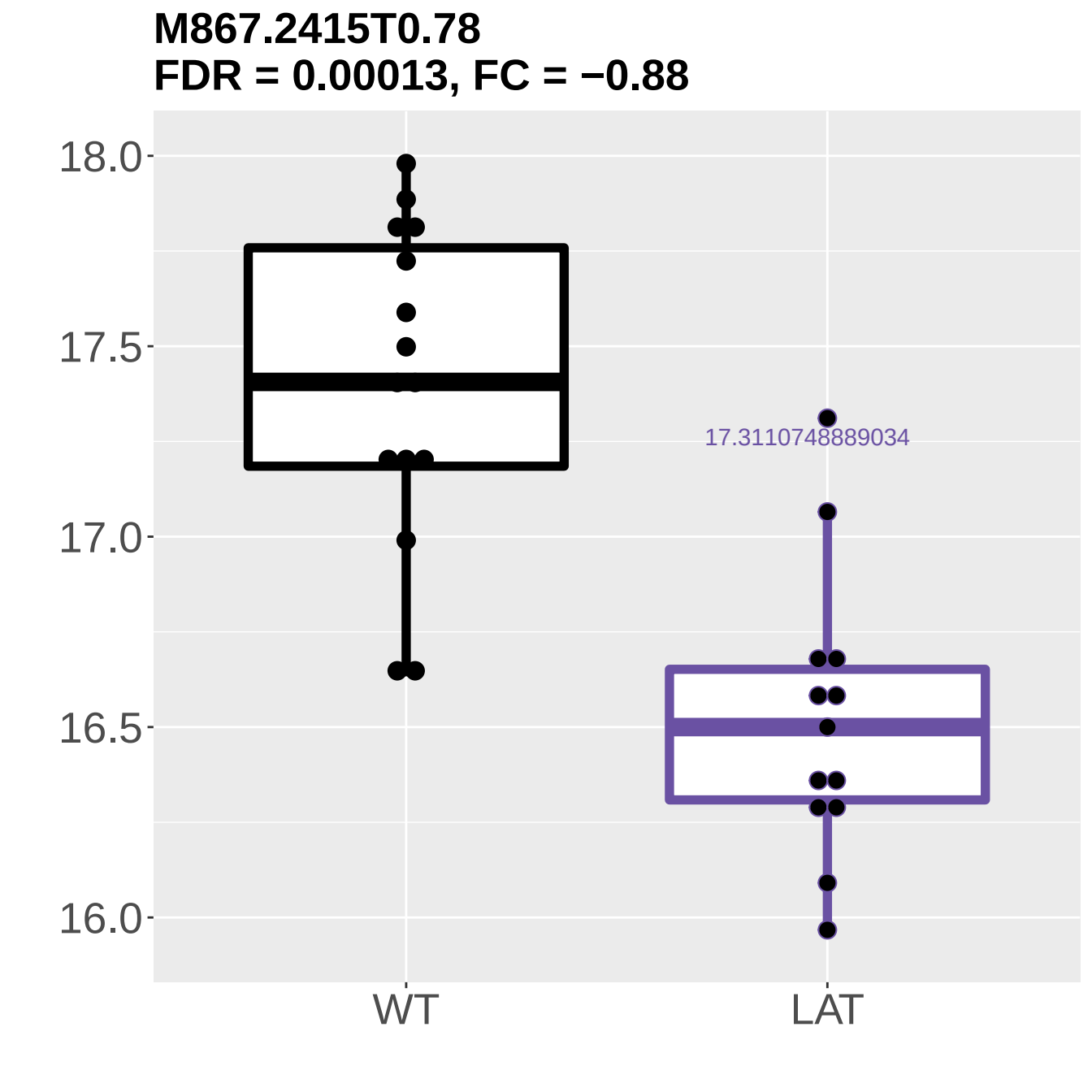
12
10
WT
LAT


M867.2415T0.78
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17.0
16.5
16.0
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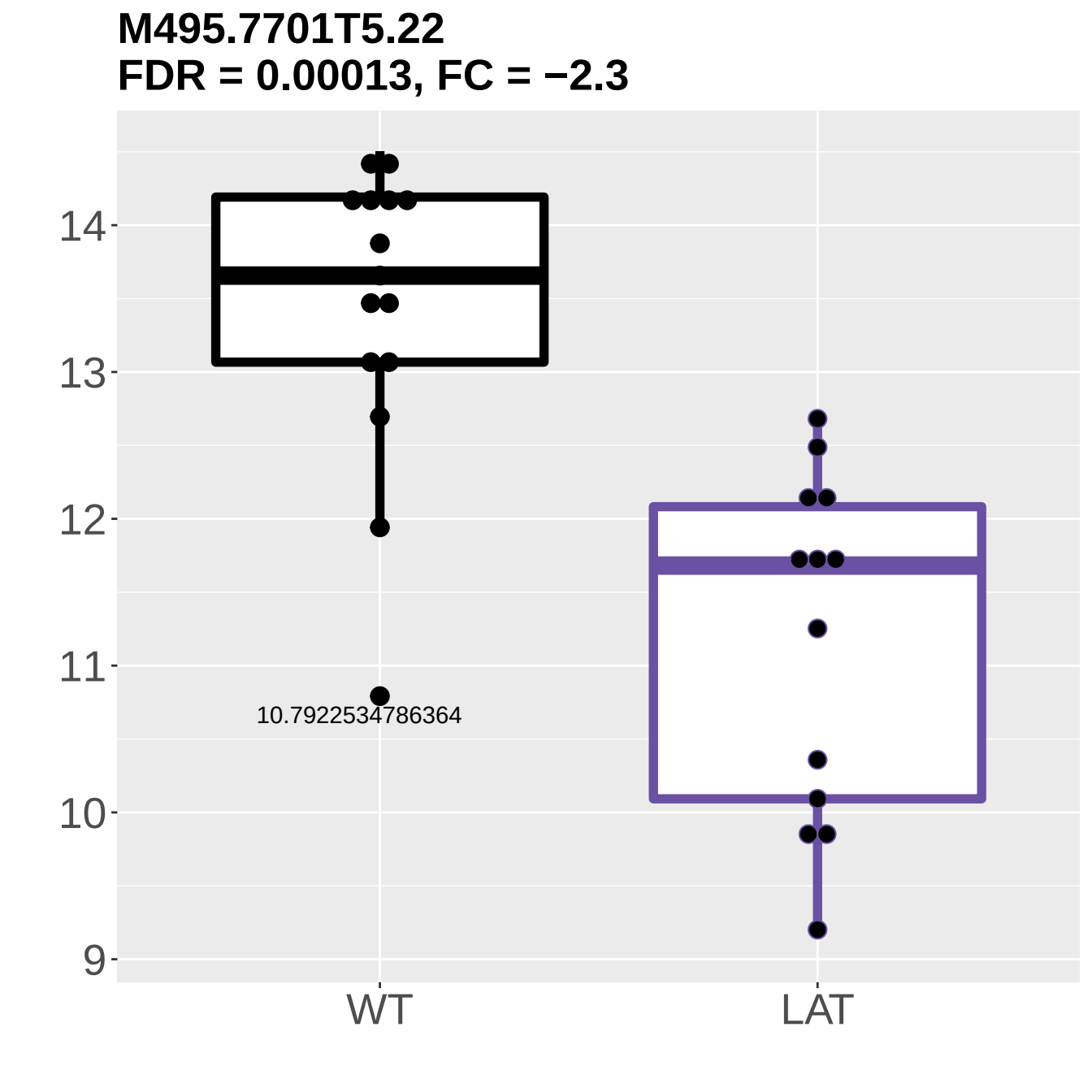
WT
LAT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13
12
11
10
9
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WT
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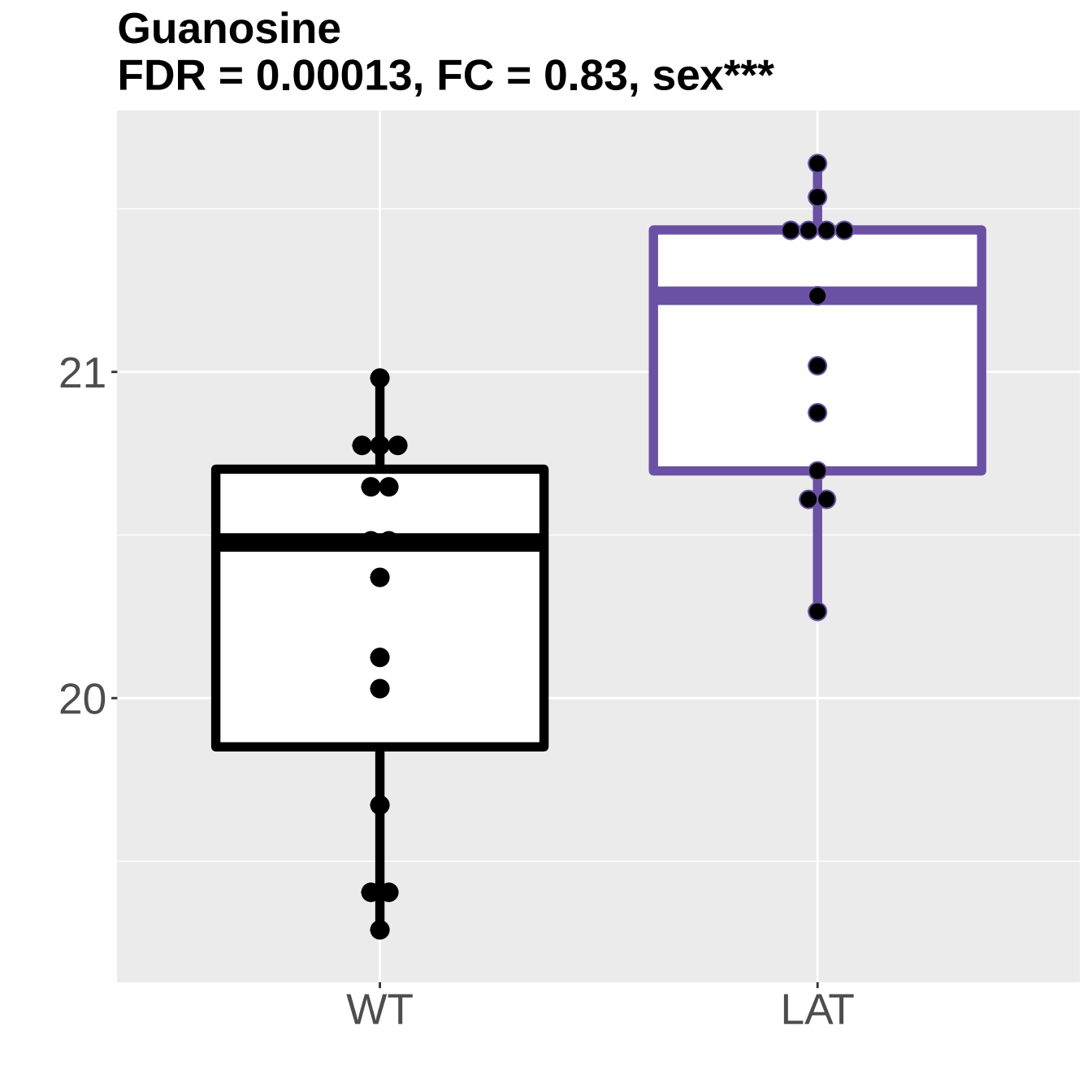
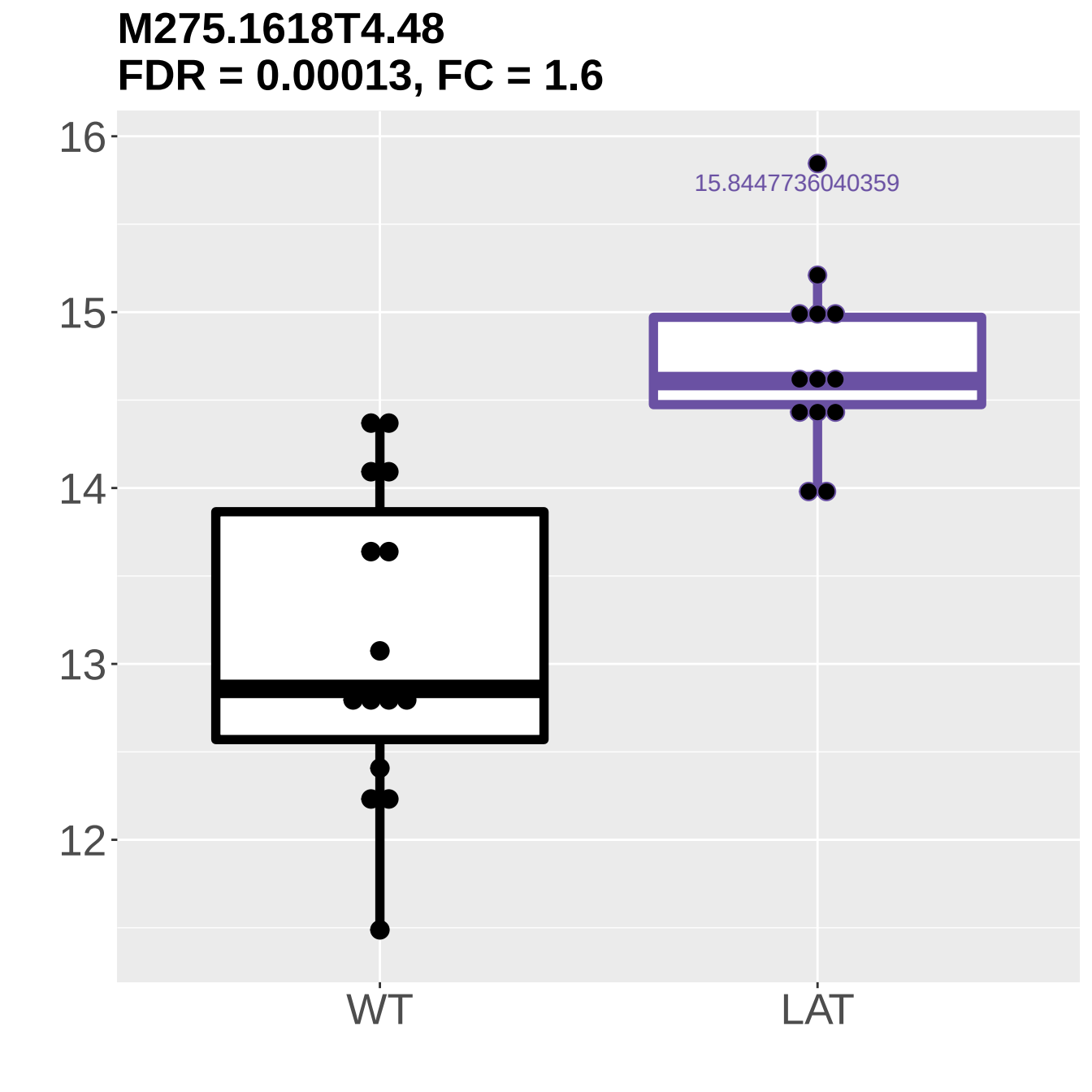

Guanosine
FDR = 0.00013, FC = 0.83, sex***
21
20
WT
LAT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15
14
13
12
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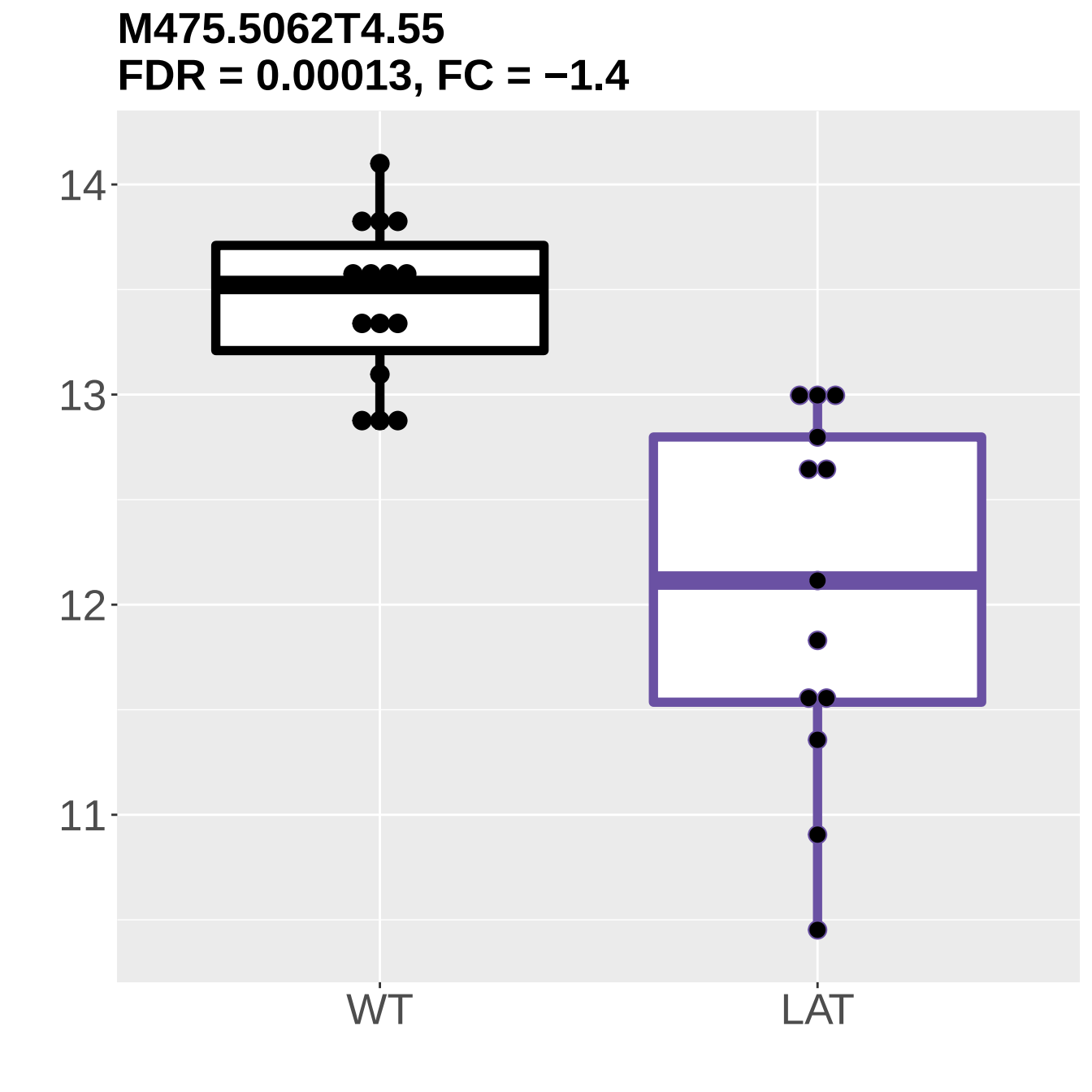
WT
LAT


M475.5062T4.55
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13
12
11
WT
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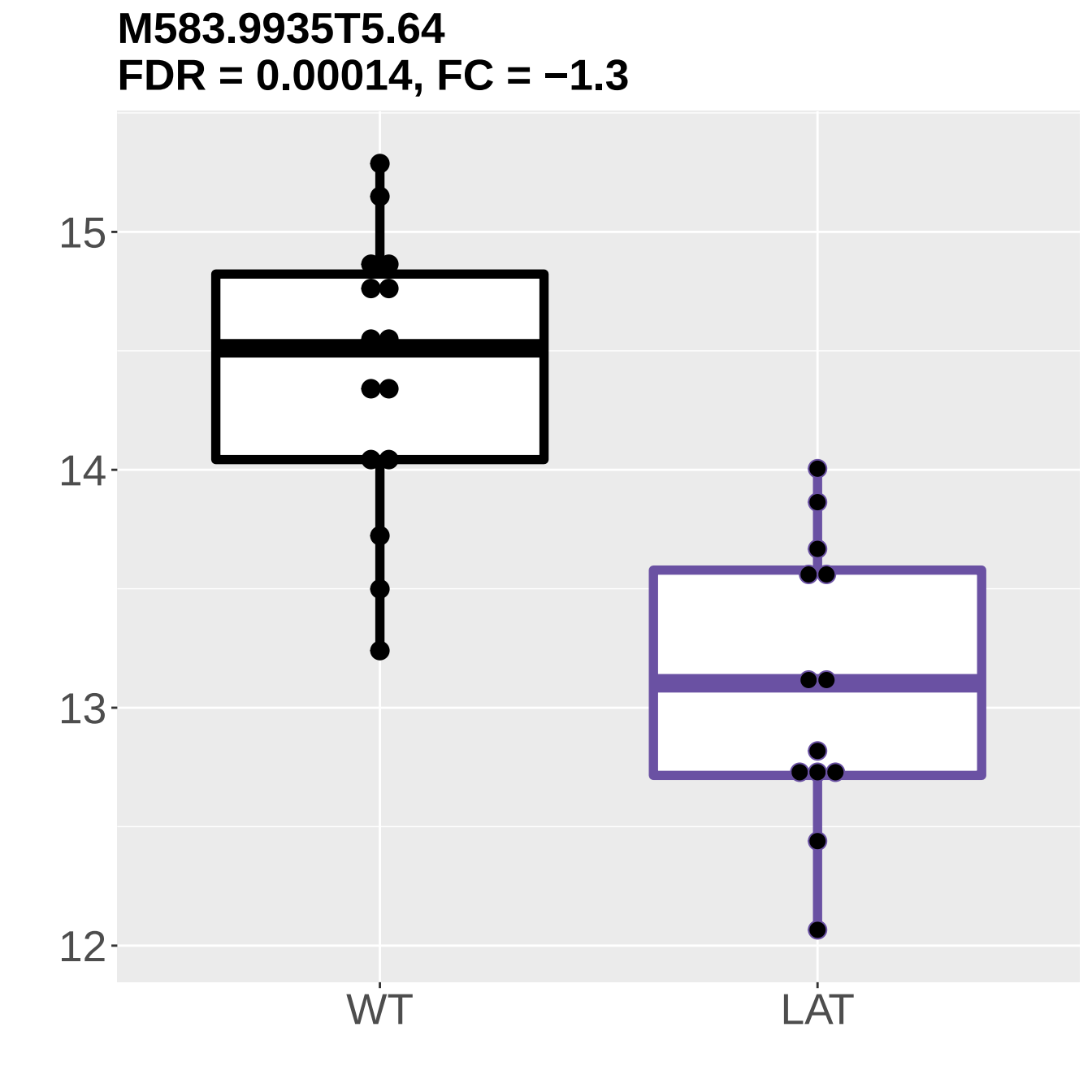
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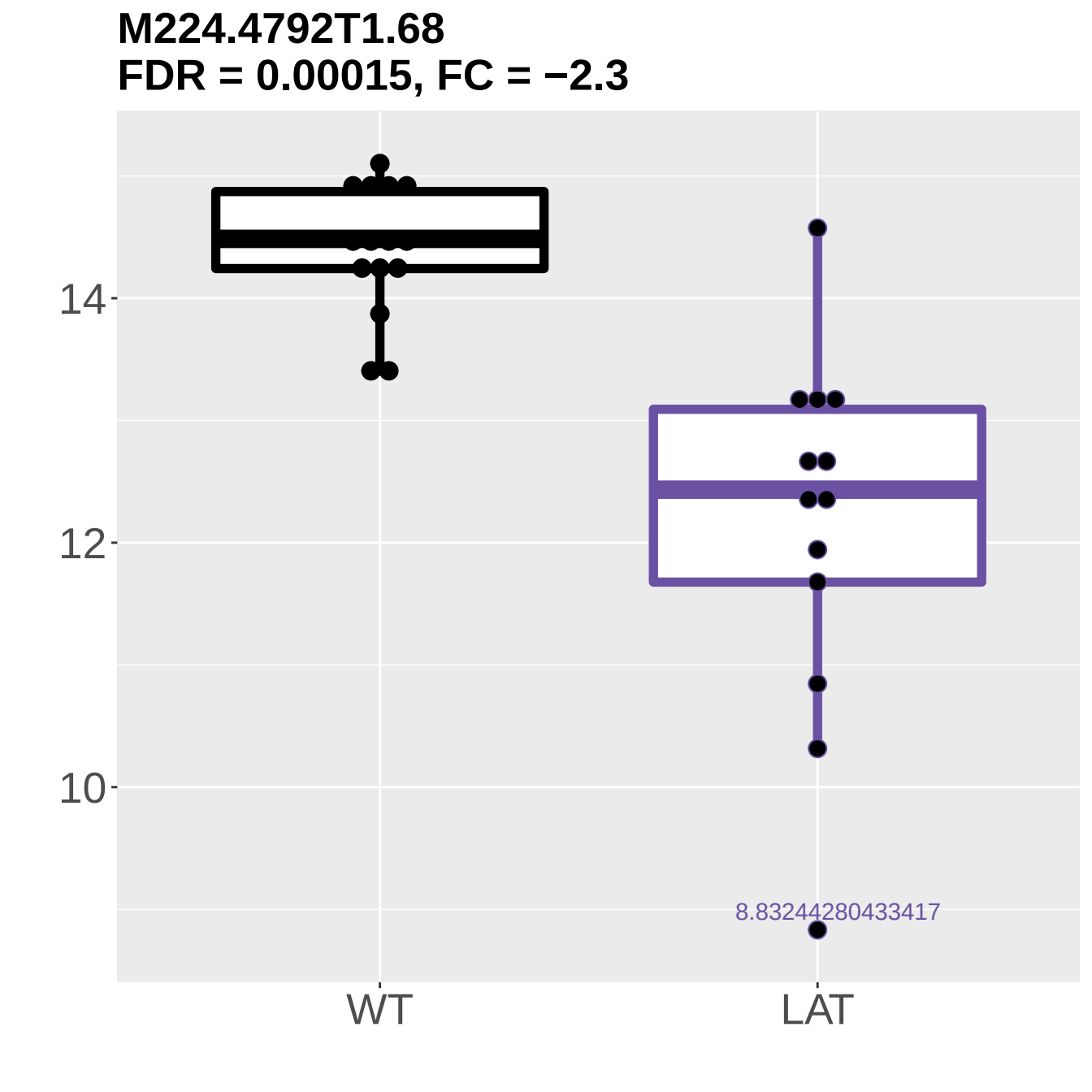
14
13
12
WT
LAT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12
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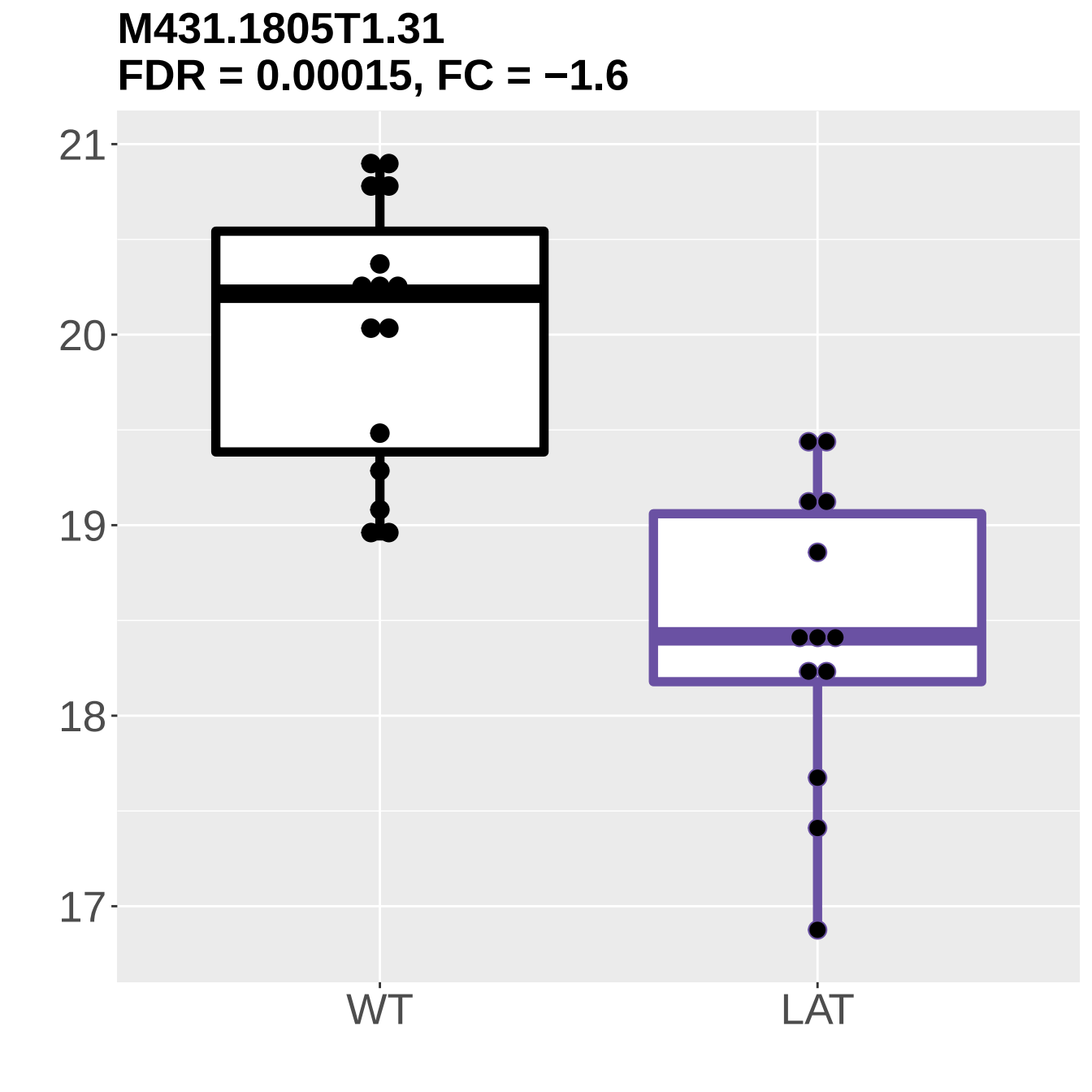
WT
LAT


M431.1805T1.31
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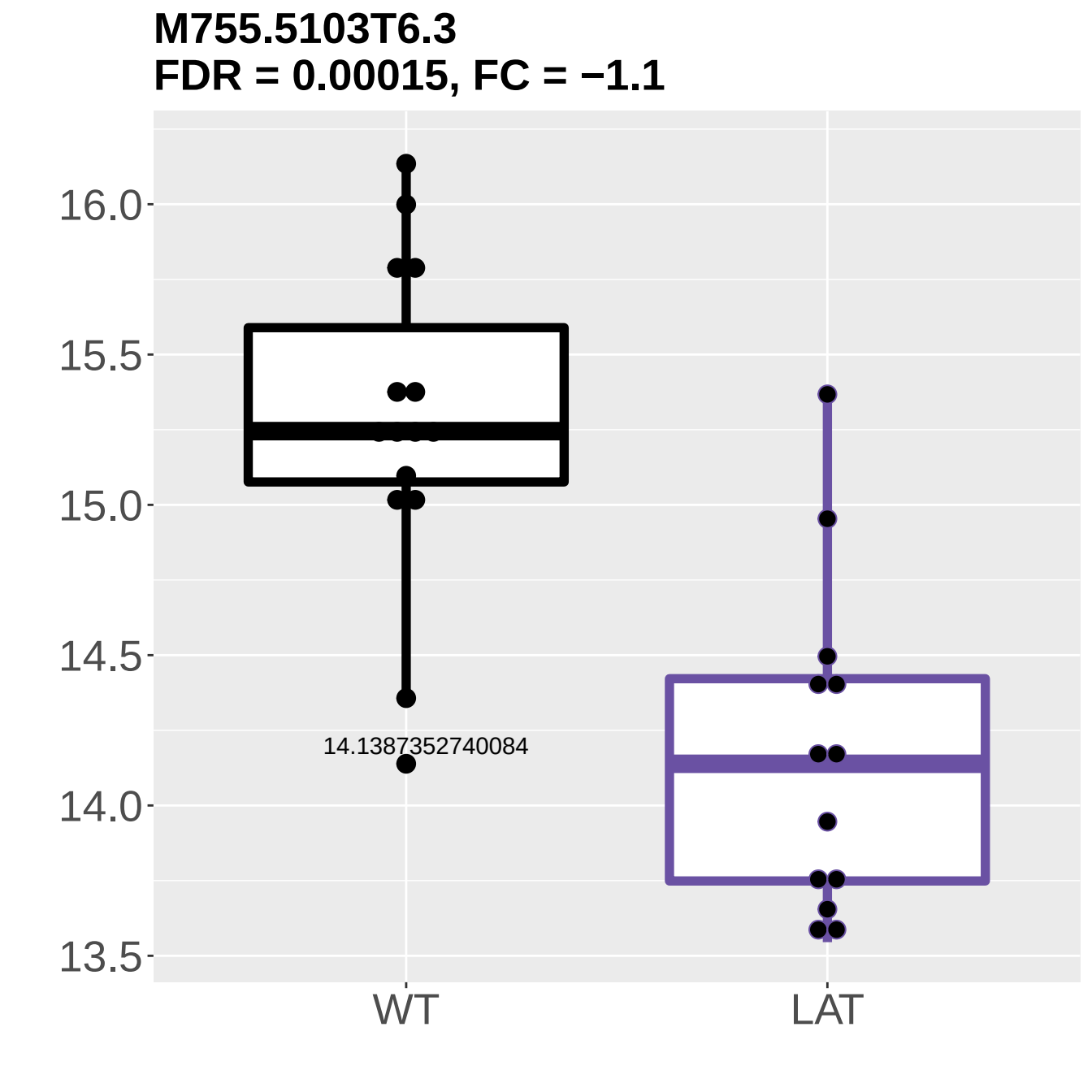
20
19
18
17
WT
LAT


M755.5103T6.3
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14.0
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WT
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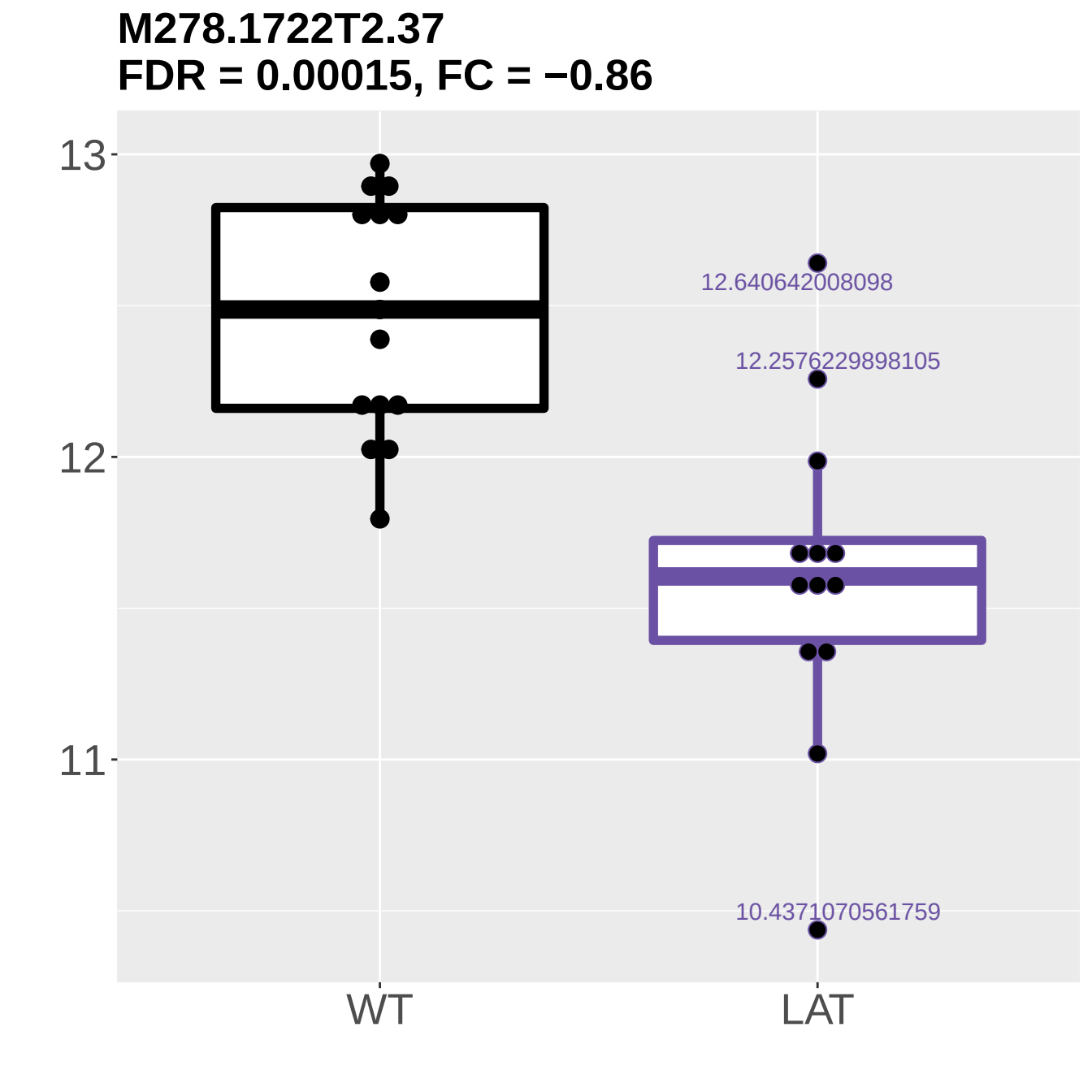
M278.1722T2.37
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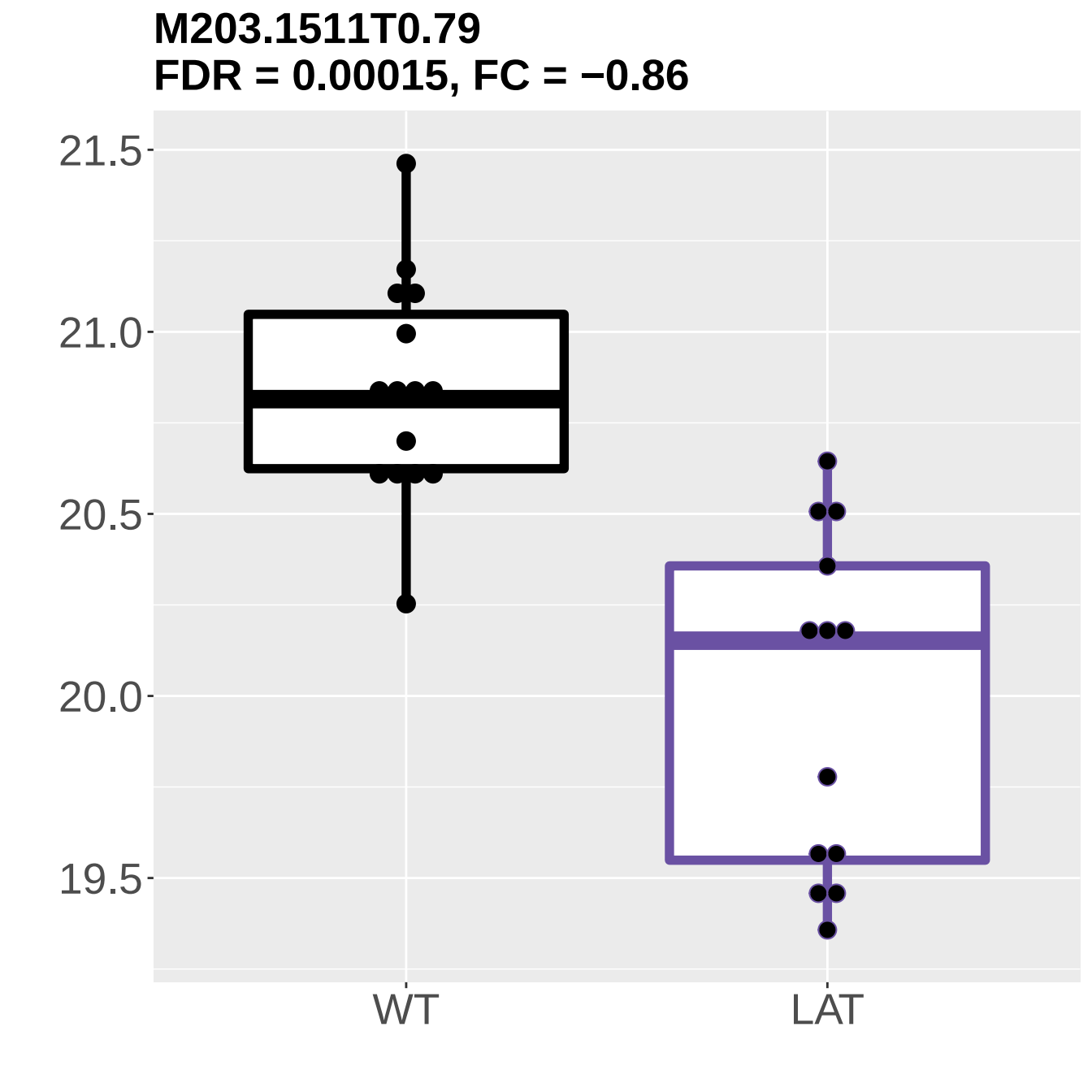
WT
LAT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20.0
19.5
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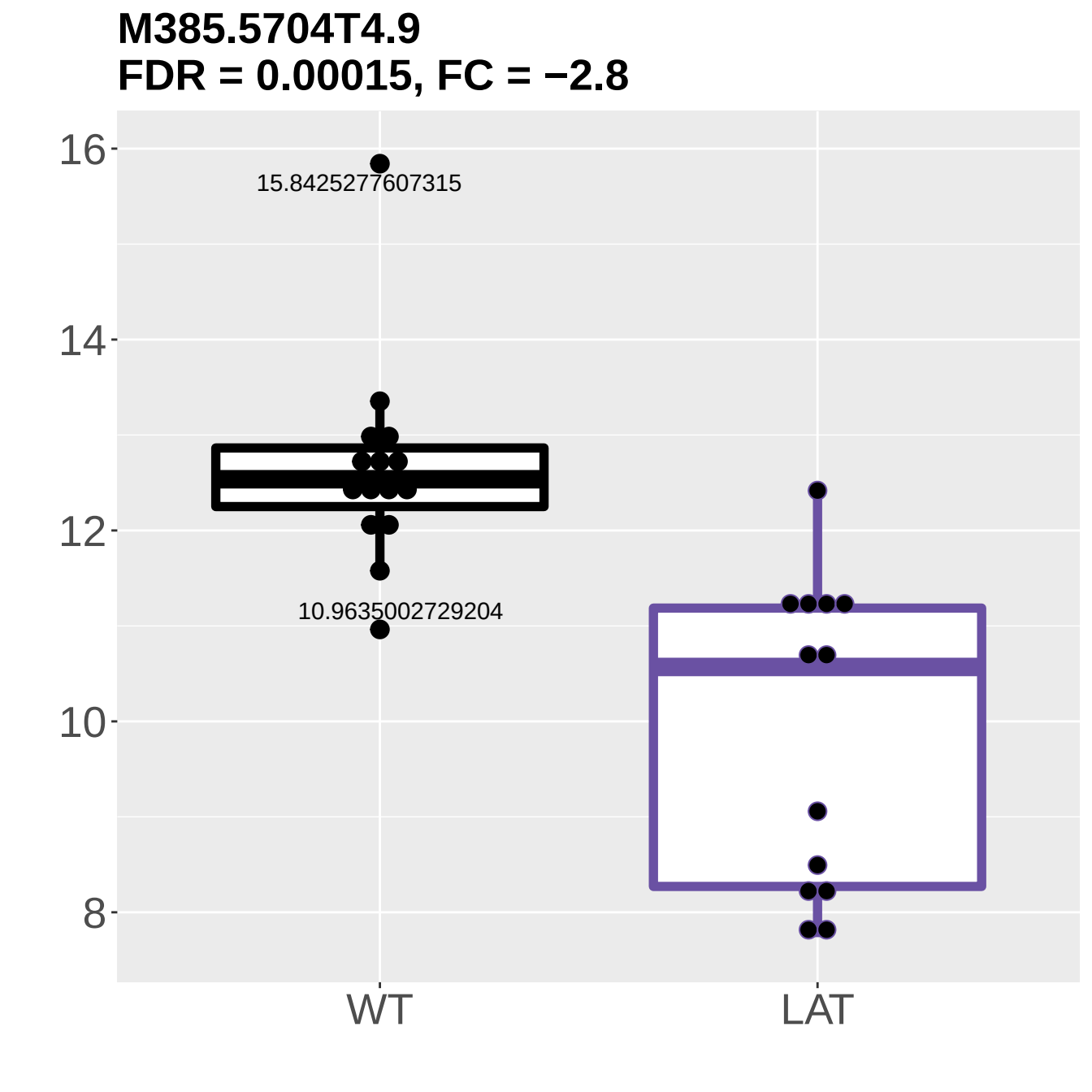
M385.5704T4.9
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WT
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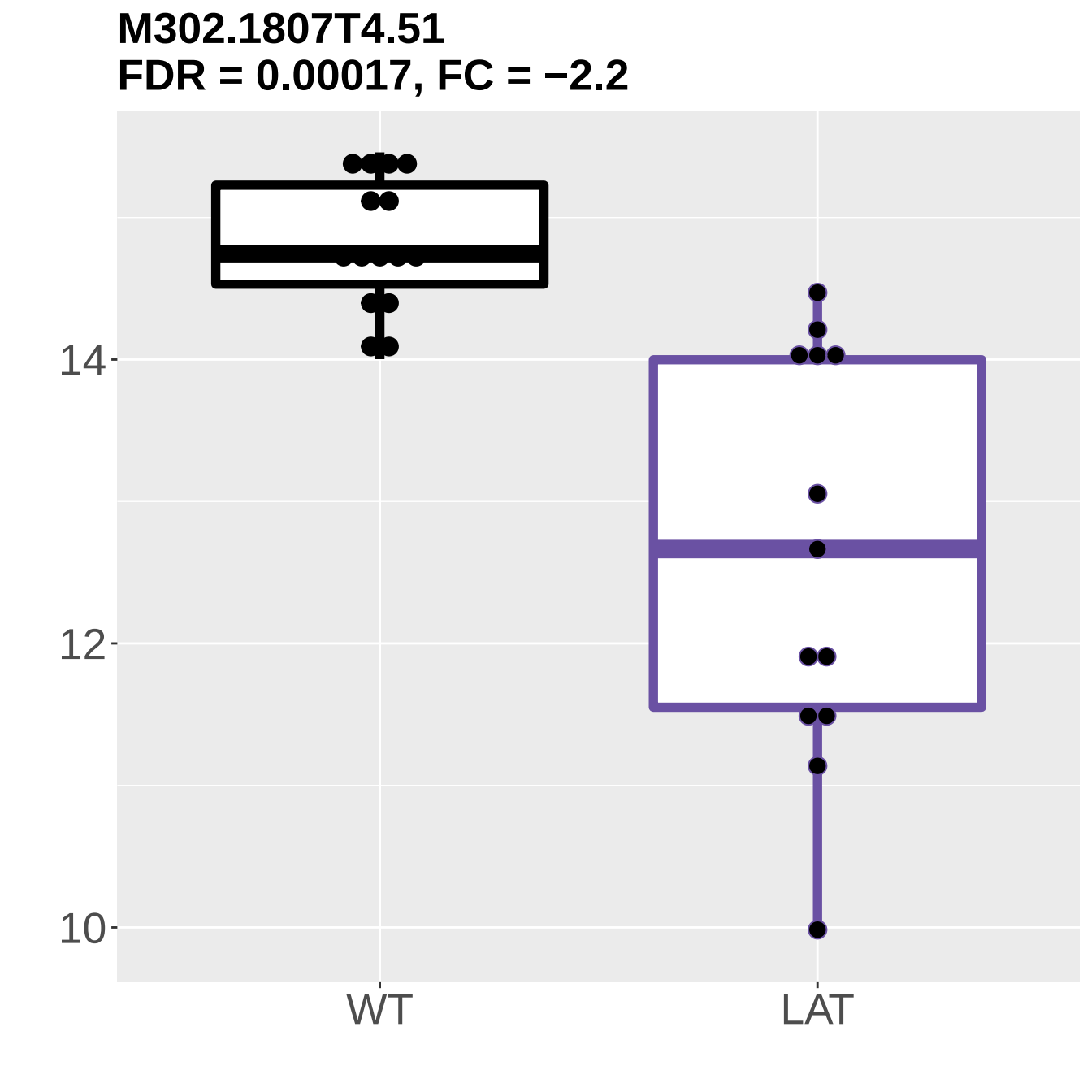
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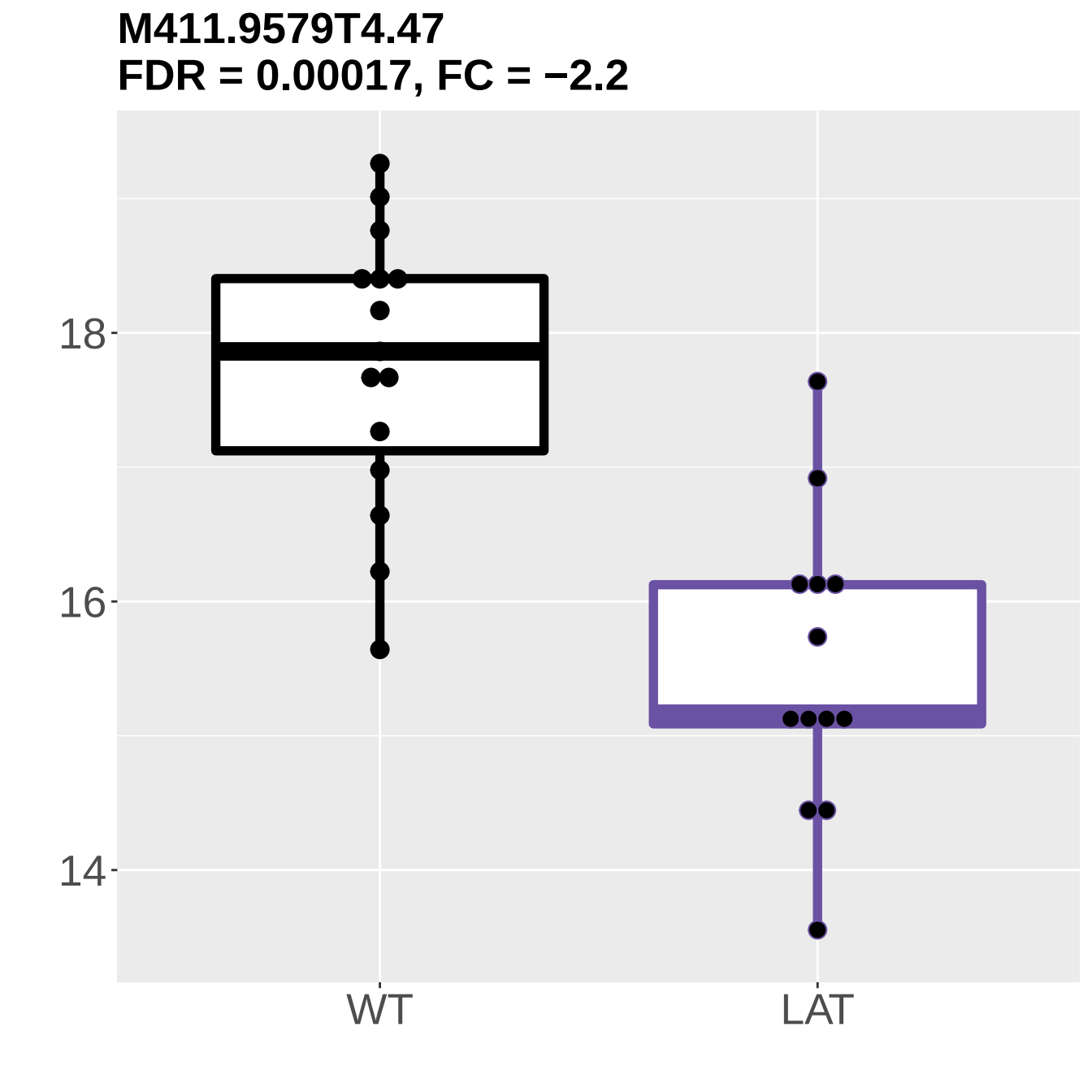
12
10
WT
LAT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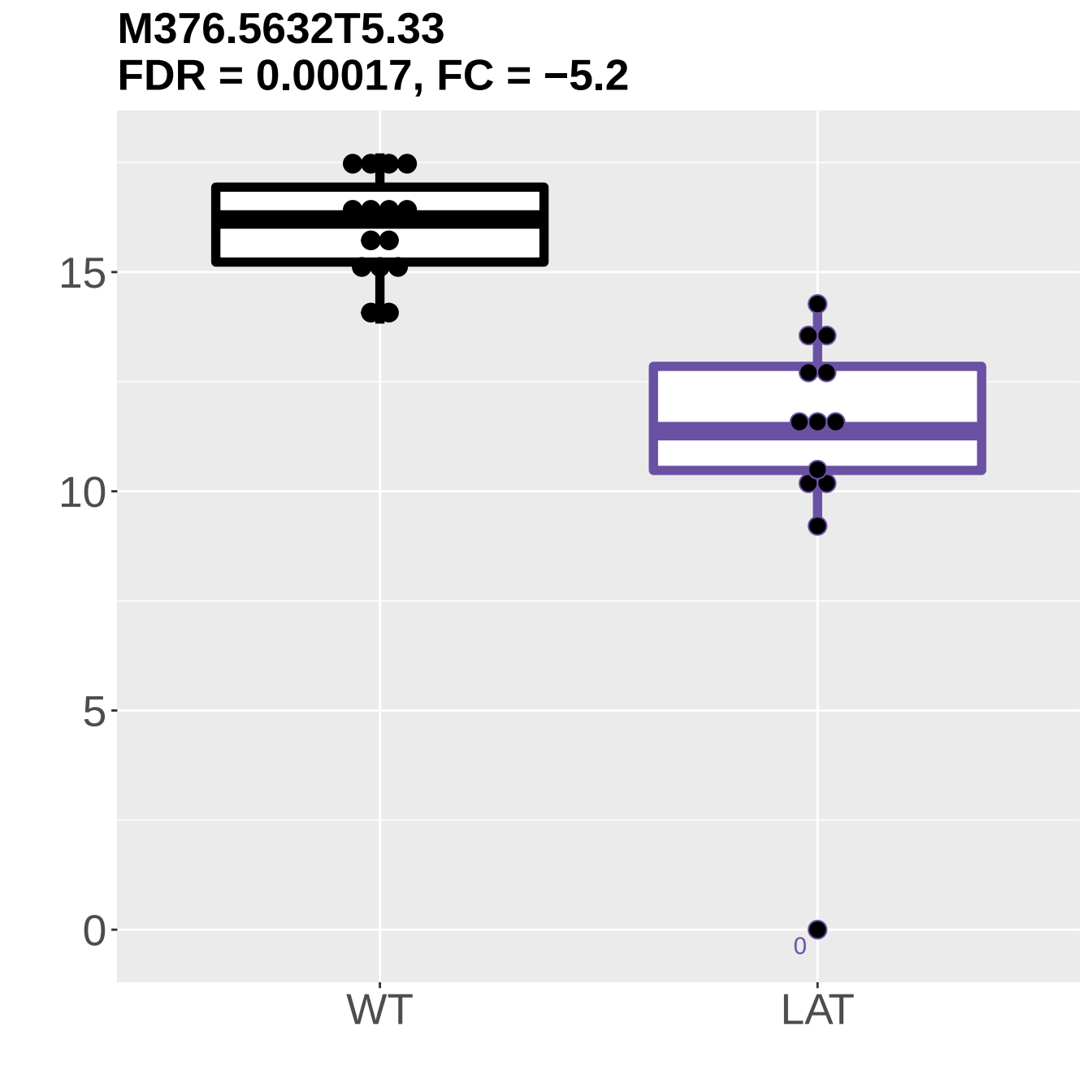
16
14
WT
LAT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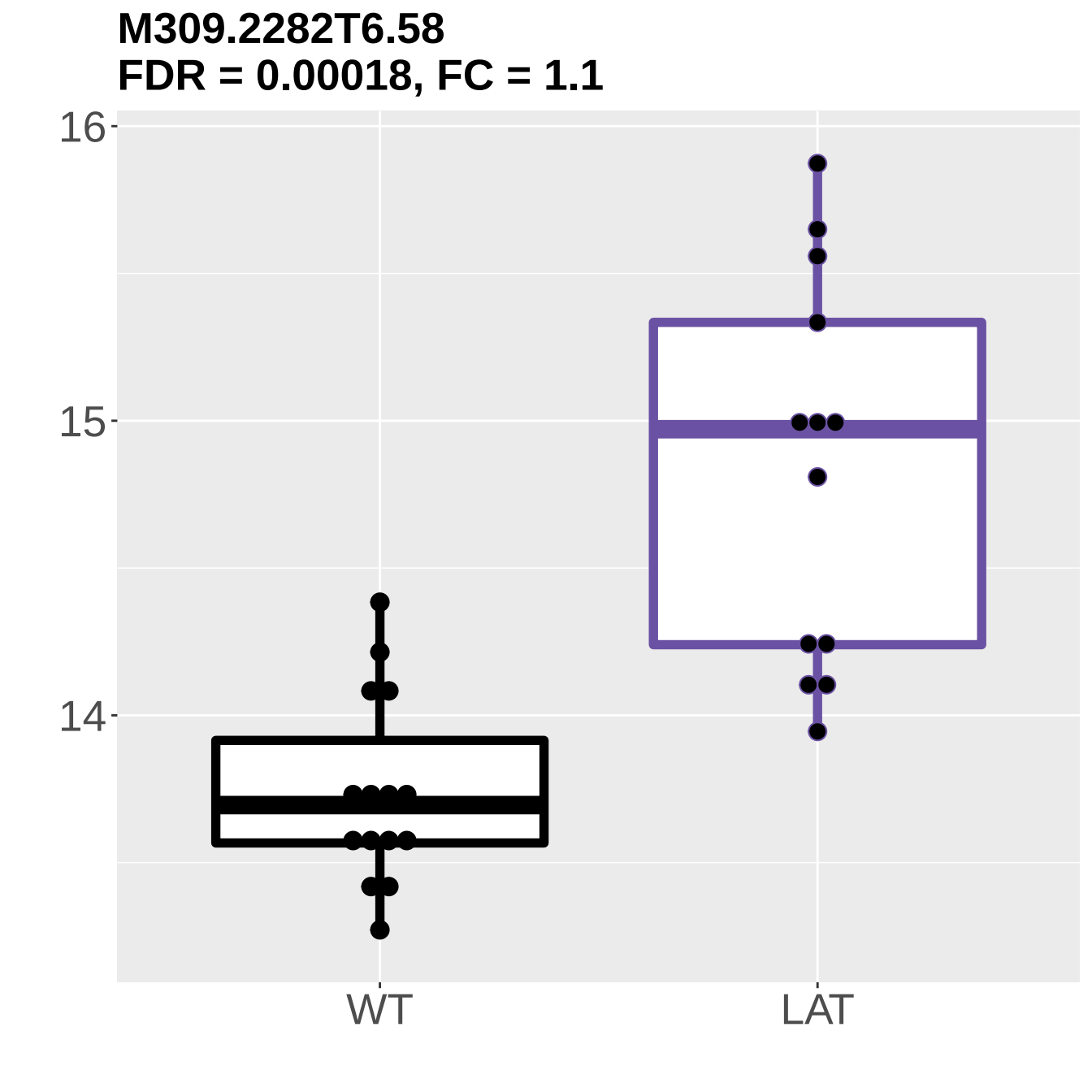
0
WT
LAT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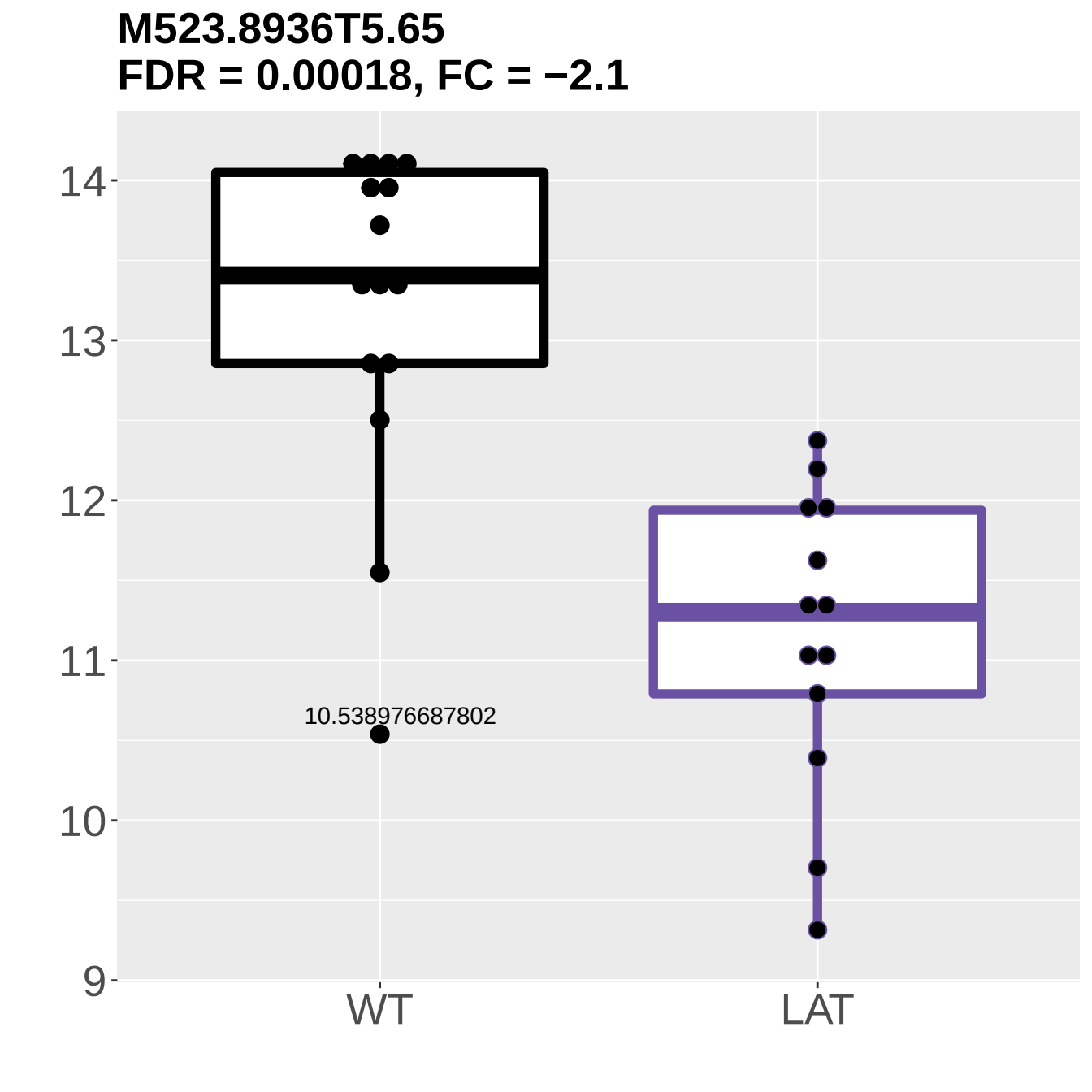
14
WT
LAT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11
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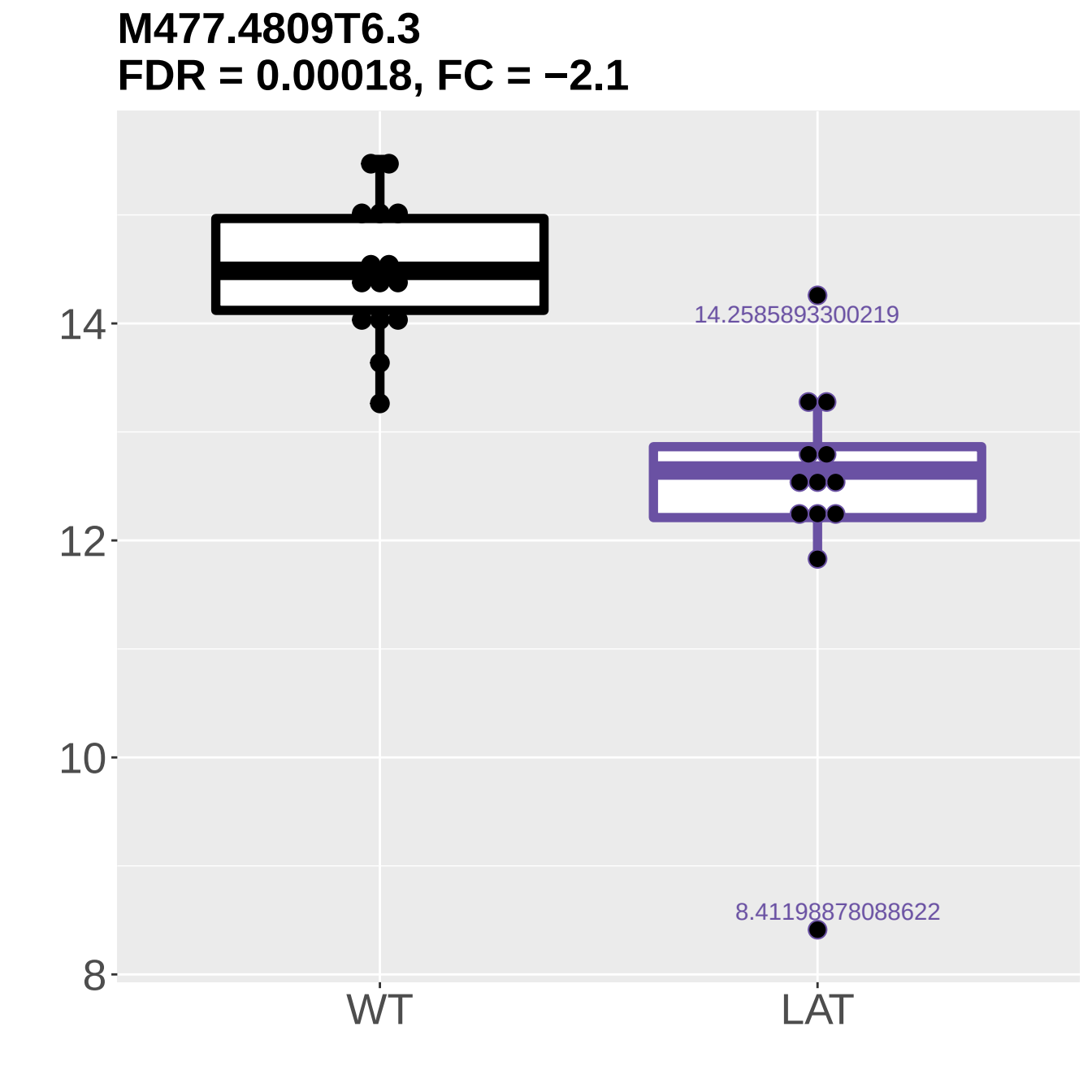
WT
LAT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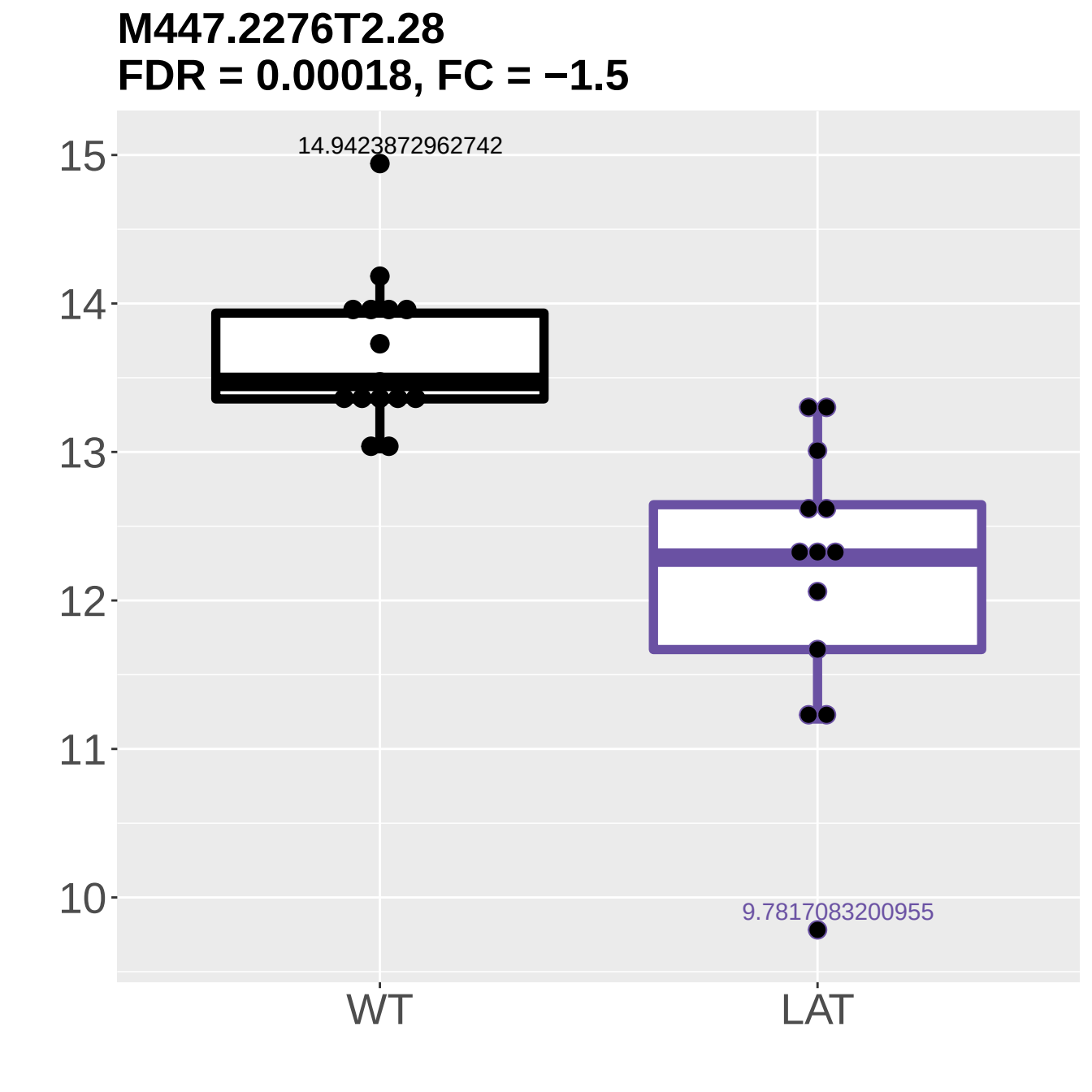
M447.2276T2.28
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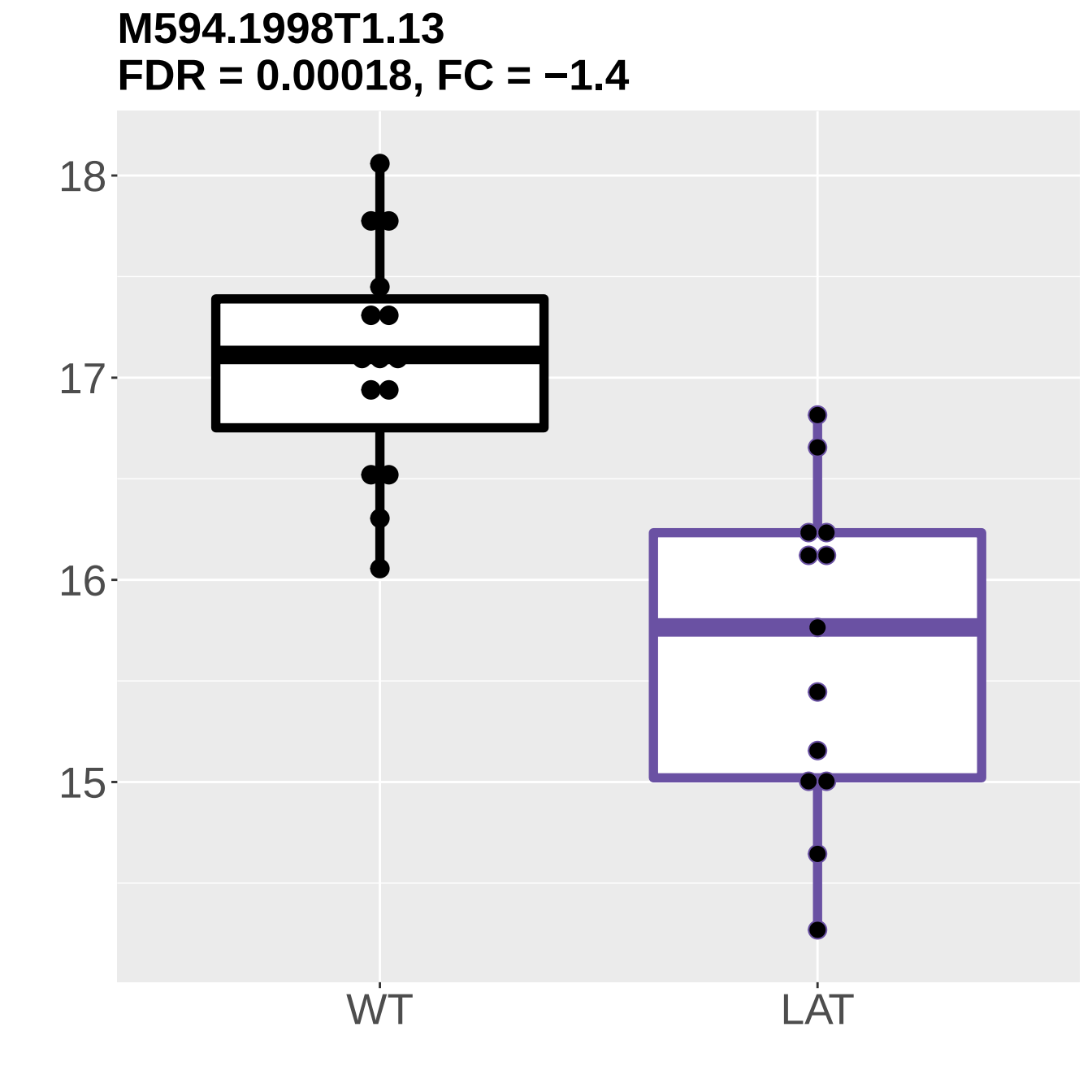
14
13
12
11
10
WT
LAT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FDR = 0.00018, FC = −1.4
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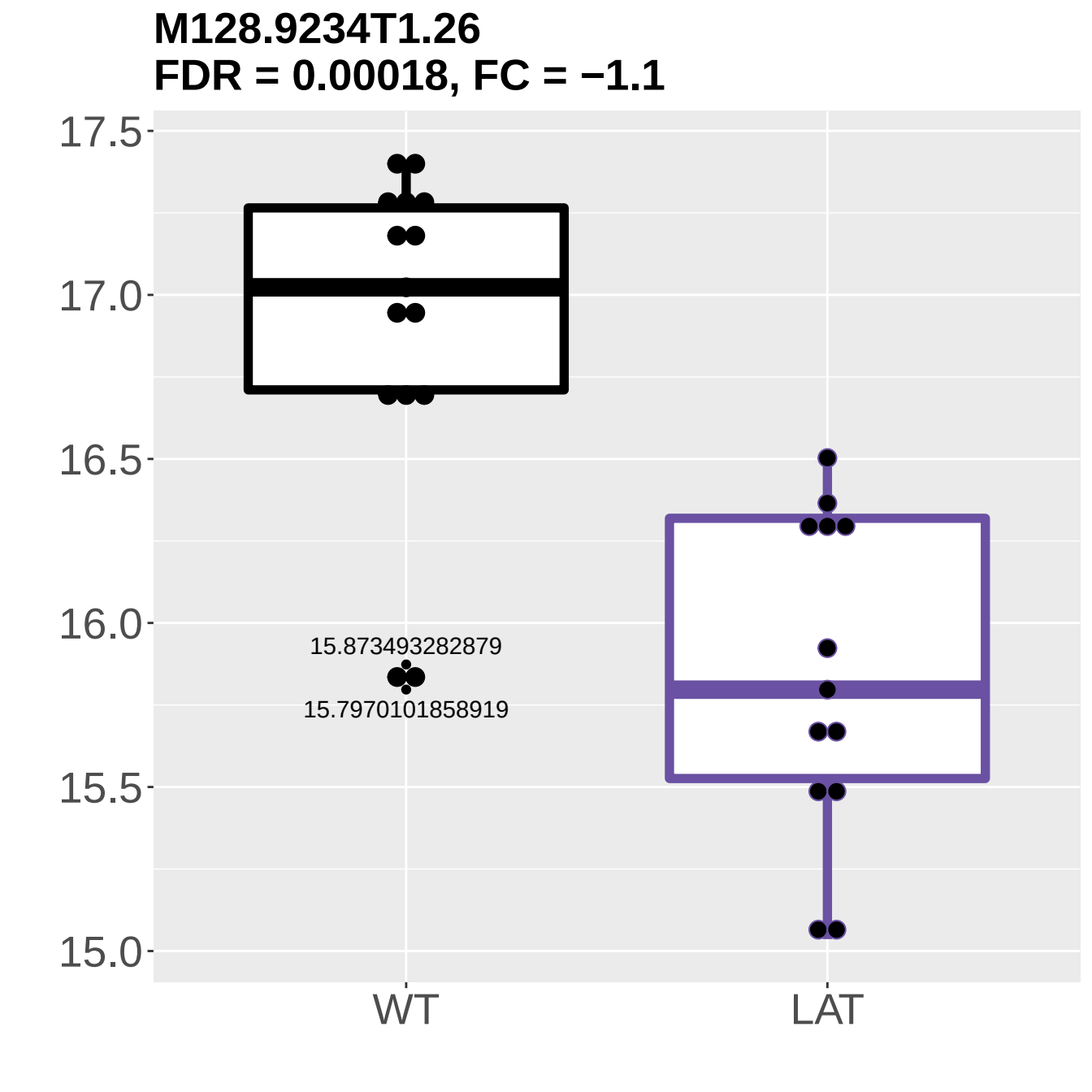
WT
LAT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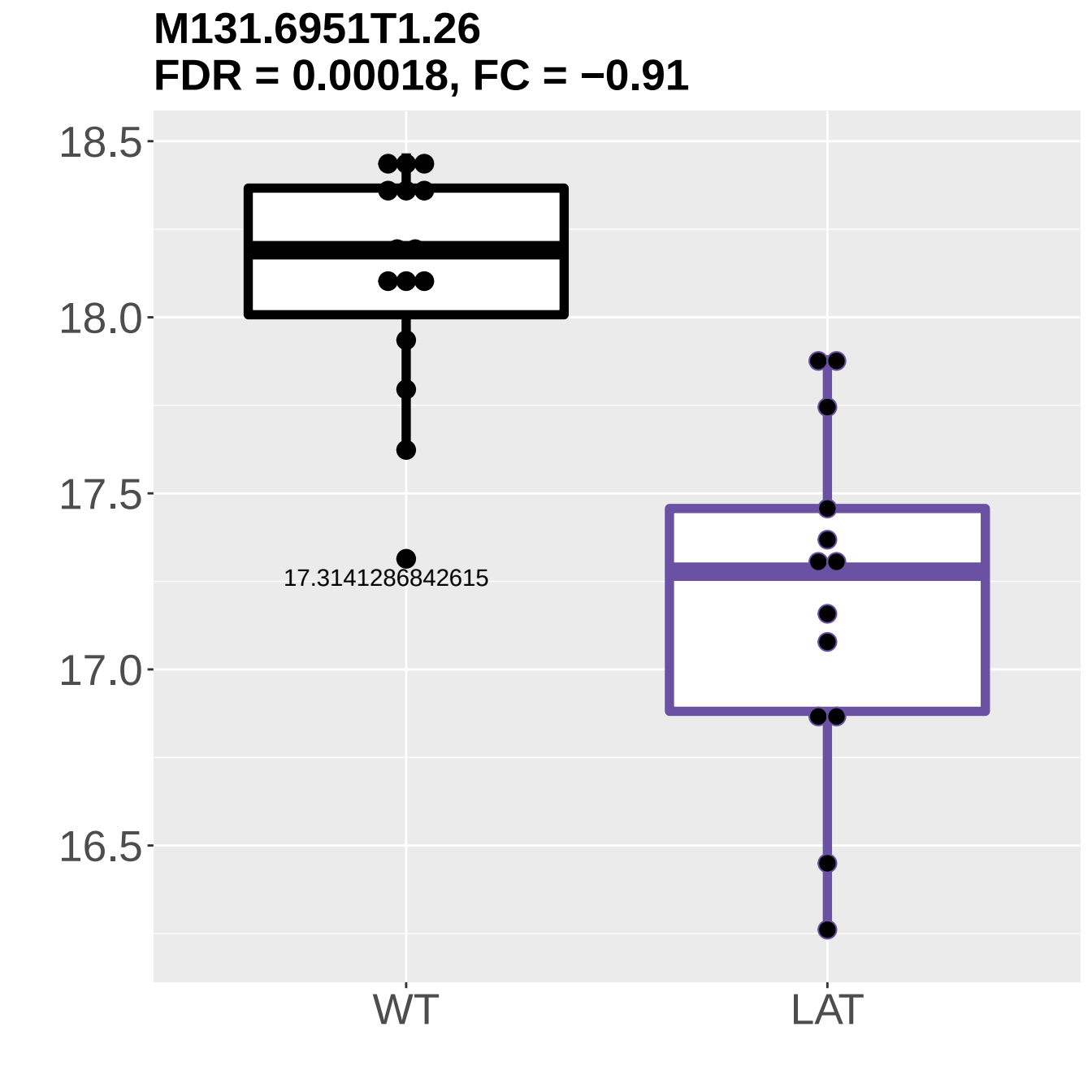
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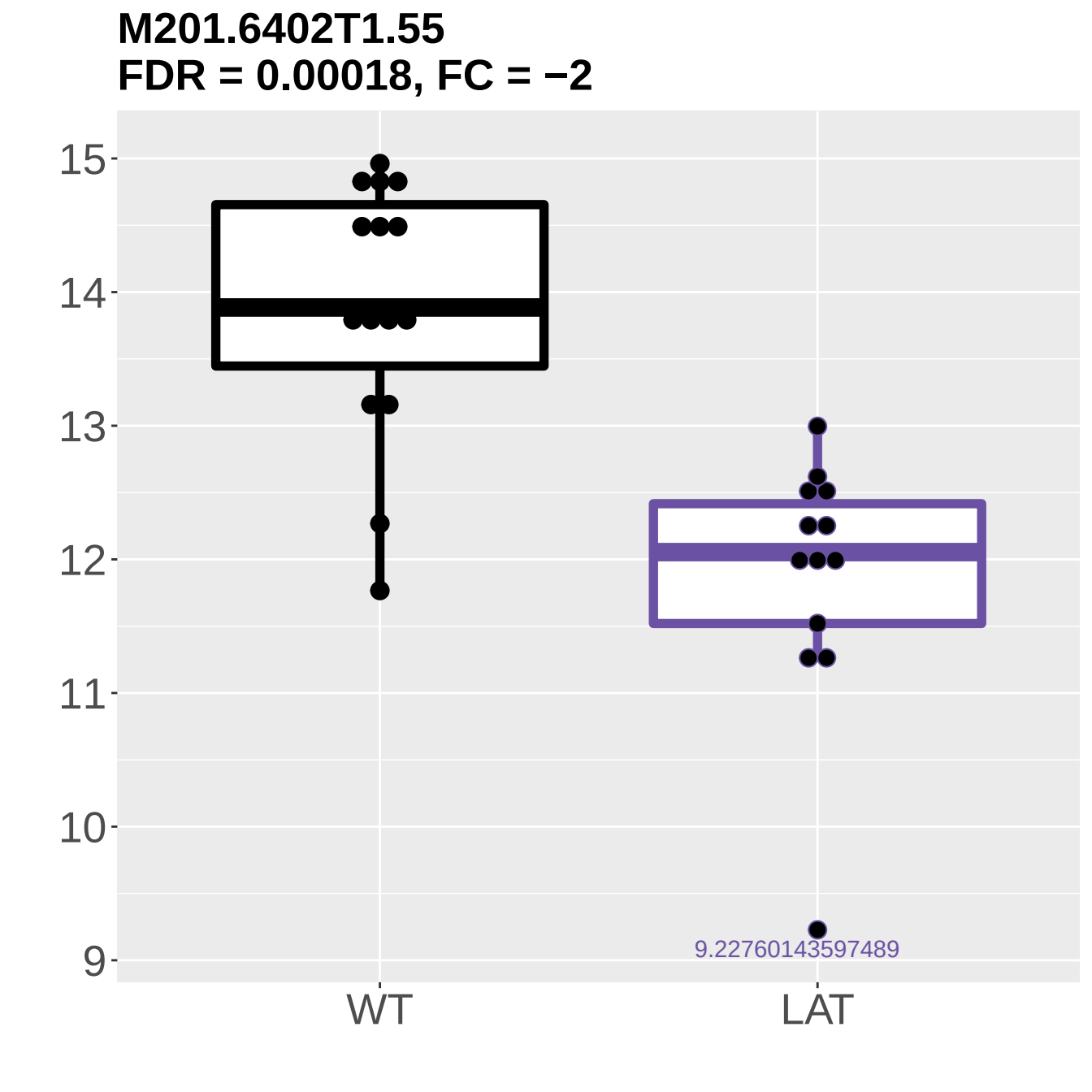
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11
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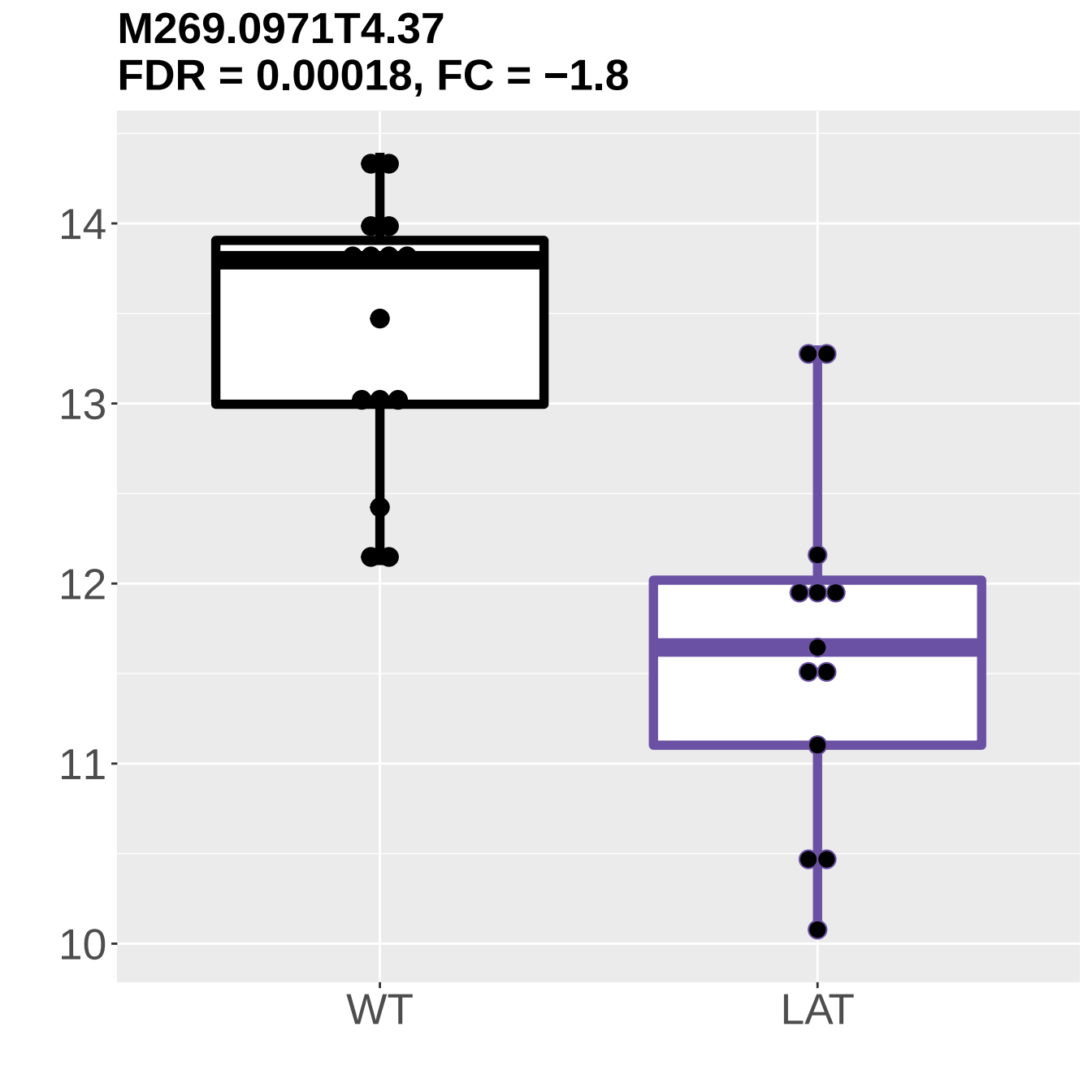
LAT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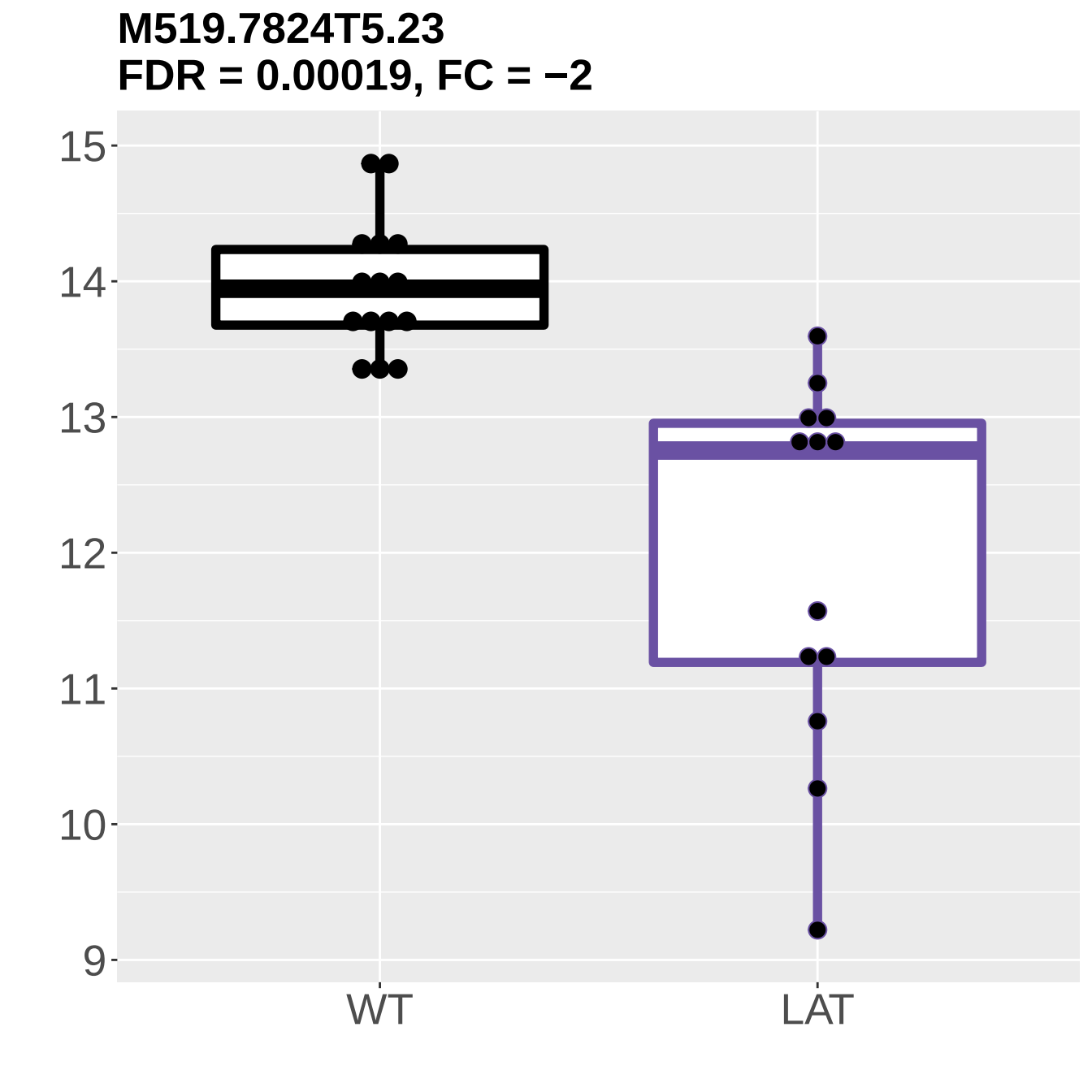
12
11
10
WT
LAT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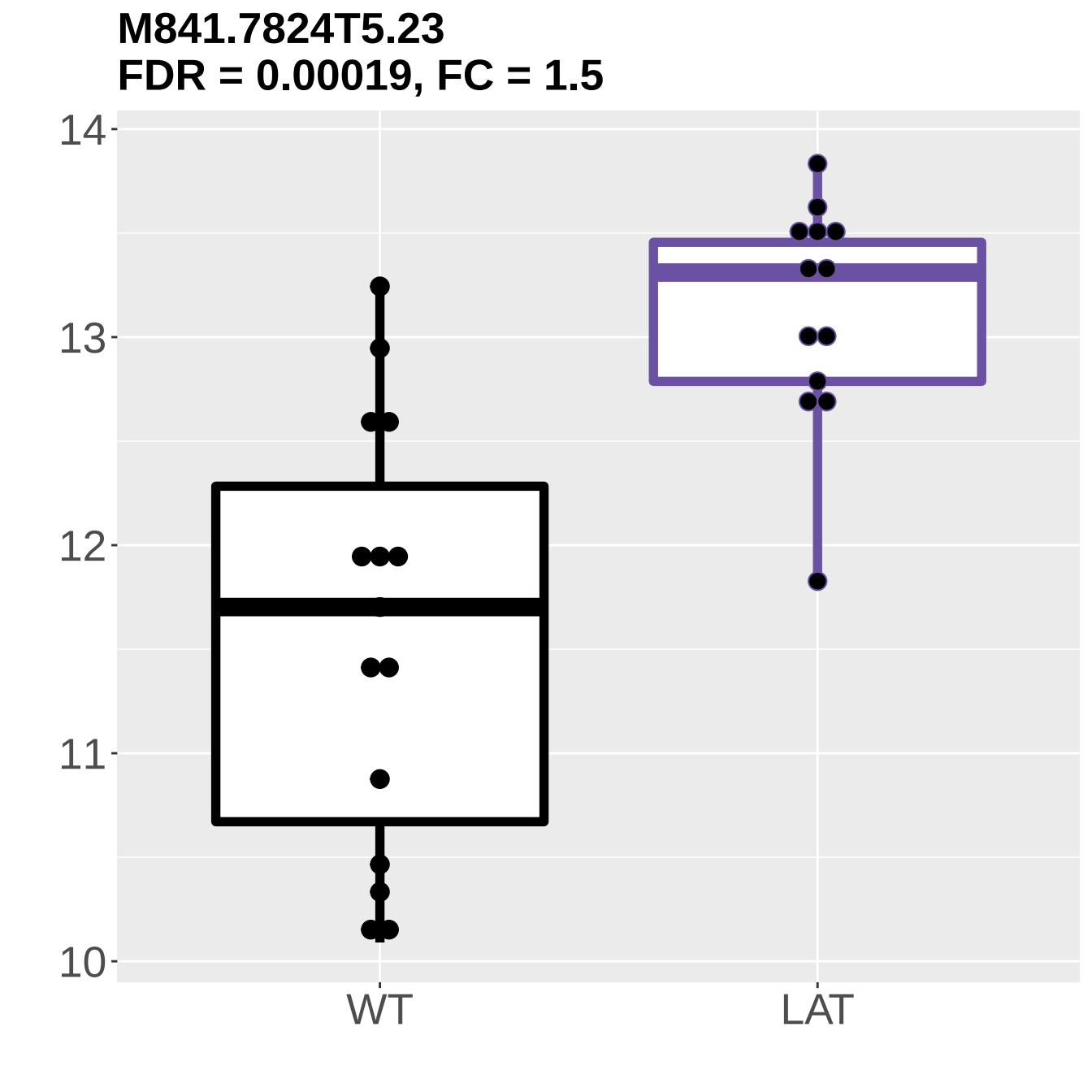
12
11
10
9
WT
LAT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13
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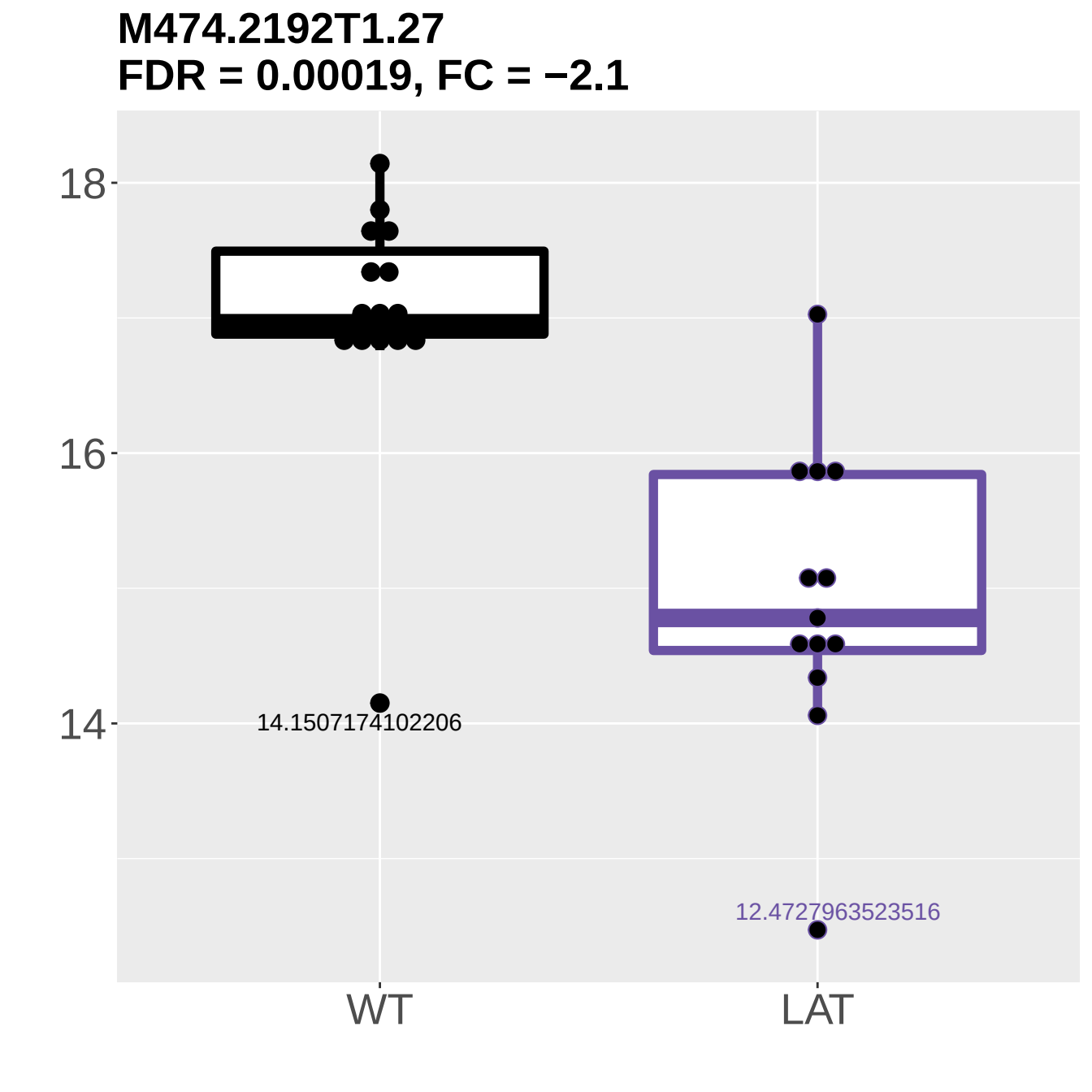
11
10
WT
LAT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16
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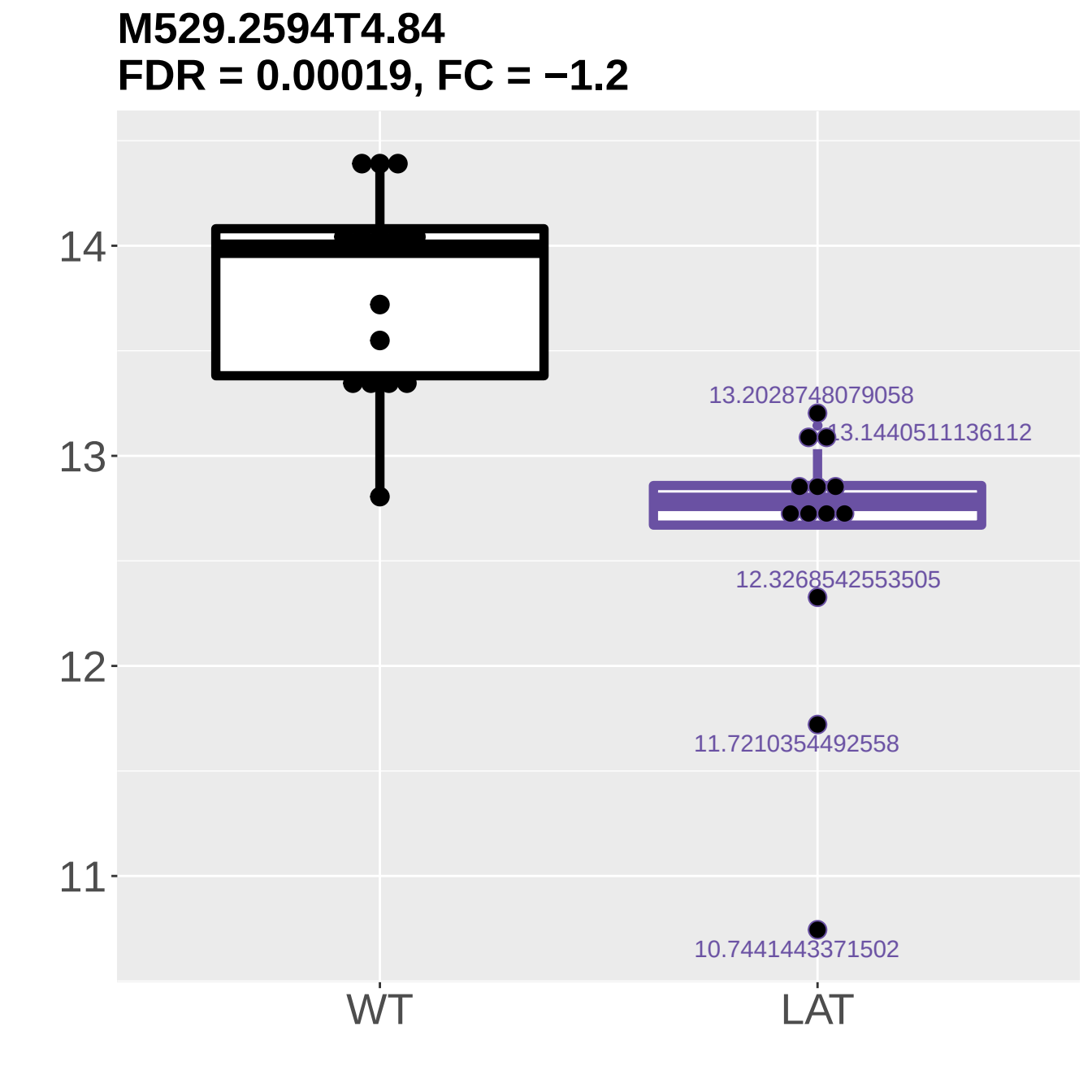
WT
LAT


M529.2594T4.84
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11.7210354492558
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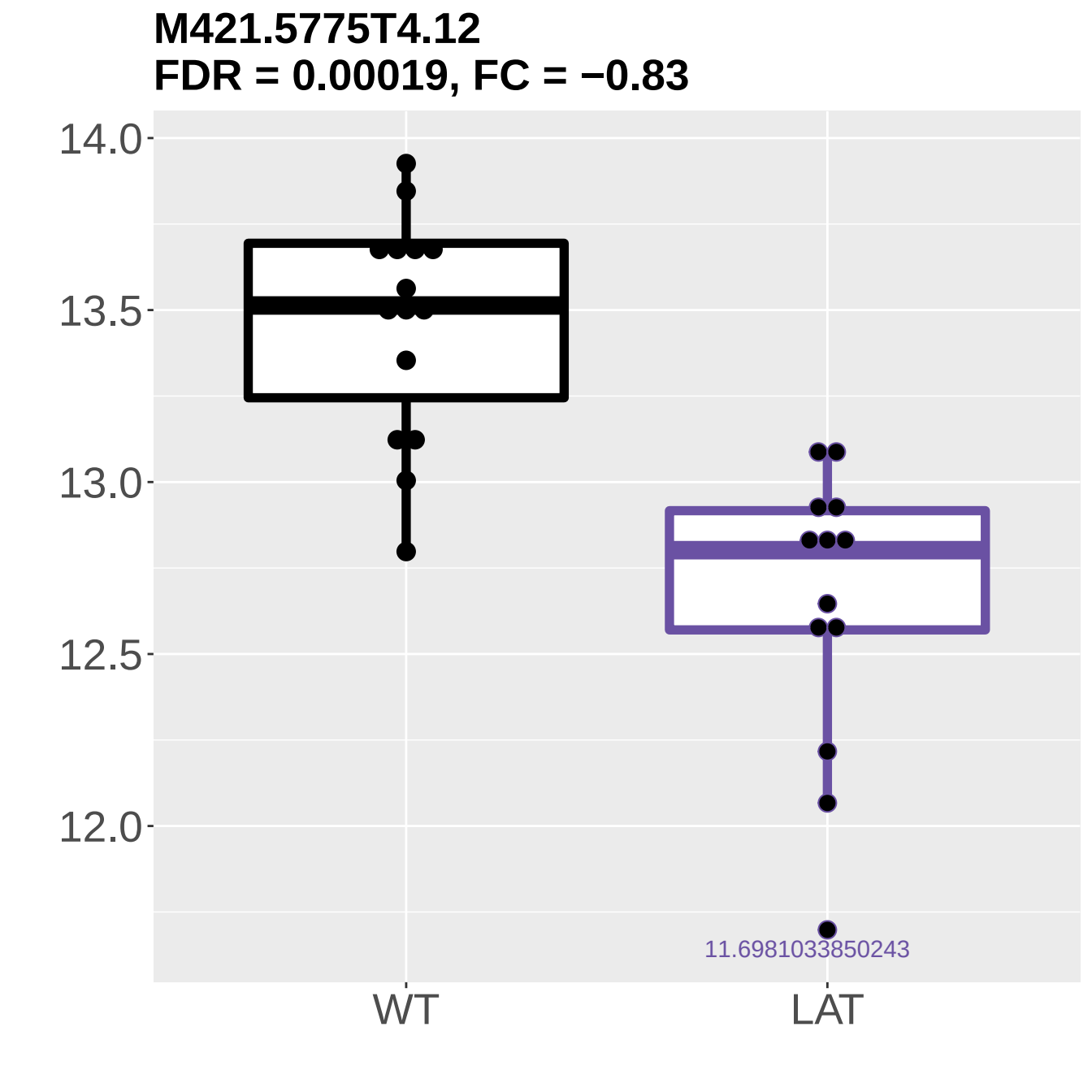
WT
LAT


M421.5775T4.12
FDR = 0.00019, FC = −0.83
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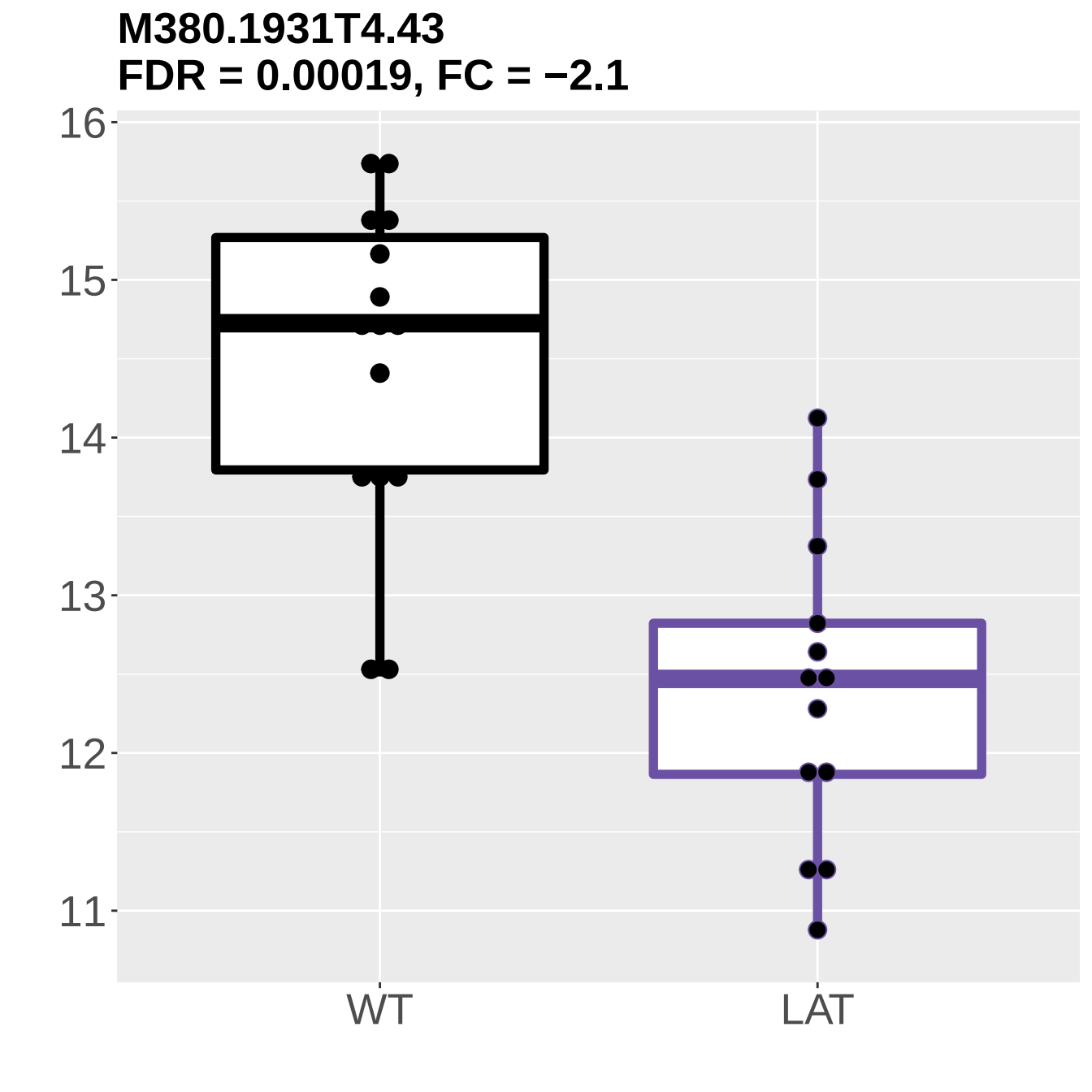
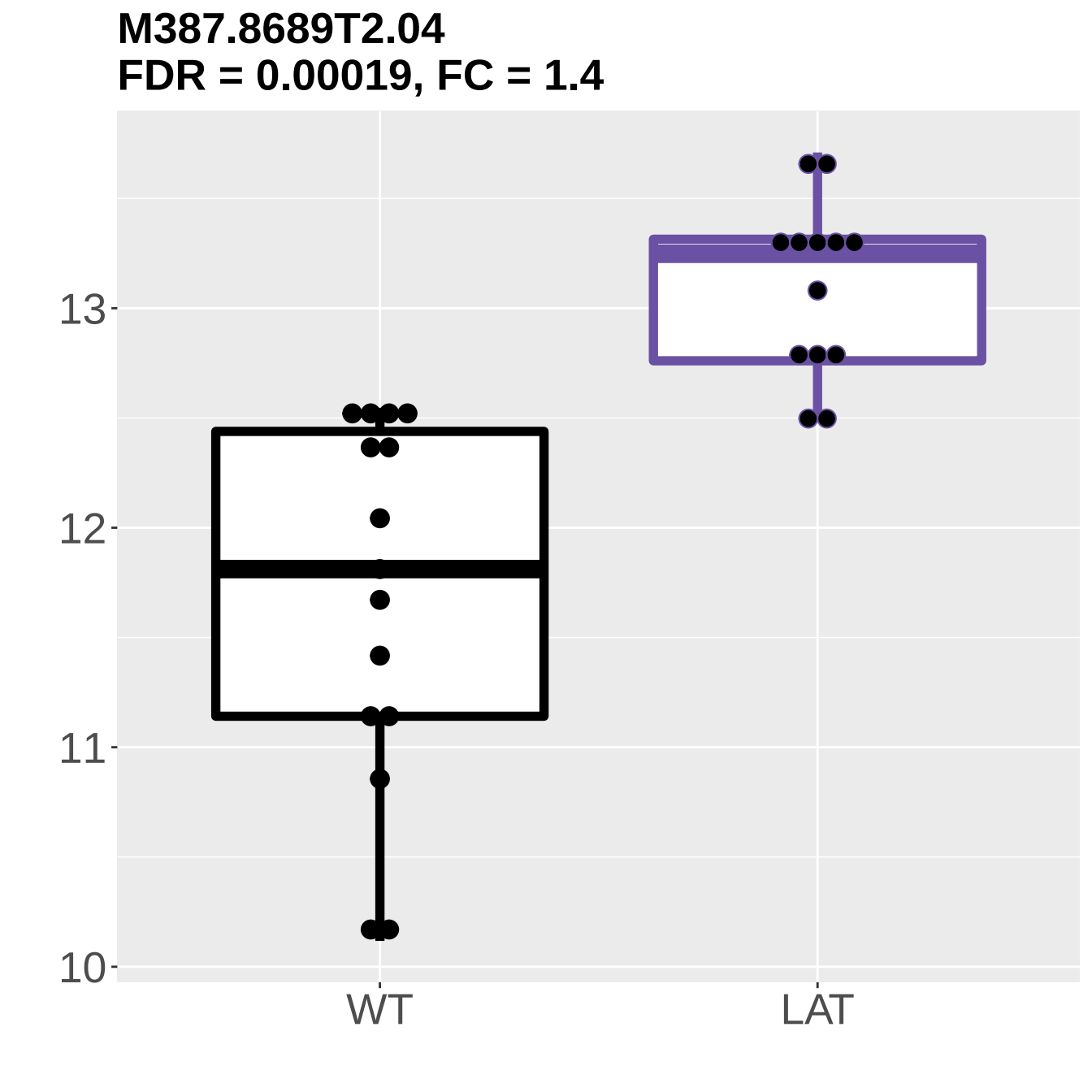
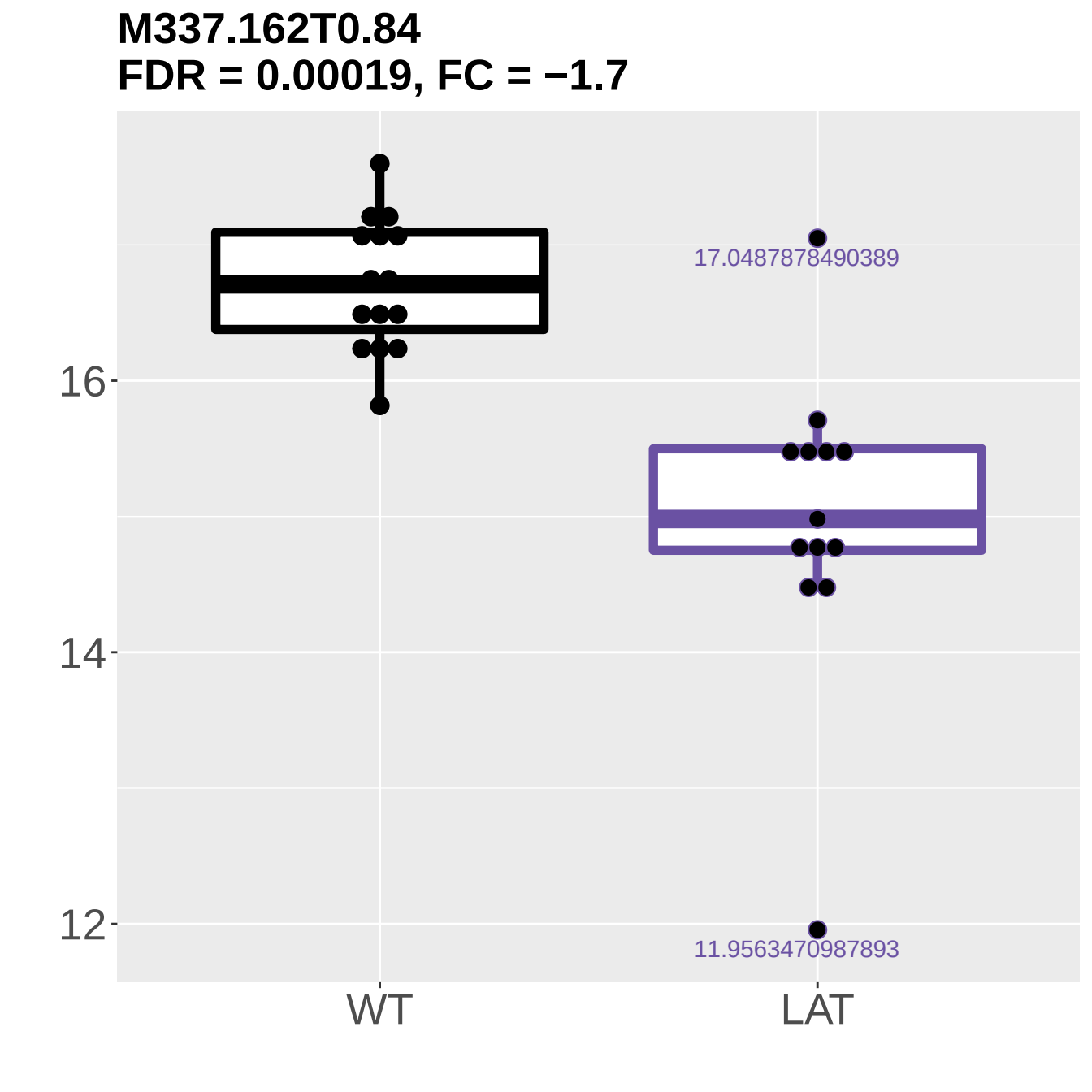
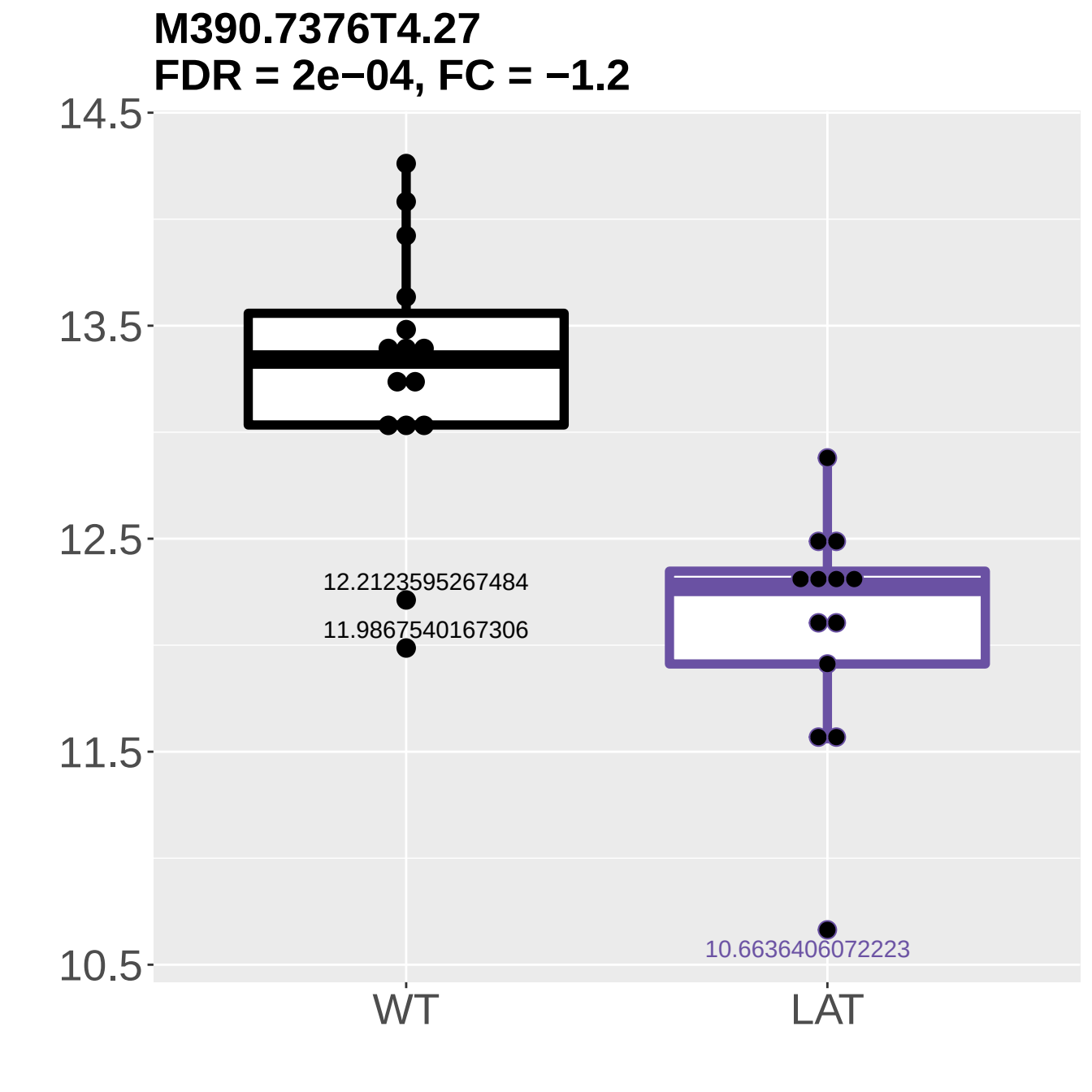
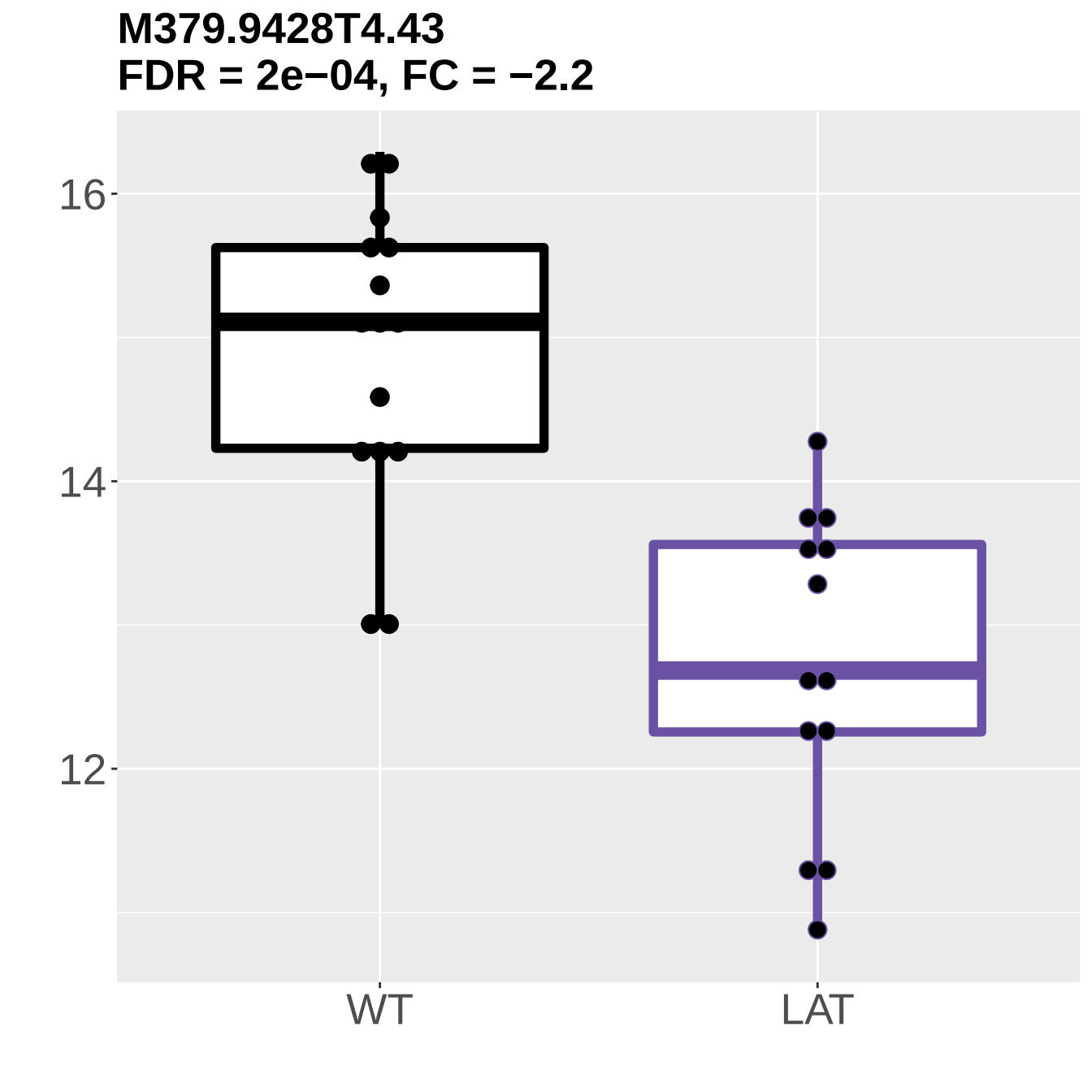
13.0
12.5
12.0
11.6981033850243
WT
LAT

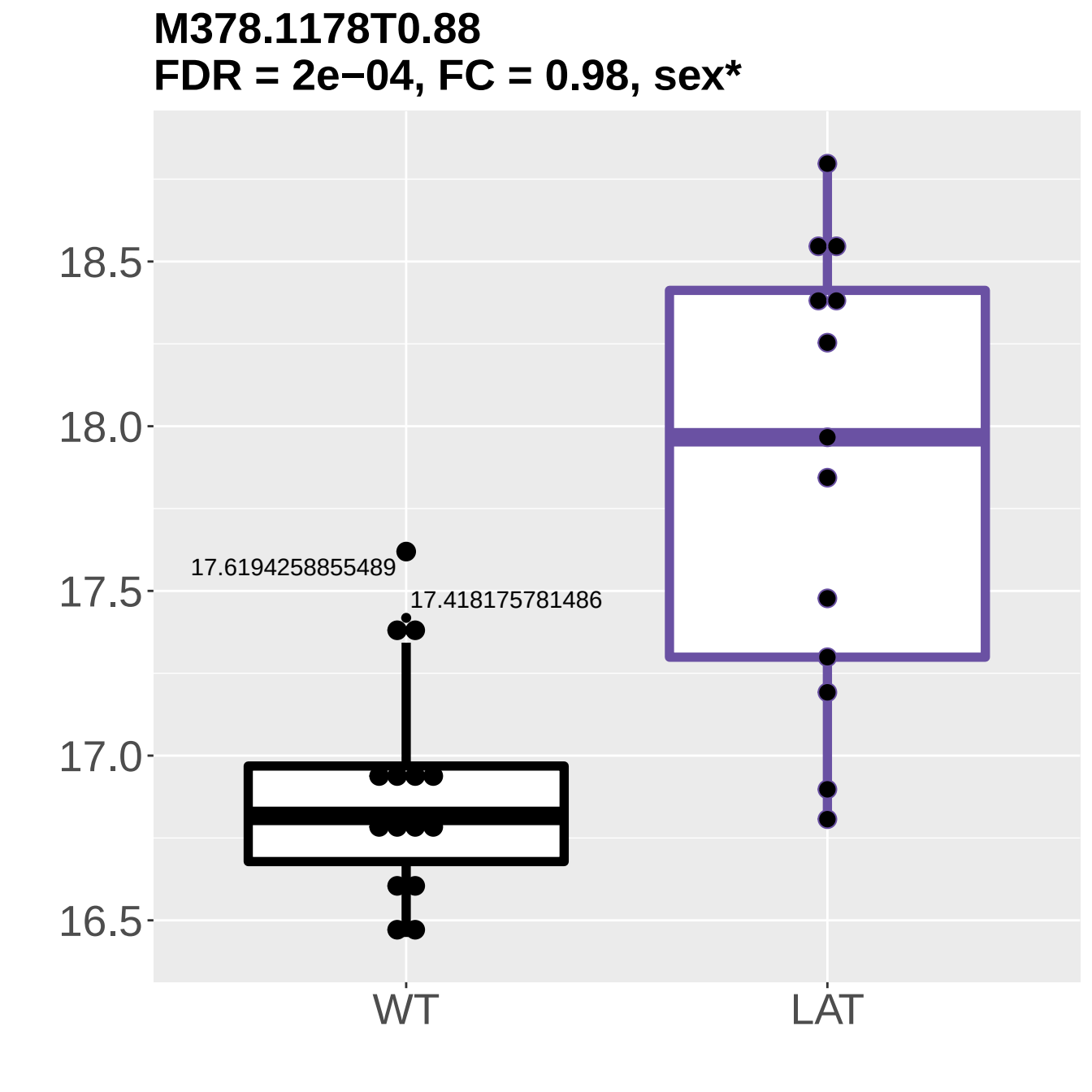

M380.1931T4.43
FDR = 0.00019, FC = −2.1
16
15
14
13
12
11
WT
LAT

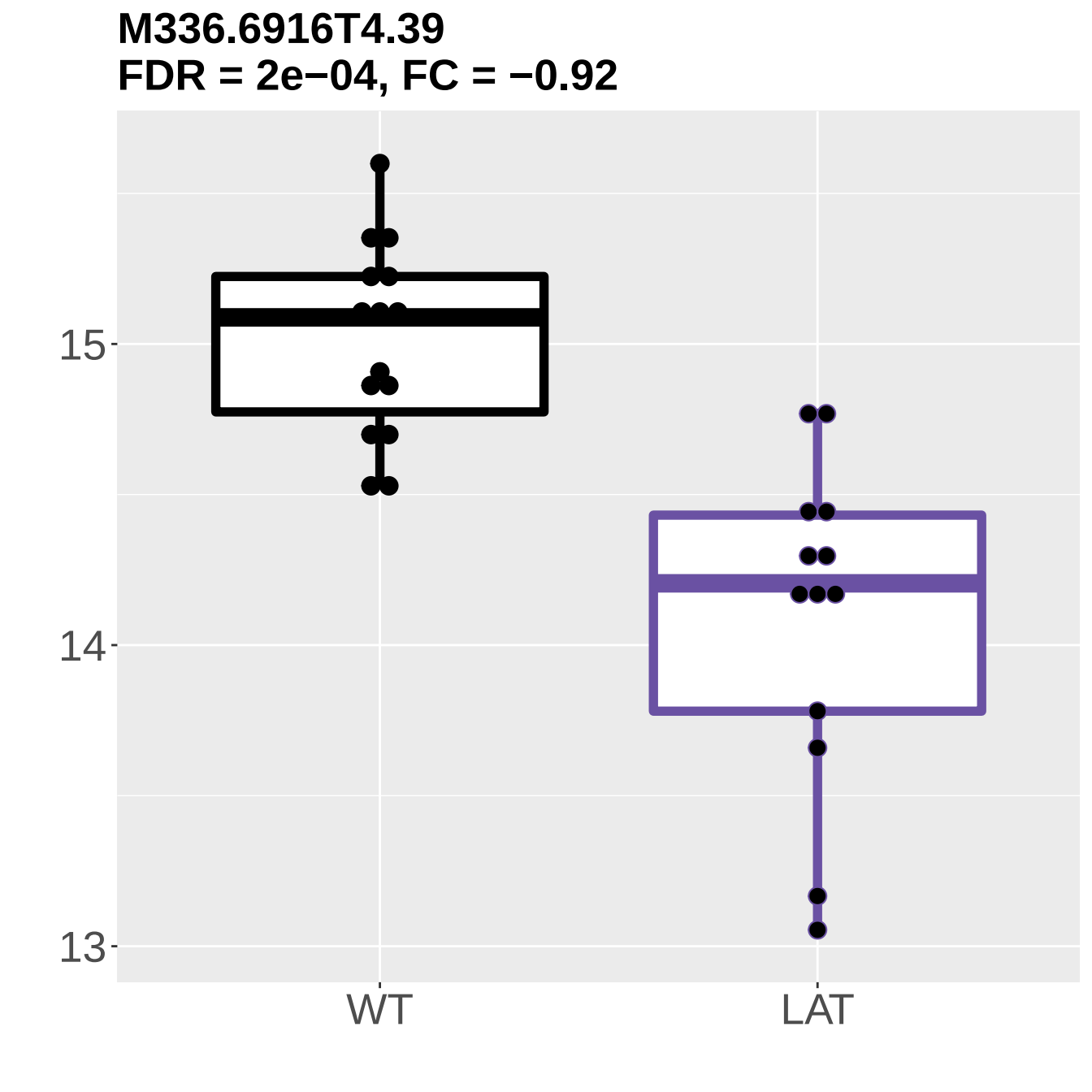

M387.8689T2.04
FDR = 0.00019, FC = 1.4
13
12
11
10
WT
LAT

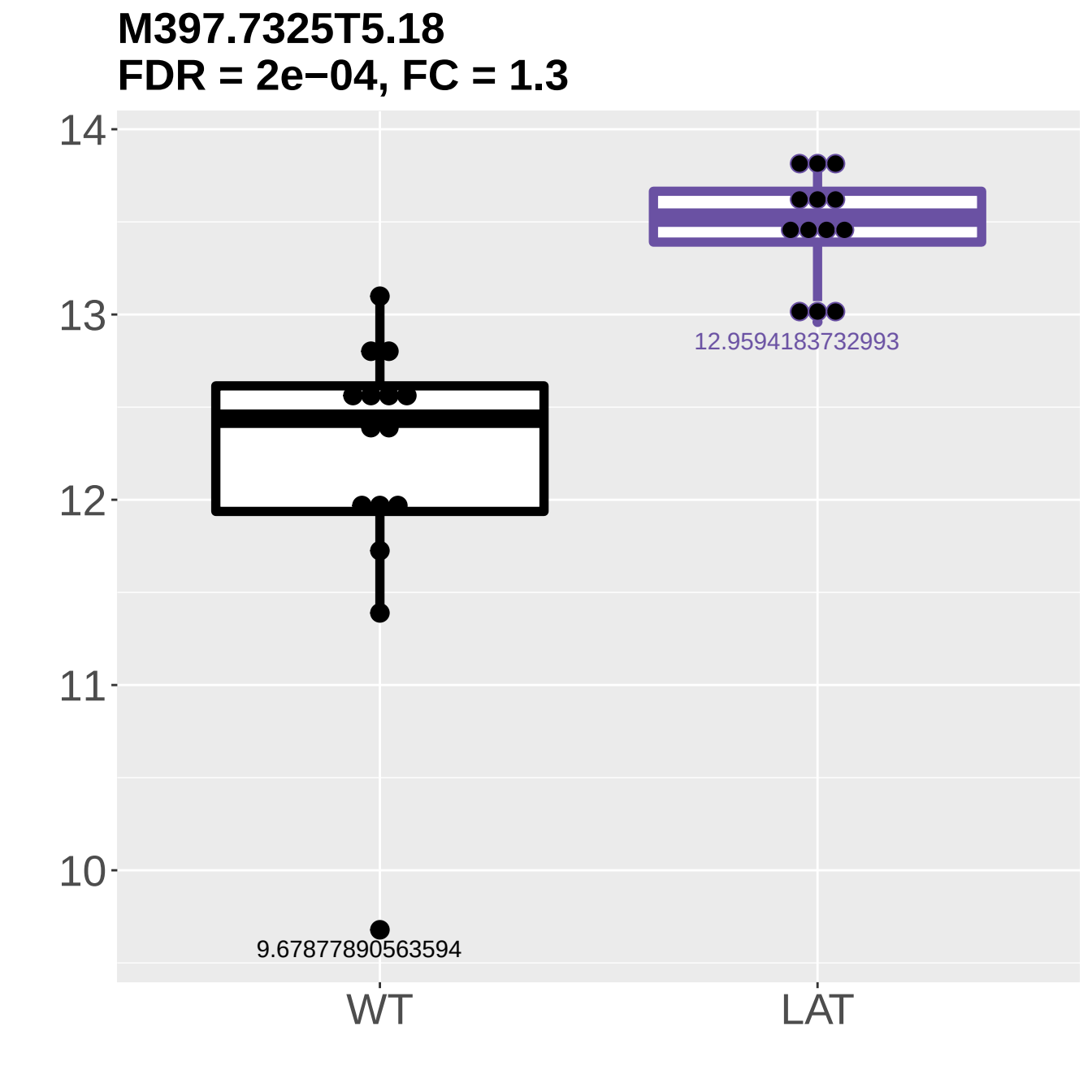

M337.162T0.84
FDR = 0.00019, FC = −1.7
16
14
12
17.0487878490389
11.9563470987893
WT
LAT

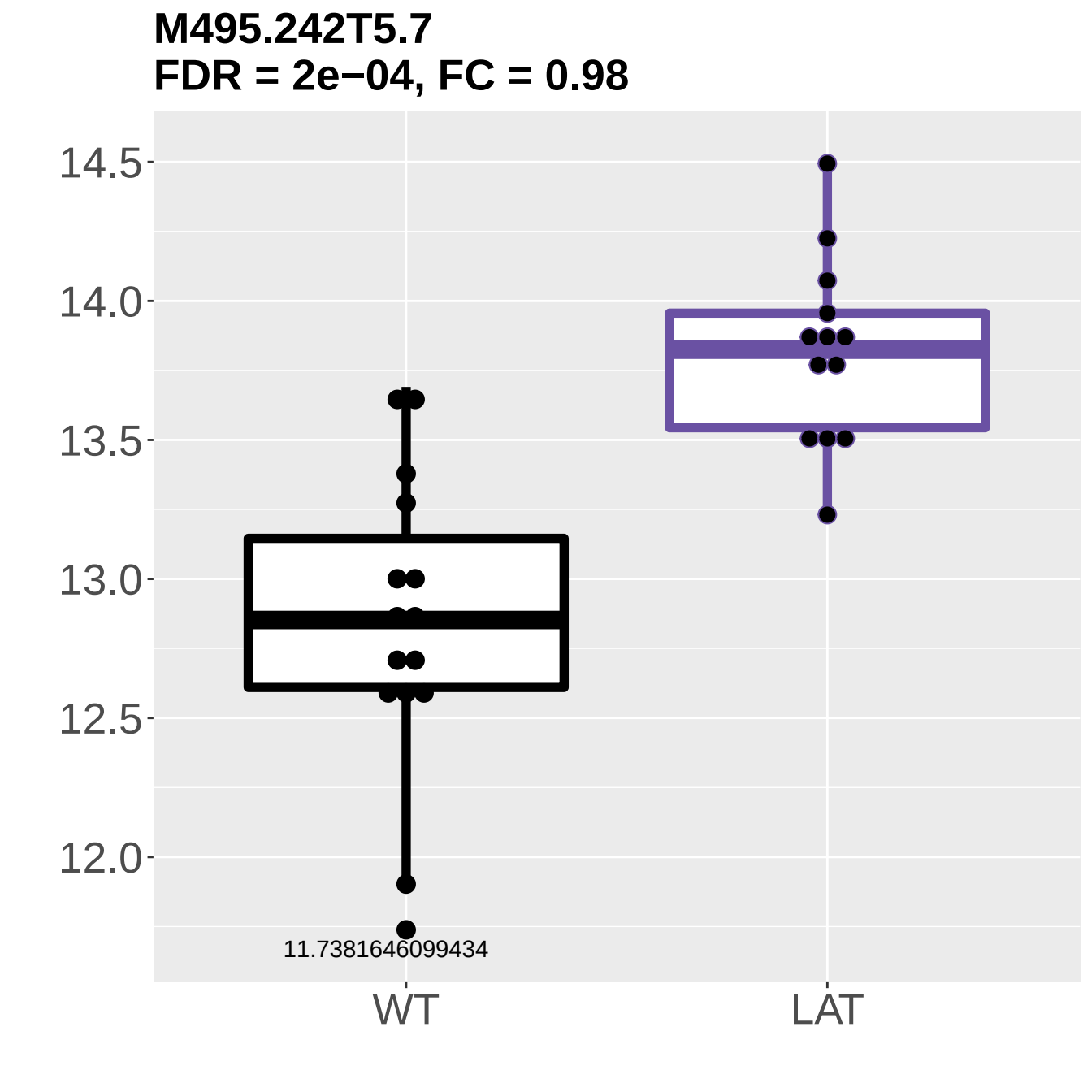

M390.7376T4.27
FDR = 2e−04, FC = −1.2
14.5
13.5
12.5
11.5
10.5
12.2123595267484
11.9867540167306
10.6636406072223
WT
LAT

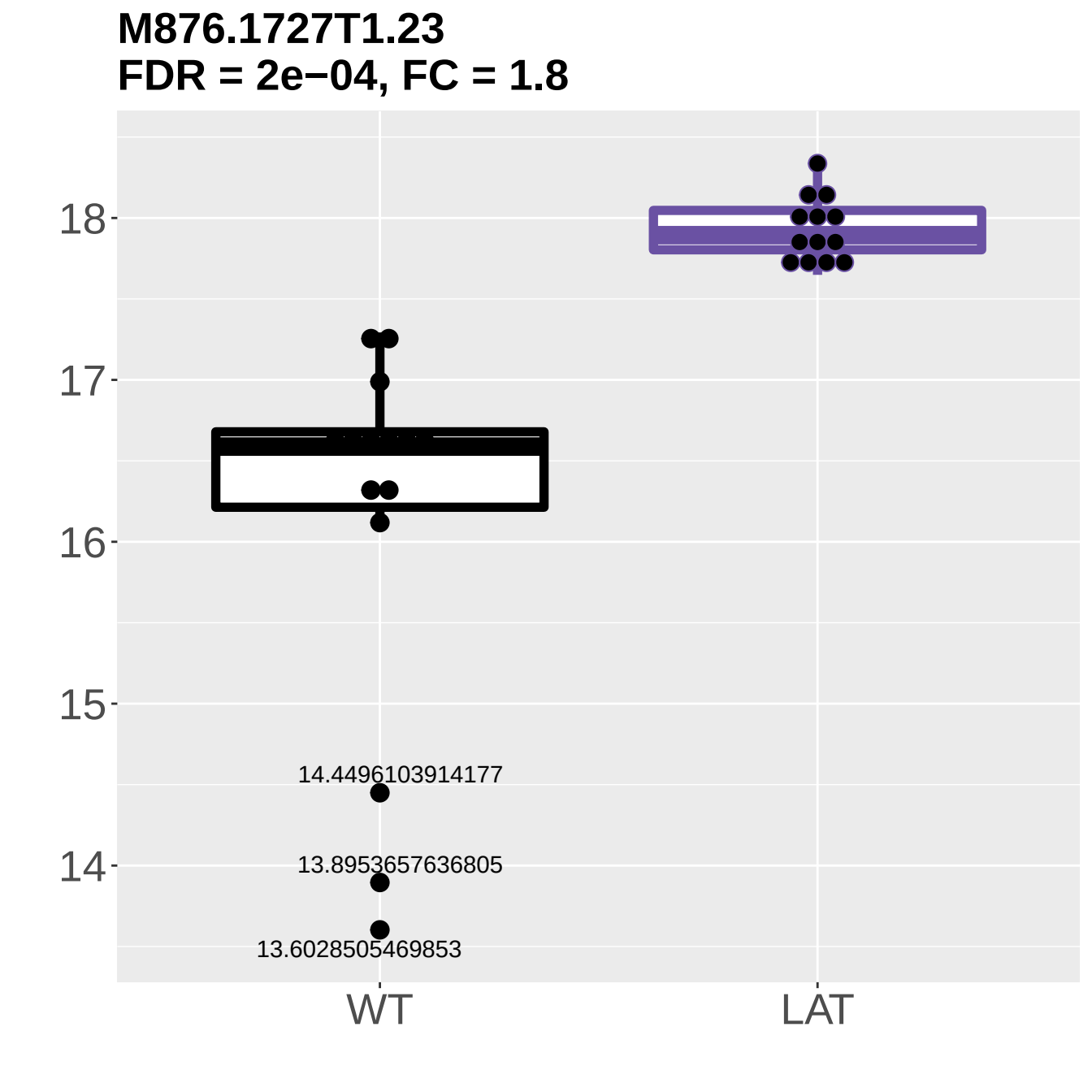

M379.9428T4.43
FDR = 2e−04, FC = −2.2
16
14
12
WT
LAT

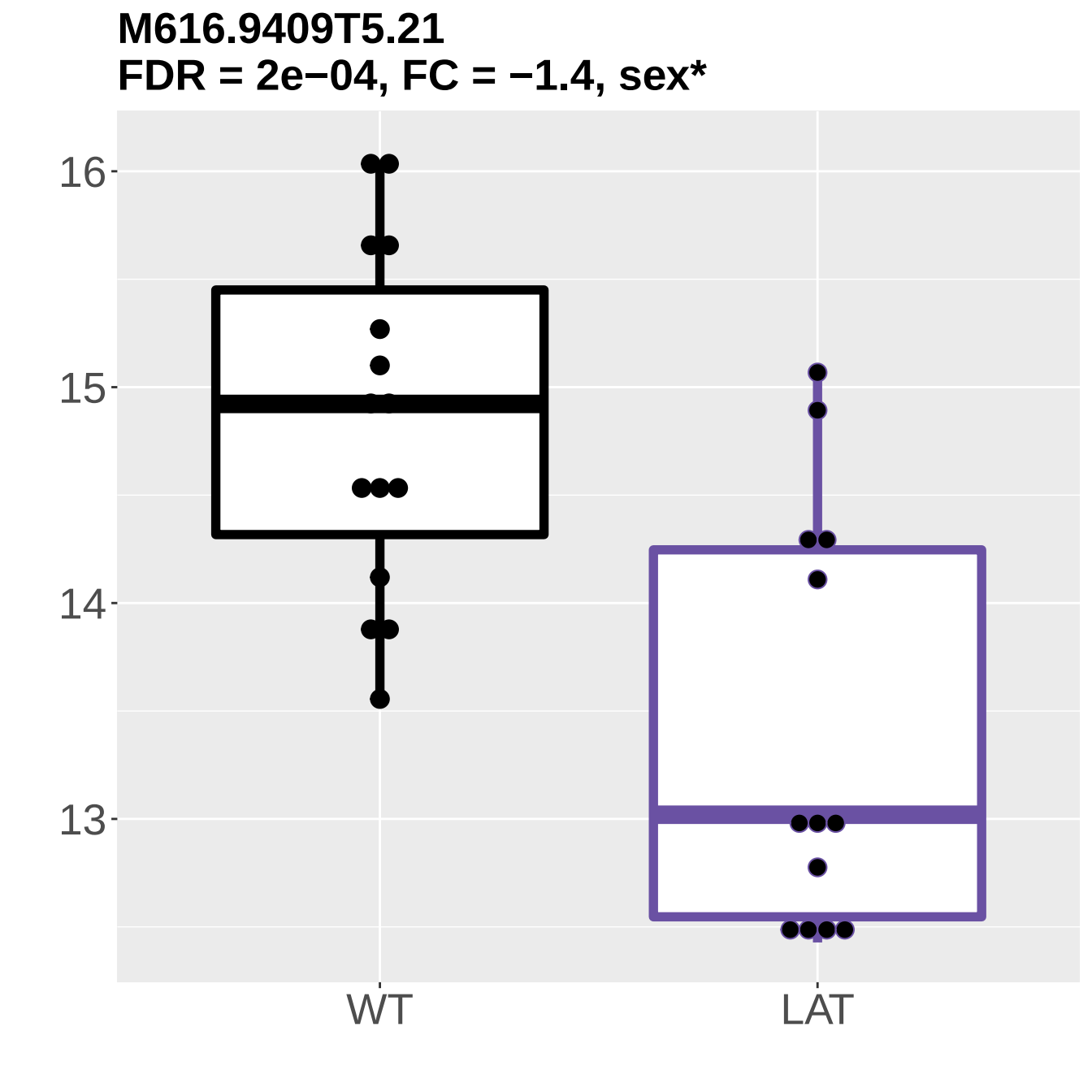

M378.1178T0.88
FDR = 2e−04, FC = 0.98, sex*
18.5
18.0
17.5
17.0
16.5
17.6194258855489
17.418175781486
WT
LAT

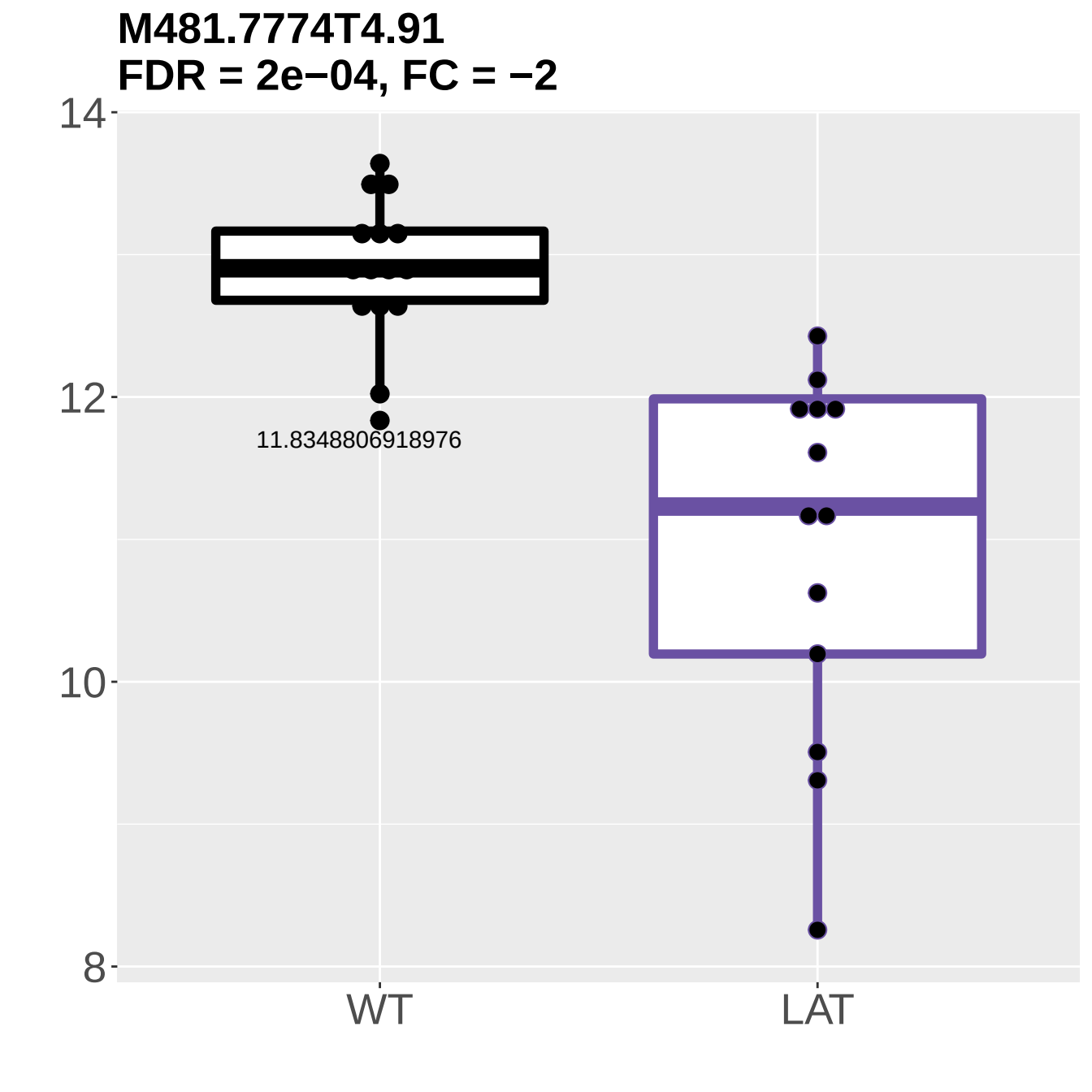

M336.6916T4.39
FDR = 2e−04, FC = −0.92
15
14
13
WT
LAT

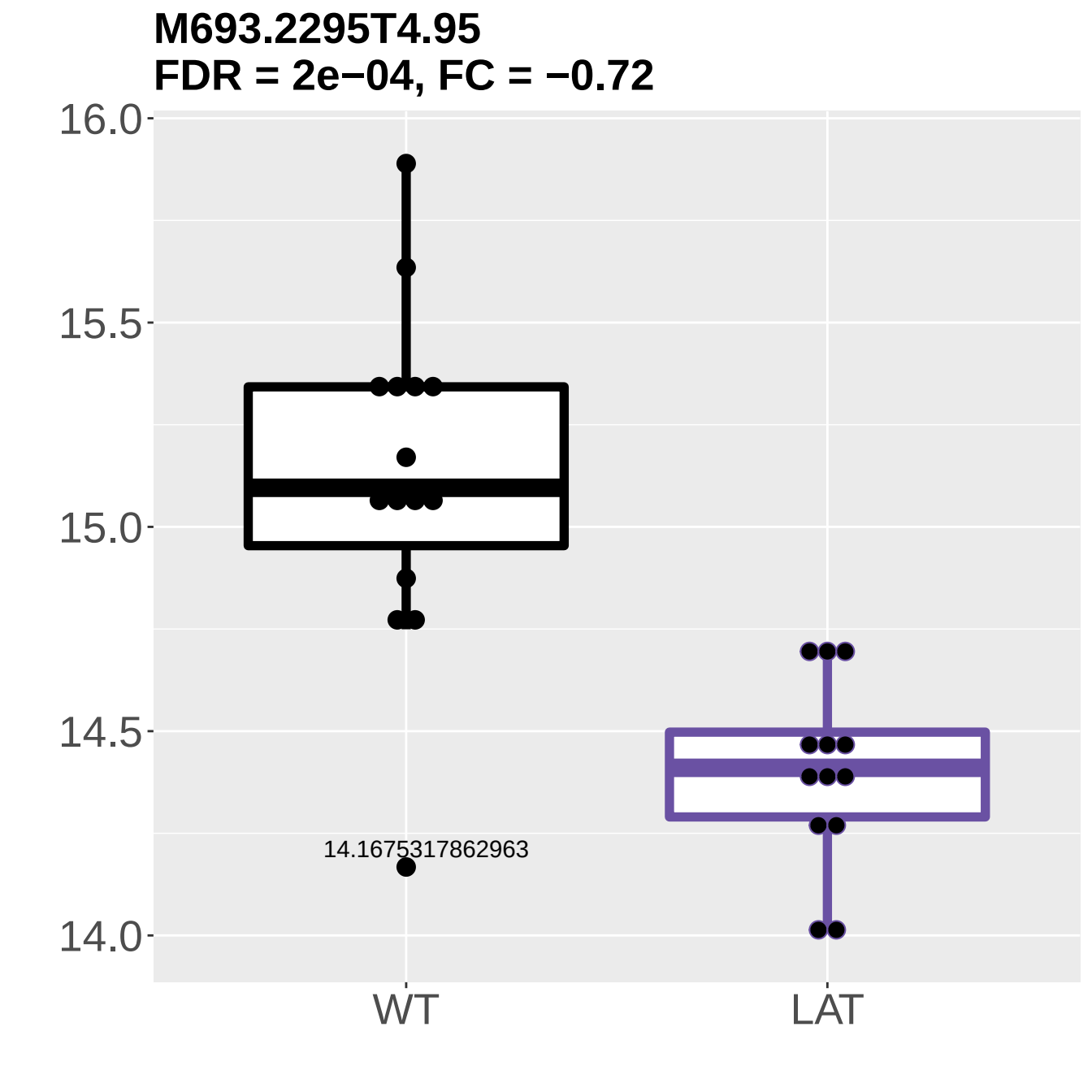

M397.7325T5.18
FDR = 2e−04, FC = 1.3
14
13
12
11
10
12.9594183732993
9.67877890563594
WT
LAT

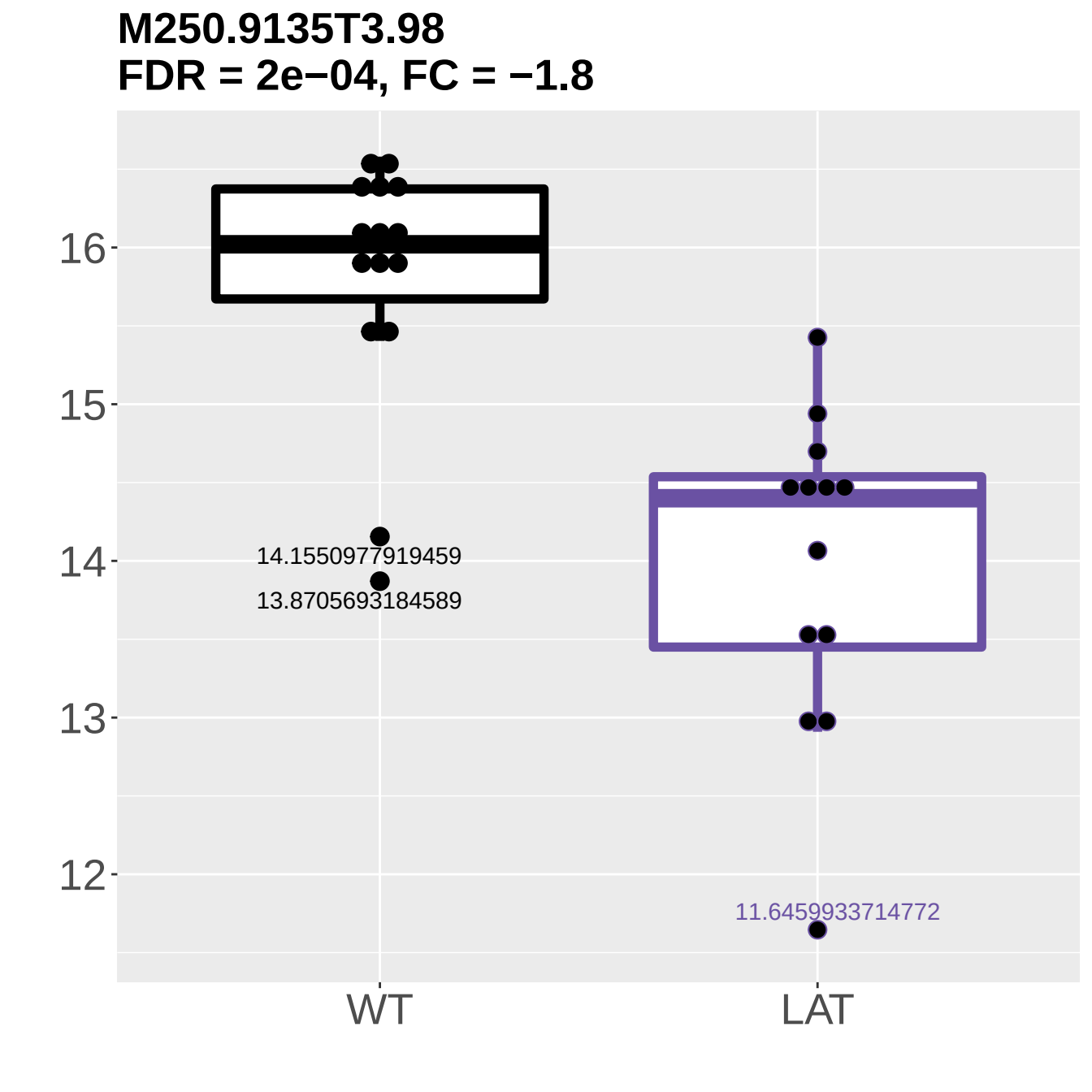

M495.242T5.7
FDR = 2e−04, FC = 0.98
14.5
14.0
13.5
13.0
12.5
12.0
11.7381646099434
WT
LAT

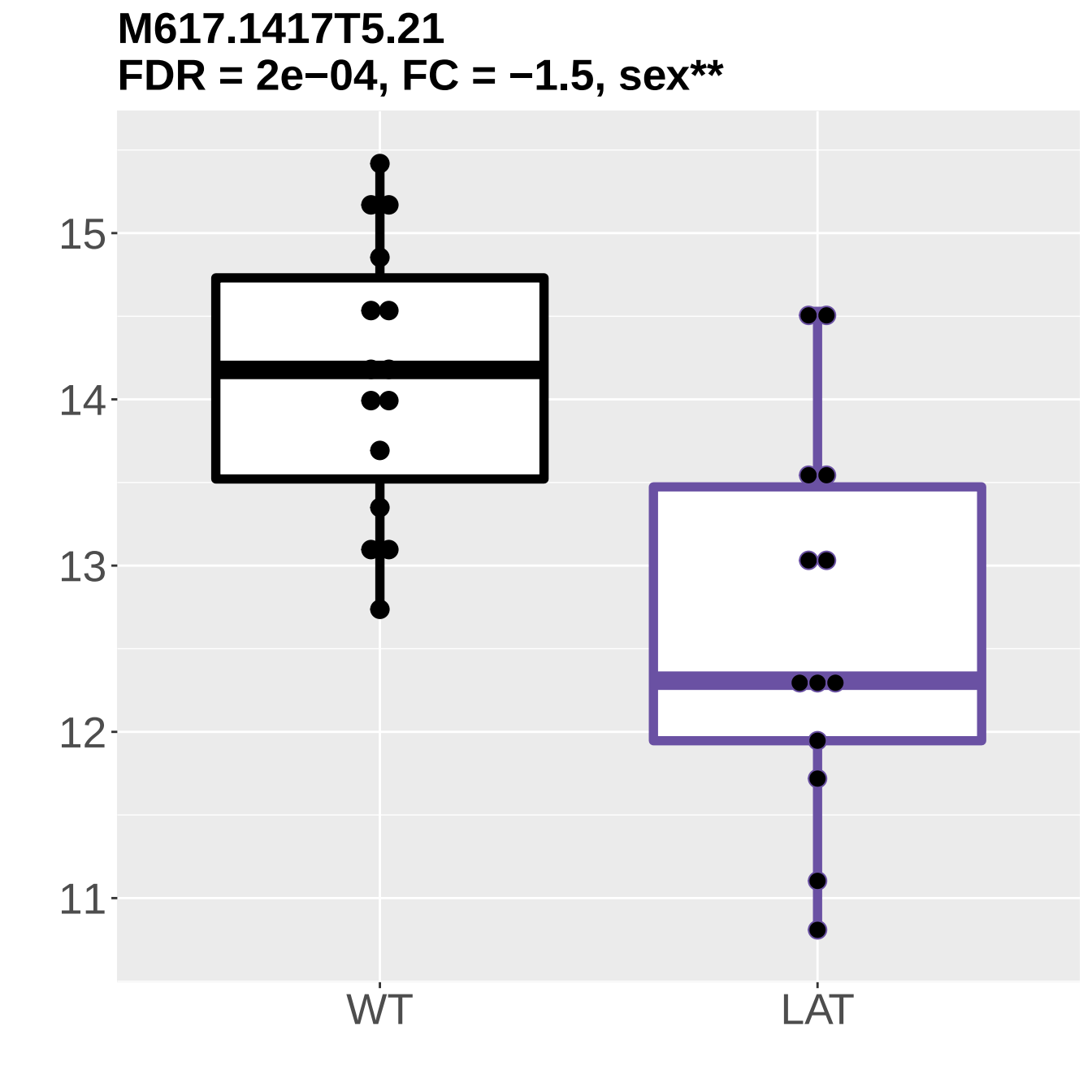

M876.1727T1.23
FDR = 2e−04, FC = 1.8
18
17
16
15
14
14.4496103914177
13.8953657636805
13.6028505469853
WT
LAT

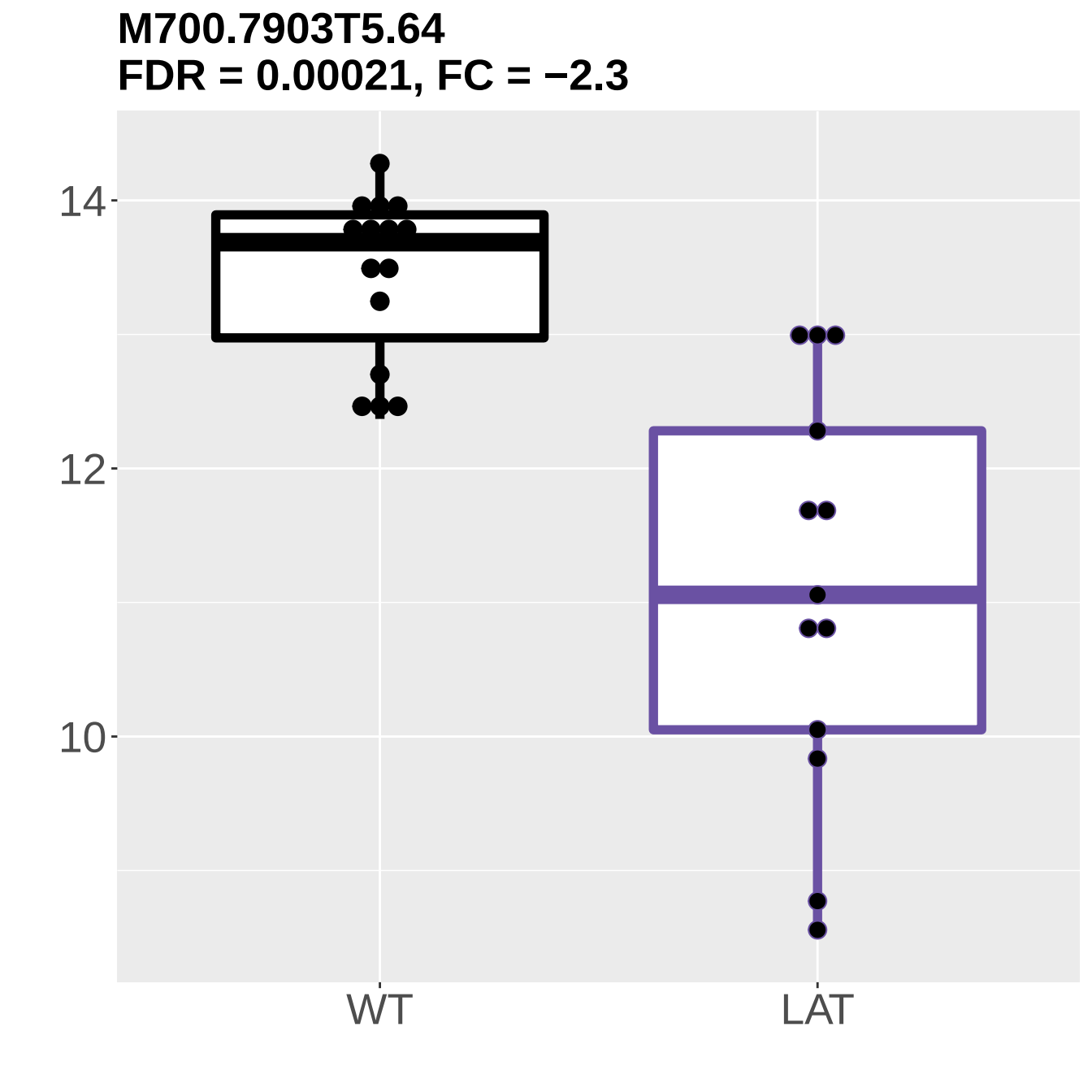

M616.9409T5.21
FDR = 2e−04, FC = −1.4, sex*
16
15
14
13
WT
LAT

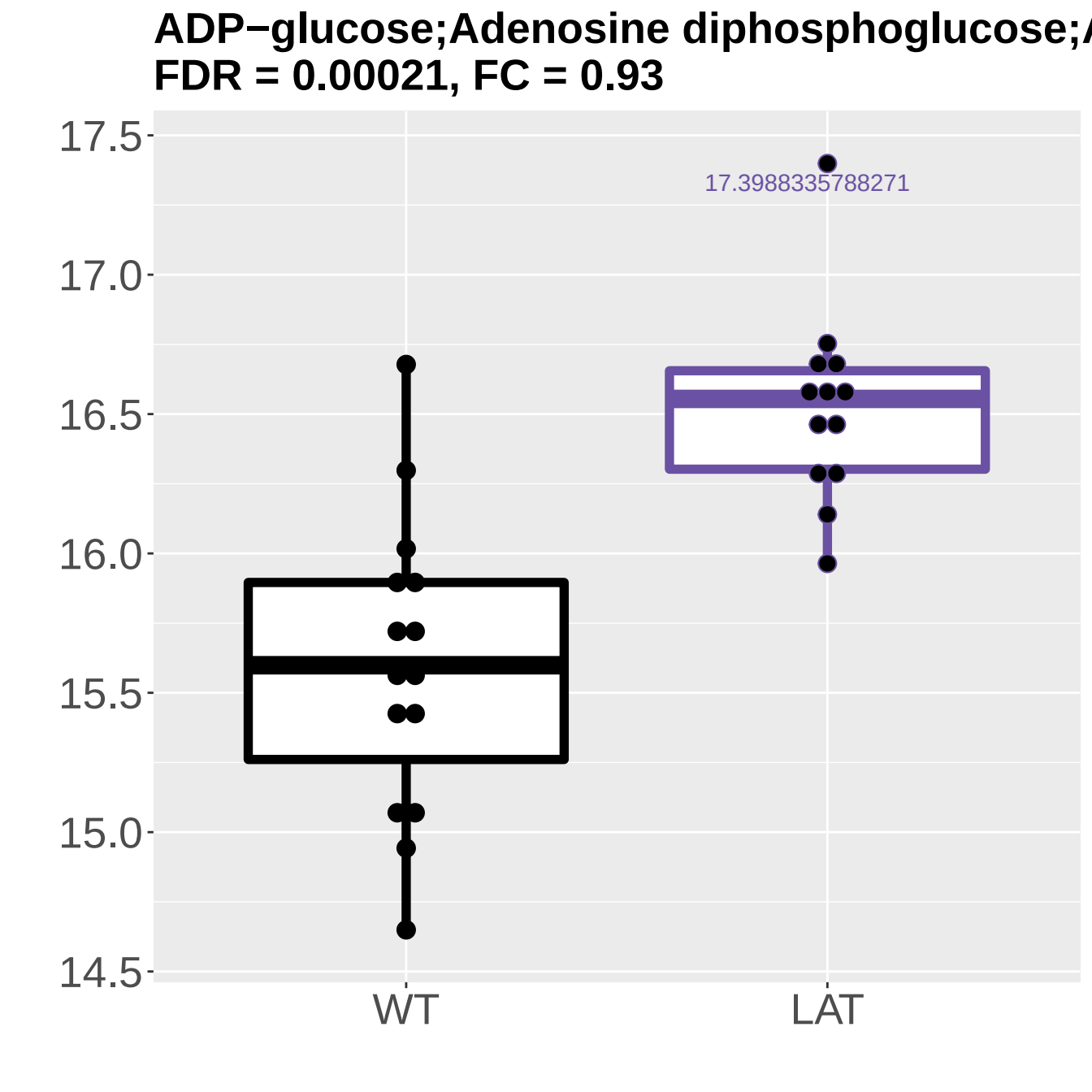

M481.7774T4.91
FDR = 2e−04, FC = −2
14
12
10
8
11.8348806918976
WT
LAT

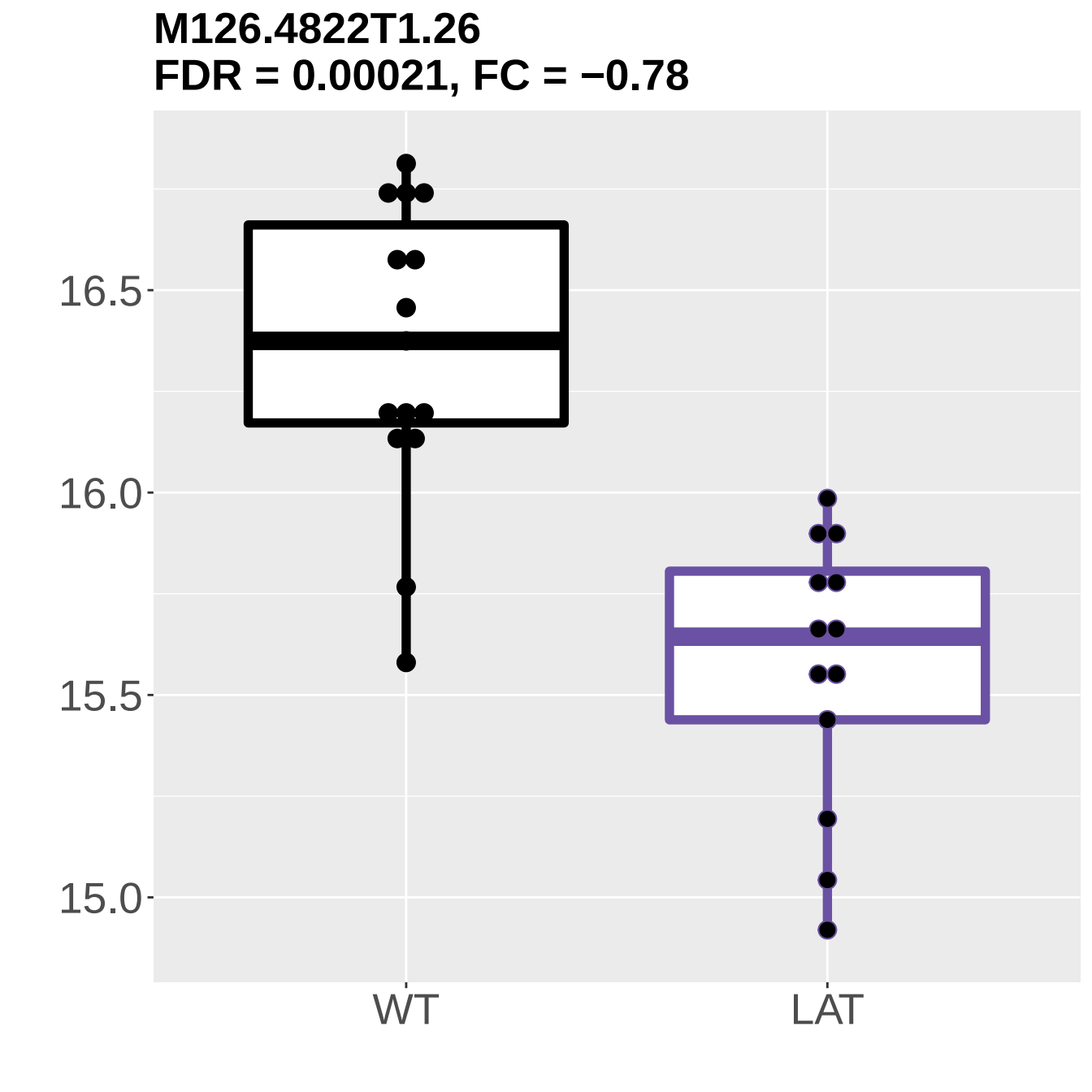

M693.2295T4.95
FDR = 2e−04, FC = −0.72
16.0
15.5
15.0
14.5
14.0
14.1675317862963
WT
LAT

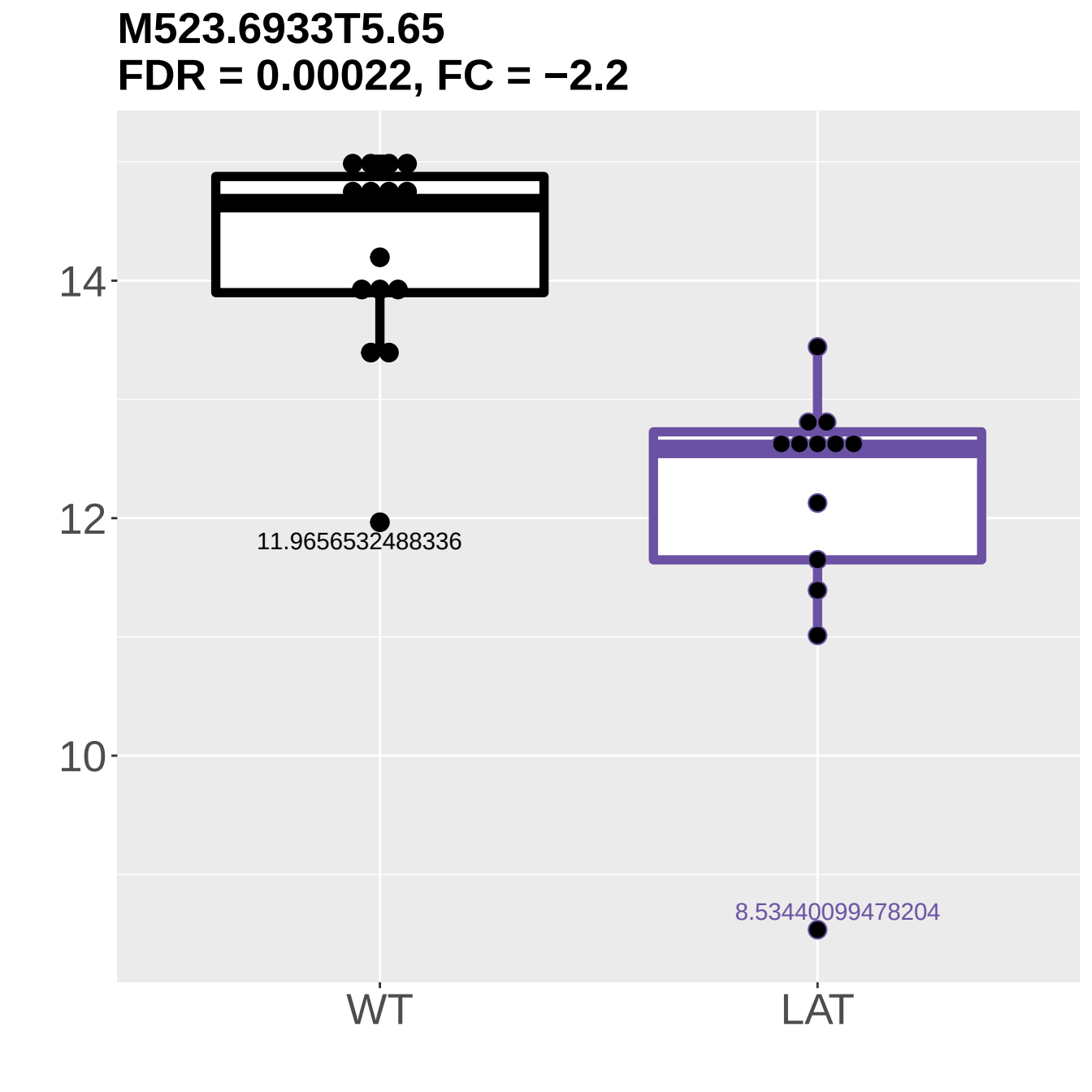

M250.9135T3.98
FDR = 2e−04, FC = −1.8
16
15
14
13
12
14.1550977919459
13.8705693184589
11.6459933714772
WT
LAT

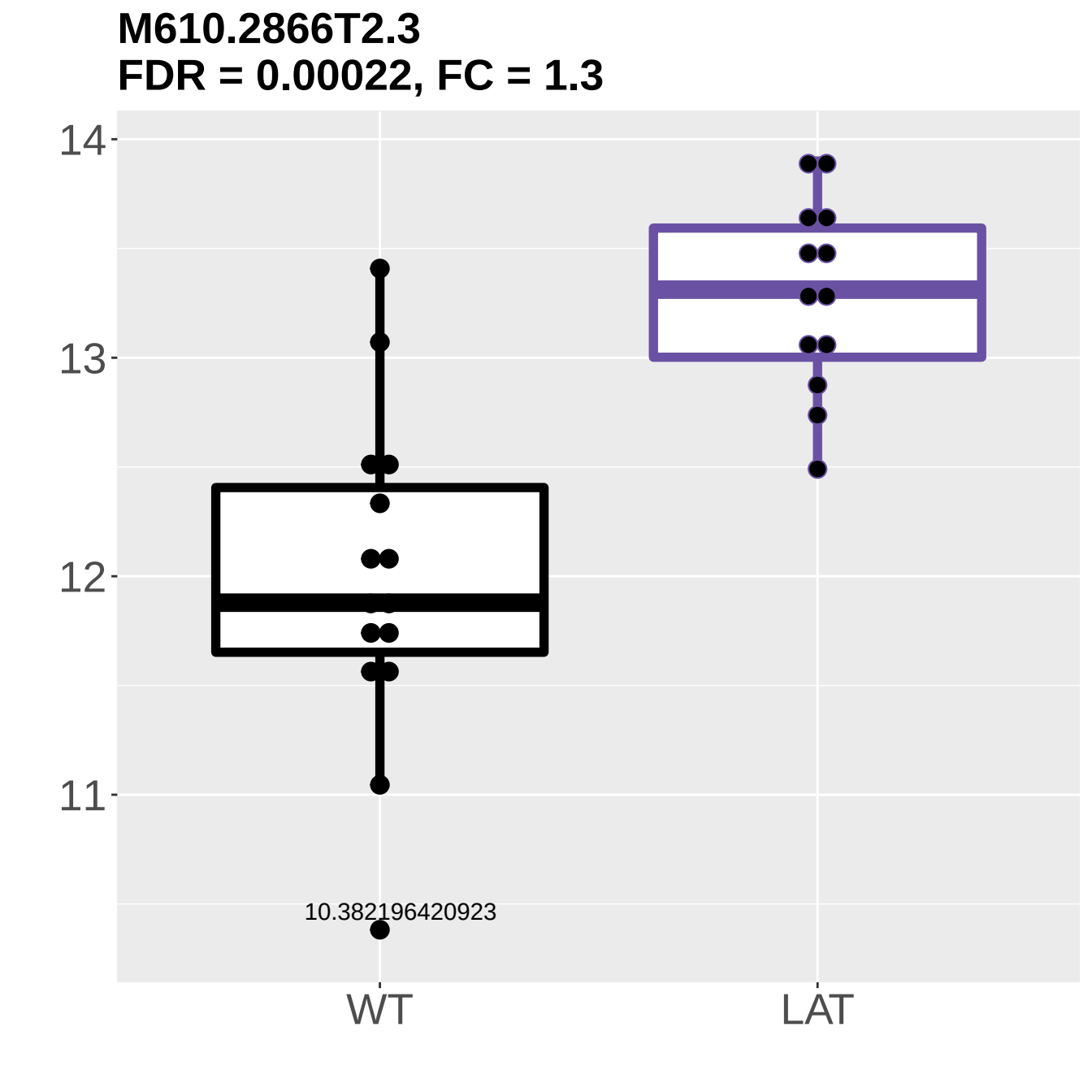

M617.1417T5.21
FDR = 2e−04, FC = −1.5, sex**
15
14
13
12
11
WT
LAT

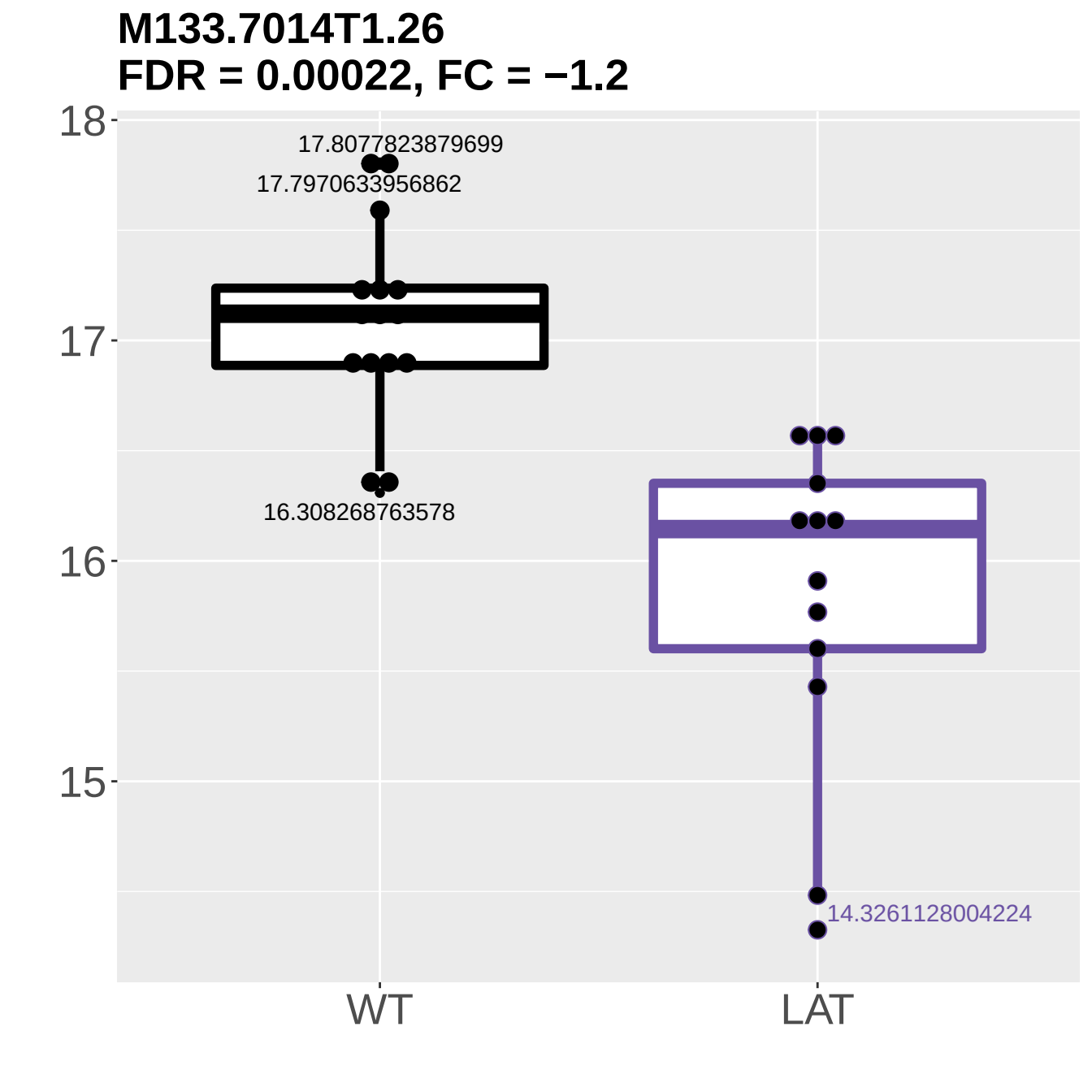

M700.7903T5.64
FDR = 0.00021, FC = −2.3
14
12
10
WT
LAT

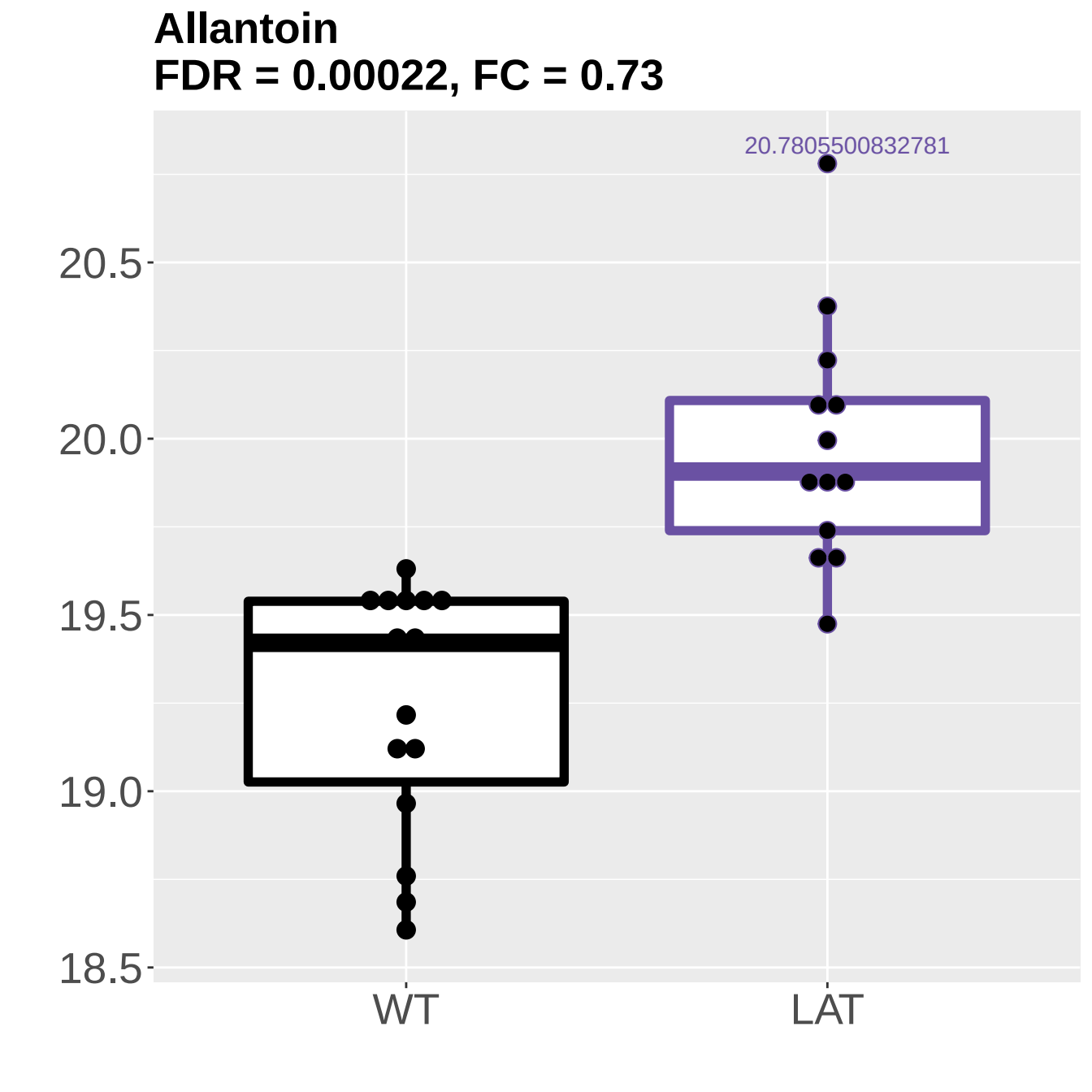

ADP−glucose;Adenosine diphosphoglucose;A
FDR = 0.00021, FC = 0.93
17.5
17.0
16.5
16.0
15.5
15.0
14.5
17.3988335788271
WT
LAT

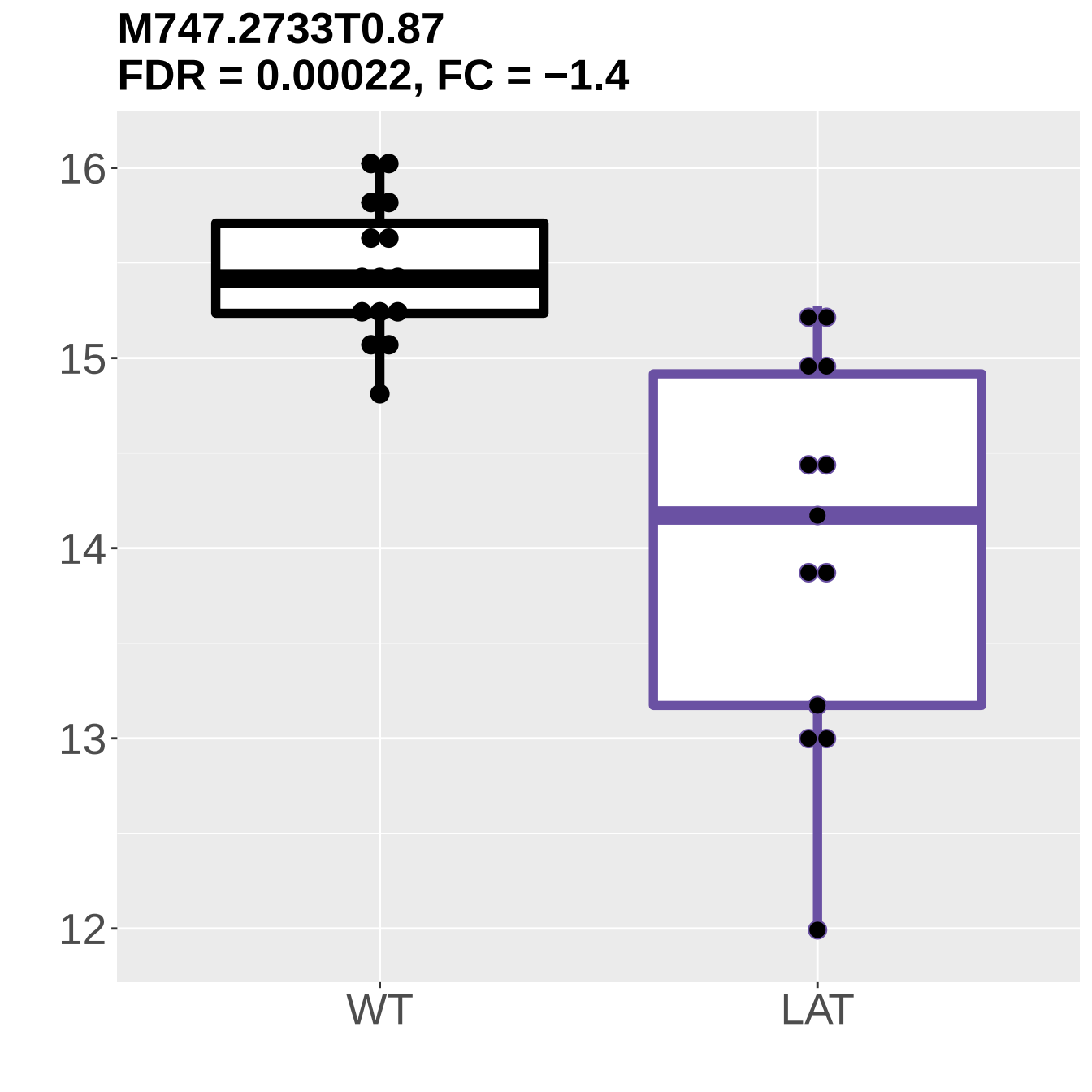

M126.4822T1.26
FDR = 0.00021, FC = −0.78
16.5
16.0
15.5
15.0
WT
LAT

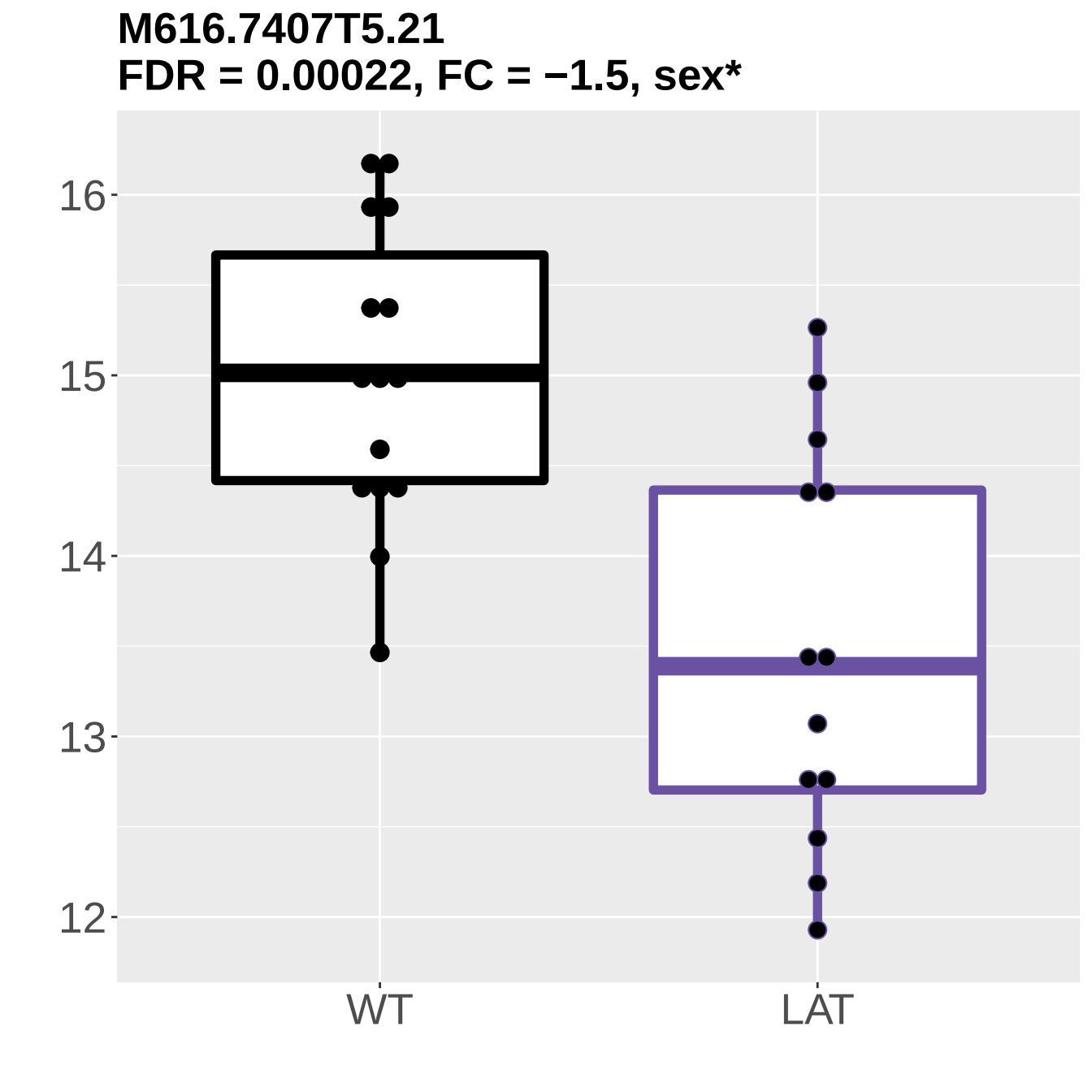

M523.6933T5.65
FDR = 0.00022, FC = −2.2
14
12
10
11.9656532488336
8.53440099478204
WT
LAT

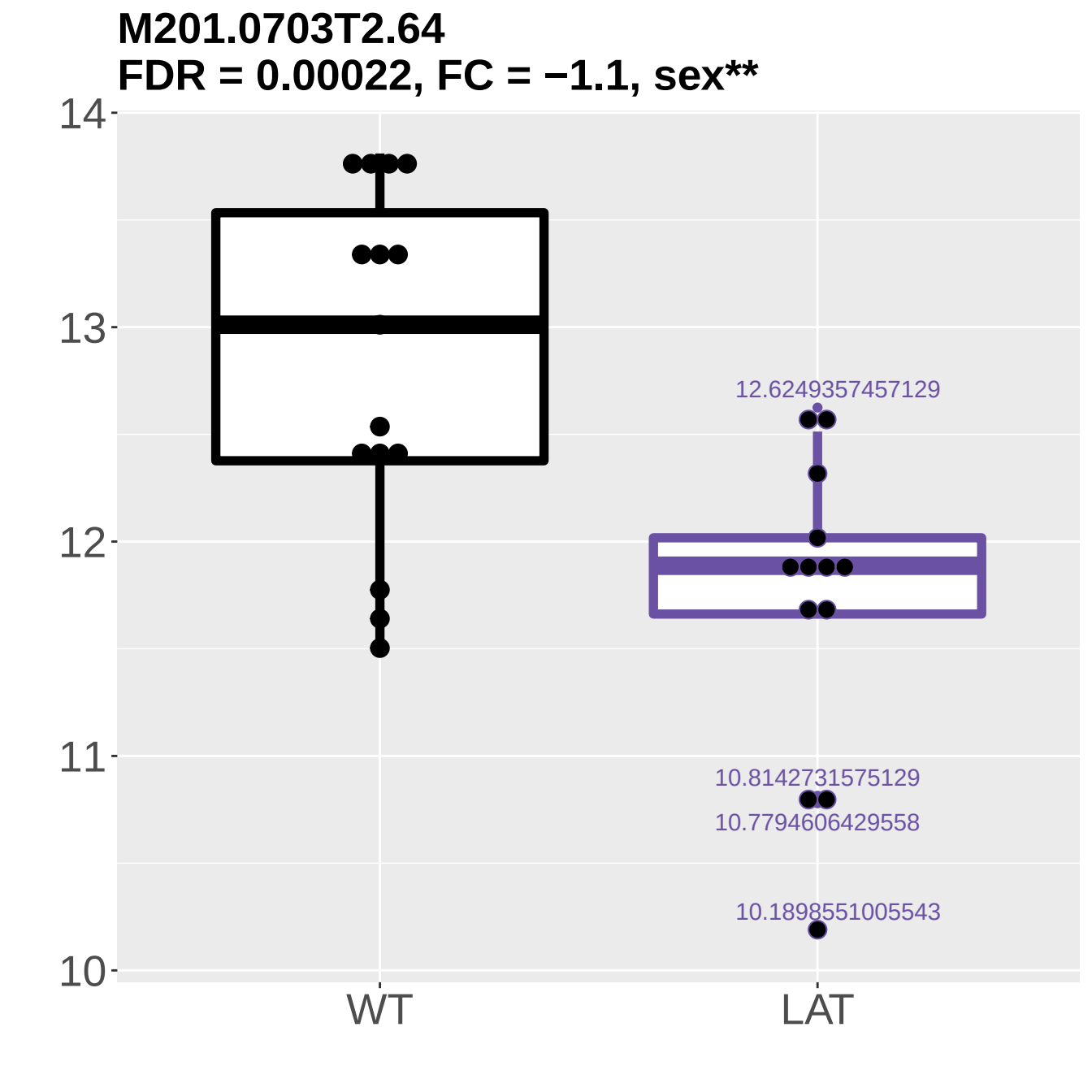

M610.2866T2.3
FDR = 0.00022, FC = 1.3
14
13
12
11
10.382196420923
WT
LAT

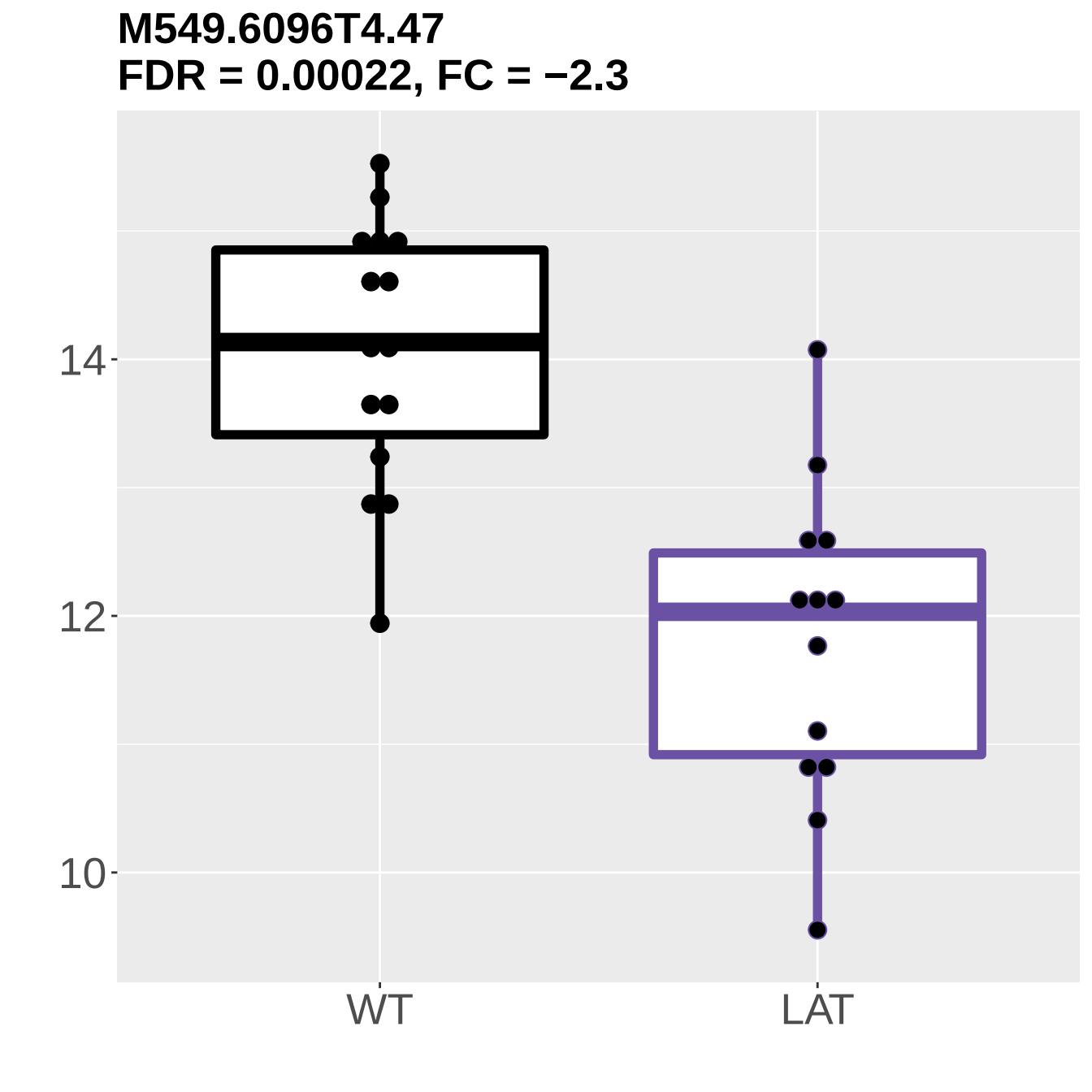

M133.7014T1.26
FDR = 0.00022, FC = −1.2
18
17
16
15
17.8077823879699
17.7970633956862
16.308268763578
14.3261128004224
WT
LAT

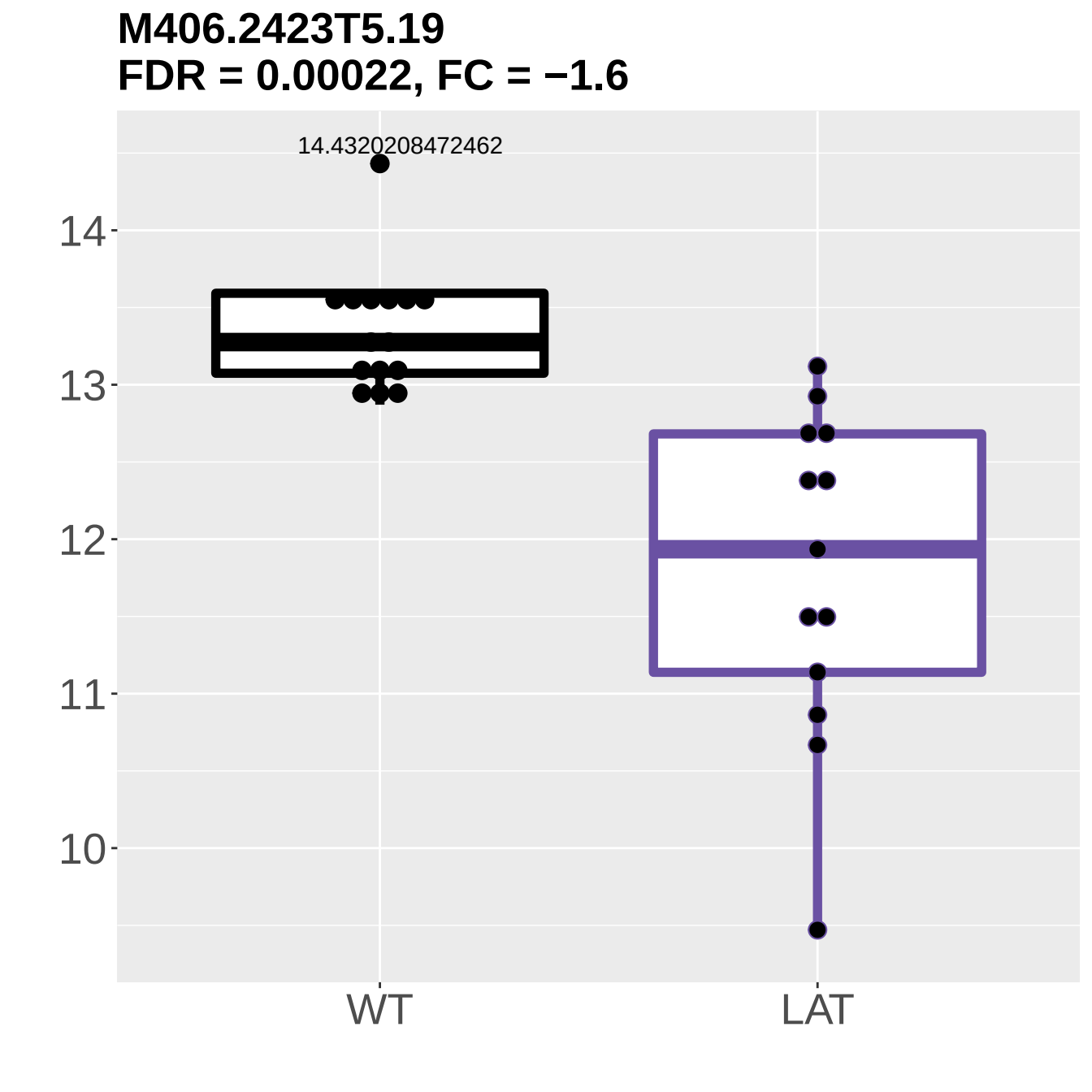

Allantoin
FDR = 0.00022, FC = 0.73
20.7805500832781
20.5
20.0
19.5
19.0
18.5
WT
LAT

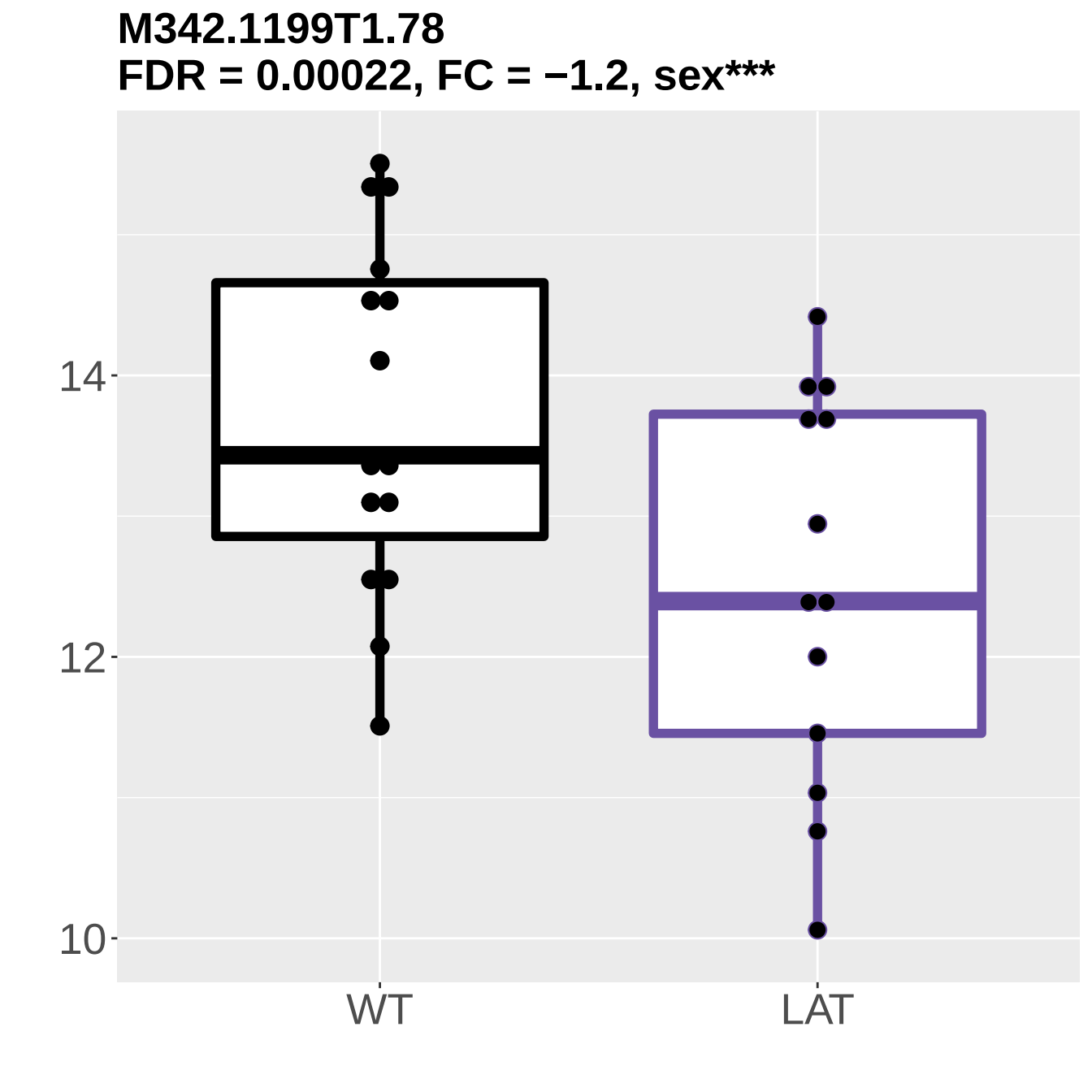

M747.2733T0.87
FDR = 0.00022, FC = −1.4
16
15
14
13
12
WT
LAT

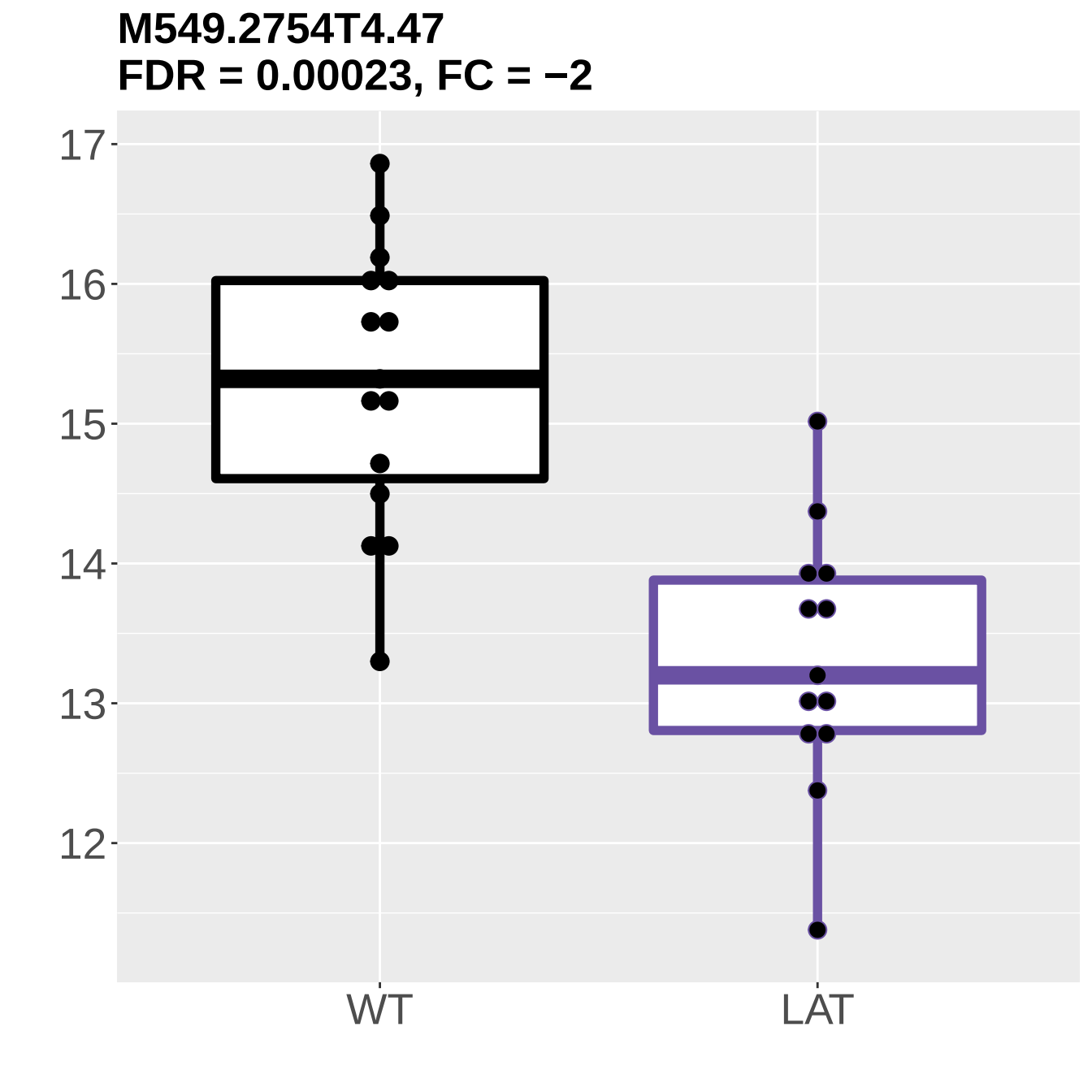

M616.7407T5.21
FDR = 0.00022, FC = −1.5, sex*
16
15
14
13
12
WT
LAT

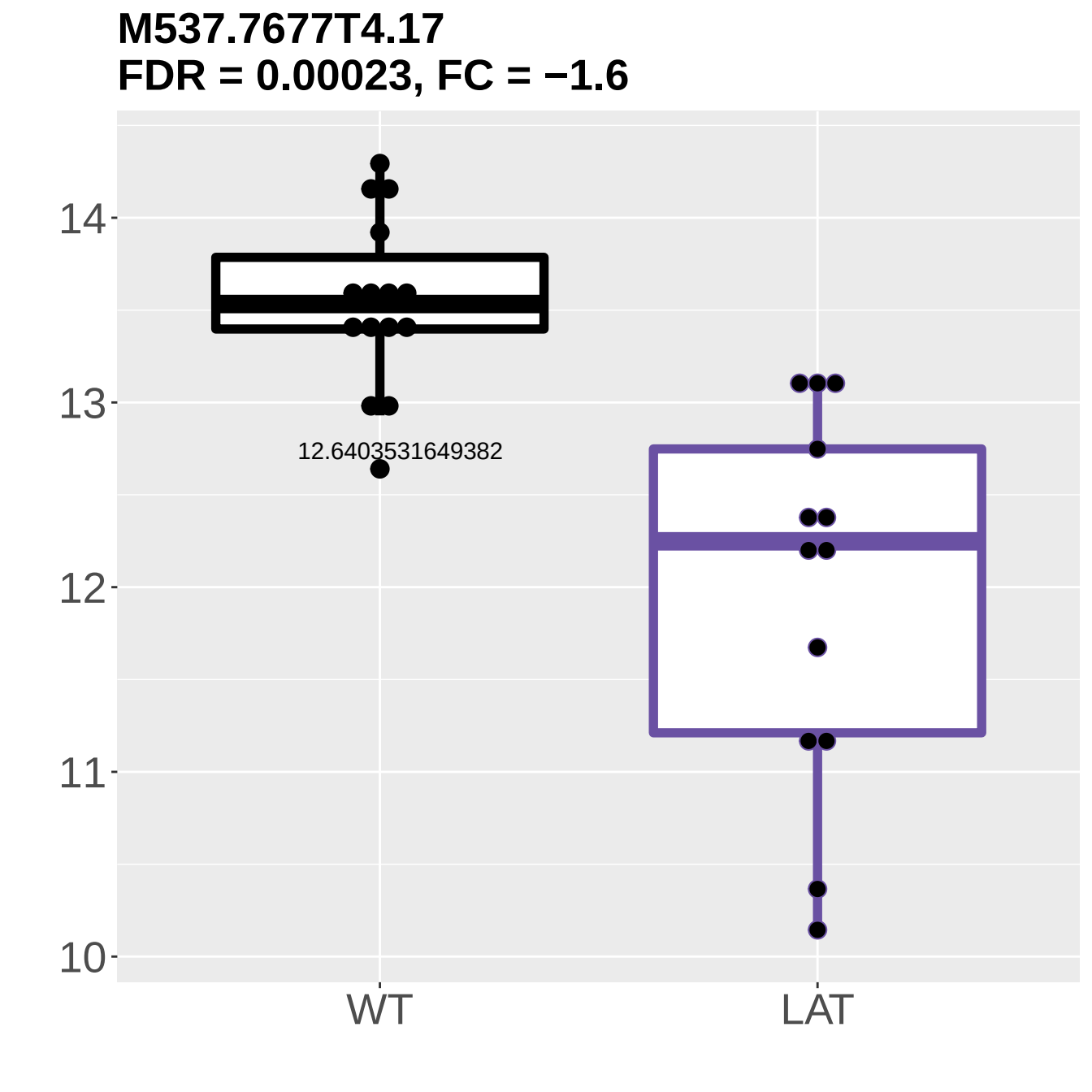

M201.0703T2.64
FDR = 0.00022, FC = −1.1, sex**
14
13
12
11
10
12.6249357457129
10.8142731575129
10.7794606429558
10.1898551005543
WT
LAT


M549.6096T4.47
FDR = 0.00022, FC = −2.3
14
12
10
WT
LAT


M406.2423T5.19
FDR = 0.00022, FC = −1.6
14.4320208472462
14
13
12
11
10
WT
LAT


M342.1199T1.78
FDR = 0.00022, FC = −1.2, sex***
14
12
10
WT
LAT


M549.2754T4.47
FDR = 0.00023, FC = −2
17
16
15
14
13
12
WT
LAT


M537.7677T4.17
FDR = 0.00023, FC = −1.6
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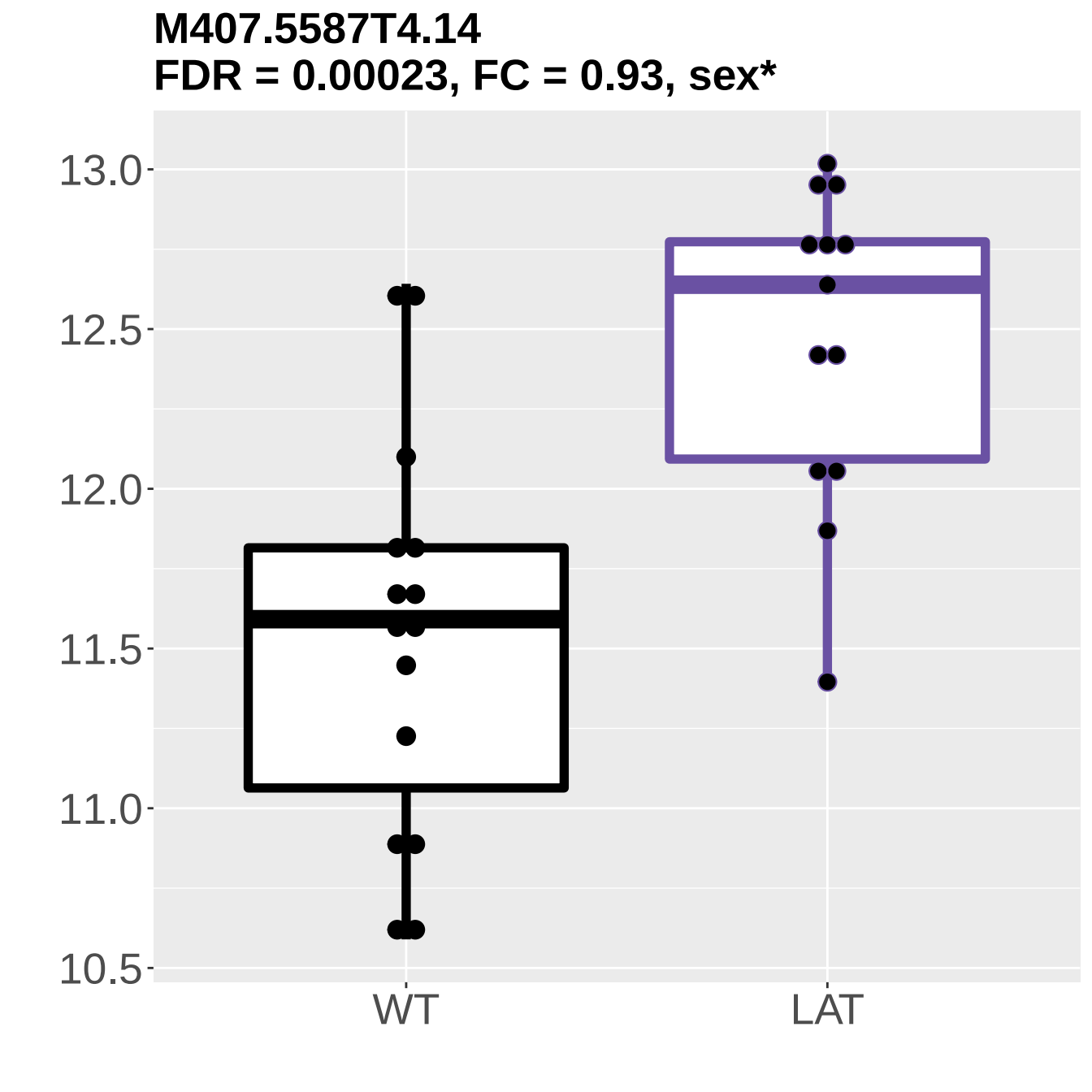
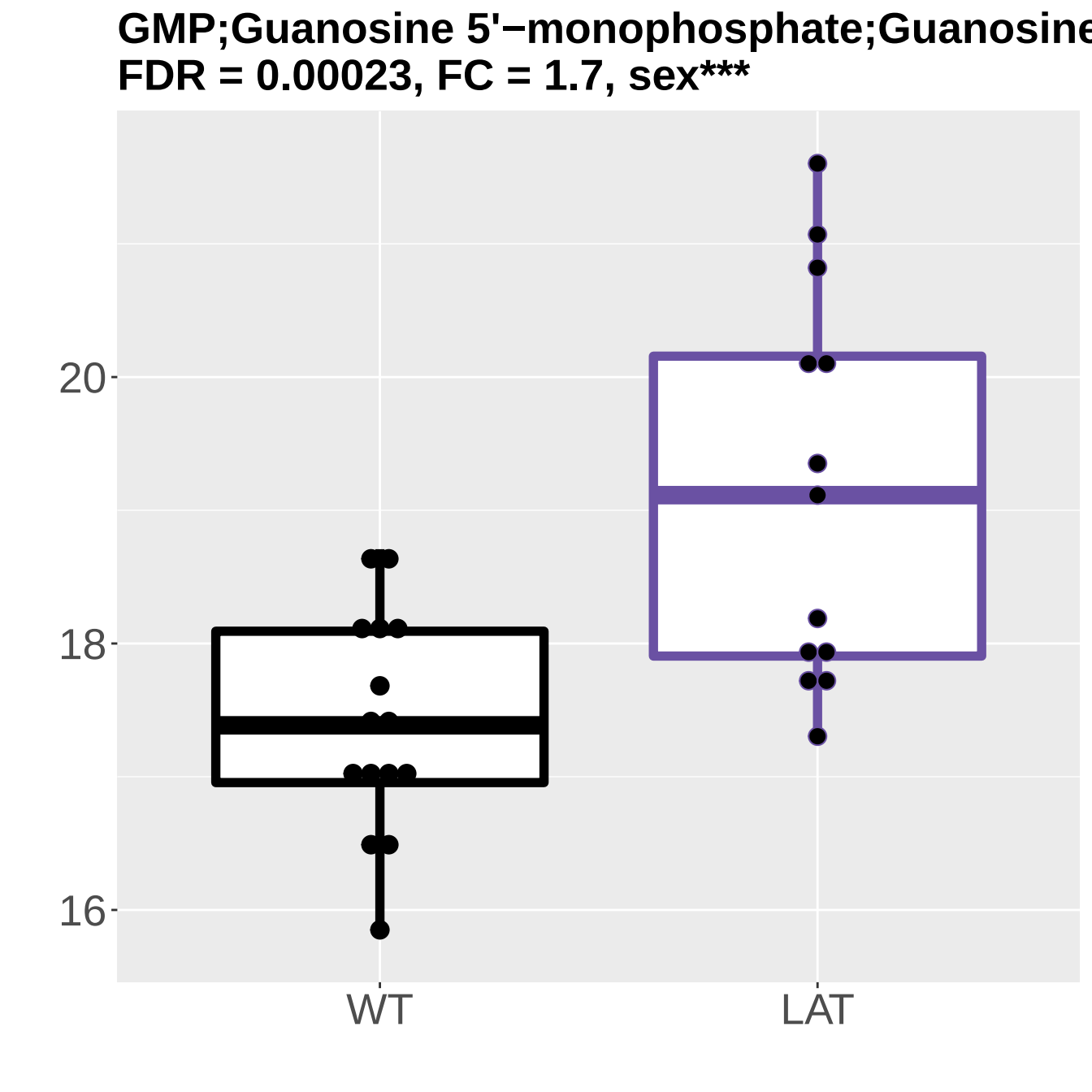
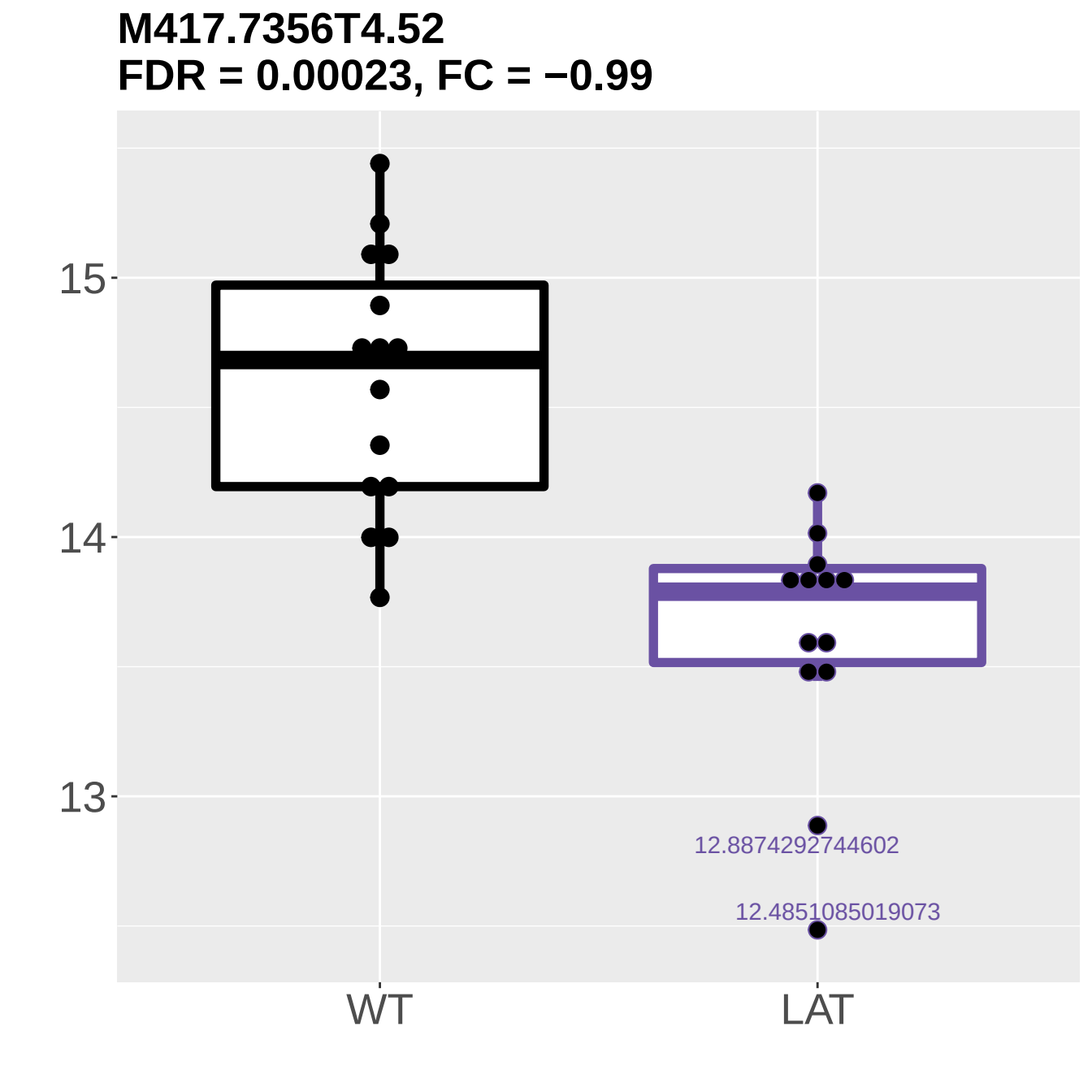
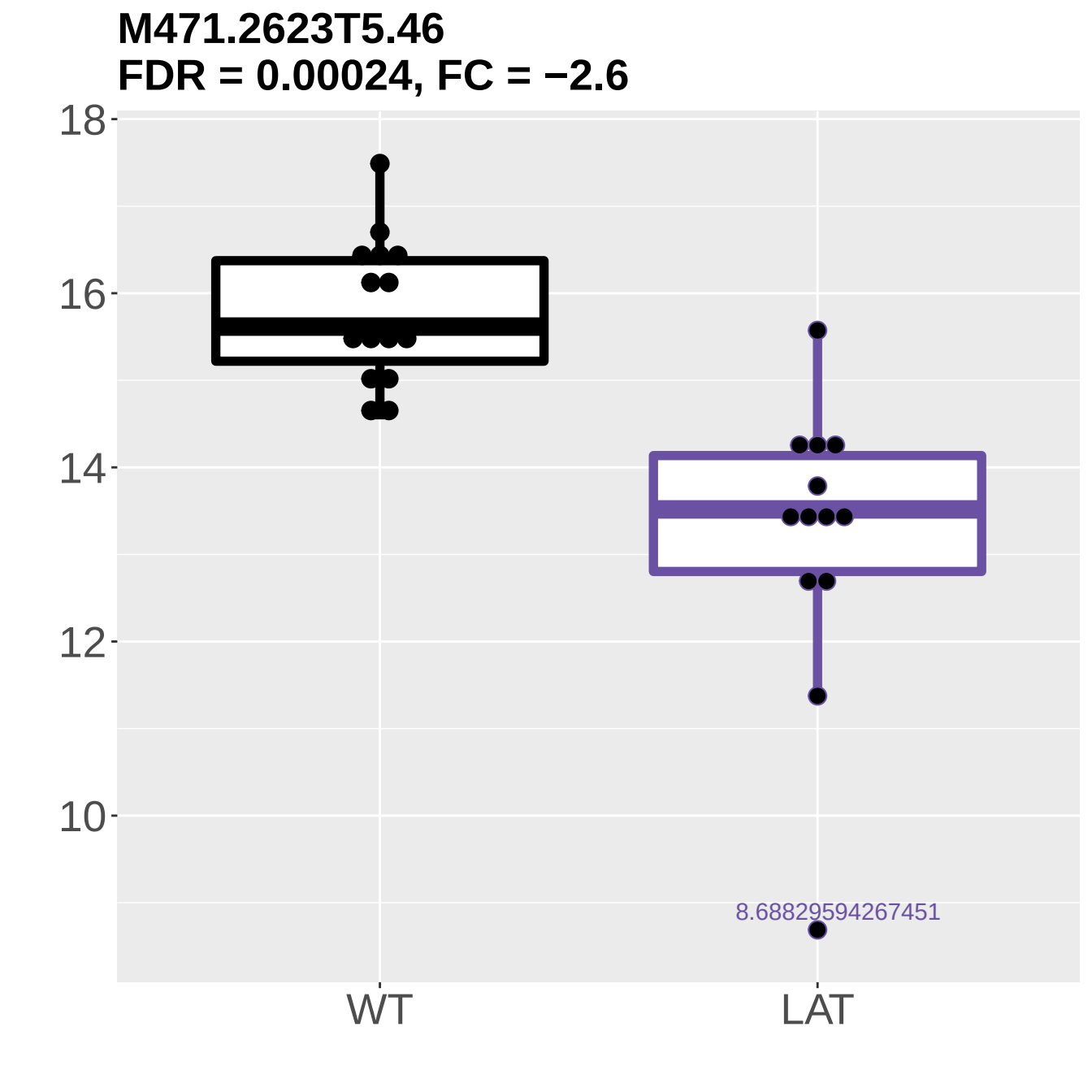
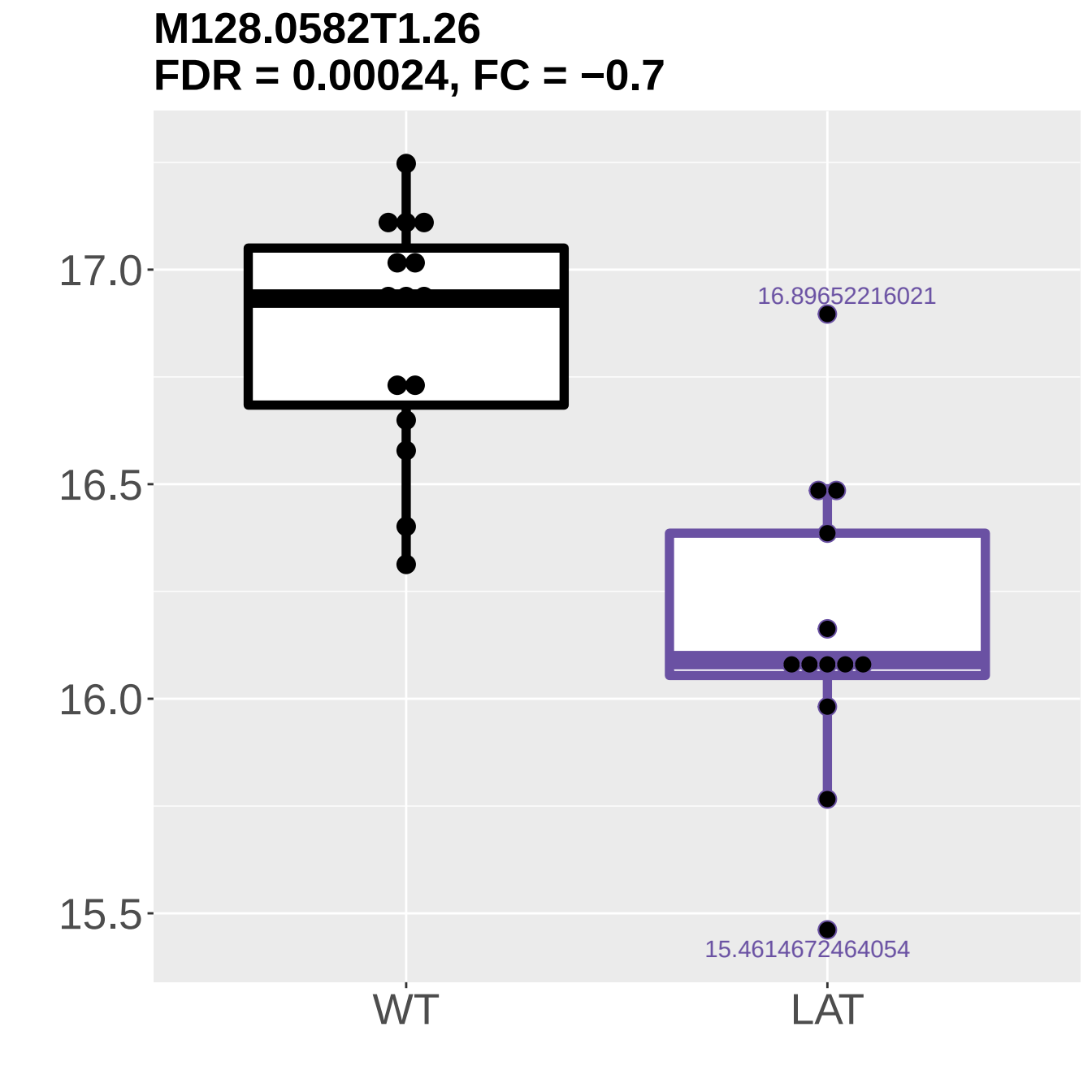
13
12
11
10
12.6403531649382
WT
LAT

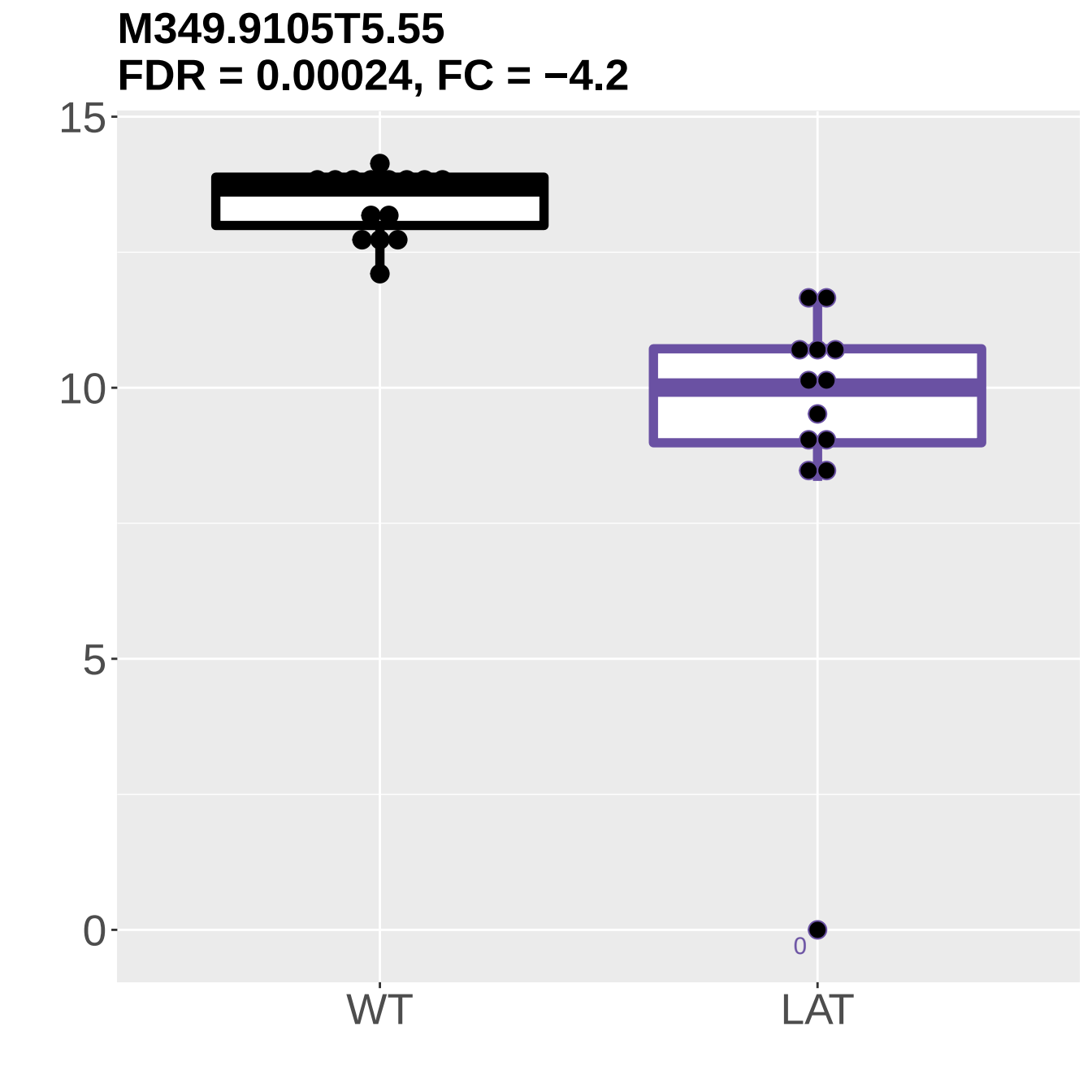

M407.5587T4.14
FDR = 0.00023, FC = 0.93, sex*
13.0
12.5
12.0
11.5
11.0
10.5
WT
LAT

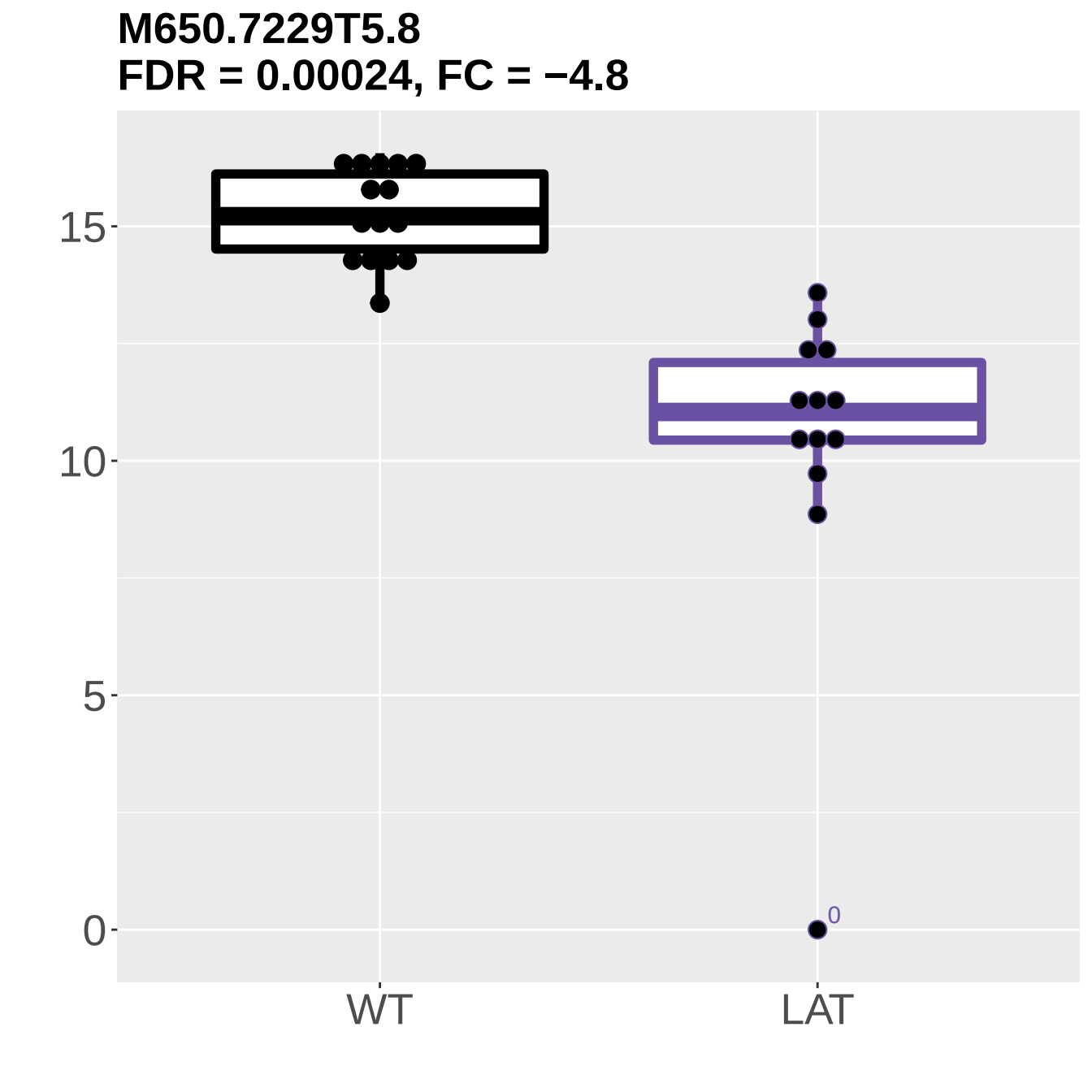

GMP;Guanosine 5'−monophosphate;Guanosine
FDR = 0.00023, FC = 1.7, sex***
20
18
16
WT
LAT

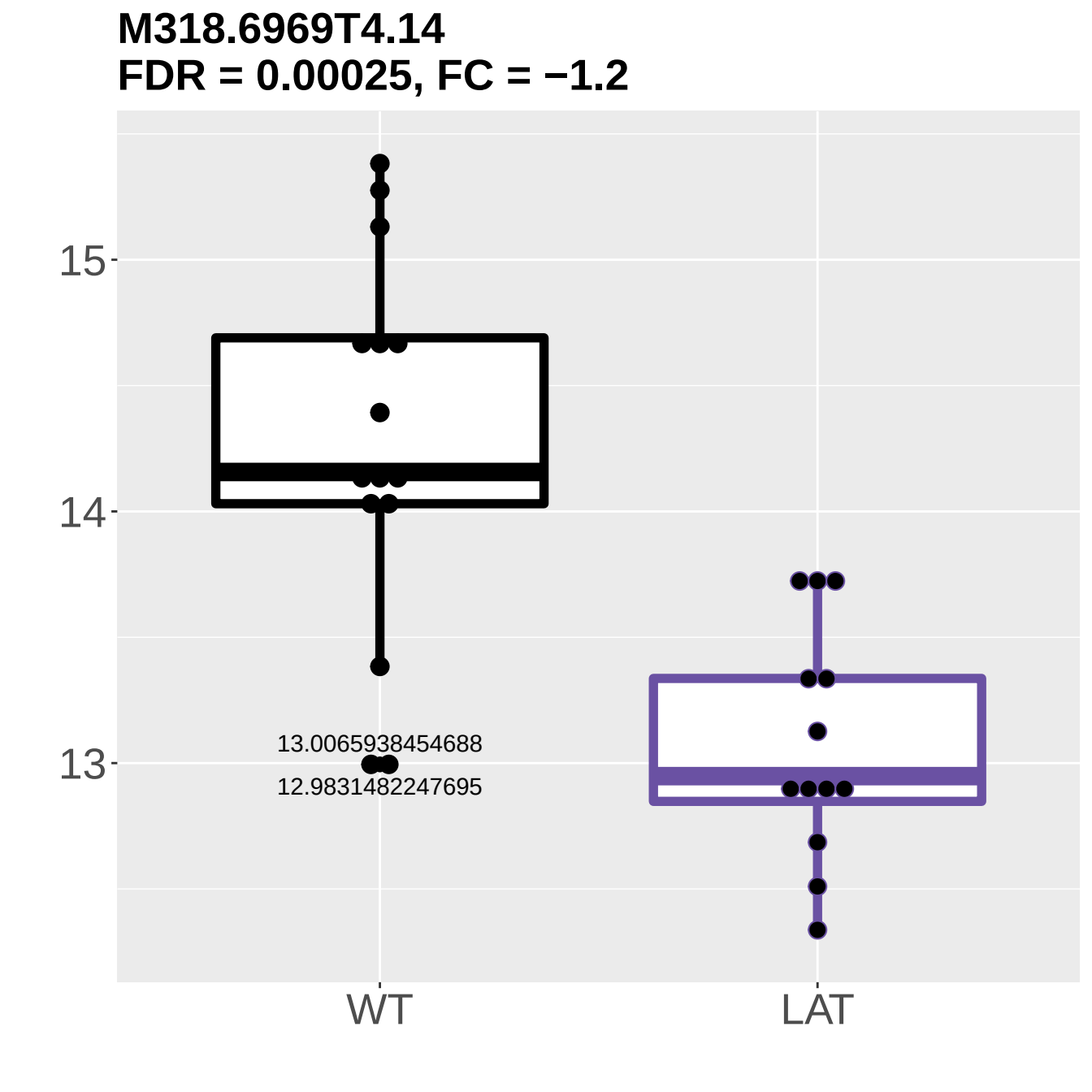

M417.7356T4.52
FDR = 0.00023, FC = −0.99
15
14
13
12.8874292744602
12.4851085019073
WT
LAT

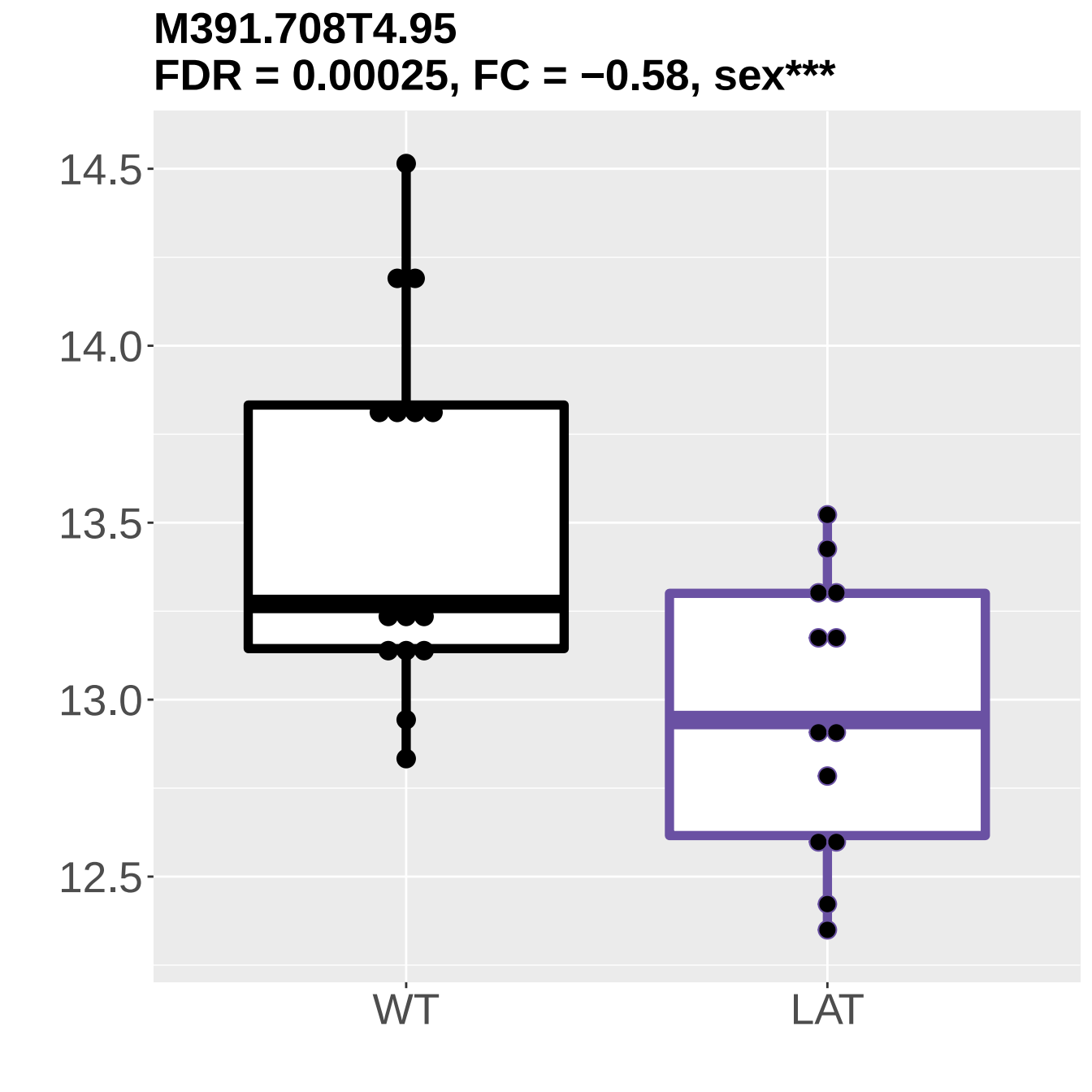

M471.2623T5.46
FDR = 0.00024, FC = −2.6
18
16
14
12
10
8.68829594267451
WT
LAT

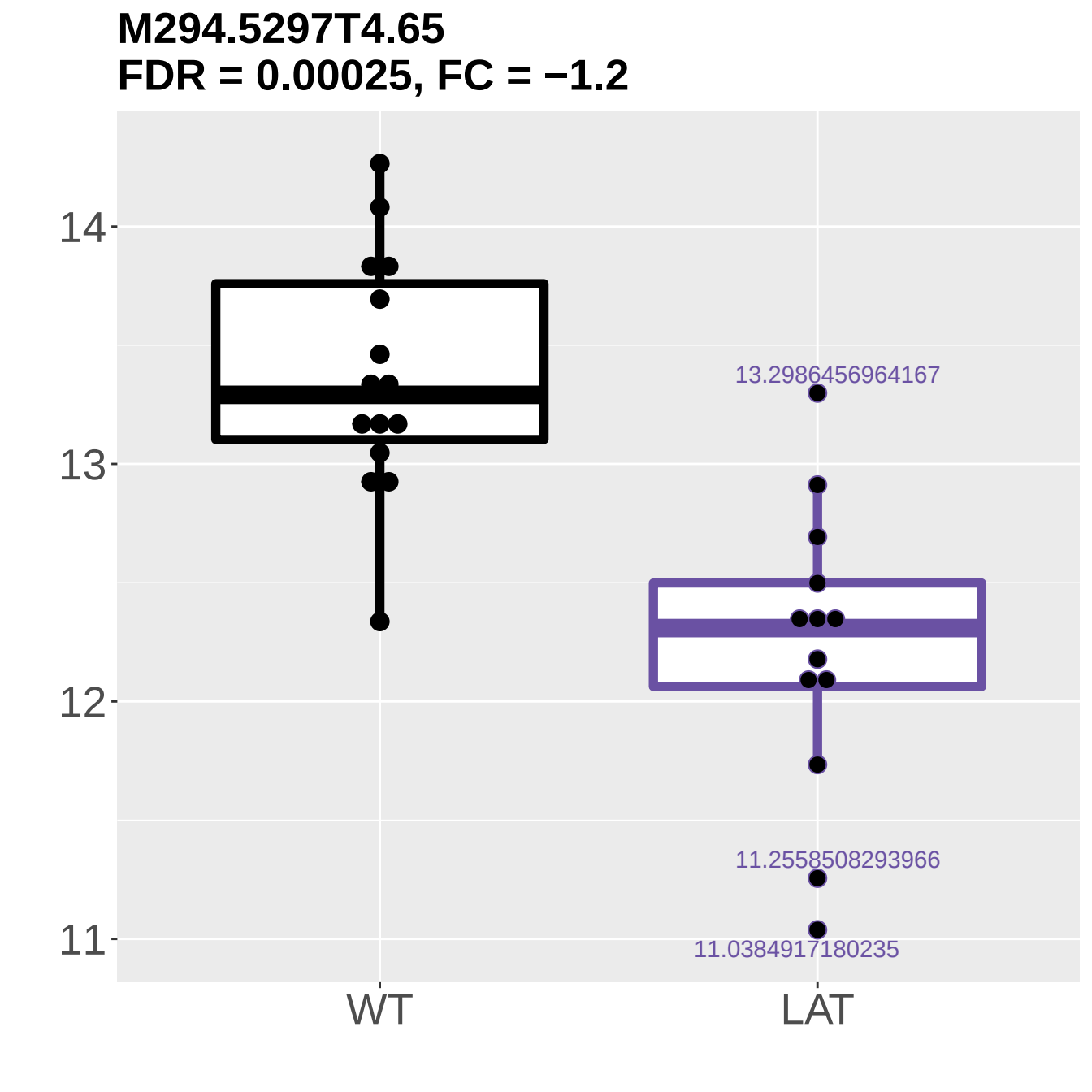

M128.0582T1.26
FDR = 0.00024, FC = −0.7
17.0
16.5
16.0
15.5
16.89652216021
15.4614672464054
WT
LAT

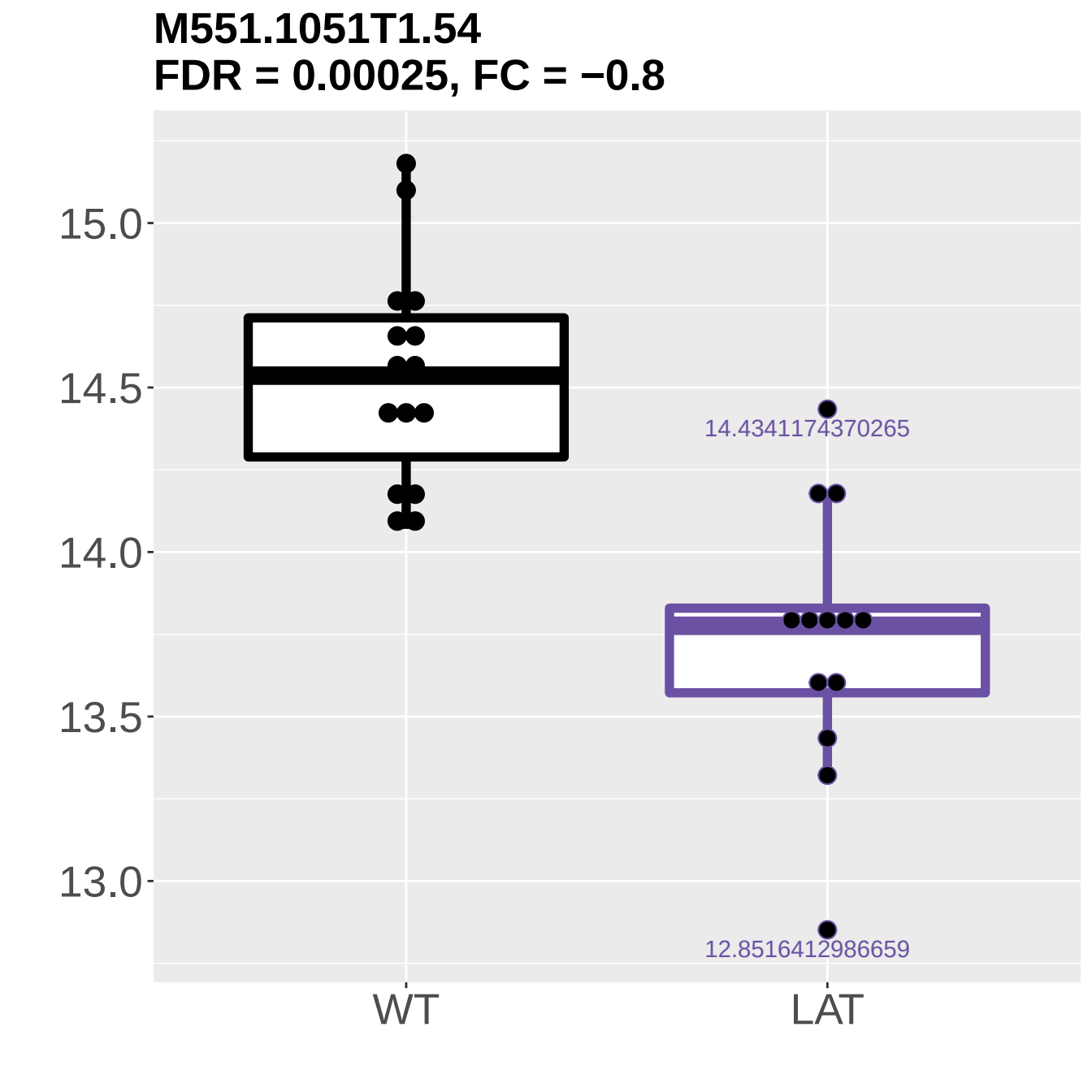

M349.9105T5.55
FDR = 0.00024, FC = −4.2
15
10
5
0
0
WT
LAT


M650.7229T5.8
FDR = 0.00024, FC = −4.8
15
10
5
0
0
WT
LAT


M318.6969T4.14
FDR = 0.00025, FC = −1.2
15
14
13
13.0065938454688
12.9831482247695
WT
LAT


M391.708T4.95
FDR = 0.00025, FC = −0.58, sex***
14.5
14.0
13.5
13.0
12.5
WT
LAT


M294.5297T4.65
FDR = 0.00025, FC = −1.2
14
13
12
11
13.2986456964167
11.2558508293966
11.0384917180235
WT
LAT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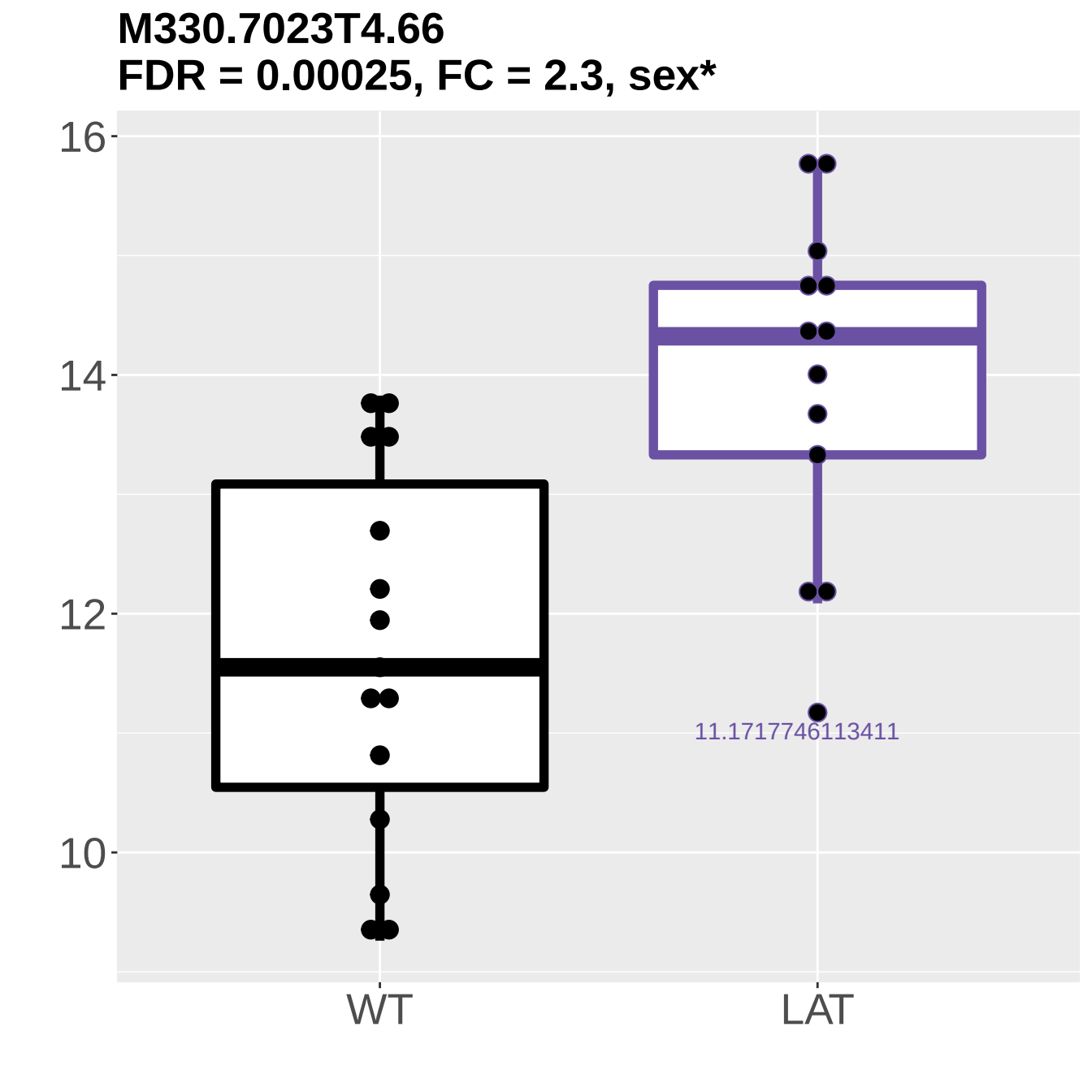
WT
LAT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FDR = 0.00025, FC = 2.3, sex*
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14
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WT
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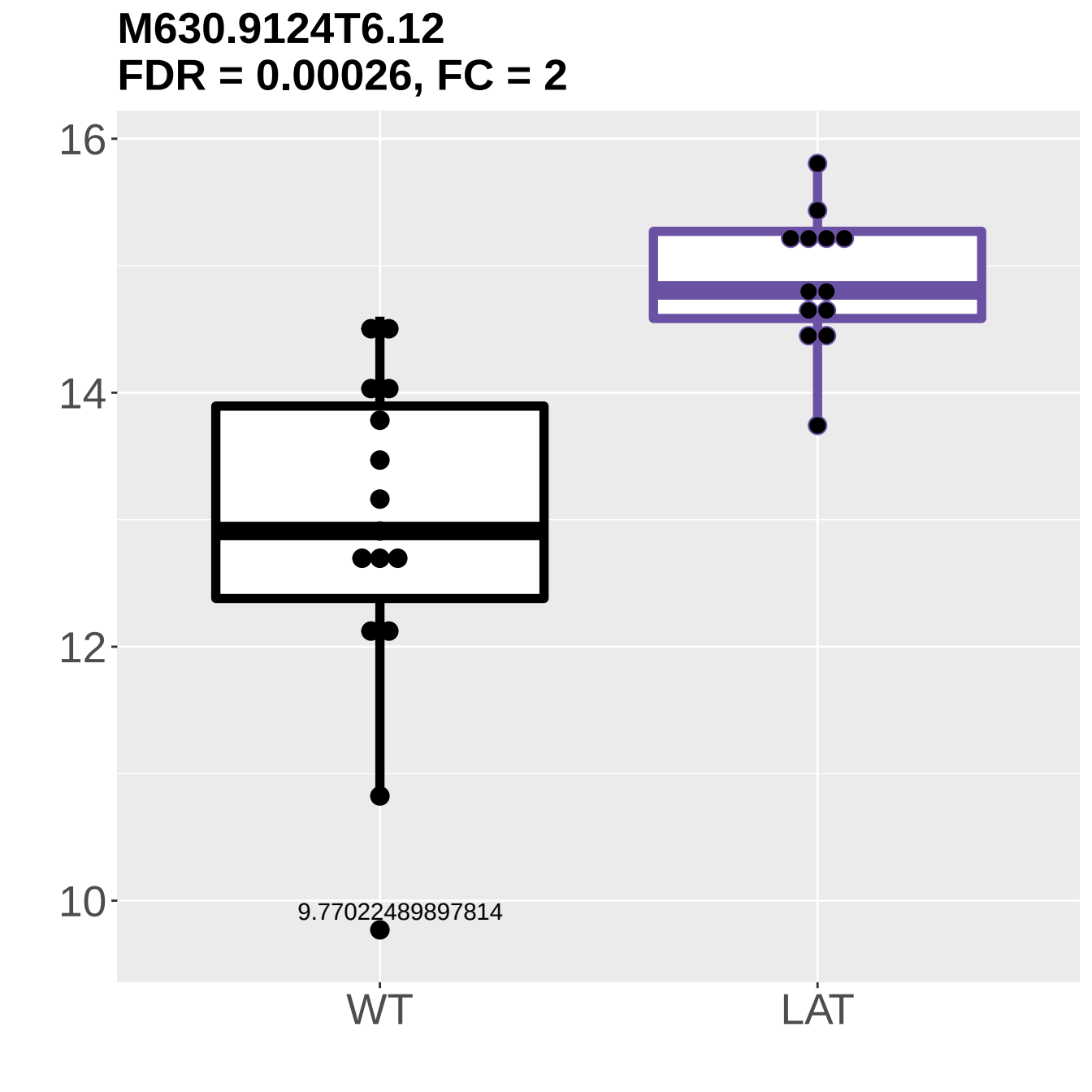
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FDR = 0.00026, FC = 2
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14
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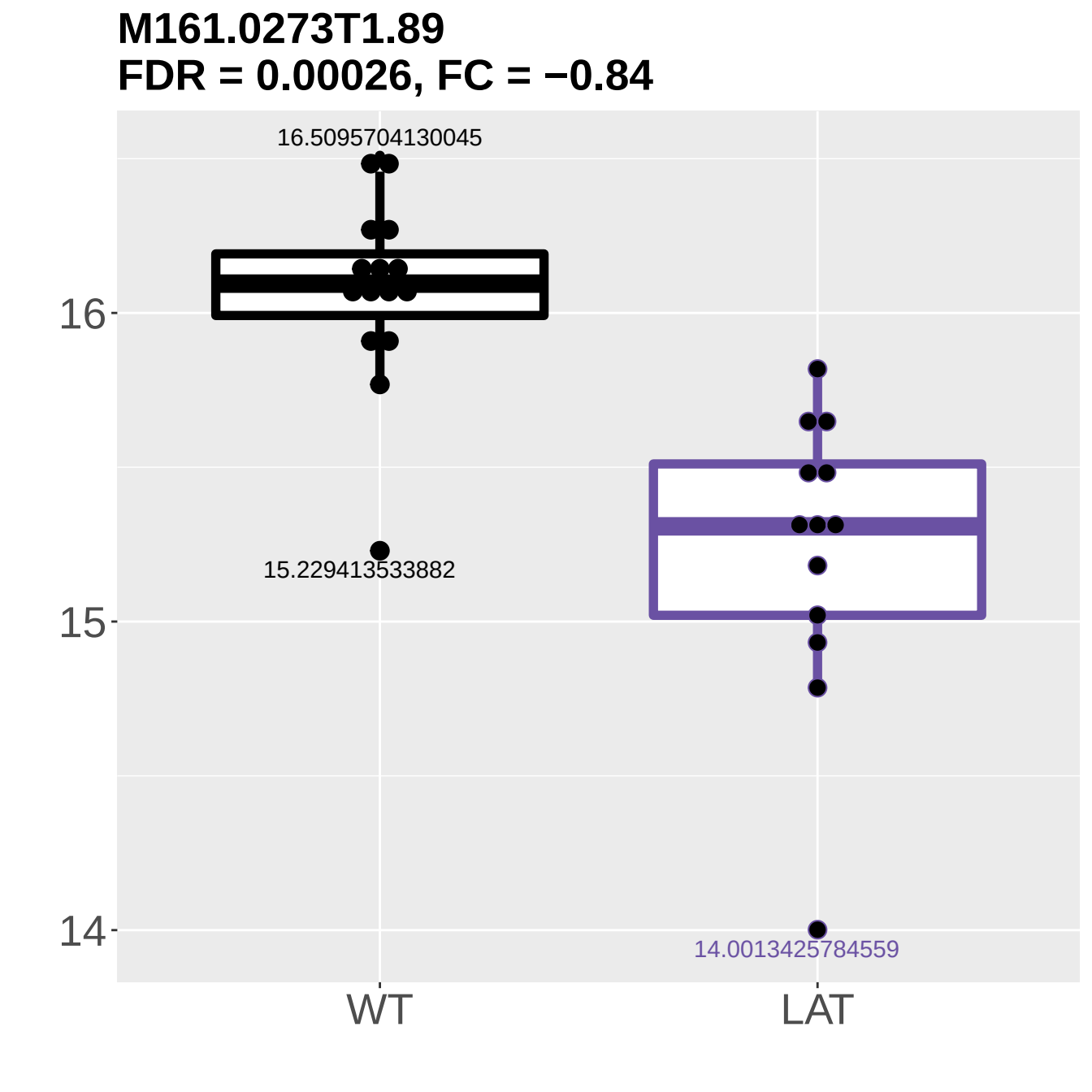
WT
LAT


M161.0273T1.89
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16
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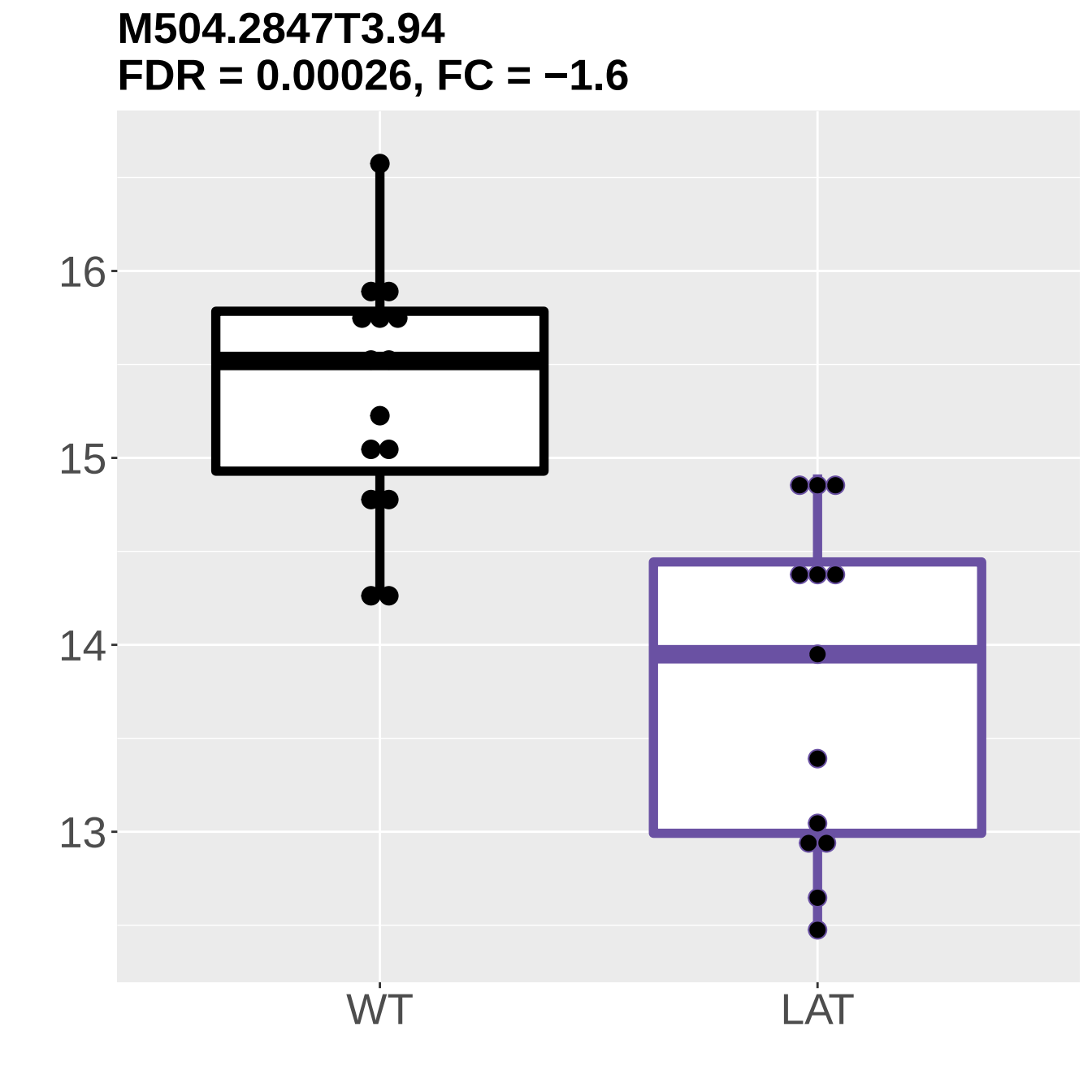
WT
LAT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15
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13
WT
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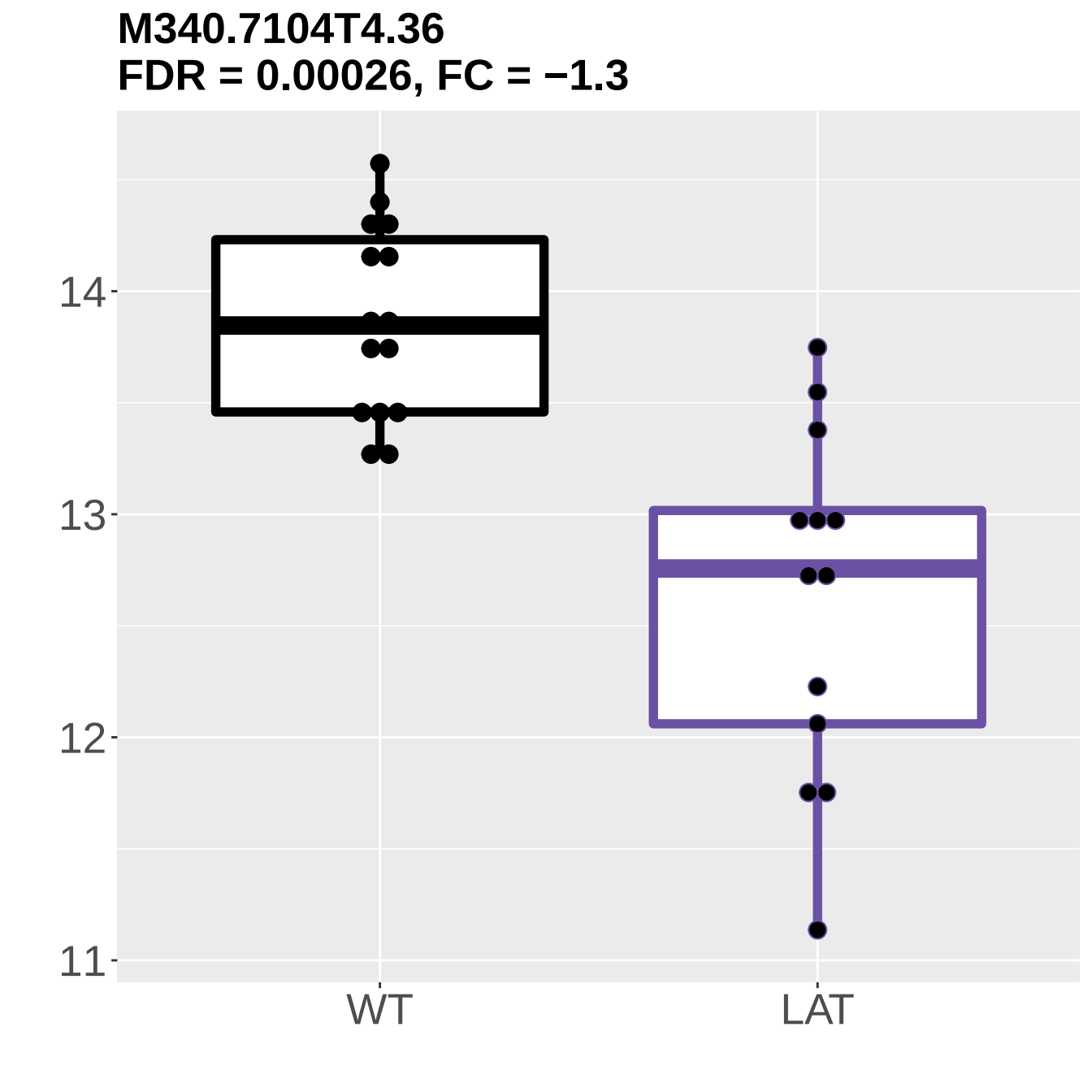
M340.7104T4.36
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13
12
11
WT
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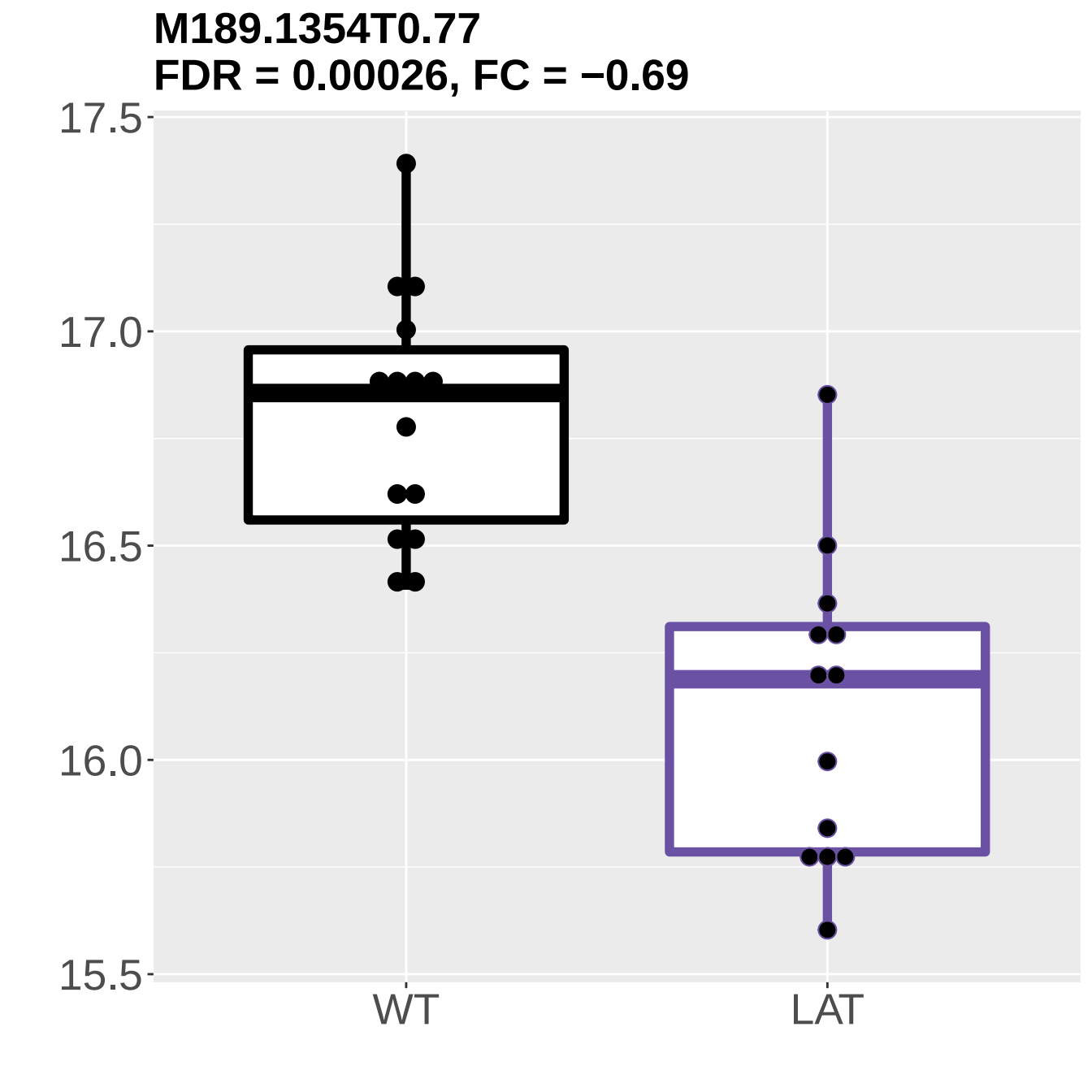
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16.0
15.5
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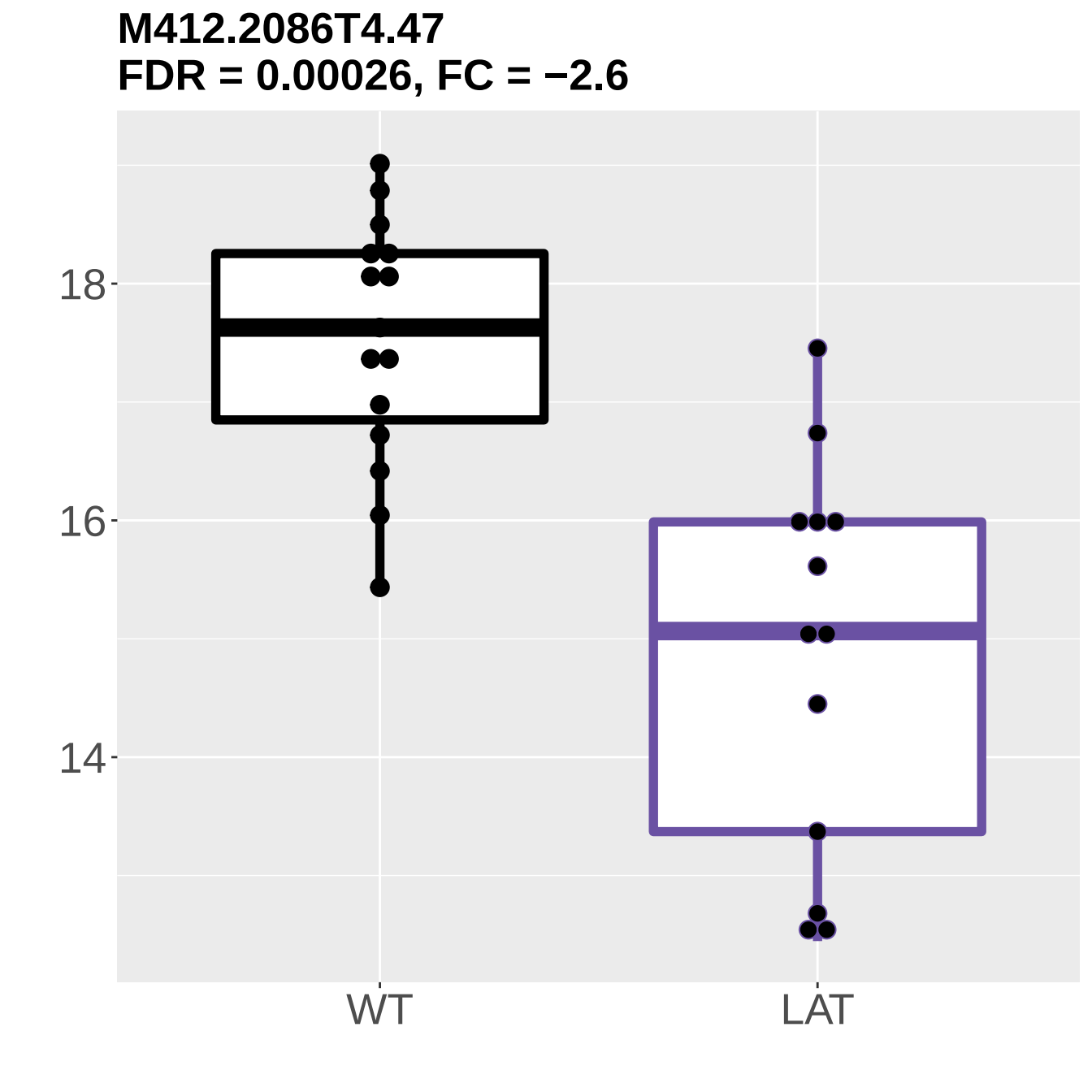
LAT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FDR = 0.00026, FC = −2.6
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16
14
WT
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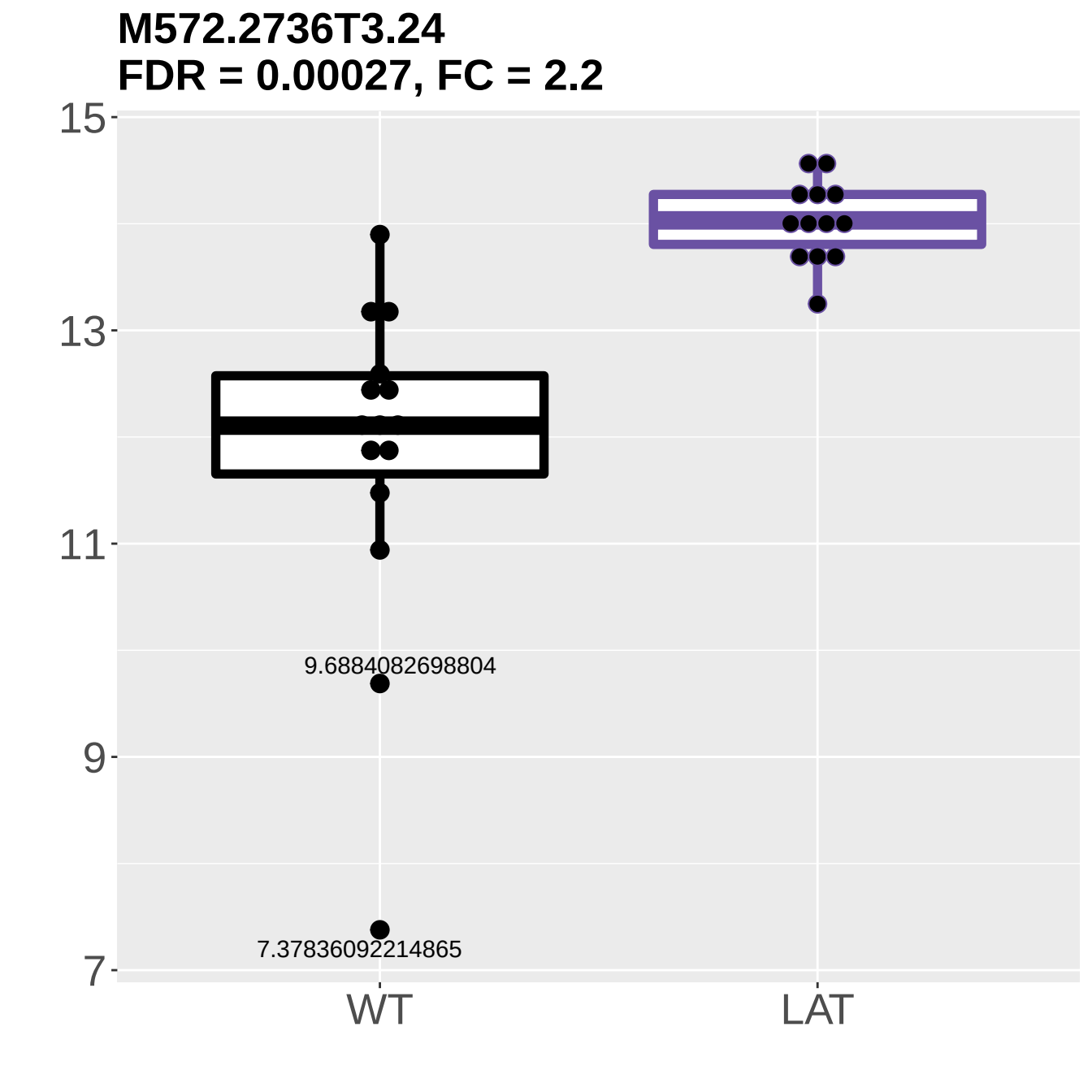
M572.2736T3.24
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13
11
9
7
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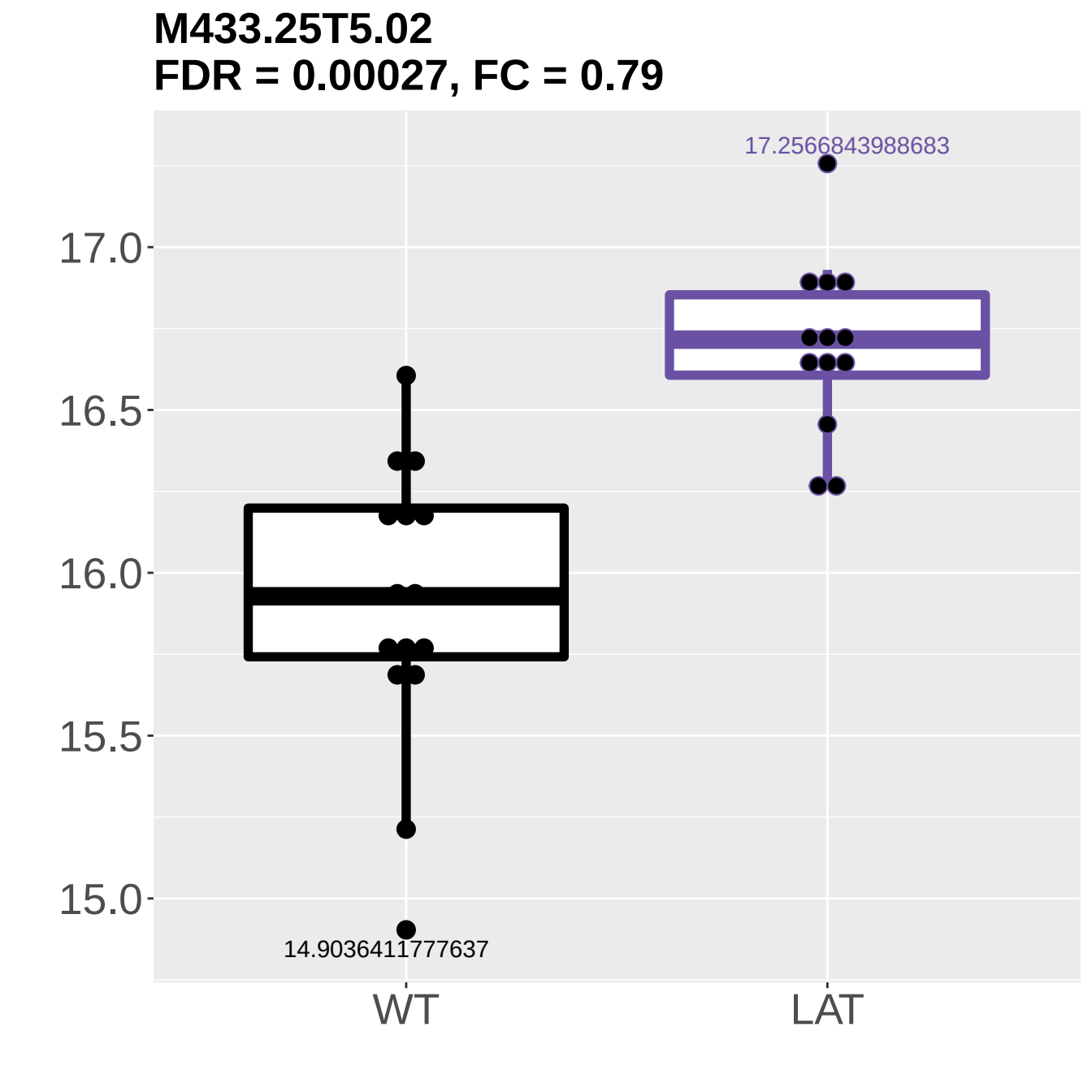
WT
LAT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16.0
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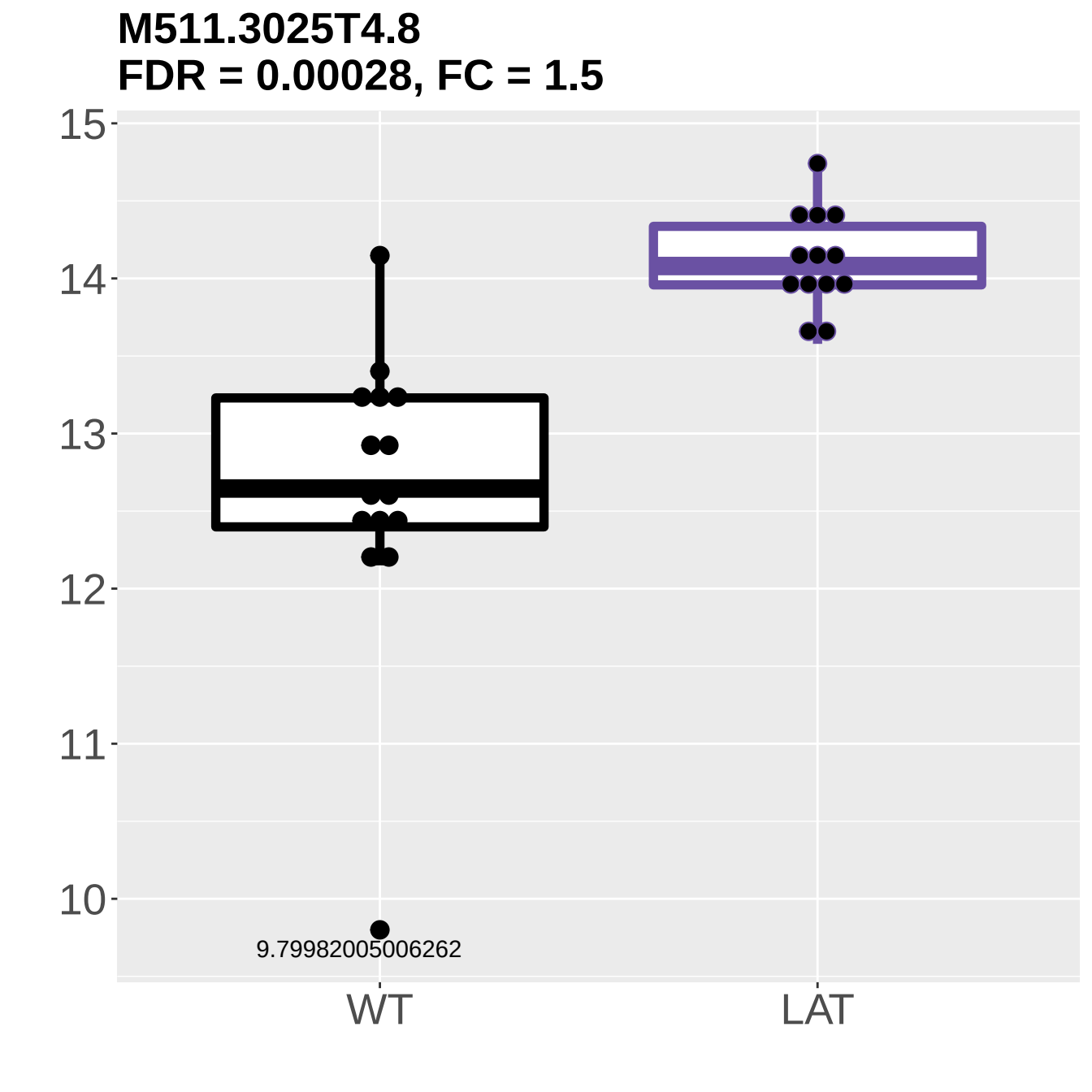
WT
LAT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14
13
12
11
10
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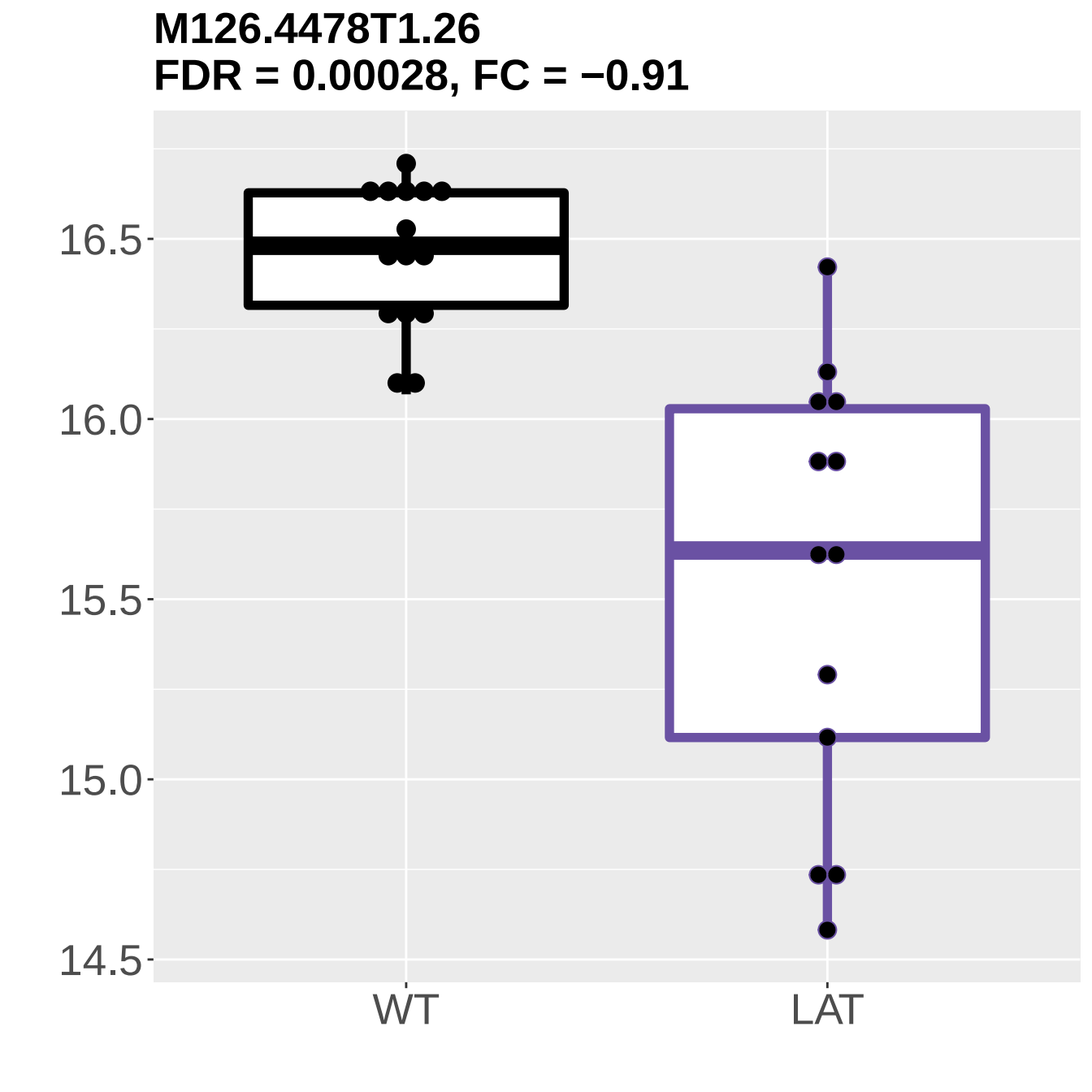
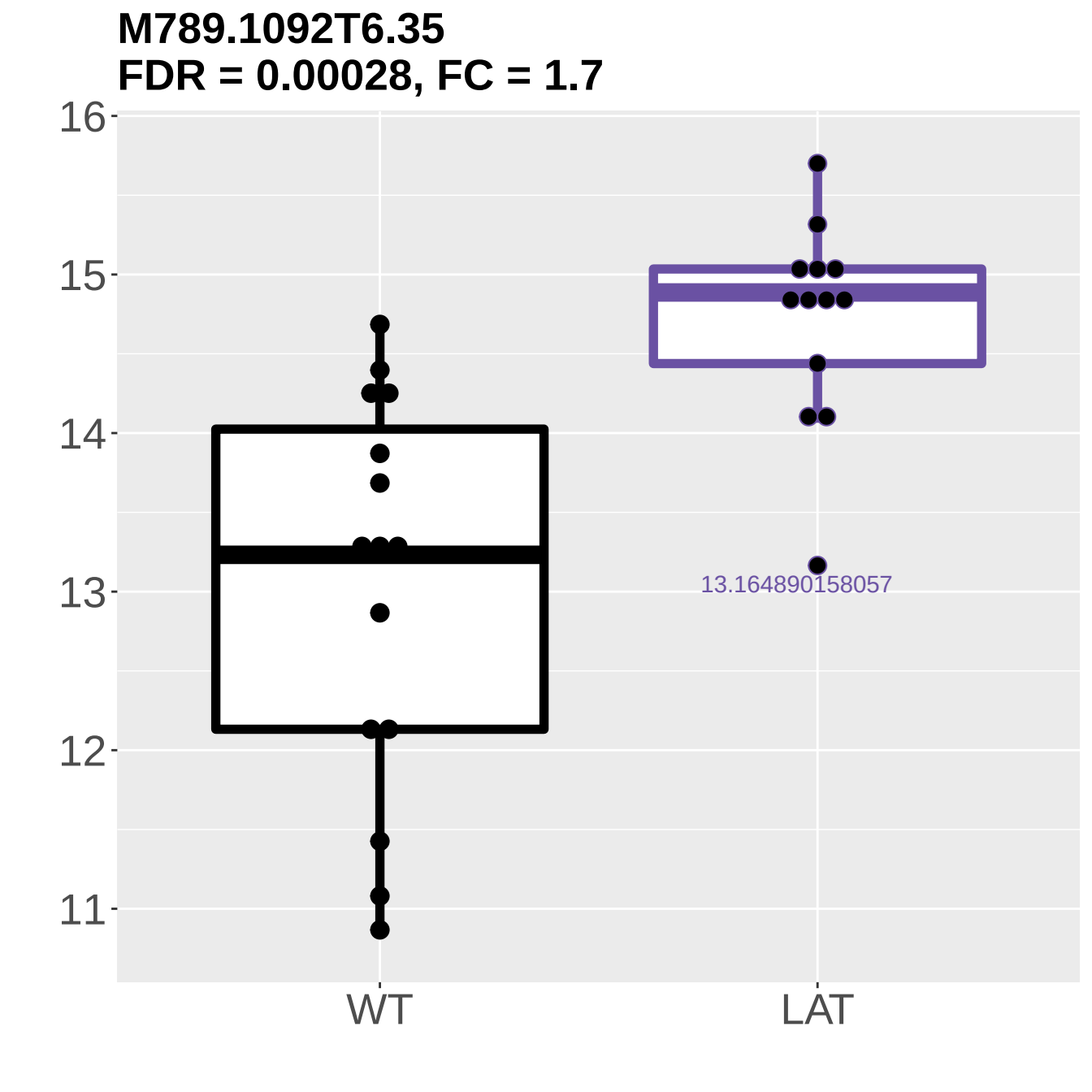
WT
LAT


M126.4478T1.26
FDR = 0.00028, FC = −0.91
16.5
16.0
15.5
15.0
14.5
WT
LAT


M789.1092T6.35
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15
14
13
12
11
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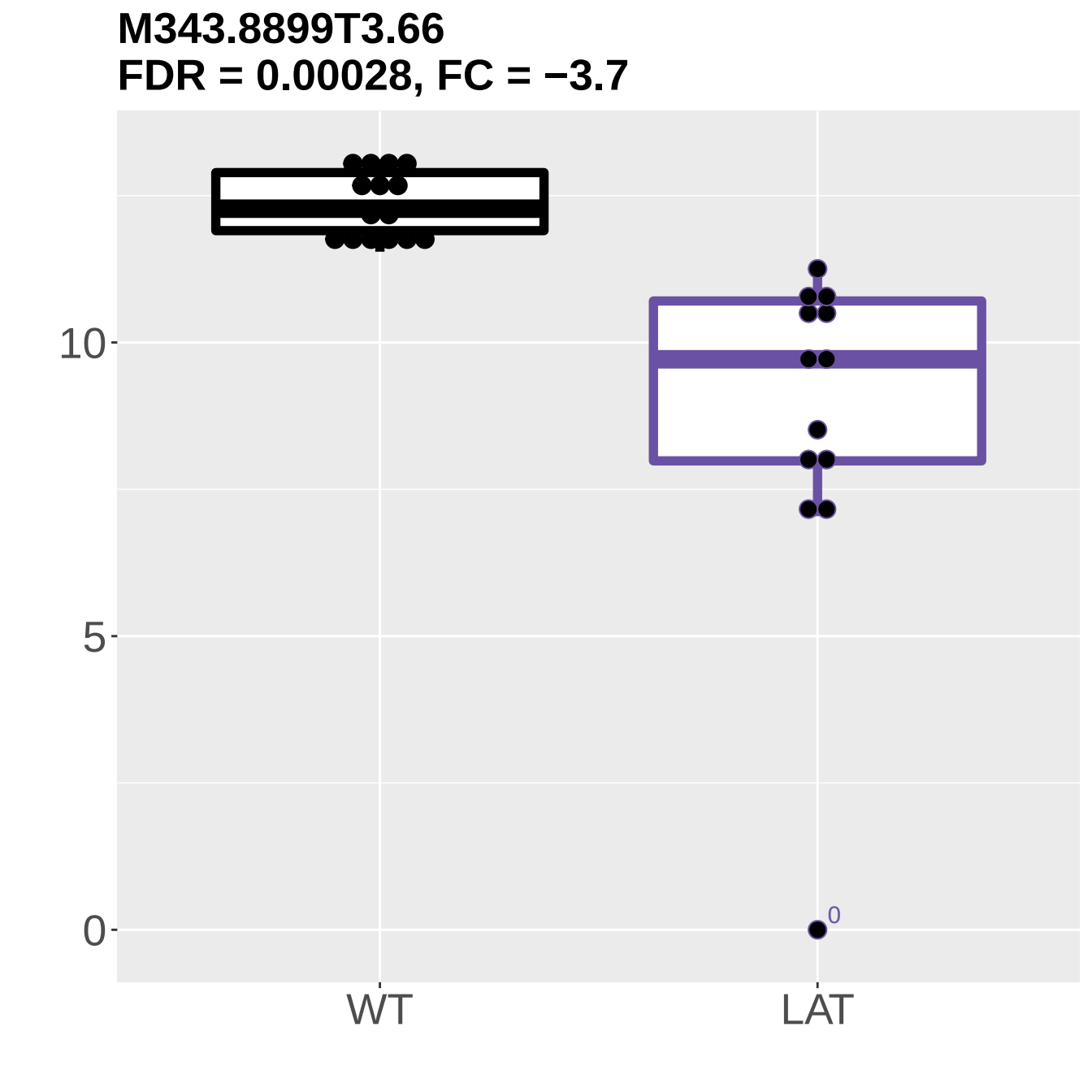
WT
LAT


M343.8899T3.66
FDR = 0.00028, FC = −3.7
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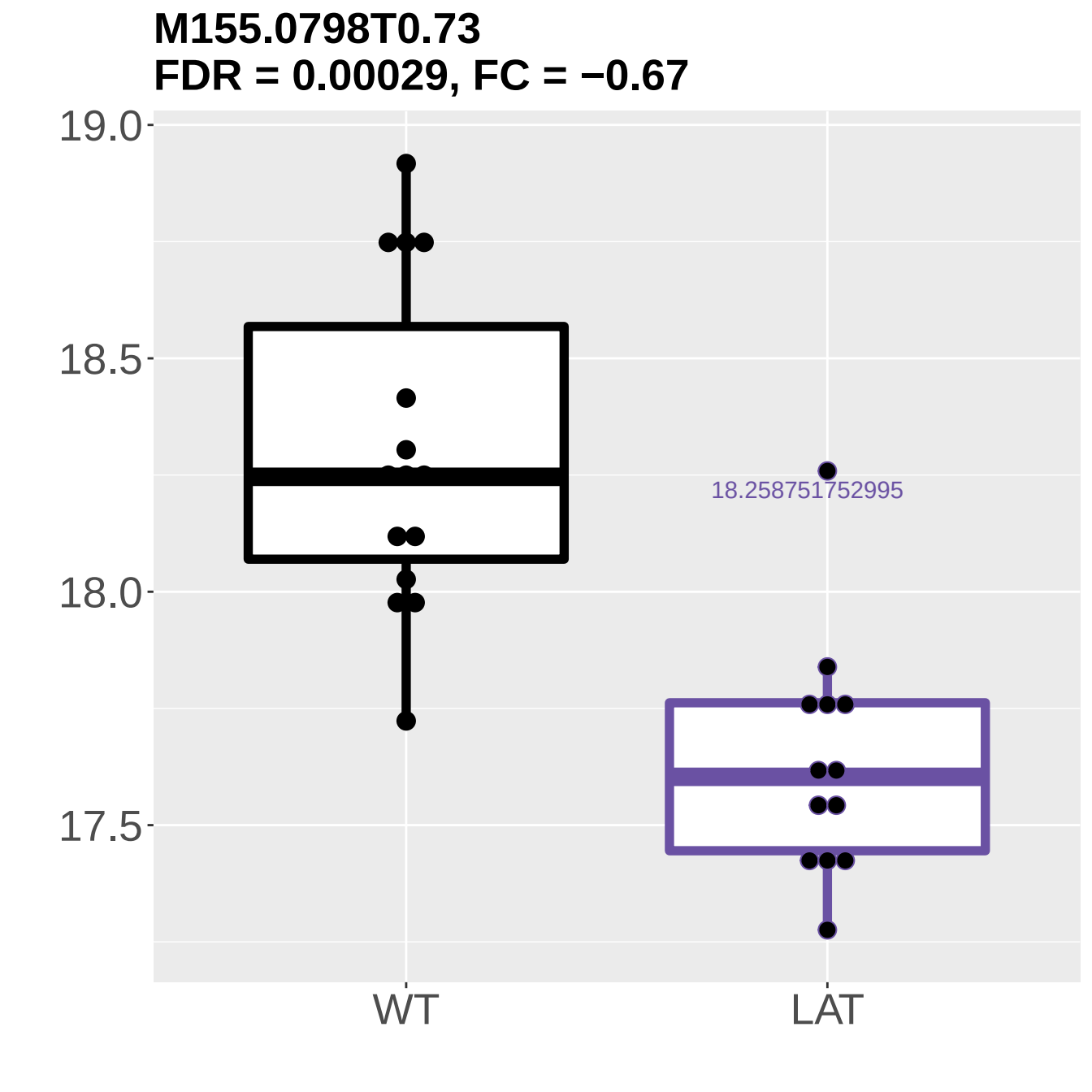
5
0
0
WT
LAT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18.0
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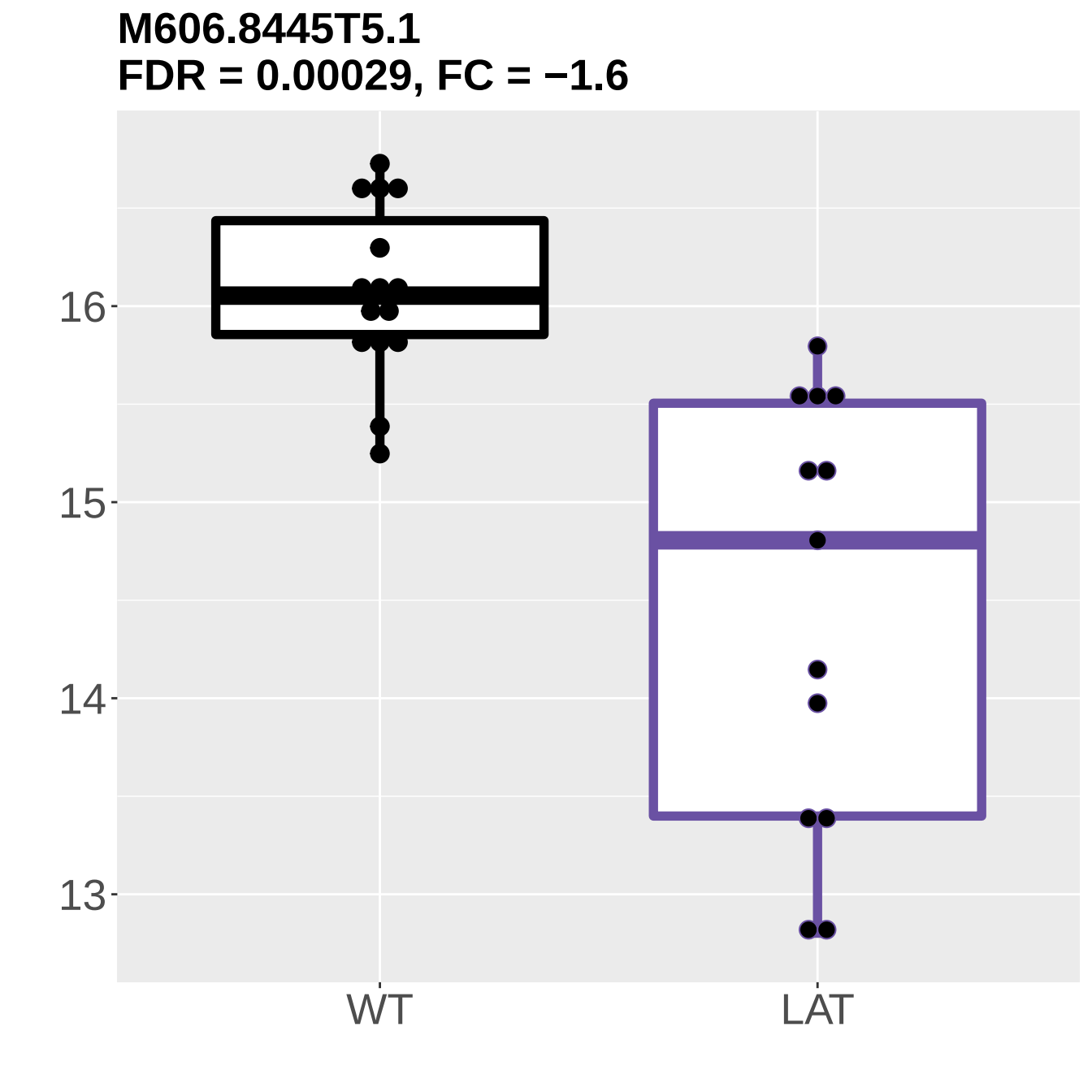
WT
LAT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FDR = 0.00029, FC = −1.6
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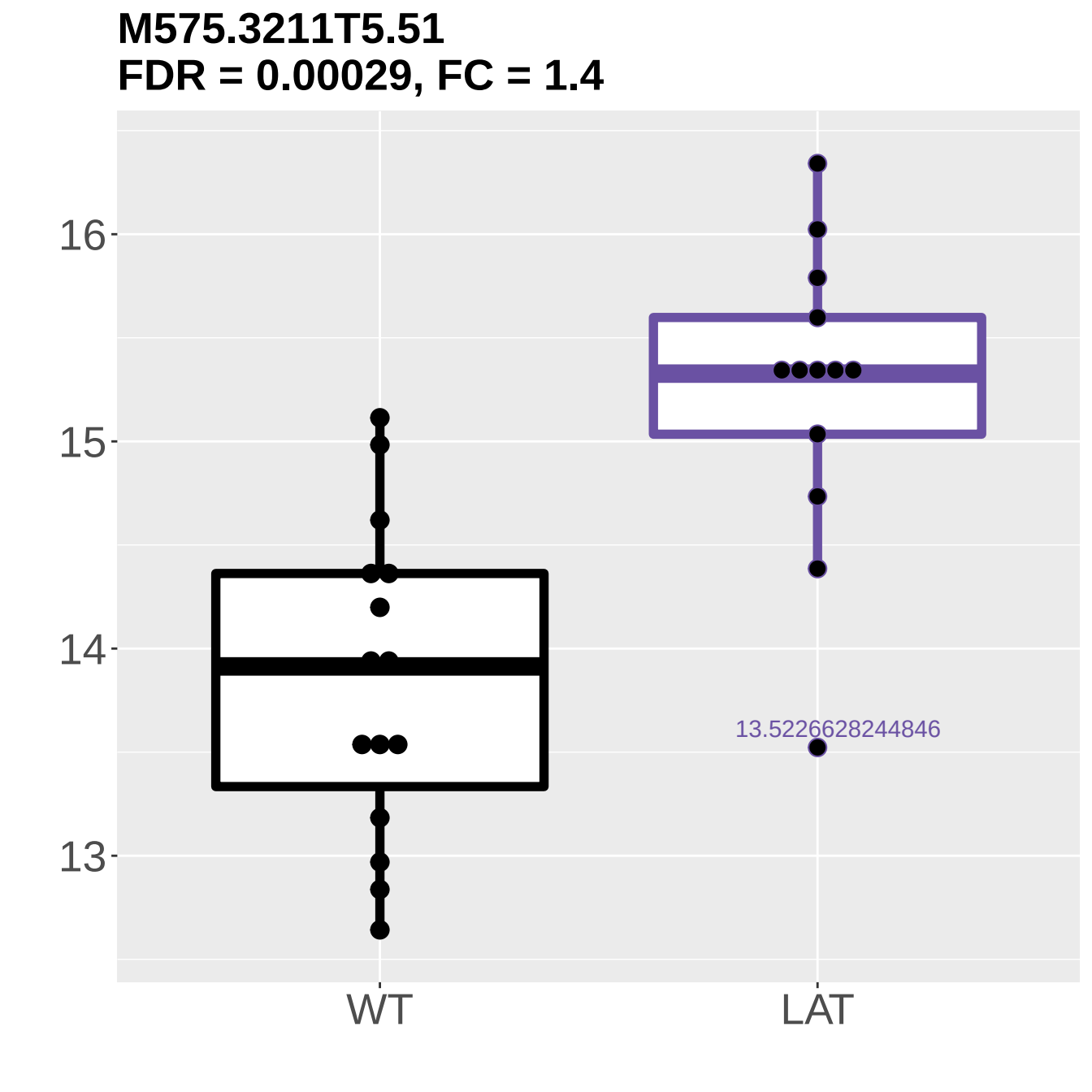
15
14
13
WT
LAT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15
14
13
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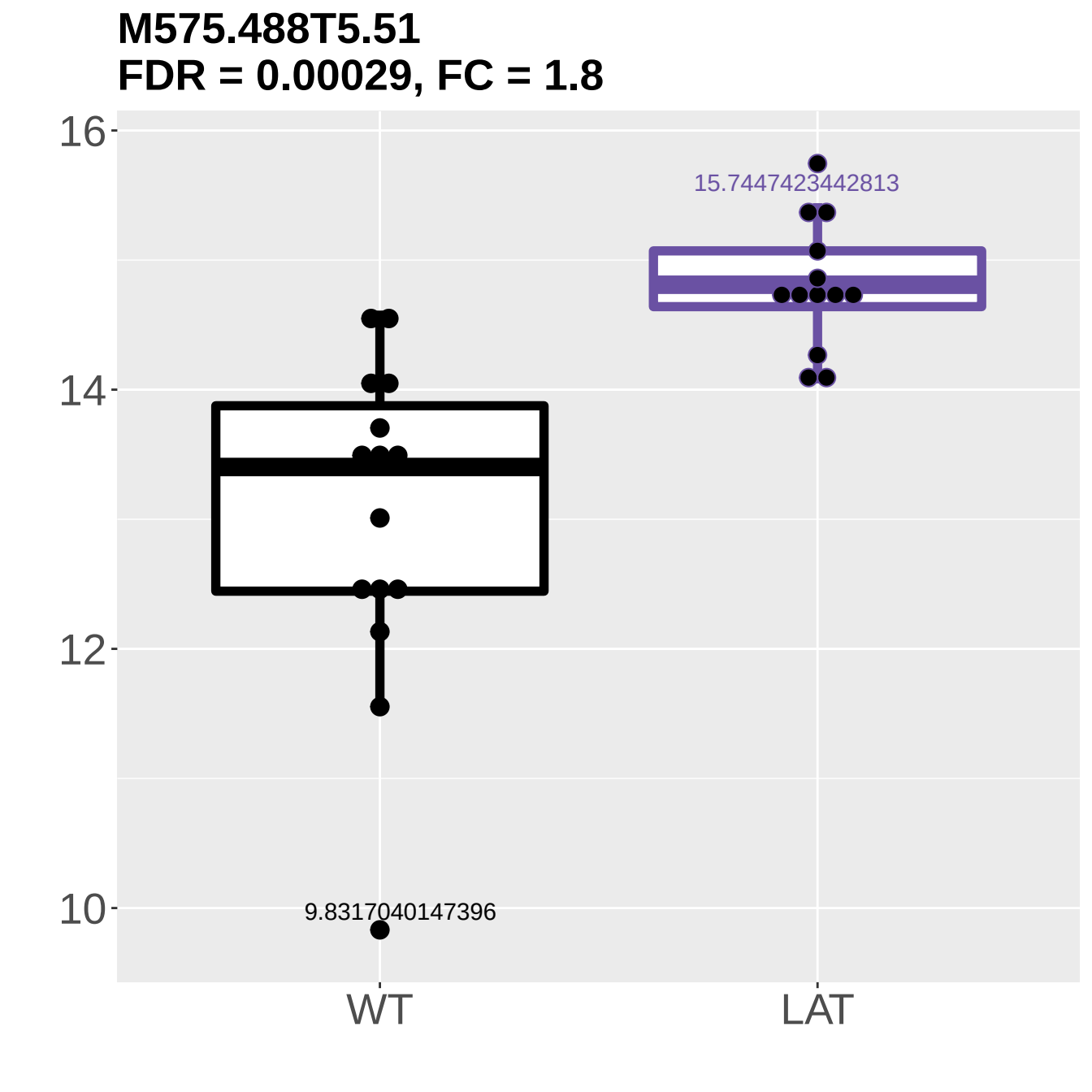
WT
LAT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14
12
10
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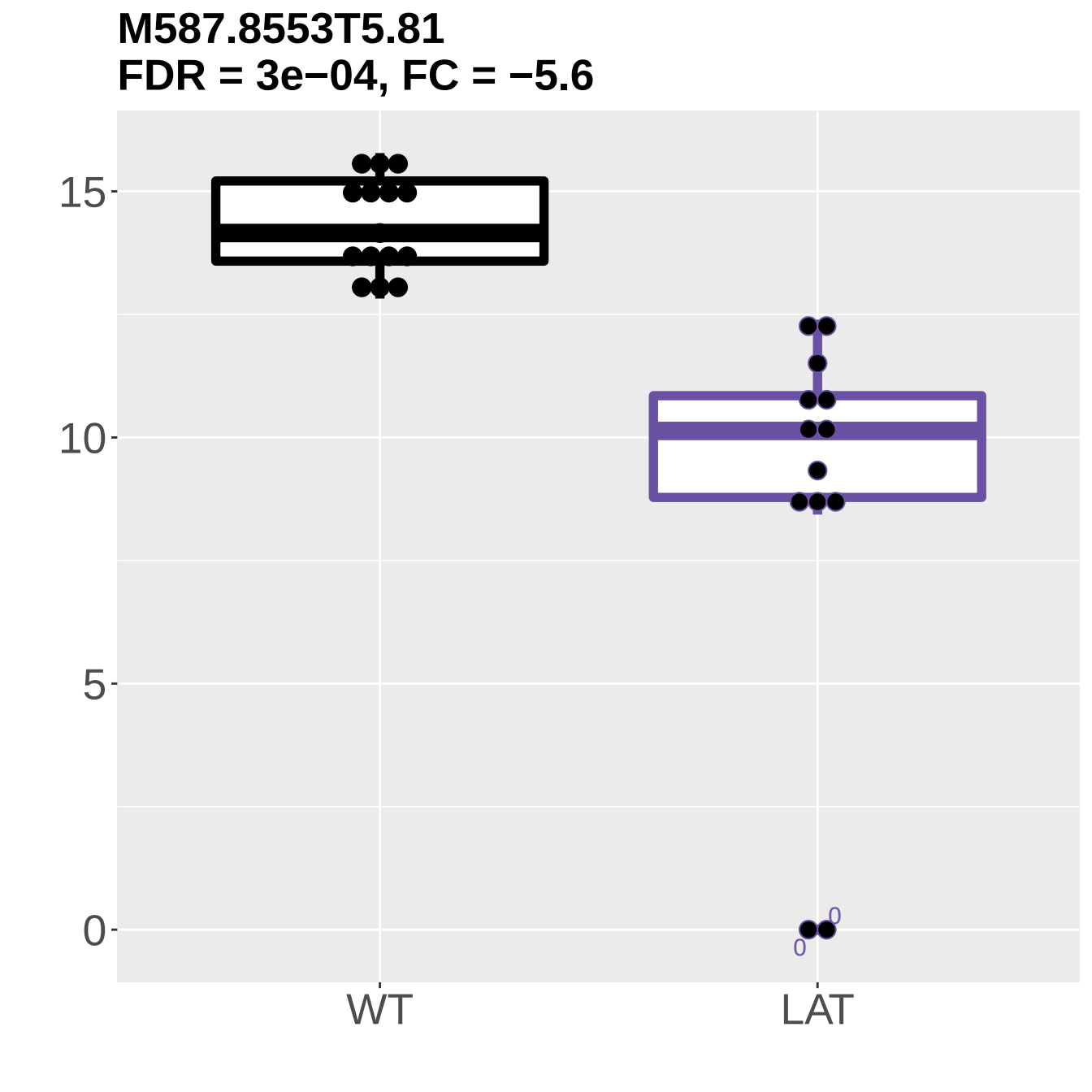
WT
LAT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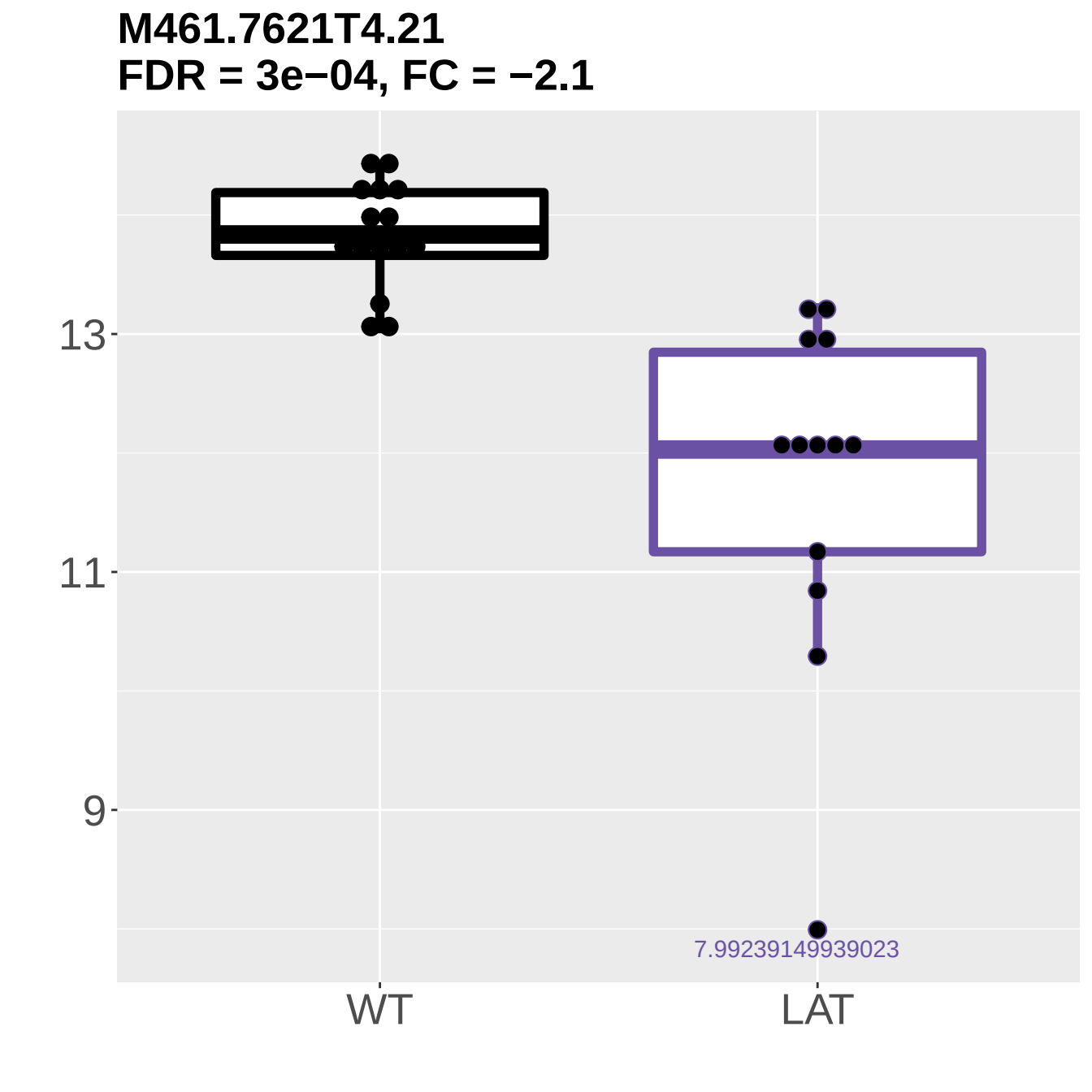
10
5
0
0
0
WT
LAT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11
9
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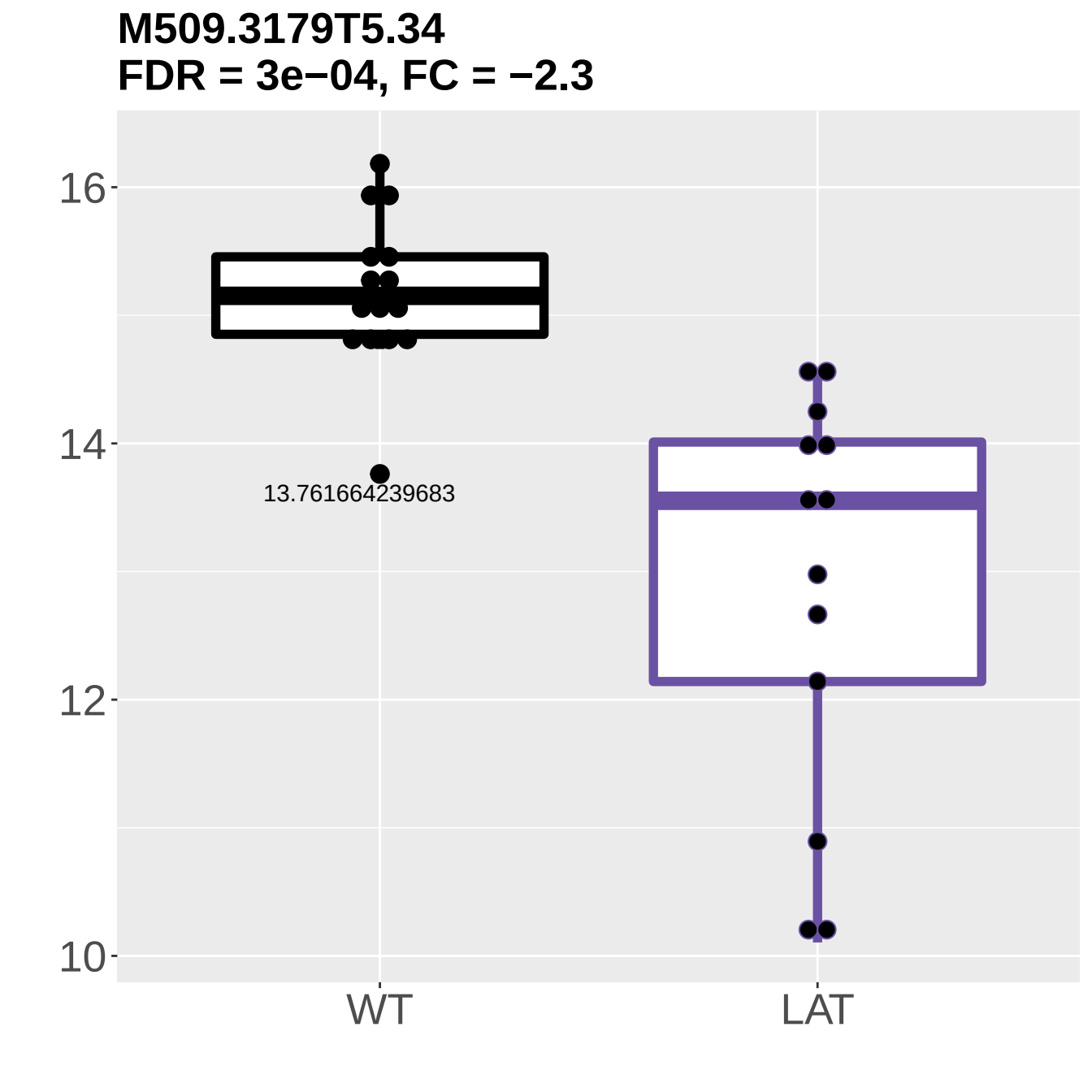
WT
LAT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14
12
10
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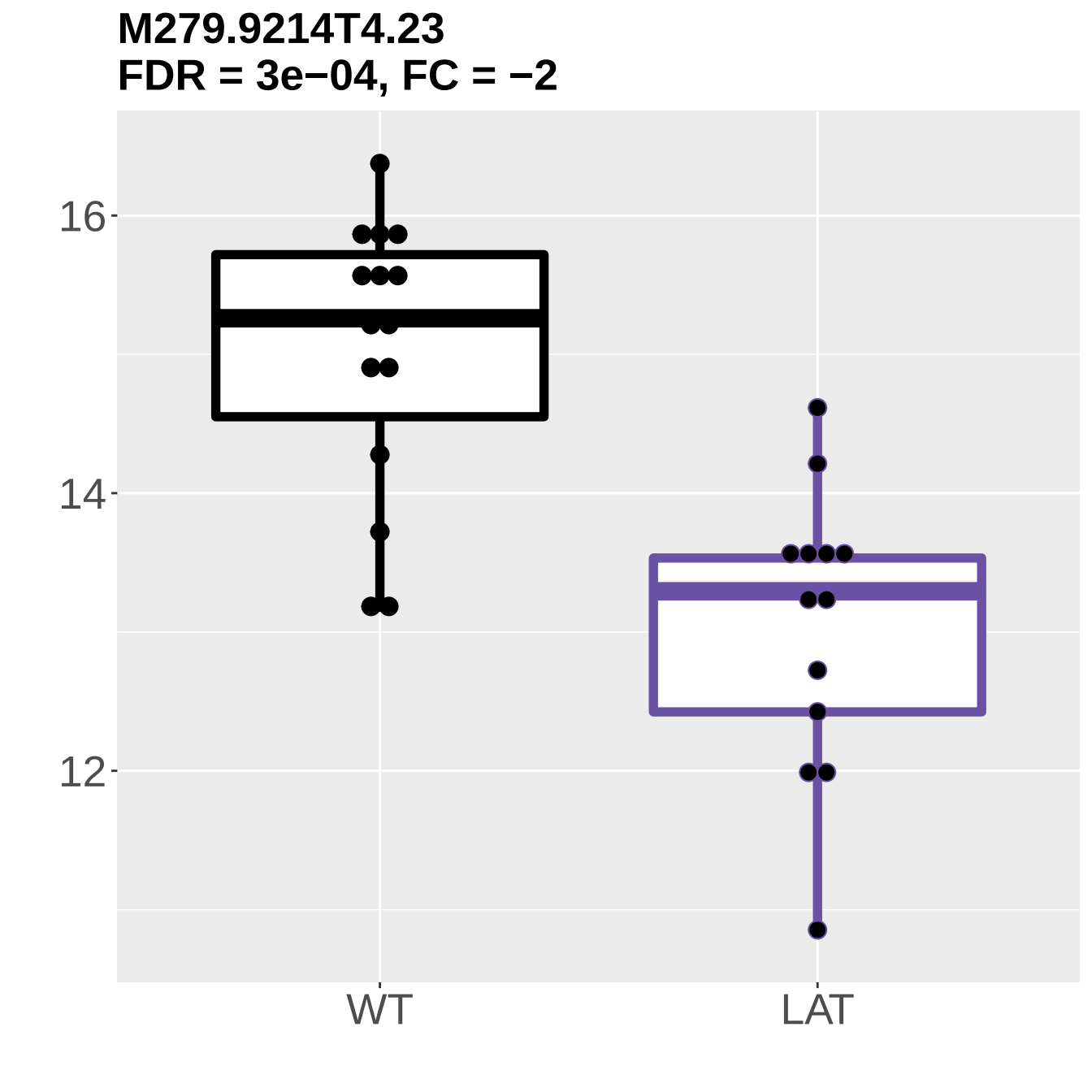
WT
LAT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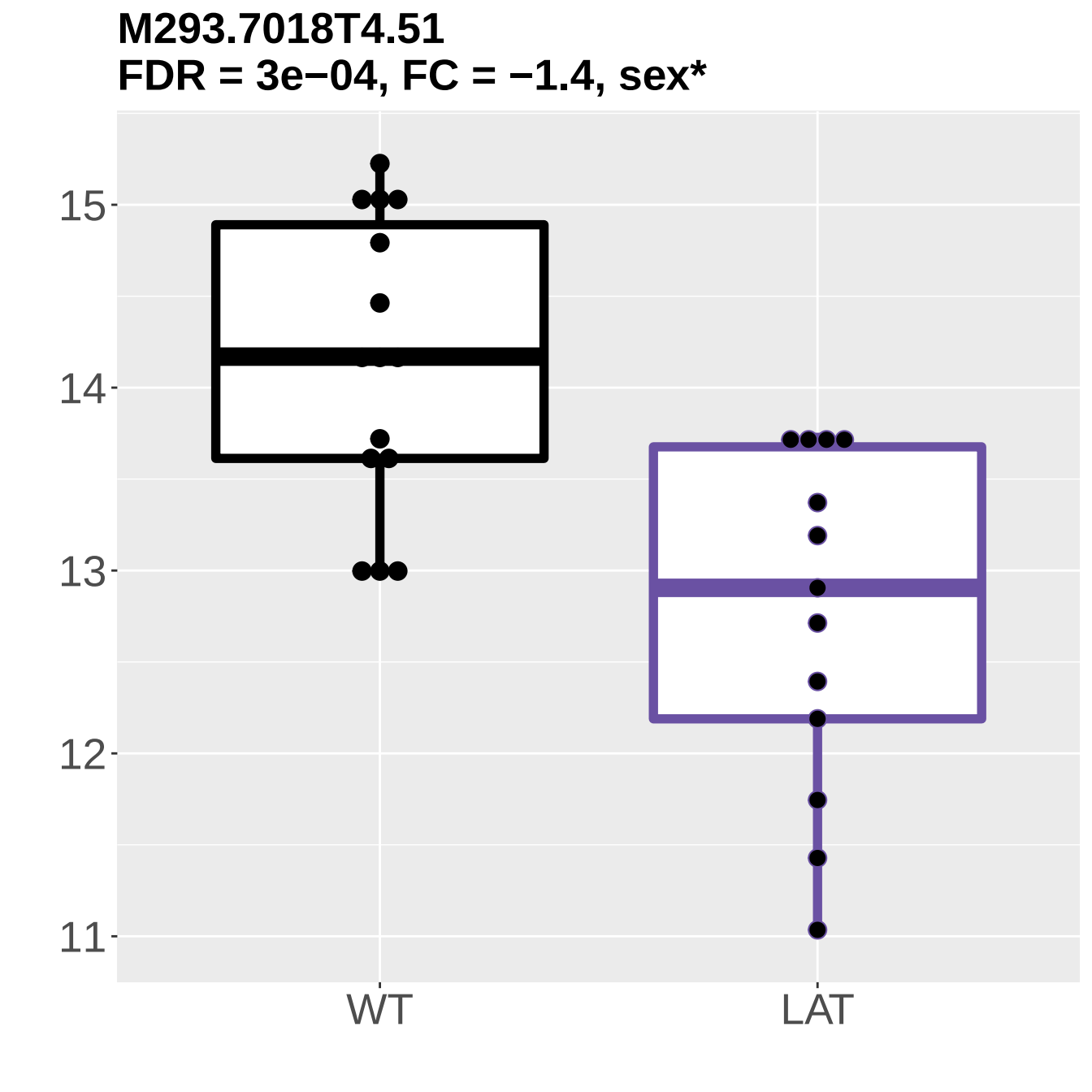
16
14
12
WT
LAT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FDR = 3e−04, FC = −1.4, sex*
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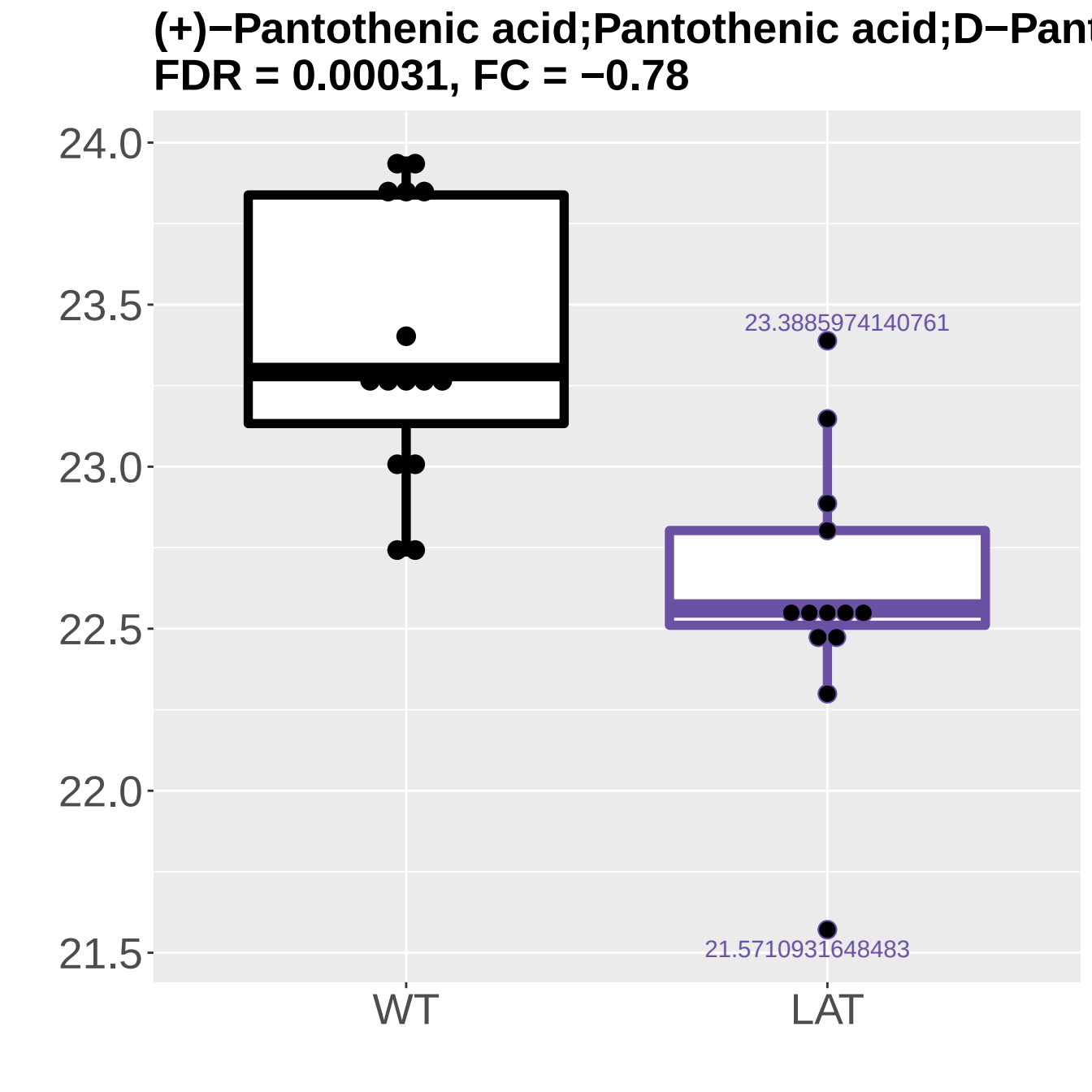
14
13
12
11
WT
LAT


(+)−Pantothenic acid;Pantothenic acid;D−Pant
FDR = 0.00031, FC = −0.78
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23.0
22.5
22.0
21.5
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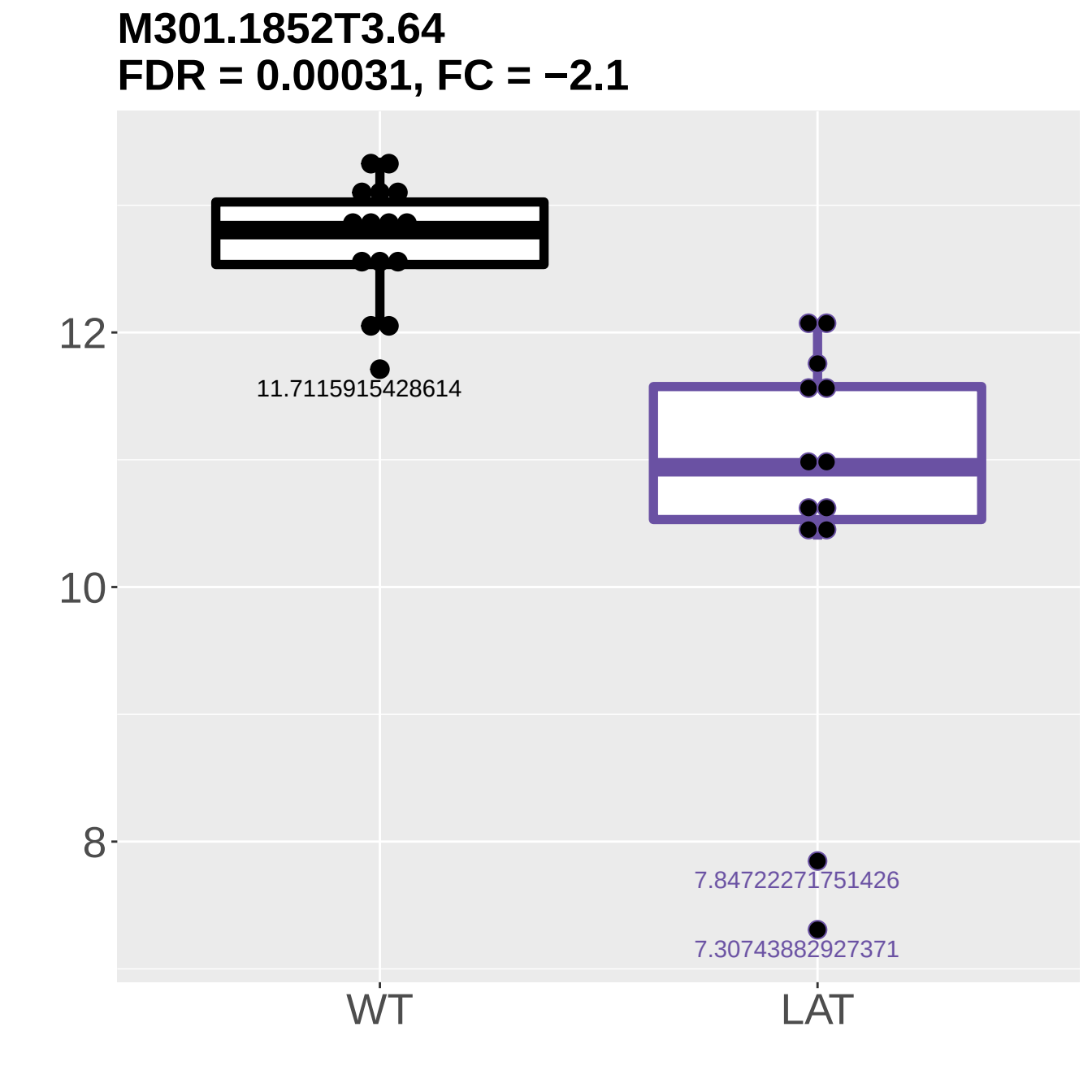
21.5710931648483
WT
LAT


M301.1852T3.64
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10
8
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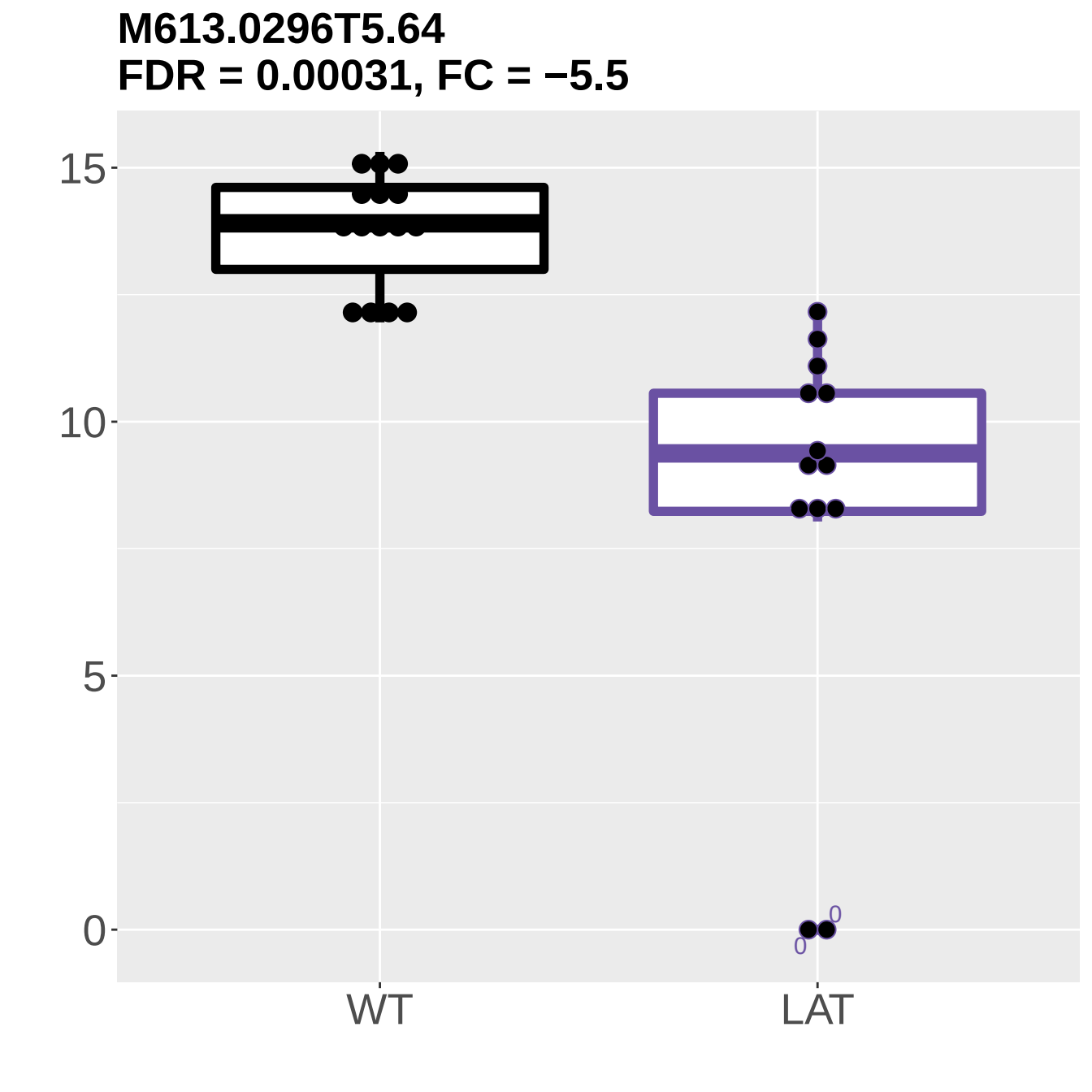
7.30743882927371
WT
LAT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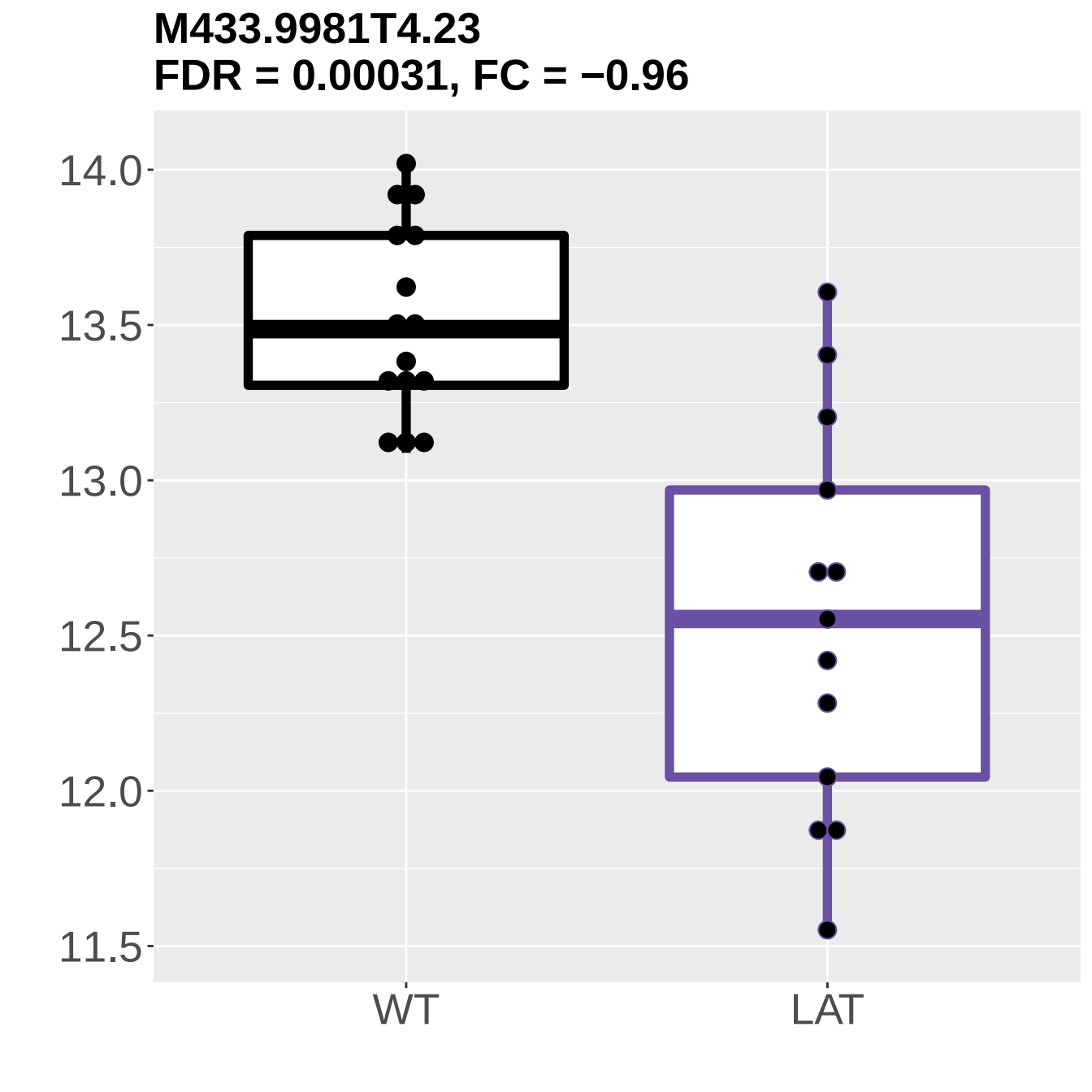
10
5
0
0
0
WT
LAT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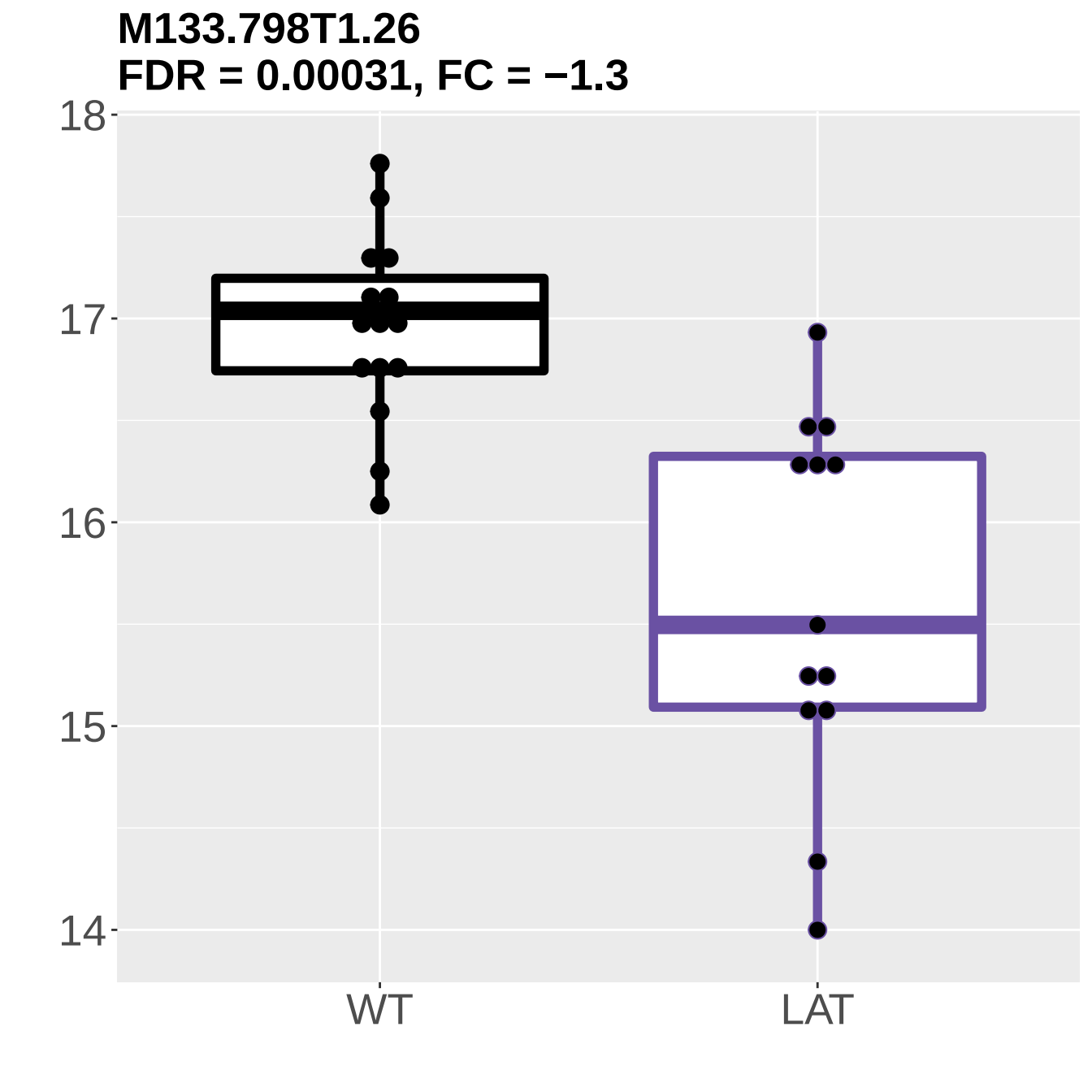
12.5
12.0
11.5
WT
LAT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FDR = 0.00031, FC = −1.3
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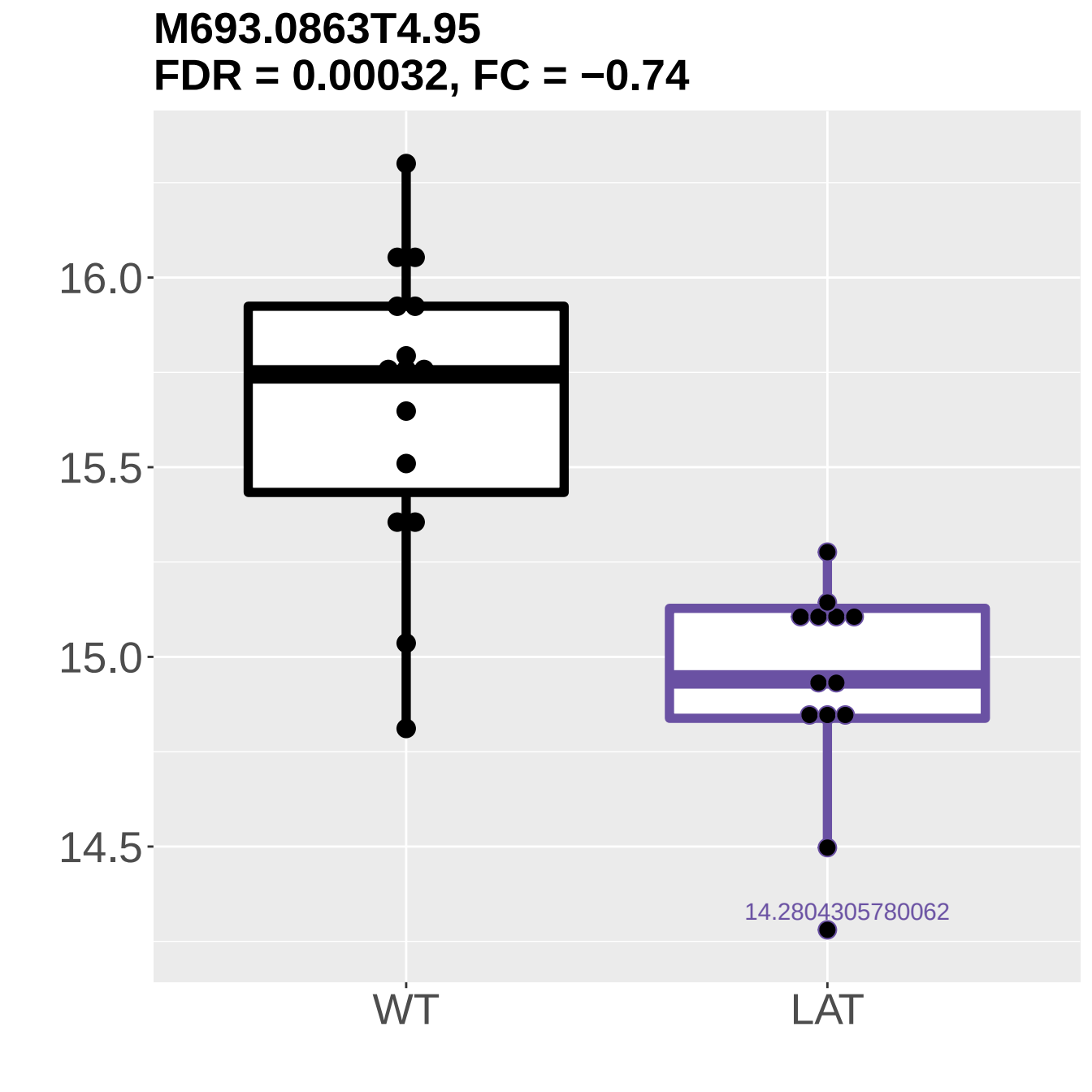
17
16
15
14
WT
LAT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15.0
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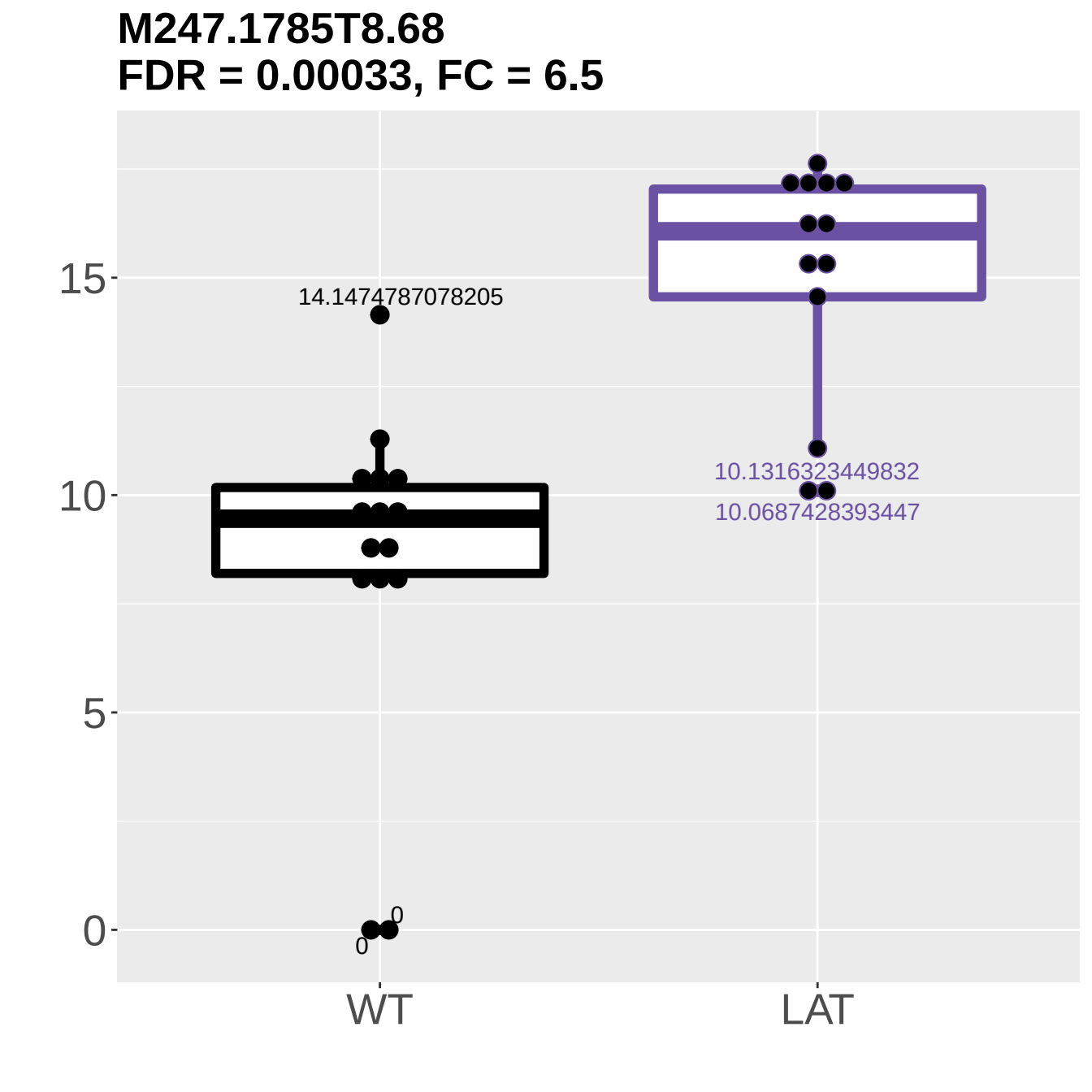
LAT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FDR = 0.00033, FC = 6.5
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10
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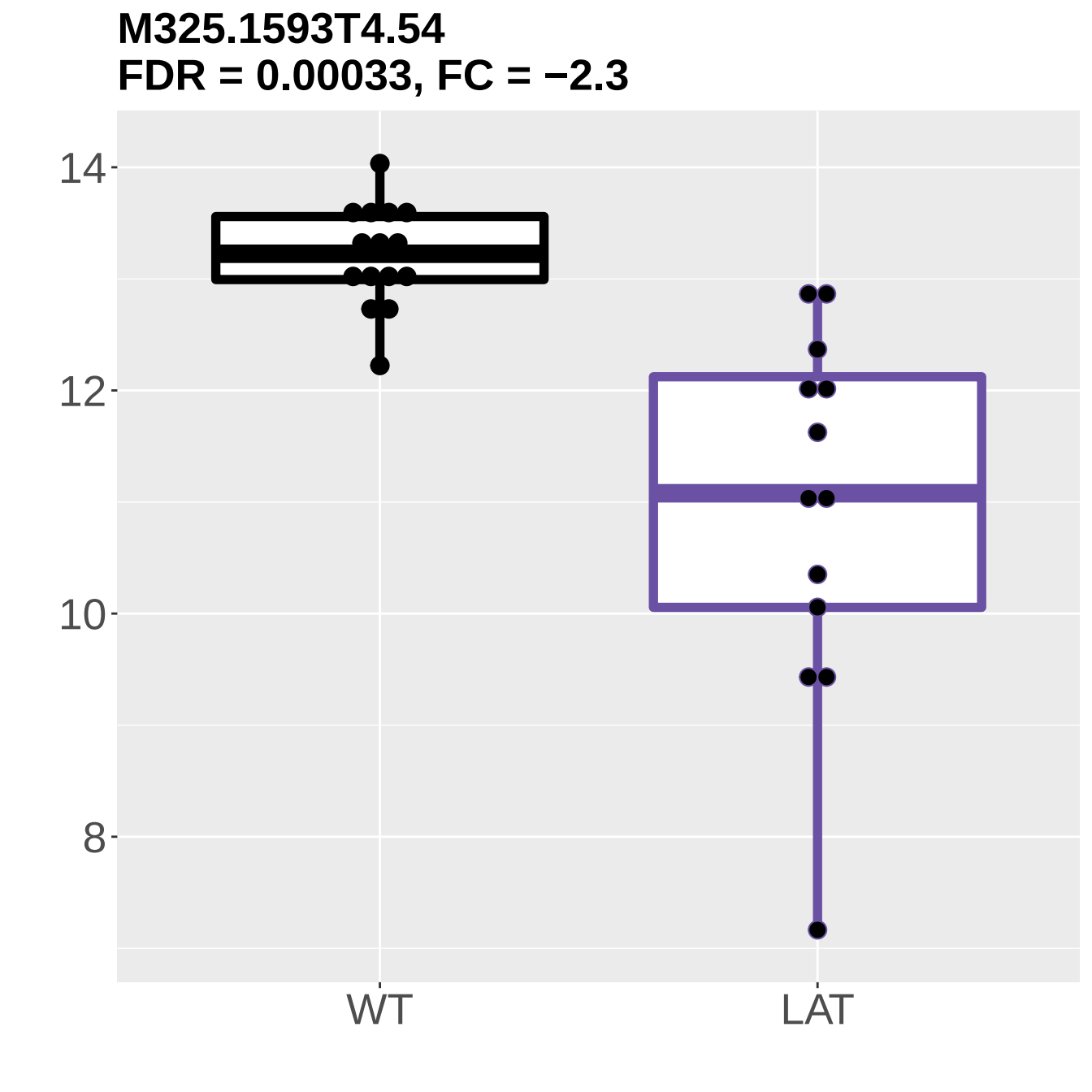
WT
LAT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FDR = 0.00033, FC = −2.3
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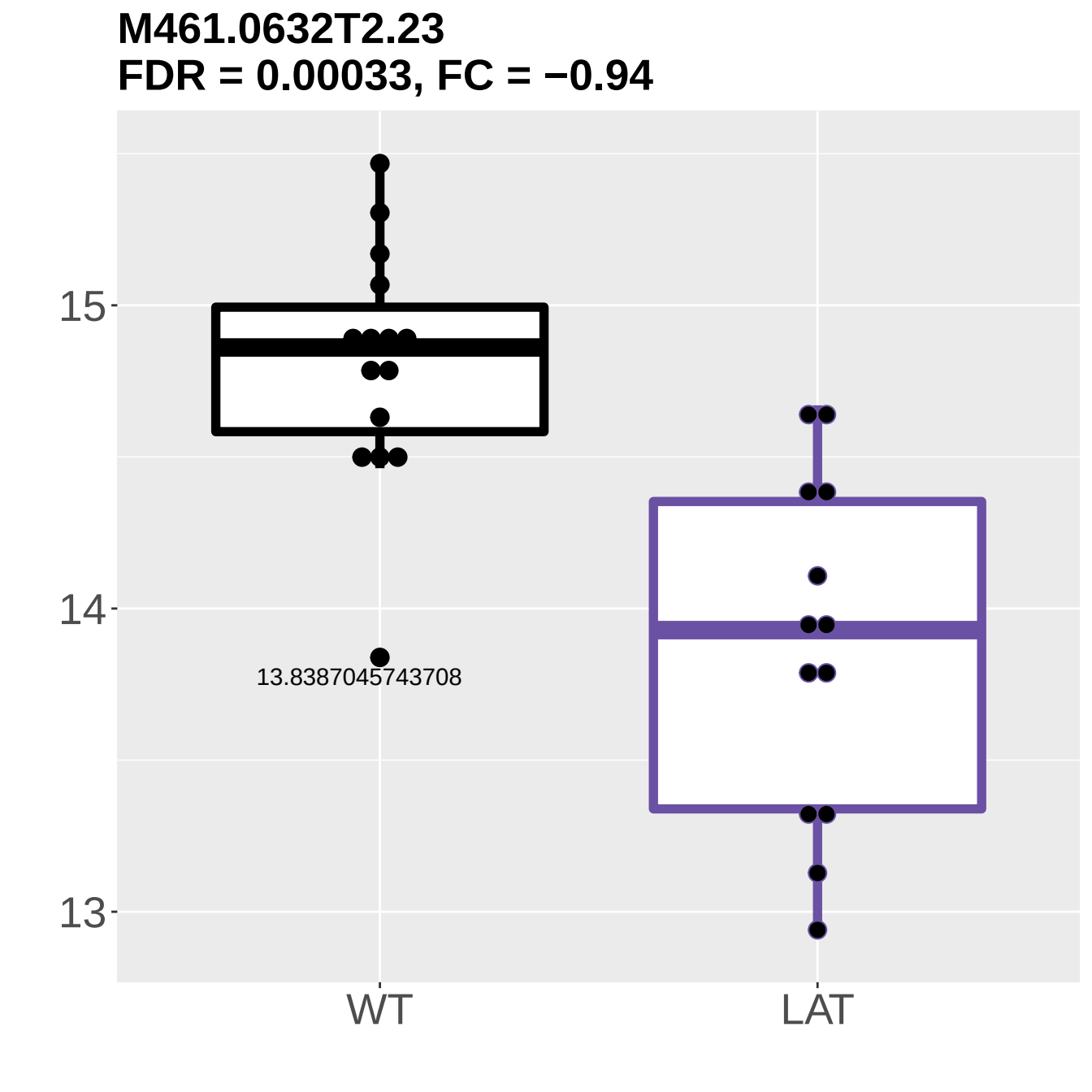
12
10
8
WT
LAT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14
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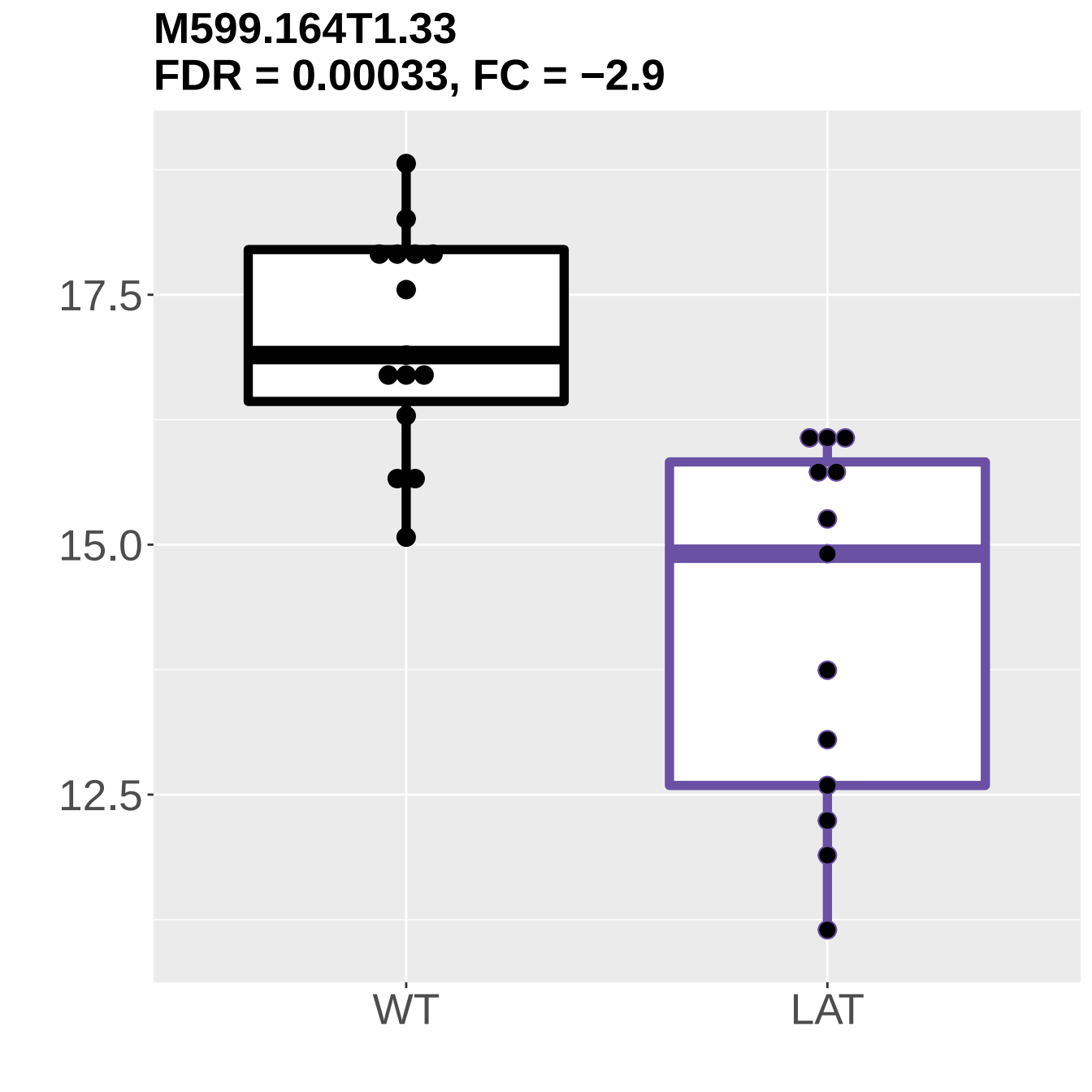
WT
LAT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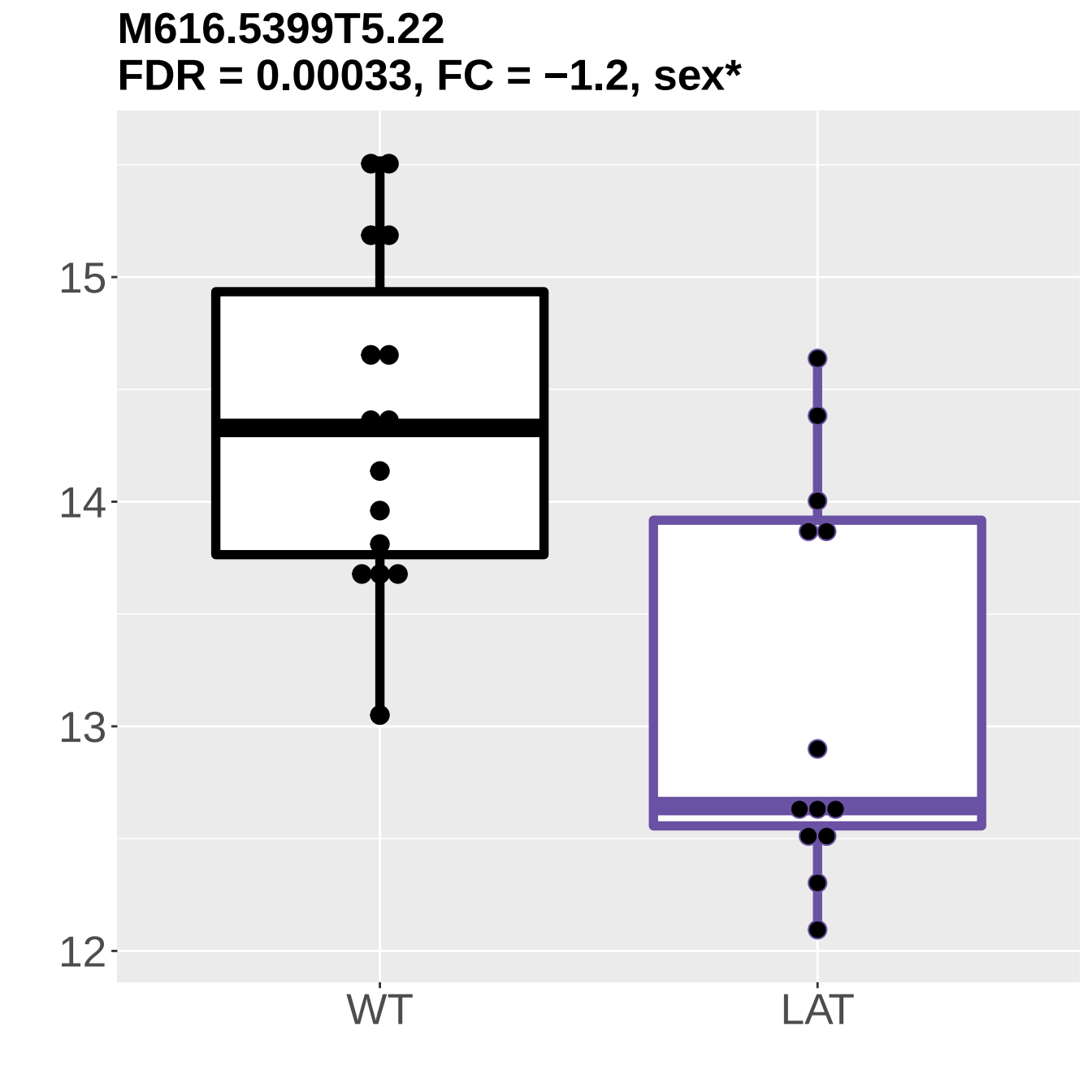
12.5
WT
LAT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FDR = 0.00033, FC = −1.2, sex*
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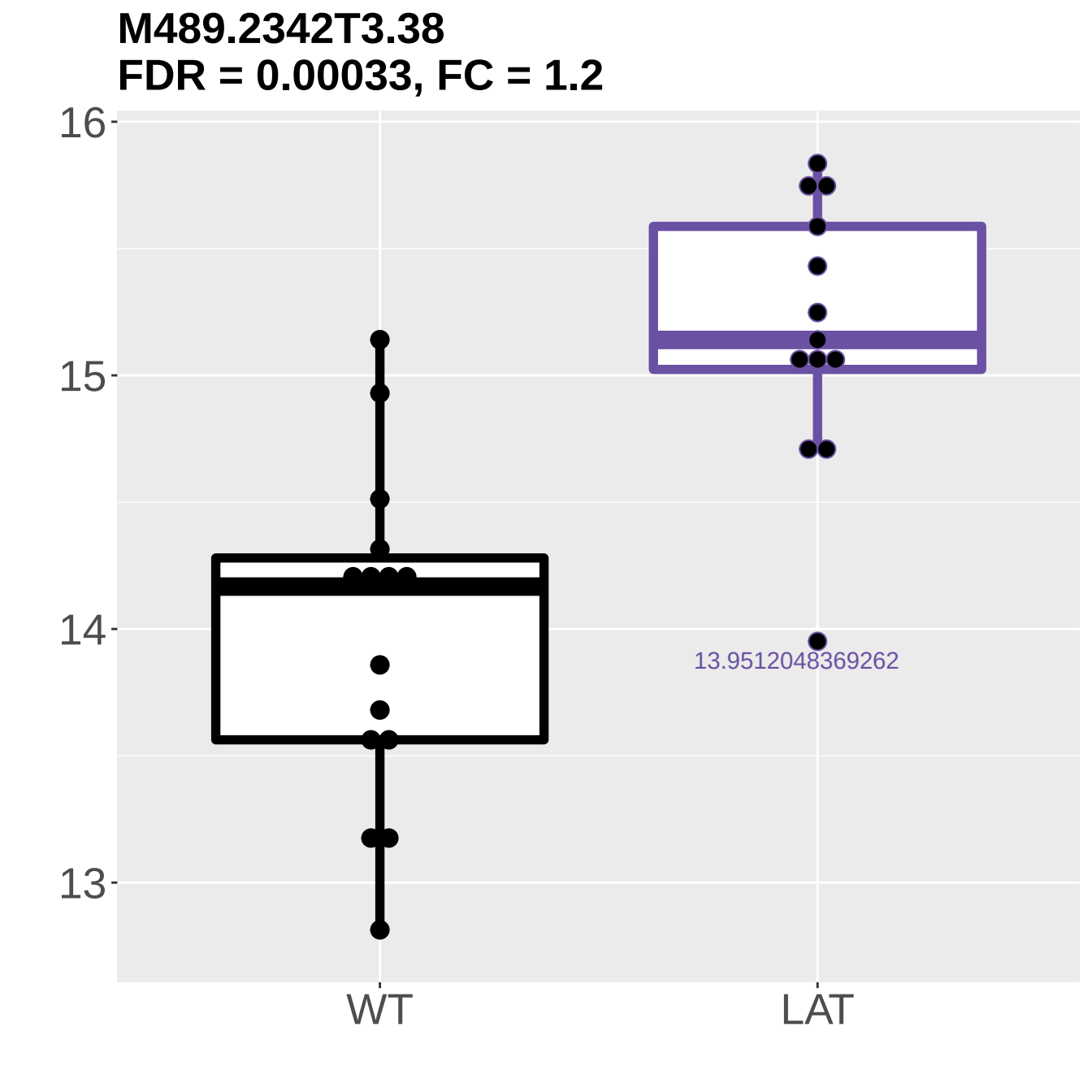
14
13
12
WT
LAT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15
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13
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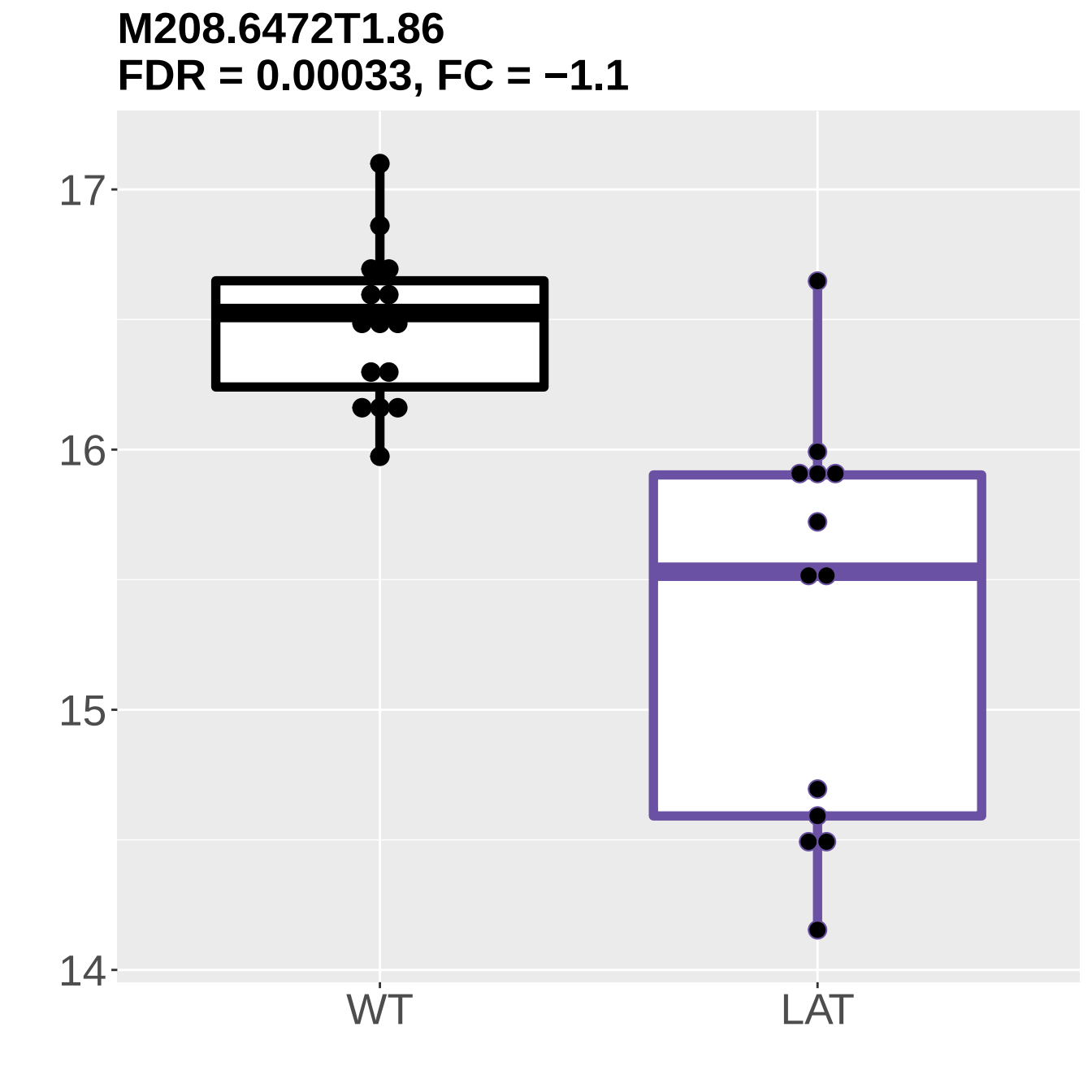
WT
LAT


M208.6472T1.86
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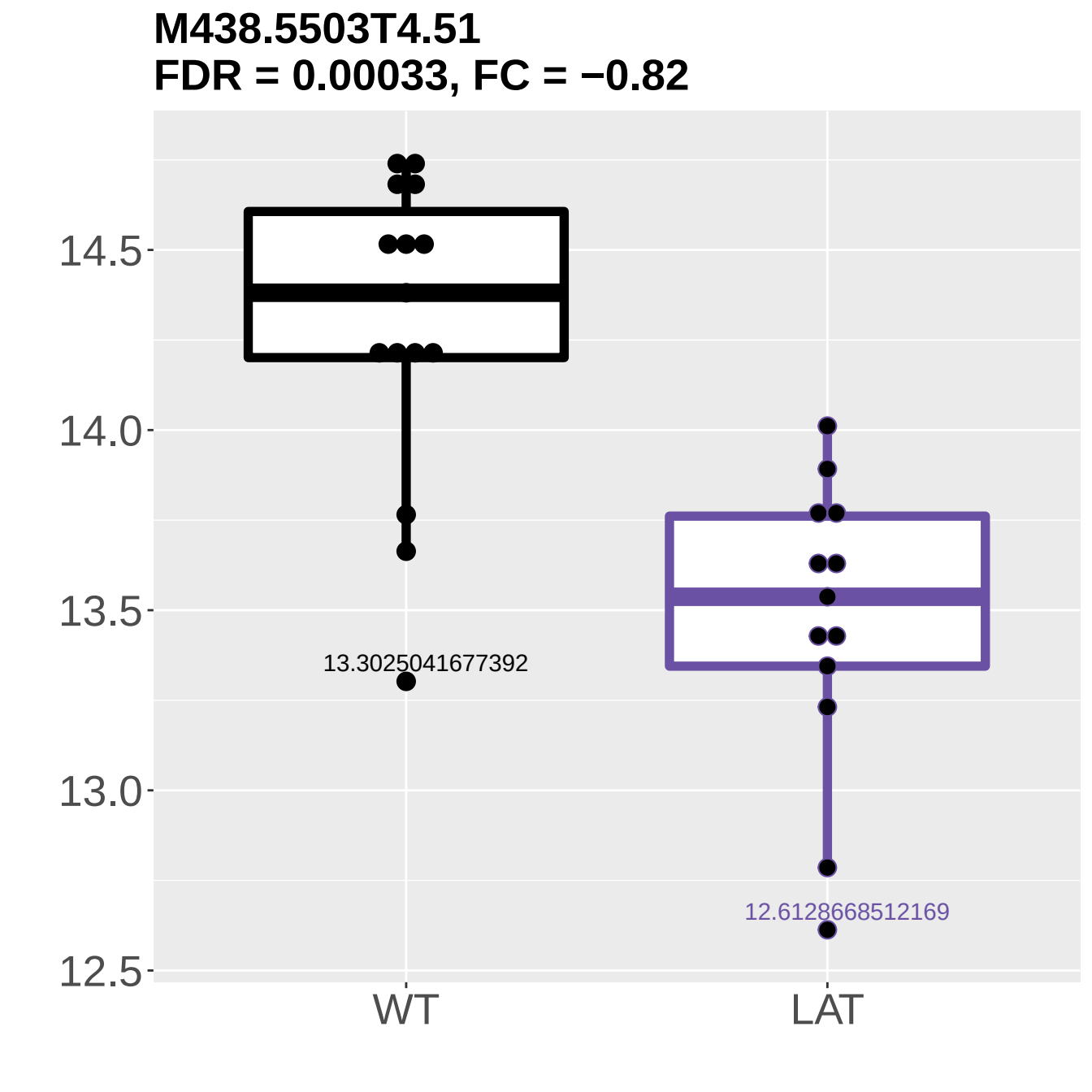
16
15
14
WT
LAT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FDR = 0.00033, FC = −0.82
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13.5
13.0
12.5
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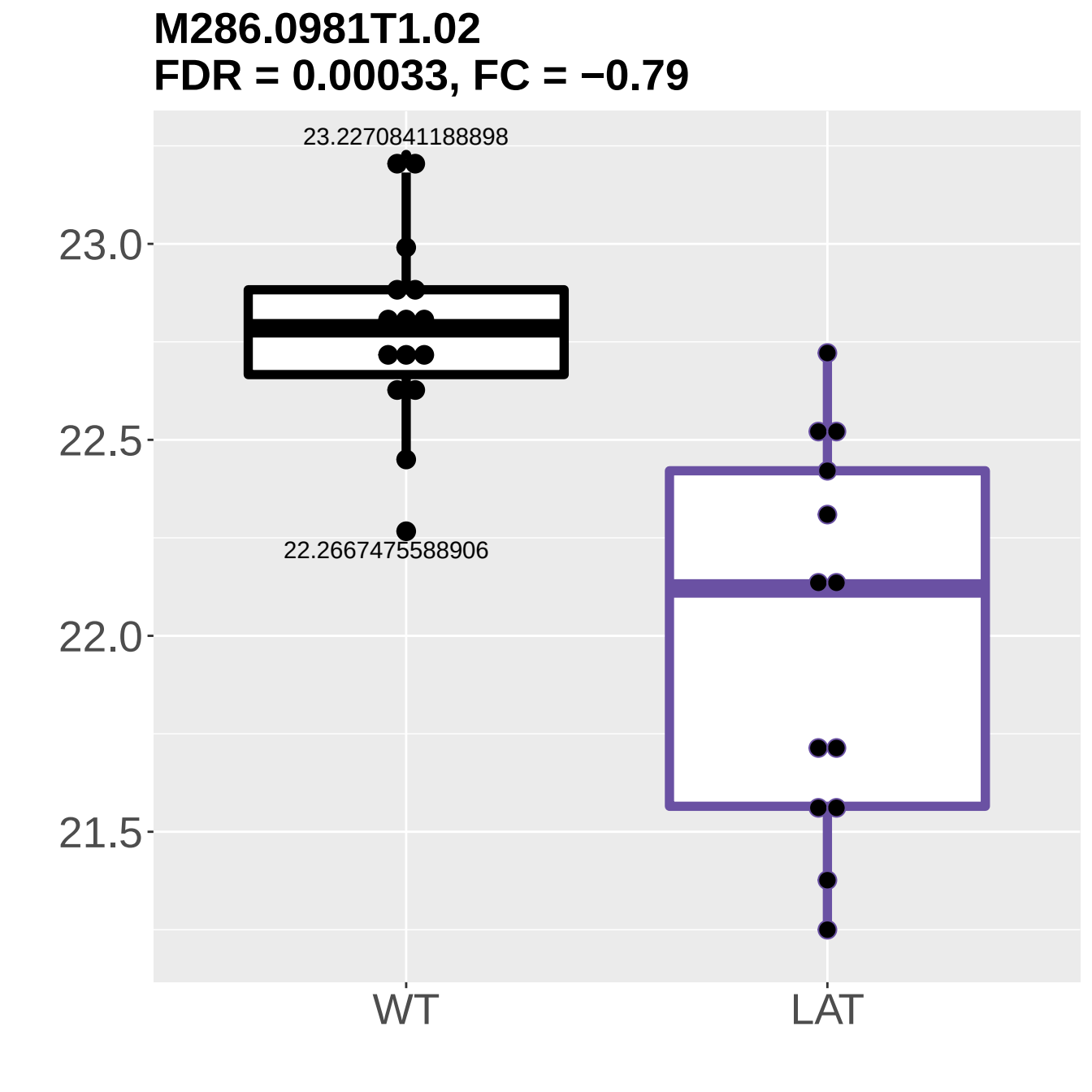
WT
LAT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FDR = 0.00033, FC = −0.79
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22.0
21.5
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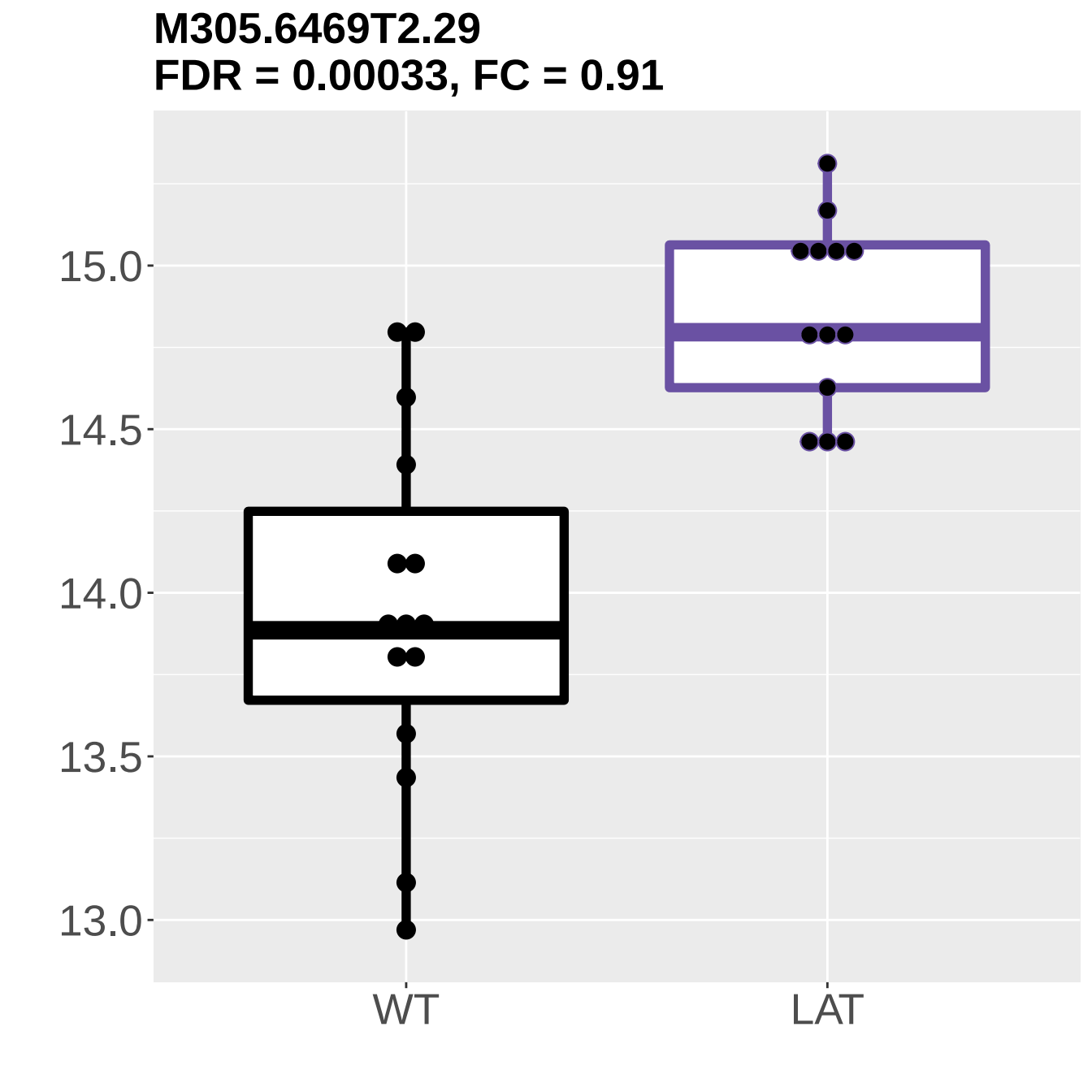
LAT


M305.6469T2.29
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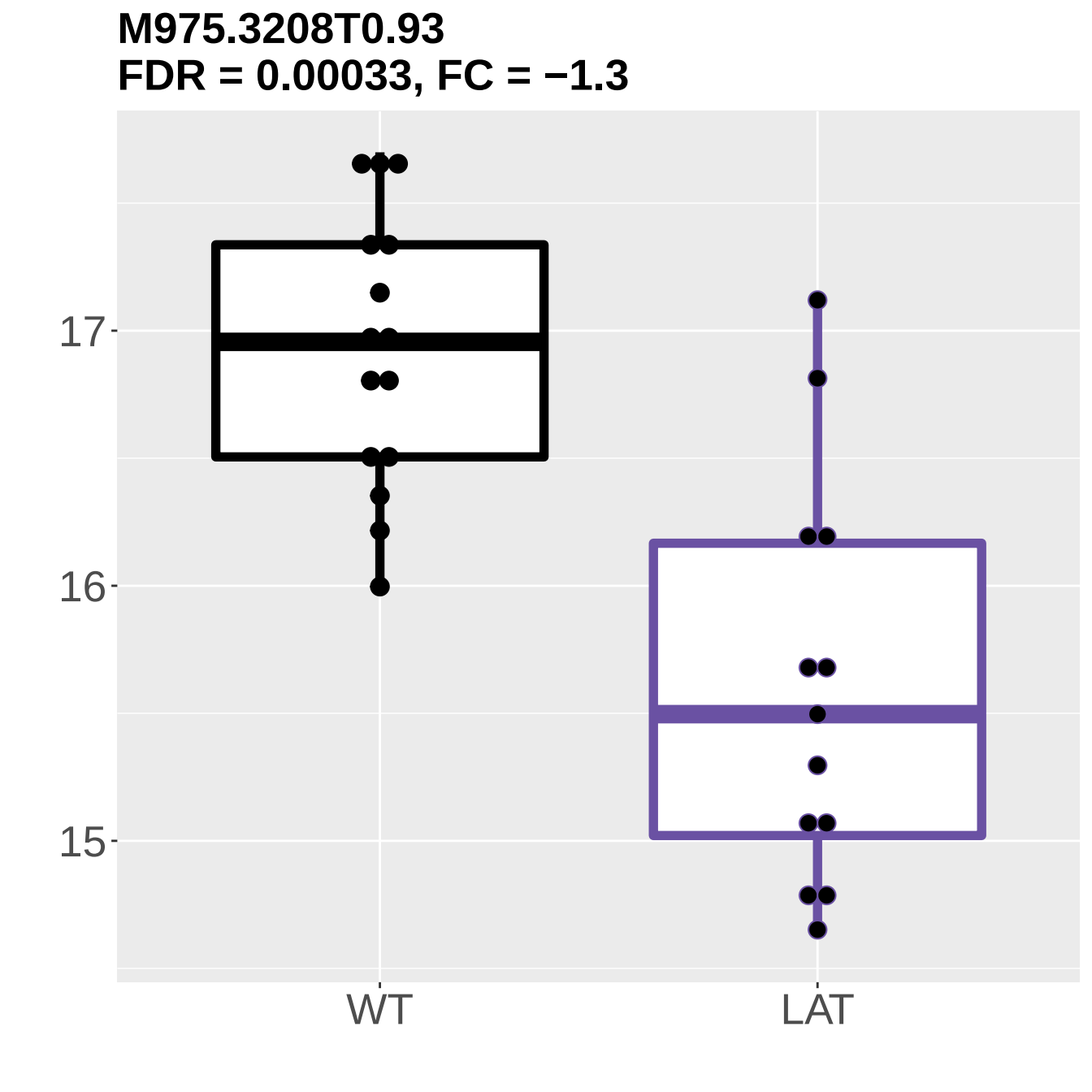
13.5
13.0
WT
LAT


M975.3208T0.93
FDR = 0.00033, FC = −1.3
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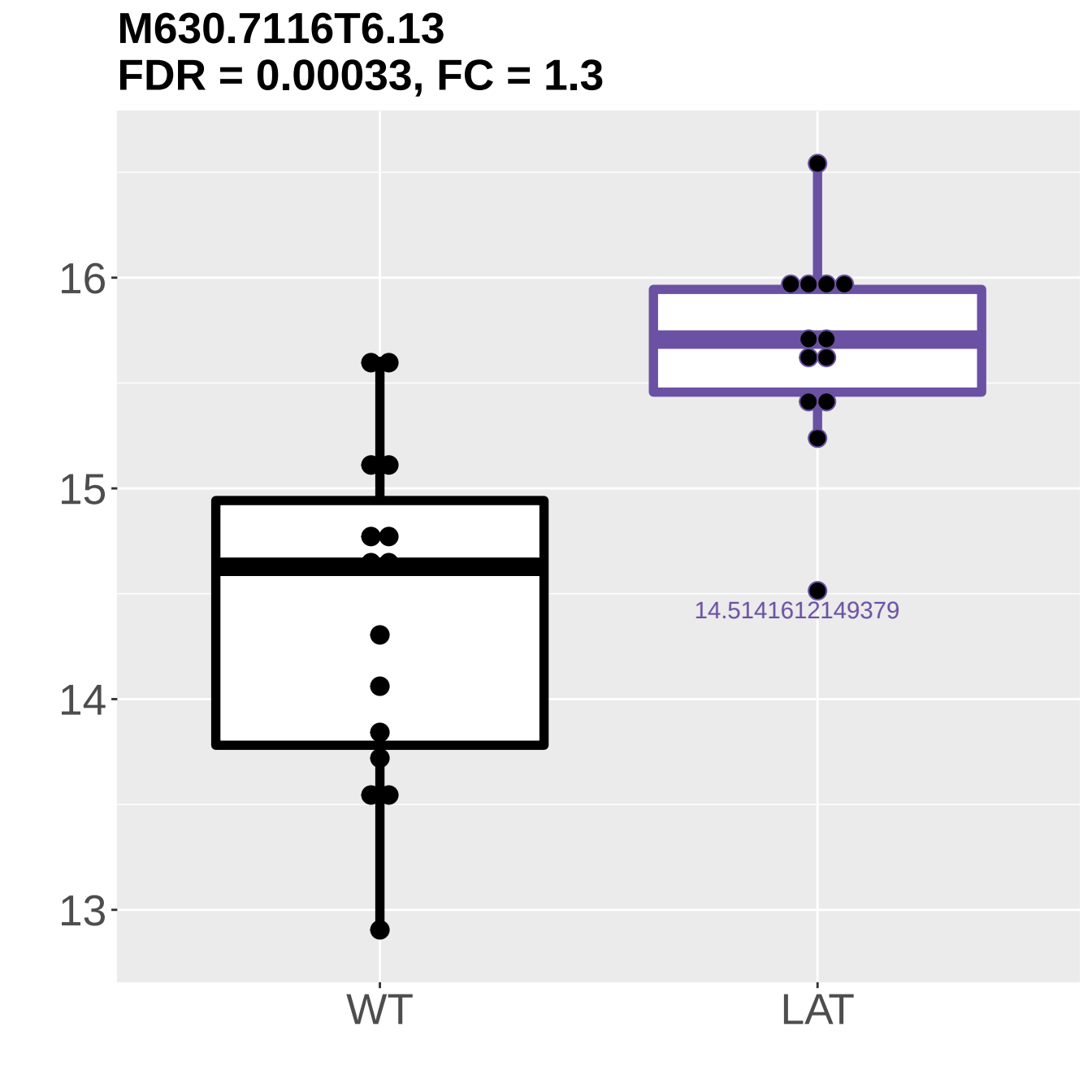
16
15
WT
LAT


M630.7116T6.13
FDR = 0.00033, FC = 1.3
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15
14
13
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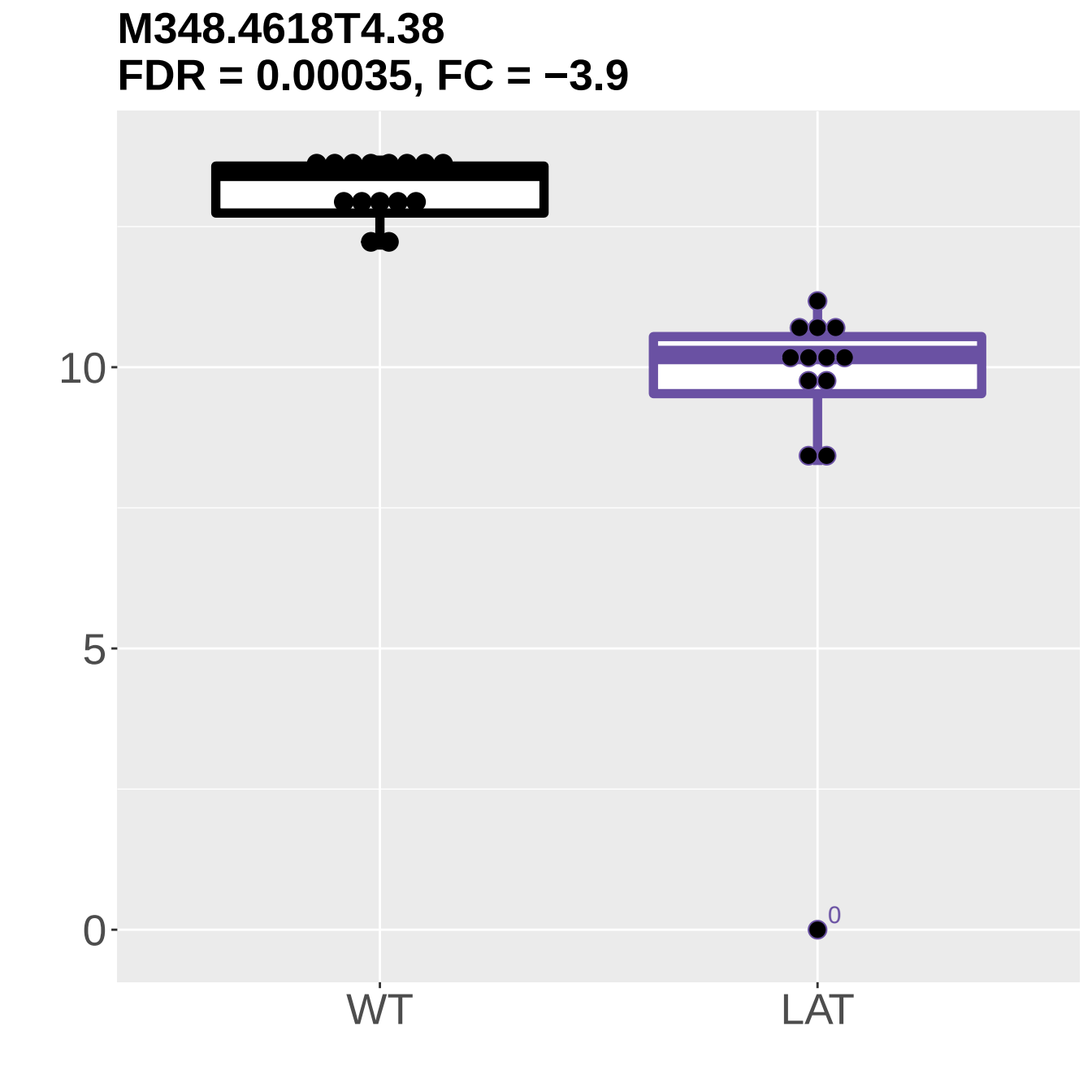
WT
LAT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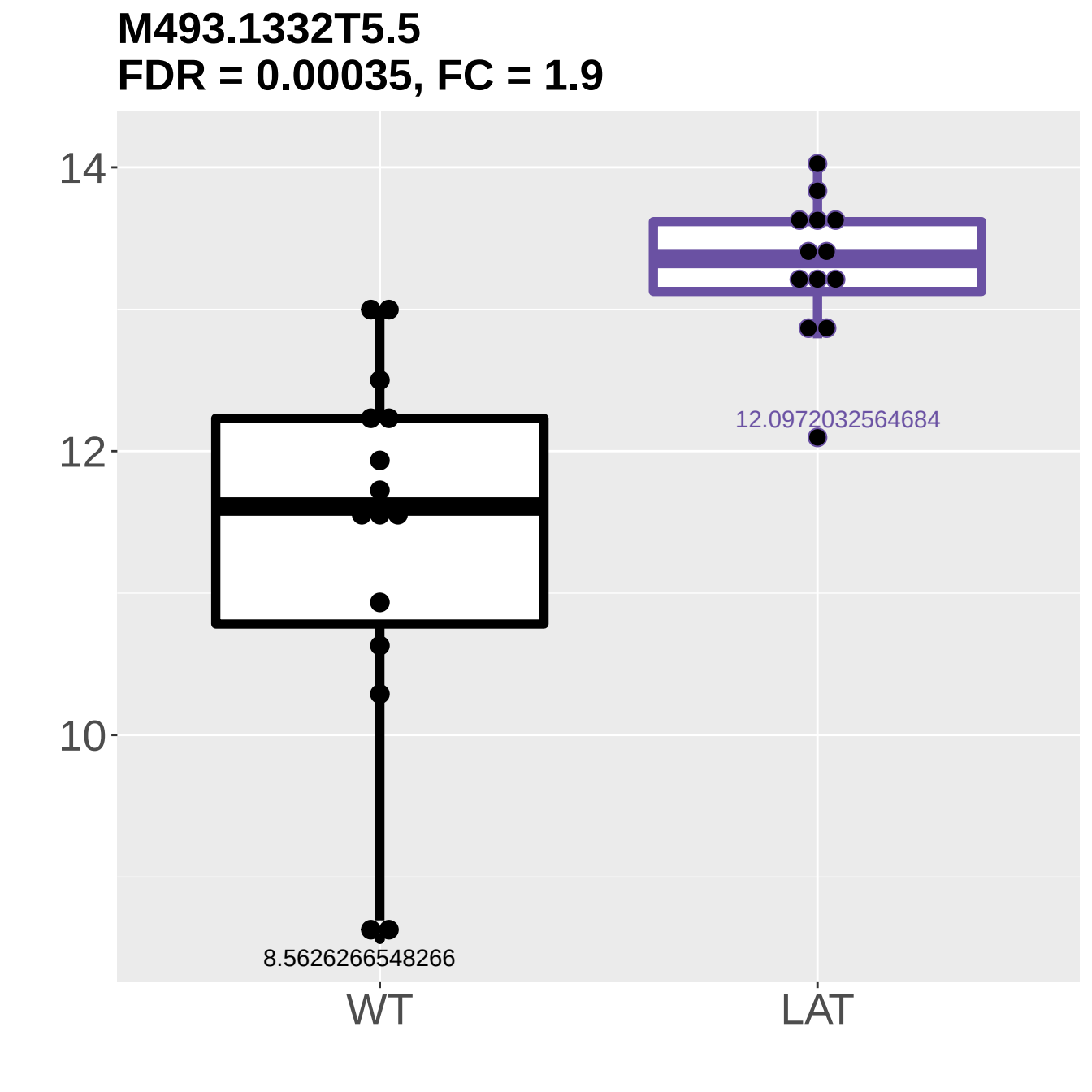
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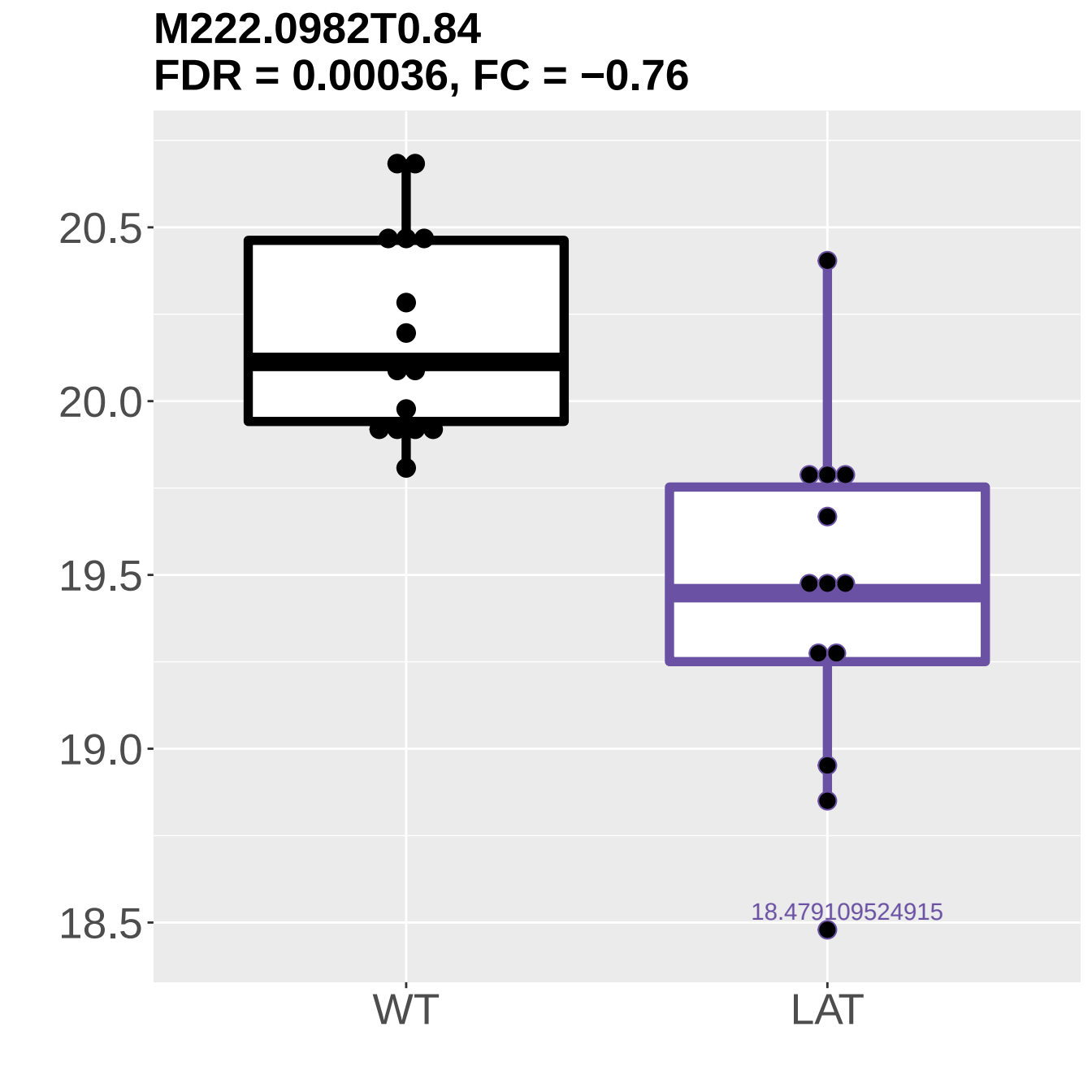
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WT
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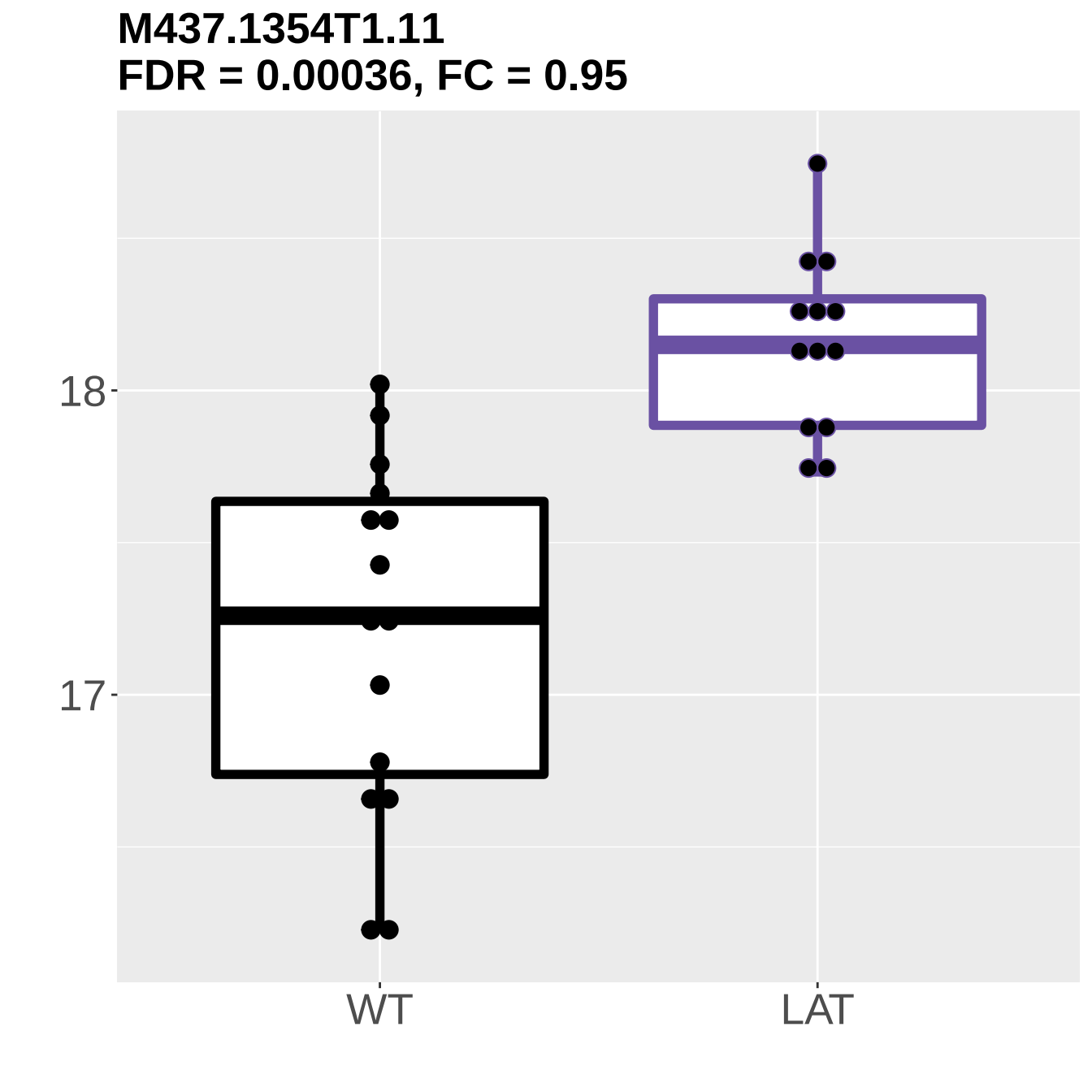
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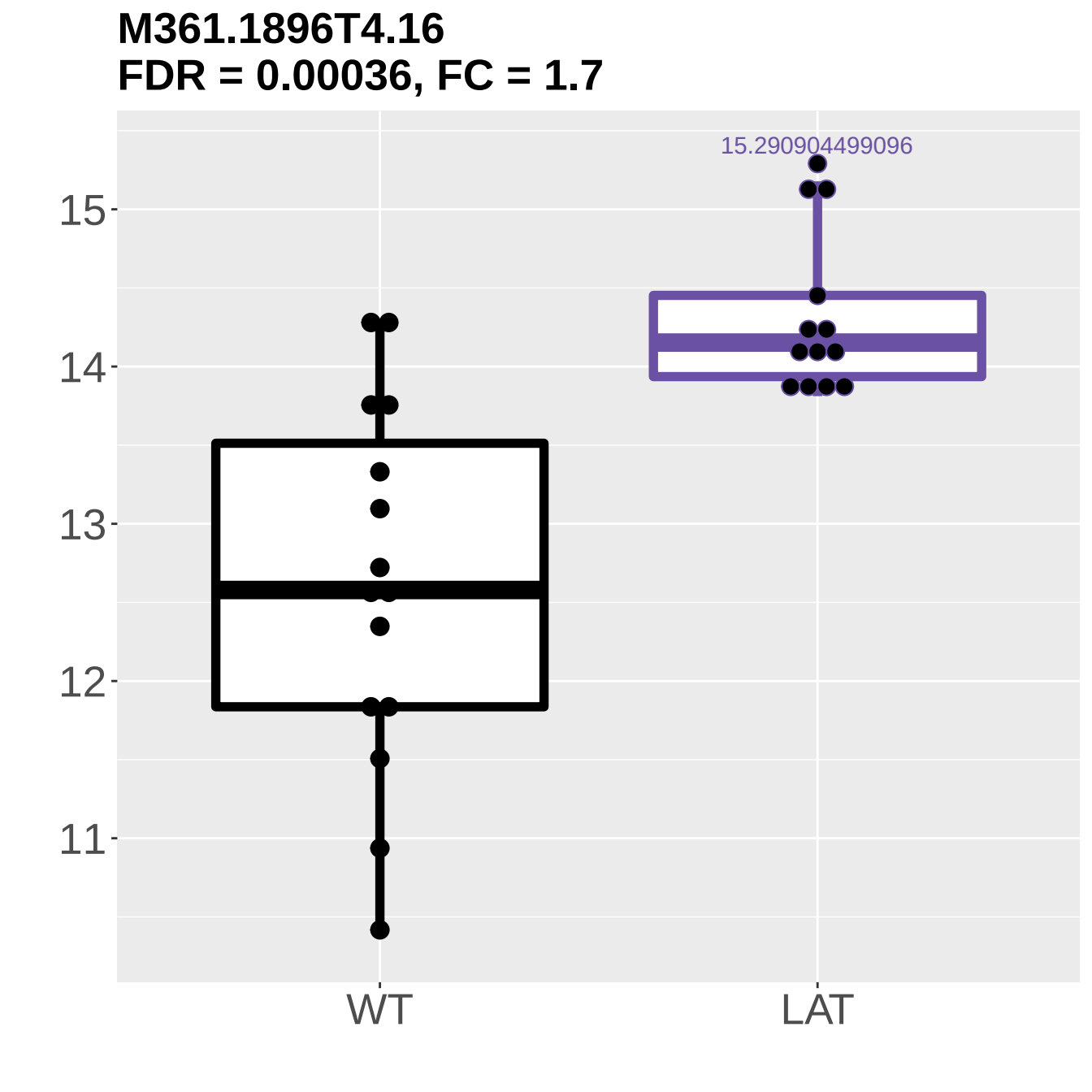
17
WT
LAT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12
11
WT
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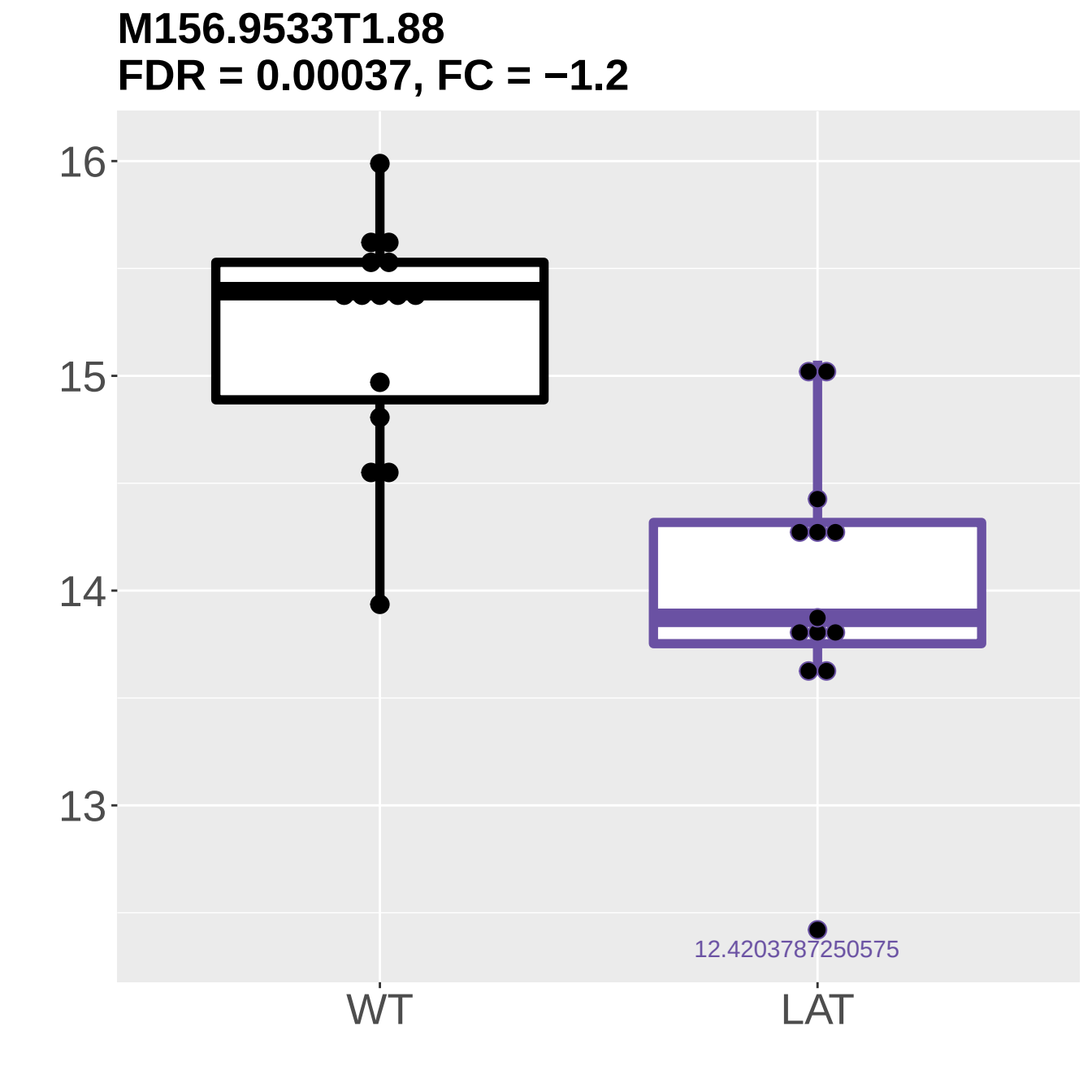
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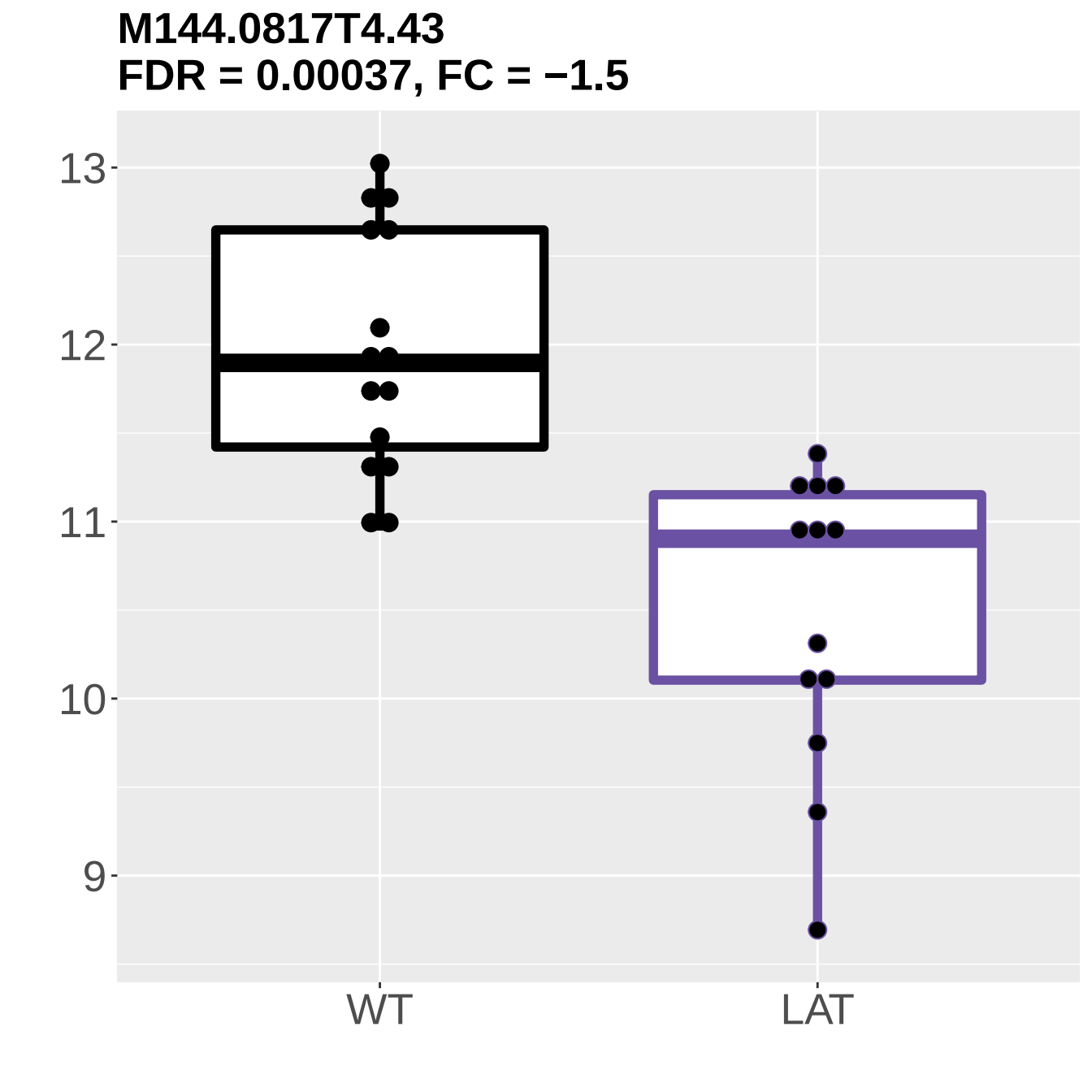
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9
WT
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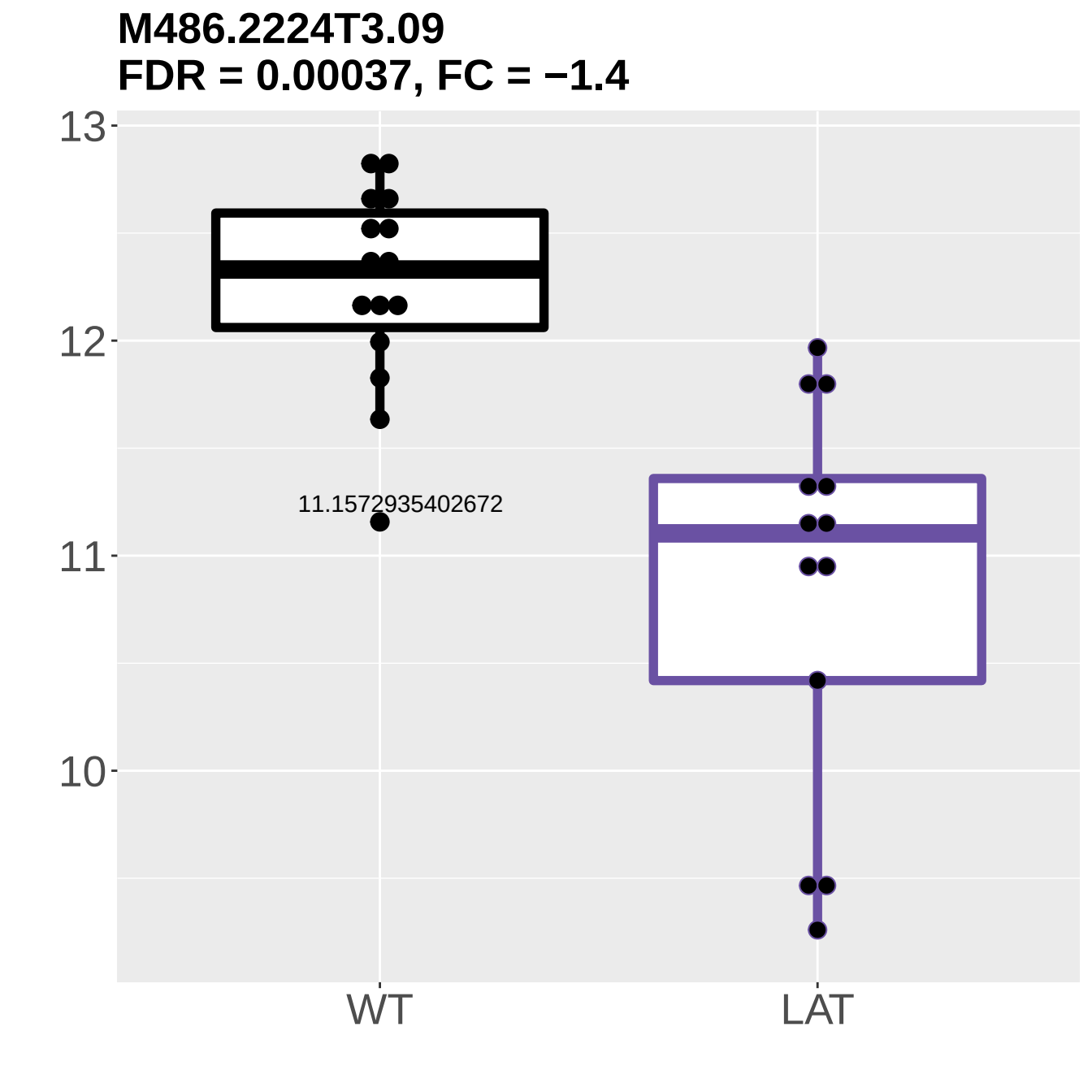
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FDR = 0.00037, FC = −1.4
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12
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WT
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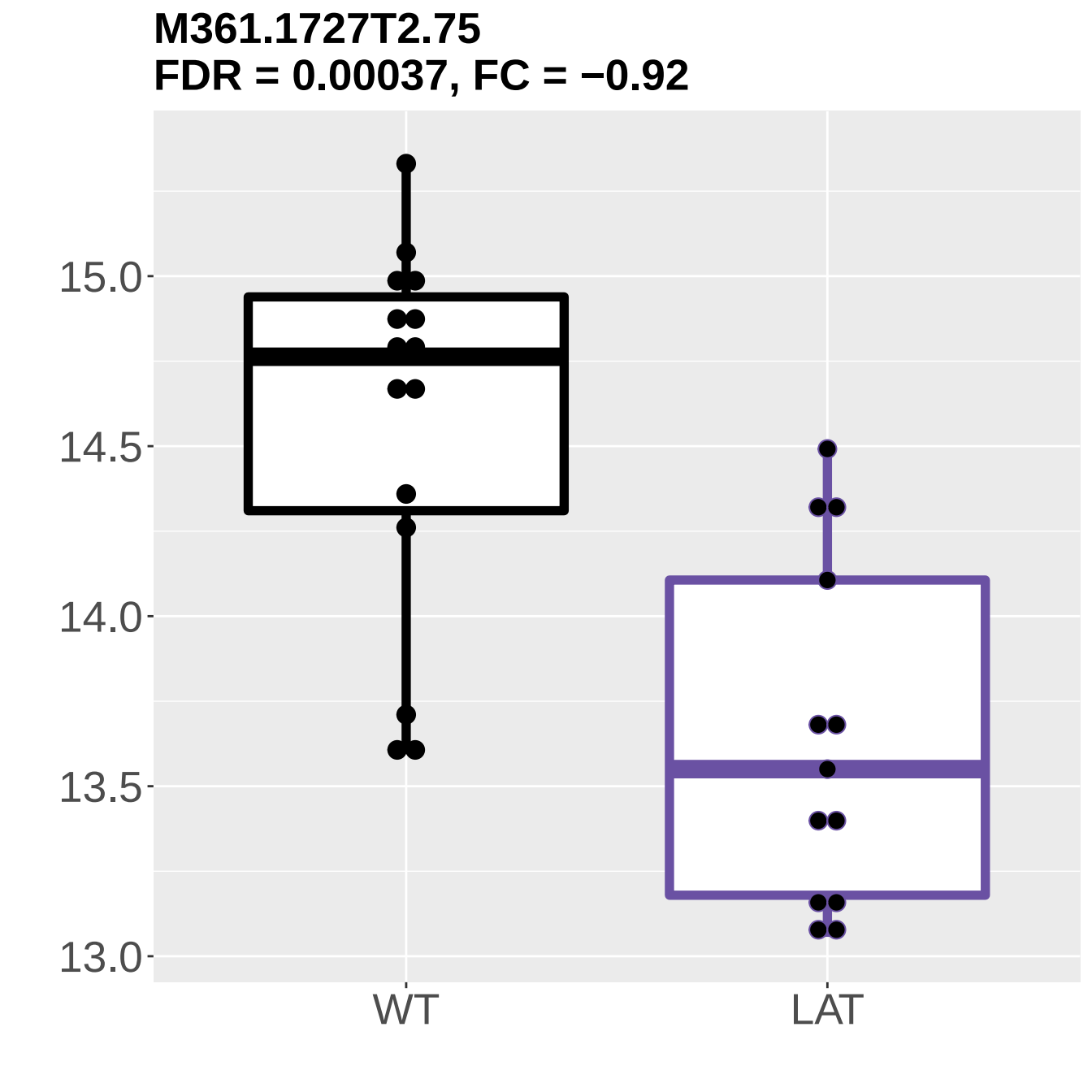
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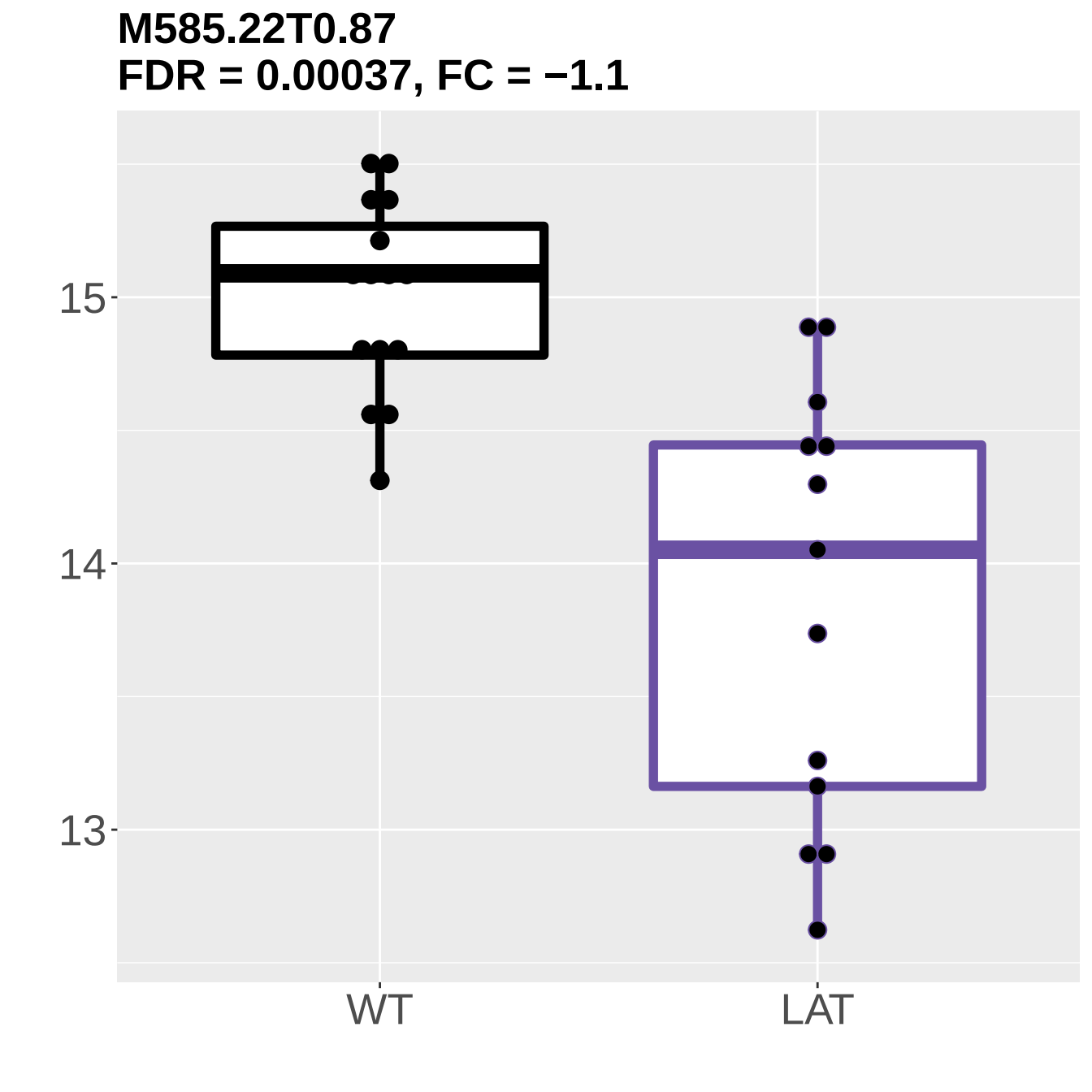
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14
13
WT
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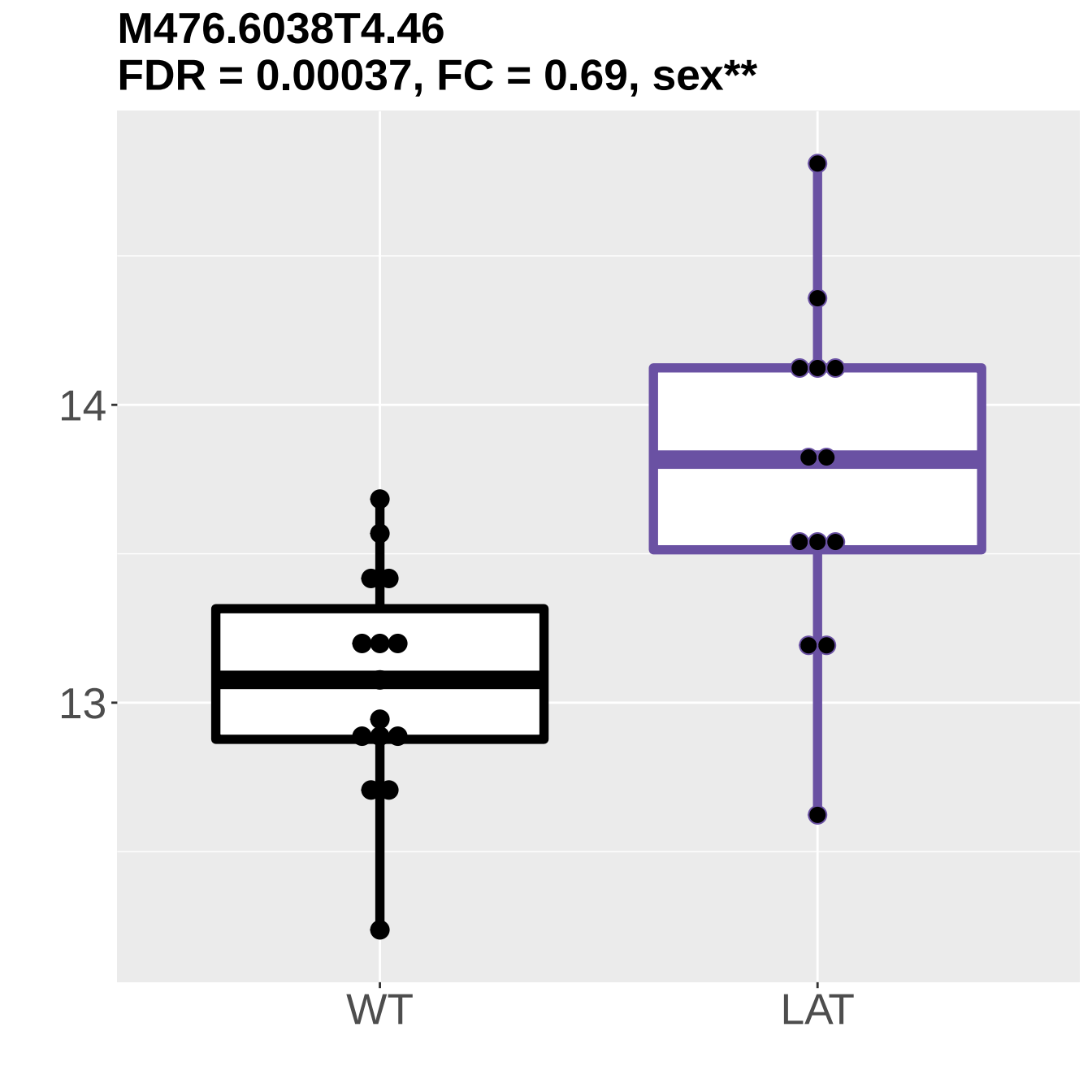
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13
WT
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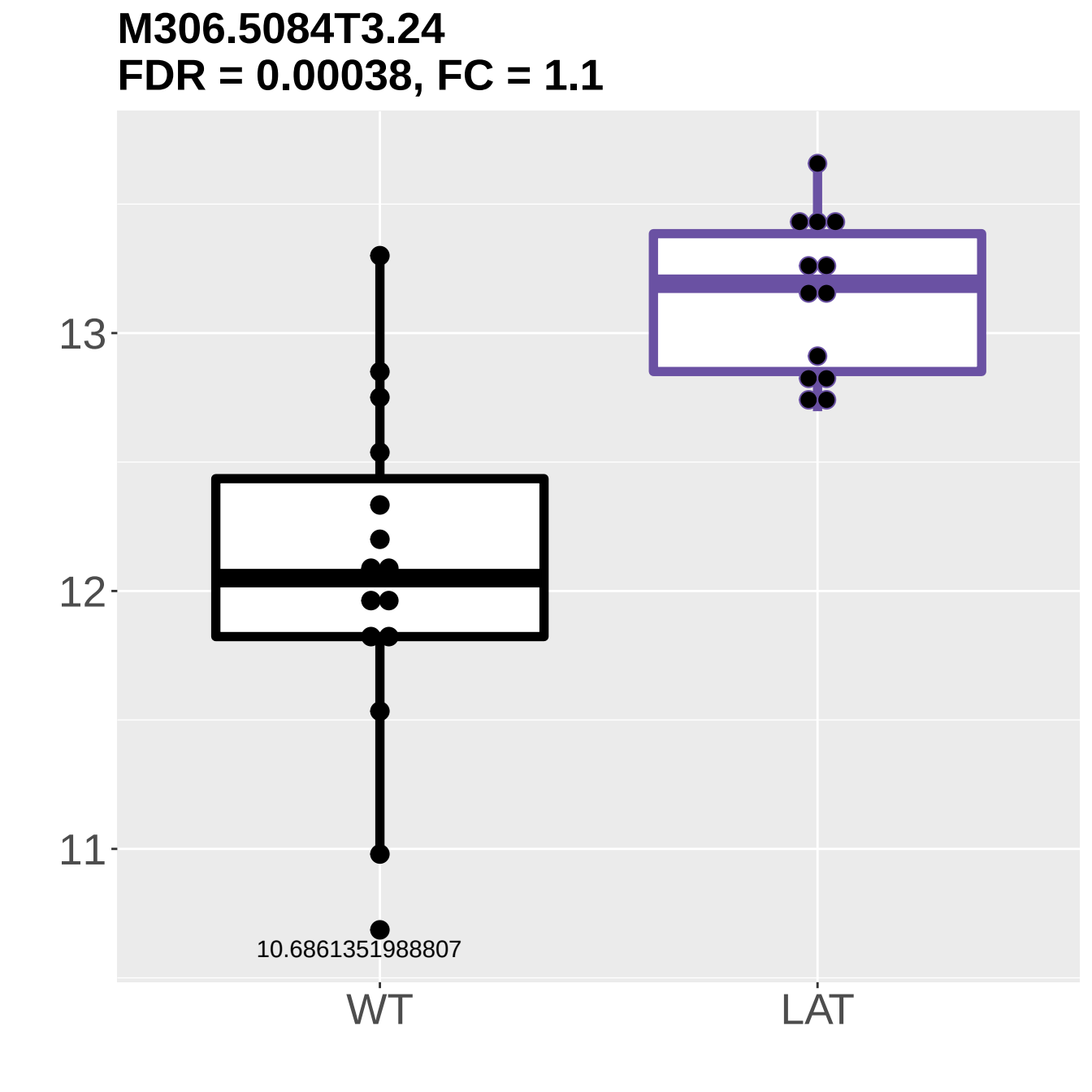
M306.5084T3.24
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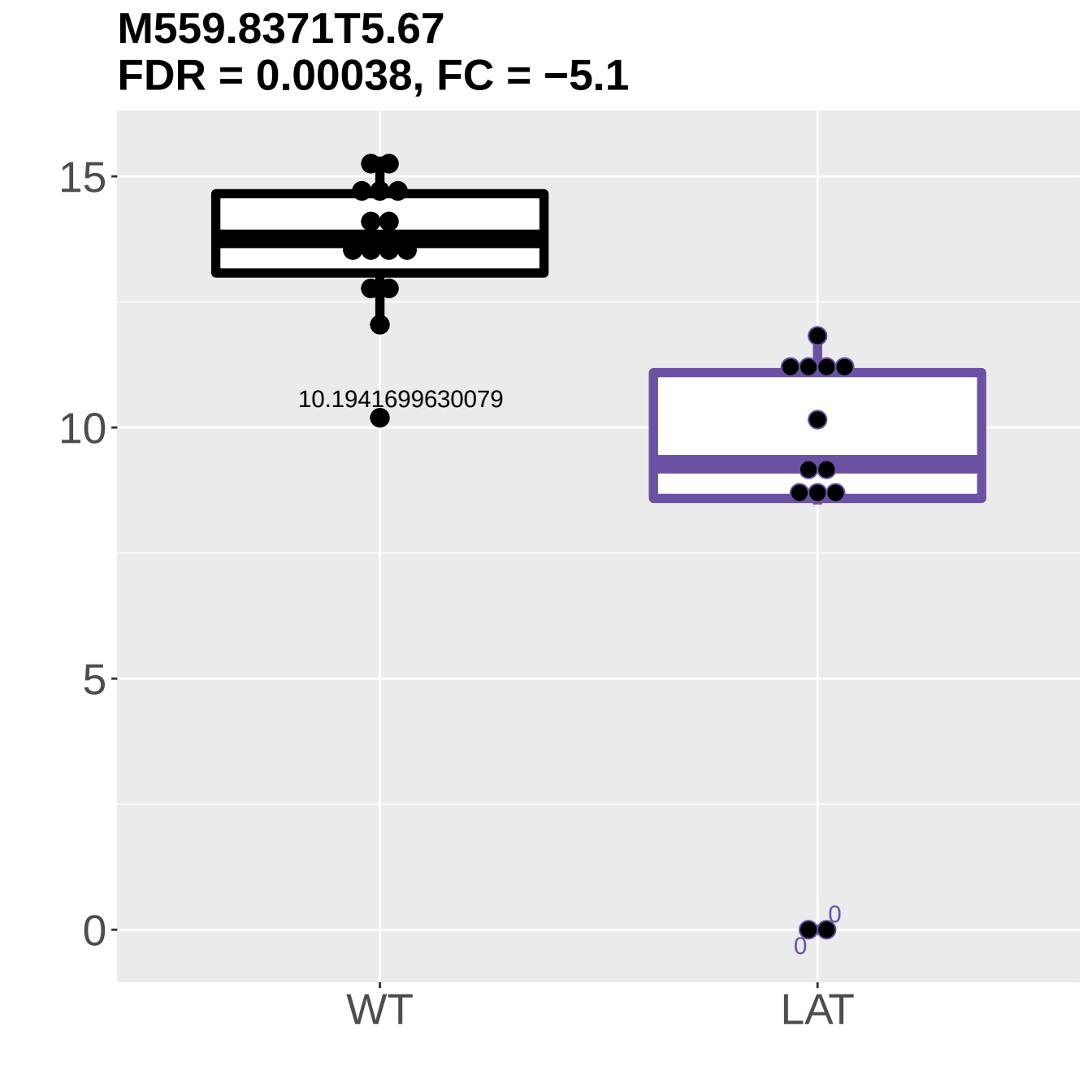
WT
LAT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0
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WT
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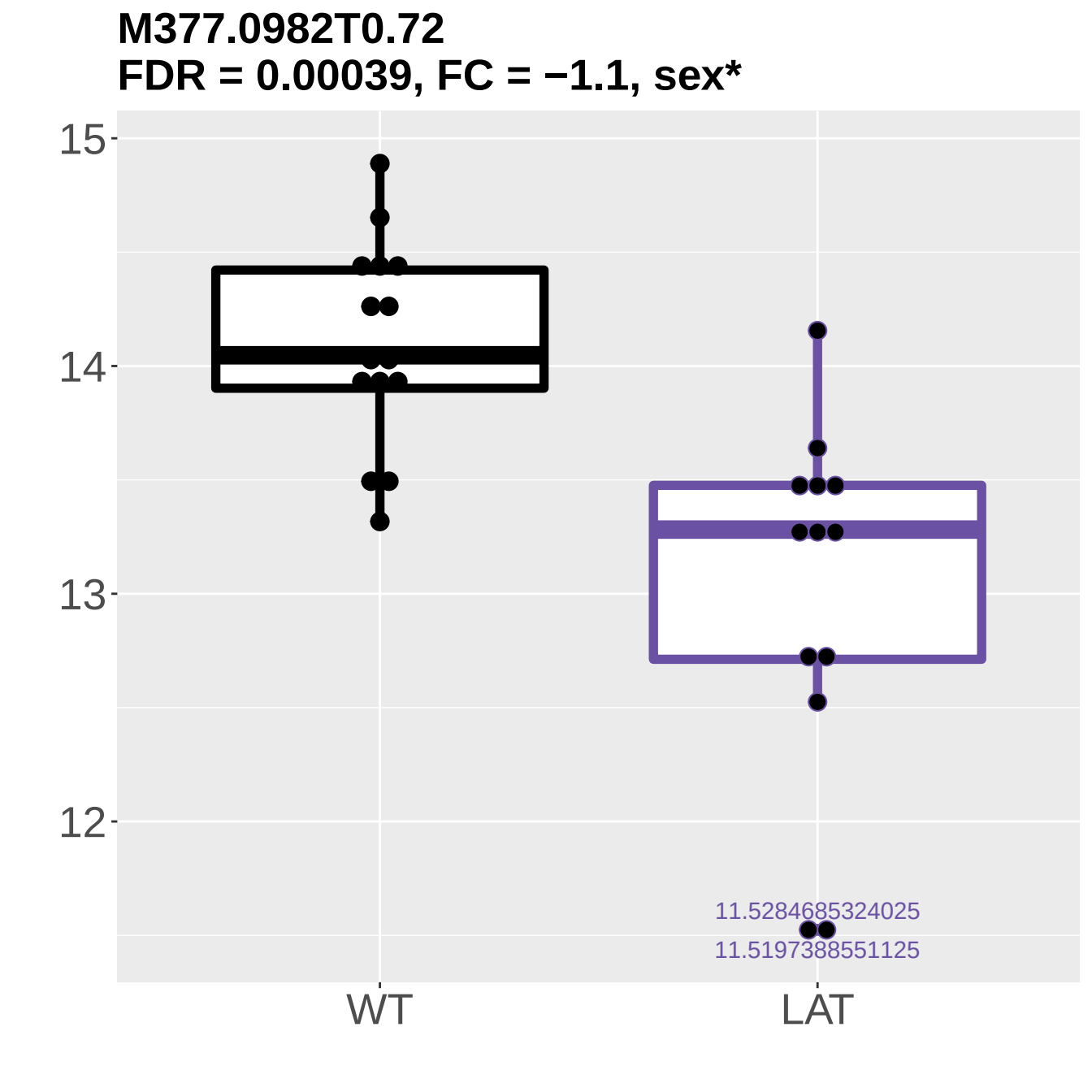
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13
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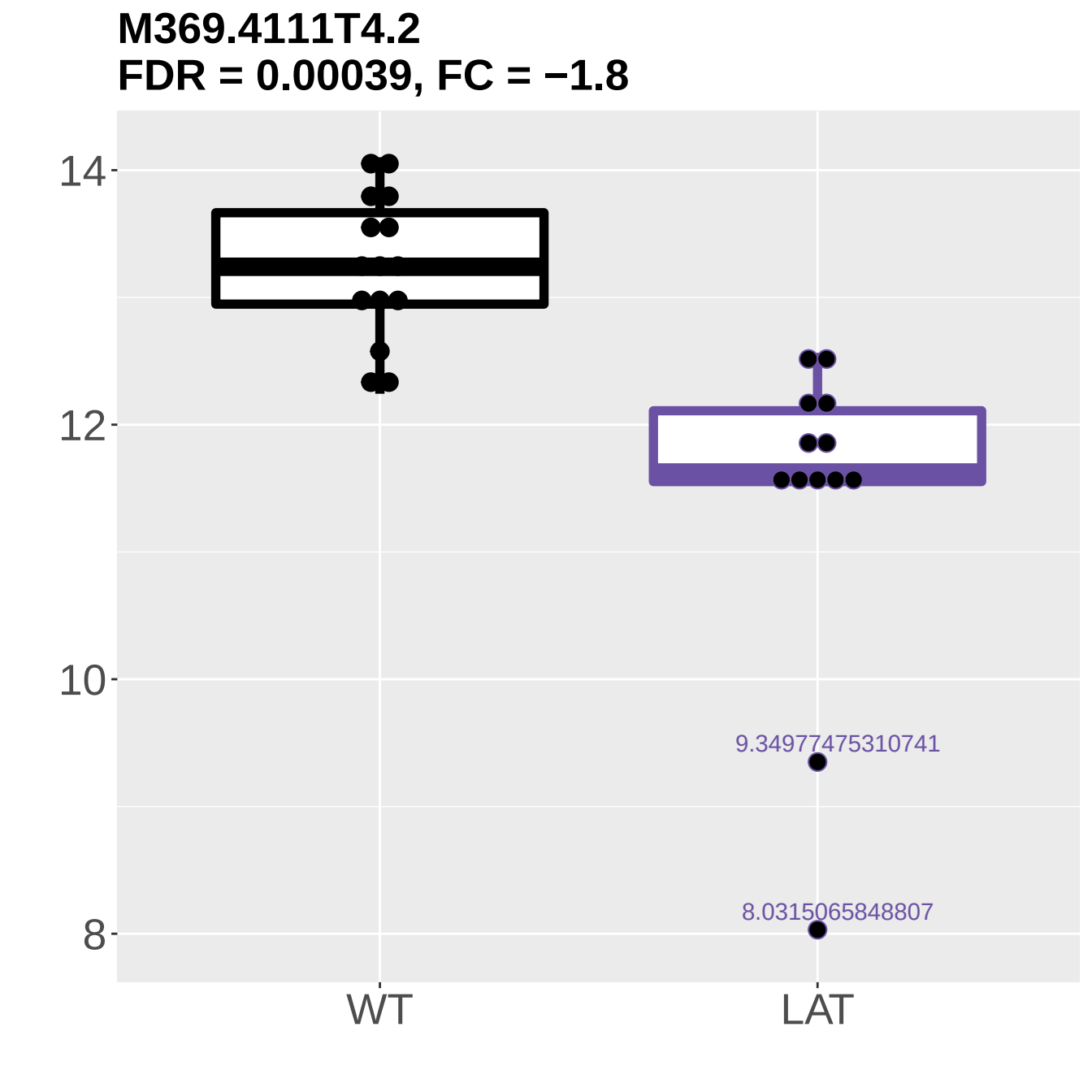
WT
LAT


M369.4111T4.2
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WT
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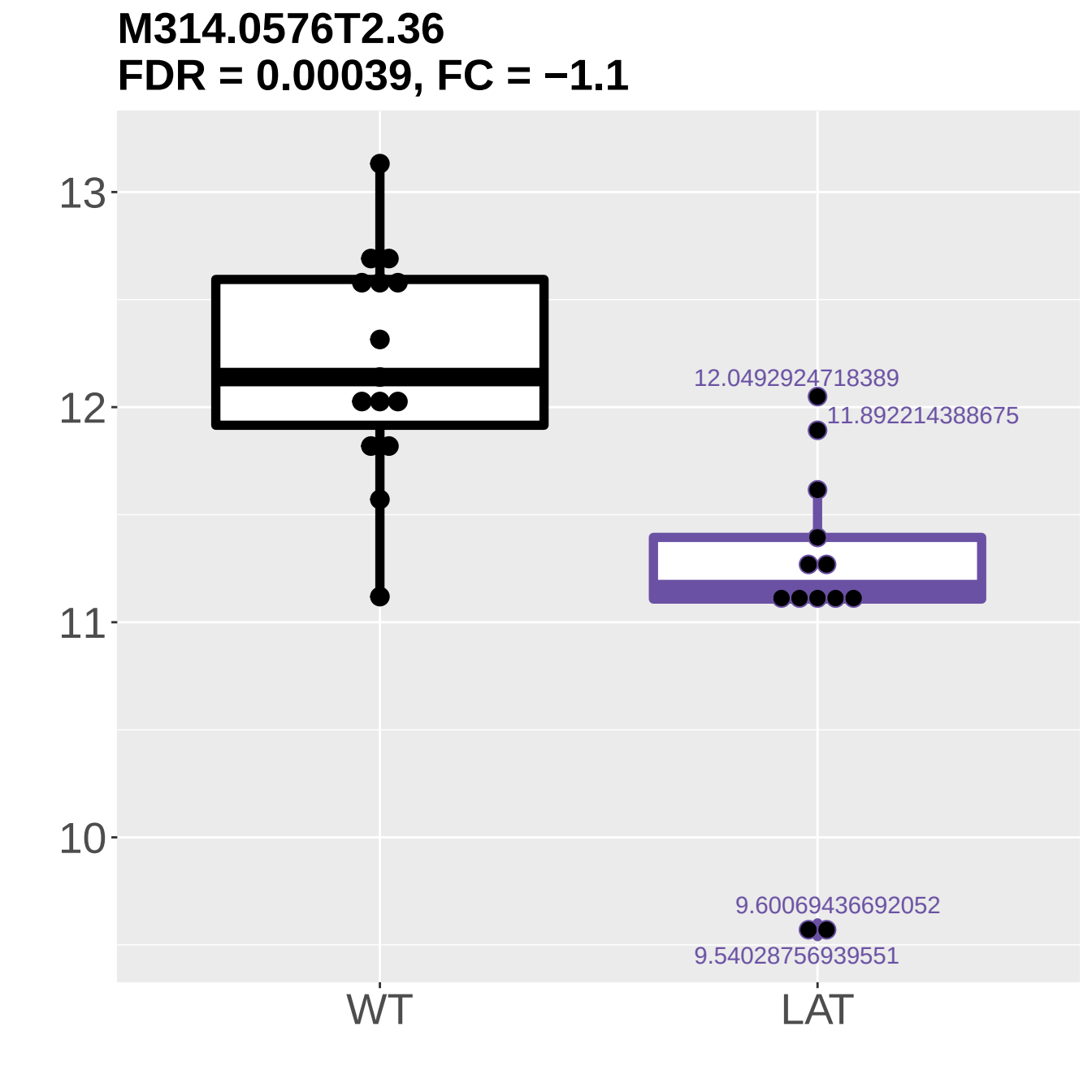
M314.0576T2.36
FDR = 0.00039, FC = −1.1
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12
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10
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WT
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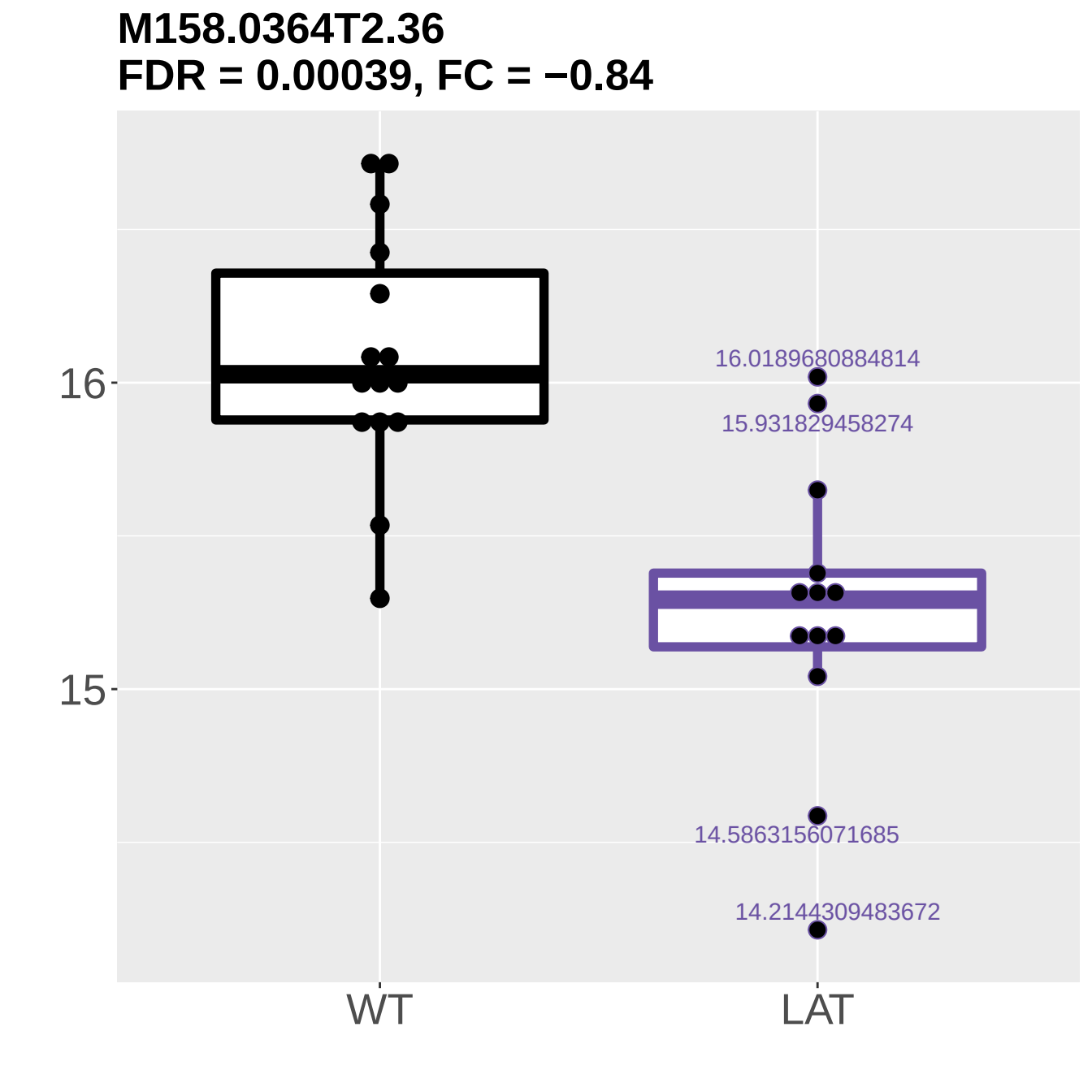
M158.0364T2.36
FDR = 0.00039, FC = −0.84
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WT
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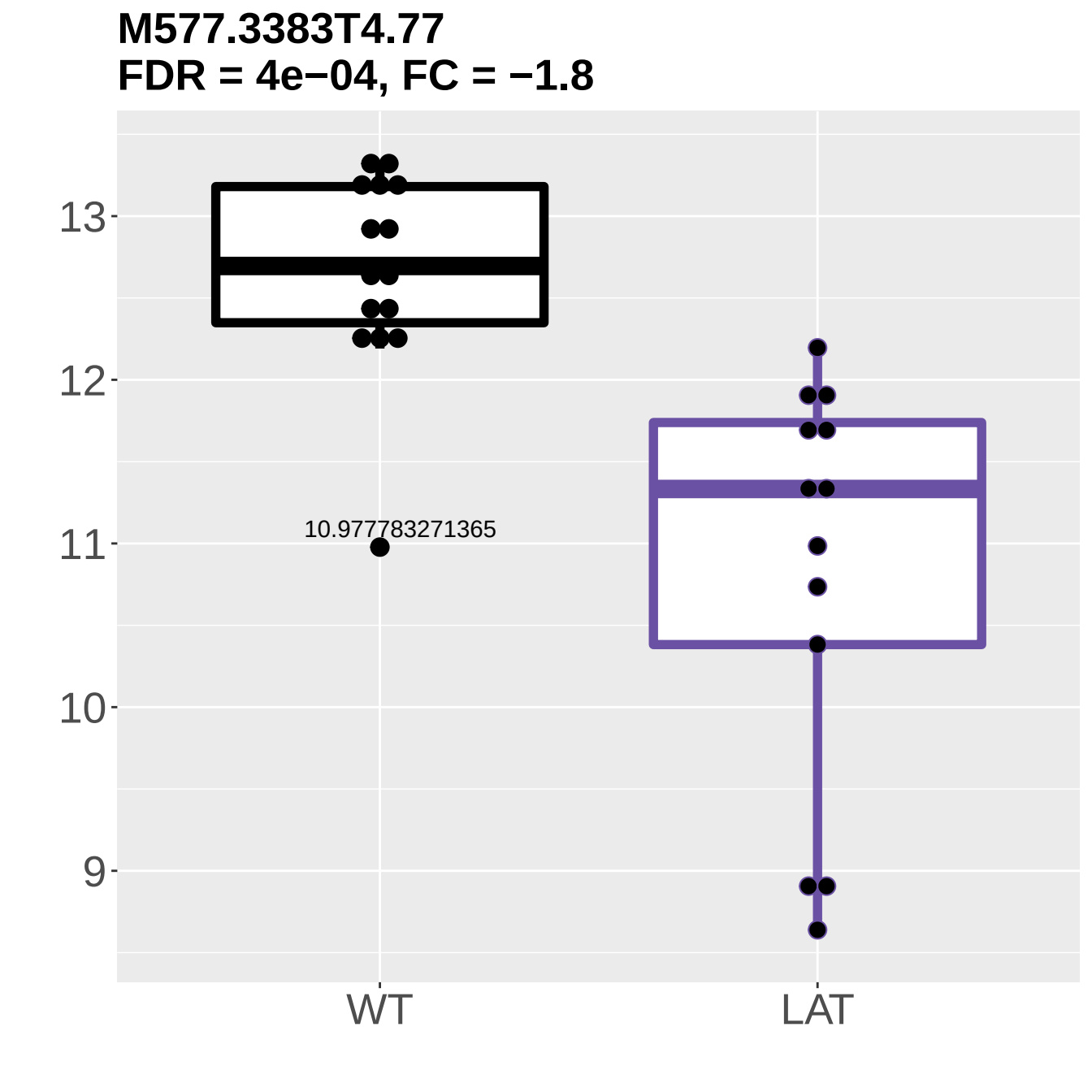
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12
11
10
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WT
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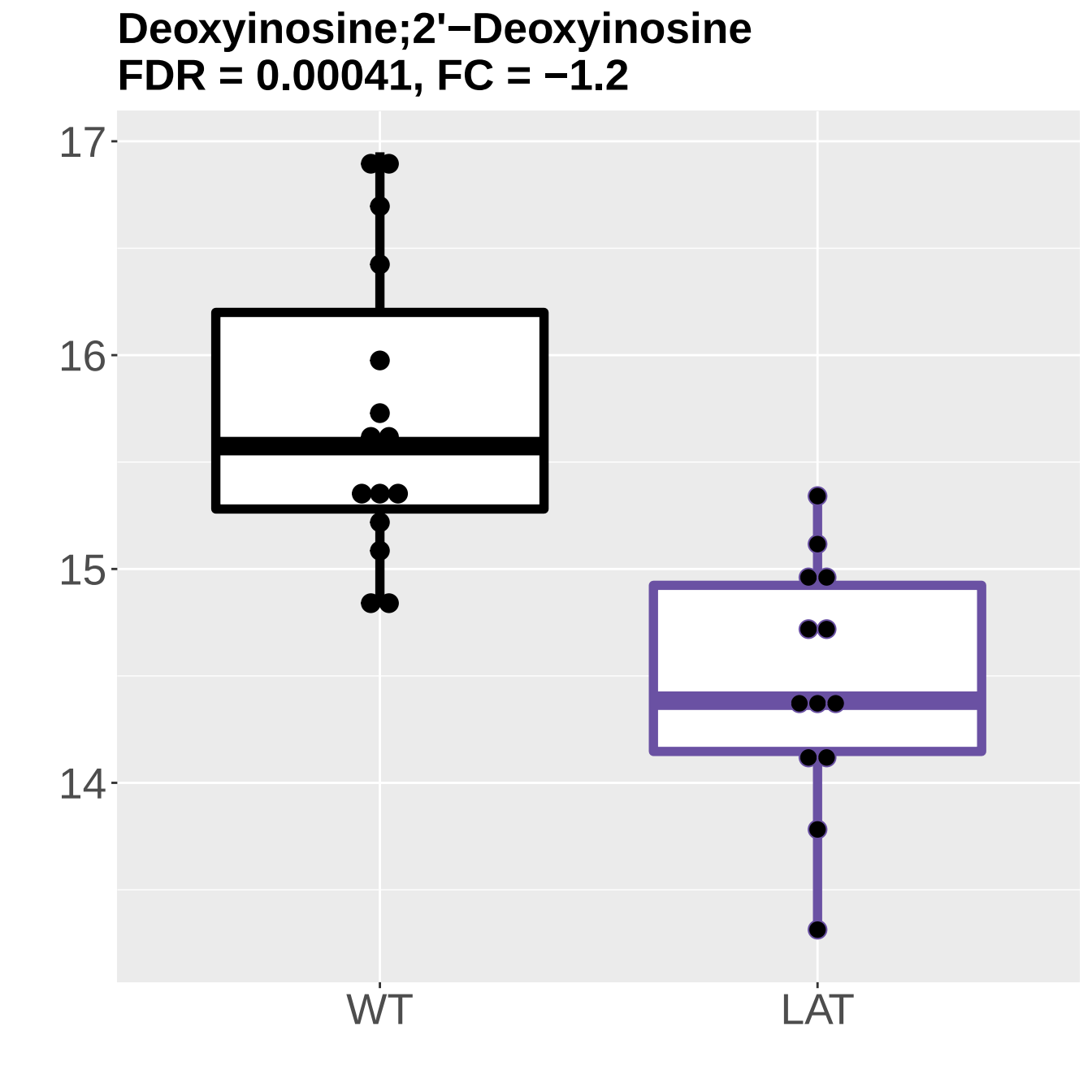
Deoxyinosine;2'−Deoxyinosine
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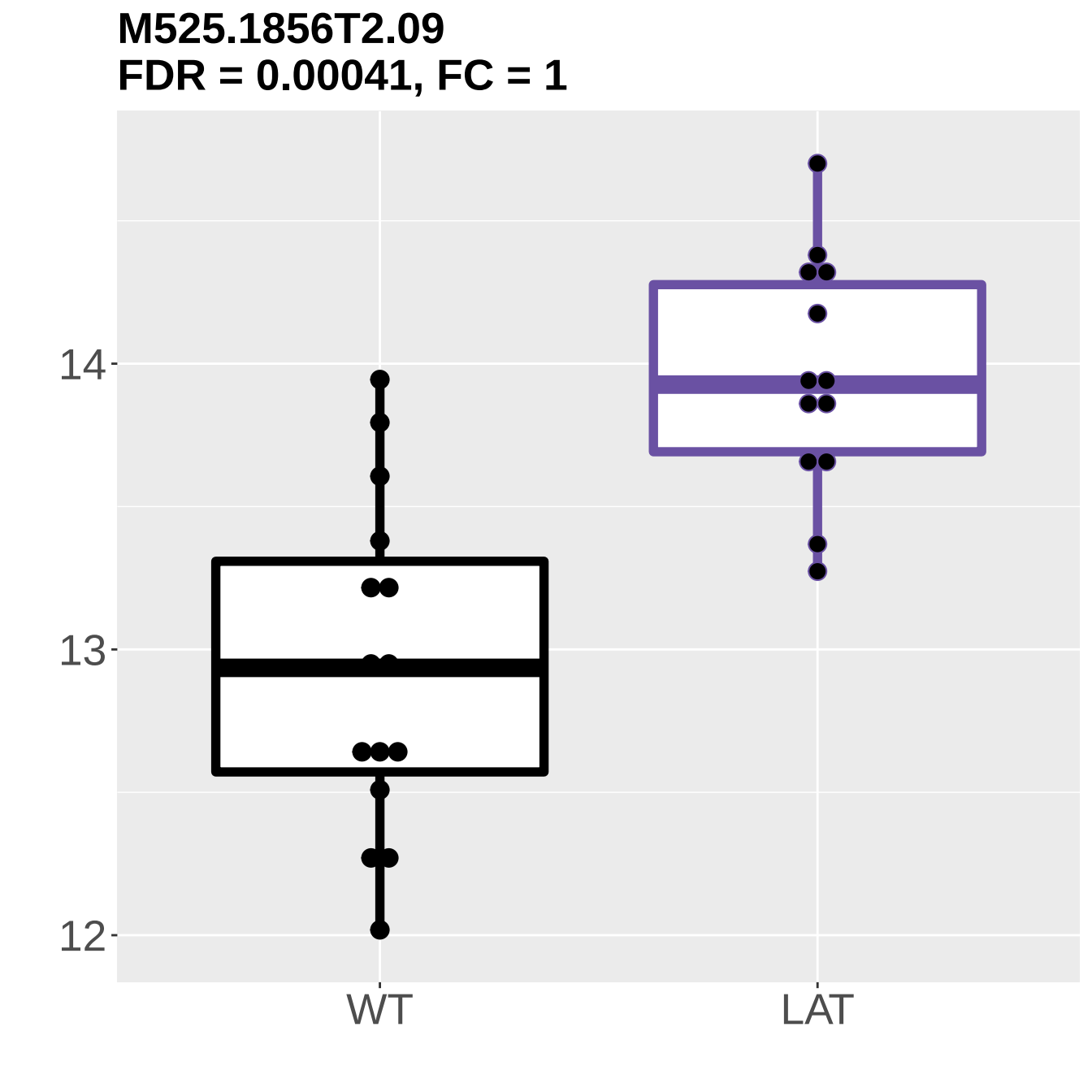
16
15
14
WT
LAT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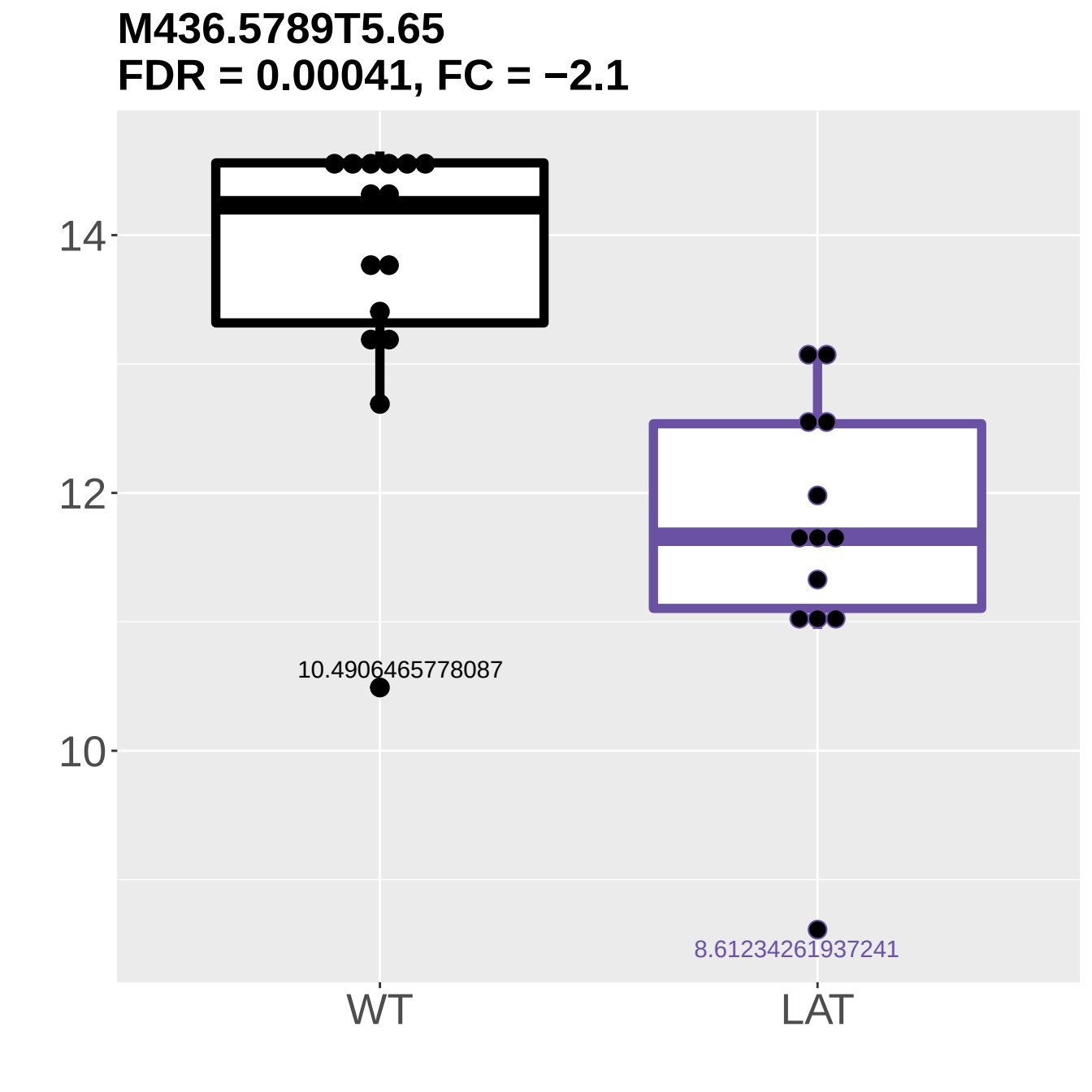
13
12
WT
LAT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WT
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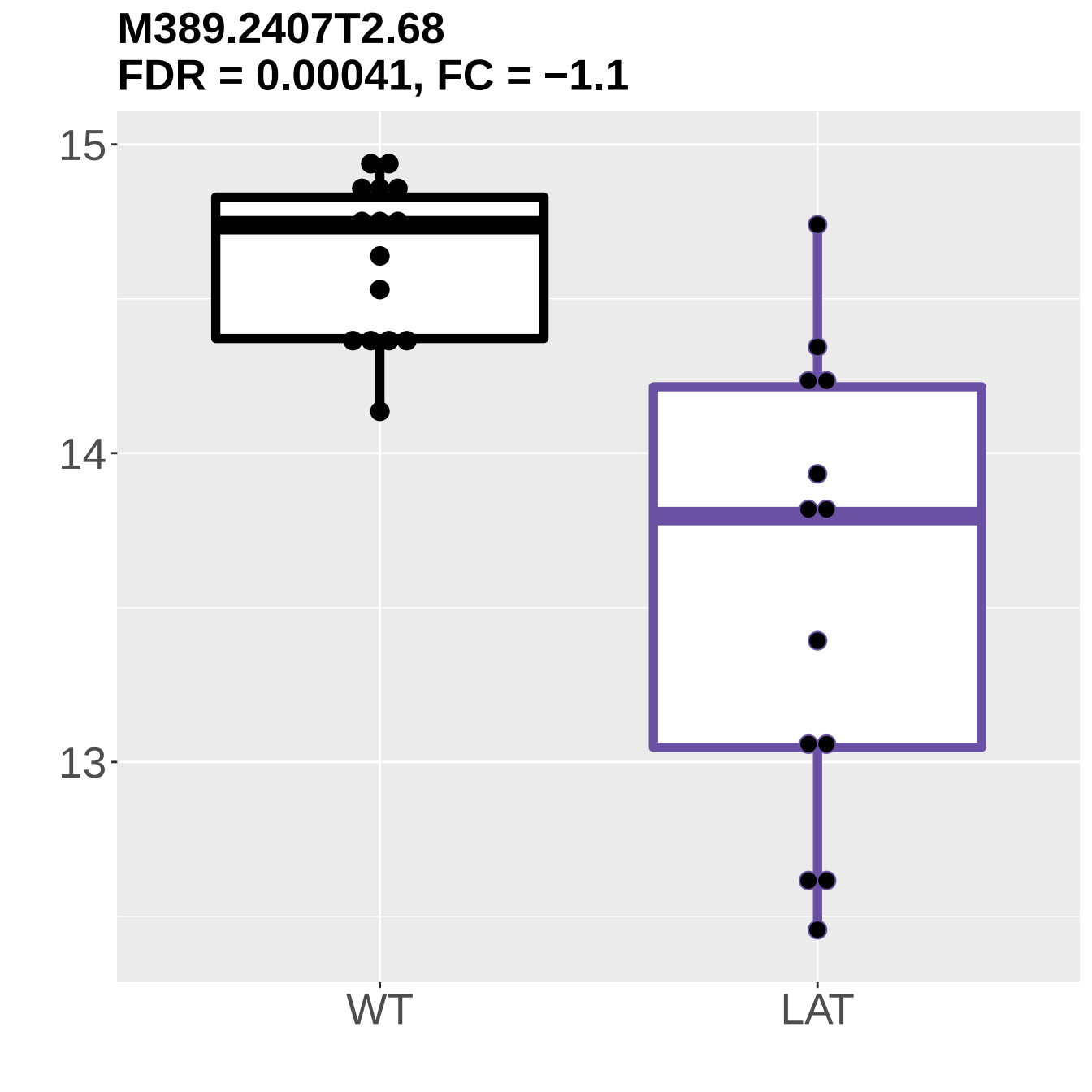
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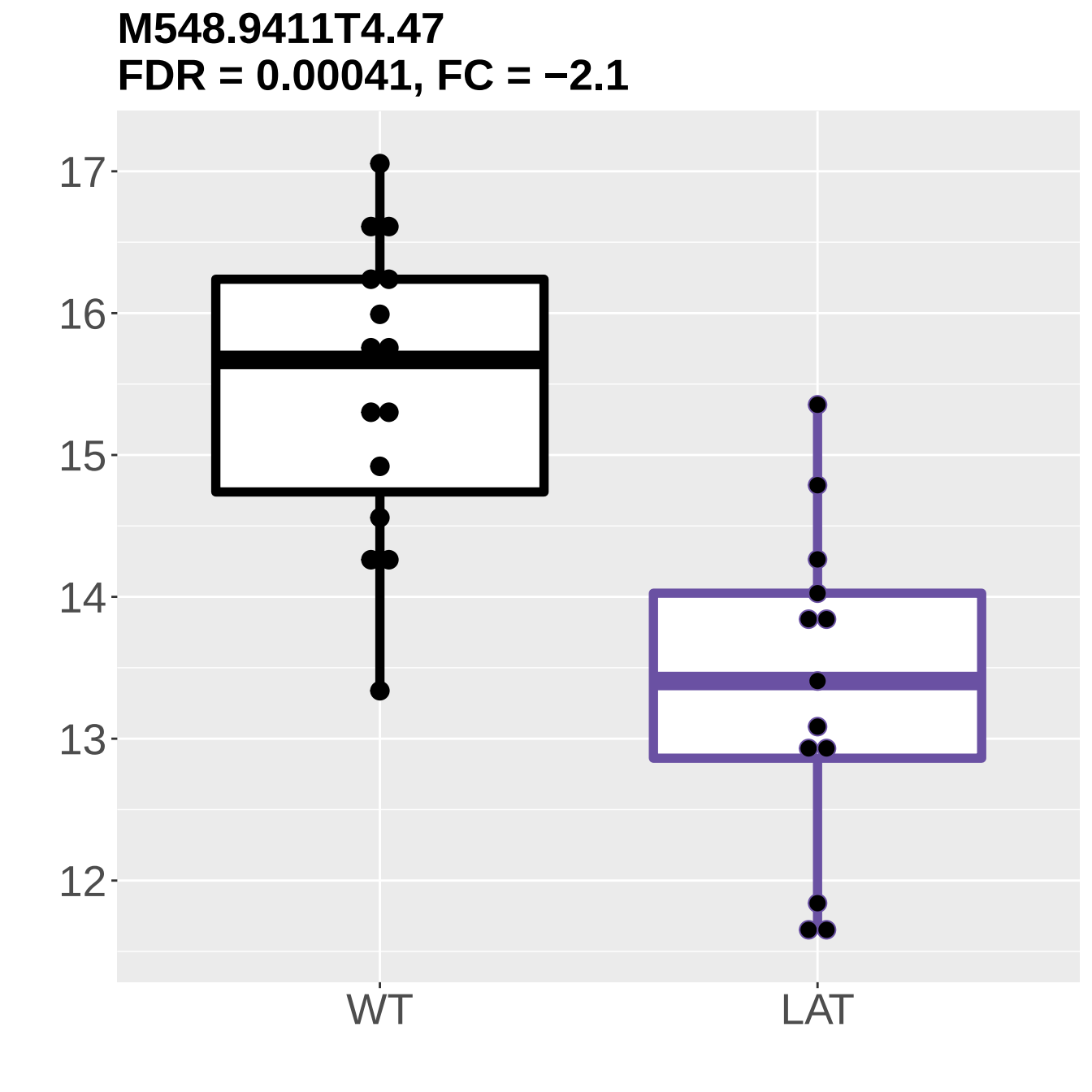
14
13
WT
LAT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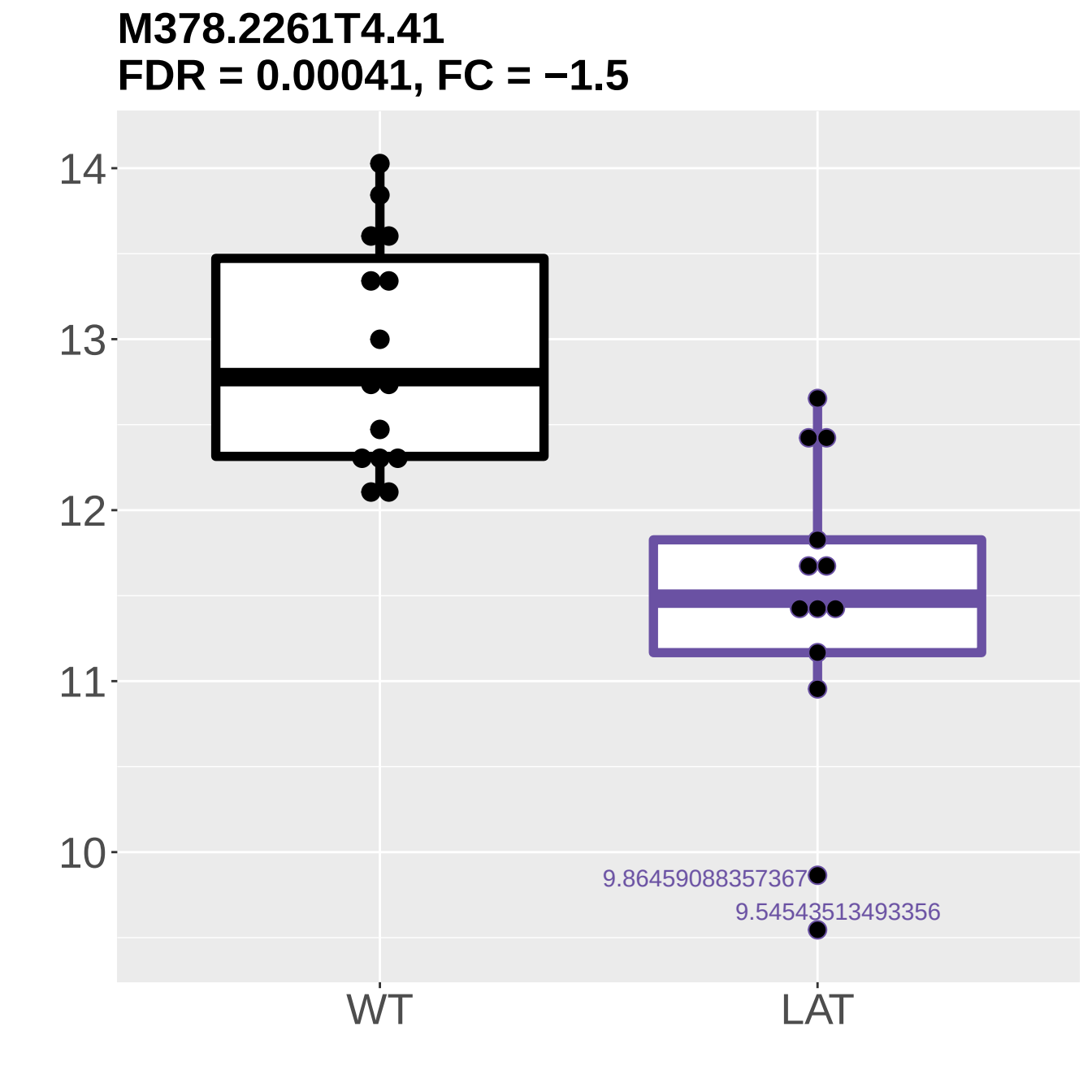
14
13
12
WT
LAT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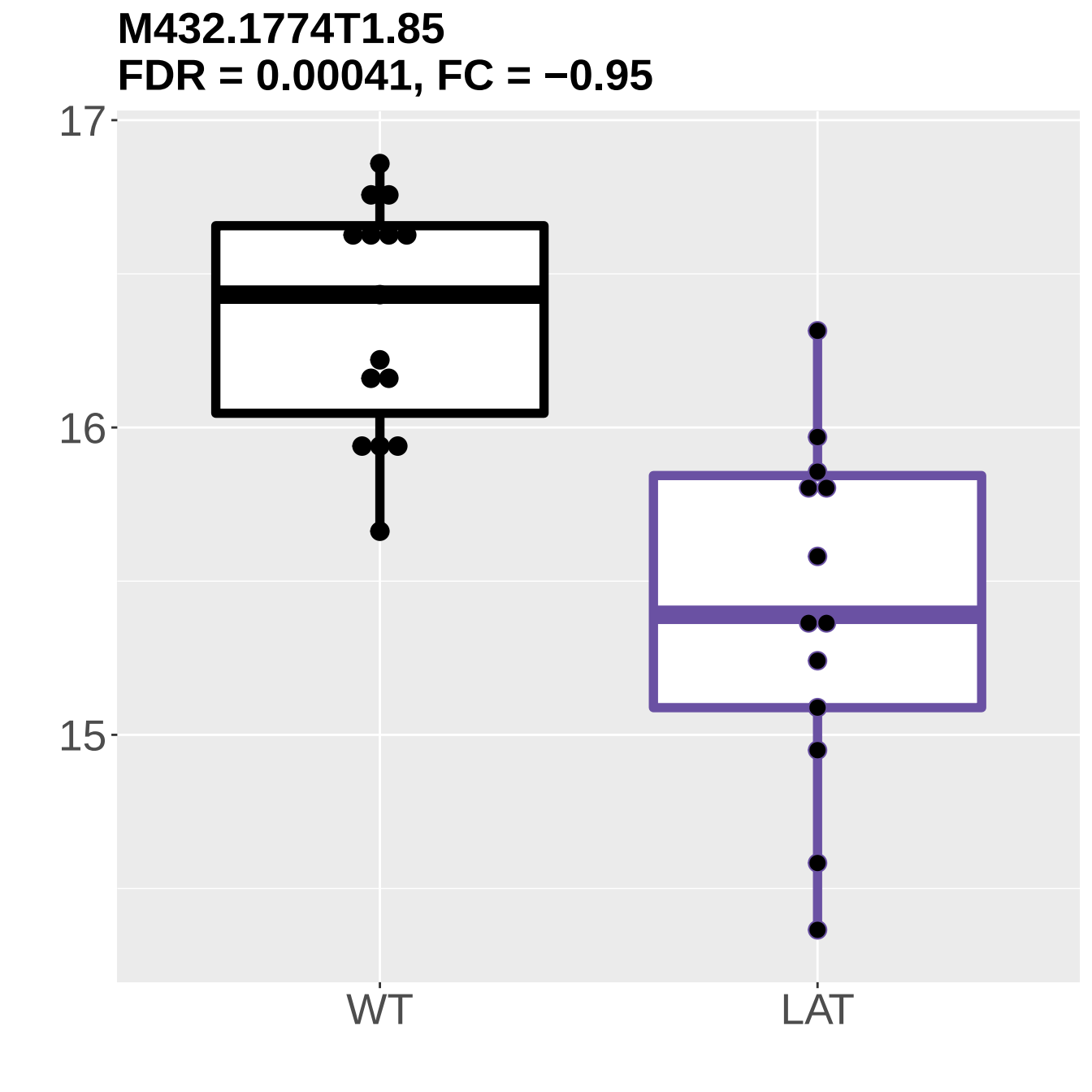
WT
LAT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16
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WT
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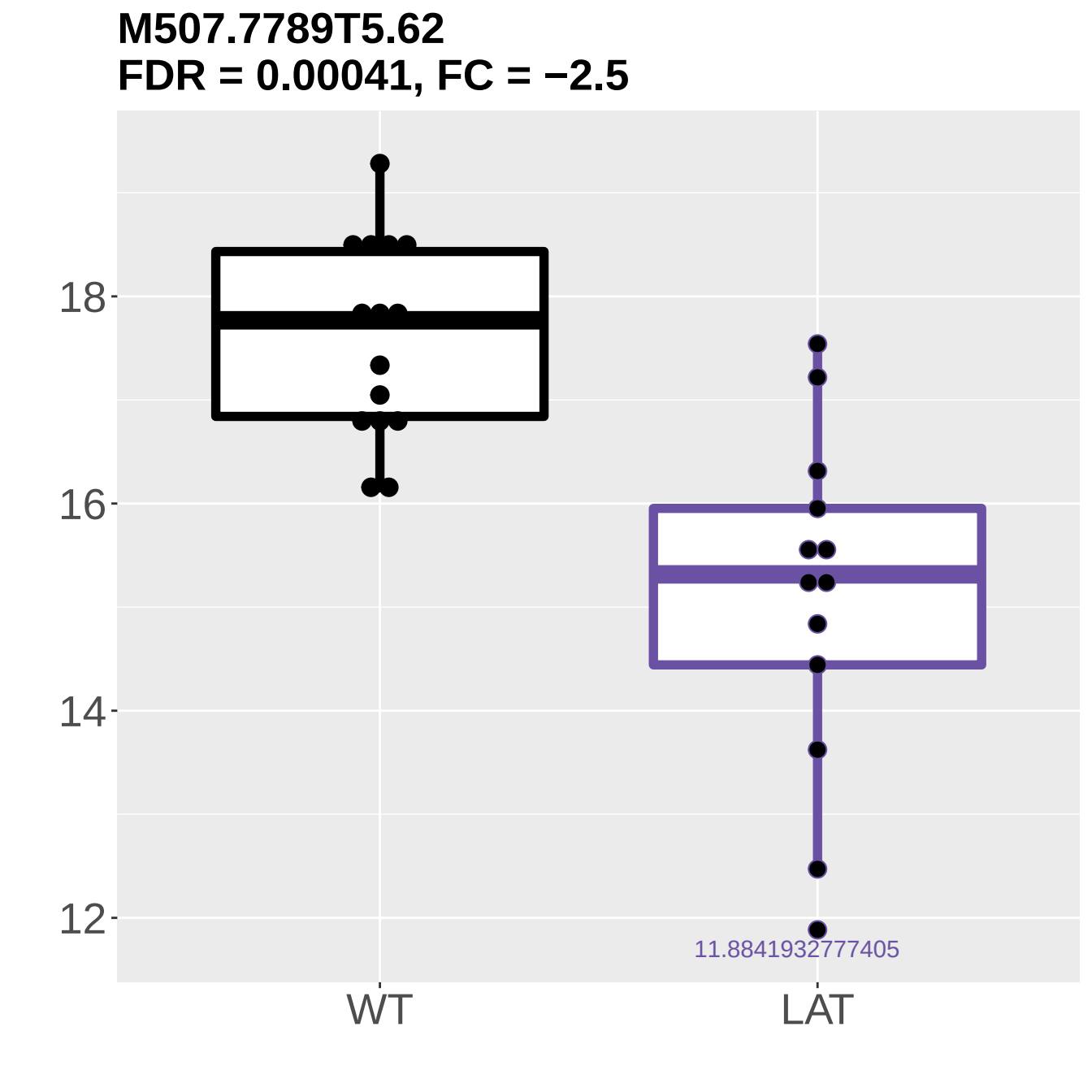
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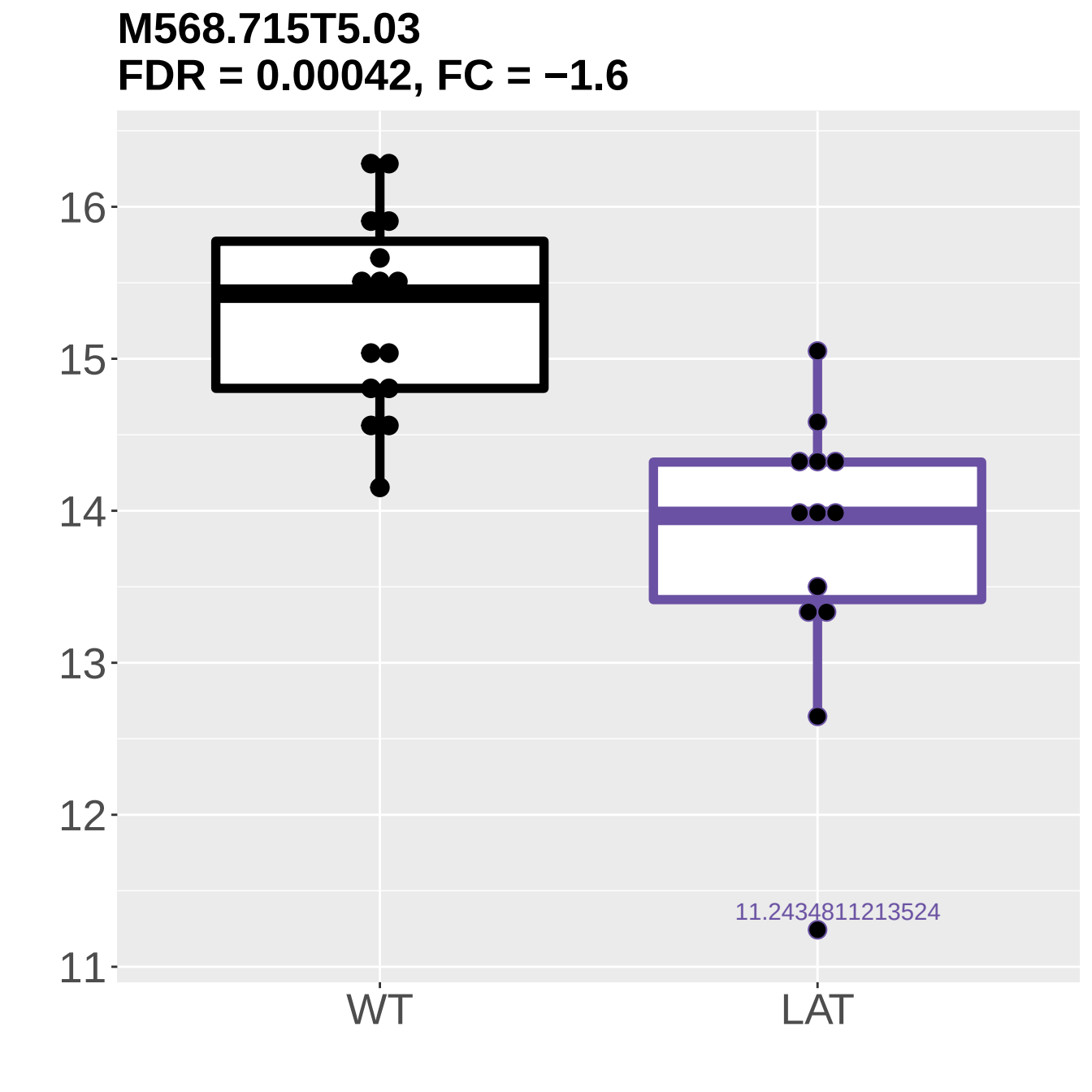
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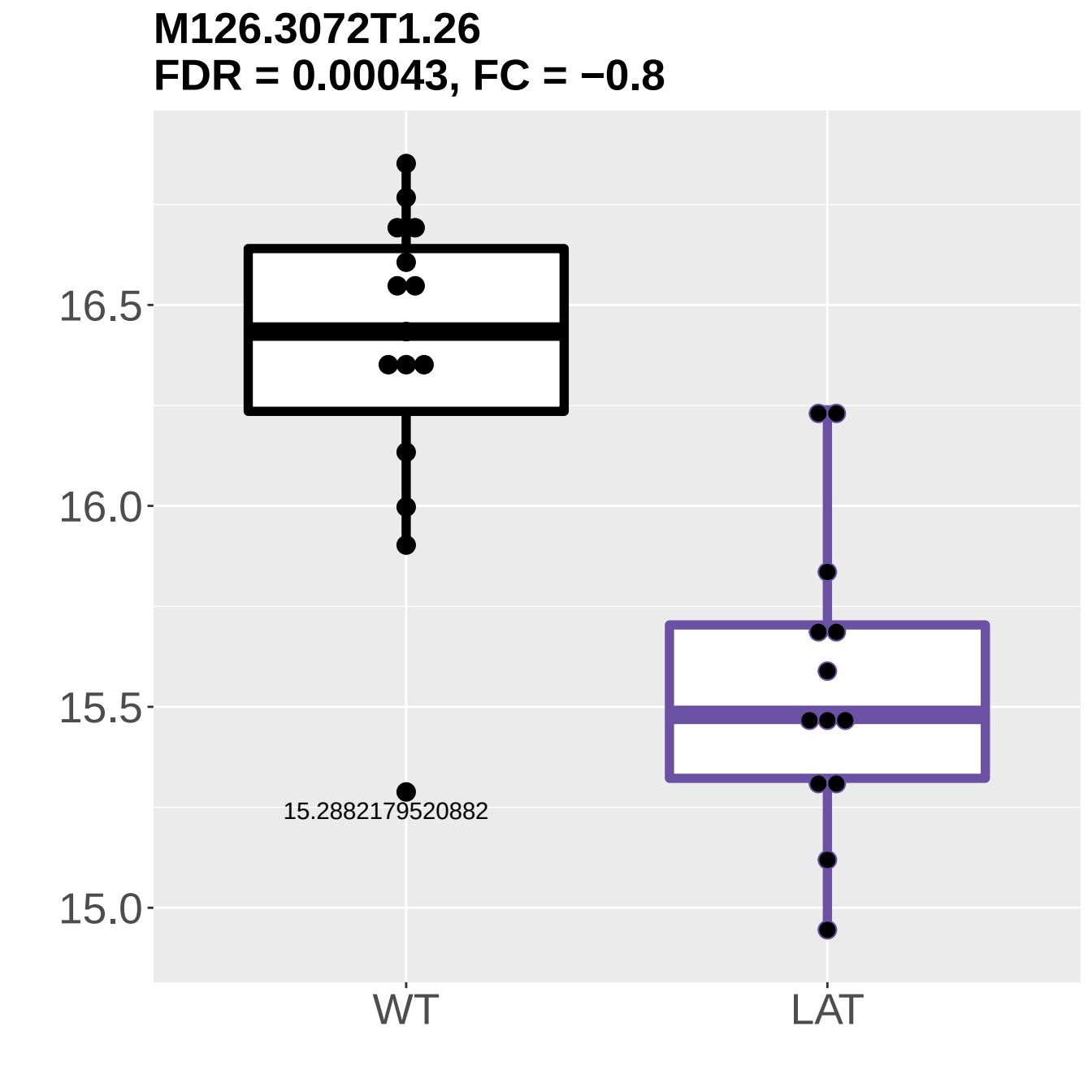
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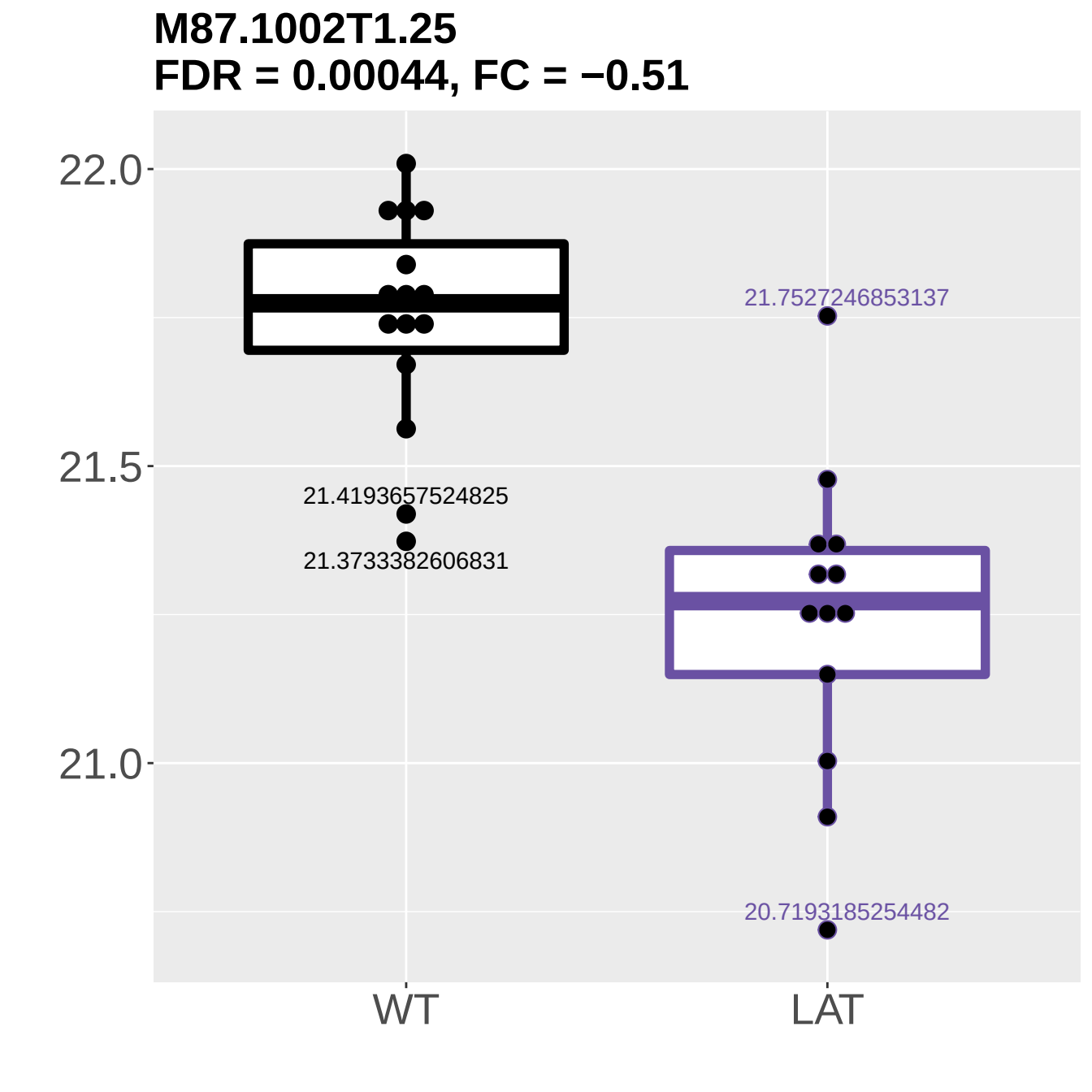
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WT
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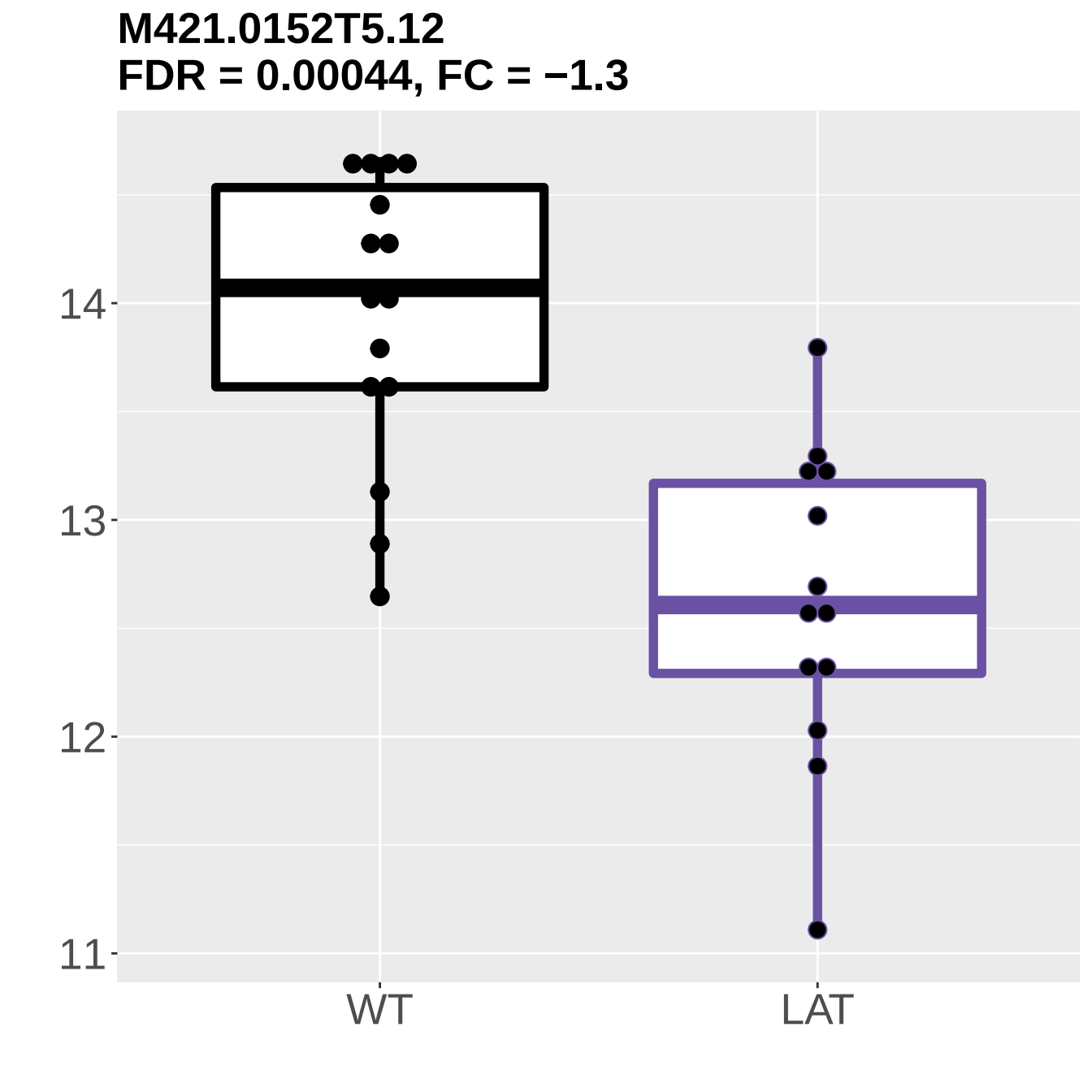
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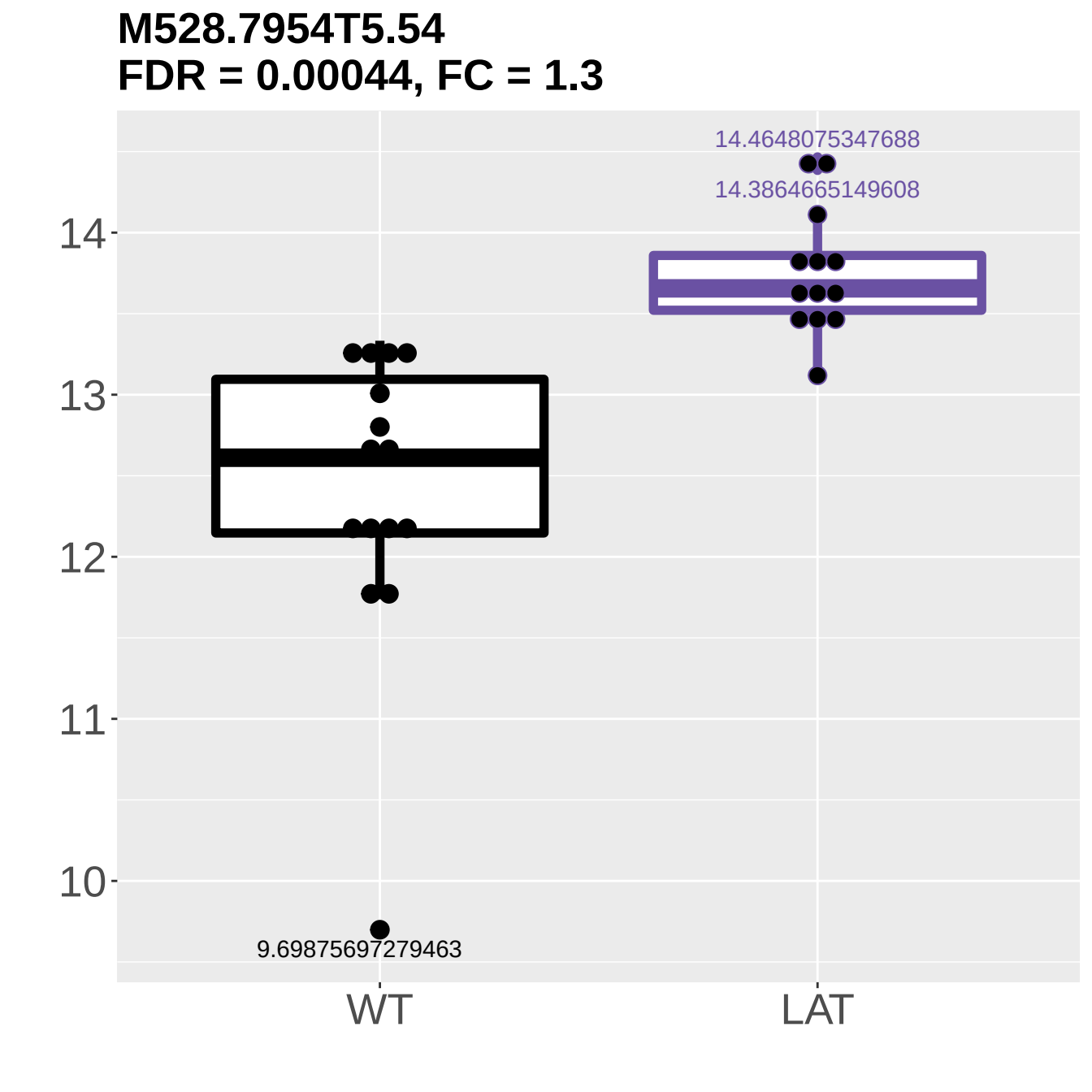
13
12
11
WT
LAT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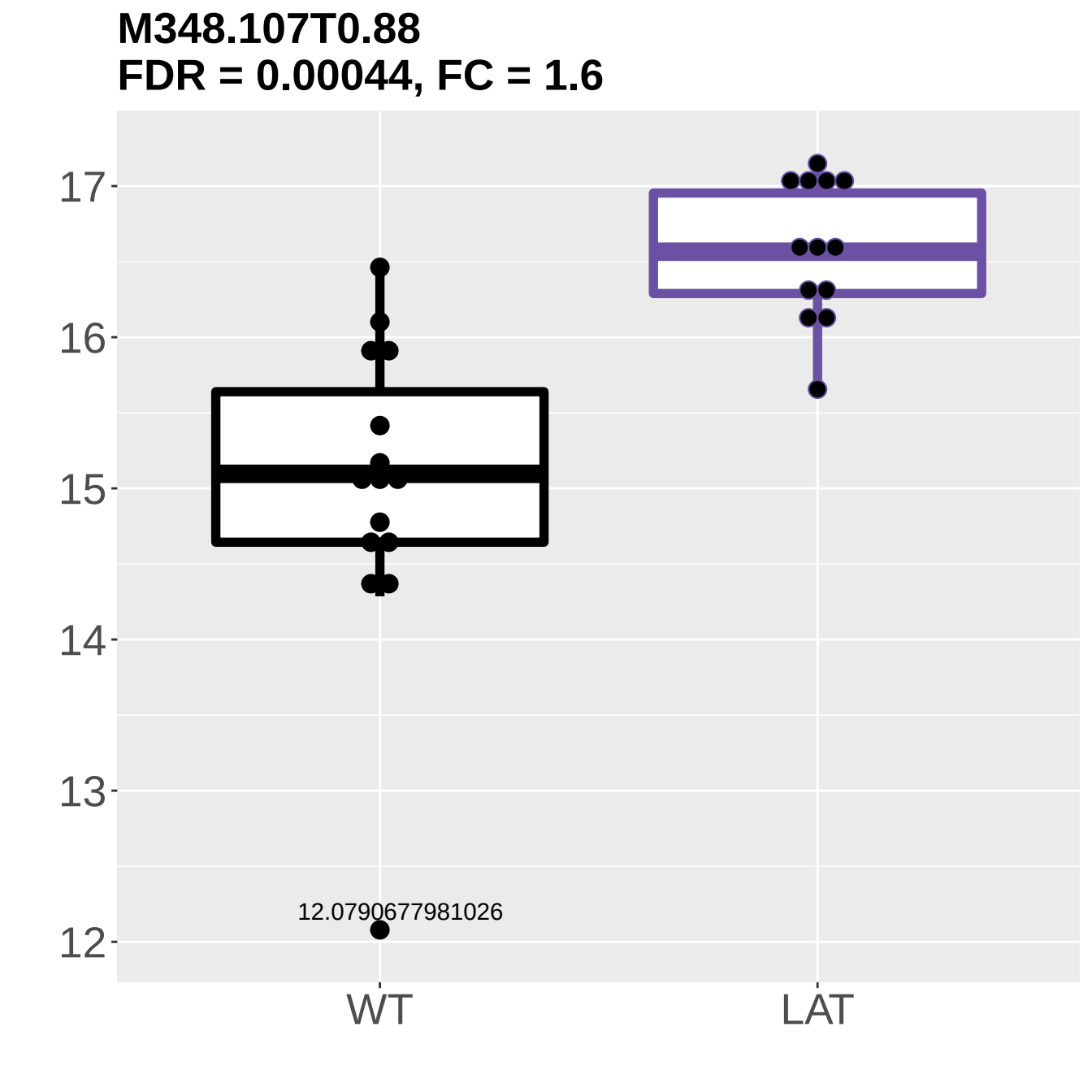
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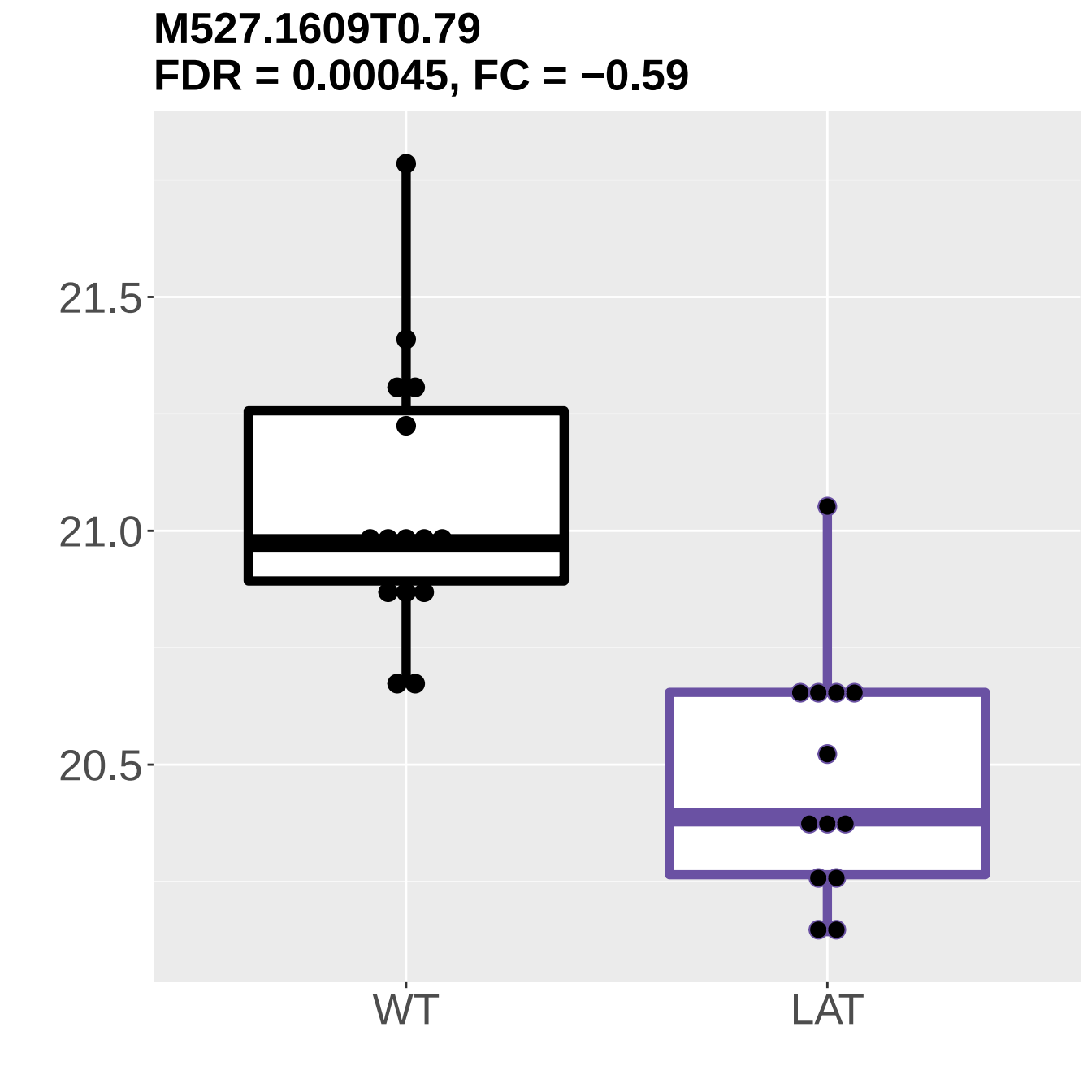
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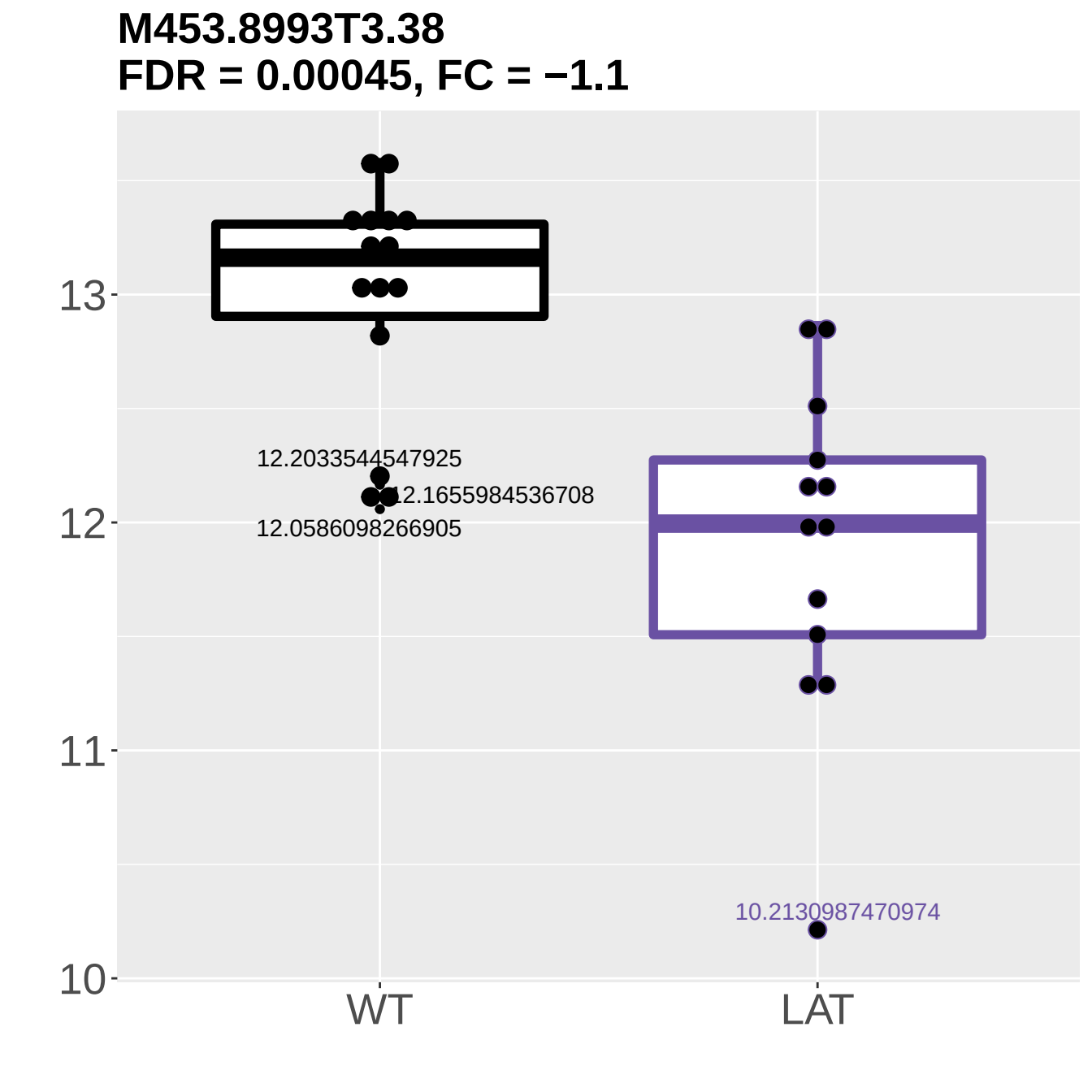
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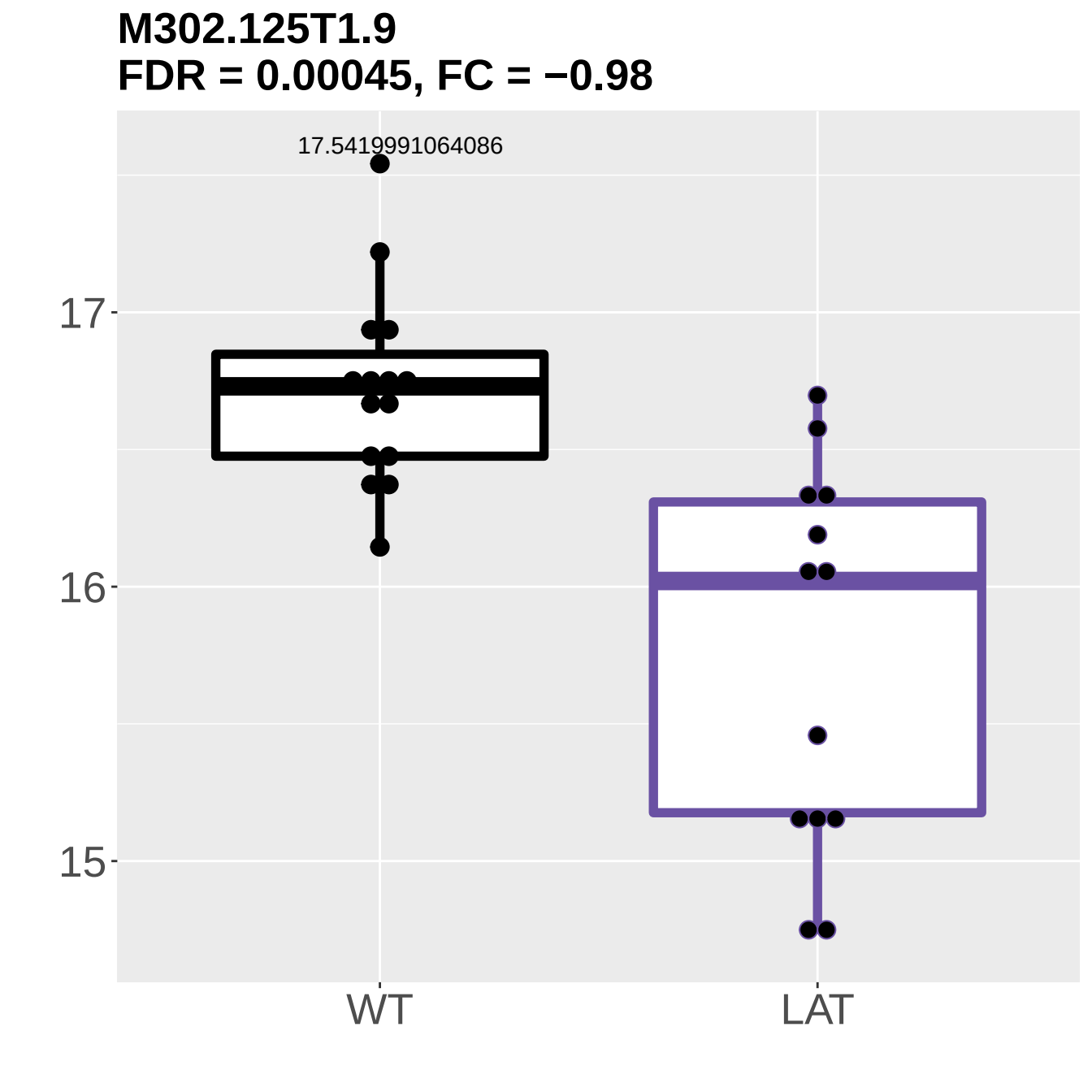
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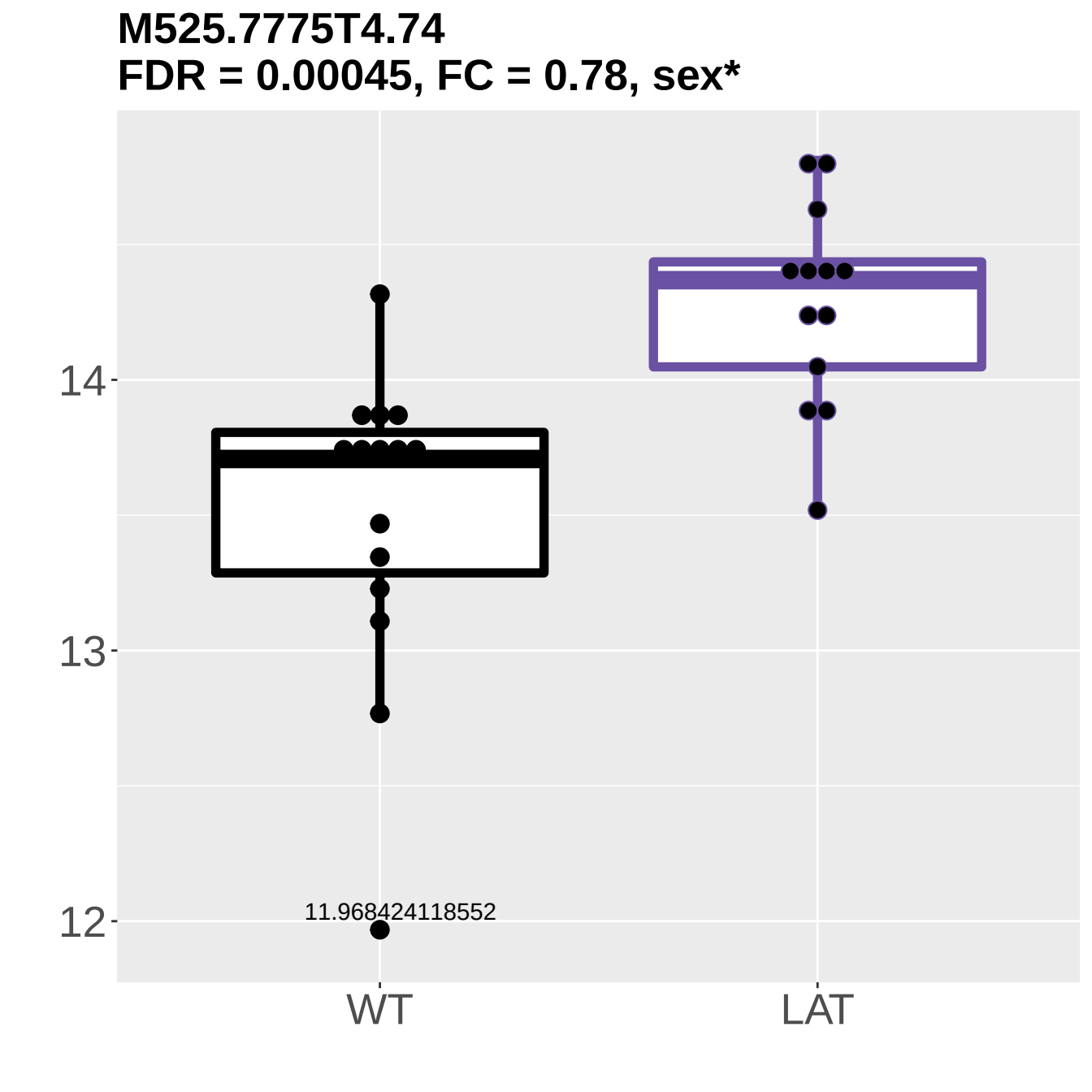
16
15
WT
LAT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13
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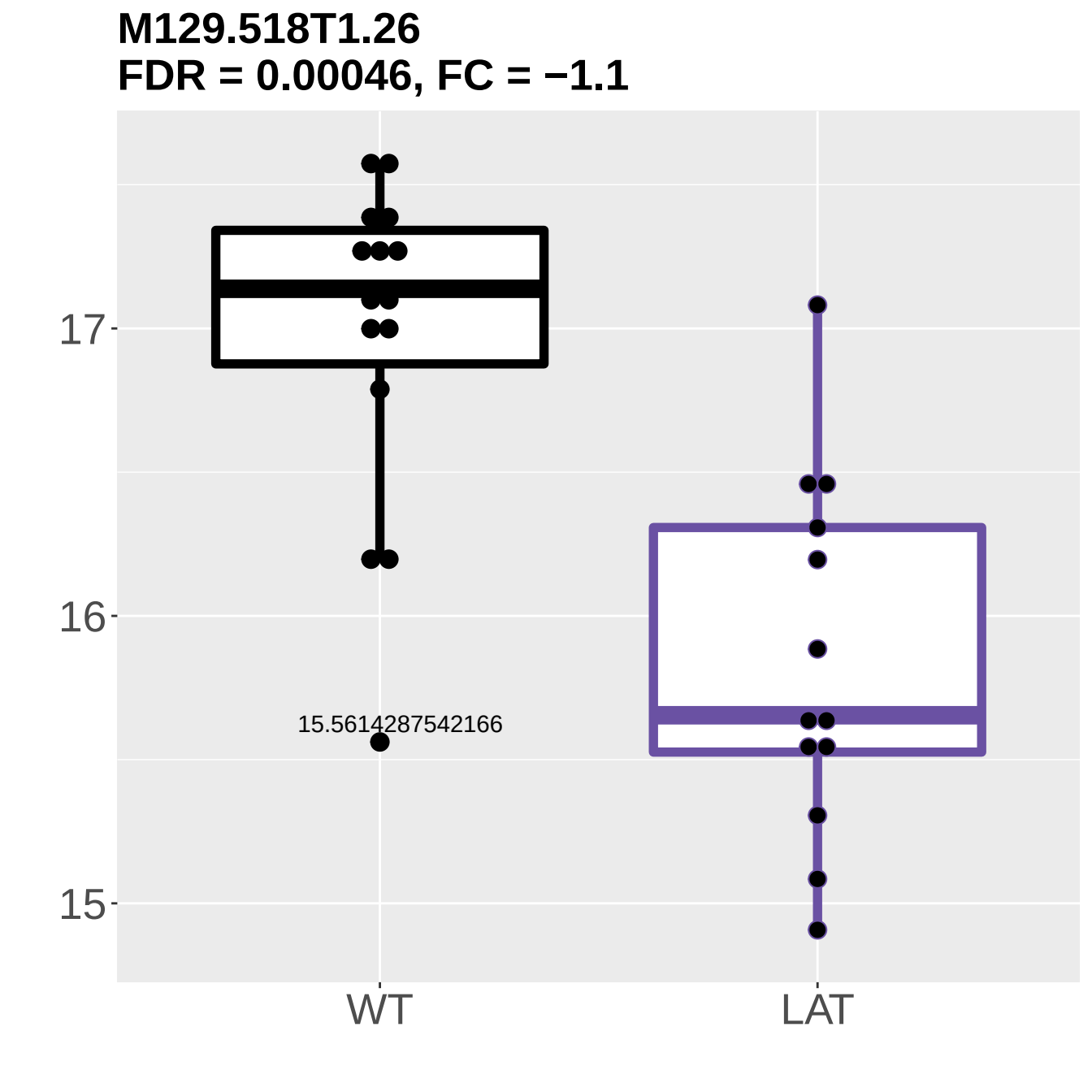
WT
LAT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16
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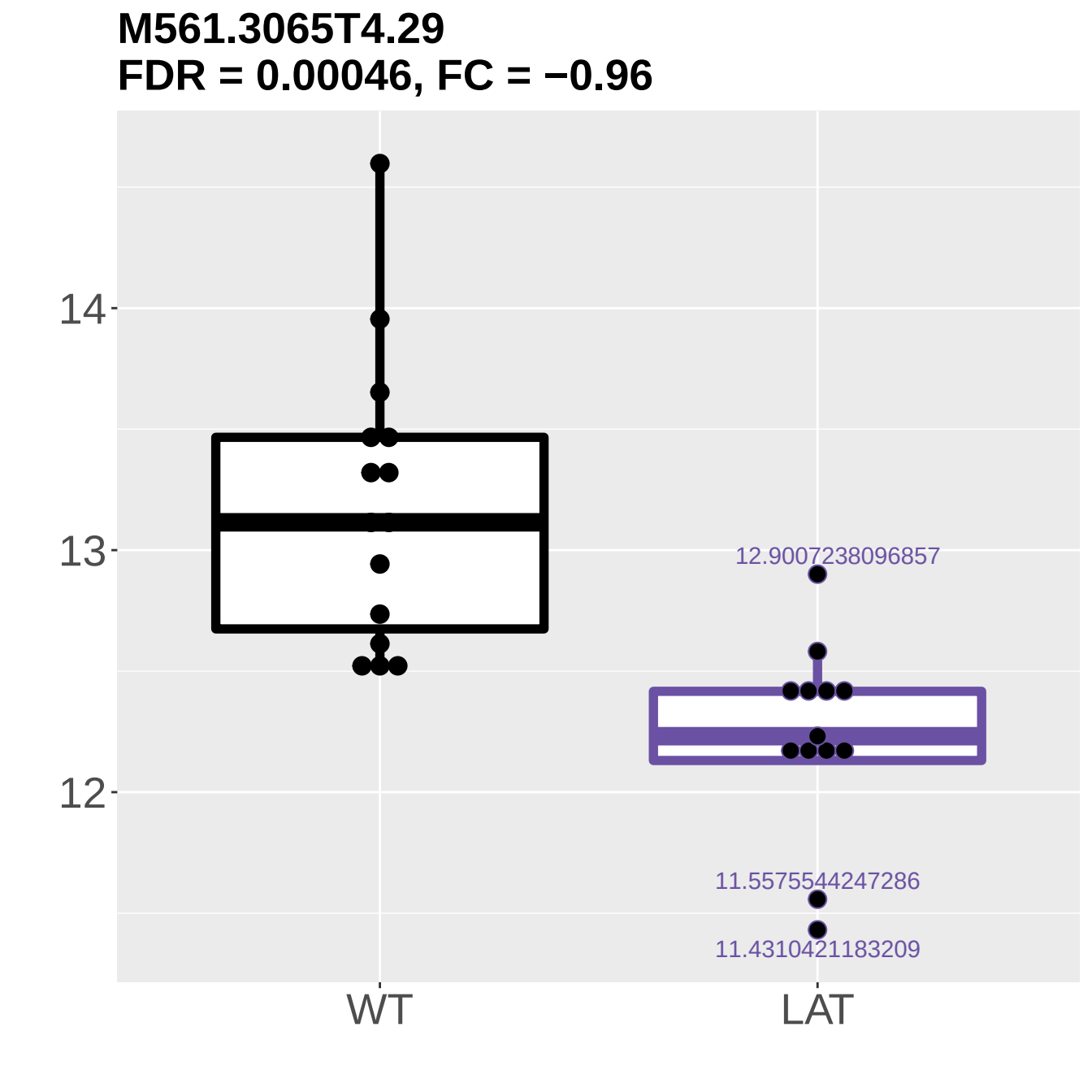
WT
LAT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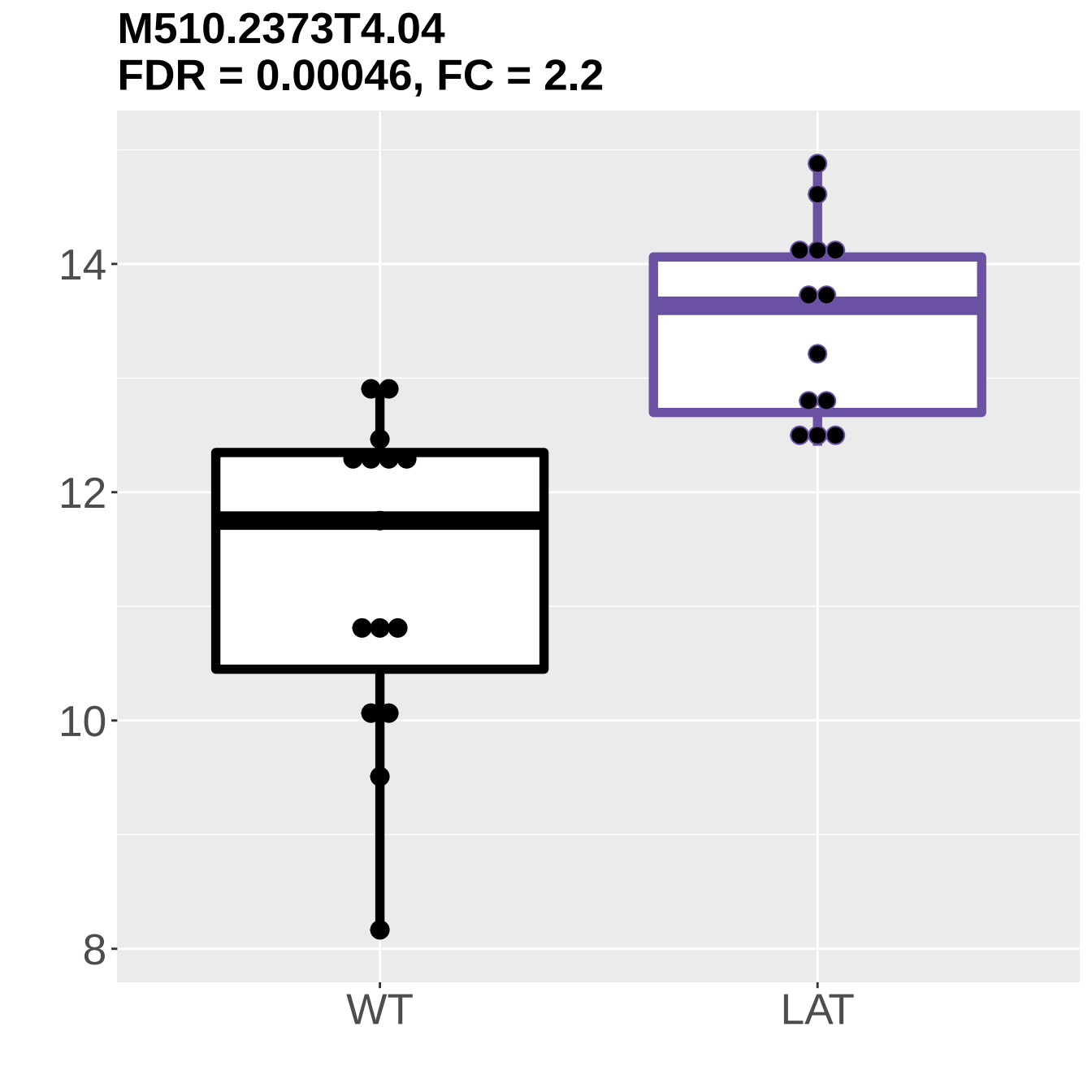
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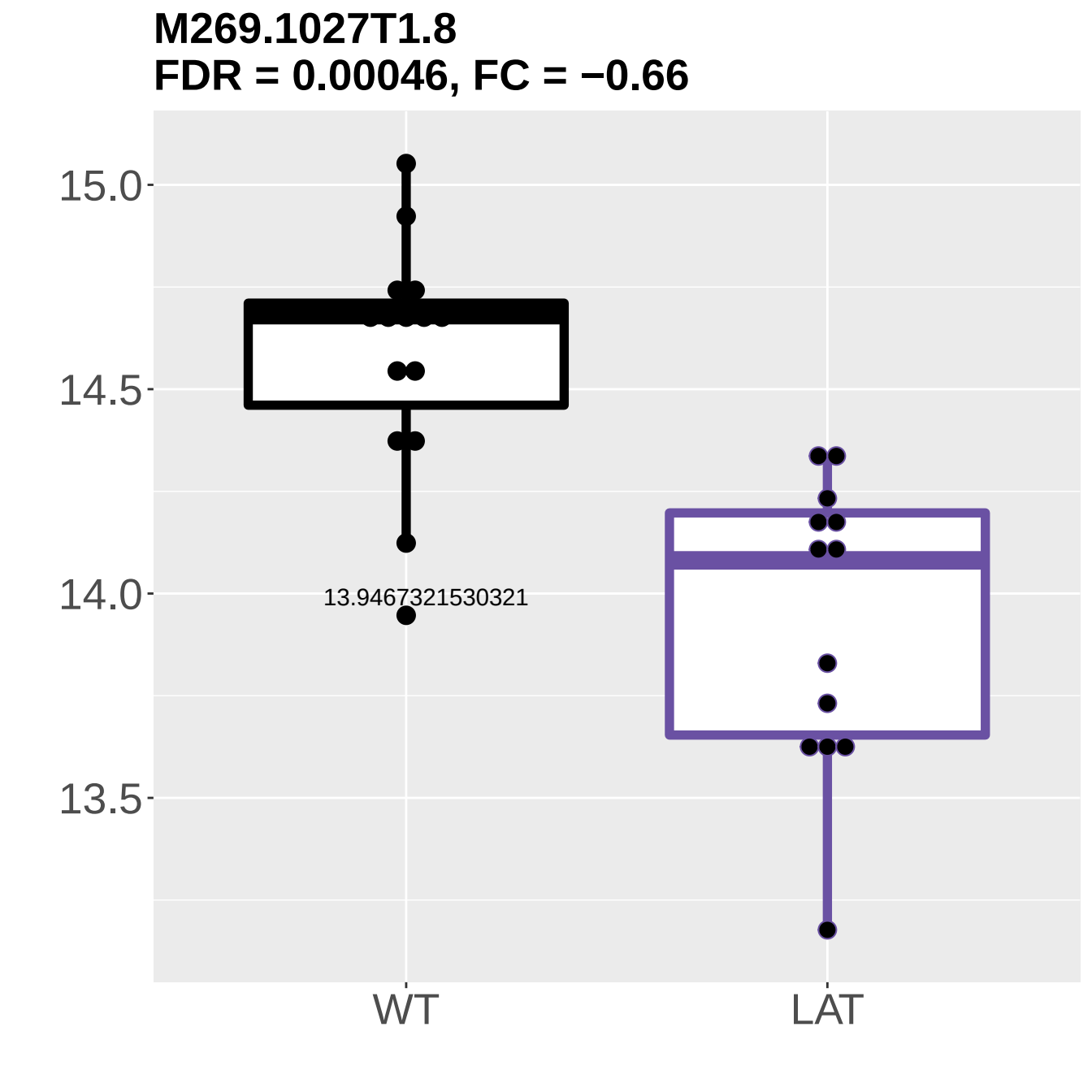
8
WT
LAT


M269.1027T1.8
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14.0
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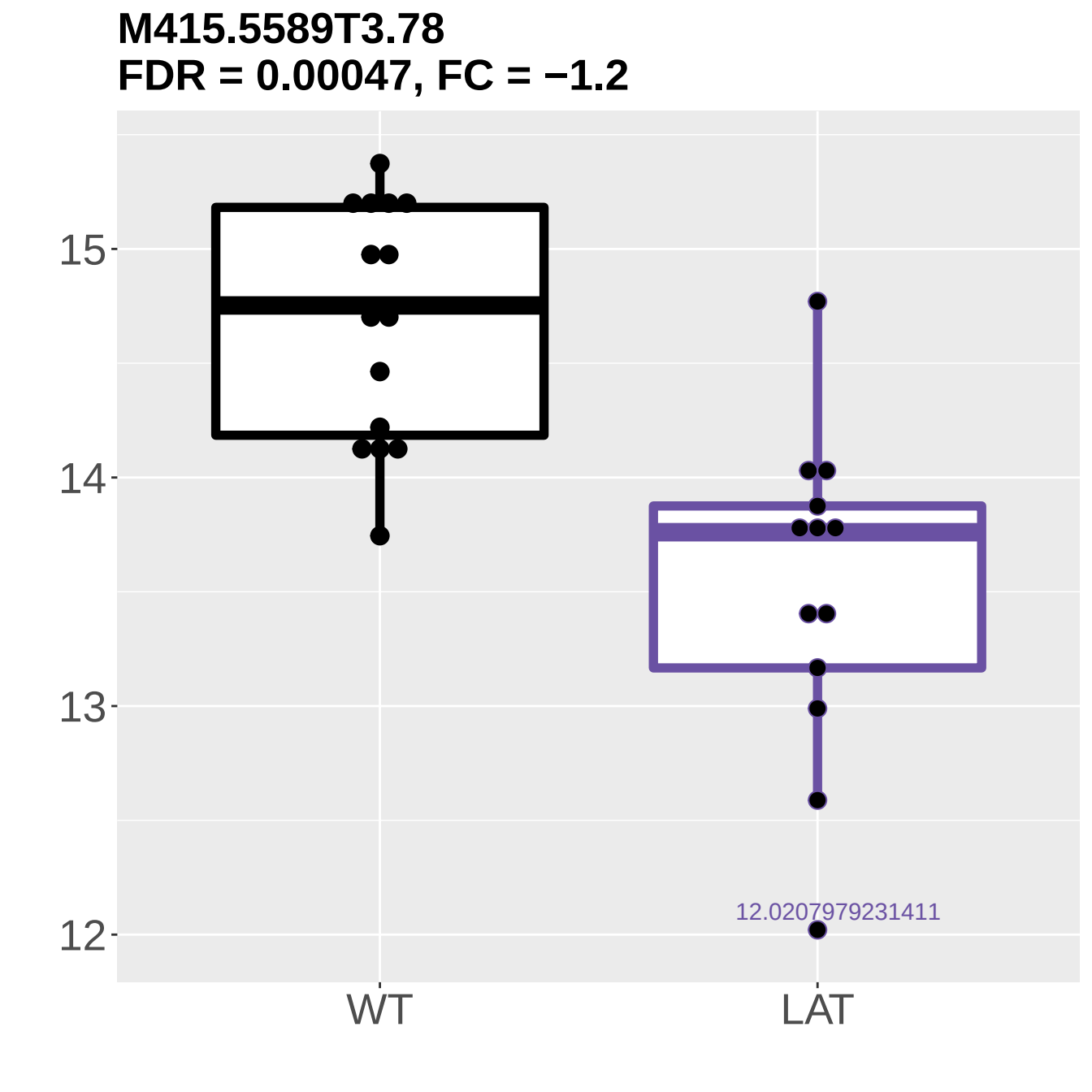
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14
13
12
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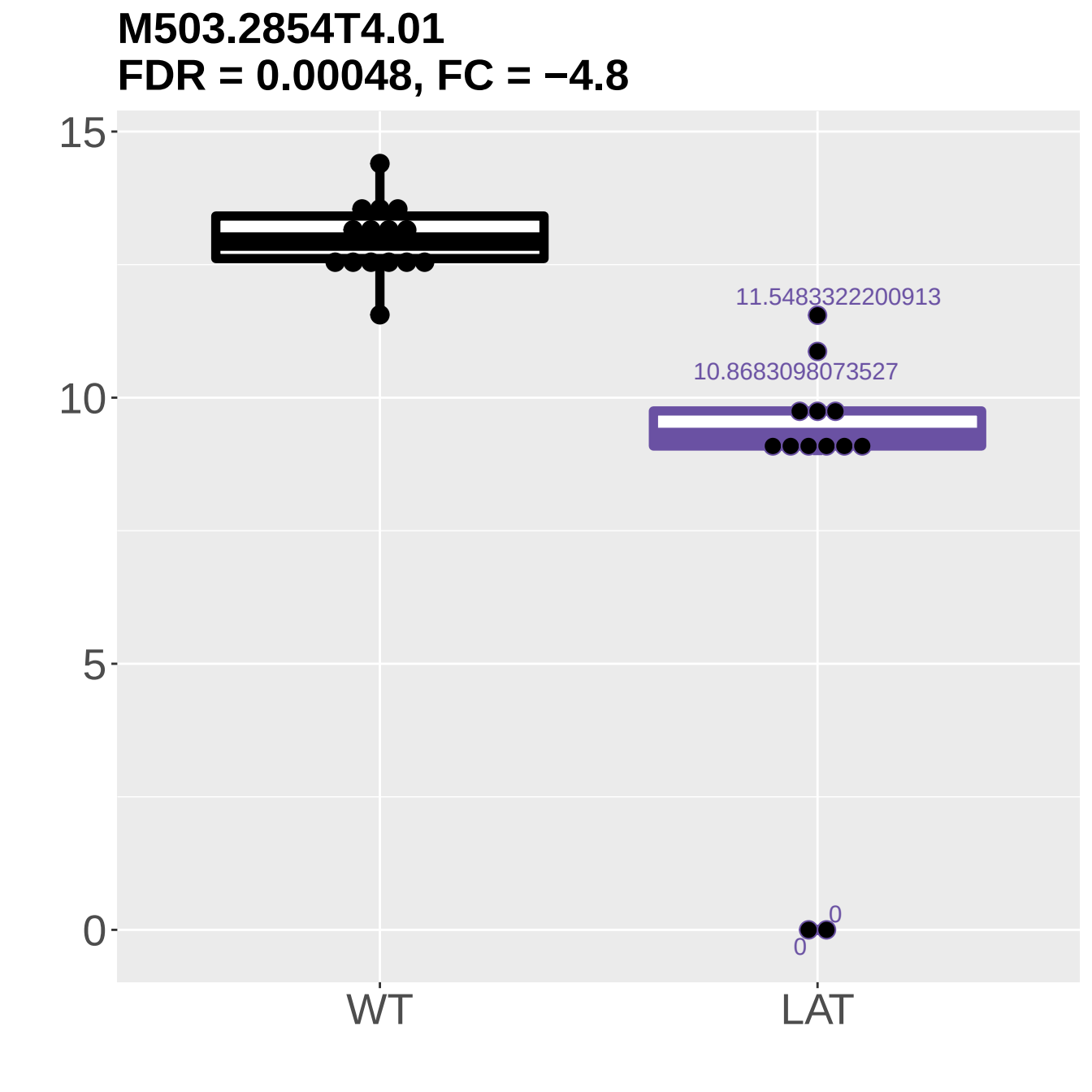
WT
LAT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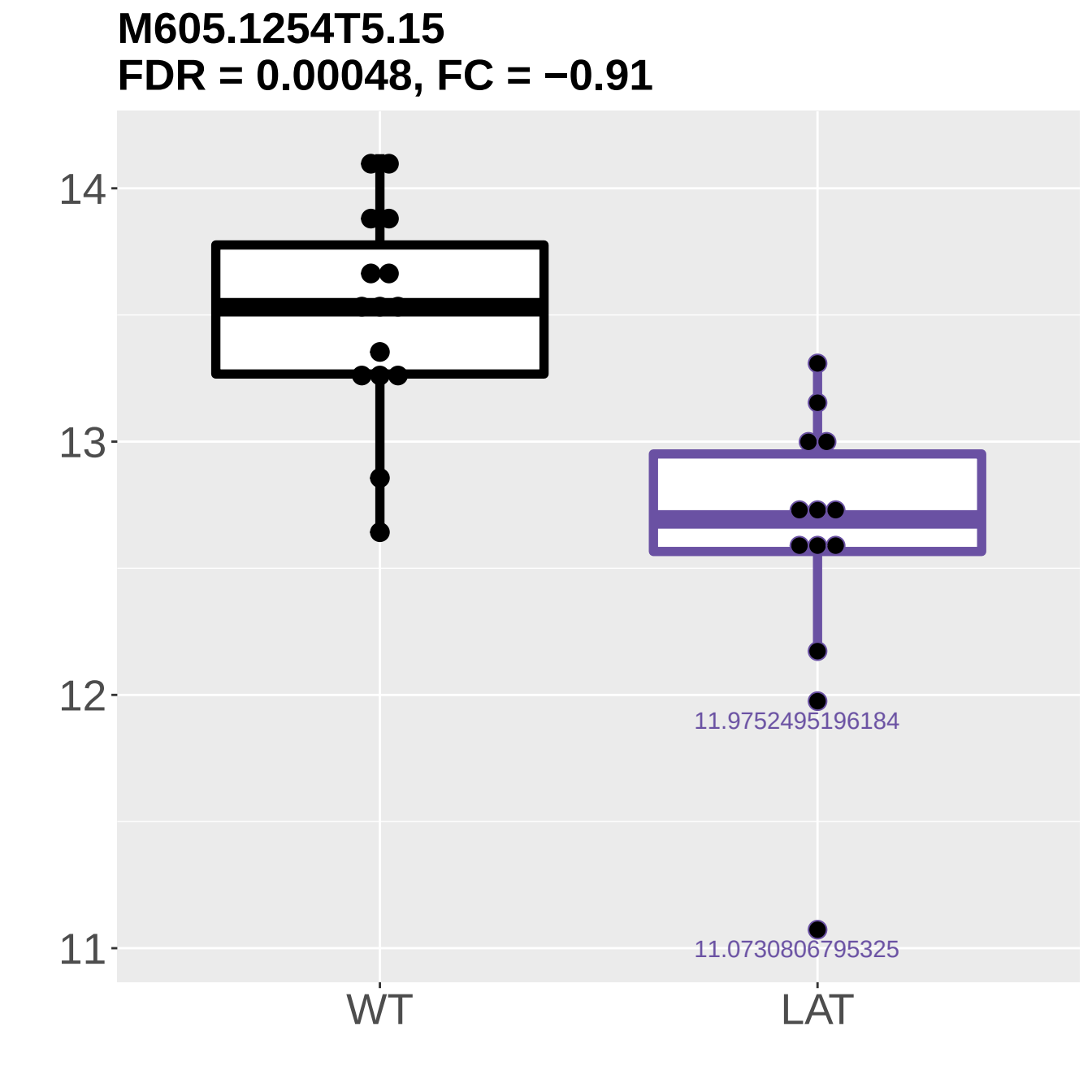
M605.1254T5.15
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WT
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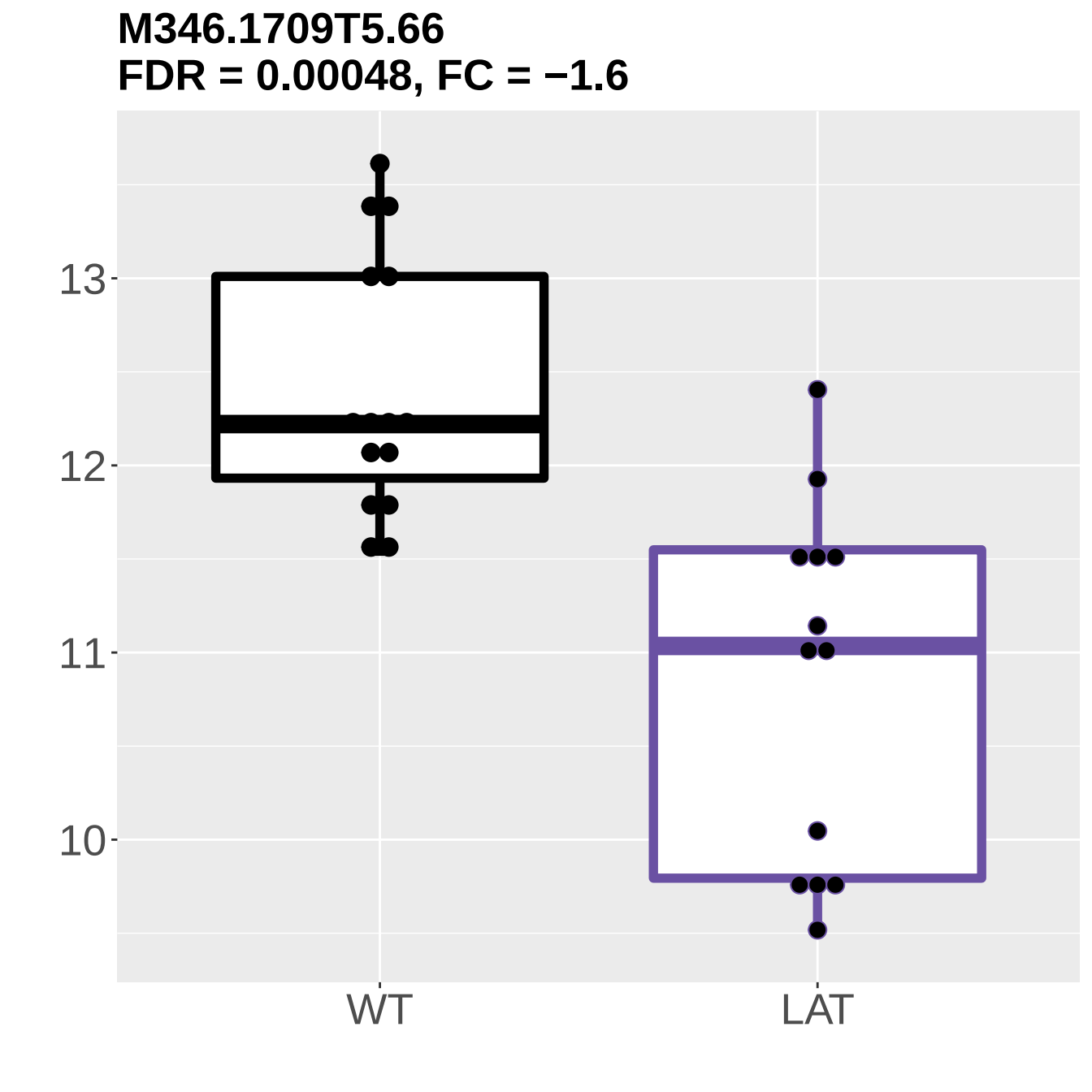
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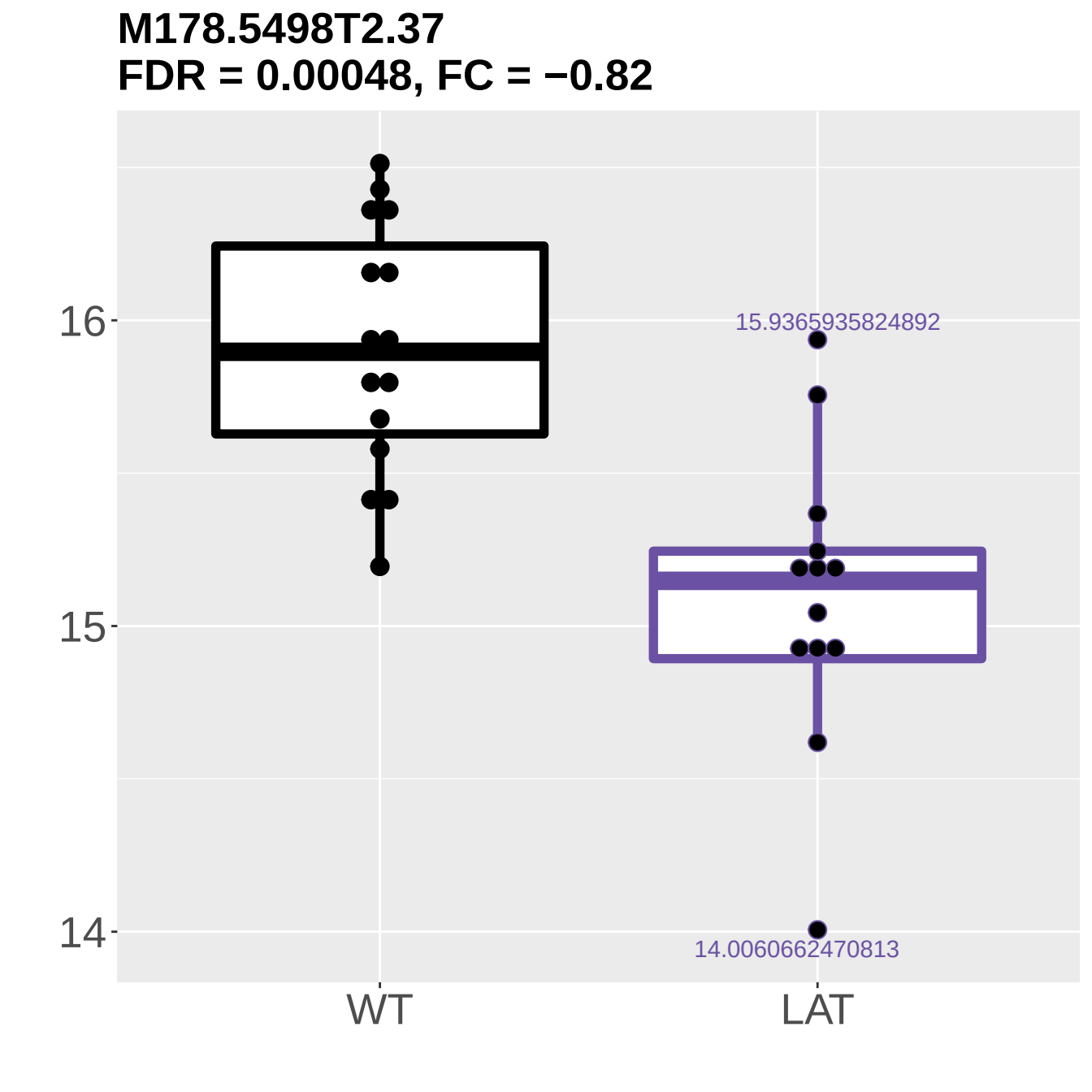
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WT
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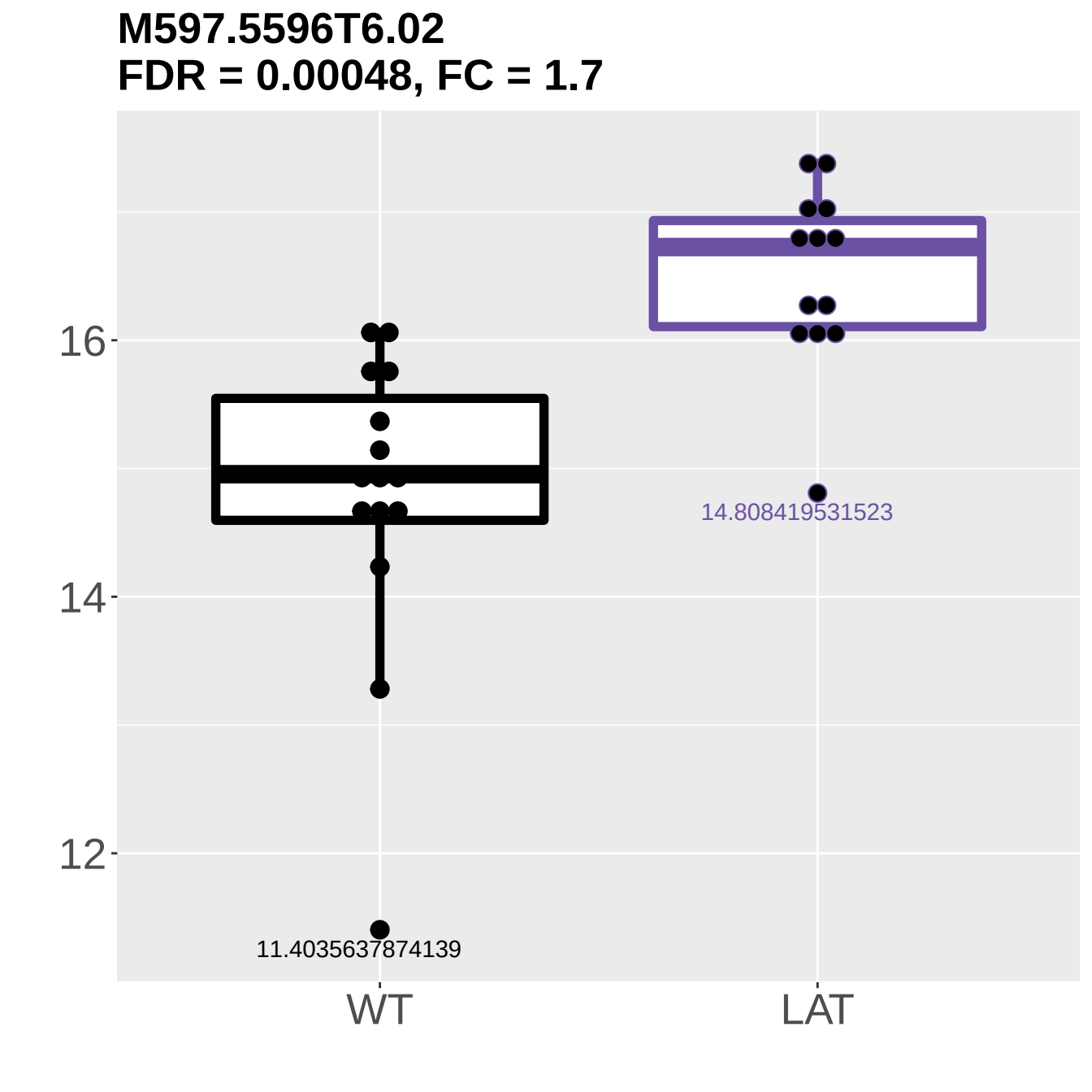
M597.5596T6.02
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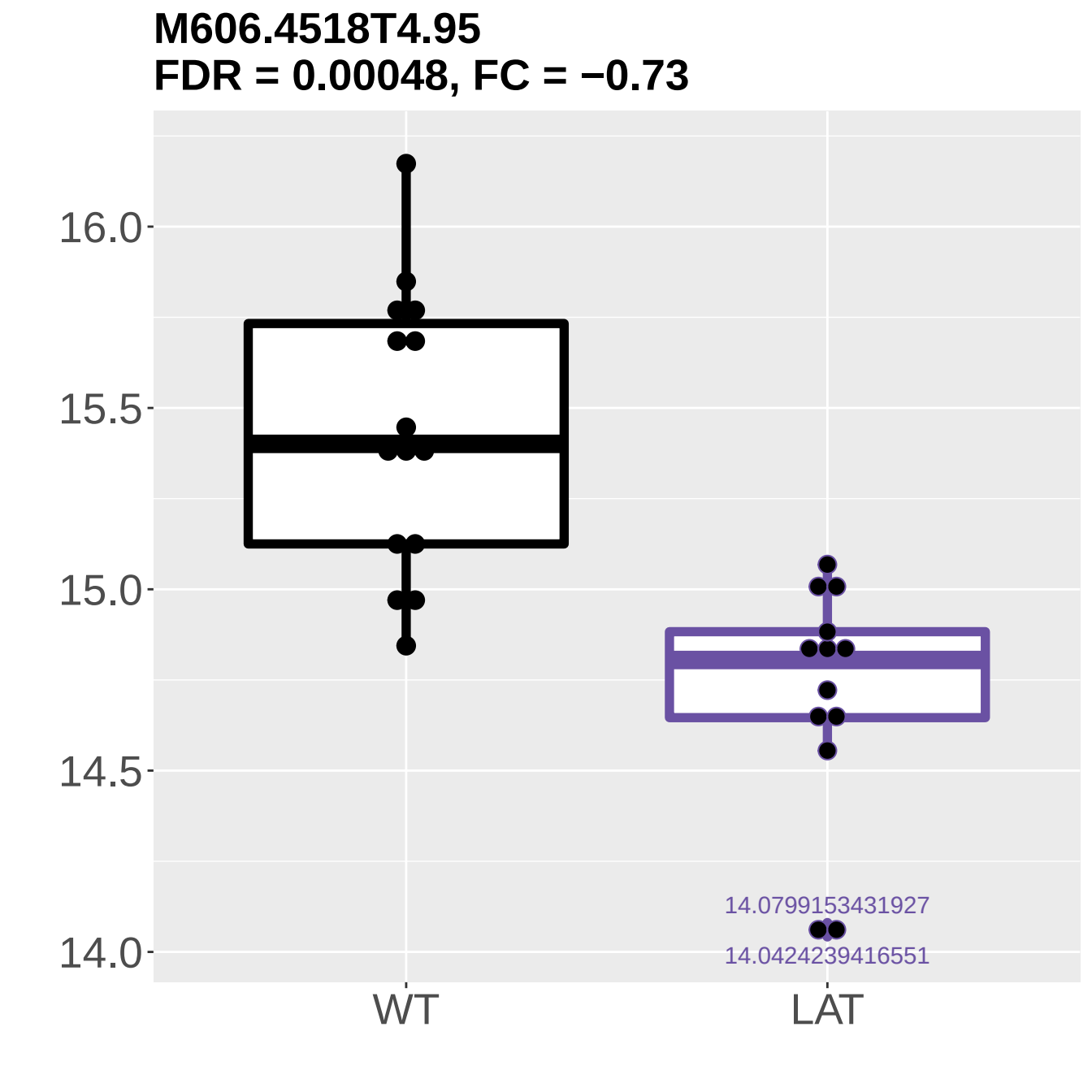
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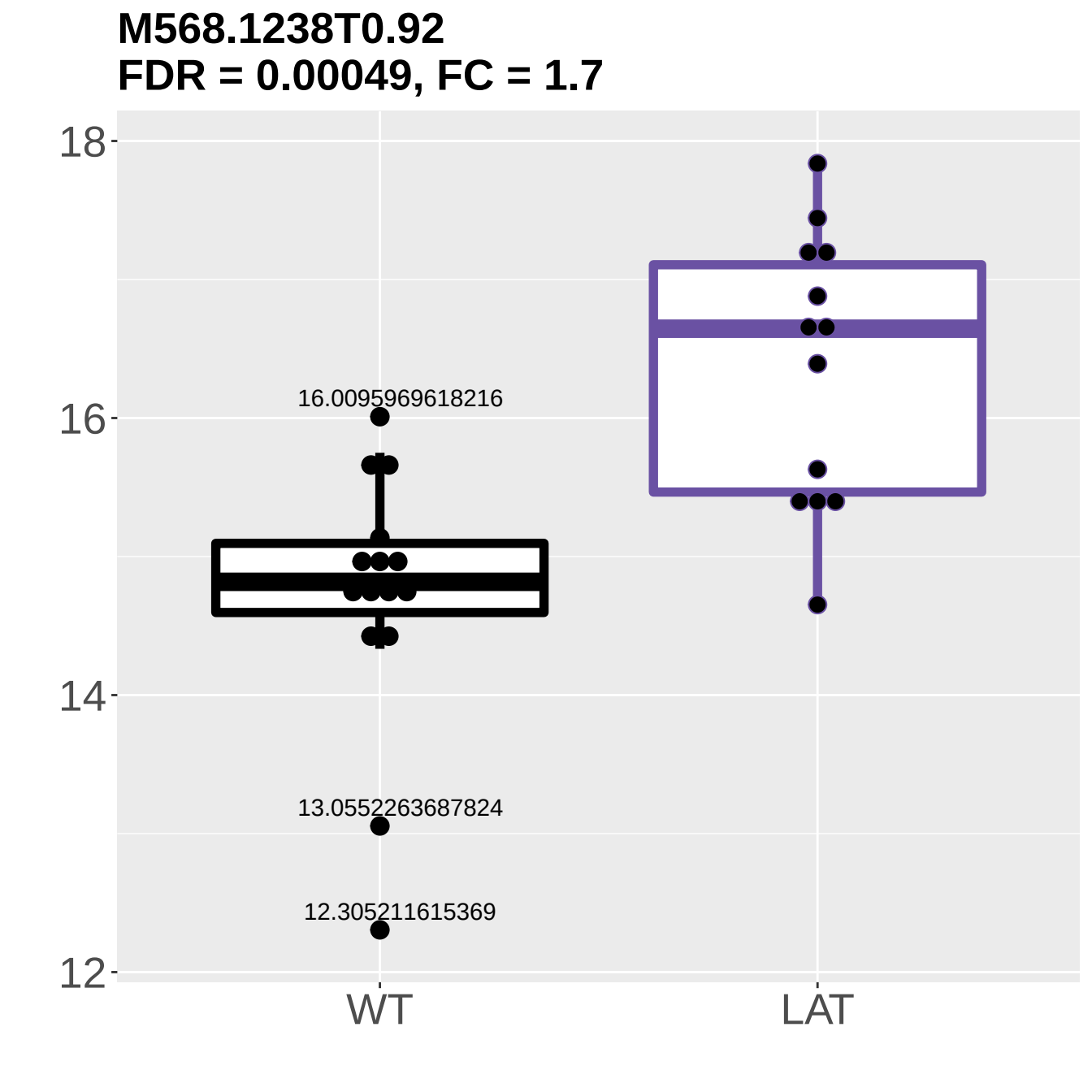
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WT
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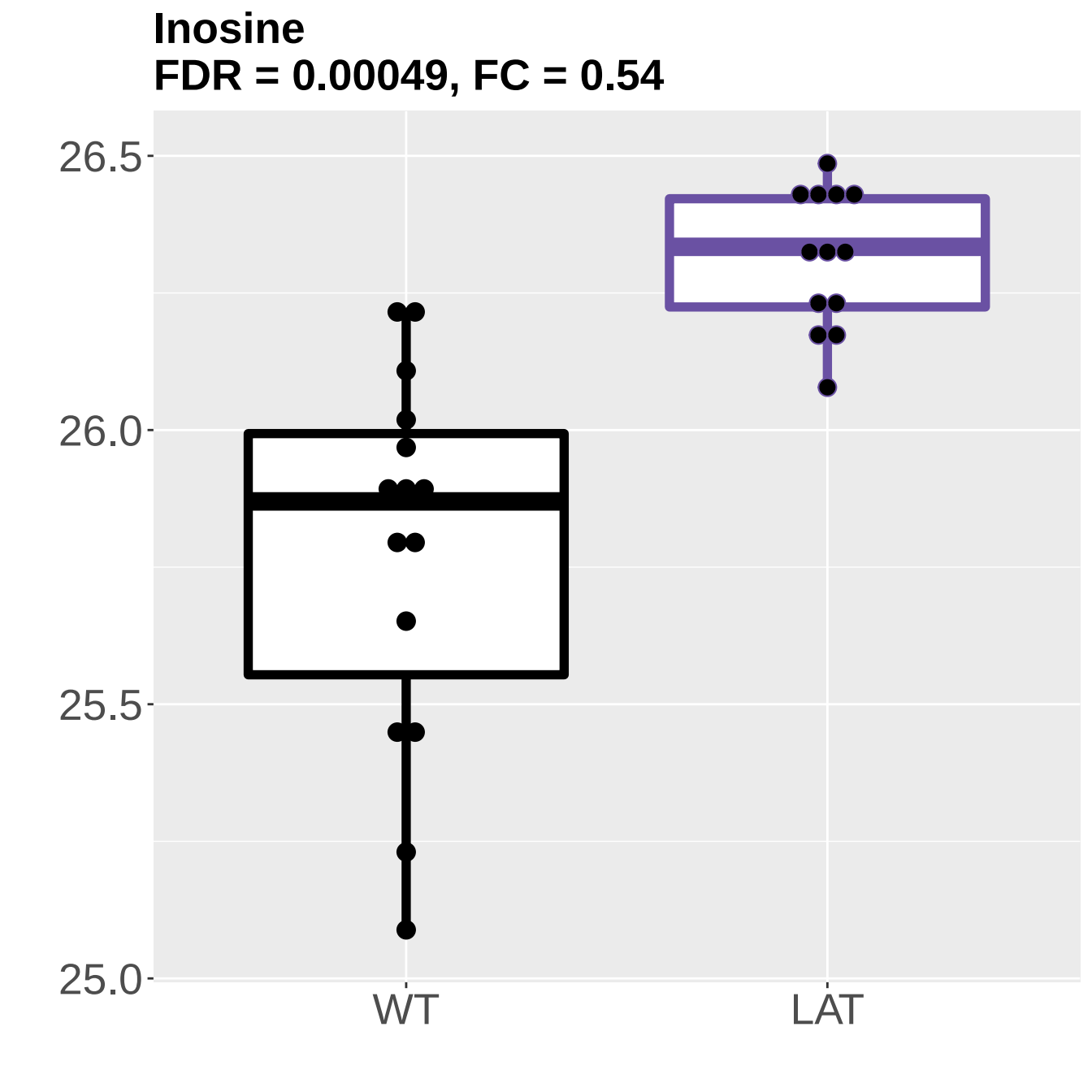
Inosine
FDR = 0.00049, FC = 0.54
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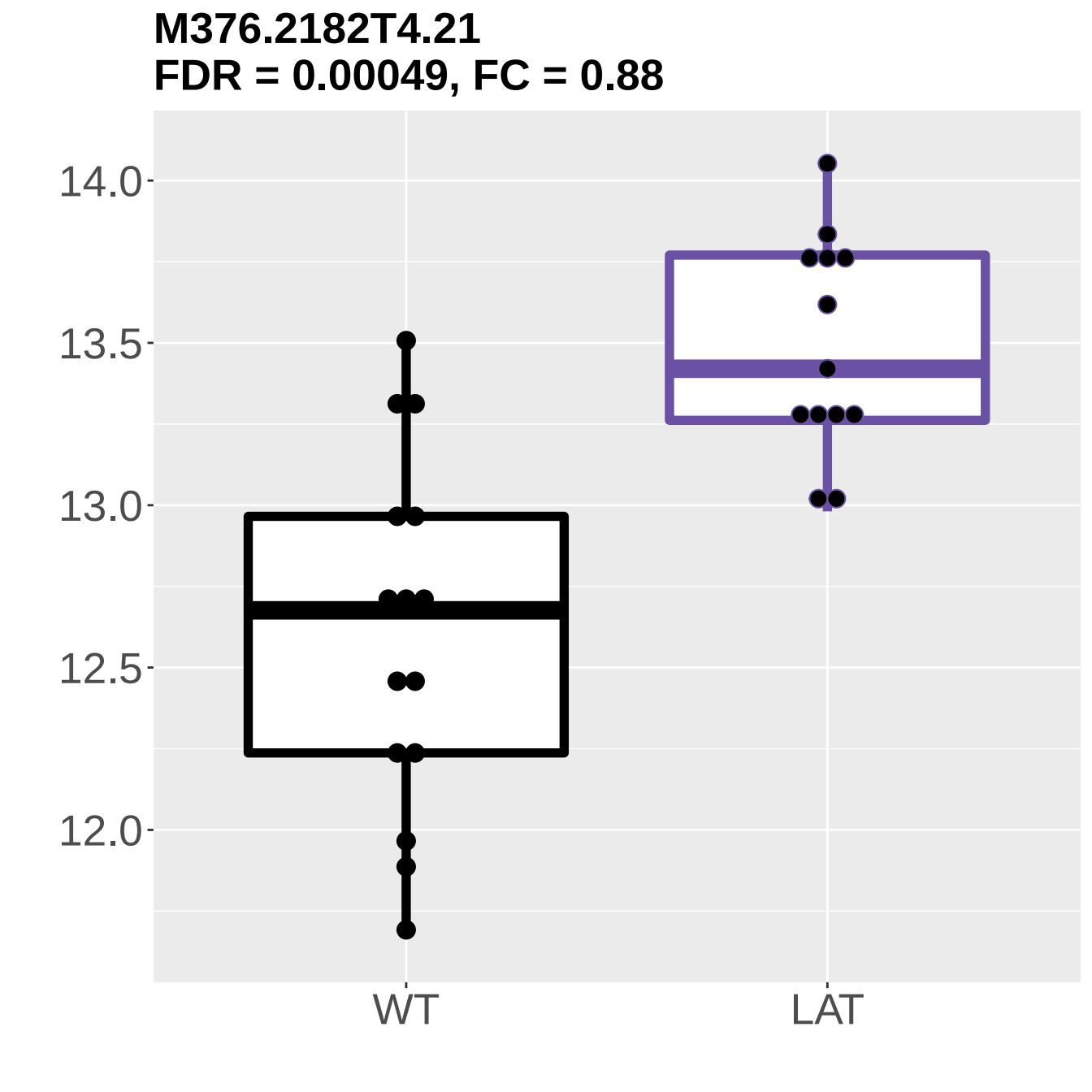
26.0
25.5
25.0
WT
LAT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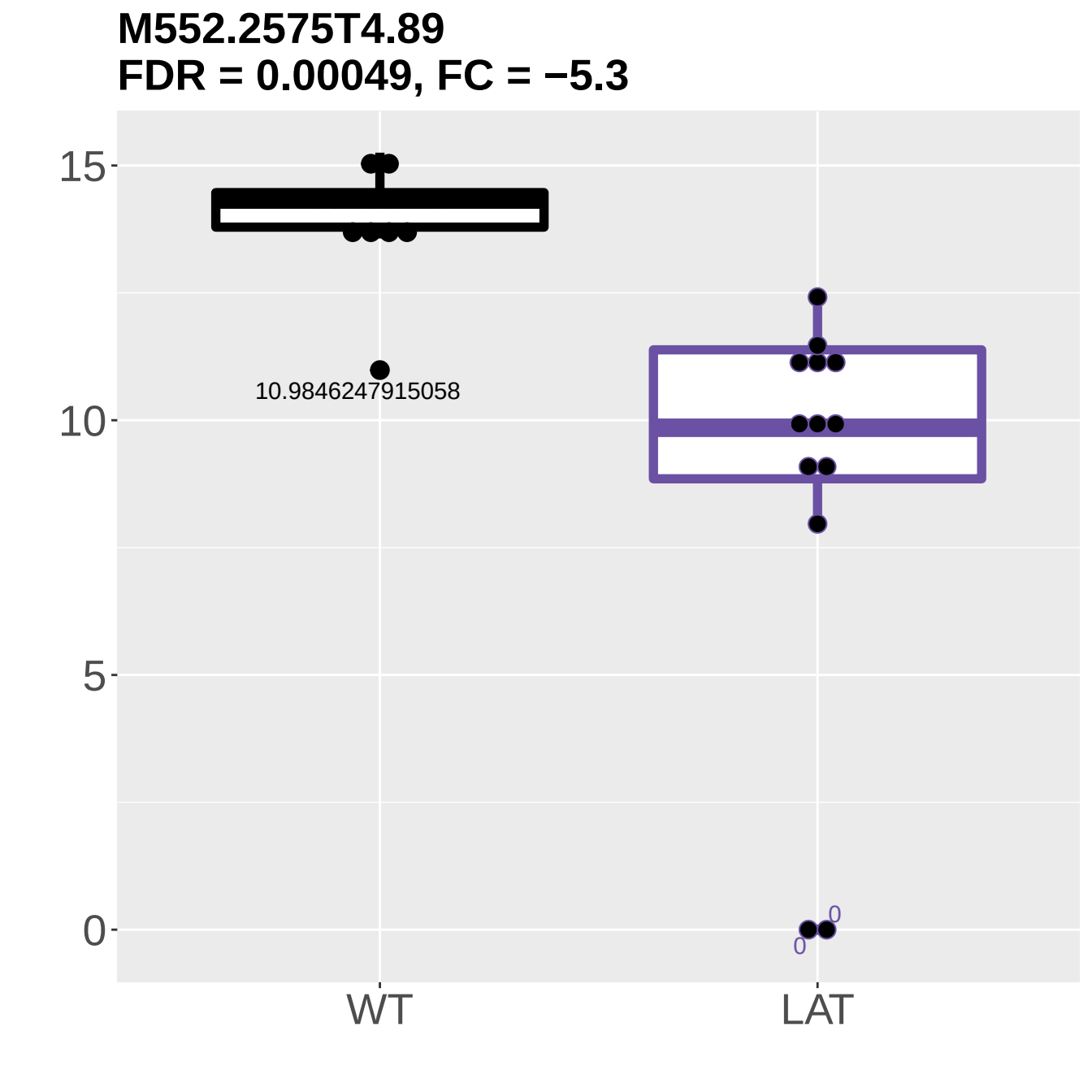
12.5
12.0
WT
LAT


M552.2575T4.89
FDR = 0.00049, FC = −5.3
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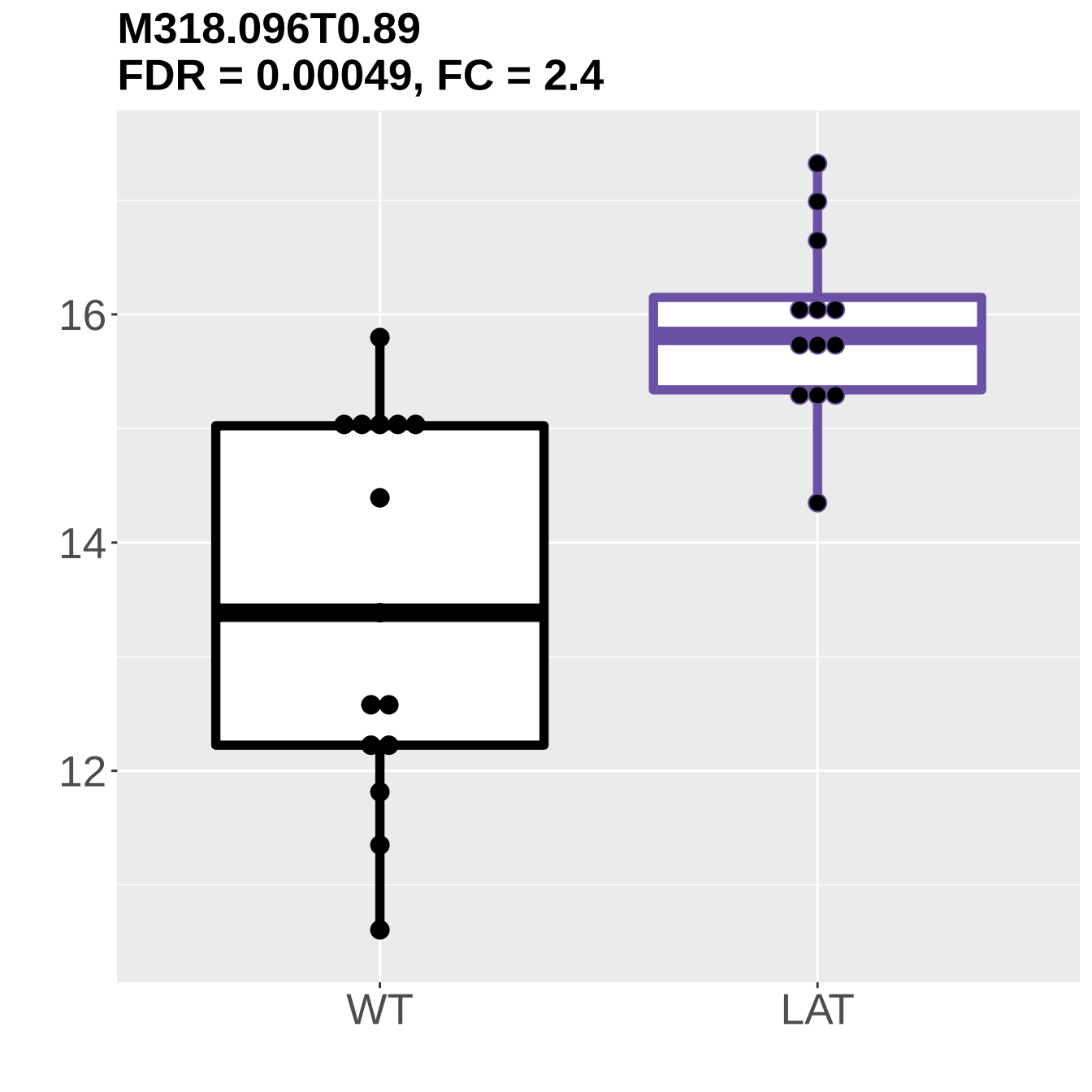
WT
LAT


M318.096T0.89
FDR = 0.00049, FC = 2.4
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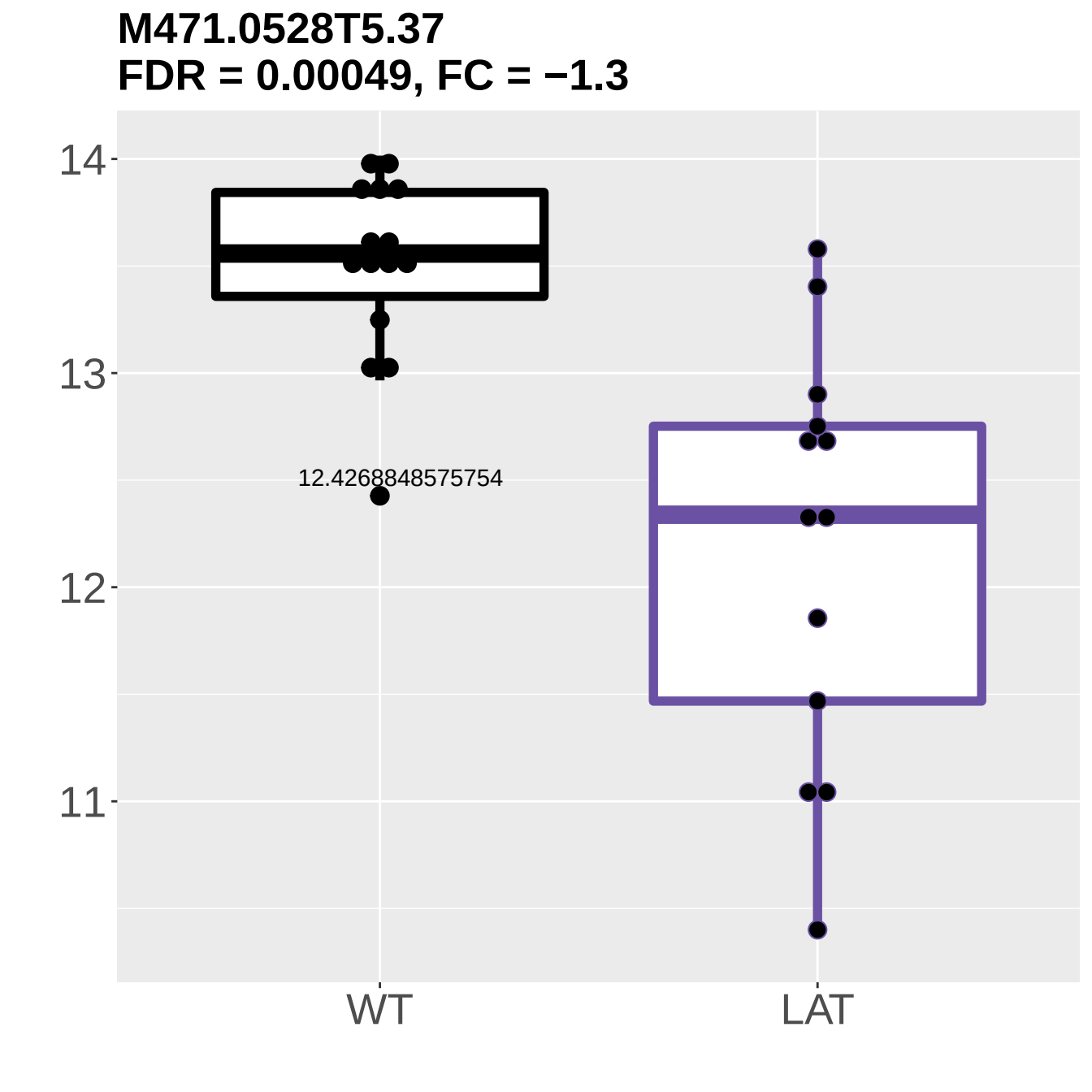
14
12
WT
LAT


M471.0528T5.37
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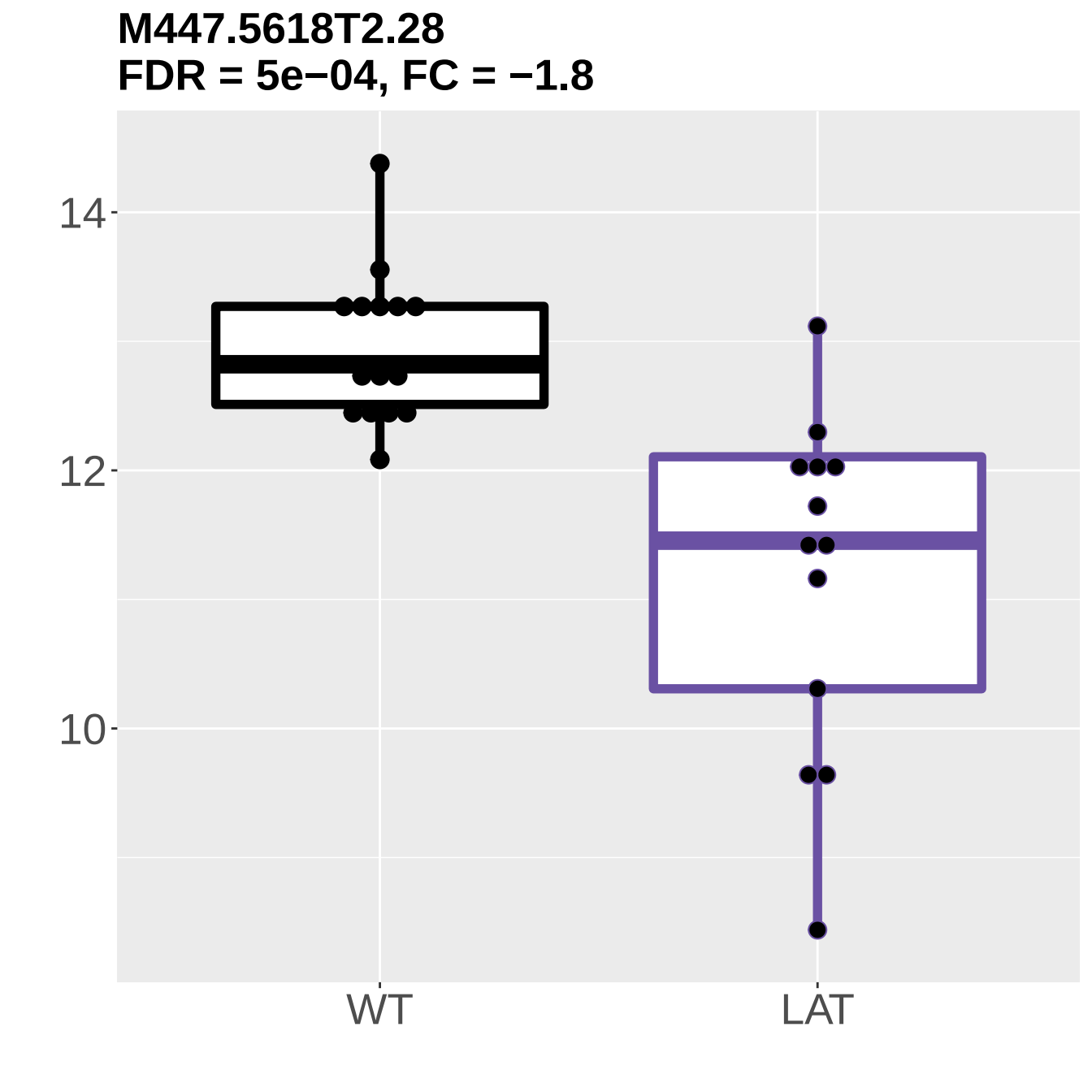
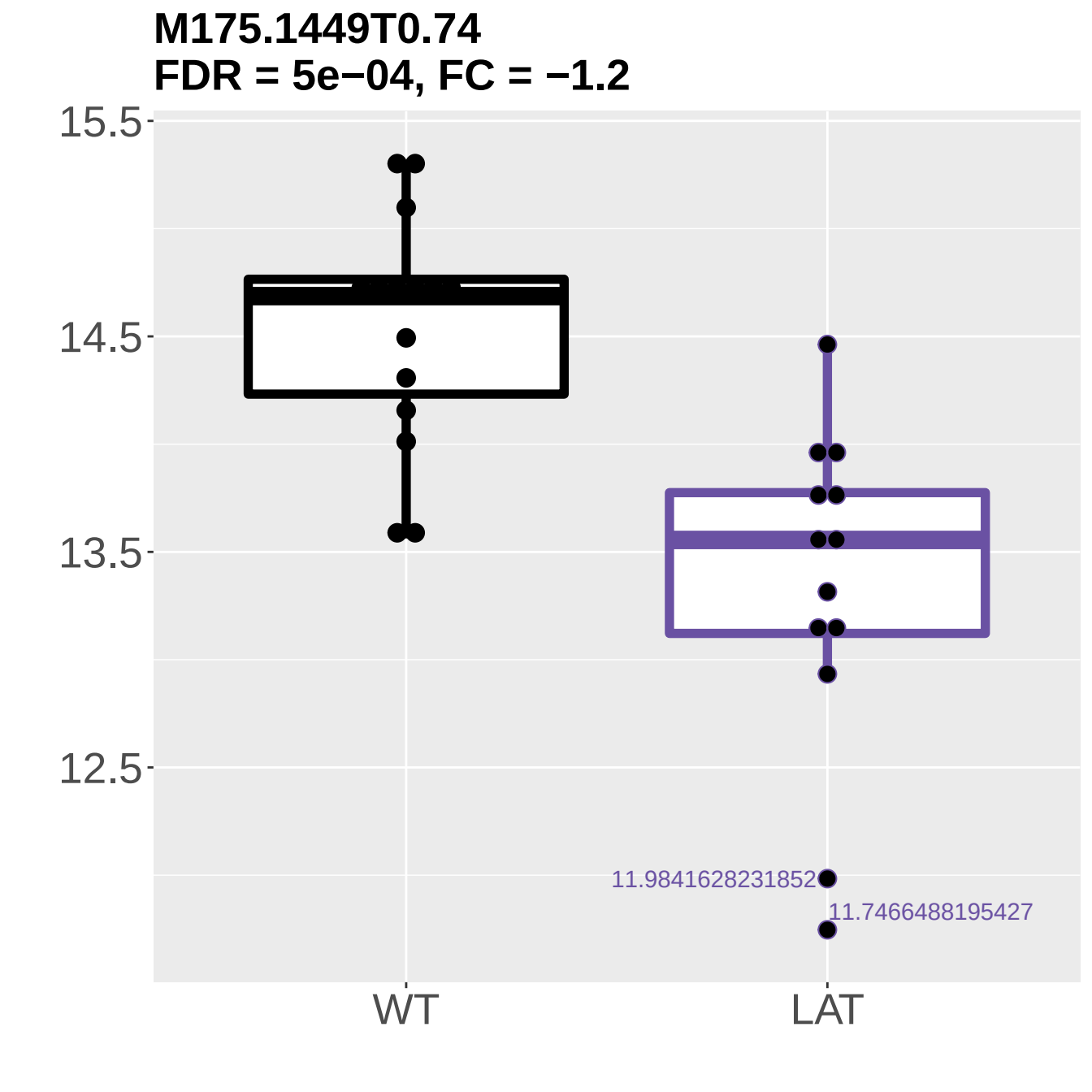
13
12
11
12.4268848575754
WT
LAT


M447.5618T2.28
FDR = 5e−04, FC = −1.8
14
12
10
WT
LAT


M175.1449T0.74
FDR = 5e−04, FC = −1.2
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13.5
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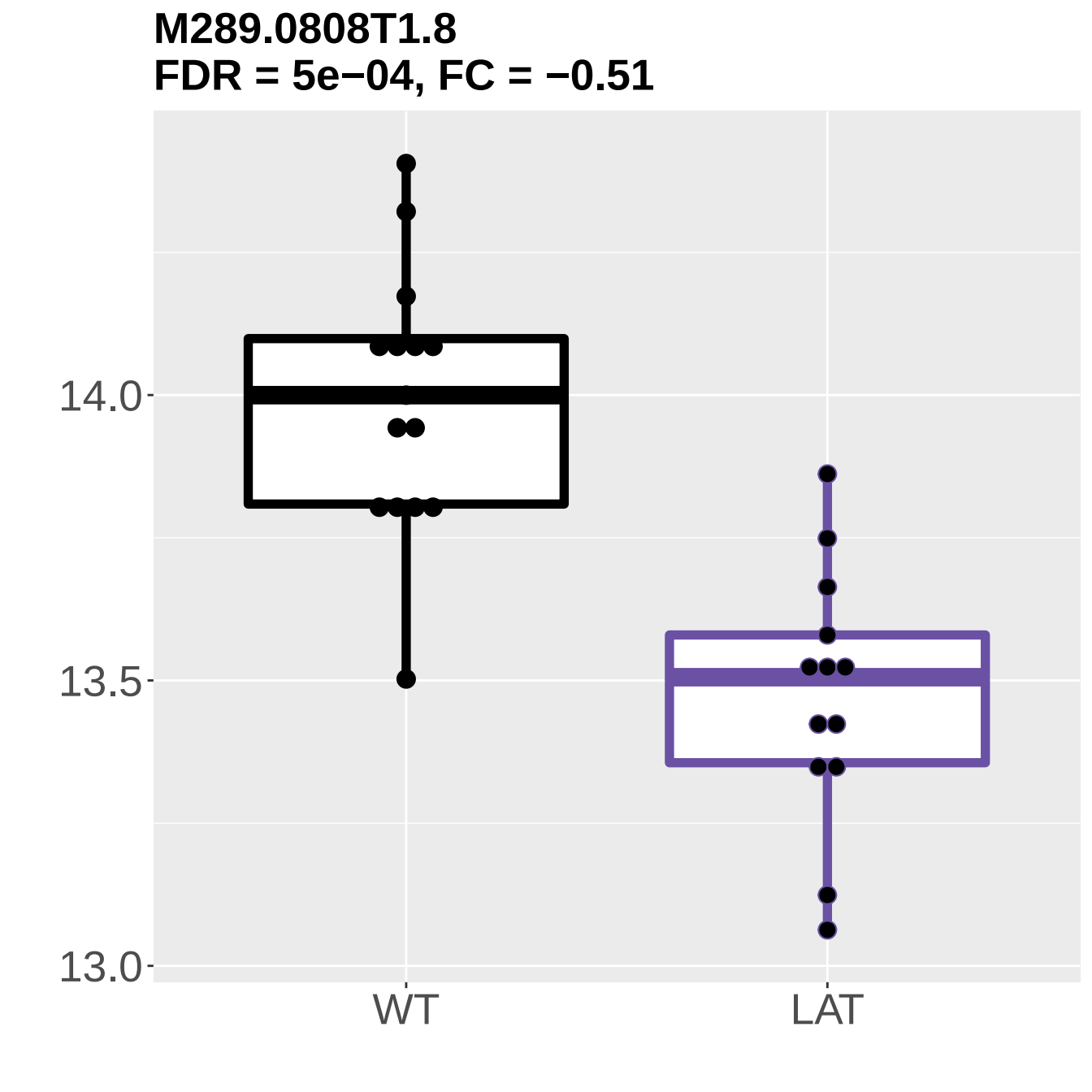
WT
LAT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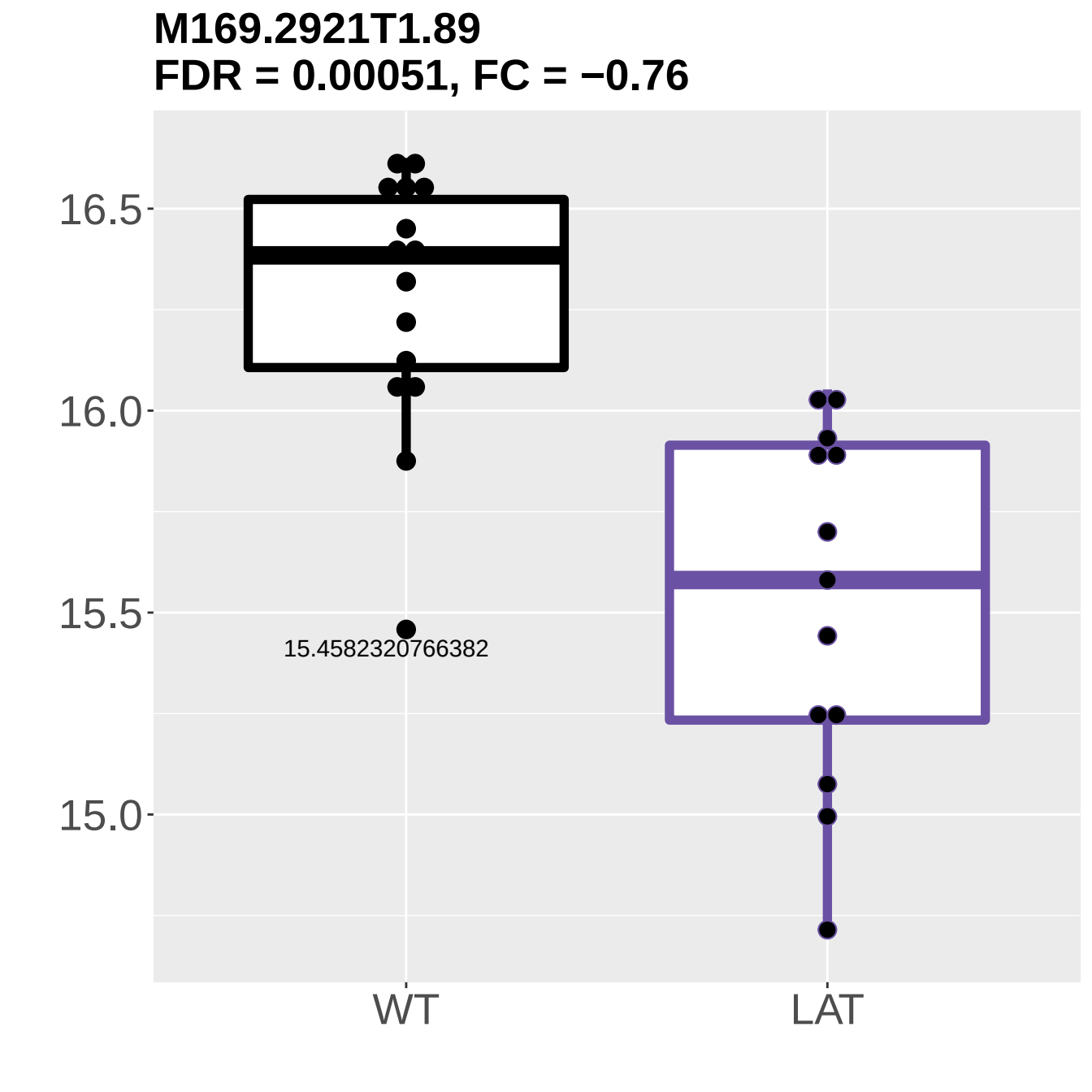
WT
LAT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15.5
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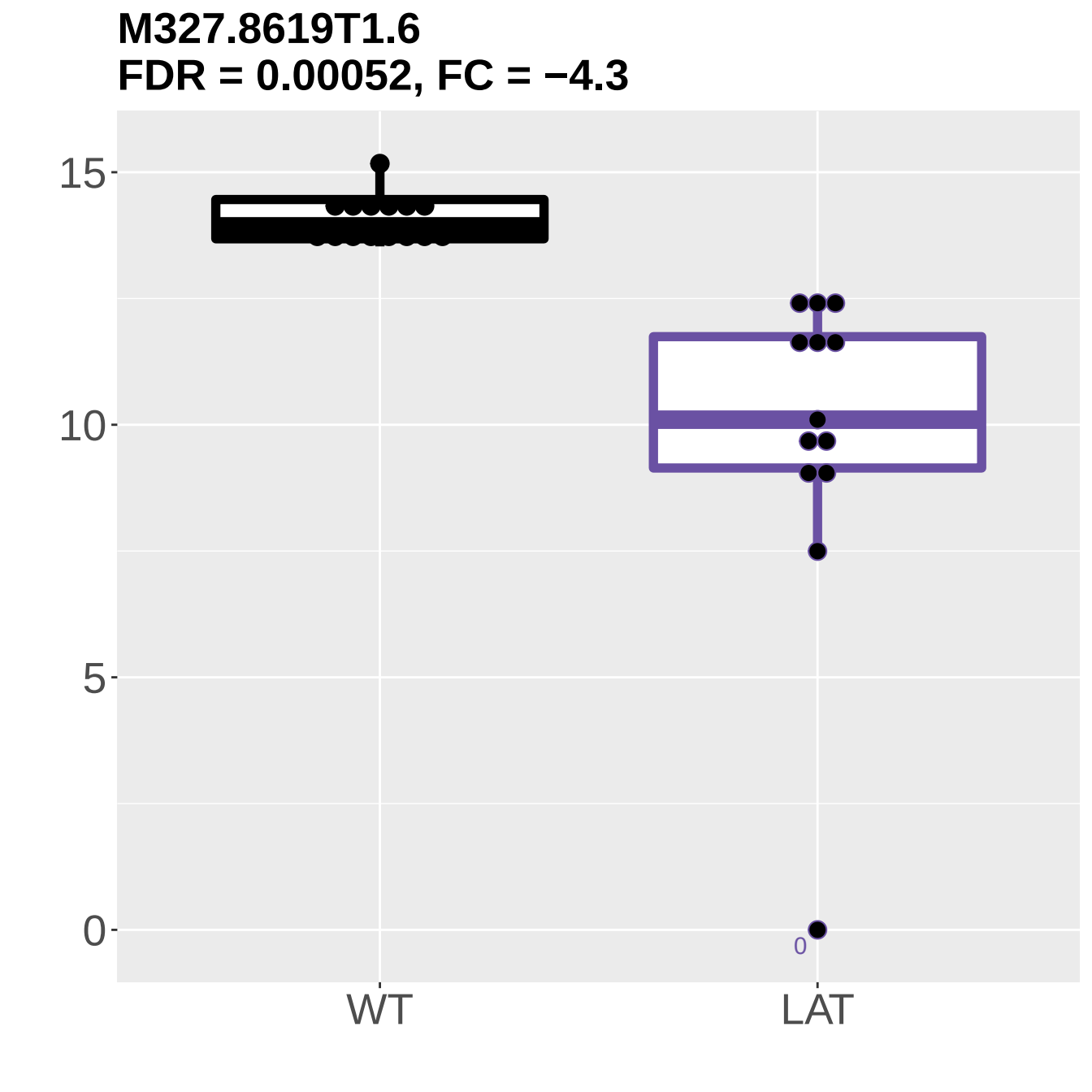
WT
LAT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FDR = 0.00052, FC = −4.3
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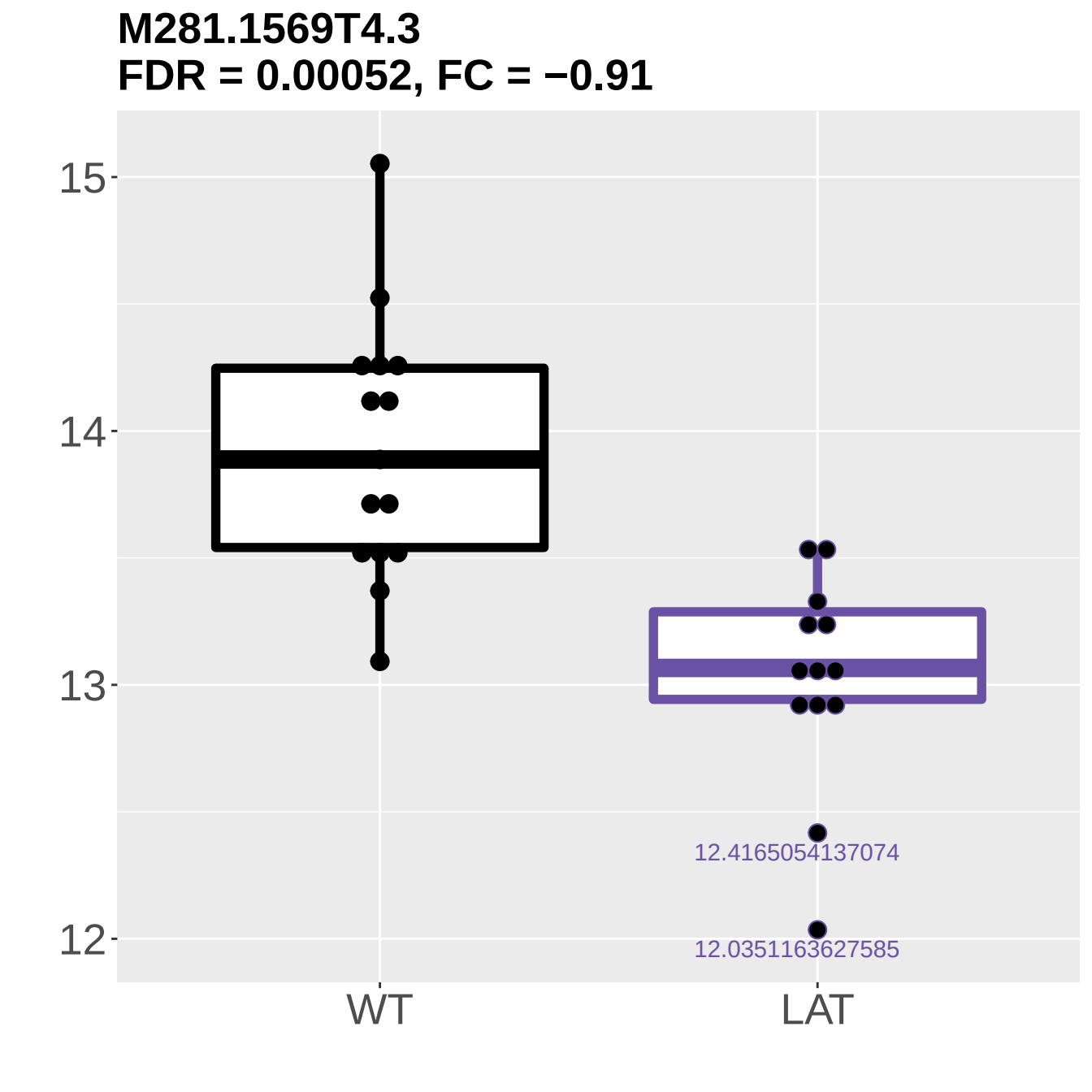
10
5
0
0
WT
LAT


M281.1569T4.3
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14
13
12
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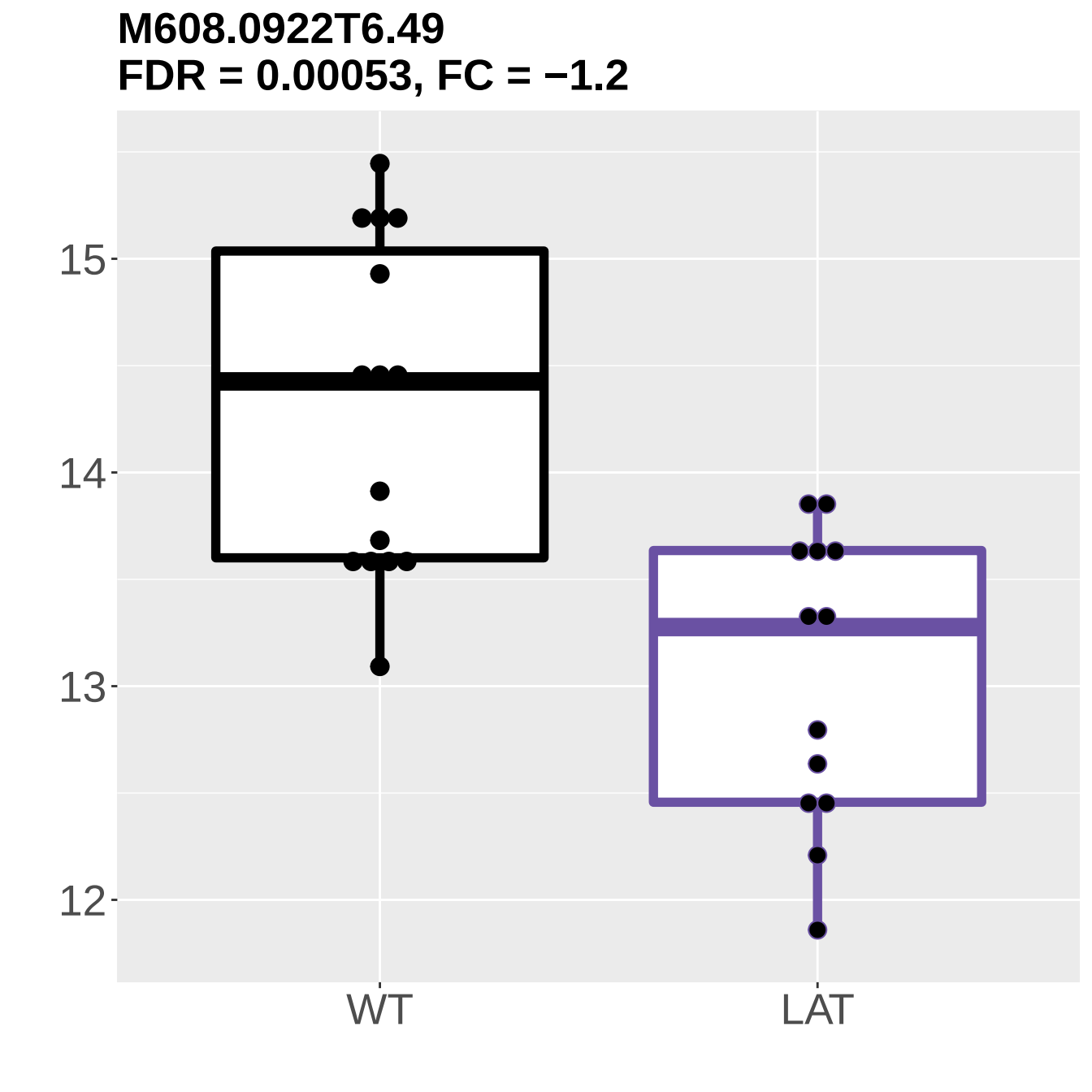
WT
LAT


M608.0922T6.49
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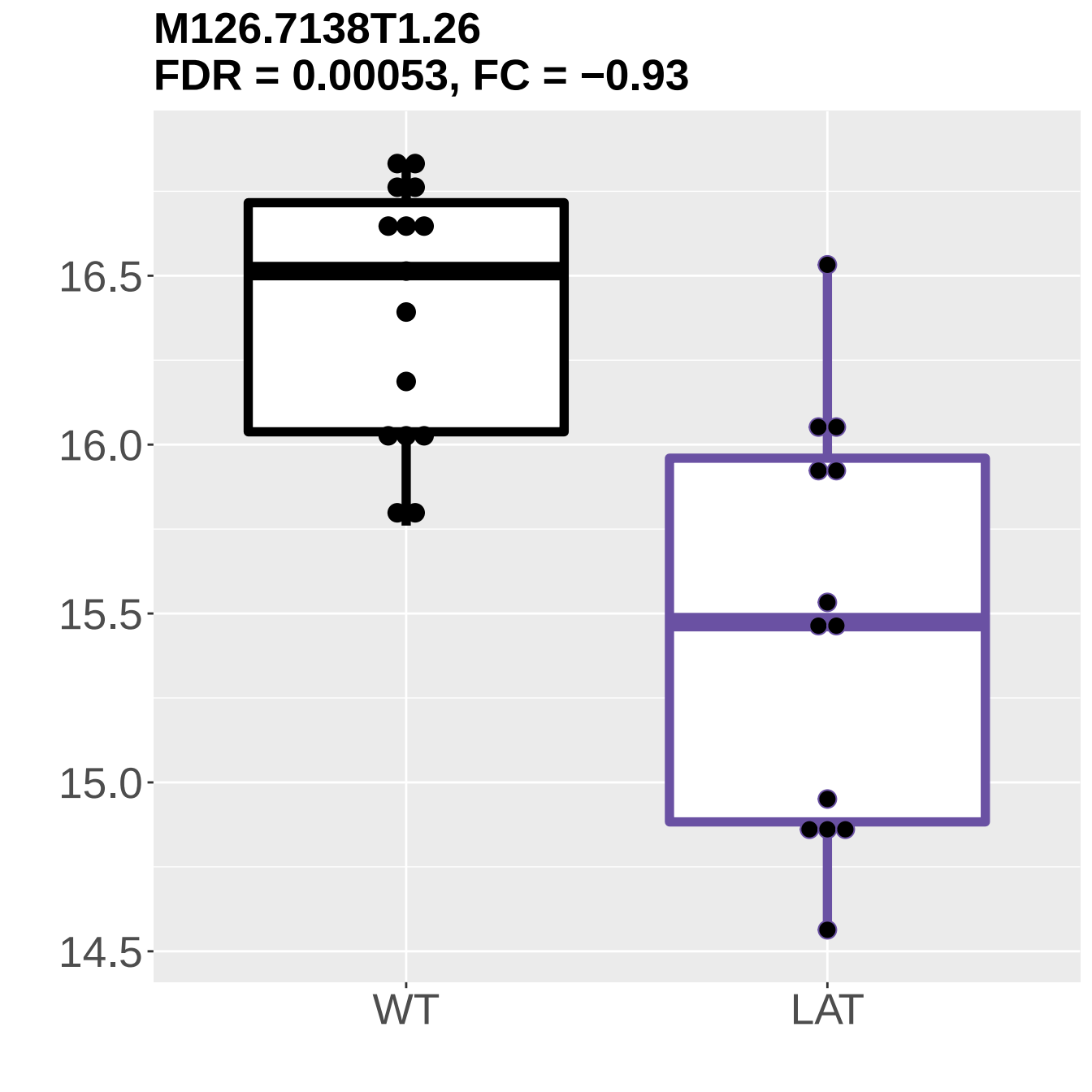
14
13
12
WT
LAT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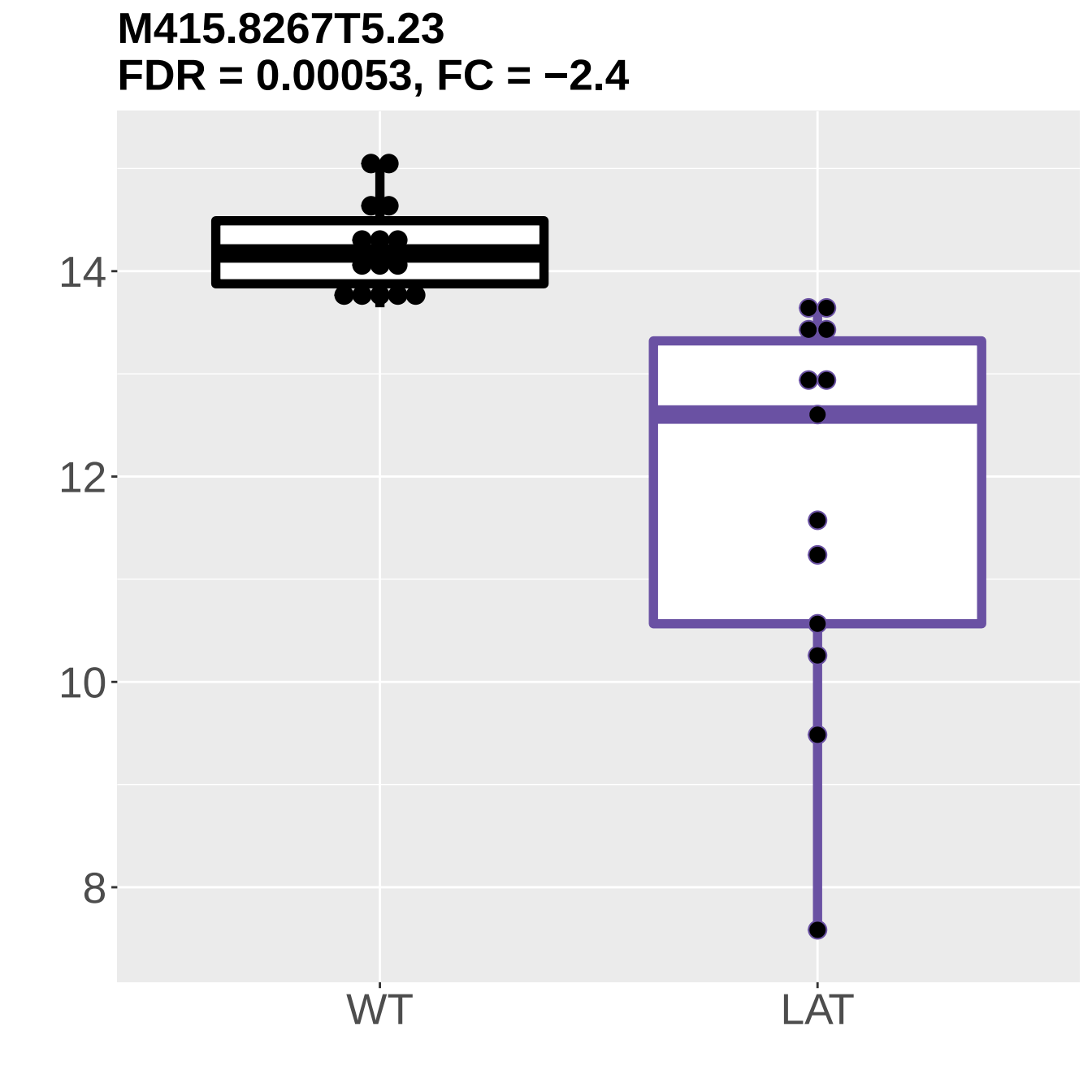
15.5
15.0
14.5
WT
LAT


M415.8267T5.23
FDR = 0.00053, FC = −2.4
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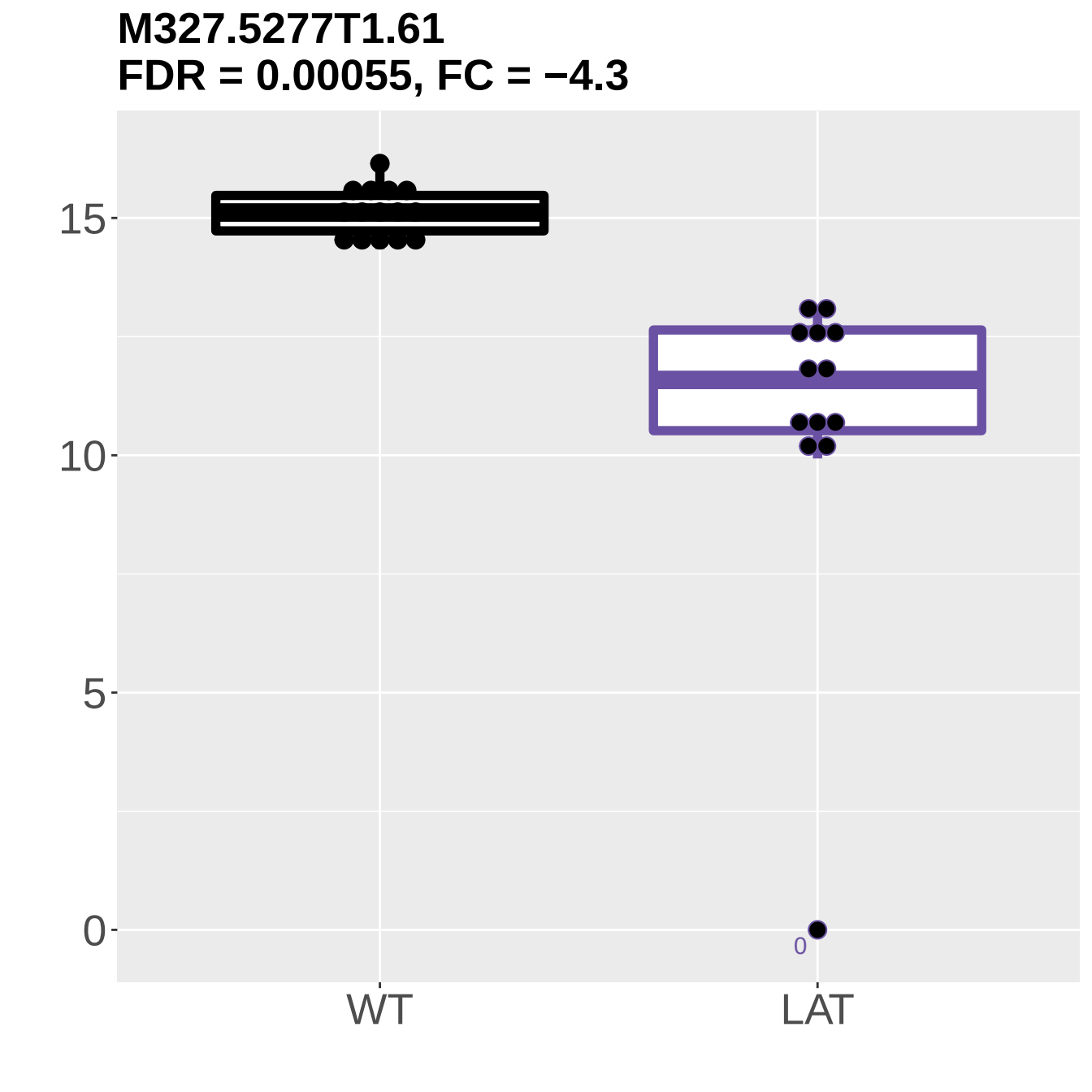
12
10
8
WT
LAT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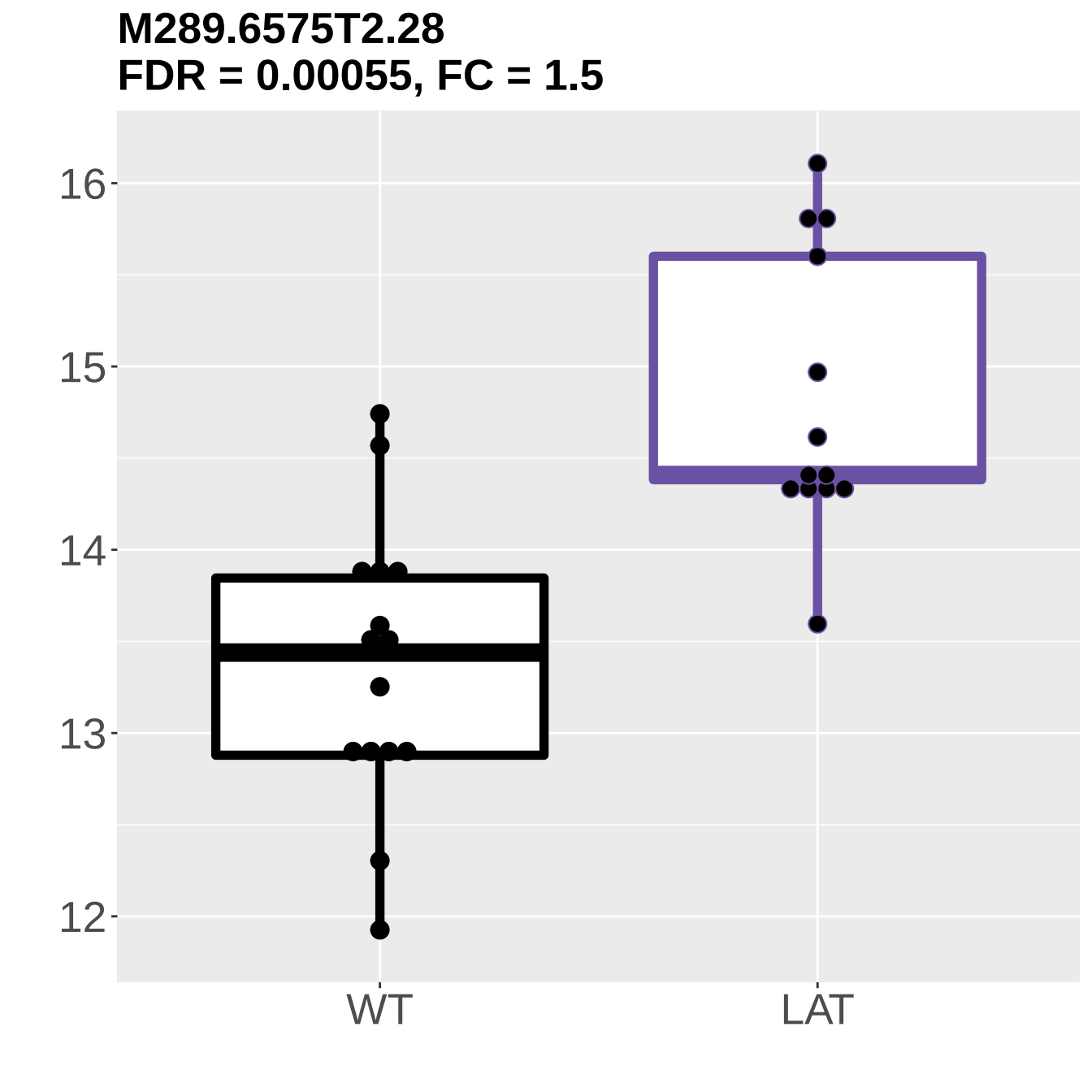
10
5
0
0
WT
LAT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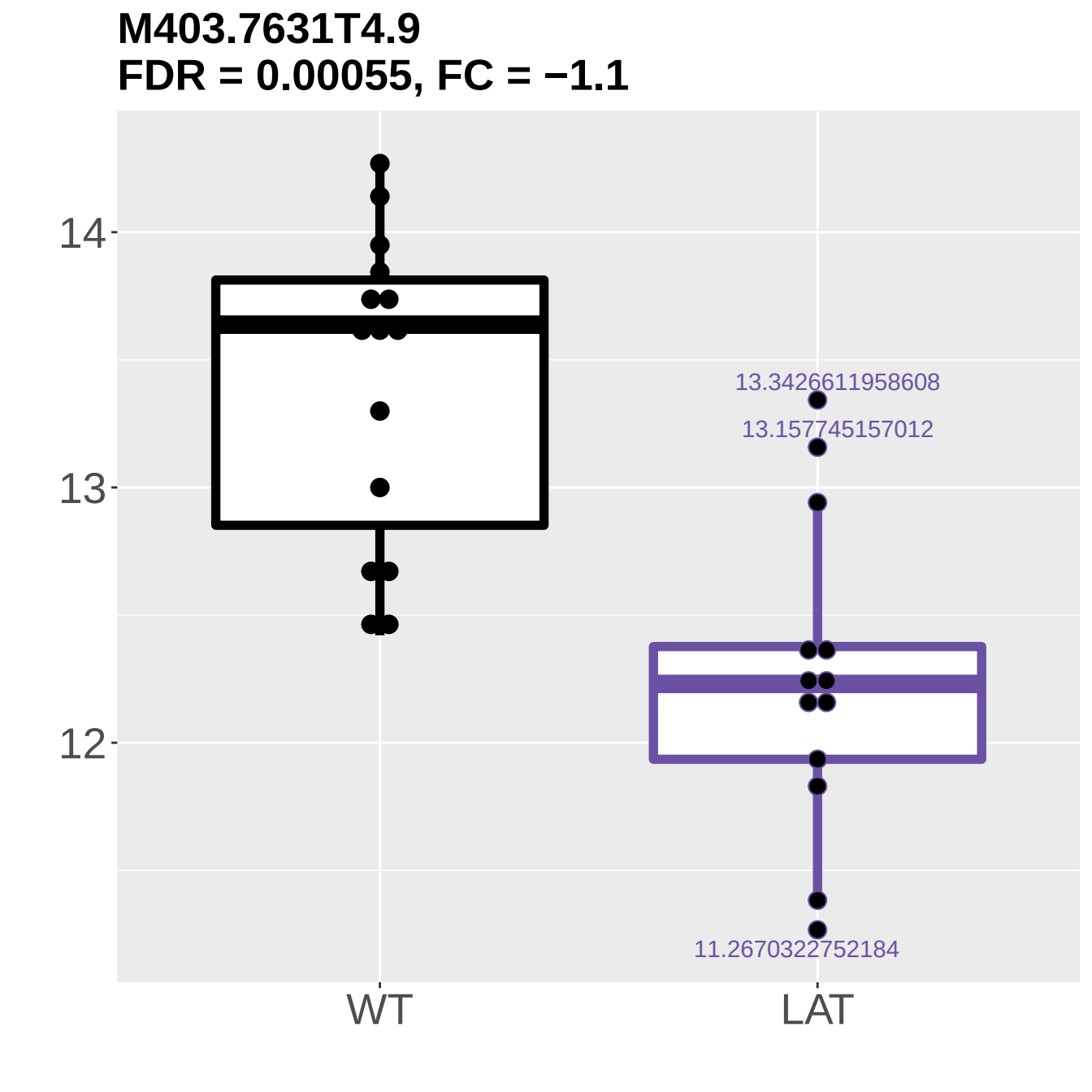
15
14
13
12
WT
LAT


M403.7631T4.9
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12
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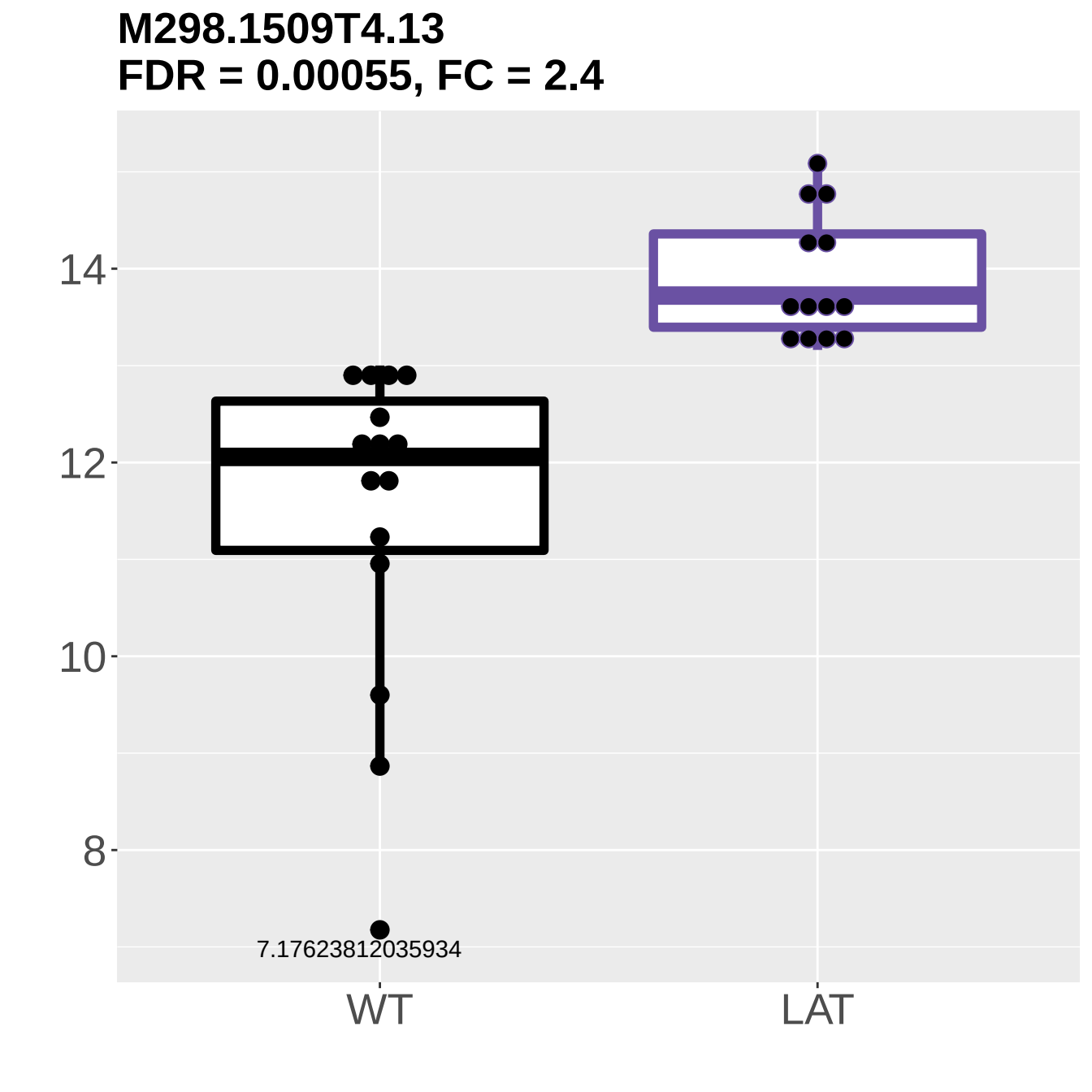
WT
LAT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12
10
8
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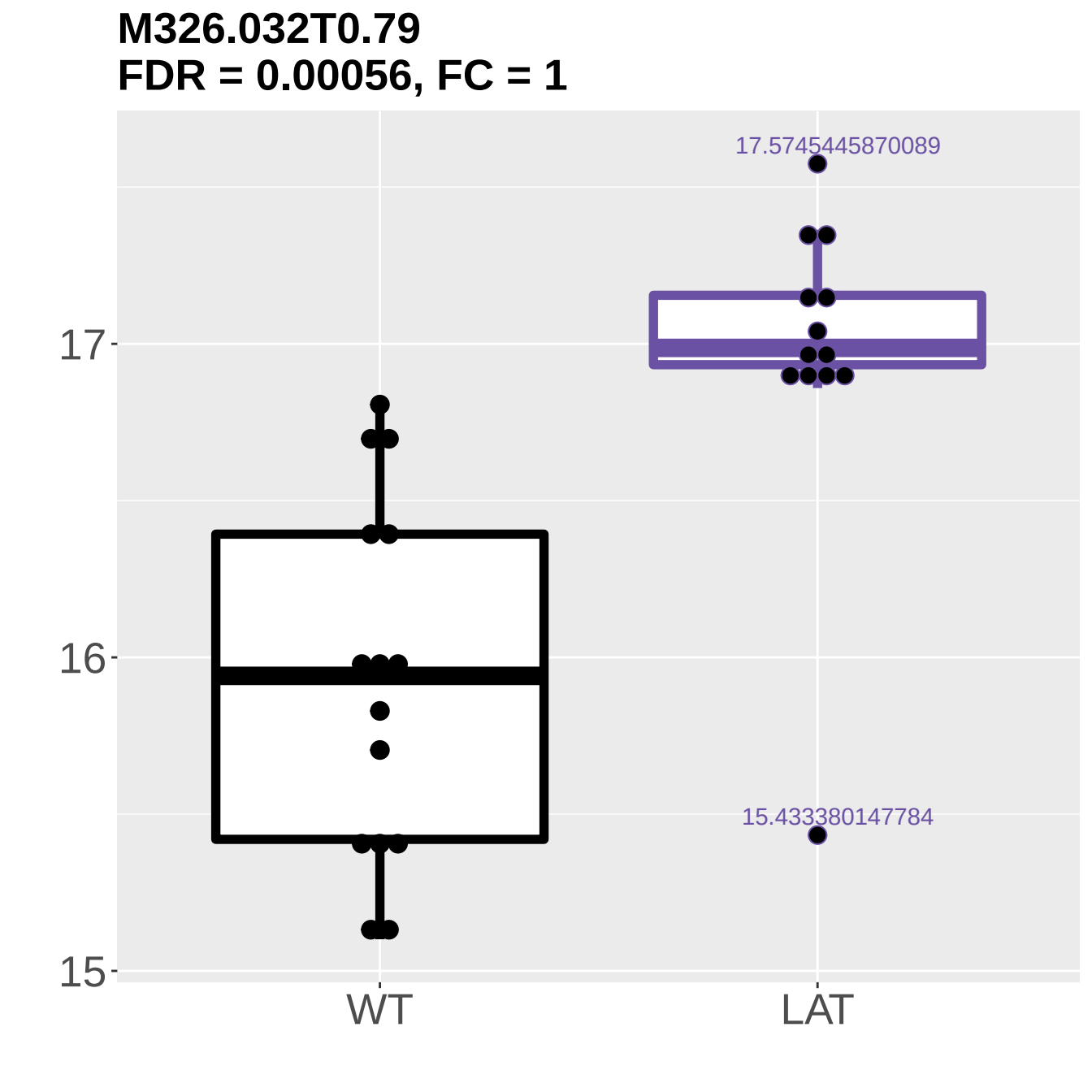
WT
LAT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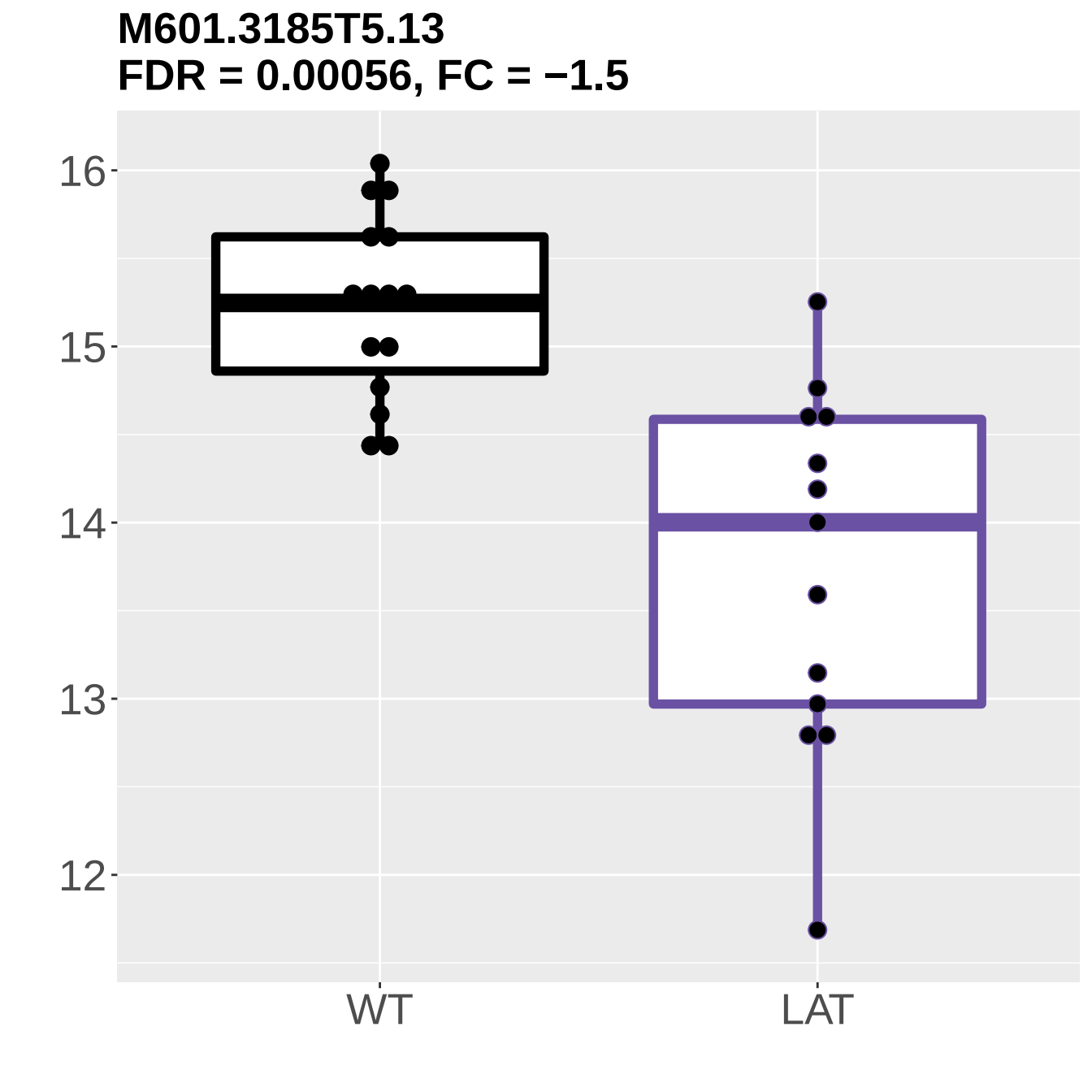
17
16
15
WT
LAT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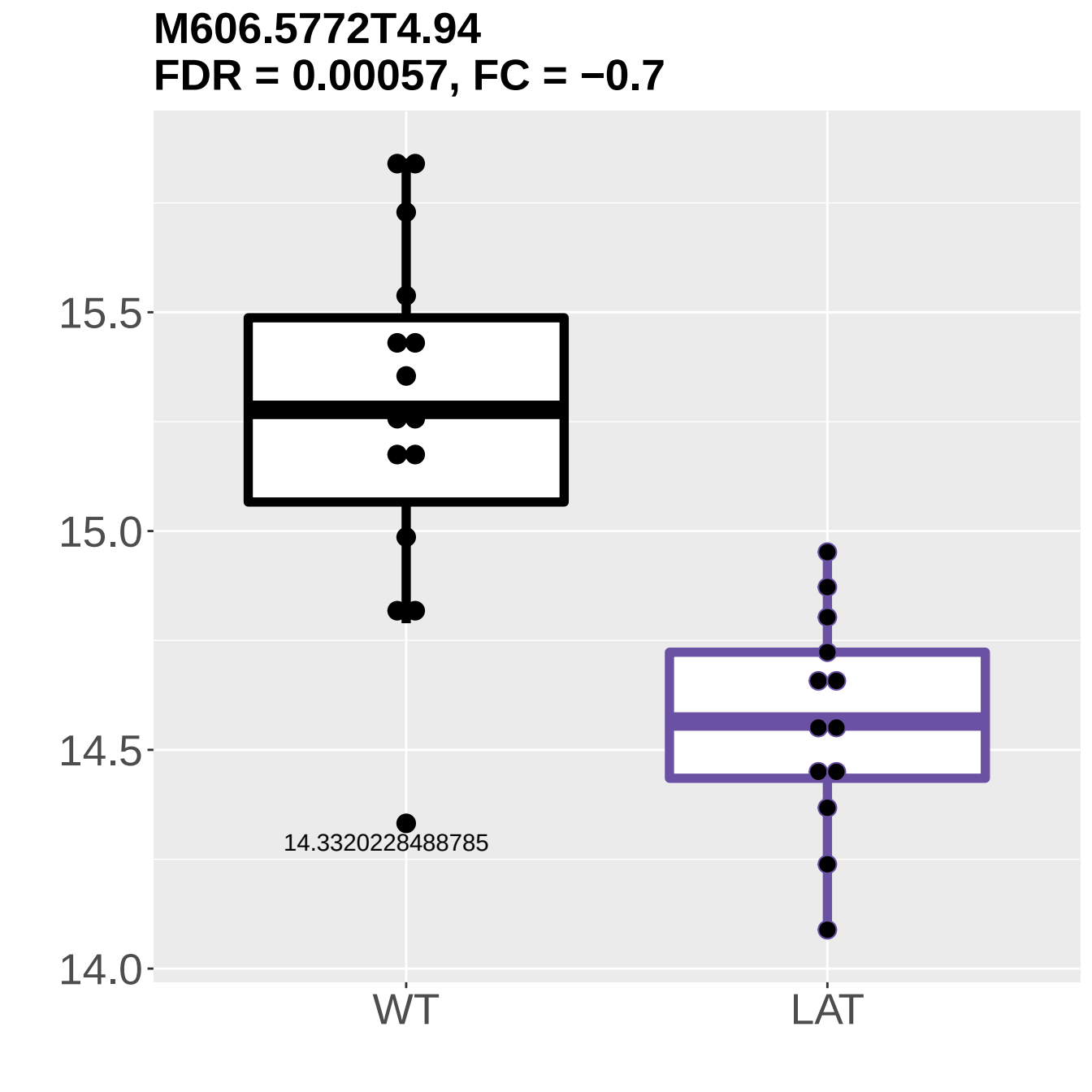
12
WT
LAT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14.5
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WT
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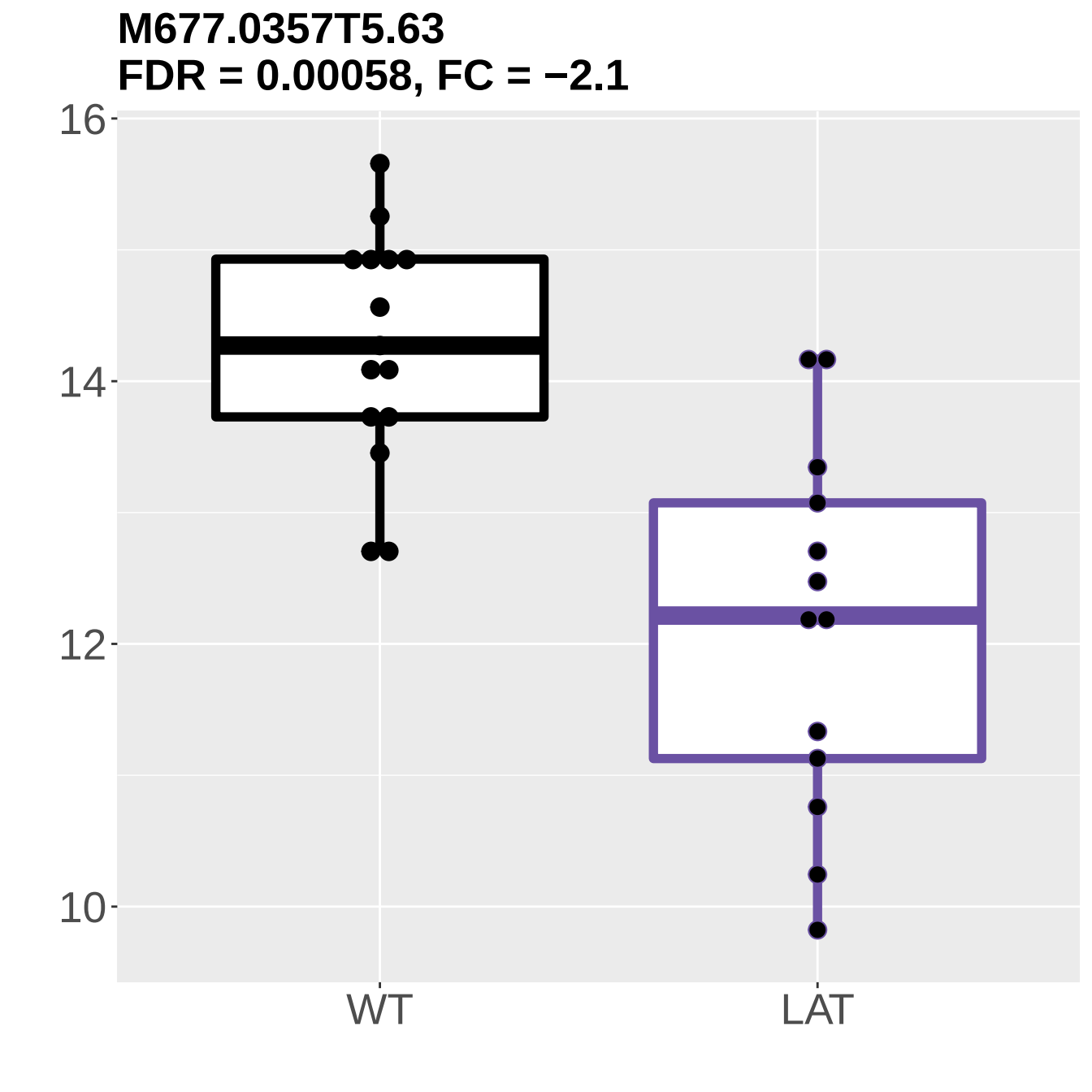
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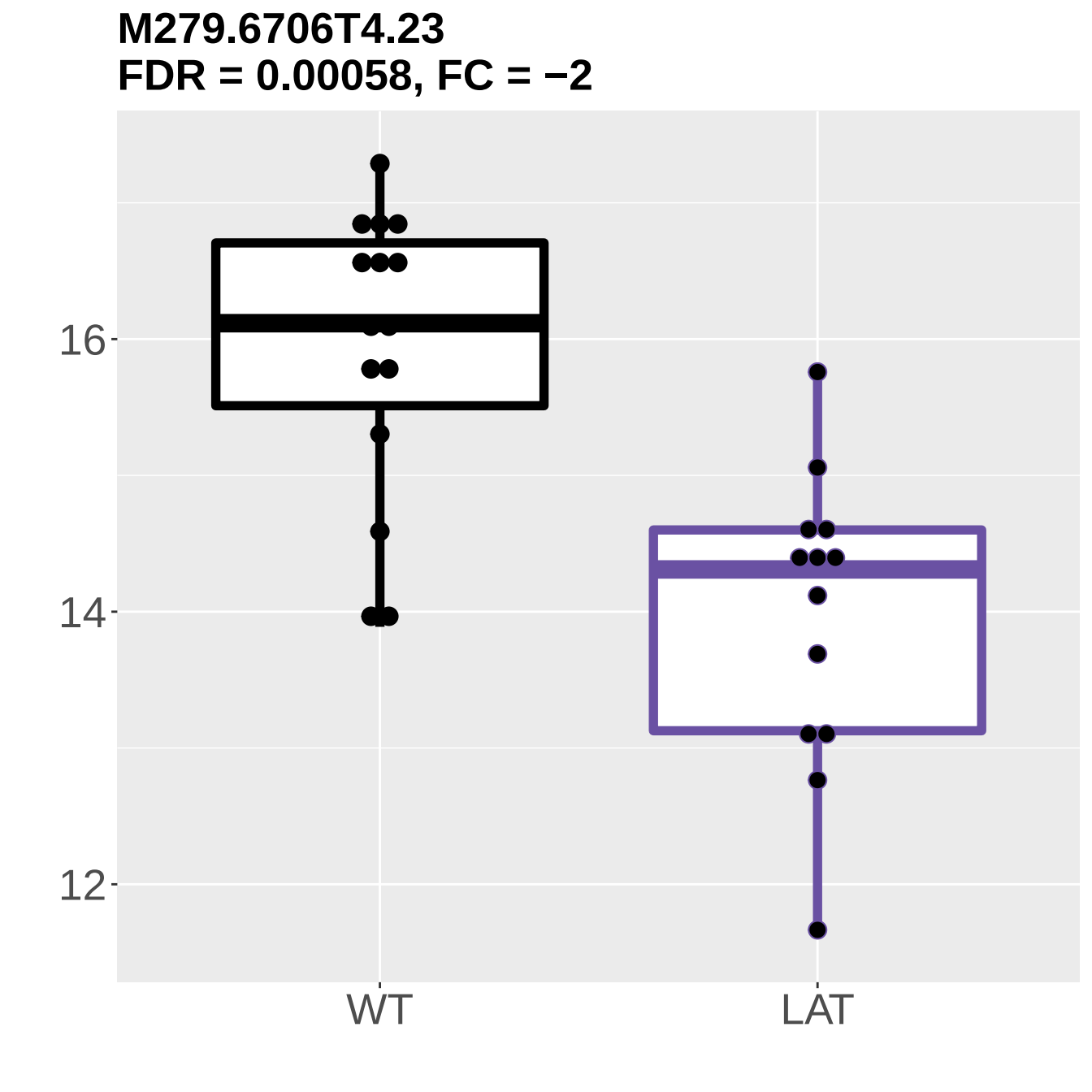
14
12
10
WT
LAT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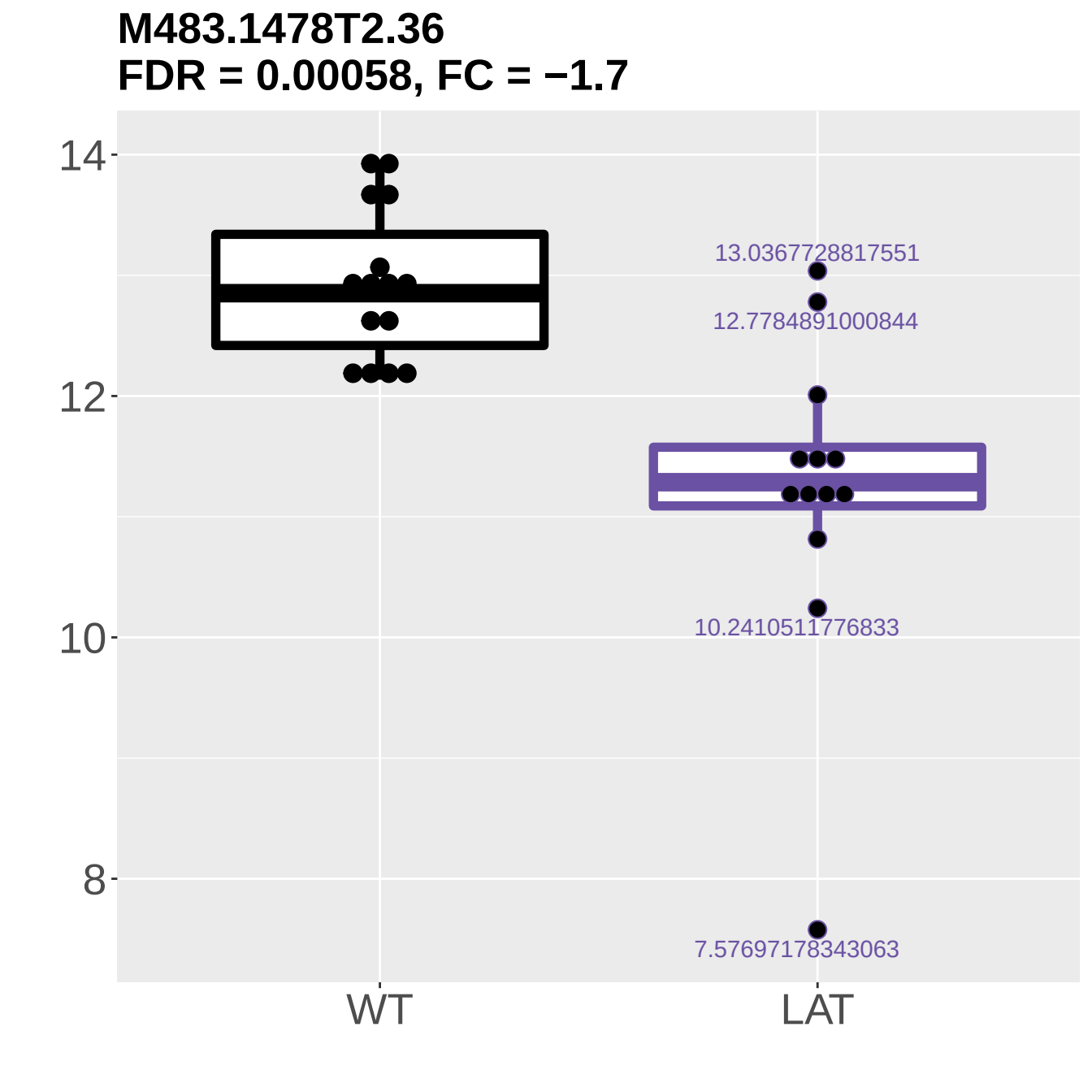
14
12
WT
LAT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FDR = 0.00058, FC = −1.7
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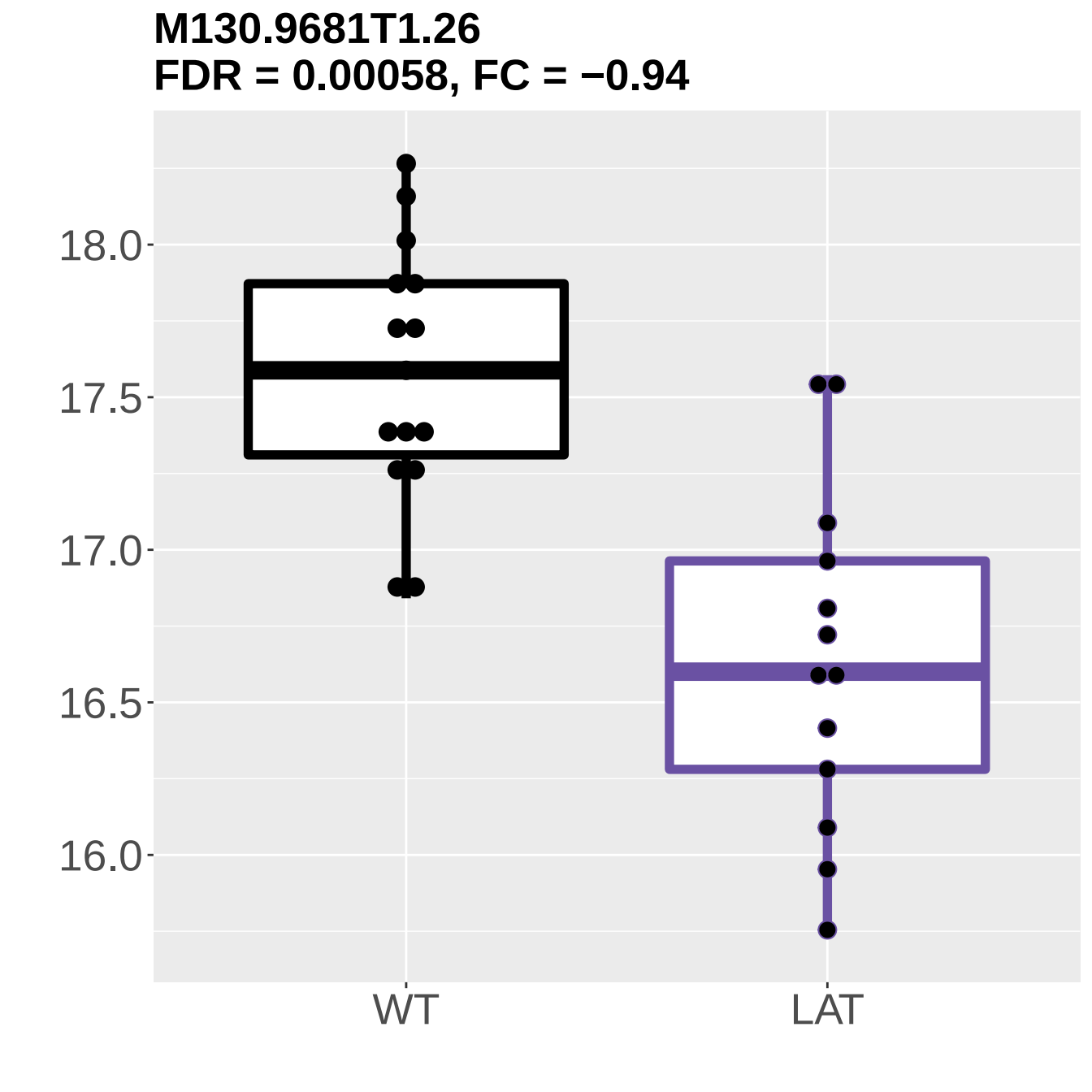
WT
LAT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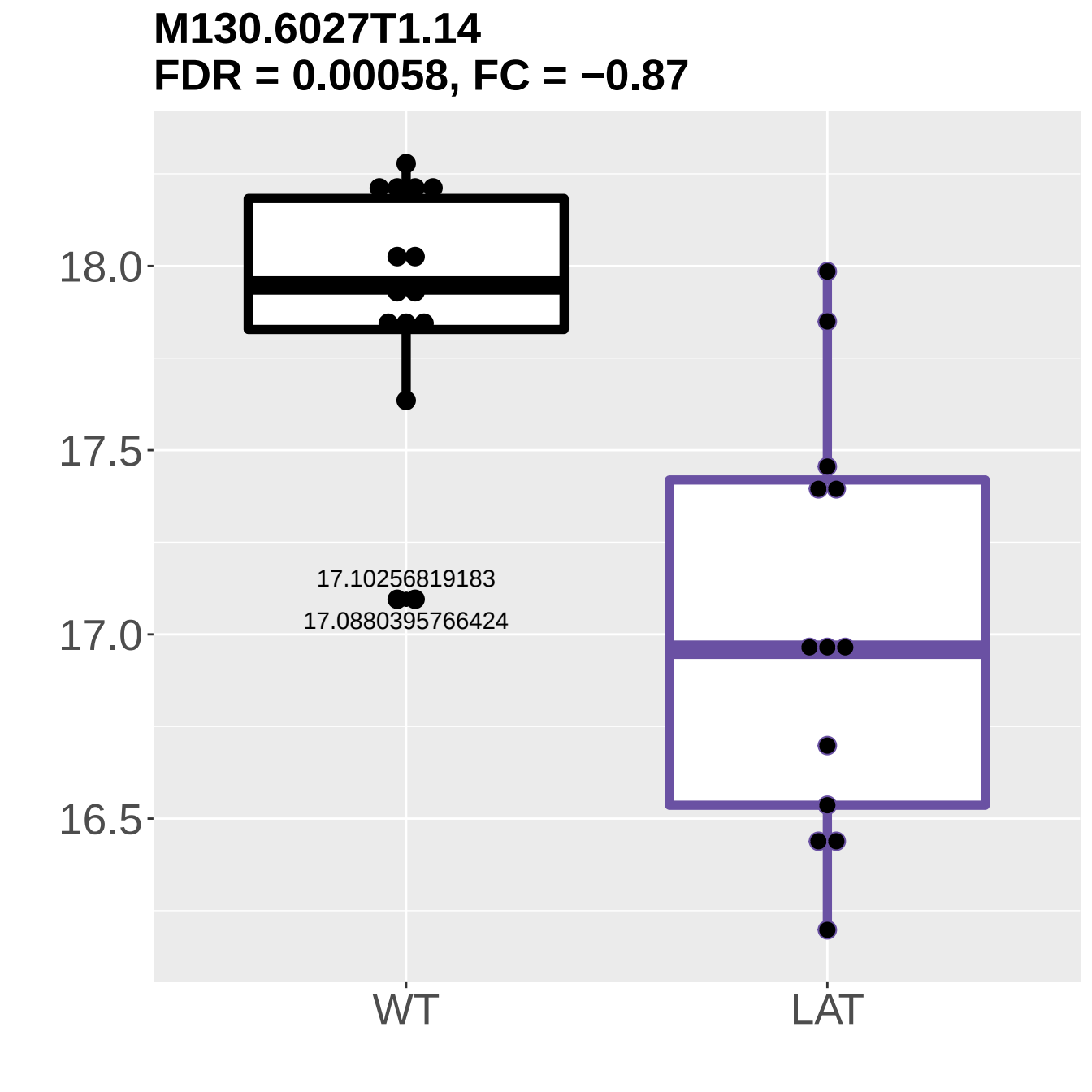
17.0
16.5
16.0
WT
LAT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17.0
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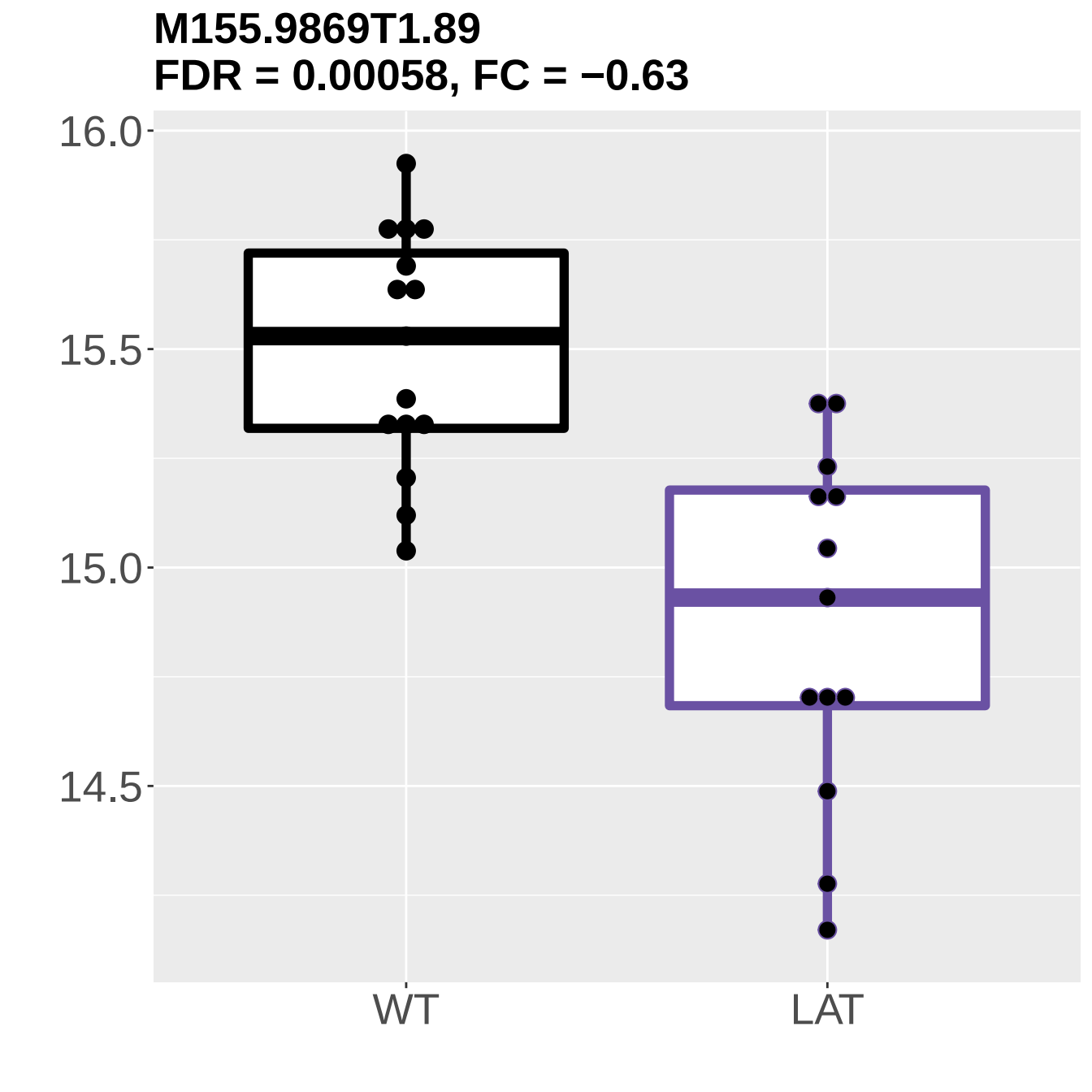
WT
LAT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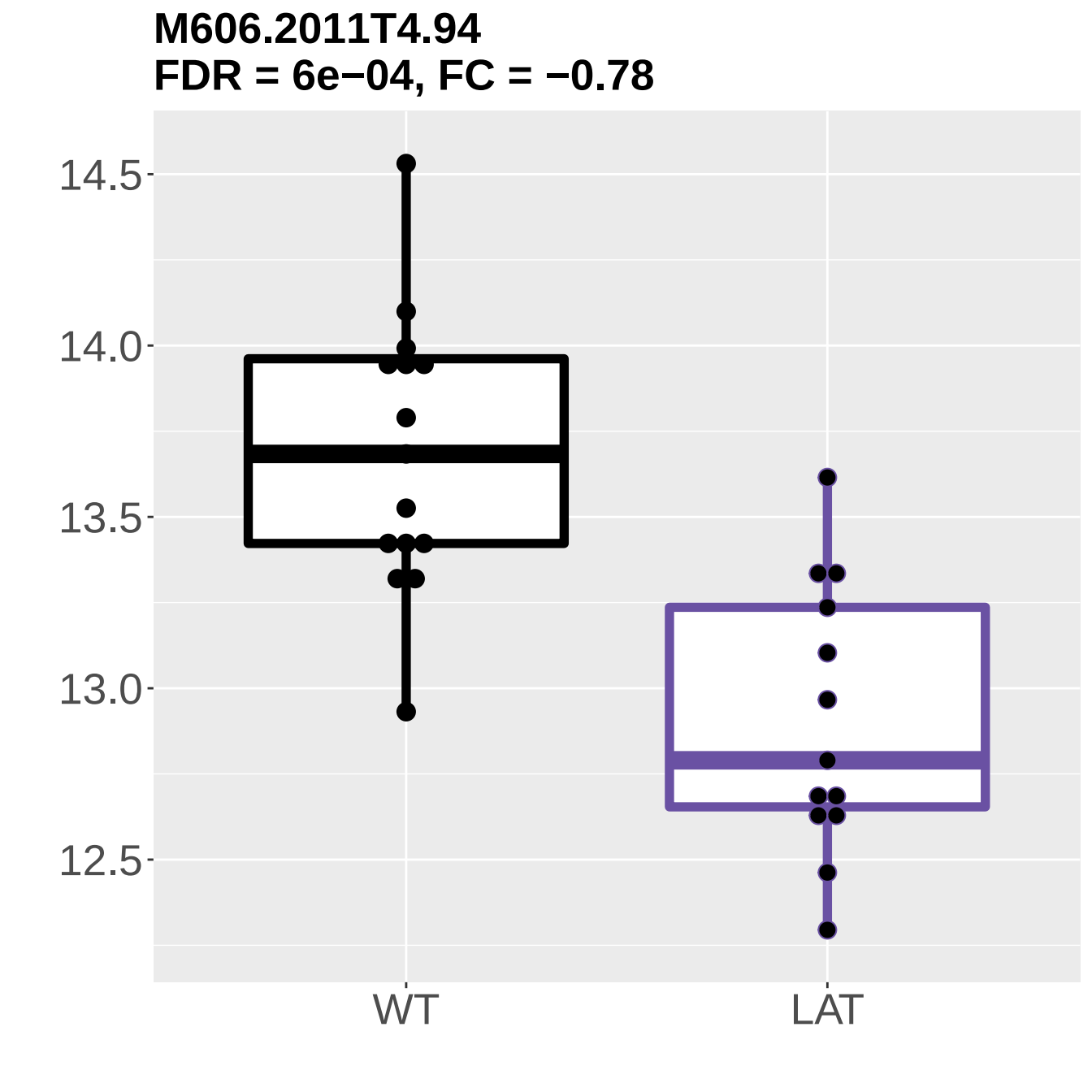
15.0
14.5
WT
LAT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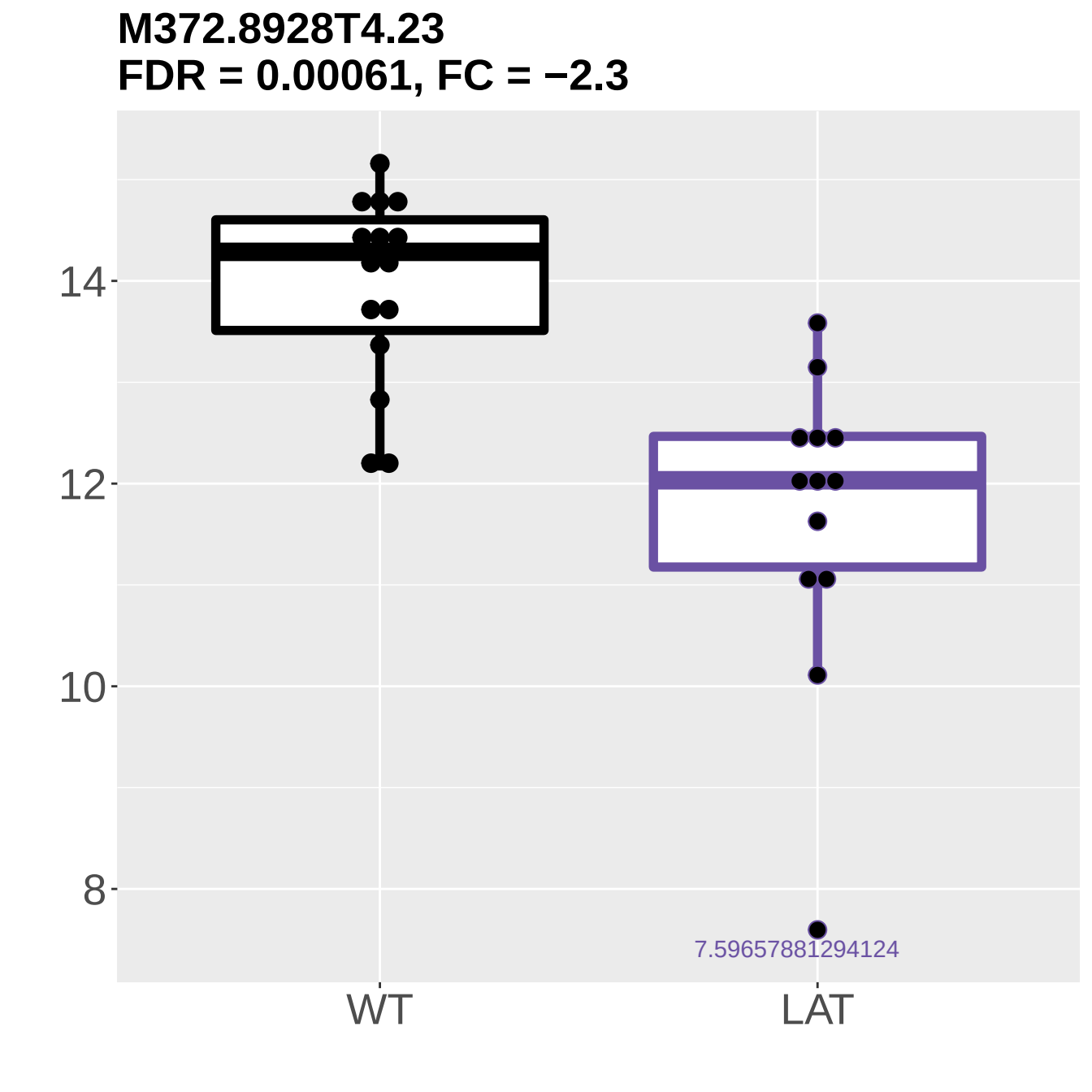
13.0
12.5
WT
LAT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FDR = 0.00061, FC = −2.3
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10
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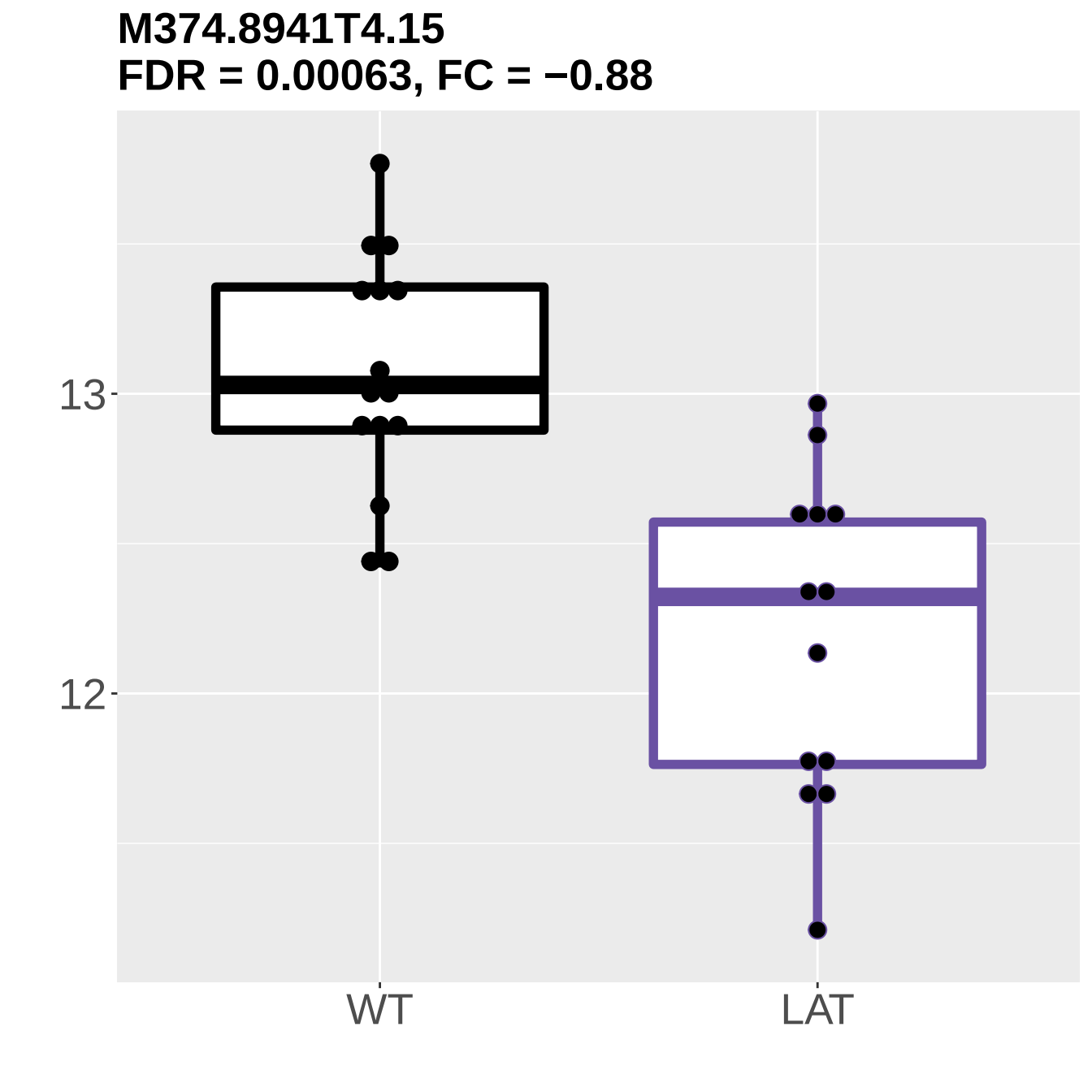
WT
LAT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FDR = 0.00063, FC = −0.88
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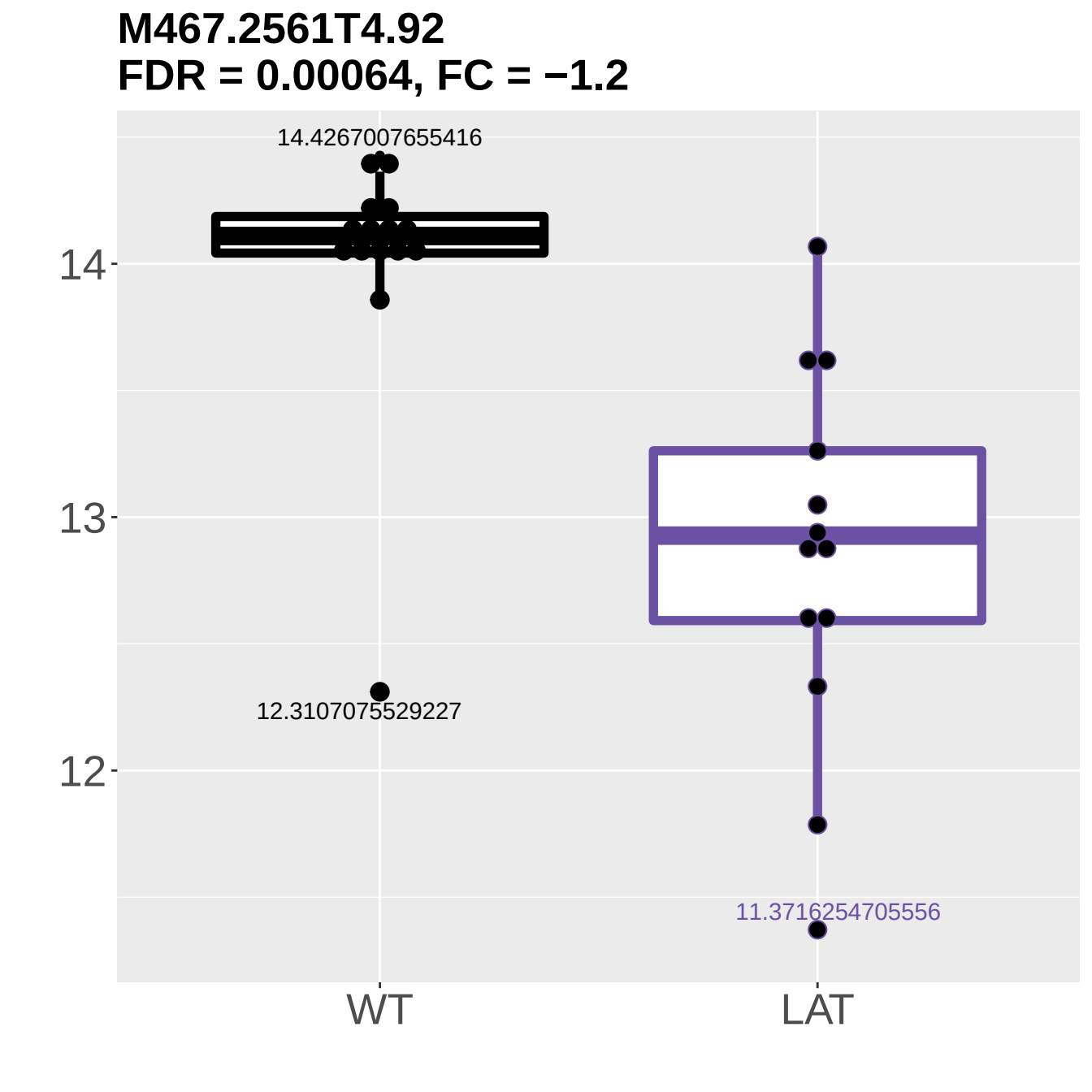
12
WT
LAT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FDR = 0.00064, FC = −1.2
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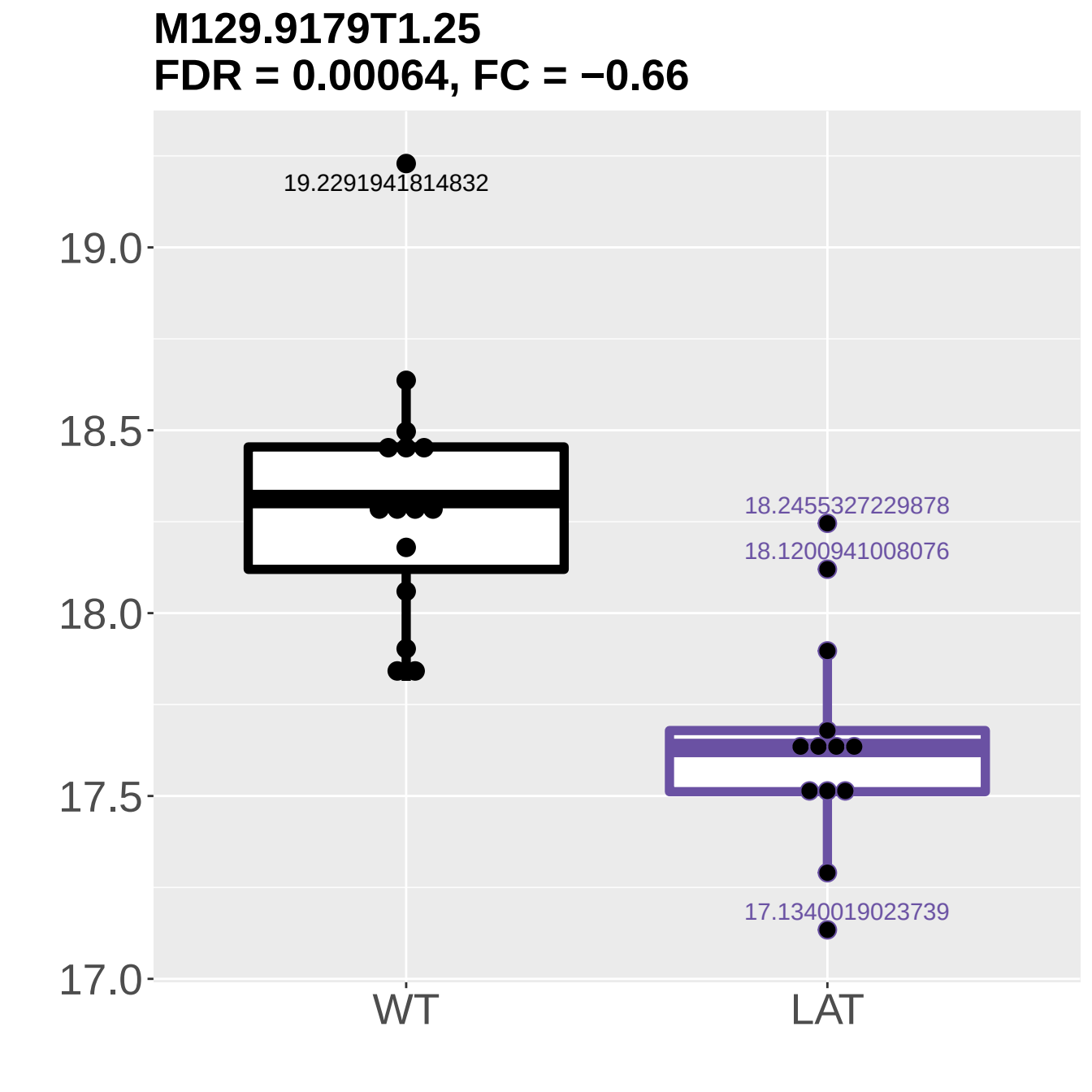
11.3716254705556
14
13
12
WT
LAT


M129.9179T1.25
FDR = 0.00064, FC = −0.66
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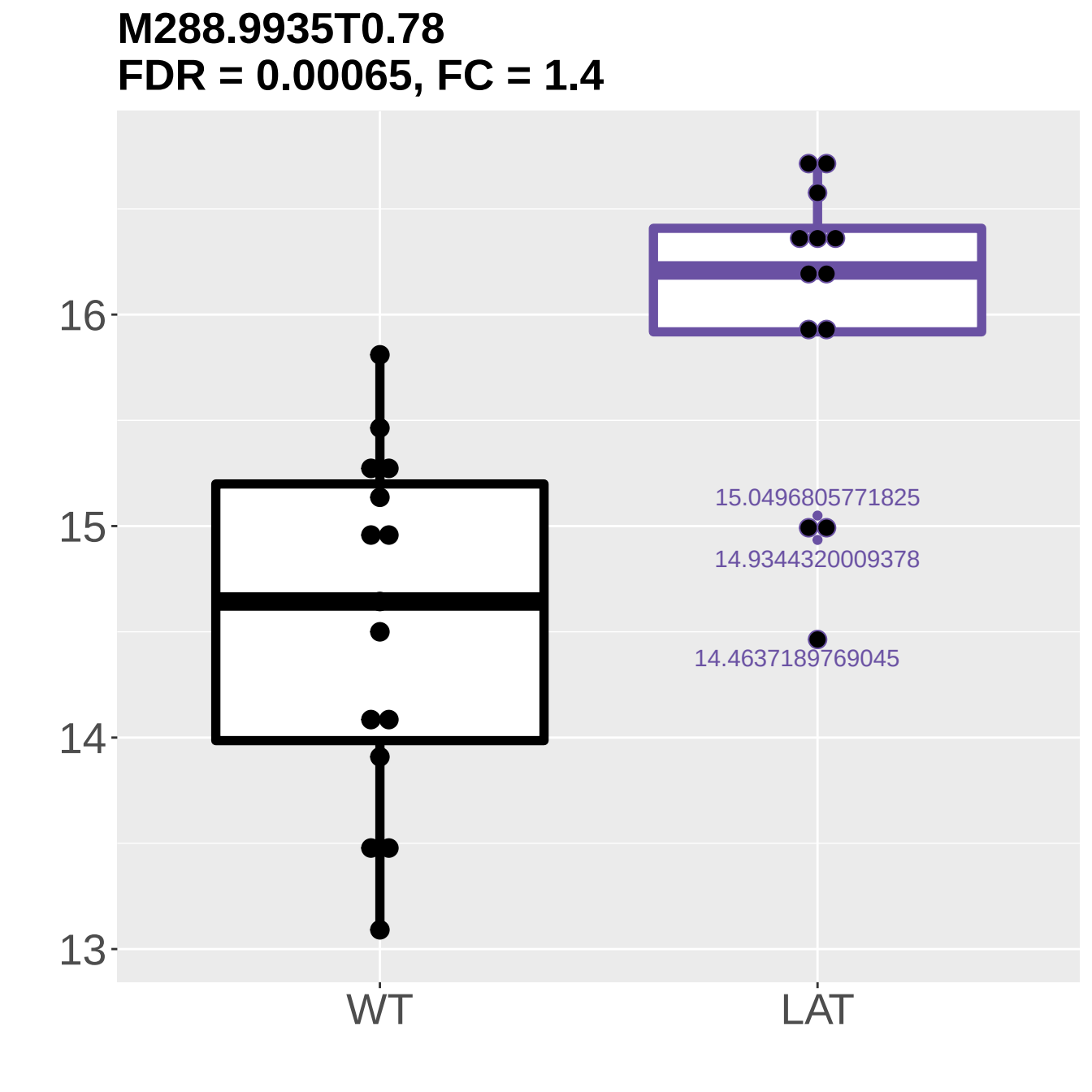
18.0
17.5
17.0
WT
LAT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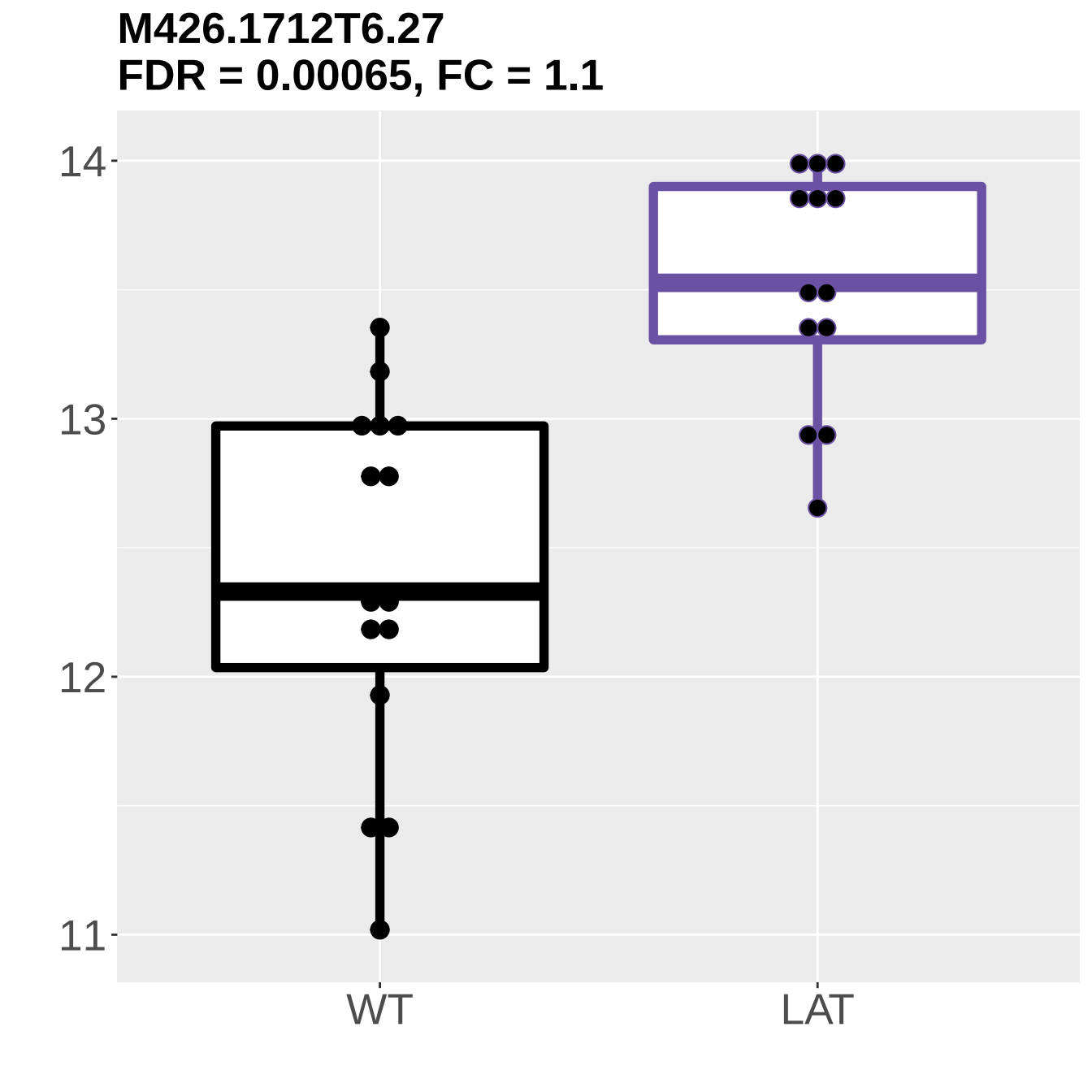
WT
LAT


M426.1712T6.27
FDR = 0.00065, FC = 1.1
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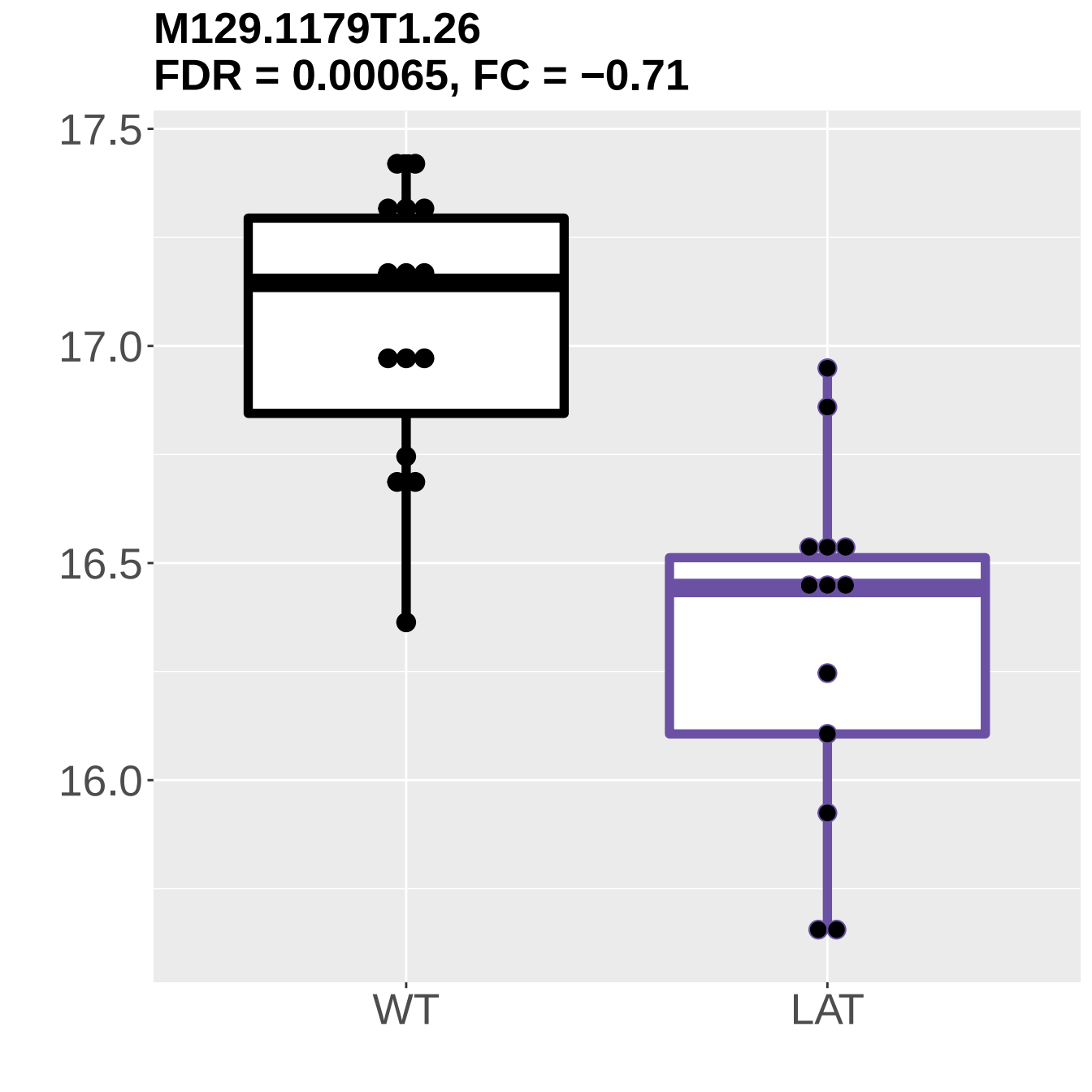
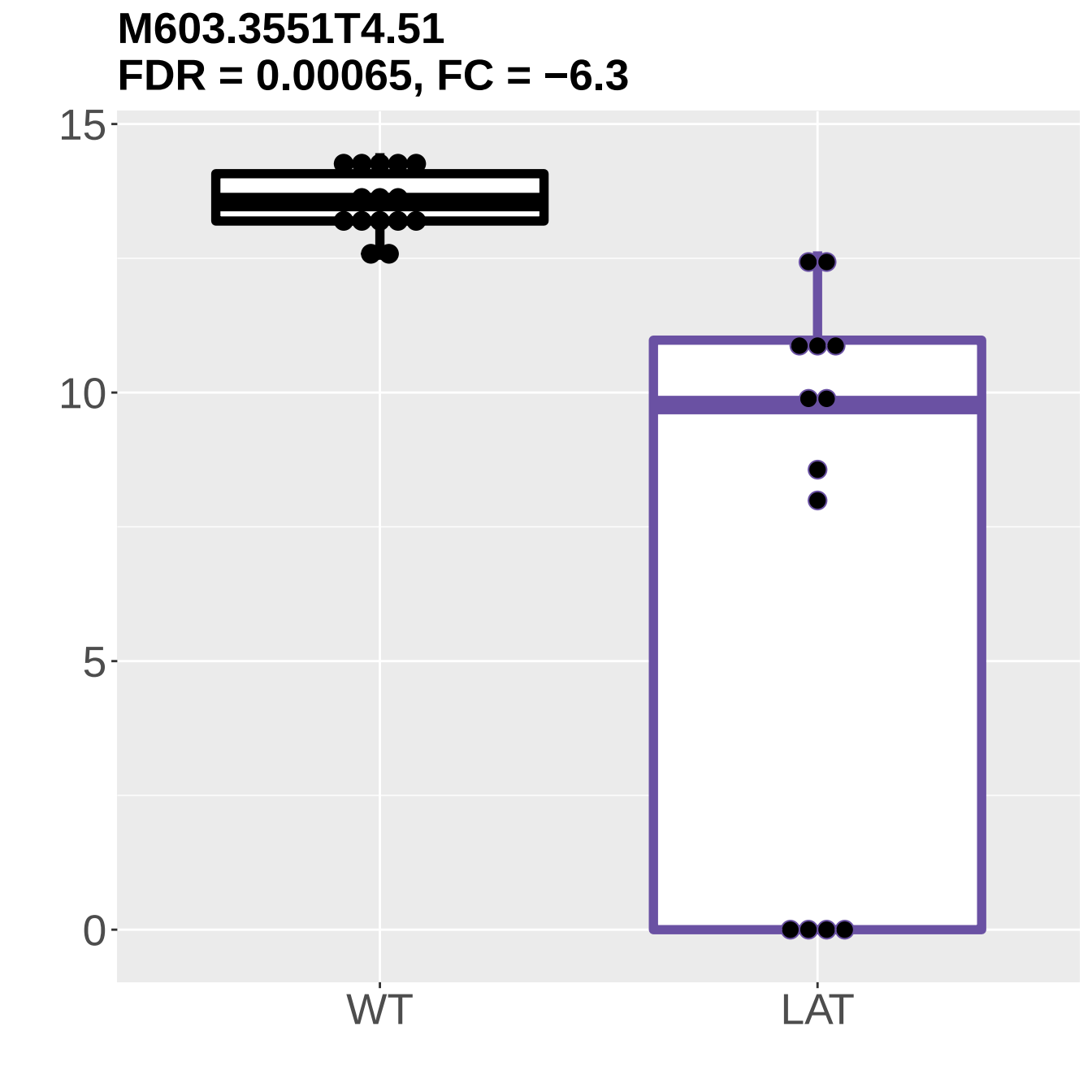
13
12
11
WT
LAT


M129.1179T1.26
FDR = 0.00065, FC = −0.71
17.5
17.0
16.5
16.0
WT
LAT


M603.3551T4.51
FDR = 0.00065, FC = −6.3
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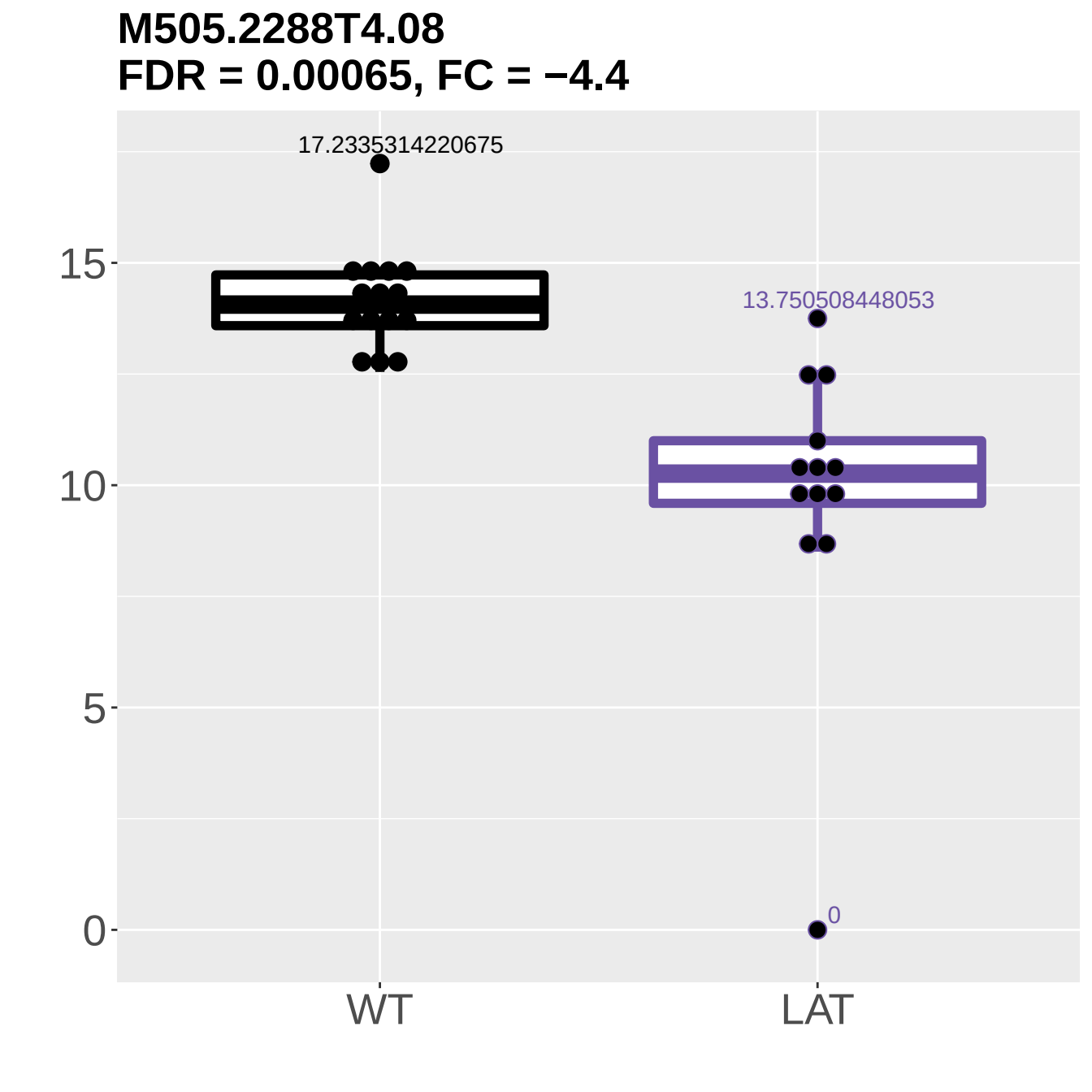
10
5
0
WT
LAT


M505.2288T4.08
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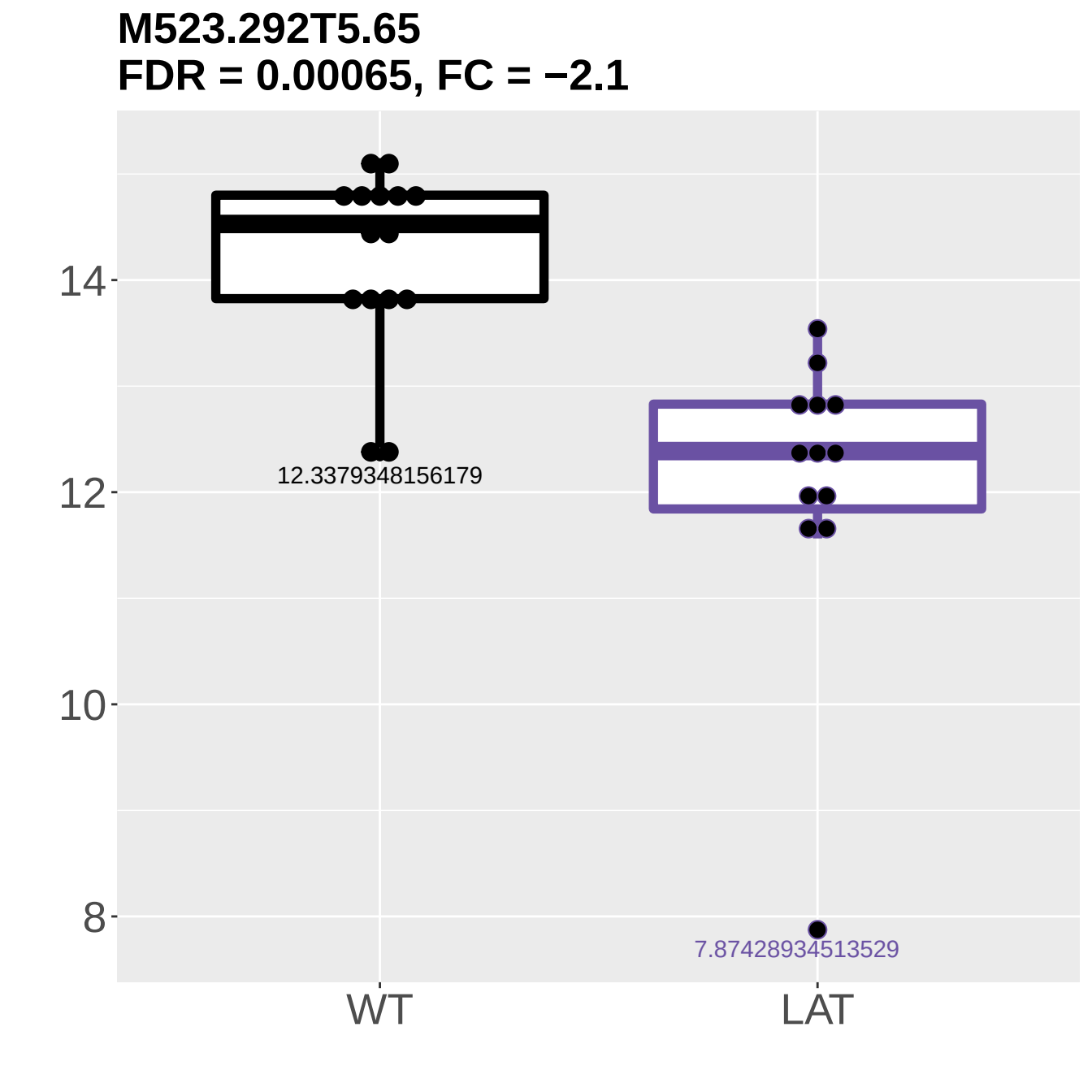
13.750508448053
0
15
10
5
0
WT
LAT


M523.292T5.65
FDR = 0.00065, FC = −2.1
14
12
10
8
12.3379348156179
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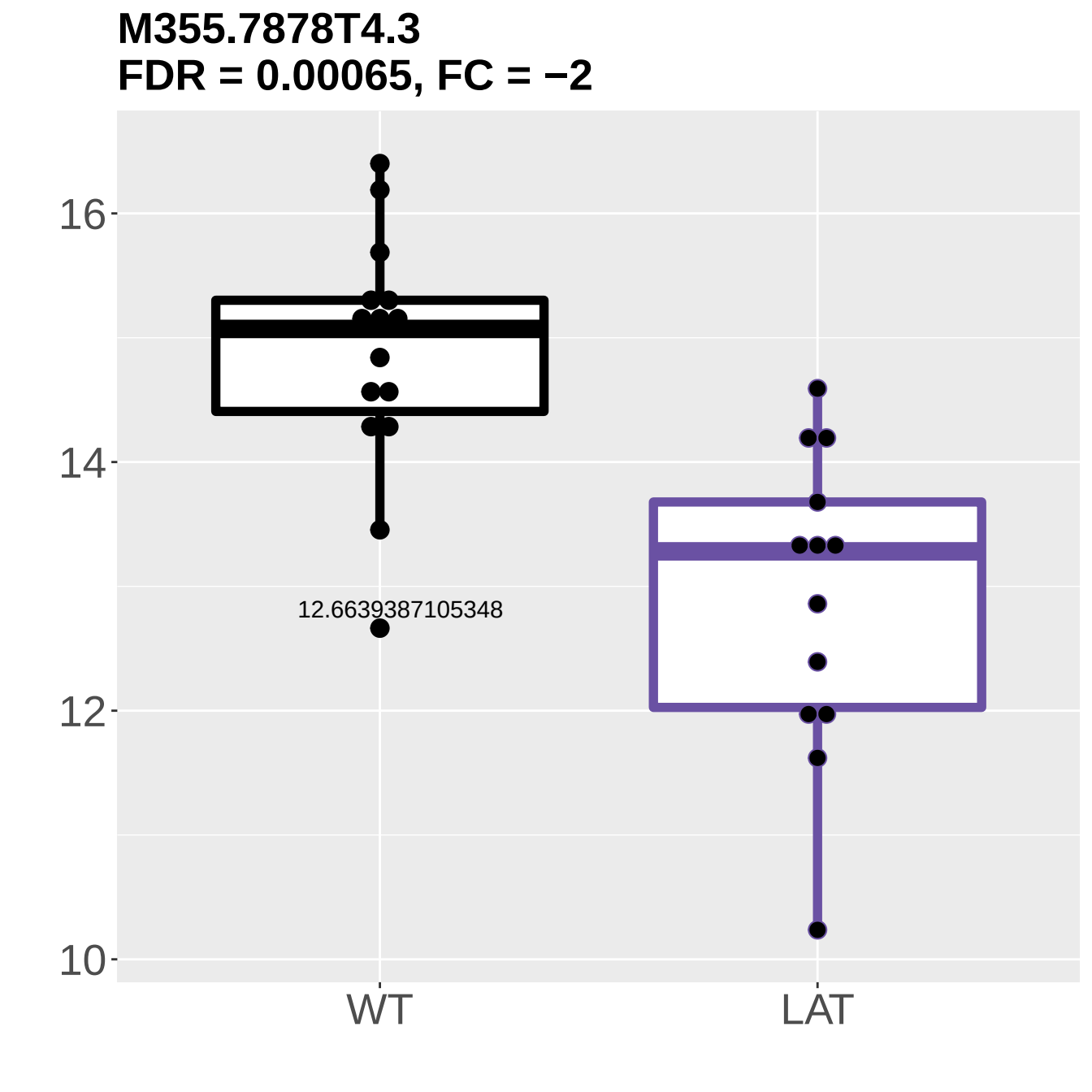
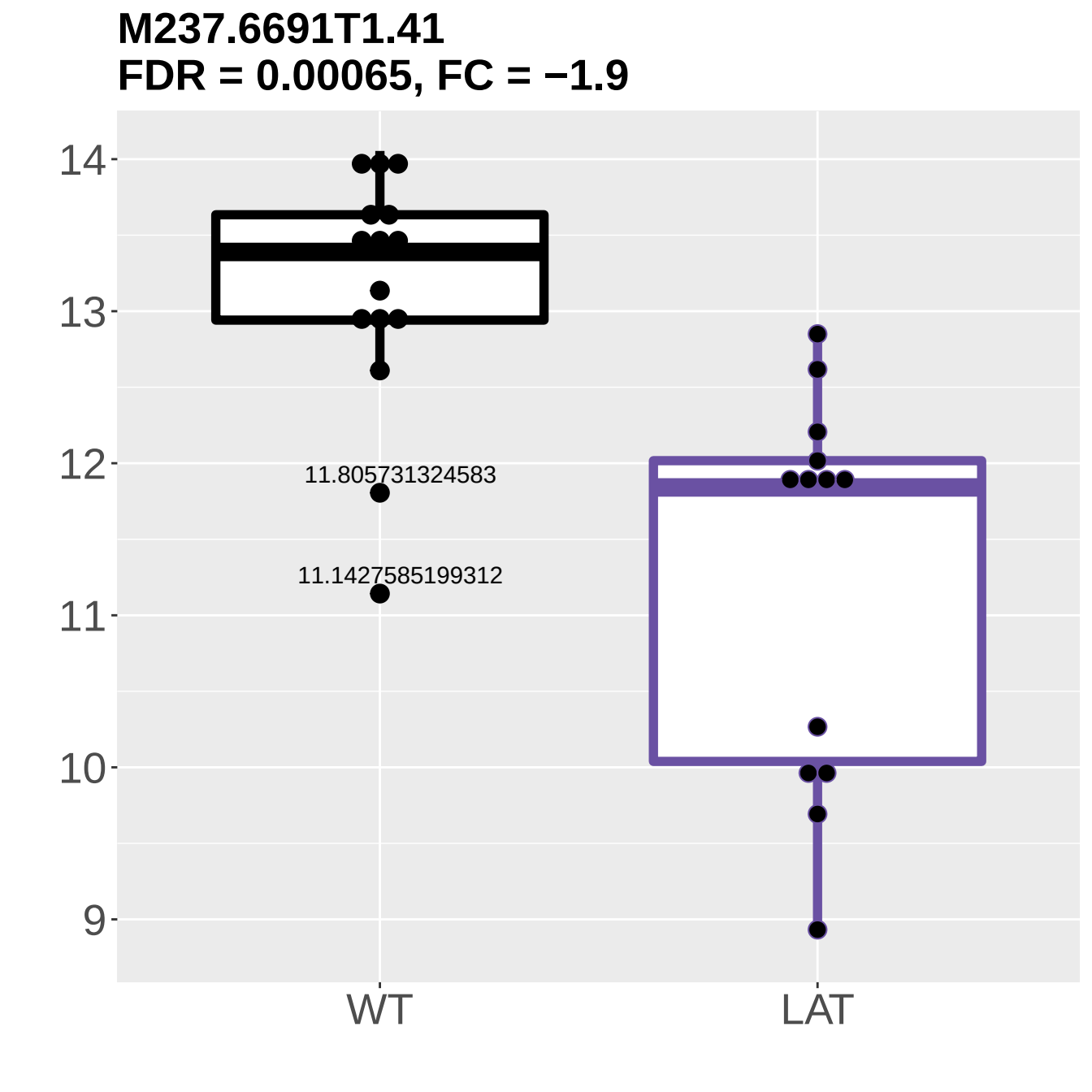
WT
LAT


M355.7878T4.3
FDR = 0.00065, FC = −2
16
14
12
10
12.6639387105348
WT
LAT


M237.6691T1.41
FDR = 0.00065, FC = −1.9
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13
12
11
10
9
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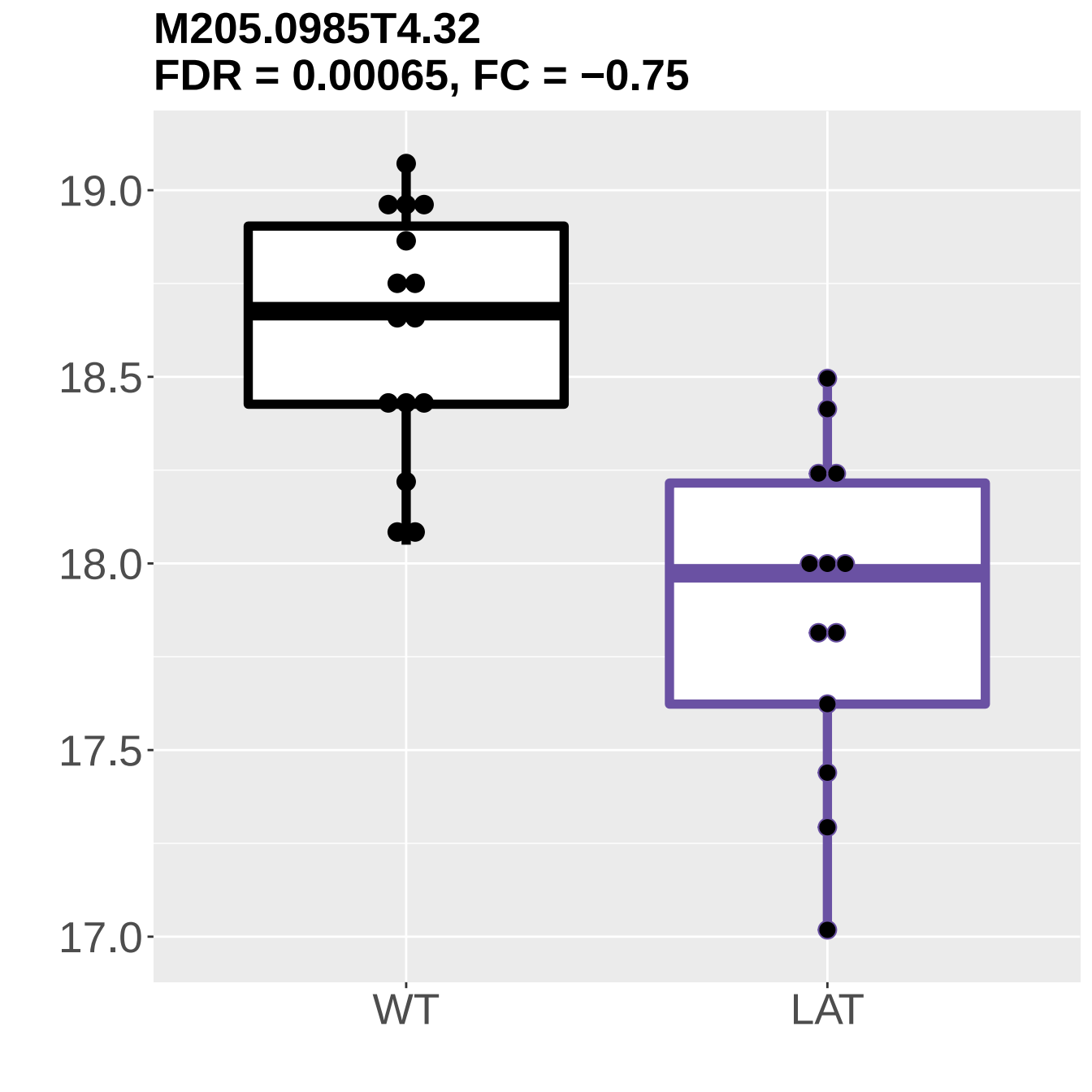
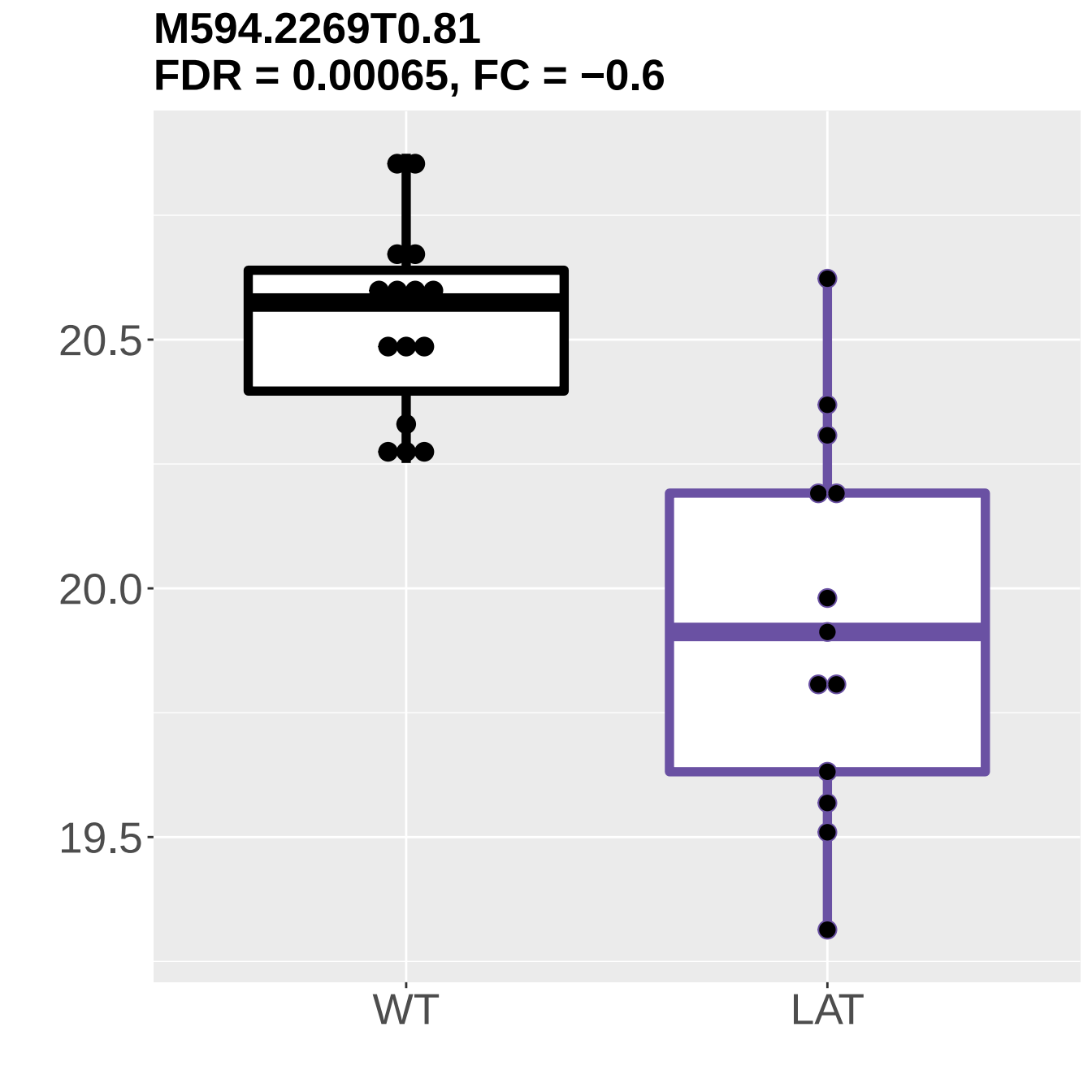
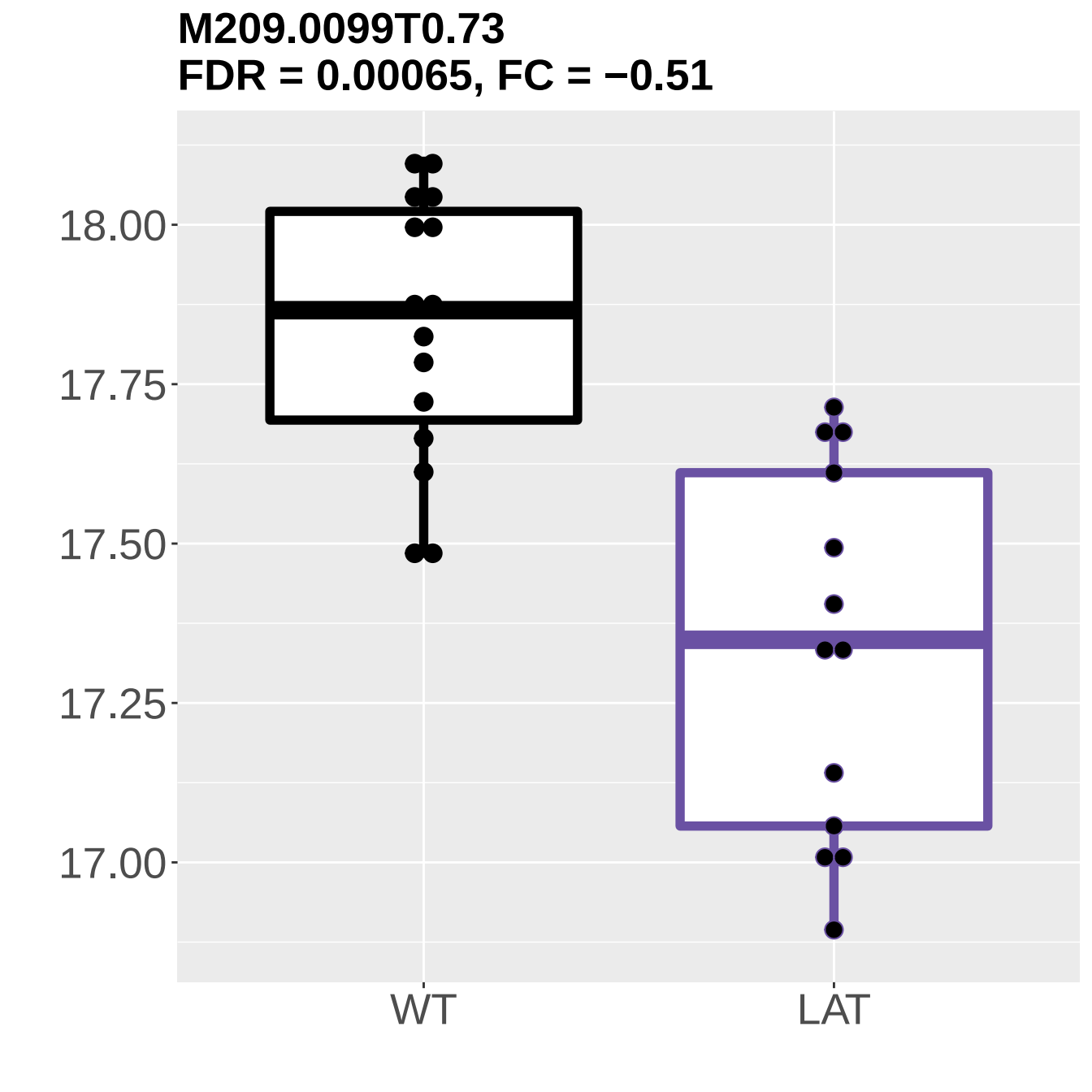
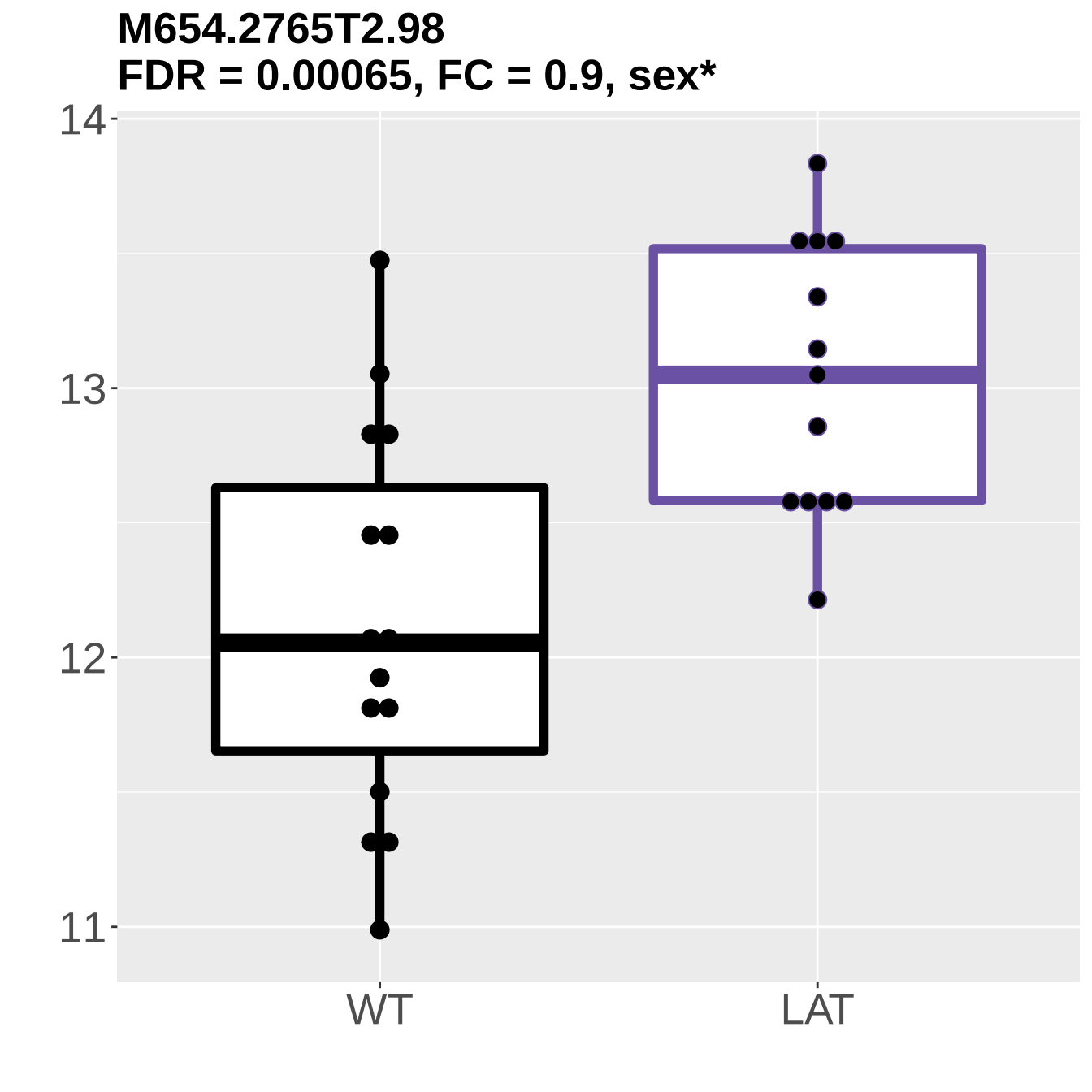
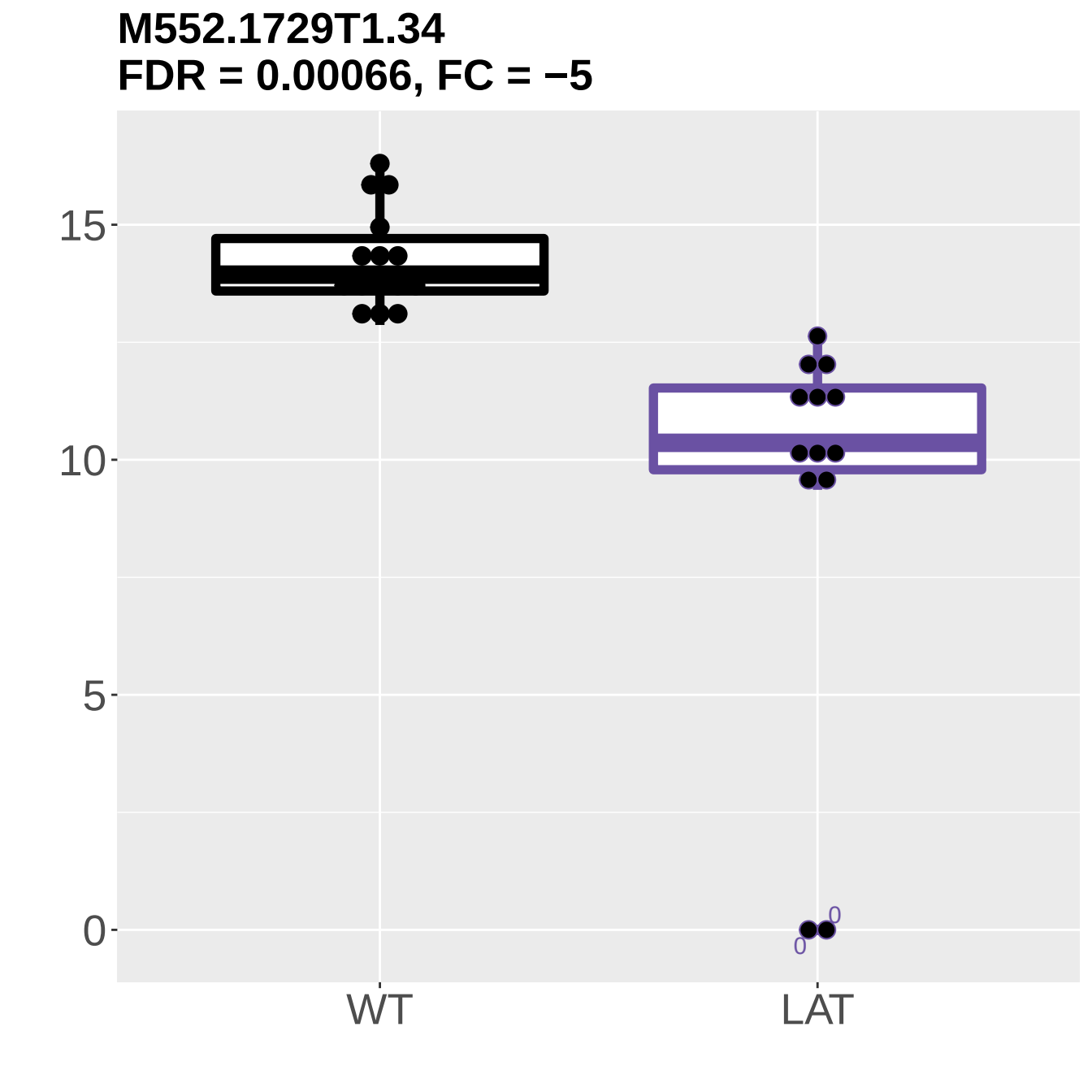
WT
LAT

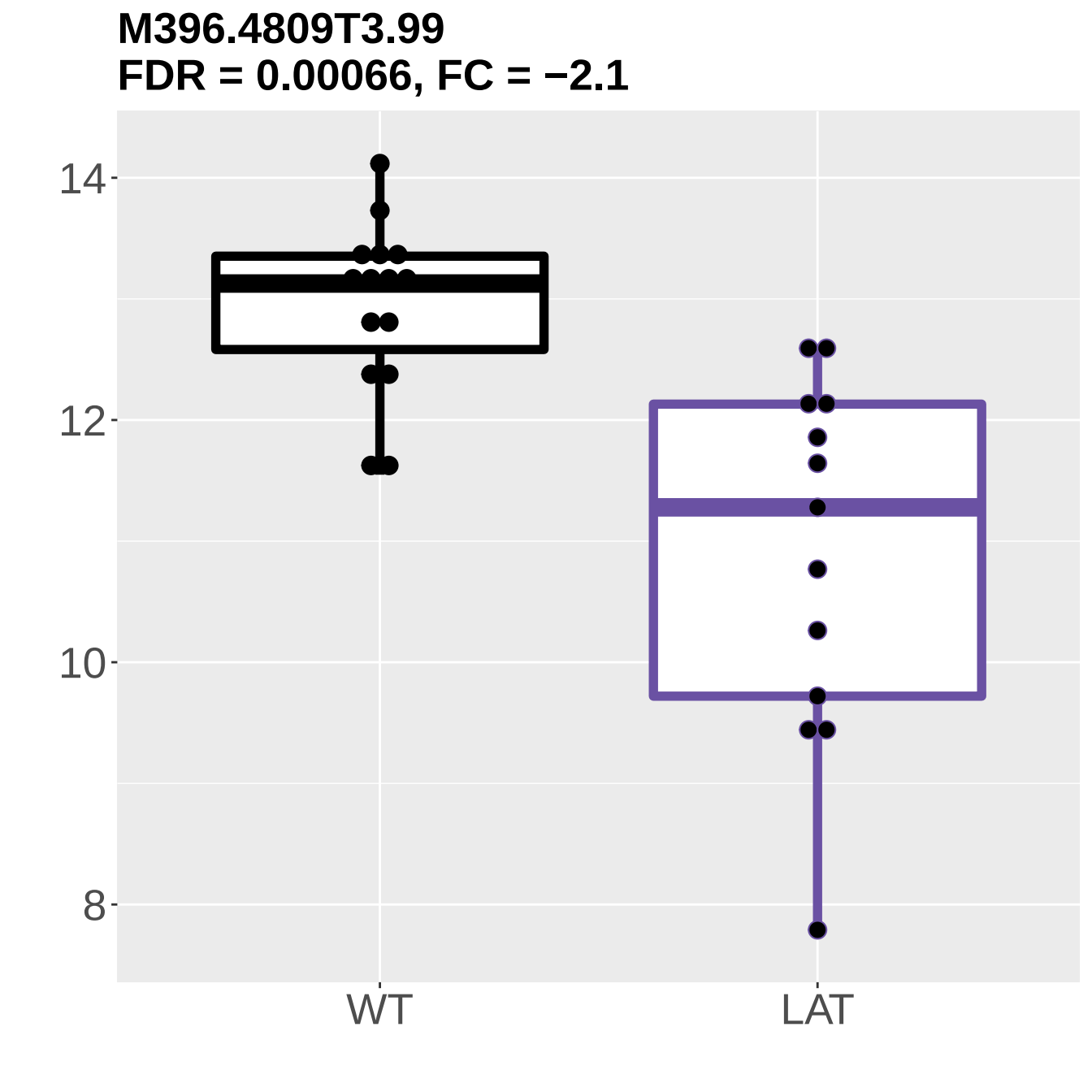

M205.0985T4.32
FDR = 0.00065, FC = −0.75
19.0
18.5
18.0
17.5
17.0
WT
LAT

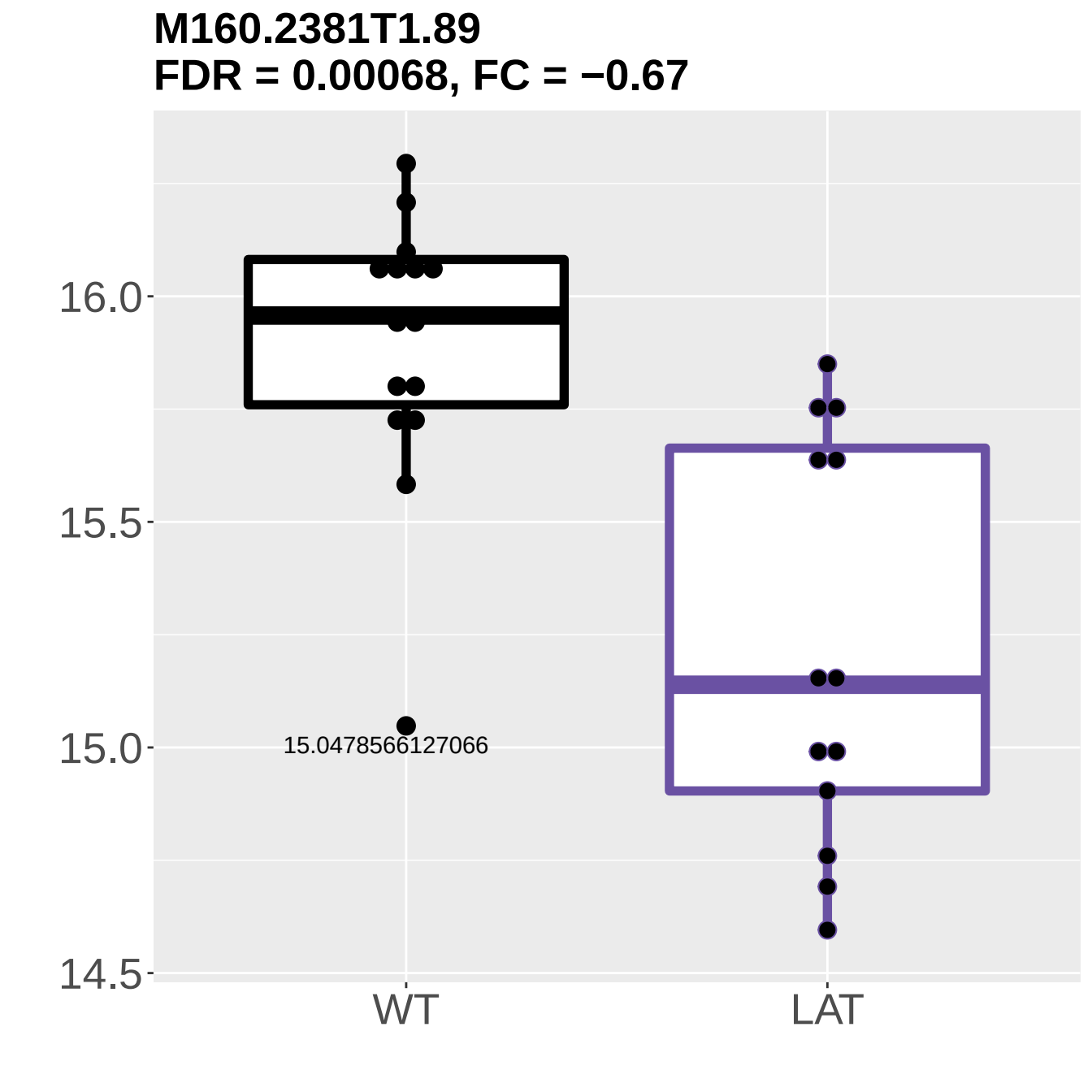

M594.2269T0.81
FDR = 0.00065, FC = −0.6
20.5
20.0
19.5
WT
LAT

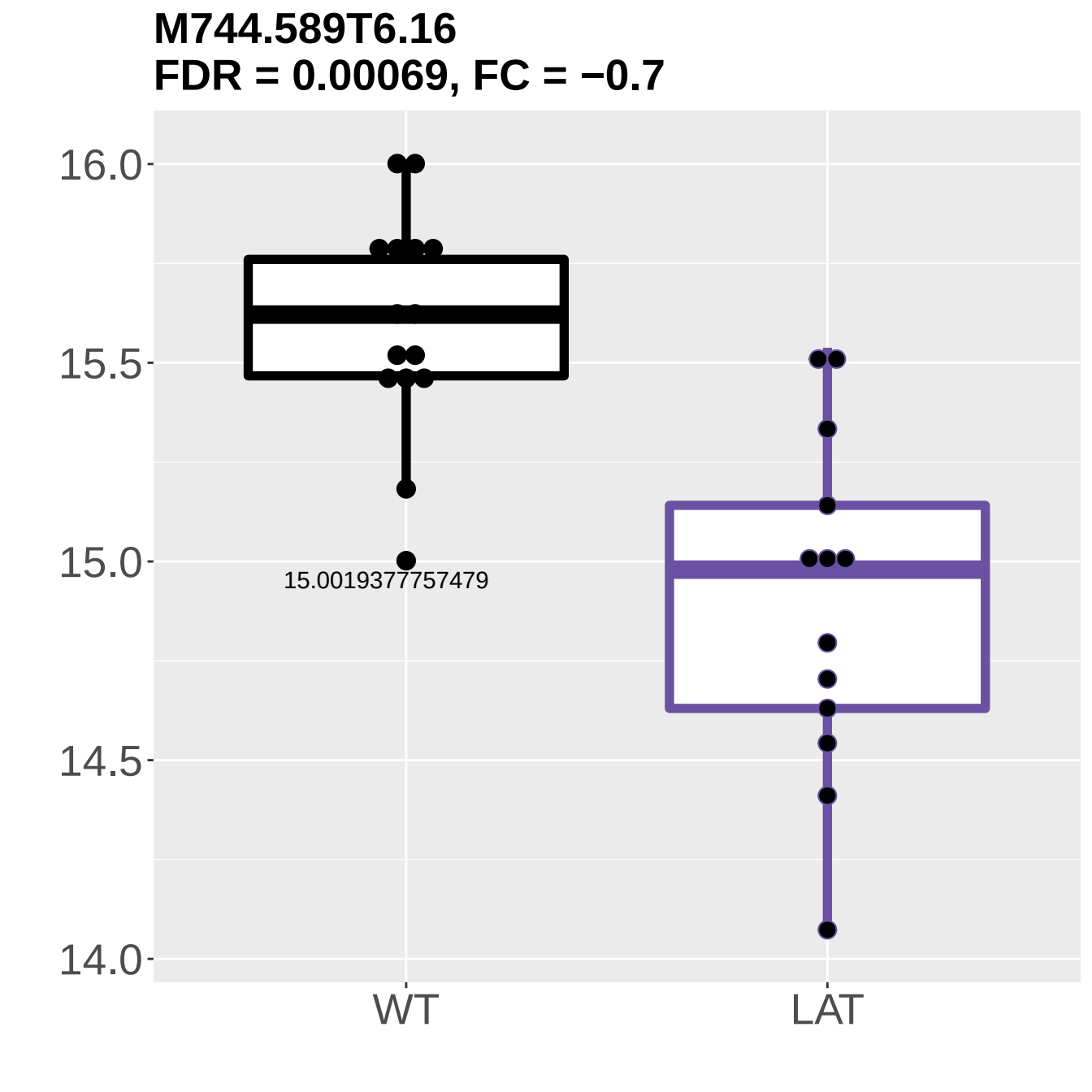

M209.0099T0.73
FDR = 0.00065, FC = −0.51
18.00
17.75
17.50
17.25
17.00
WT
LAT


M654.2765T2.98
FDR = 0.00065, FC = 0.9, sex*
14
13
12
11
WT
LAT


M552.1729T1.34
FDR = 0.00066, FC = −5
15
10
5
0
0
0
WT
LAT


M396.4809T3.99
FDR = 0.00066, FC = −2.1
14
12
10
8
WT
LAT


M160.2381T1.89
FDR = 0.00068, FC = −0.67
16.0
15.5
15.0
14.5
15.0478566127066
WT
LAT


M744.589T6.16
FDR = 0.00069, FC = −0.7
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15.5
15.0
14.5
14.0
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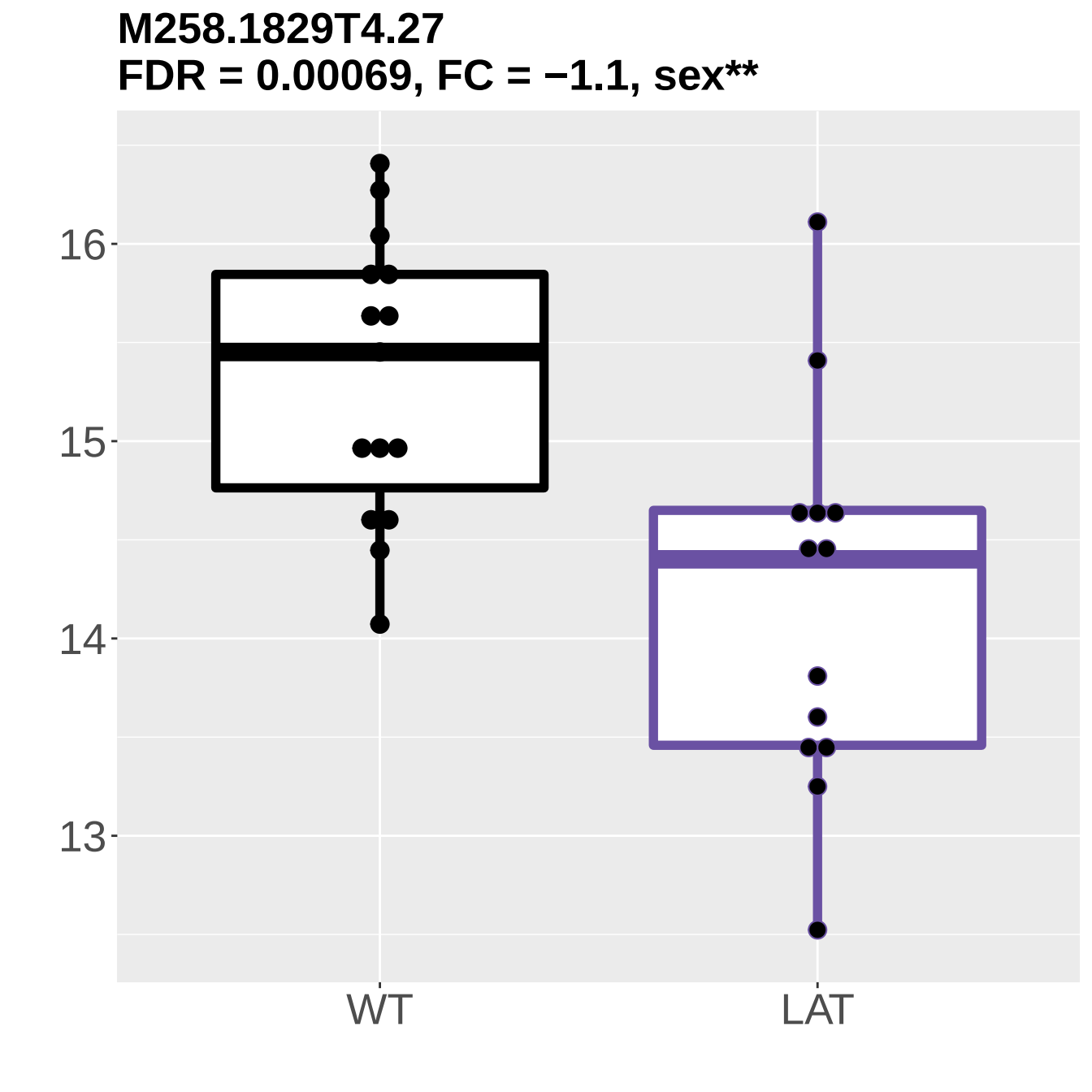
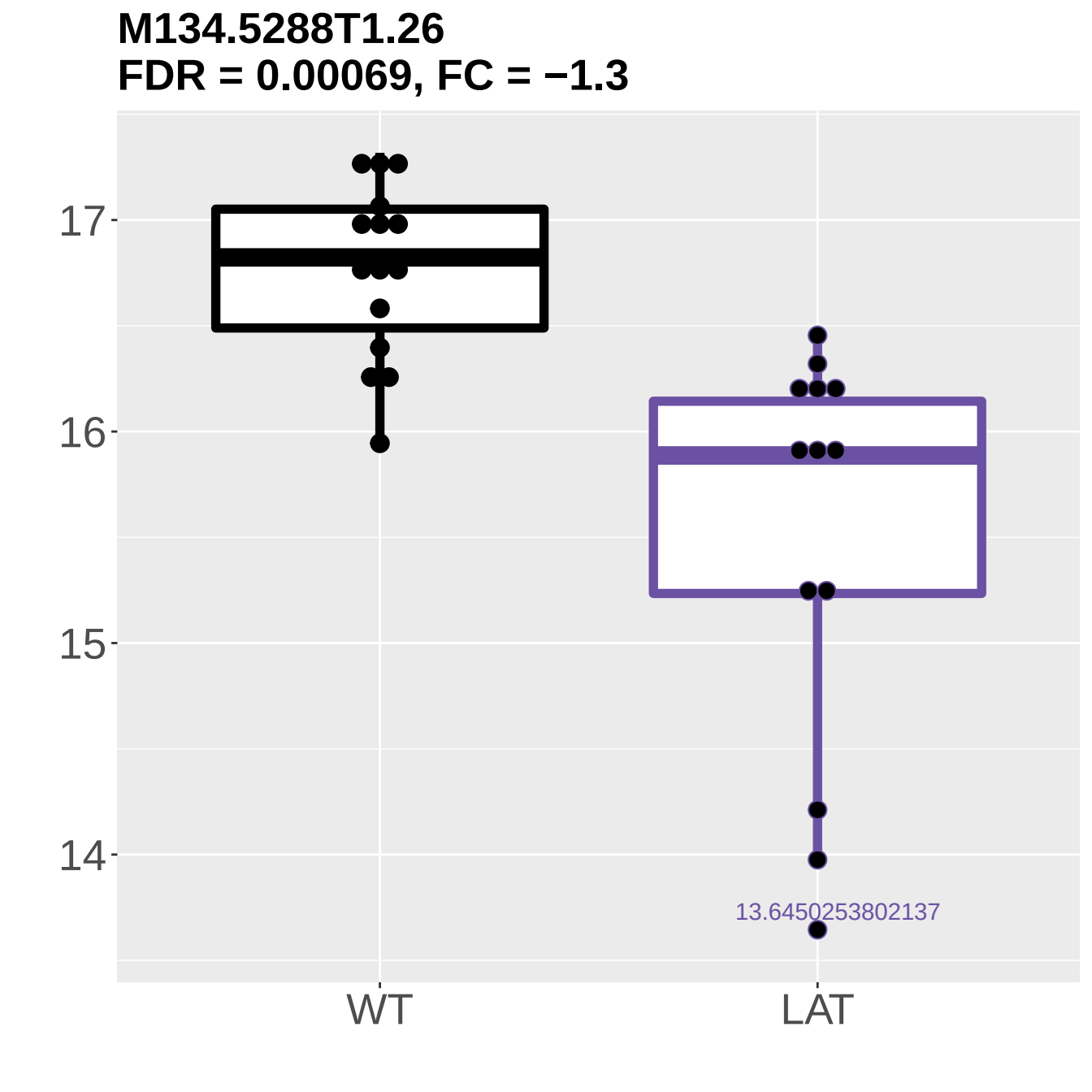
WT
LAT


M258.1829T4.27
FDR = 0.00069, FC = −1.1, sex**
16
15
14
13
WT
LAT


M134.5288T1.26
FDR = 0.00069, FC = −1.3
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16
15
14
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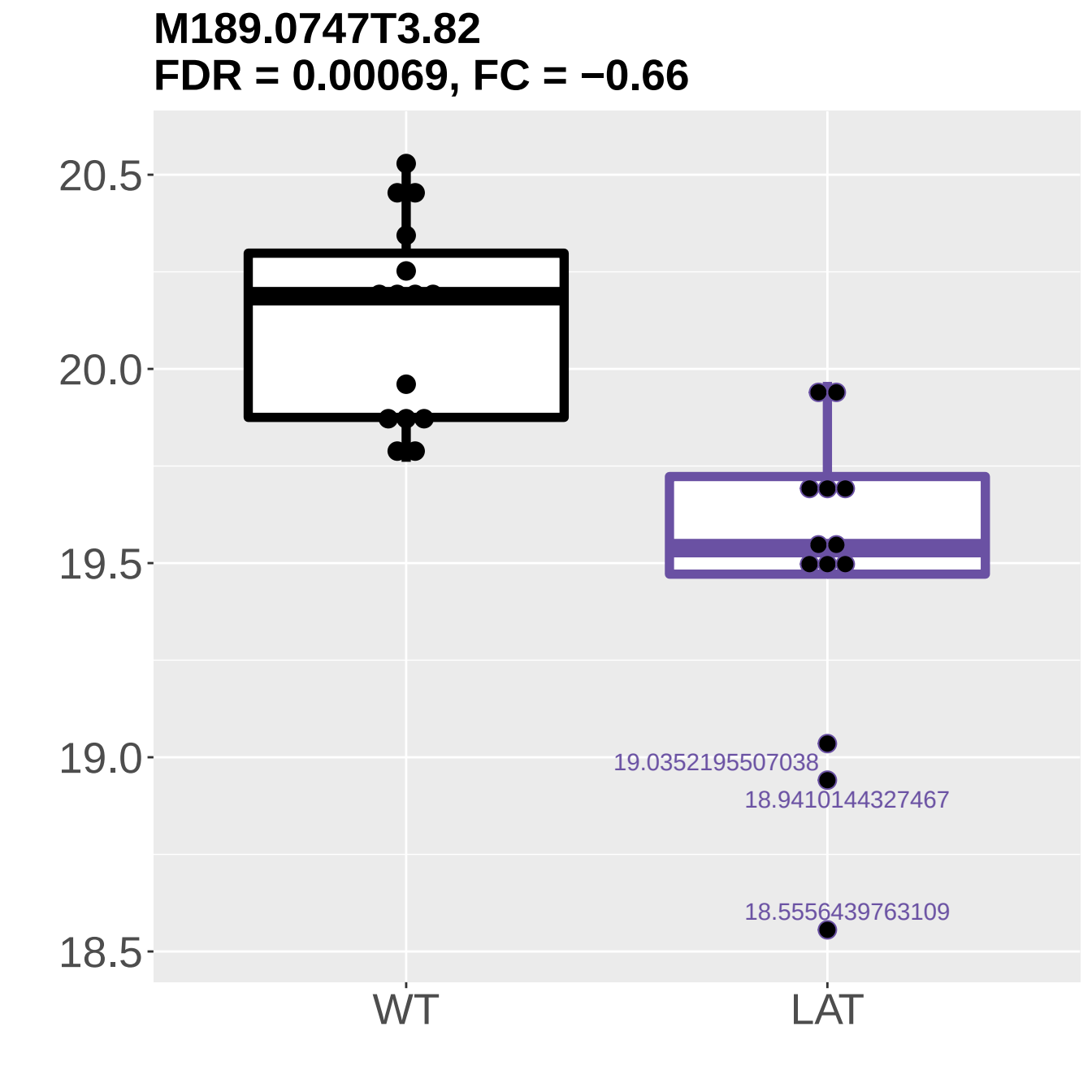
WT
LAT


M189.0747T3.82
FDR = 0.00069, FC = −0.66
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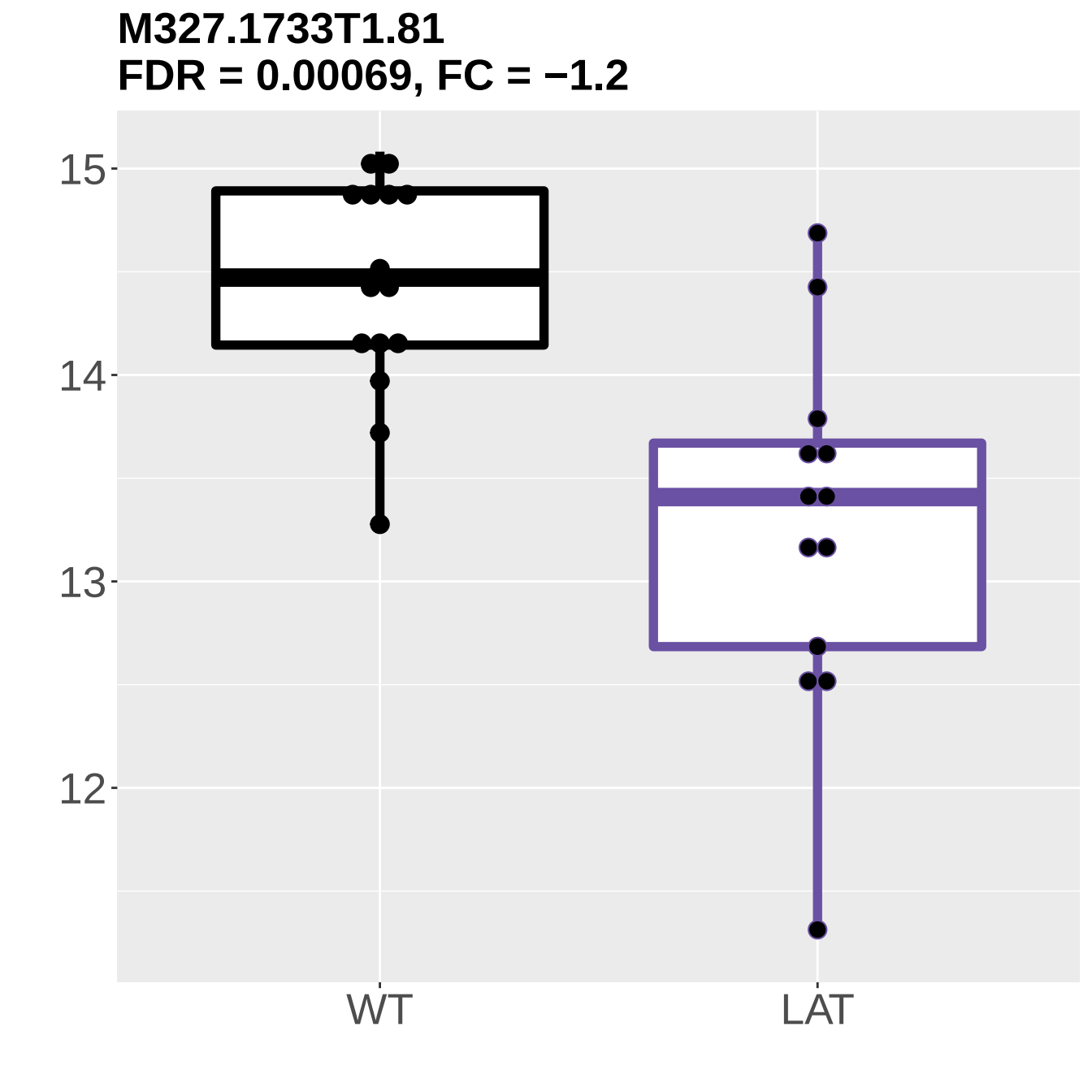
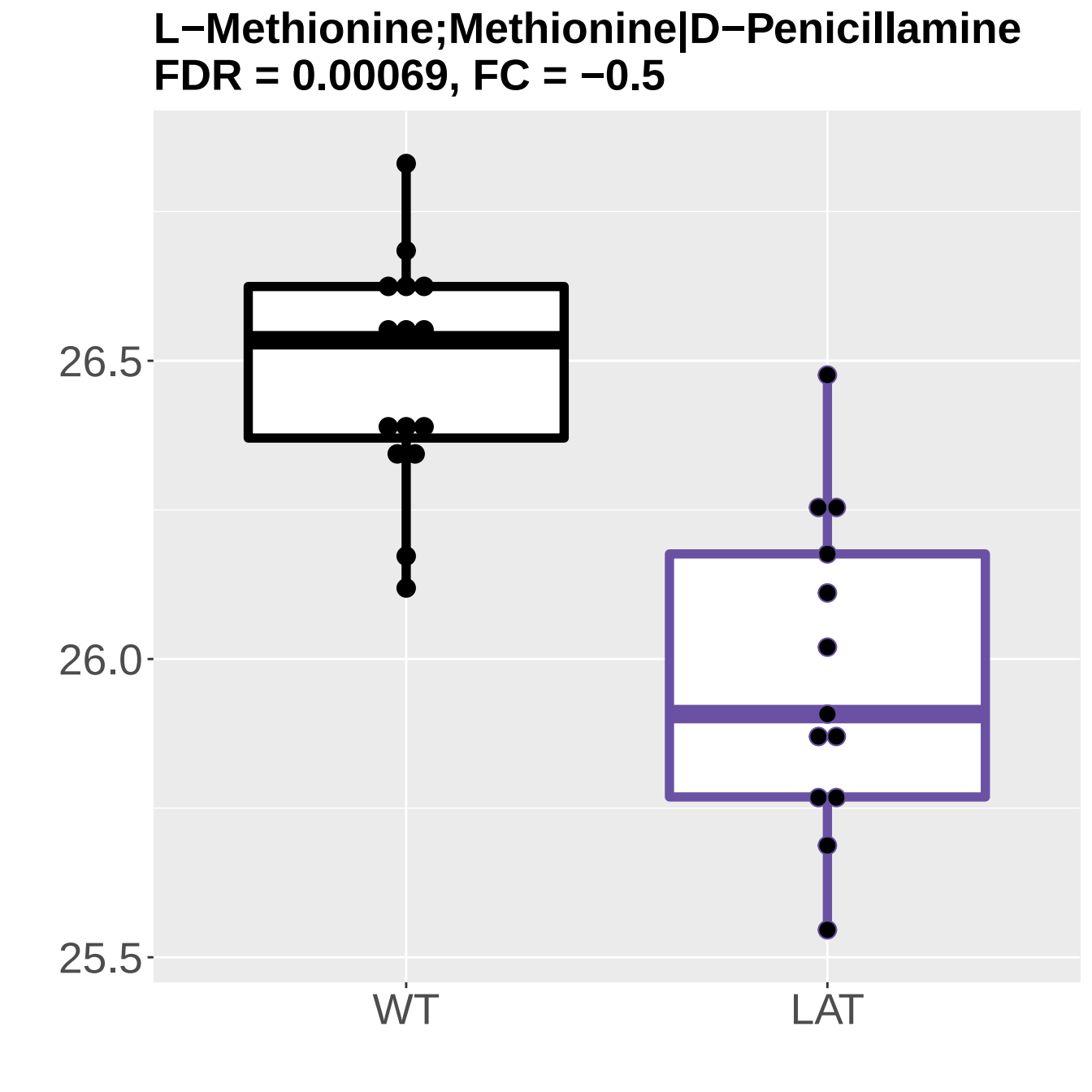
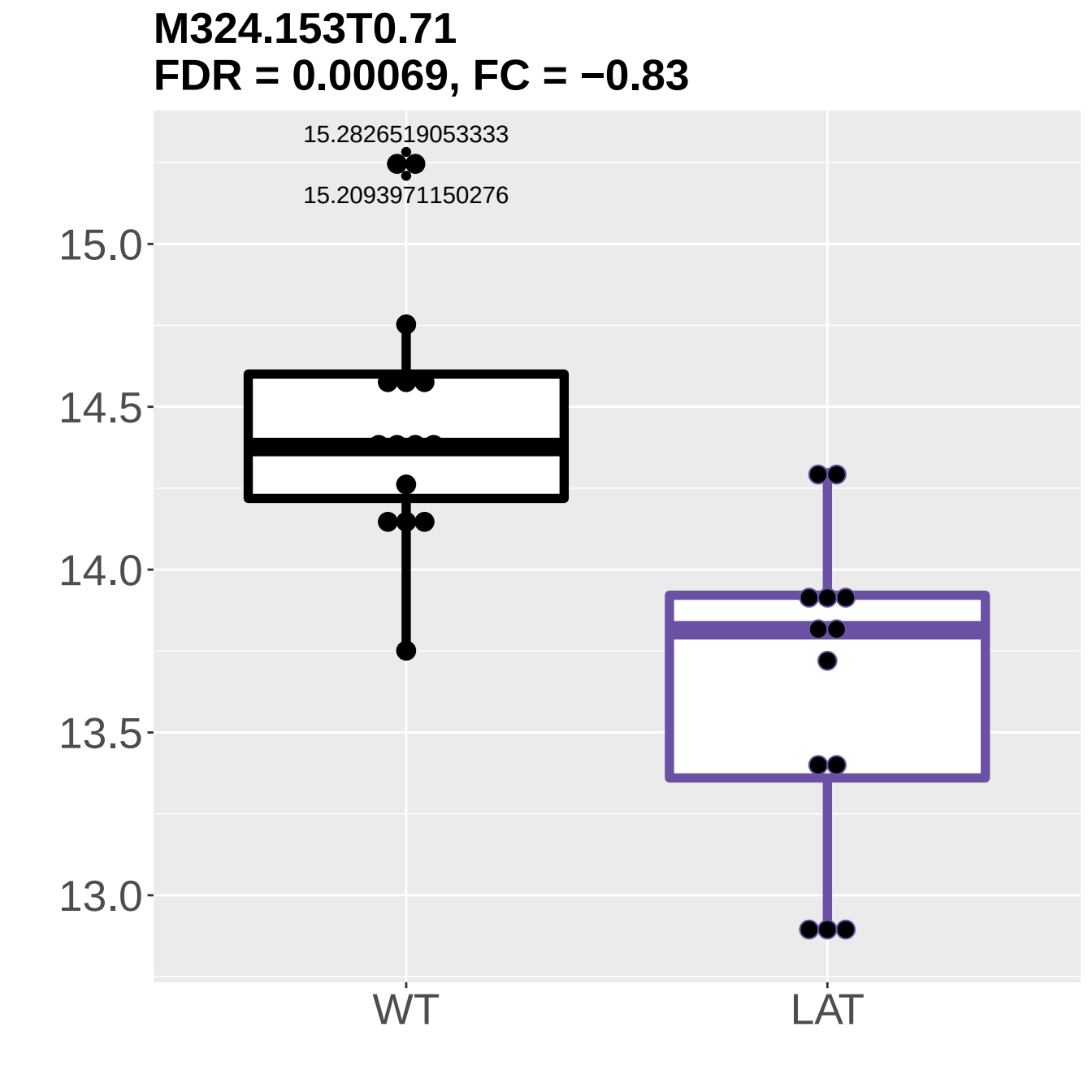
20.0
19.5
19.0
18.5
19.0352195507038
18.9410144327467
18.5556439763109
WT
LAT


M327.1733T1.81
FDR = 0.00069, FC = −1.2
15
14
13
12
WT
LAT


L−Methionine;Methionine|D−Penicillamine
FDR = 0.00069, FC = −0.5
26.5
26.0
25.5
WT
LAT


M324.153T0.71
FDR = 0.00069, FC = −0.83
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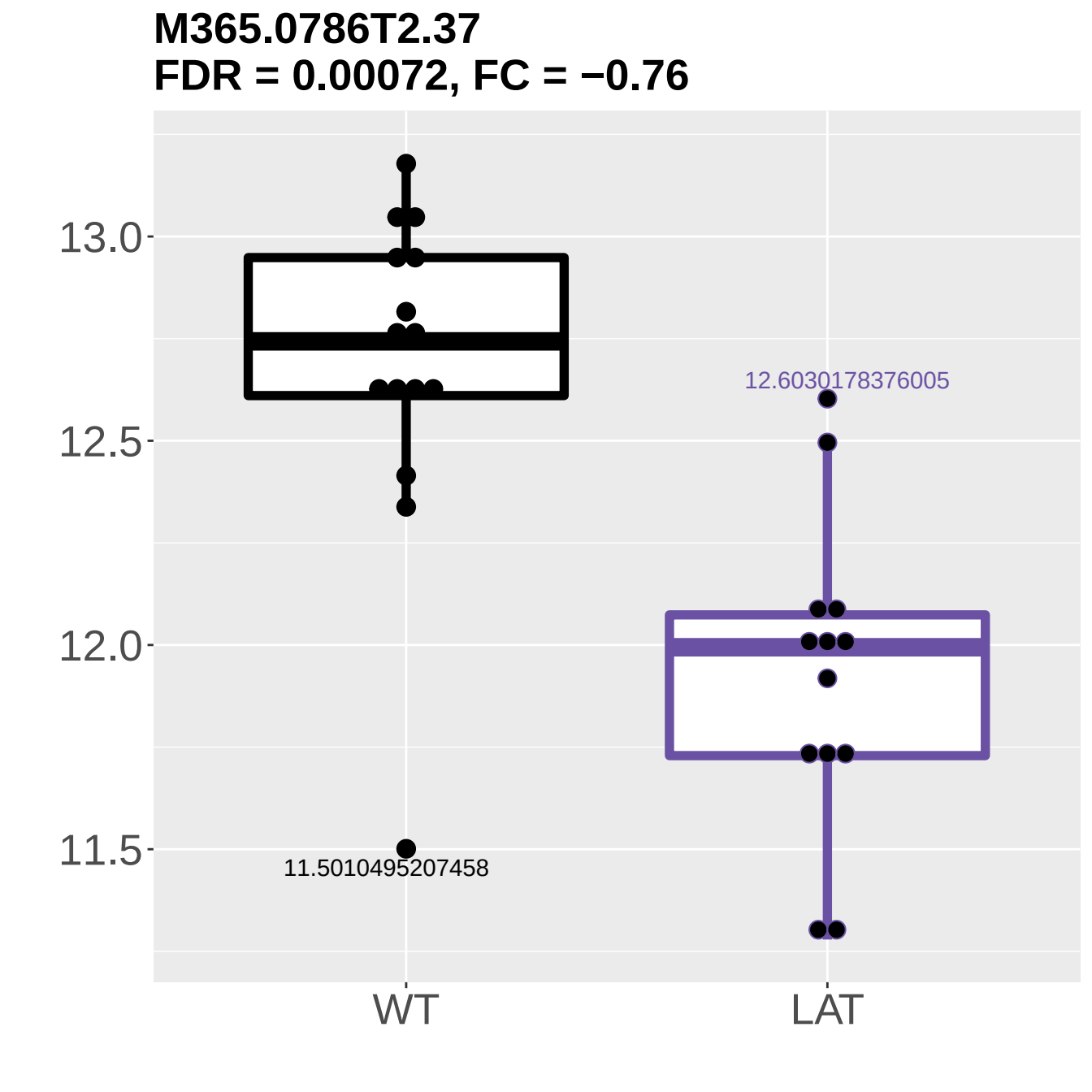
15.2093971150276
15.0
14.5
14.0
13.5
13.0
WT
LAT


M365.0786T2.37
FDR = 0.00072, FC = −0.76
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12.5
12.0
11.5
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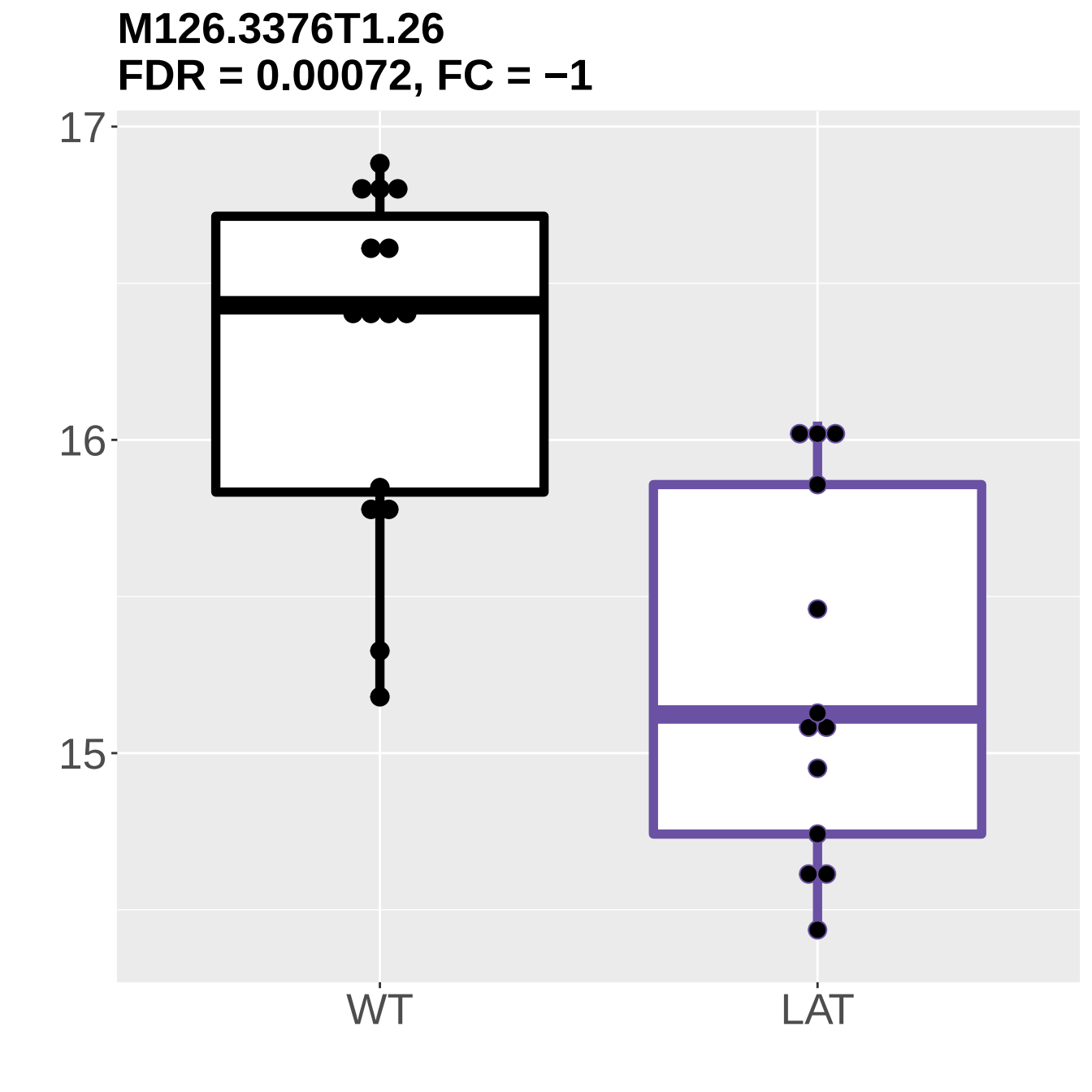
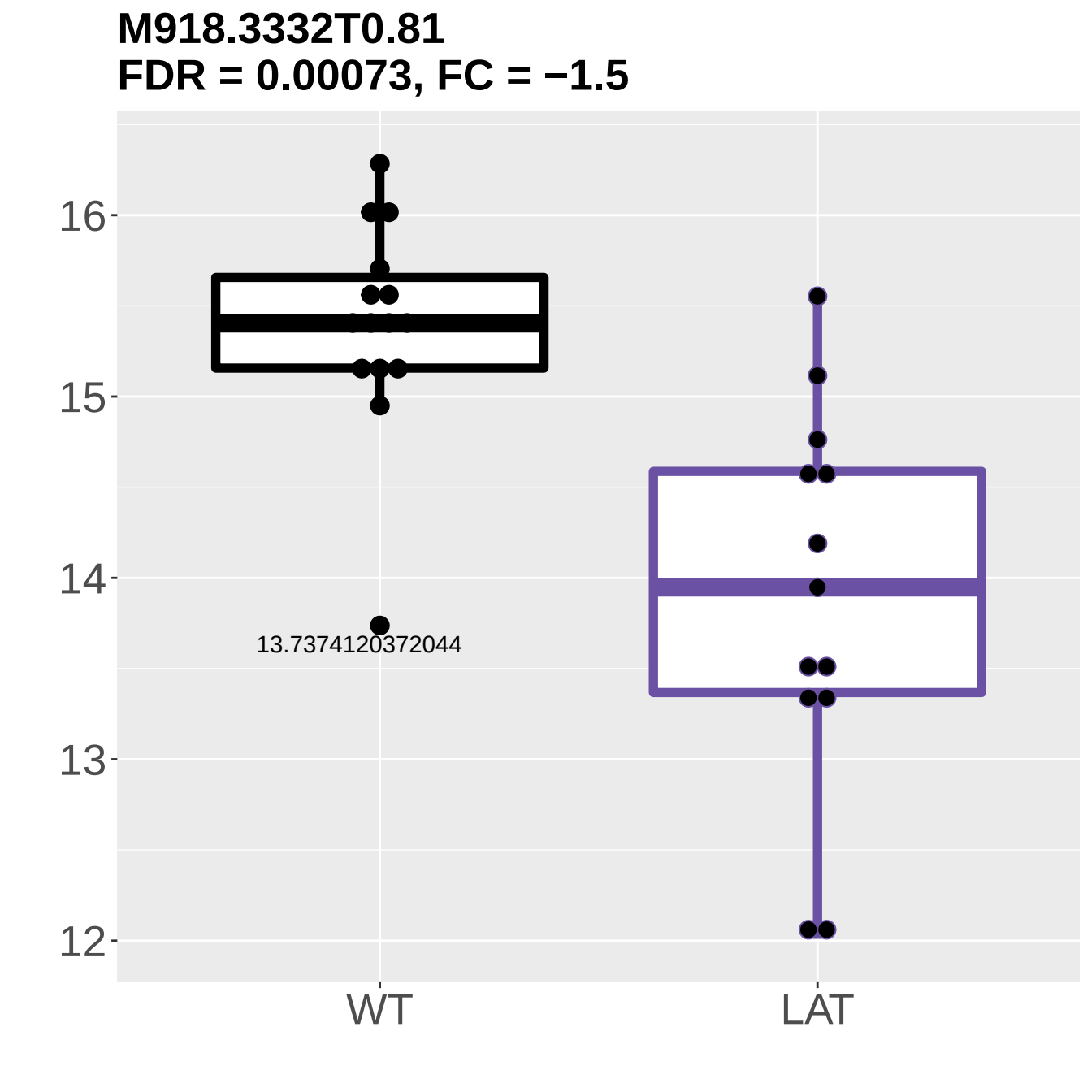
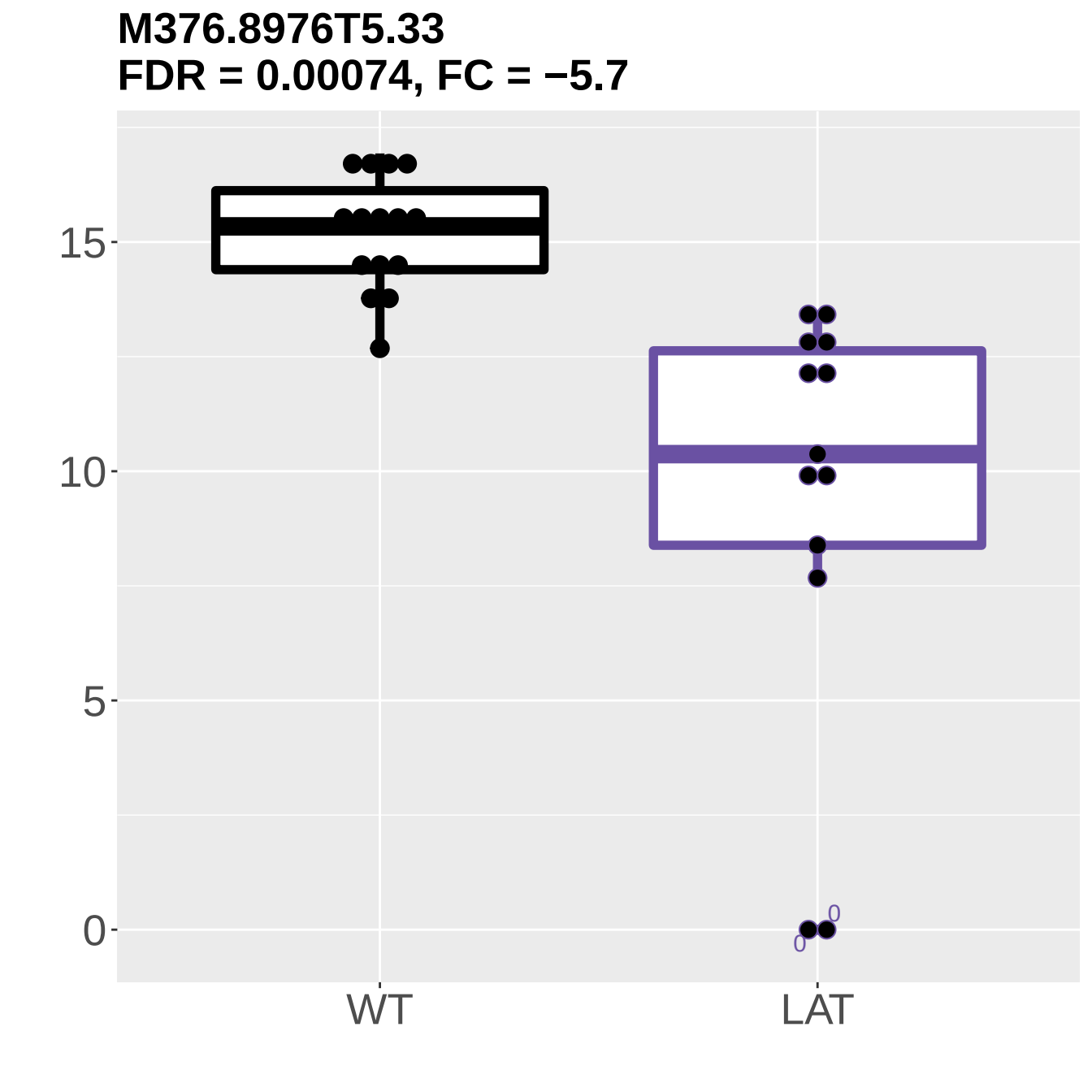
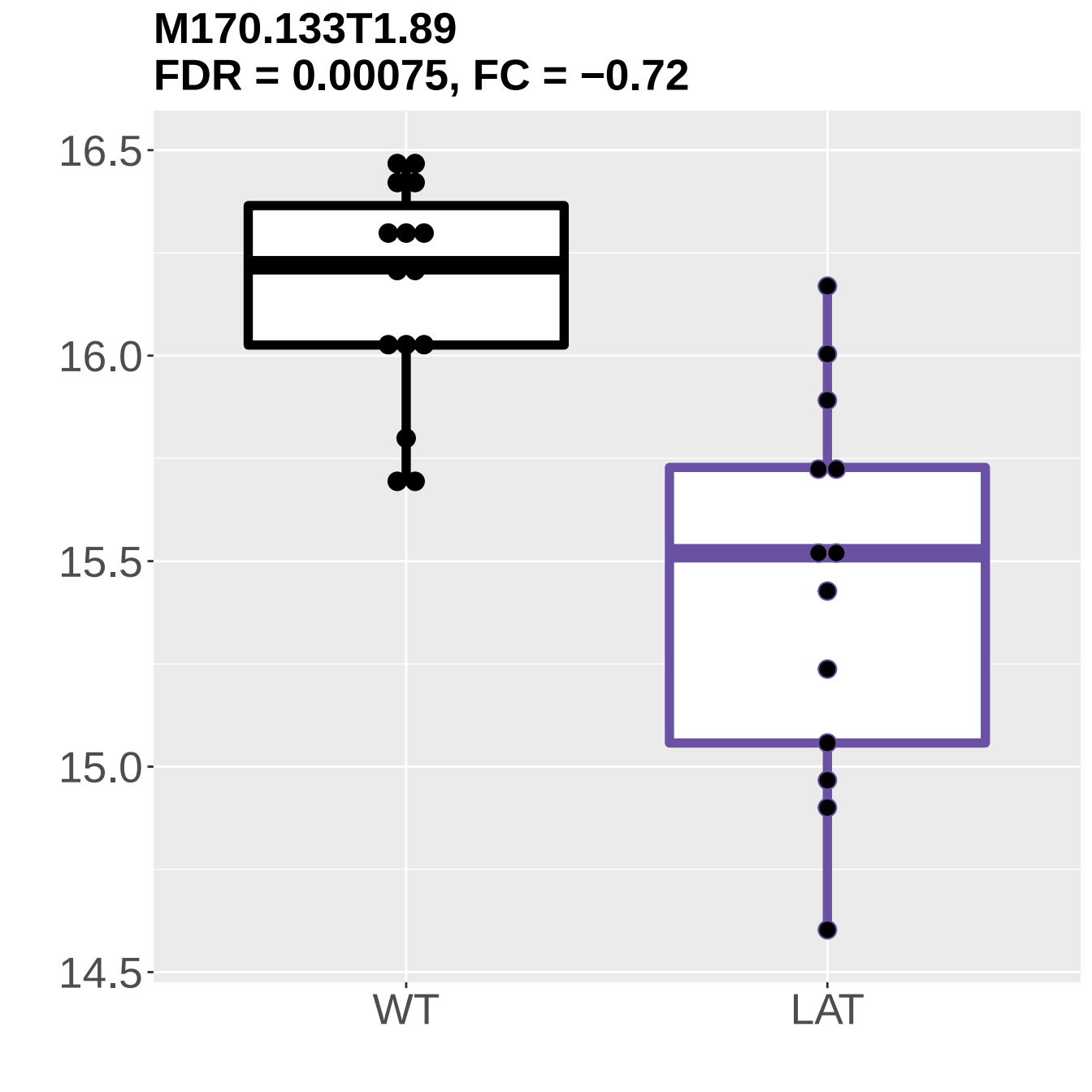
11.5010495207458
WT
LAT


M126.3376T1.26
FDR = 0.00072, FC = −1
17
16
15
WT
LAT


M918.3332T0.81
FDR = 0.00073, FC = −1.5
16
15
14
13
12
13.7374120372044
WT
LAT


M376.8976T5.33
FDR = 0.00074, FC = −5.7
15
10
5
0
0
0
WT
LAT


M170.133T1.89
FDR = 0.00075, FC = −0.72
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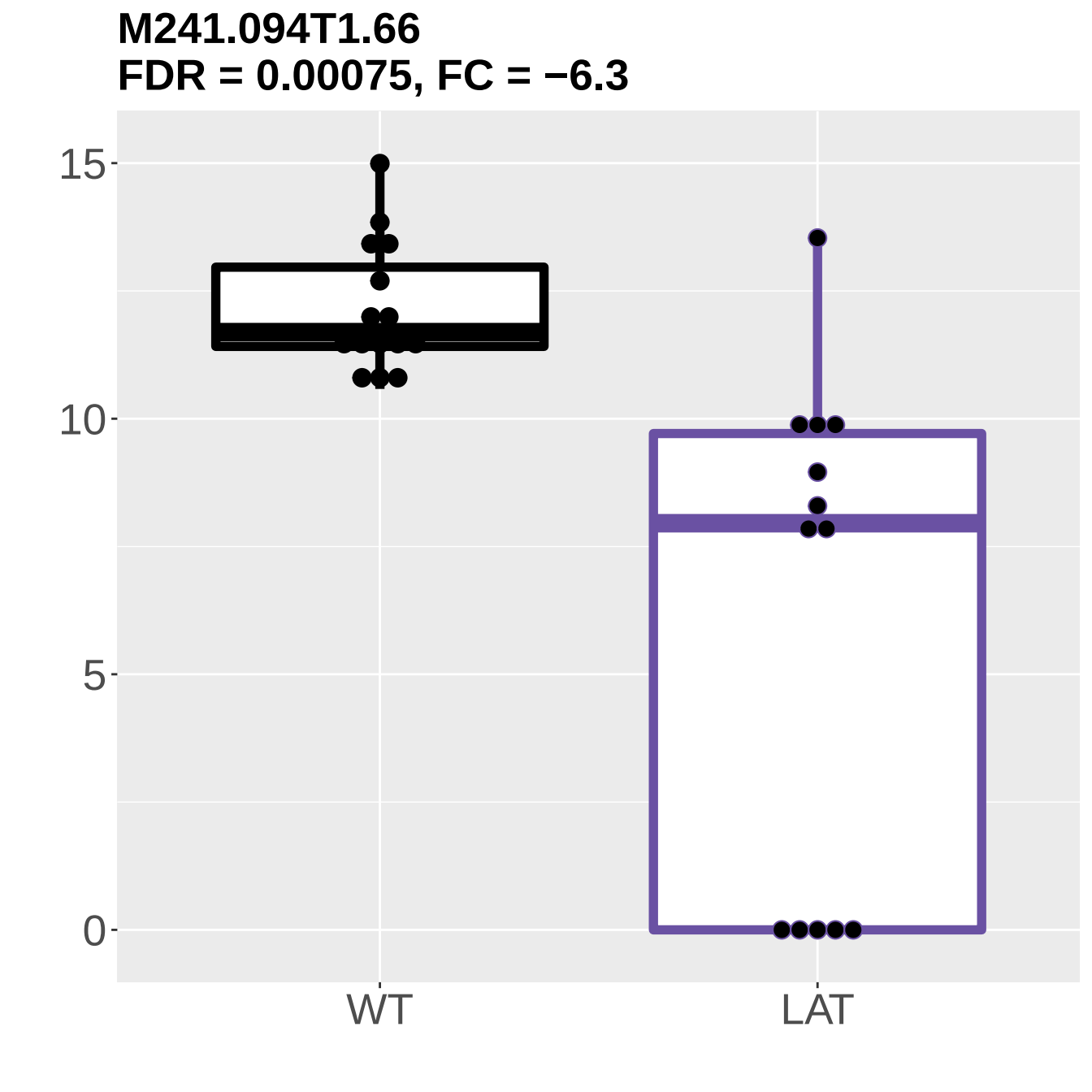
16.0
15.5
15.0
14.5
WT
LAT


M241.094T1.66
FDR = 0.00075, FC = −6.3
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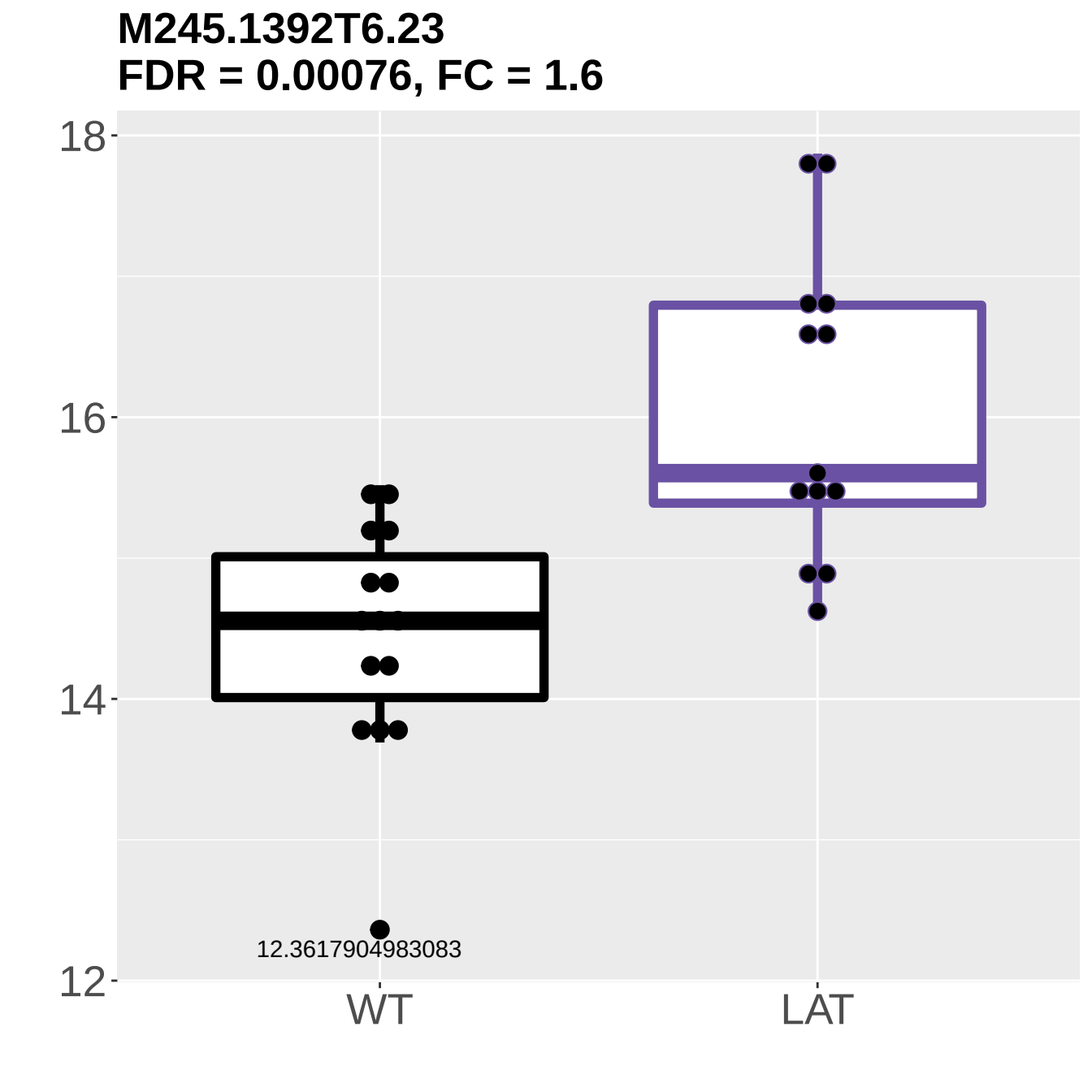
10
5
0
WT
LAT


M245.1392T6.23
FDR = 0.00076, FC = 1.6
18
16
14
12
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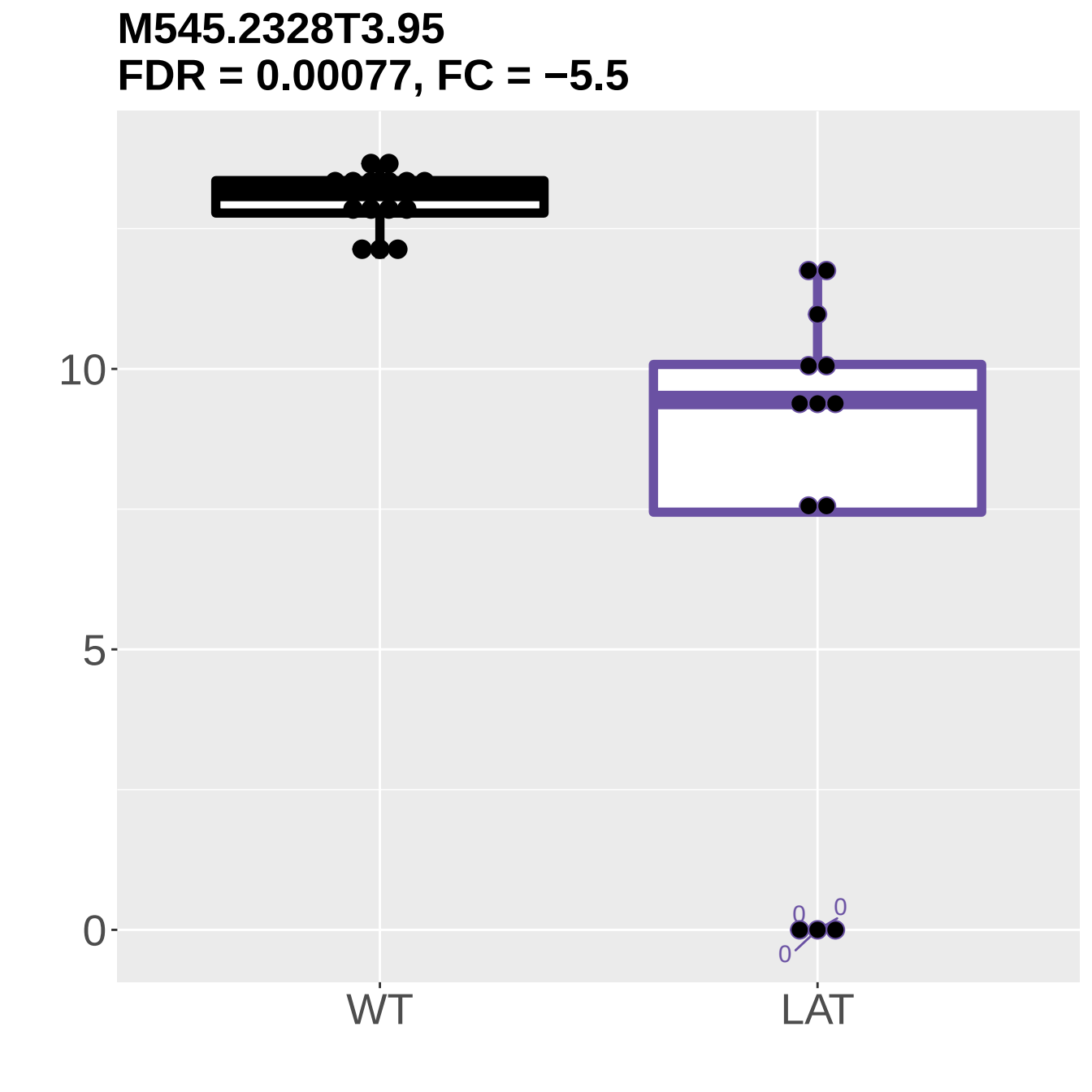
WT
LAT


M545.2328T3.95
FDR = 0.00077, FC = −5.5
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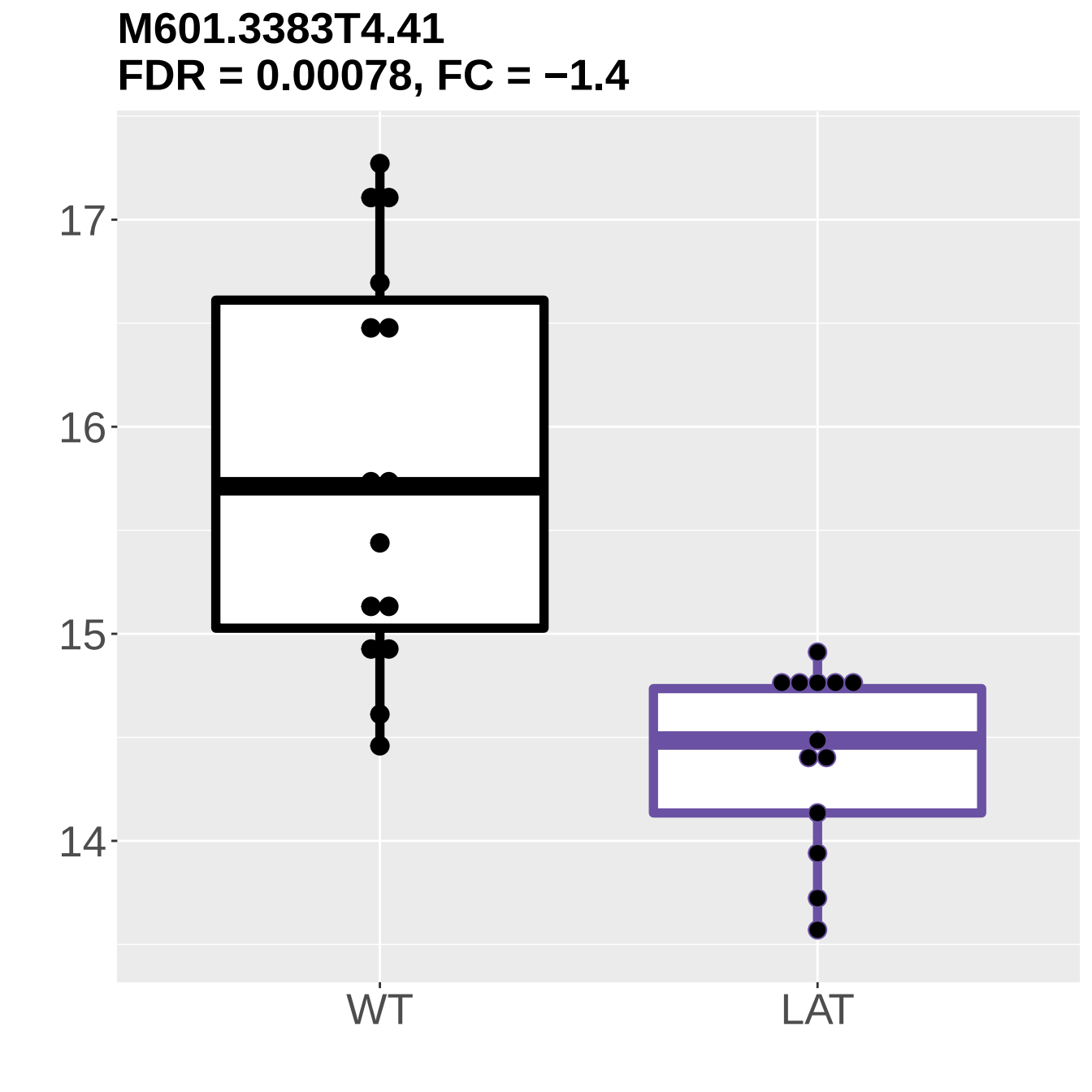
5
0
0
0
0
WT
LAT


M601.3383T4.41
FDR = 0.00078, FC = −1.4
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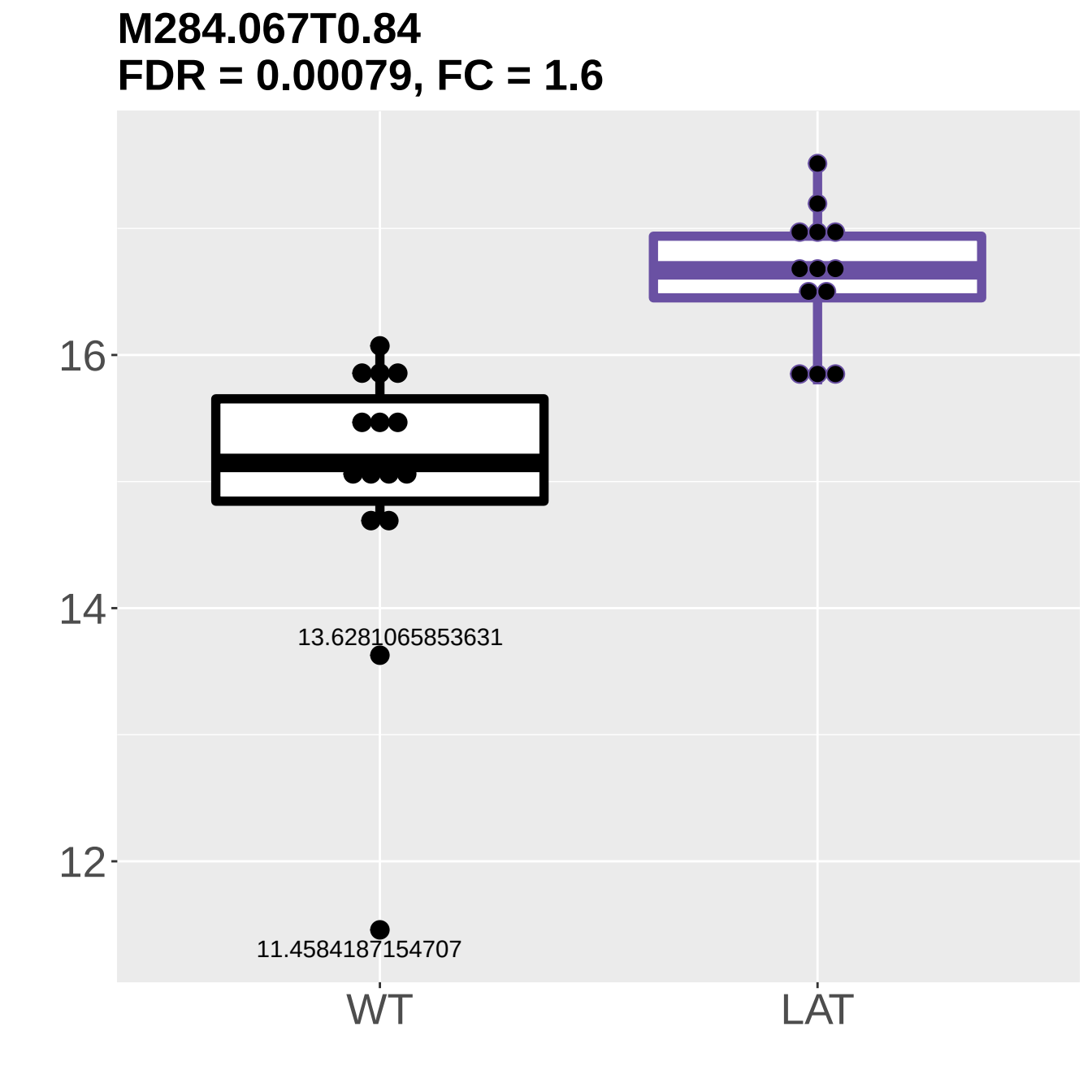
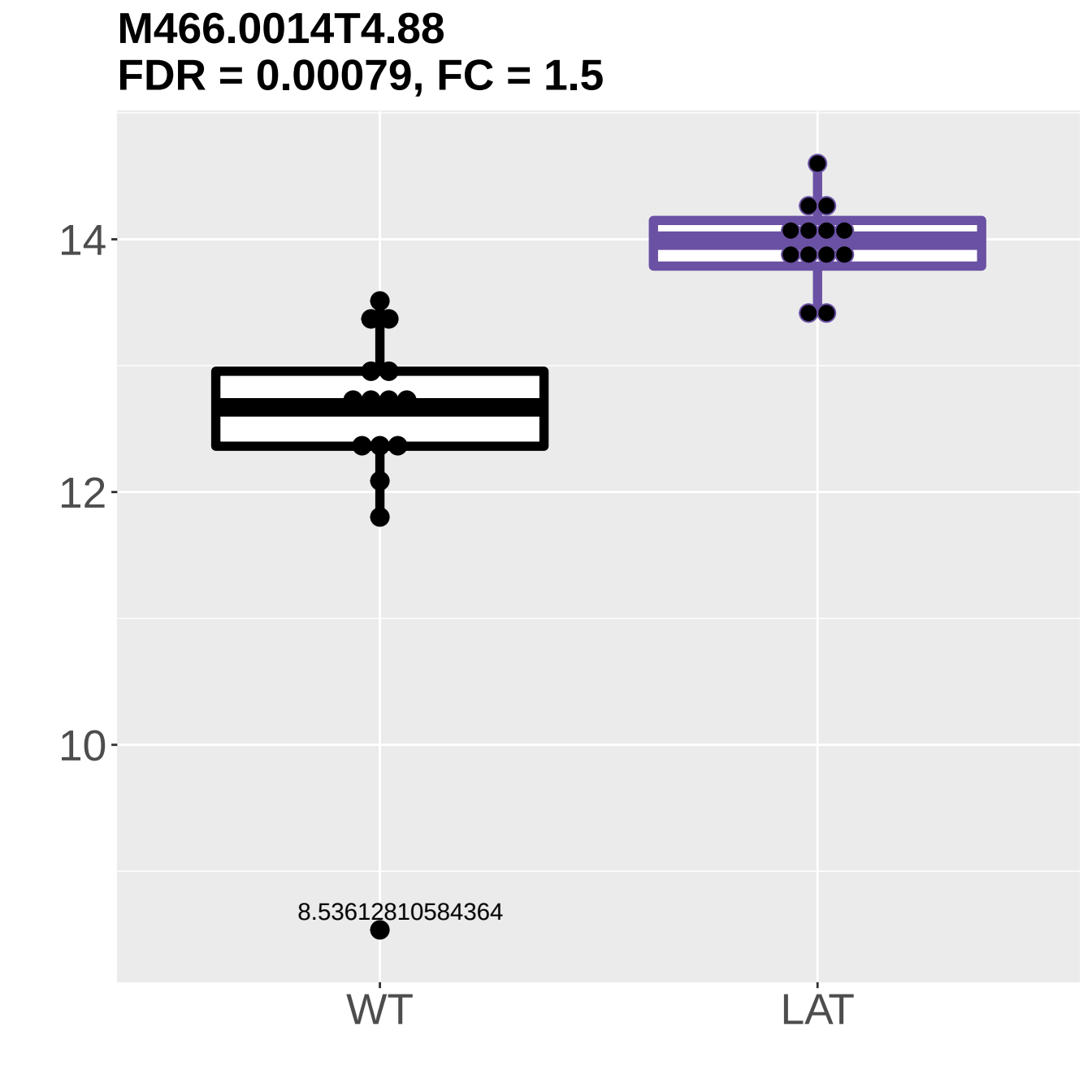
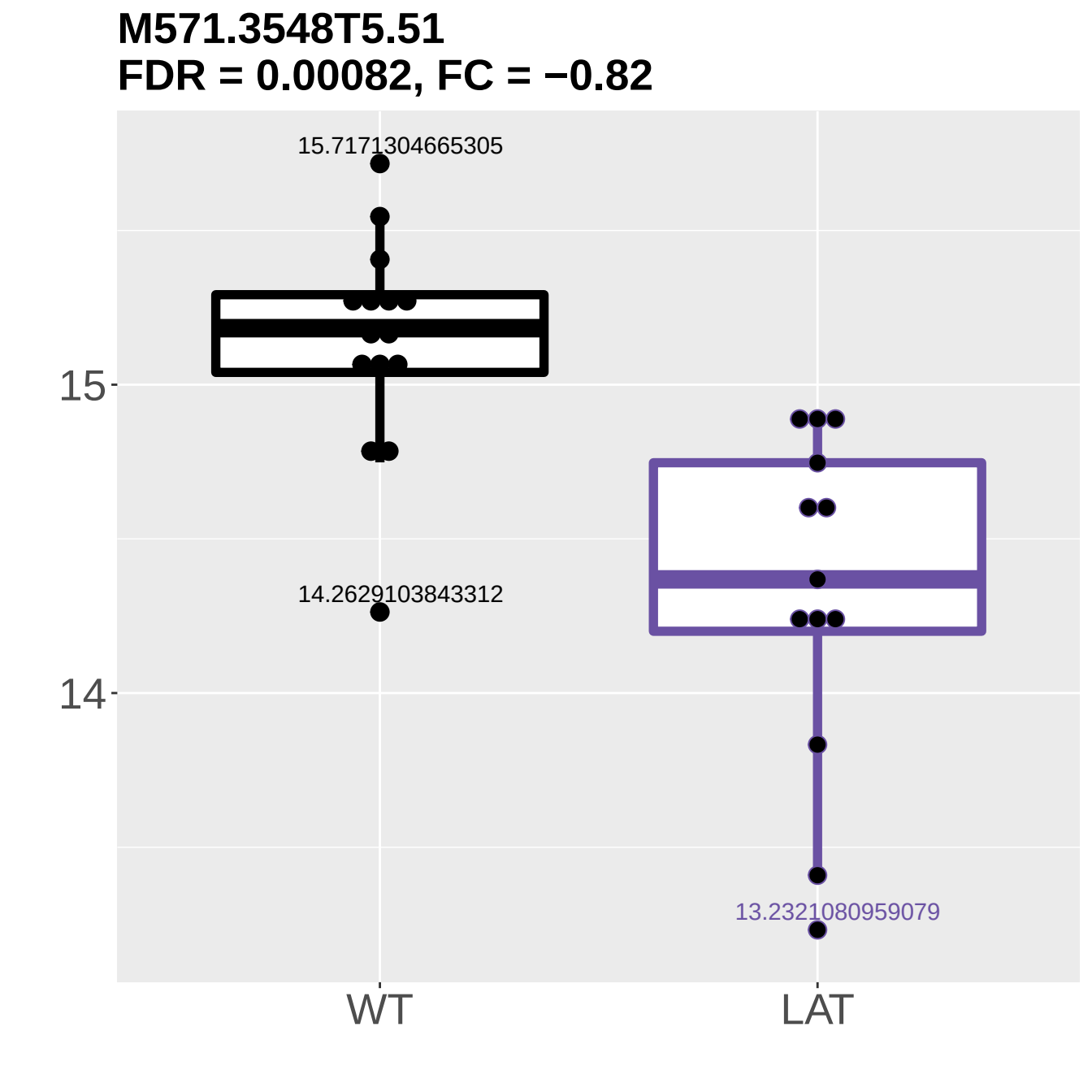
16
15
14
WT
LAT


M284.067T0.84
FDR = 0.00079, FC = 1.6
16
14
12
13.6281065853631
11.4584187154707
WT
LAT


M466.0014T4.88
FDR = 0.00079, FC = 1.5
14
12
10
8.53612810584364
WT
LAT


M571.3548T5.51
FDR = 0.00082, FC = −0.82
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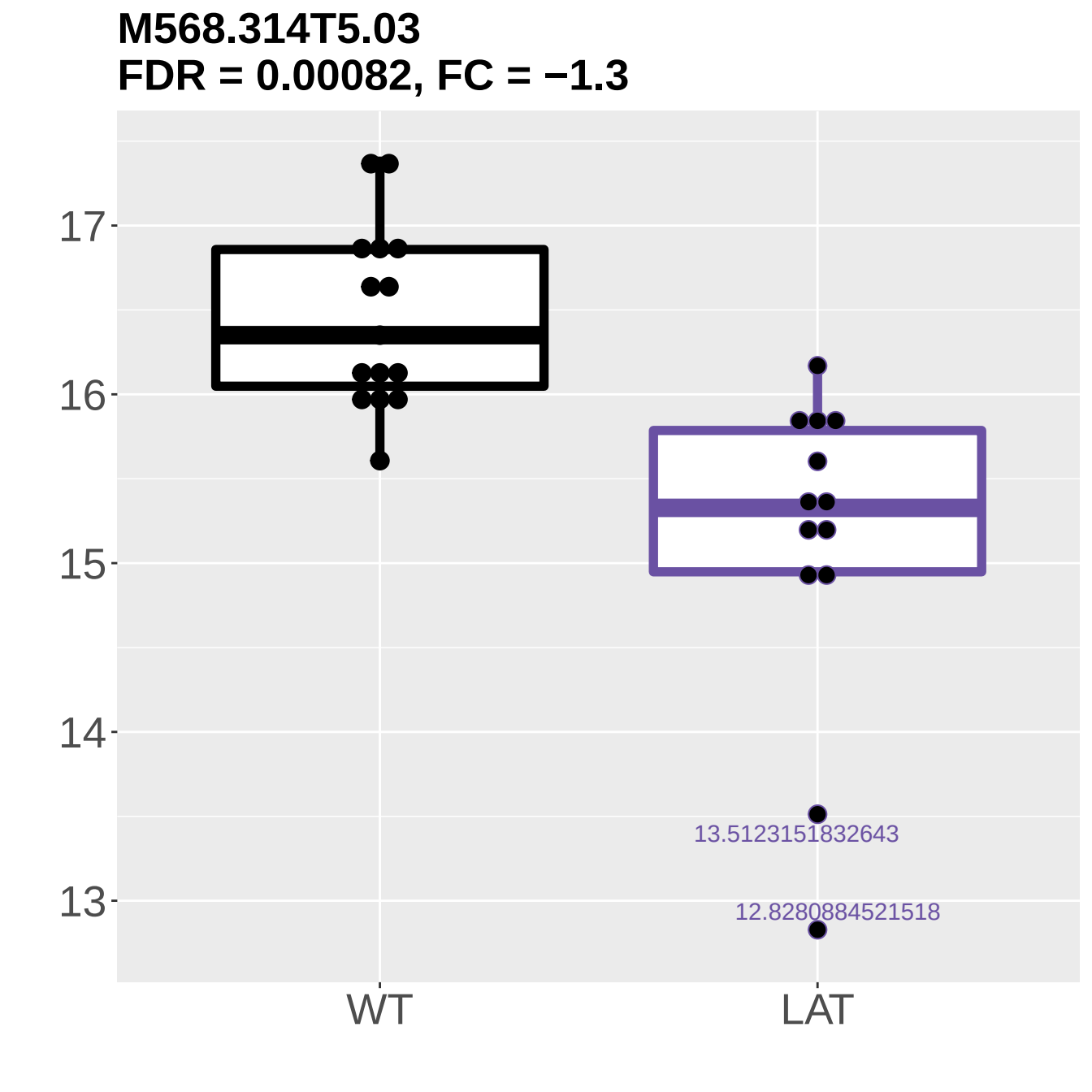
14.2629103843312
13.2321080959079
15
14
WT
LAT


M568.314T5.03
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17
16
15
14
13
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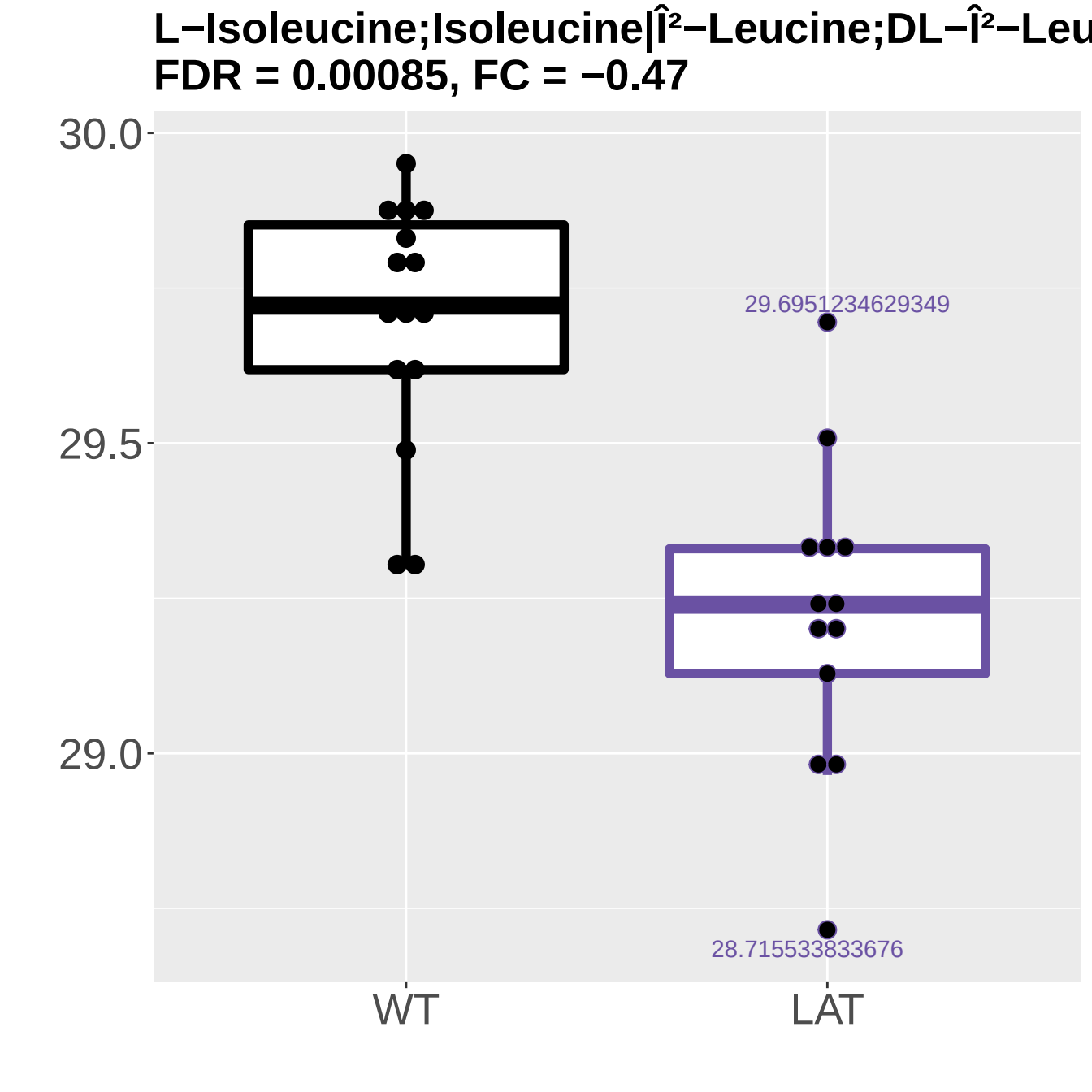
12.8280884521518
WT
LAT


L−Isoleucine;Isoleucine|Î²−Leucine;DL−Î²−Leu
FDR = 0.00085, FC = −0.47
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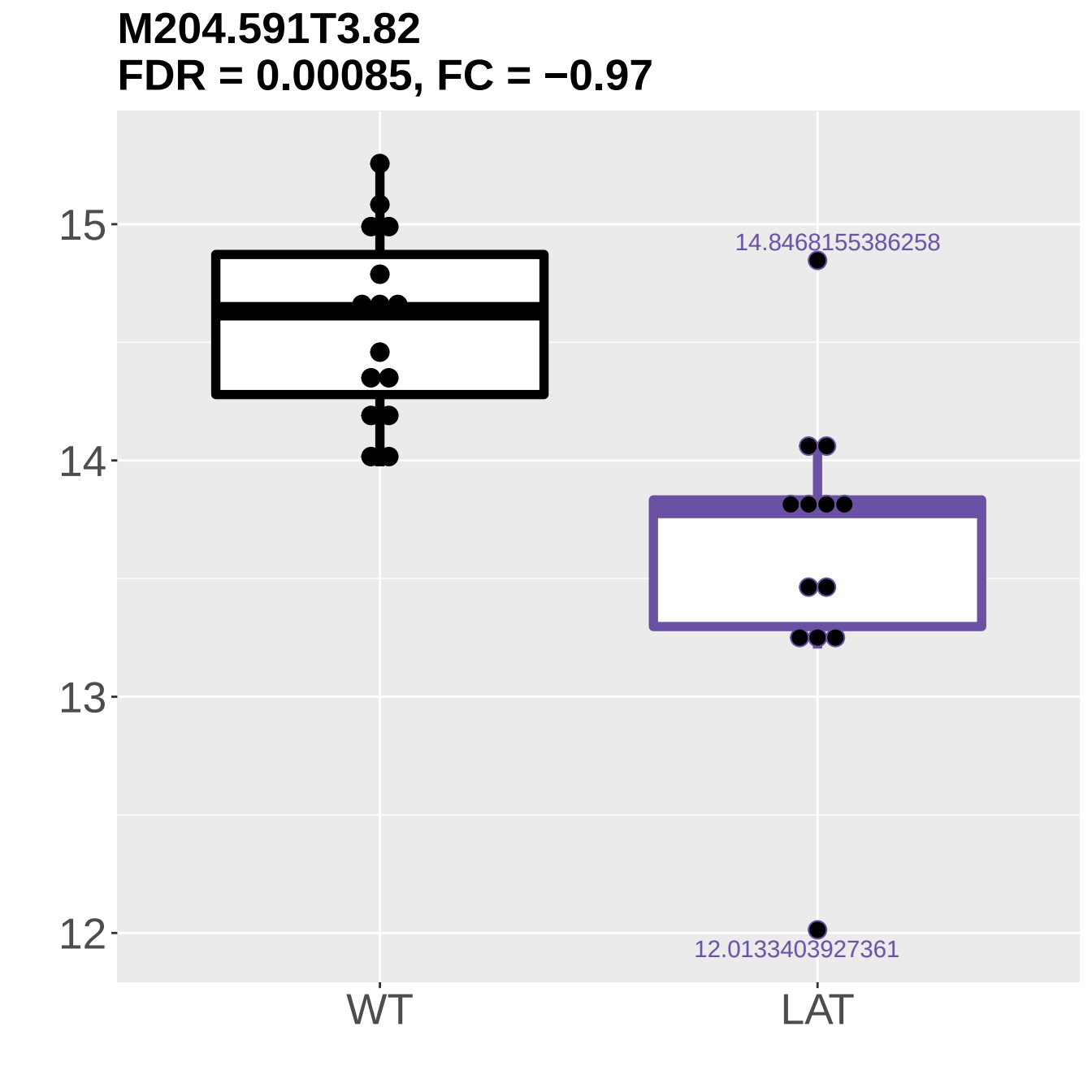
29.5
29.0
29.6951234629349
28.715533833676
WT
LAT


M204.591T3.82
FDR = 0.00085, FC = −0.97
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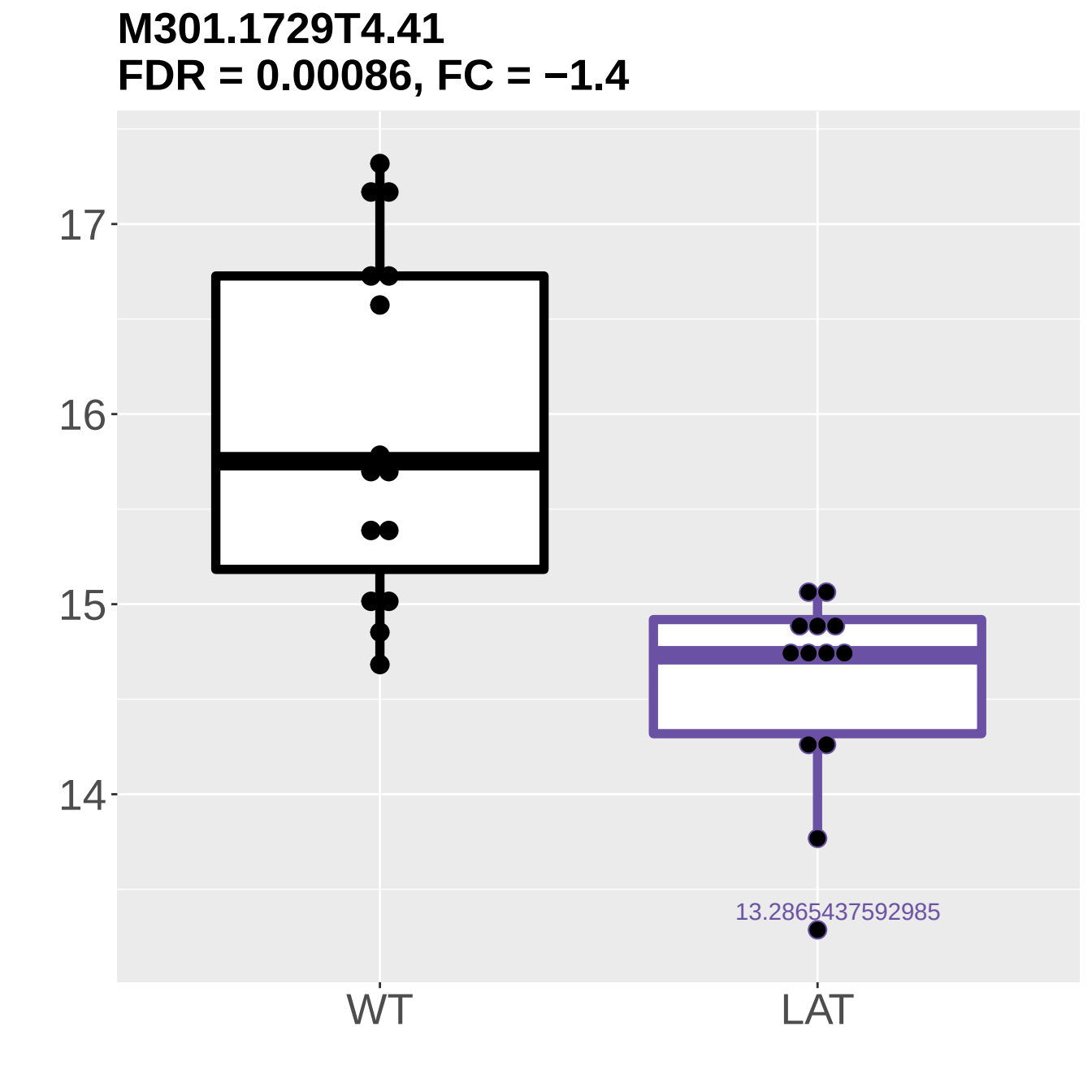
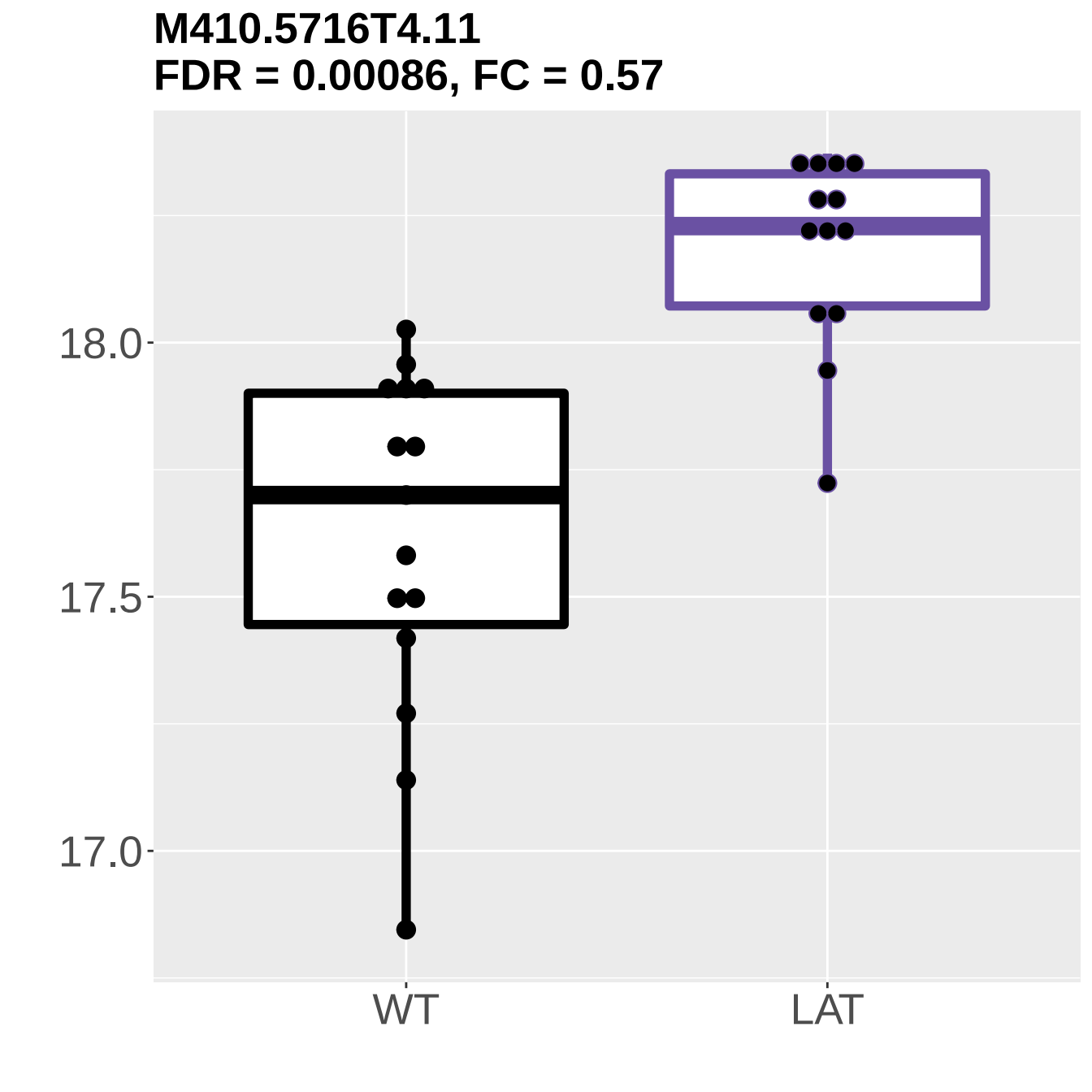
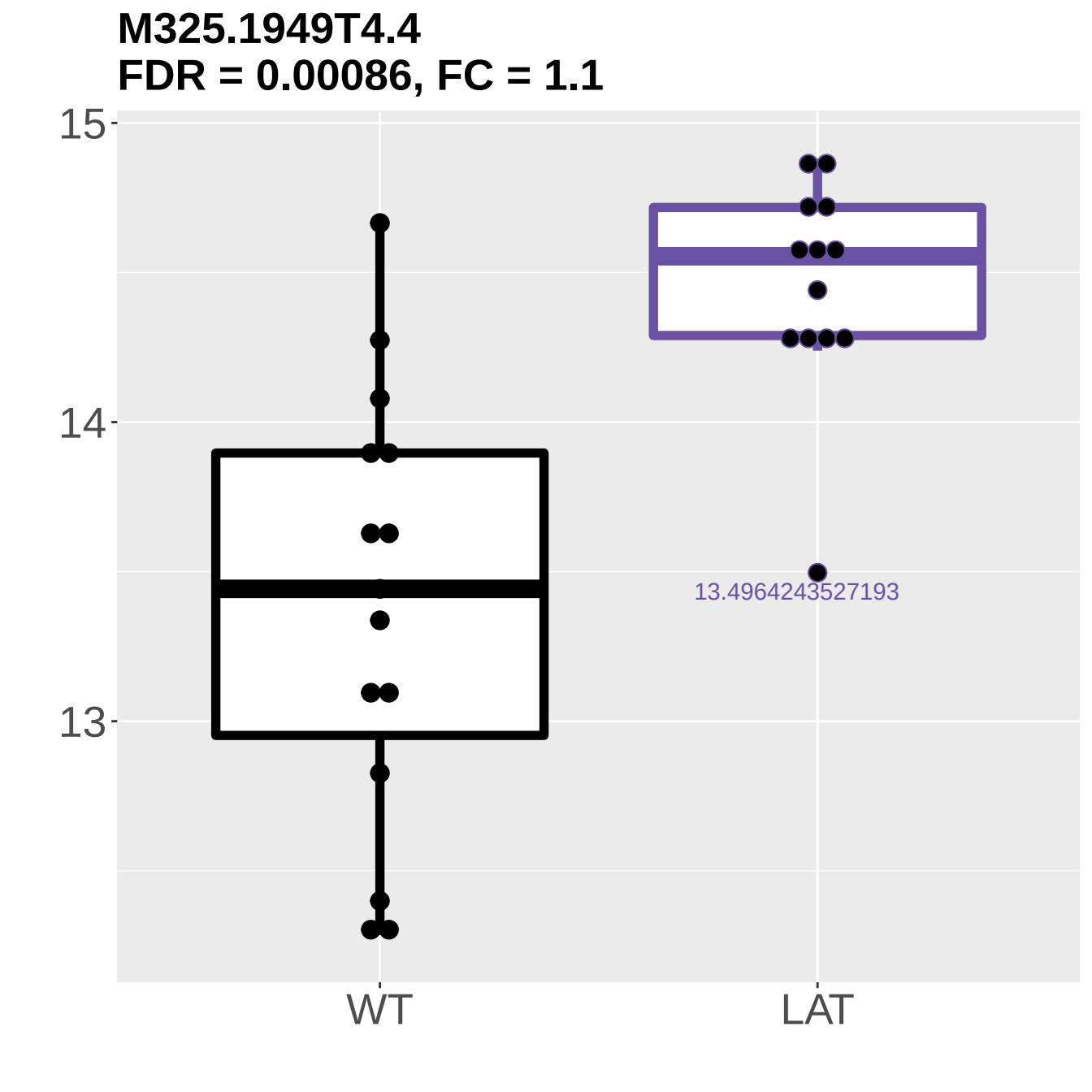
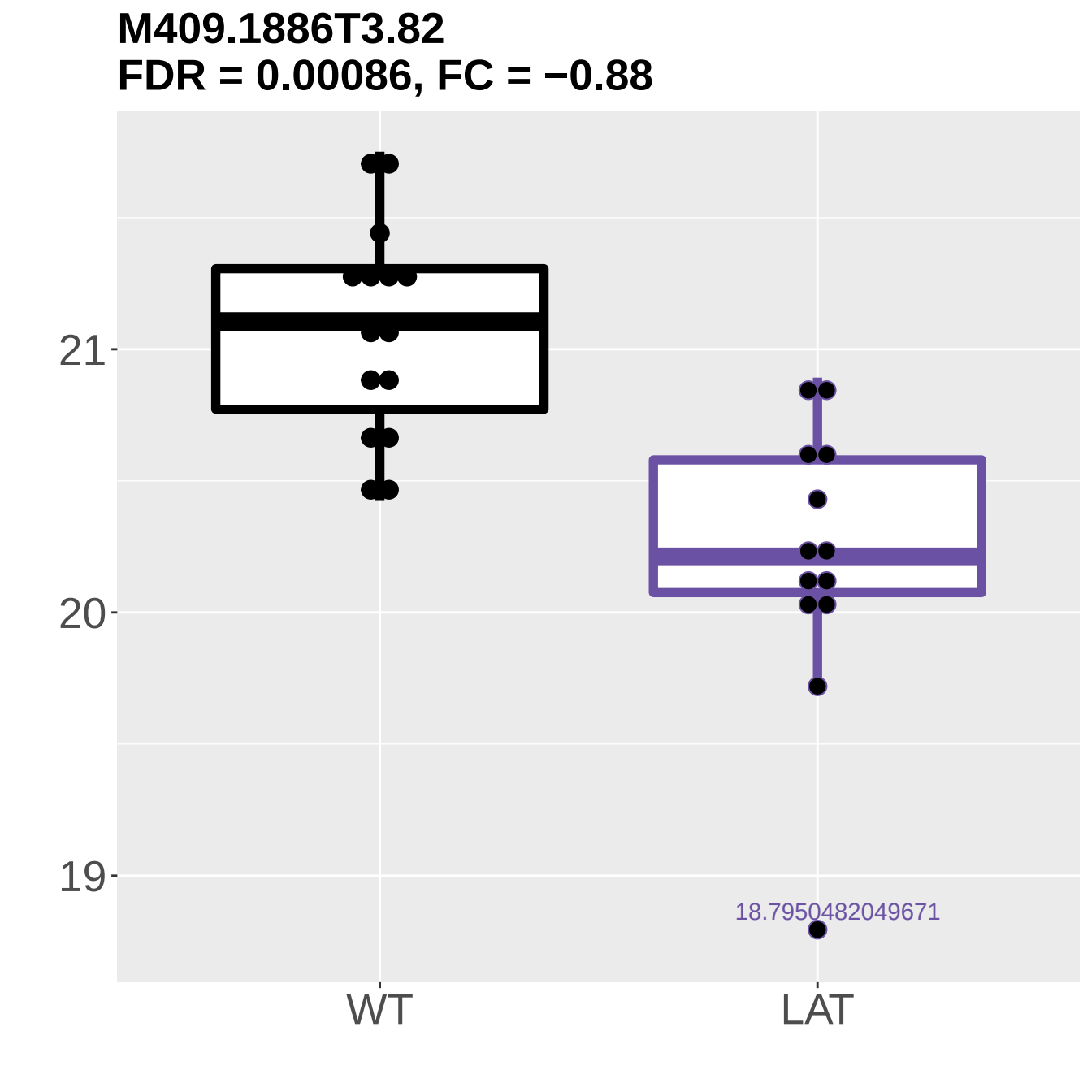
14
13
12
14.8468155386258
12.0133403927361
WT
LAT


M301.1729T4.41
FDR = 0.00086, FC = −1.4
17
16
15
14
13.2865437592985
WT
LAT


M410.5716T4.11
FDR = 0.00086, FC = 0.57
18.0
17.5
17.0
WT
LAT


M325.1949T4.4
FDR = 0.00086, FC = 1.1
15
14
13
13.4964243527193
WT
LAT


M409.1886T3.82
FDR = 0.00086, FC = −0.88
21
20
19
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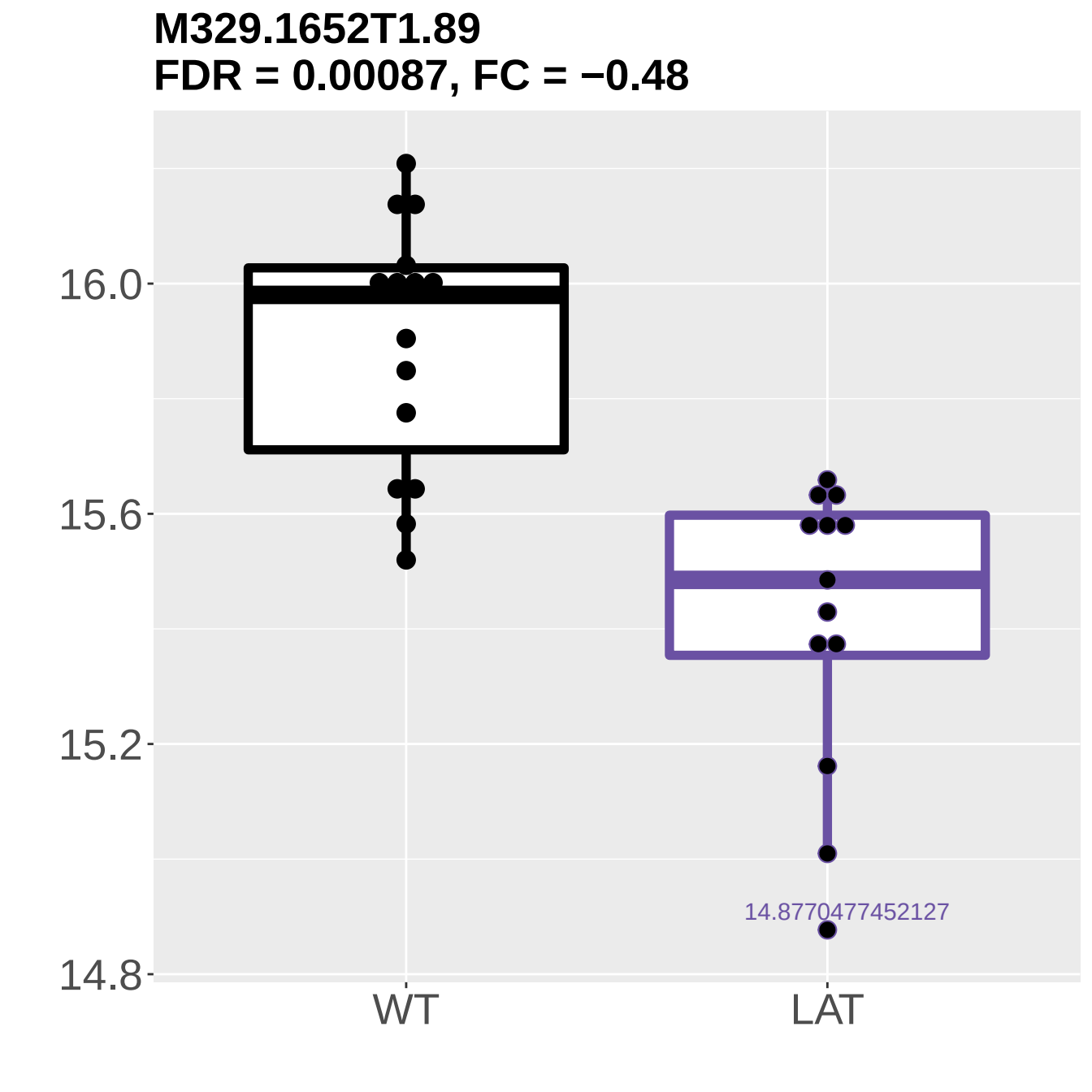
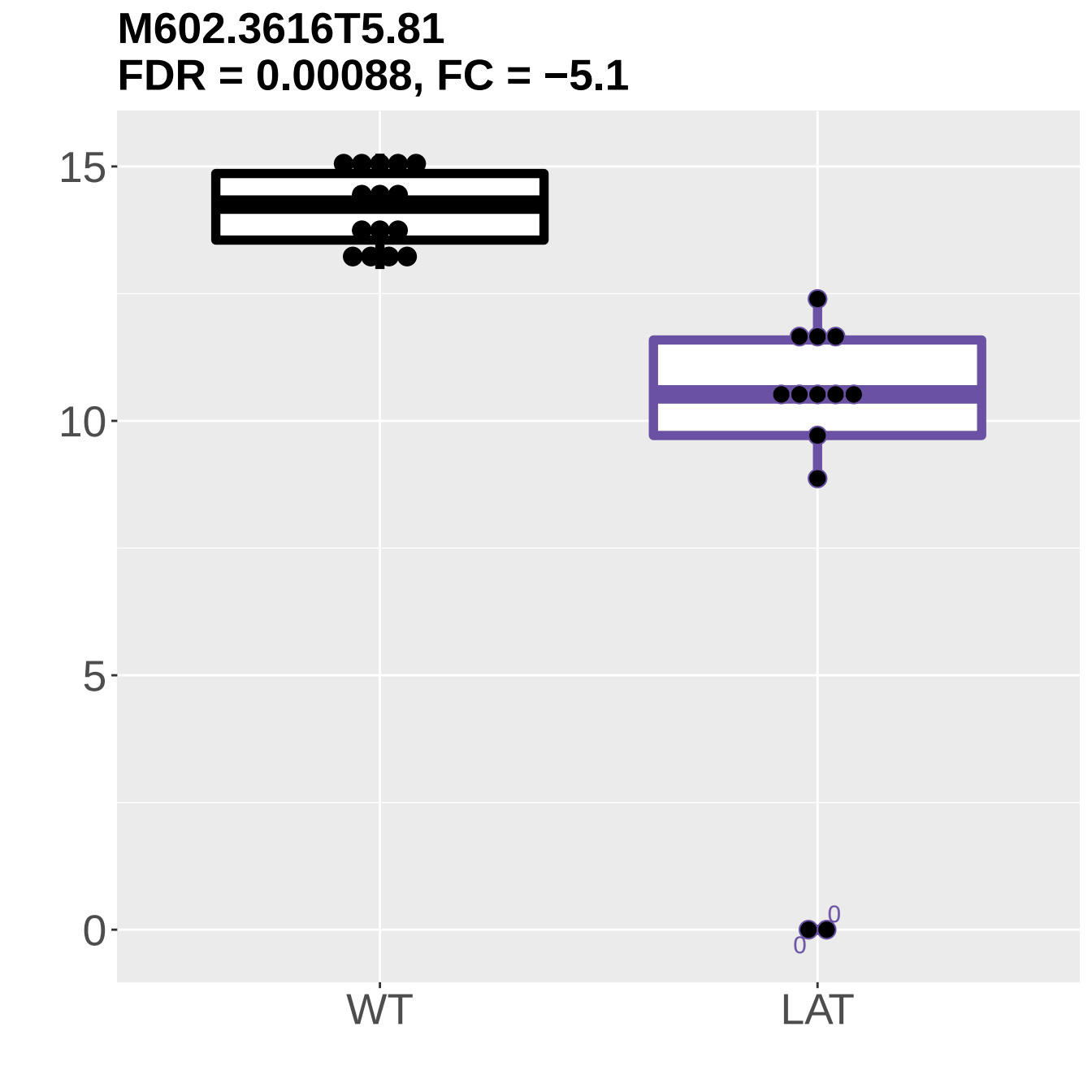
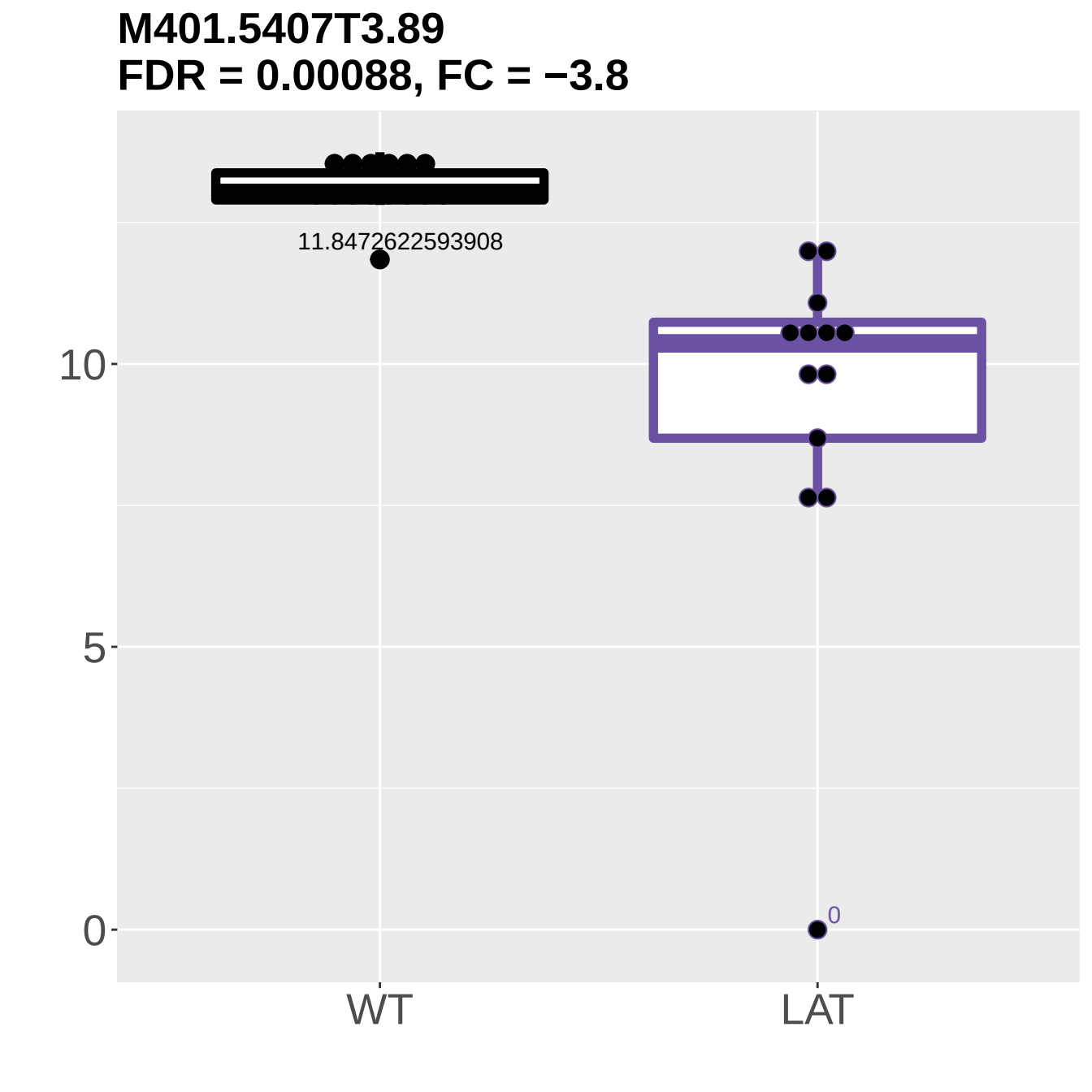
WT
LAT


M329.1652T1.89
FDR = 0.00087, FC = −0.48
16.0
15.6
15.2
14.8
14.8770477452127
WT
LAT


M602.3616T5.81
FDR = 0.00088, FC = −5.1
15
10
5
0
0
0
WT
LAT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WT
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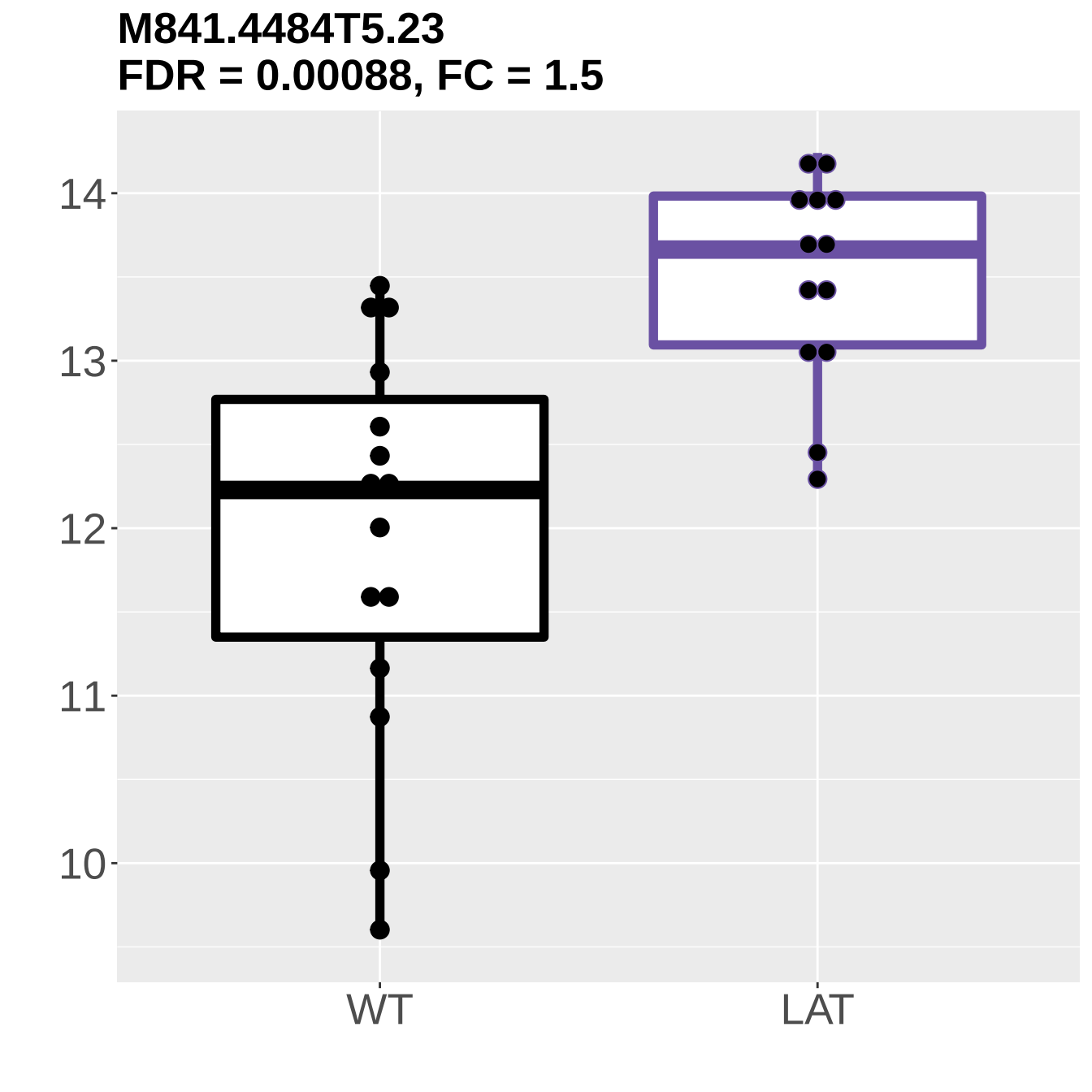
M841.4484T5.23
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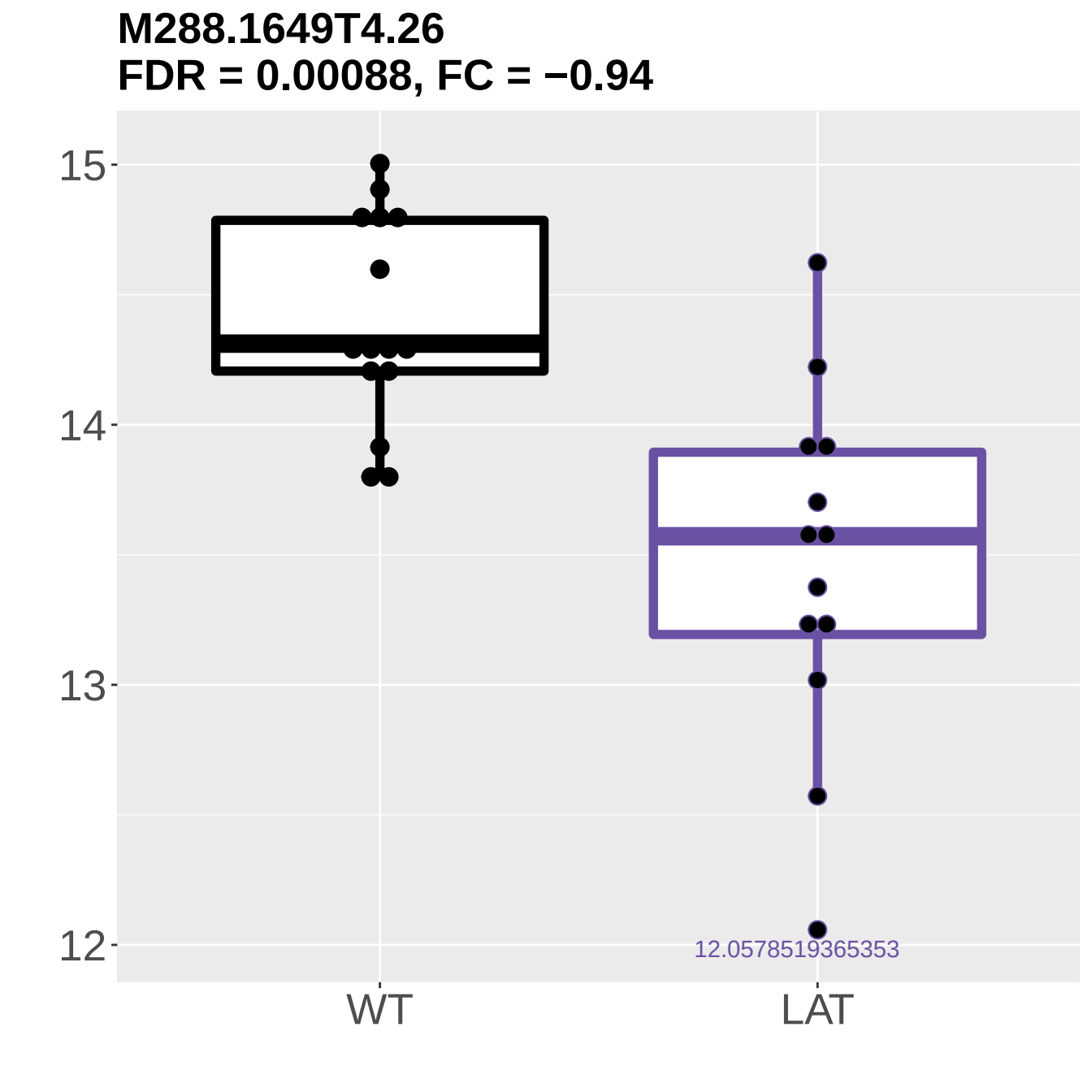
WT
LAT


M288.1649T4.26
FDR = 0.00088, FC = −0.94
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14
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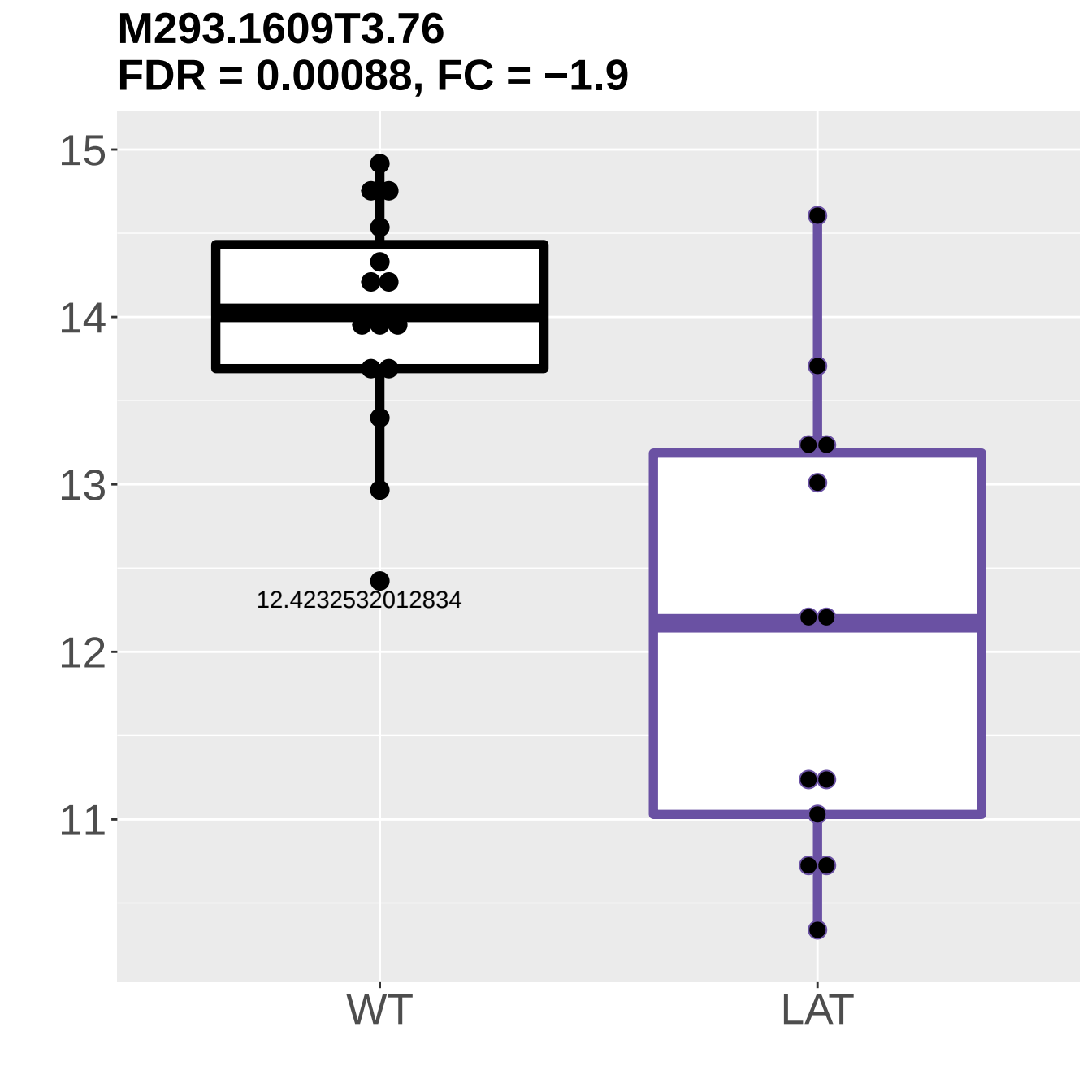
WT
LAT


M293.1609T3.76
FDR = 0.00088, FC = −1.9
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14
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12
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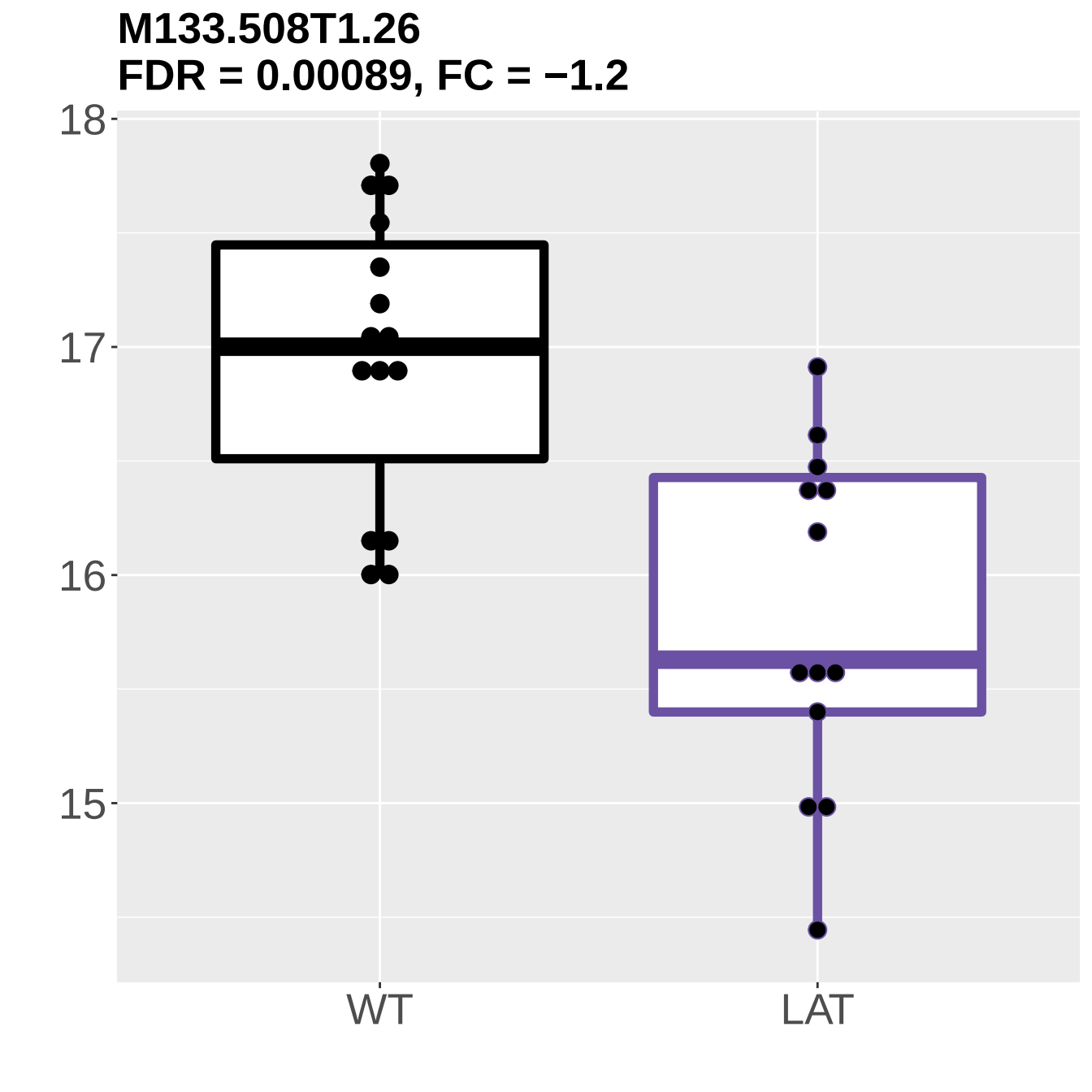
WT
LAT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16
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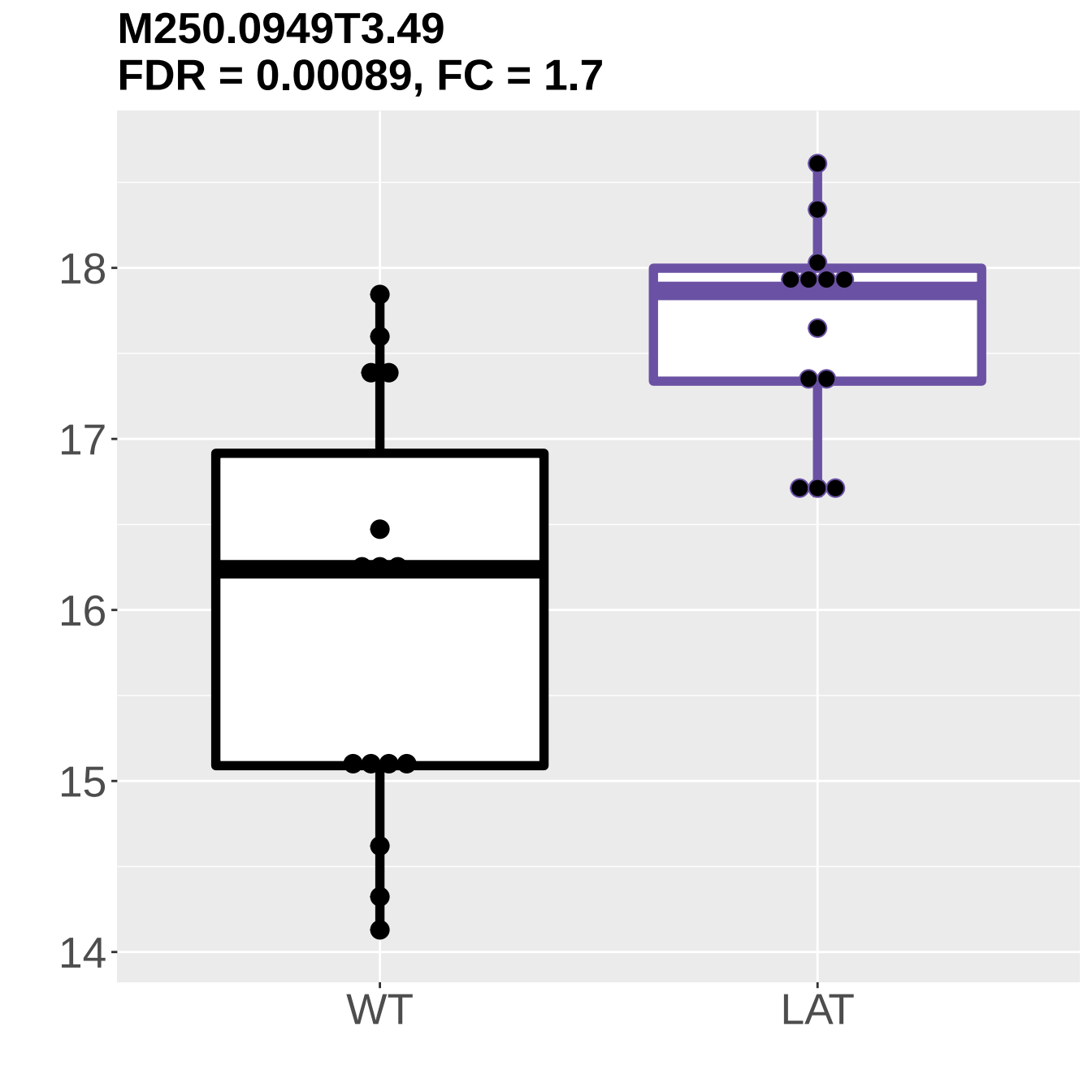
WT
LAT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17
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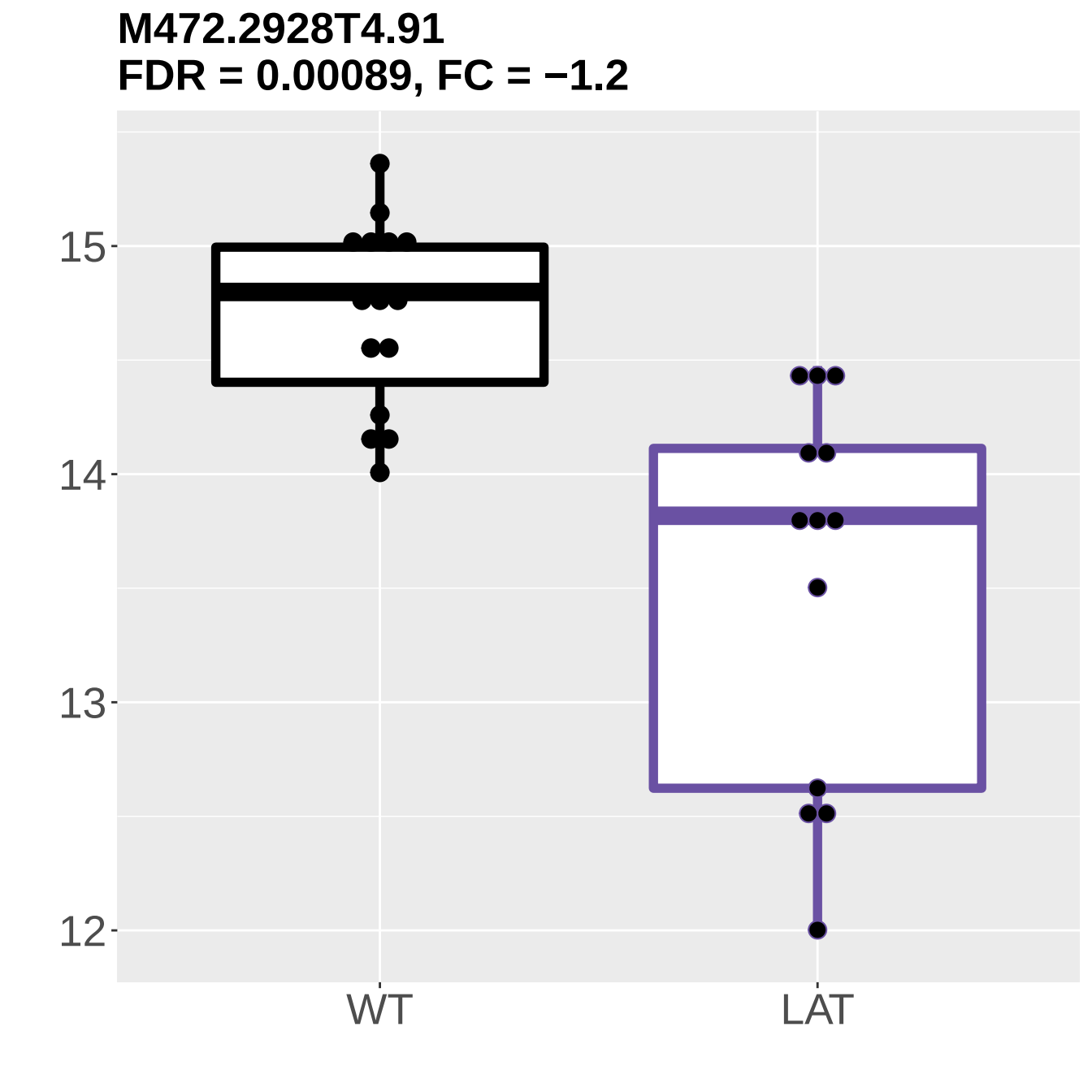
WT
LAT


M472.2928T4.91
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14
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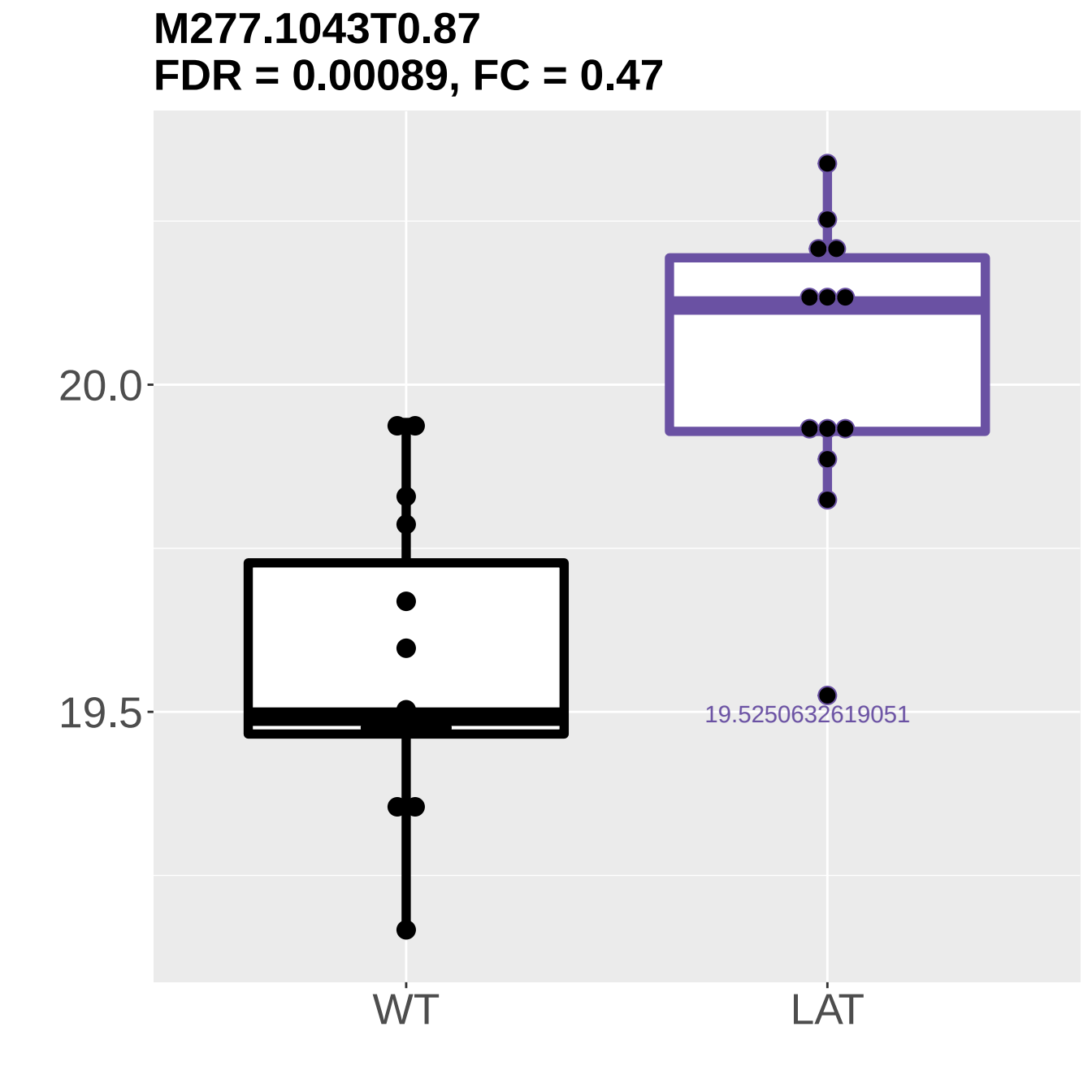
12
WT
LAT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FDR = 0.00089, FC = 0.47
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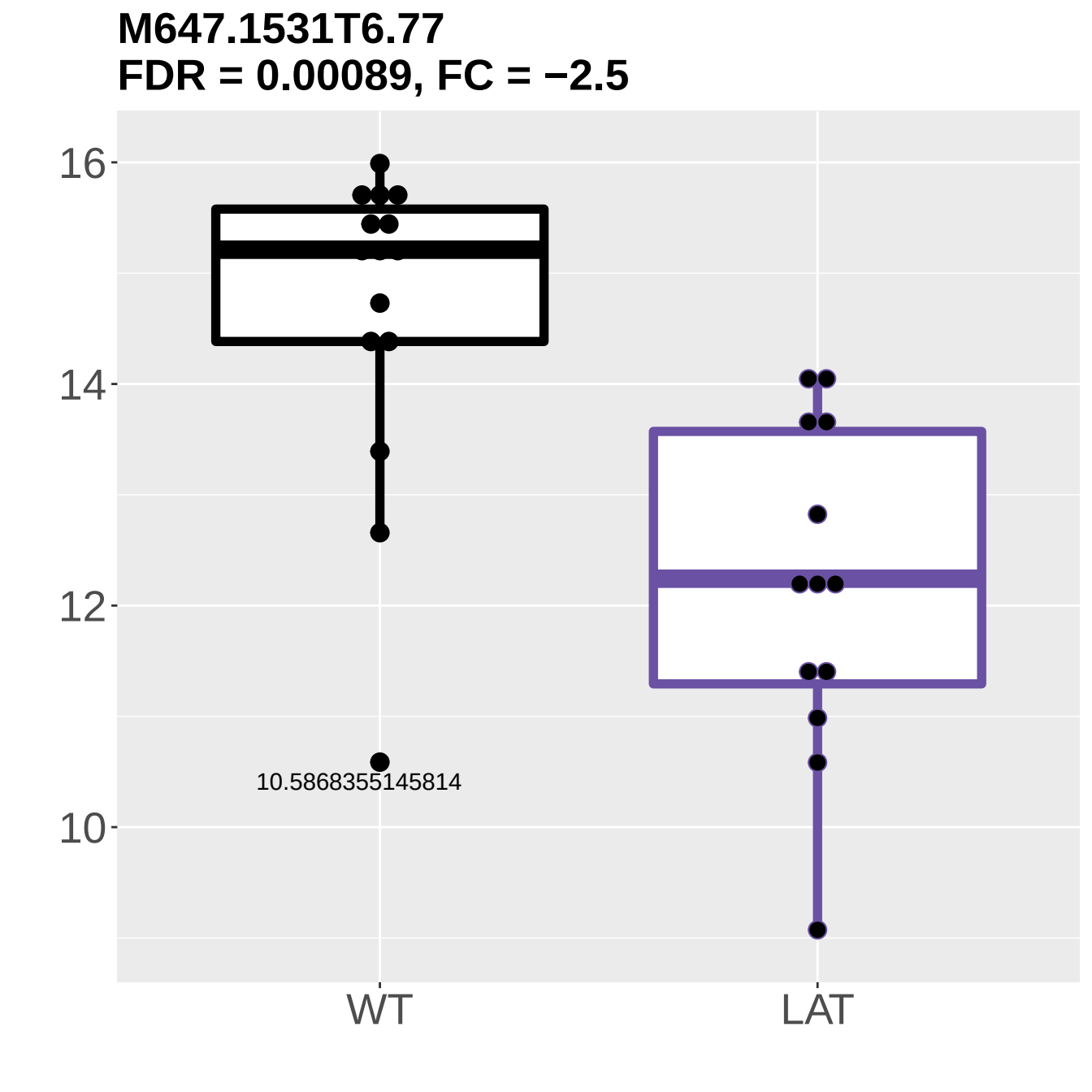
WT
LAT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14
12
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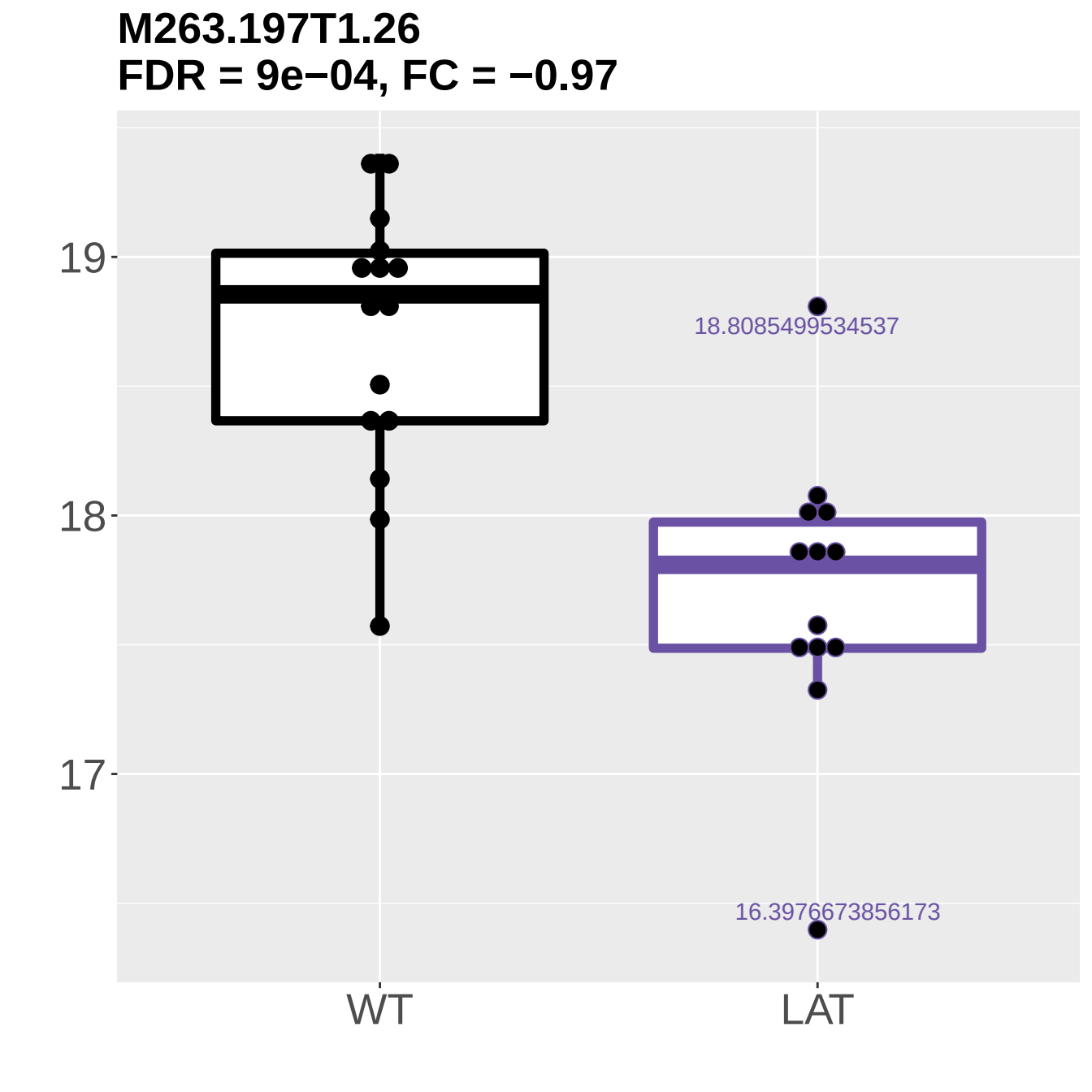
WT
LAT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18
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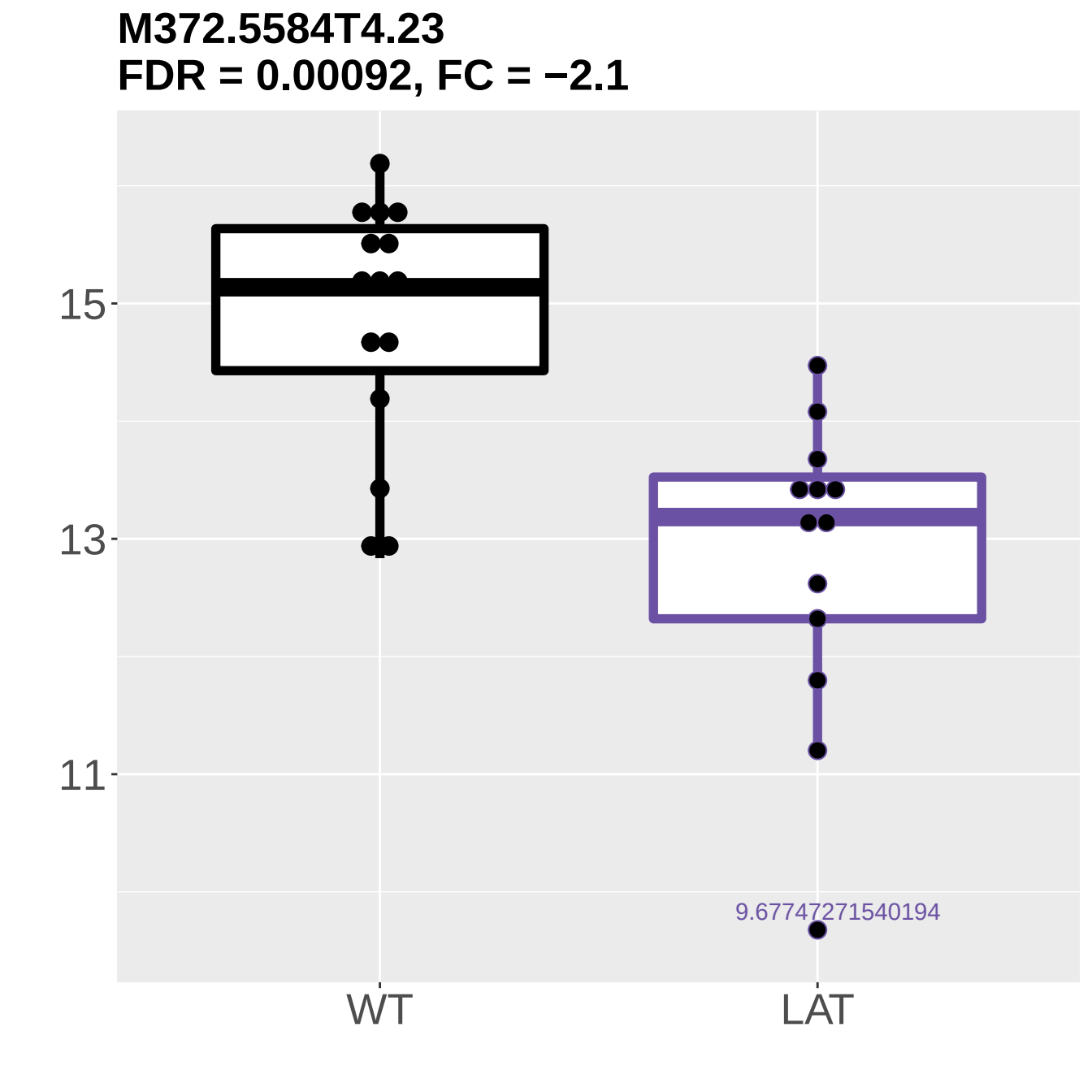
WT
LAT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FDR = 0.00092, FC = −2.1
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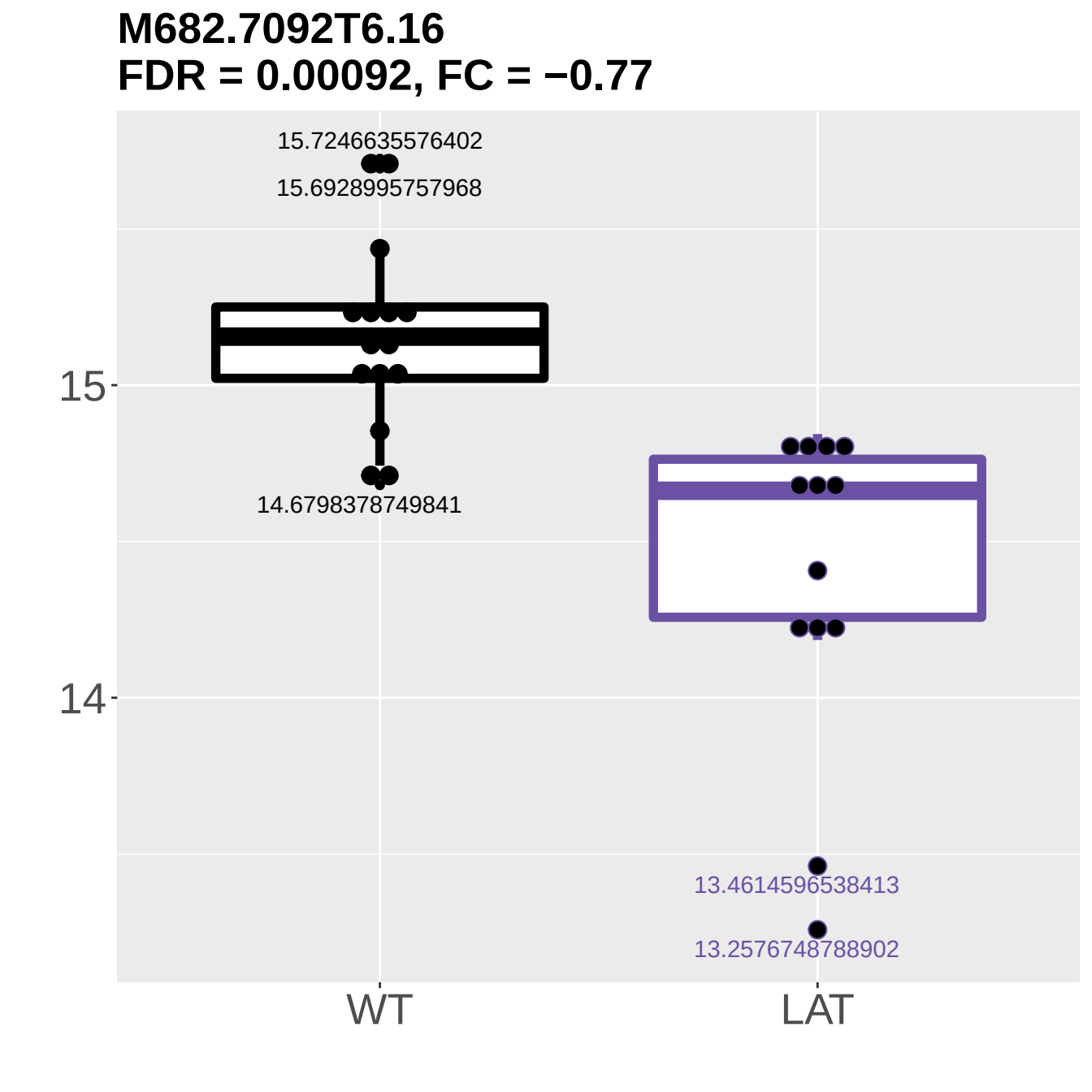
13
11
9.67747271540194
WT
LAT


M682.7092T6.16
FDR = 0.00092, FC = −0.77
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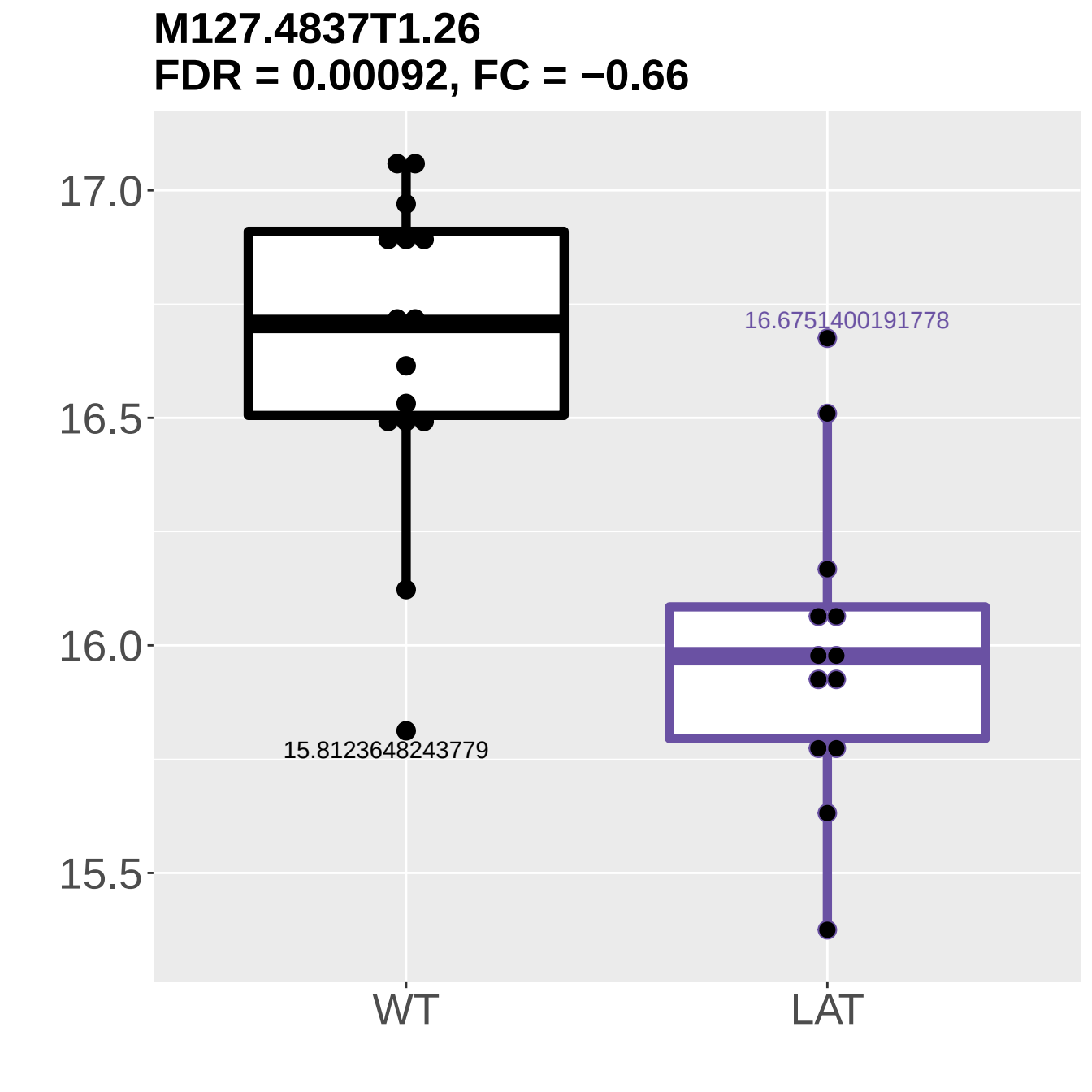
15.6928995757968
14.6798378749841
13.4614596538413
13.2576748788902
15
14
WT
LAT


M127.4837T1.26
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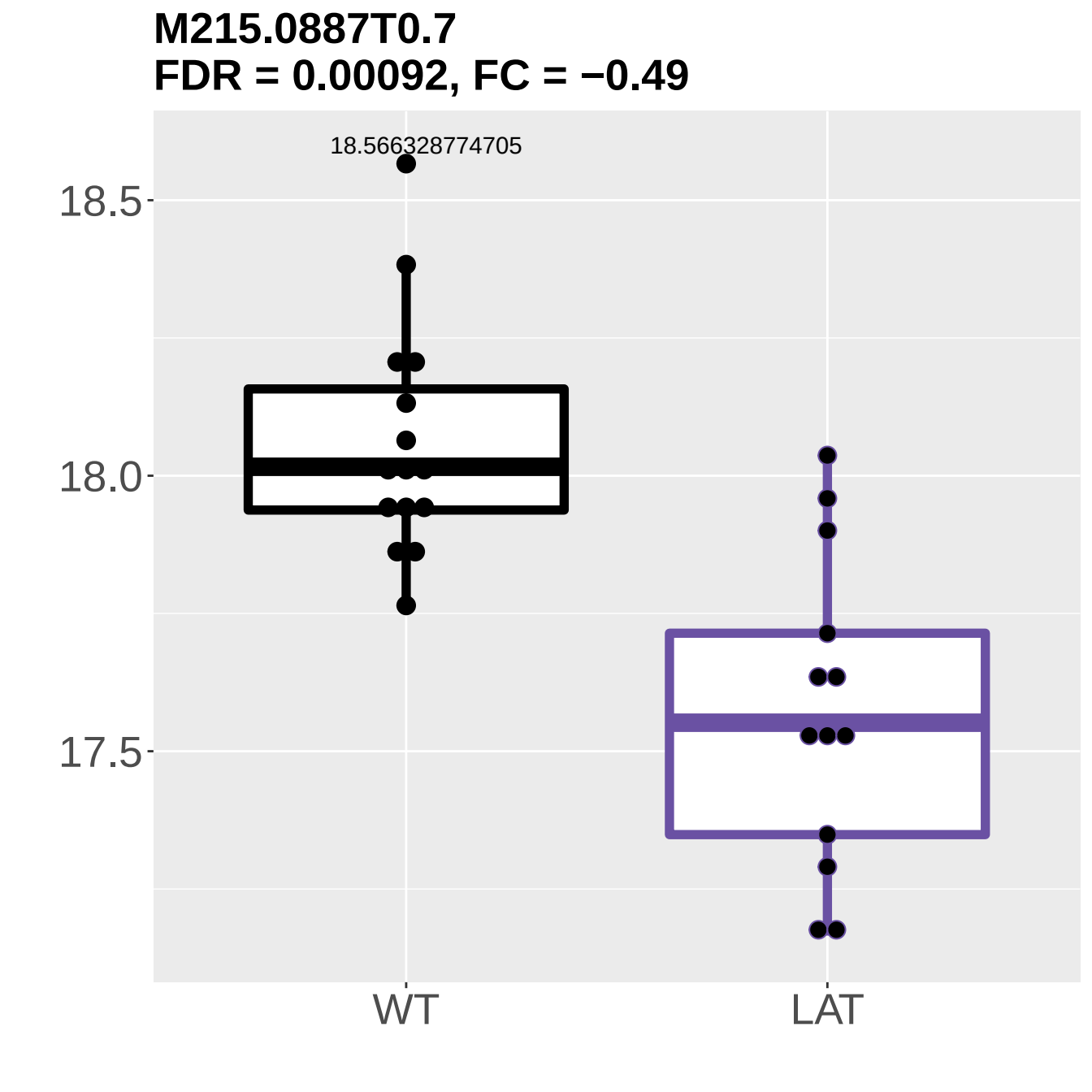
16.5
16.0
15.5
16.6751400191778
15.8123648243779
WT
LAT


M215.0887T0.7
FDR = 0.00092, FC = −0.49
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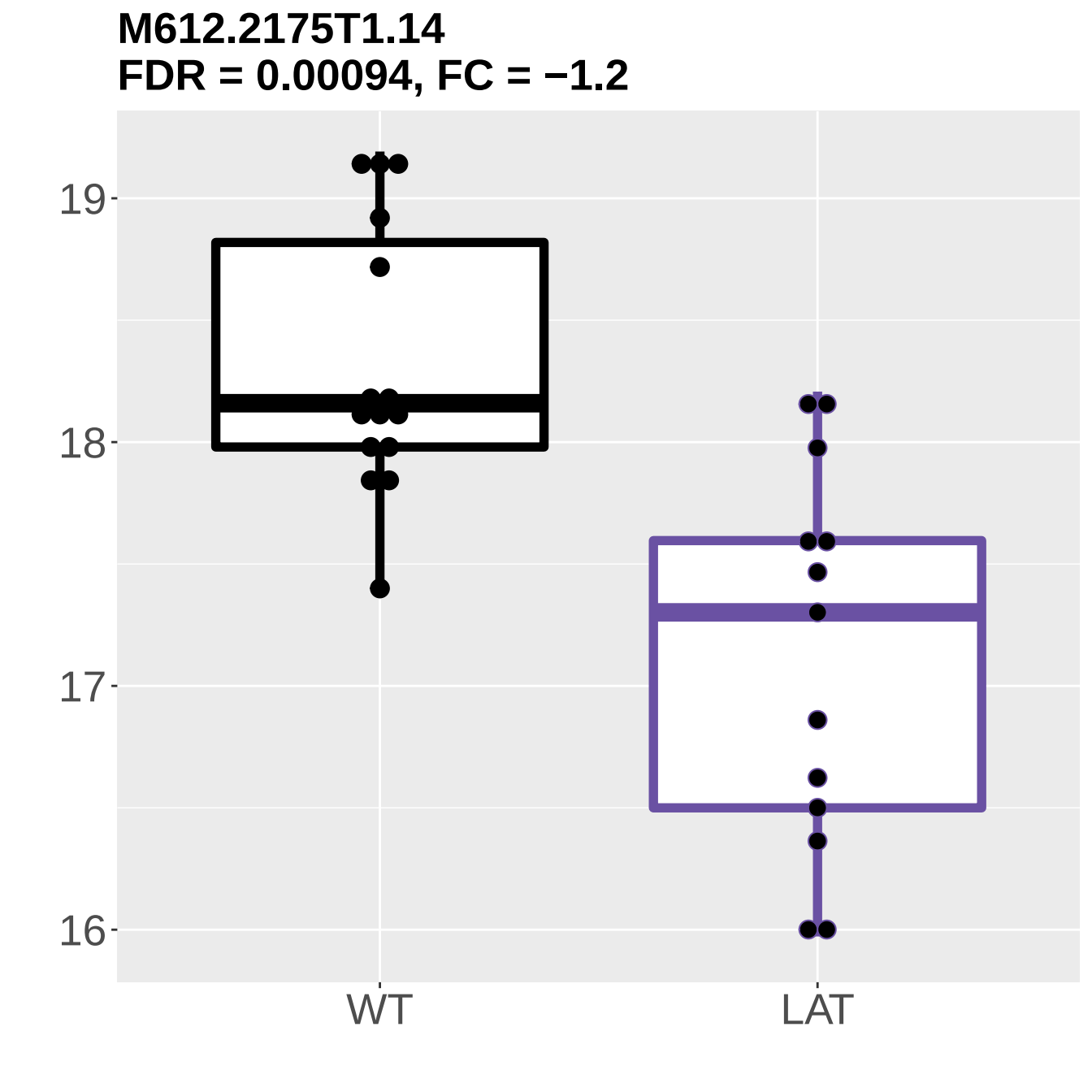
18.5
18.0
17.5
WT
LAT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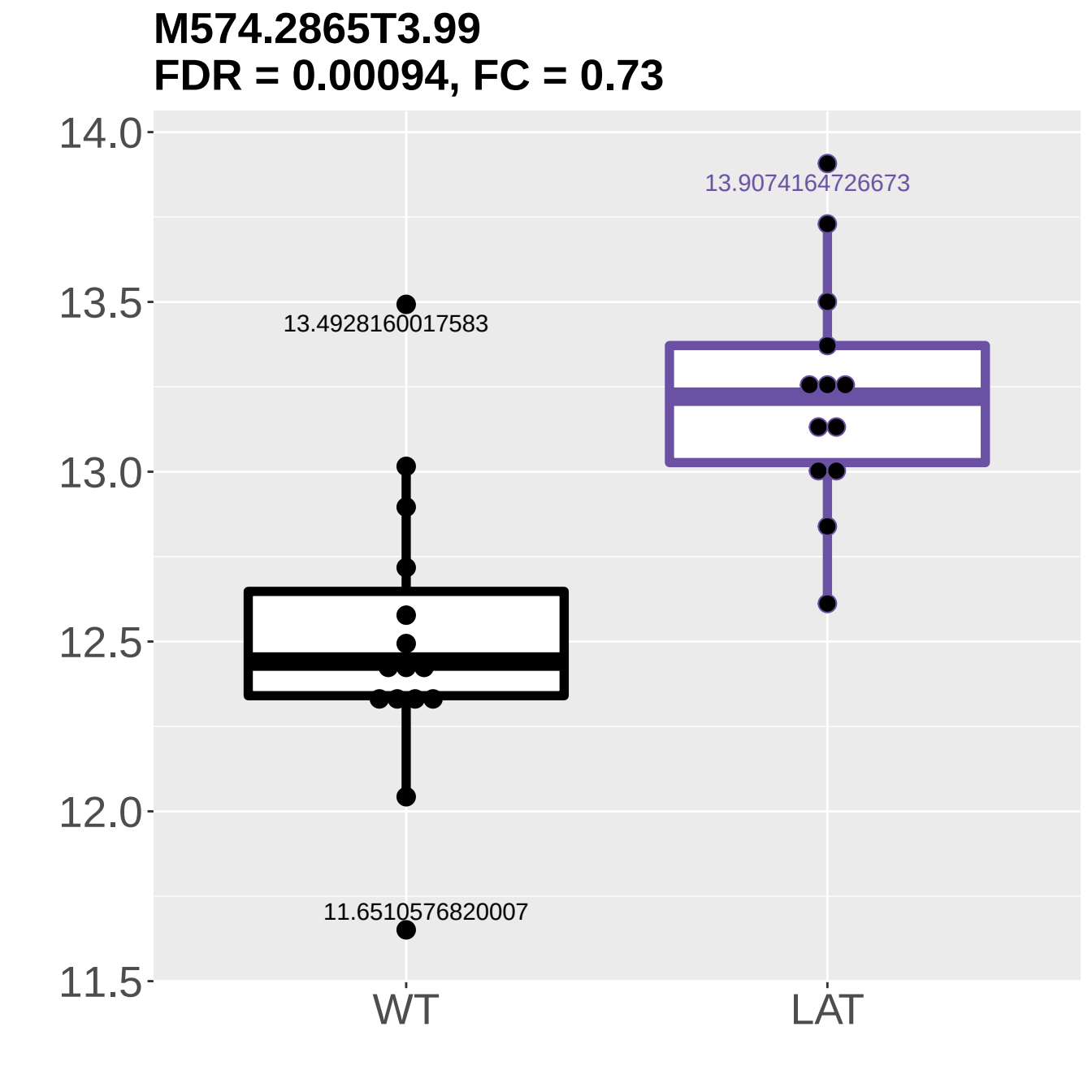
FDR = 0.00094, FC = −1.2
19
18
17
16
WT
LAT


M574.2865T3.99
FDR = 0.00094, FC = 0.73
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13.5
13.0
12.5
12.0
11.5
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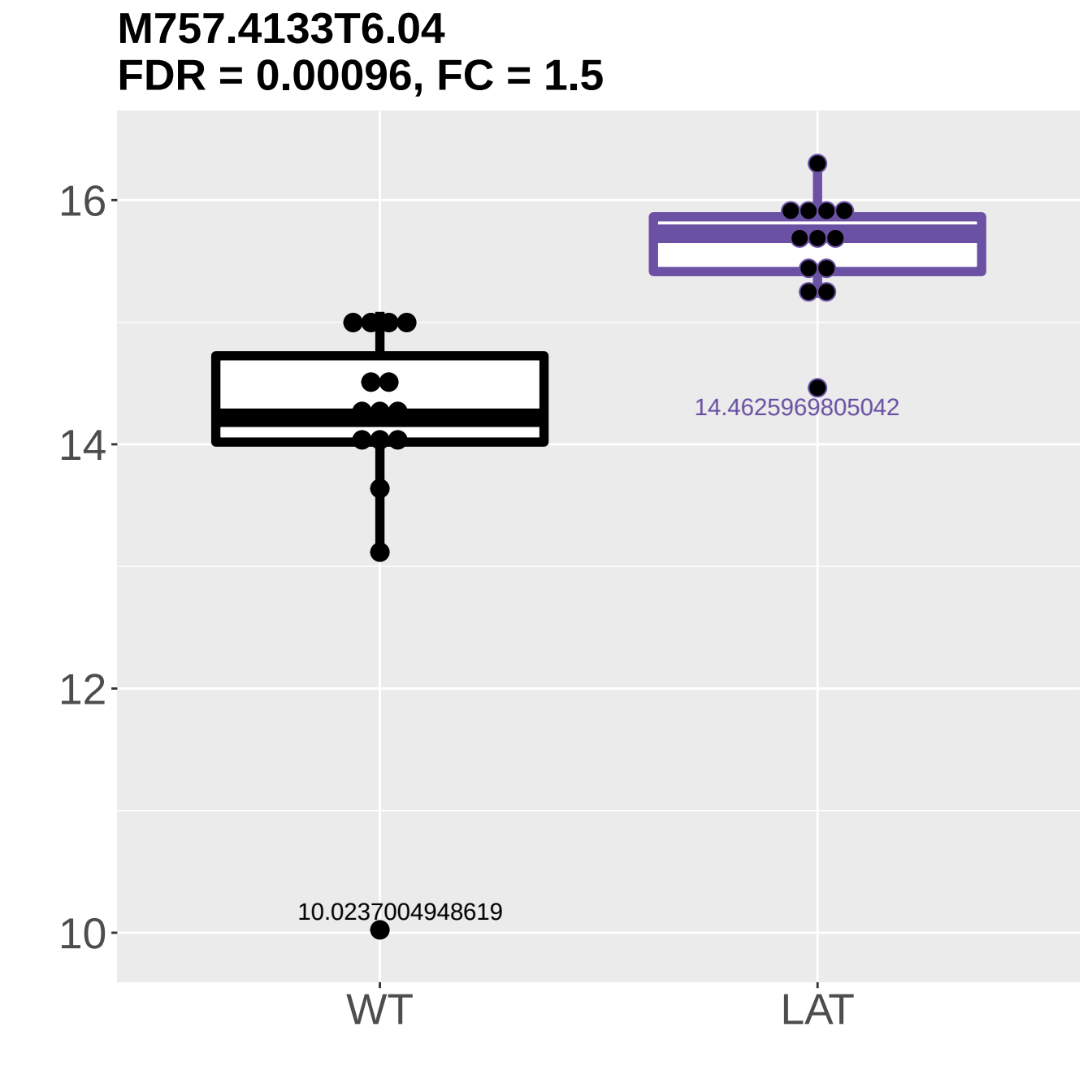
13.4928160017583
11.6510576820007
WT
LAT


M757.4133T6.04
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14
12
10
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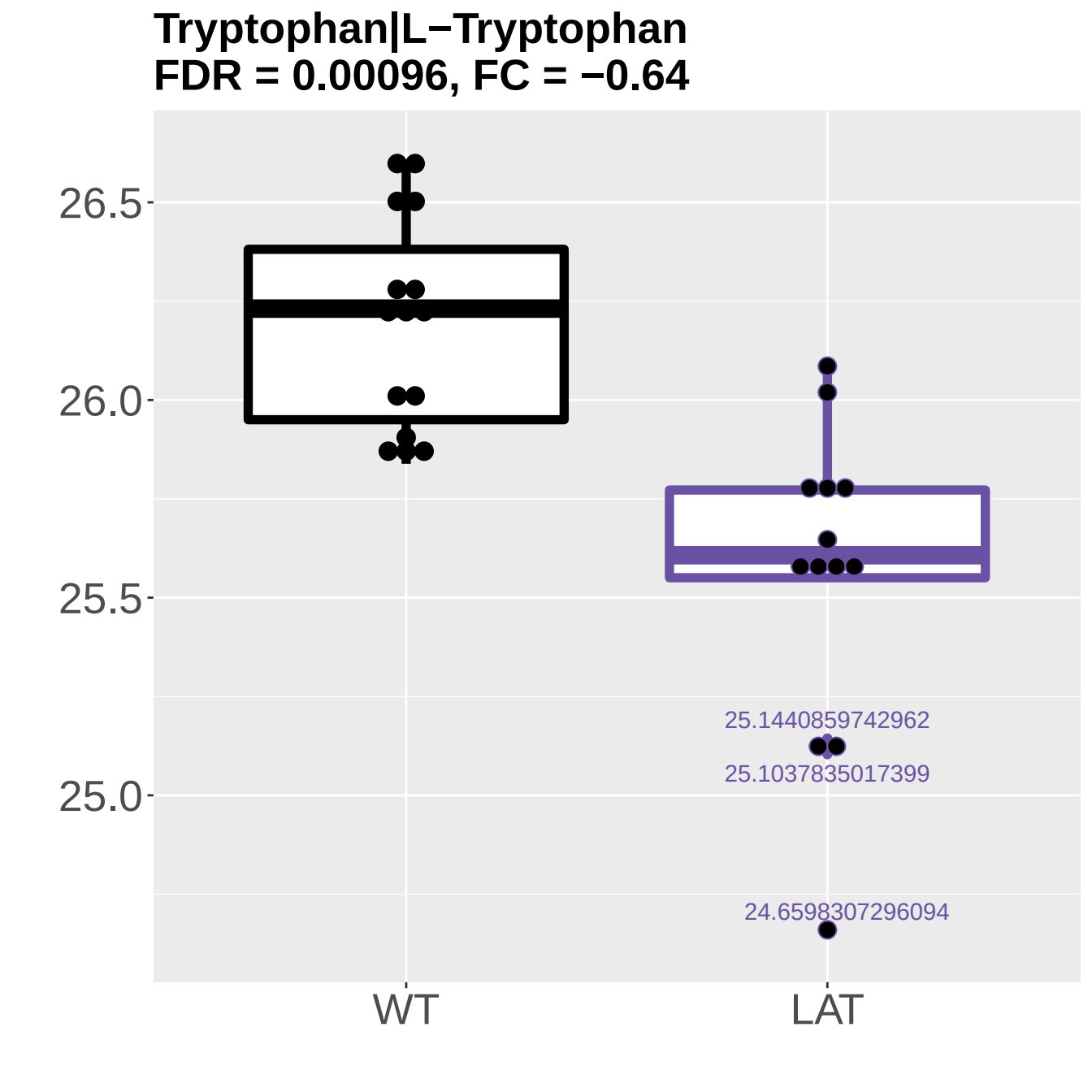
WT
LAT


Tryptophan|L−Tryptophan
FDR = 0.00096, FC = −0.64
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26.0
25.5
25.0
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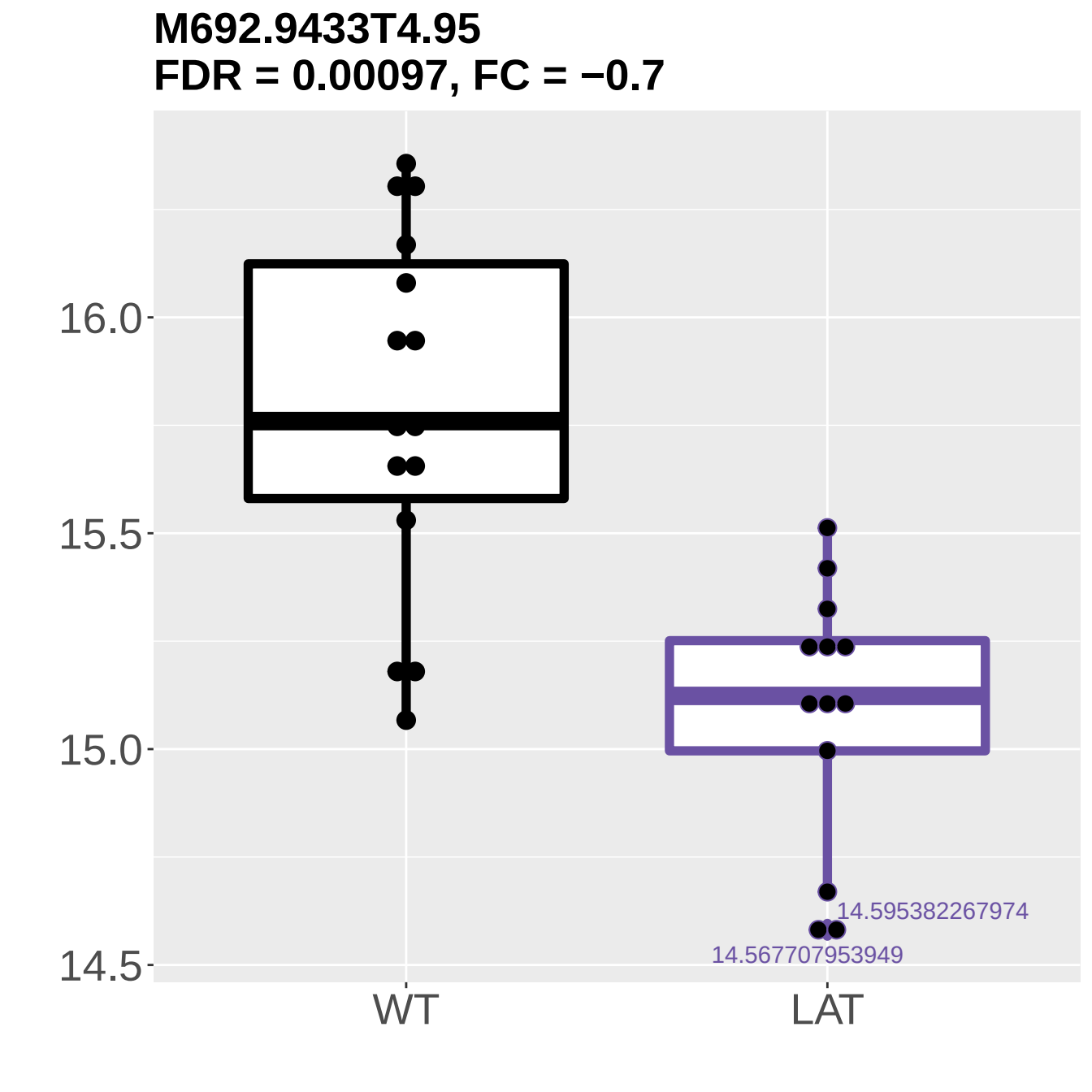
24.6598307296094
WT
LAT


M692.9433T4.95
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15.0
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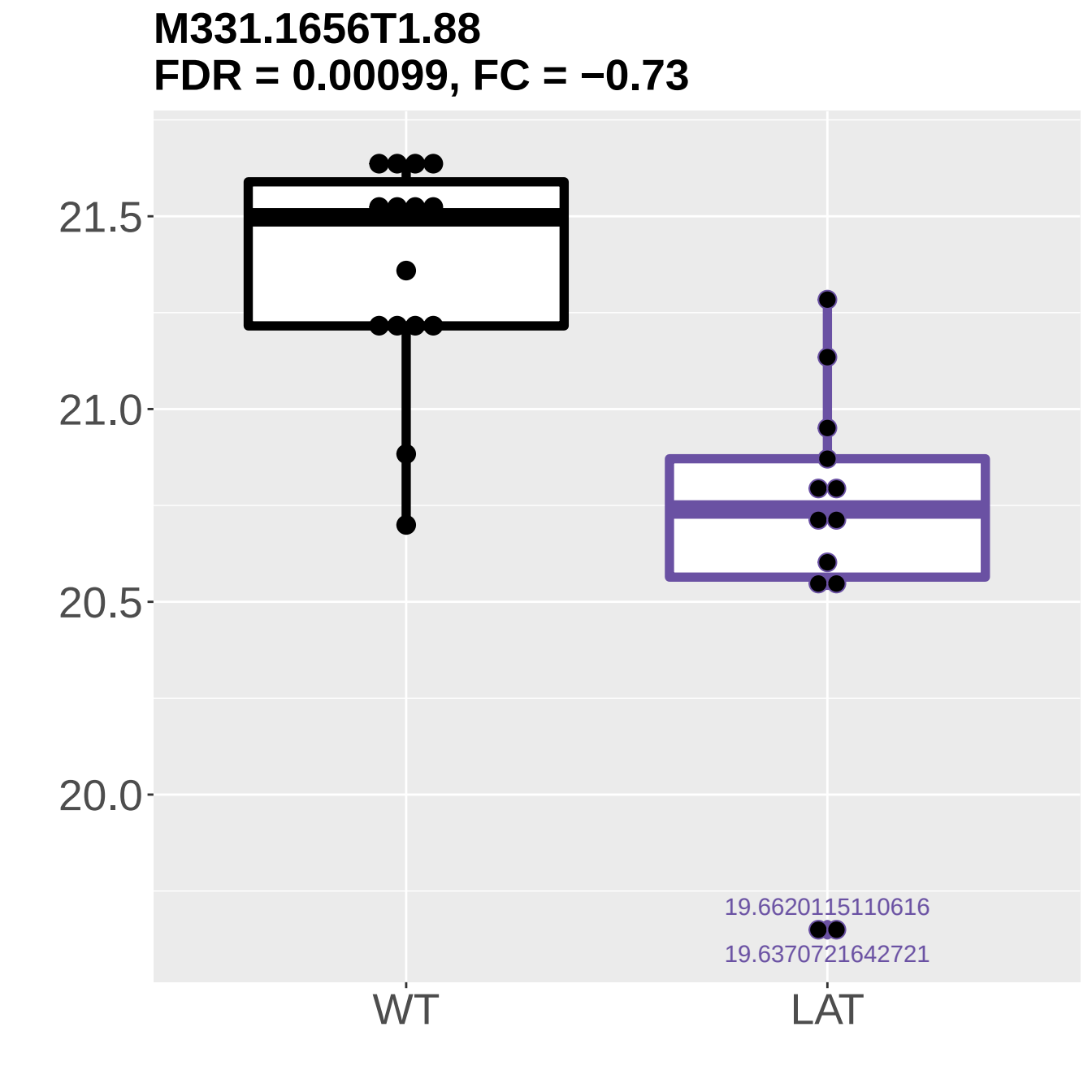
WT
LAT


M331.1656T1.88
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20.5
20.0
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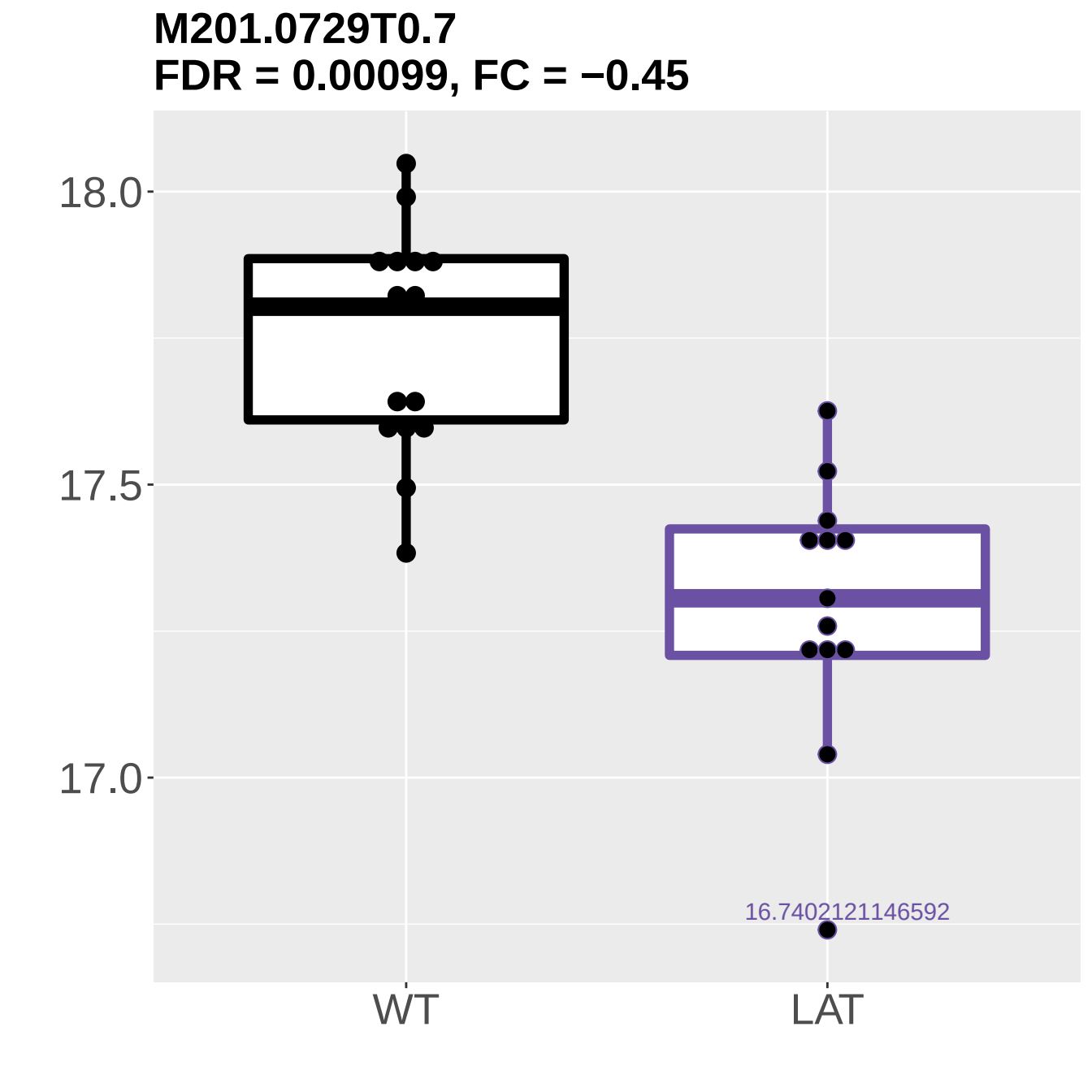
WT
LAT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17.0
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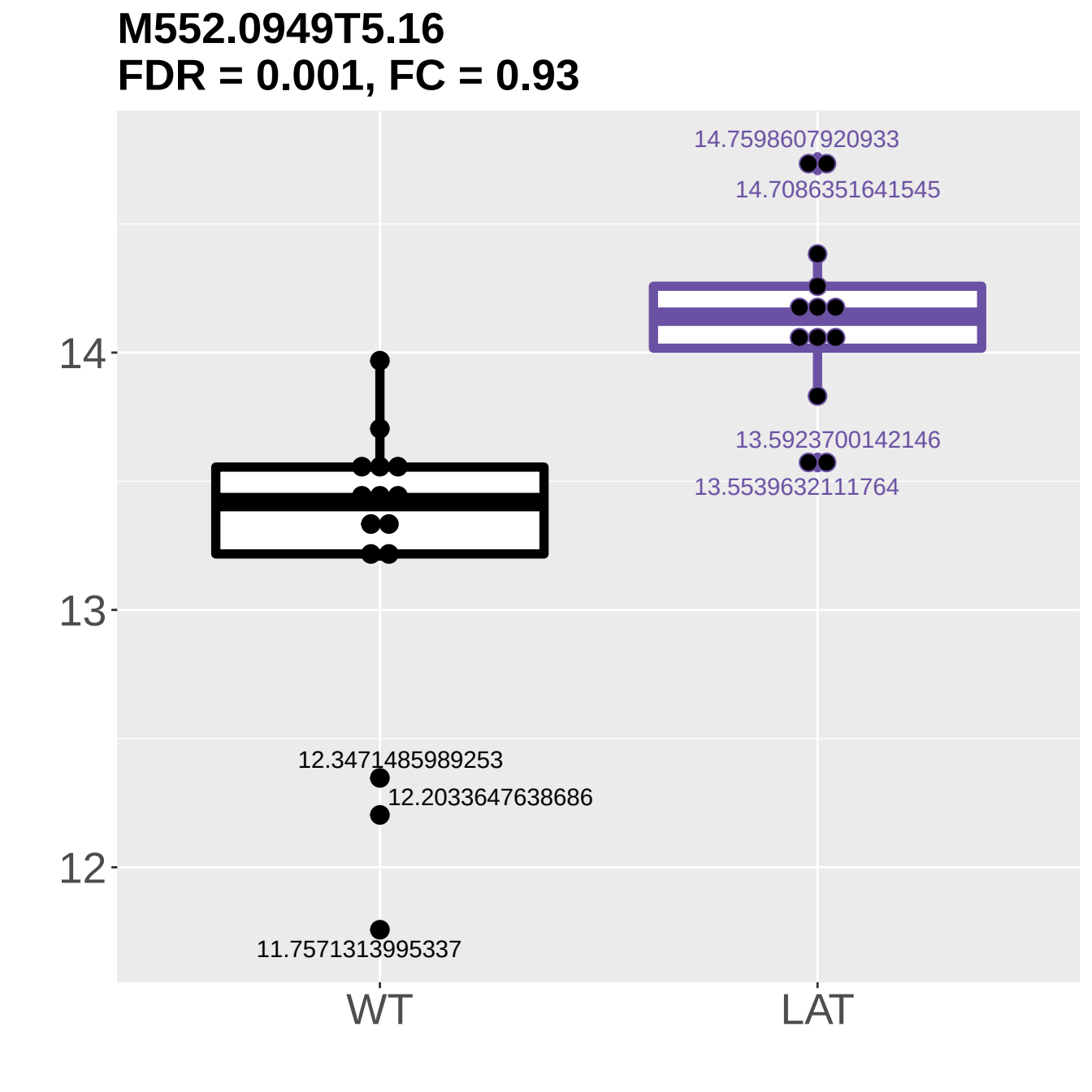
WT
LAT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14.7086351641545
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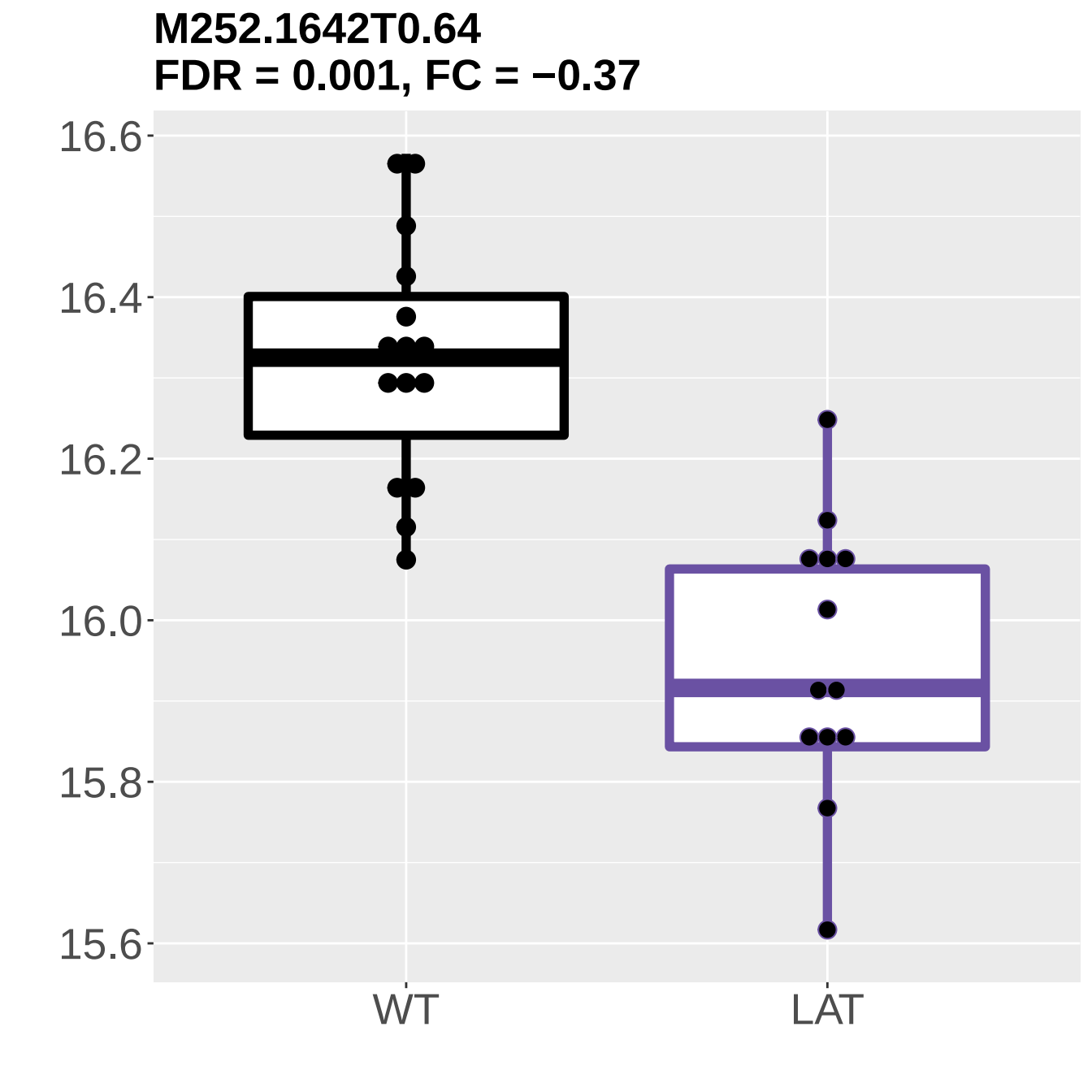
12.3471485989253
12.2033647638686
11.7571313995337
14
13
12
WT
LAT


M252.1642T0.64
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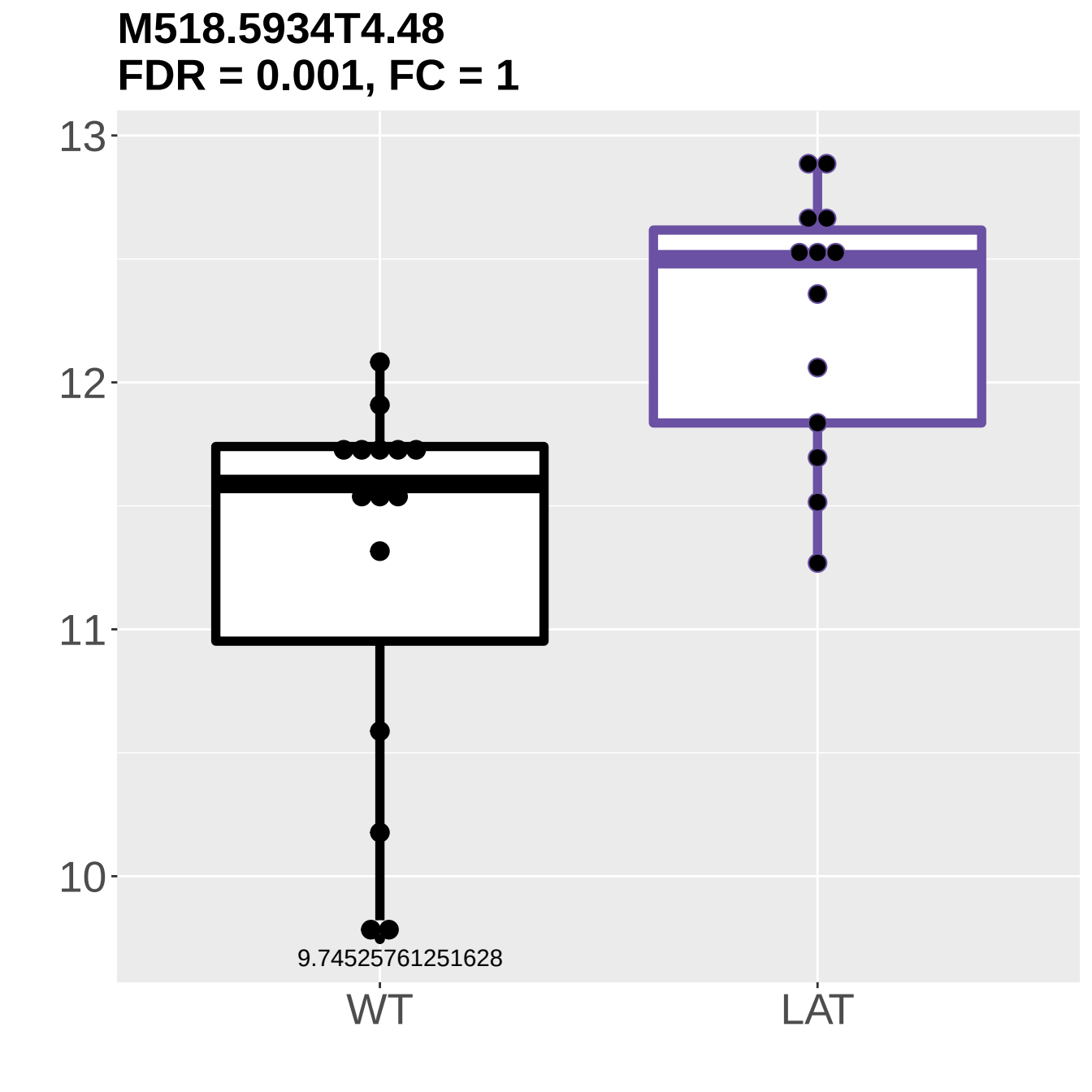
16.4
16.2
16.0
15.8
15.6
WT
LAT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12
11
10
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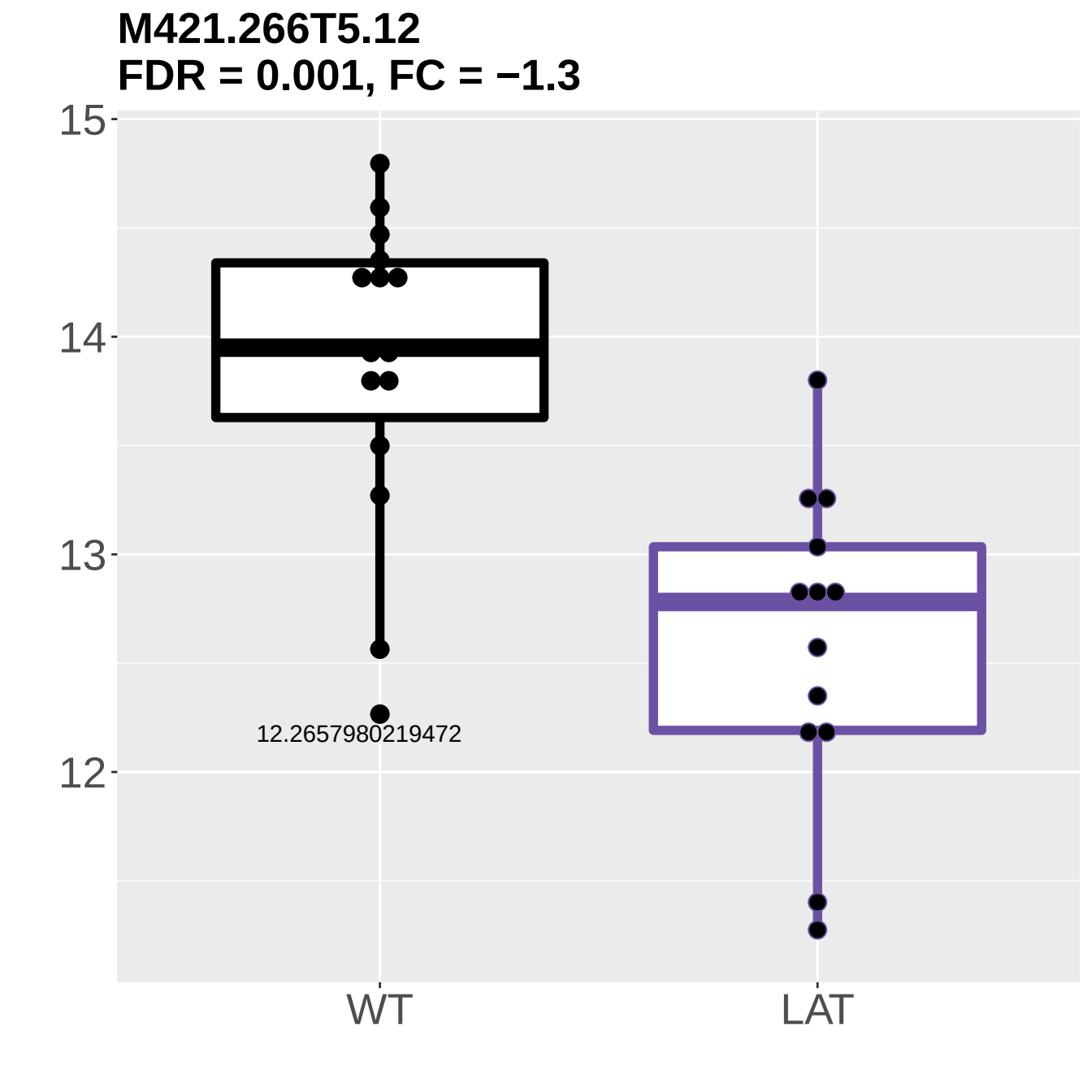
WT
LAT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14
13
12
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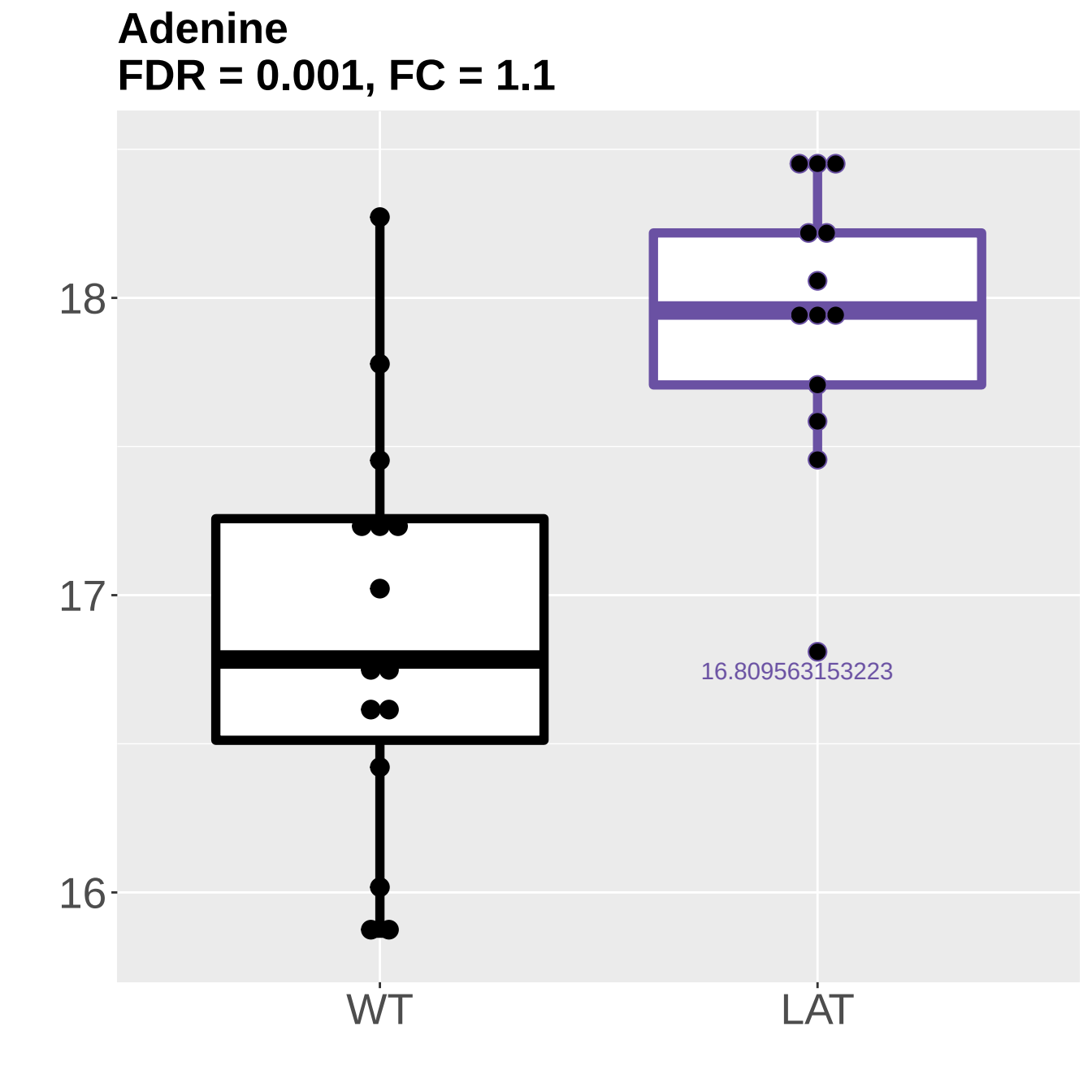
WT
LAT


Adenine
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17
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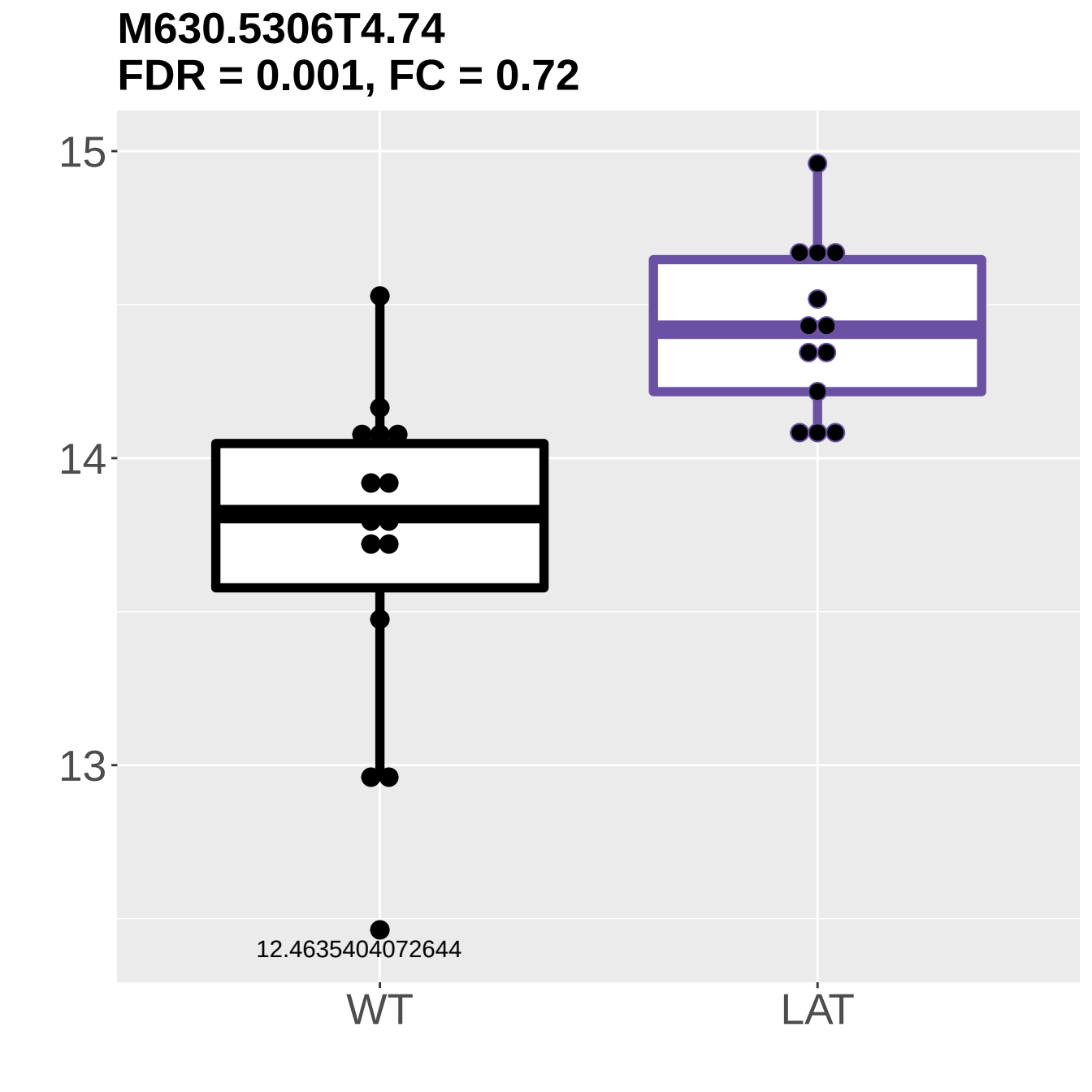
WT
LAT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14
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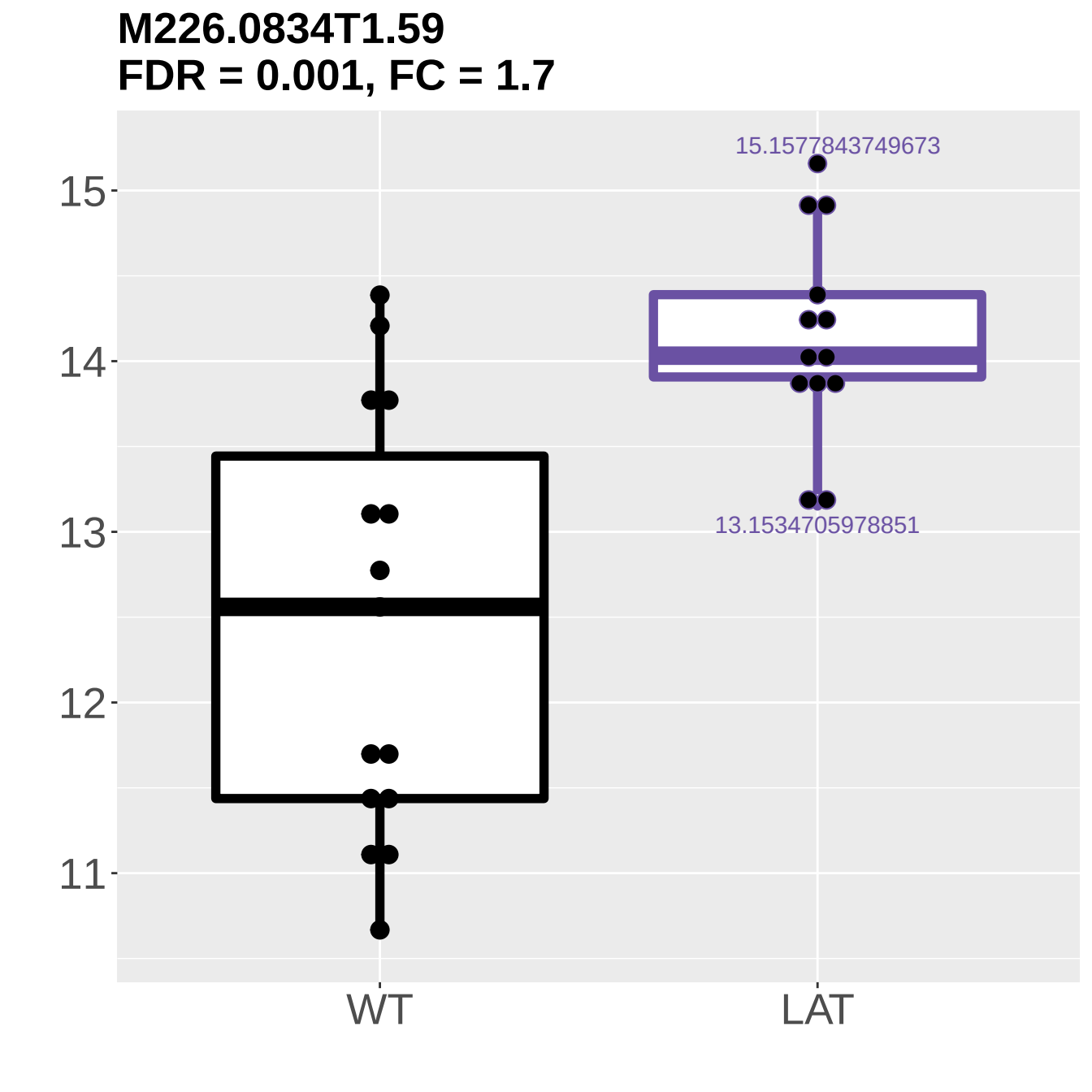
WT
LAT


M226.0834T1.59
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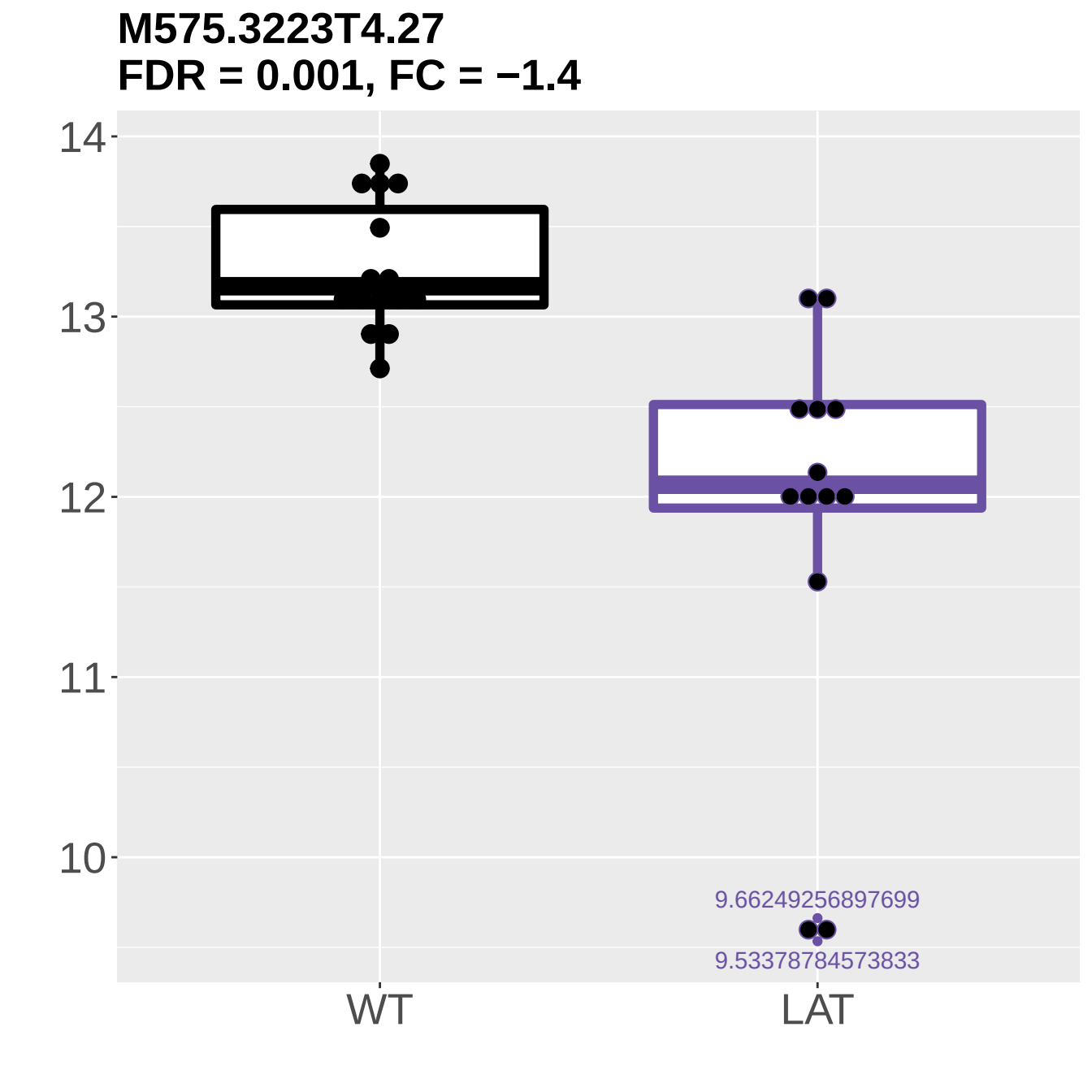
15
14
13
12
11
WT
LAT


M575.3223T4.27
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13
12
11
10
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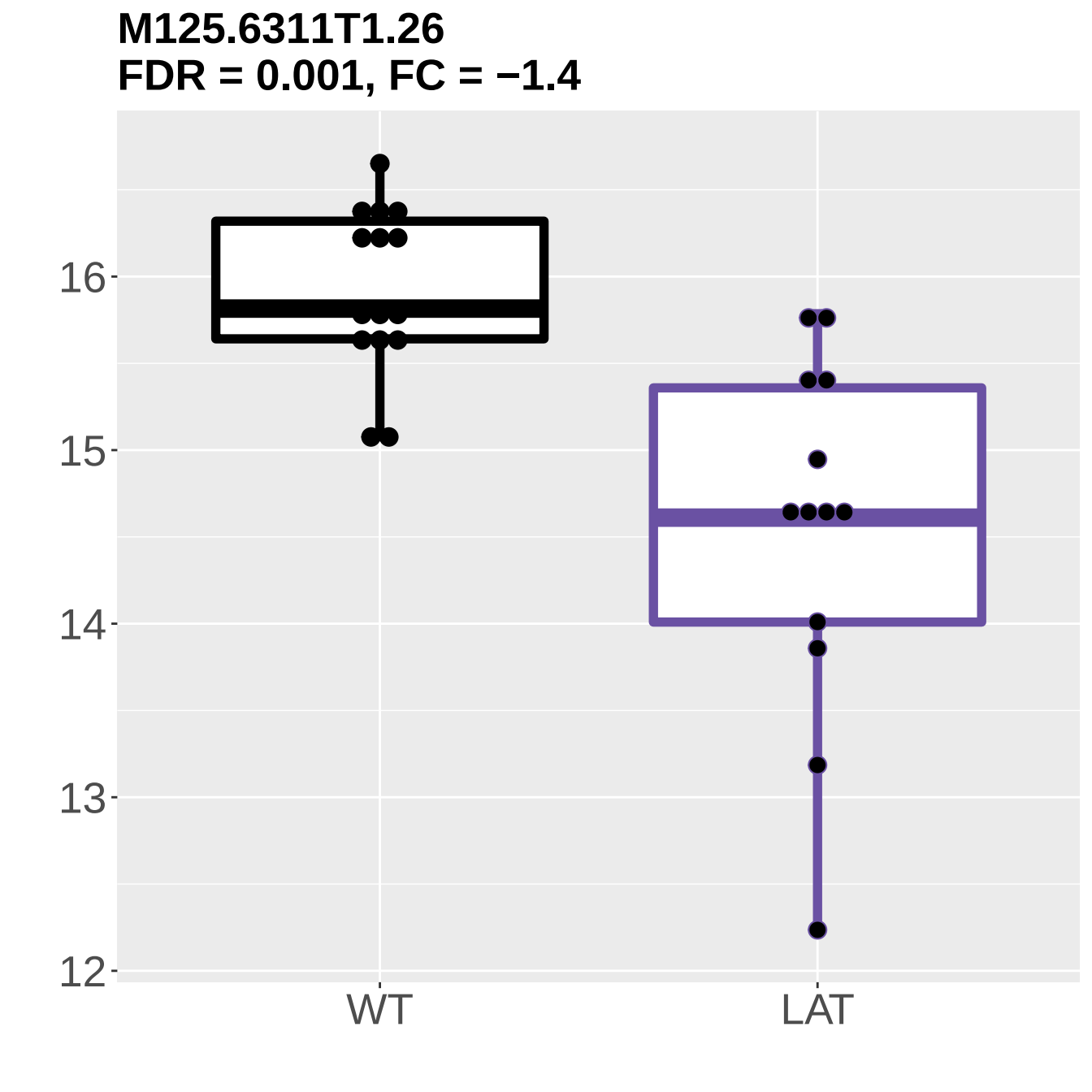
9.53378784573833
WT
LAT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FDR = 0.001, FC = −1.4
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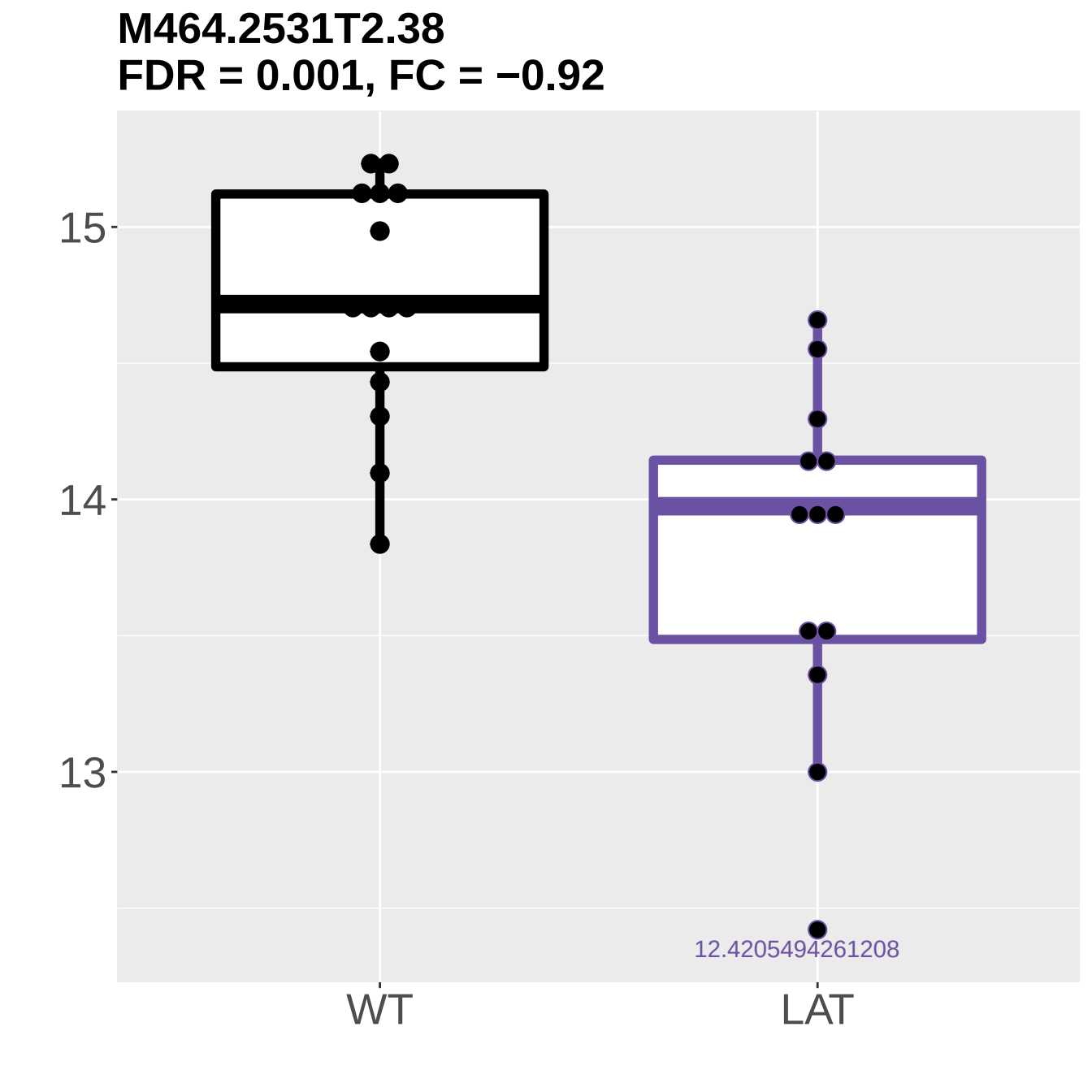
15
14
13
12
WT
LAT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14
13
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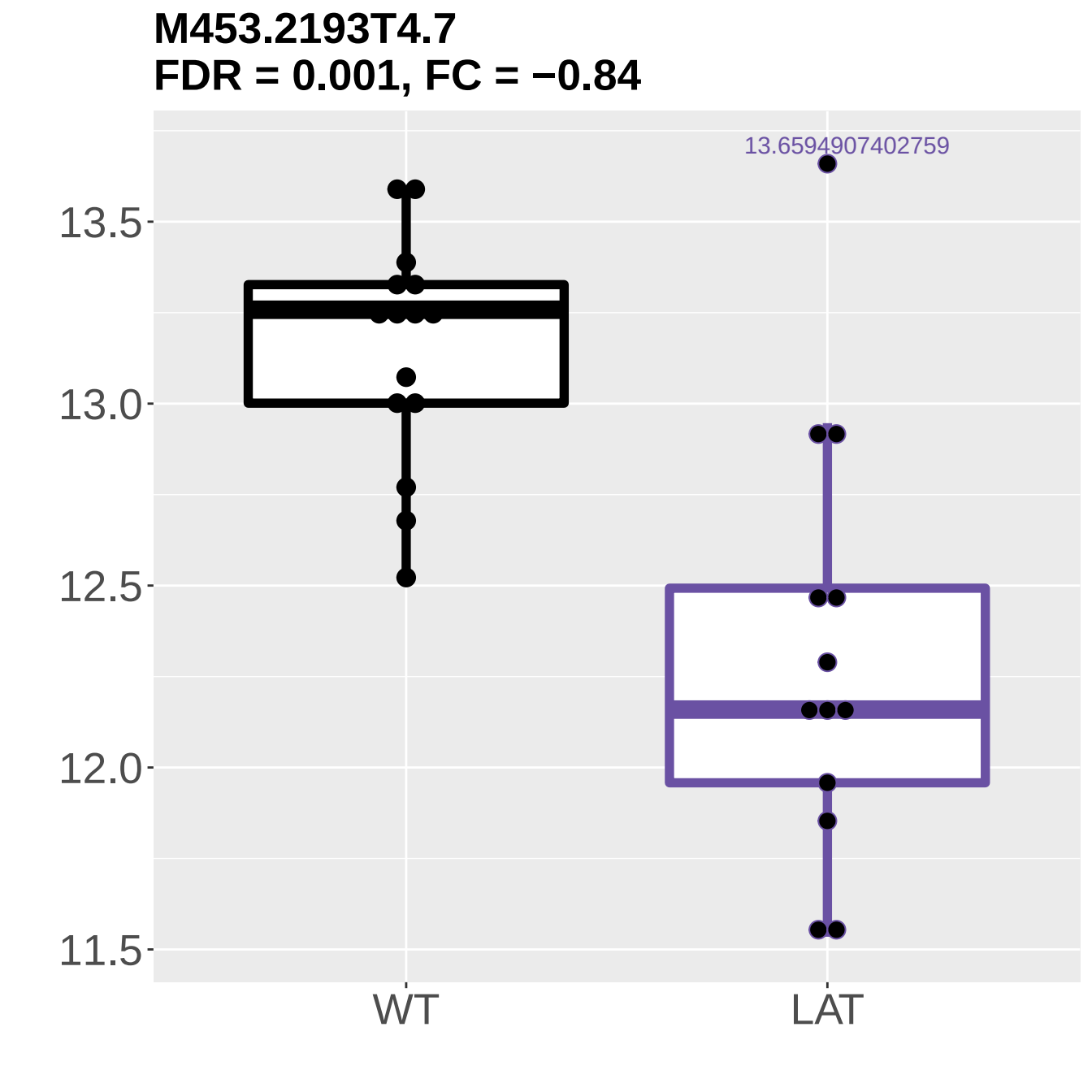
WT
LAT


M453.2193T4.7
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12.5
12.0
11.5
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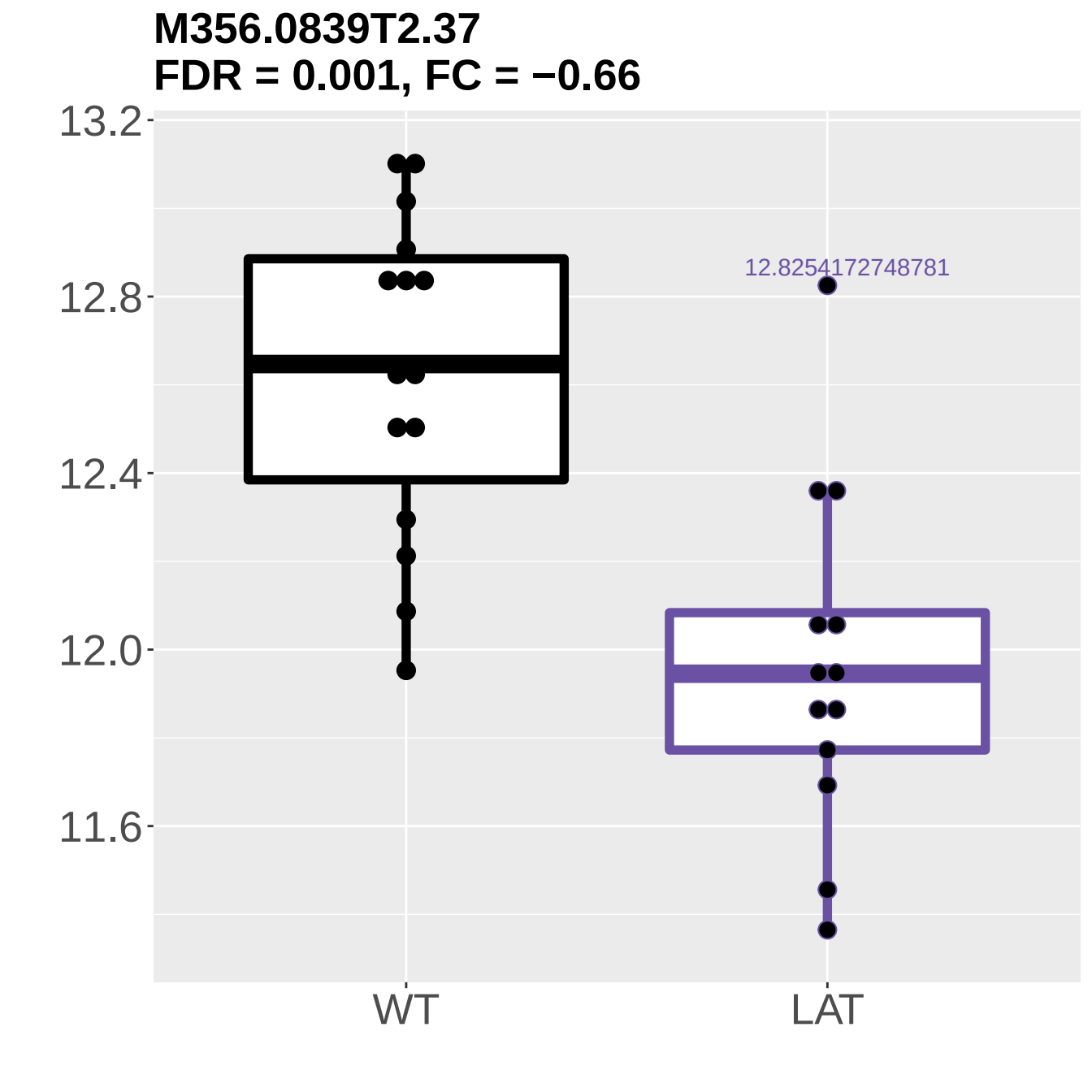
LAT


M356.0839T2.37
FDR = 0.001, FC = −0.66
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12.4
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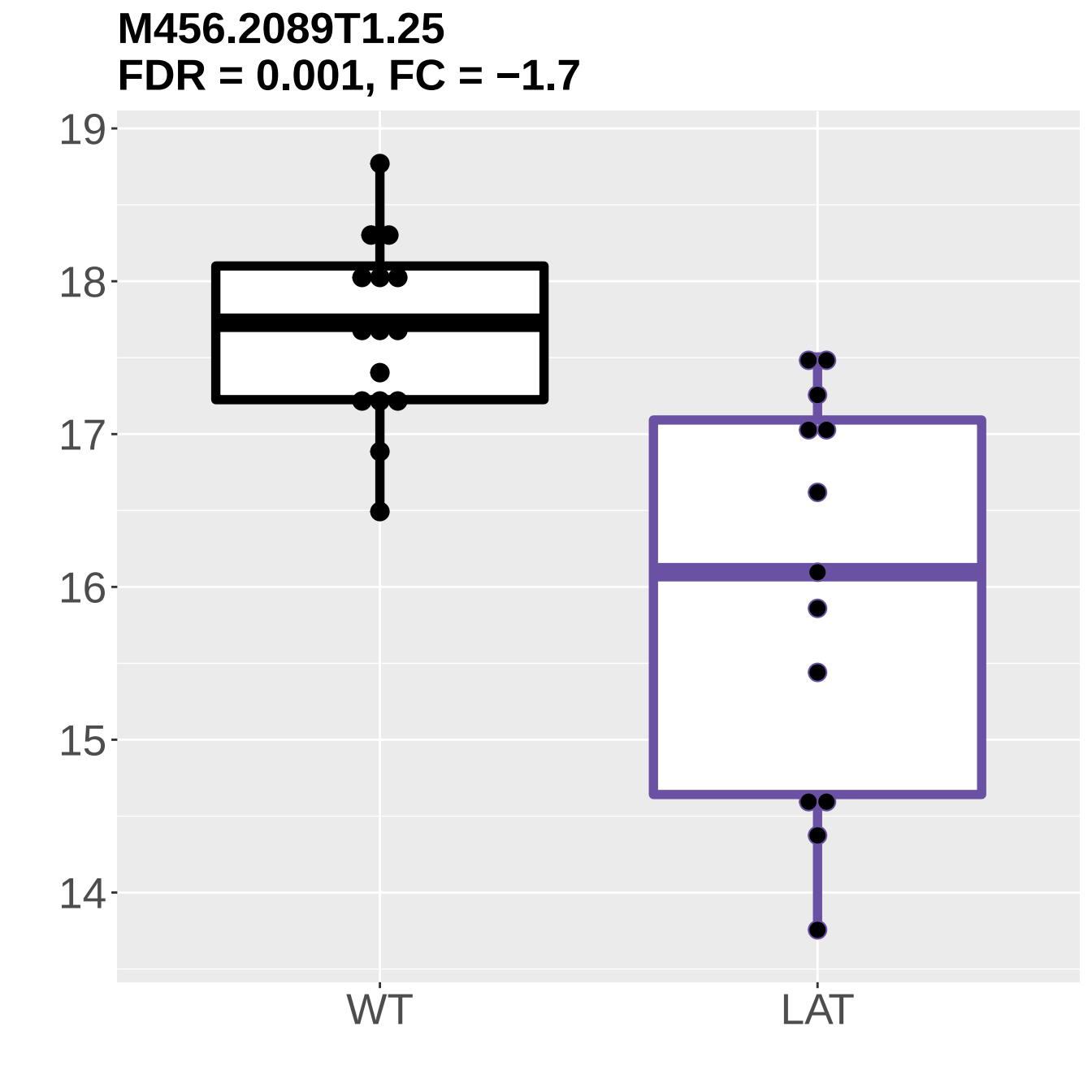
LAT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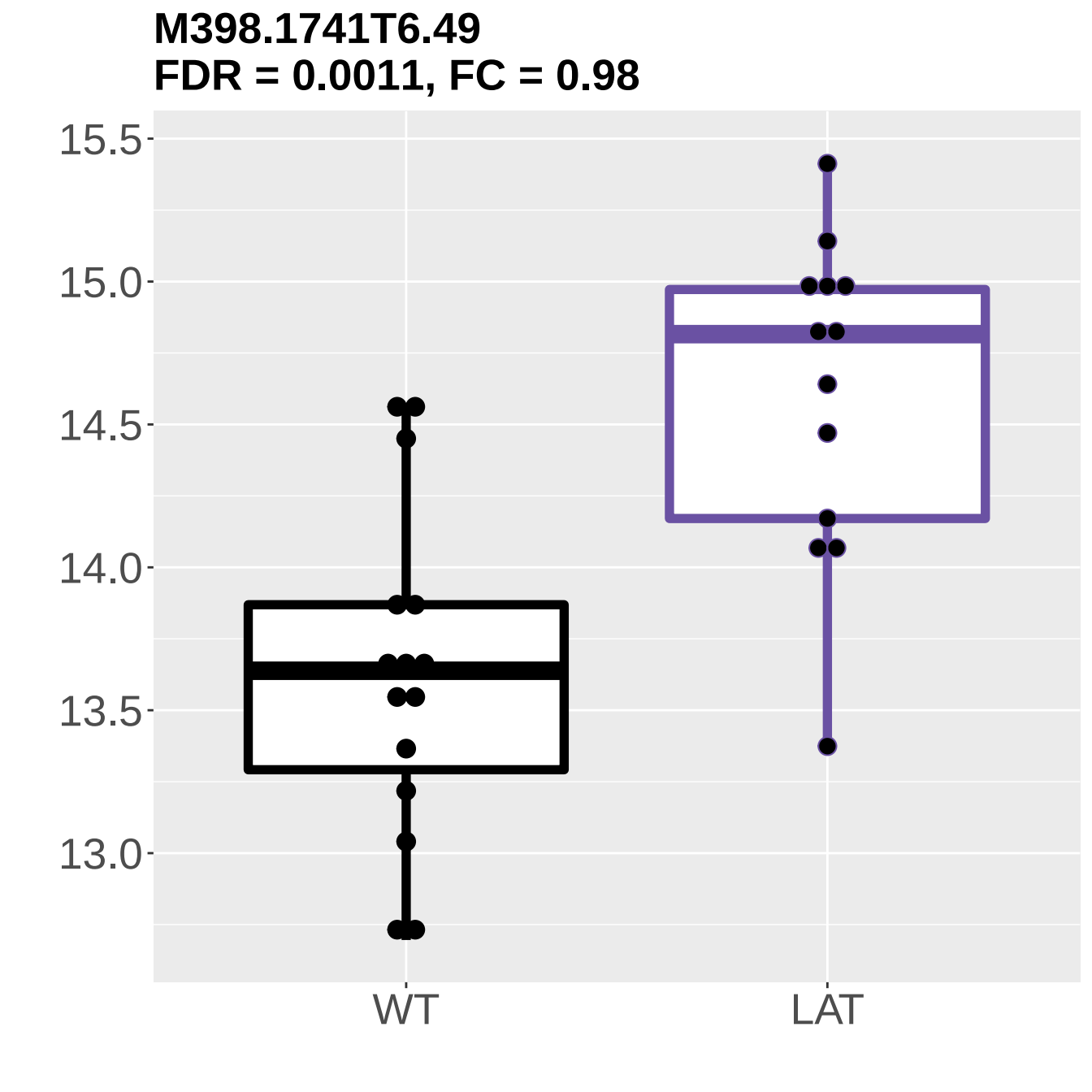
18
17
16
15
14
WT
LAT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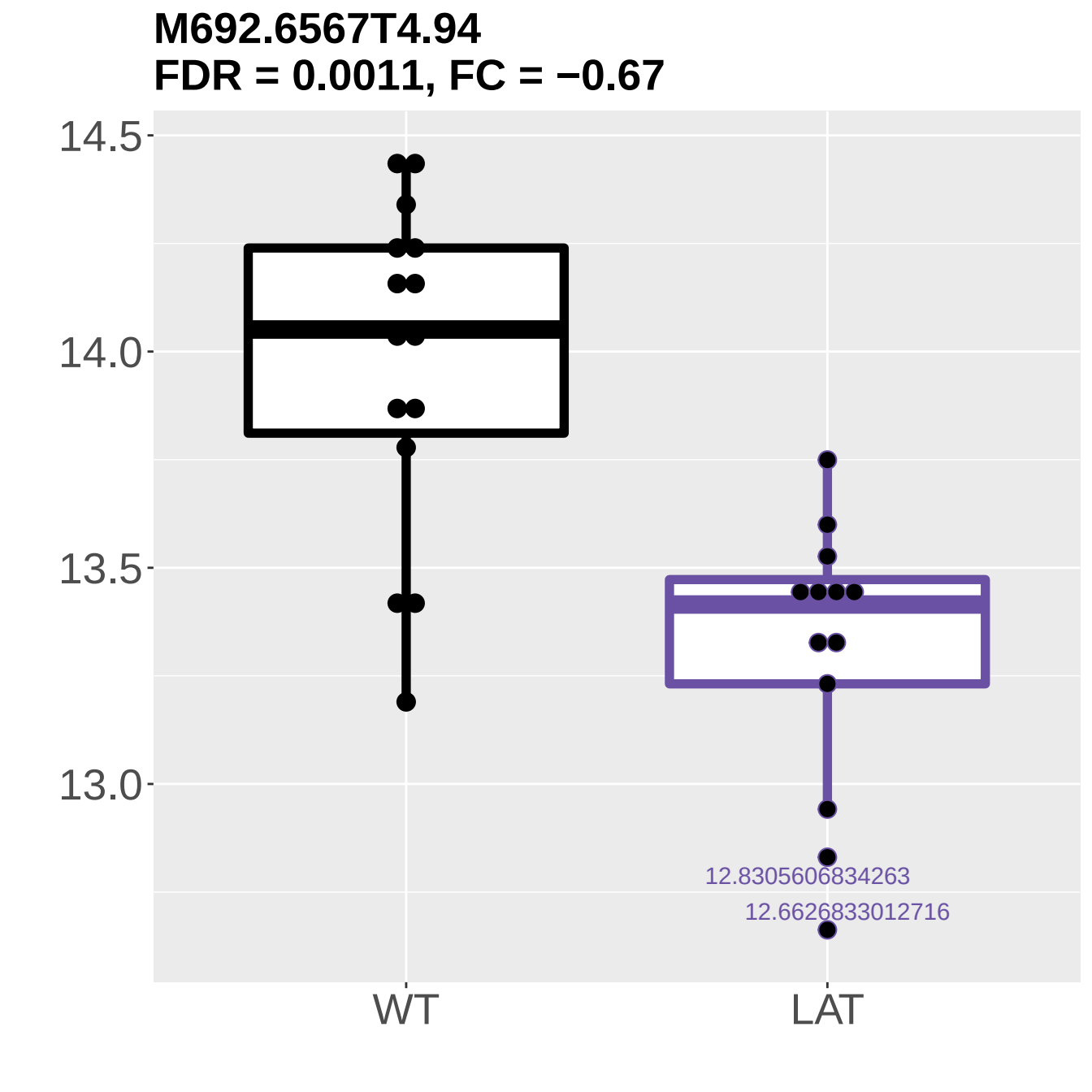
14.5
14.0
13.5
13.0
WT
LAT


M692.6567T4.94
FDR = 0.0011, FC = −0.67
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14.0
13.5
13.0
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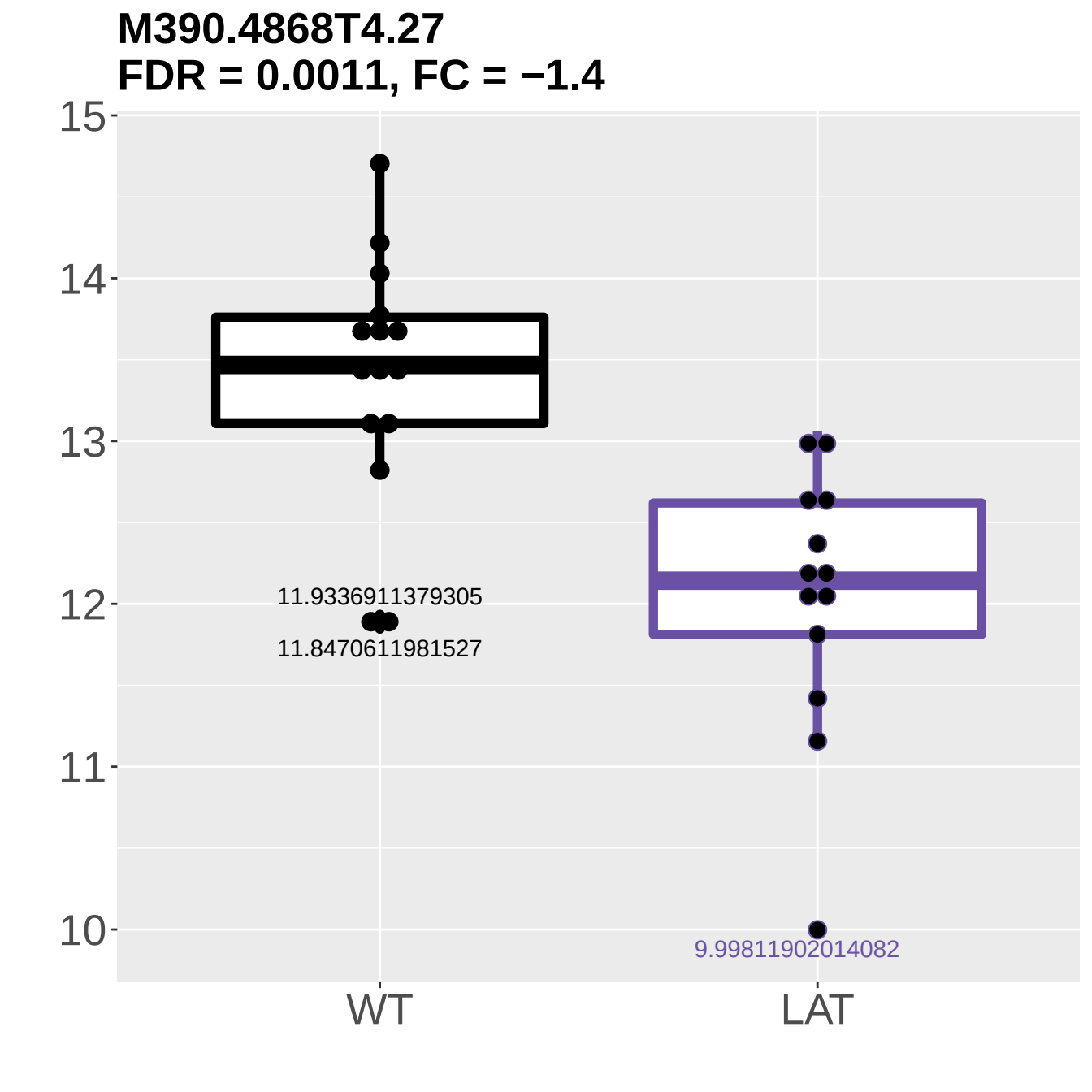
12.6626833012716
WT
LAT


M390.4868T4.27
FDR = 0.0011, FC = −1.4
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13
12
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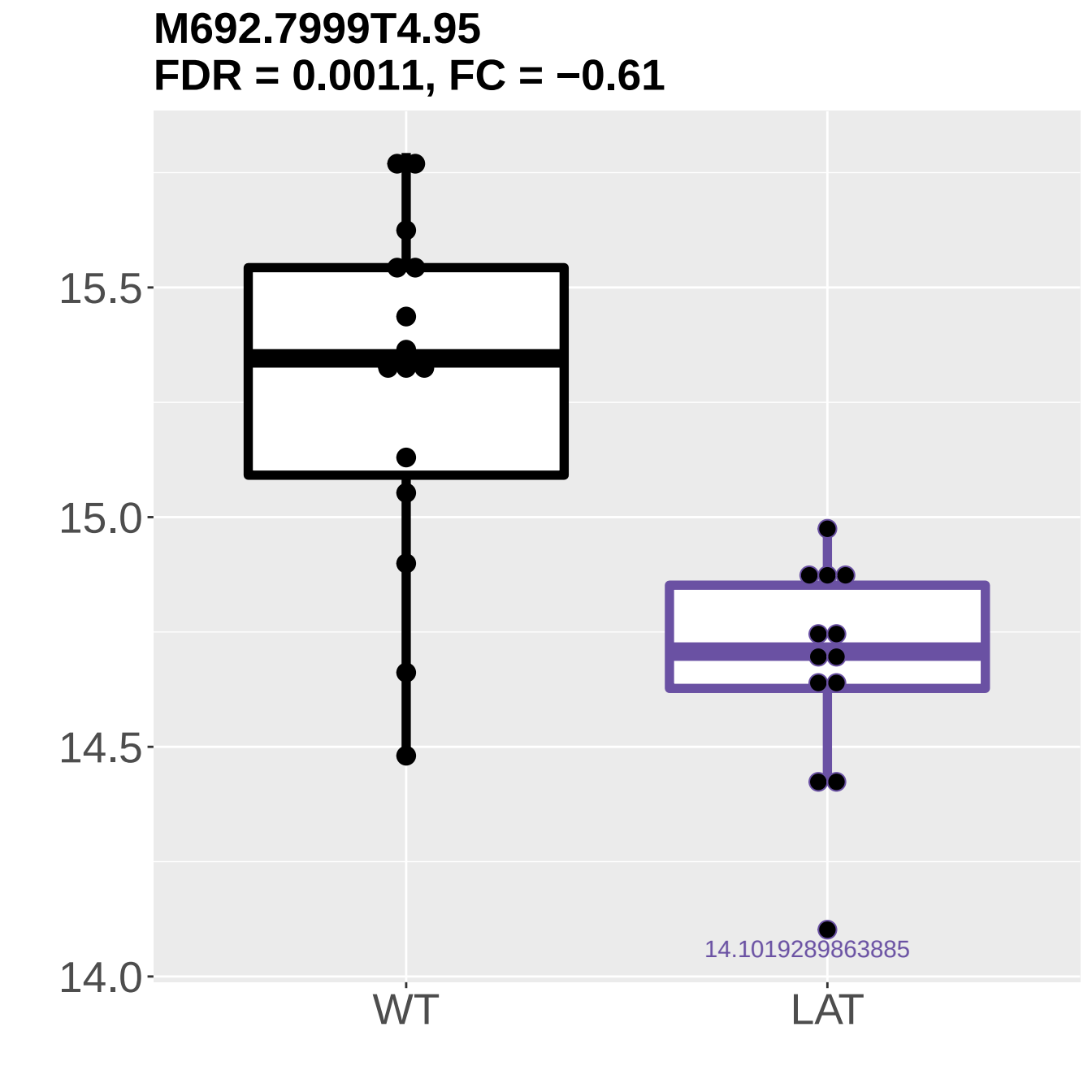
11.8470611981527
9.99811902014082
WT
LAT


M692.7999T4.95
FDR = 0.0011, FC = −0.61
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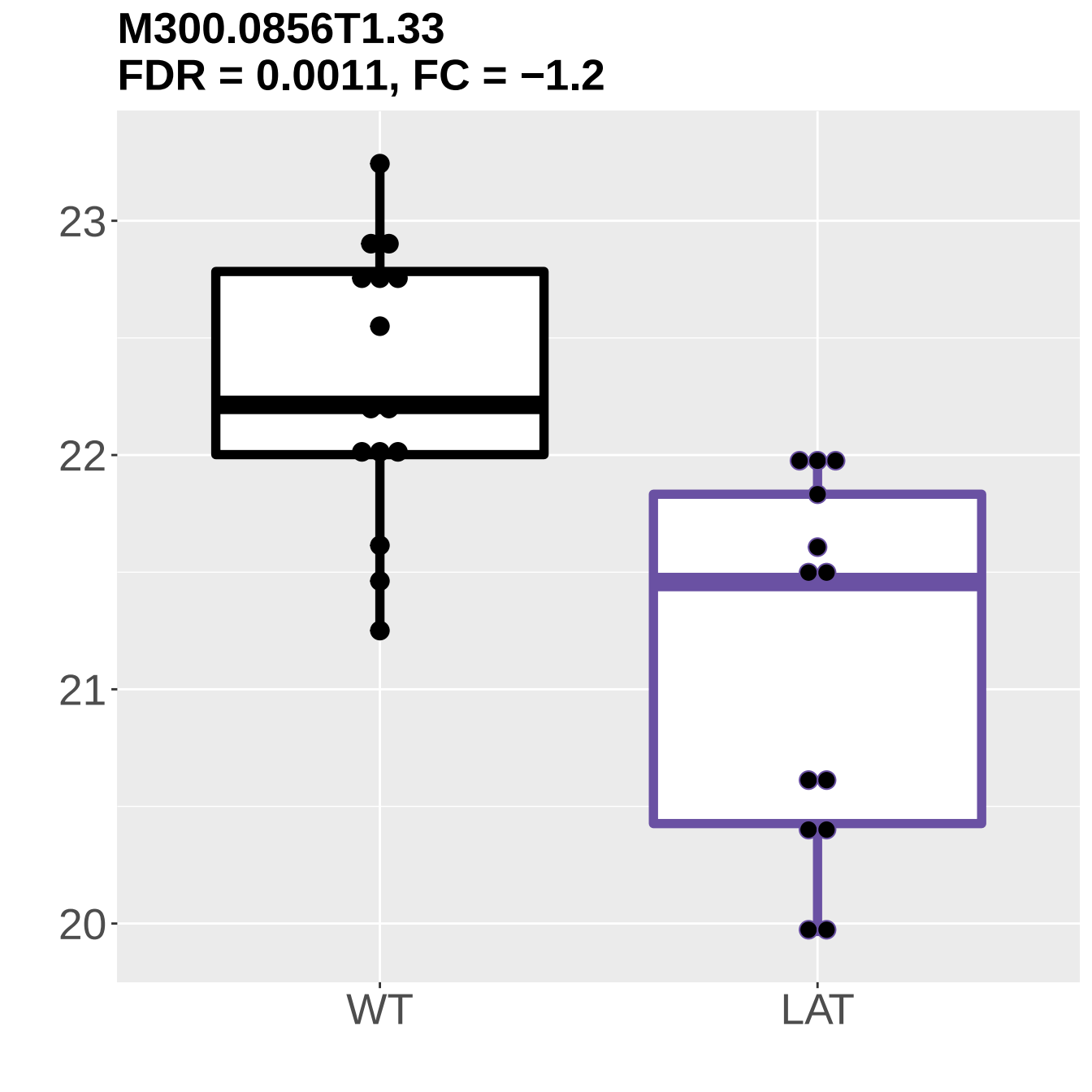
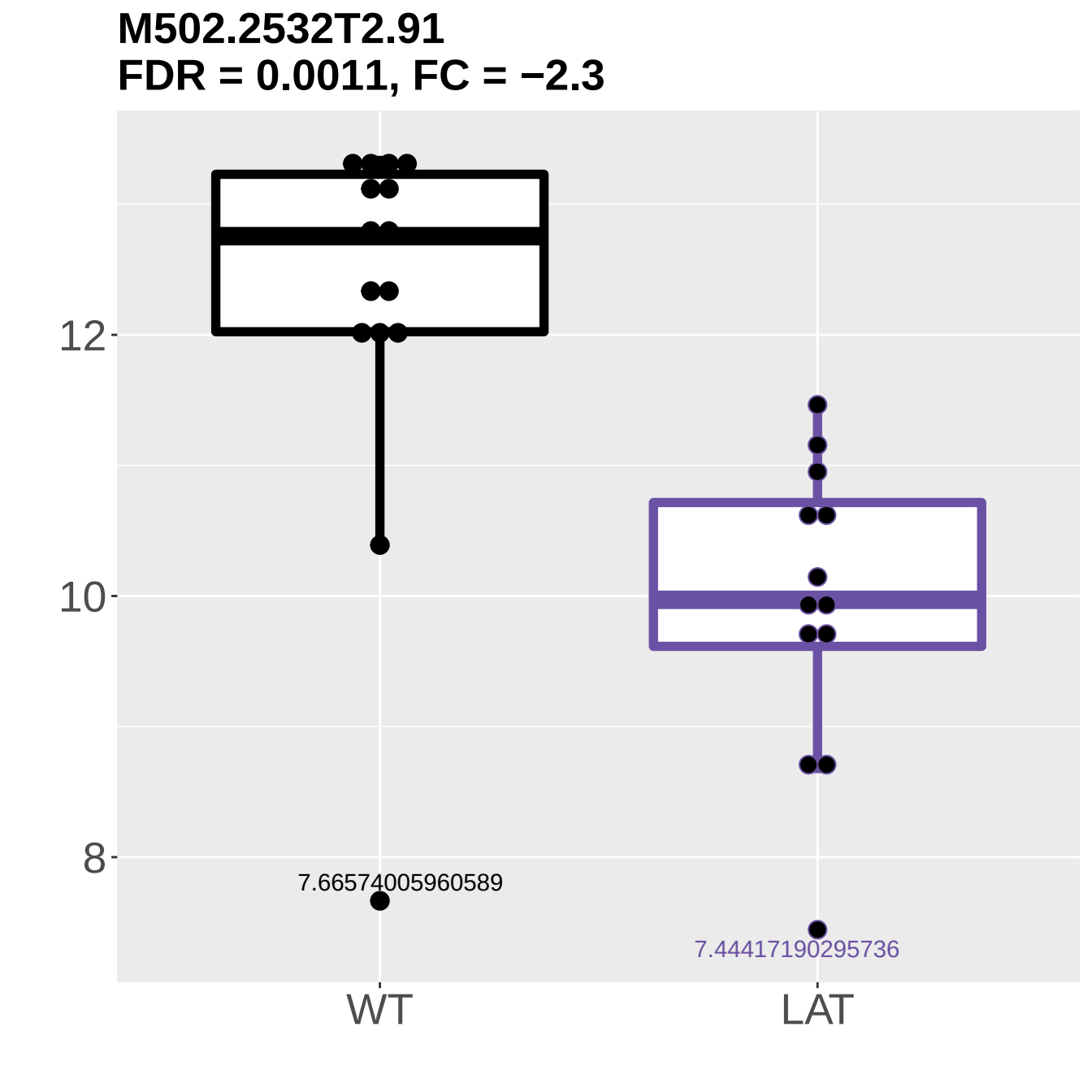
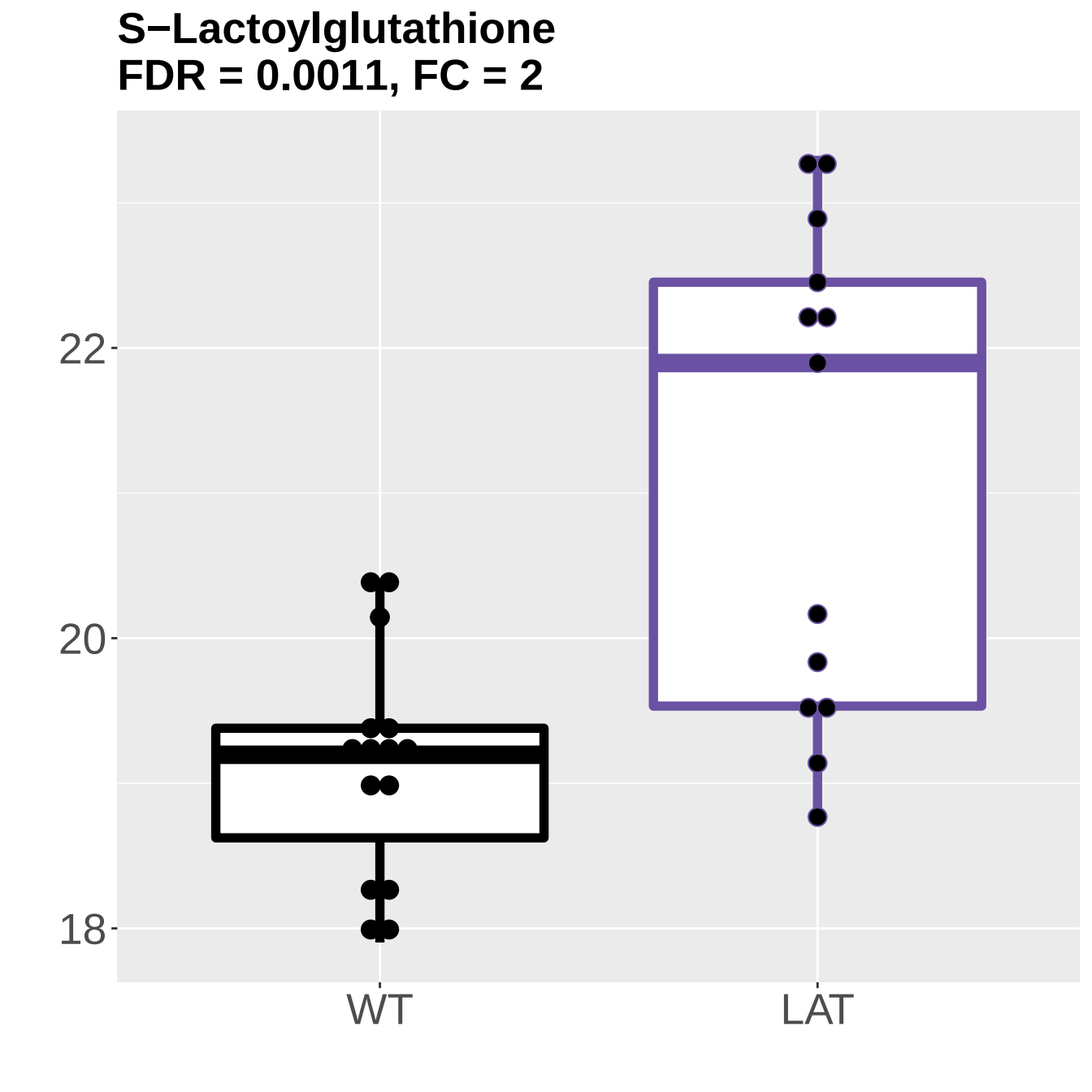
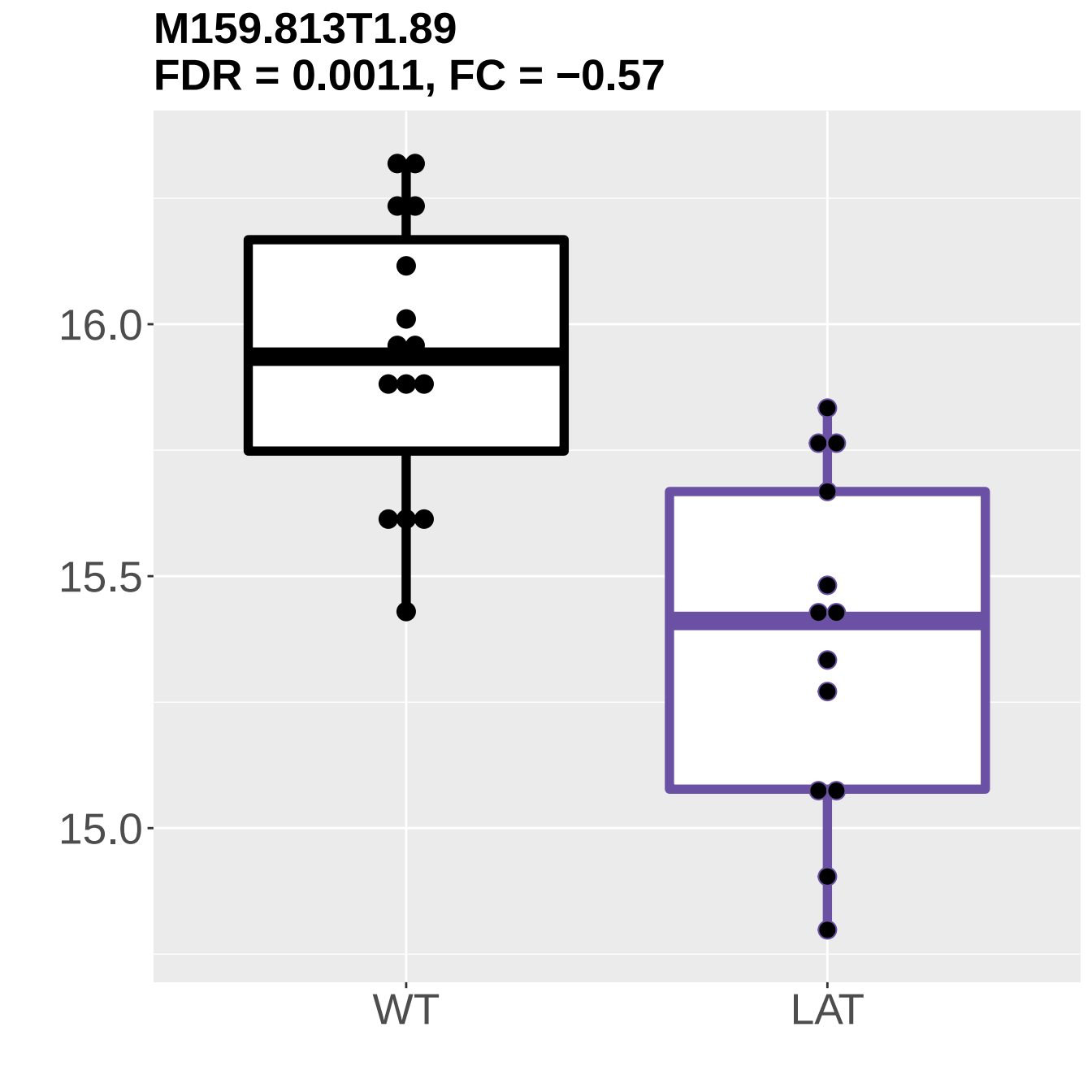
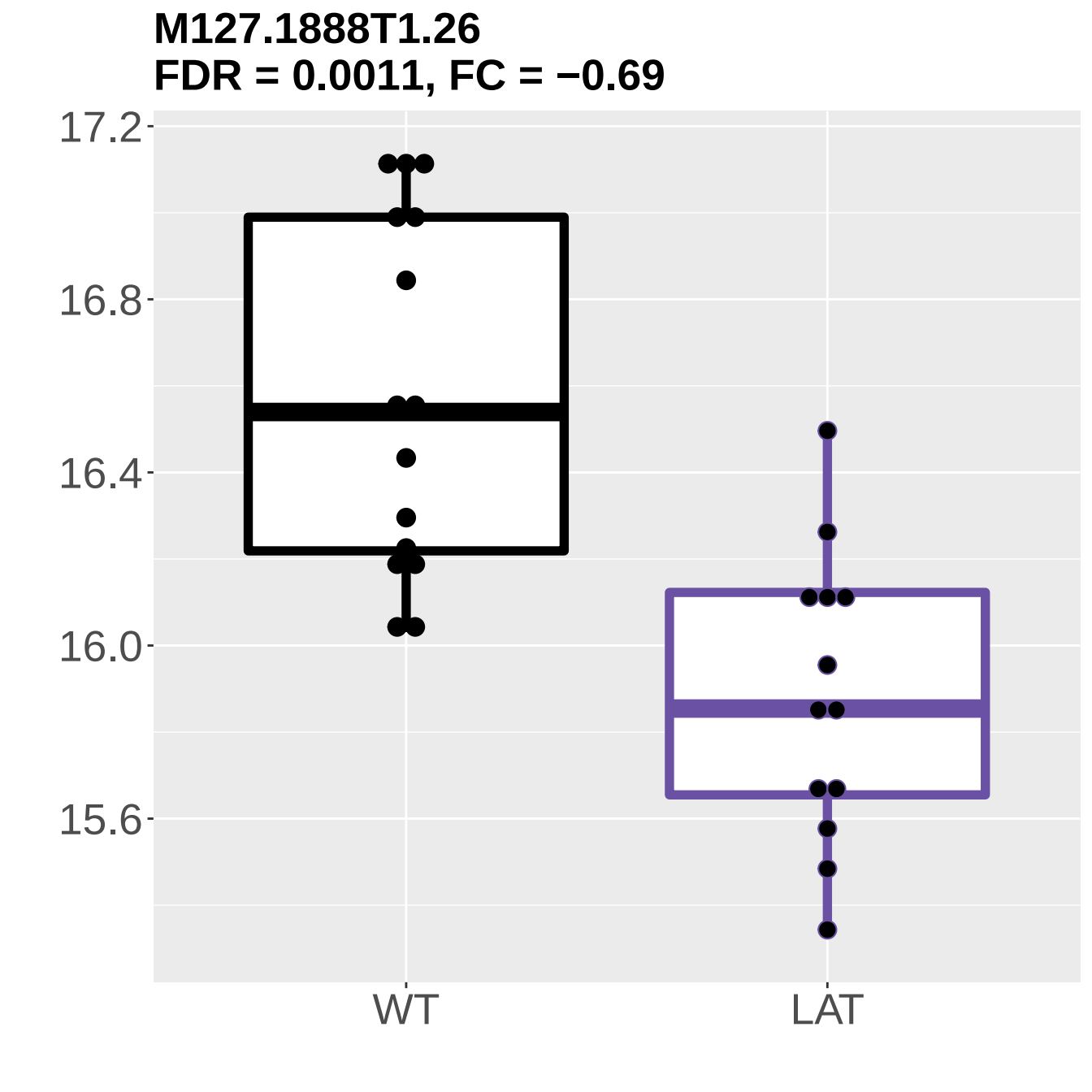
15.0
14.5
14.0
14.1019289863885
WT
LAT

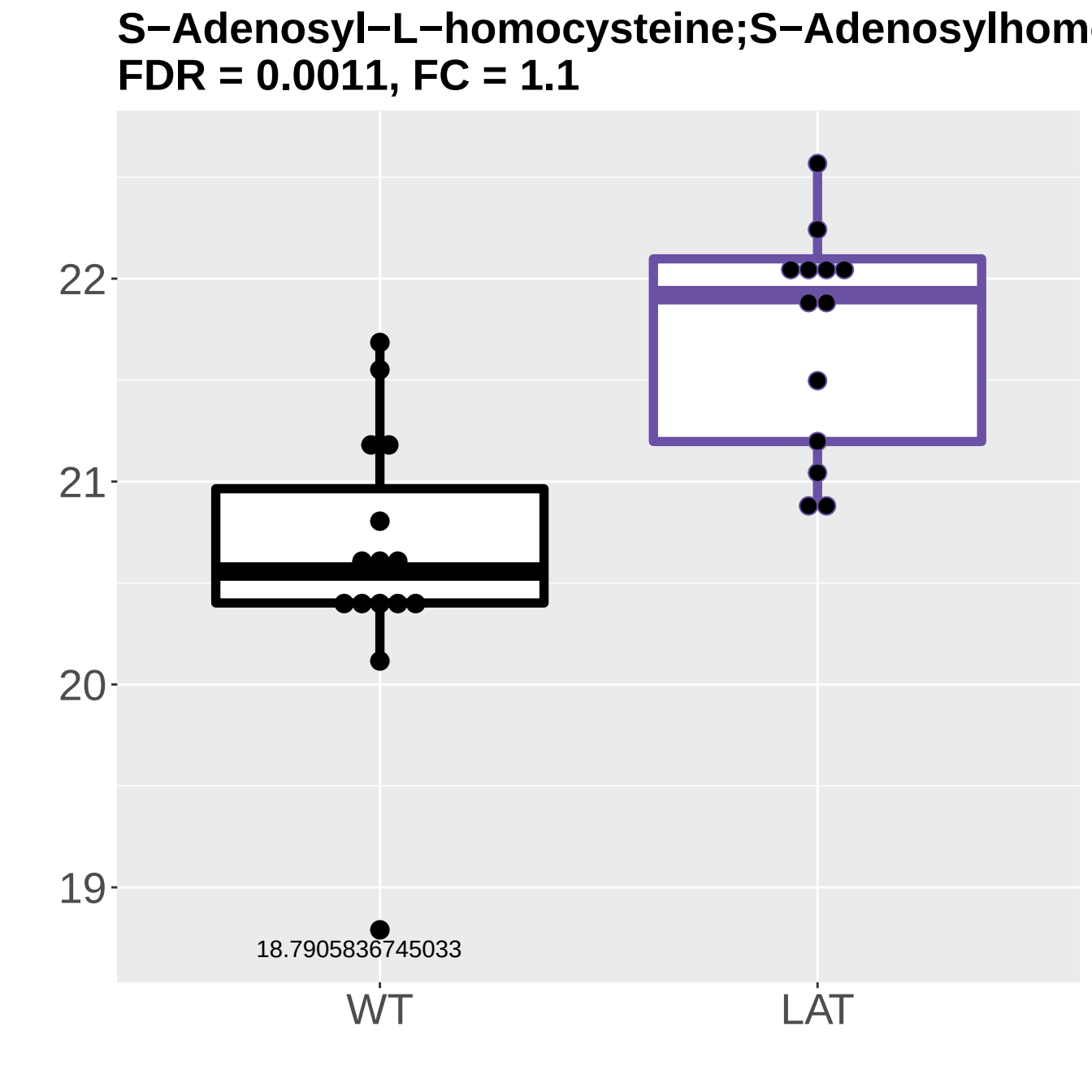

M300.0856T1.33
FDR = 0.0011, FC = −1.2
23
22
21
20
WT
LAT

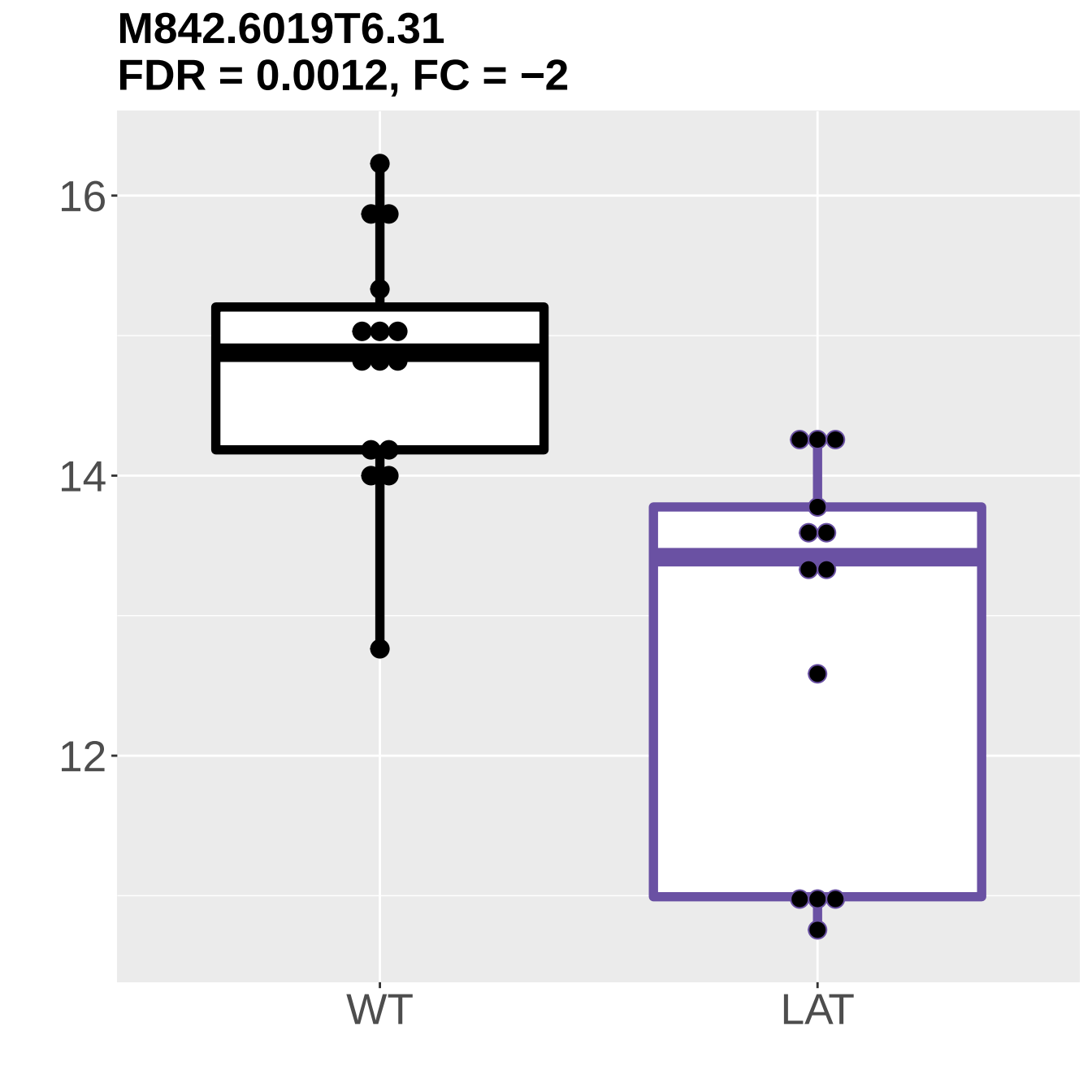

M502.2532T2.91
FDR = 0.0011, FC = −2.3
12
10
8
7.66574005960589
7.44417190295736
WT
LAT

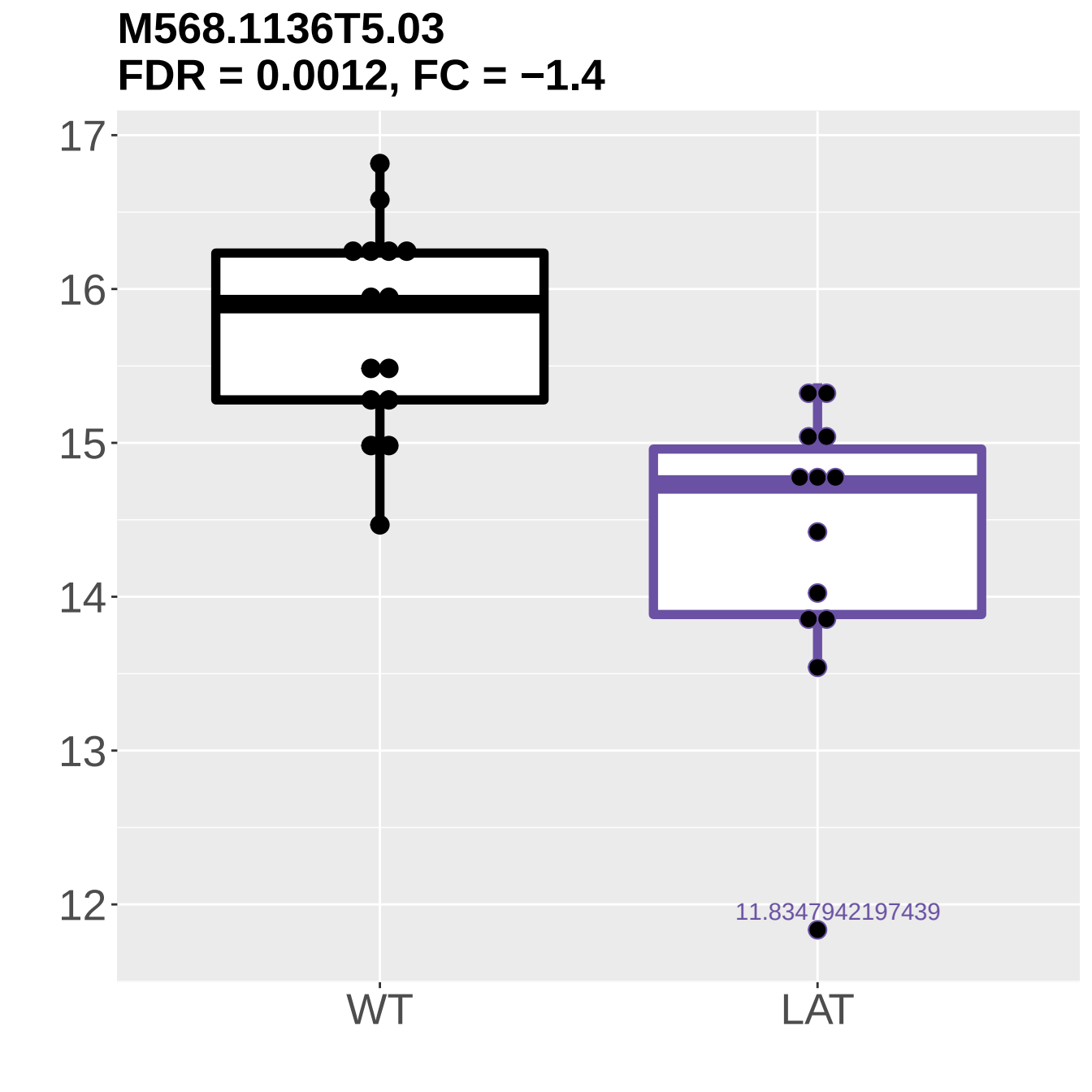

S−Lactoylglutathione
FDR = 0.0011, FC = 2
22
20
18
WT
LAT

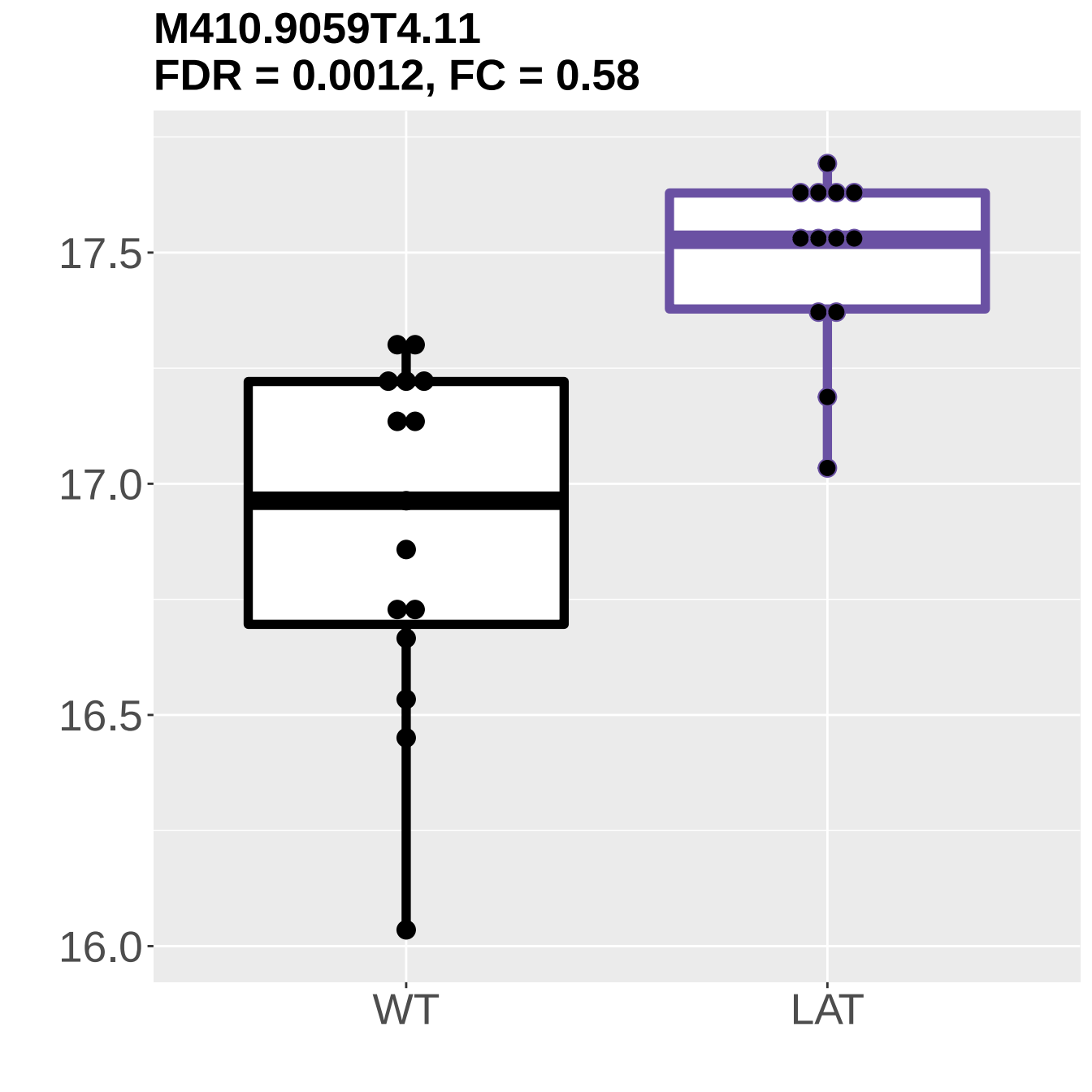

M159.813T1.89
FDR = 0.0011, FC = −0.57
16.0
15.5
15.0
WT
LAT

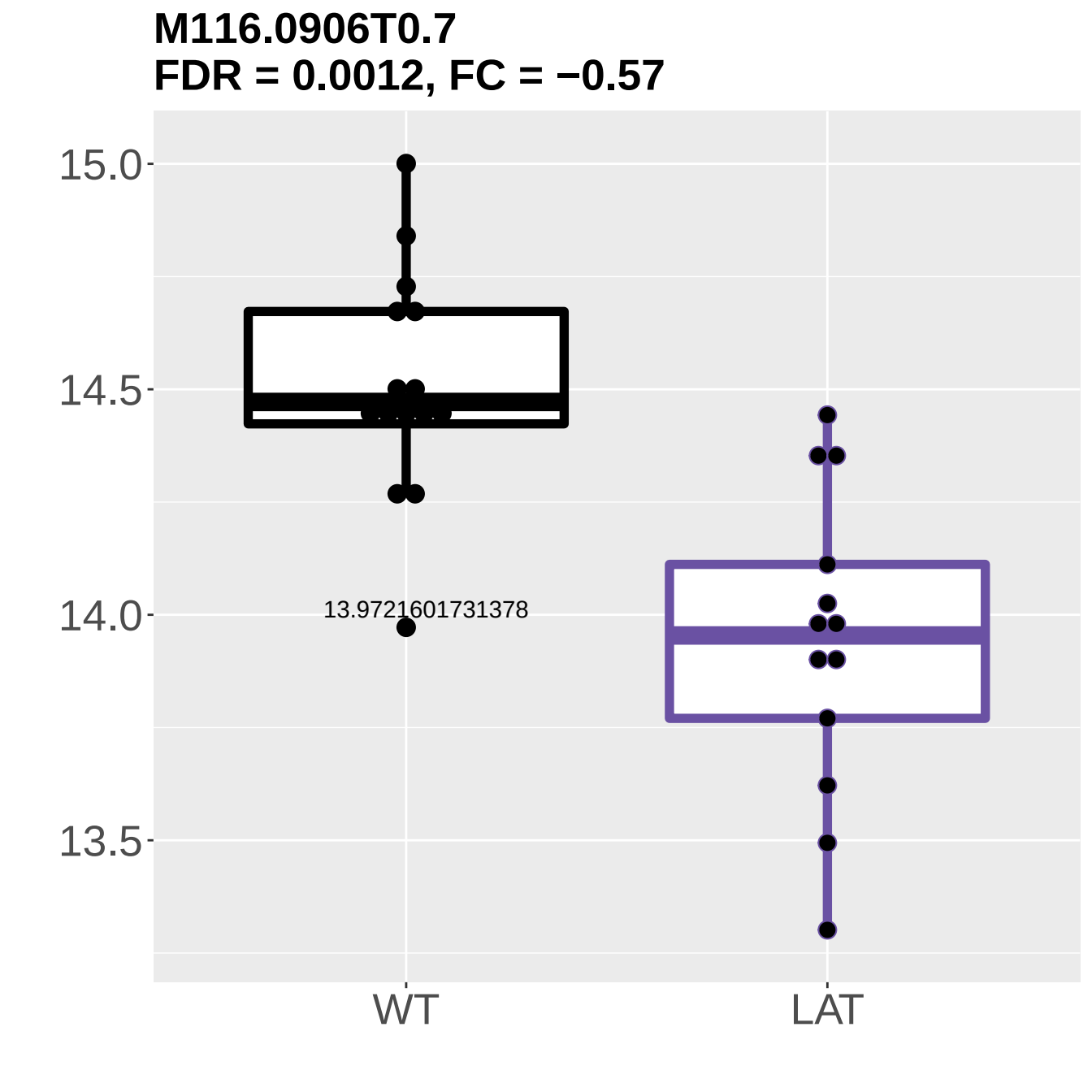

M127.1888T1.26
FDR = 0.0011, FC = −0.69
17.2
16.8
16.4
16.0
15.6
WT
LAT

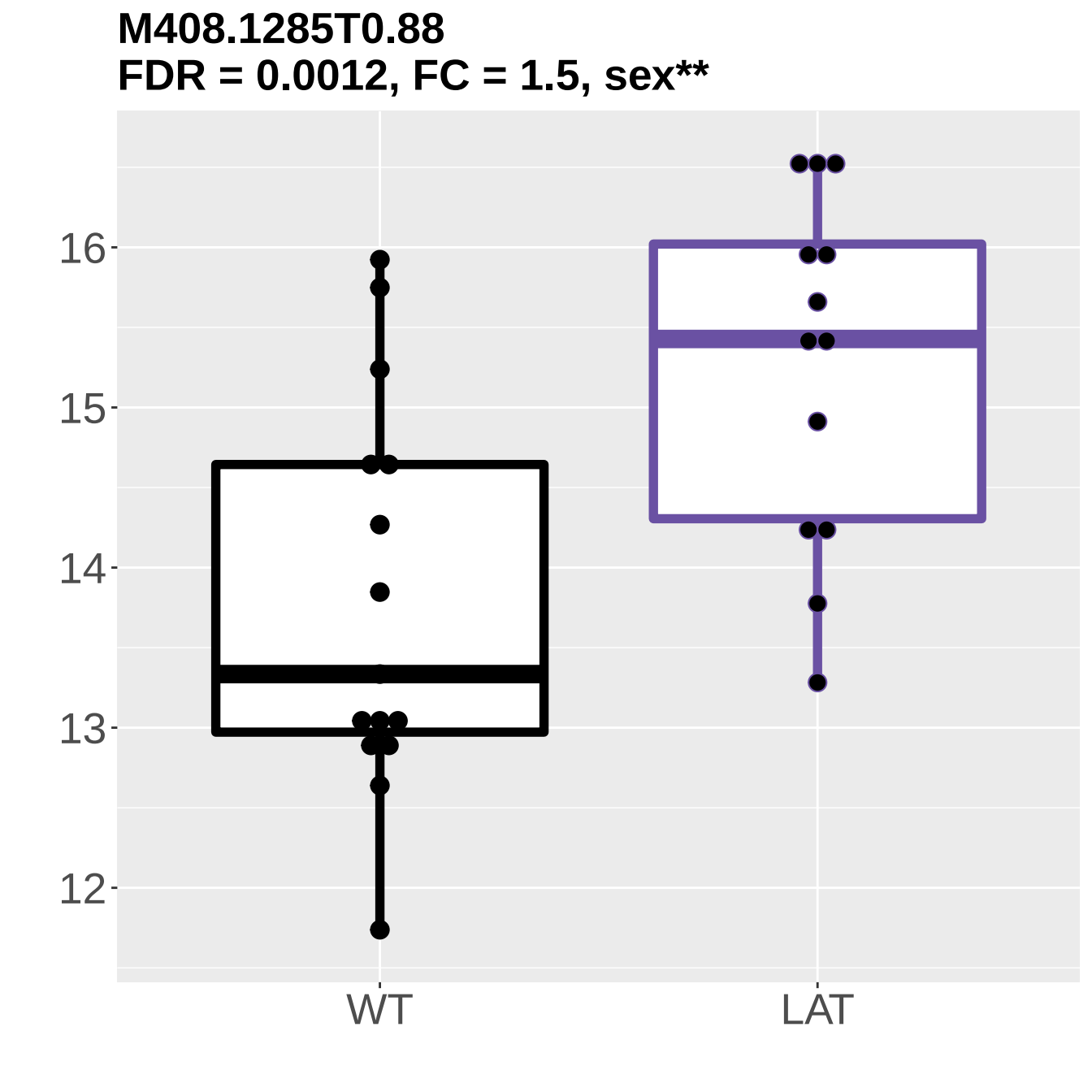

S−Adenosyl−L−homocysteine;S−Adenosylhom
FDR = 0.0011, FC = 1.1
22
21
20
19
18.7905836745033
WT
LAT

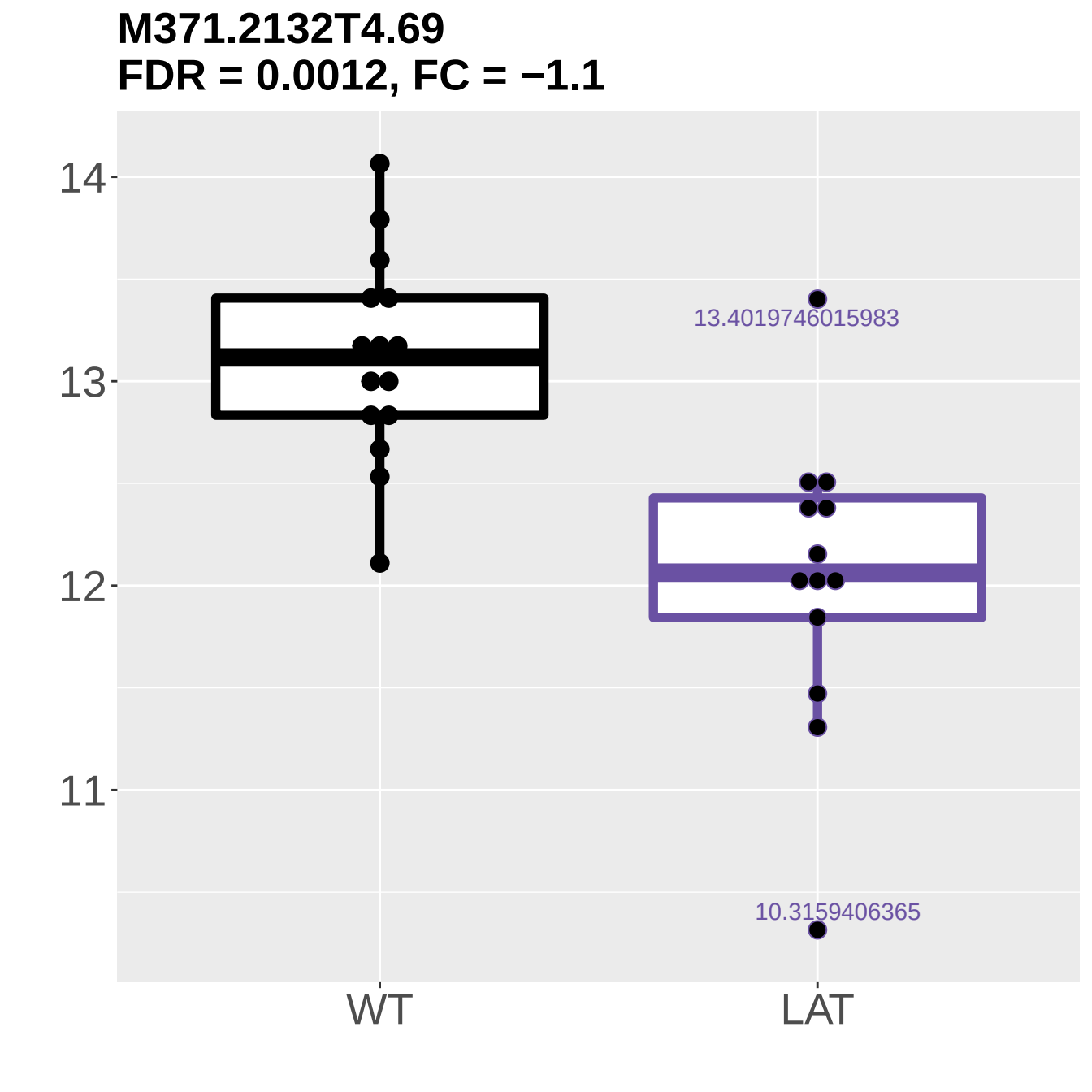

M842.6019T6.31
FDR = 0.0012, FC = −2
16
14
12
WT
LAT

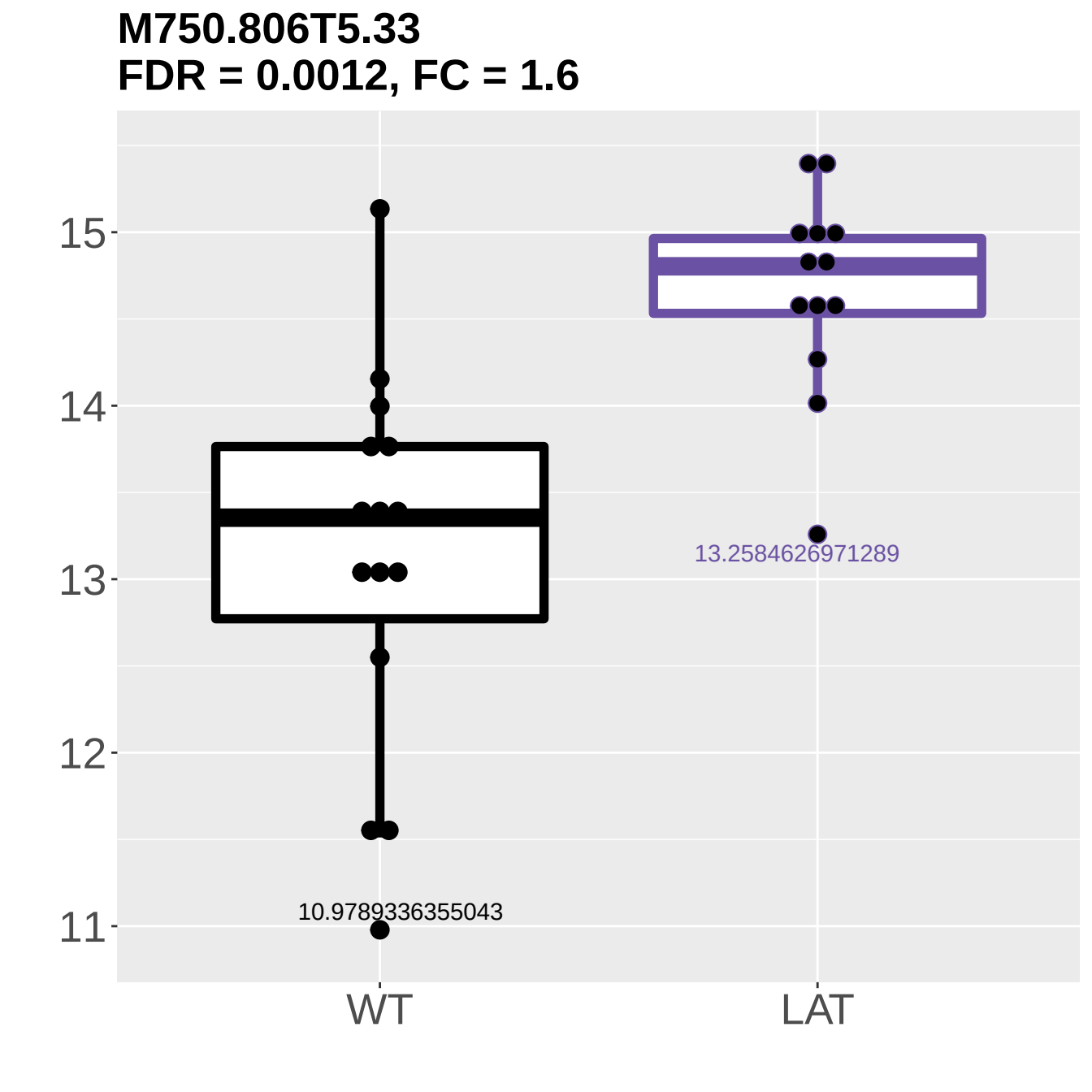

M568.1136T5.03
FDR = 0.0012, FC = −1.4
17
16
15
14
13
12
11.8347942197439
WT
LAT

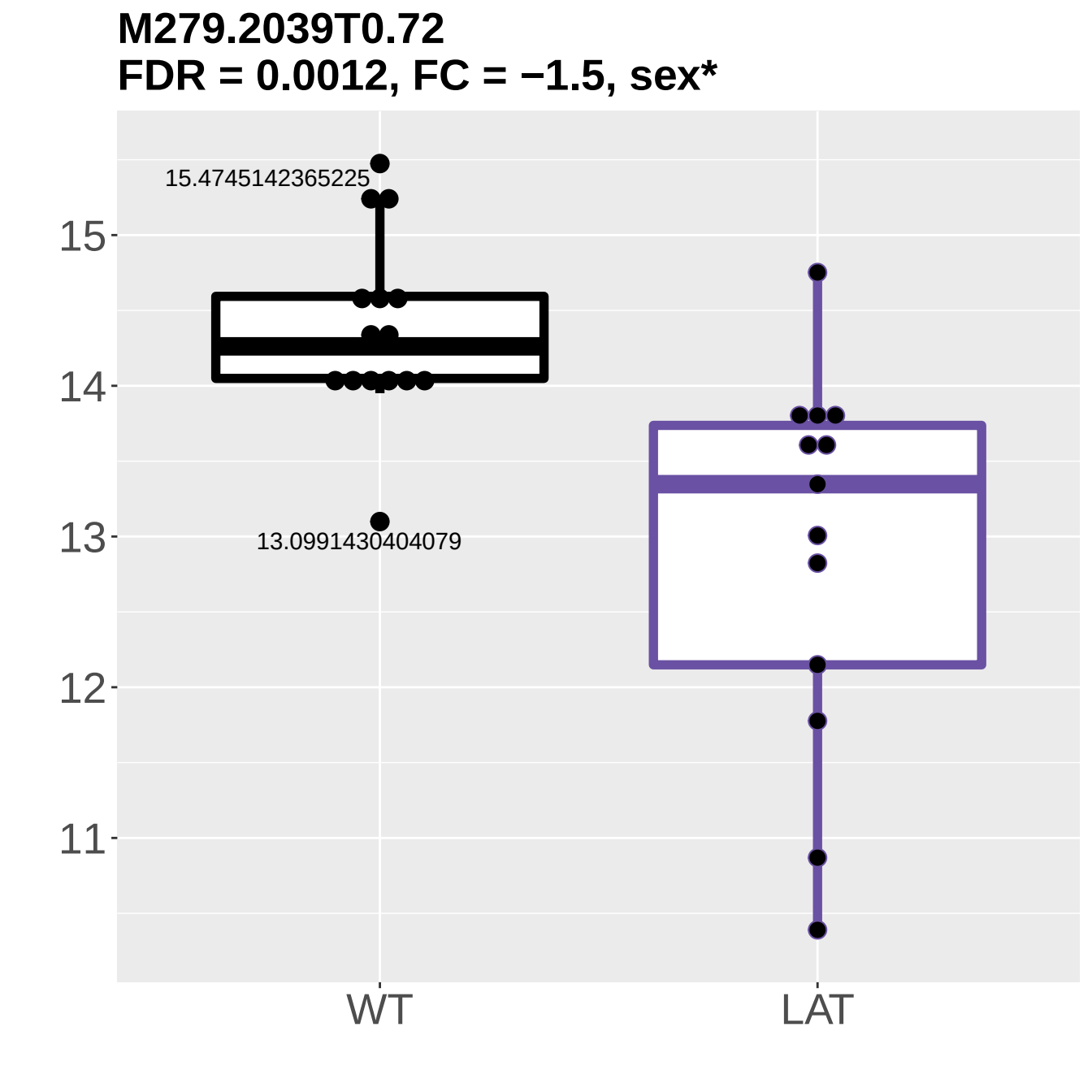

M410.9059T4.11
FDR = 0.0012, FC = 0.58
17.5
17.0
16.5
16.0
WT
LAT

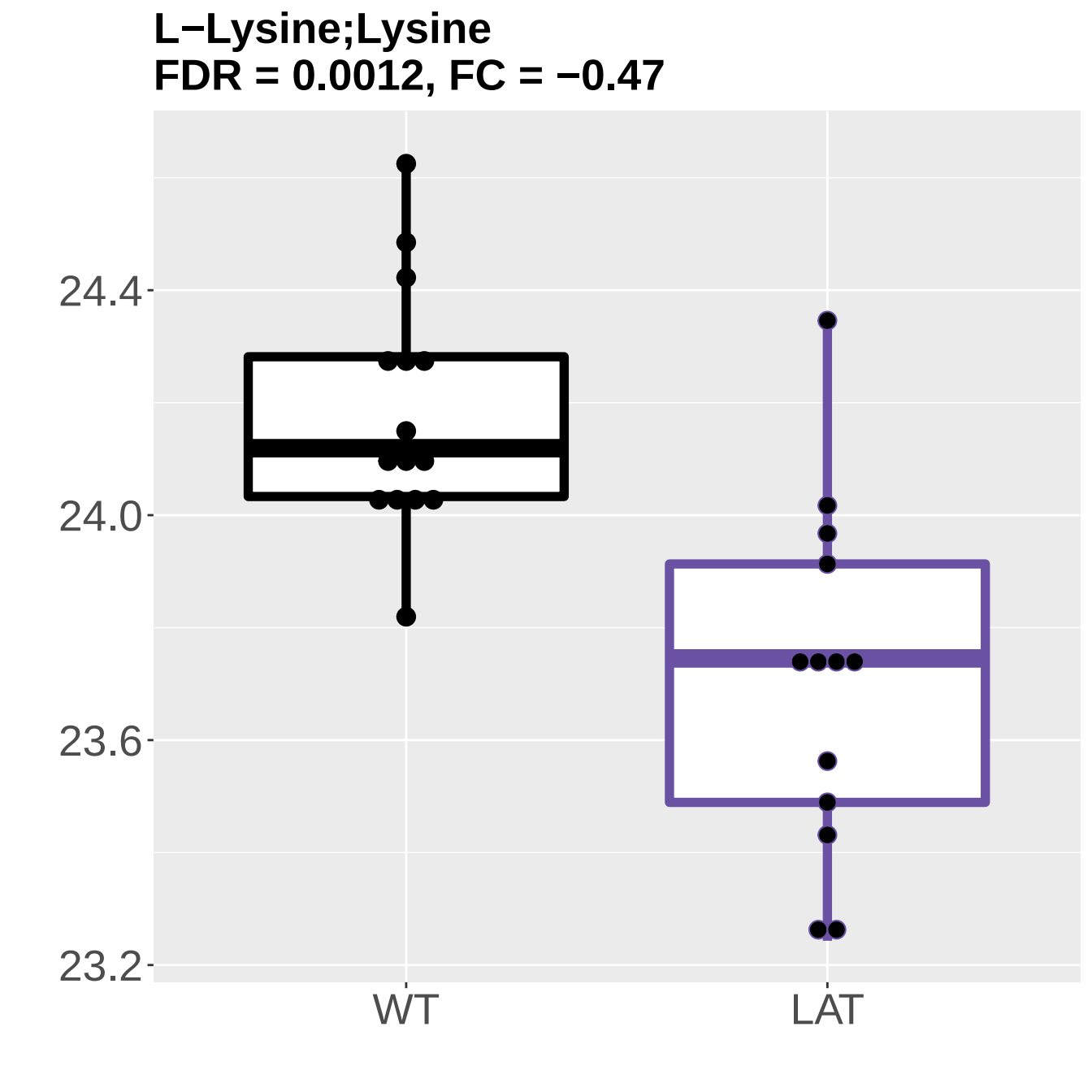

M116.0906T0.7
FDR = 0.0012, FC = −0.57
15.0
14.5
14.0
13.5
13.9721601731378
WT
LAT

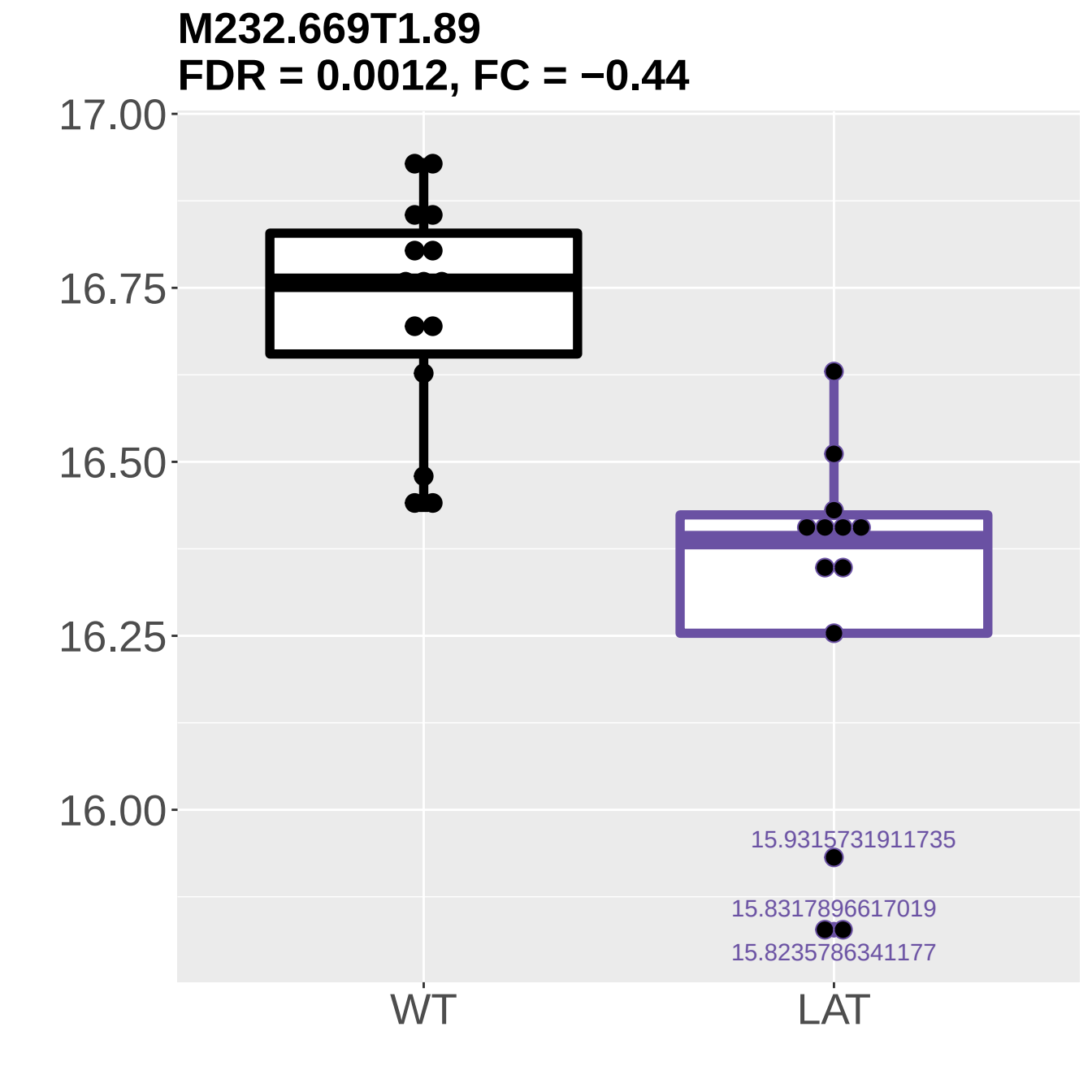

M408.1285T0.88
FDR = 0.0012, FC = 1.5, sex**
16
15
14
13
12
WT
LAT

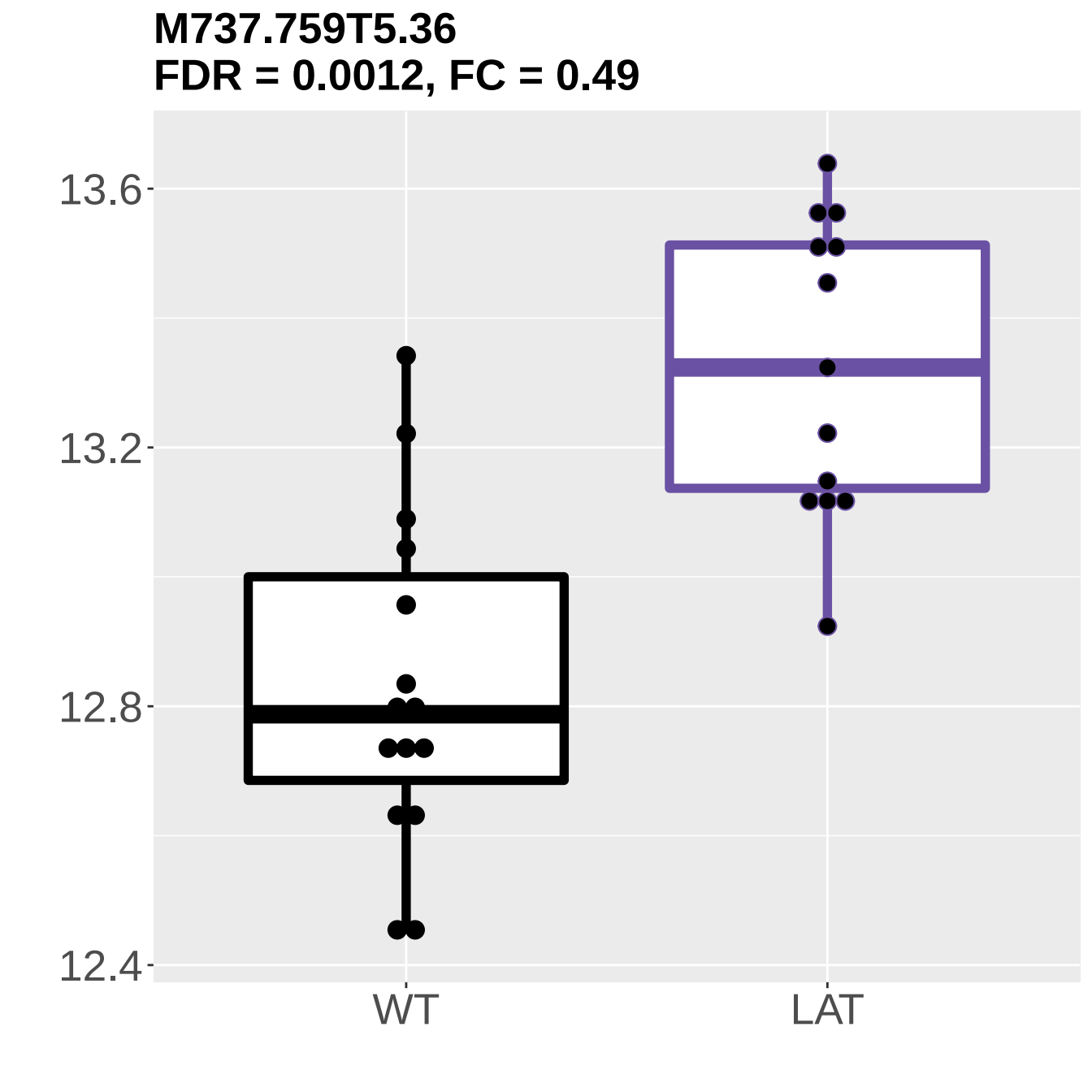

M371.2132T4.69
FDR = 0.0012, FC = −1.1
14
13
12
11
13.4019746015983
10.3159406365
WT
LAT

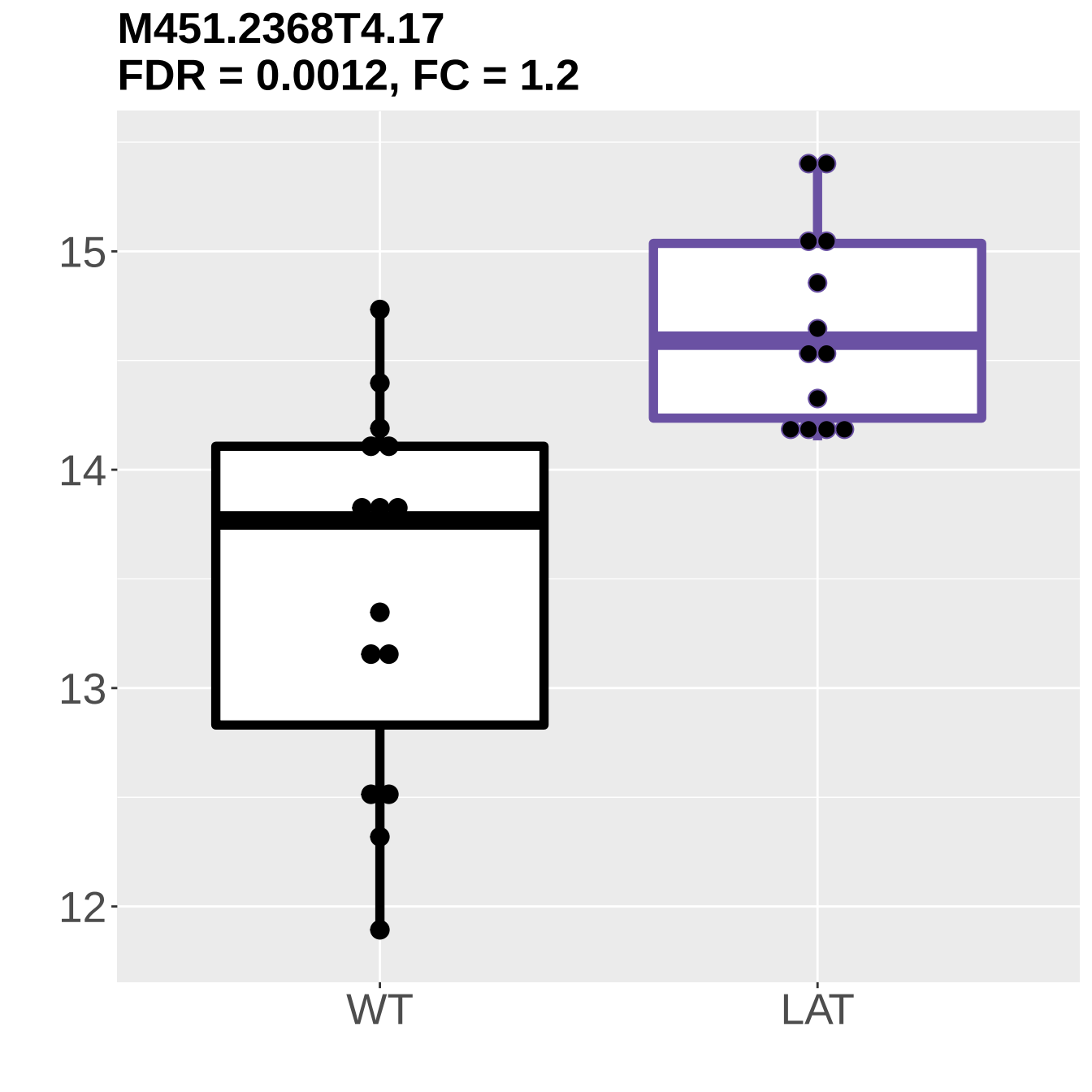

M750.806T5.33
FDR = 0.0012, FC = 1.6
15
14
13
12
11
13.2584626971289
10.9789336355043
WT
LAT

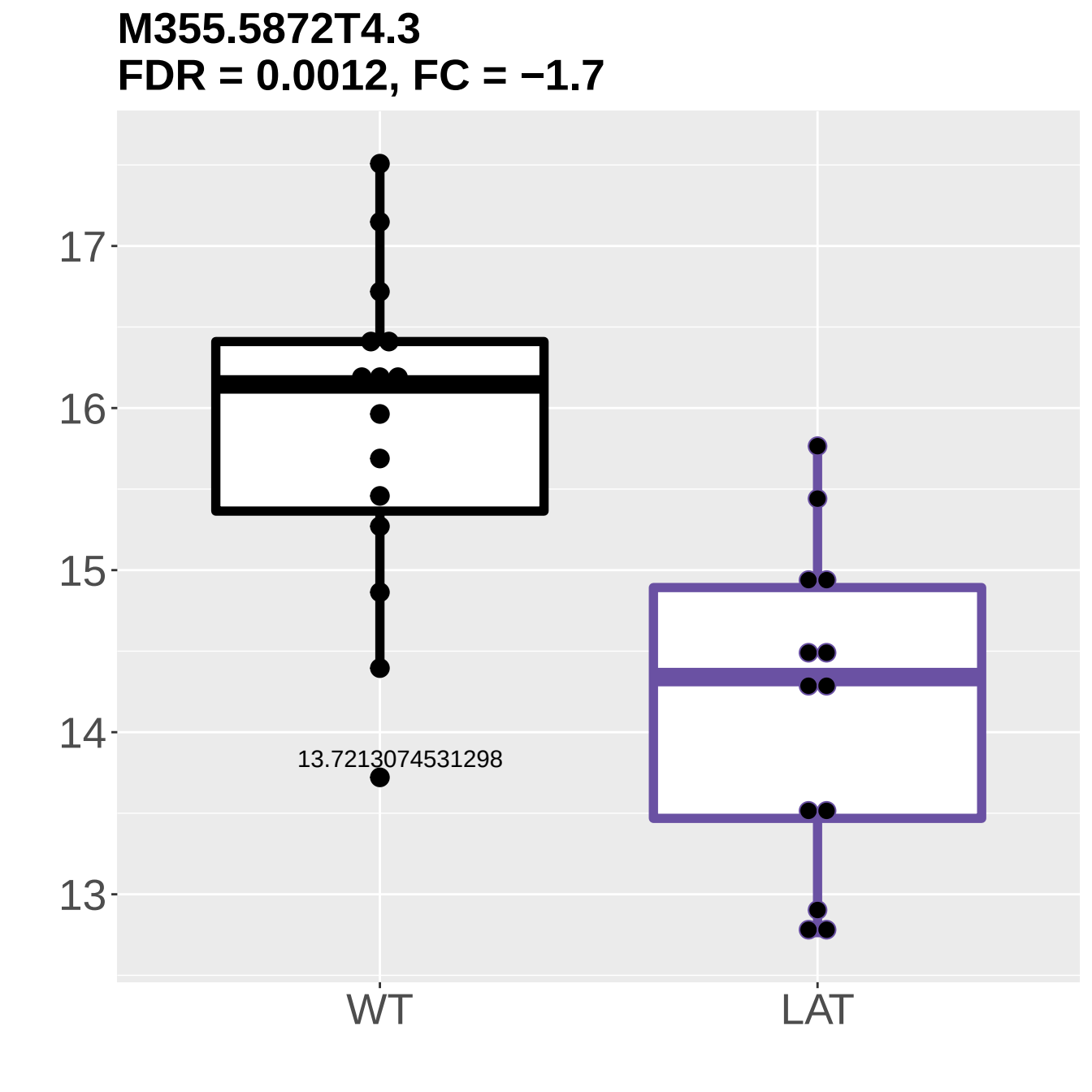

M279.2039T0.72
FDR = 0.0012, FC = −1.5, sex*
15.4745142365225
13.0991430404079
15
14
13
12
11
WT
LAT

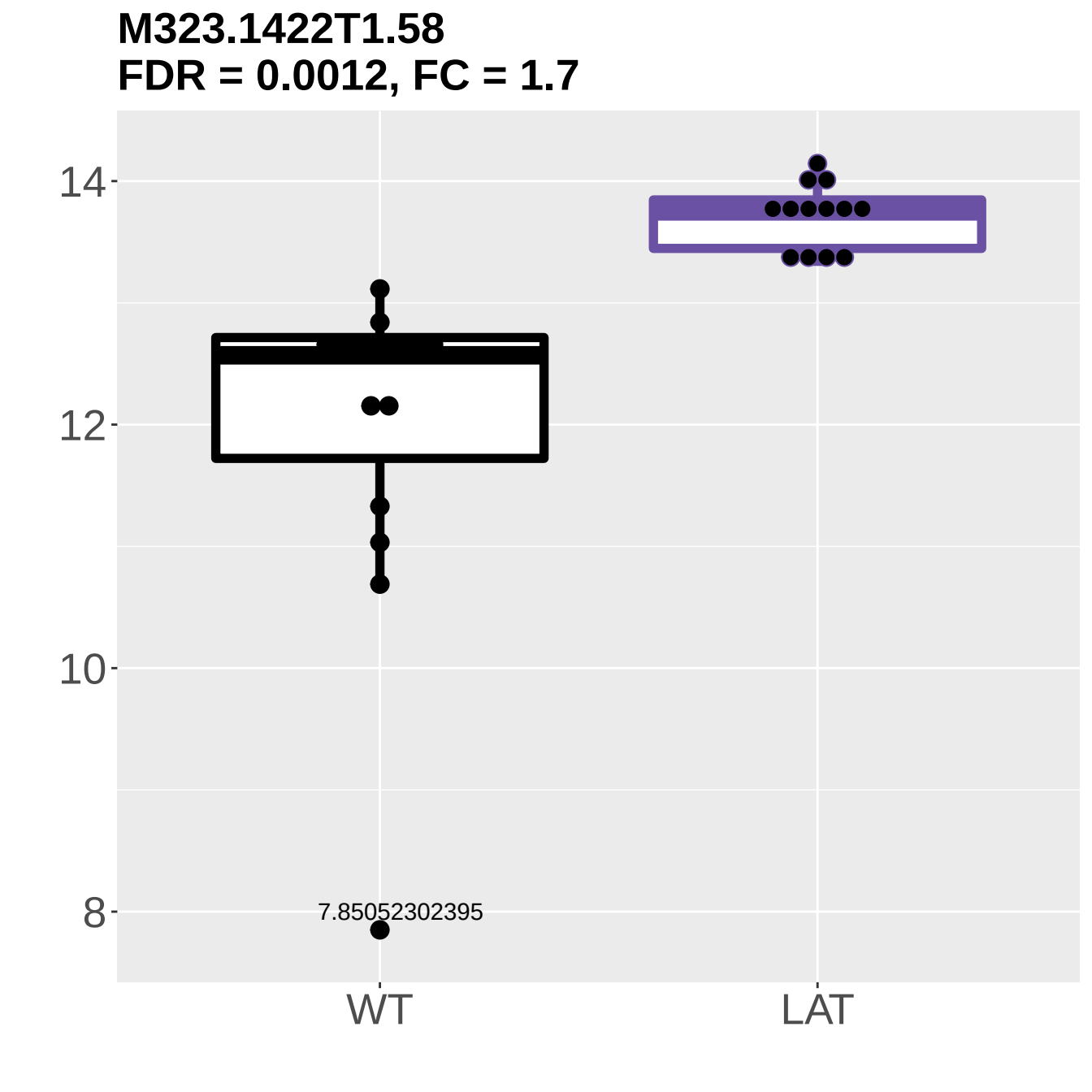

L−Lysine;Lysine
FDR = 0.0012, FC = −0.47
24.4
24.0
23.6
23.2
WT
LAT

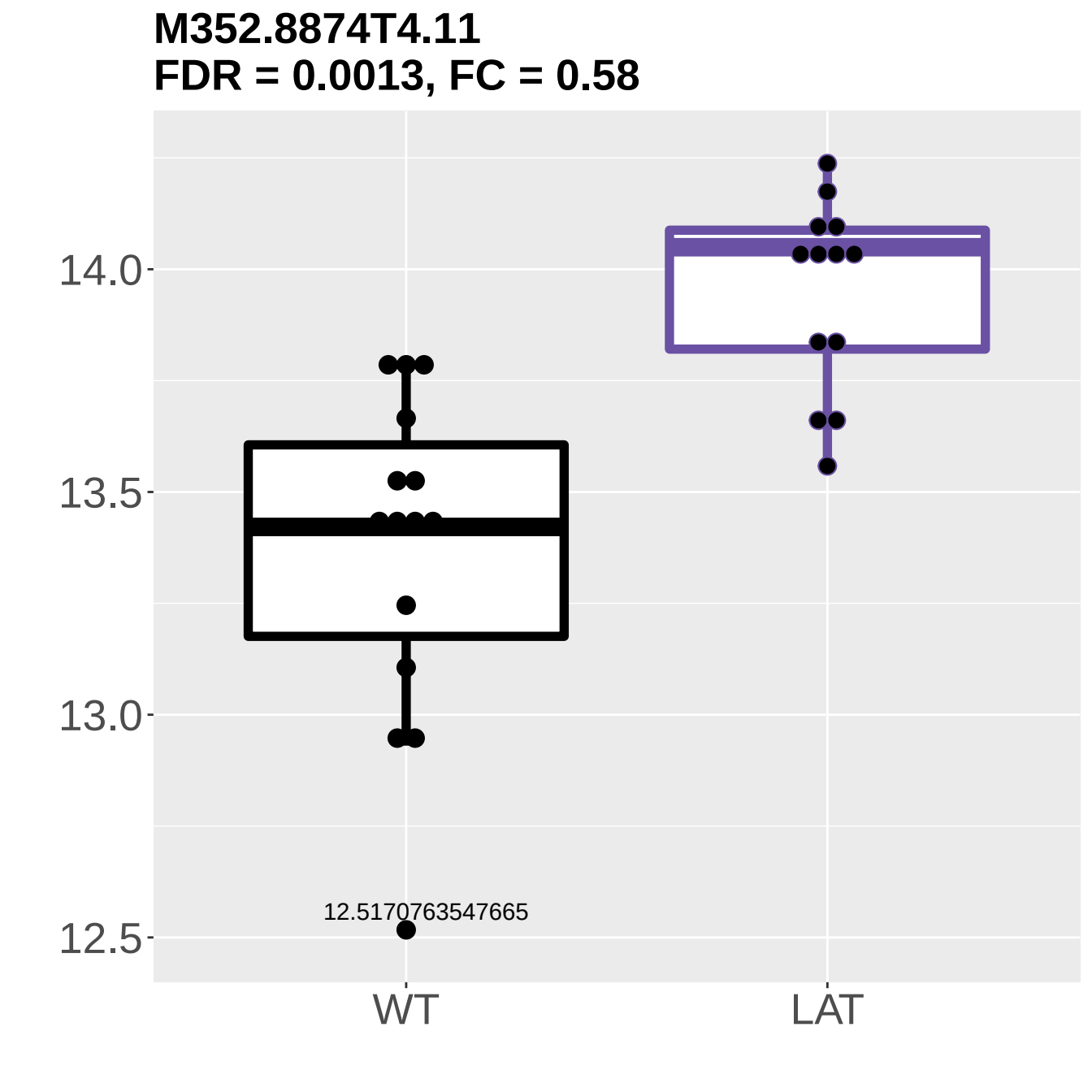

M232.669T1.89
FDR = 0.0012, FC = −0.44
17.00
16.75
16.50
16.25
16.00
15.9315731911735
15.8317896617019
15.8235786341177
WT
LAT


M737.759T5.36
FDR = 0.0012, FC = 0.49
13.6
13.2
12.8
12.4
WT
LAT


M451.2368T4.17
FDR = 0.0012, FC = 1.2
15
14
13
12
WT
LAT


M355.5872T4.3
FDR = 0.0012, FC = −1.7
17
16
15
14
13
13.7213074531298
WT
LAT


M323.1422T1.58
FDR = 0.0012, FC = 1.7
14
12
10
8
7.85052302395
WT
LAT


M352.8874T4.11
FDR = 0.0013, FC = 0.58
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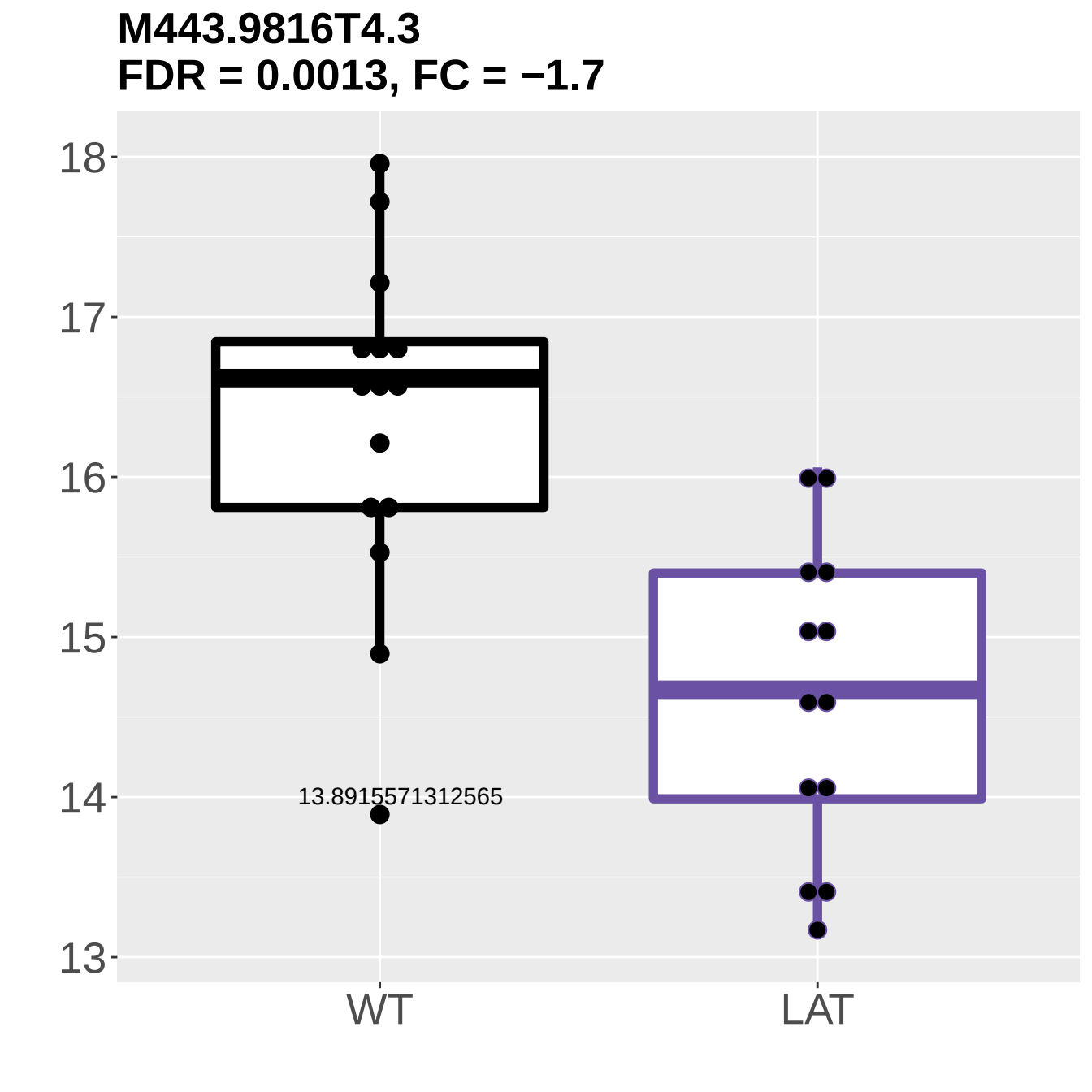
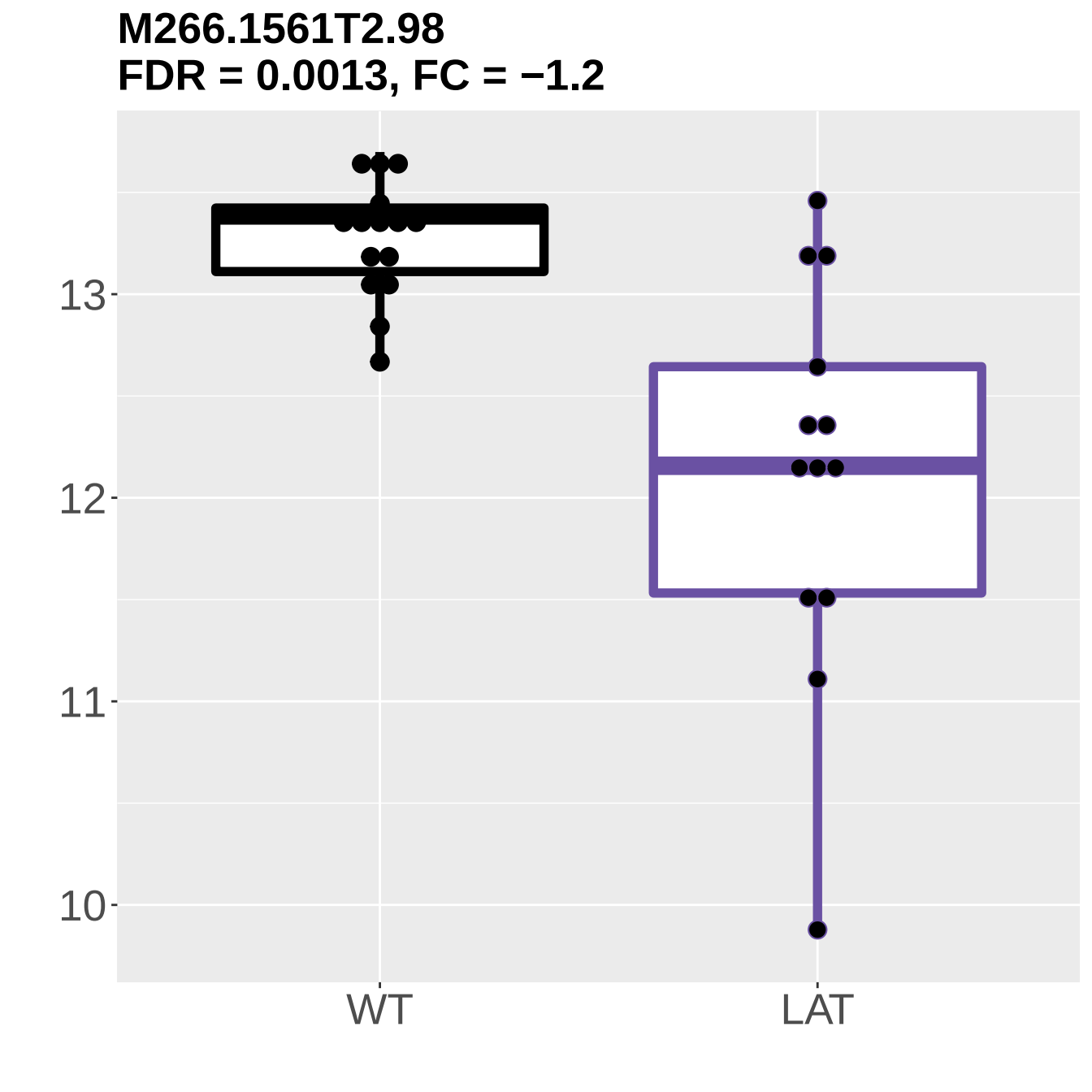
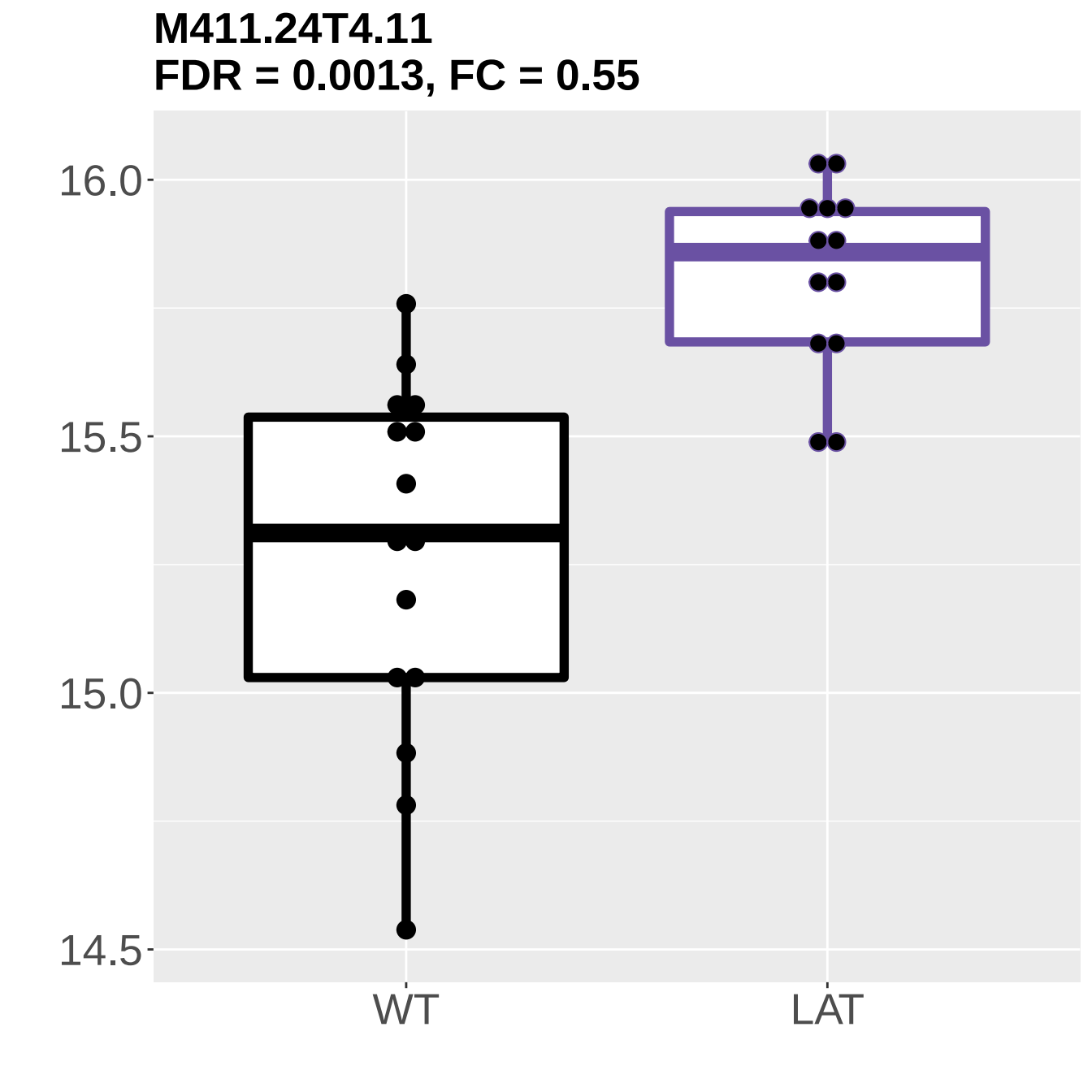
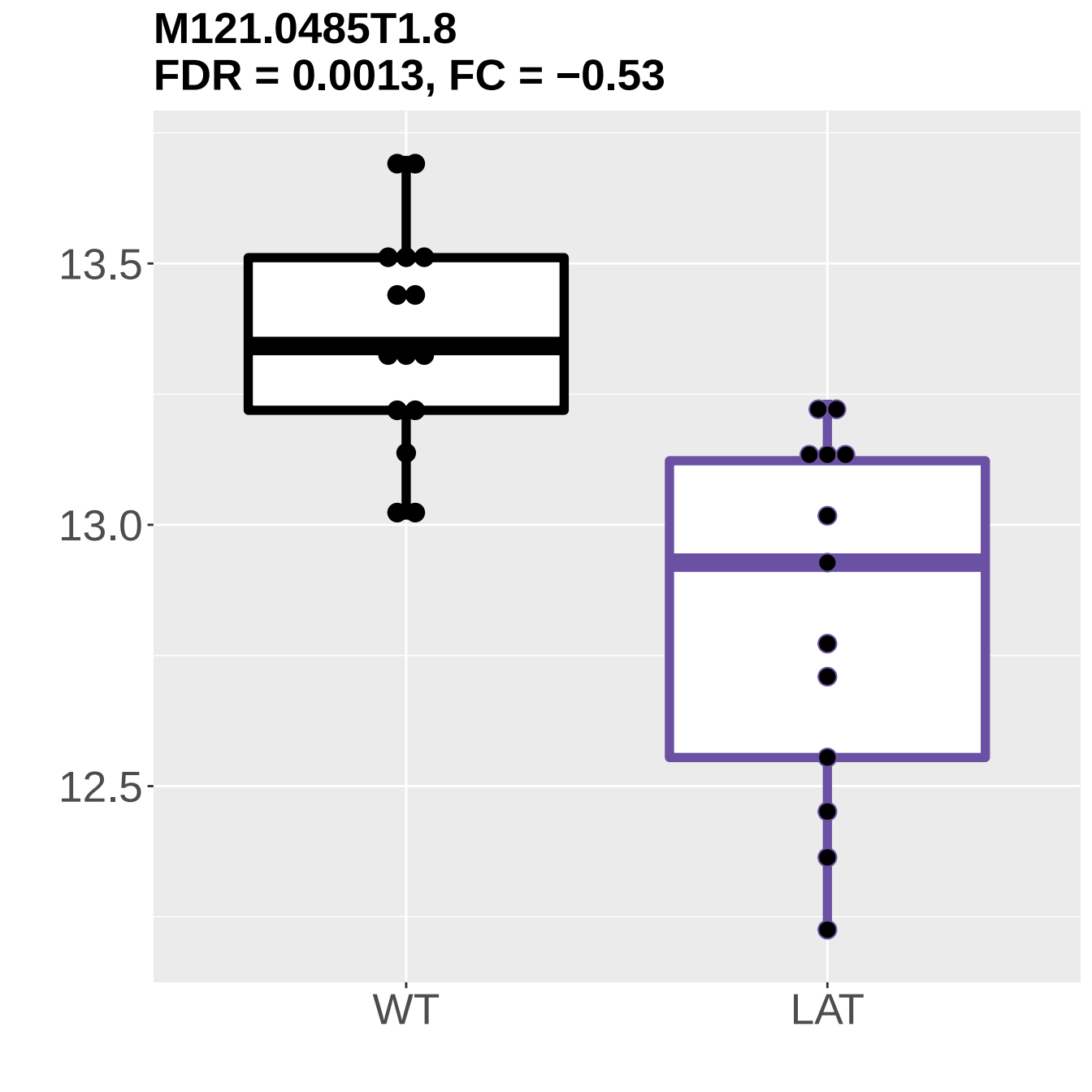
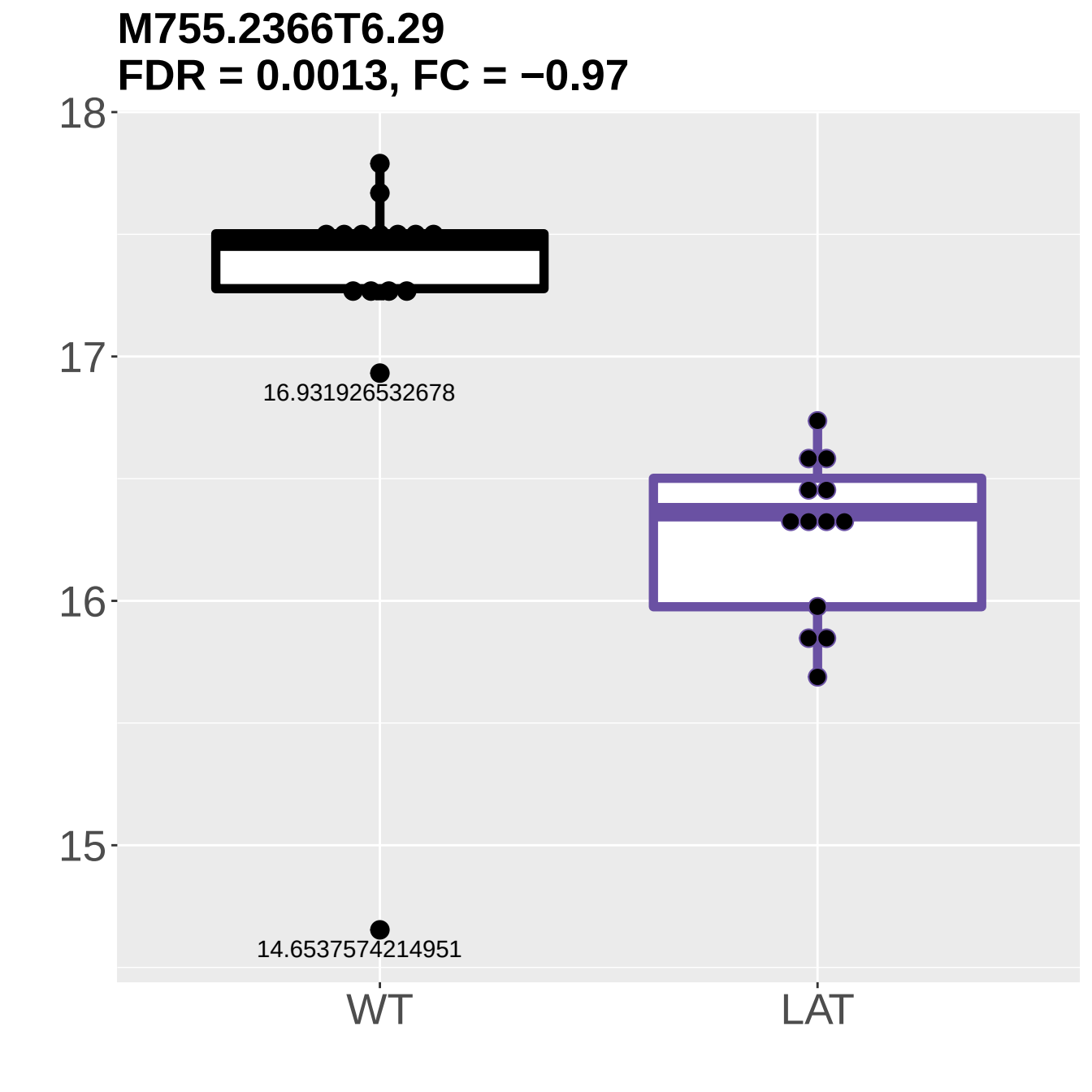
13.5
13.0
12.5
12.5170763547665
WT
LAT

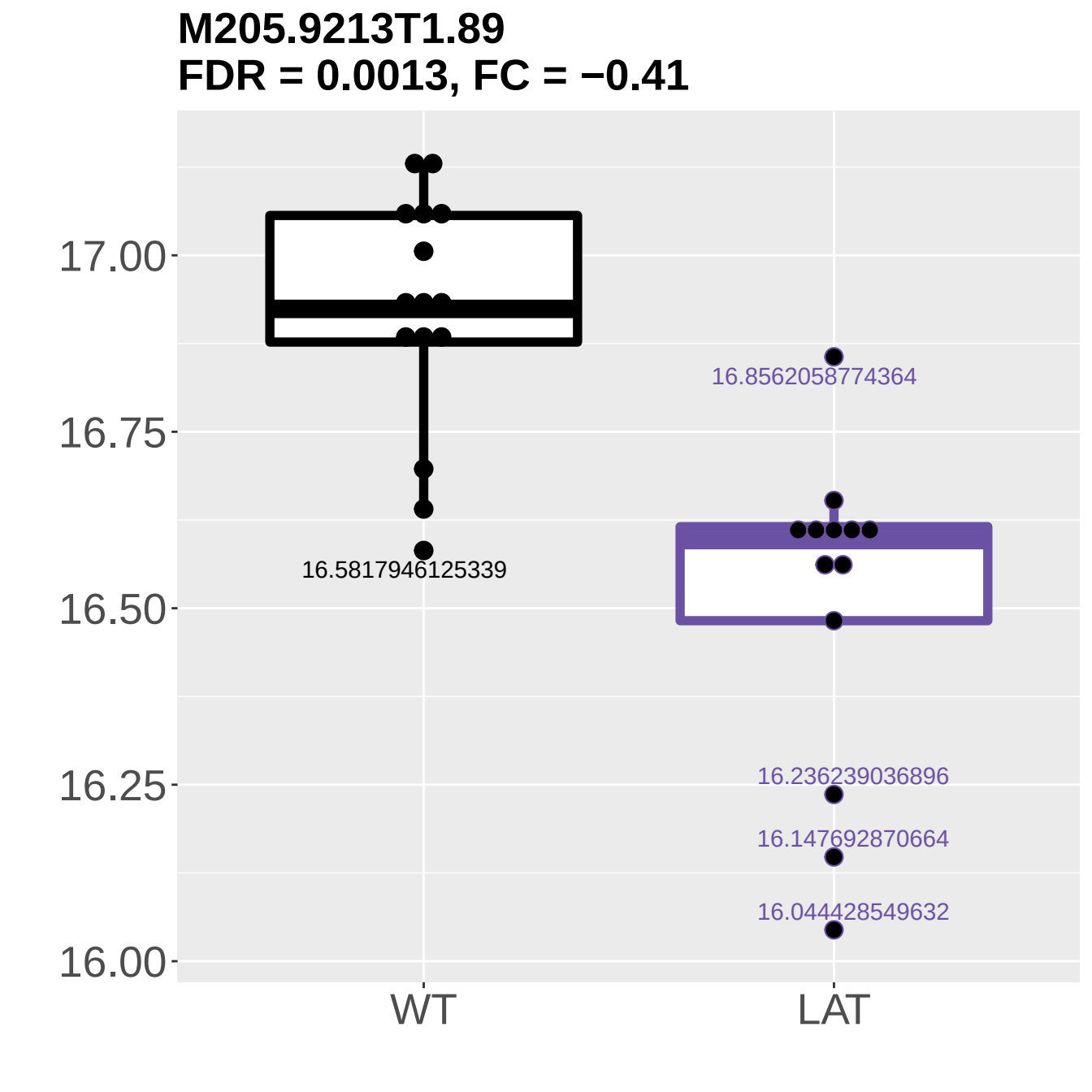

M443.9816T4.3
FDR = 0.0013, FC = −1.7
18
17
16
15
14
13
13.8915571312565
WT
LAT


M266.1561T2.98
FDR = 0.0013, FC = −1.2
13
12
11
10
WT
LAT


M411.24T4.11
FDR = 0.0013, FC = 0.55
16.0
15.5
15.0
14.5
WT
LAT


M121.0485T1.8
FDR = 0.0013, FC = −0.53
13.5
13.0
12.5
WT
LAT


M755.2366T6.29
FDR = 0.0013, FC = −0.97
18
17
16
15
16.931926532678
14.6537574214951
WT
LAT


M205.9213T1.89
FDR = 0.0013, FC = −0.41
17.00
16.75
16.50
16.25
16.00
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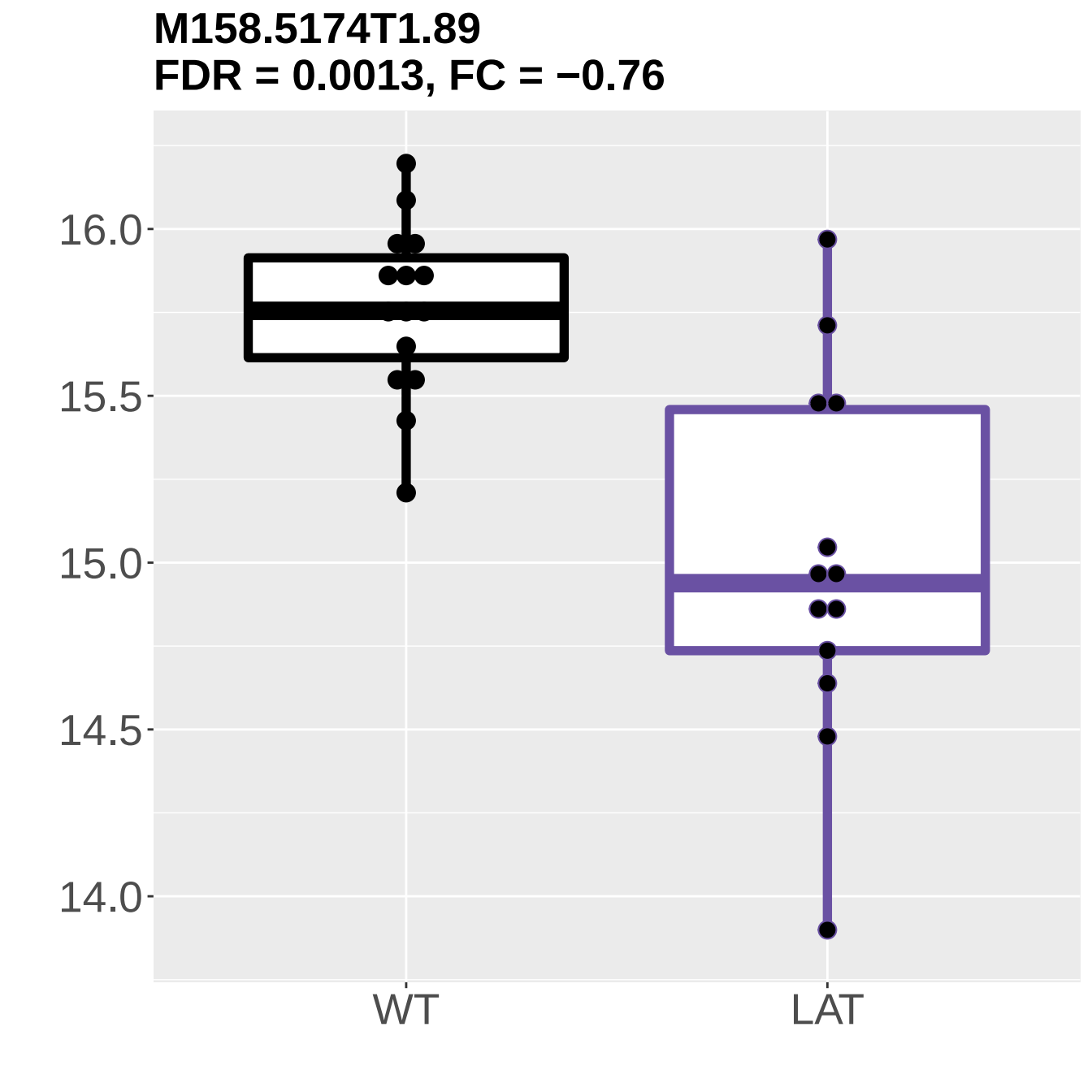
16.5817946125339
16.236239036896
16.147692870664
16.044428549632
WT
LAT


M158.5174T1.89
FDR = 0.0013, FC = −0.76
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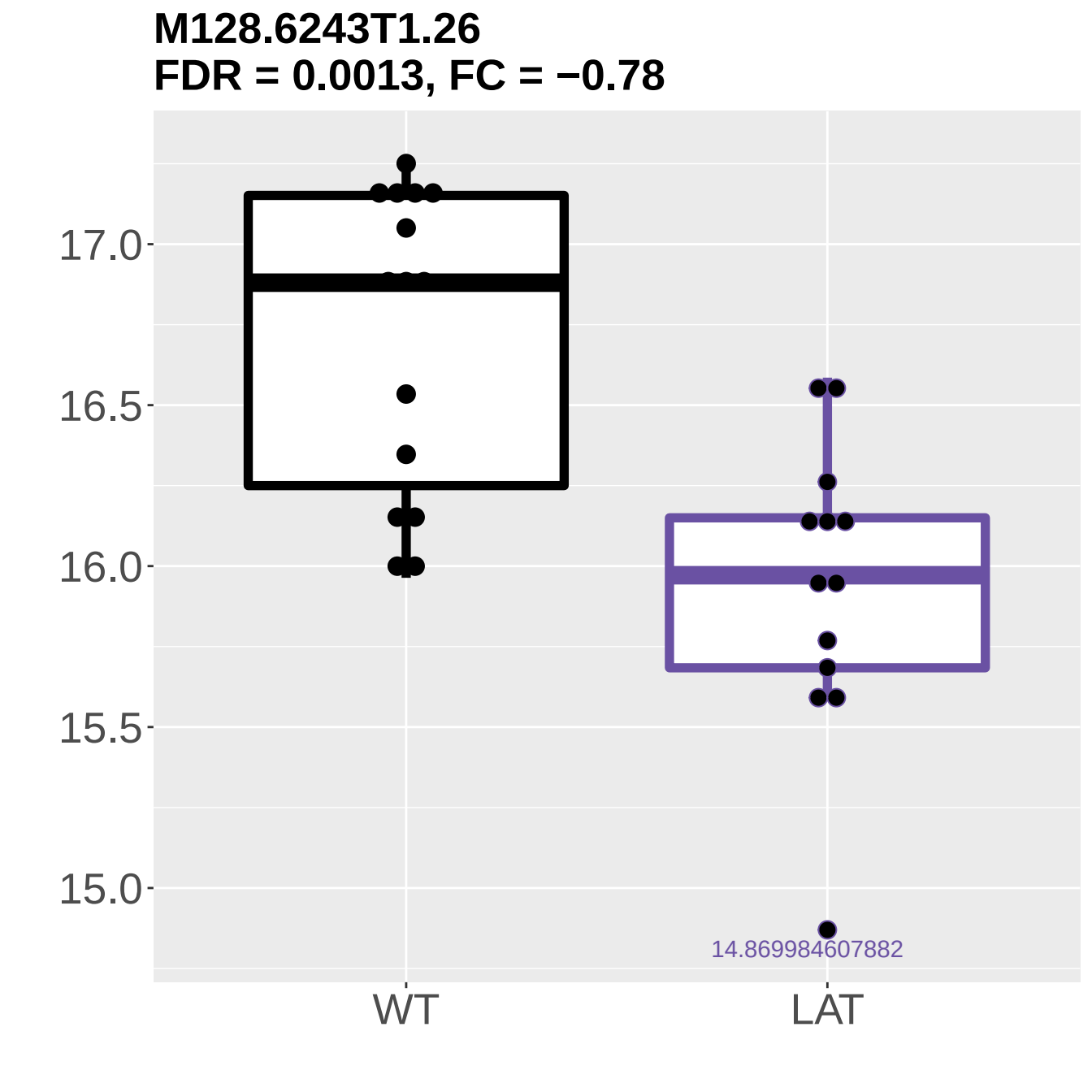
15.5
15.0
14.5
14.0
WT
LAT


M128.6243T1.26
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16.5
16.0
15.5
15.0
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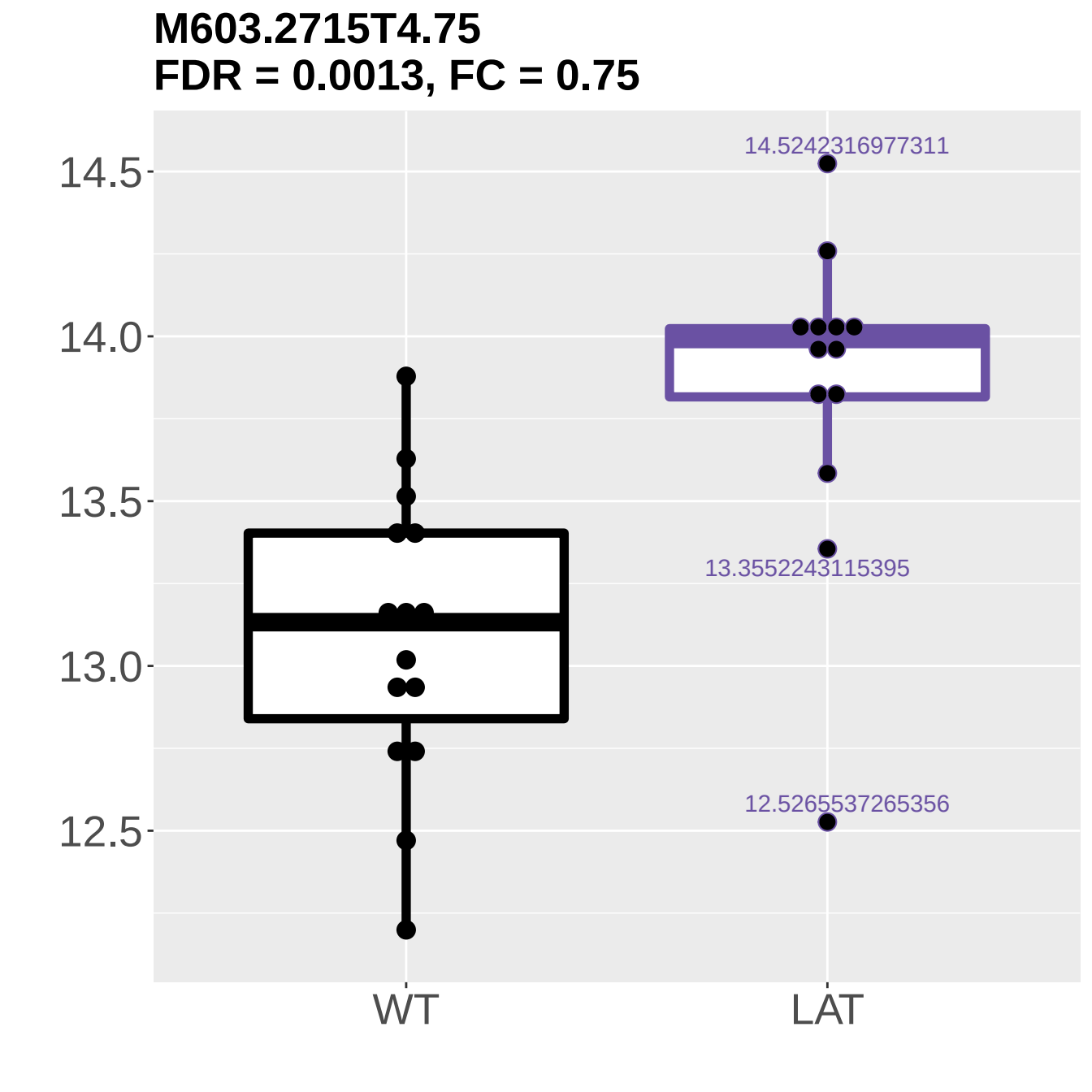
WT
LAT


M603.2715T4.75
FDR = 0.0013, FC = 0.75
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13.5
13.0
12.5
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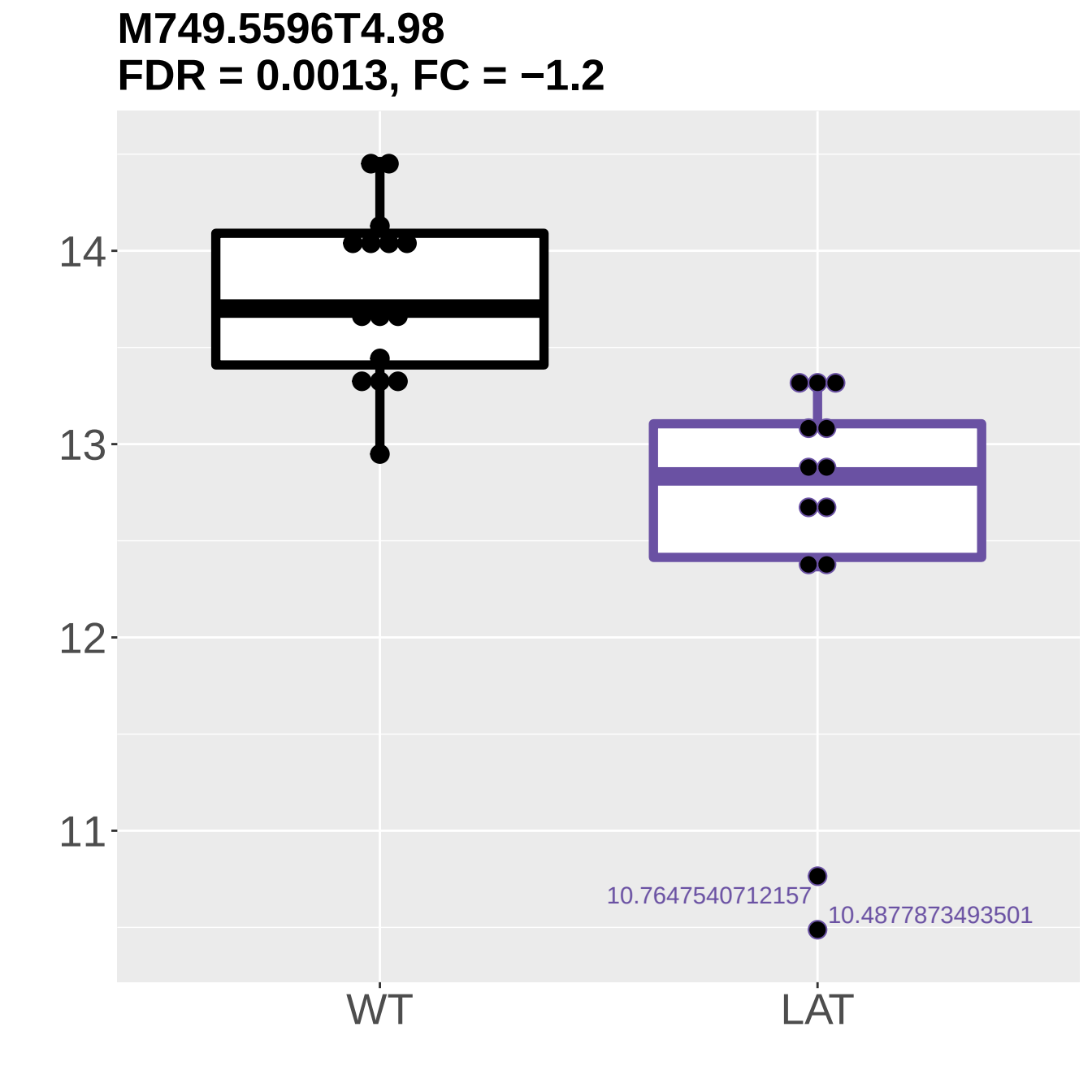
13.3552243115395
12.5265537265356
WT
LAT


M749.5596T4.98
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14
13
12
11
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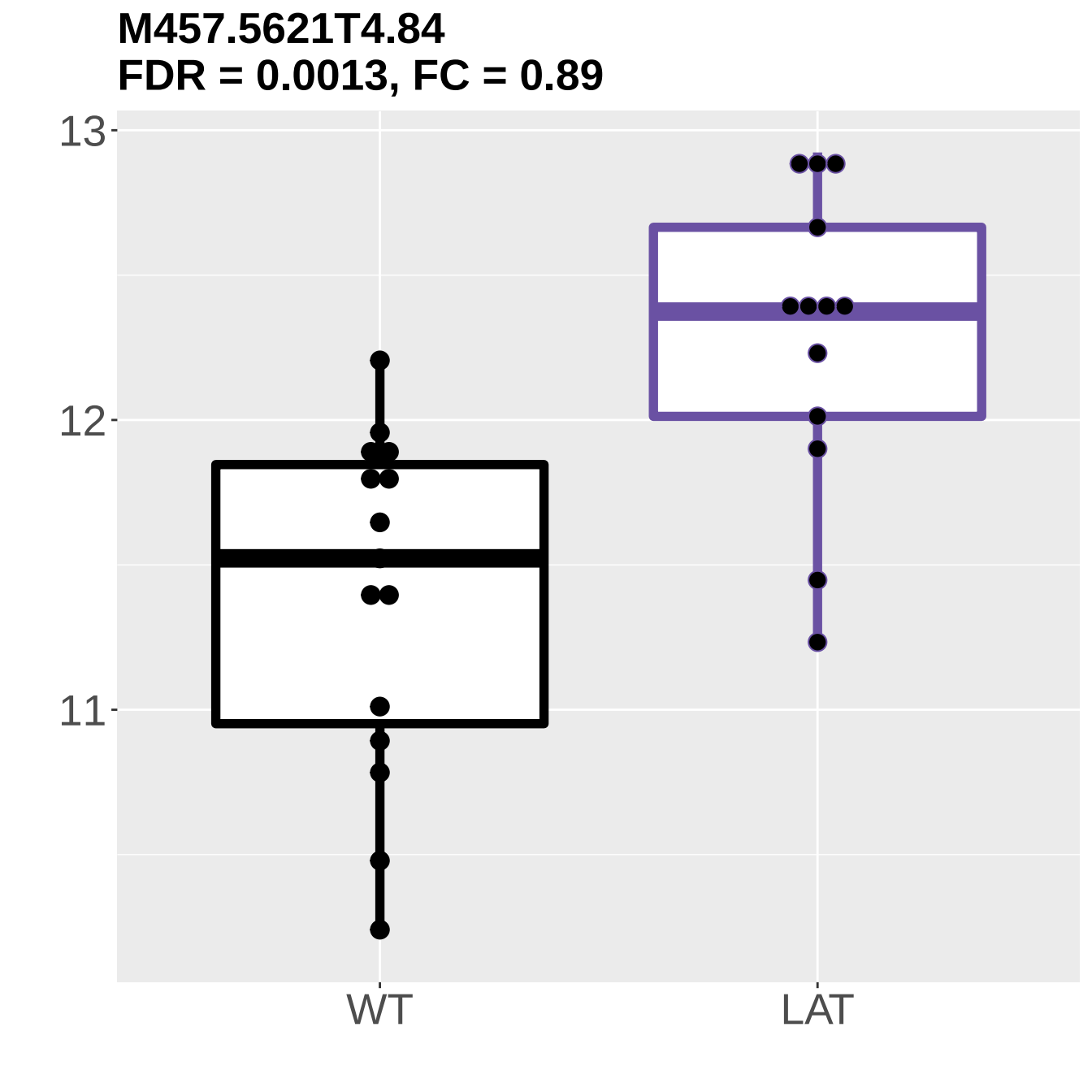
10.4877873493501
WT
LAT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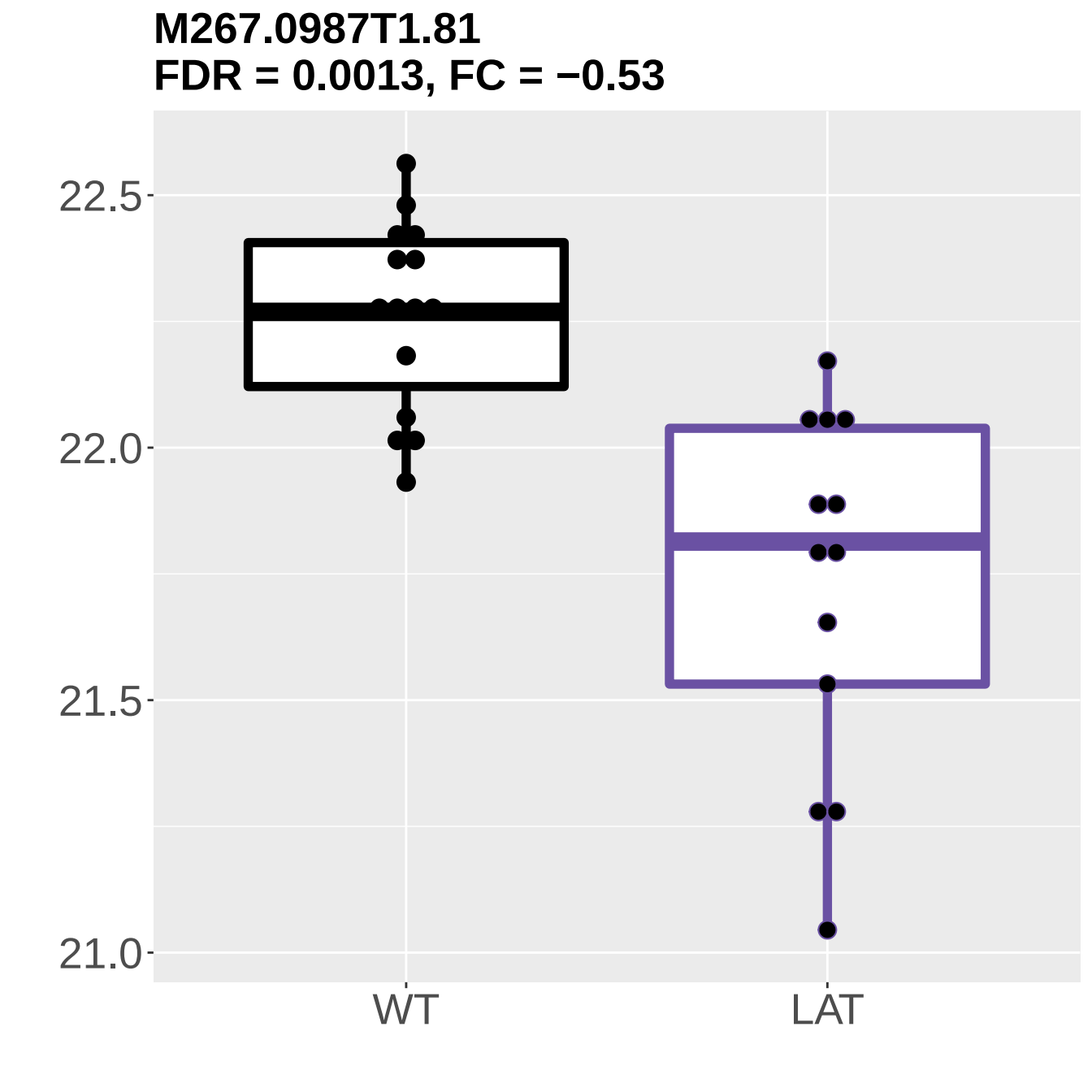
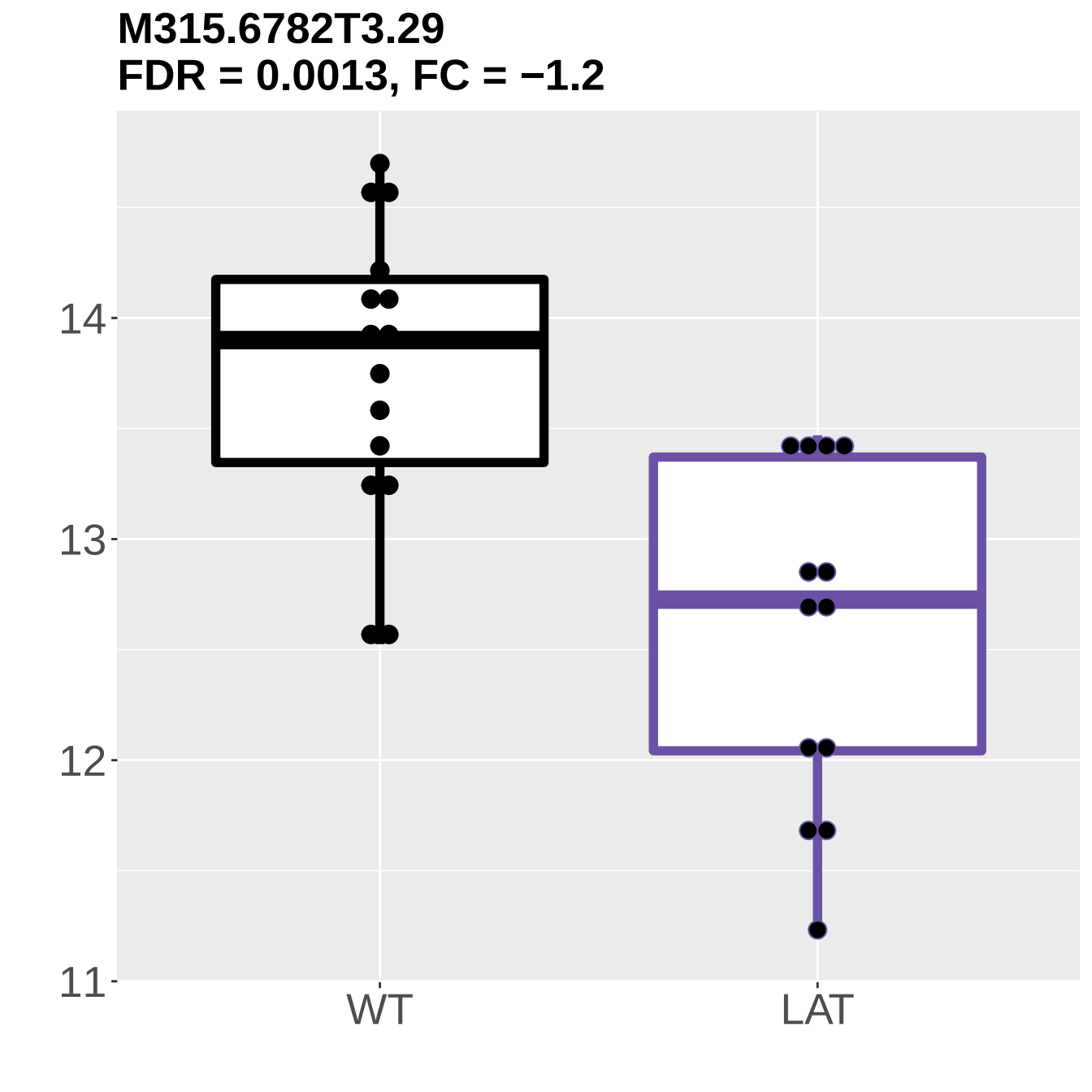
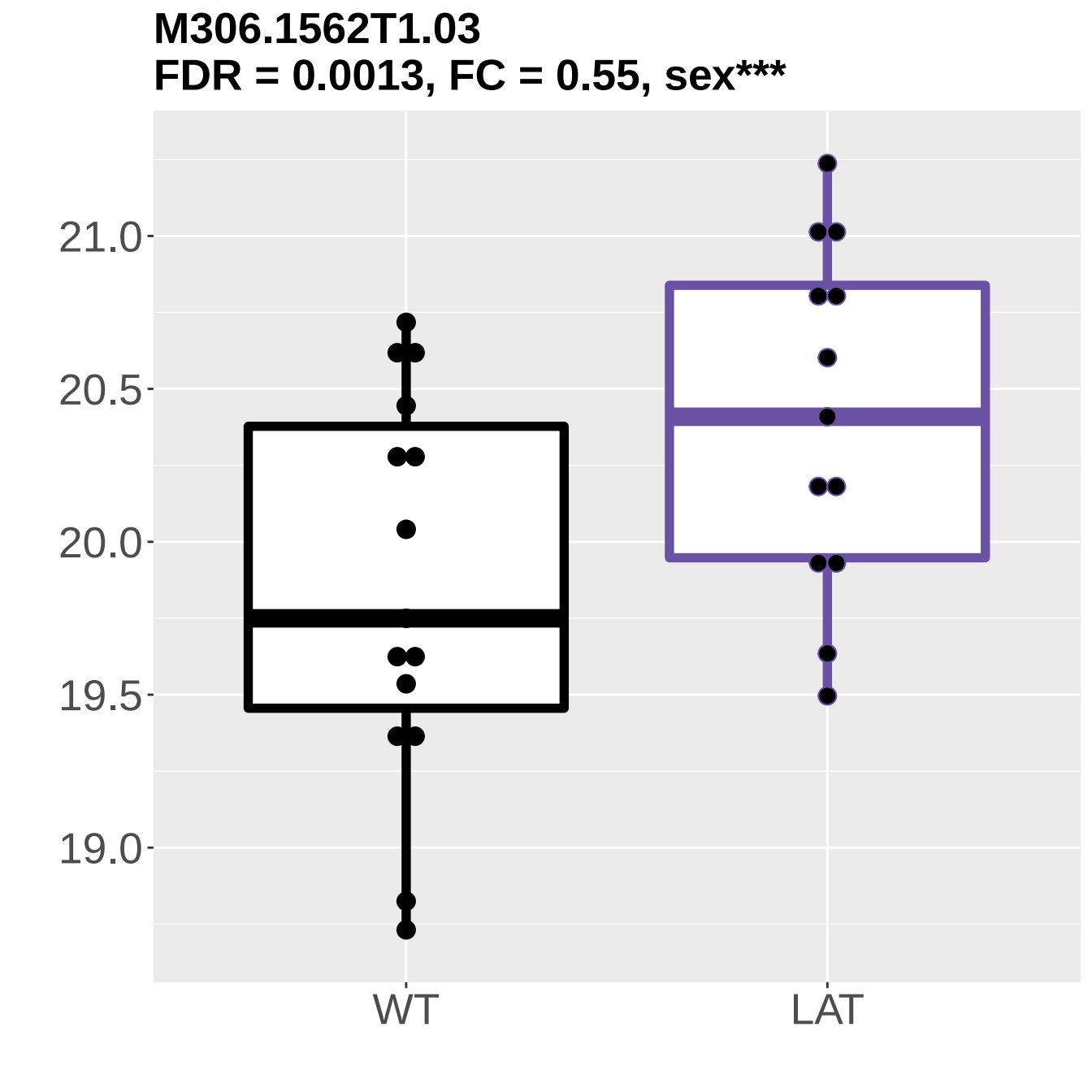
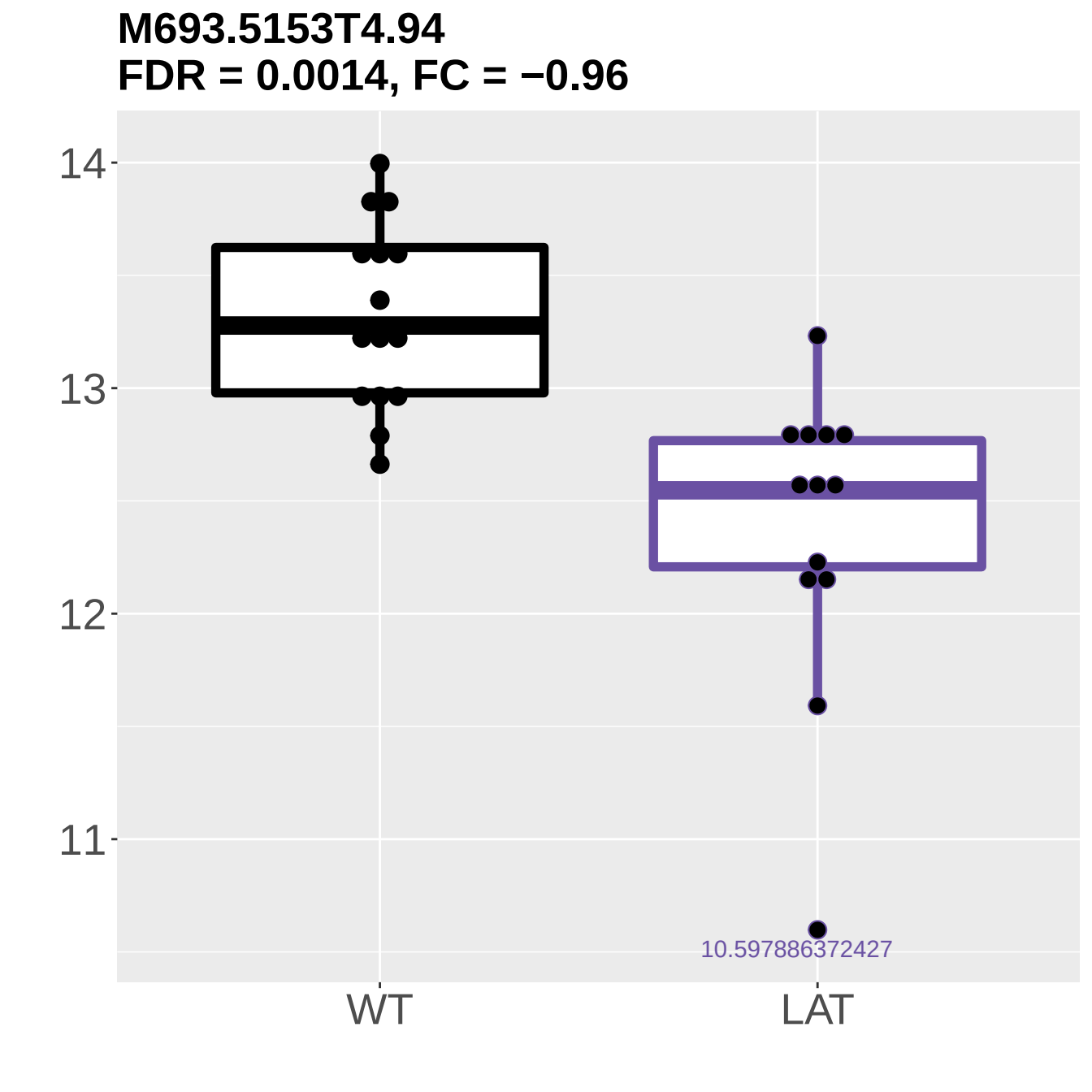
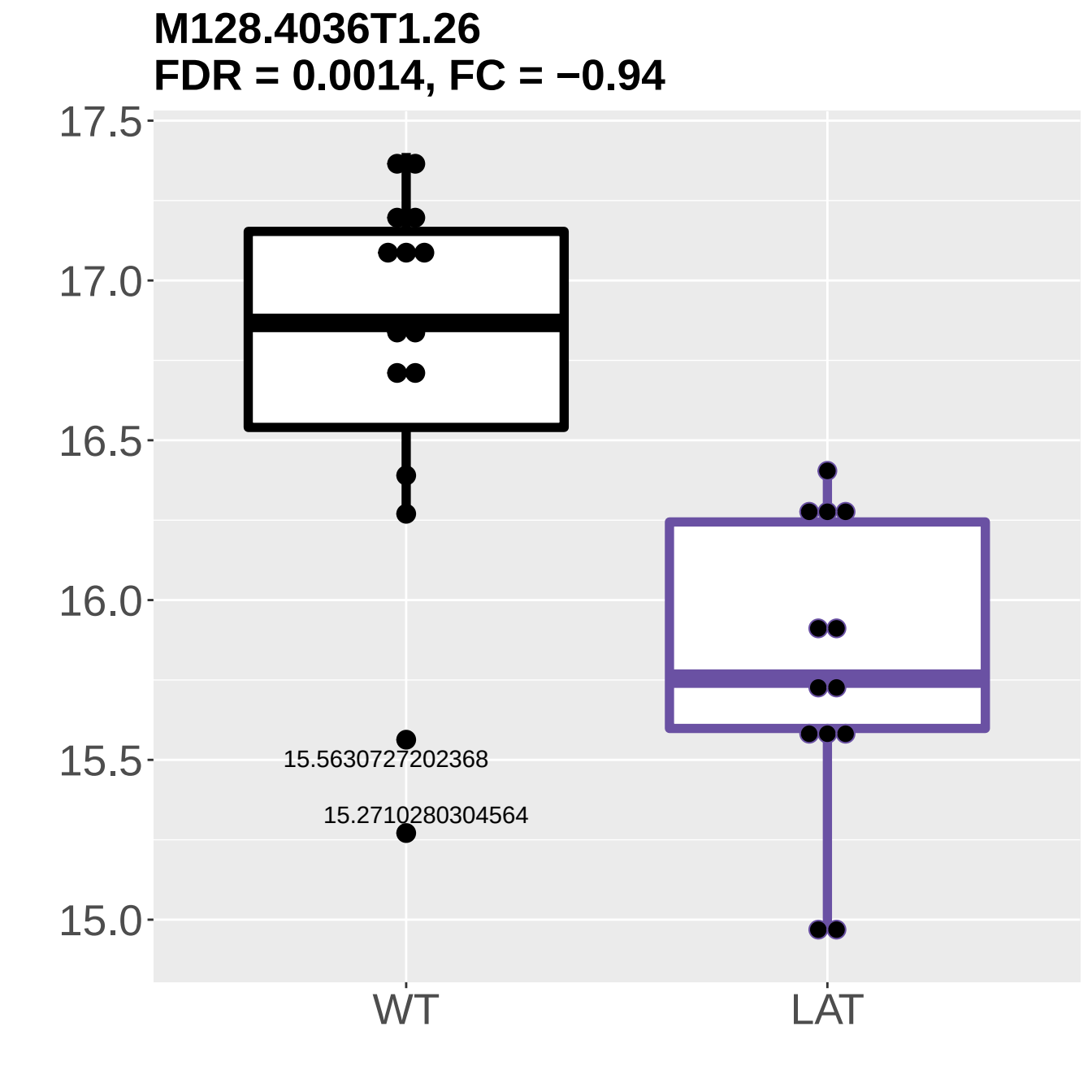
FDR = 0.0013, FC = 0.89
13
12
11
WT
LAT


M267.0987T1.81
FDR = 0.0013, FC = −0.53
22.5
22.0
21.5
21.0
WT
LAT


M315.6782T3.29
FDR = 0.0013, FC = −1.2
14
13
12
11
WT
LAT


M306.1562T1.03
FDR = 0.0013, FC = 0.55, sex***
21.0
20.5
20.0
19.5
19.0
WT
LAT


M693.5153T4.94
FDR = 0.0014, FC = −0.96
14
13
12
11
10.597886372427
WT
LAT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FDR = 0.0014, FC = −0.94
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16.5
16.0
15.5
15.0
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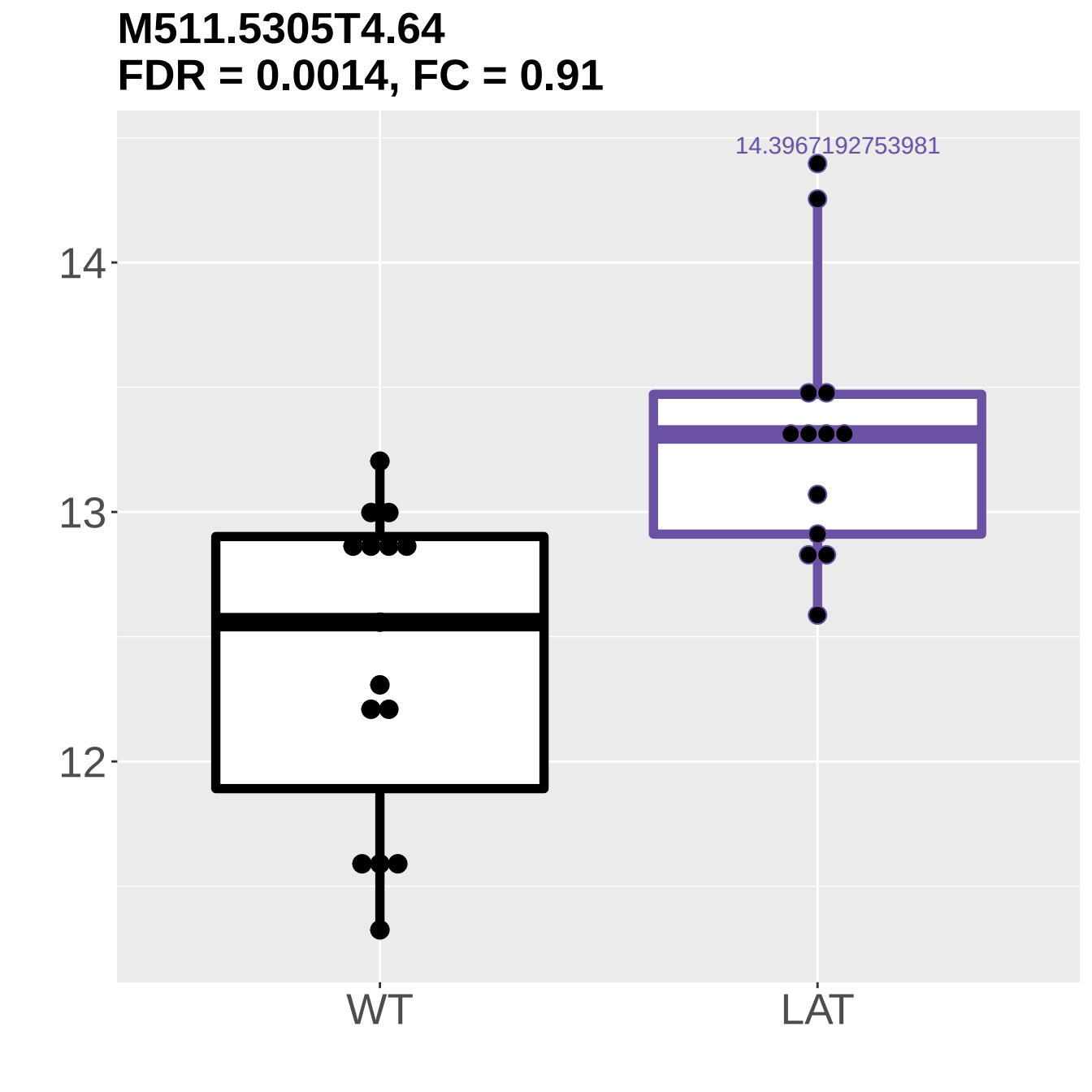
15.2710280304564
WT
LAT


M511.5305T4.64
FDR = 0.0014, FC = 0.91
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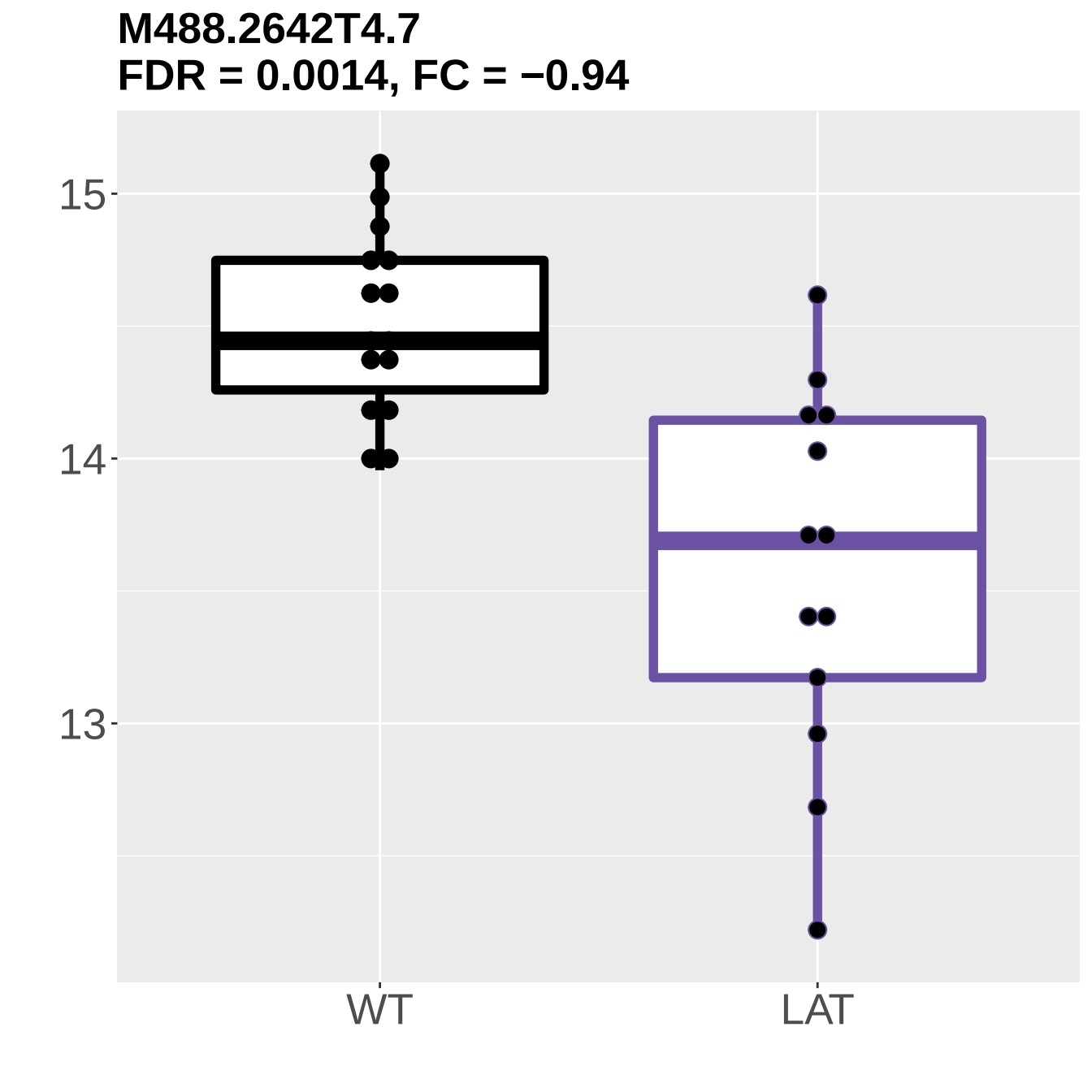
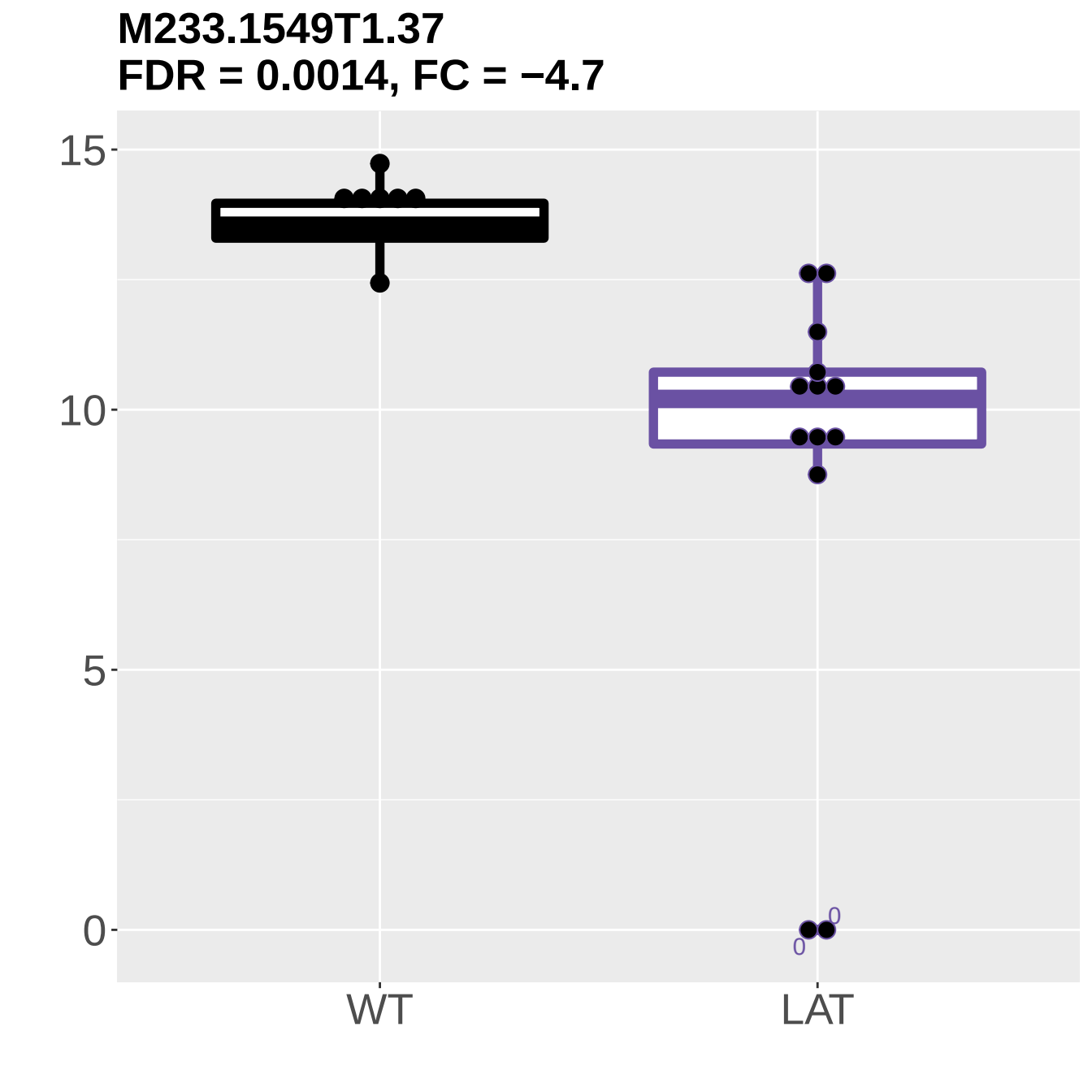
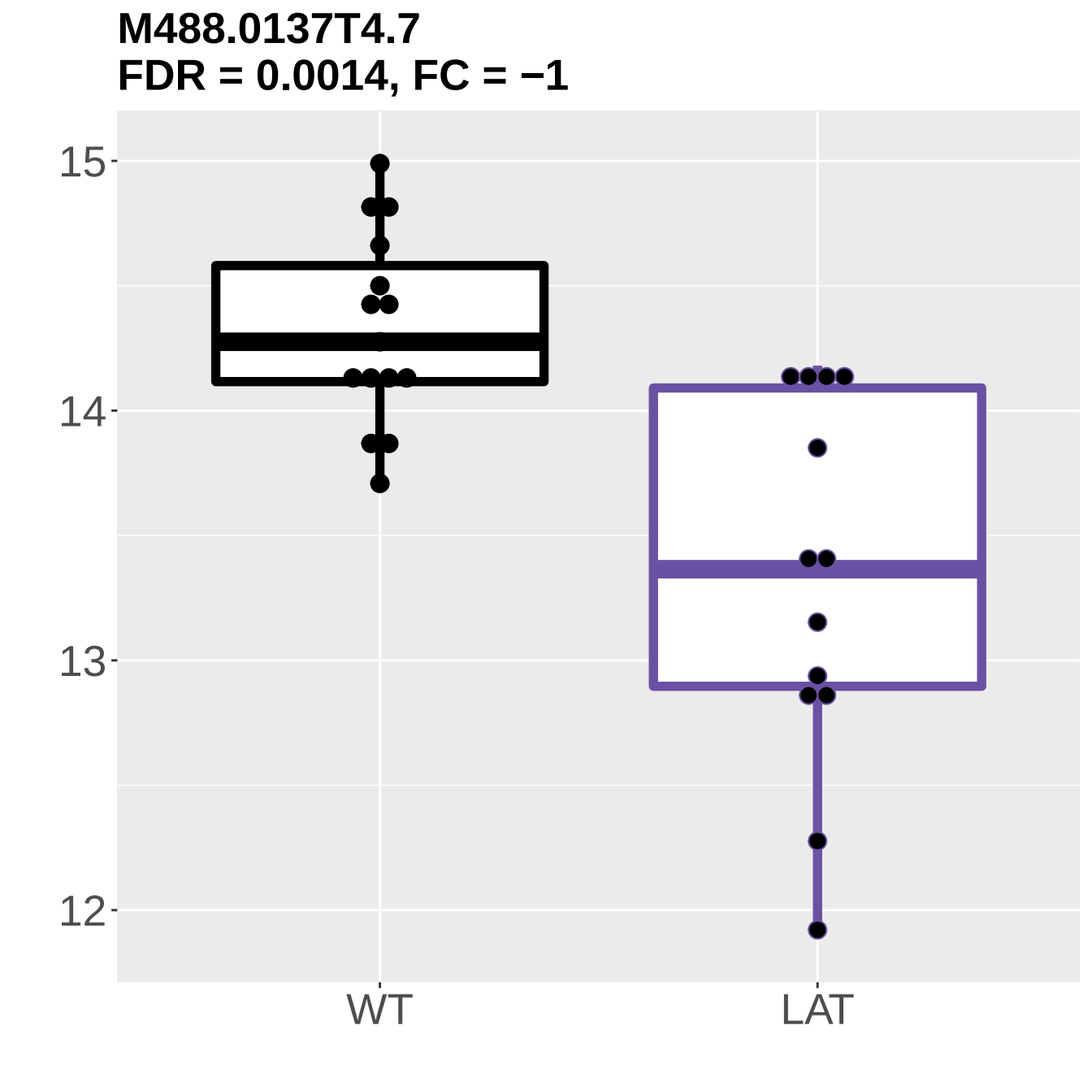
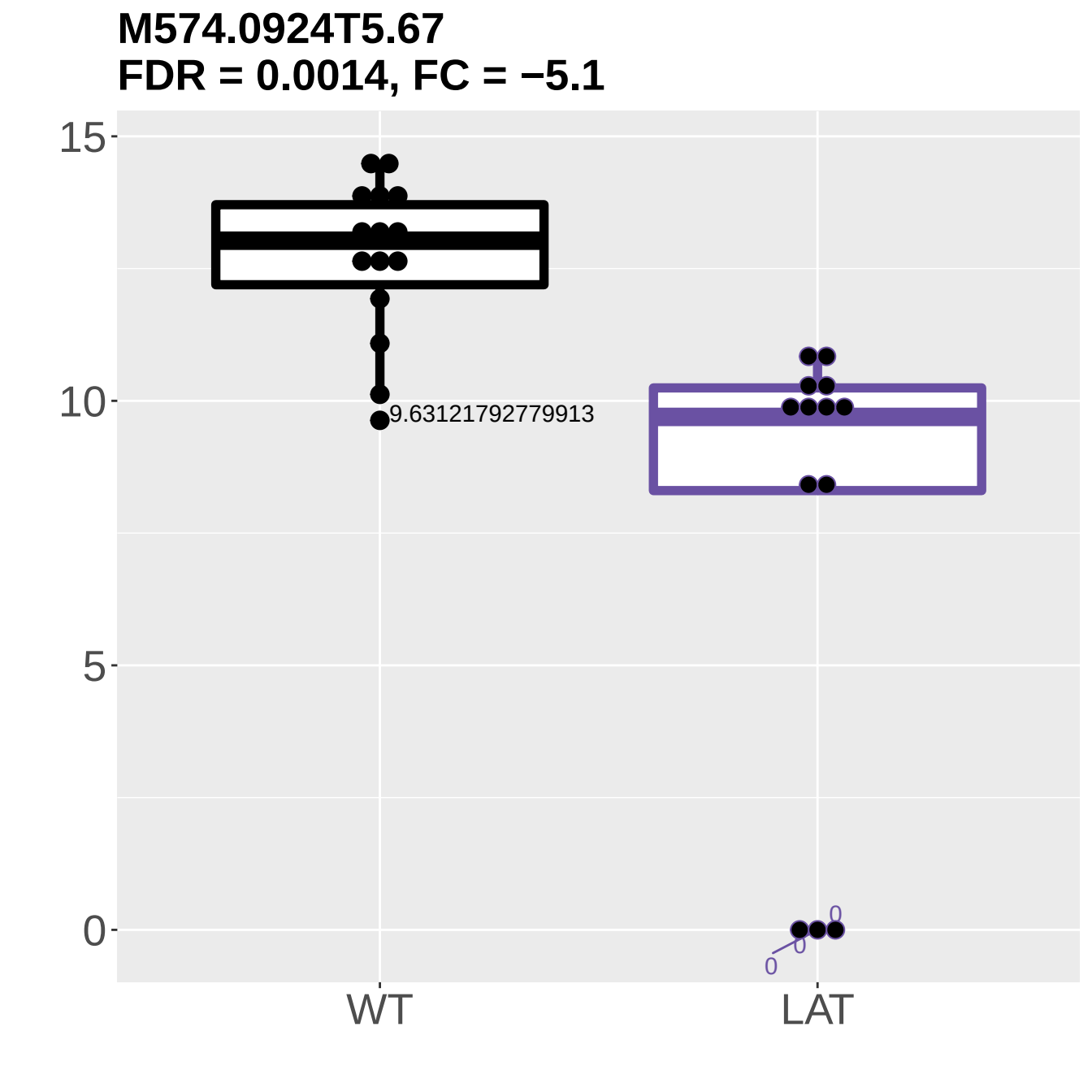
14
13
12
WT
LAT


M488.2642T4.7
FDR = 0.0014, FC = −0.94
15
14
13
WT
LAT


M233.1549T1.37
FDR = 0.0014, FC = −4.7
15
10
5
0
0
0
WT
LAT


M488.0137T4.7
FDR = 0.0014, FC = −1
15
14
13
12
WT
LAT


M574.0924T5.67
FDR = 0.0014, FC = −5.1
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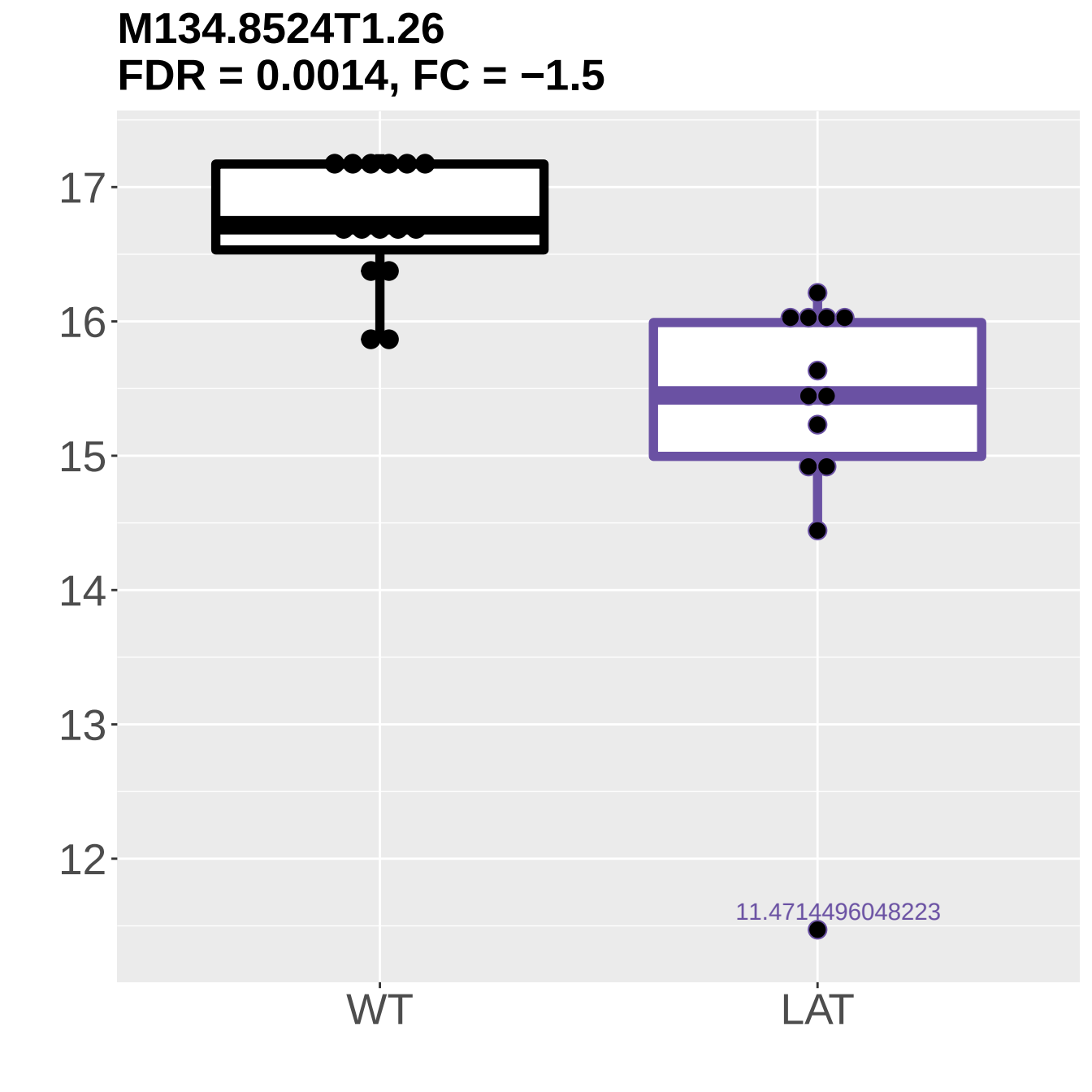
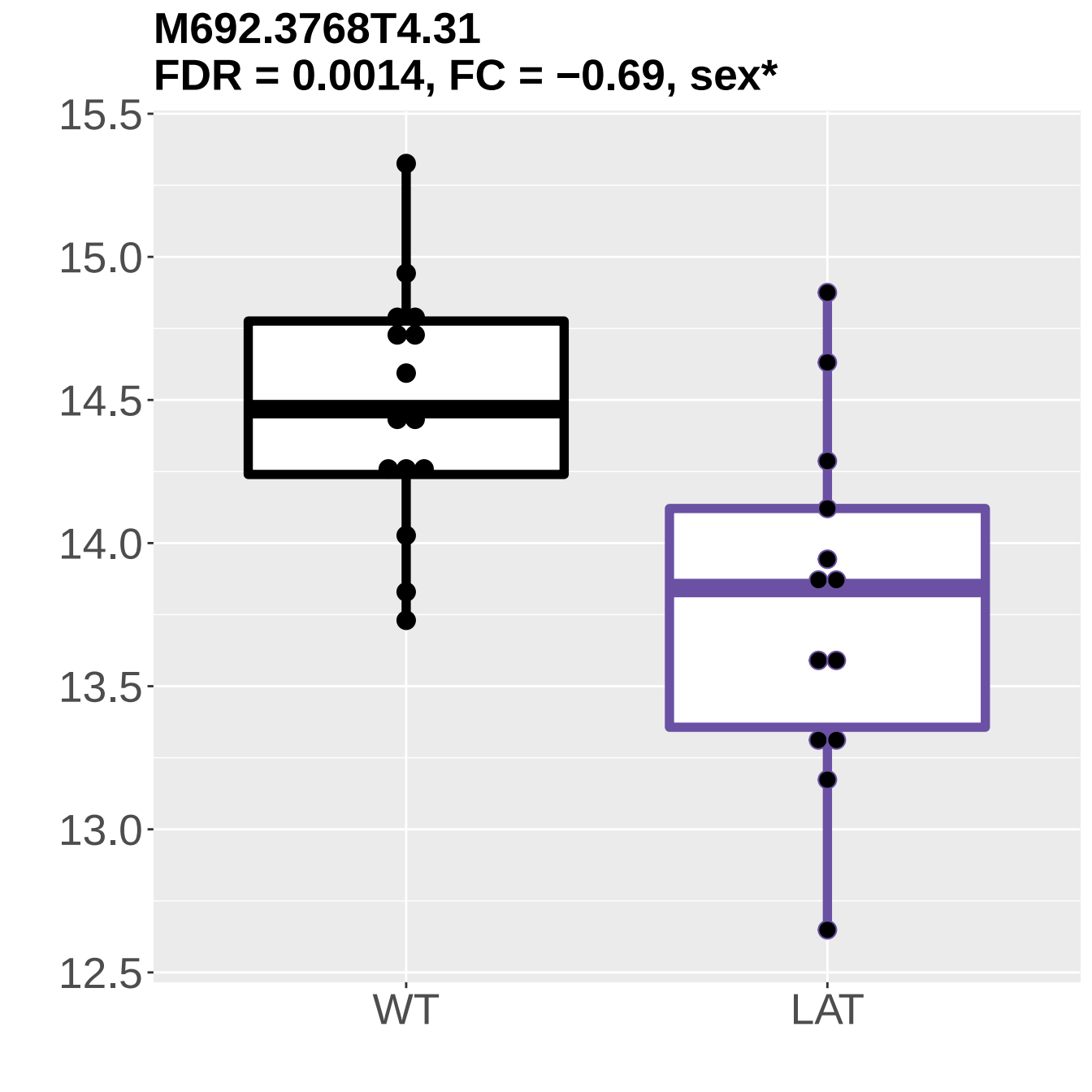
10
5
0
9.63121792779913
0
0
0
WT
LAT


M134.8524T1.26
FDR = 0.0014, FC = −1.5
17
16
15
14
13
12
11.4714496048223
WT
LAT


M692.3768T4.31
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WT
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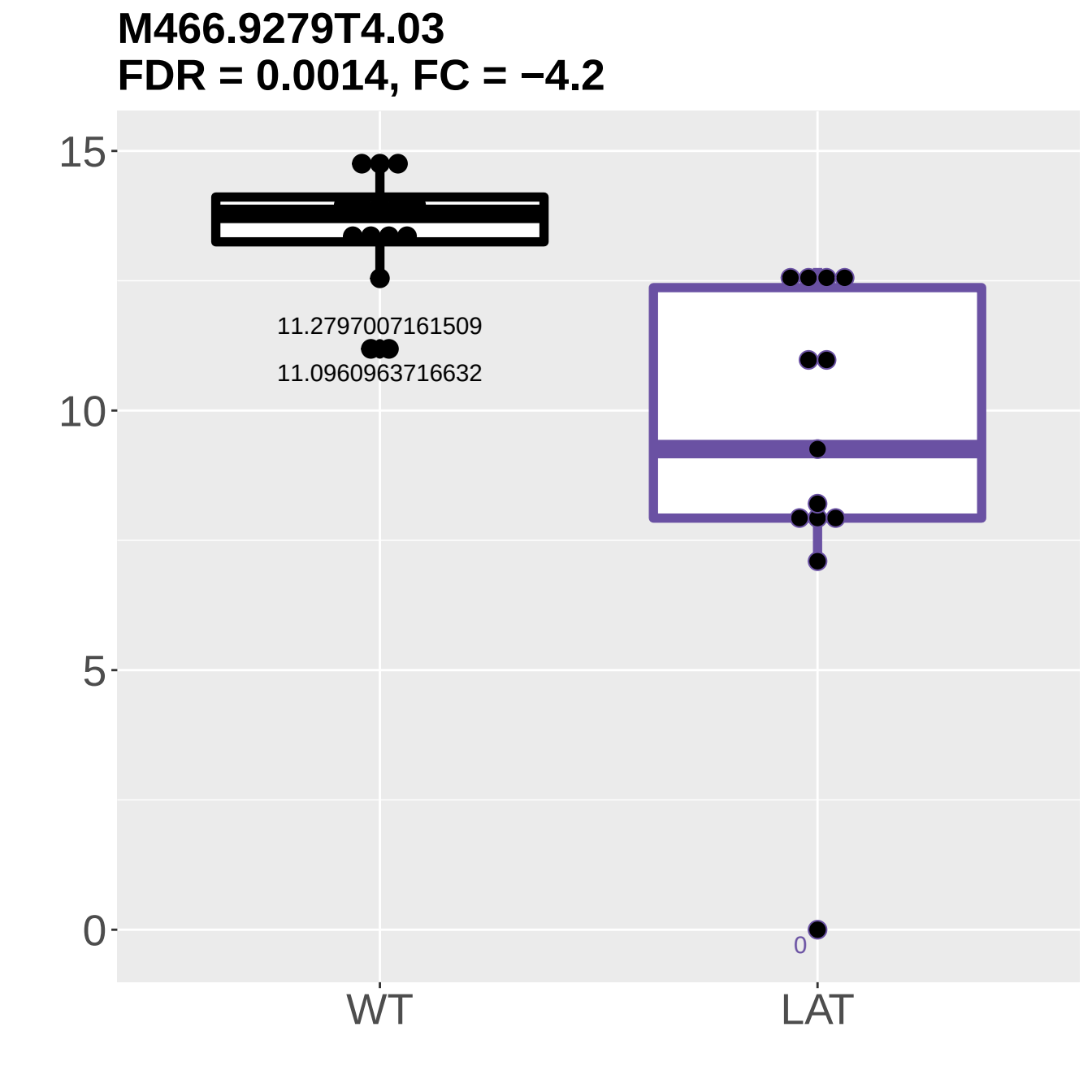
M466.9279T4.03
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WT
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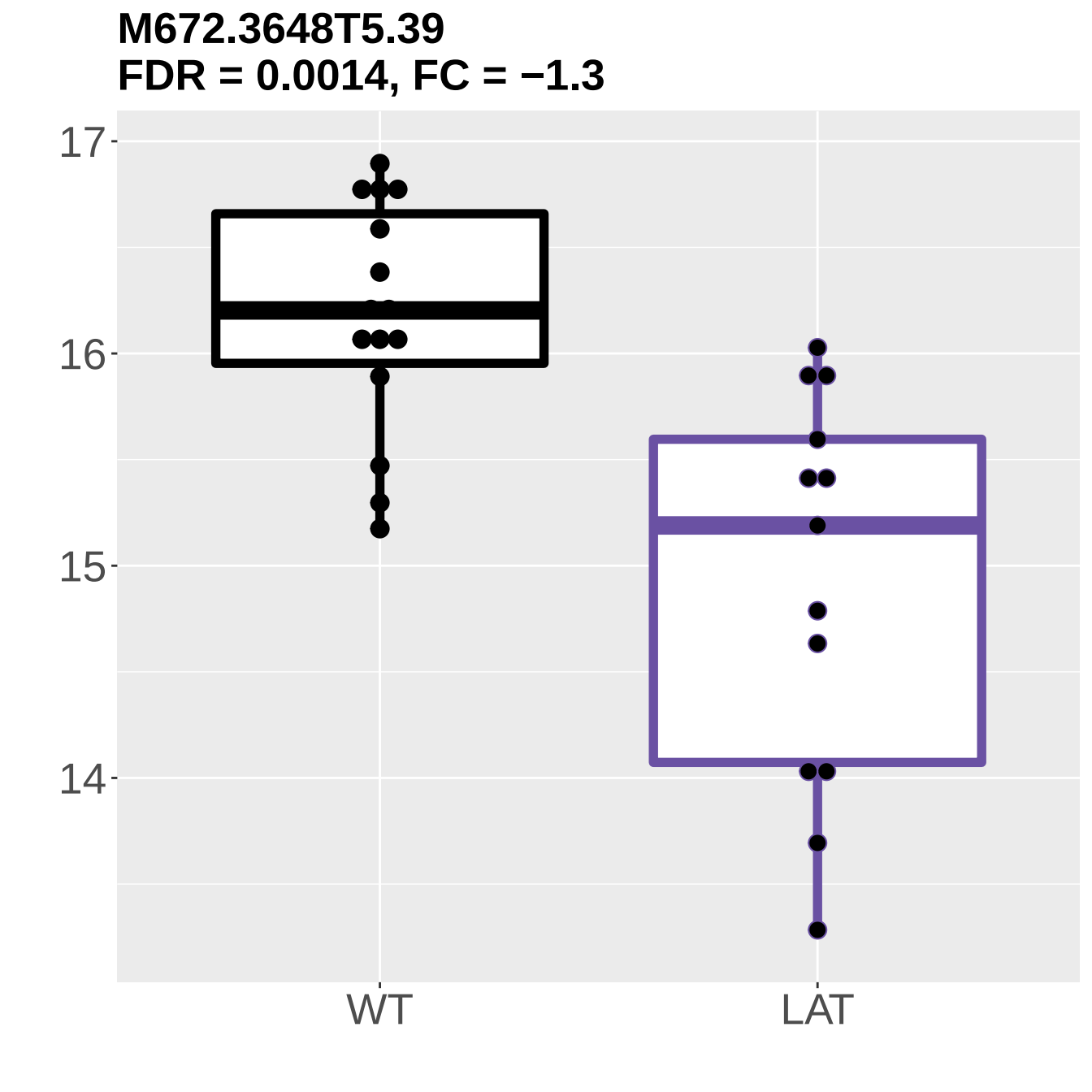
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WT
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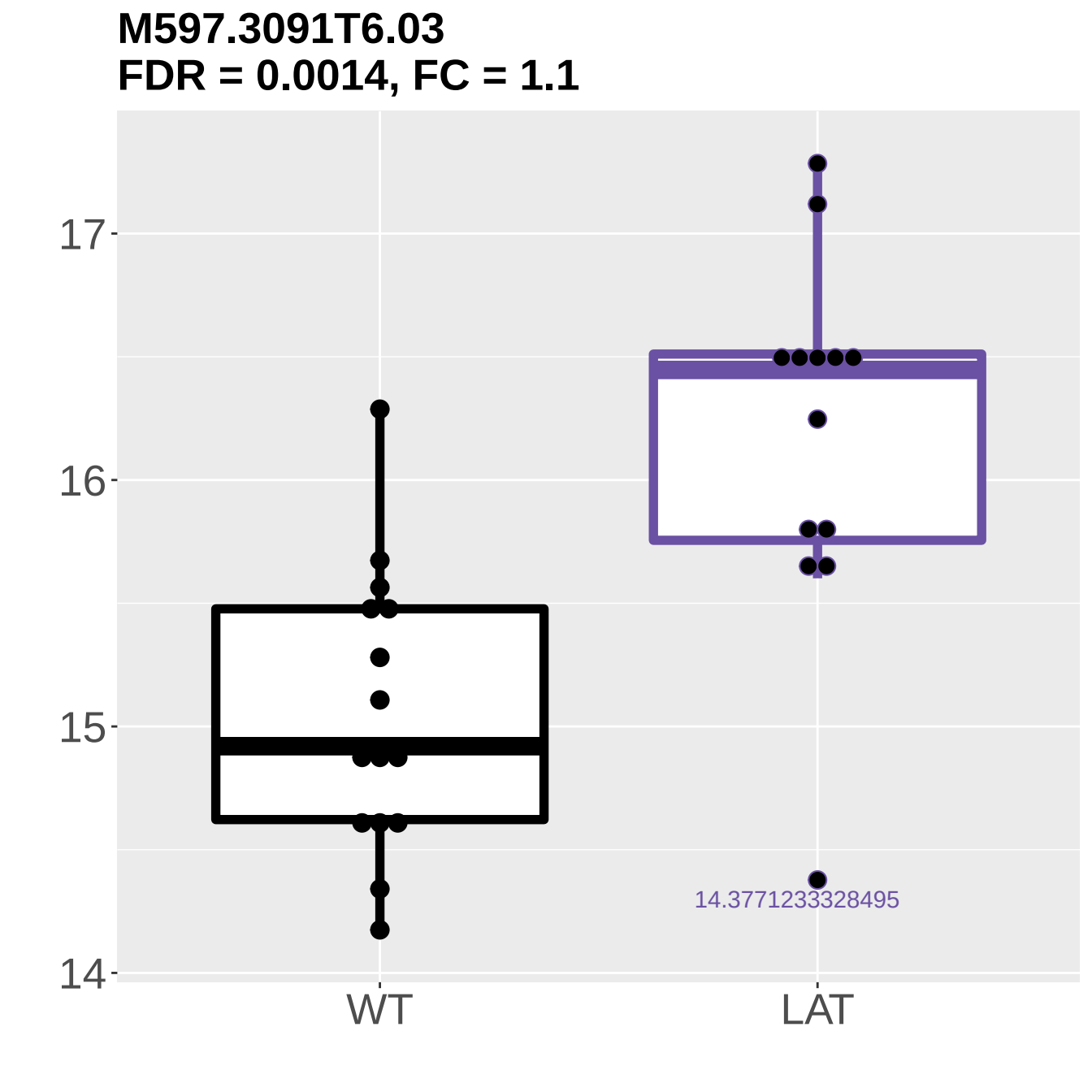
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FDR = 0.0014, FC = 1.1
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14
WT
LAT
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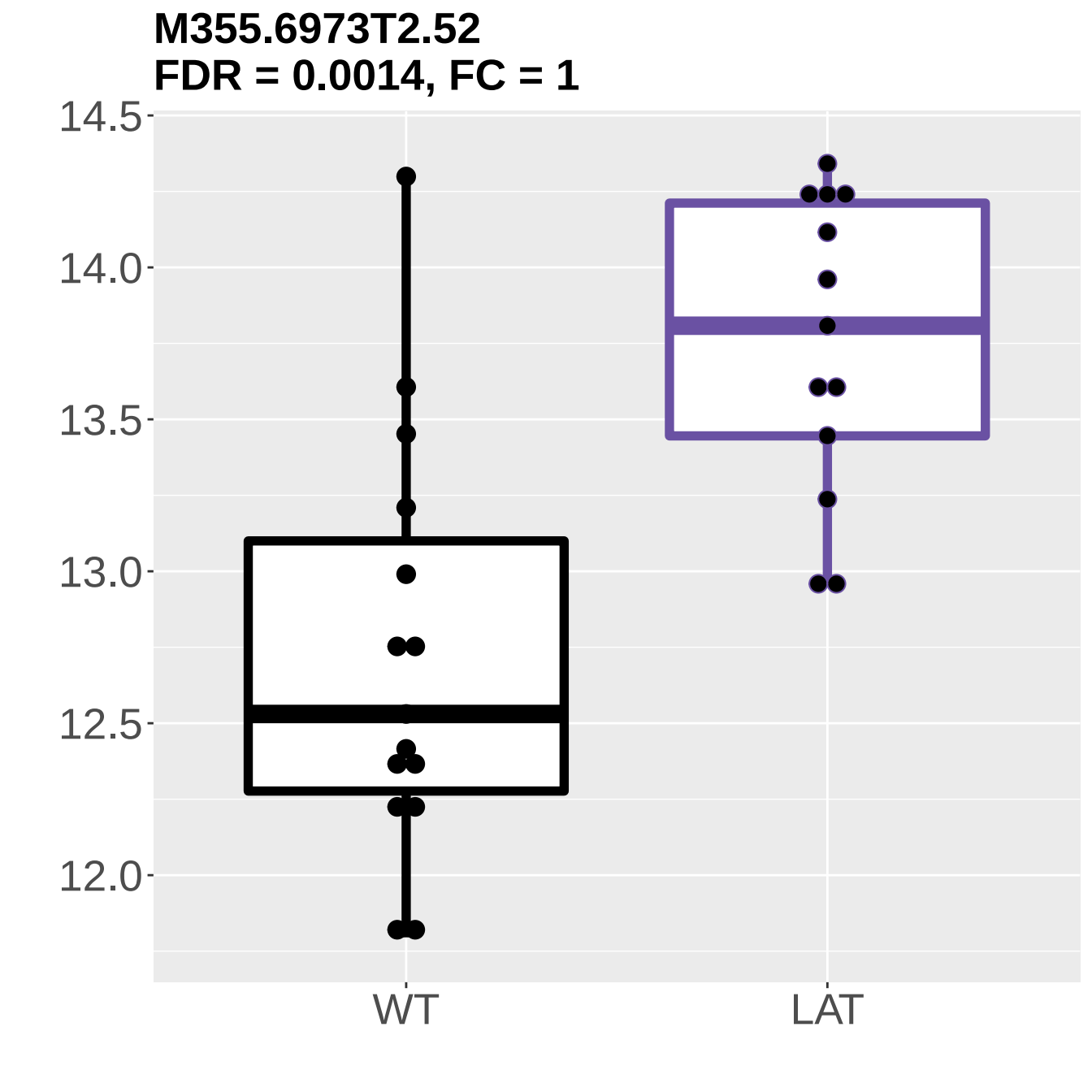
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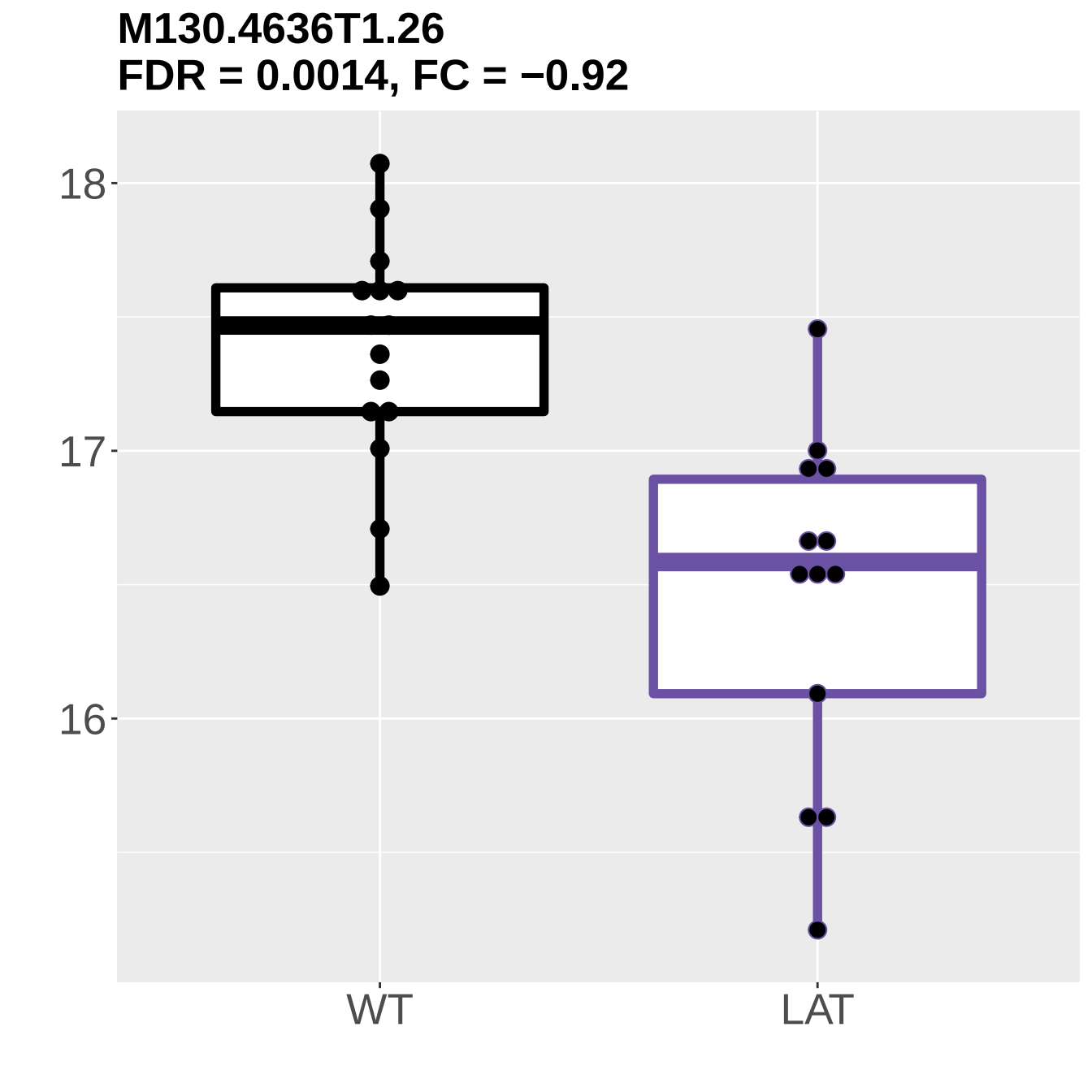
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17
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WT
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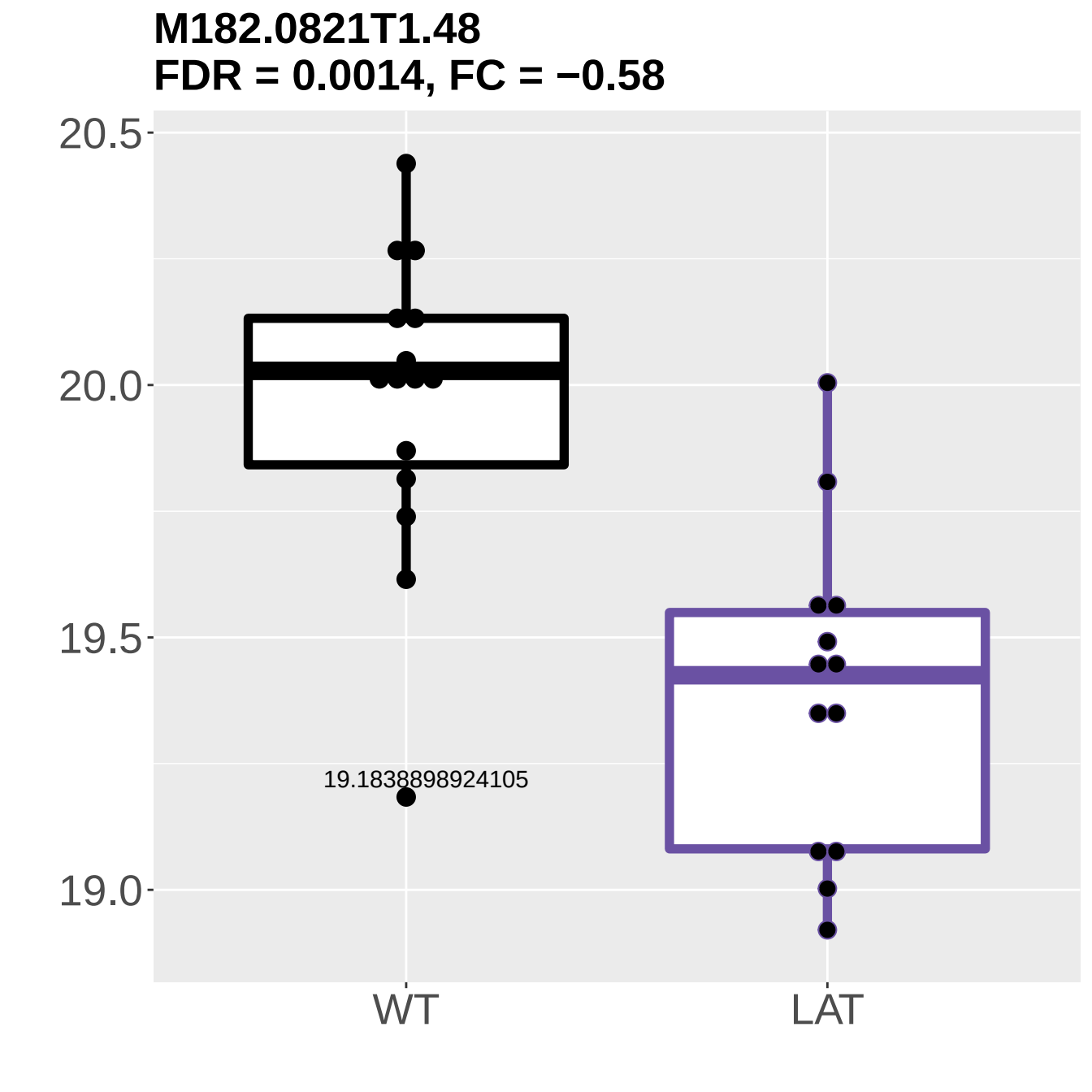
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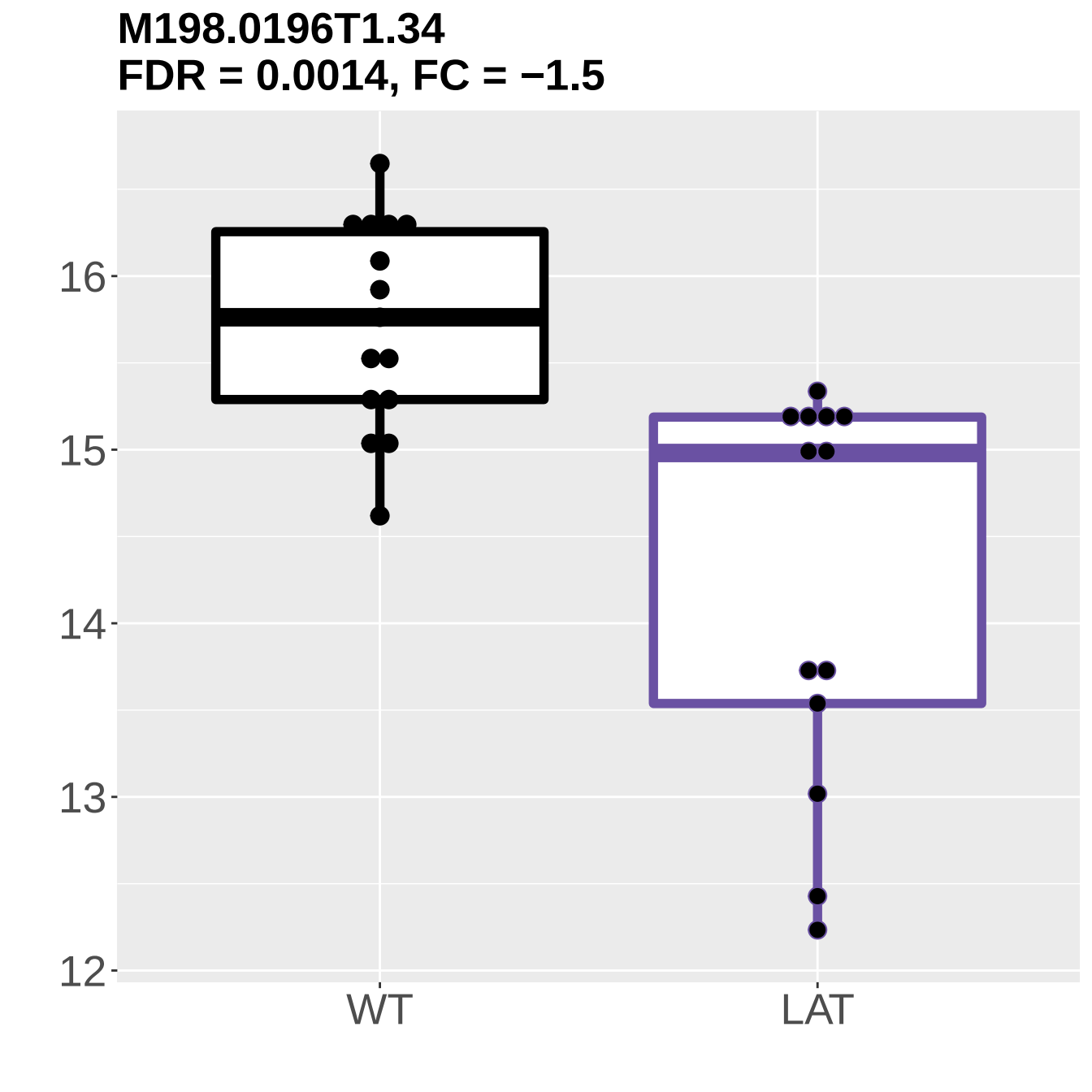
M198.0196T1.34
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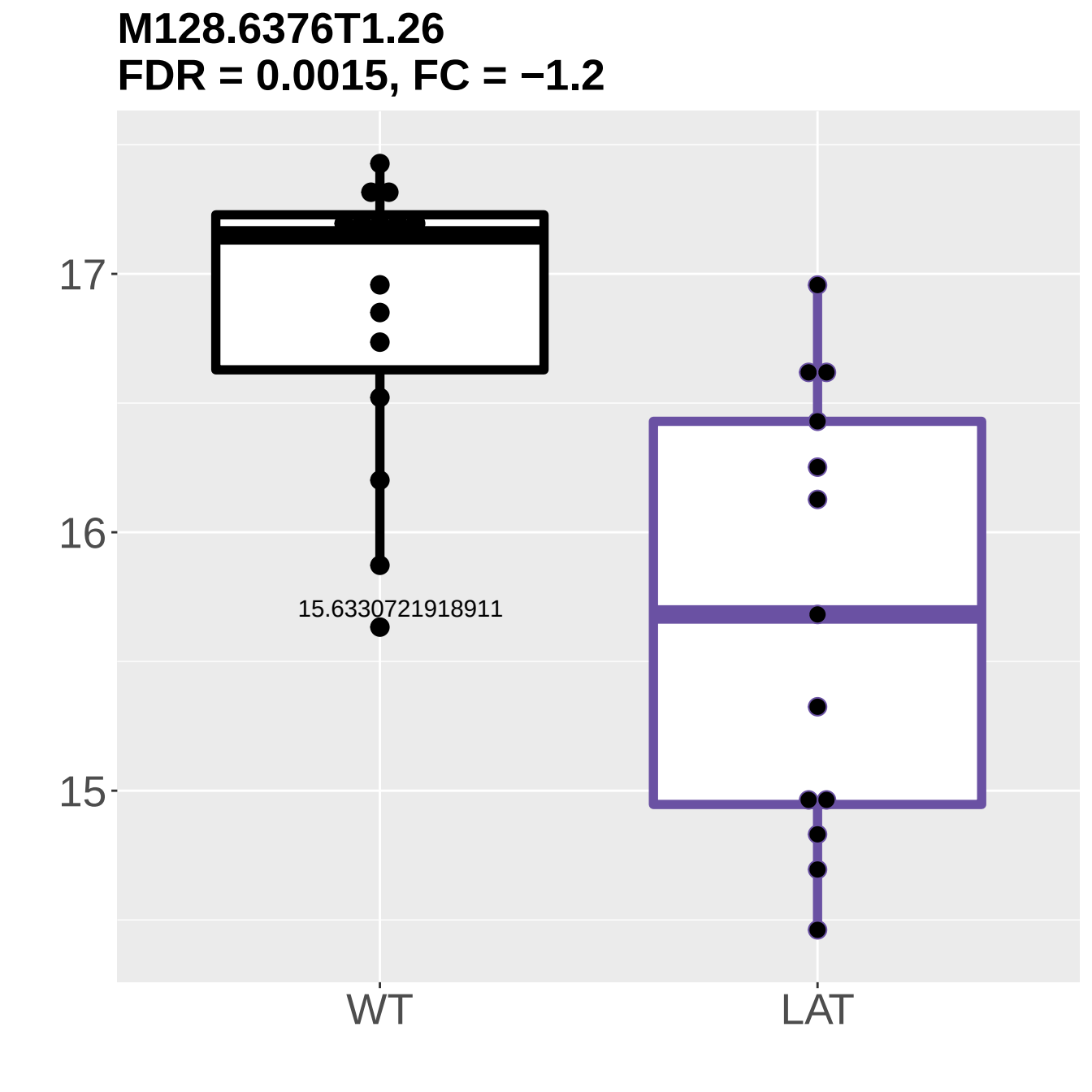
15
14
13
12
WT
LAT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16
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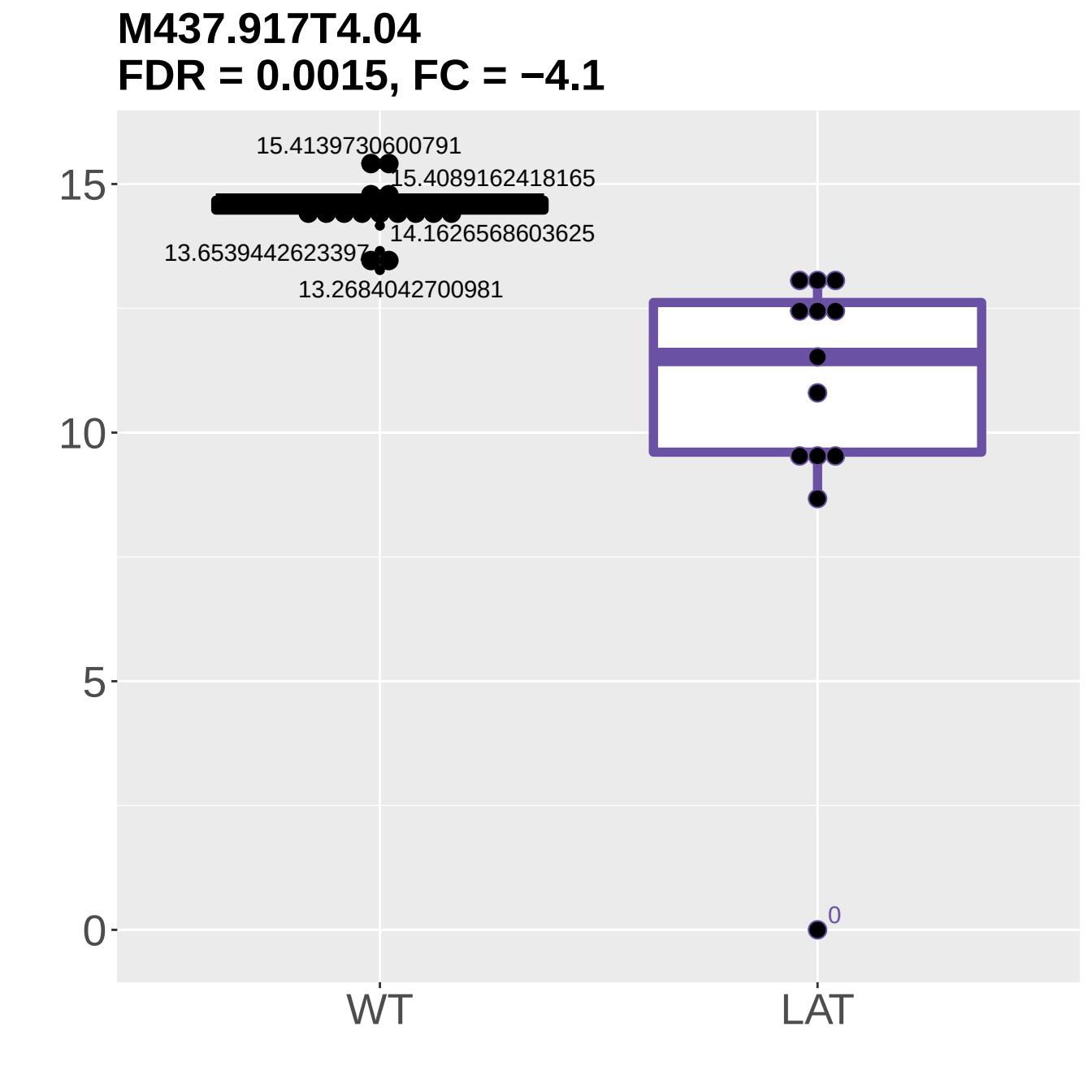
M437.917T4.04
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0
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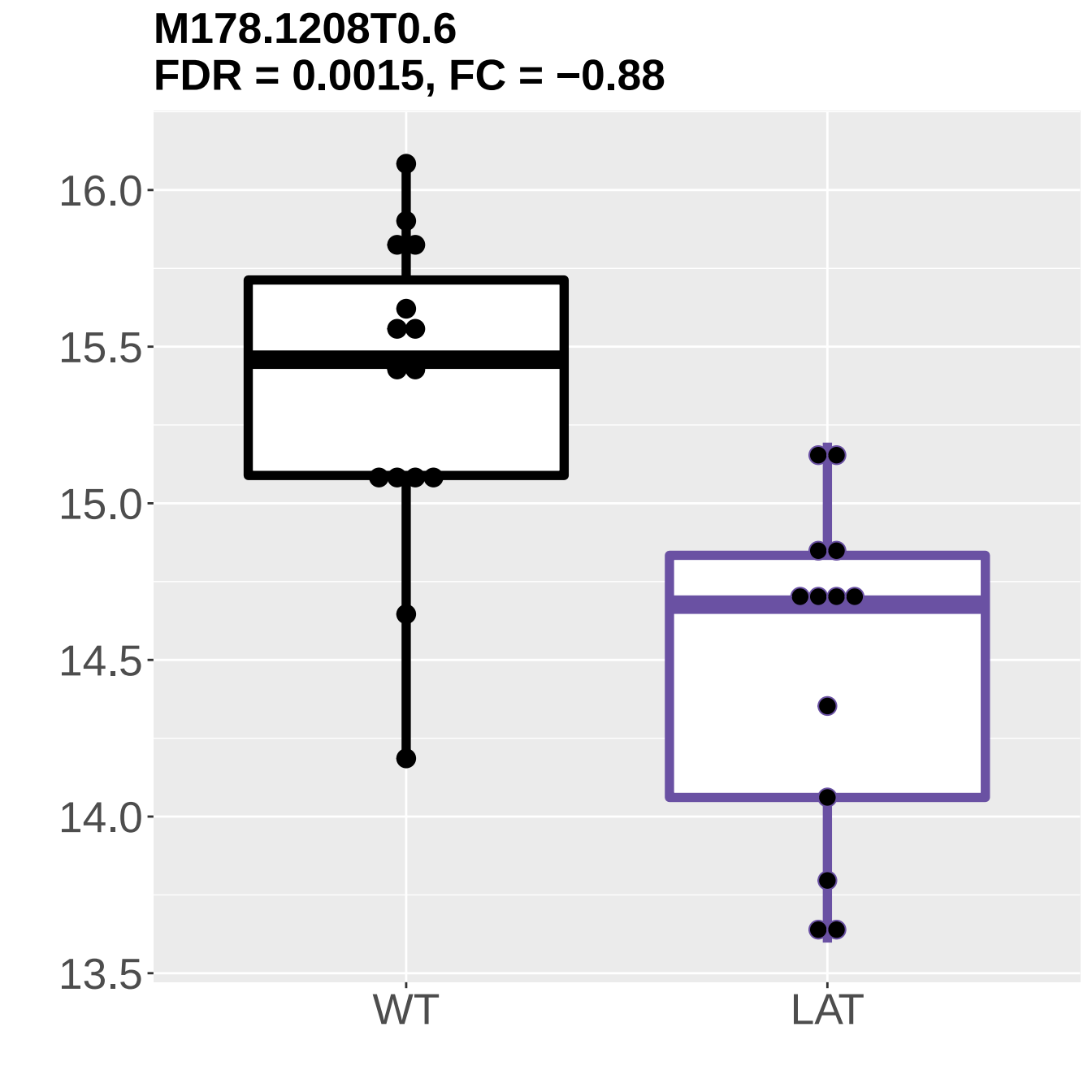
10
5
0
WT
LAT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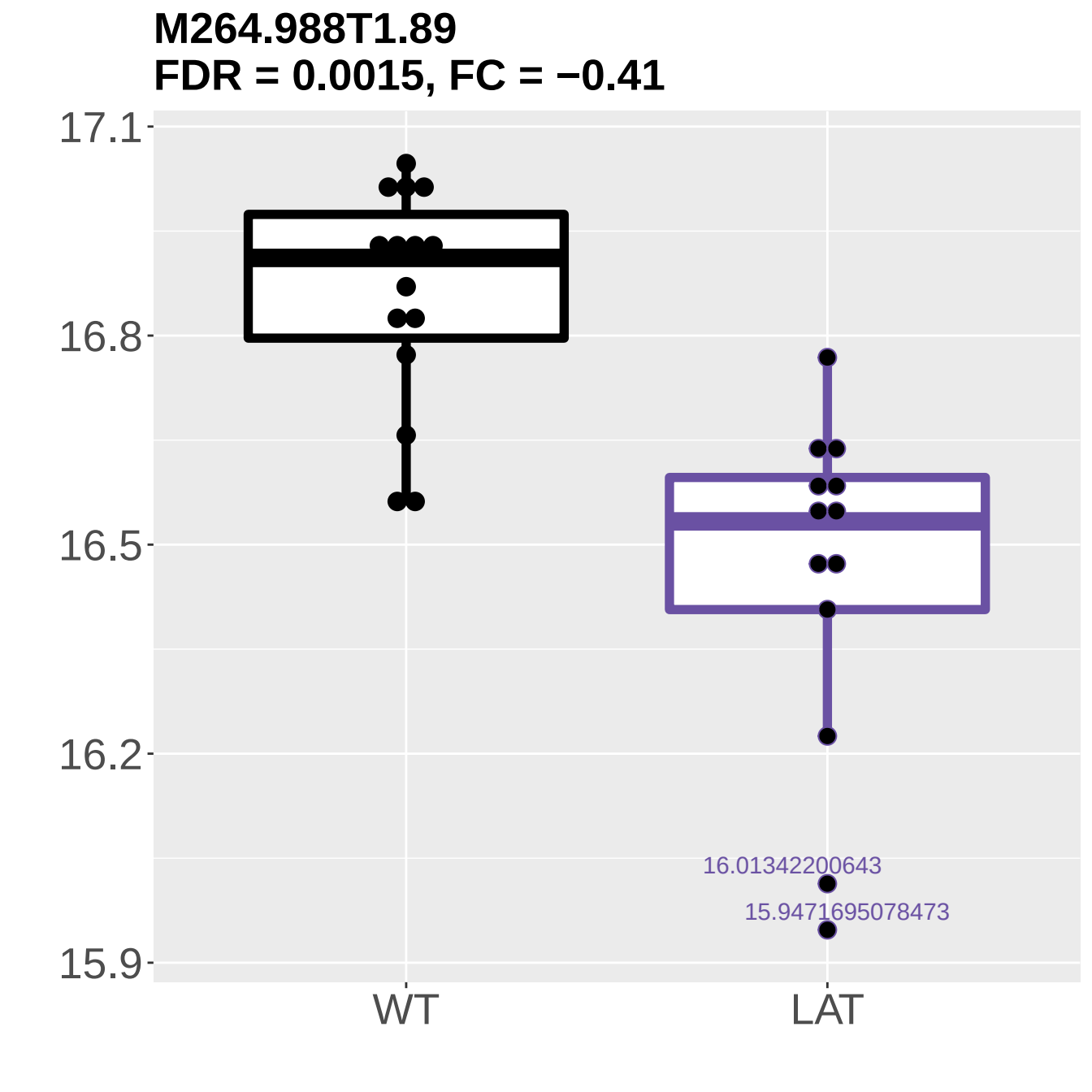
14.5
14.0
13.5
WT
LAT


M264.988T1.89
FDR = 0.0015, FC = −0.41
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16.8
16.5
16.2
15.9
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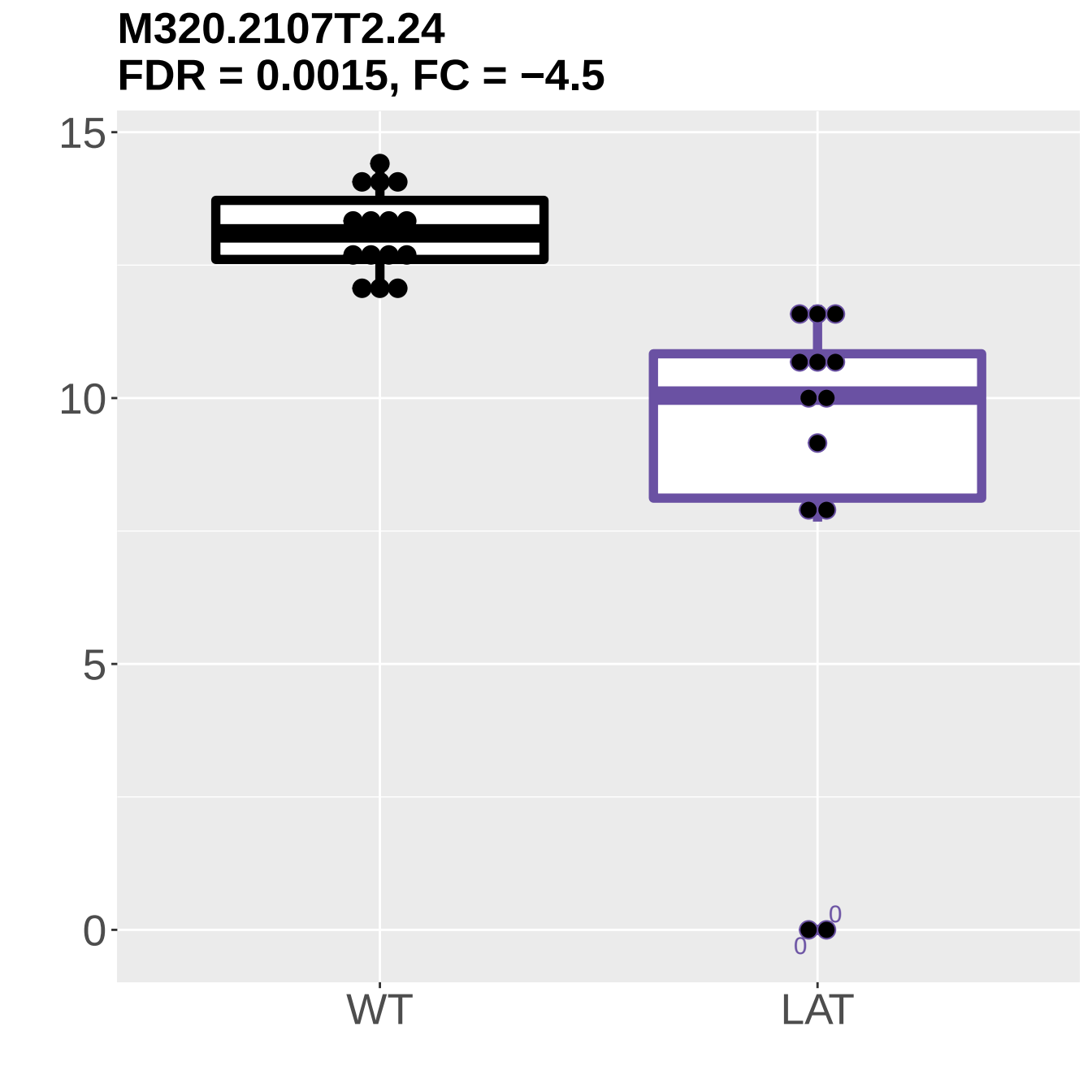
WT
LAT


M320.2107T2.24
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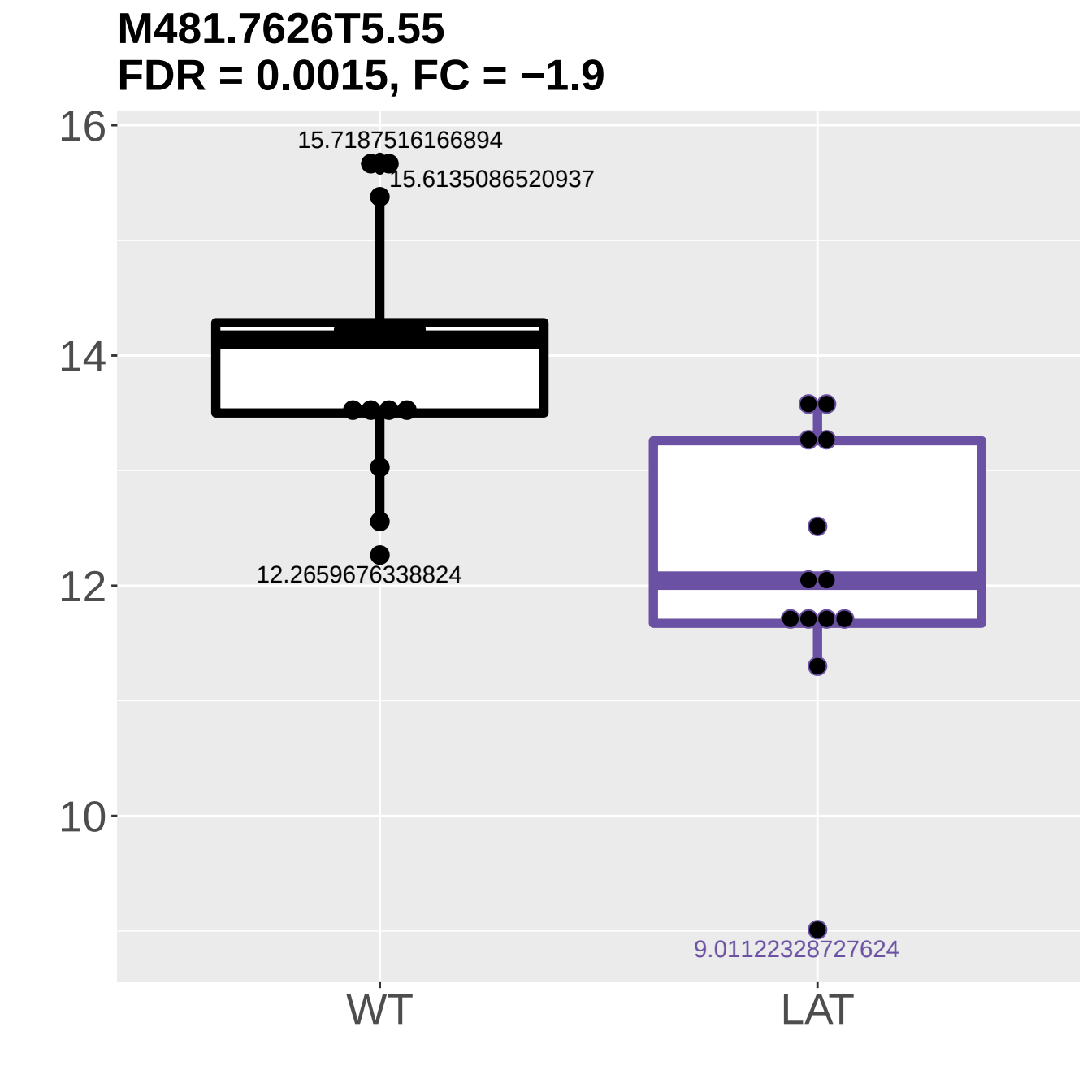
10
5
0
0
0
WT
LAT


M481.7626T5.55
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14
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10
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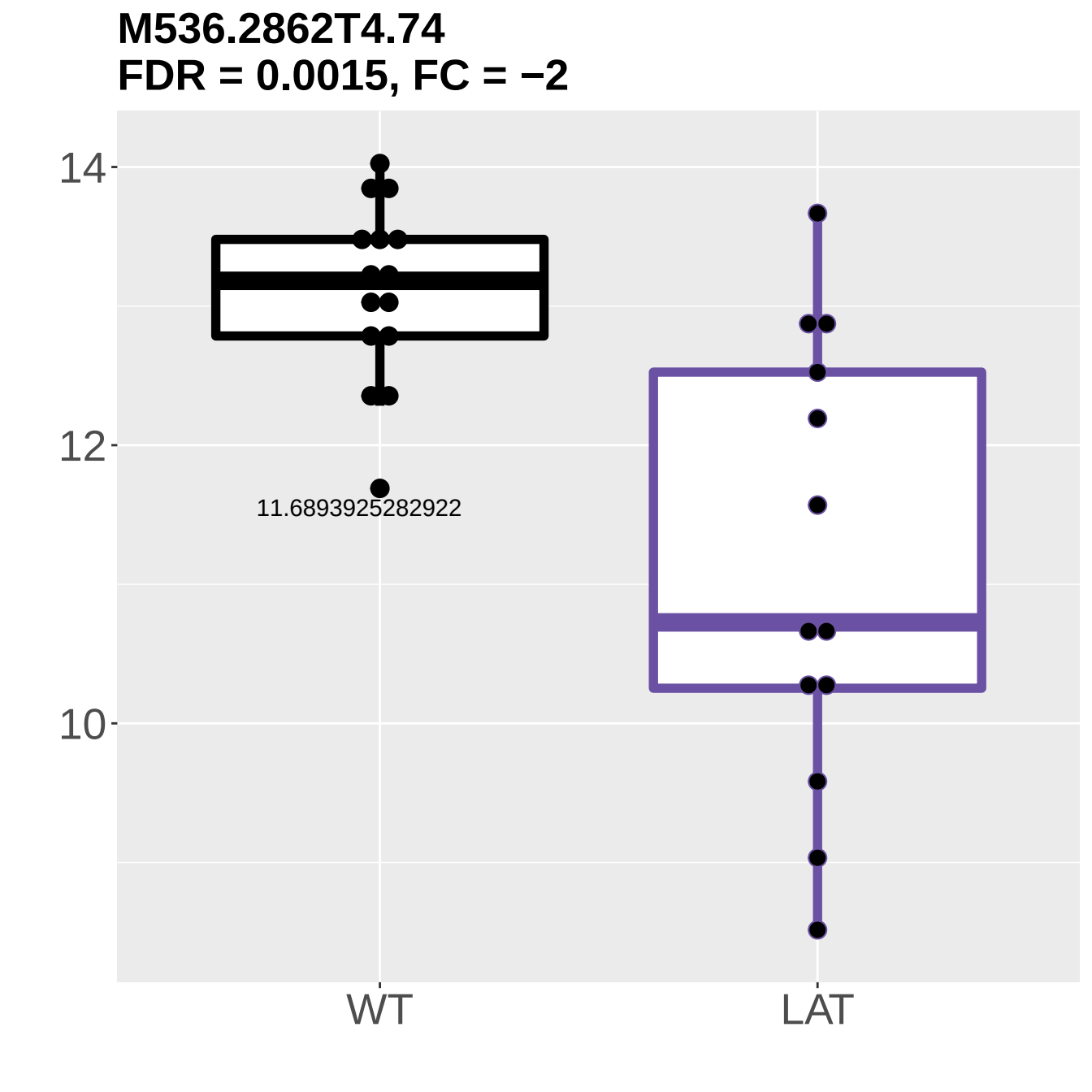
WT
LAT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12
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WT
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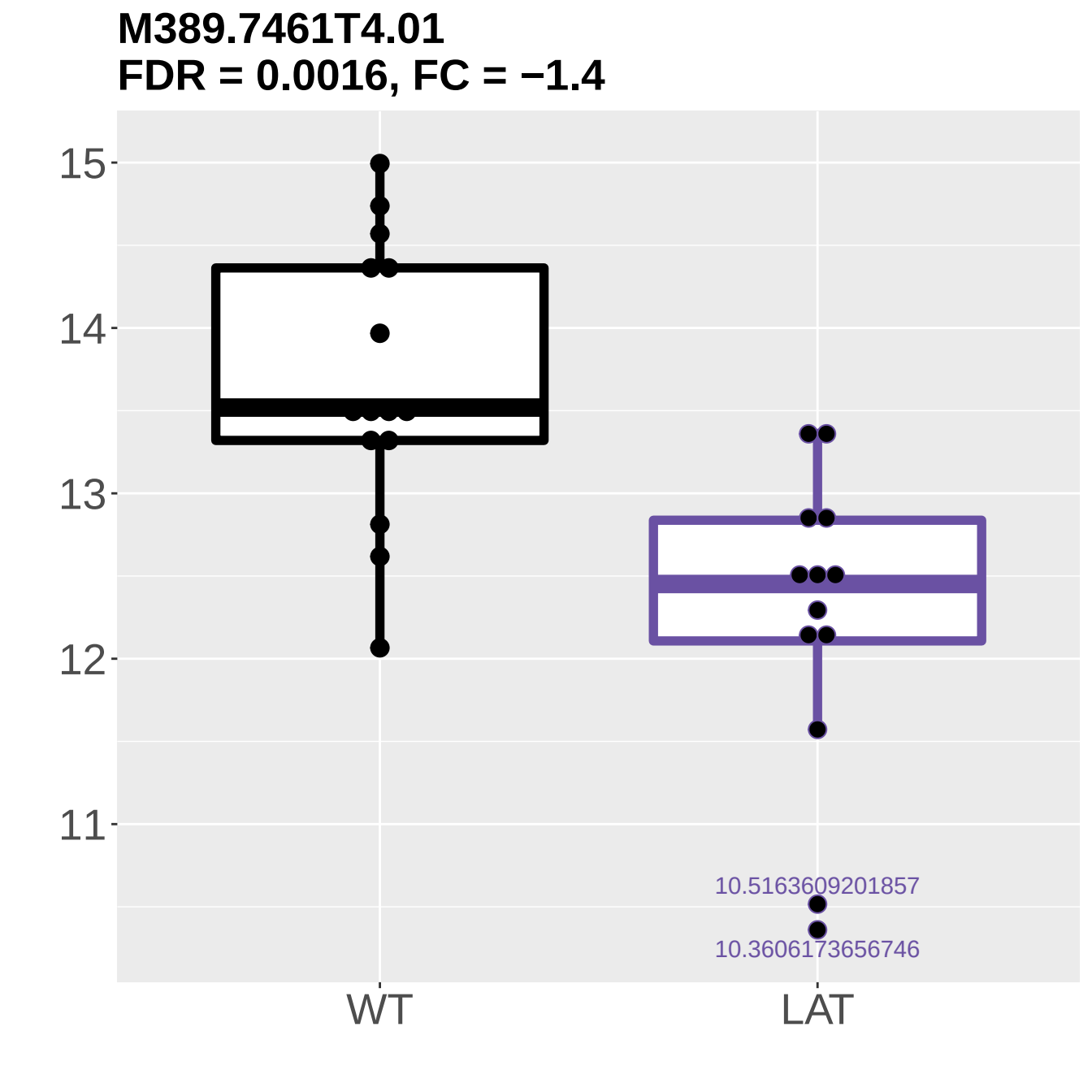
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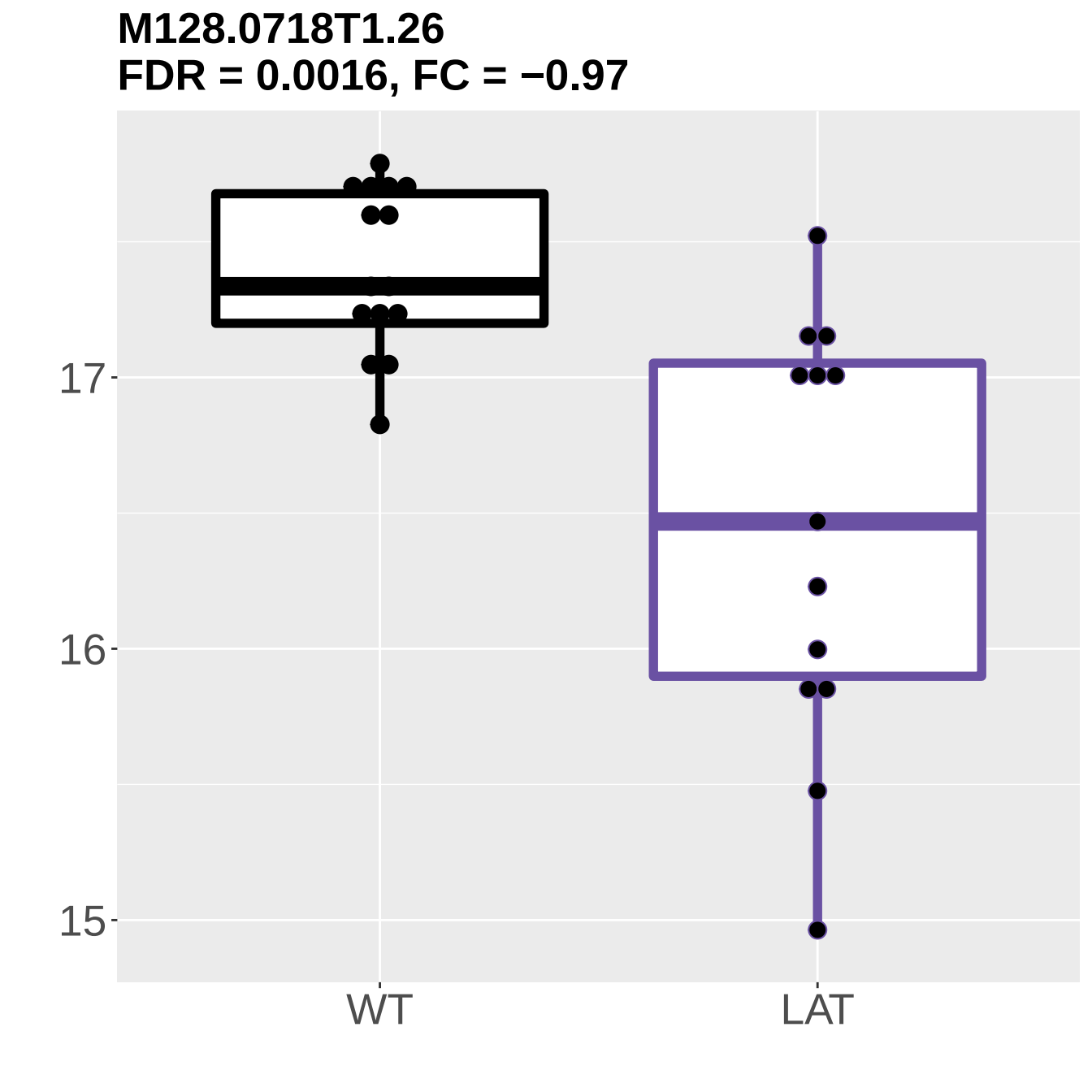
WT
LAT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16
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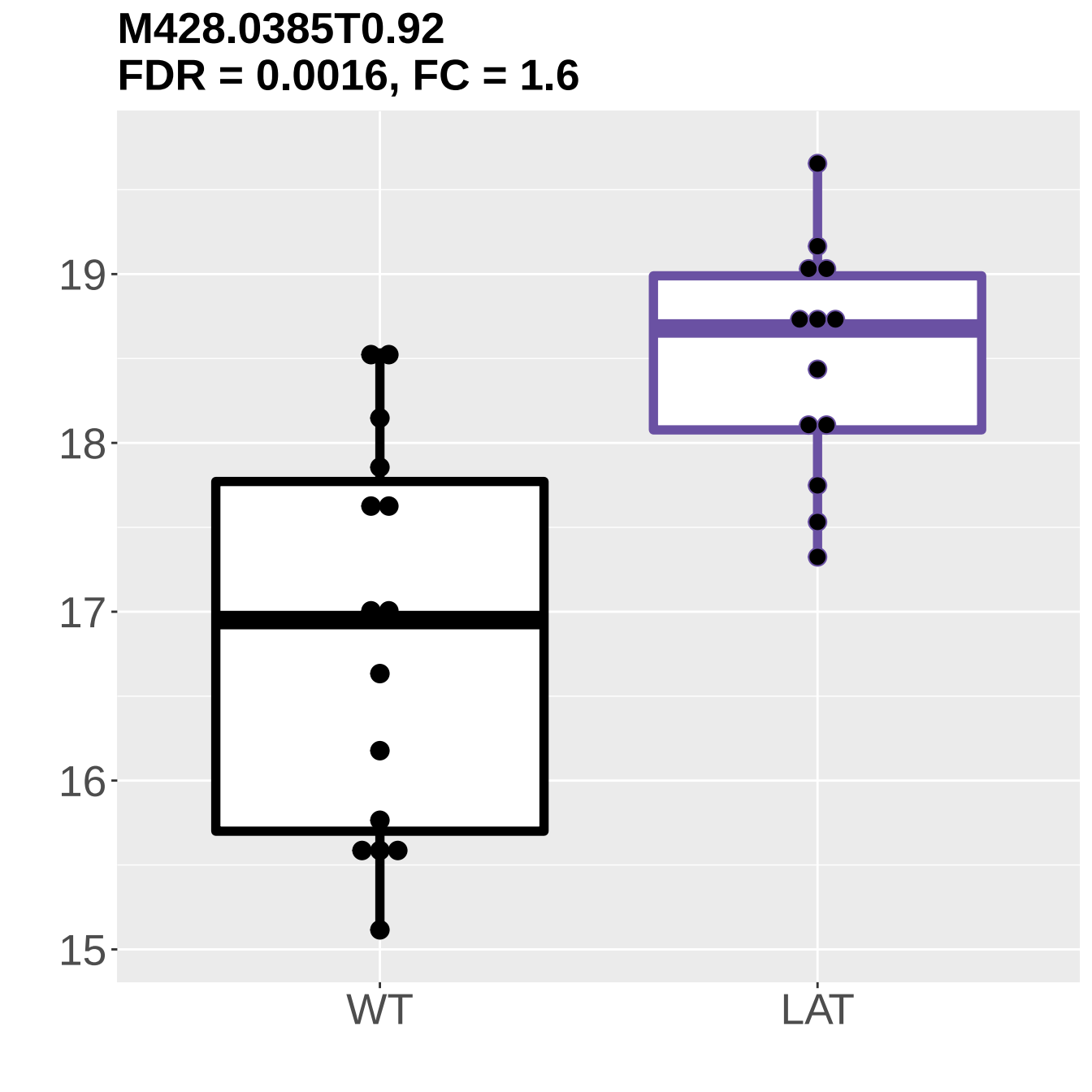
WT
LAT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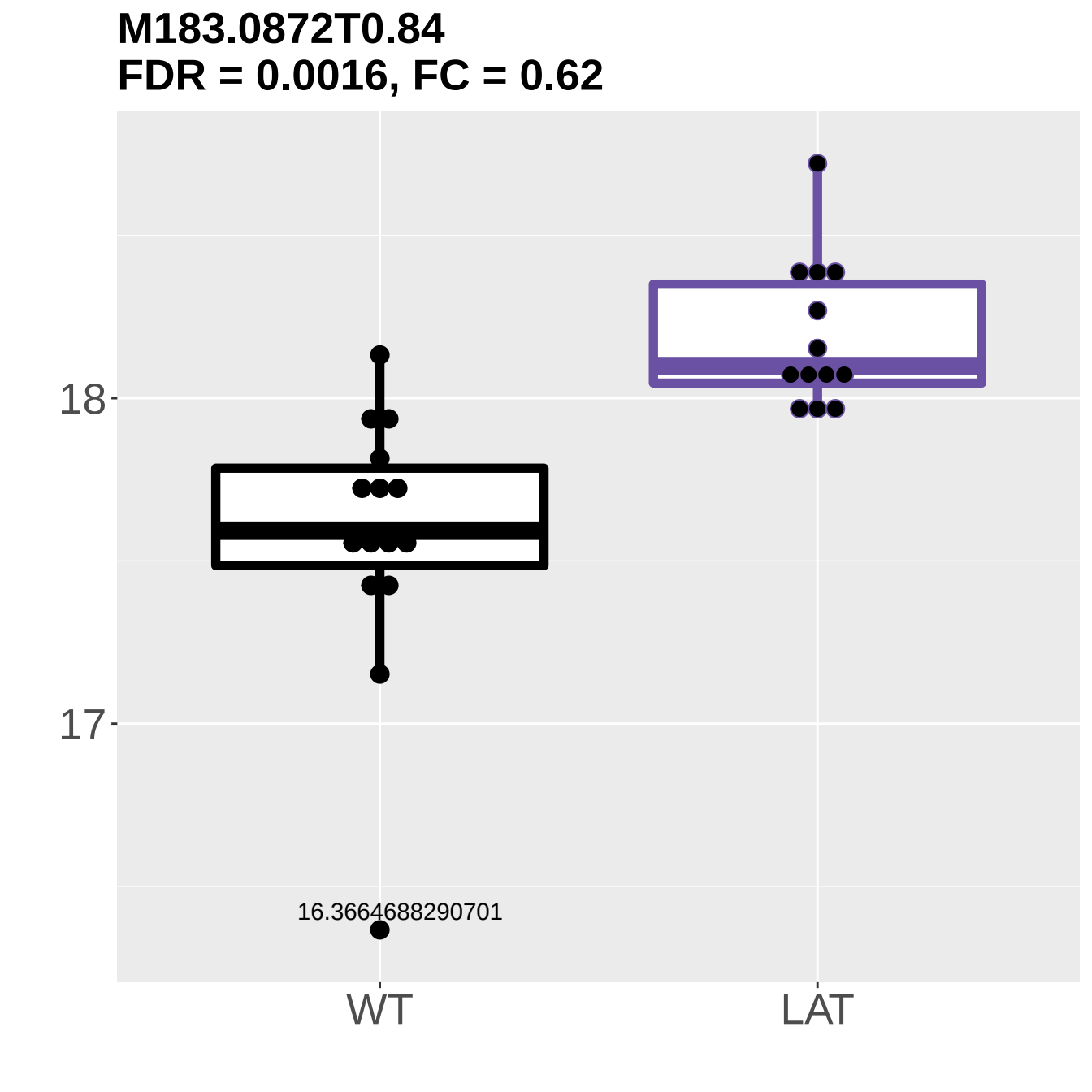
18
17
16
15
WT
LAT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17
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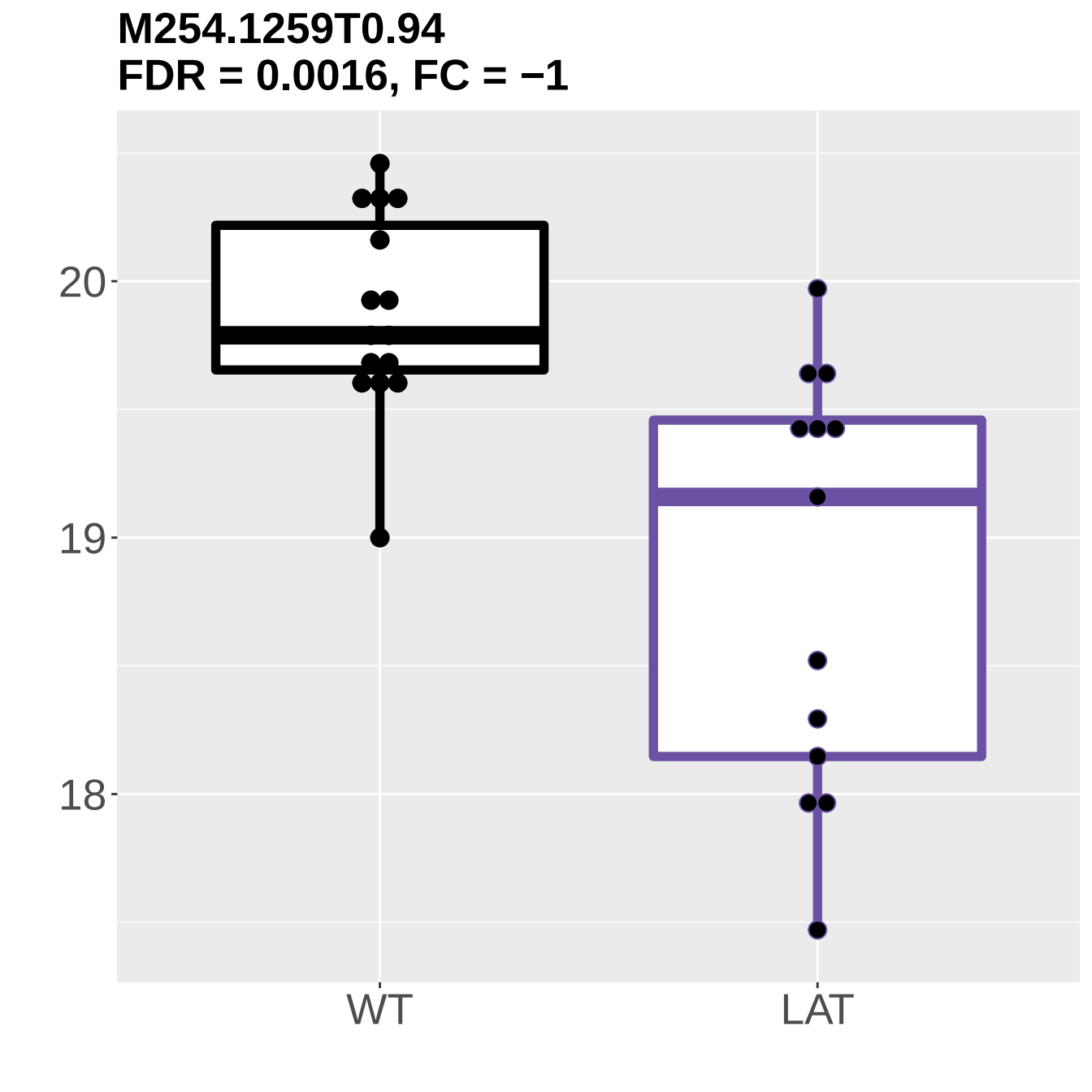
WT
LAT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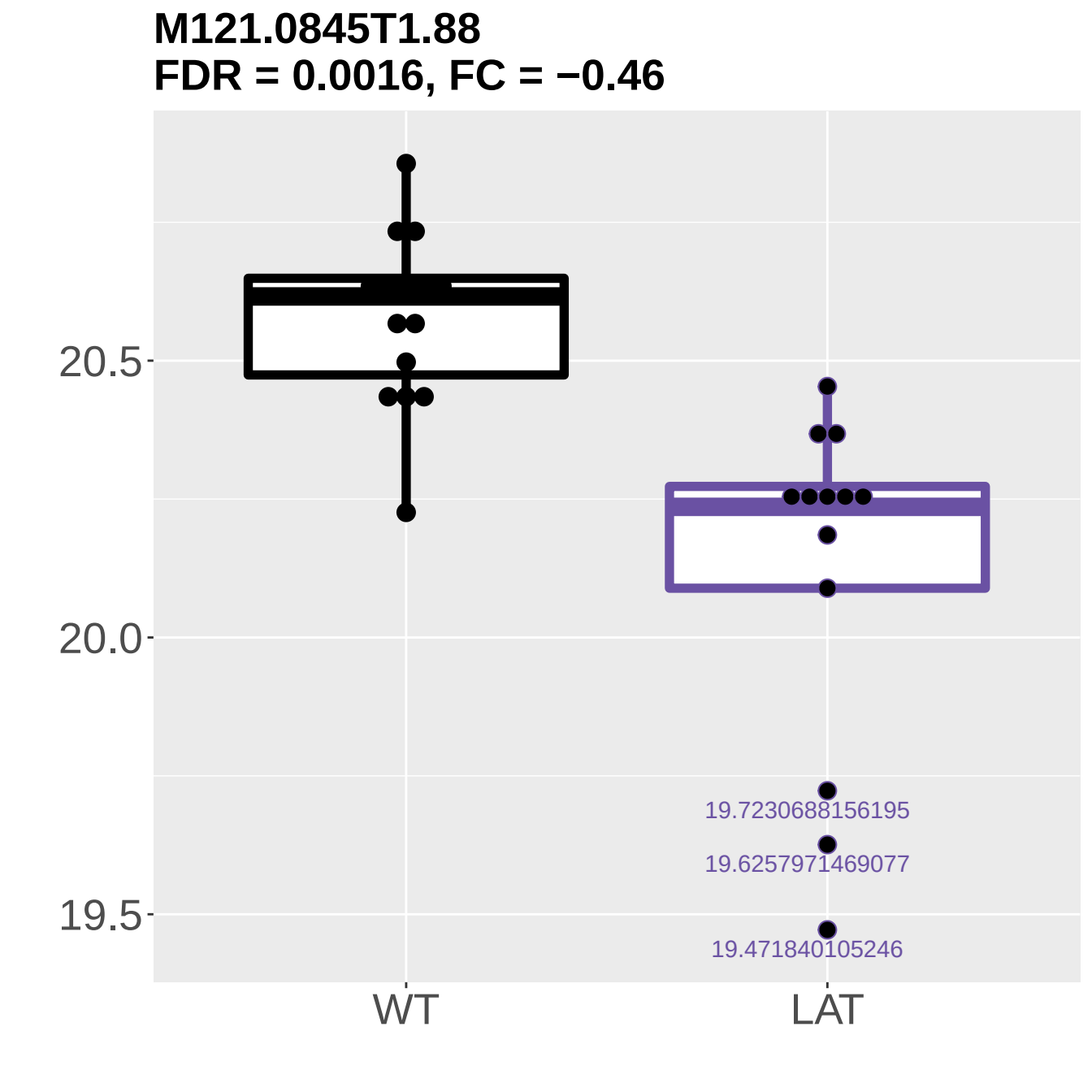
19
18
WT
LAT


M121.0845T1.88
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WT
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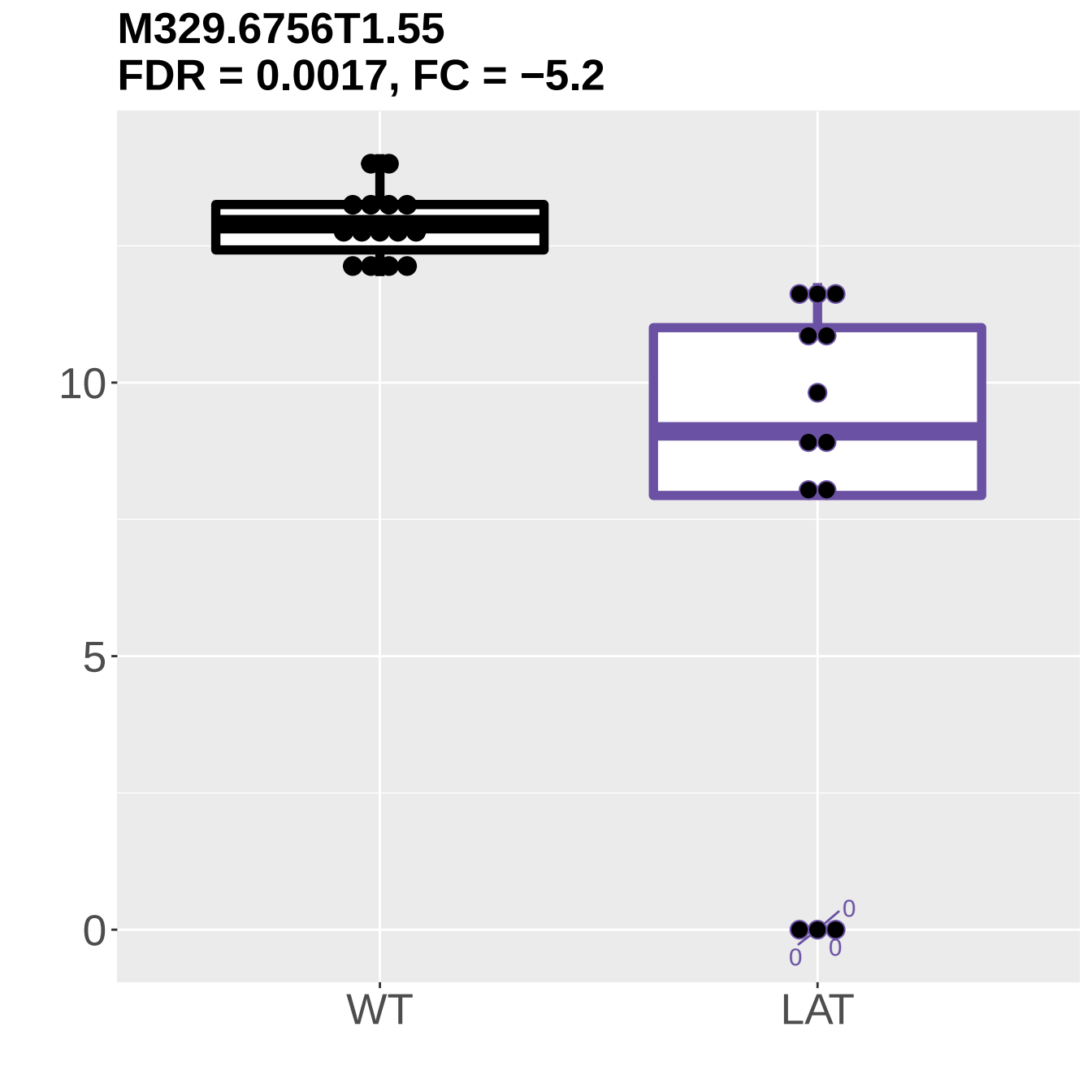
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5
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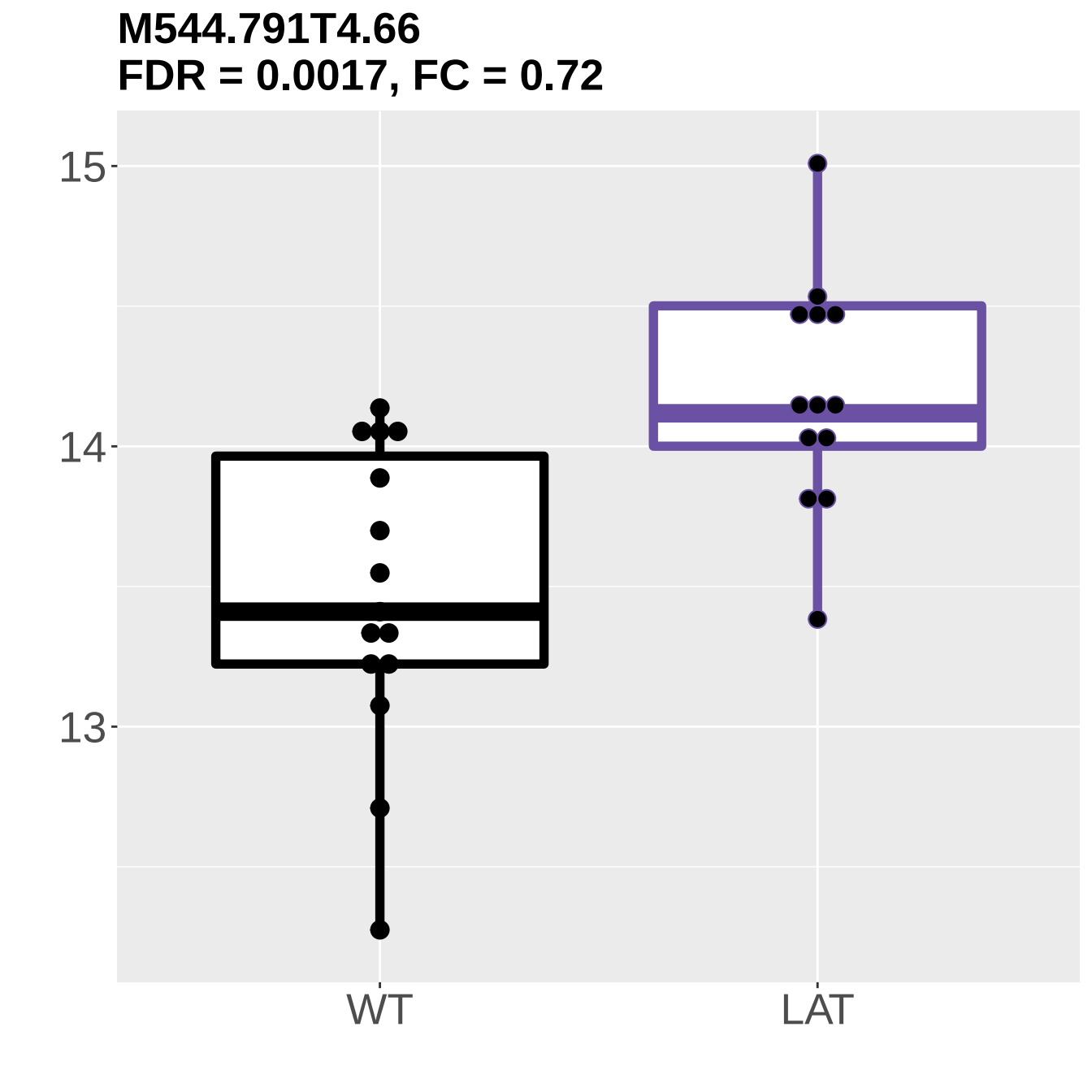
0
0
0
WT
LAT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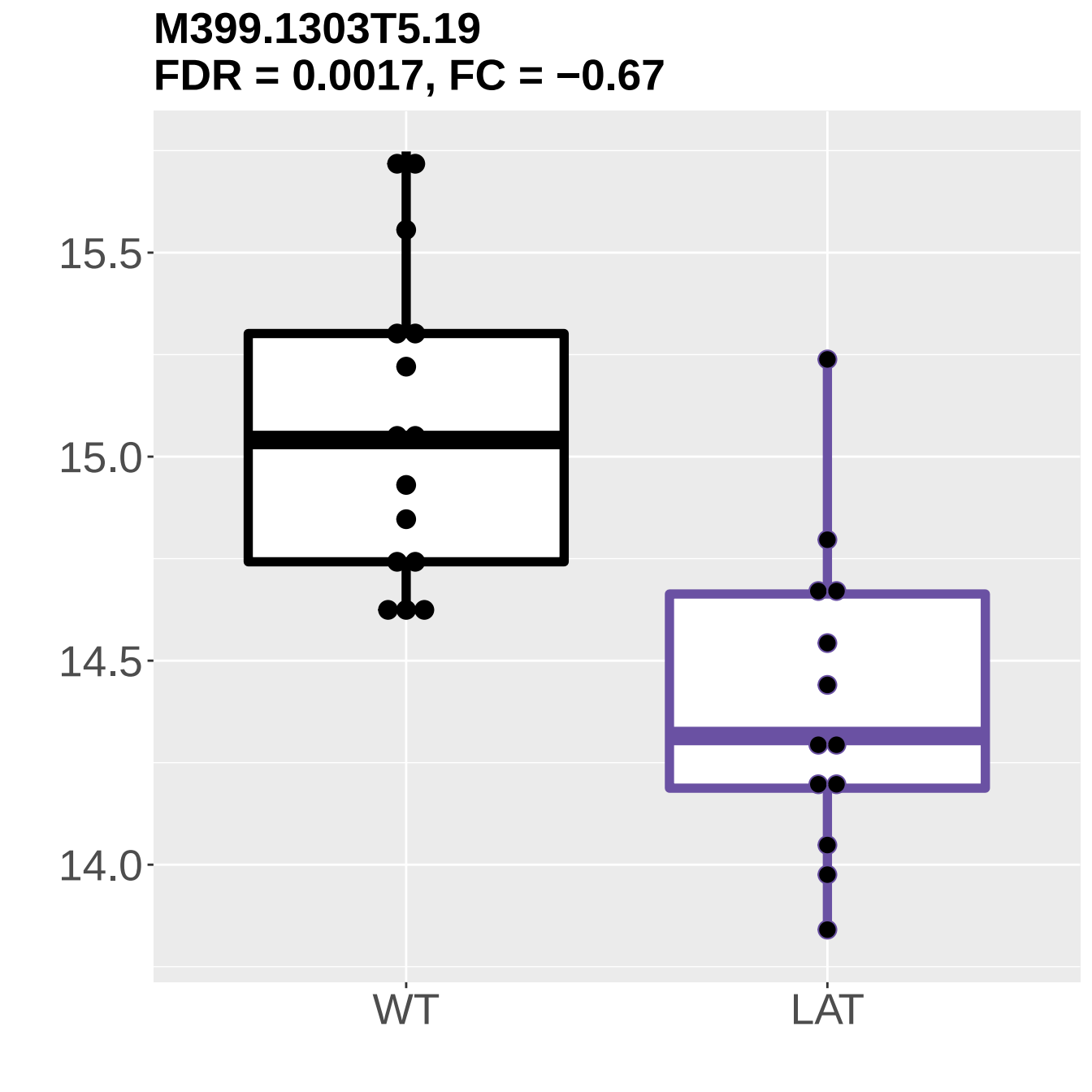
14
13
WT
LAT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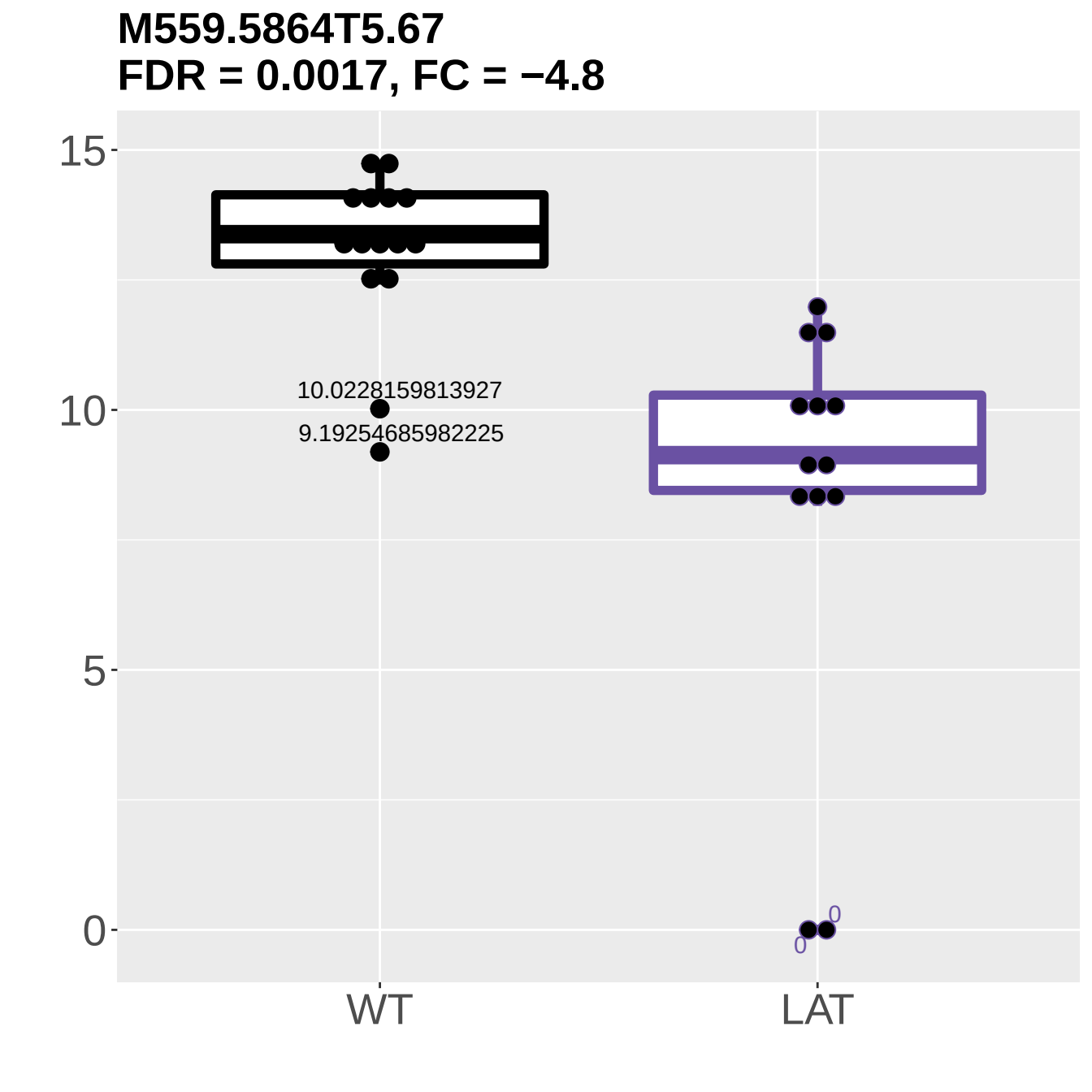
WT
LAT


M559.5864T5.67
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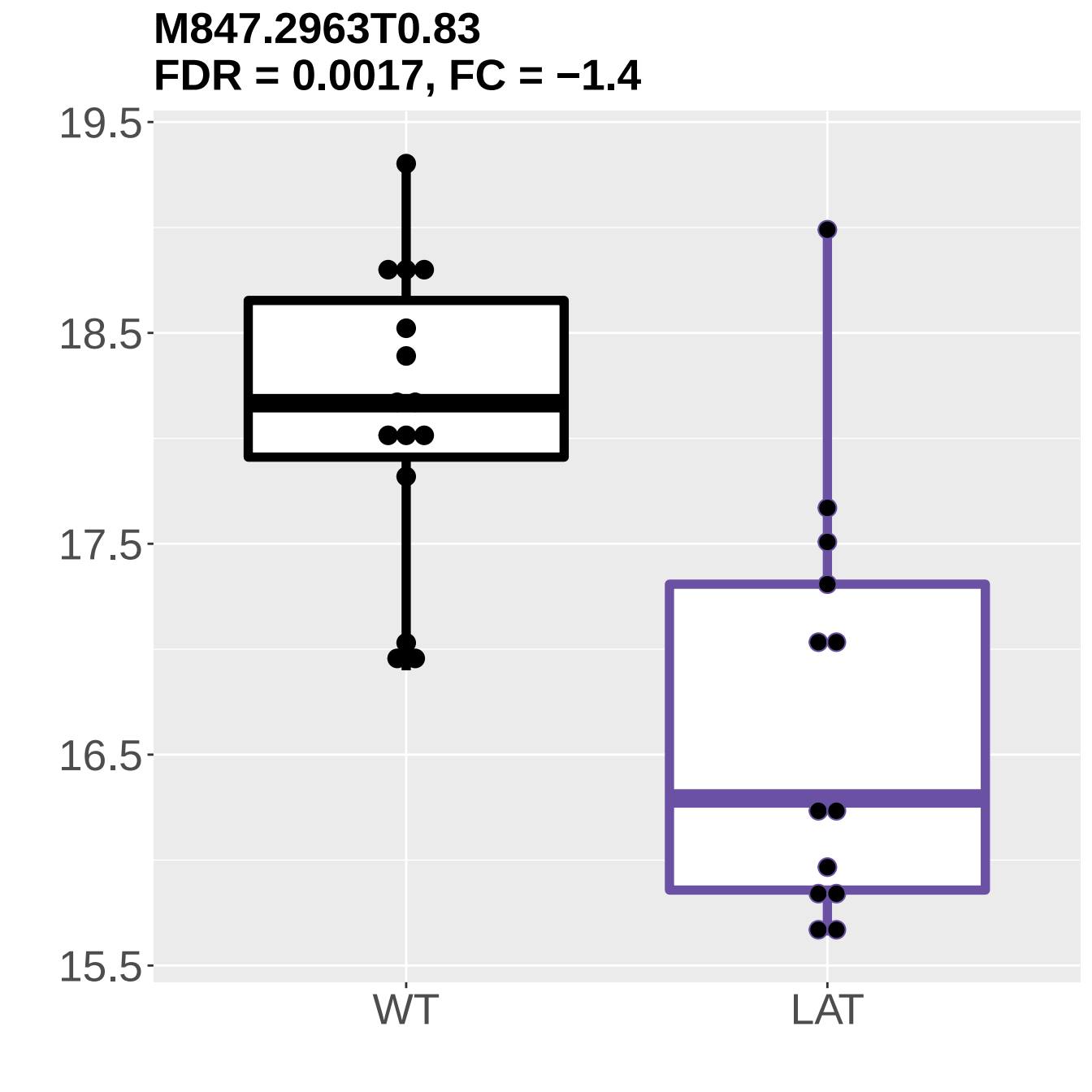
WT
LAT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16.5
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WT
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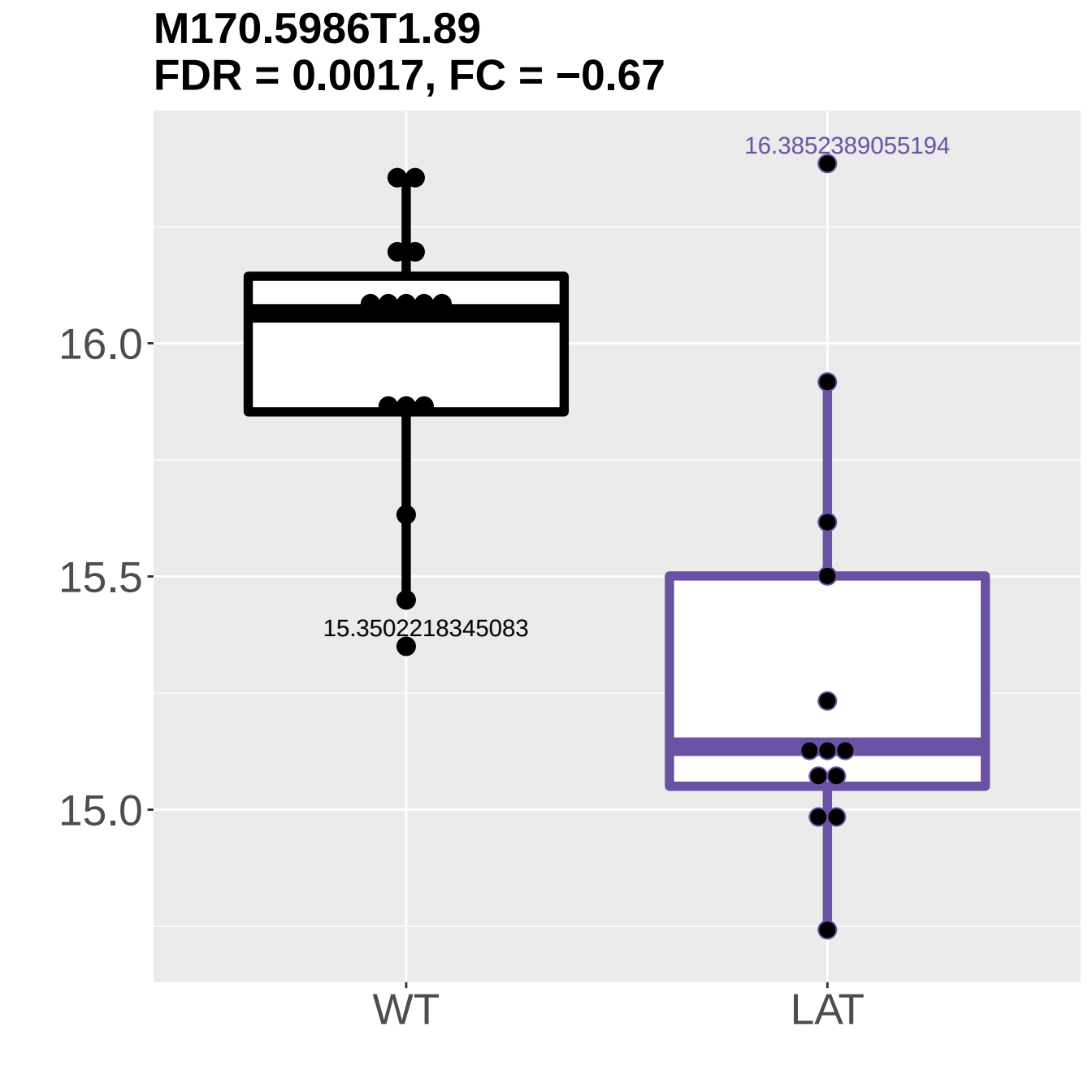
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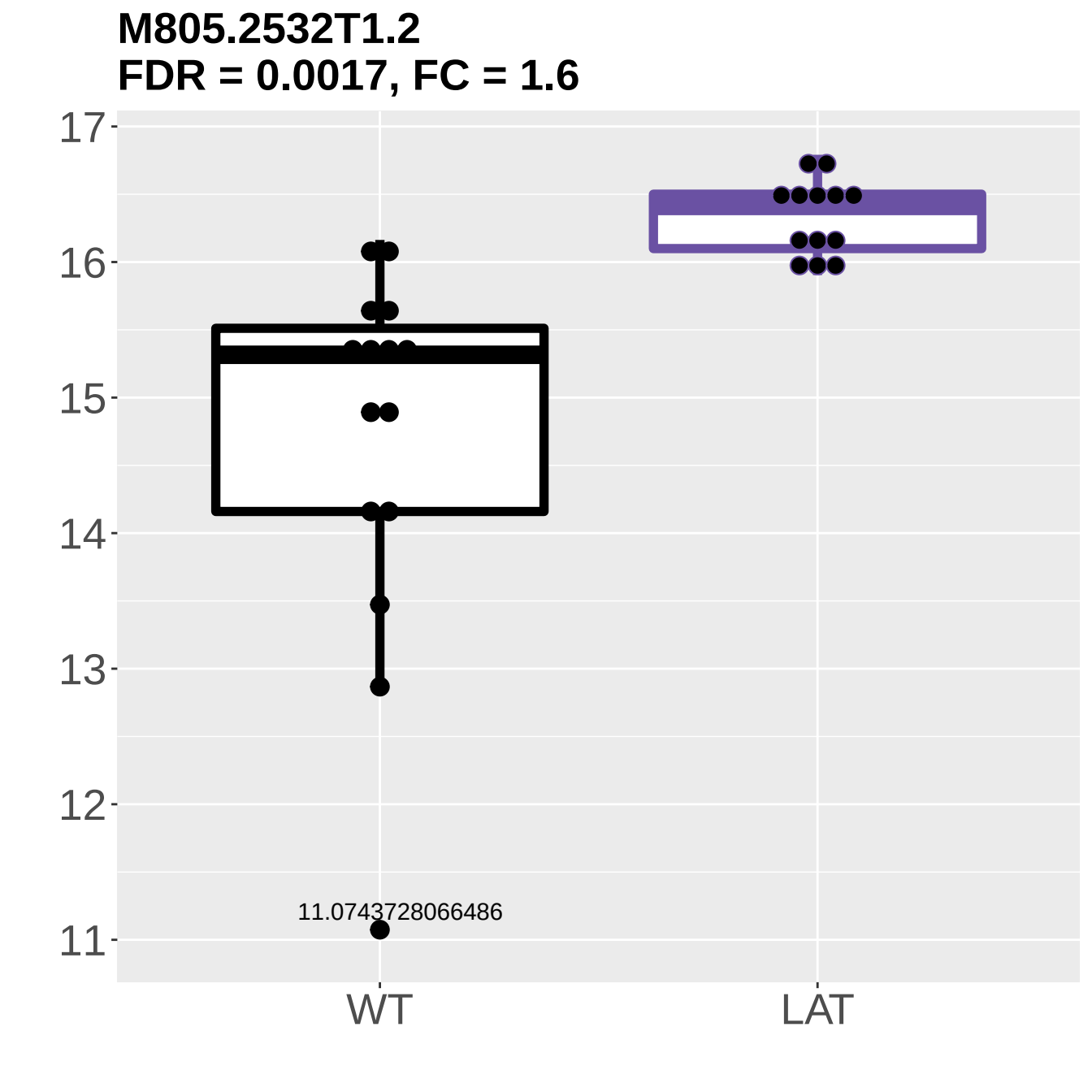
LAT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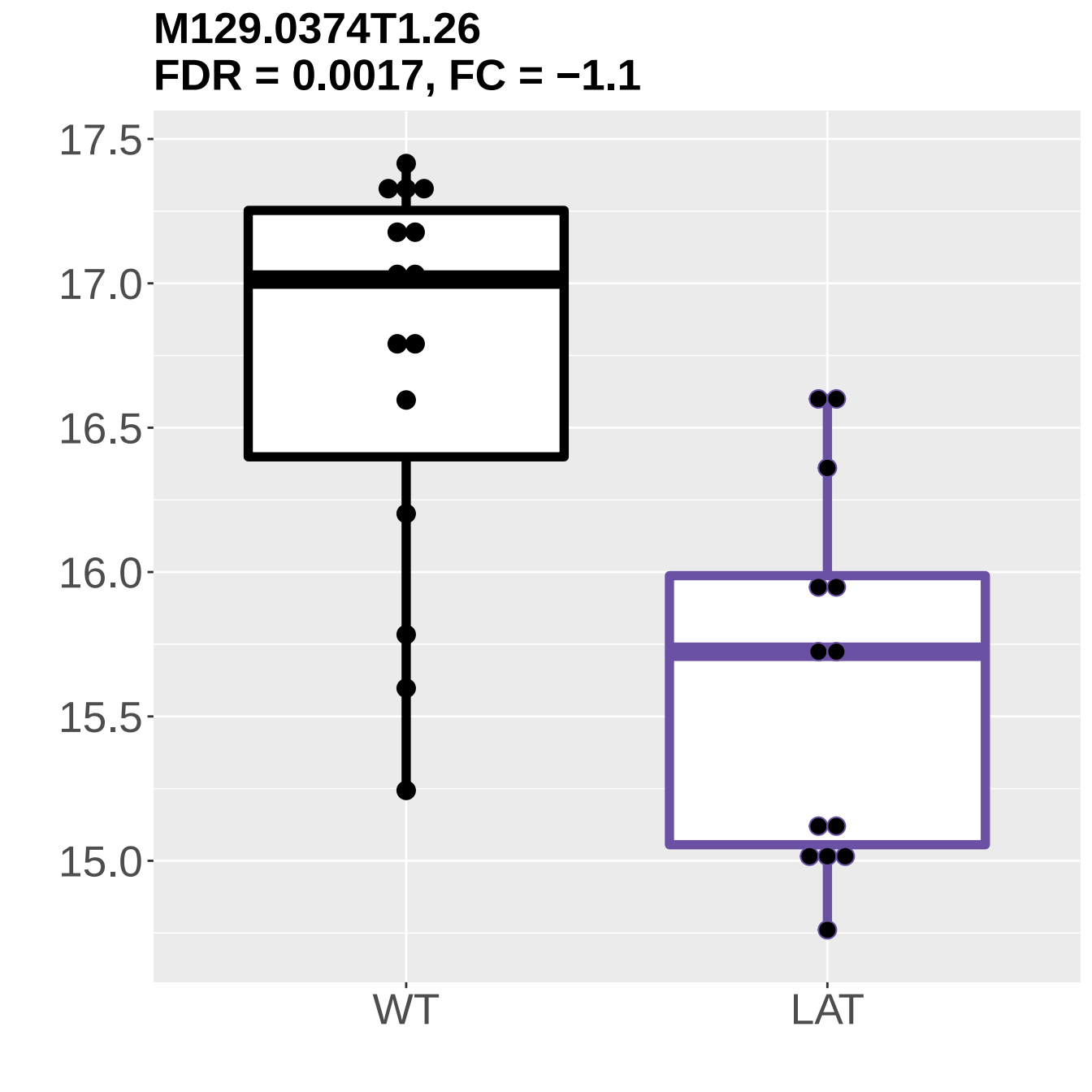
WT
LAT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WT
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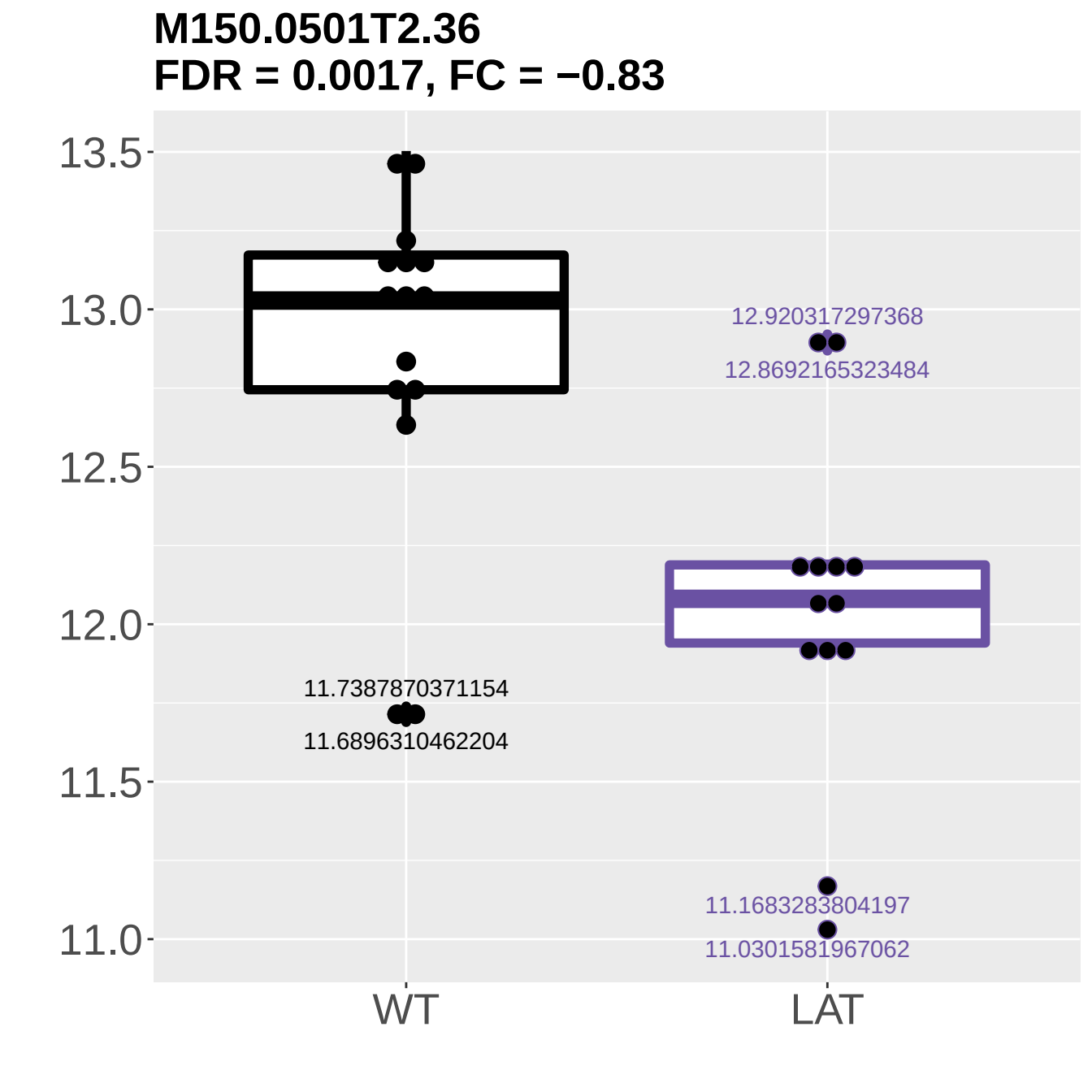
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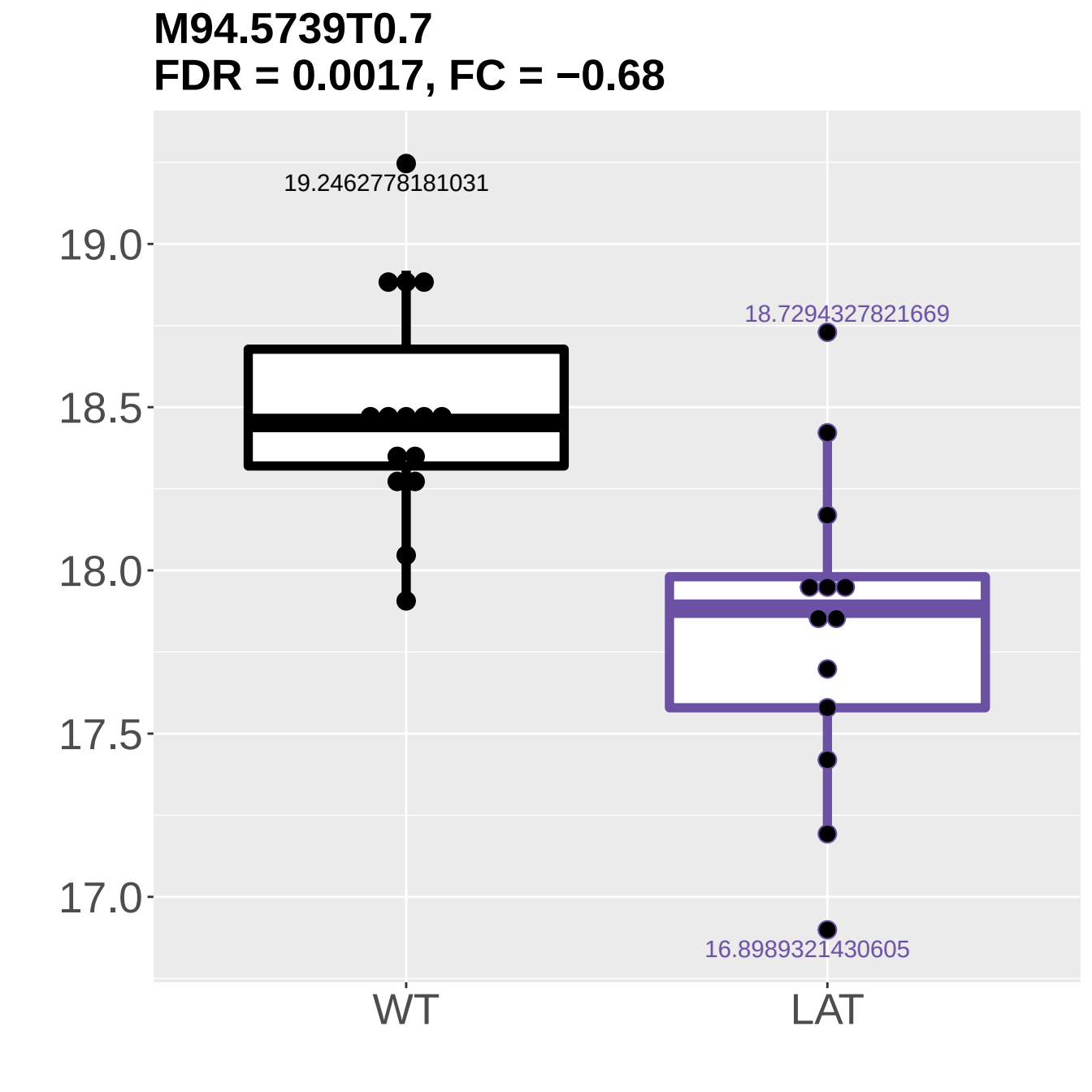
WT
LAT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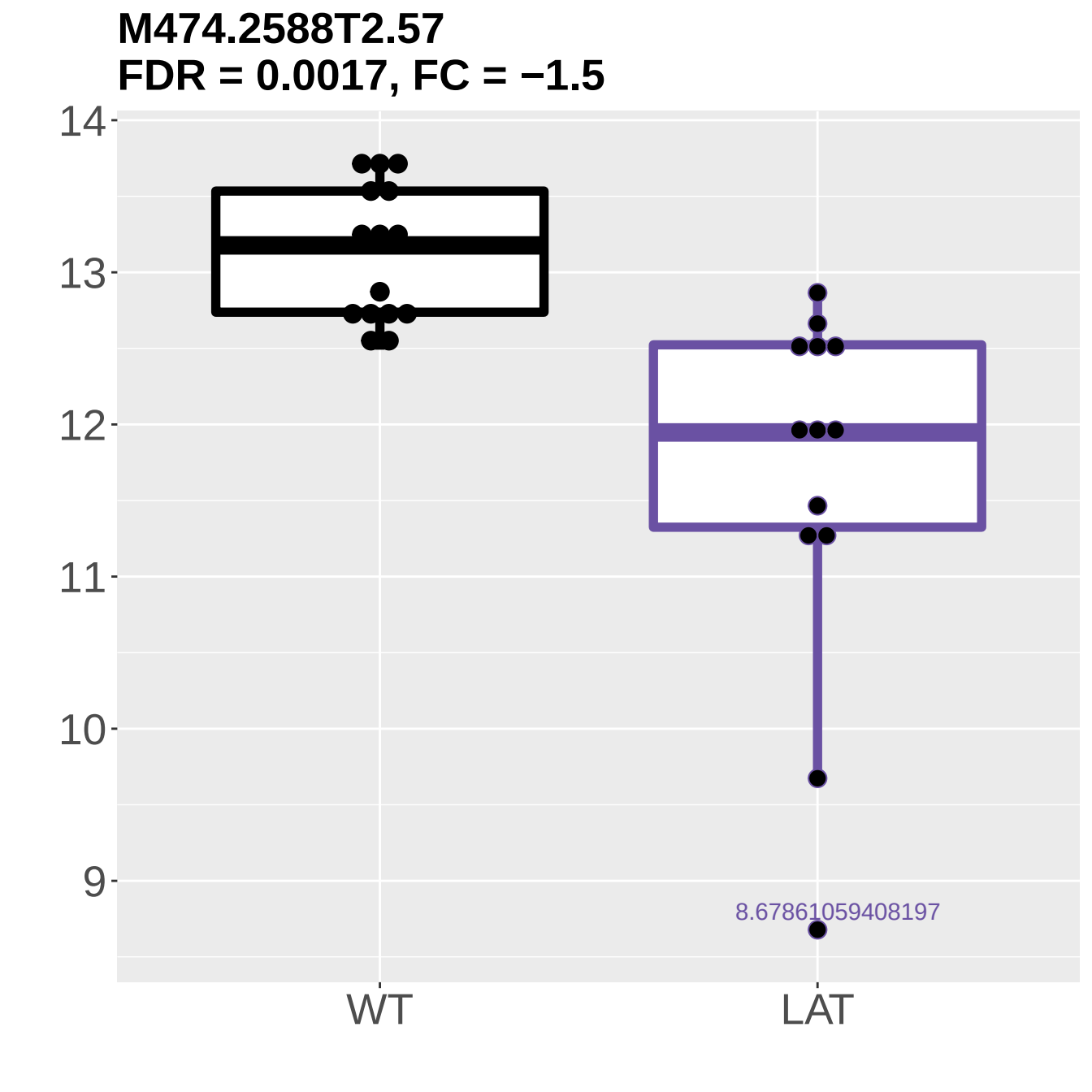
WT
LAT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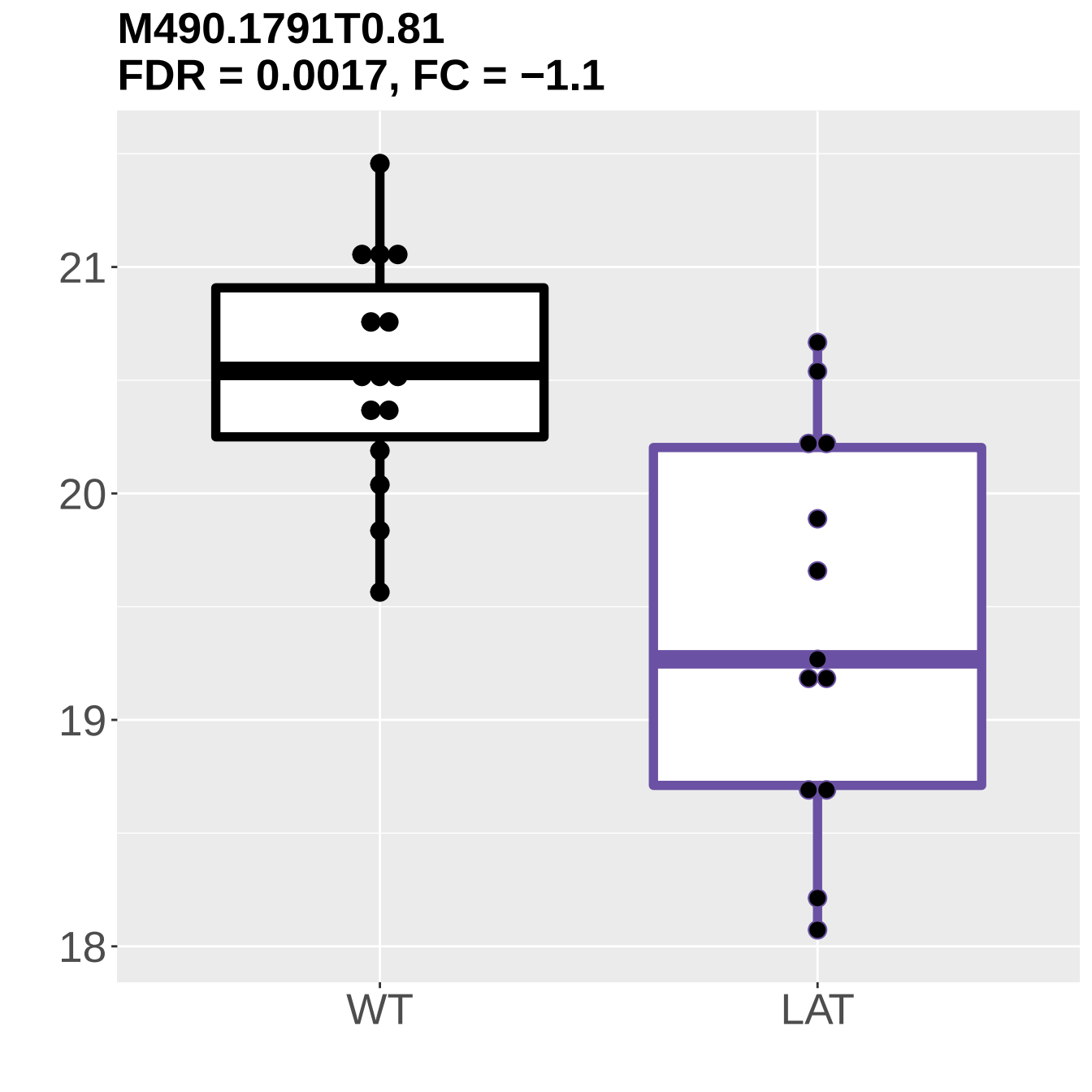
WT
LAT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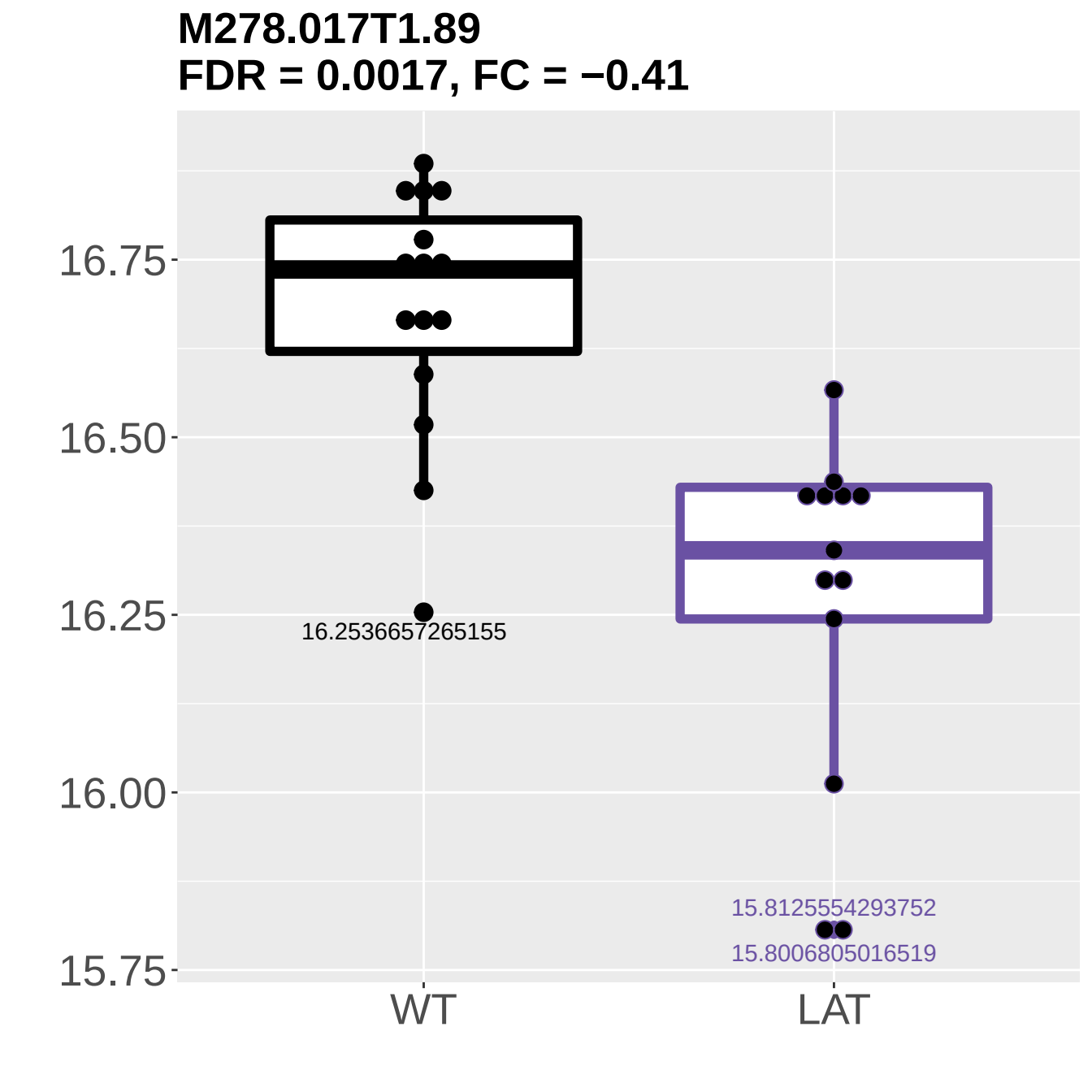
19
18
WT
LAT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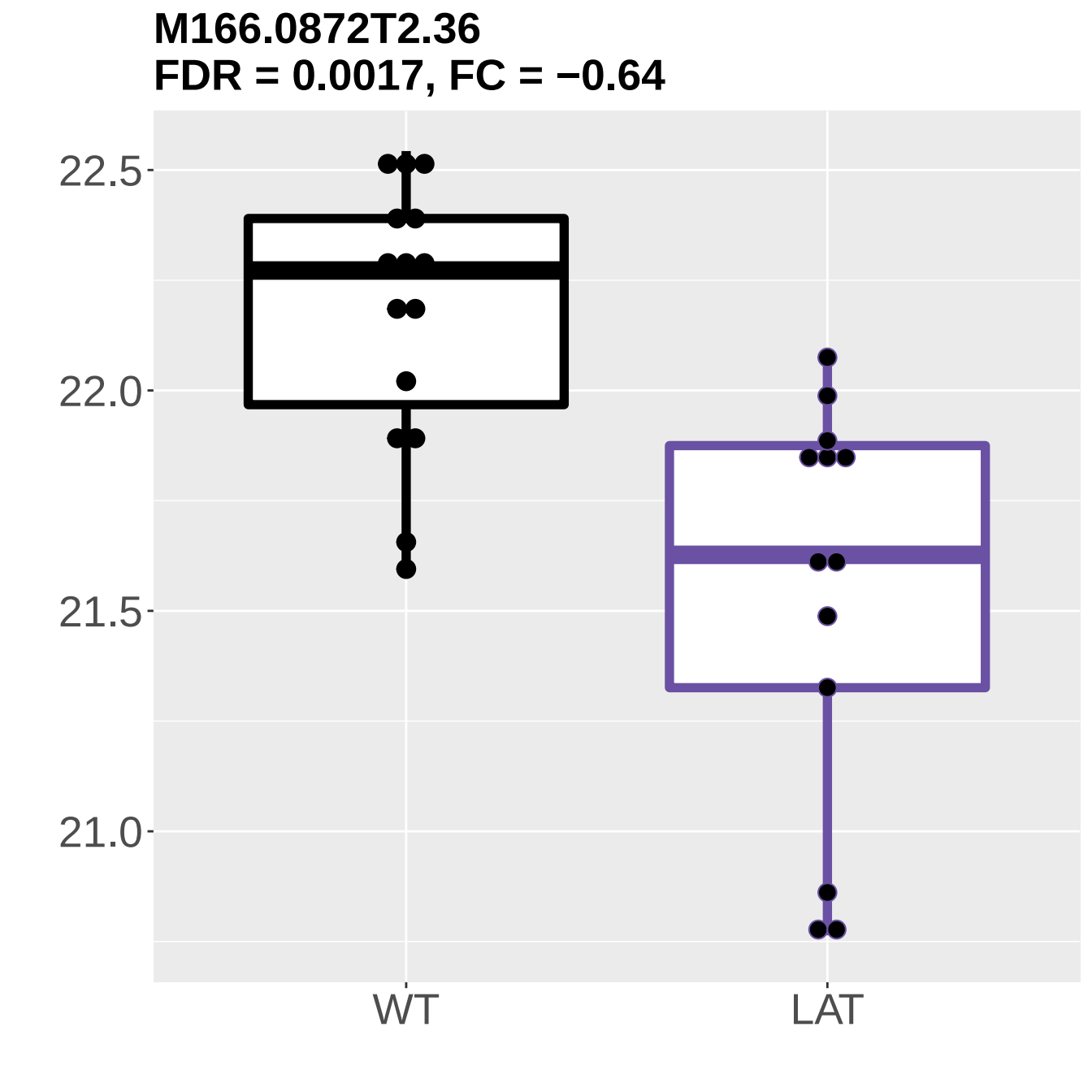
WT
LAT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WT
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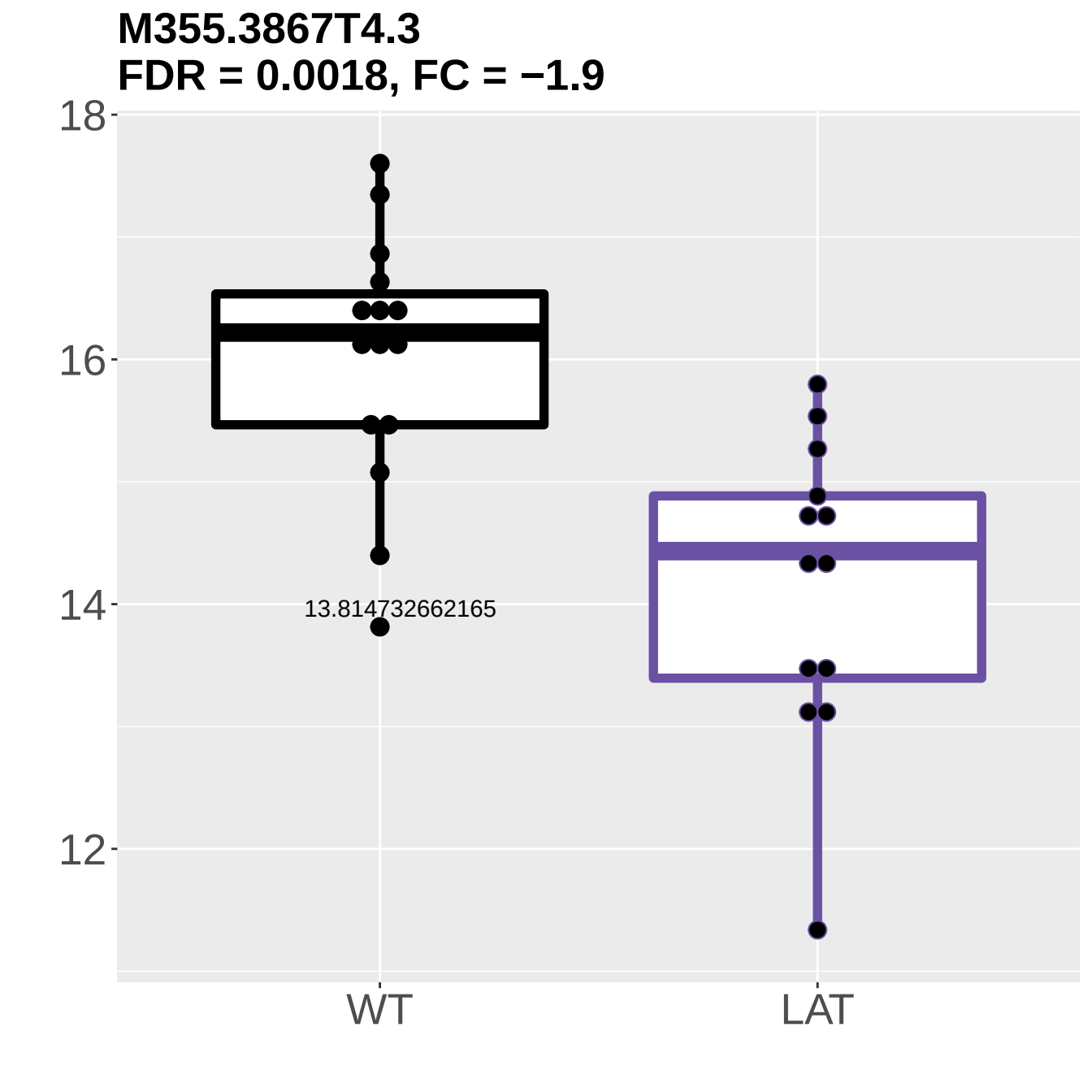
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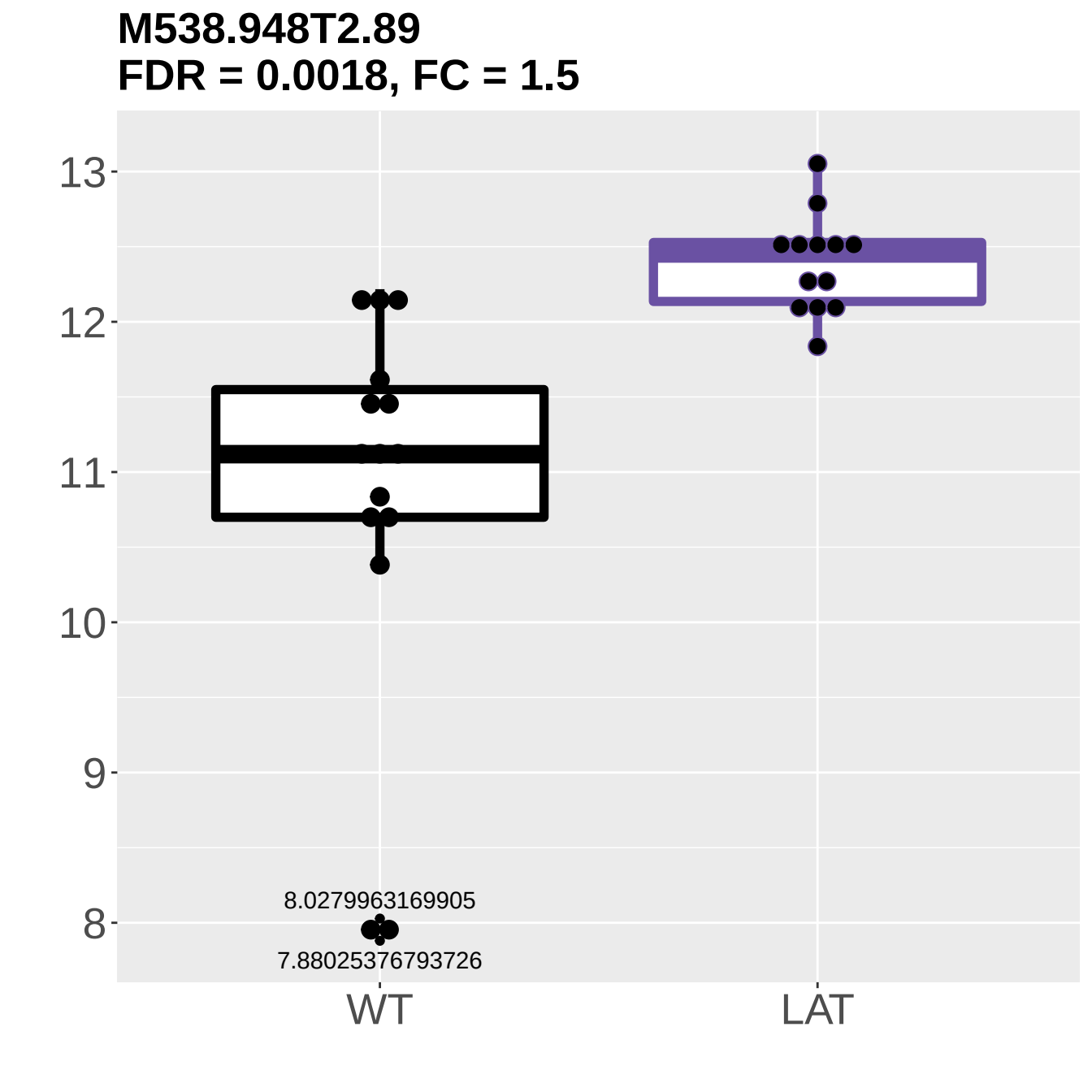
WT
LAT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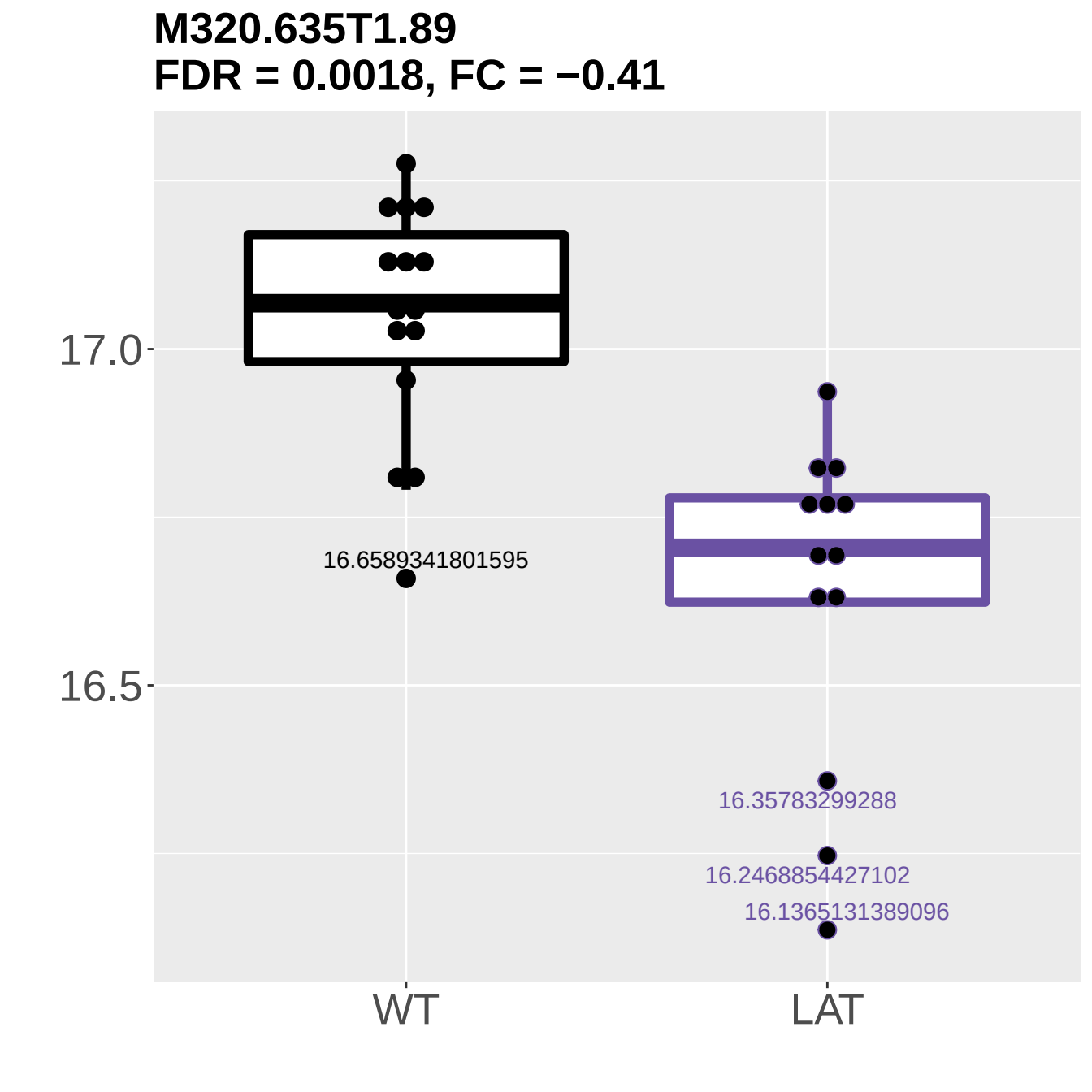
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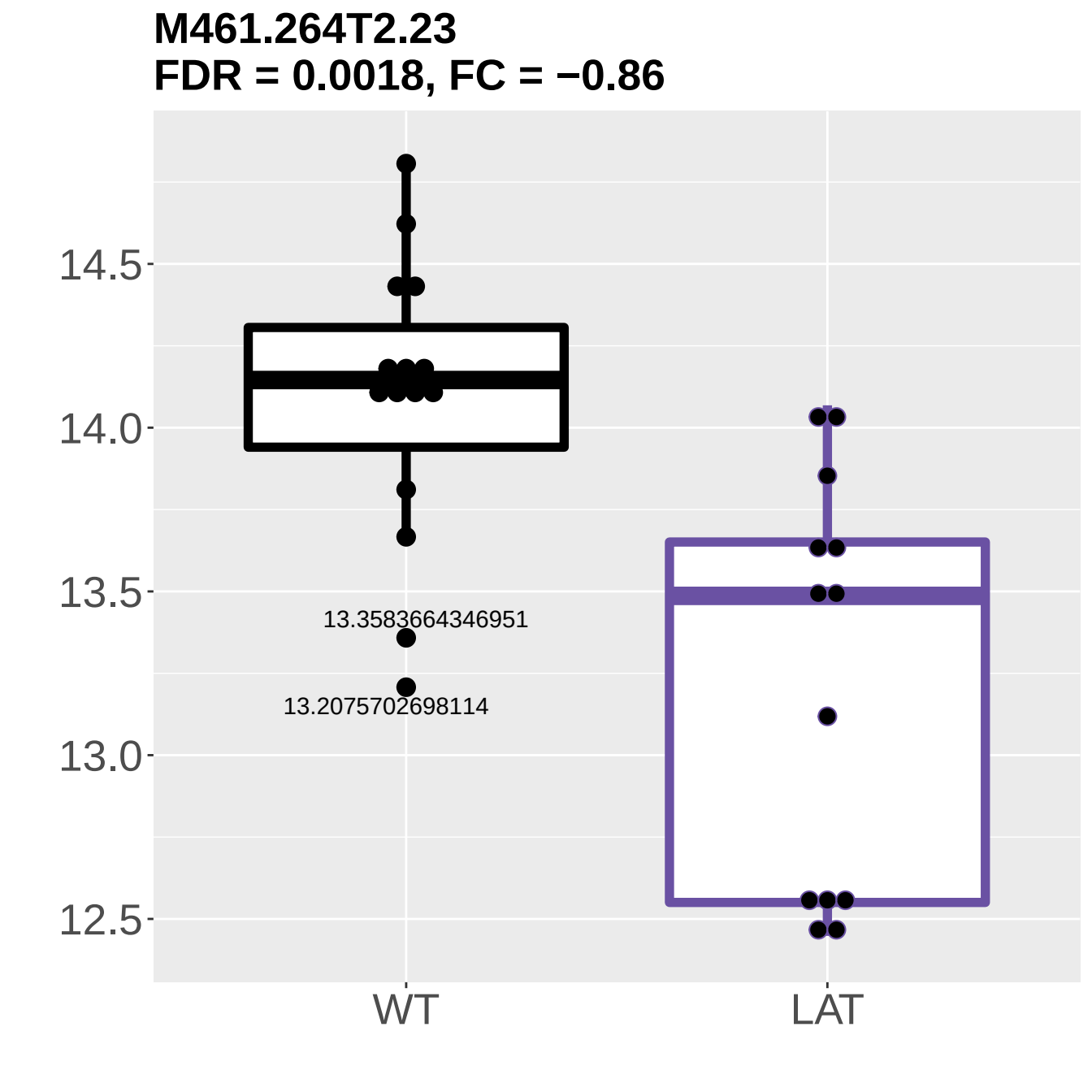
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13.0
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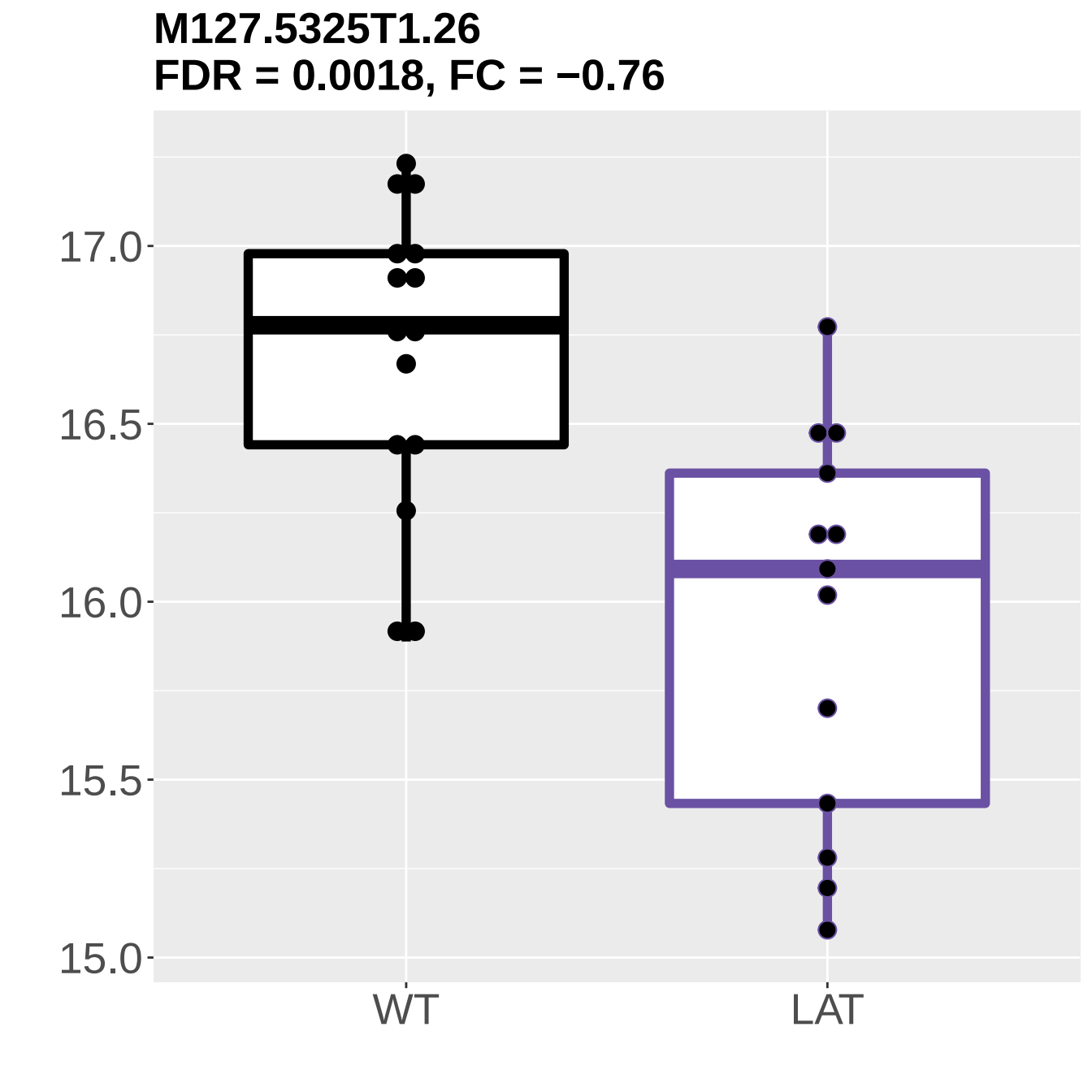
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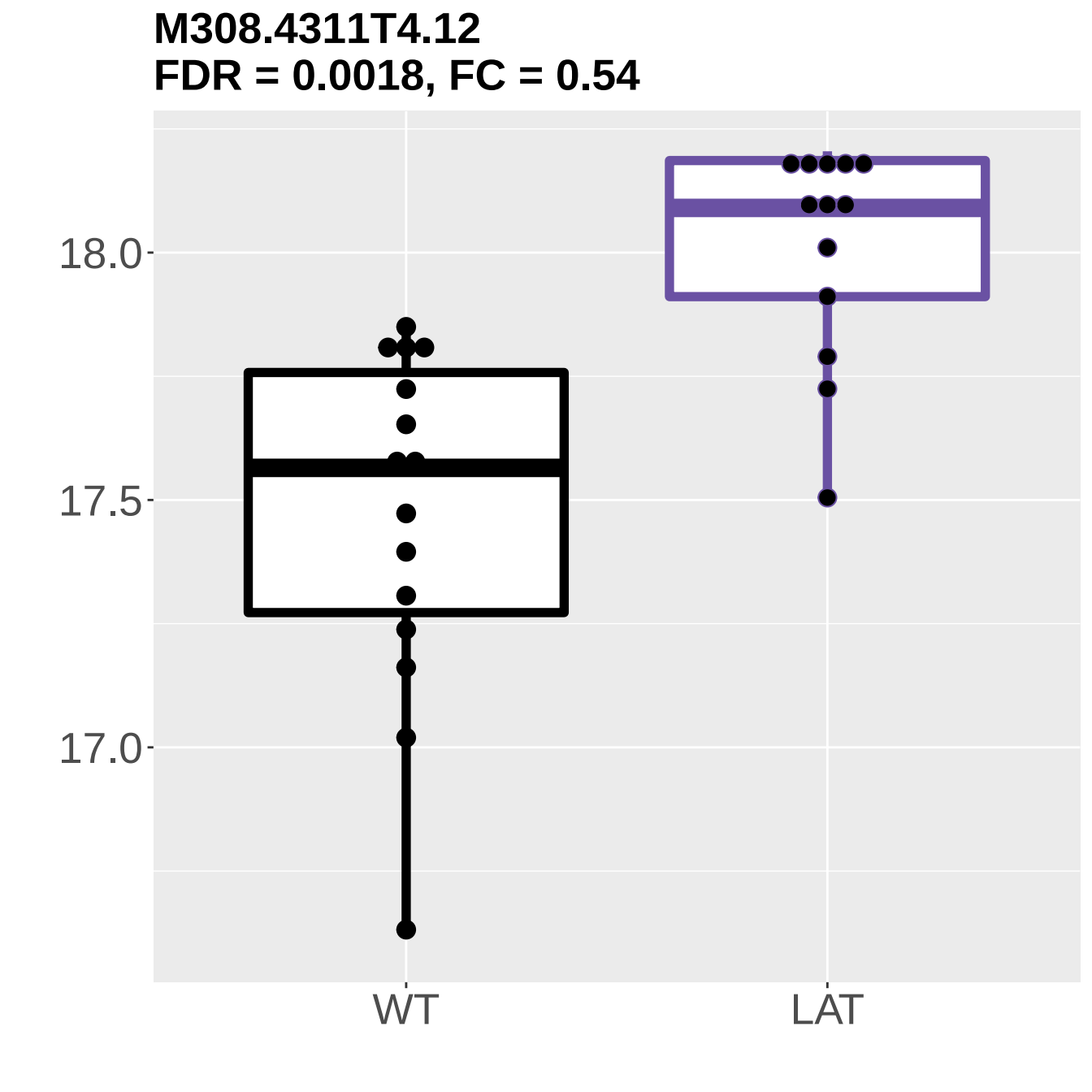
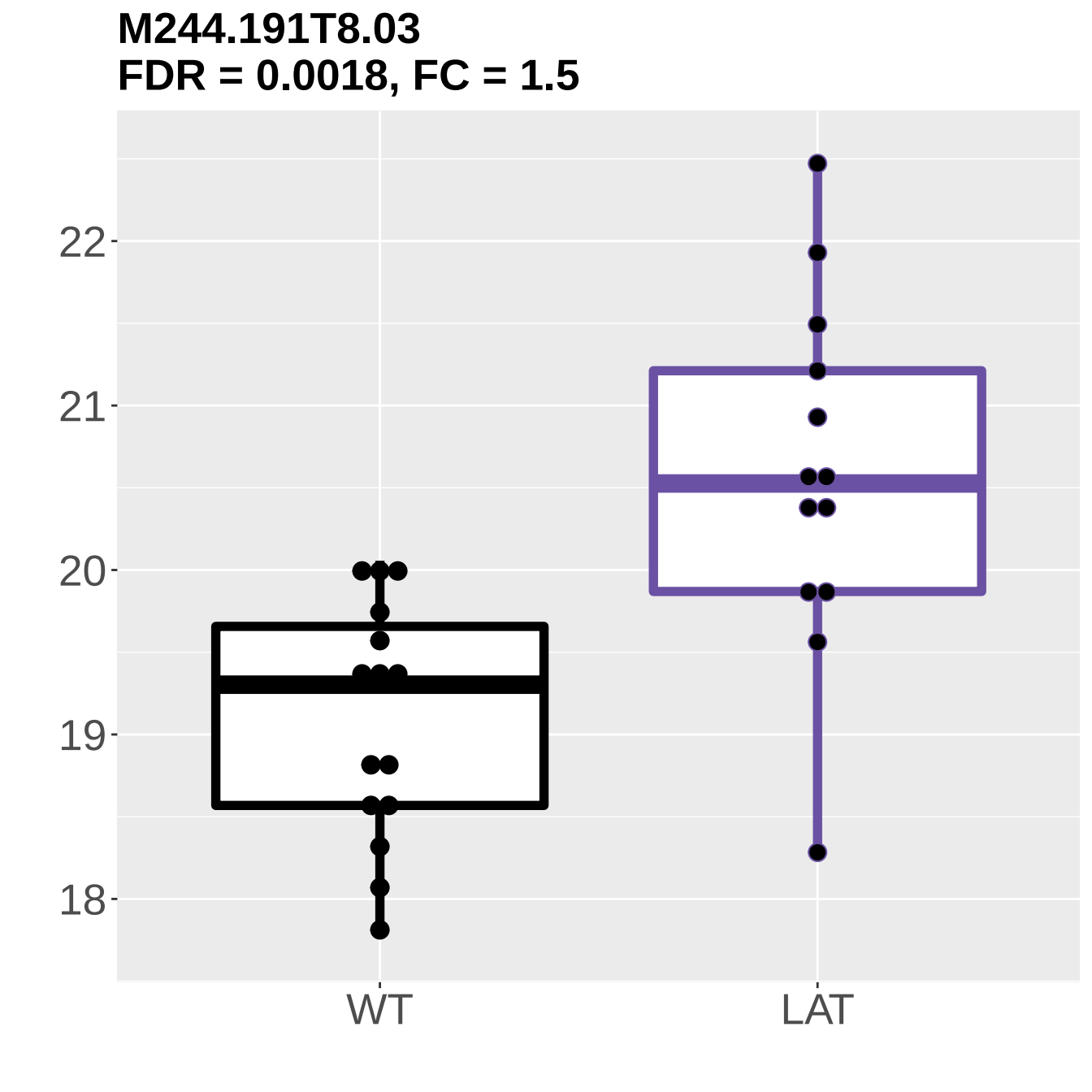
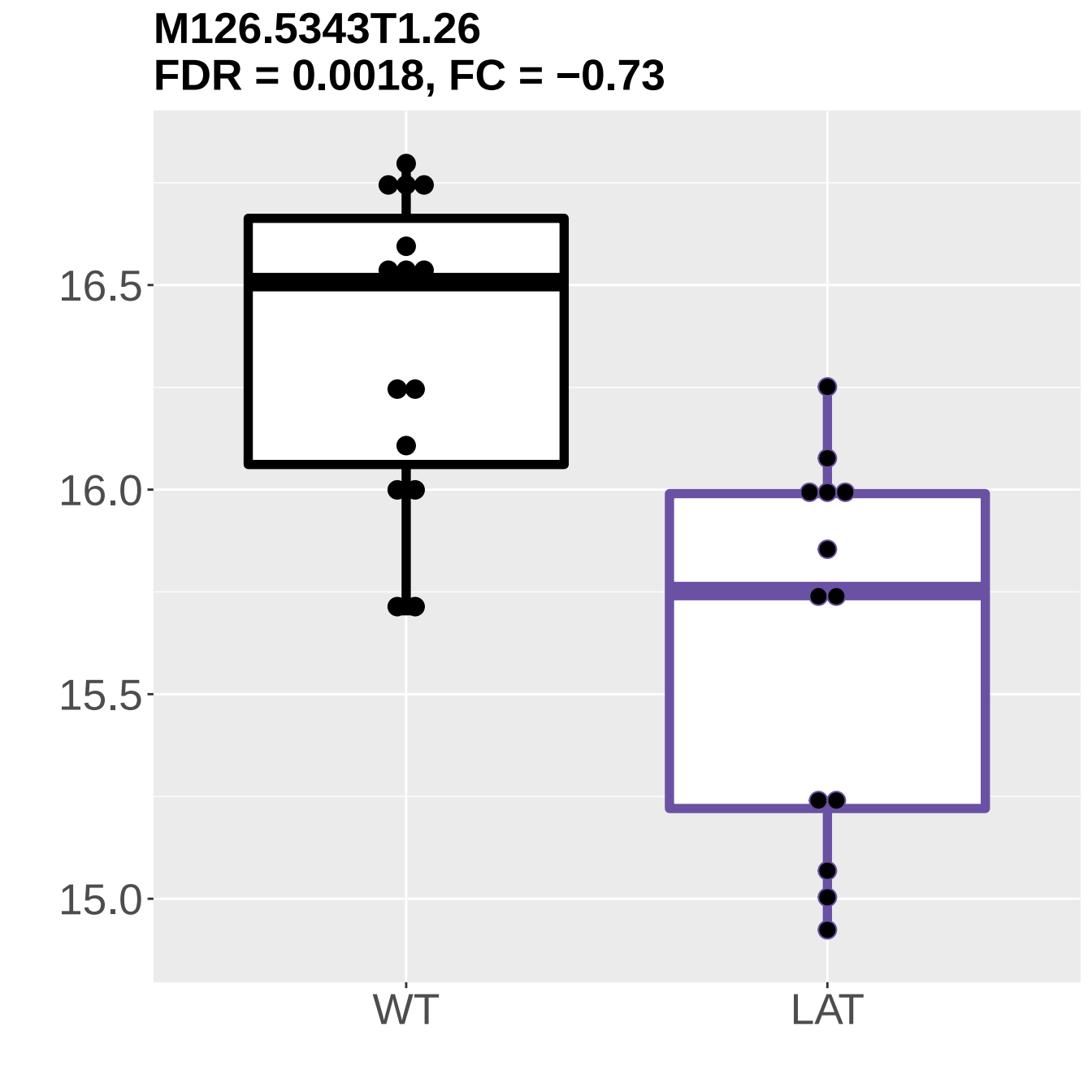
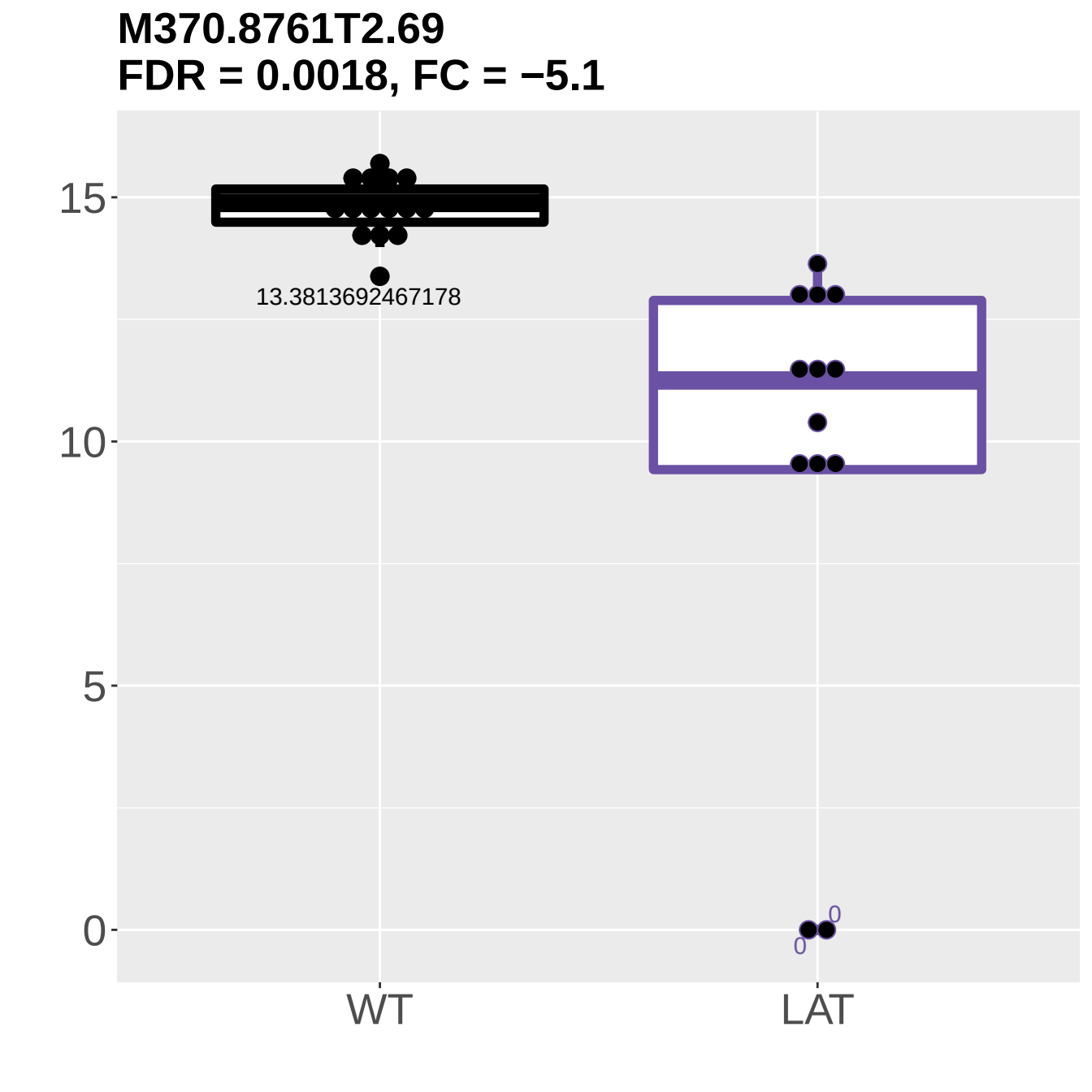
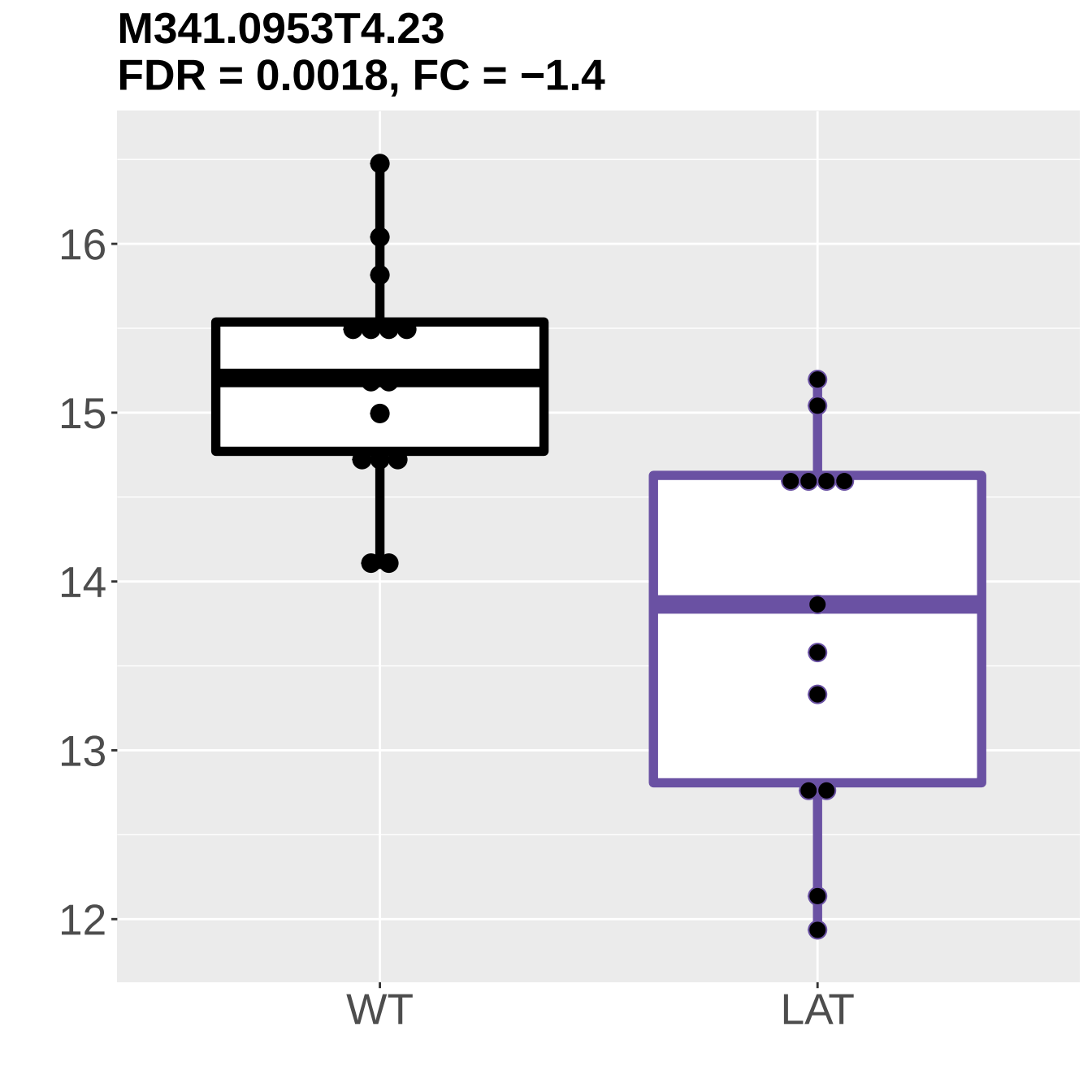
16.0
15.5
15.0
WT
LAT

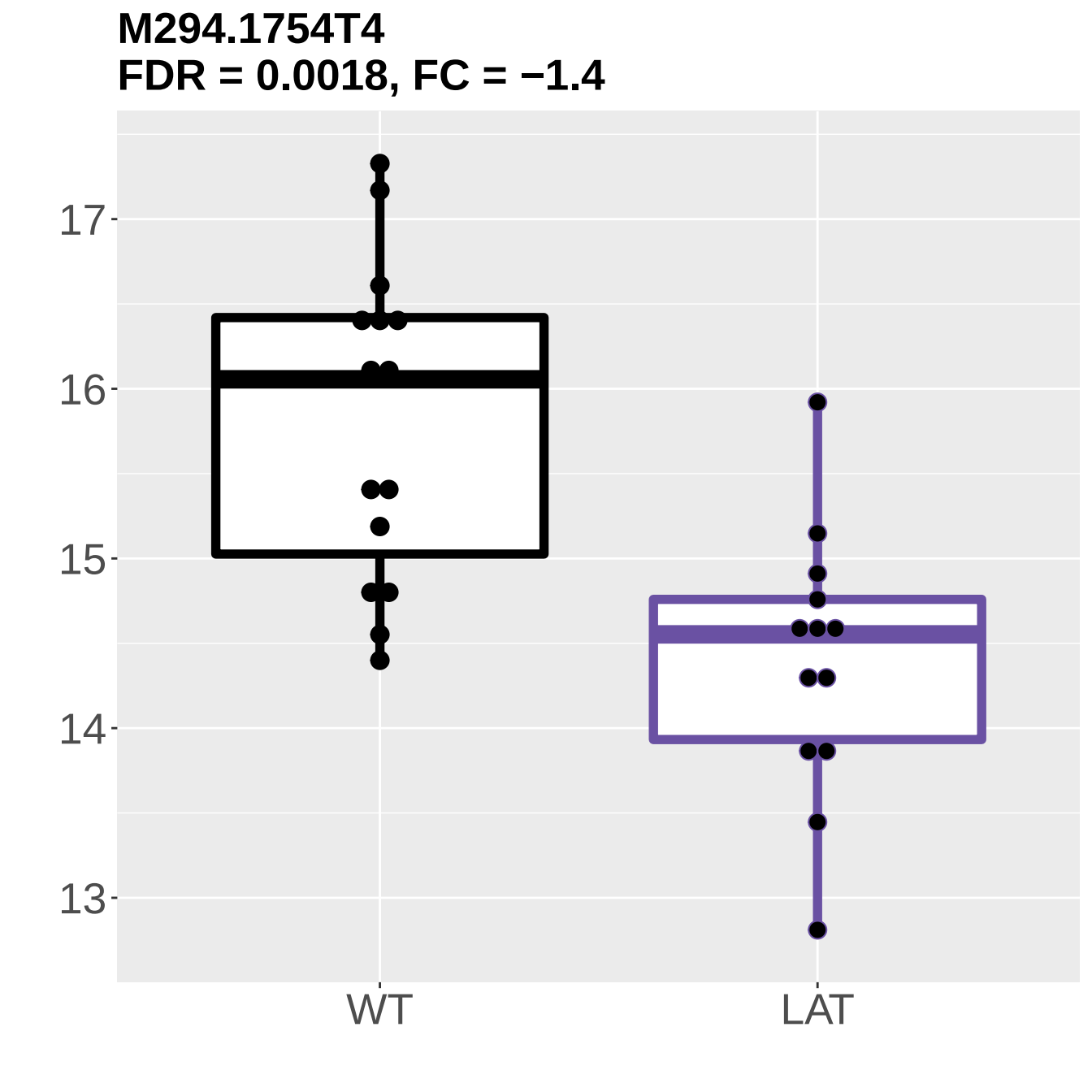

M308.4311T4.12
FDR = 0.0018, FC = 0.54
18.0
17.5
17.0
WT
LAT

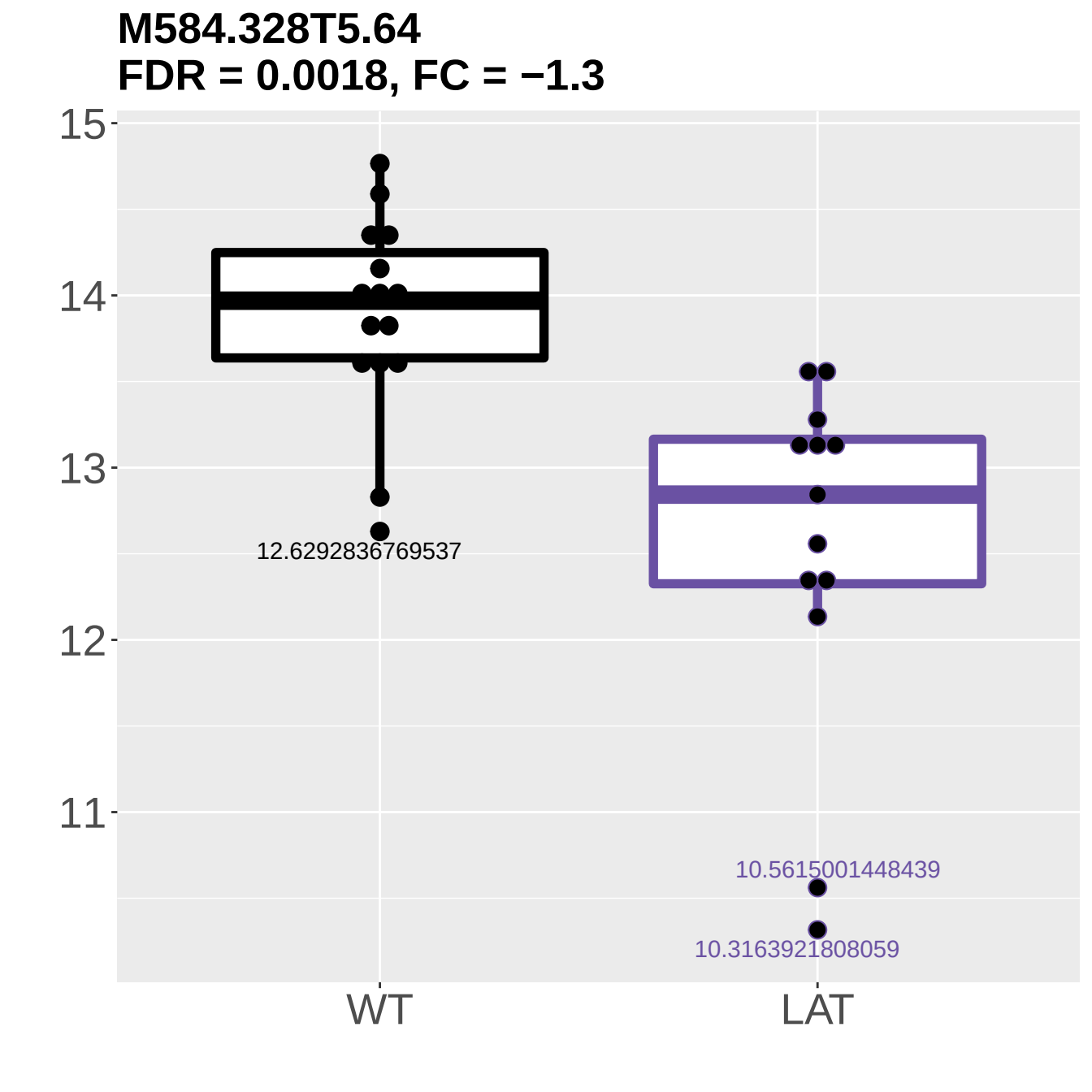

M244.191T8.03
FDR = 0.0018, FC = 1.5
22
21
20
19
18
WT
LAT

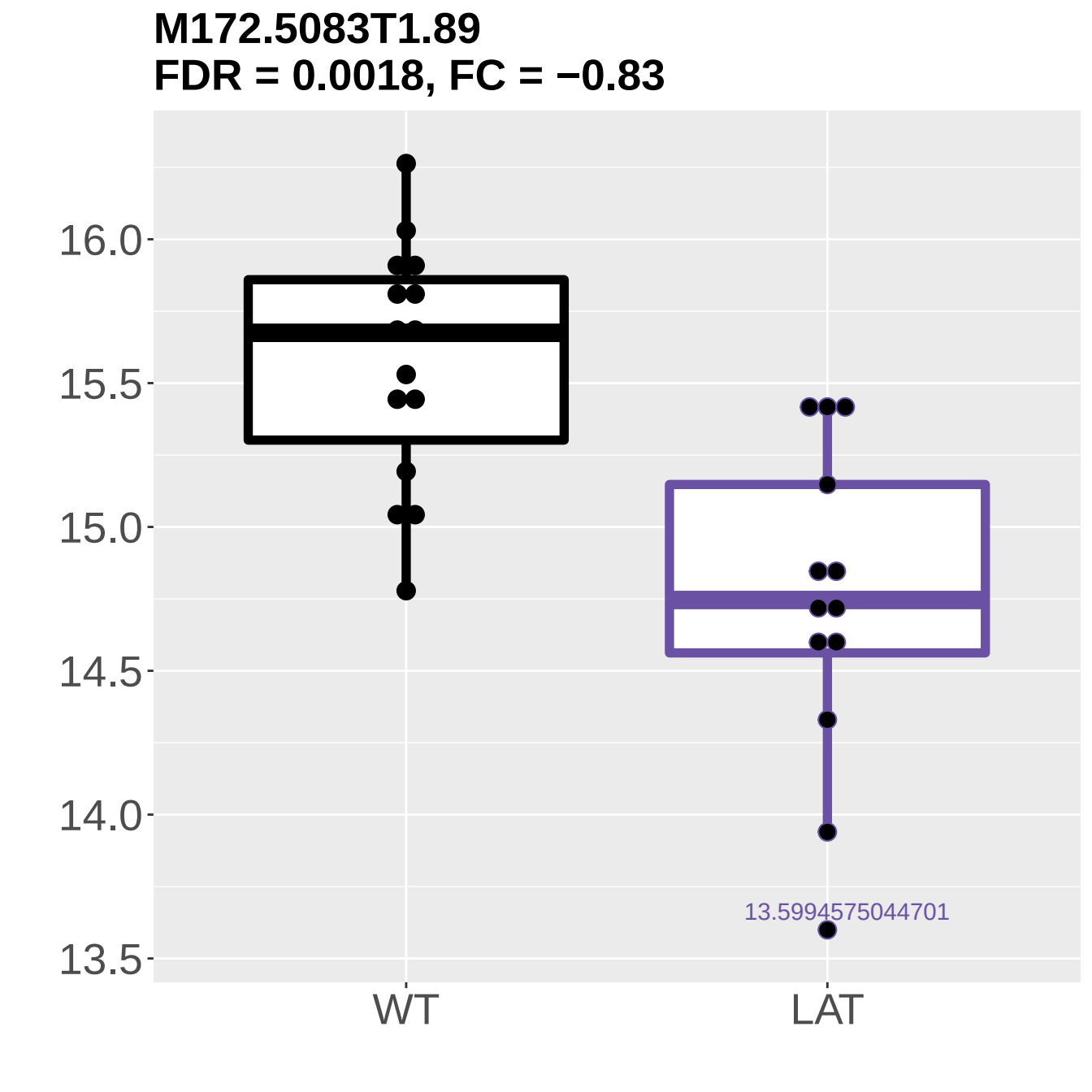

M126.5343T1.26
FDR = 0.0018, FC = −0.73
16.5
16.0
15.5
15.0
WT
LAT

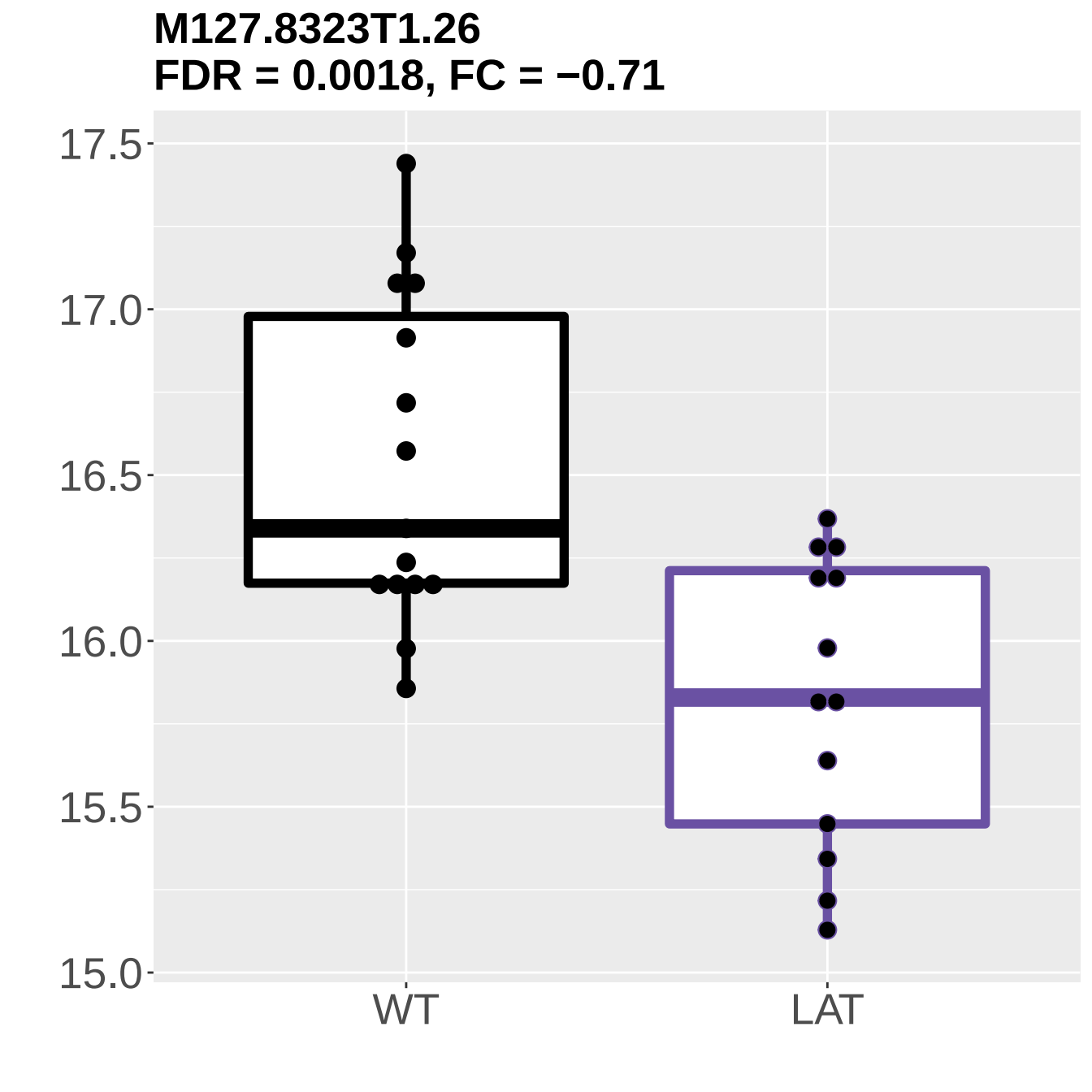

M370.8761T2.69
FDR = 0.0018, FC = −5.1
15
10
5
0
13.3813692467178
0
0
WT
LAT

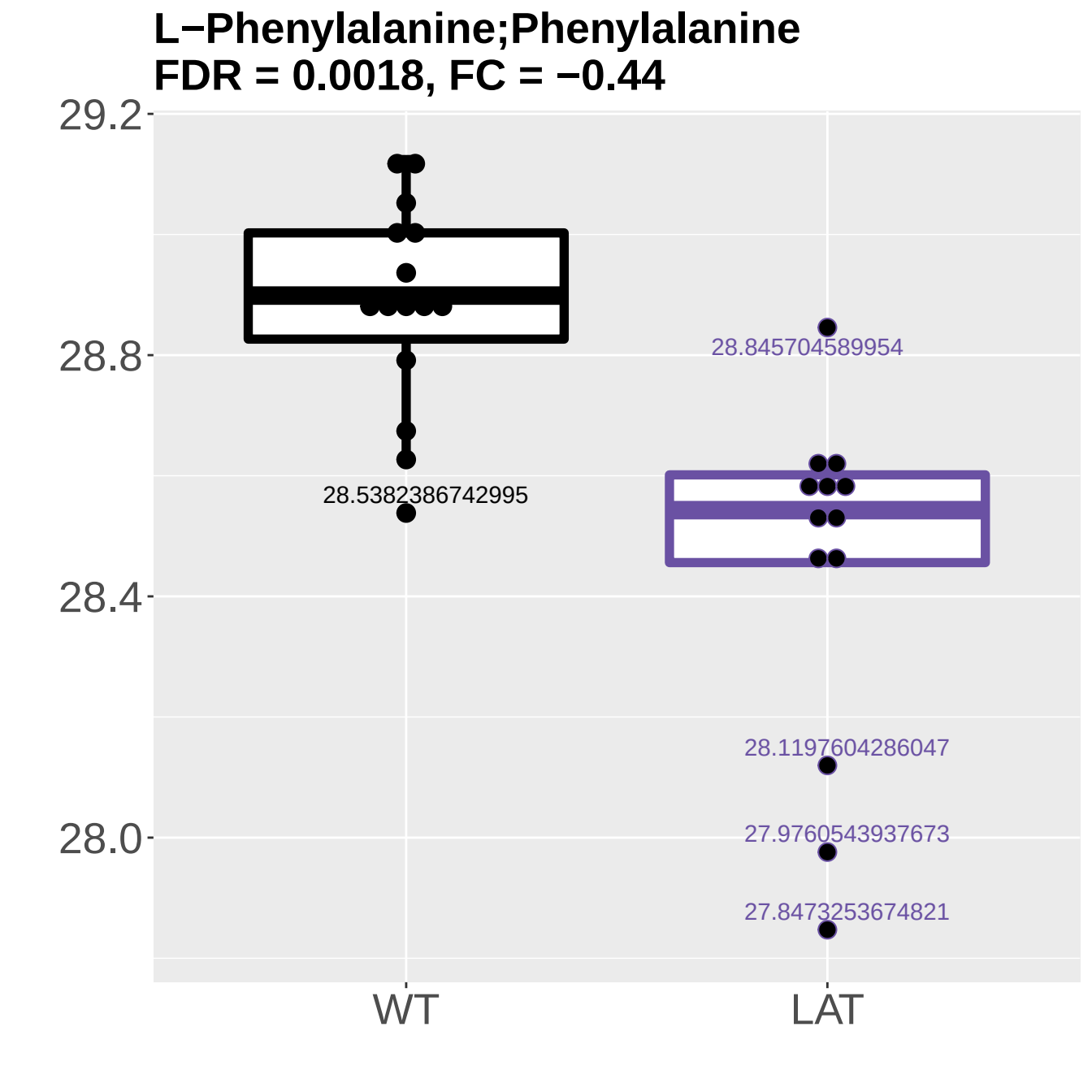

M341.0953T4.23
FDR = 0.0018, FC = −1.4
16
15
14
13
12
WT
LAT


M294.1754T4
FDR = 0.0018, FC = −1.4
17
16
15
14
13
WT
LAT


M584.328T5.64
FDR = 0.0018, FC = −1.3
15
14
13
12
11
12.6292836769537
10.5615001448439
10.3163921808059
WT
LAT


M172.5083T1.89
FDR = 0.0018, FC = −0.83
16.0
15.5
15.0
14.5
14.0
13.5
13.5994575044701
WT
LAT


M127.8323T1.26
FDR = 0.0018, FC = −0.71
17.5
17.0
16.5
16.0
15.5
15.0
WT
LAT


L−Phenylalanine;Phenylalanine
FDR = 0.0018, FC = −0.44
29.2
28.8
28.4
28.0
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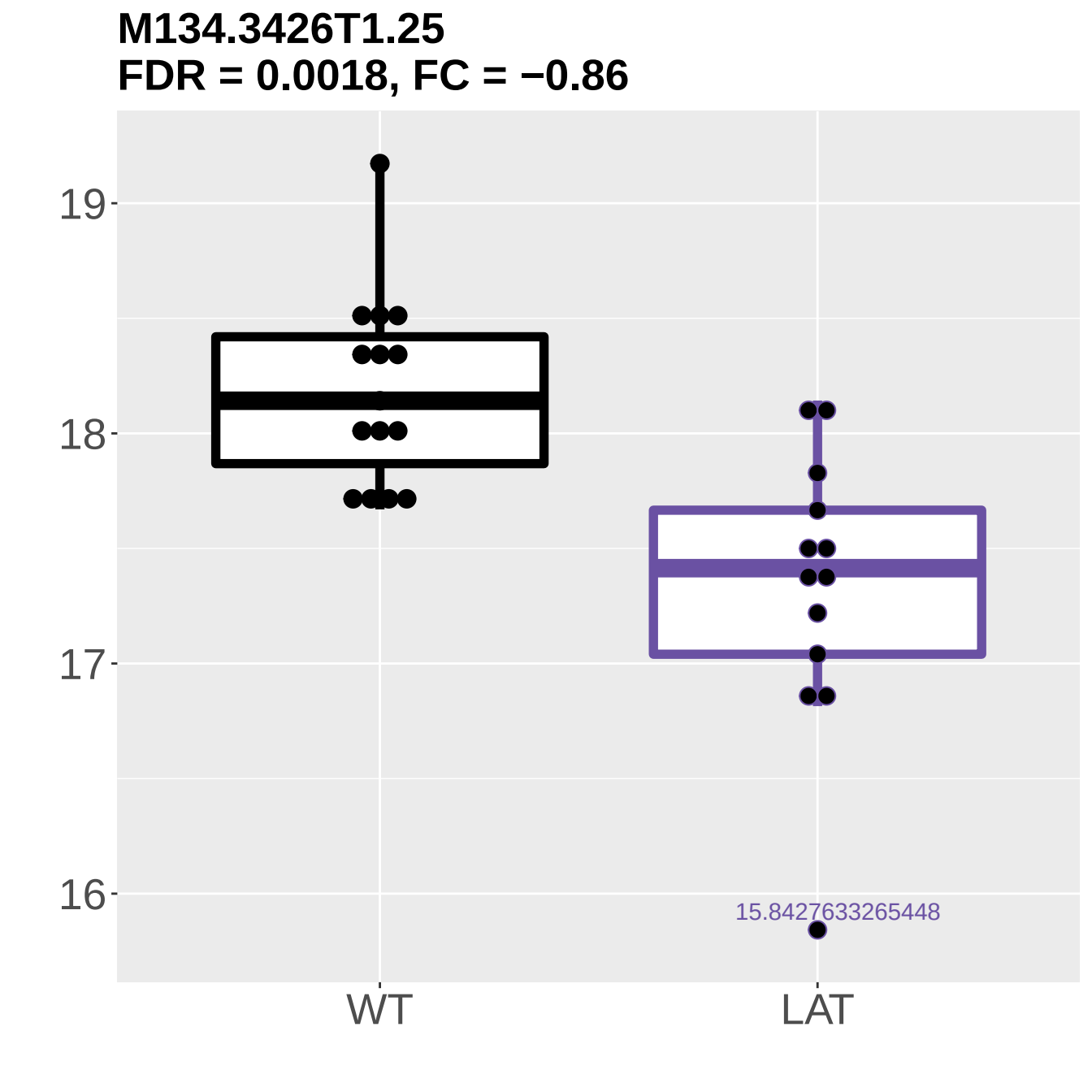
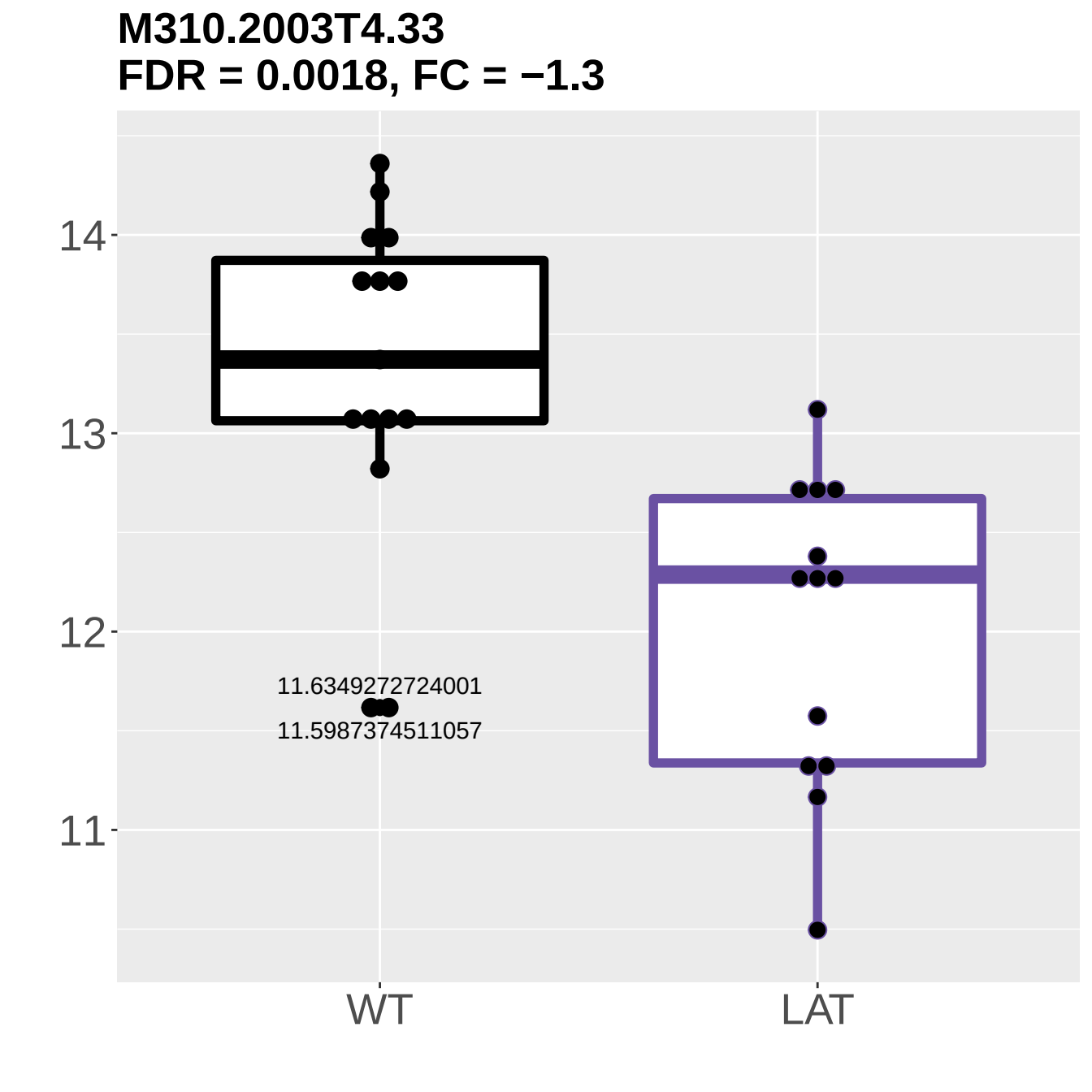
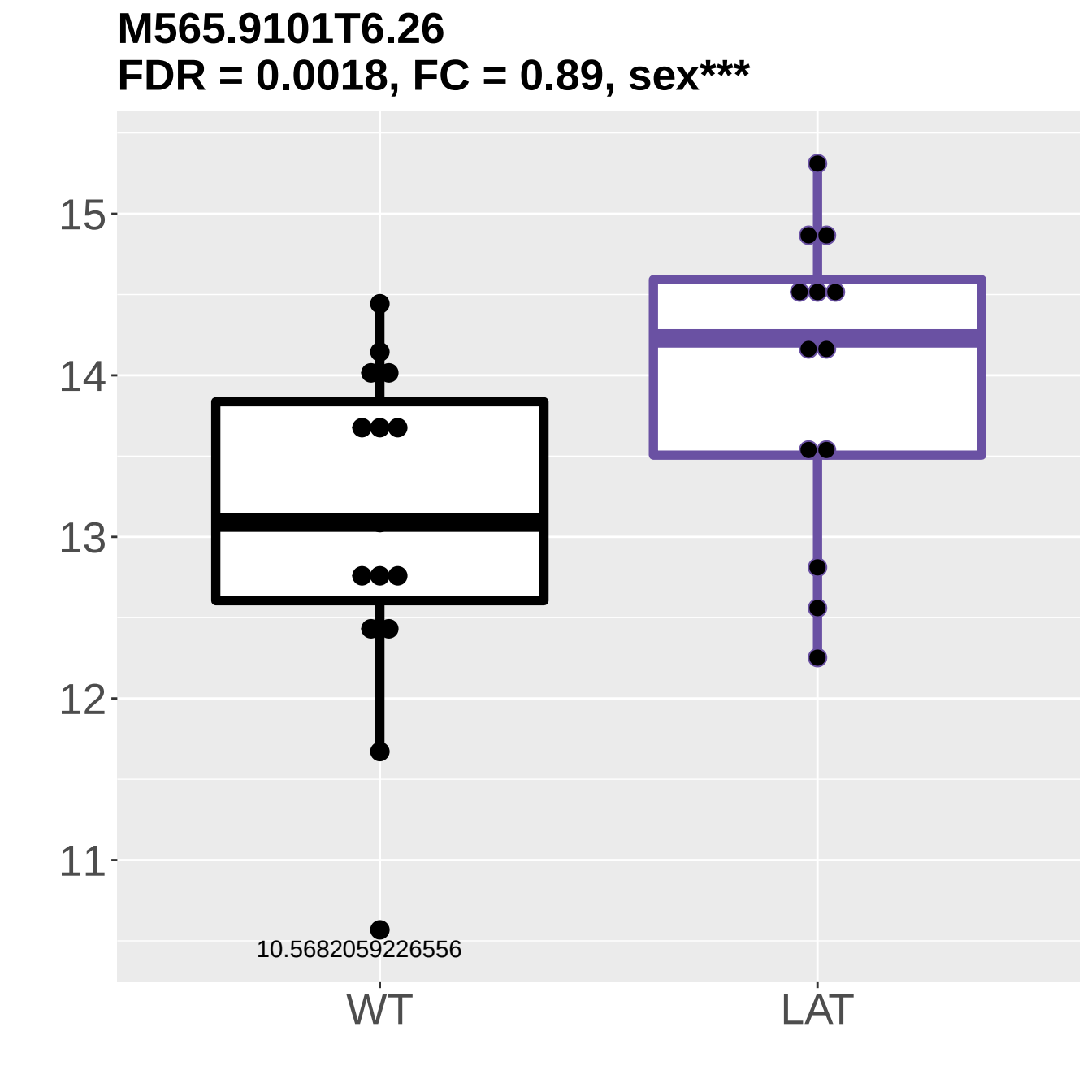
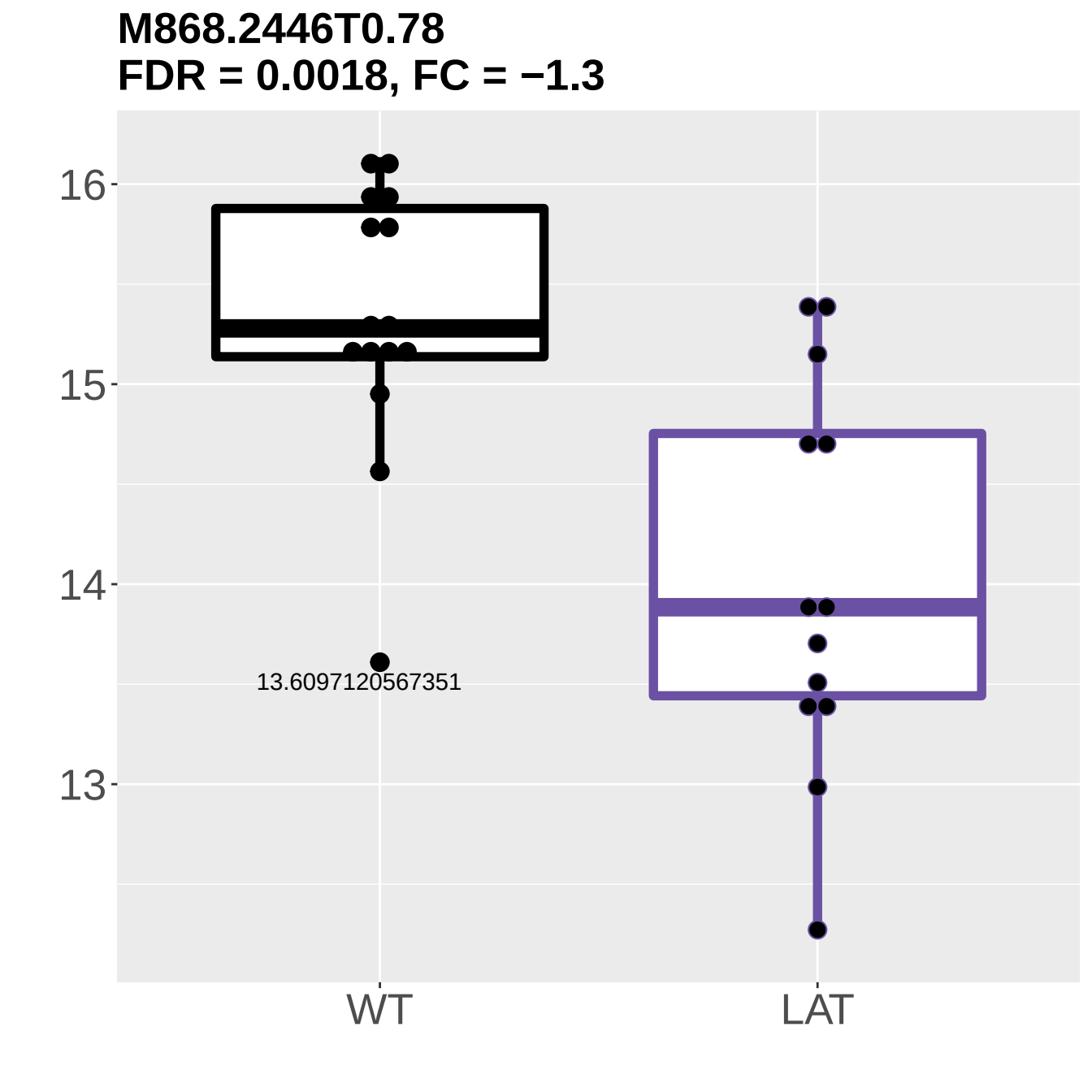
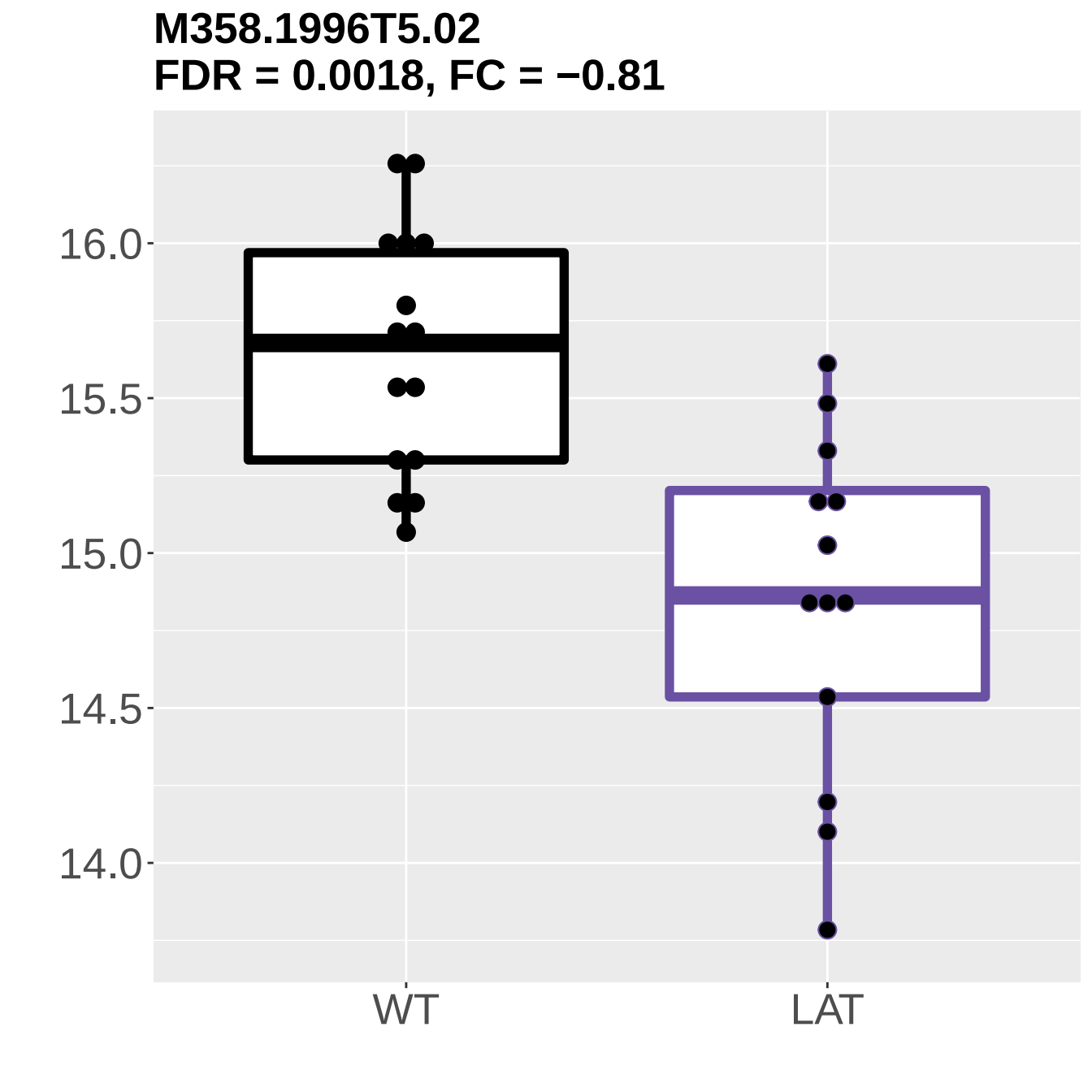
28.5382386742995
28.1197604286047
27.9760543937673
27.8473253674821
WT
LAT

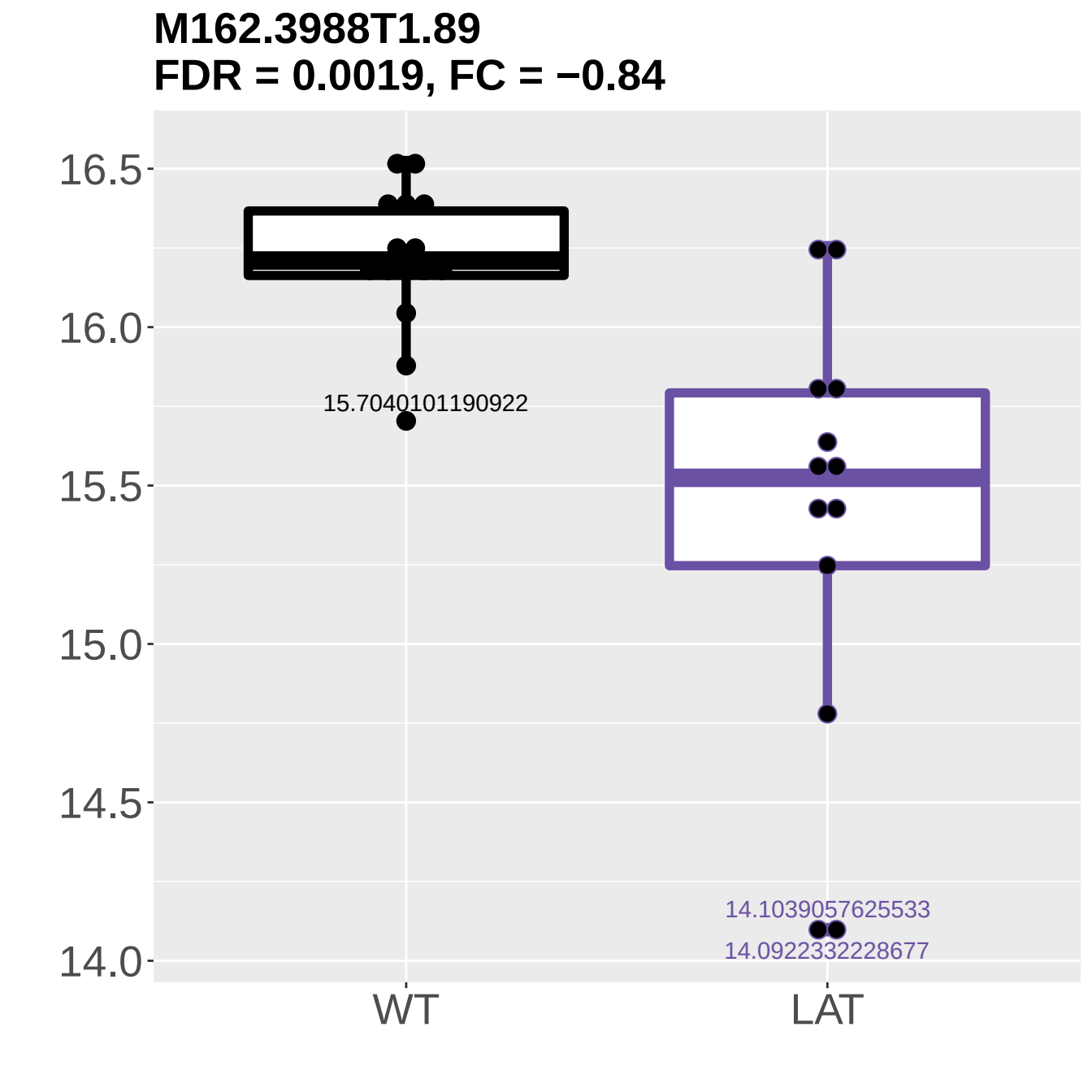

M134.3426T1.25
FDR = 0.0018, FC = −0.86
19
18
17
16
15.8427633265448
WT
LAT

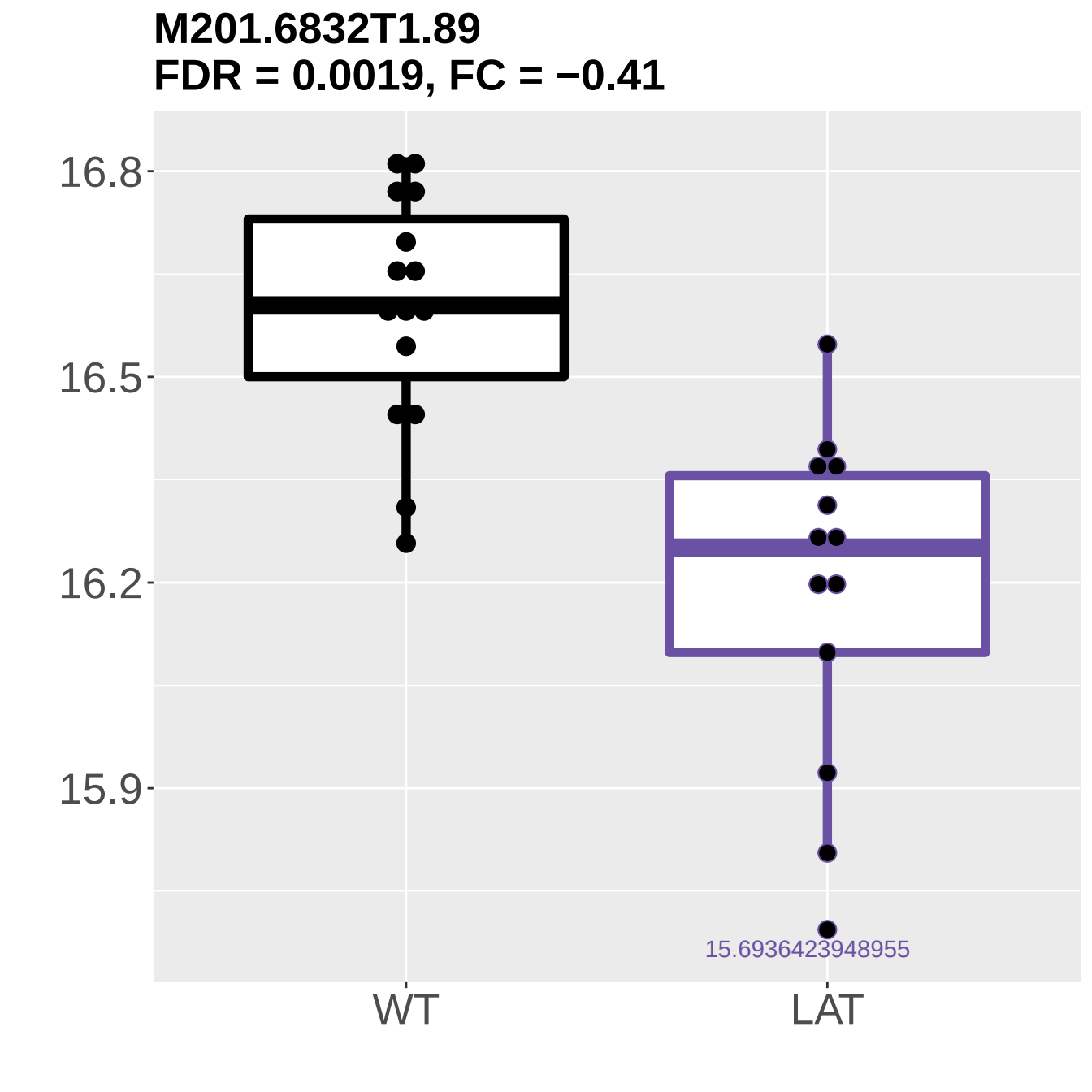

M310.2003T4.33
FDR = 0.0018, FC = −1.3
14
13
12
11
11.6349272724001
11.5987374511057
WT
LAT

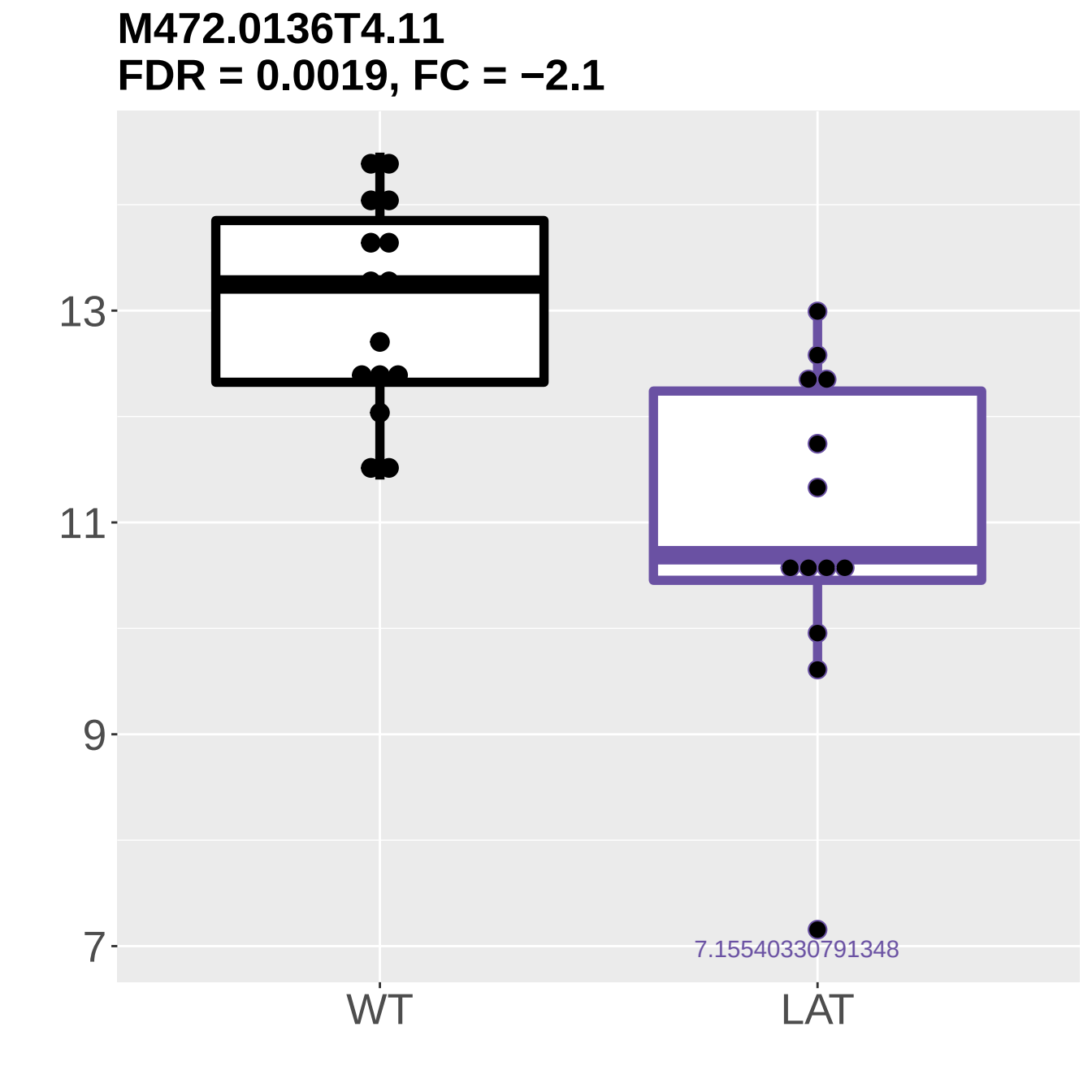

M565.9101T6.26
FDR = 0.0018, FC = 0.89, sex***
15
14
13
12
11
10.5682059226556
WT
LAT

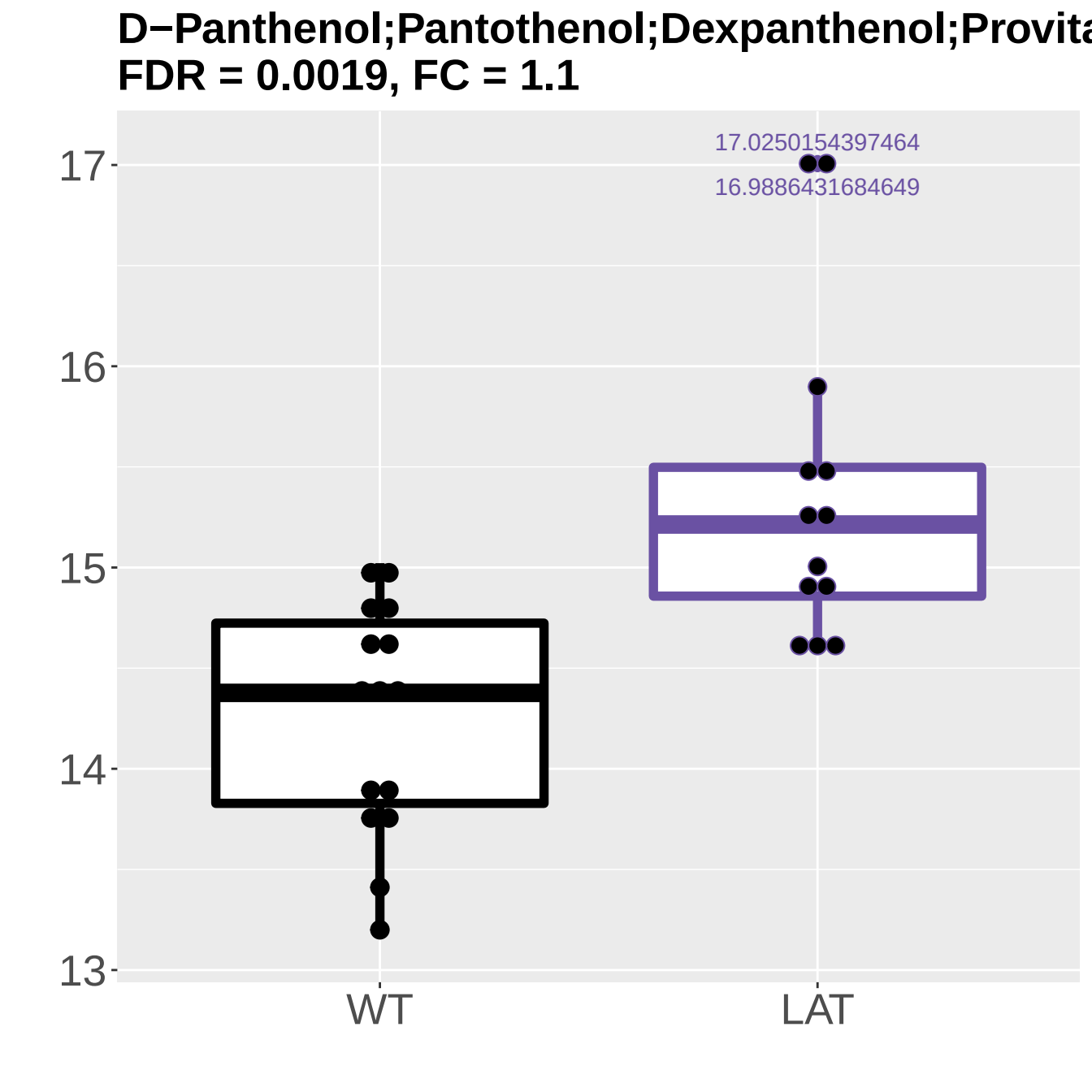

M868.2446T0.78
FDR = 0.0018, FC = −1.3
16
15
14
13
13.6097120567351
WT
LAT


M358.1996T5.02
FDR = 0.0018, FC = −0.81
16.0
15.5
15.0
14.5
14.0
WT
LAT


M162.3988T1.89
FDR = 0.0019, FC = −0.84
16.5
16.0
15.5
15.0
14.5
14.0
15.7040101190922
14.1039057625533
14.0922332228677
WT
LAT


M201.6832T1.89
FDR = 0.0019, FC = −0.41
16.8
16.5
16.2
15.9
15.6936423948955
WT
LAT


M472.0136T4.11
FDR = 0.0019, FC = −2.1
13
11
9
7
7.15540330791348
WT
LAT


D−Panthenol;Pantothenol;Dexpanthenol;Provita
FDR = 0.0019, FC = 1.1
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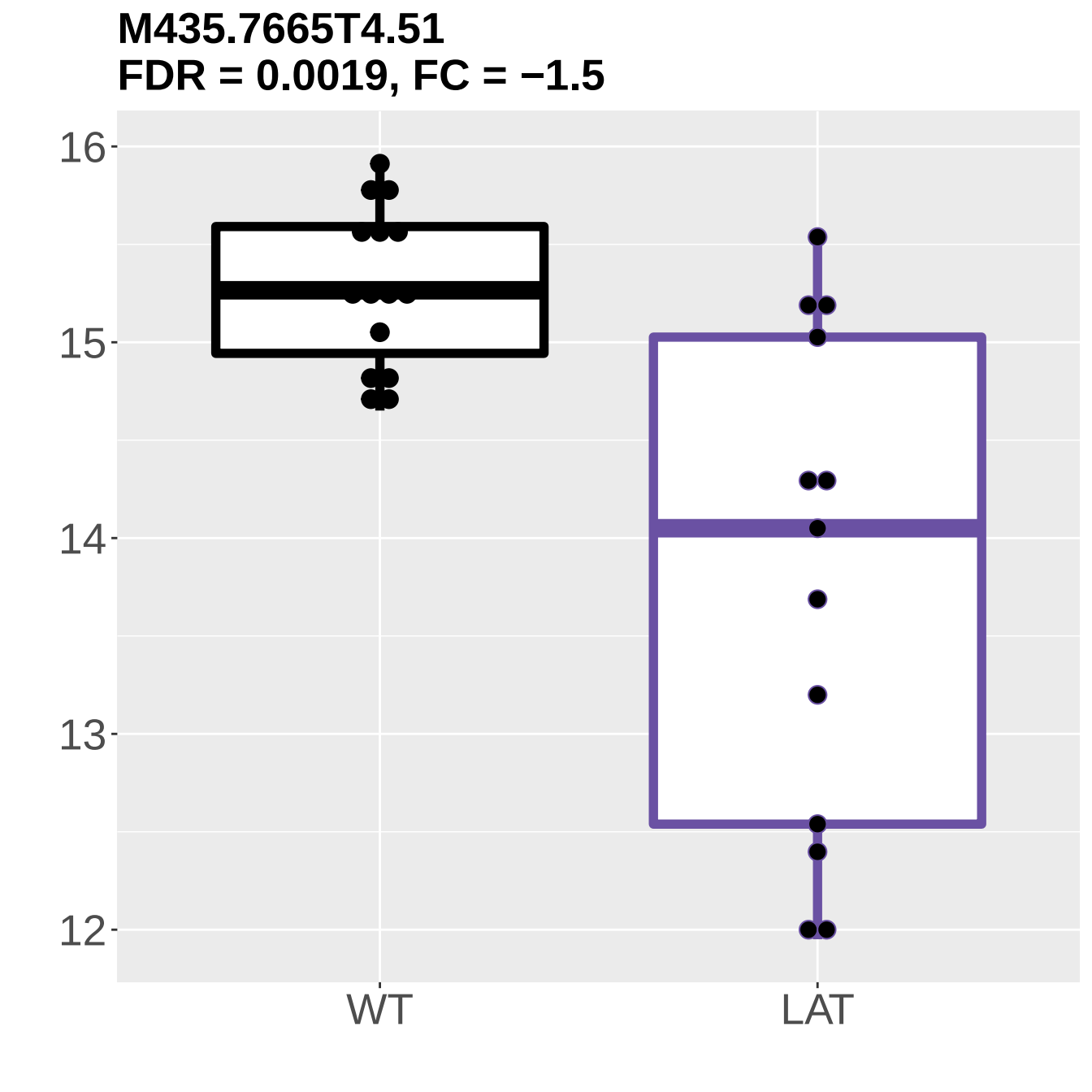
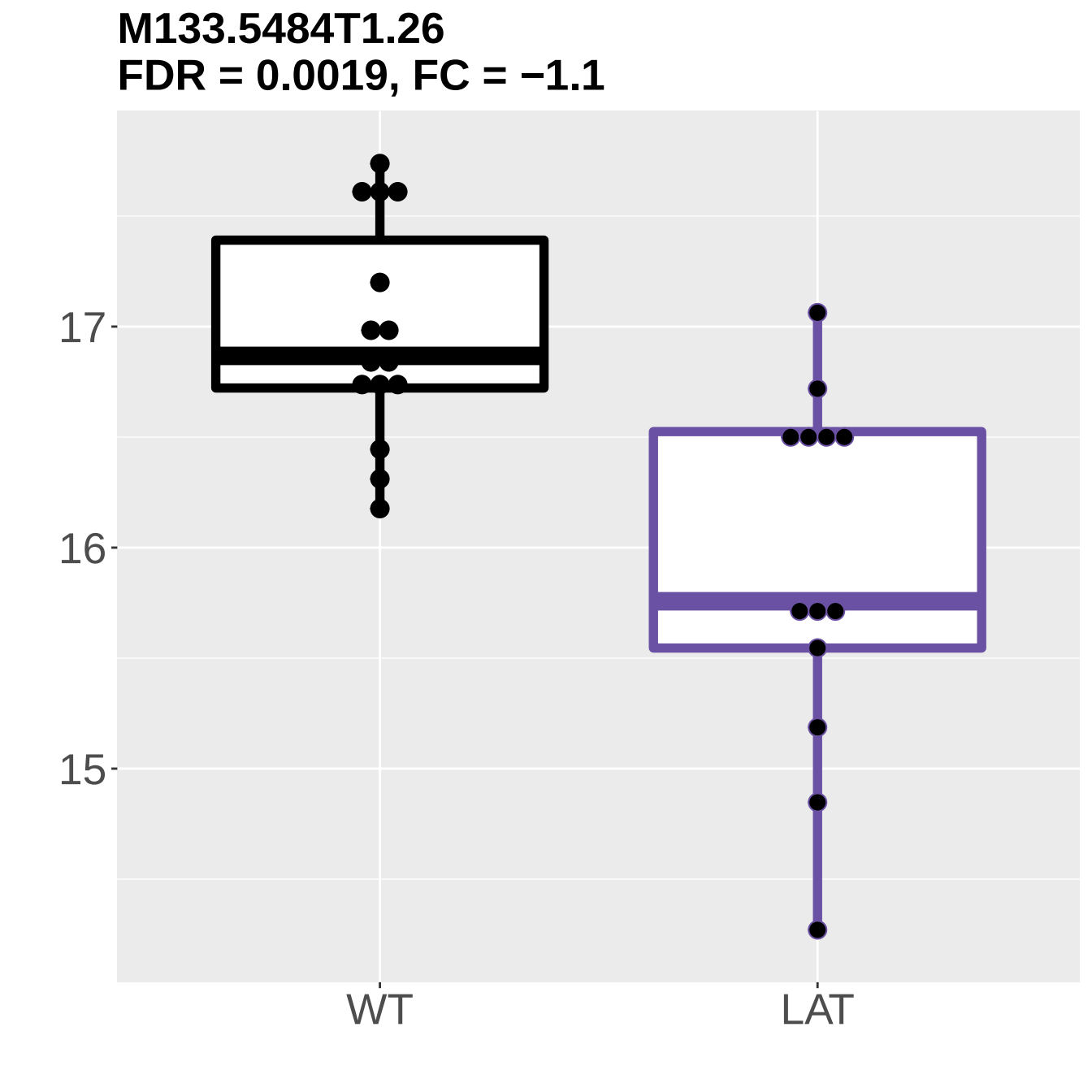
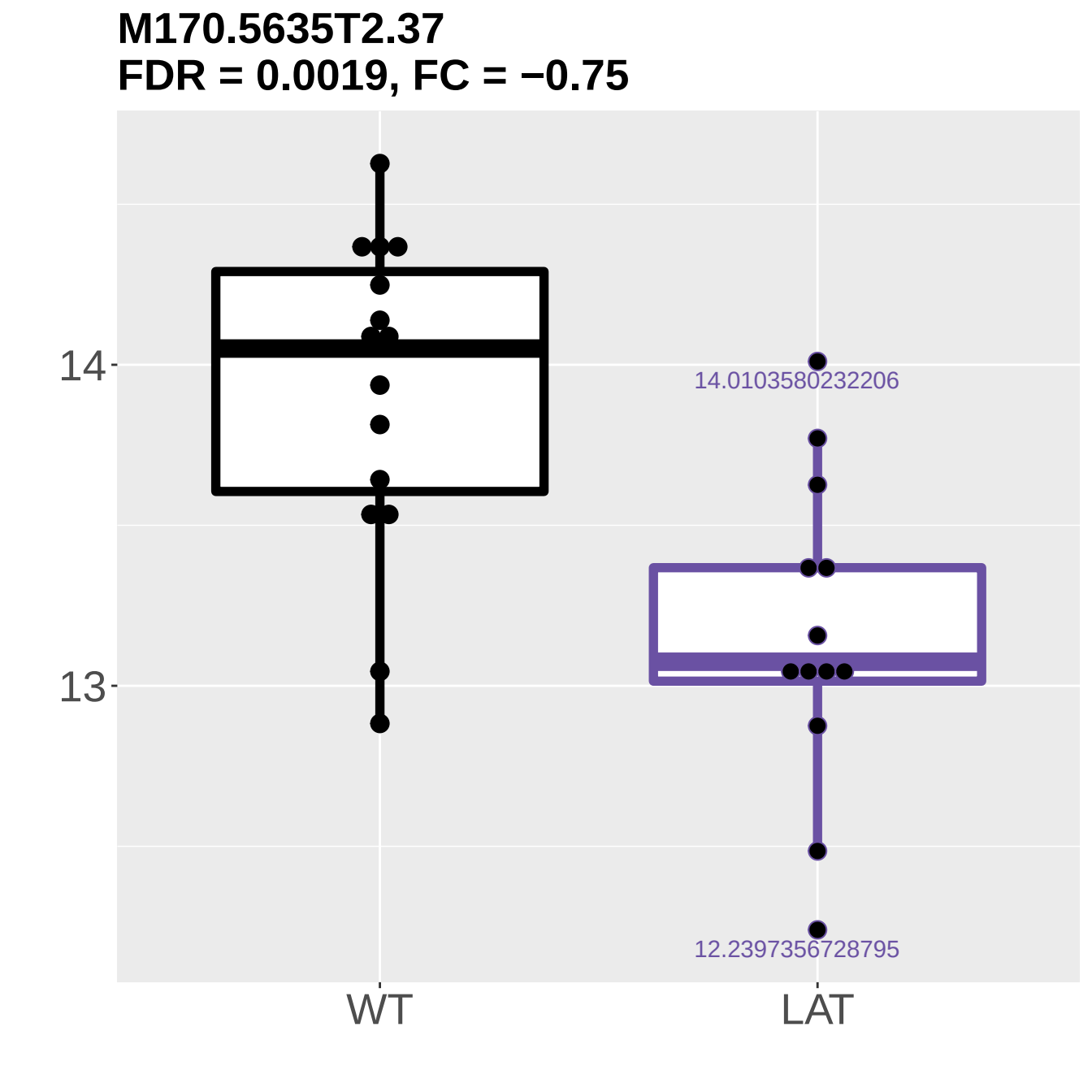
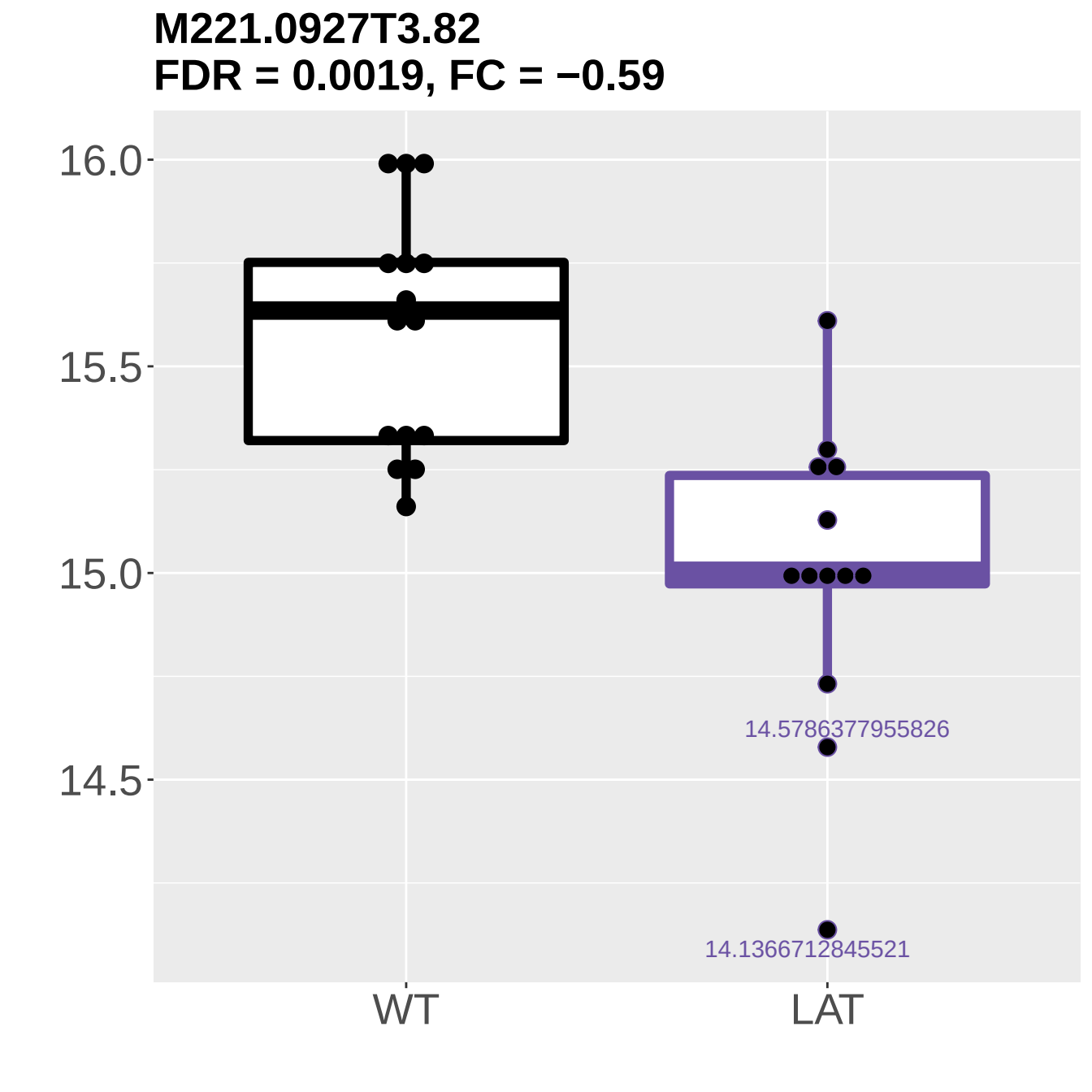
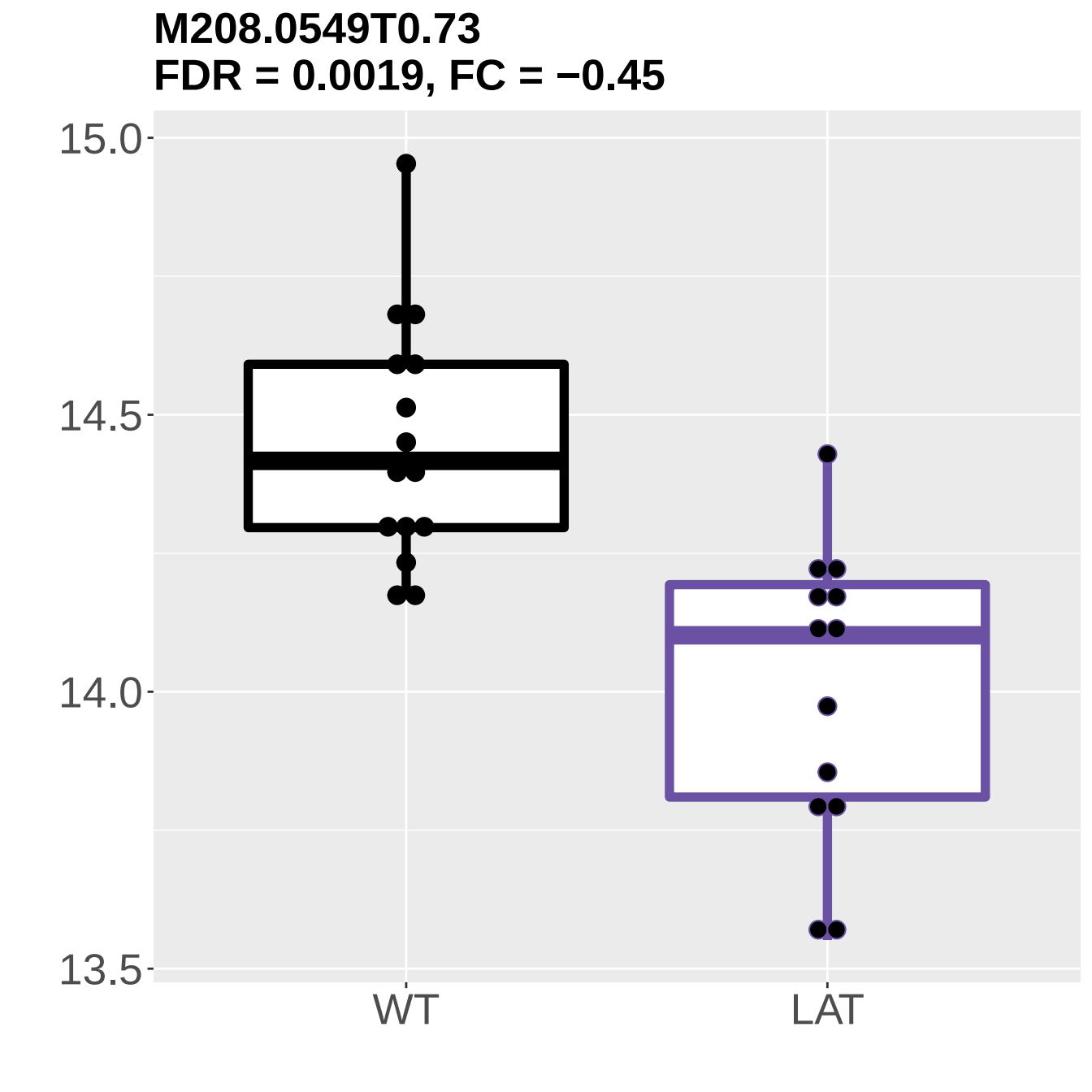
16.9886431684649
17
16
15
14
13
WT
LAT


M435.7665T4.51
FDR = 0.0019, FC = −1.5
16
15
14
13
12
WT
LAT


M133.5484T1.26
FDR = 0.0019, FC = −1.1
17
16
15
WT
LAT


M170.5635T2.37
FDR = 0.0019, FC = −0.75
14
13
14.0103580232206
12.2397356728795
WT
LAT


M221.0927T3.82
FDR = 0.0019, FC = −0.59
16.0
15.5
15.0
14.5
14.5786377955826
14.1366712845521
WT
LAT


M208.0549T0.73
FDR = 0.0019, FC = −0.45
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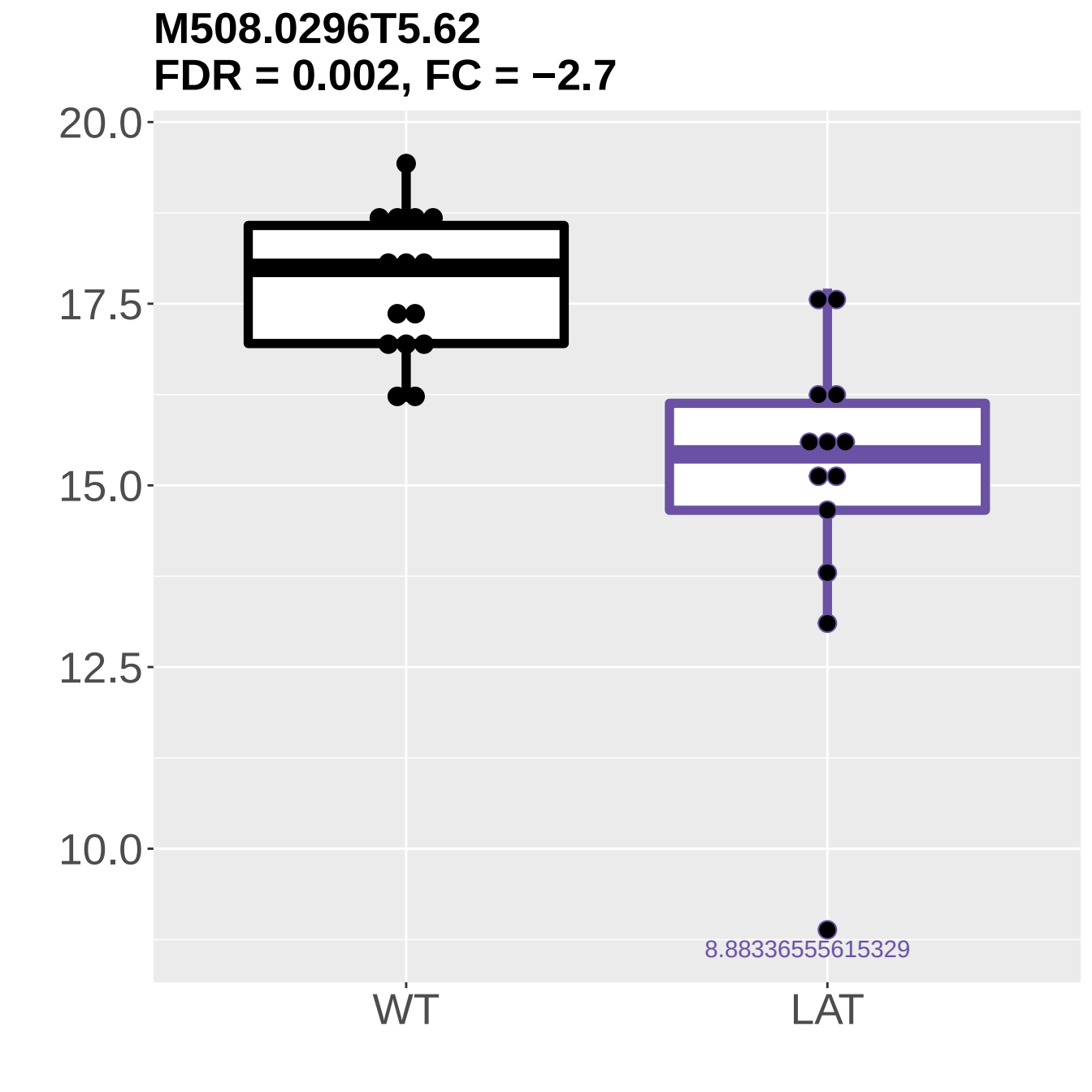
14.5
14.0
13.5
WT
LAT


M508.0296T5.62
FDR = 0.002, FC = −2.7
20.0
17.5
15.0
12.5
10.0
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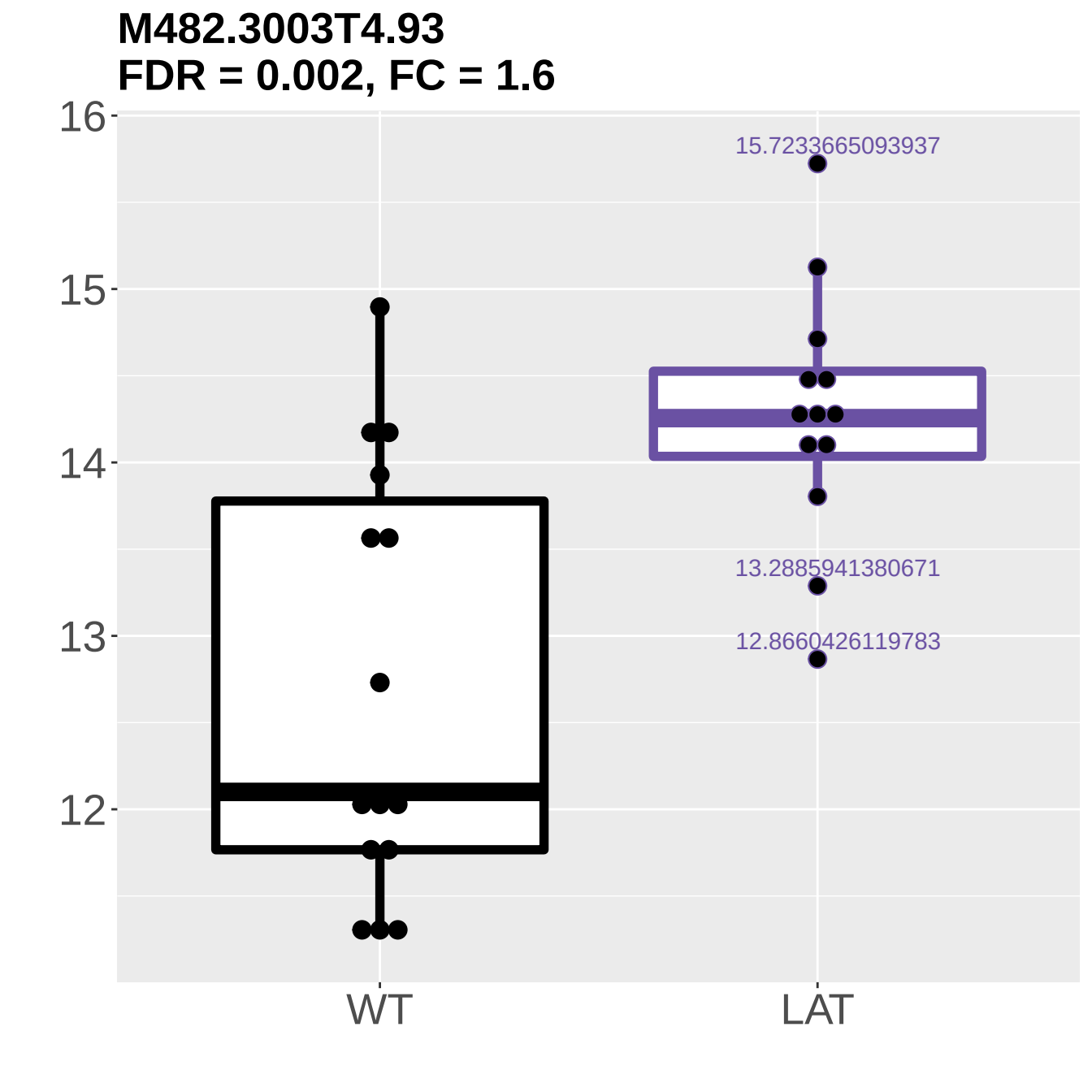
WT
LAT


M482.3003T4.93
FDR = 0.002, FC = 1.6
16
15
14
13
12
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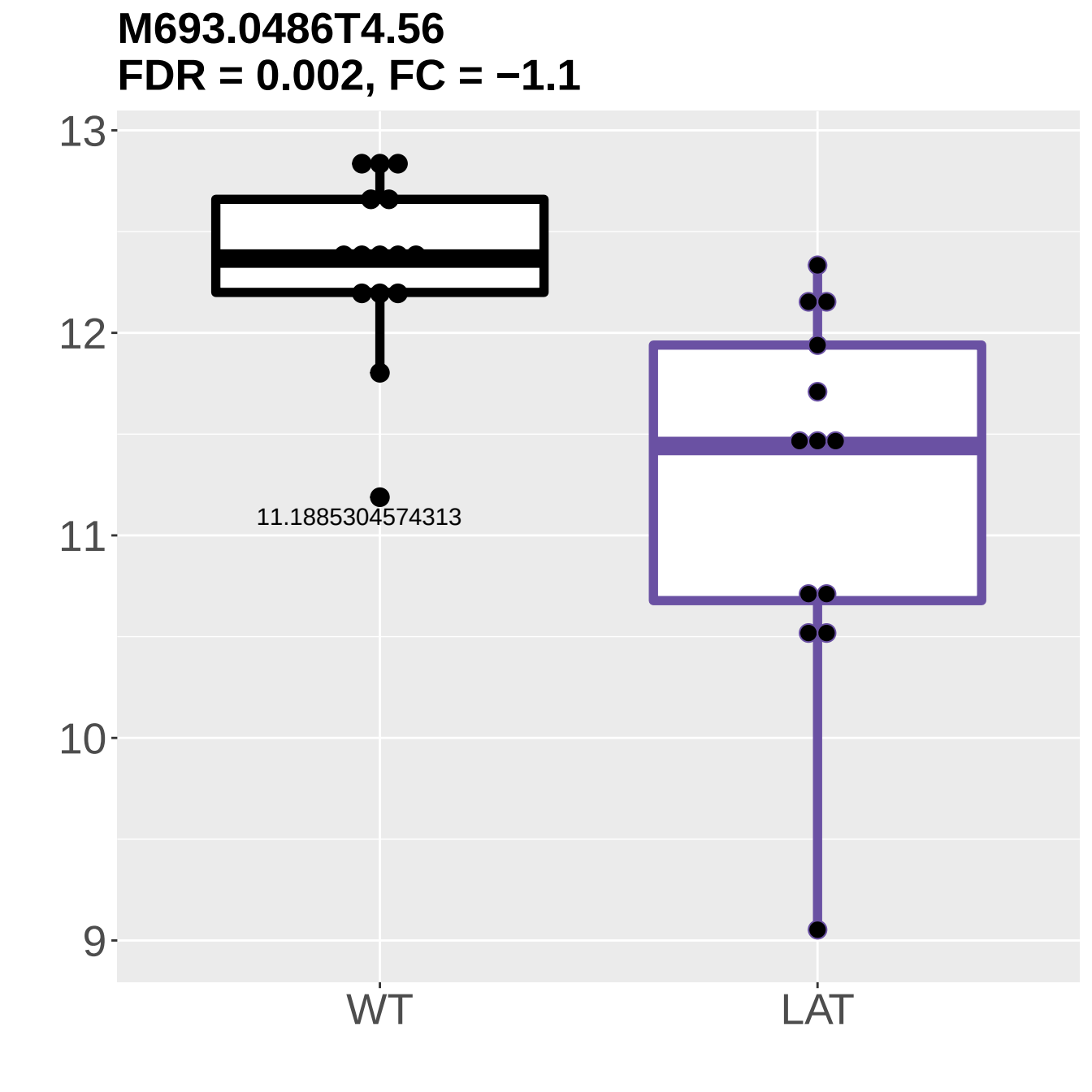
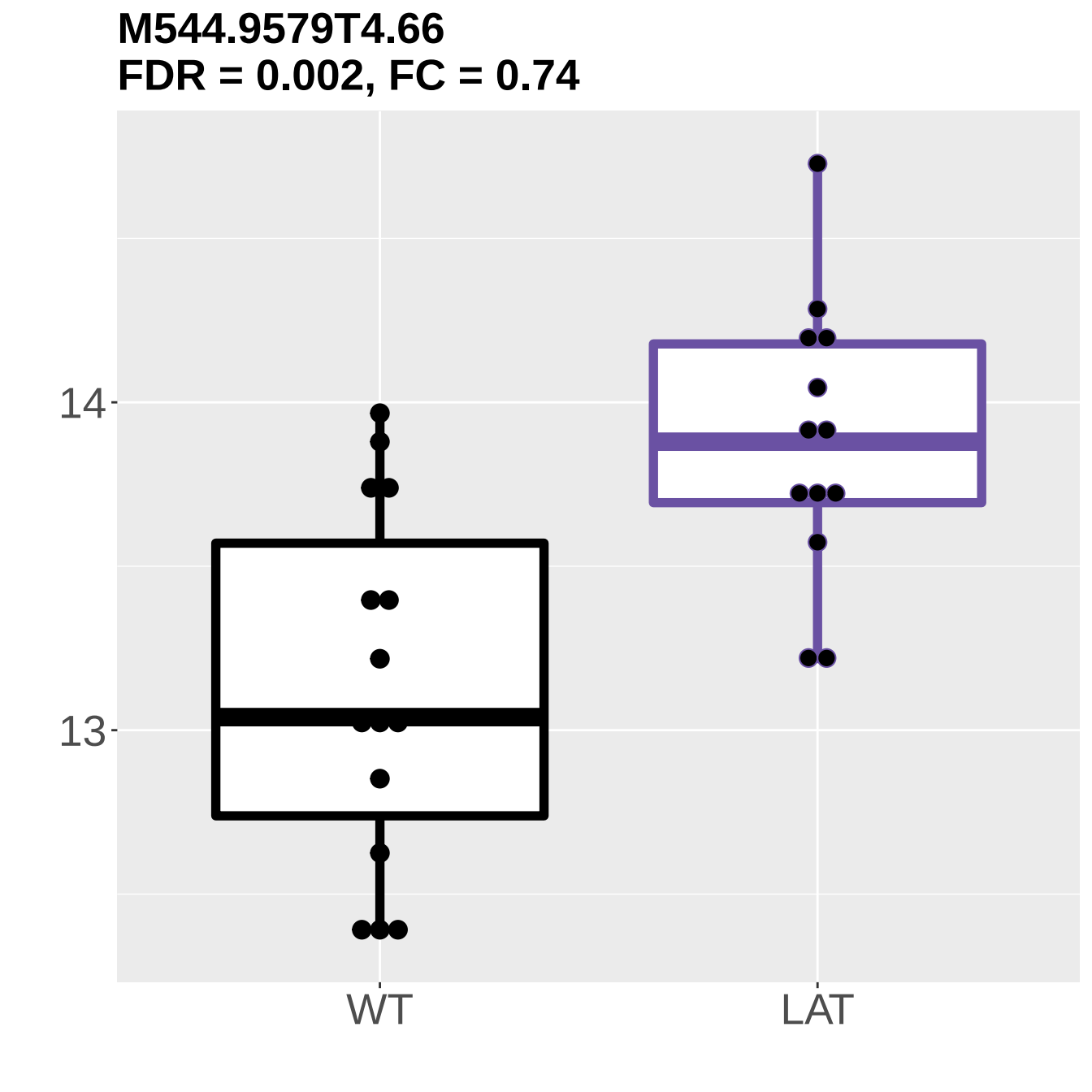
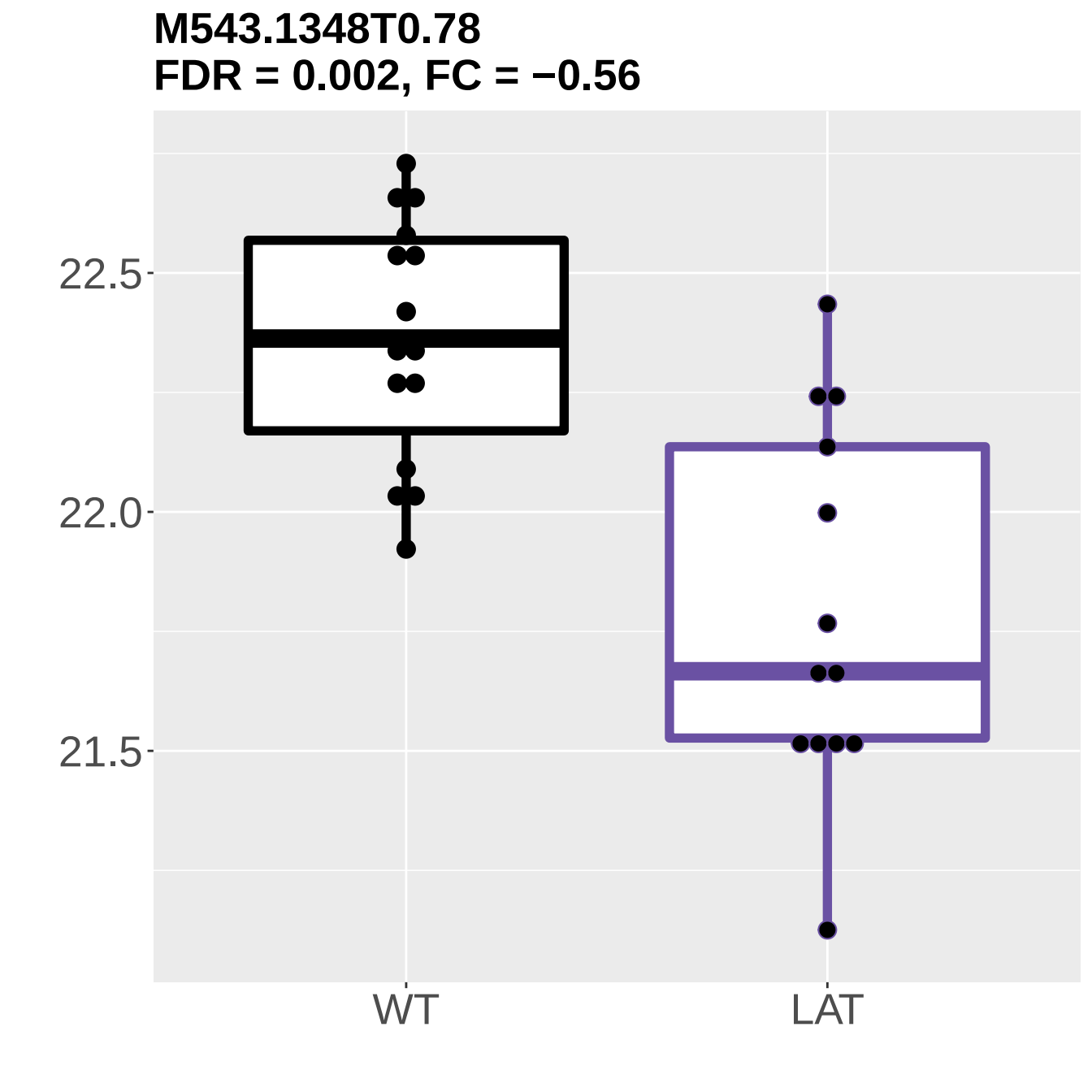
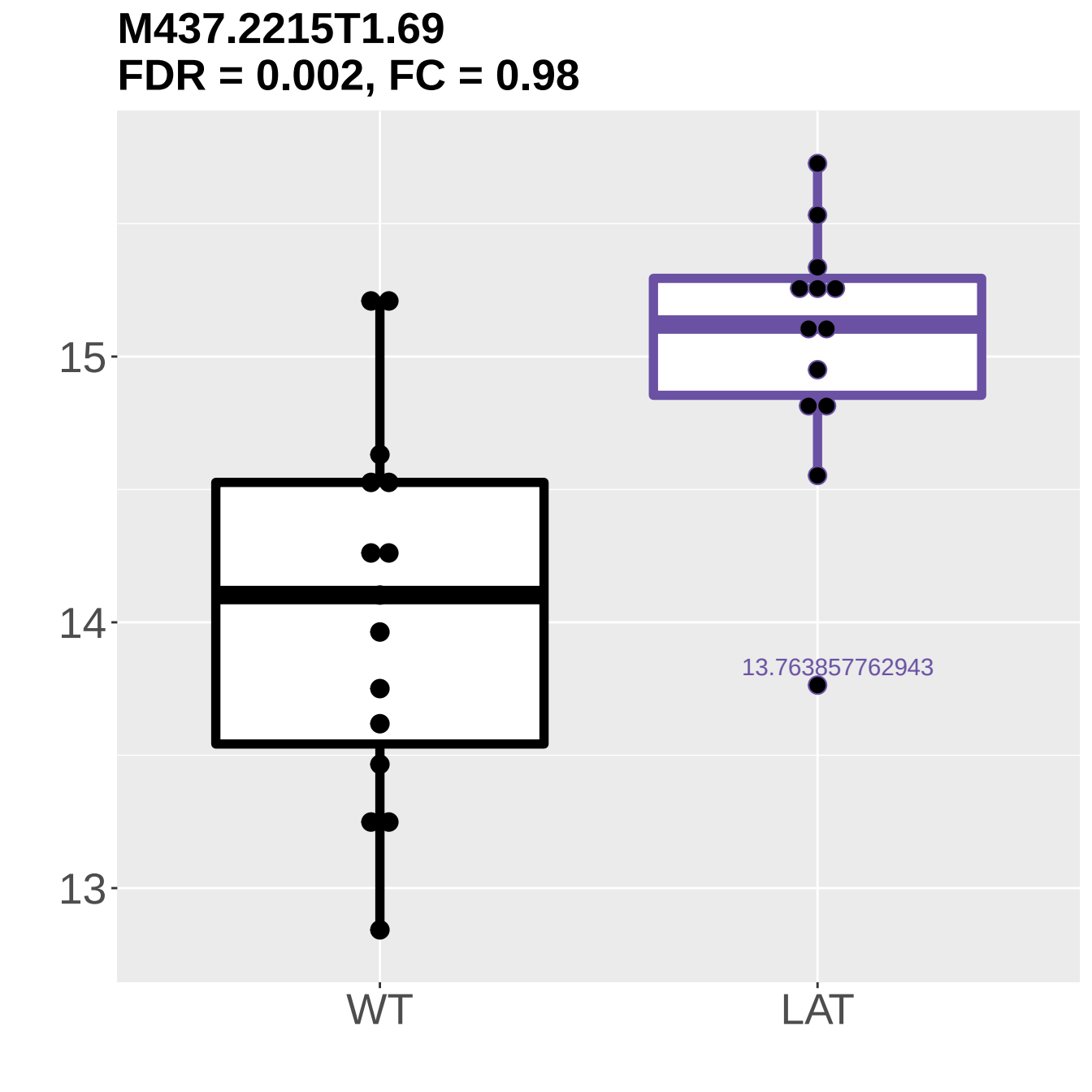
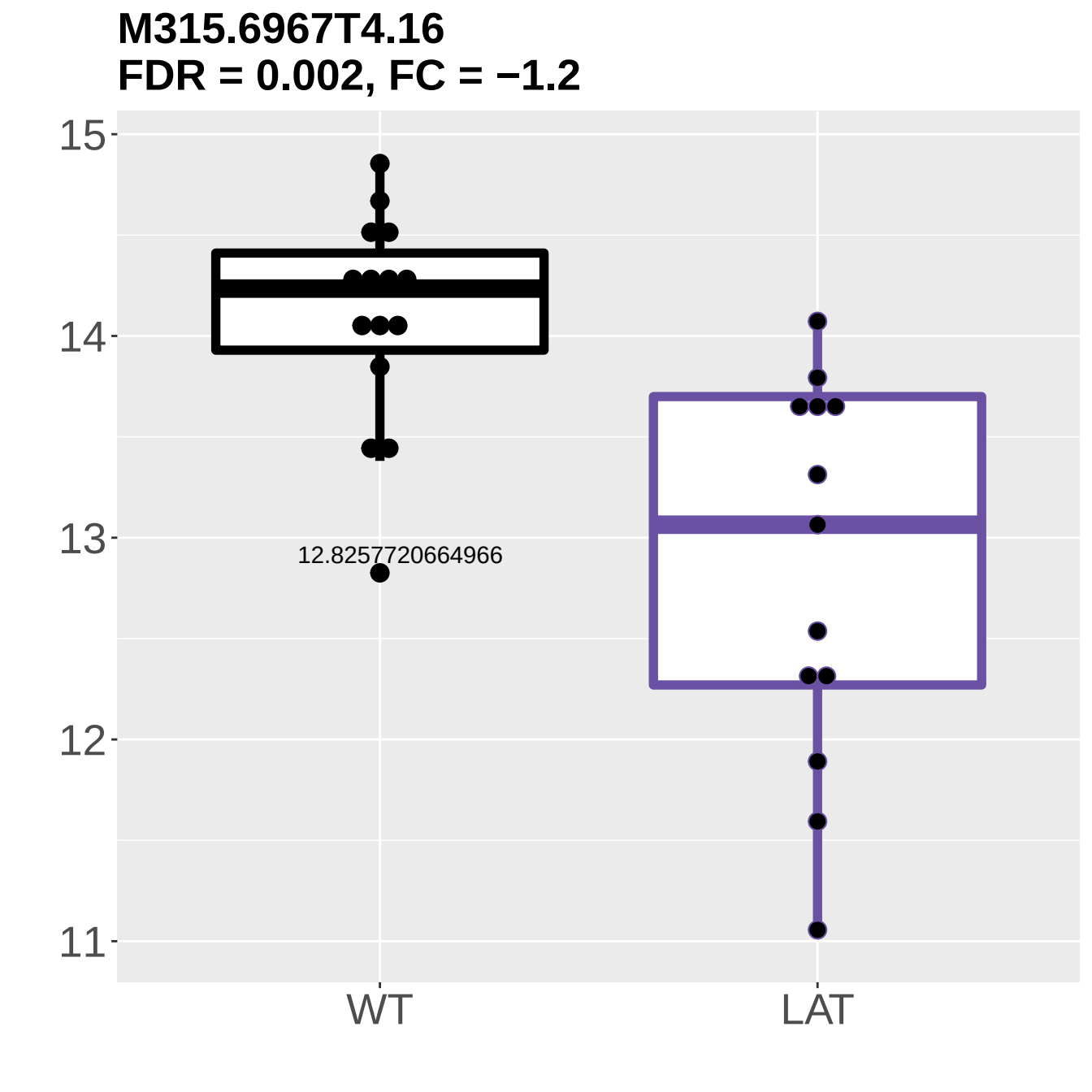
13.2885941380671
12.8660426119783
WT
LAT

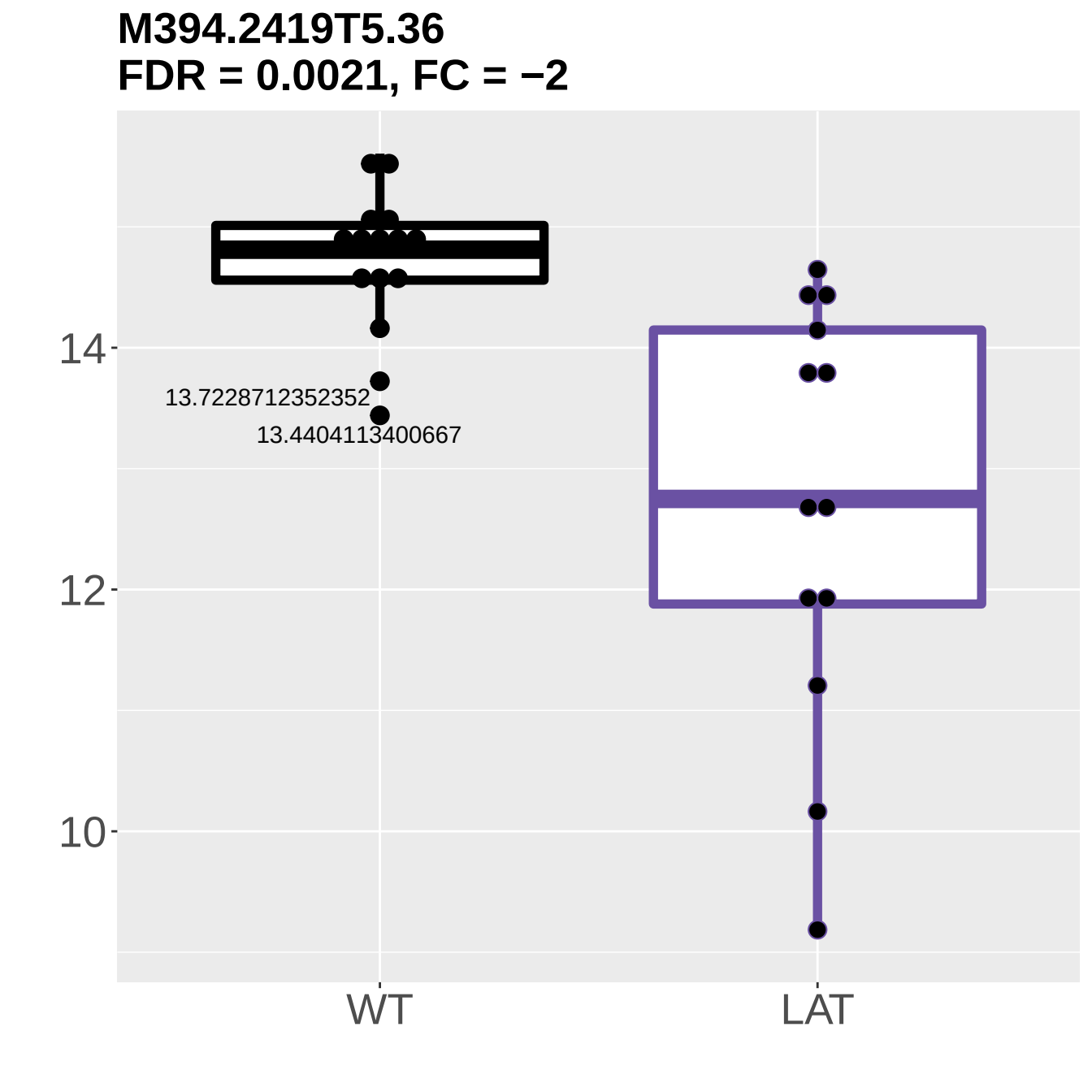

M693.0486T4.56
FDR = 0.002, FC = −1.1
13
12
11
10
9
11.1885304574313
WT
LAT


M544.9579T4.66
FDR = 0.002, FC = 0.74
14
13
WT
LAT


M543.1348T0.78
FDR = 0.002, FC = −0.56
22.5
22.0
21.5
WT
LAT


M437.2215T1.69
FDR = 0.002, FC = 0.98
15
14
13
13.763857762943
WT
LAT


M315.6967T4.16
FDR = 0.002, FC = −1.2
15
14
13
12
11
12.8257720664966
WT
LAT


M394.2419T5.36
FDR = 0.0021, FC = −2
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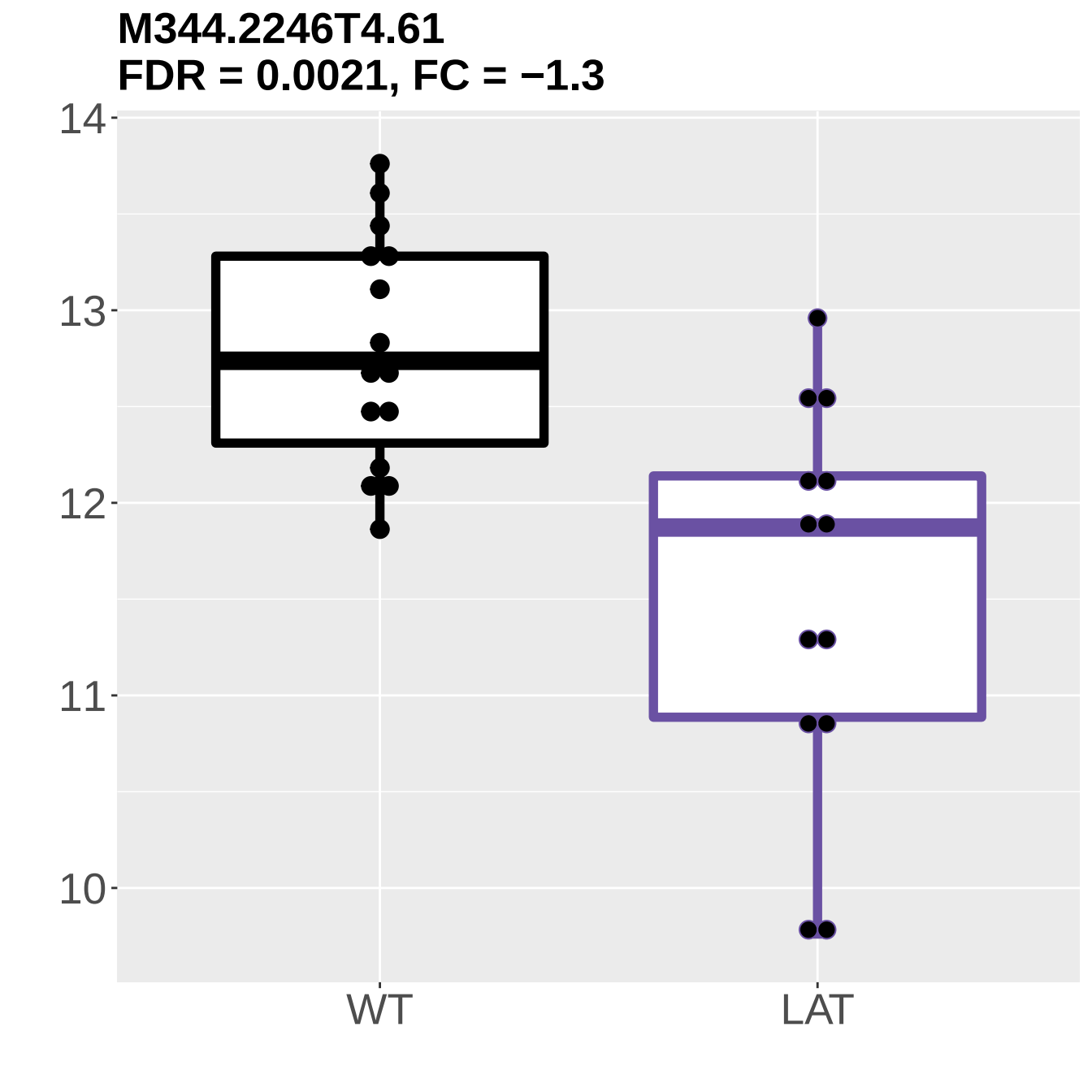
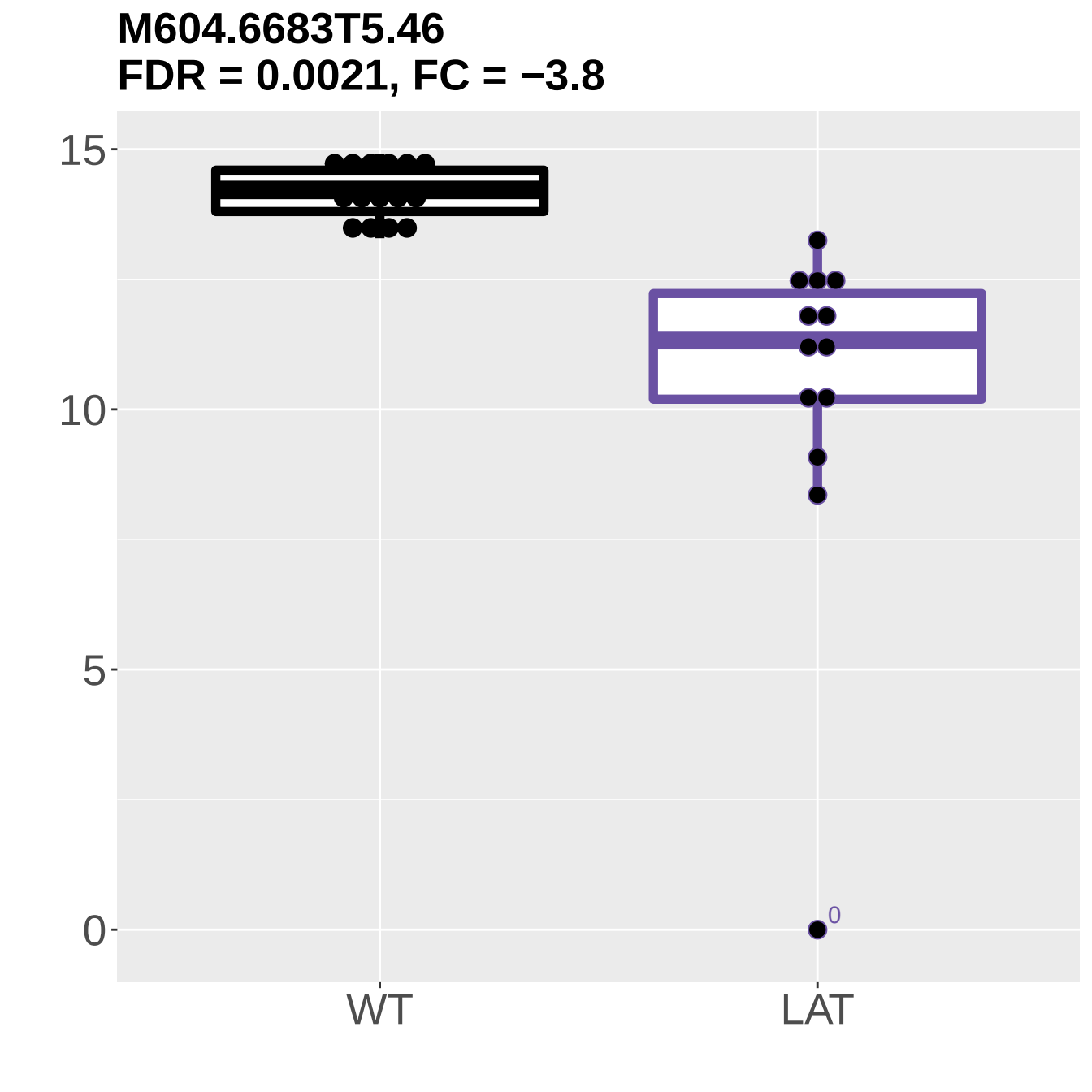
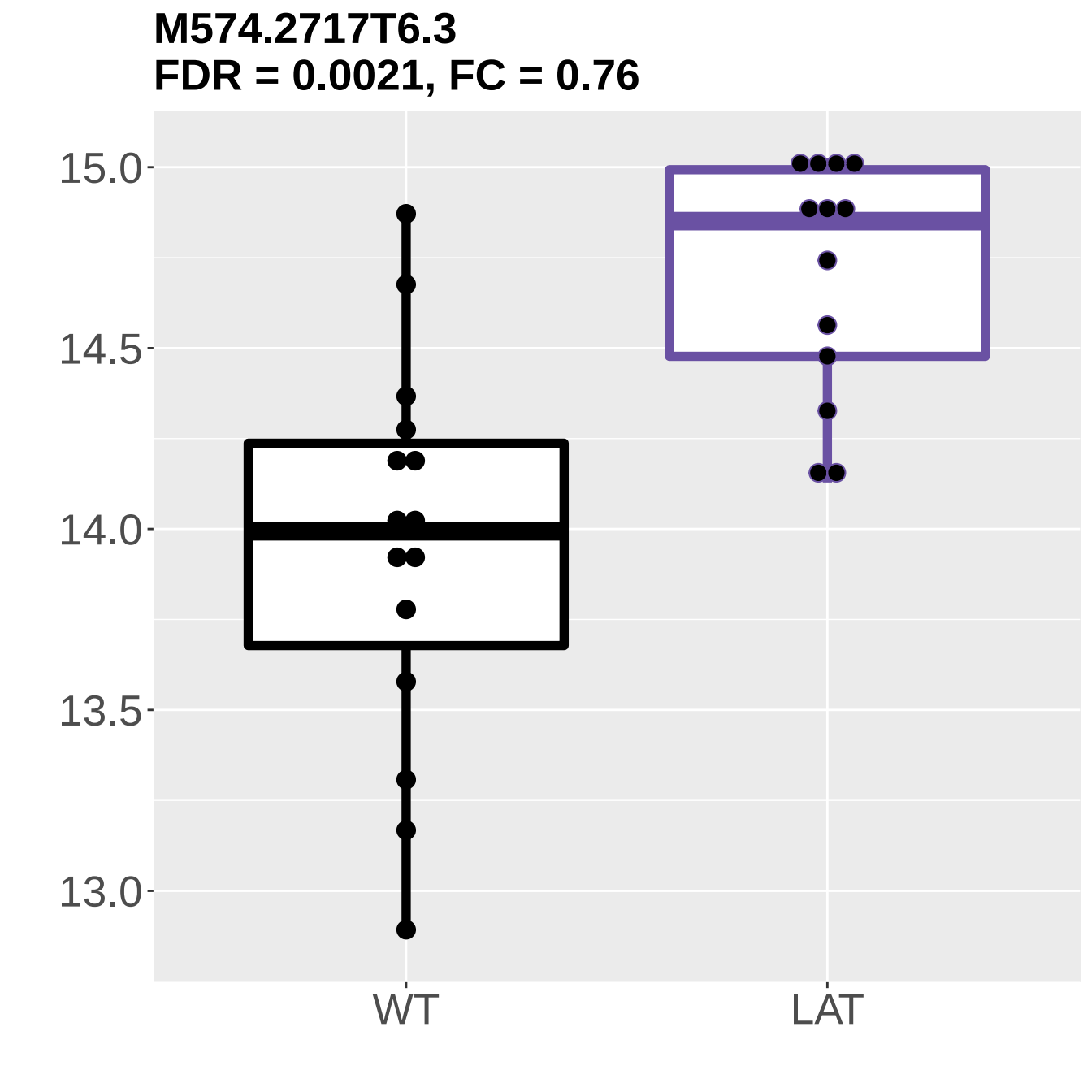
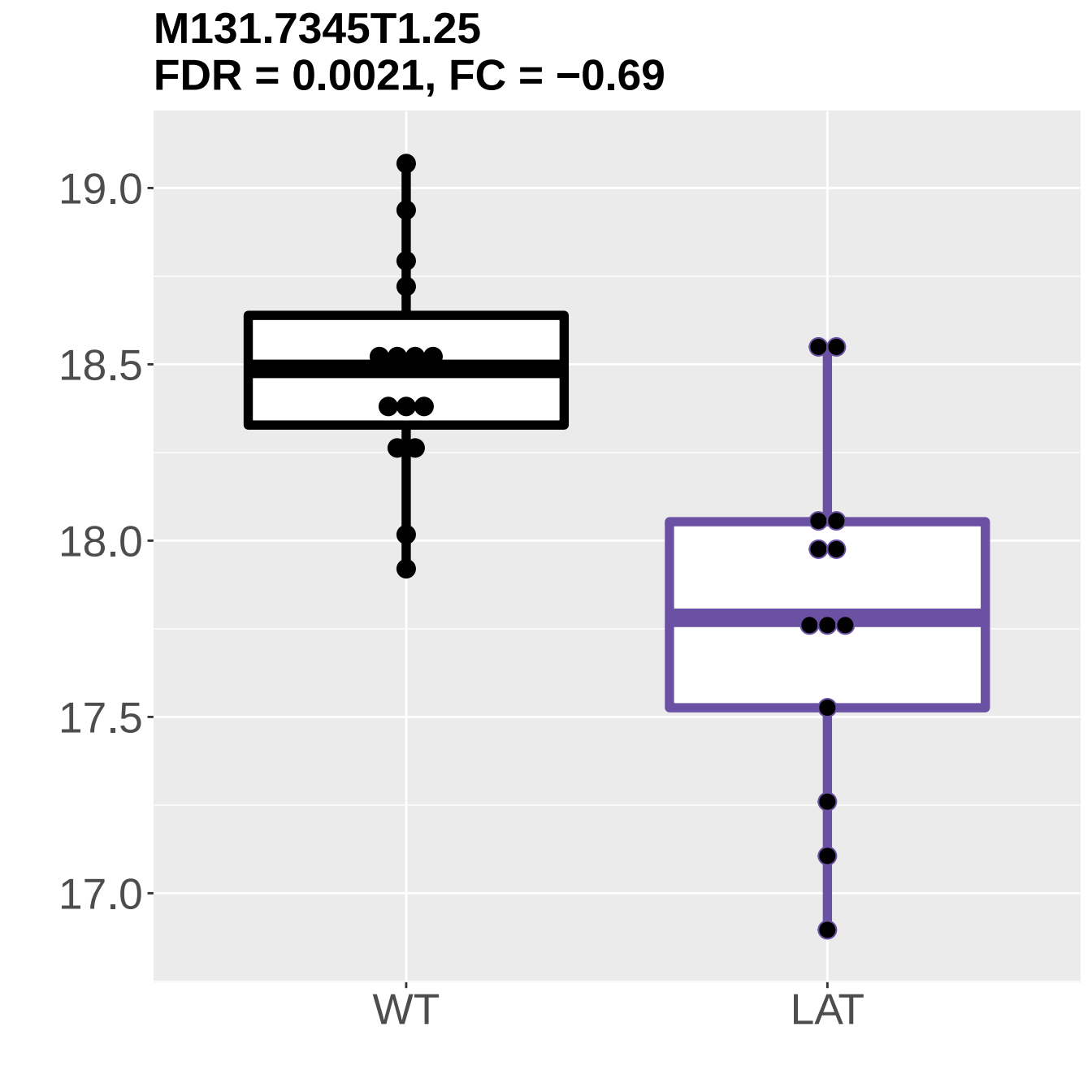
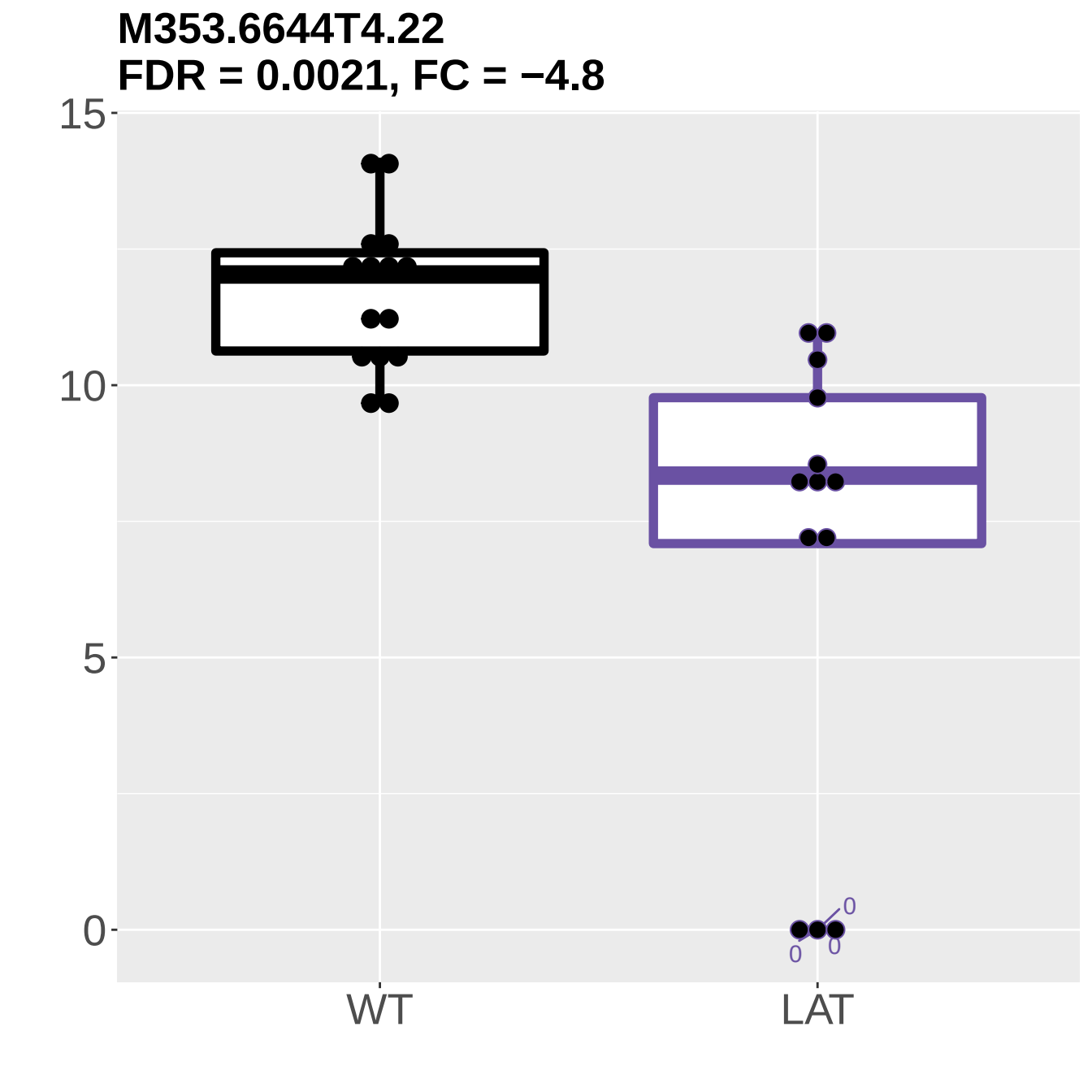
12
10
13.7228712352352
13.4404113400667
WT
LAT


M344.2246T4.61
FDR = 0.0021, FC = −1.3
14
13
12
11
10
WT
LAT


M604.6683T5.46
FDR = 0.0021, FC = −3.8
15
10
5
0
0
WT
LAT


M574.2717T6.3
FDR = 0.0021, FC = 0.76
15.0
14.5
14.0
13.5
13.0
WT
LAT


M131.7345T1.25
FDR = 0.0021, FC = −0.69
19.0
18.5
18.0
17.5
17.0
WT
LAT


M353.6644T4.22
FDR = 0.0021, FC = −4.8
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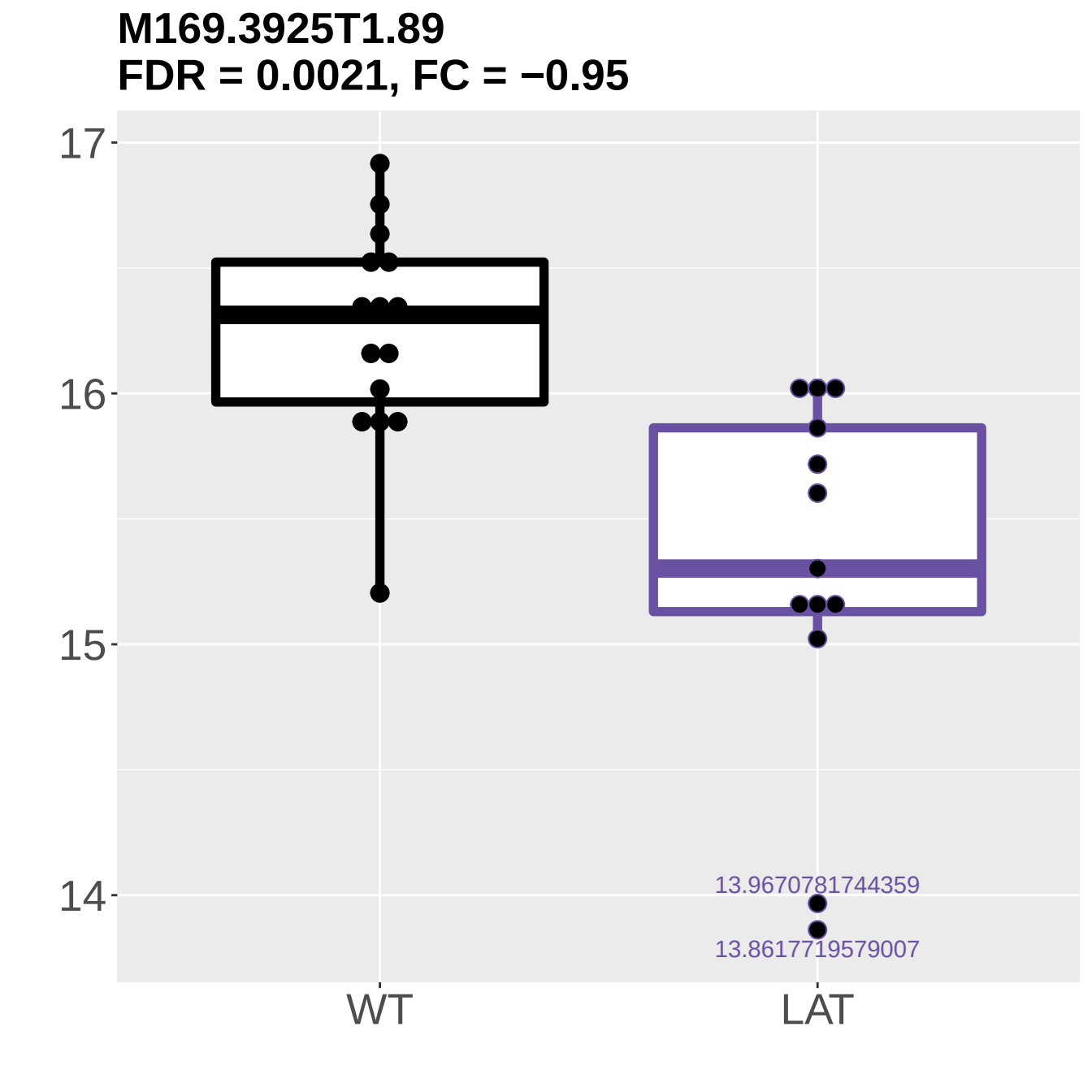
10
5
0
0
0
0
WT
LAT


M169.3925T1.89
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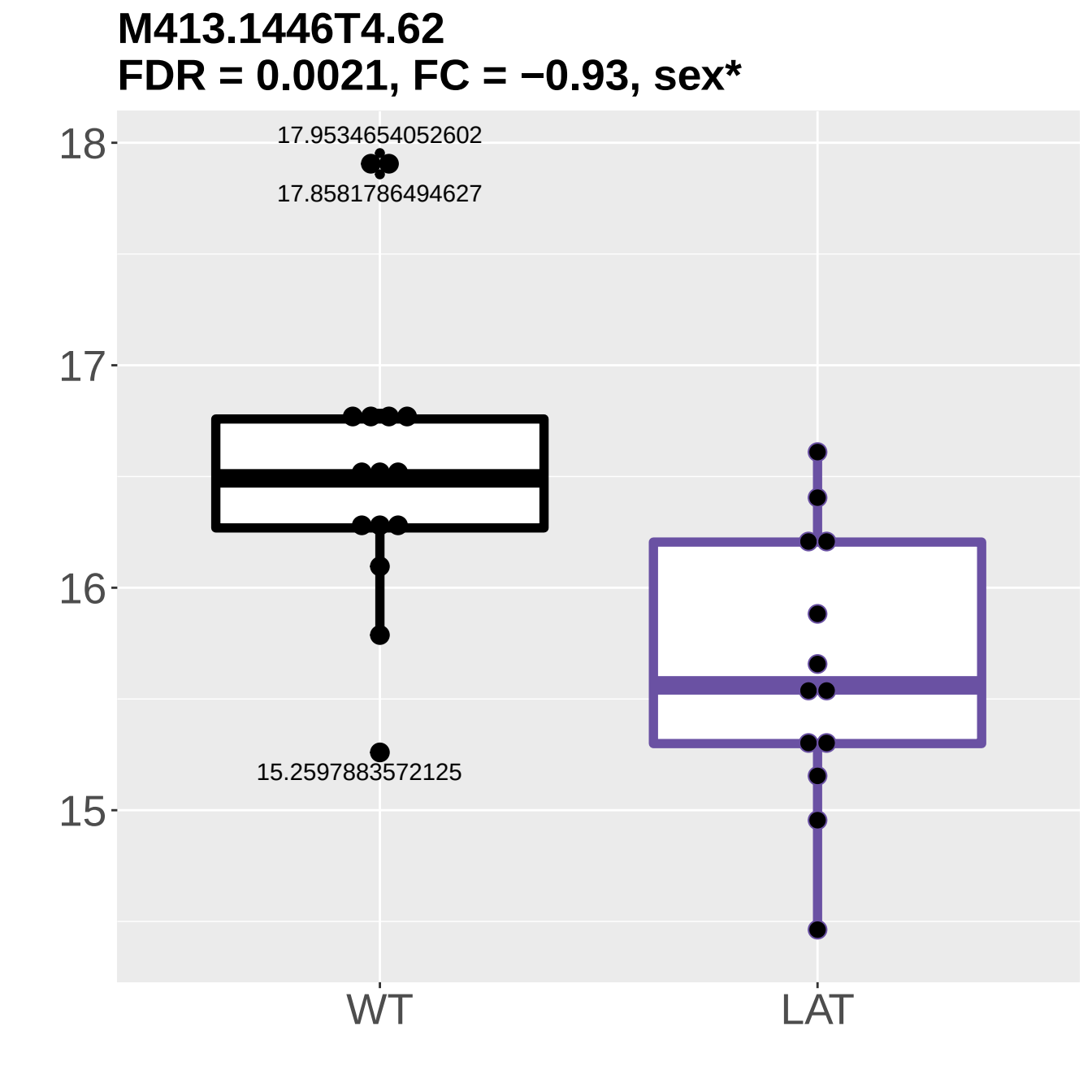
17
16
15
14
13.9670781744359
13.8617719579007
WT
LAT


M413.1446T4.62
FDR = 0.0021, FC = −0.93, sex*
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17
16
15
17.9534654052602
17.8581786494627
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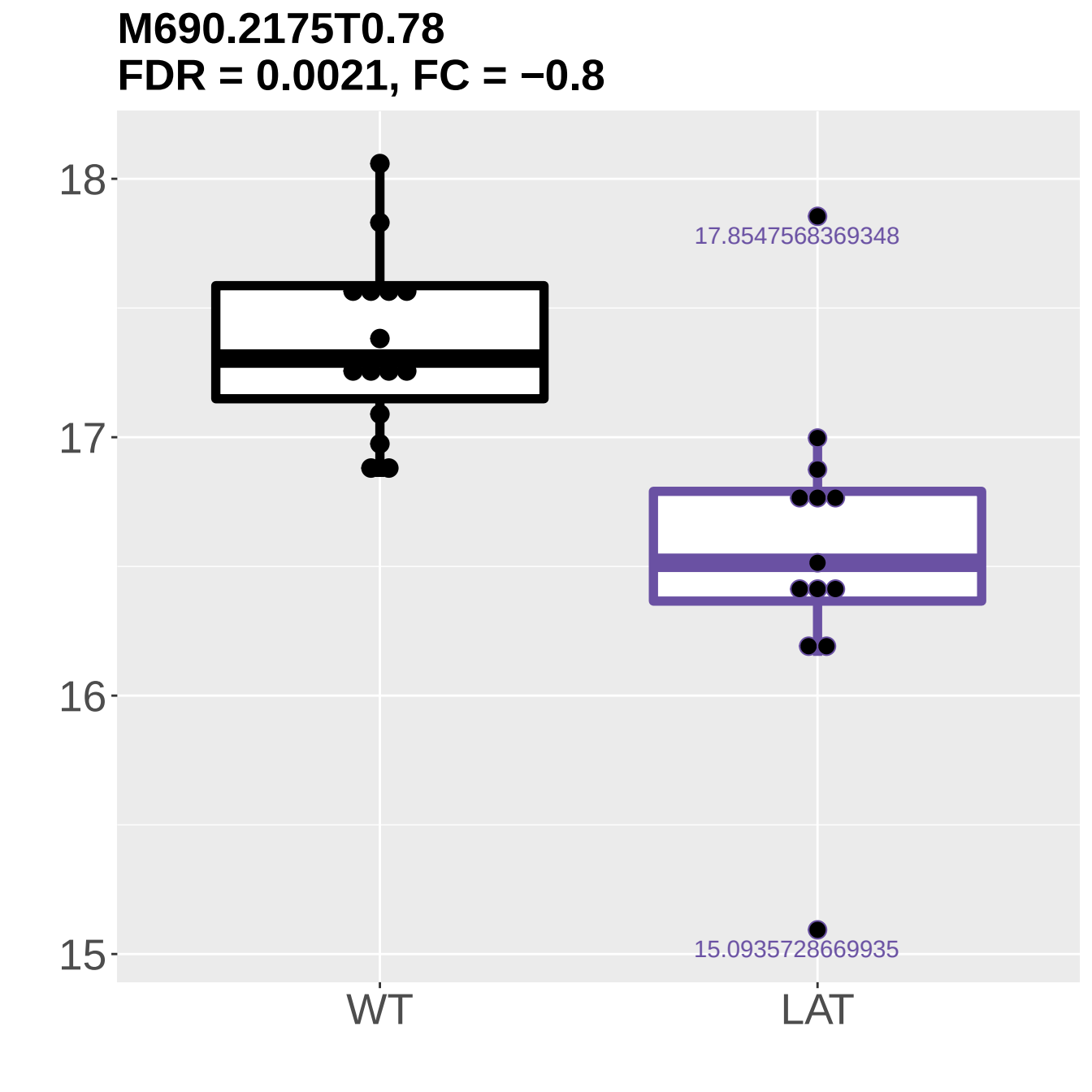
WT
LAT


M690.2175T0.78
FDR = 0.0021, FC = −0.8
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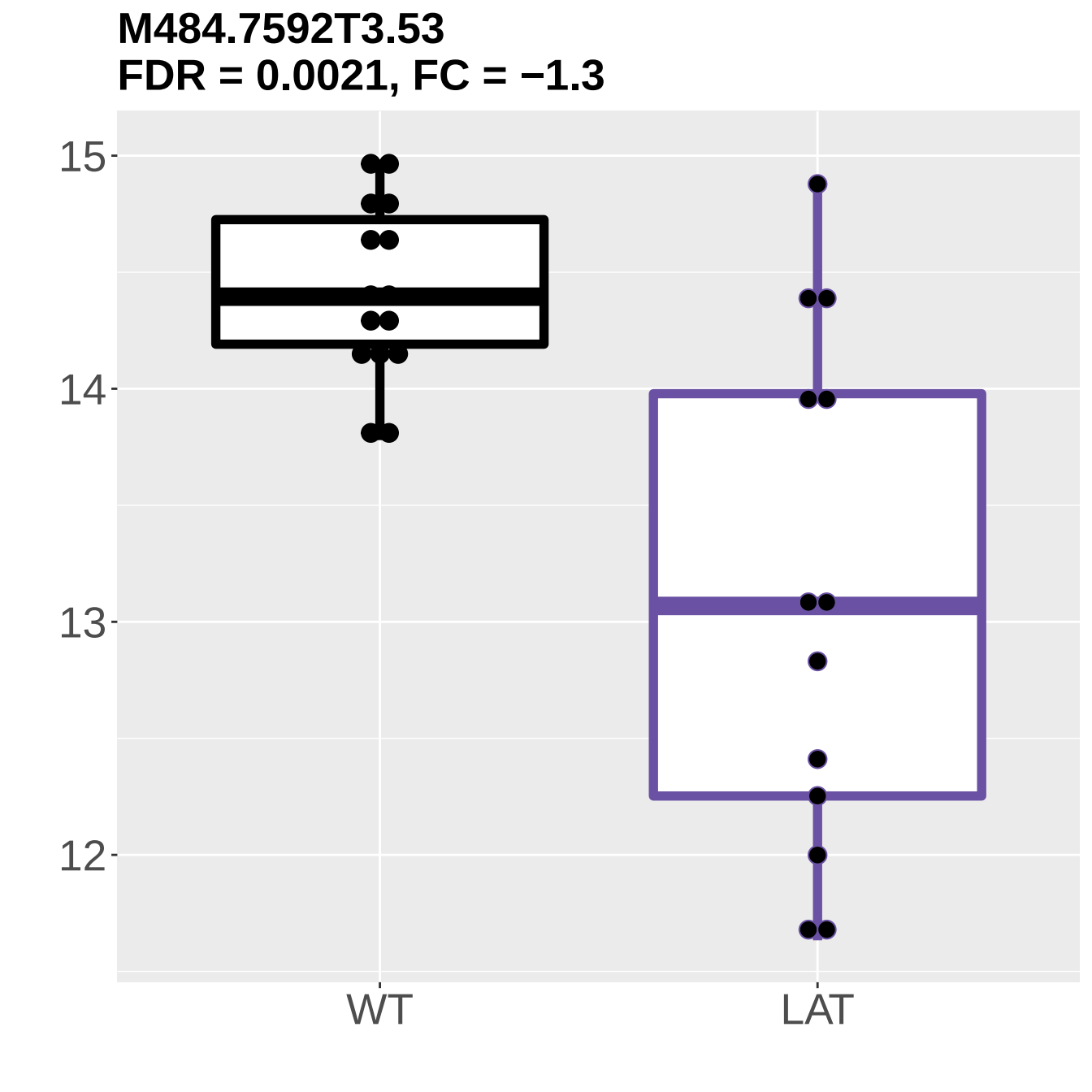
17
16
15
17.8547568369348
15.0935728669935
WT
LAT


M484.7592T3.53
FDR = 0.0021, FC = −1.3
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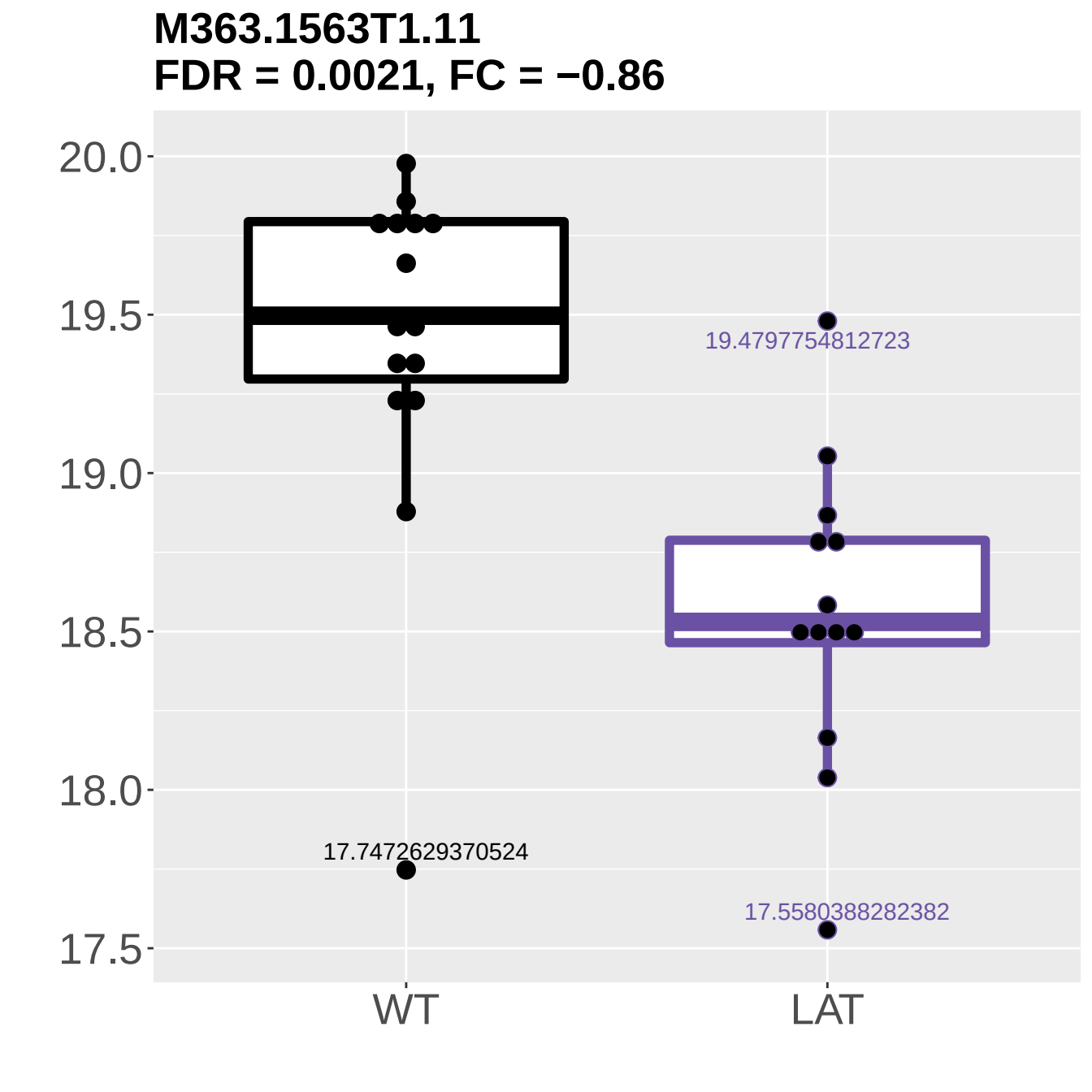
14
13
12
WT
LAT


M363.1563T1.11
FDR = 0.0021, FC = −0.86
20.0
19.5
19.0
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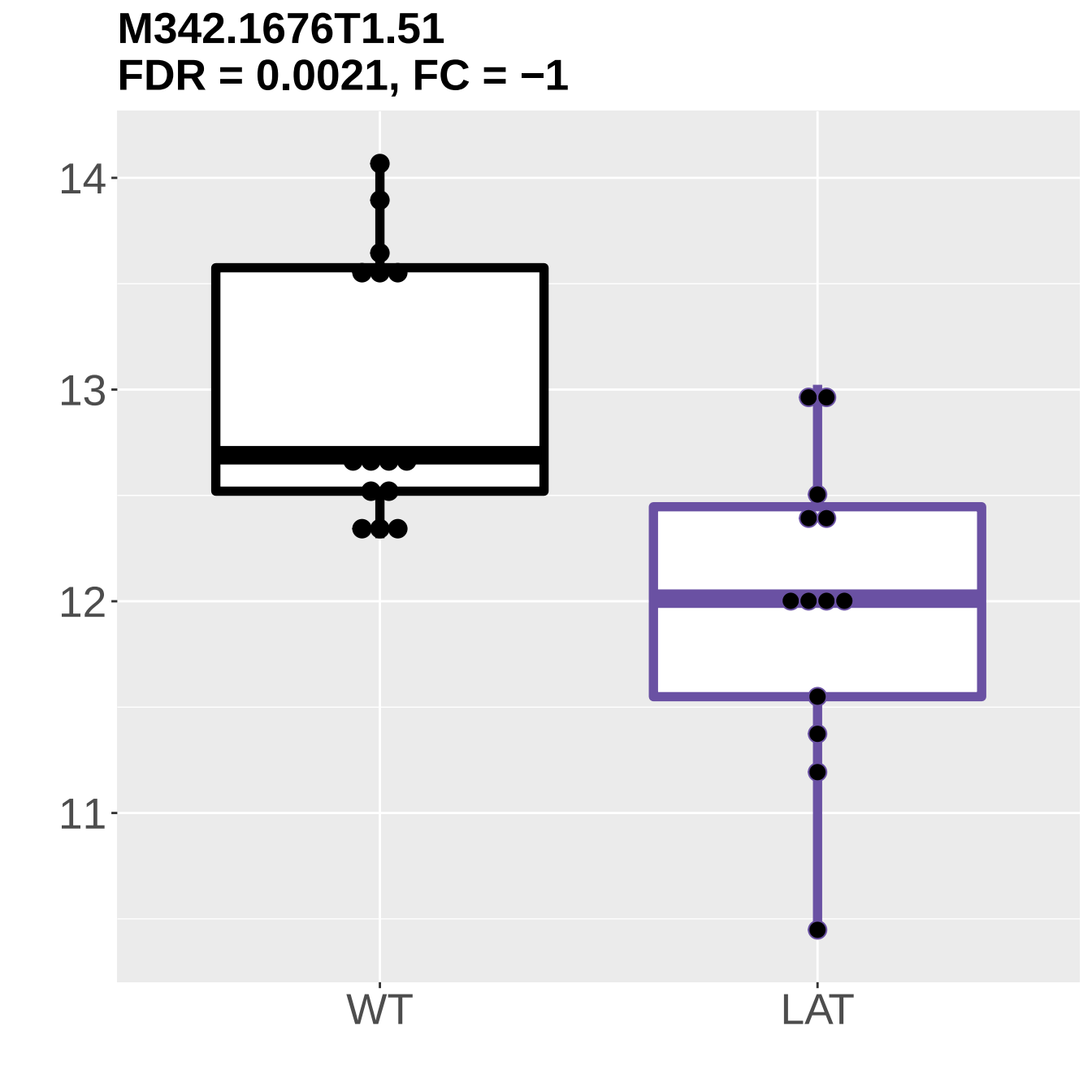
18.0
17.5
19.4797754812723
17.7472629370524
17.5580388282382
WT
LAT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FDR = 0.0021, FC = −1
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WT
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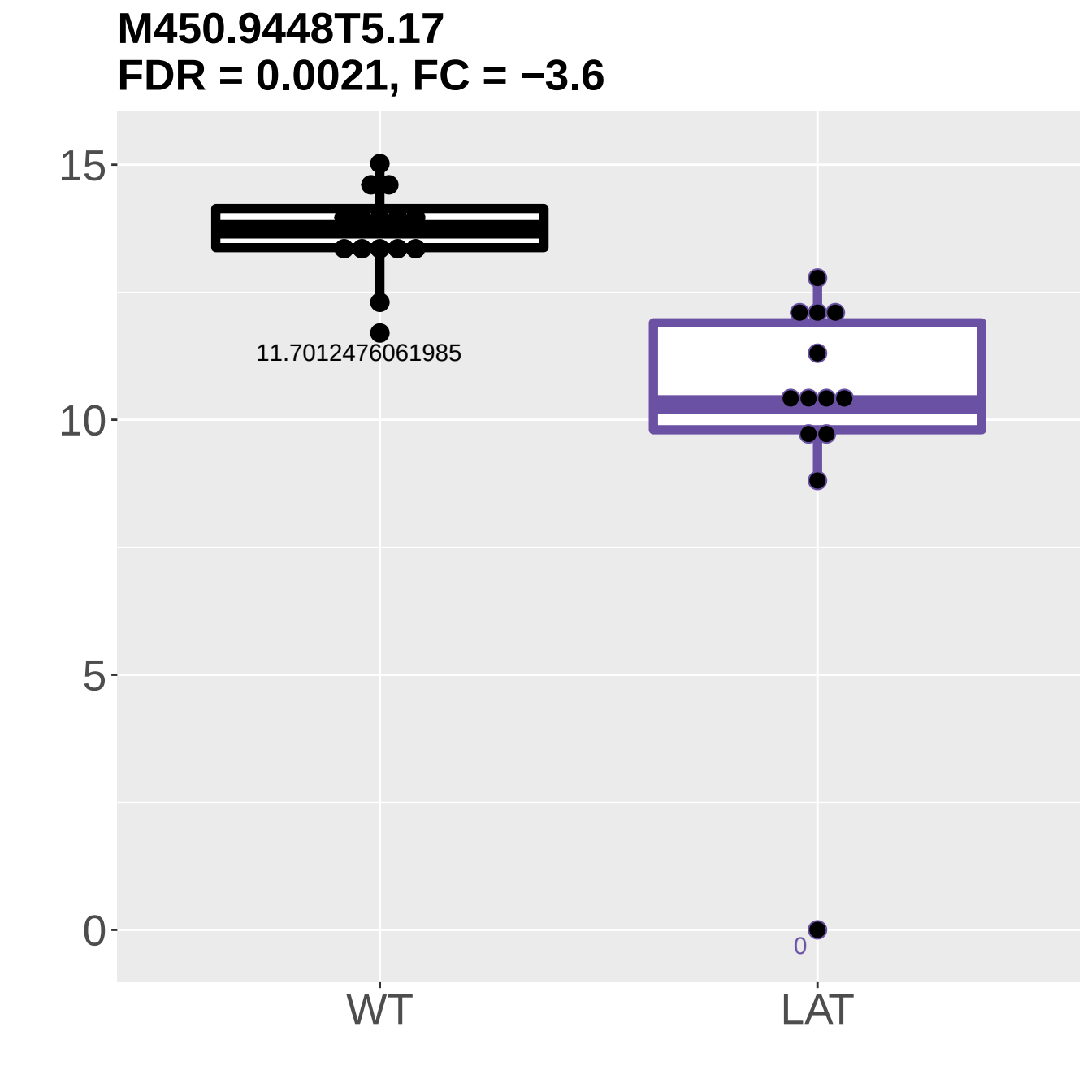
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FDR = 0.0021, FC = −3.6
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10
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0
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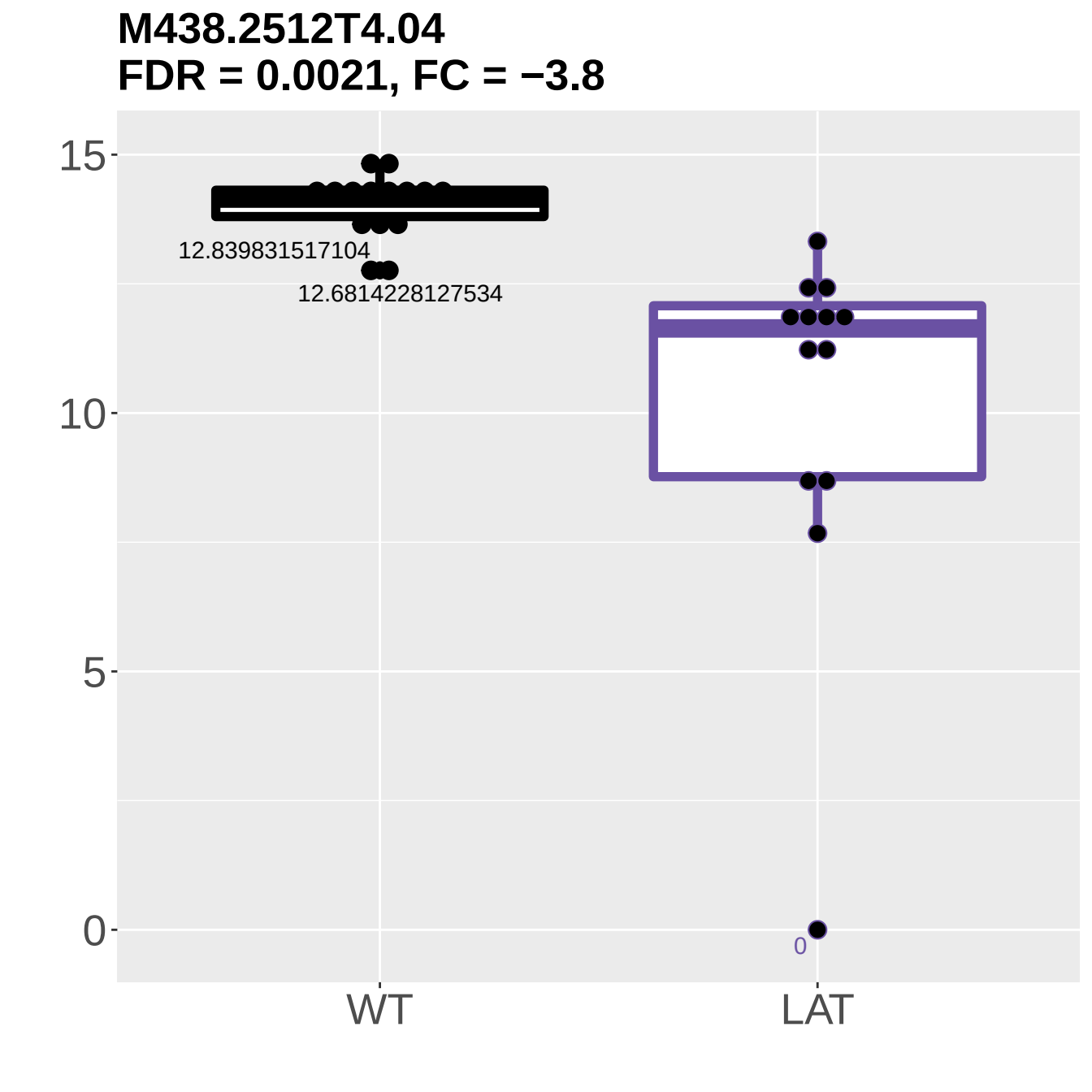
0
WT
LAT


M438.2512T4.04
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0
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0
WT
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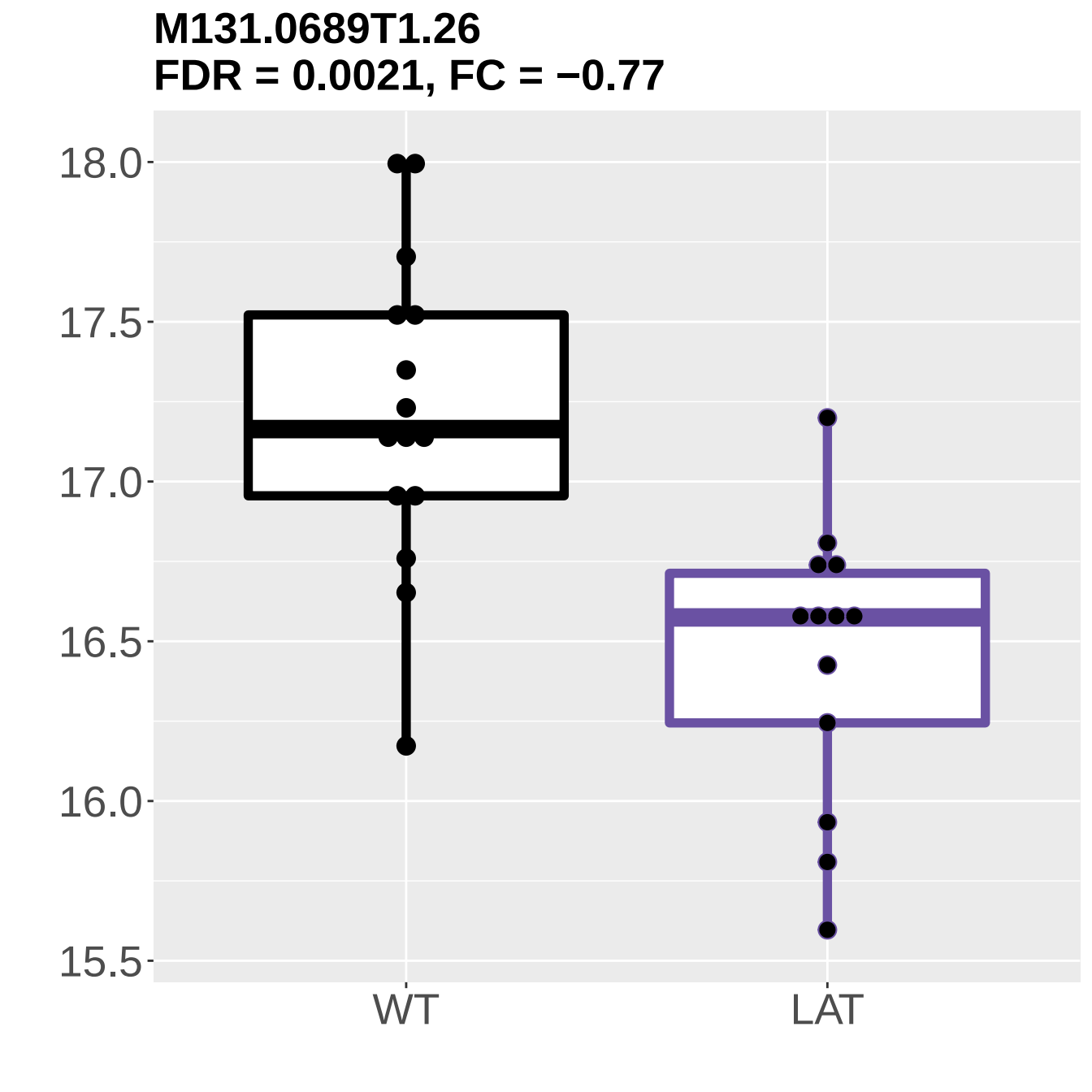
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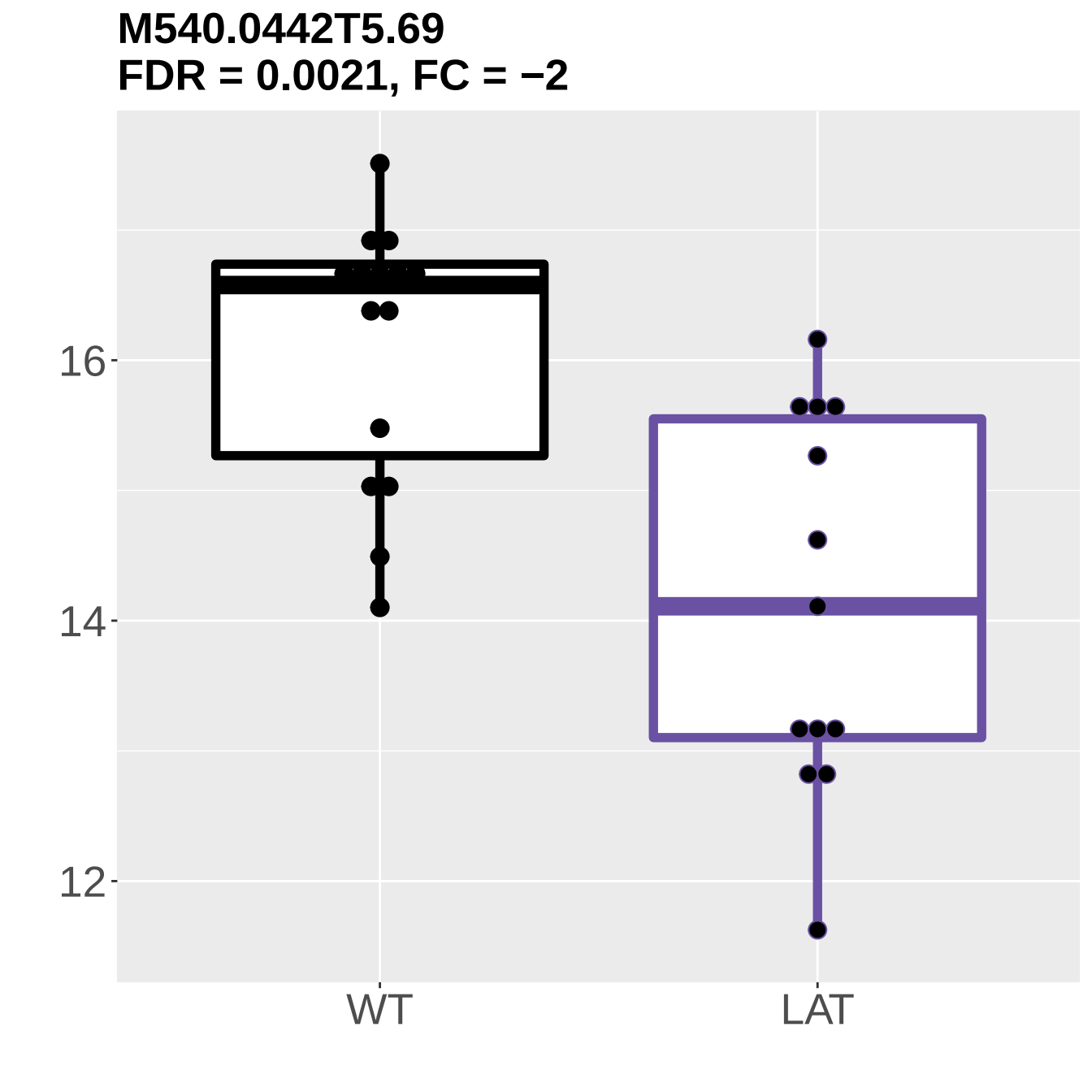
17.0
16.5
16.0
15.5
WT
LAT


M540.0442T5.69
FDR = 0.0021, FC = −2
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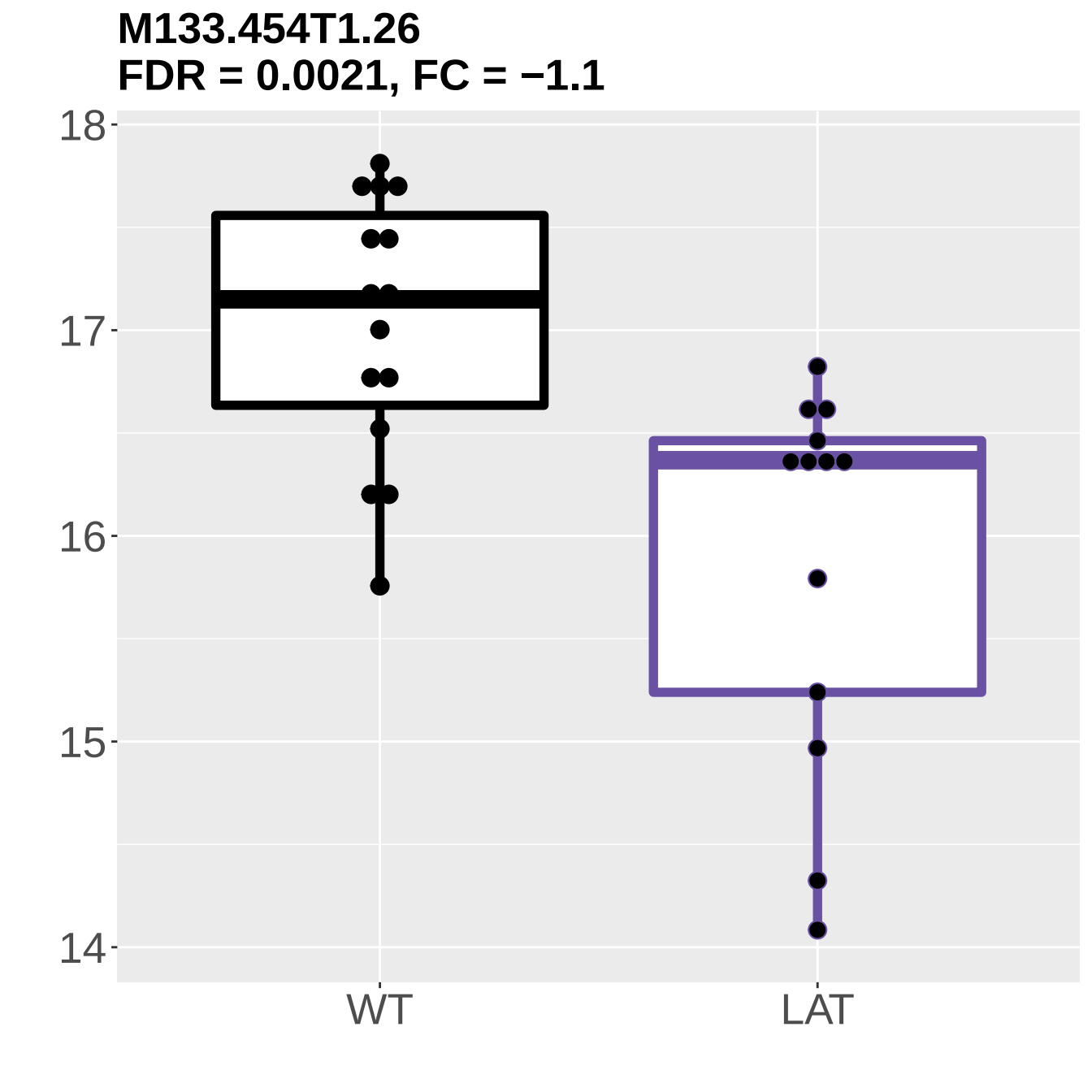
14
12
WT
LAT


M133.454T1.26
FDR = 0.0021, FC = −1.1
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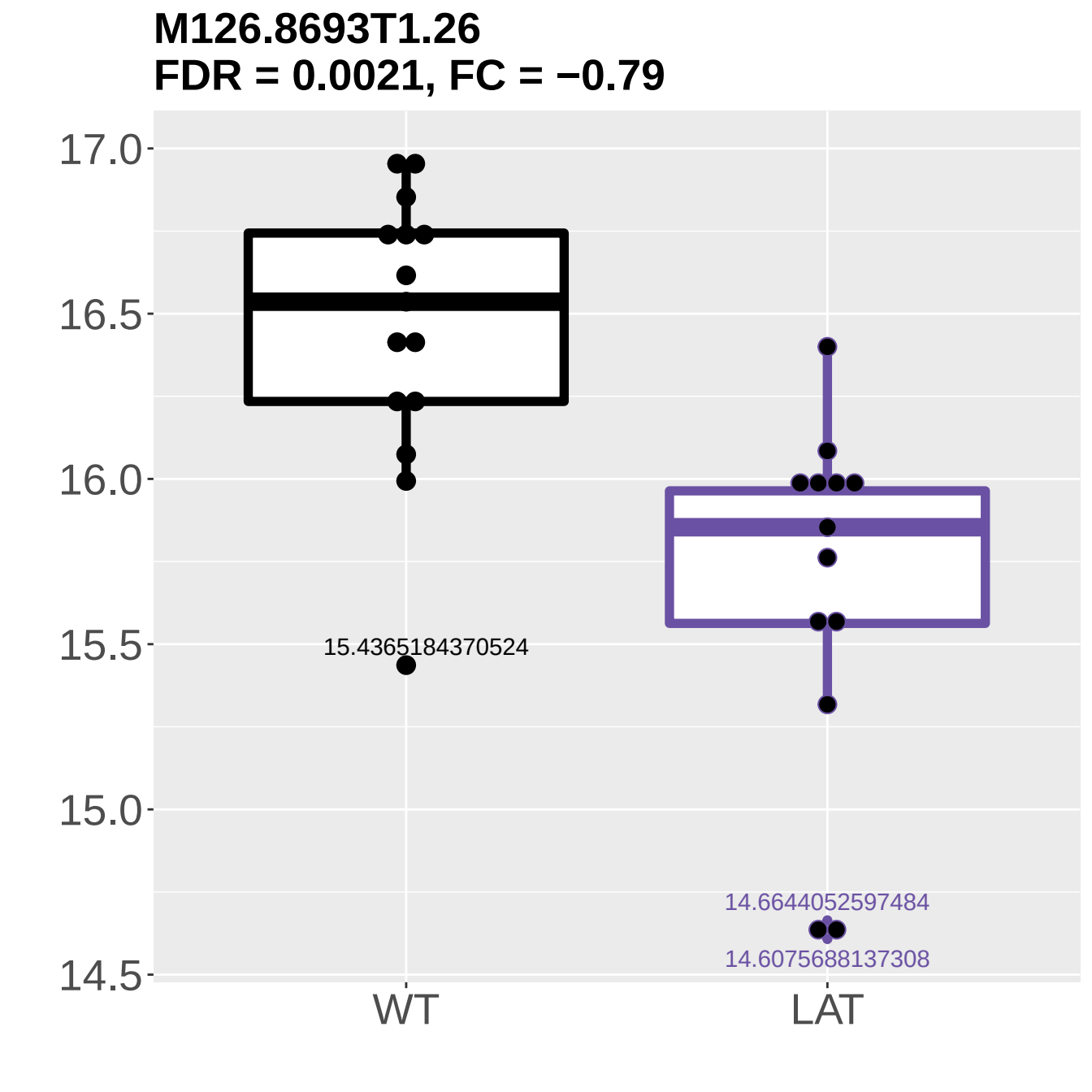
17
16
15
14
WT
LAT


M126.8693T1.26
FDR = 0.0021, FC = −0.79
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16.5
16.0
15.5
15.0
14.5
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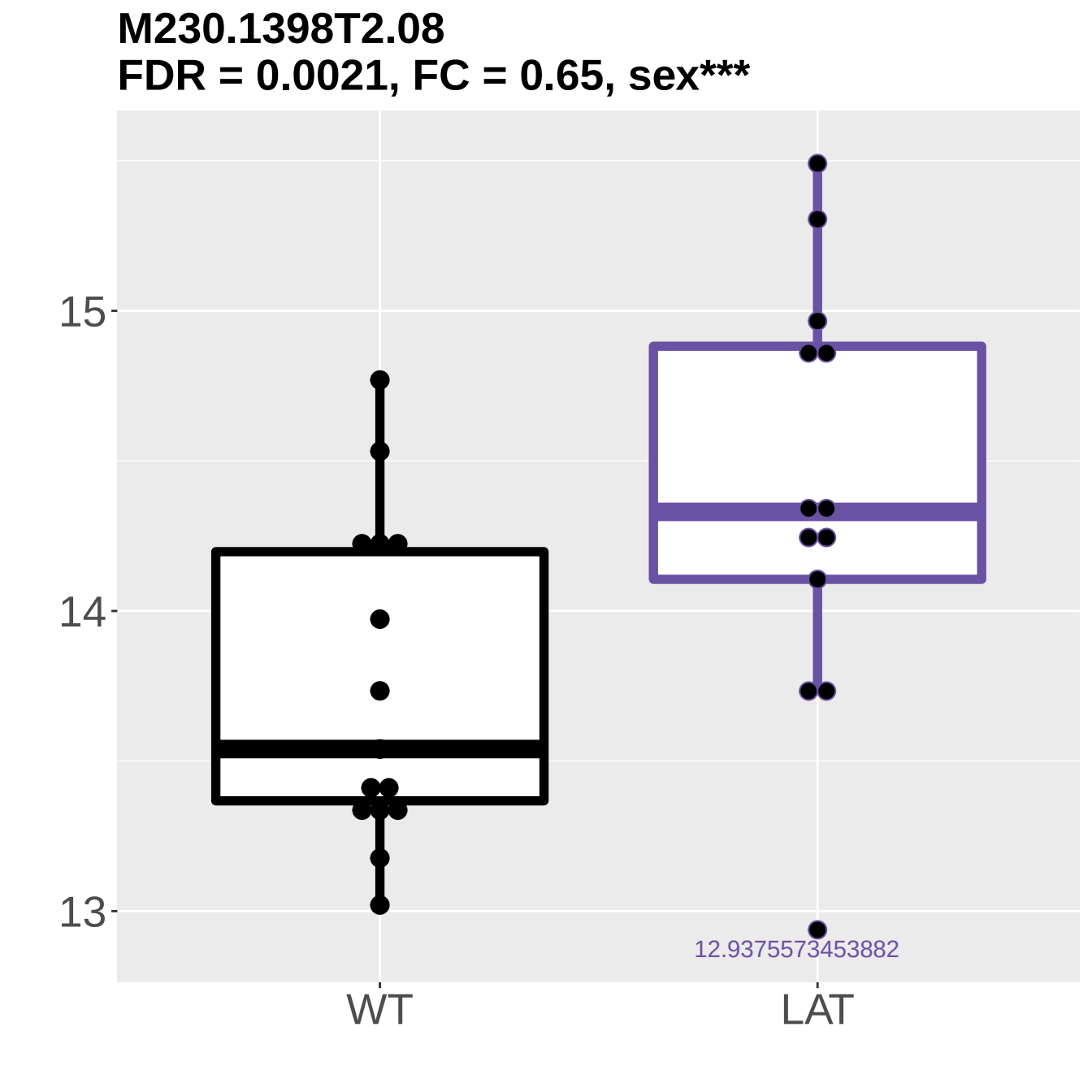
14.6644052597484
14.6075688137308
WT
LAT


M230.1398T2.08
FDR = 0.0021, FC = 0.65, sex***
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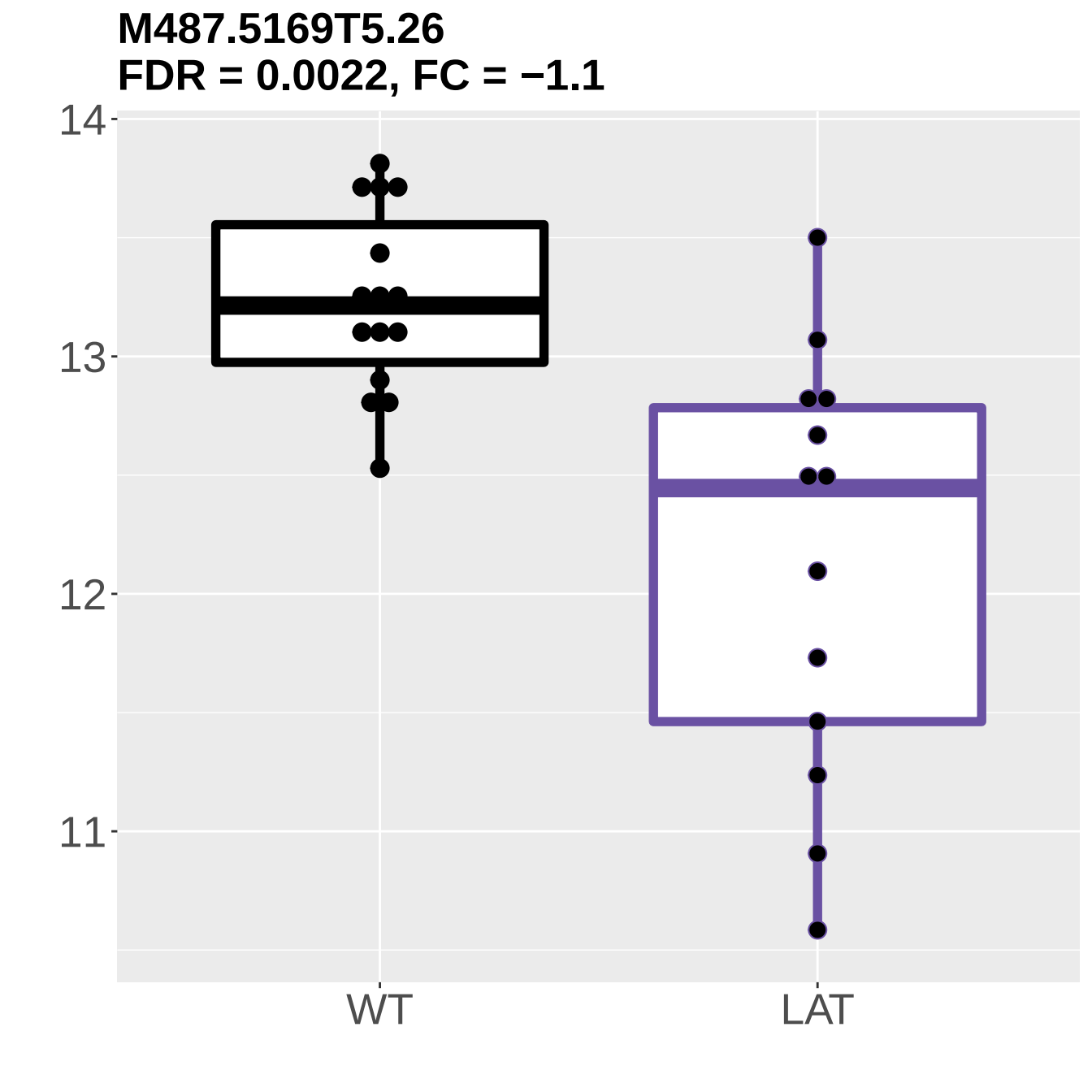
14
13
12.9375573453882
WT
LAT


M487.5169T5.26
FDR = 0.0022, FC = −1.1
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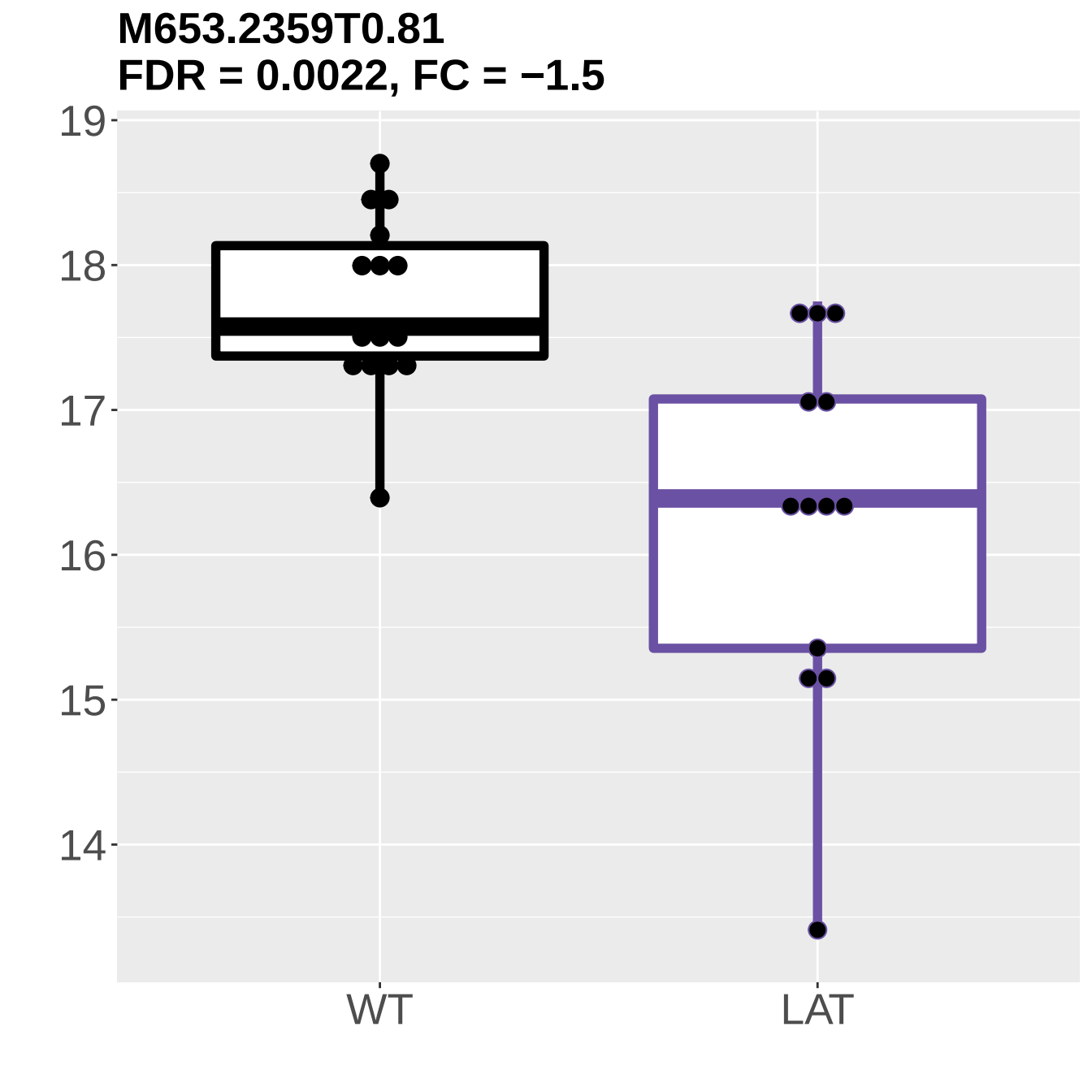
13
12
11
WT
LAT


M653.2359T0.81
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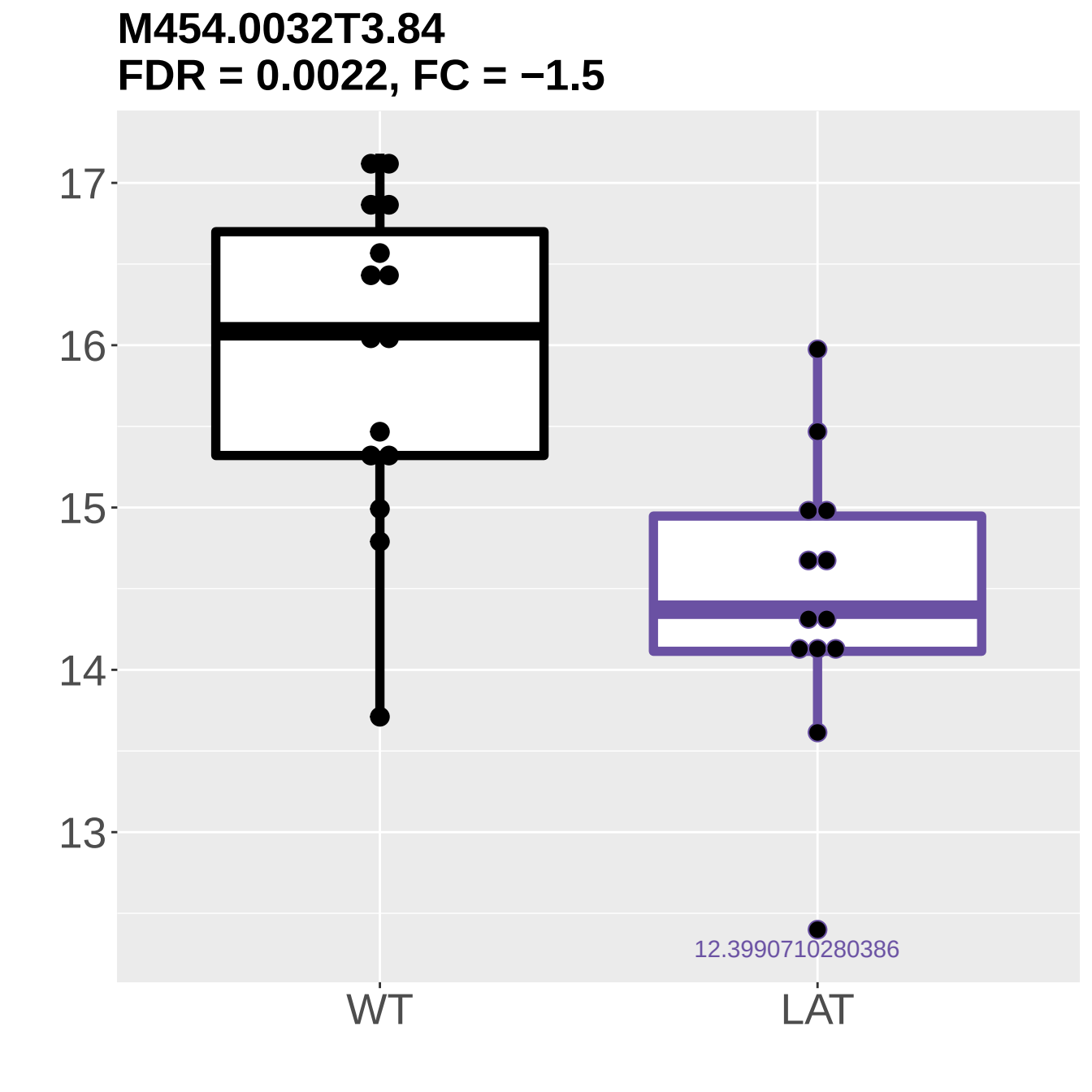
19
18
17
16
15
14
WT
LAT


M454.0032T3.84
FDR = 0.0022, FC = −1.5
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16
15
14
13
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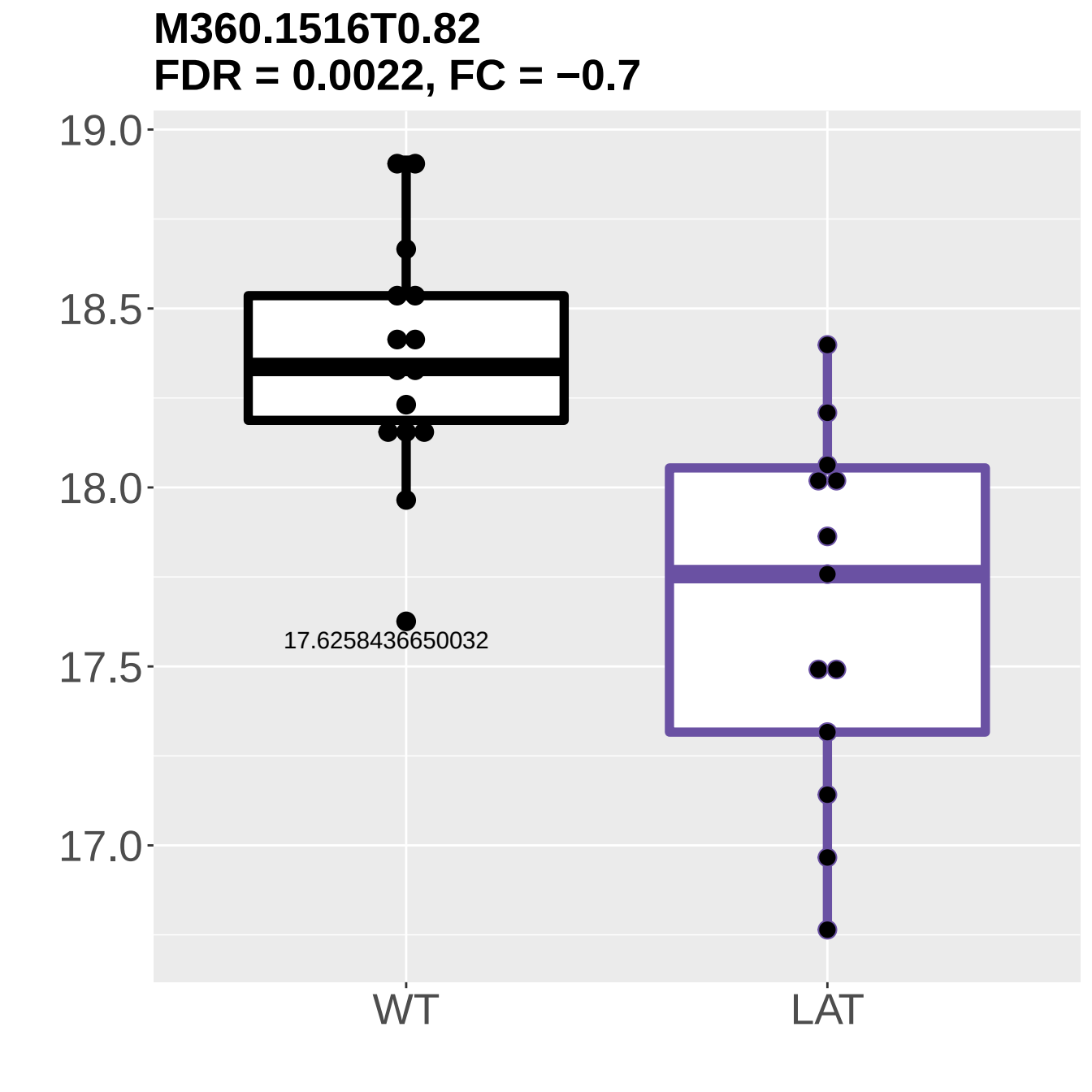
WT
LAT


M360.1516T0.82
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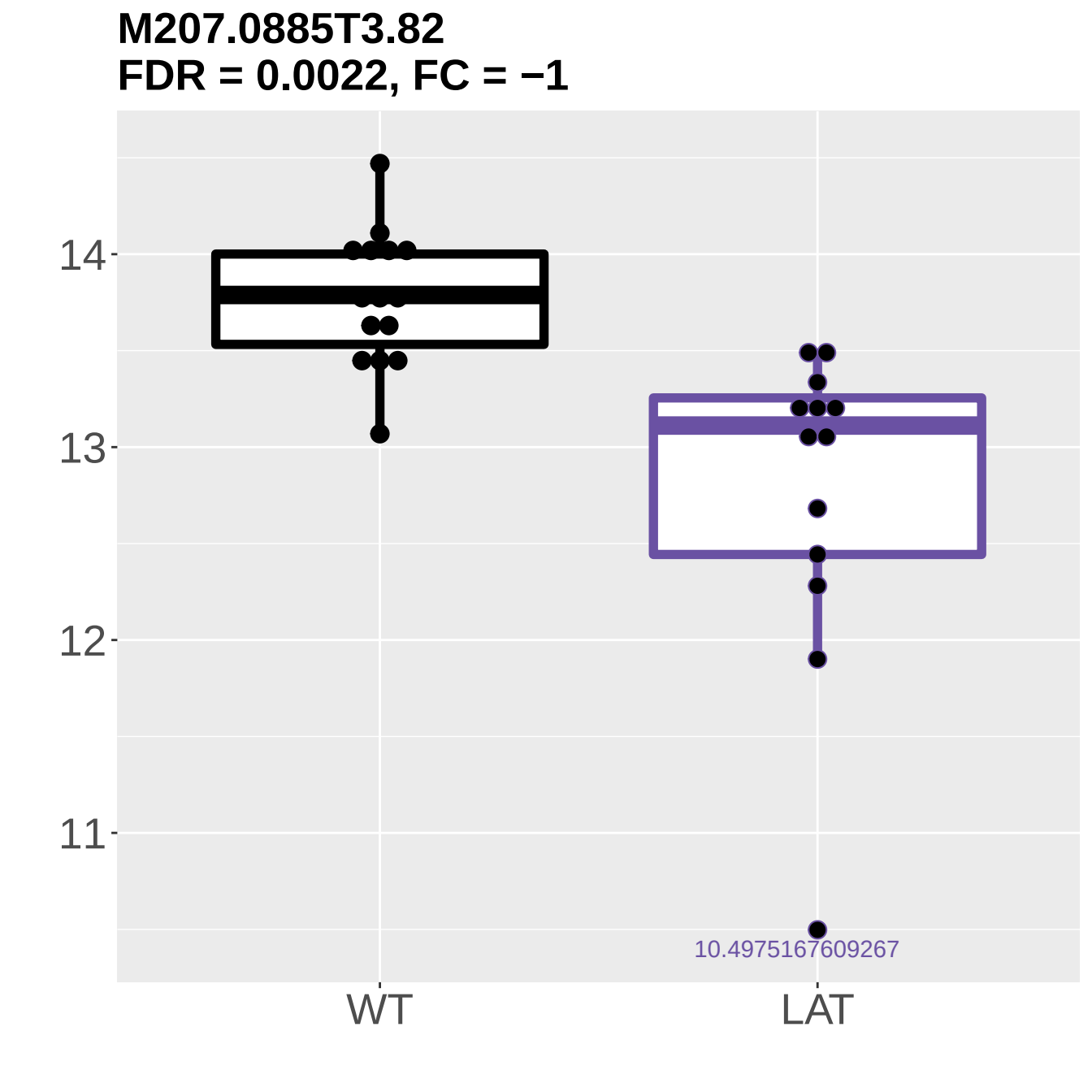
18.5
18.0
17.5
17.0
17.6258436650032
WT
LAT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13
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11
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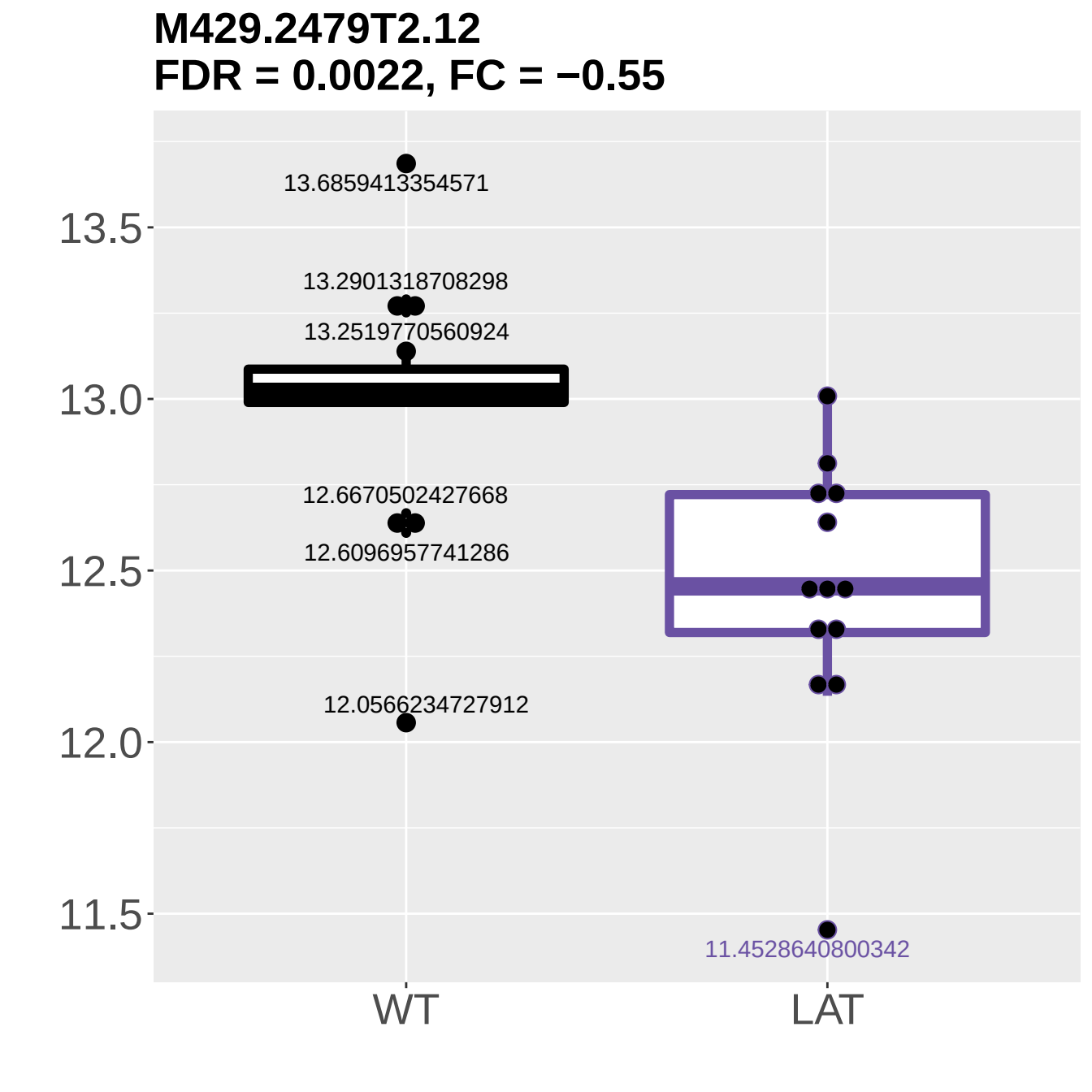
WT
LAT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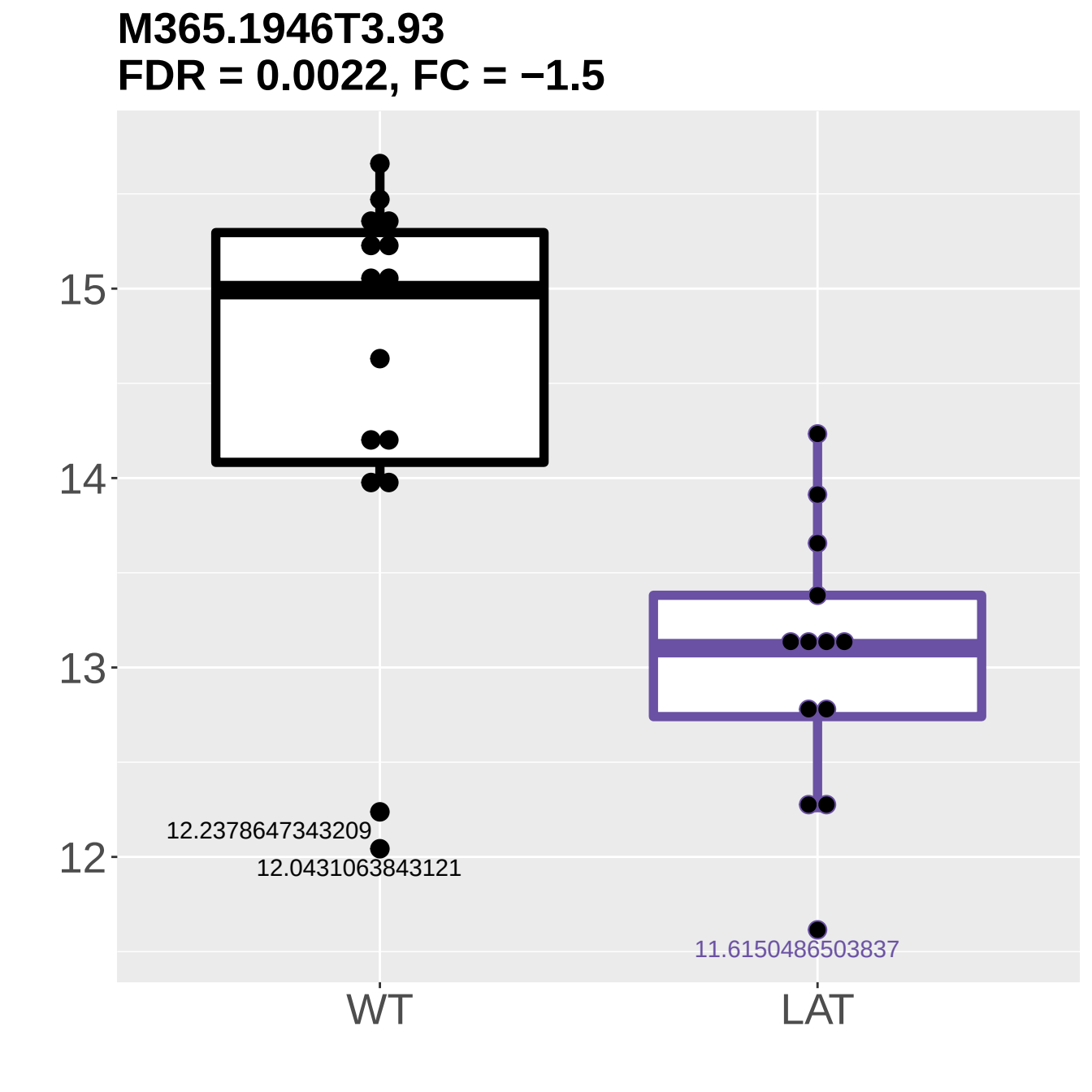
13.2901318708298
13.2519770560924
12.6670502427668
12.6096957741286
12.0566234727912
11.4528640800342
13.5
13.0
12.5
12.0
11.5
WT
LAT


M365.1946T3.93
FDR = 0.0022, FC = −1.5
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14
13
12
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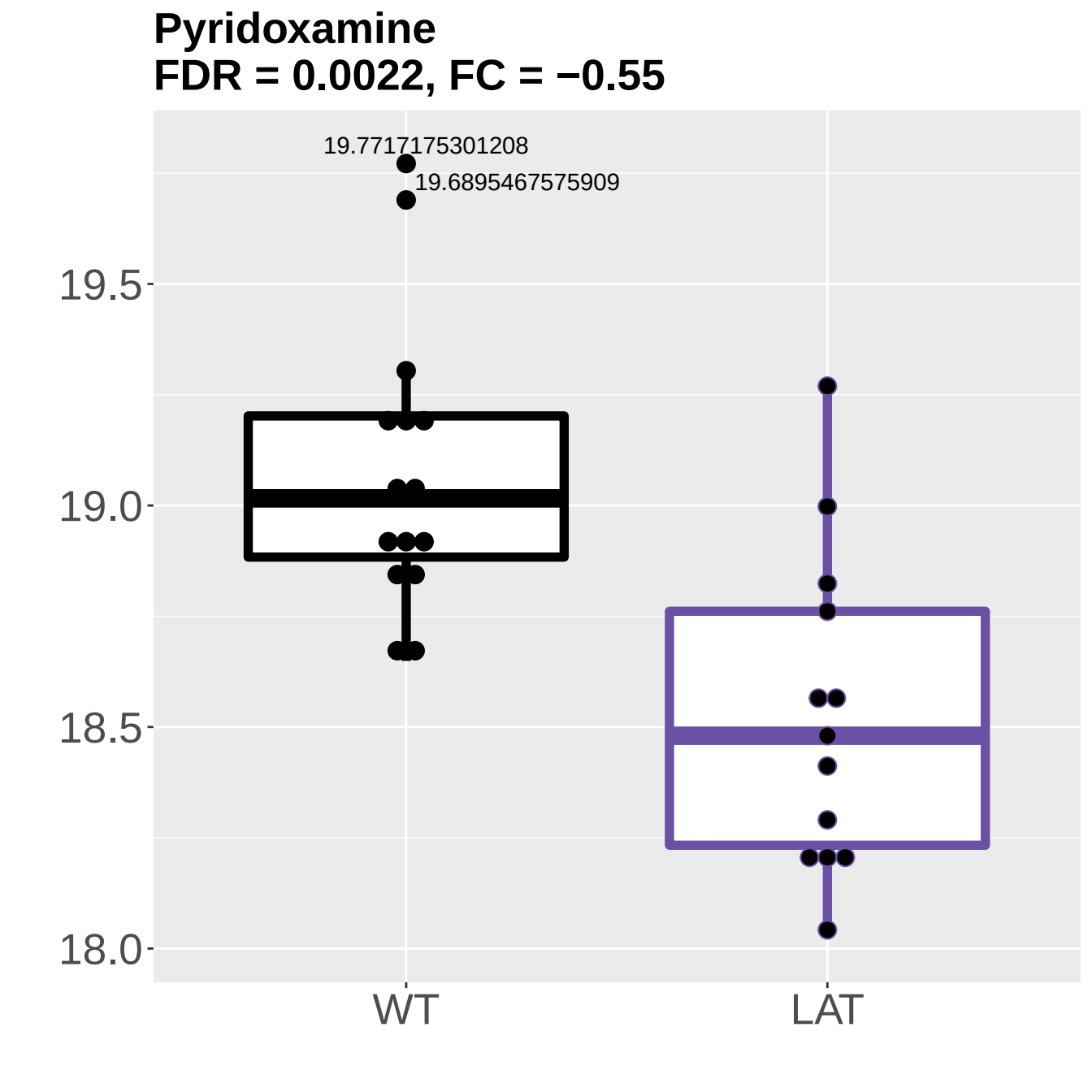
12.0431063843121
11.6150486503837
WT
LAT


Pyridoxamine
FDR = 0.0022, FC = −0.55
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19.6895467575909
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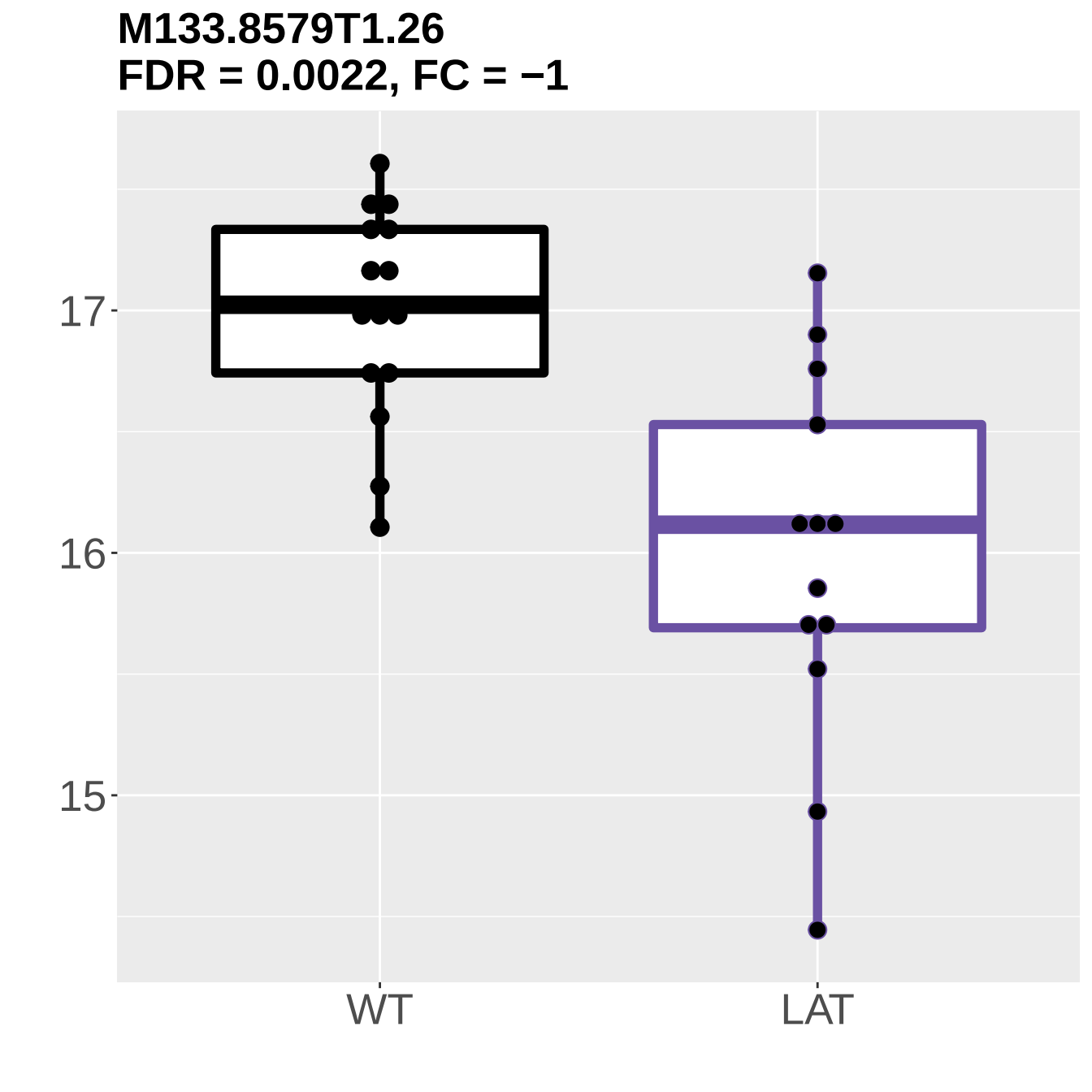
19.0
18.5
18.0
WT
LAT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FDR = 0.0022, FC = −1
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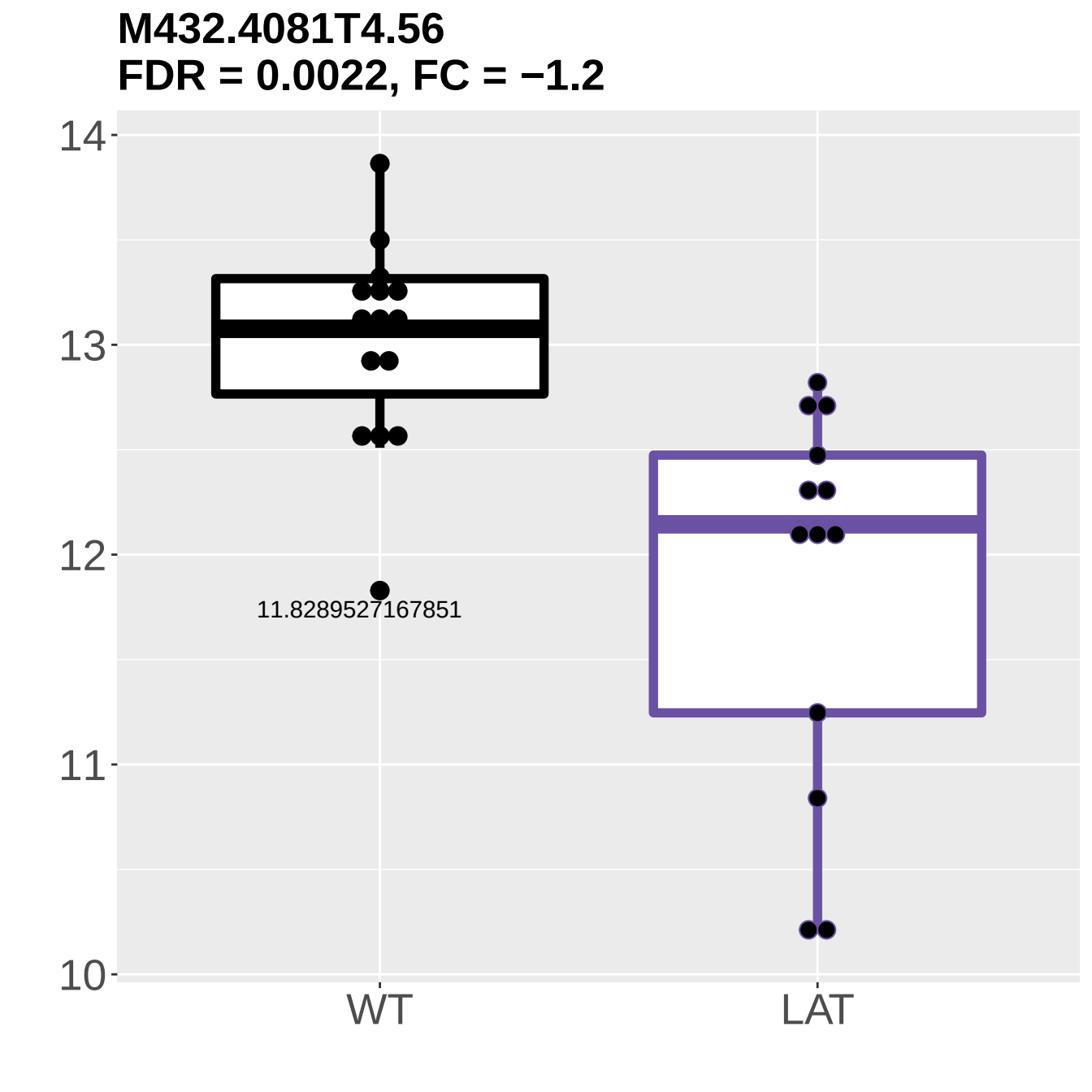
16
15
WT
LAT


M432.4081T4.56
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13
12
11
10
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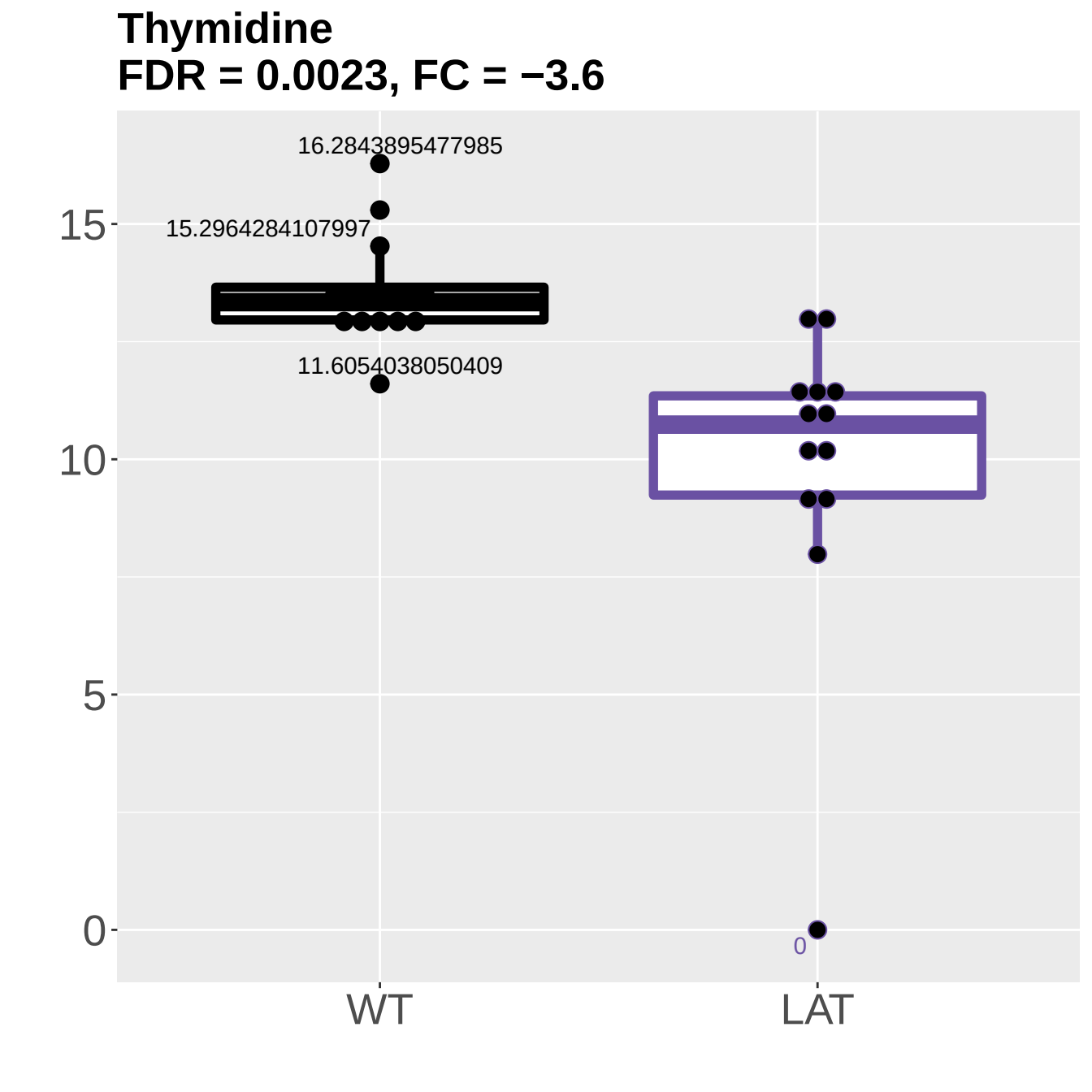
WT
LAT


Thymidine
FDR = 0.0023, FC = −3.6
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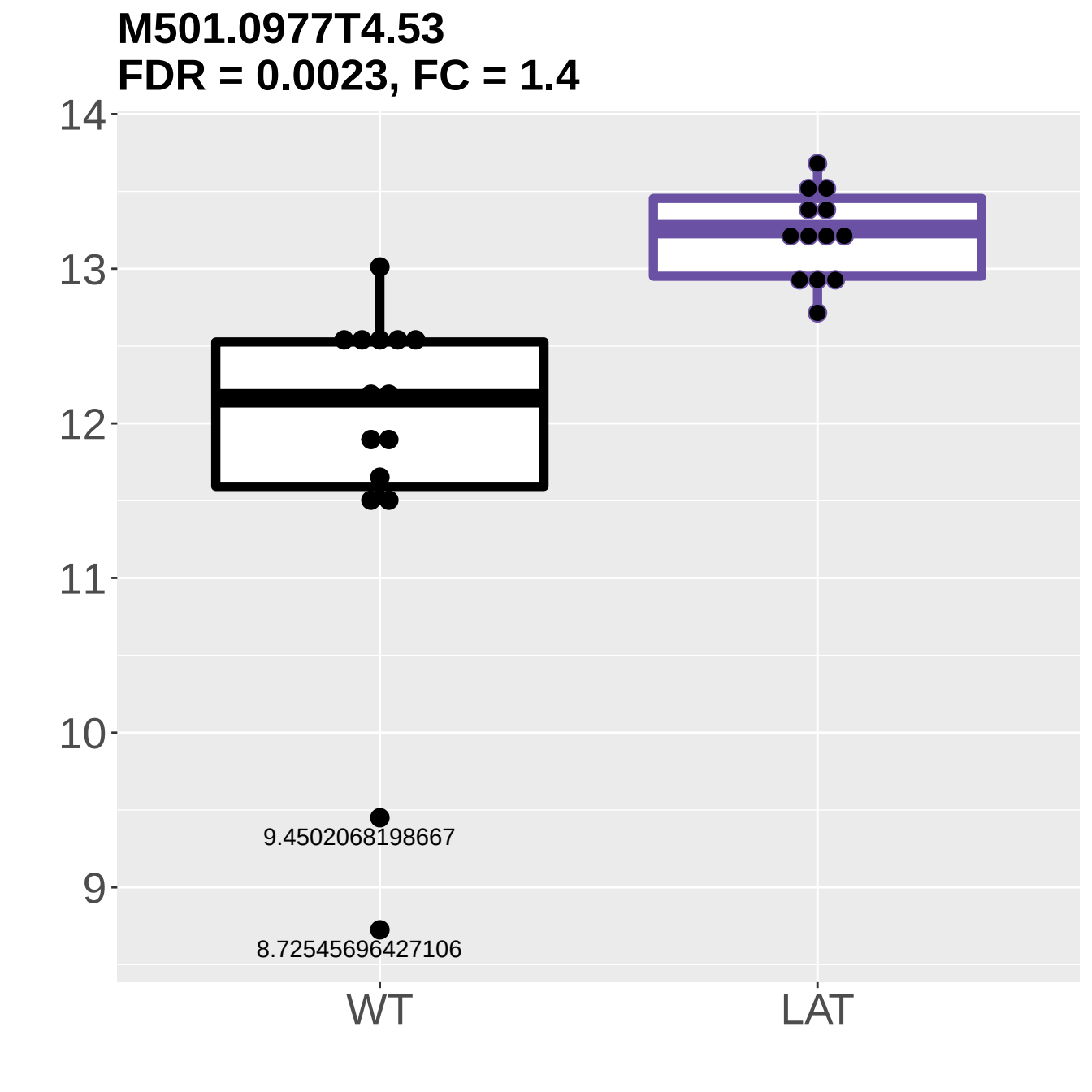
11.6054038050409
0
15
10
5
0
WT
LAT


M501.0977T4.53
FDR = 0.0023, FC = 1.4
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11
10
9
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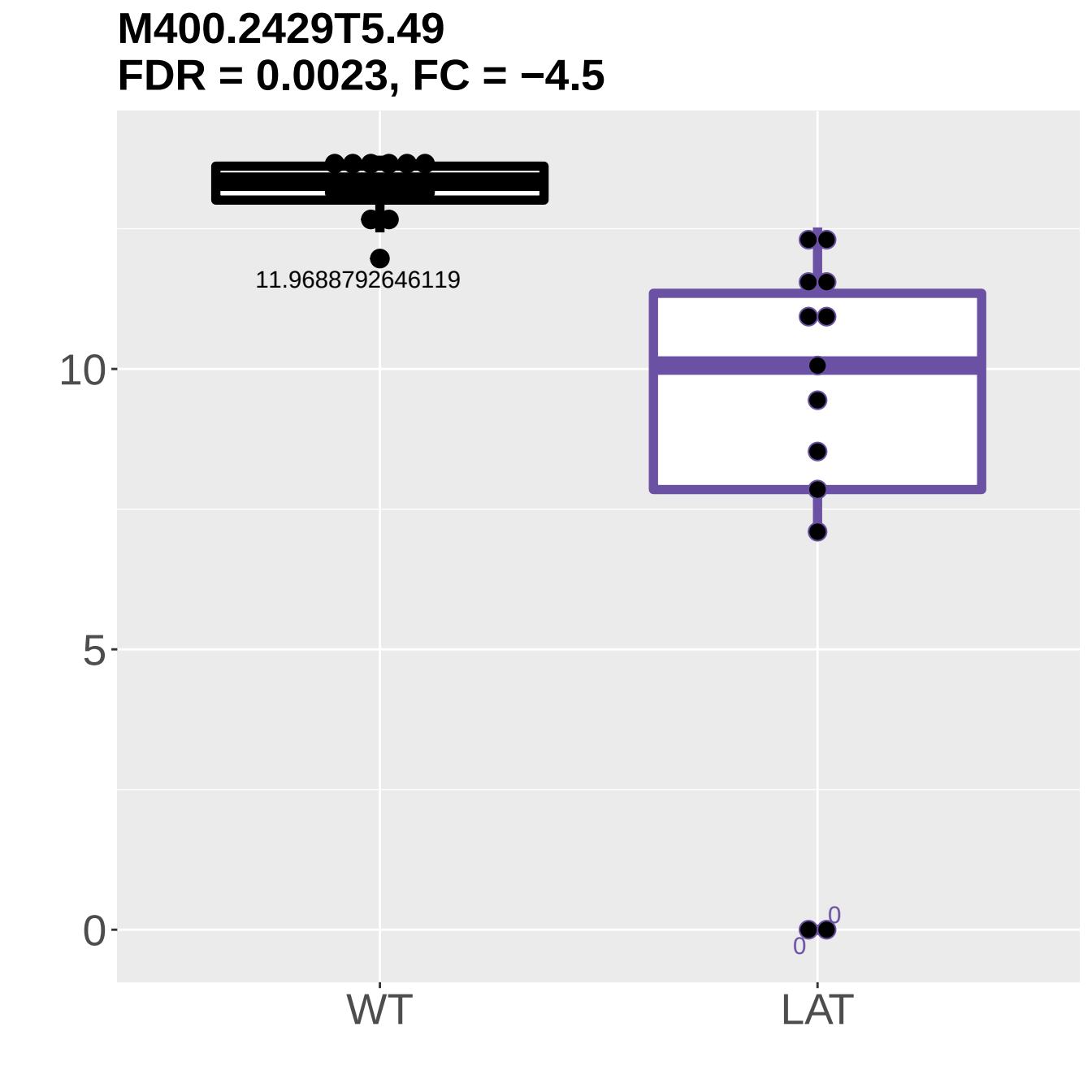
WT
LAT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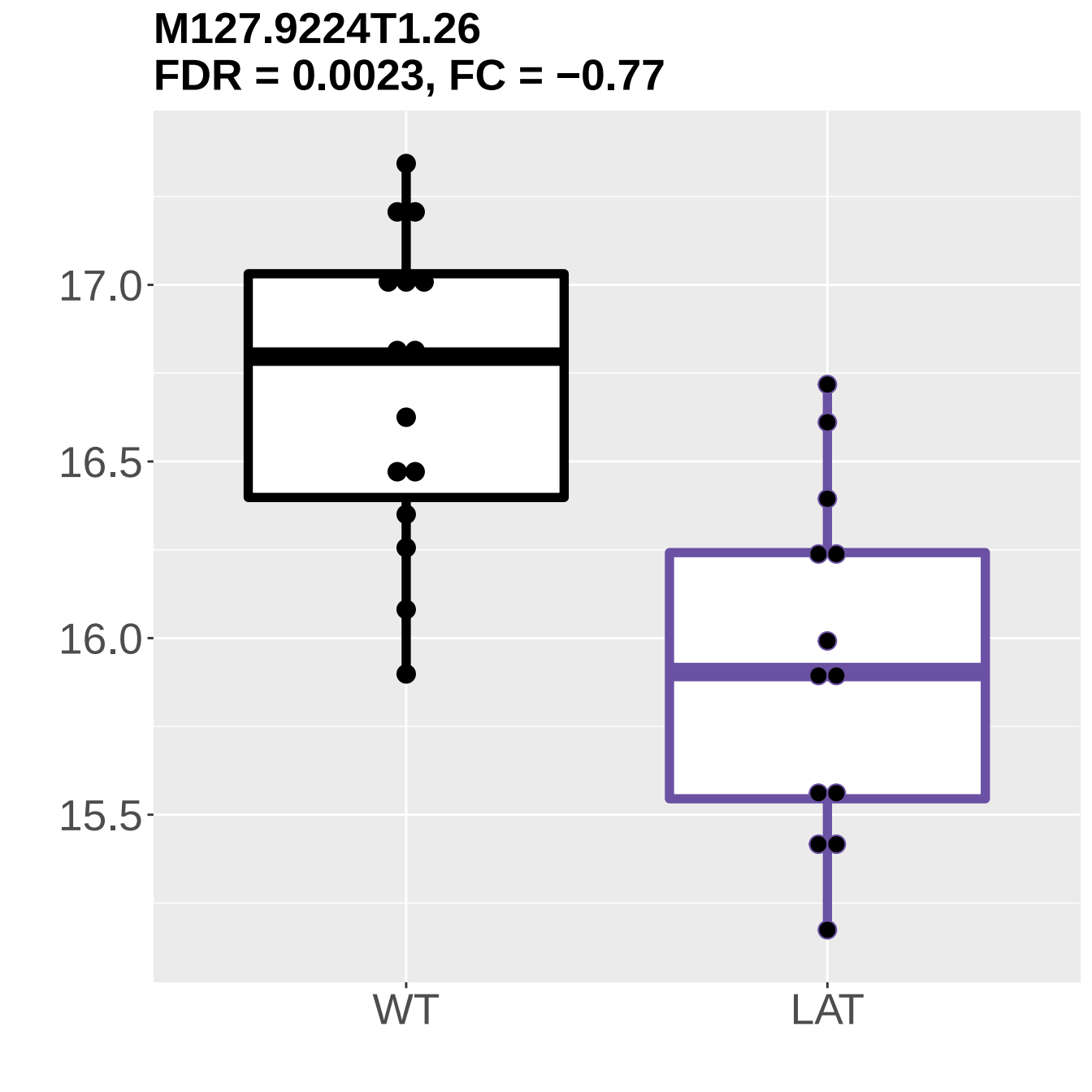
10
5
0
0
0
WT
LAT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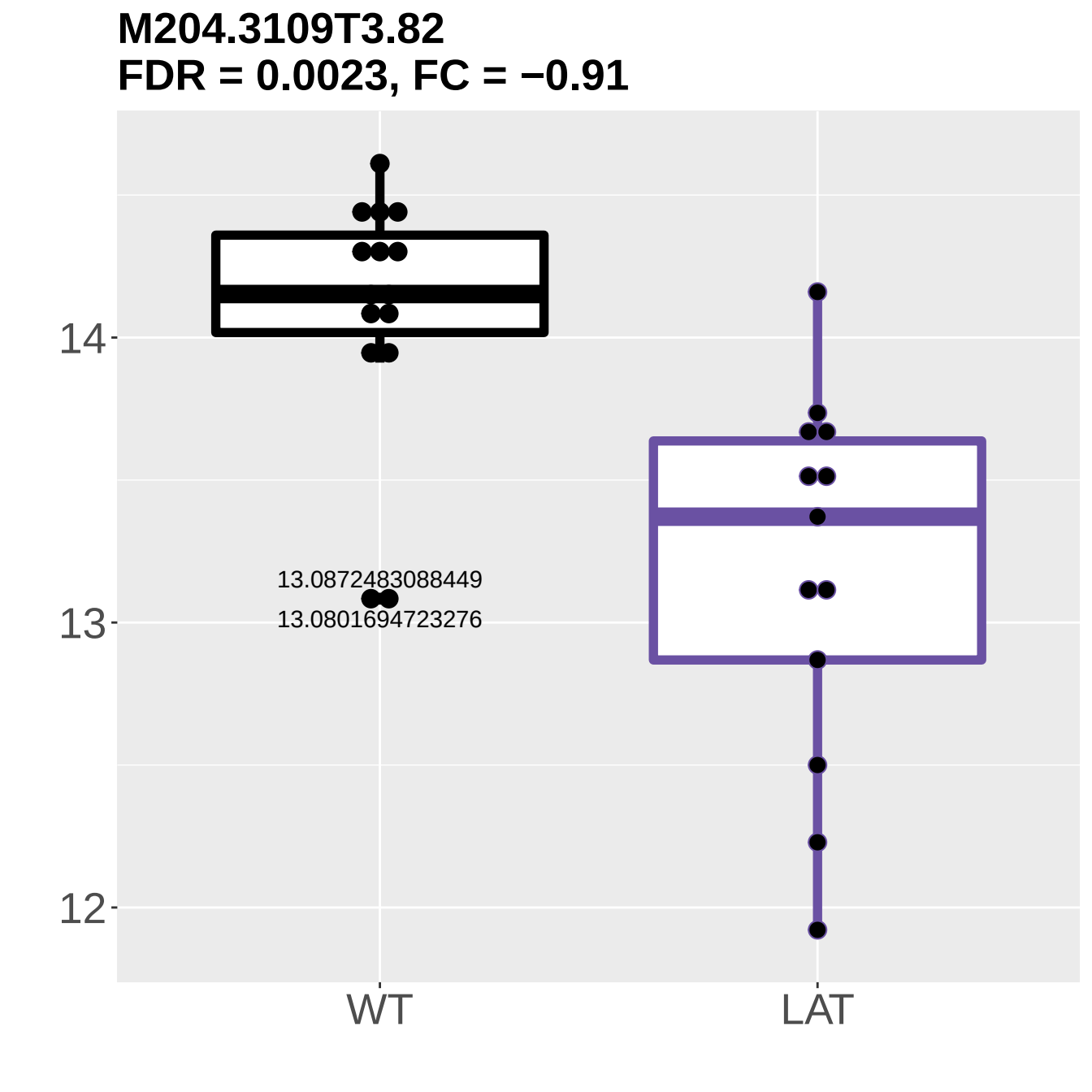
16.0
15.5
WT
LAT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13
12
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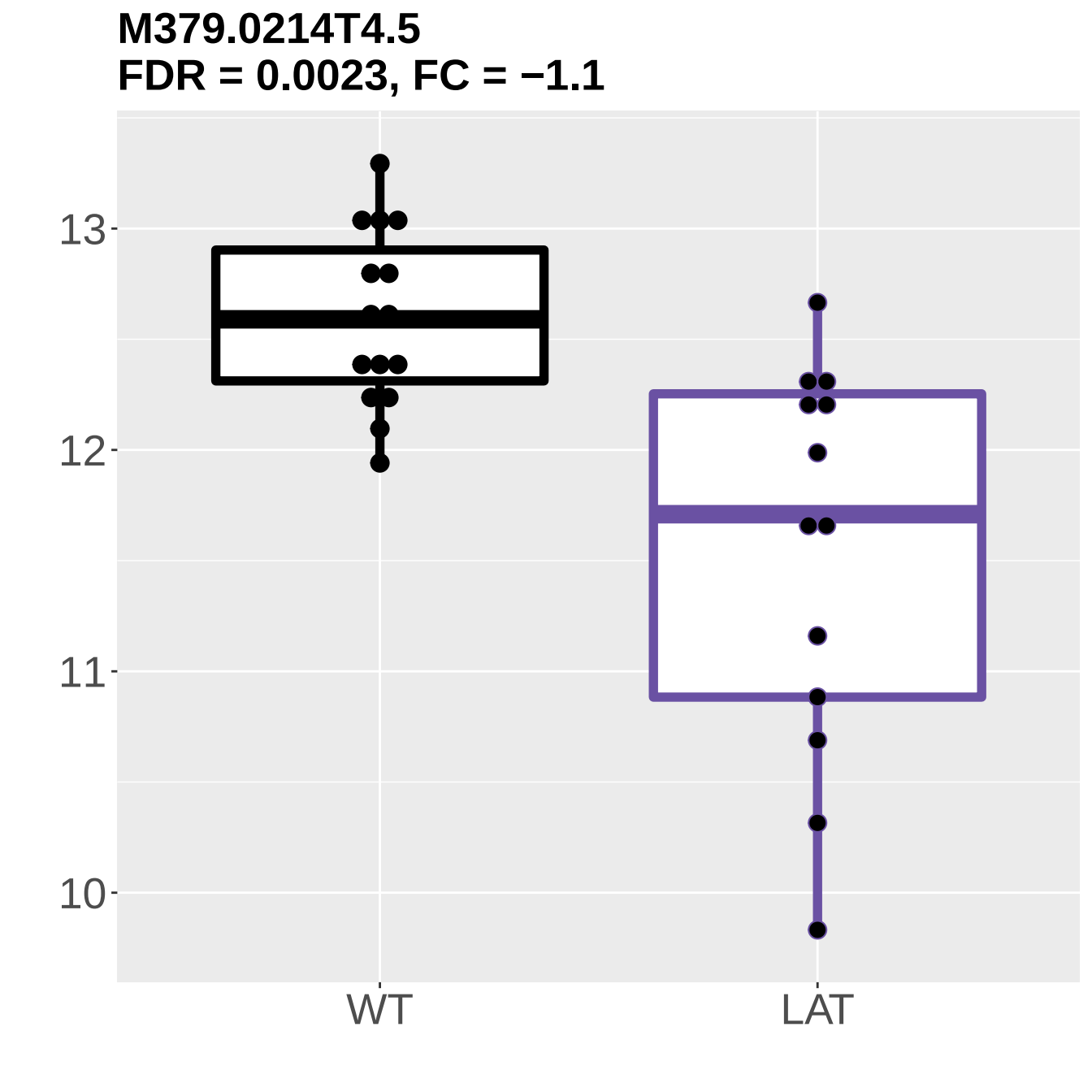
WT
LAT


M379.0214T4.5
FDR = 0.0023, FC = −1.1
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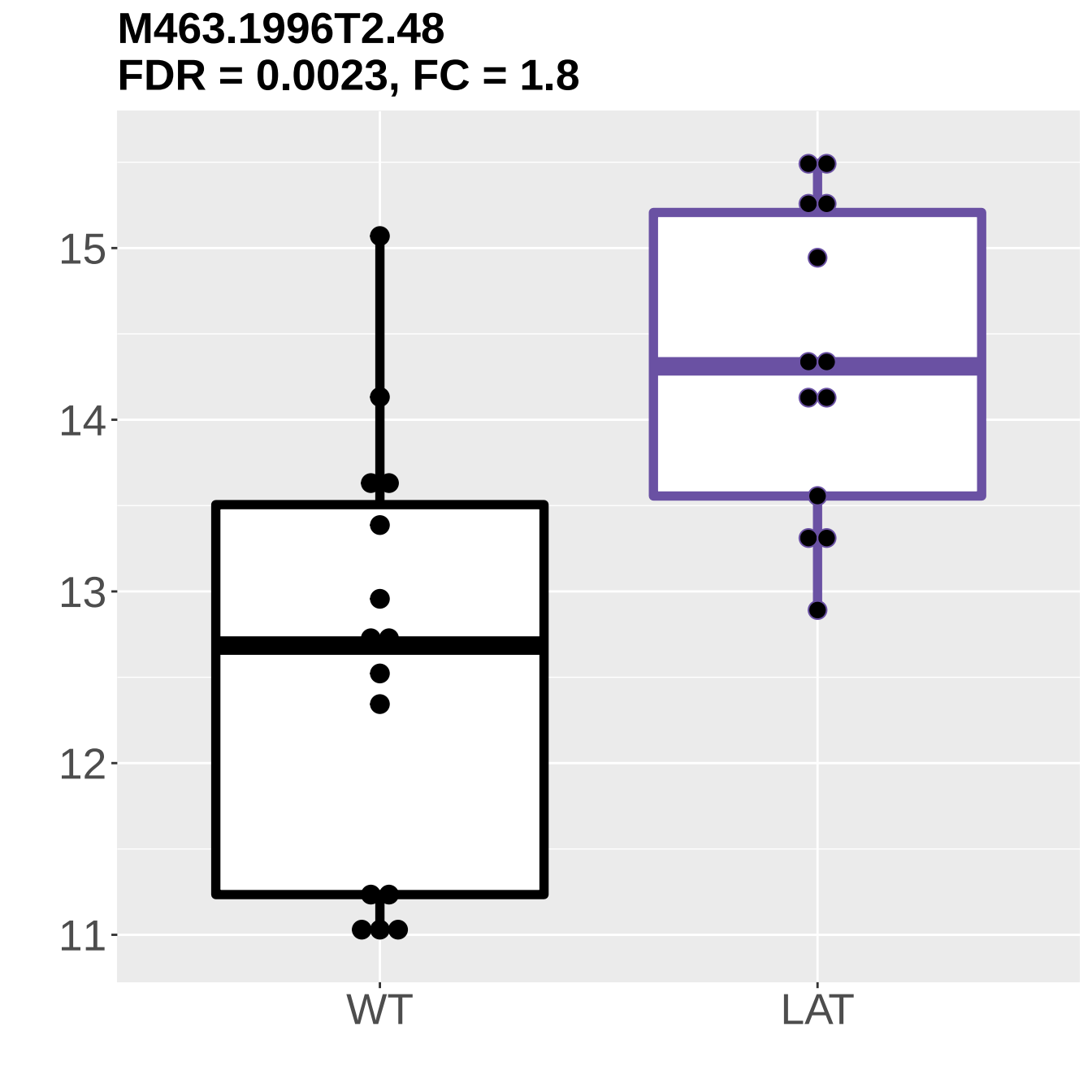
12
11
10
WT
LAT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FDR = 0.0023, FC = 1.8
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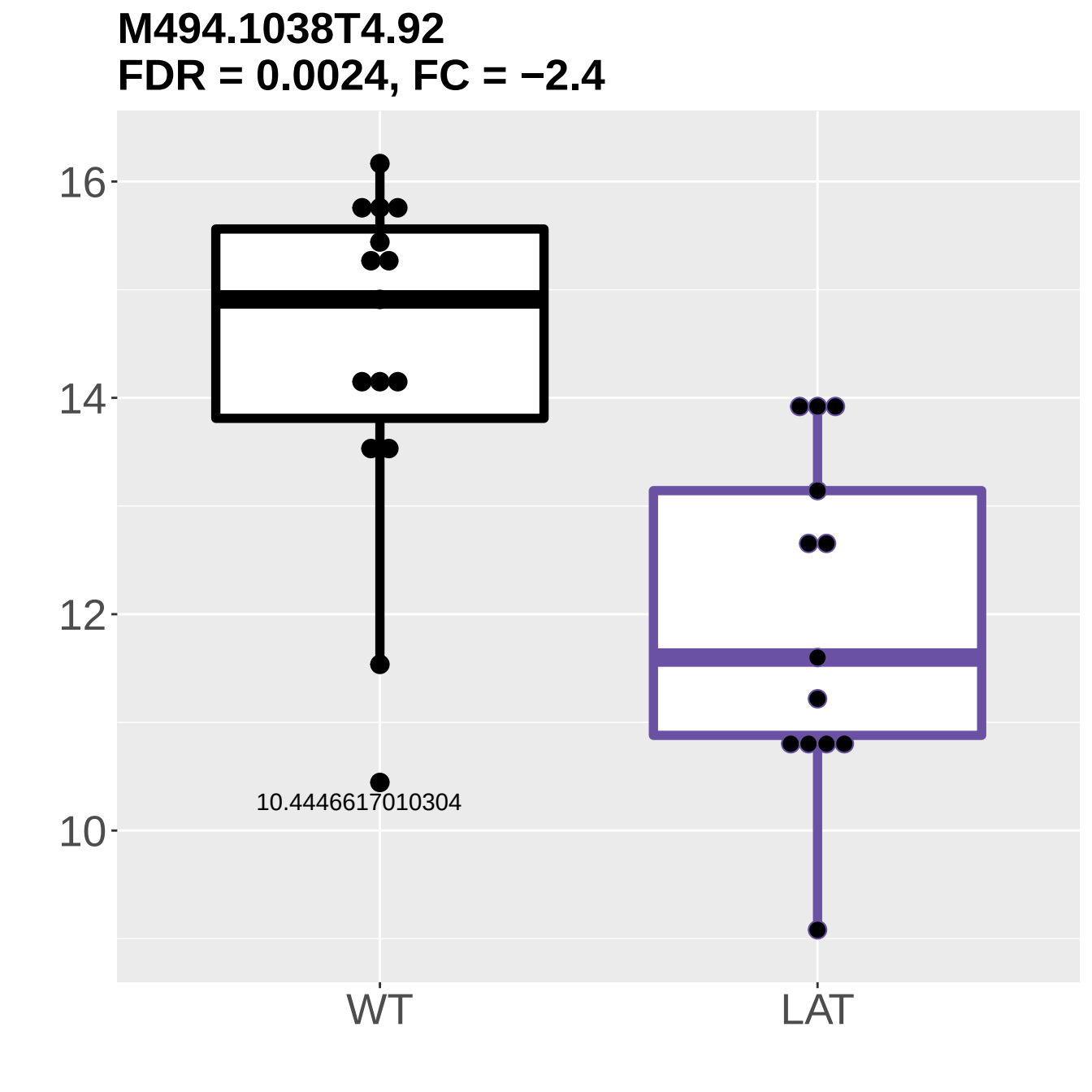
12
11
WT
LAT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14
12
10
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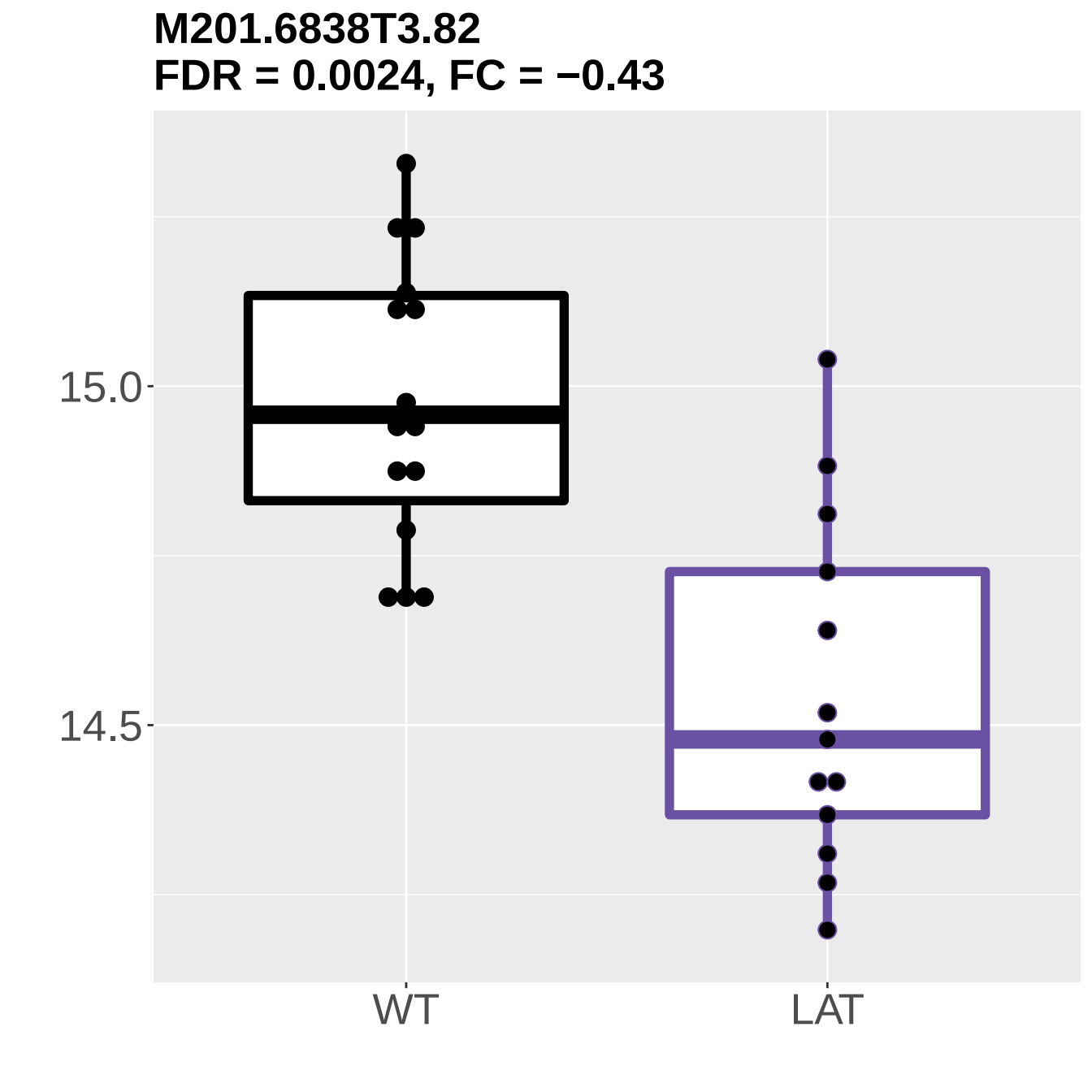
WT
LAT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FDR = 0.0024, FC = −0.43
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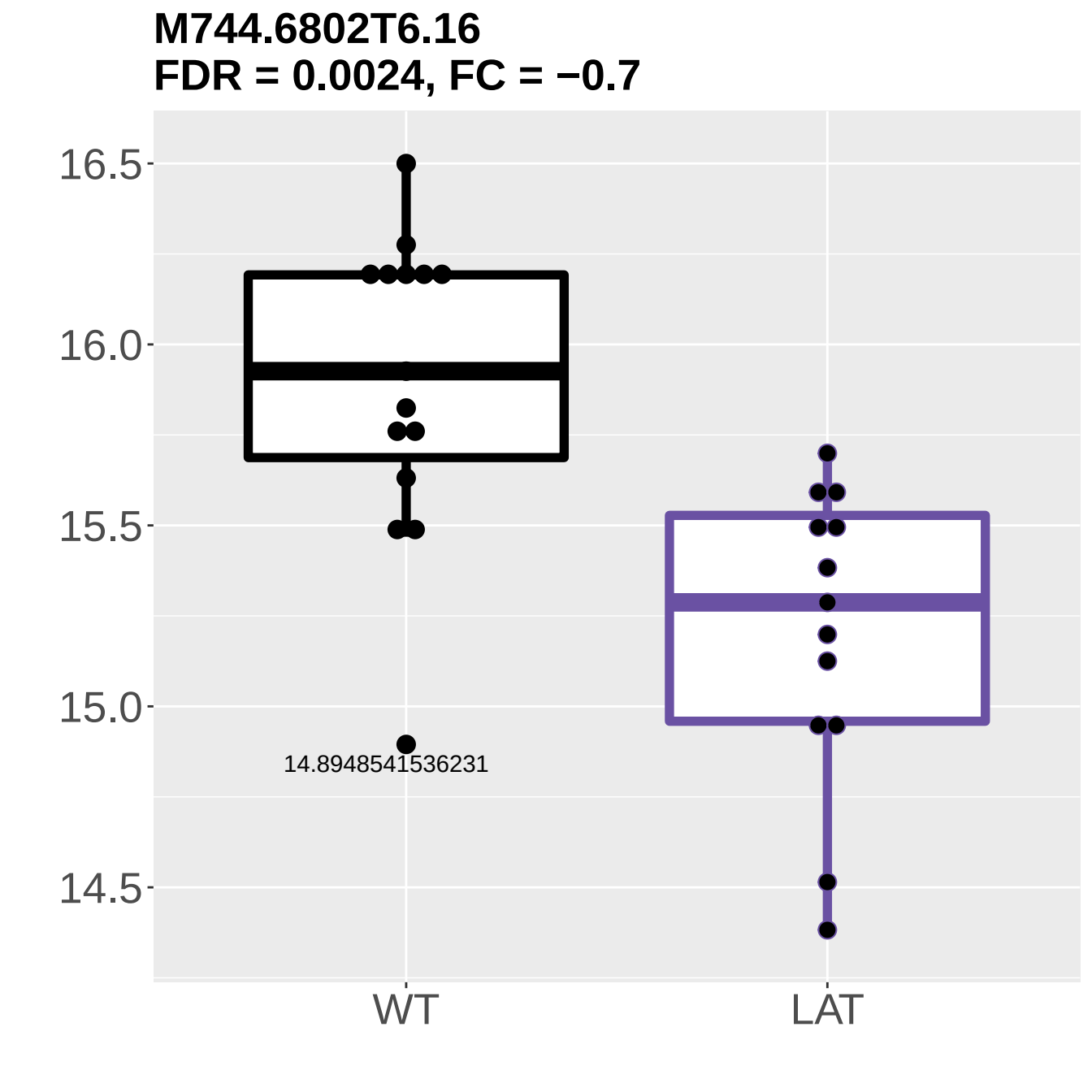
14.5
WT
LAT


M744.6802T6.16
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15.0
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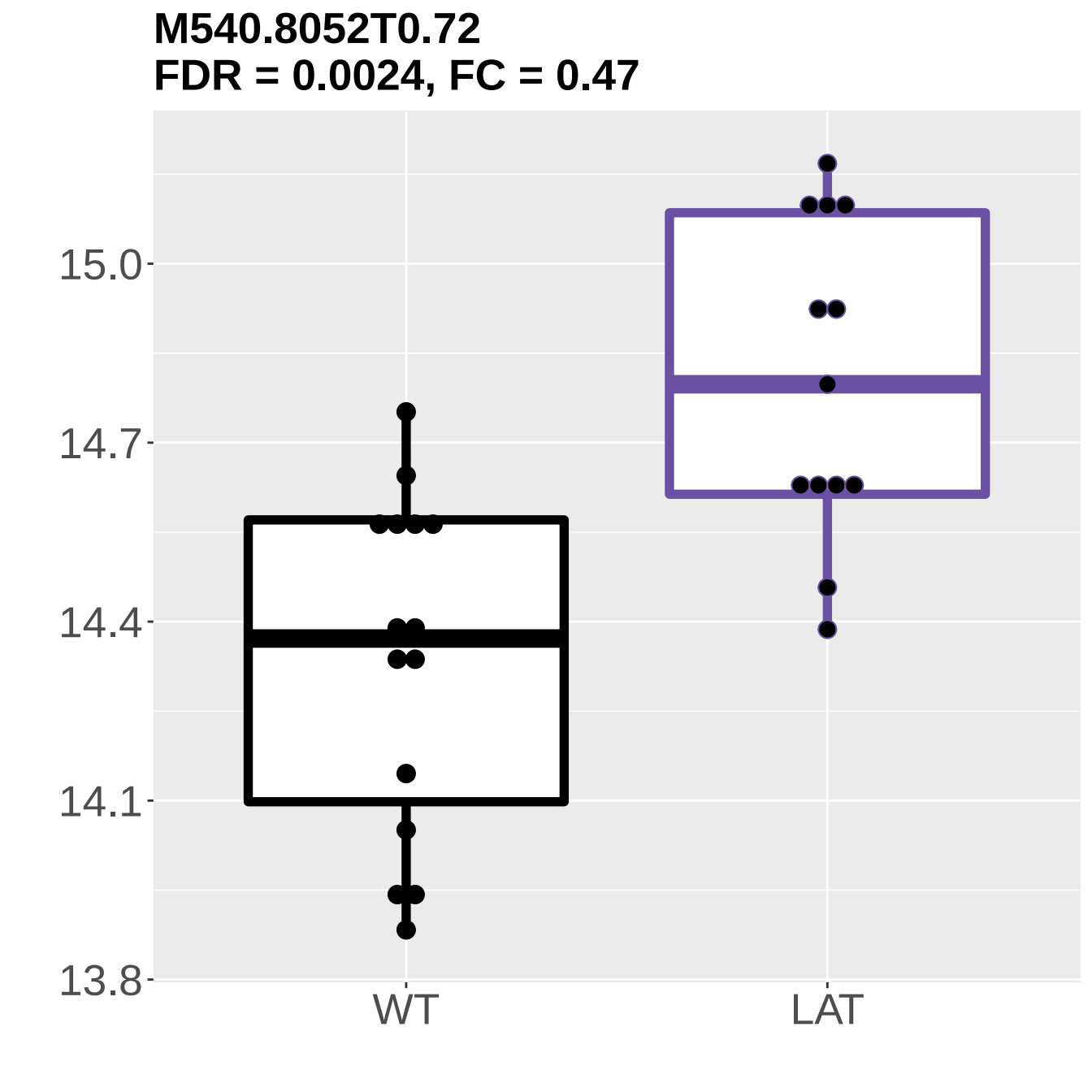
WT
LAT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FDR = 0.0024, FC = 0.47
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WT
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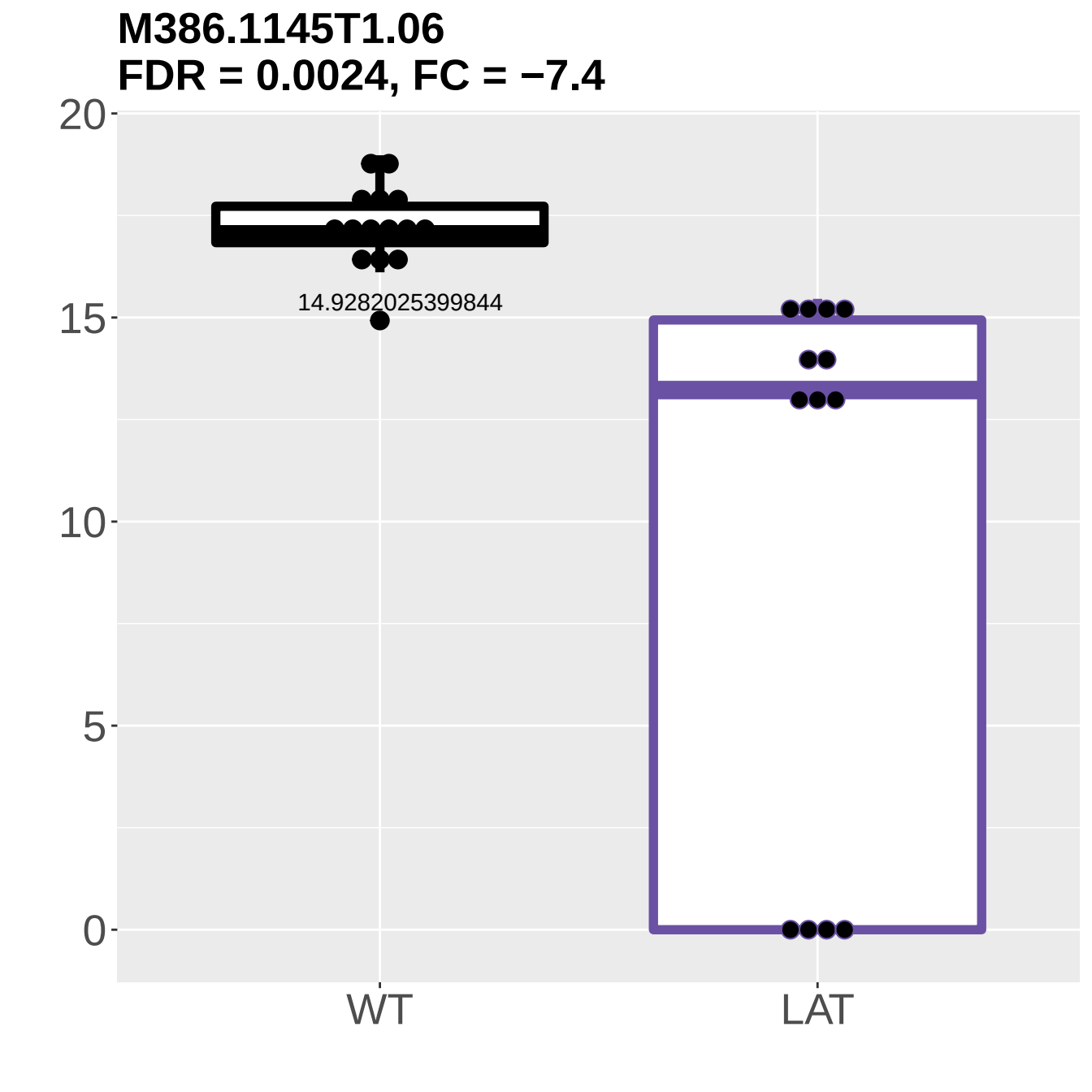
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10
5
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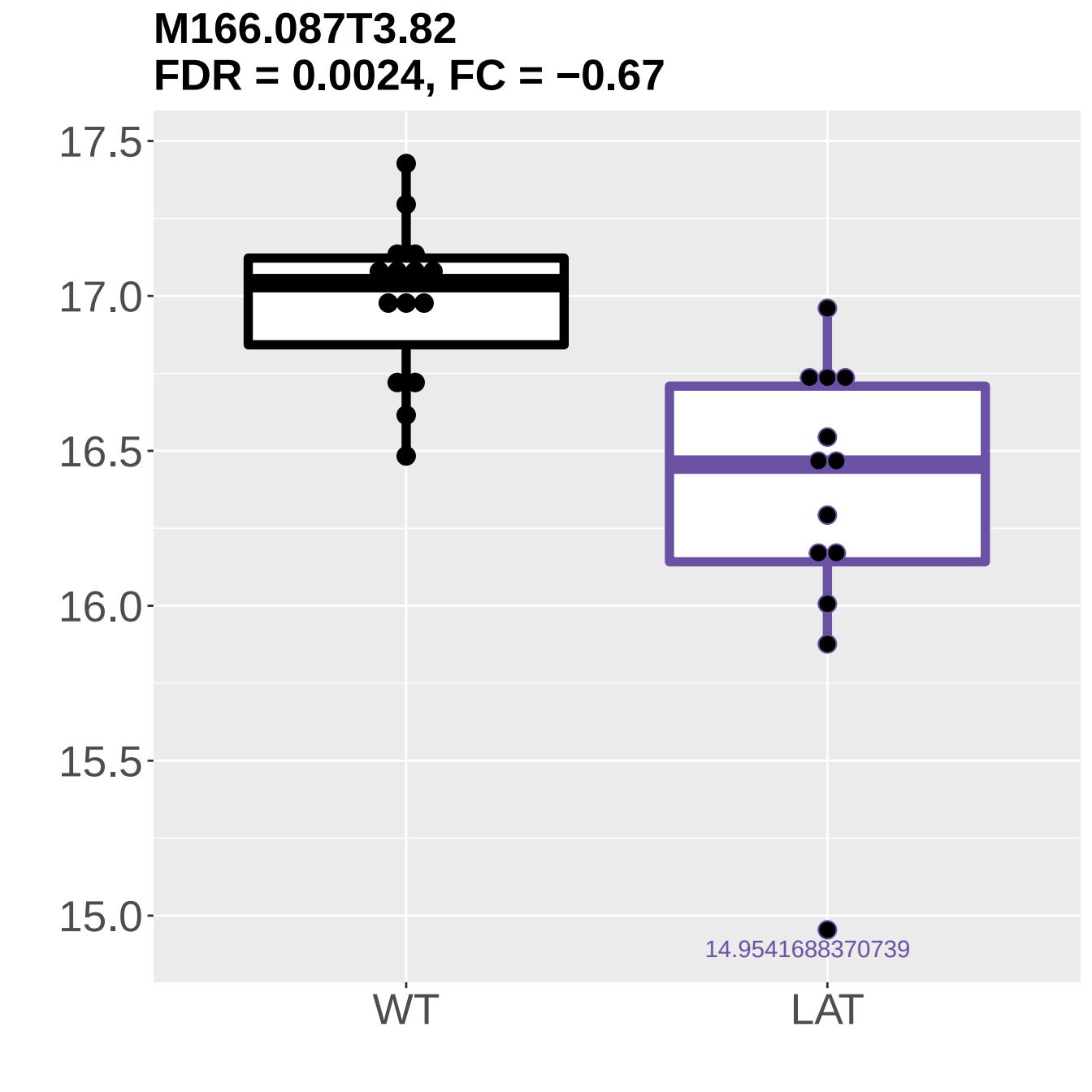
WT
LAT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16.0
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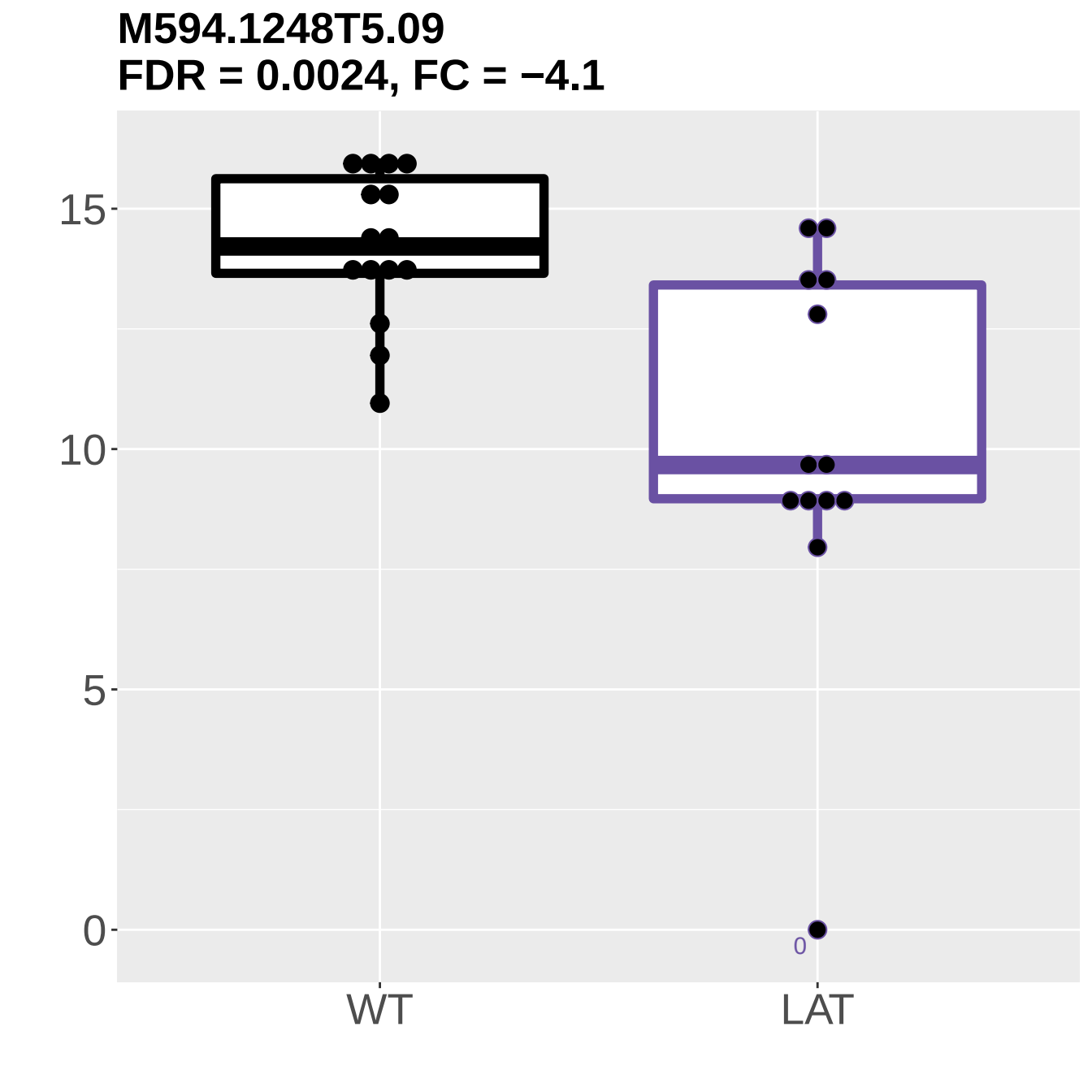
WT
LAT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FDR = 0.0024, FC = −4.1
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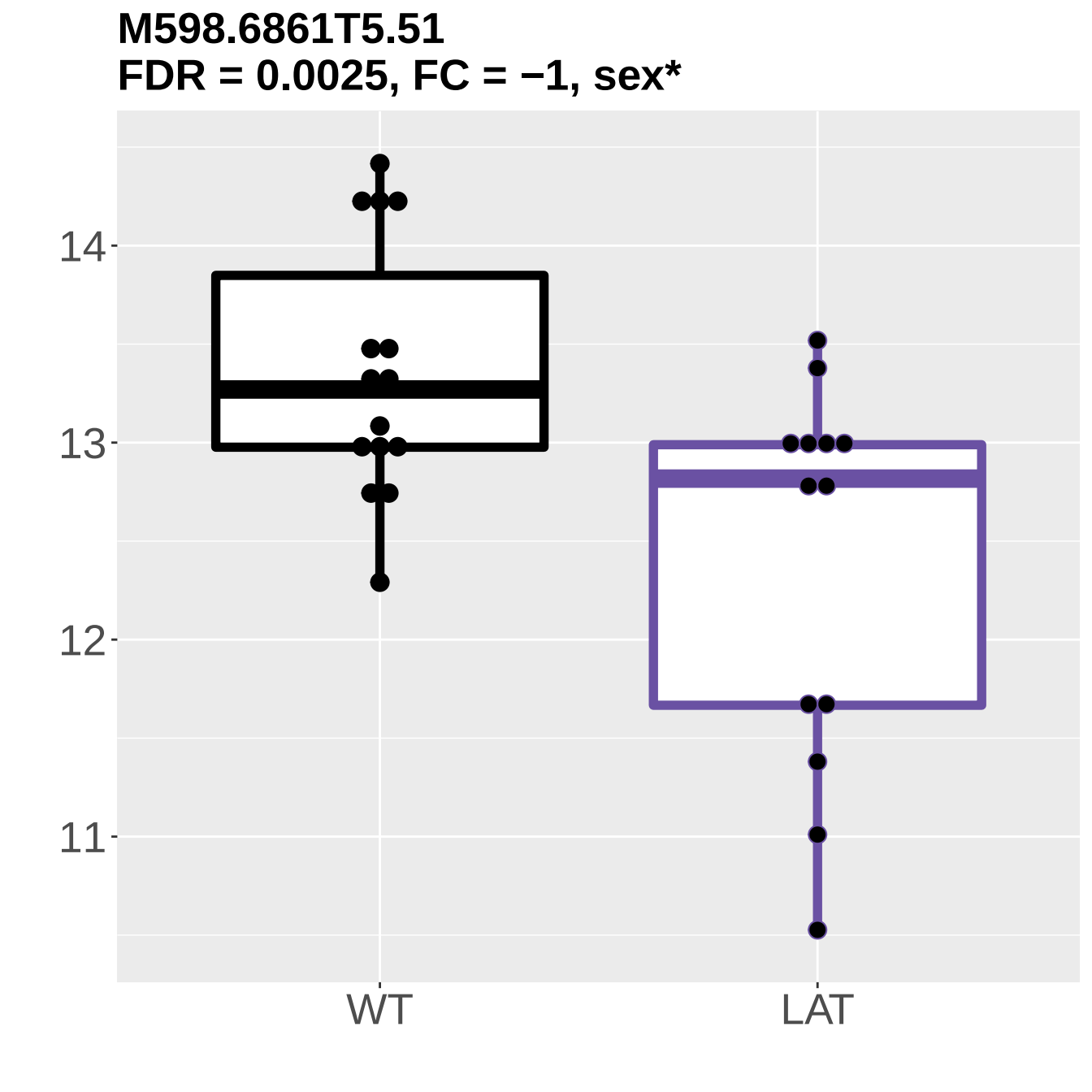
5
0
0
WT
LAT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FDR = 0.0025, FC = −1, sex*
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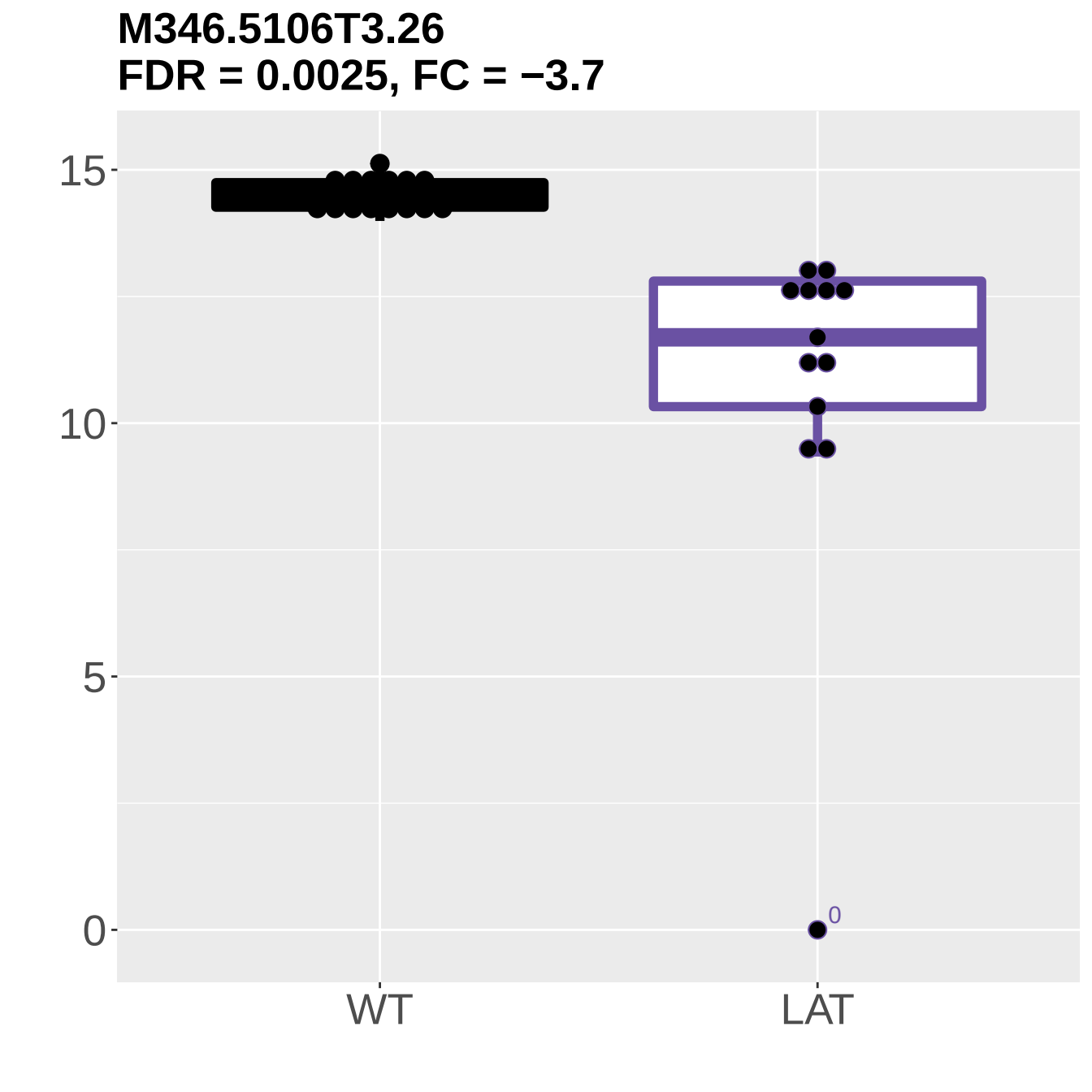
12
11
WT
LAT


M346.5106T3.26
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10
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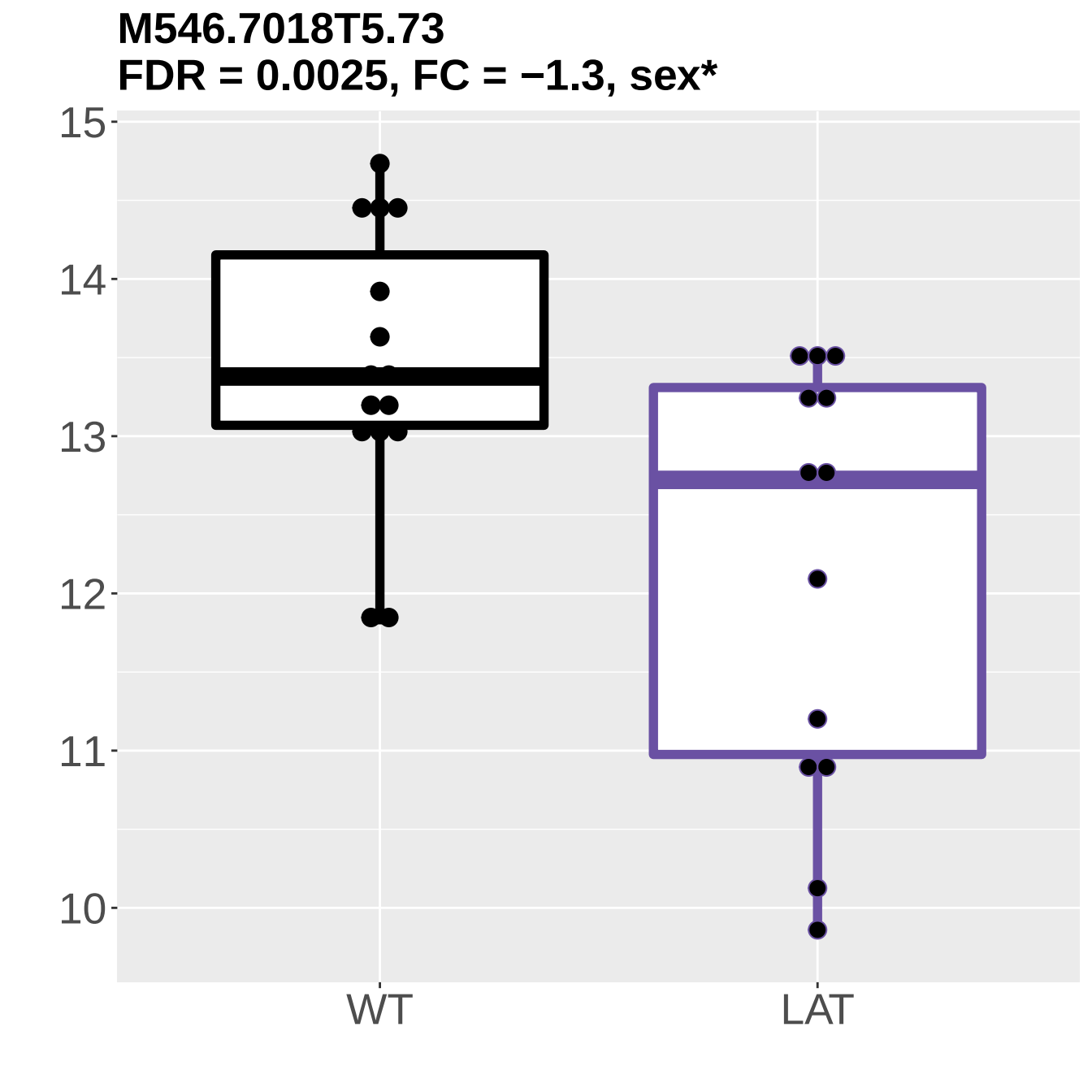
0
0
WT
LAT


M546.7018T5.73
FDR = 0.0025, FC = −1.3, sex*
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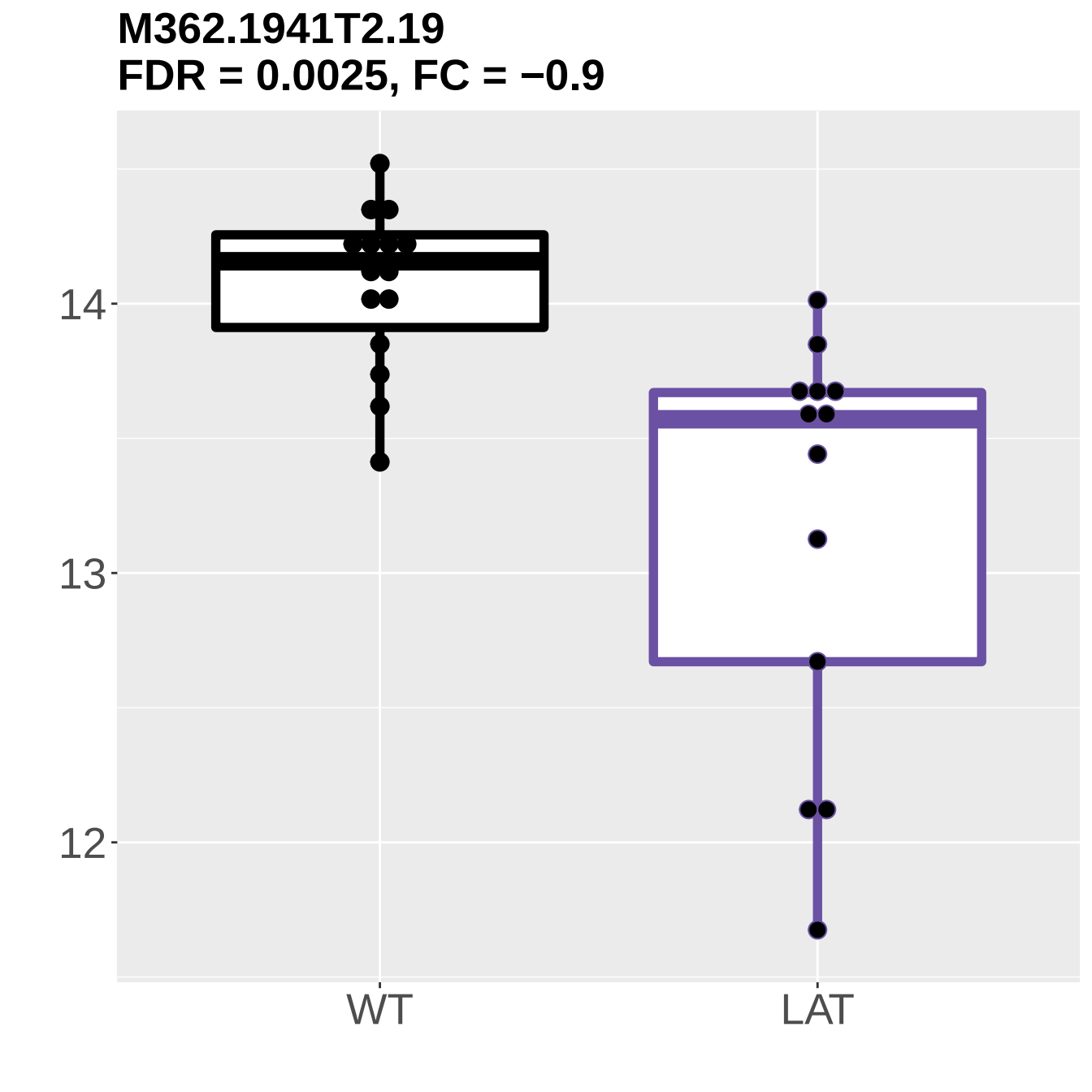
14
13
12
11
10
WT
LAT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FDR = 0.0025, FC = −0.9
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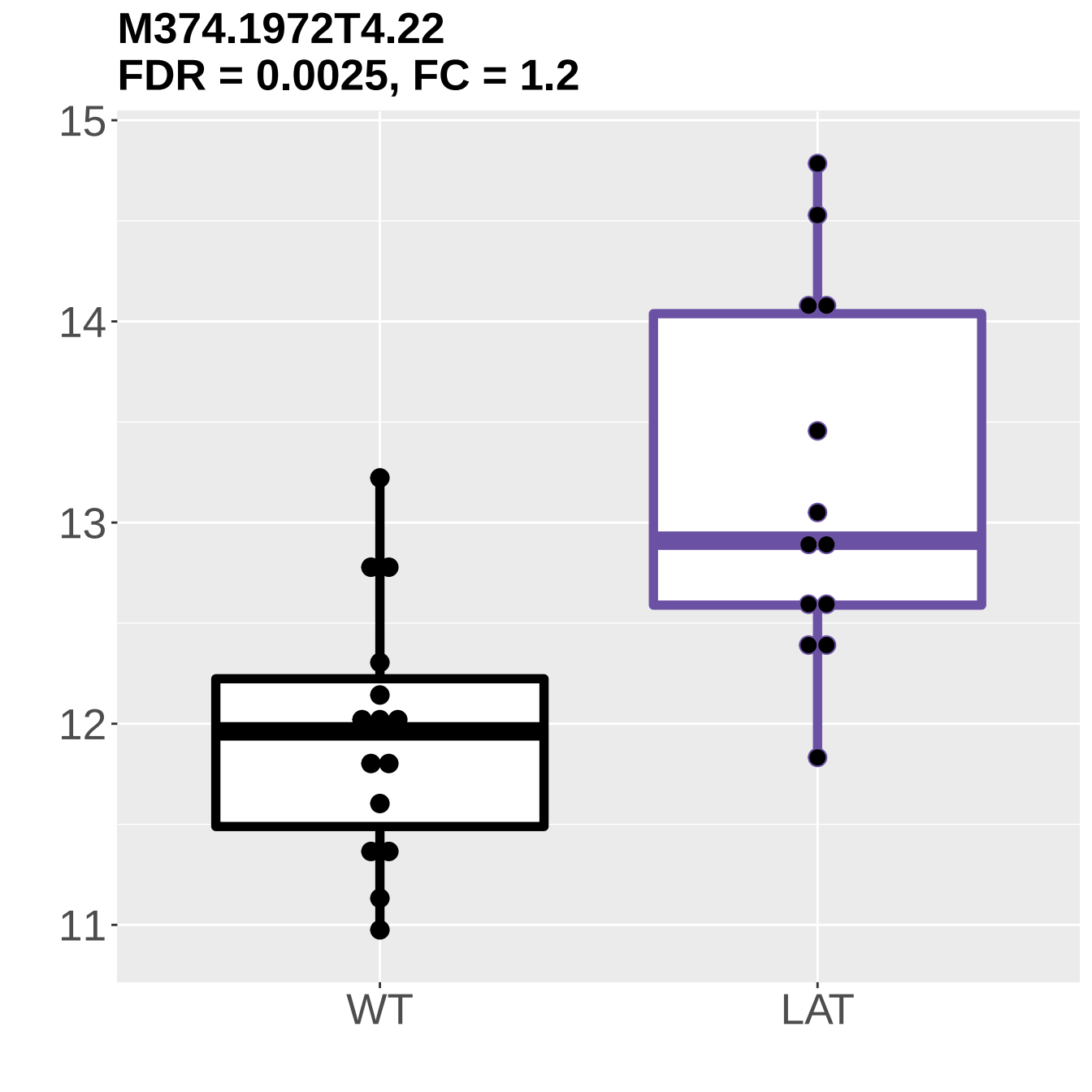
13
12
WT
LAT


M374.1972T4.22
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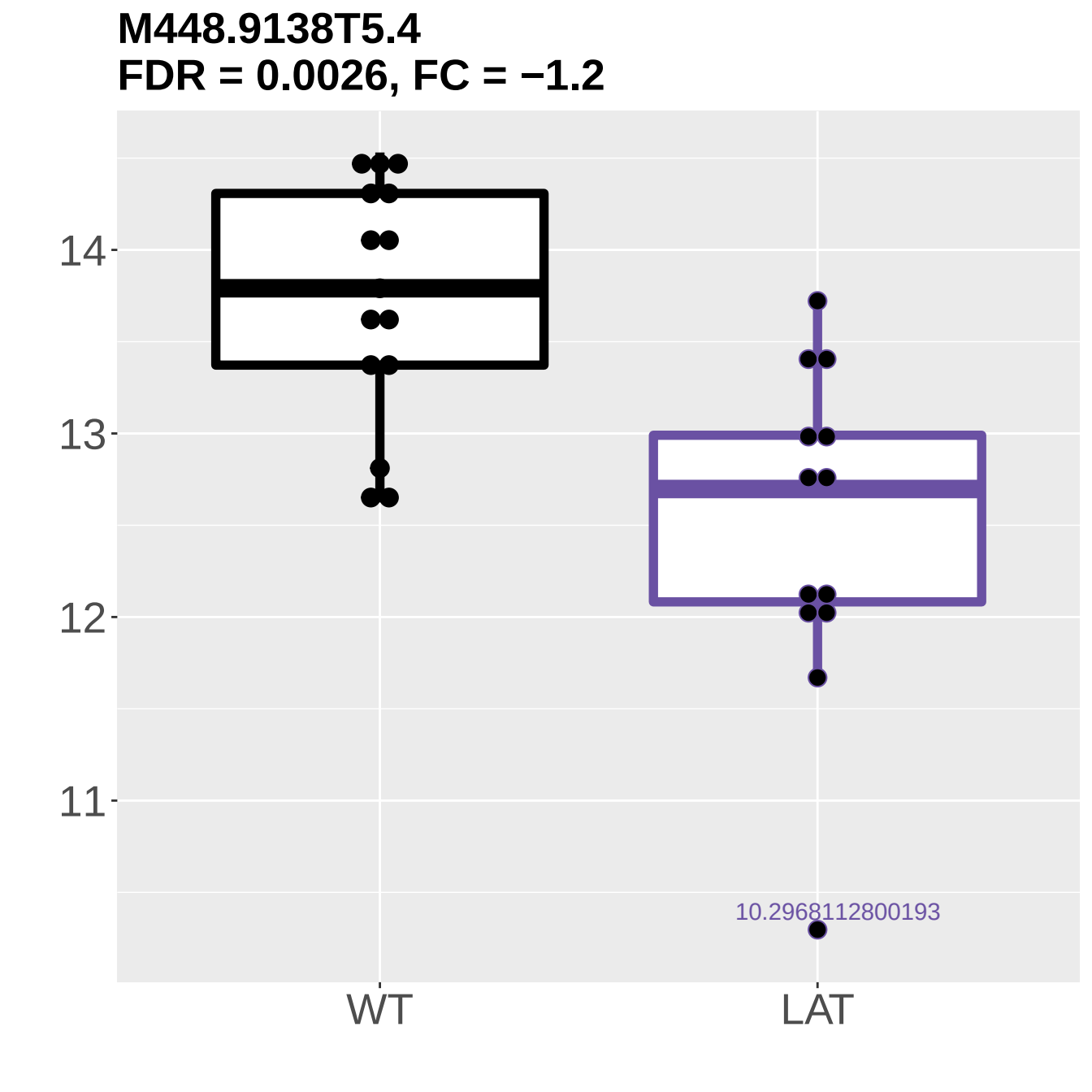
12
11
WT
LAT


M448.9138T5.4
FDR = 0.0026, FC = −1.2
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13
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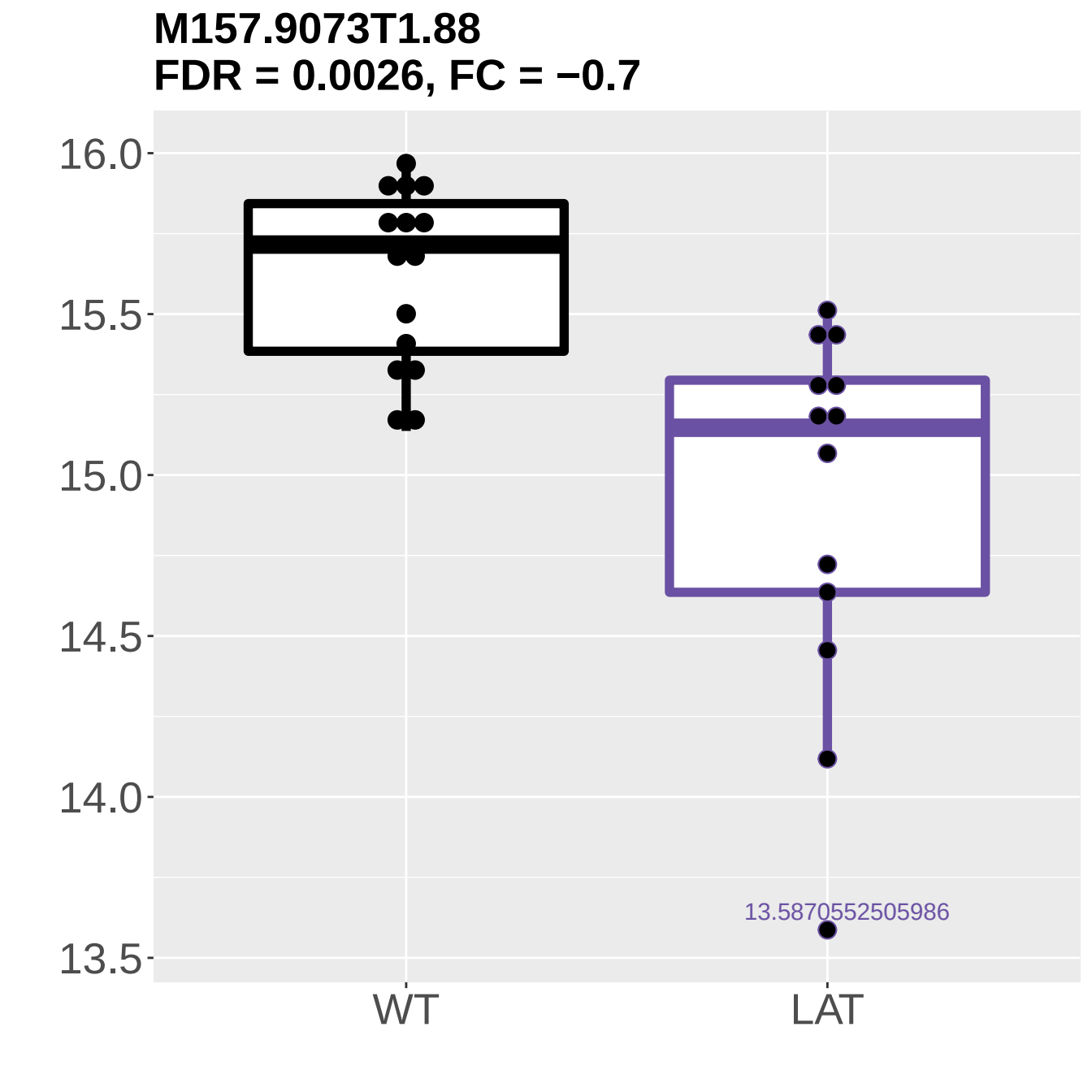
10.2968112800193
WT
LAT


M157.9073T1.88
FDR = 0.0026, FC = −0.7
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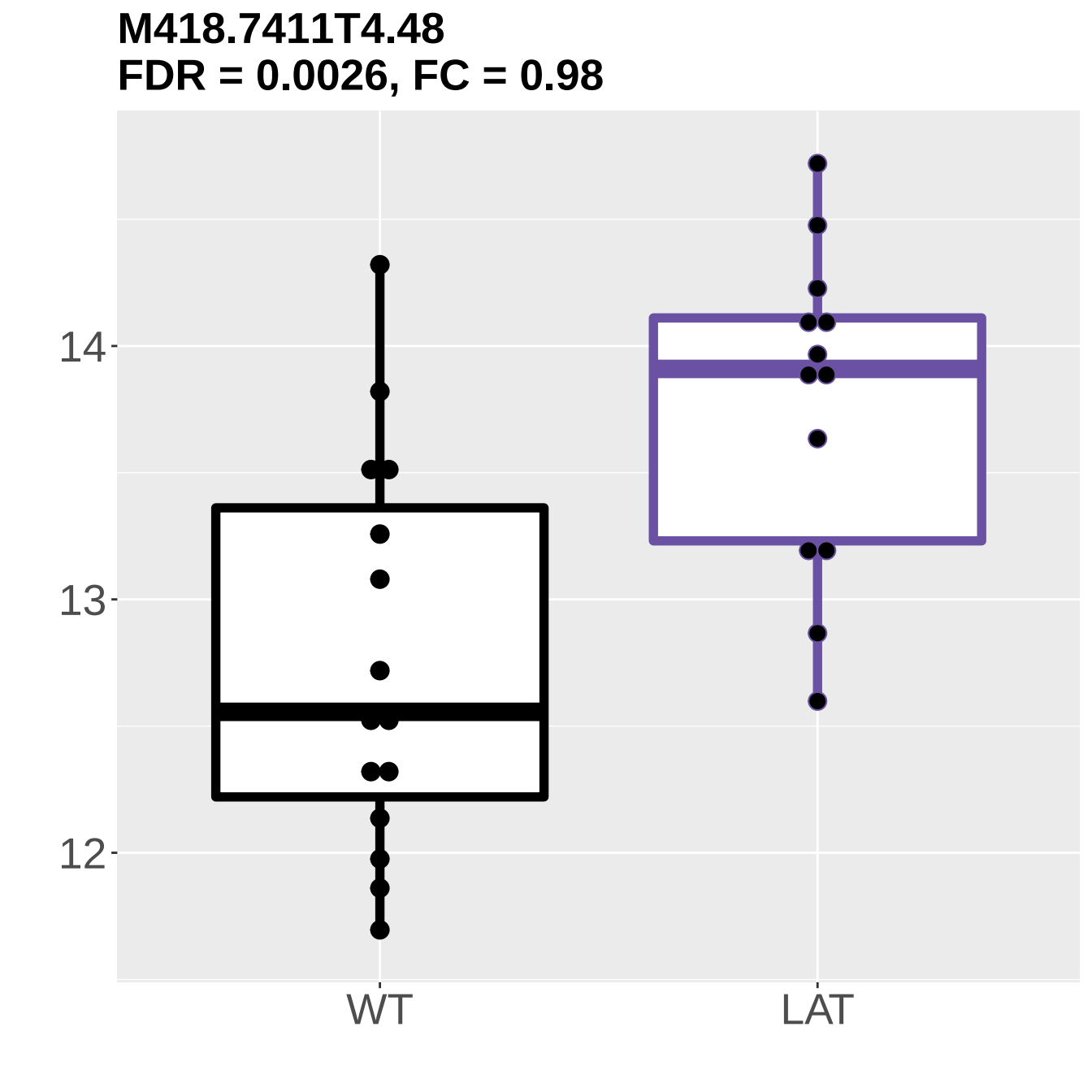
15.5
15.0
14.5
14.0
13.5
13.5870552505986
WT
LAT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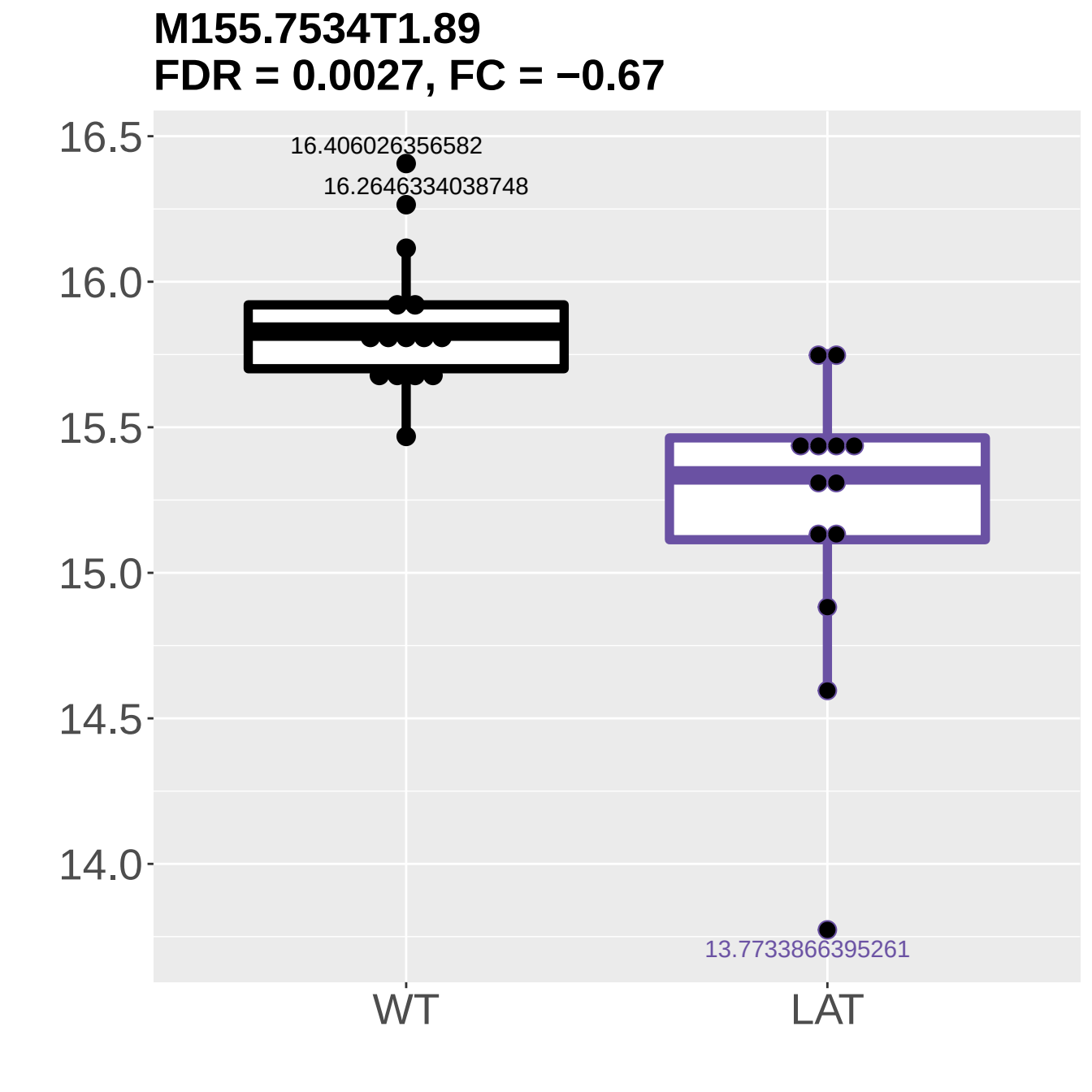
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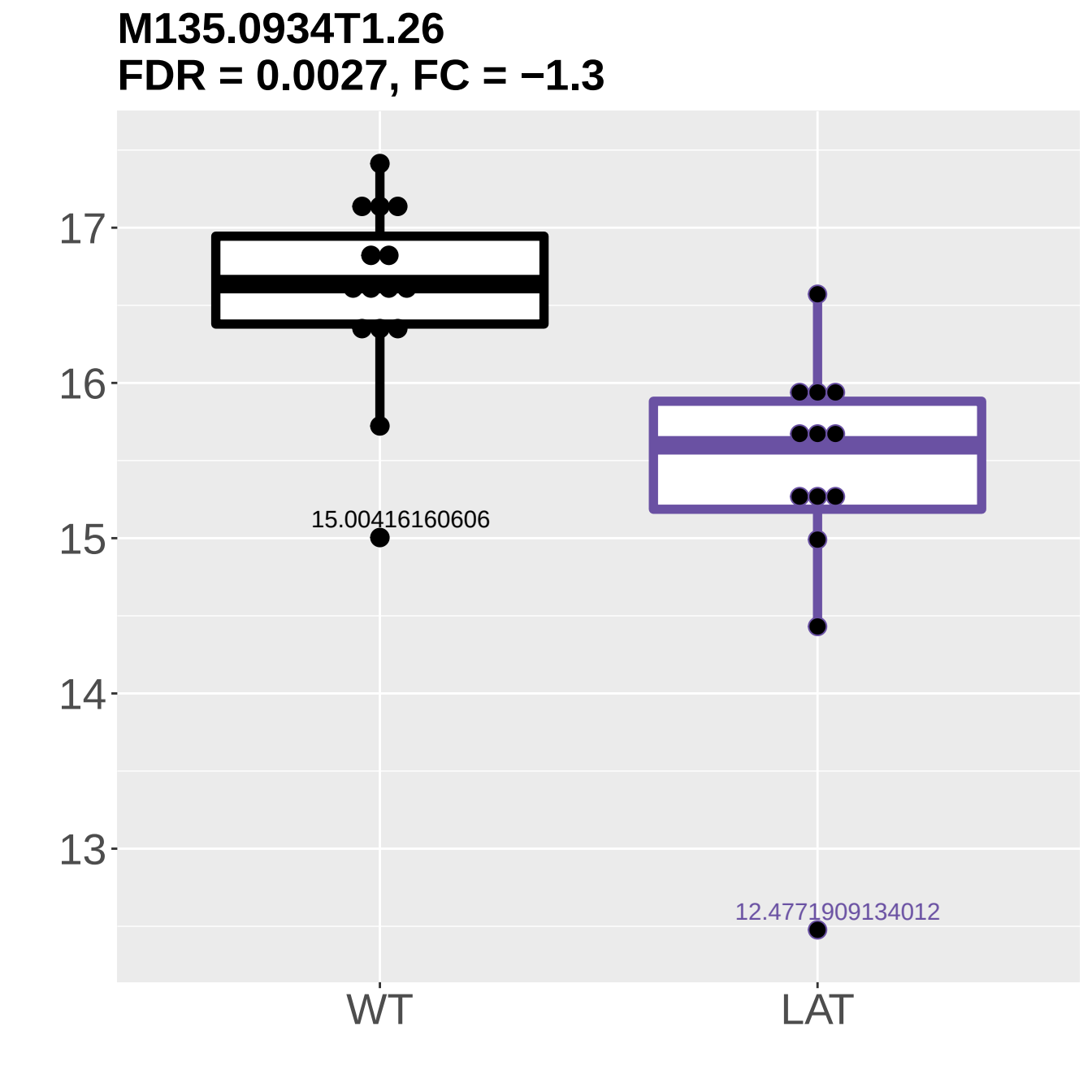
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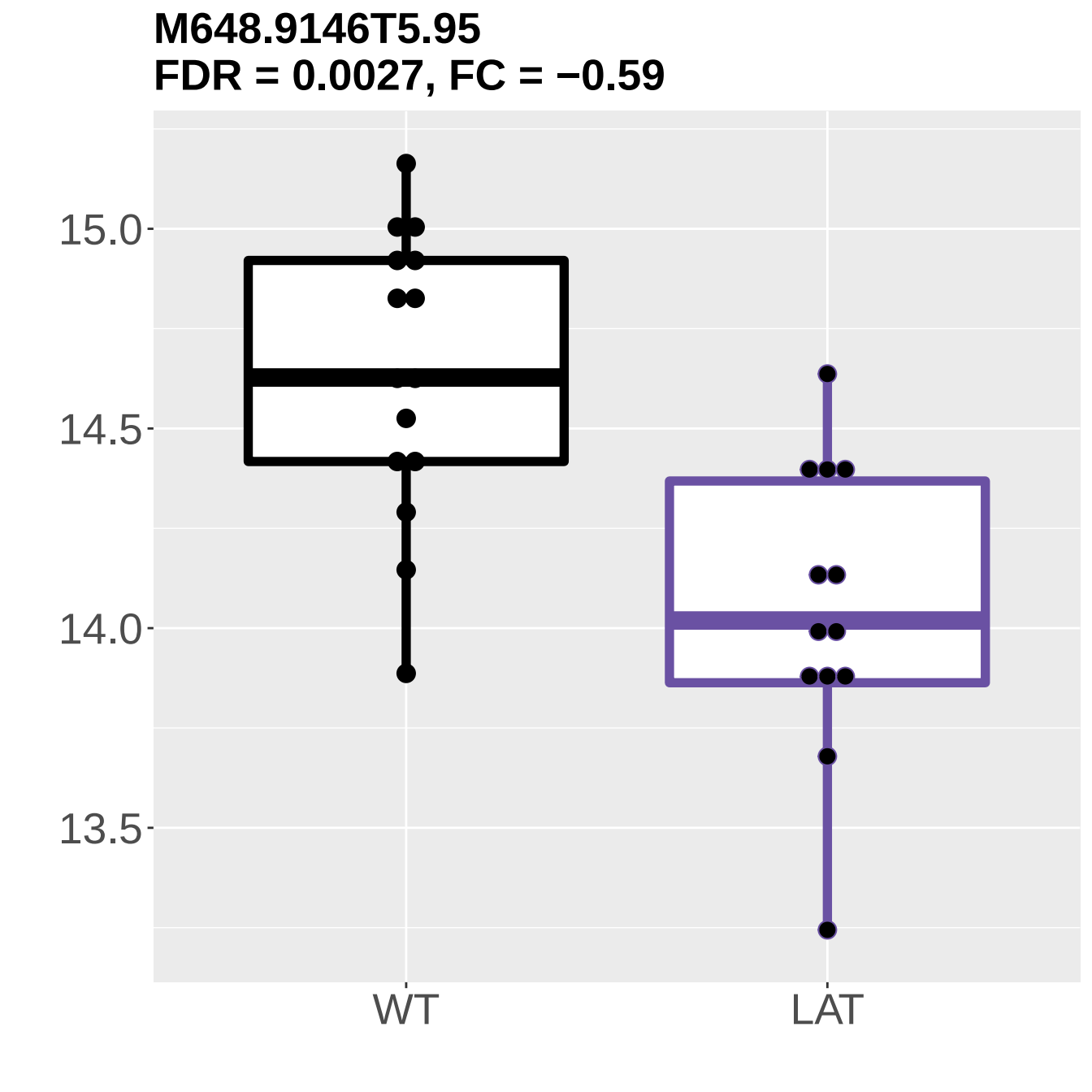
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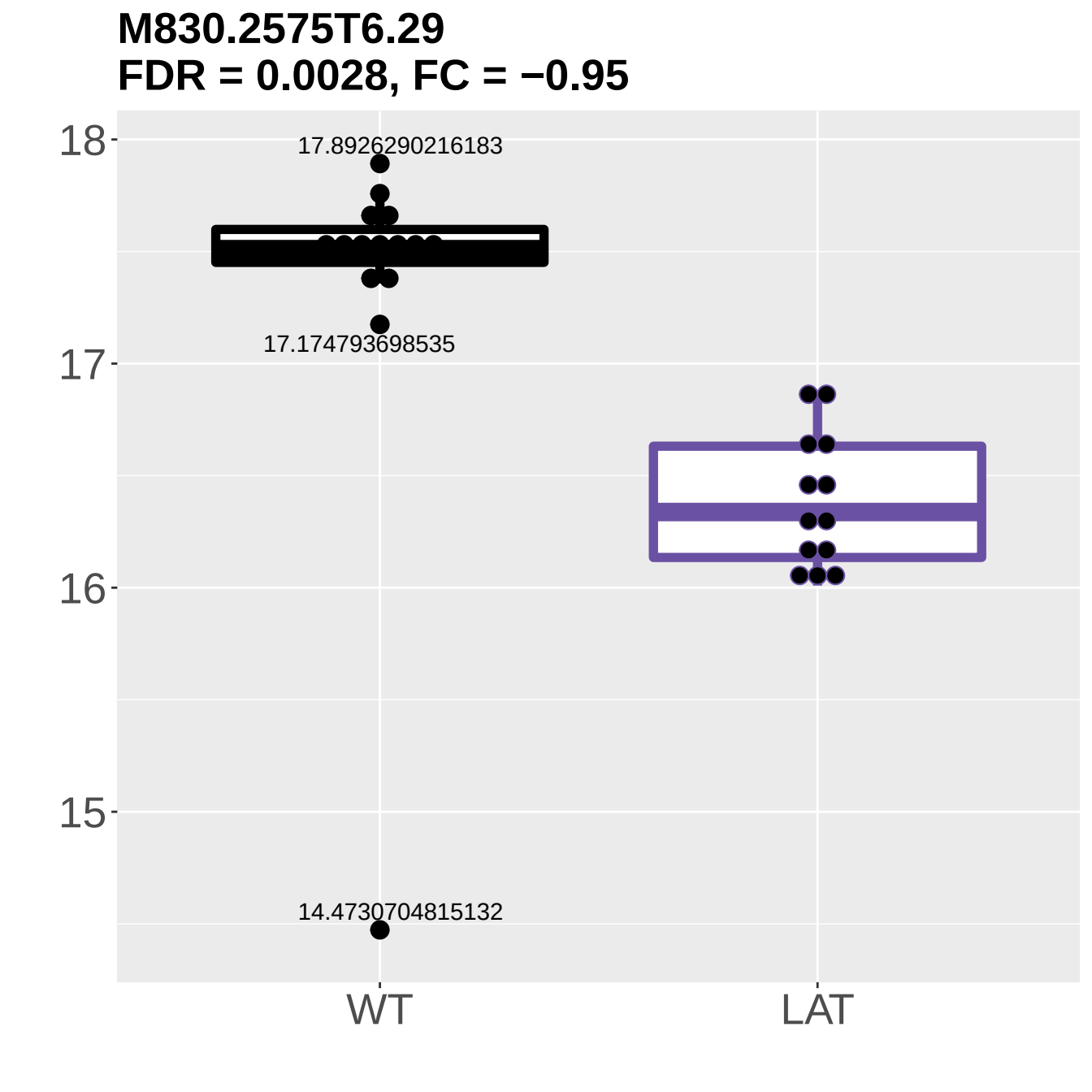
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WT
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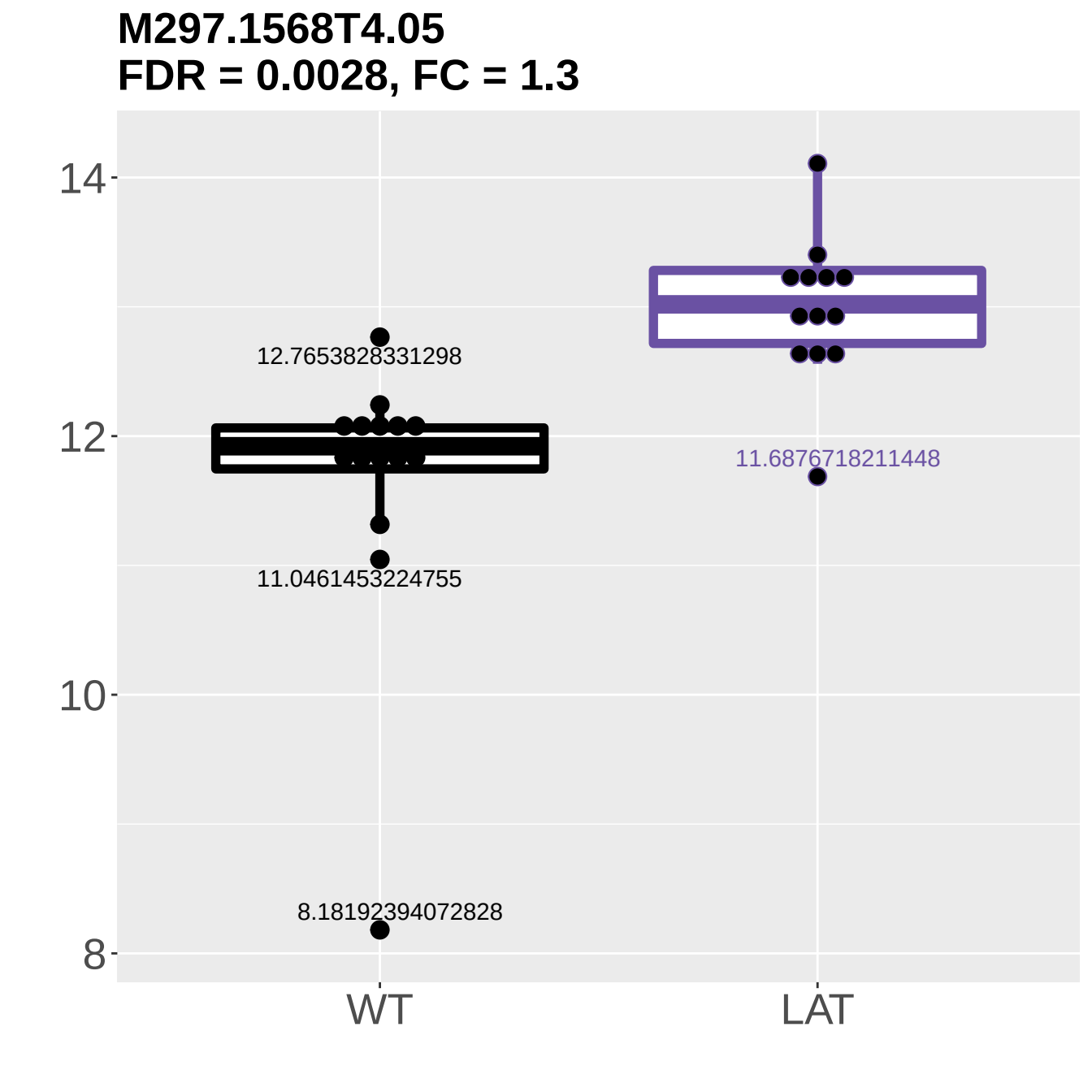
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FDR = 0.0028, FC = 1.3
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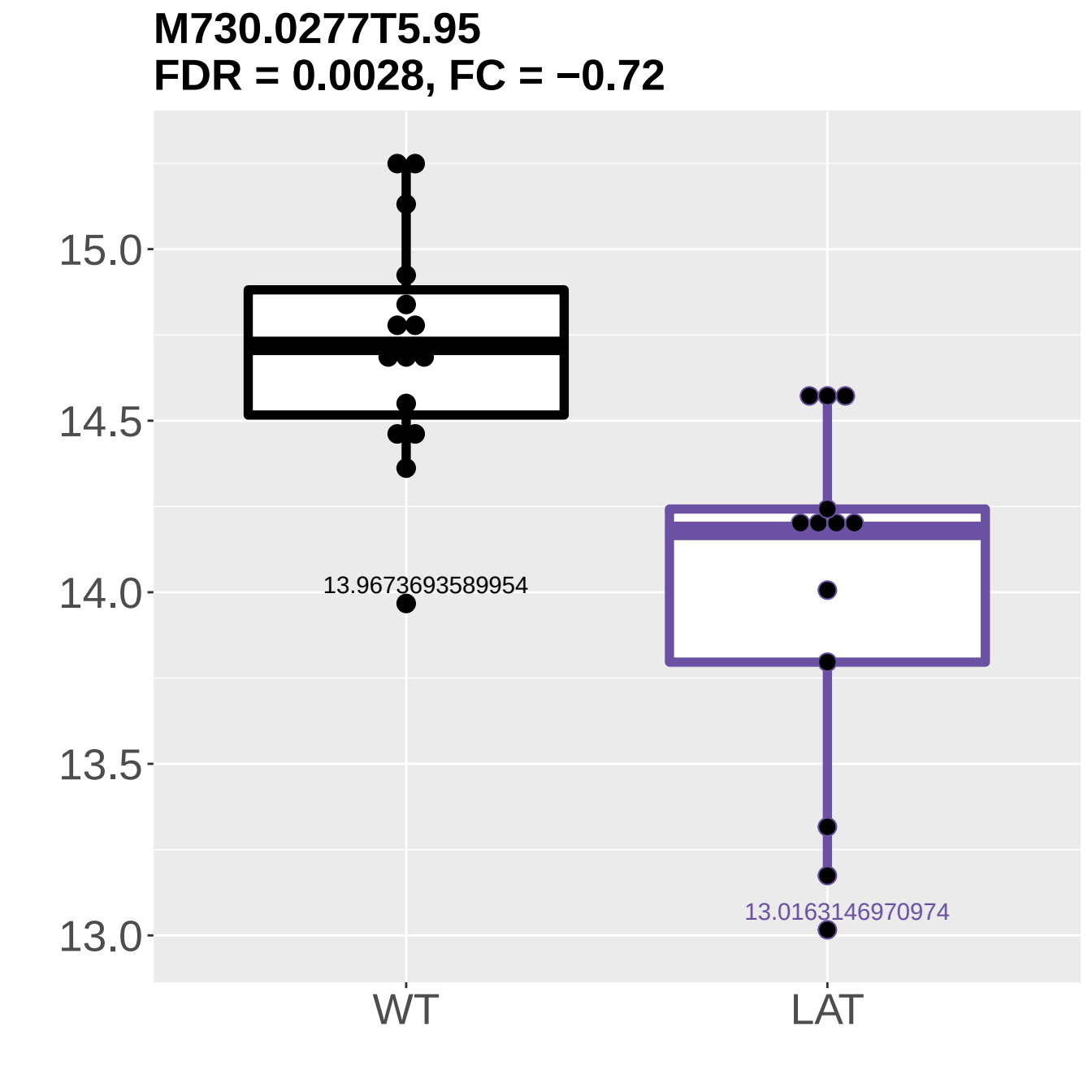
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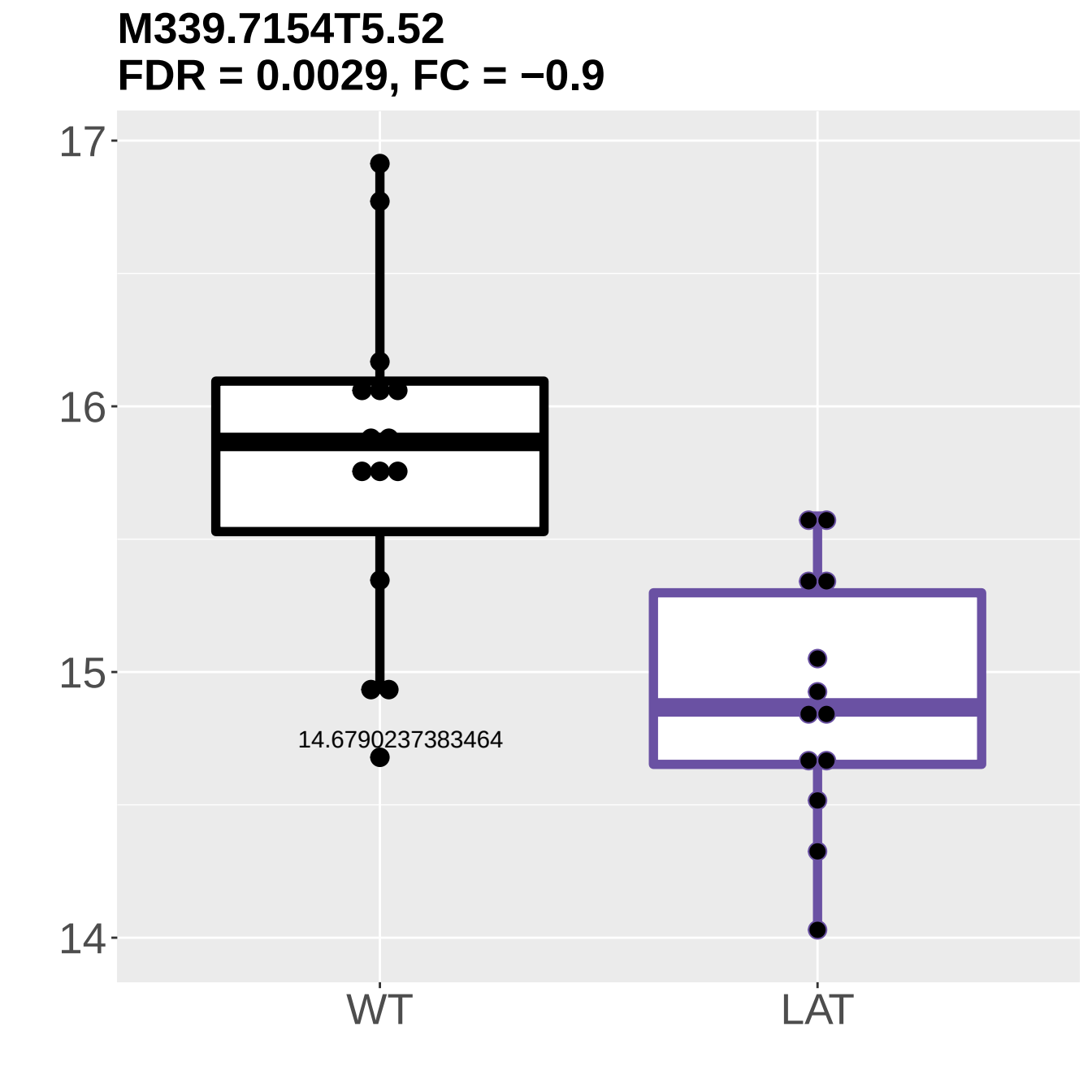
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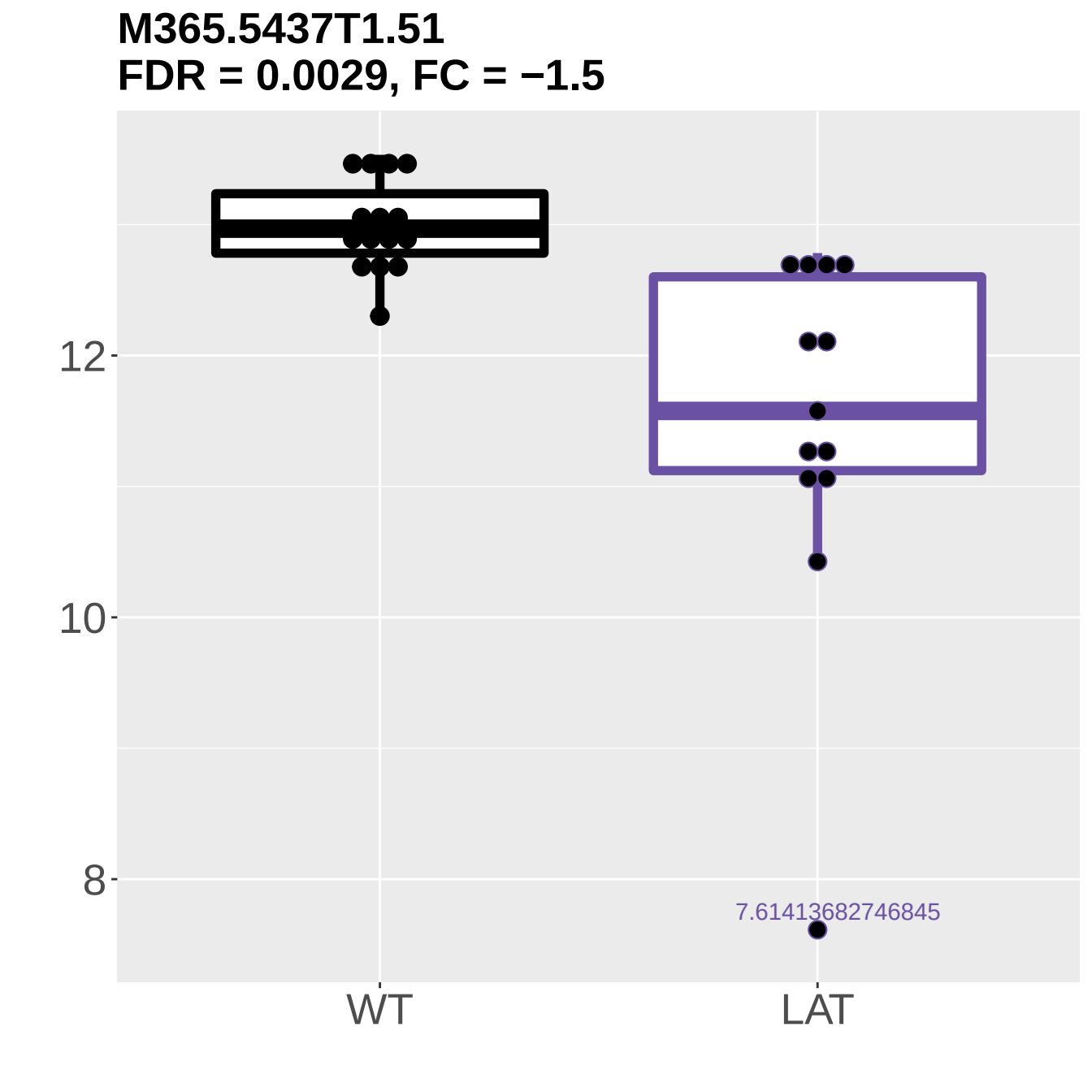
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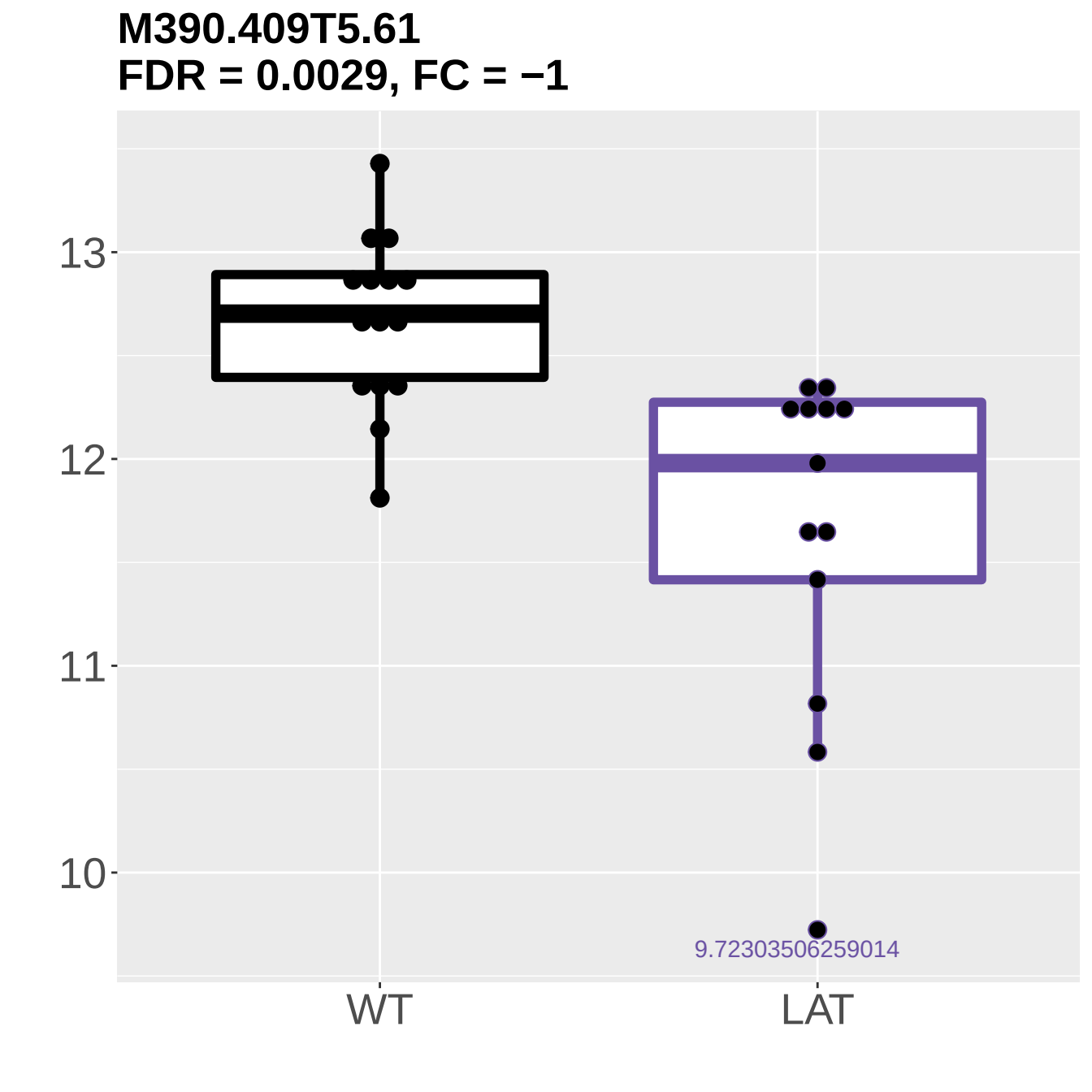
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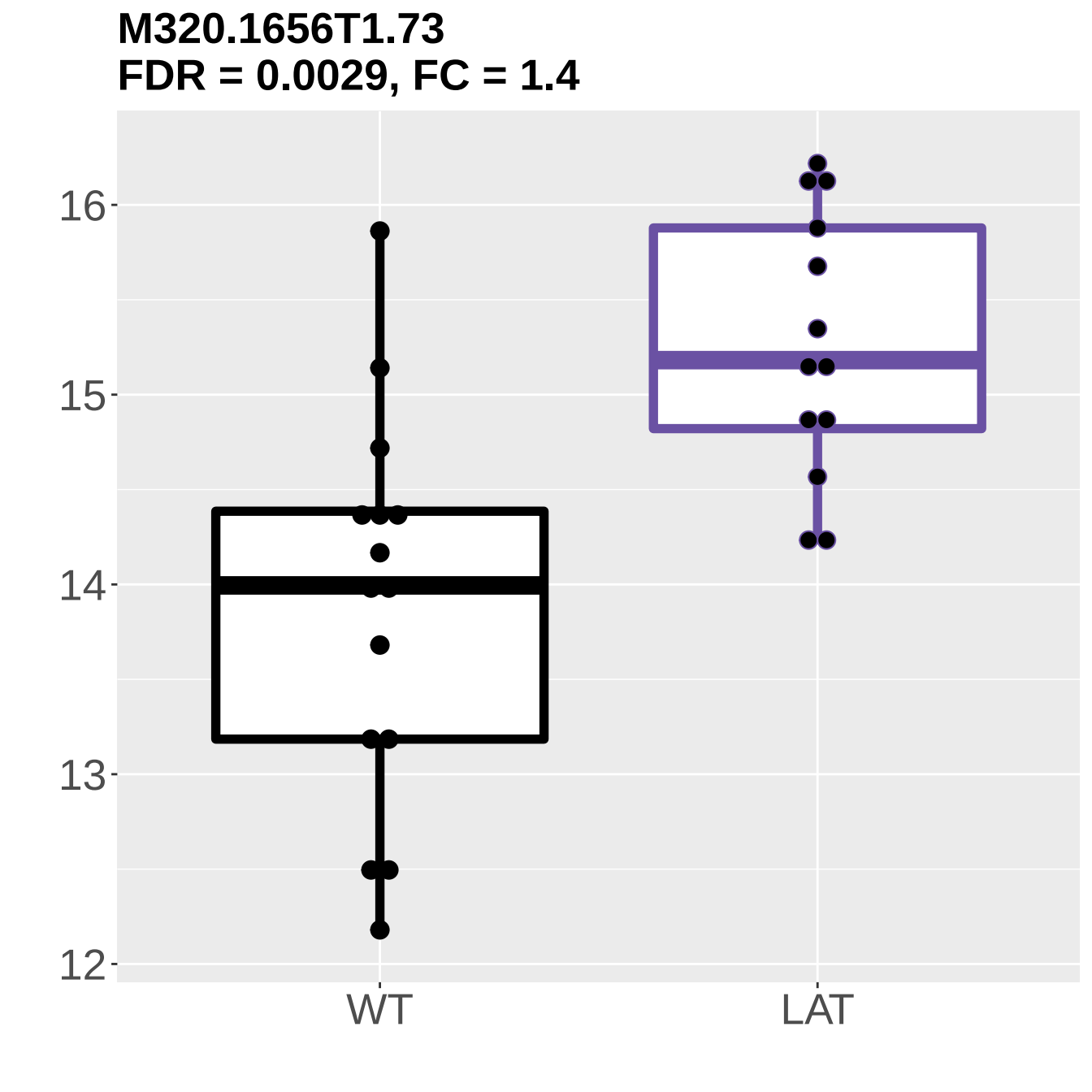
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13
12
WT
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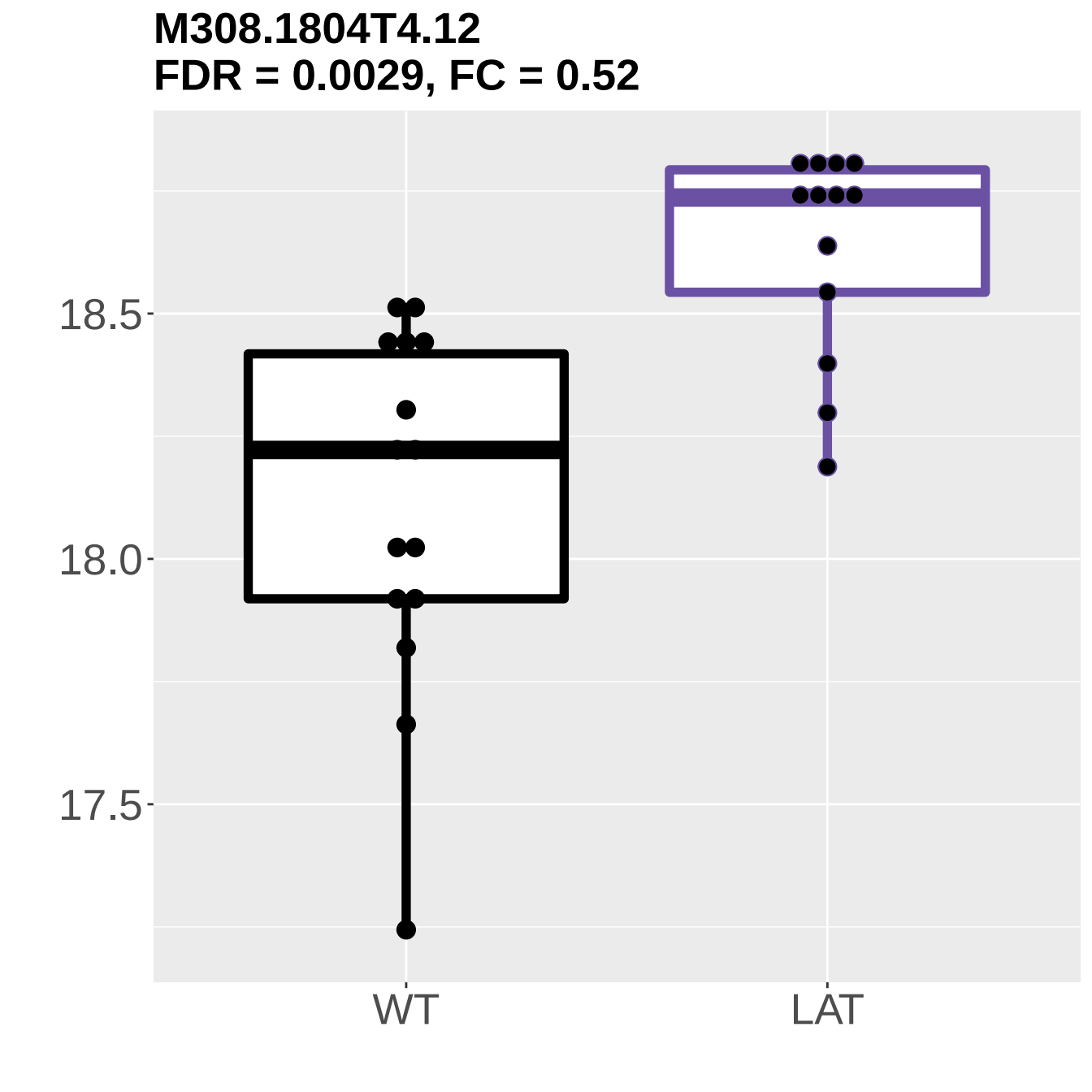
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WT
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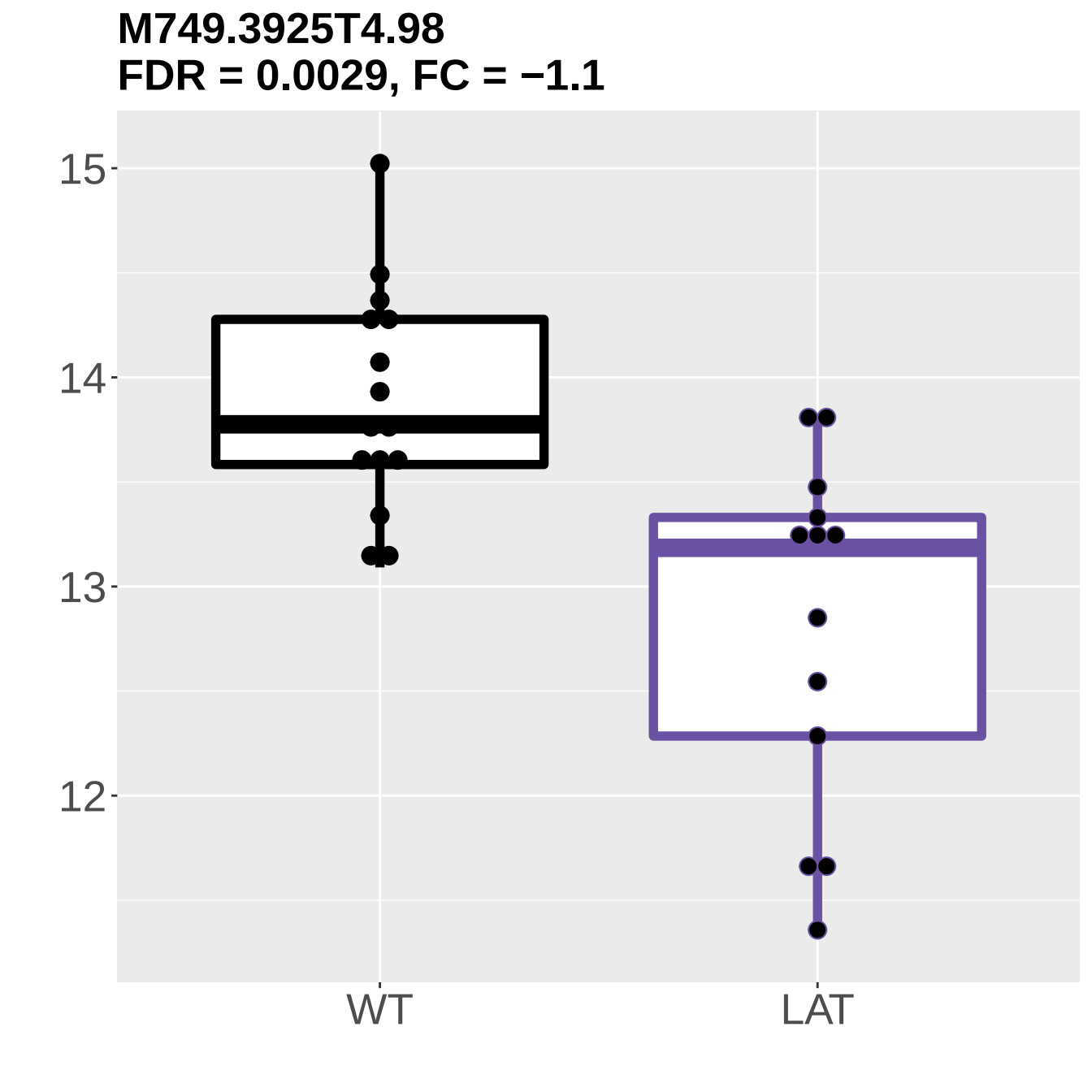
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14
13
12
WT
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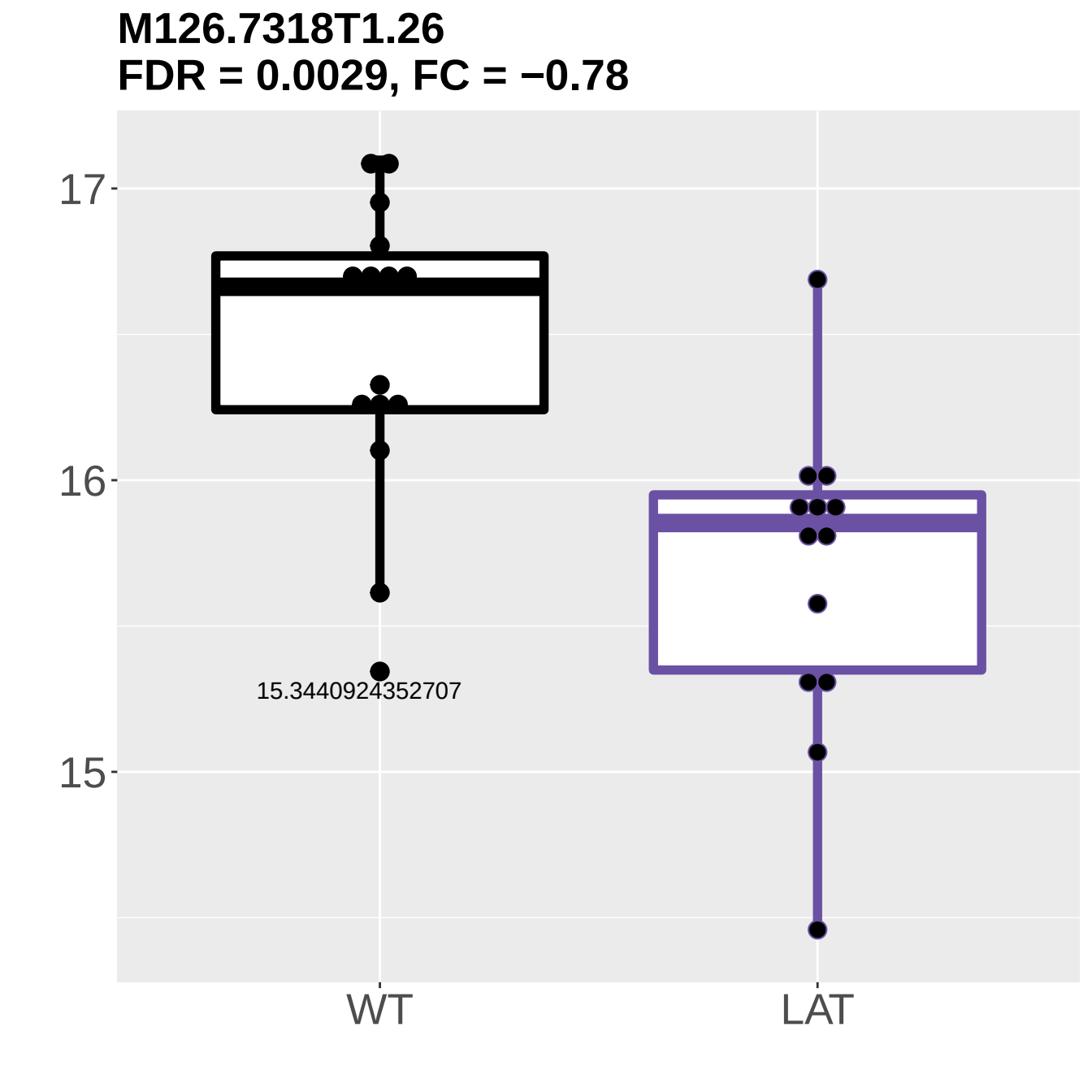
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16
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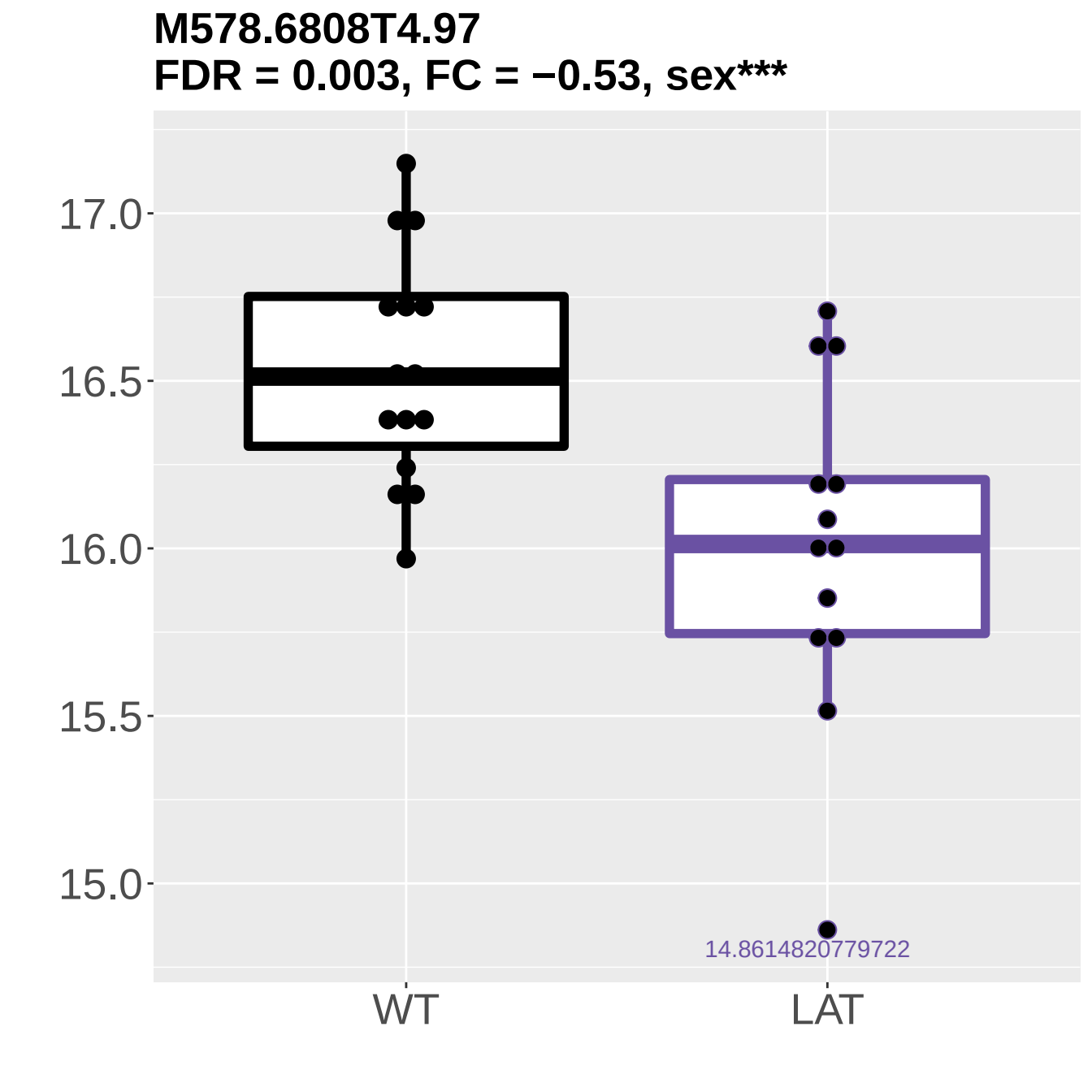
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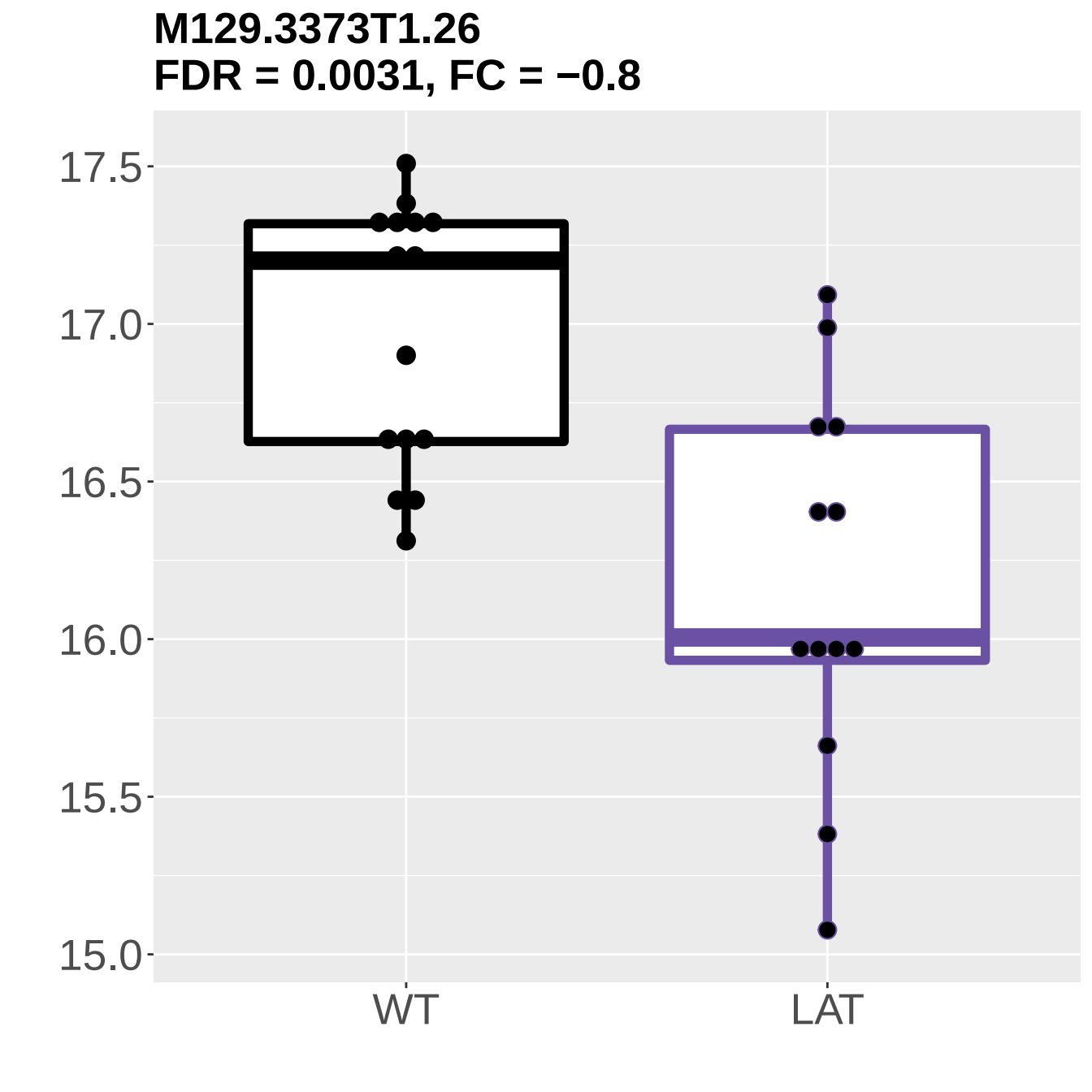
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16.0
15.5
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WT
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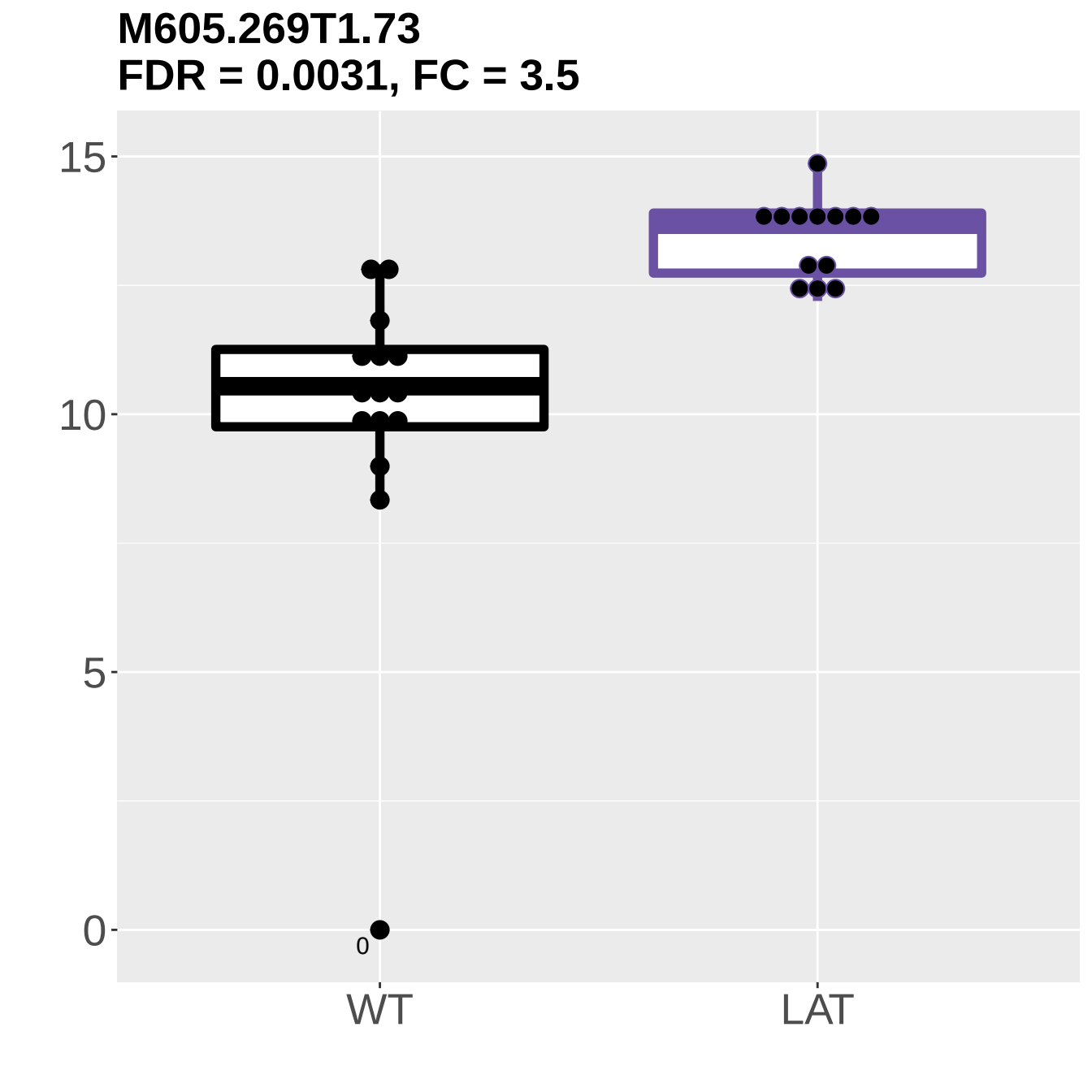
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0
0
WT
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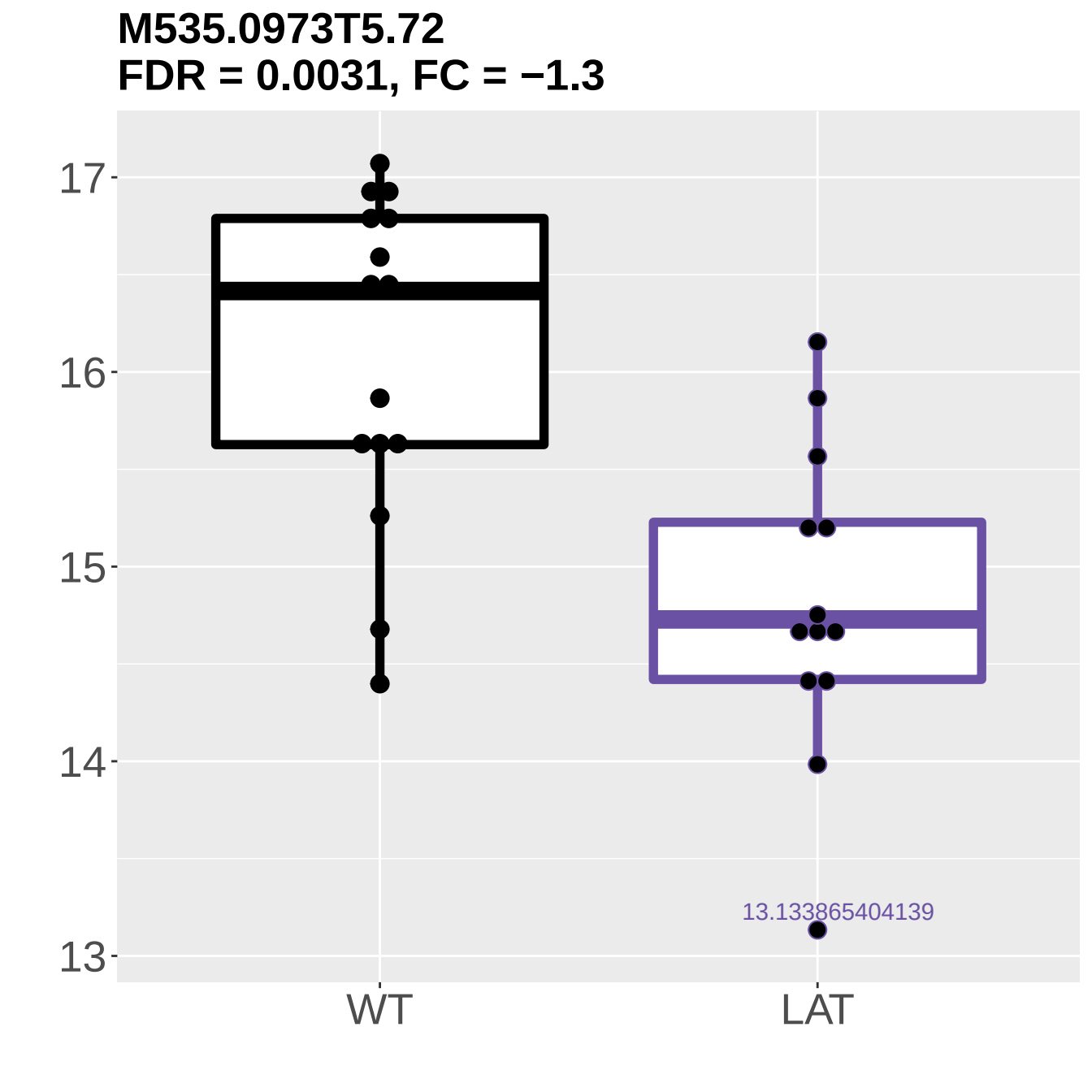
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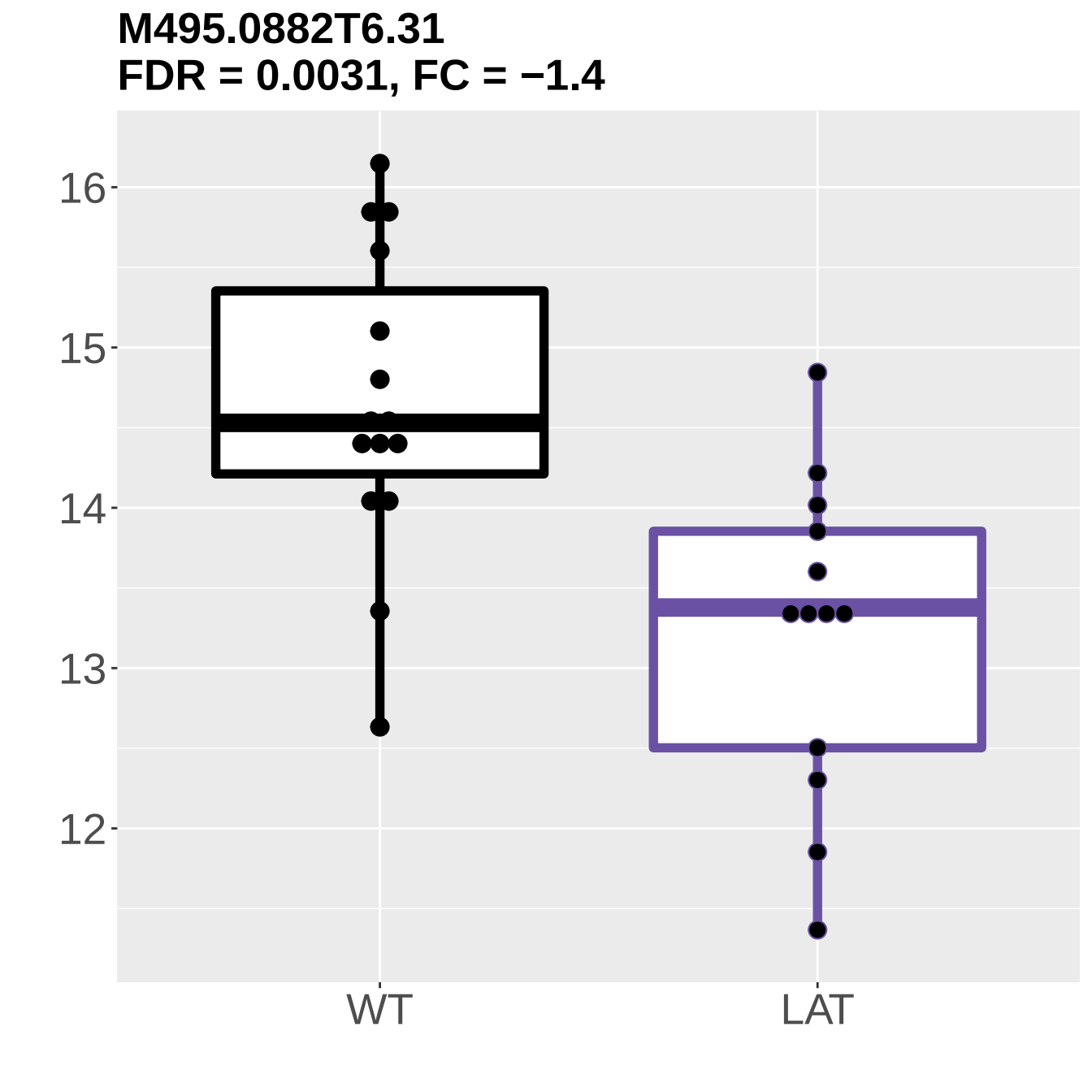
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15
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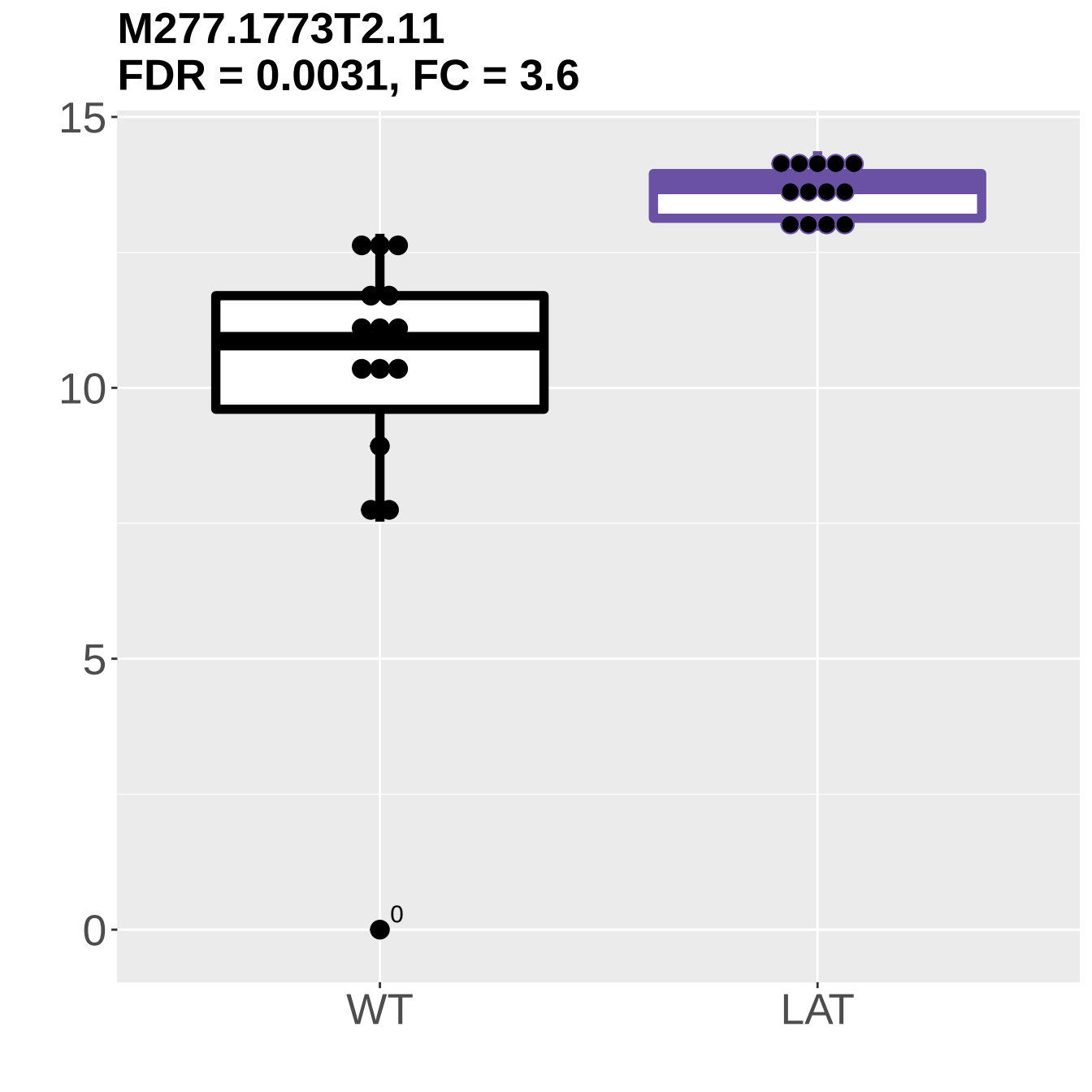
13
12
WT
LAT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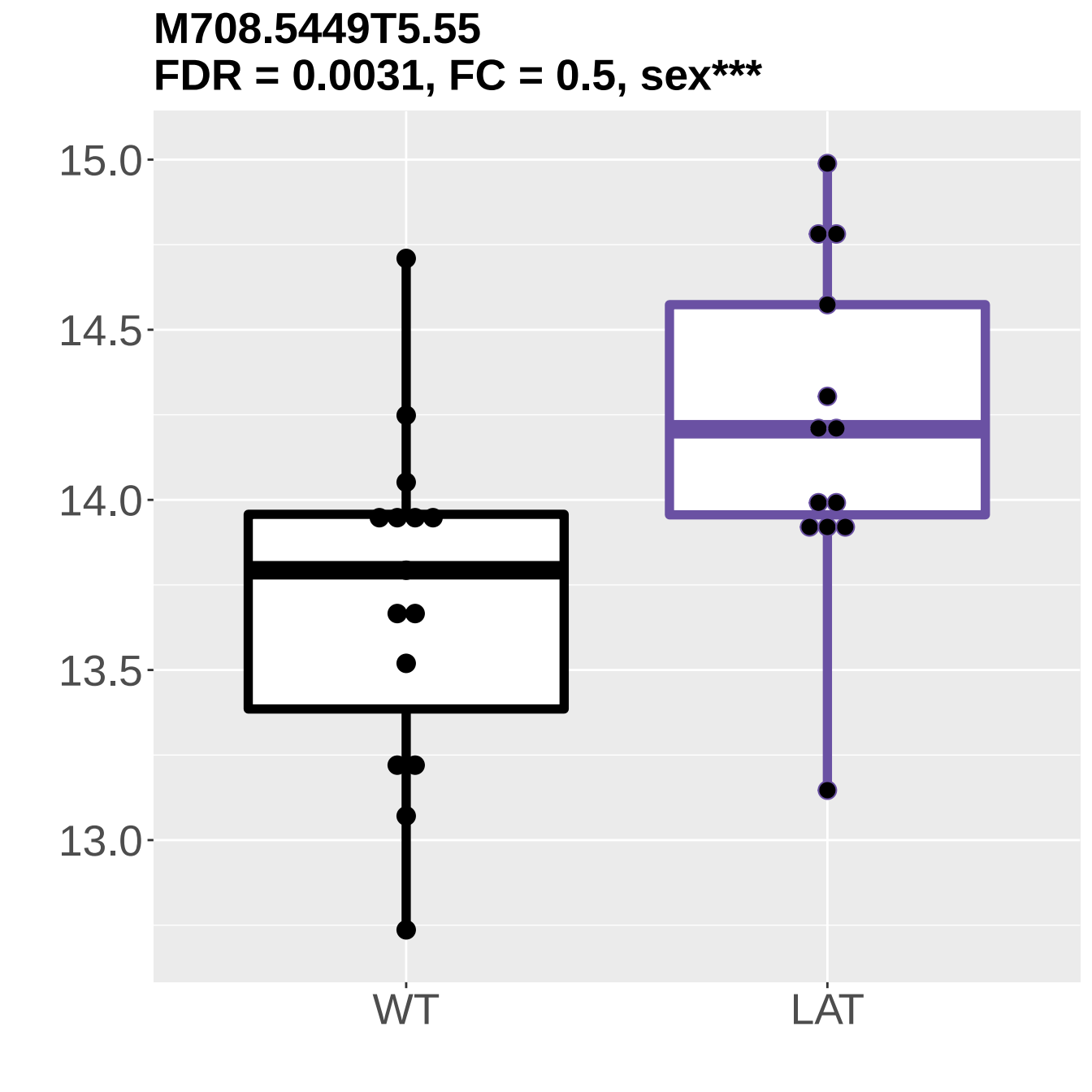
0
WT
LAT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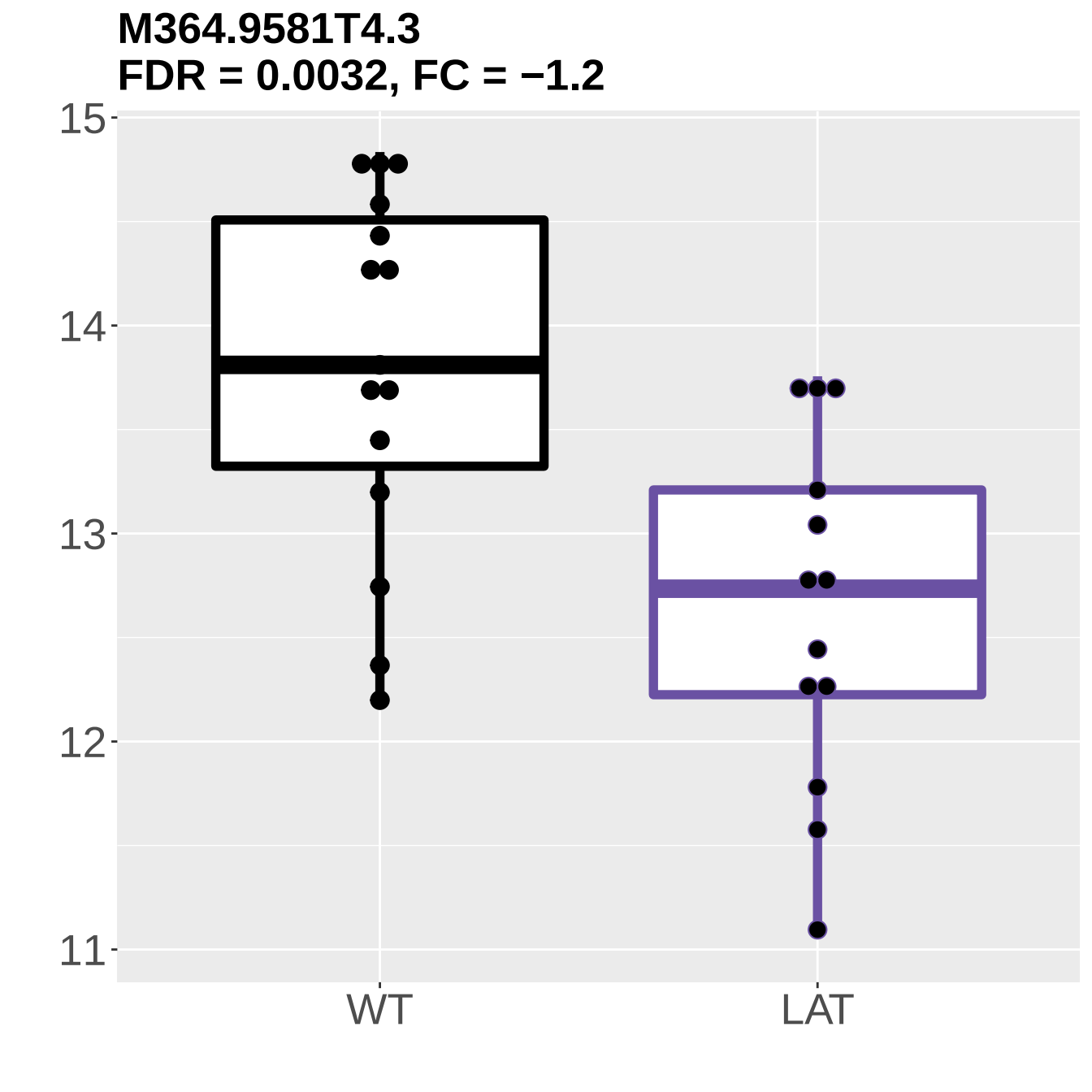
WT
LAT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12
11
WT
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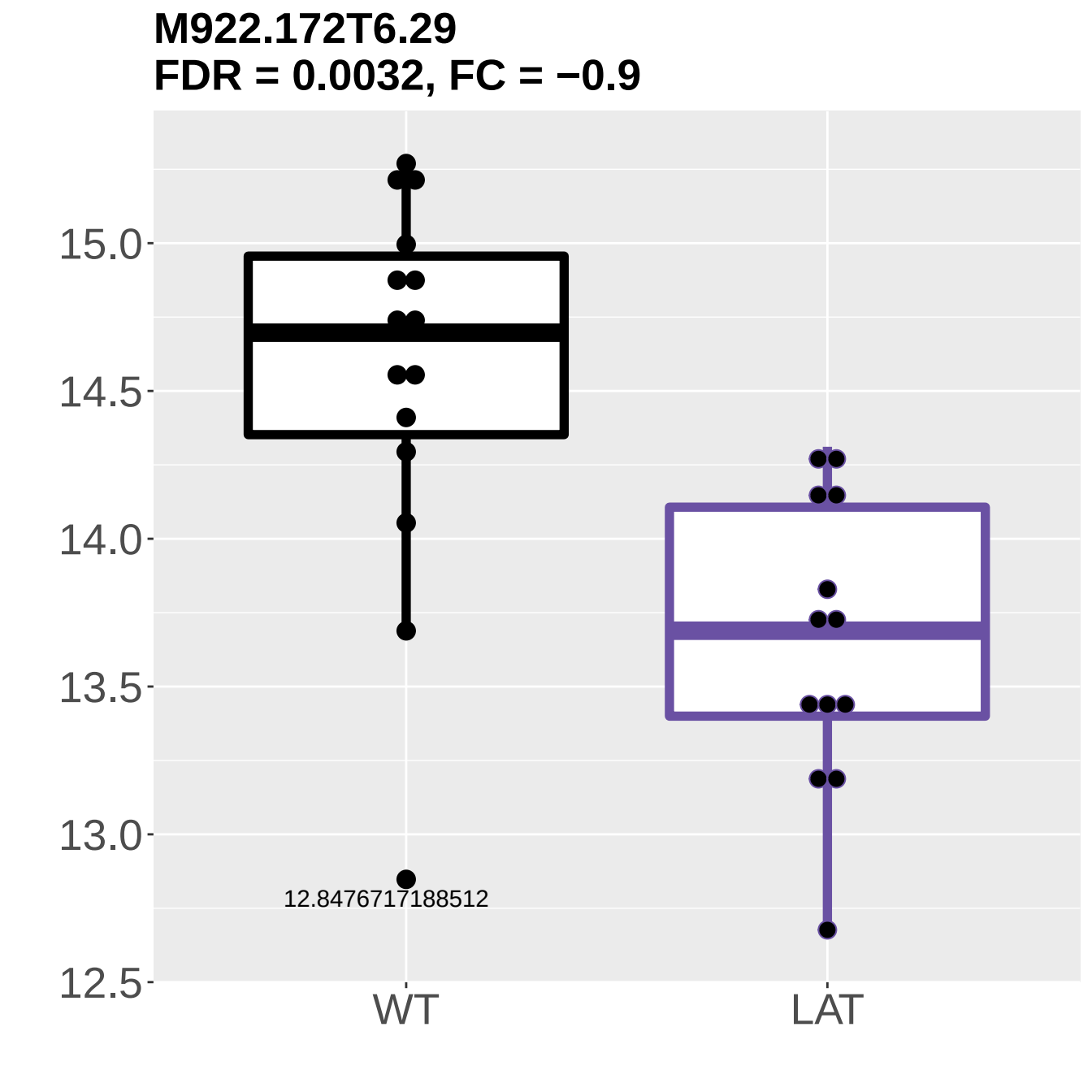
M922.172T6.29
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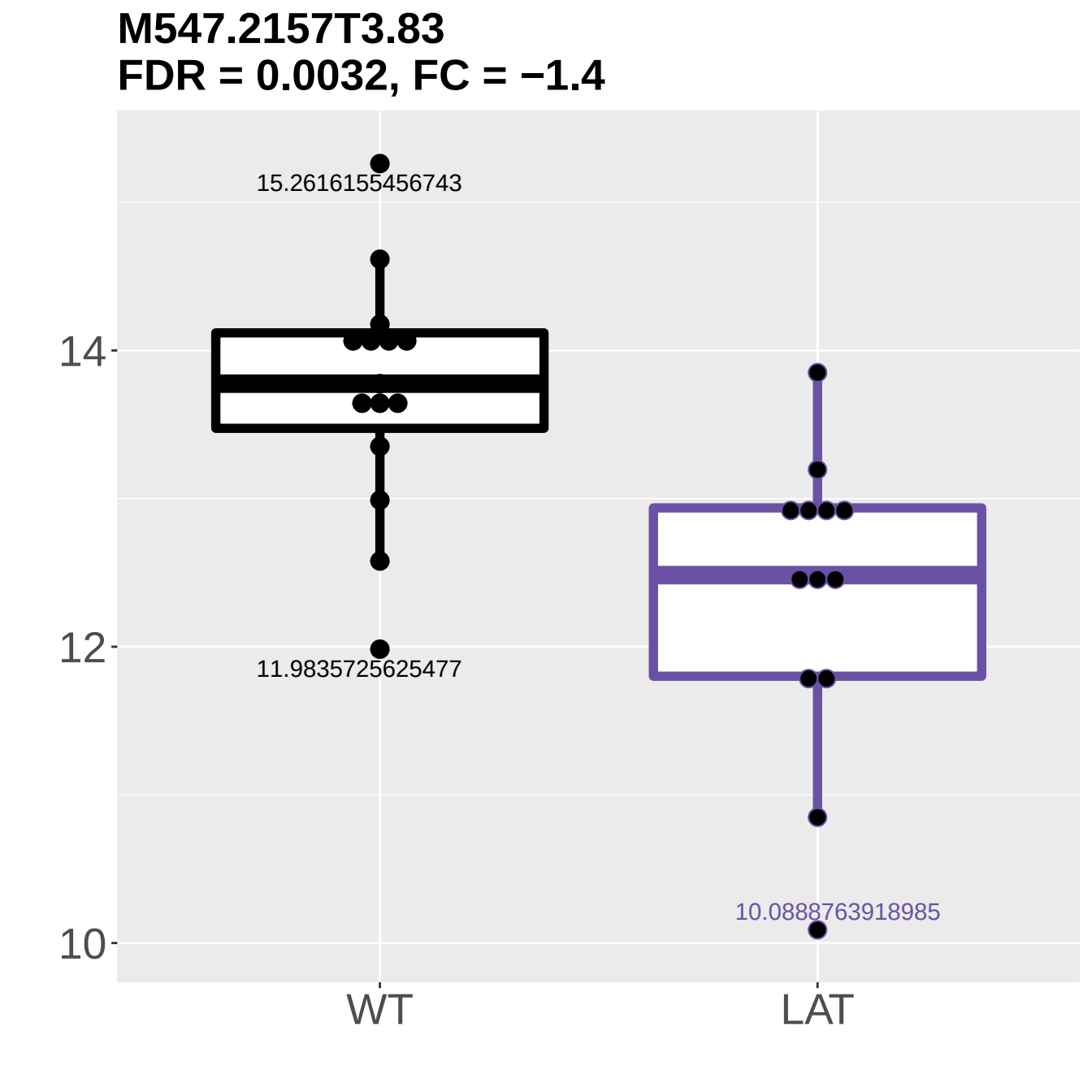
M547.2157T3.83
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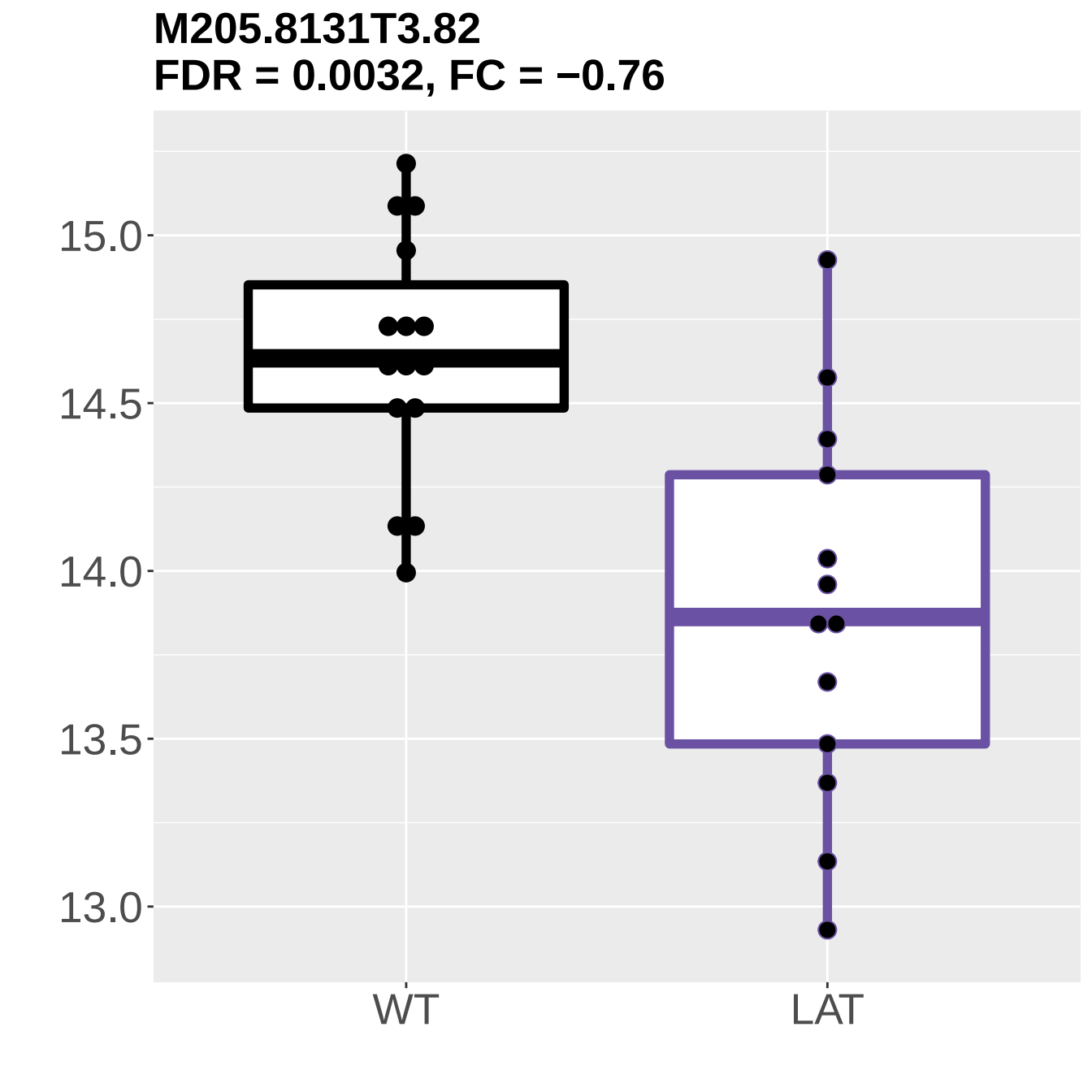
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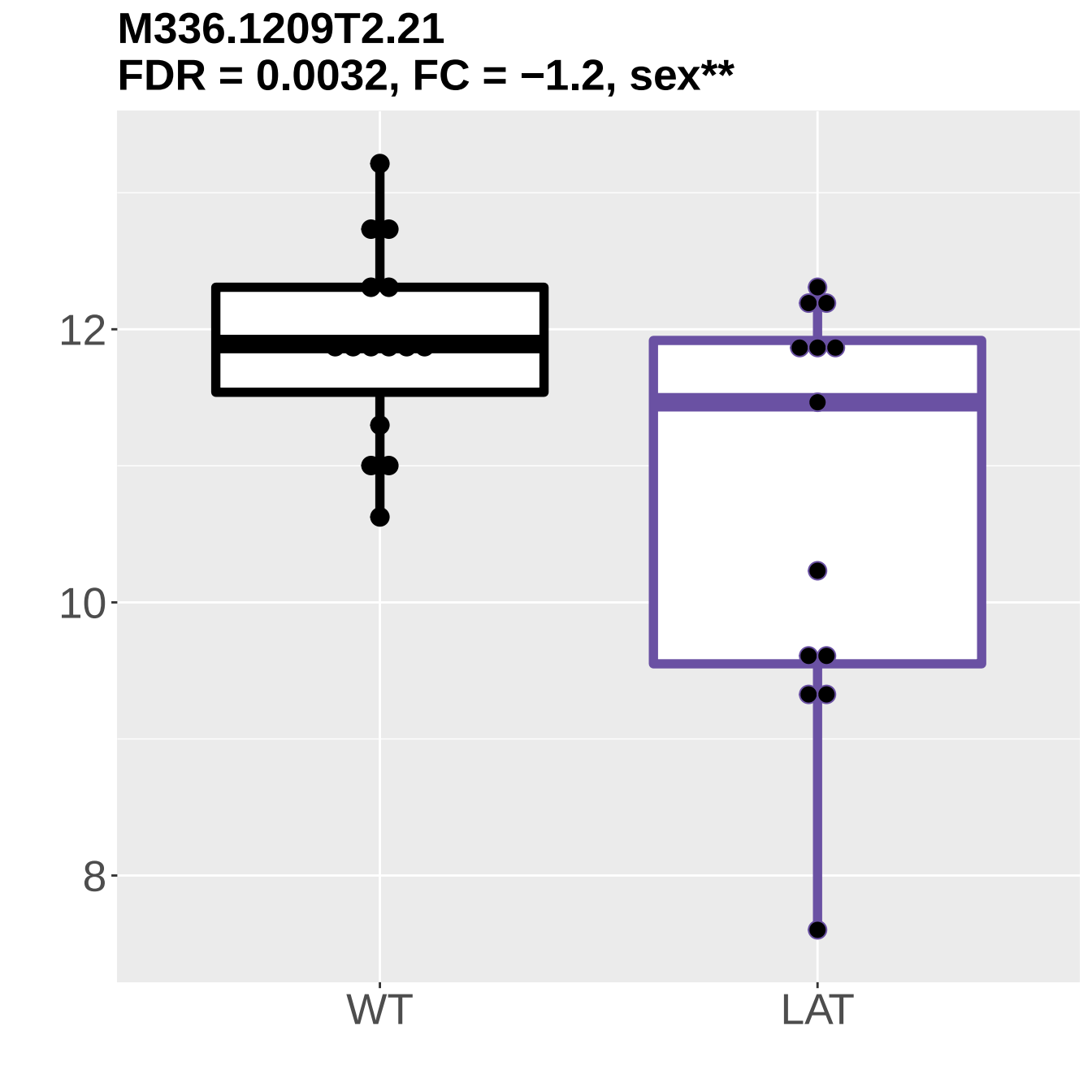
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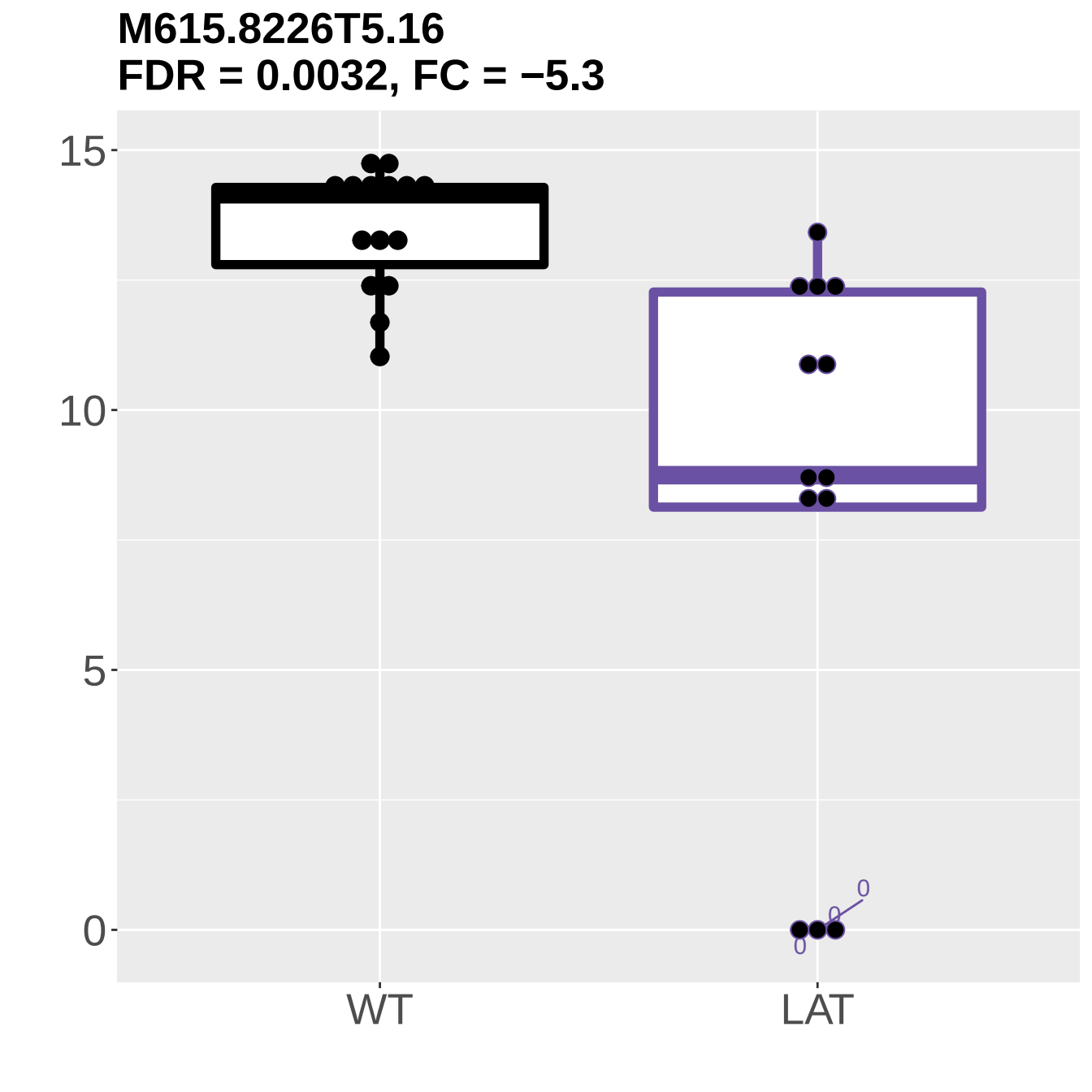
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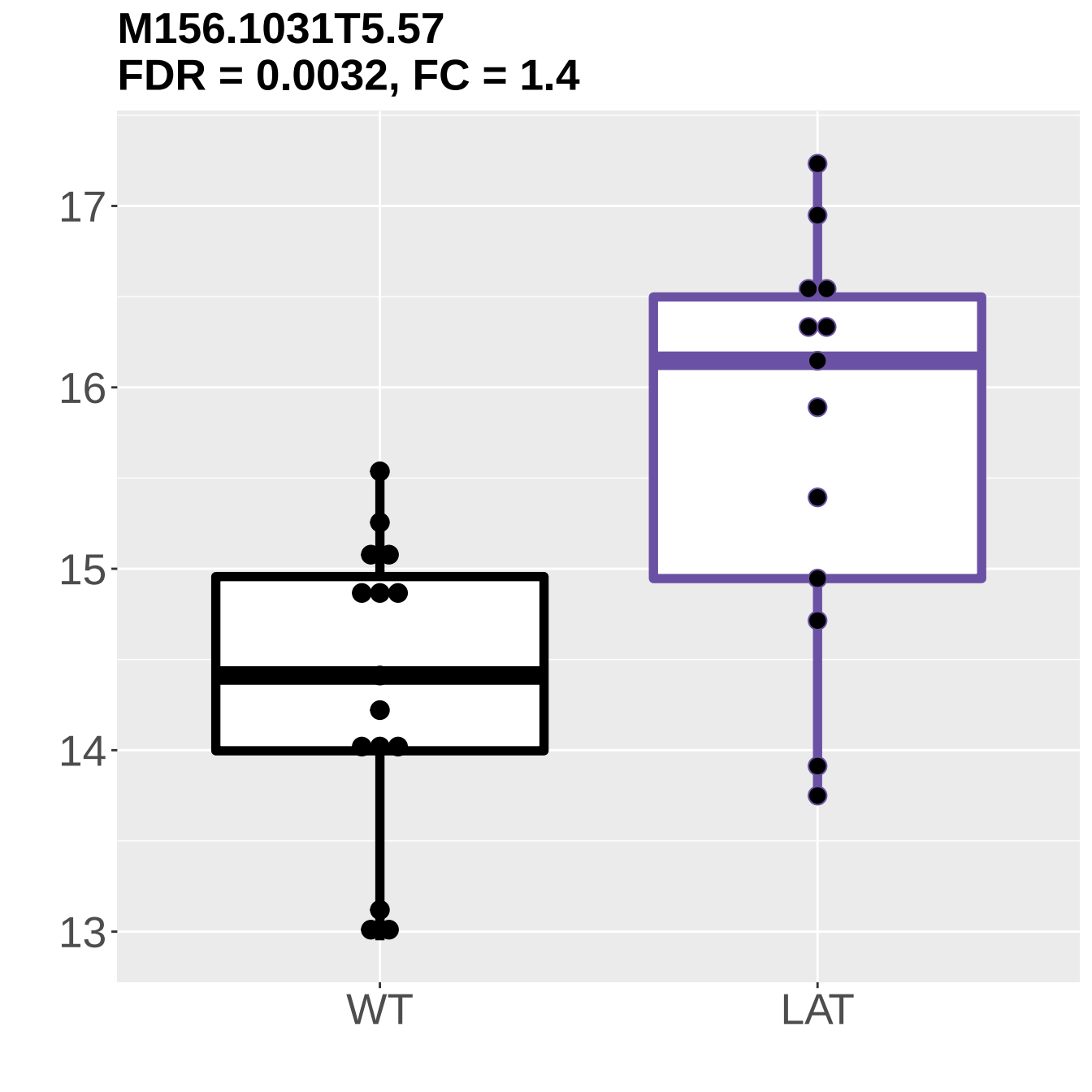
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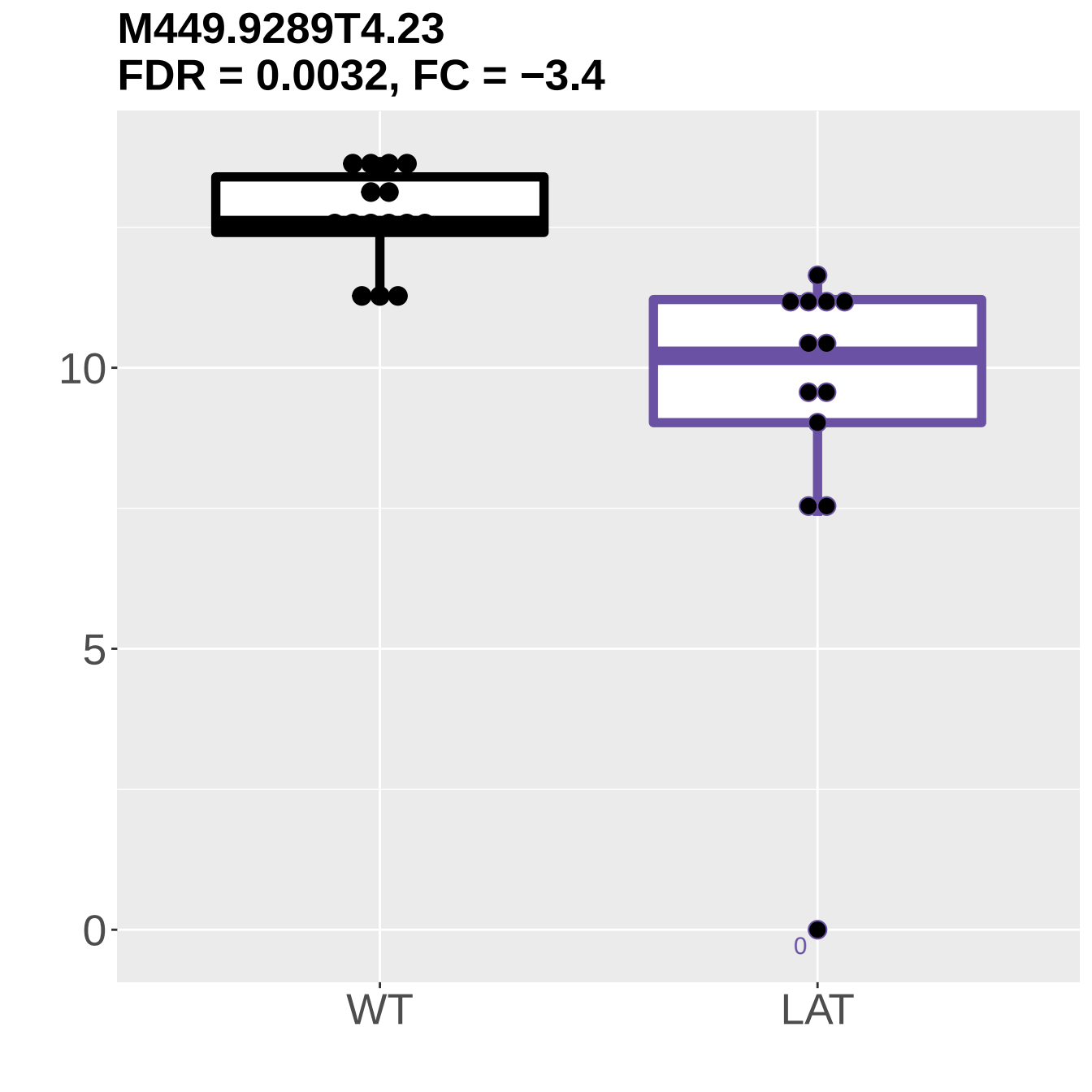
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WT
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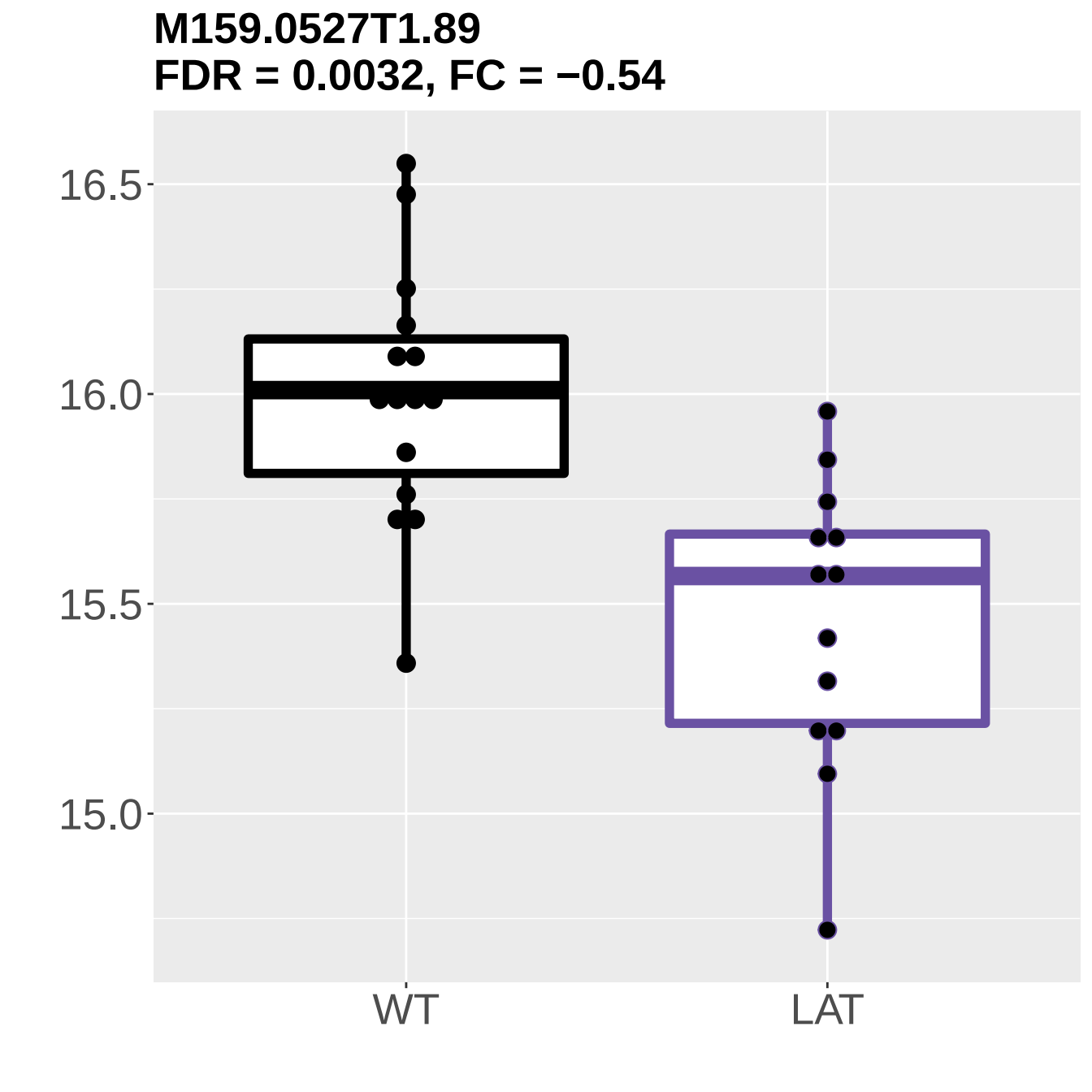
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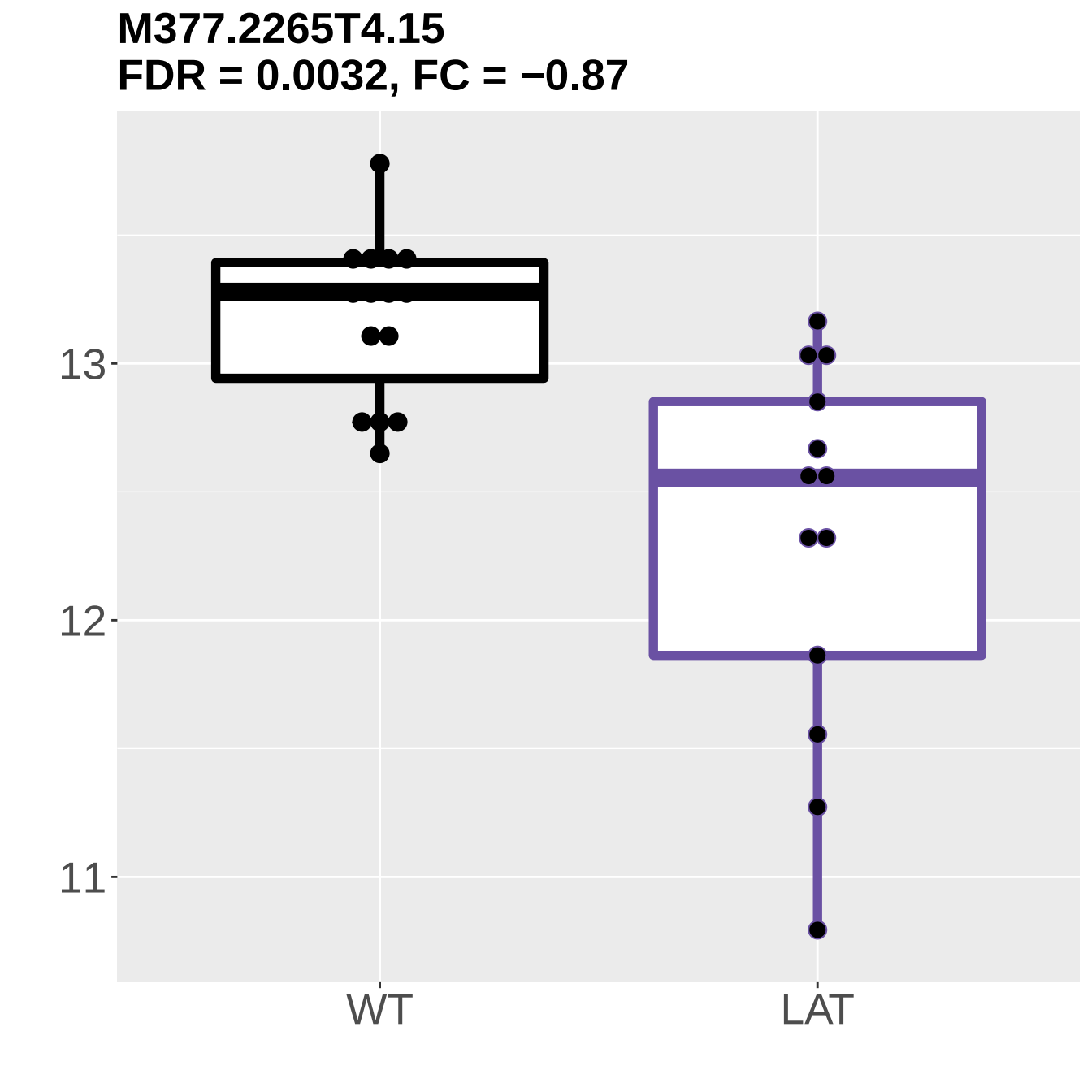
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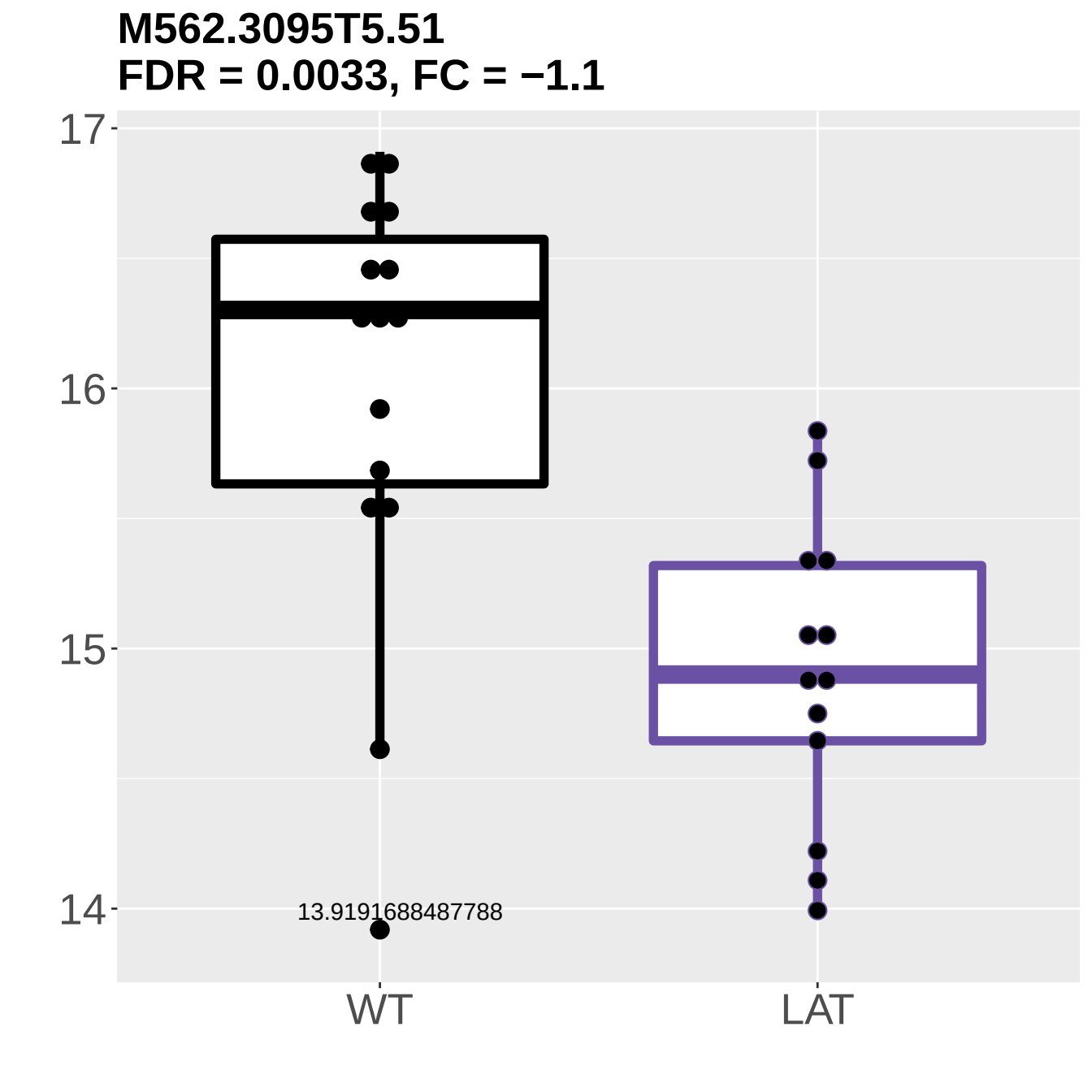
12
11
WT
LAT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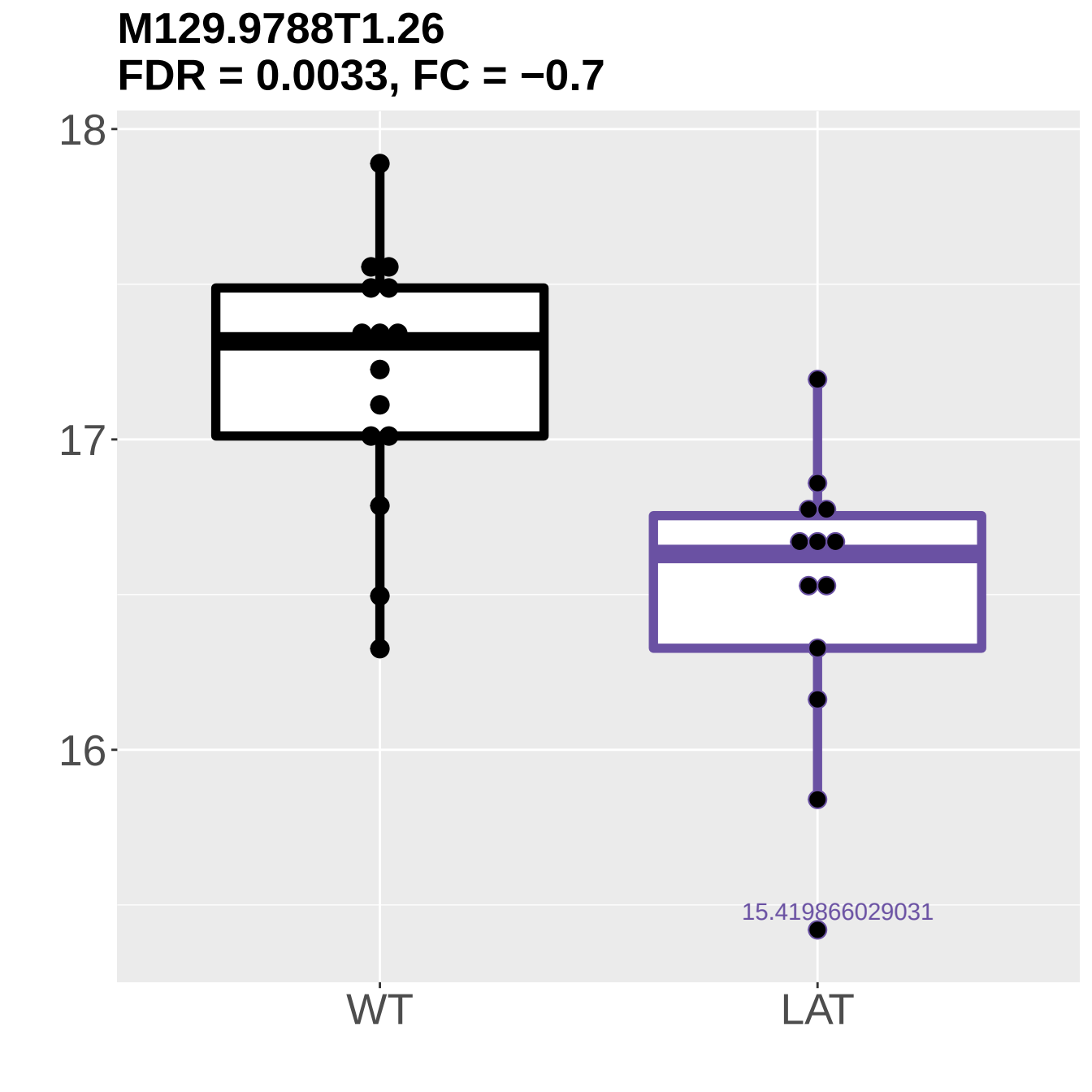
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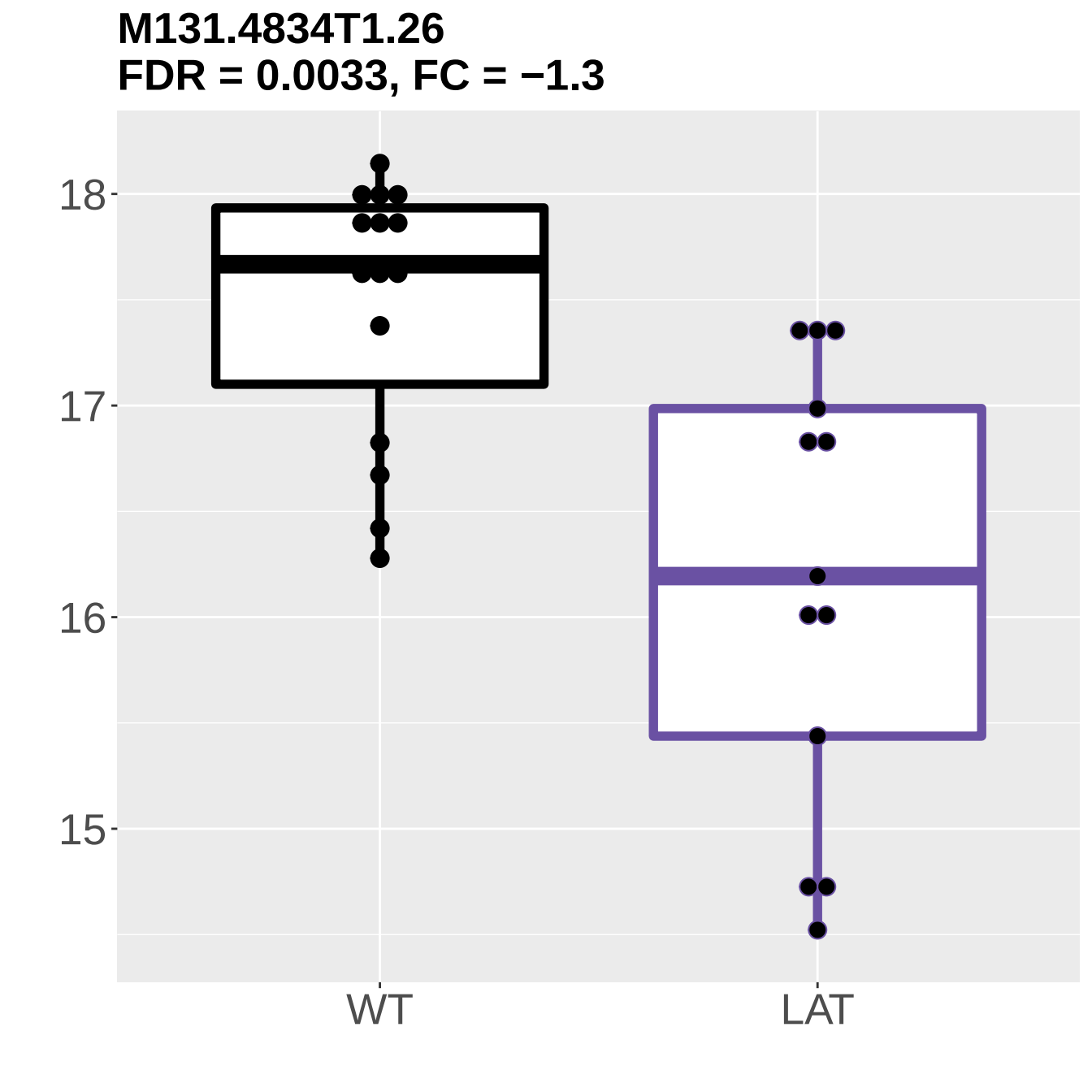
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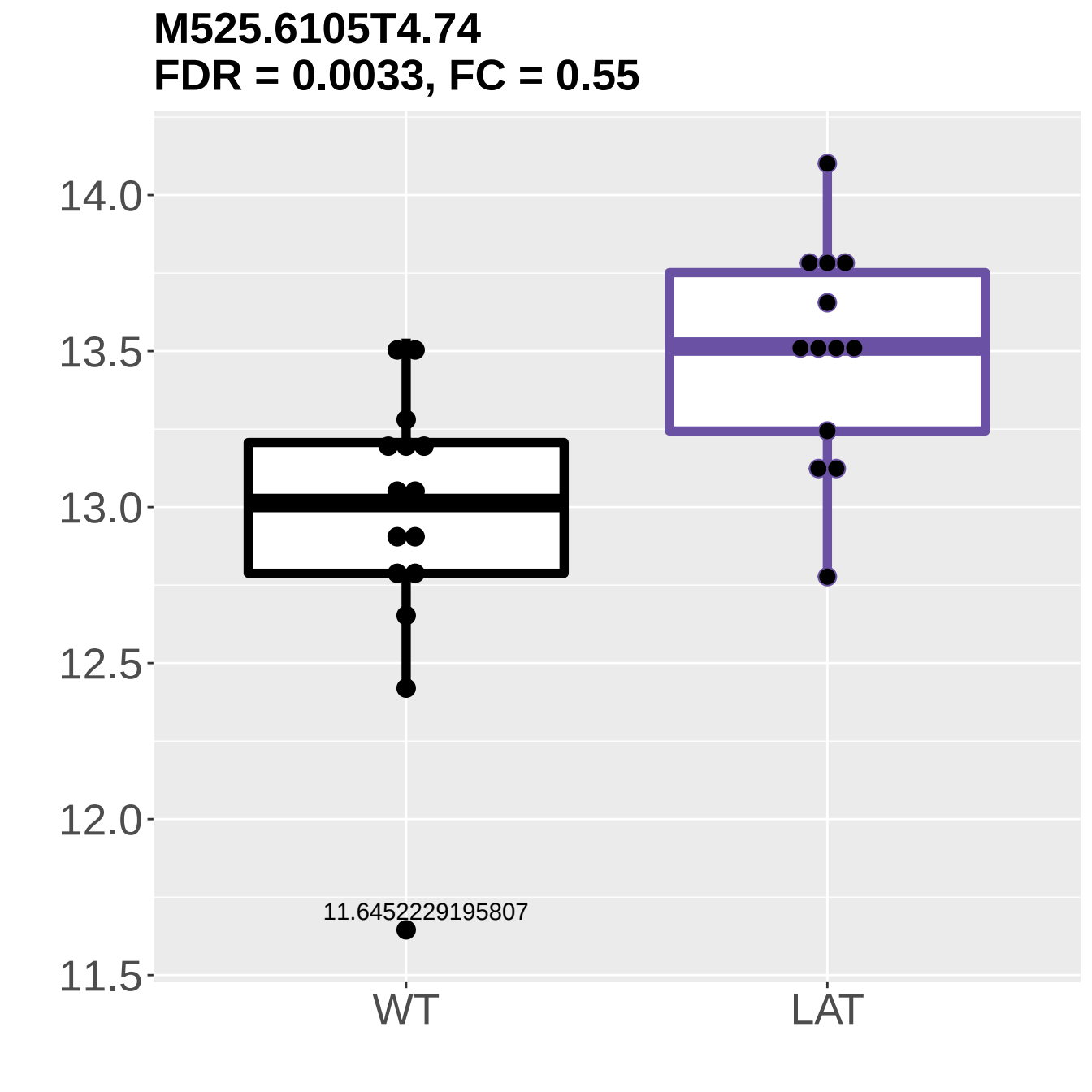
15
WT
LAT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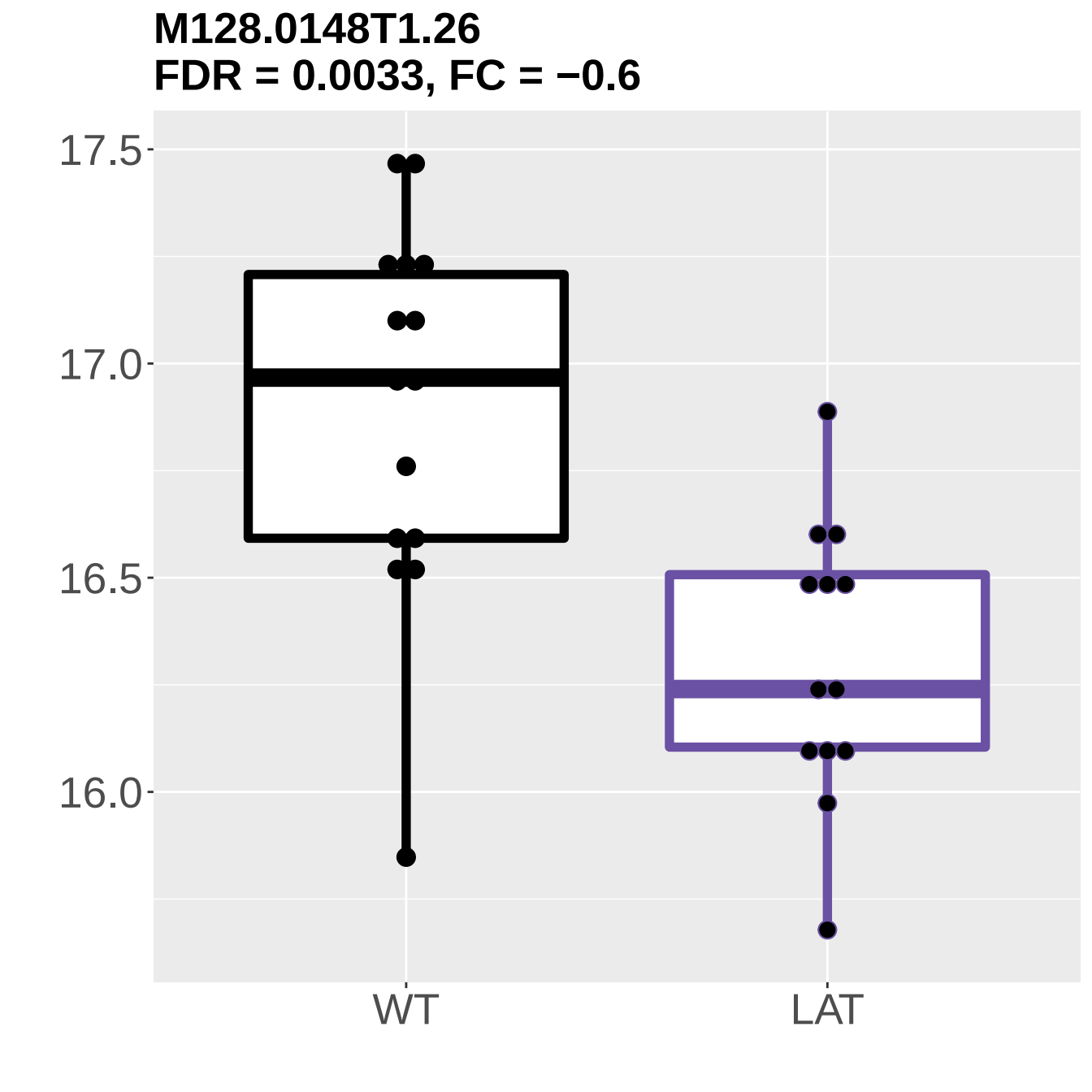
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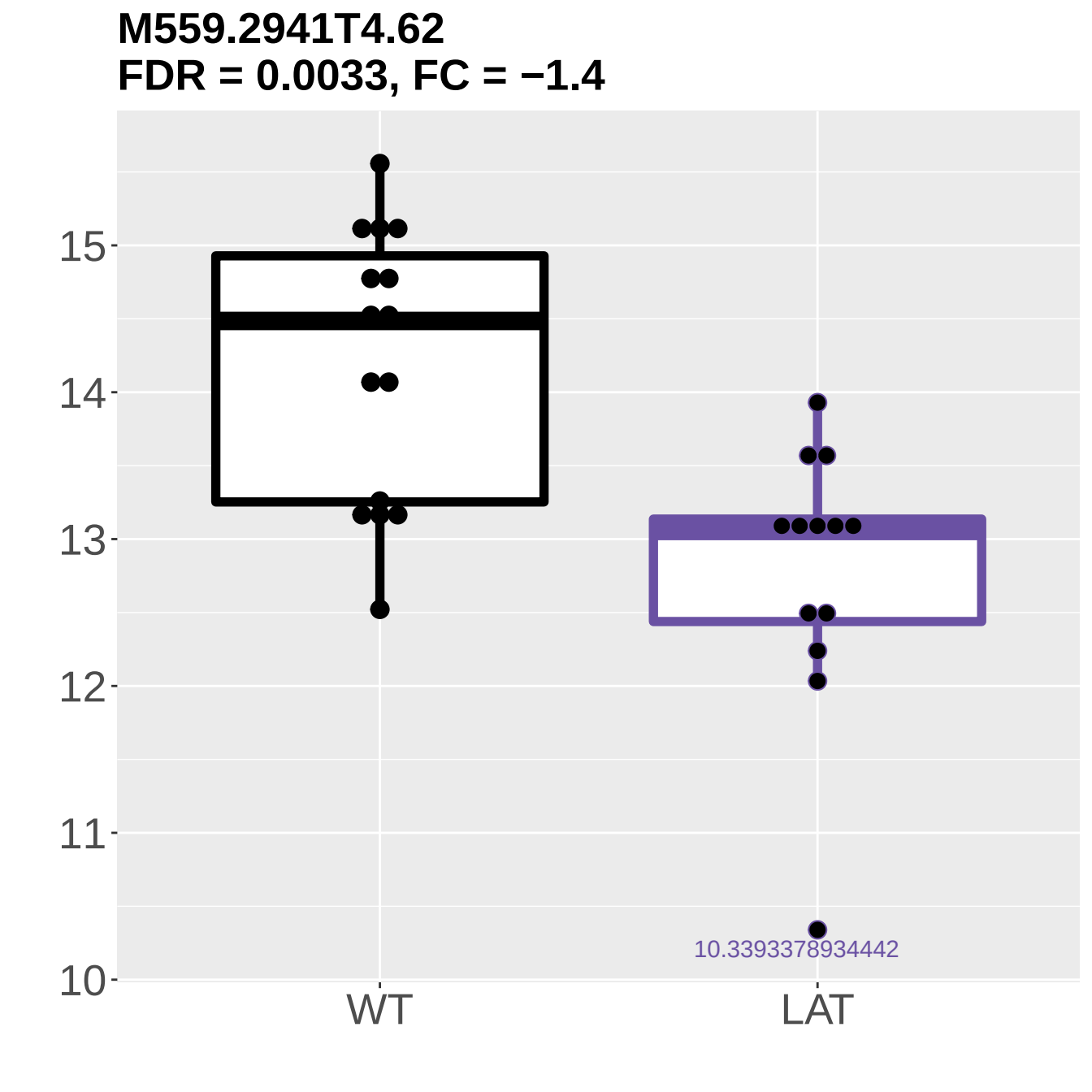
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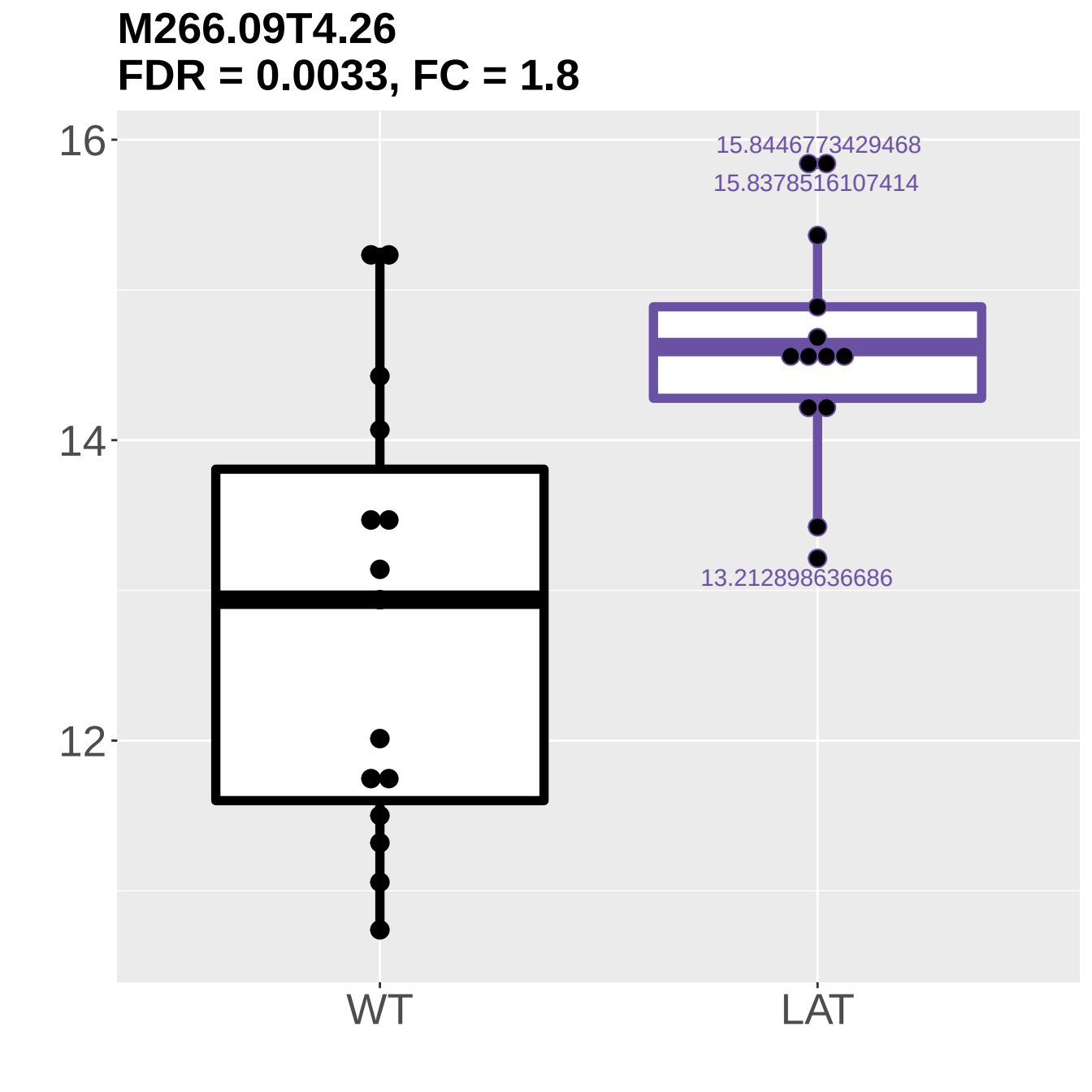
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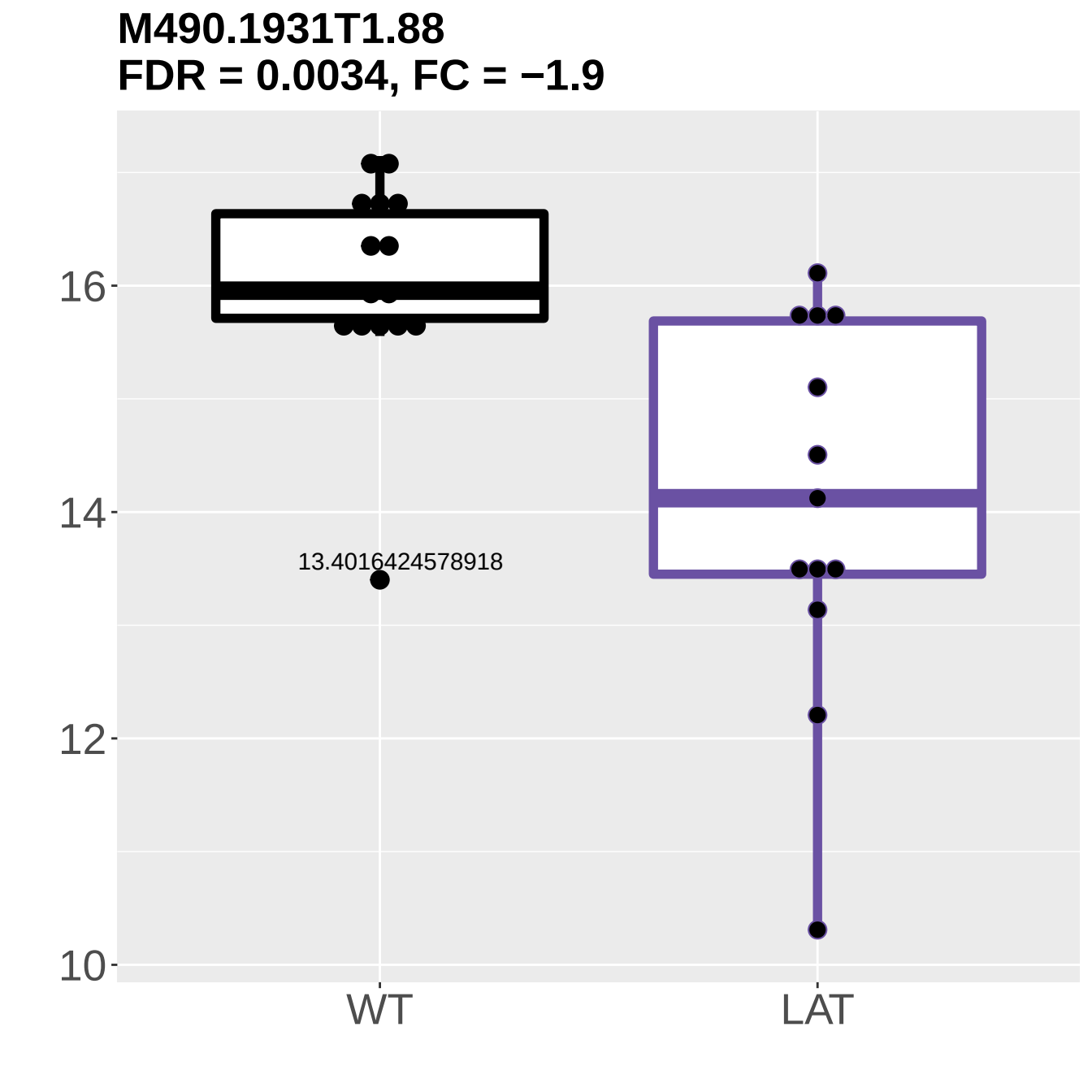
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WT
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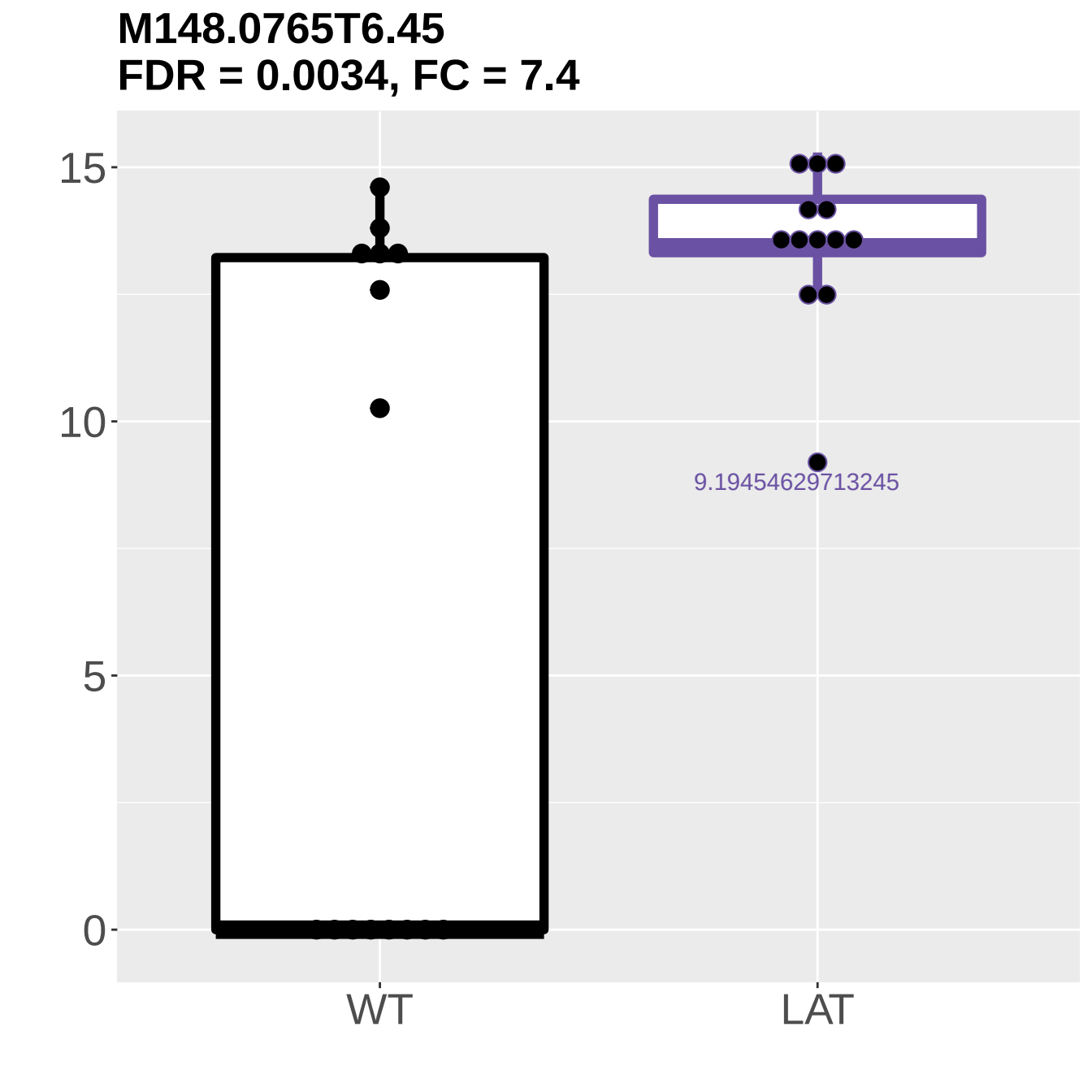
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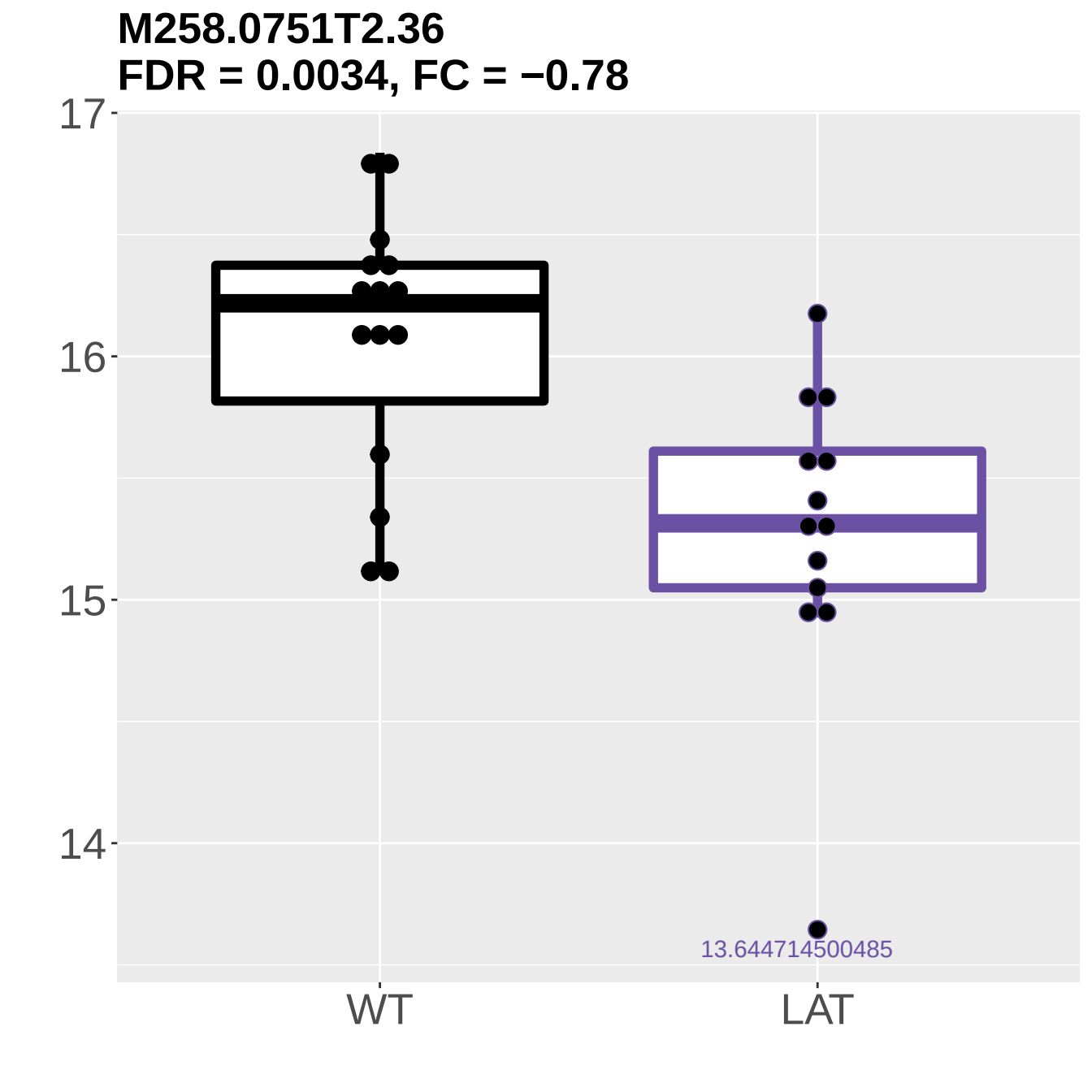
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16
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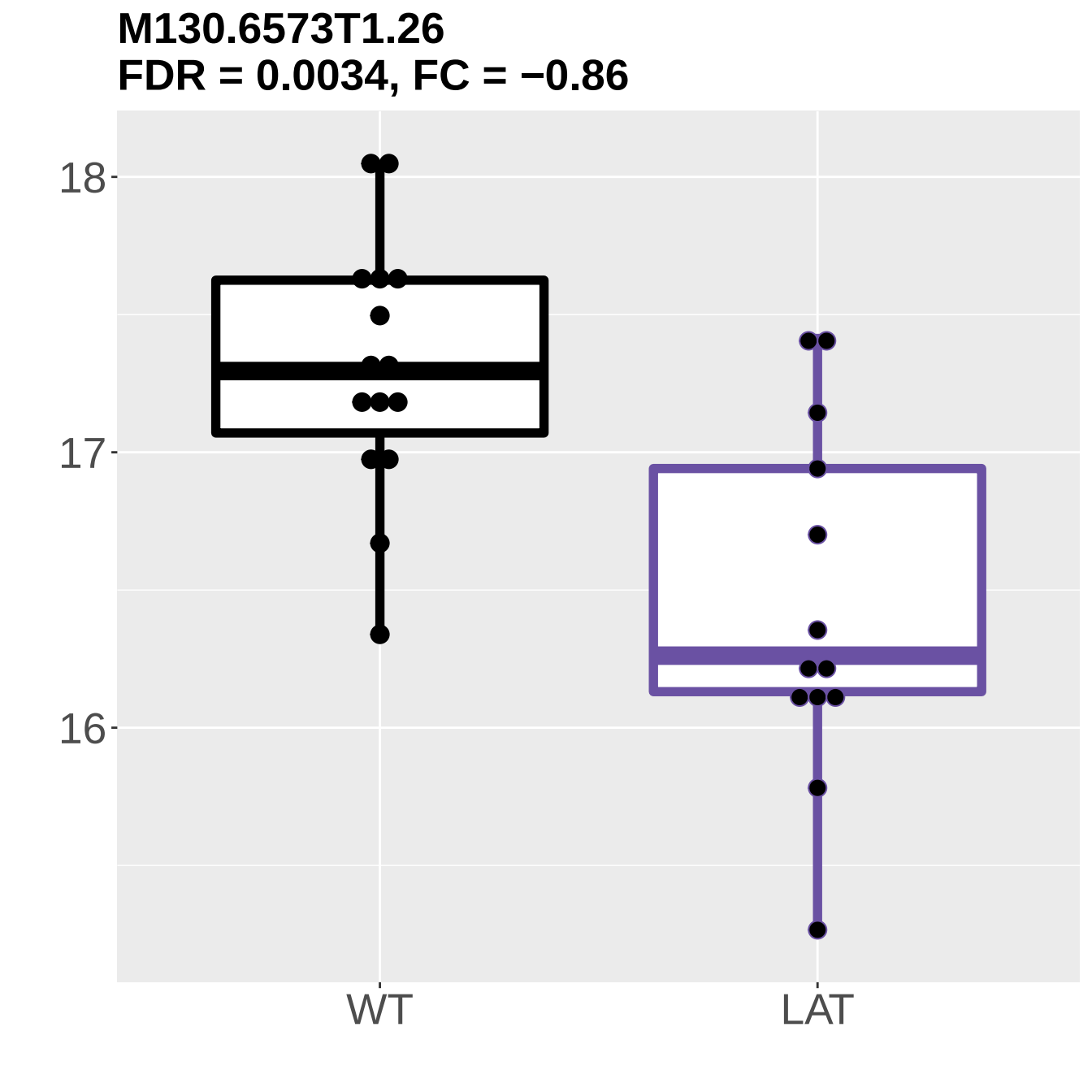
WT
LAT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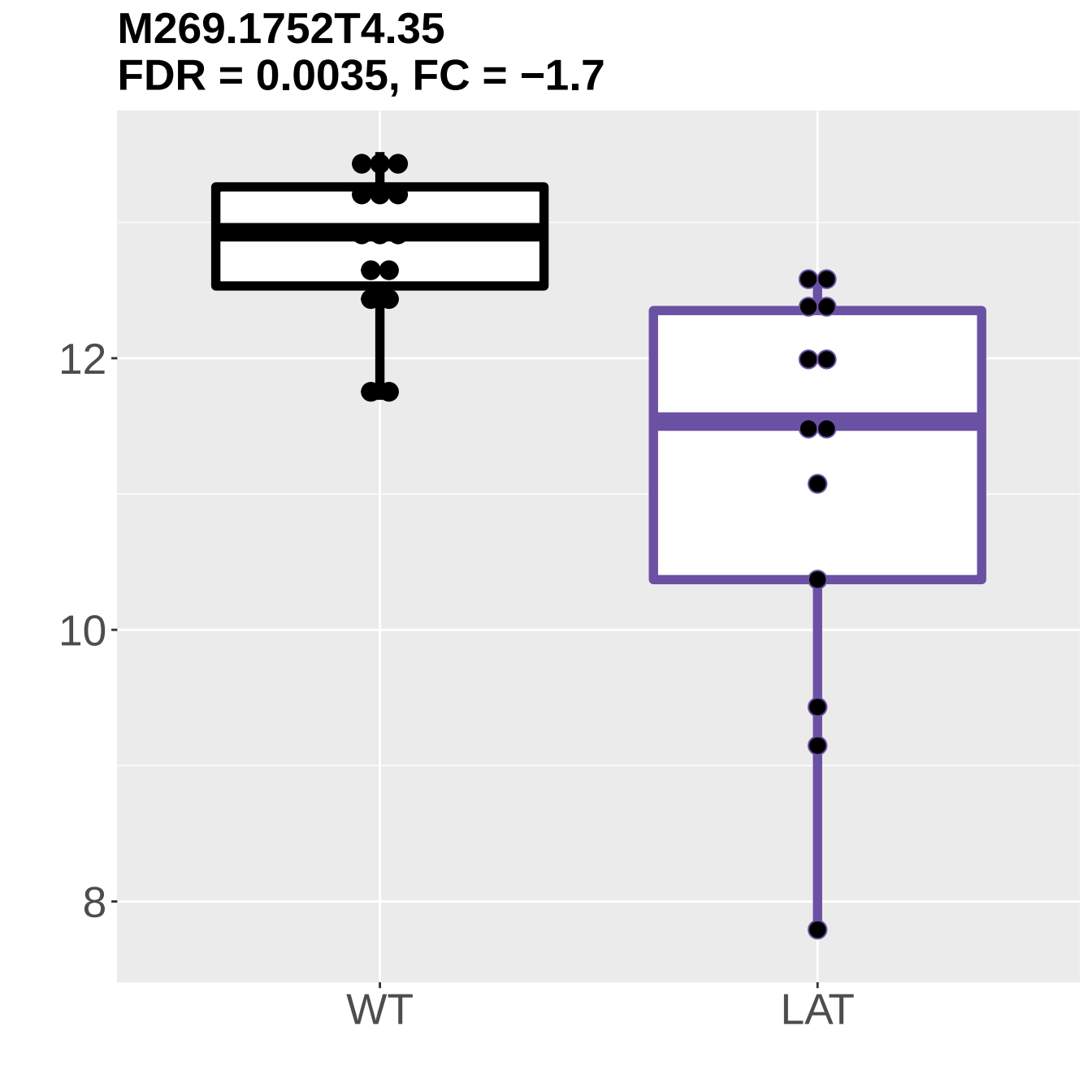
17
16
WT
LAT


M269.1752T4.35
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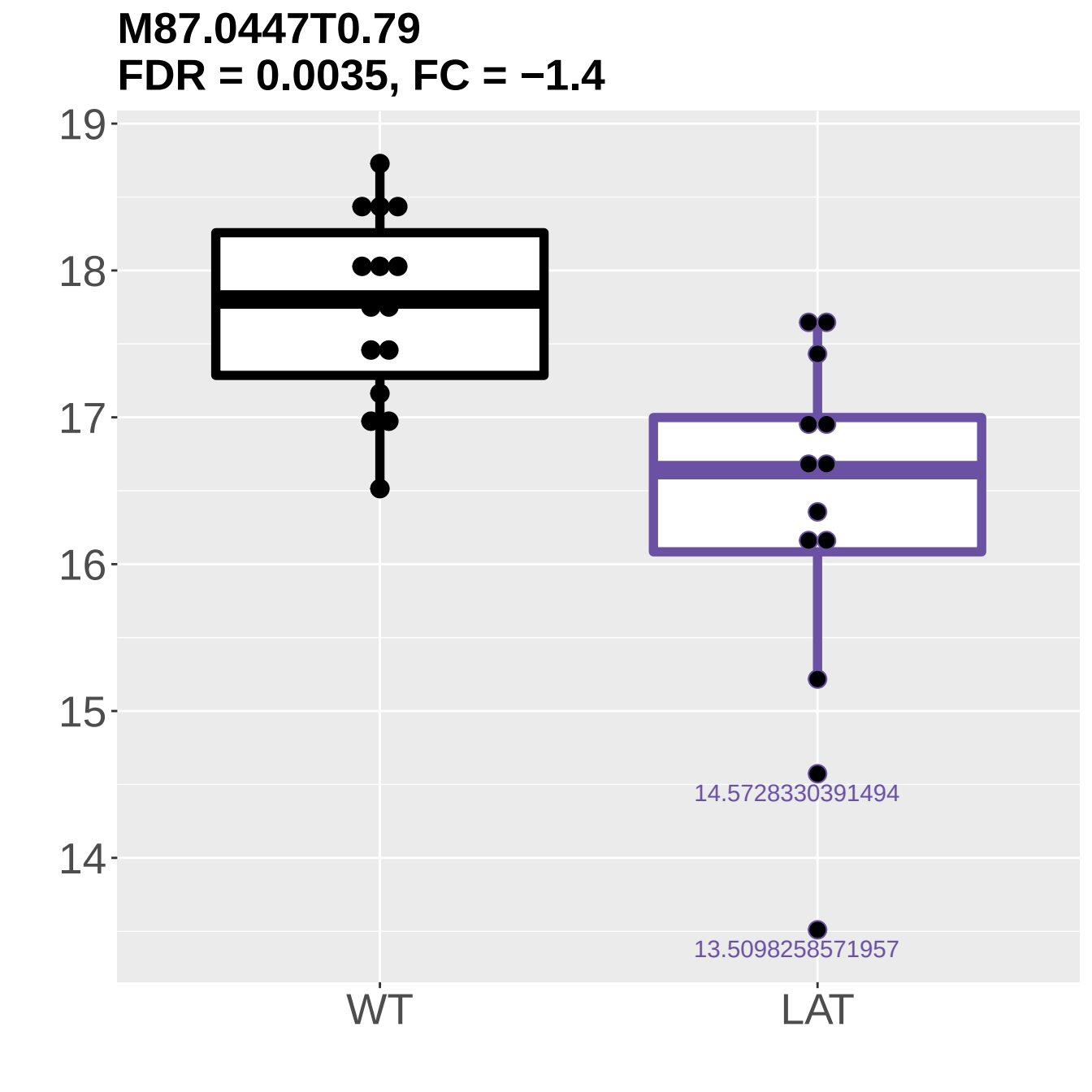
10
8
WT
LAT


M87.0447T0.79
FDR = 0.0035, FC = −1.4
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18
17
16
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14
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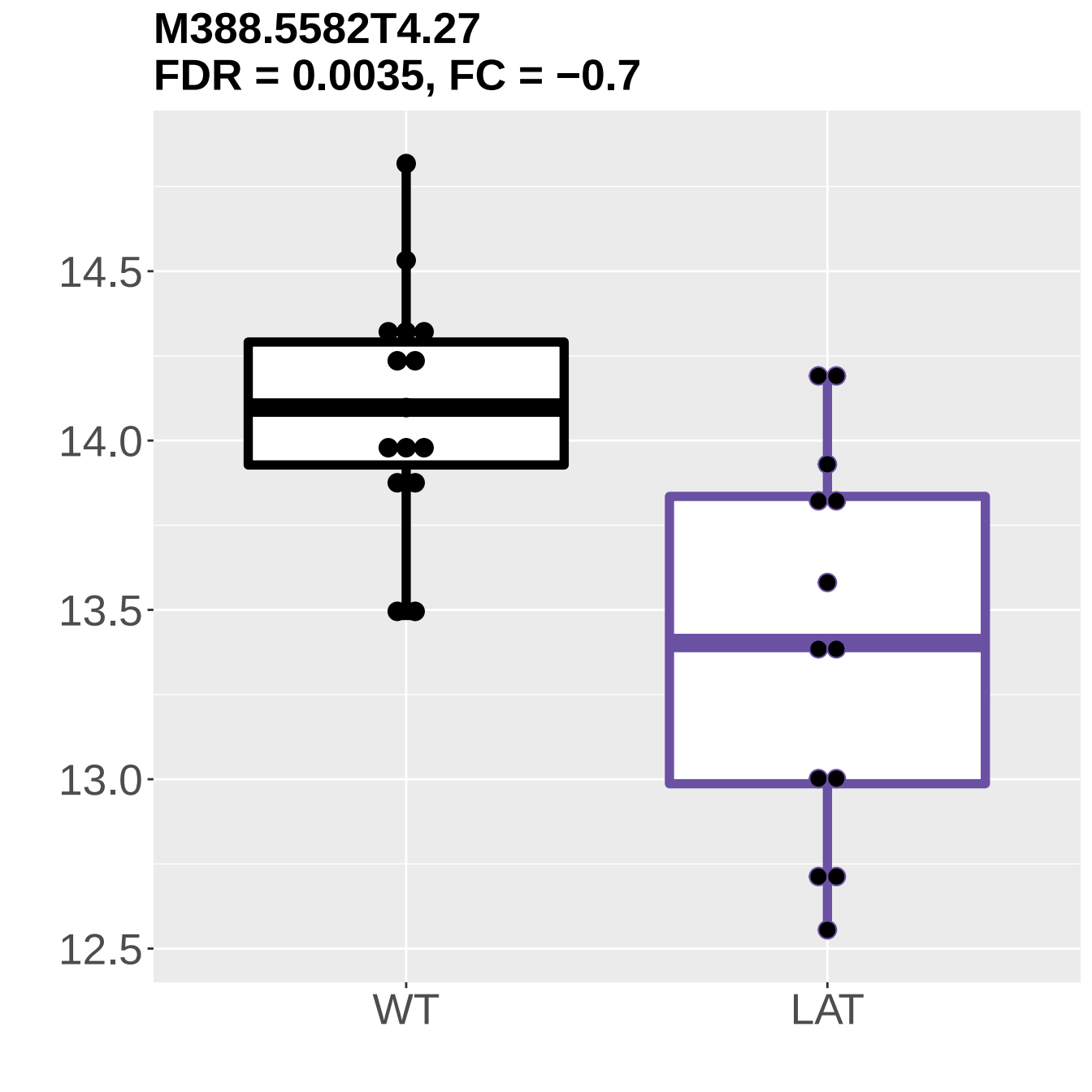
WT
LAT


M388.5582T4.27
FDR = 0.0035, FC = −0.7
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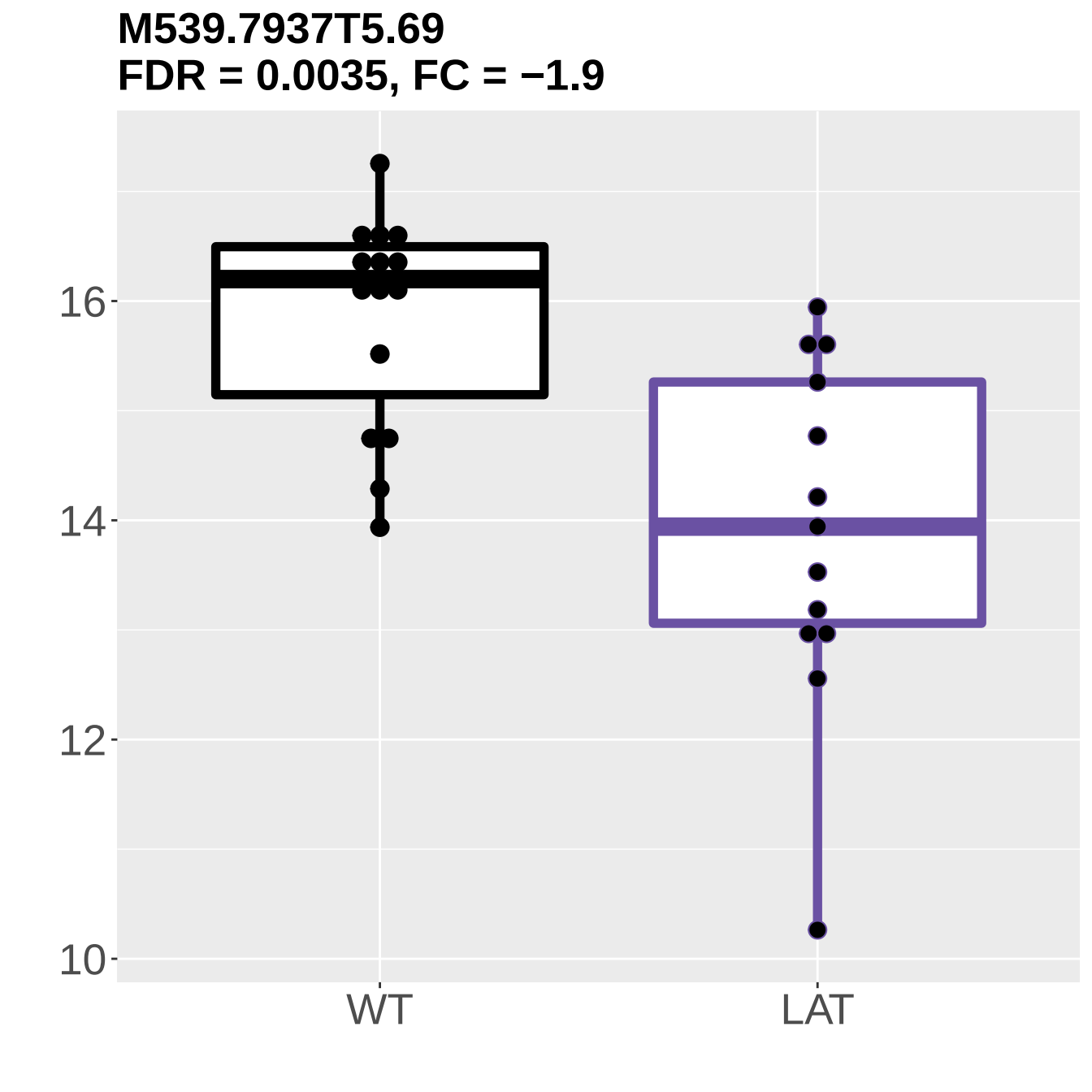
14.0
13.5
13.0
12.5
WT
LAT


M539.7937T5.69
FDR = 0.0035, FC = −1.9
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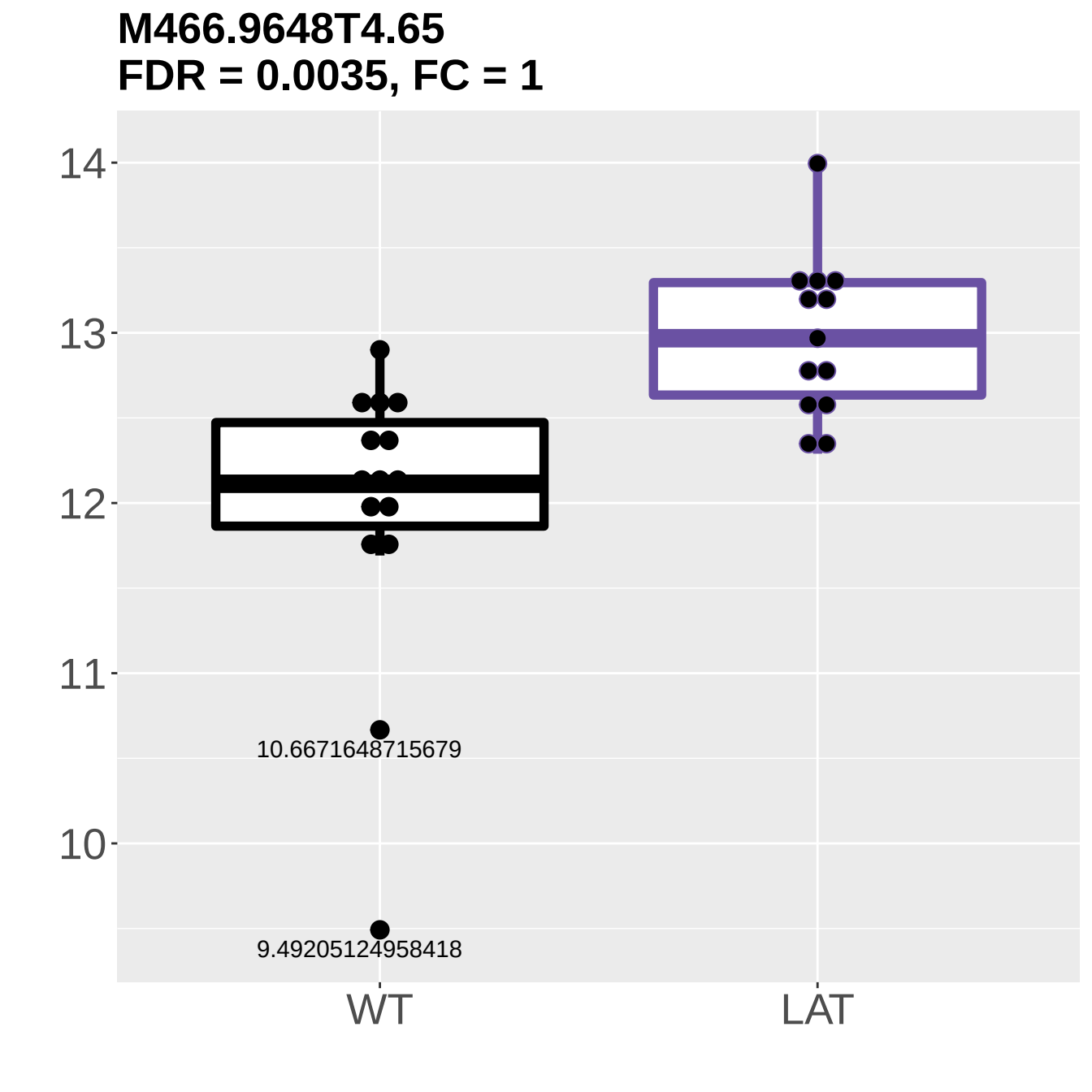
14
12
10
WT
LAT


M466.9648T4.65
FDR = 0.0035, FC = 1
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13
12
11
10
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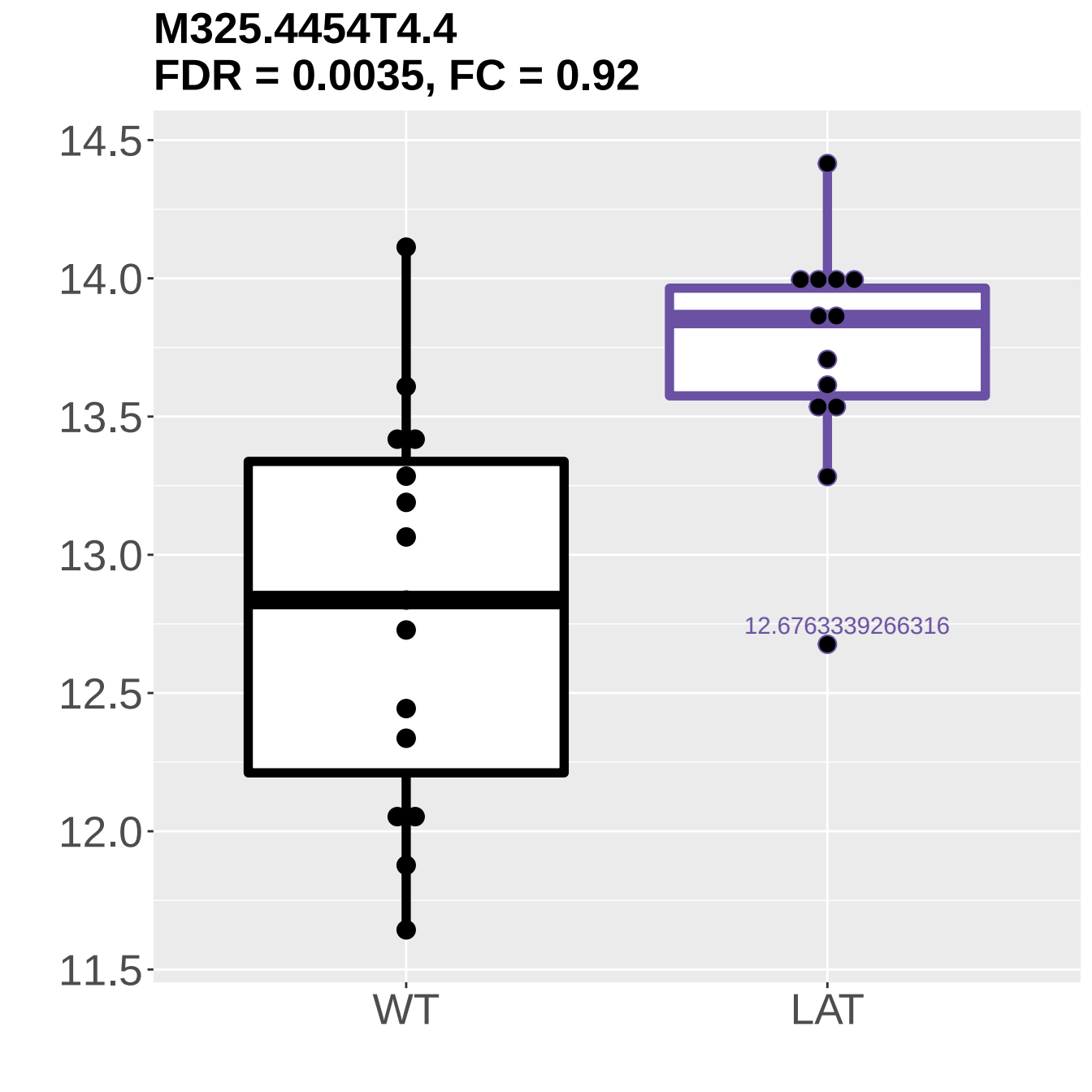
WT
LAT


M325.4454T4.4
FDR = 0.0035, FC = 0.92
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13.5
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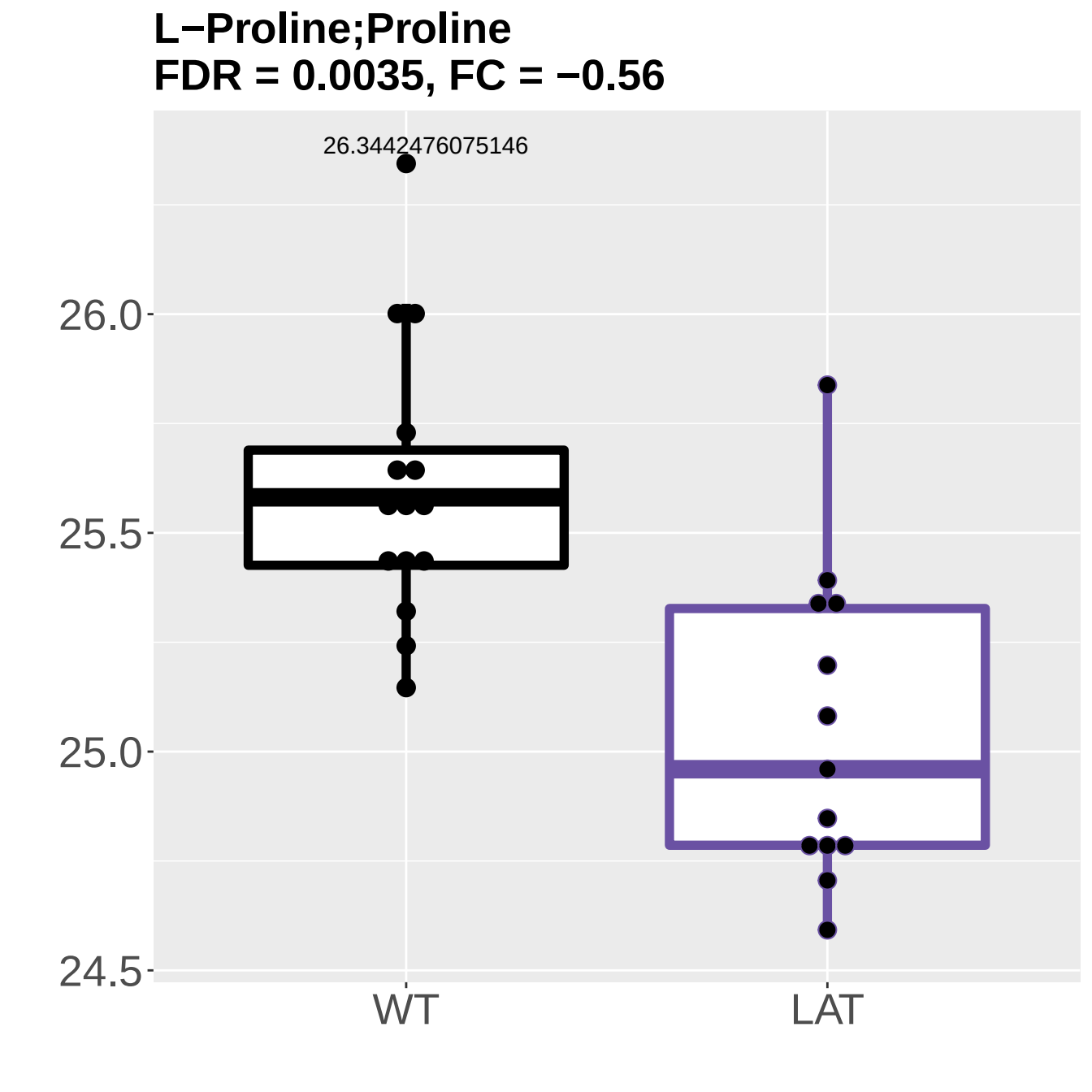
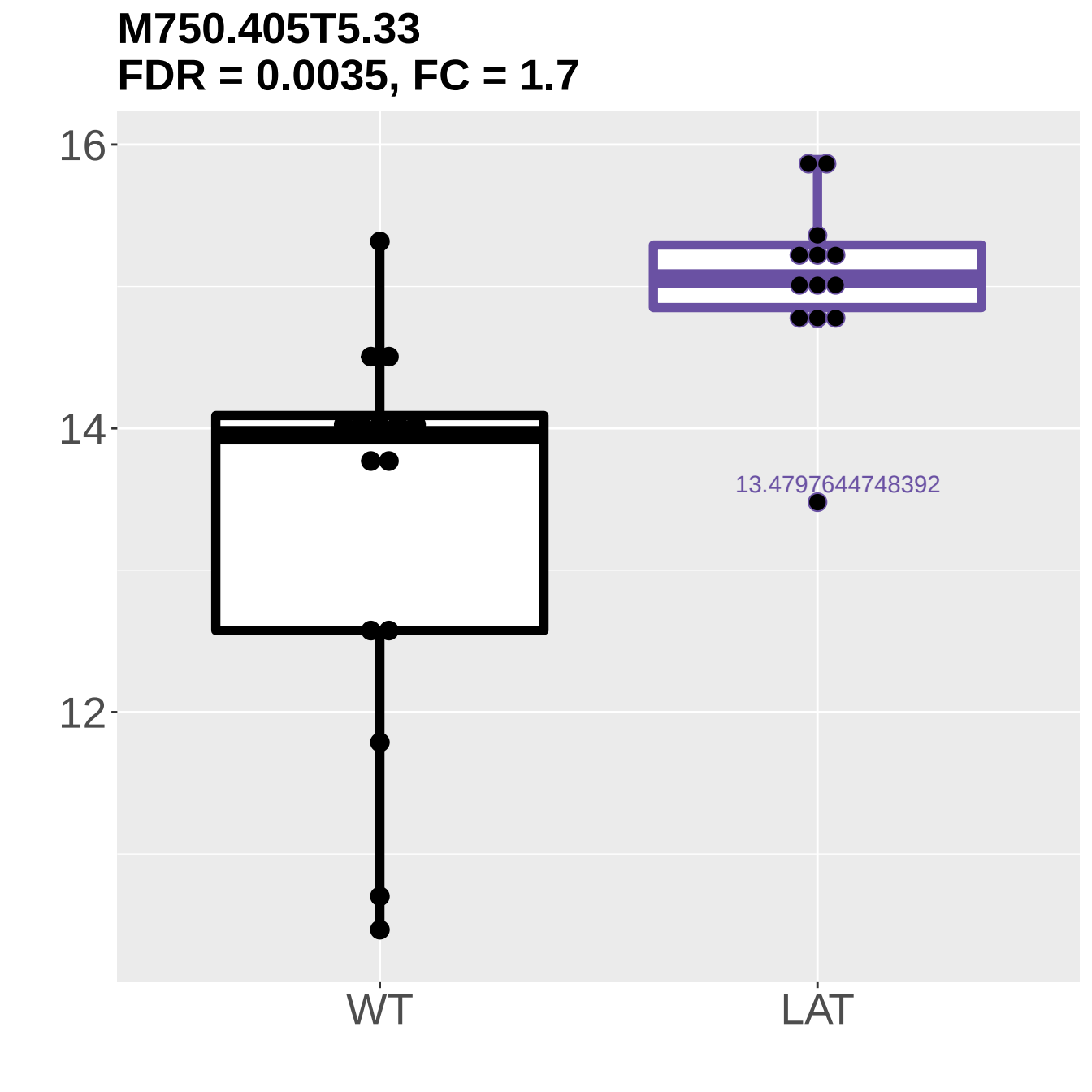
WT
LAT


L−Proline;Proline
FDR = 0.0035, FC = −0.56
26.3442476075146
26.0
25.5
25.0
24.5
WT
LAT


M750.405T5.33
FDR = 0.0035, FC = 1.7
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14
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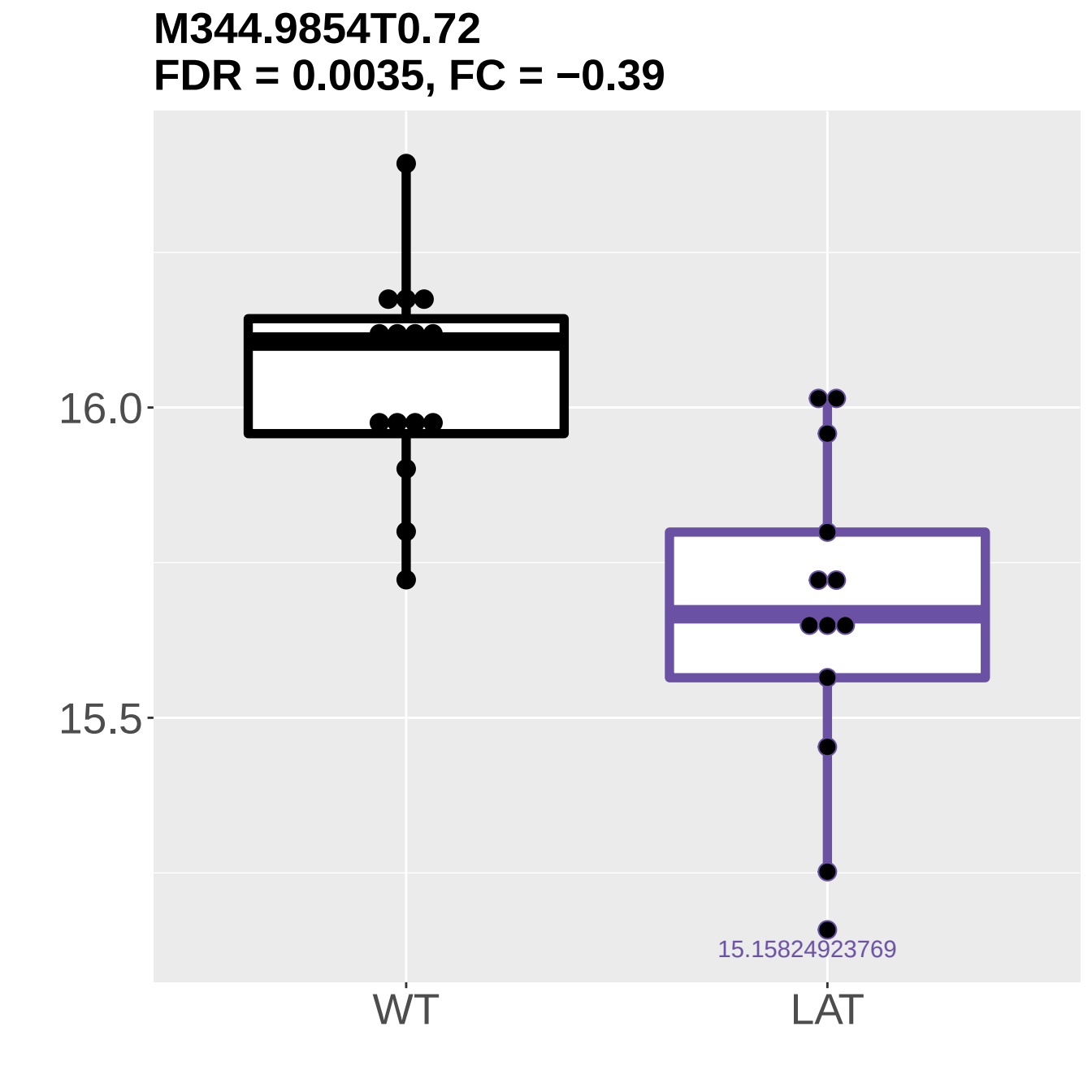
WT
LAT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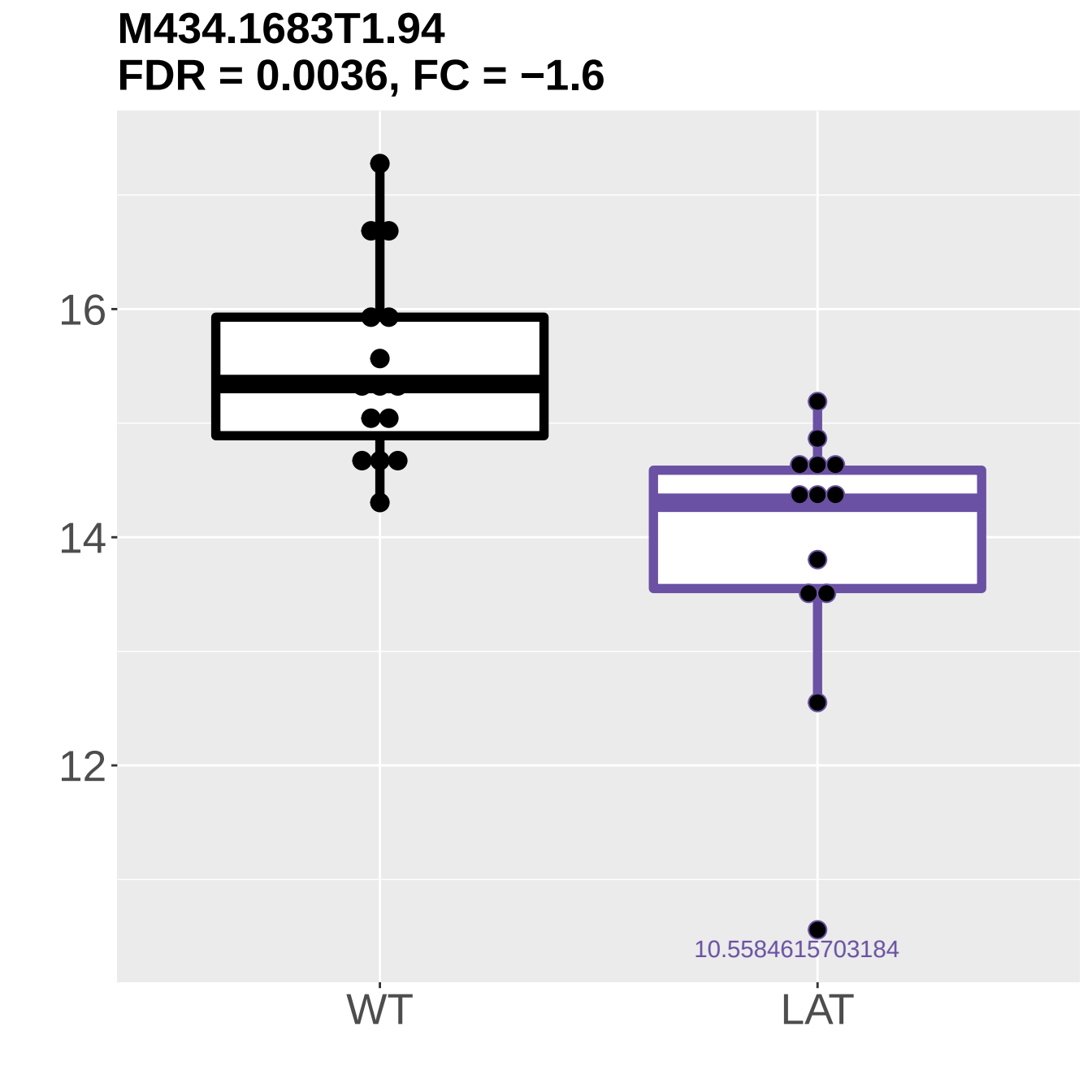
WT
LAT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FDR = 0.0036, FC = −1.6
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14
12
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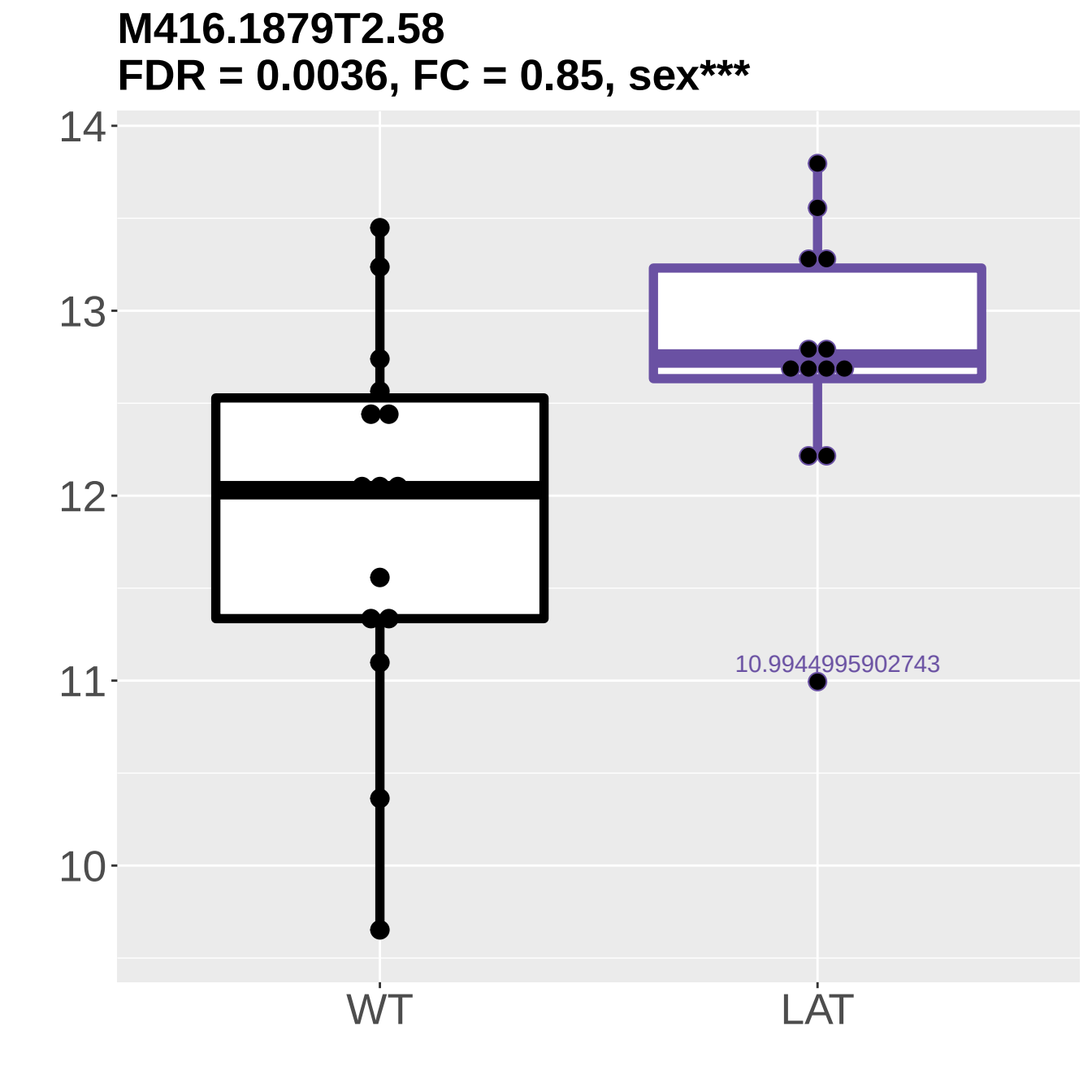
WT
LAT


M416.1879T2.58
FDR = 0.0036, FC = 0.85, sex***
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13
12
11
10
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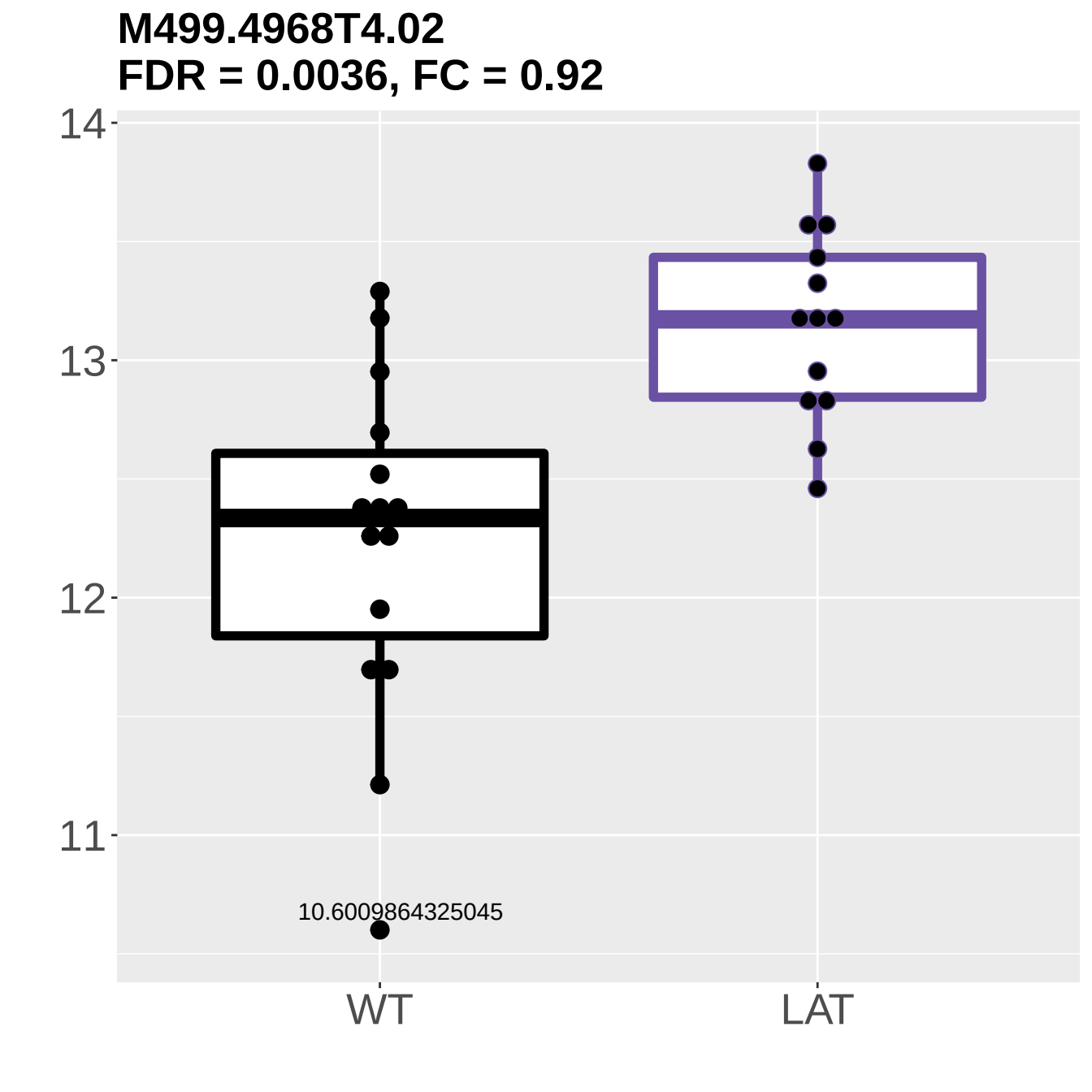
WT
LAT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FDR = 0.0036, FC = 0.92
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13
12
11
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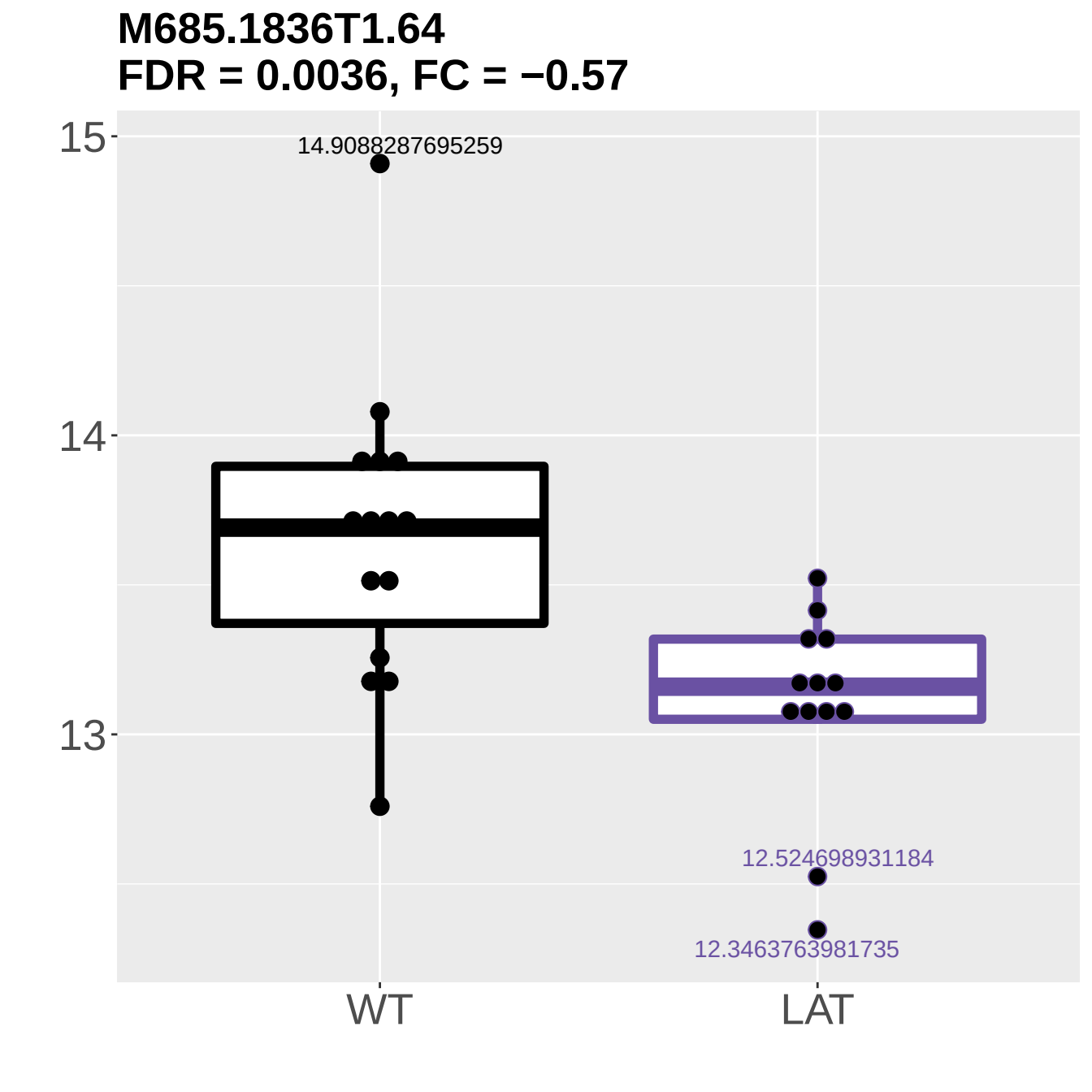
WT
LAT


M685.1836T1.64
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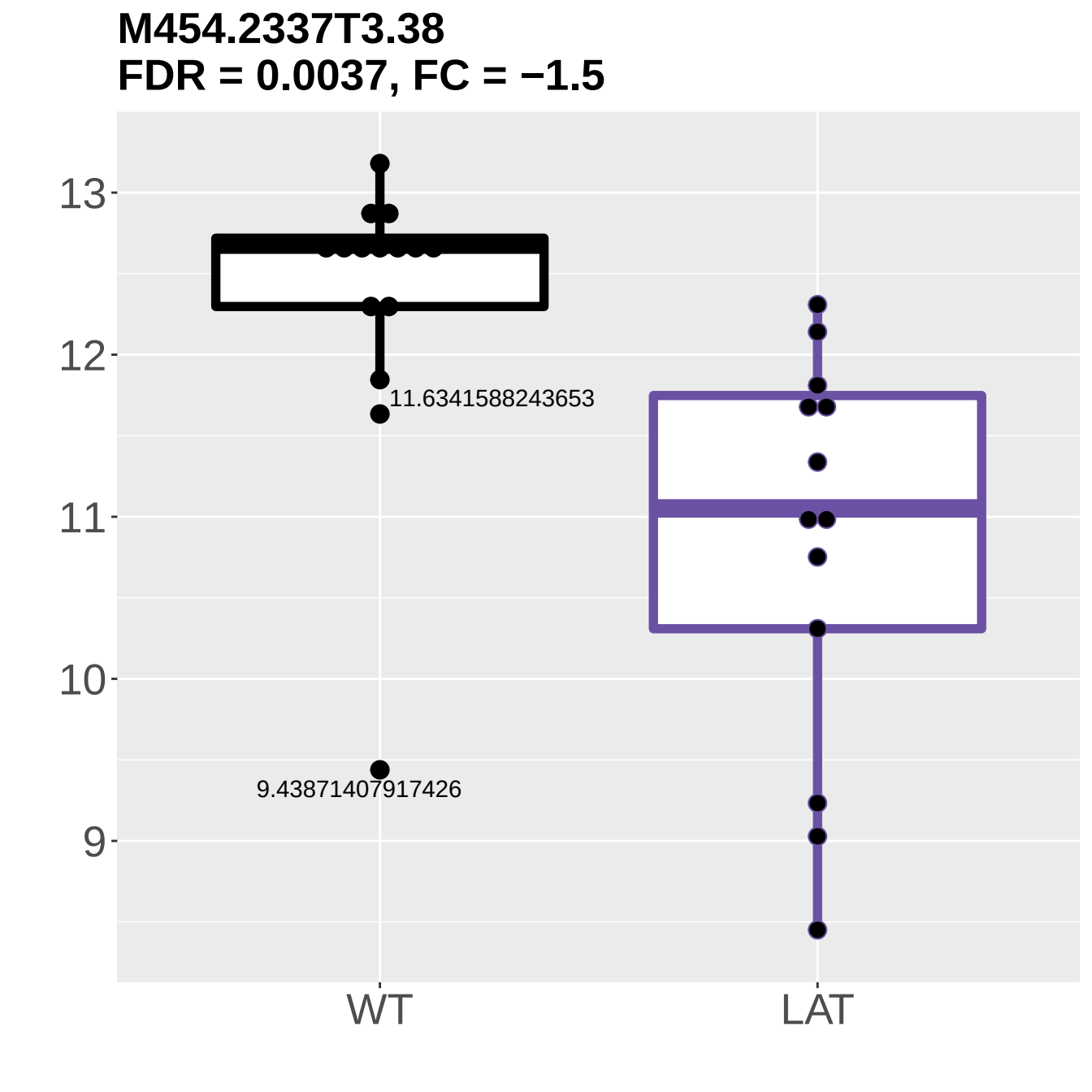
WT
LAT


M454.2337T3.38
FDR = 0.0037, FC = −1.5
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12
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10
9
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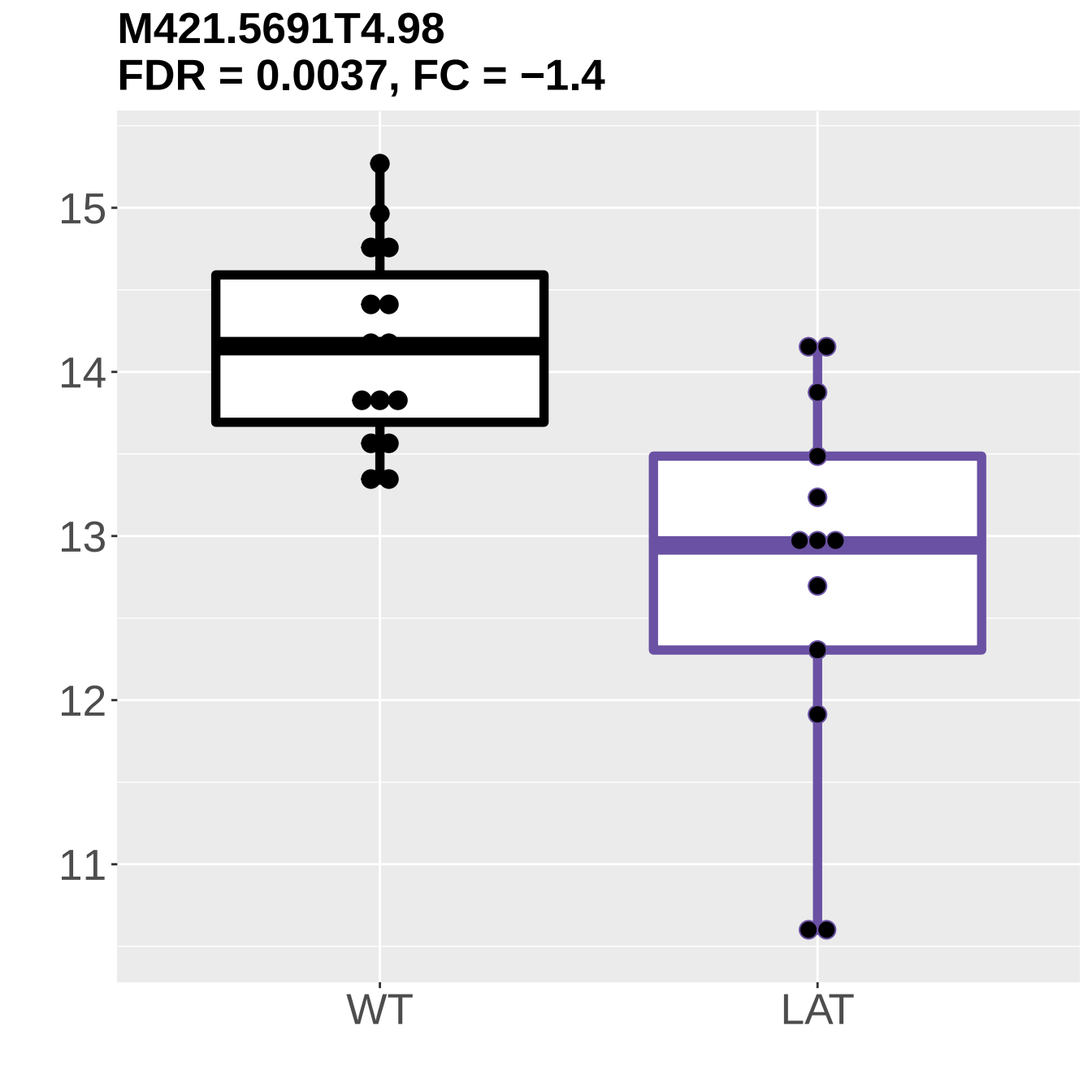
WT
LAT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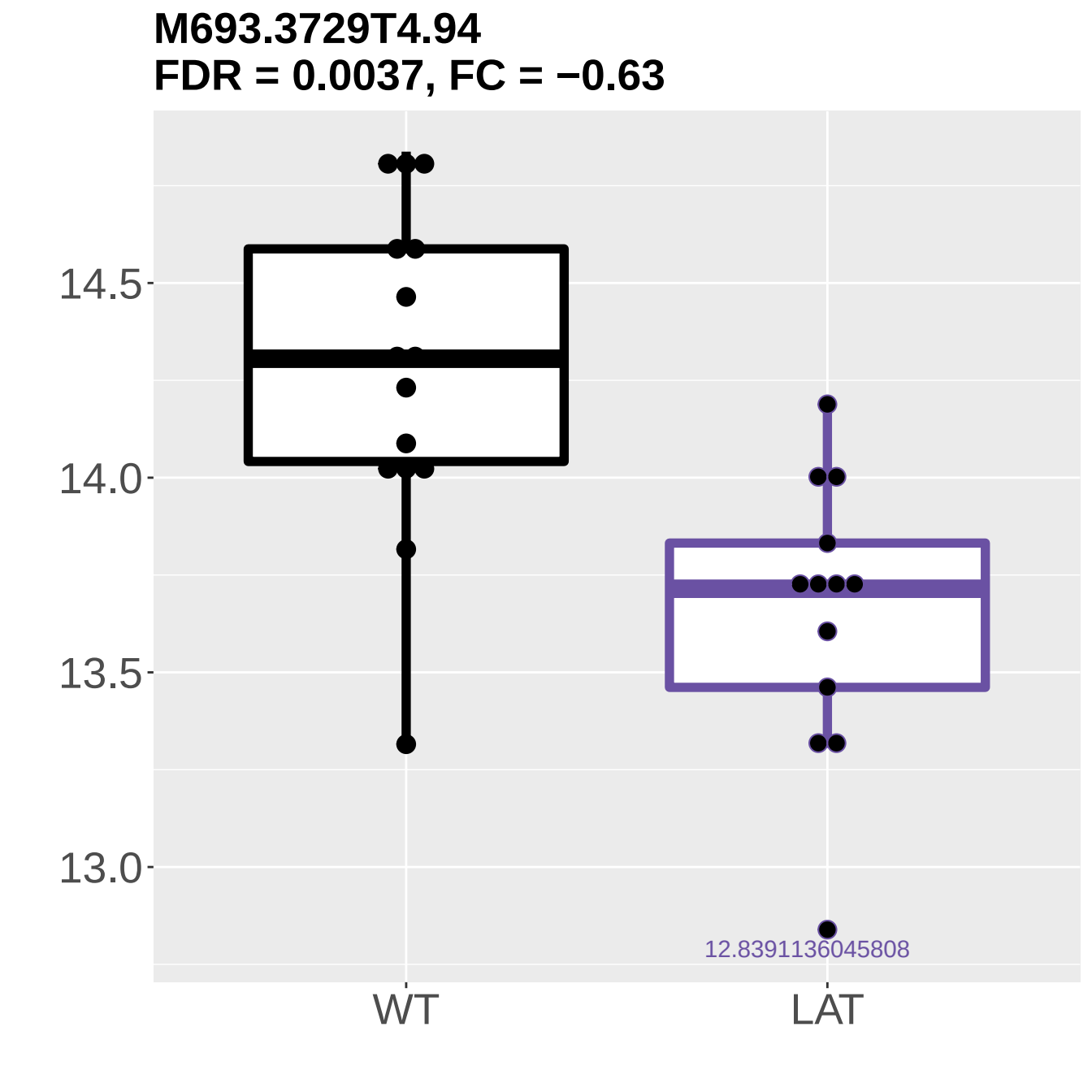
14
13
12
11
WT
LAT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13.0
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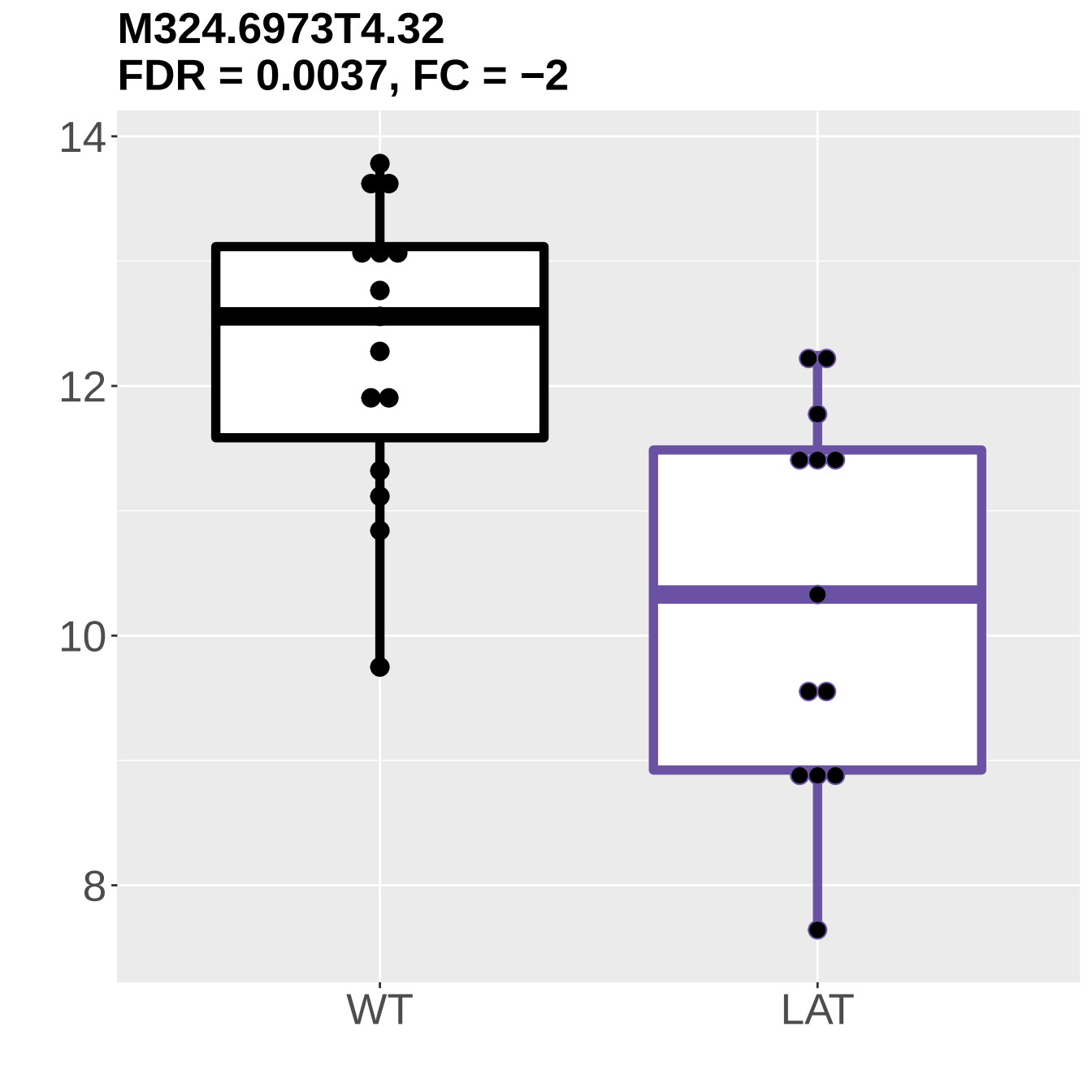
WT
LAT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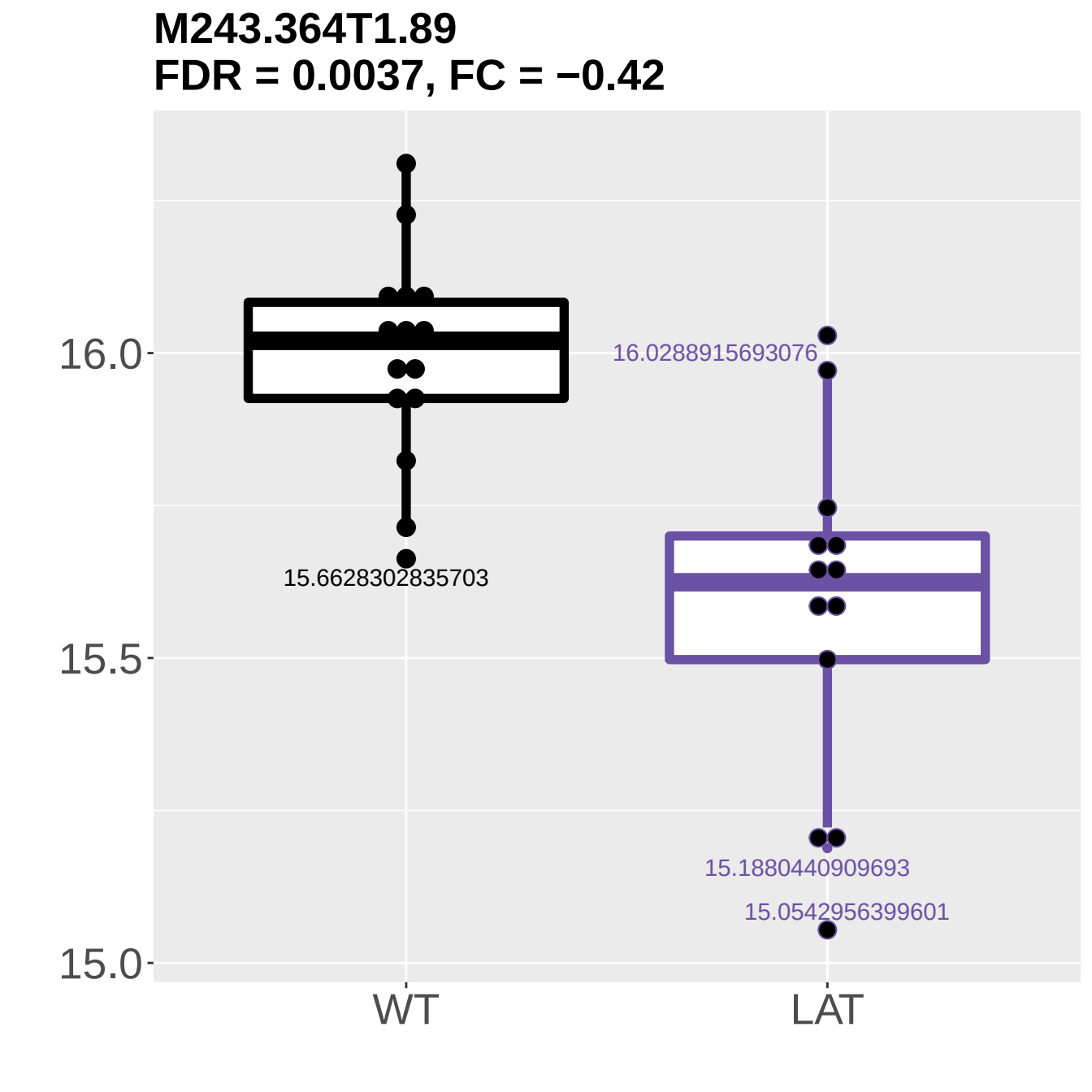
12
10
8
WT
LAT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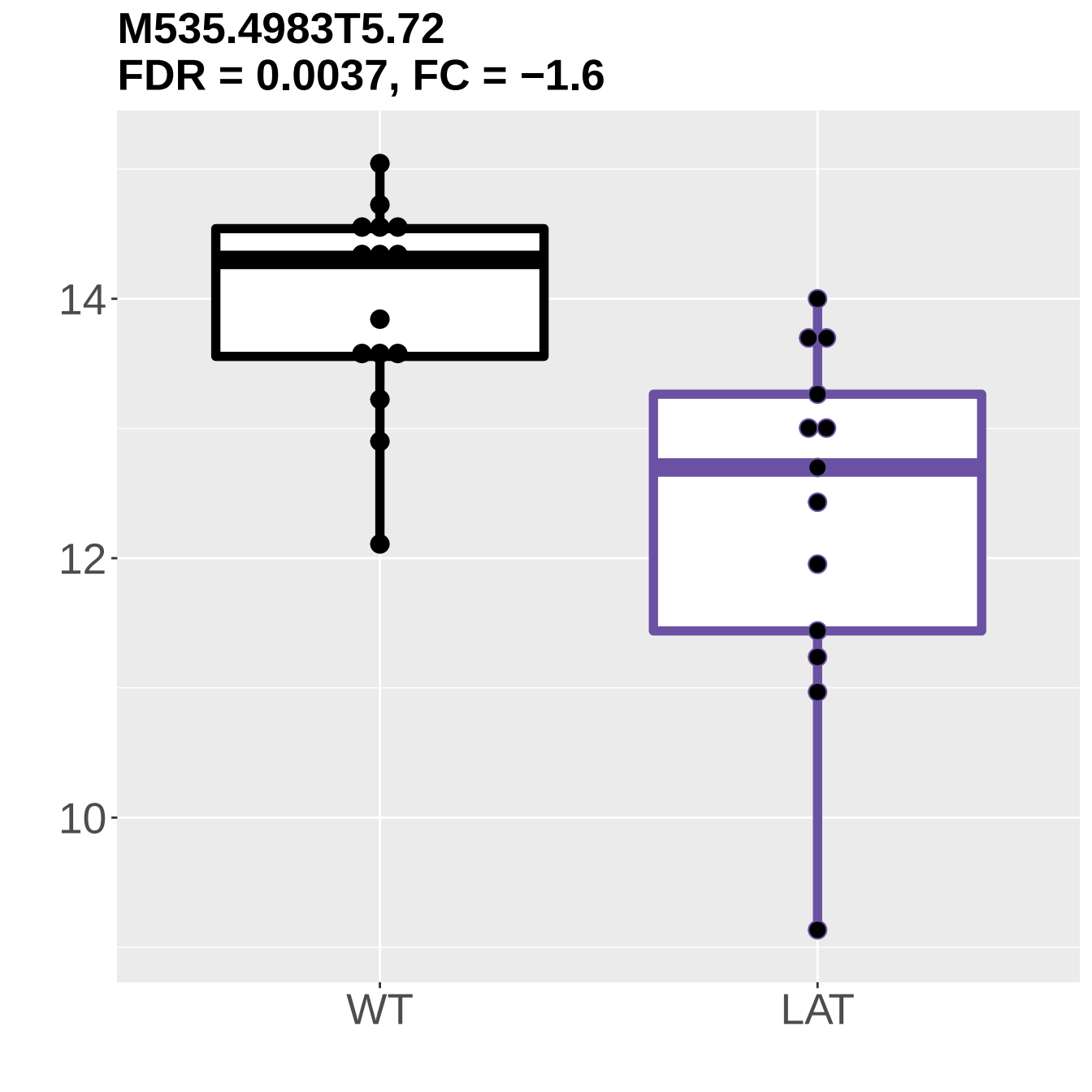
WT
LAT


M535.4983T5.72
FDR = 0.0037, FC = −1.6
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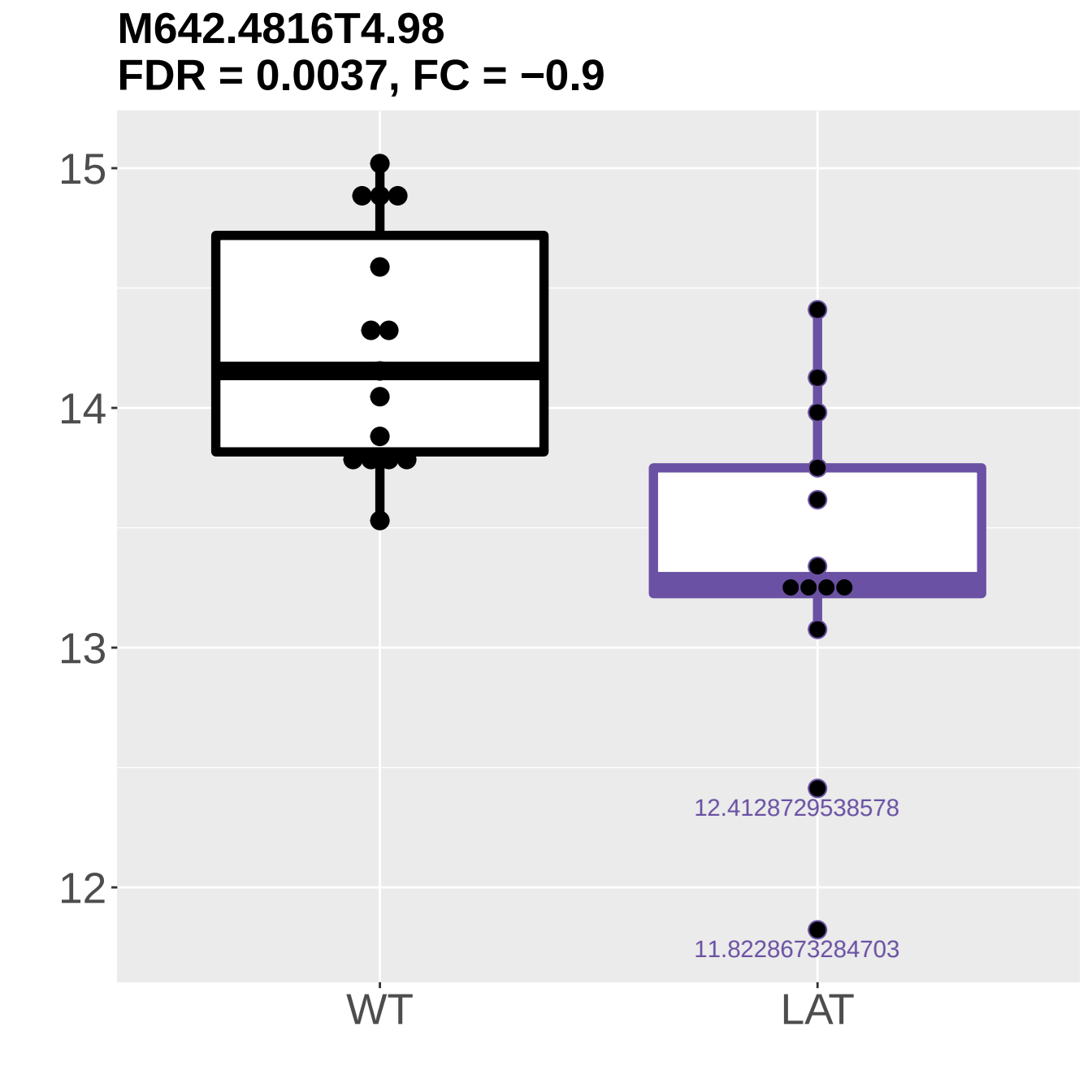
12
10
WT
LAT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14
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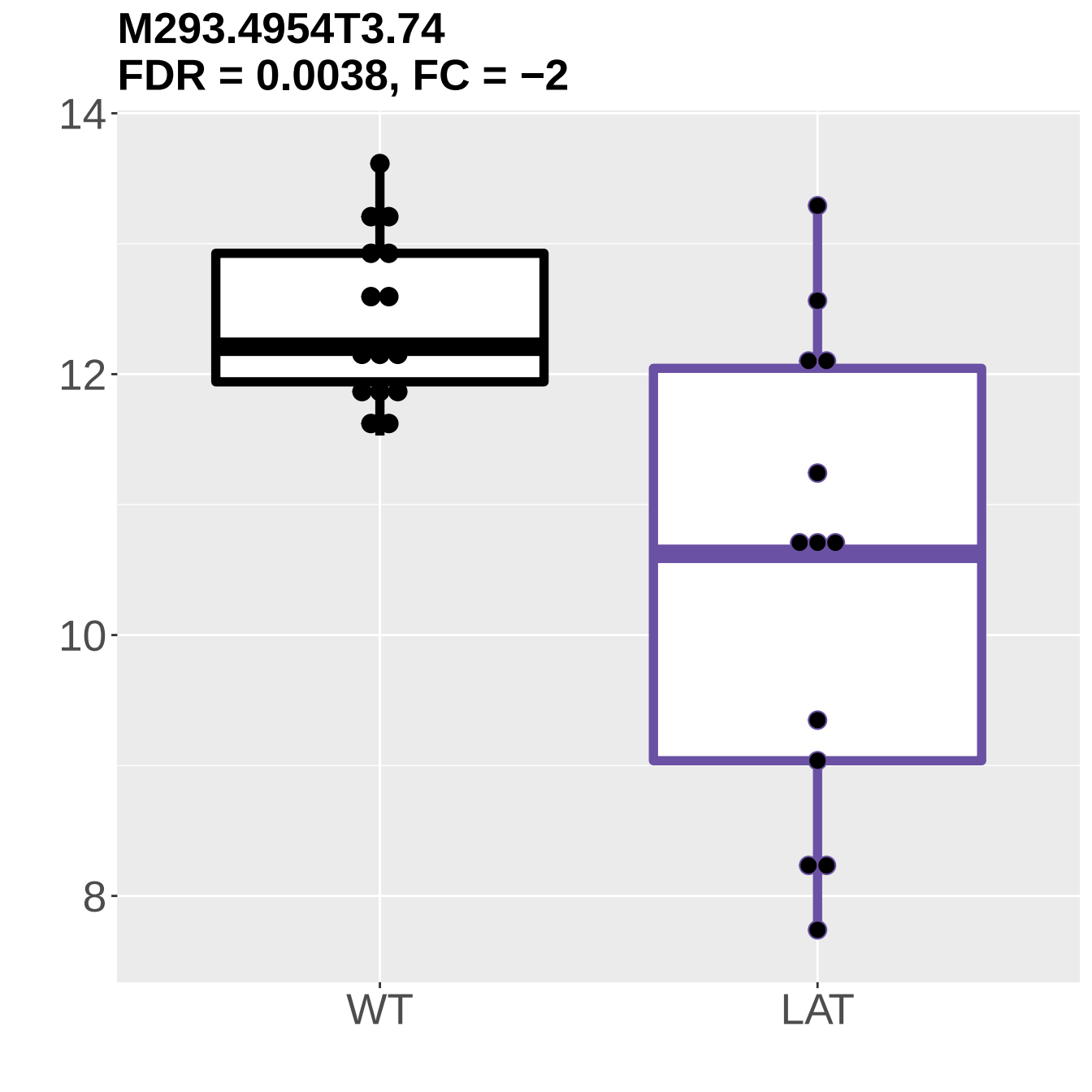
WT
LAT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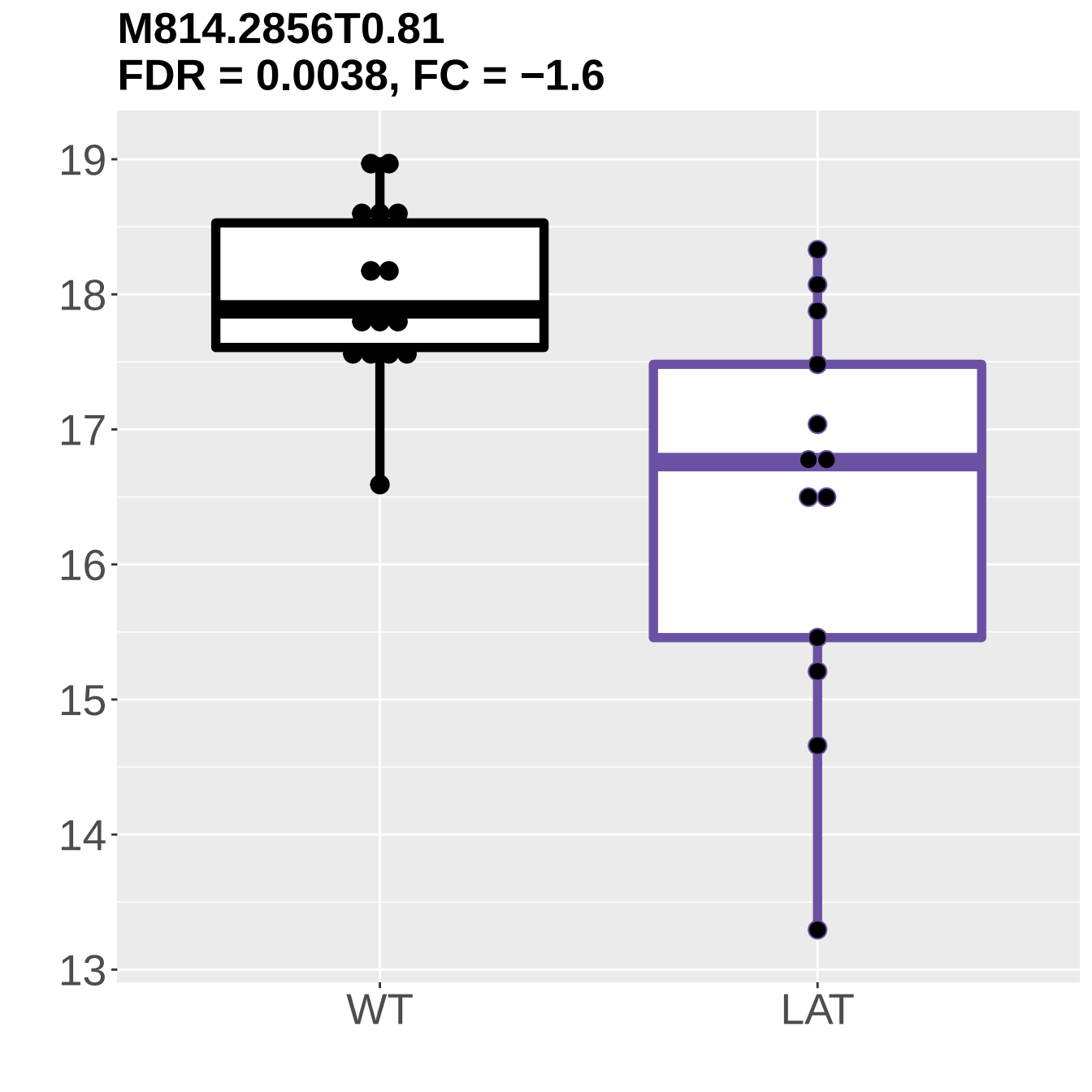
12
10
8
WT
LAT


M814.2856T0.81
FDR = 0.0038, FC = −1.6
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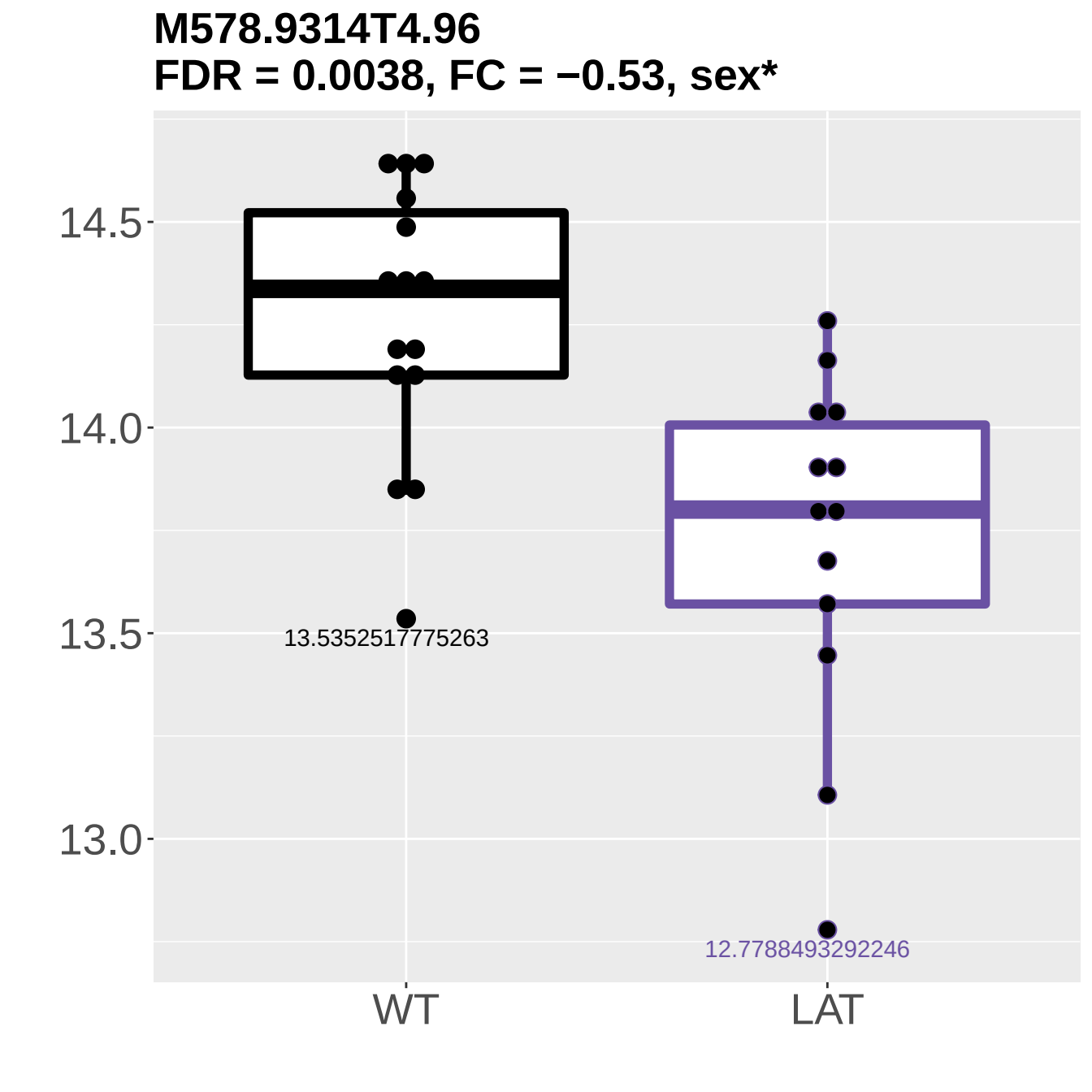
18
17
16
15
14
13
WT
LAT


M578.9314T4.96
FDR = 0.0038, FC = −0.53, sex*
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13.5
13.0
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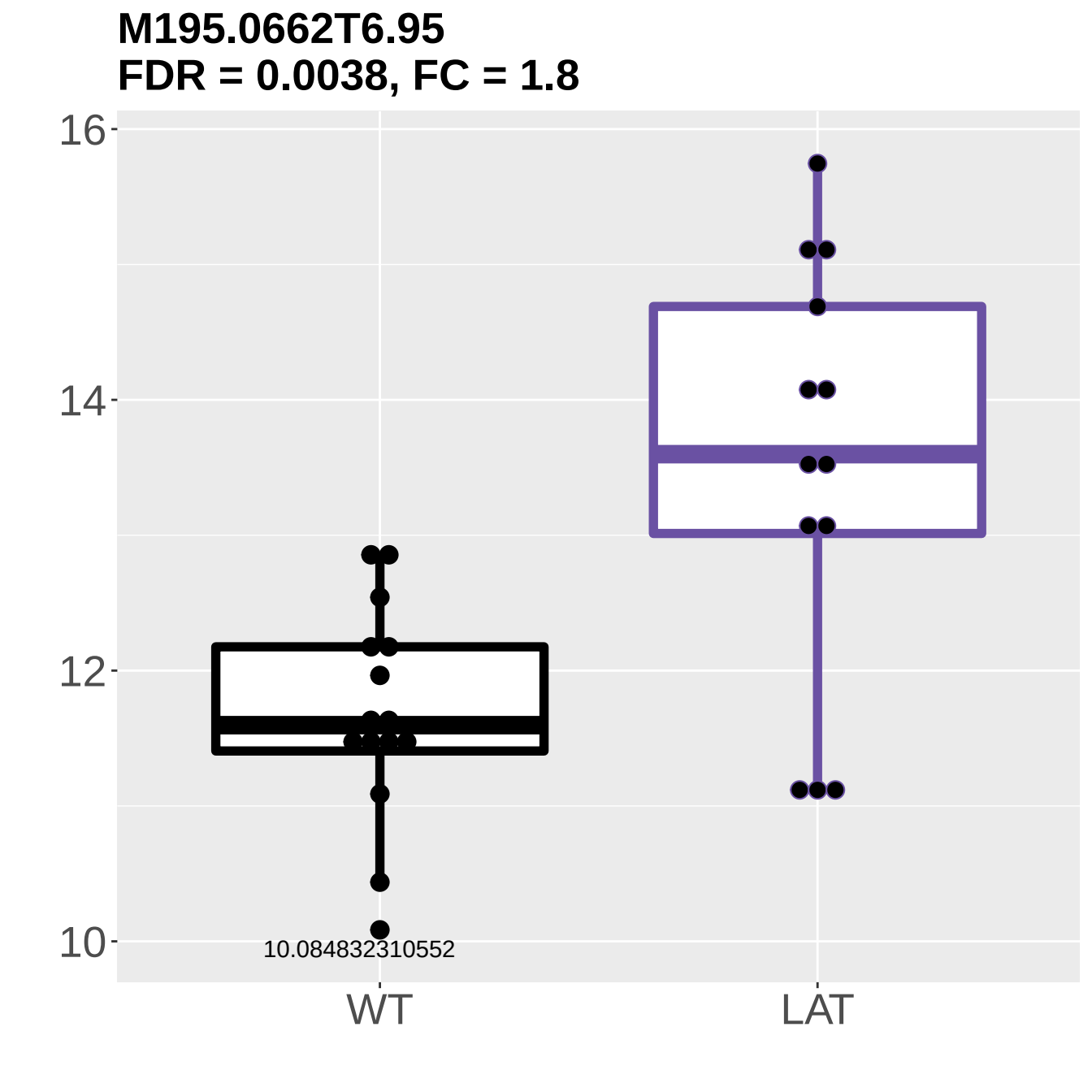
12.7788493292246
WT
LAT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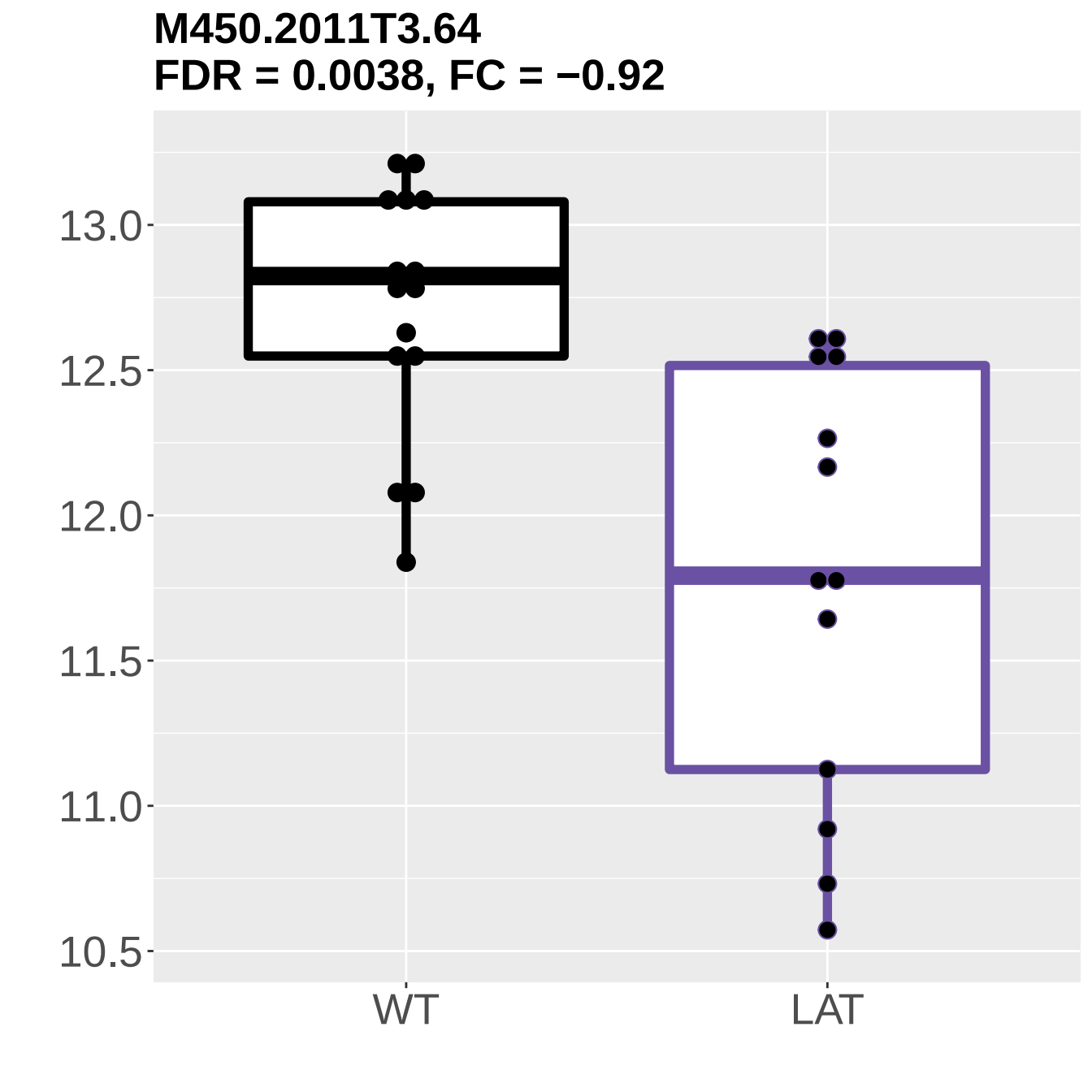
WT
LAT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11.0
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WT
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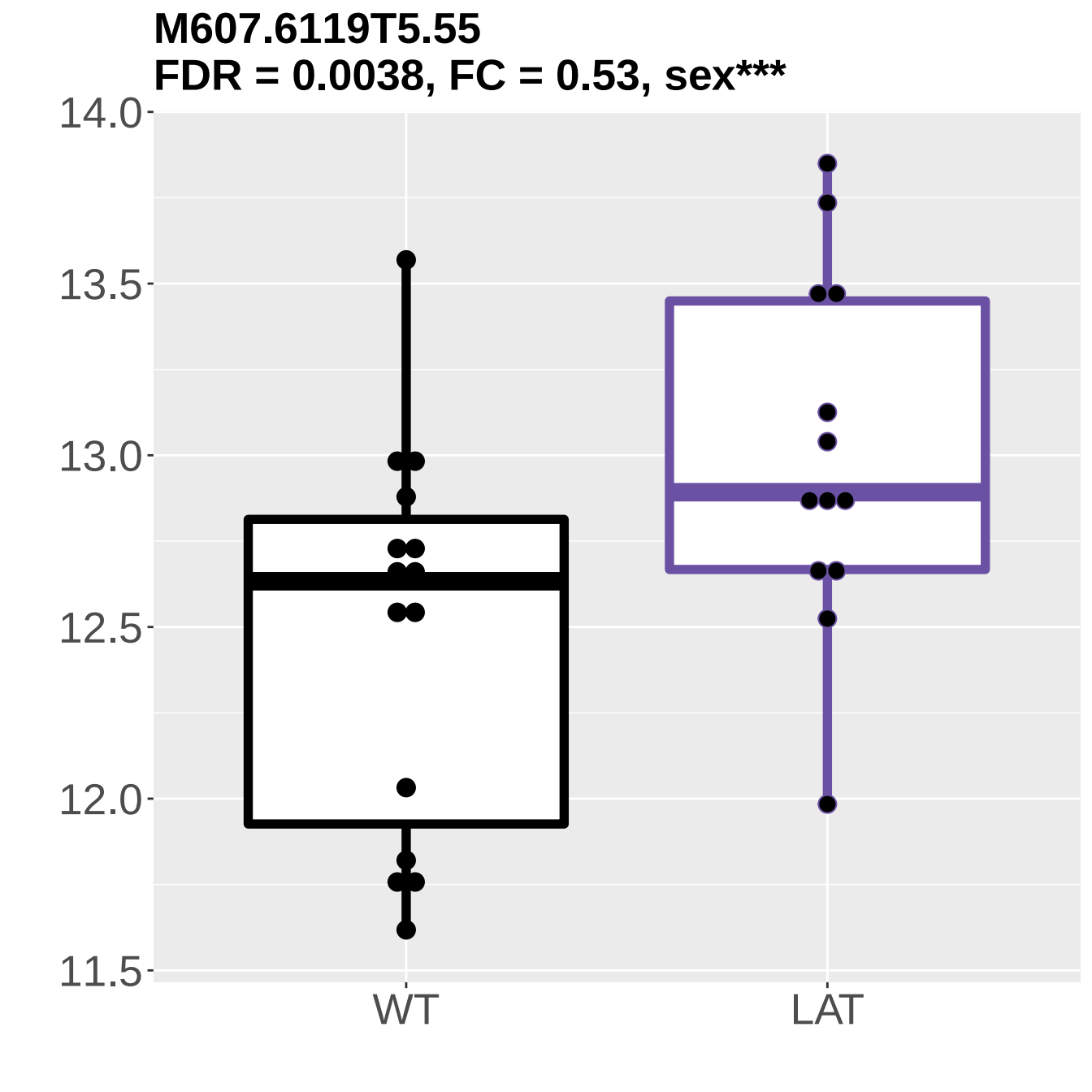
M607.6119T5.55
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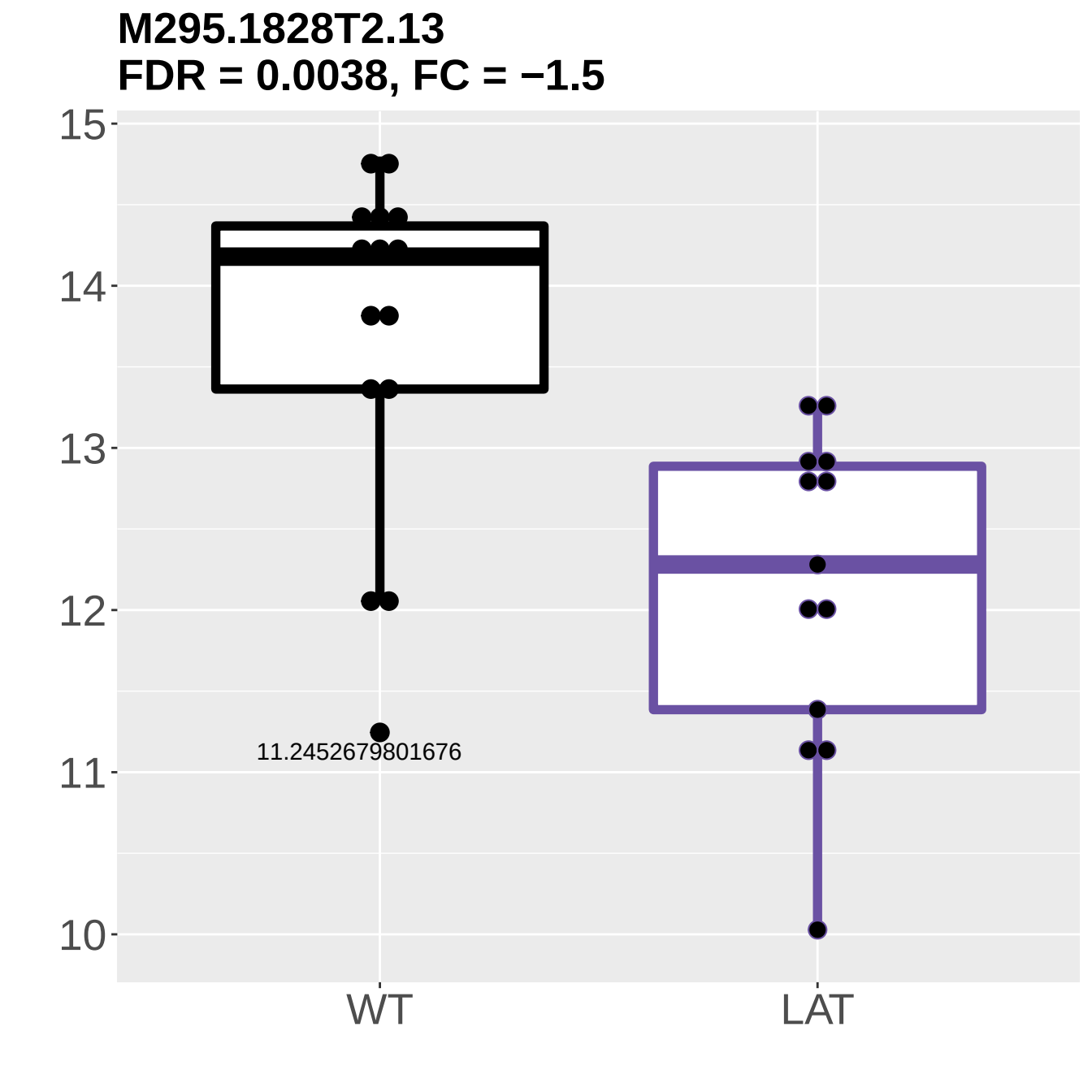
WT
LAT


M295.1828T2.13
FDR = 0.0038, FC = −1.5
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14
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12
11
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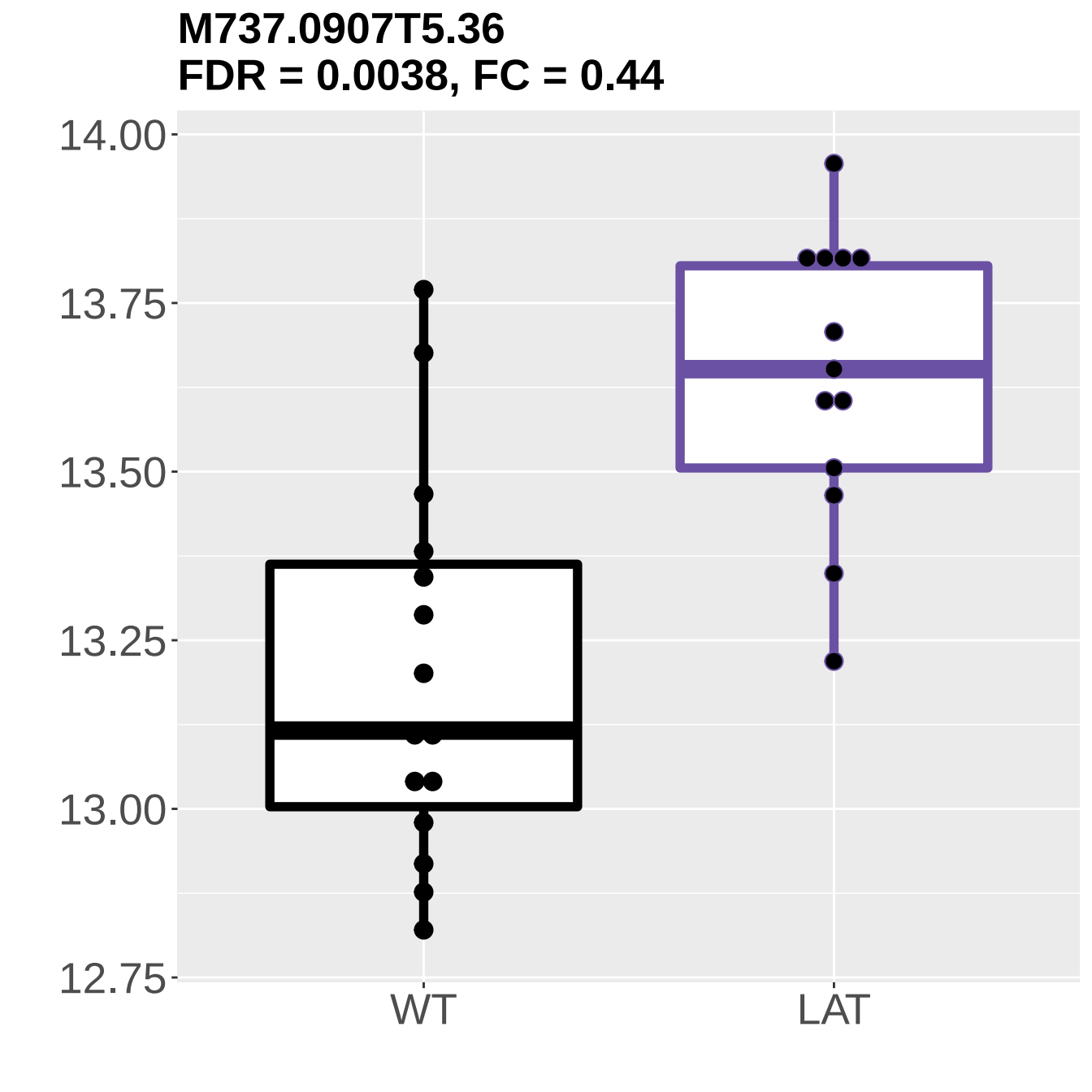
WT
LAT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WT
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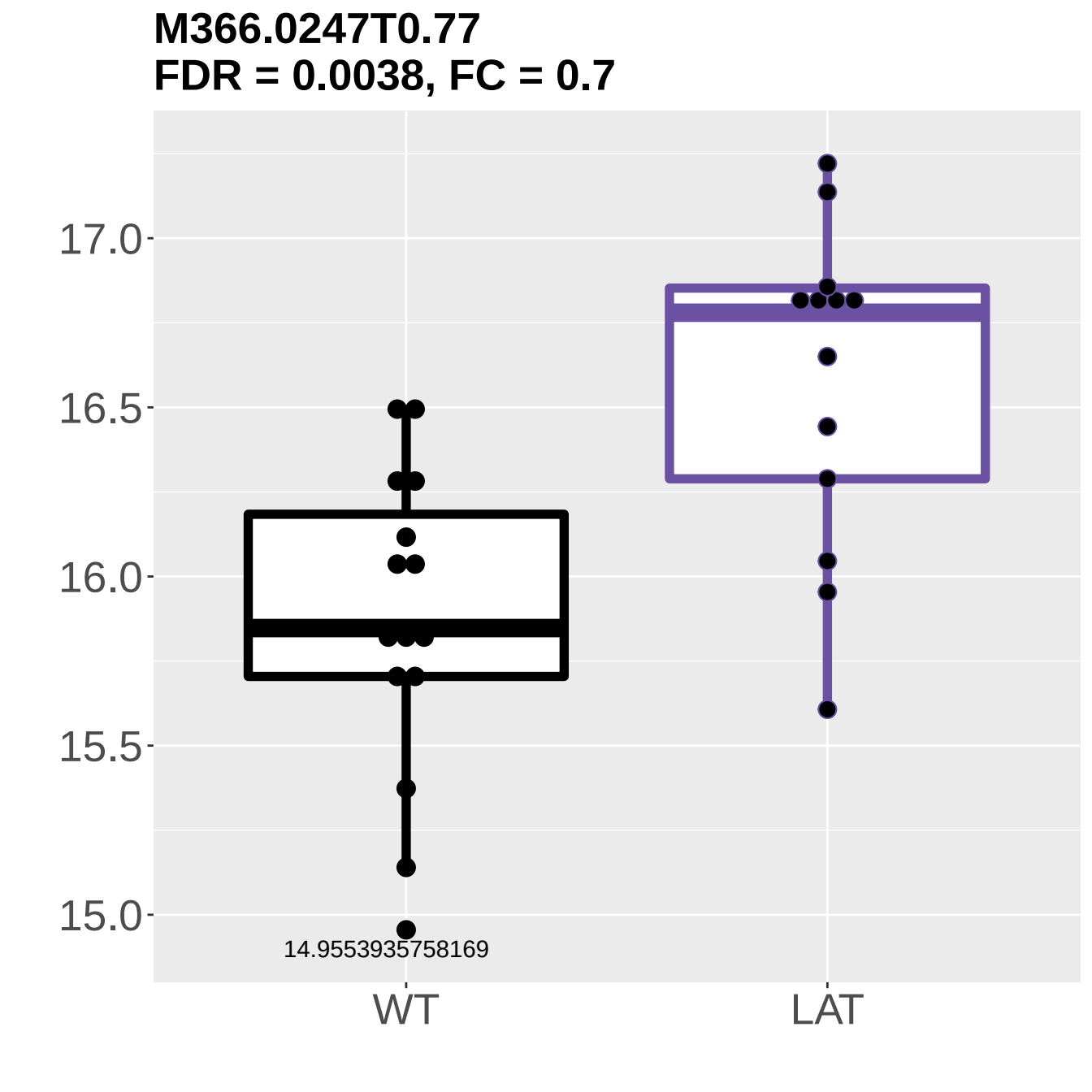
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WT
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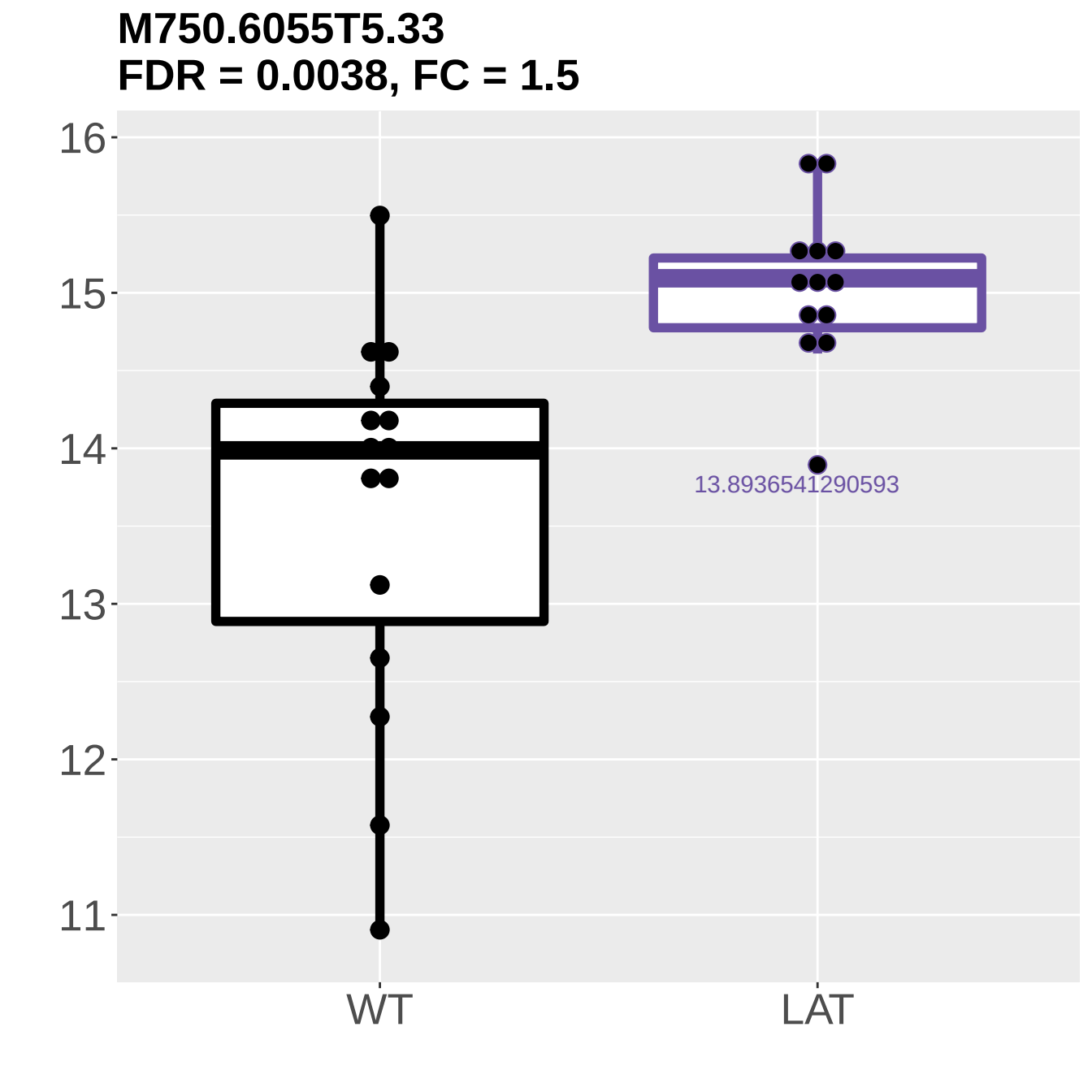
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13
12
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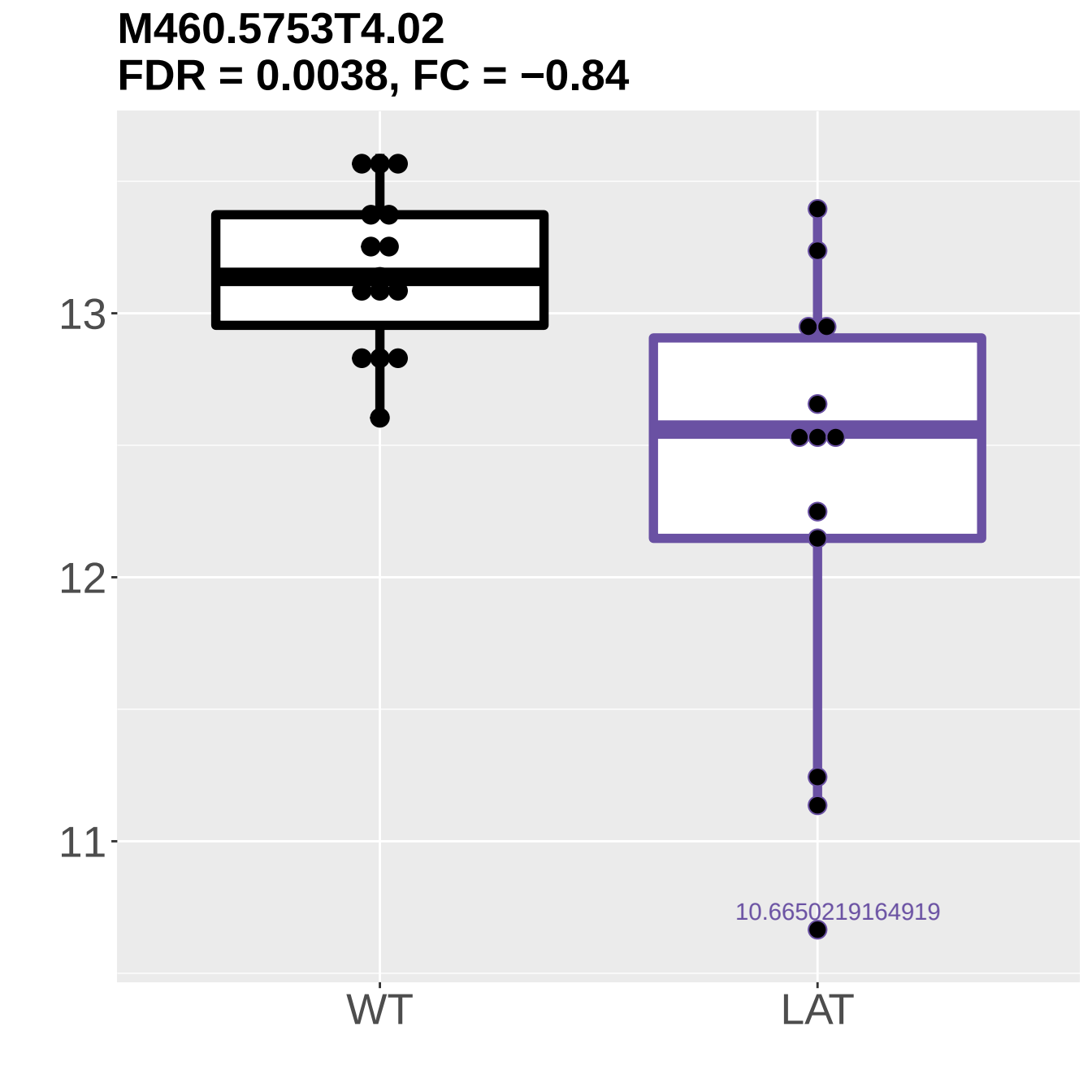
WT
LAT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12
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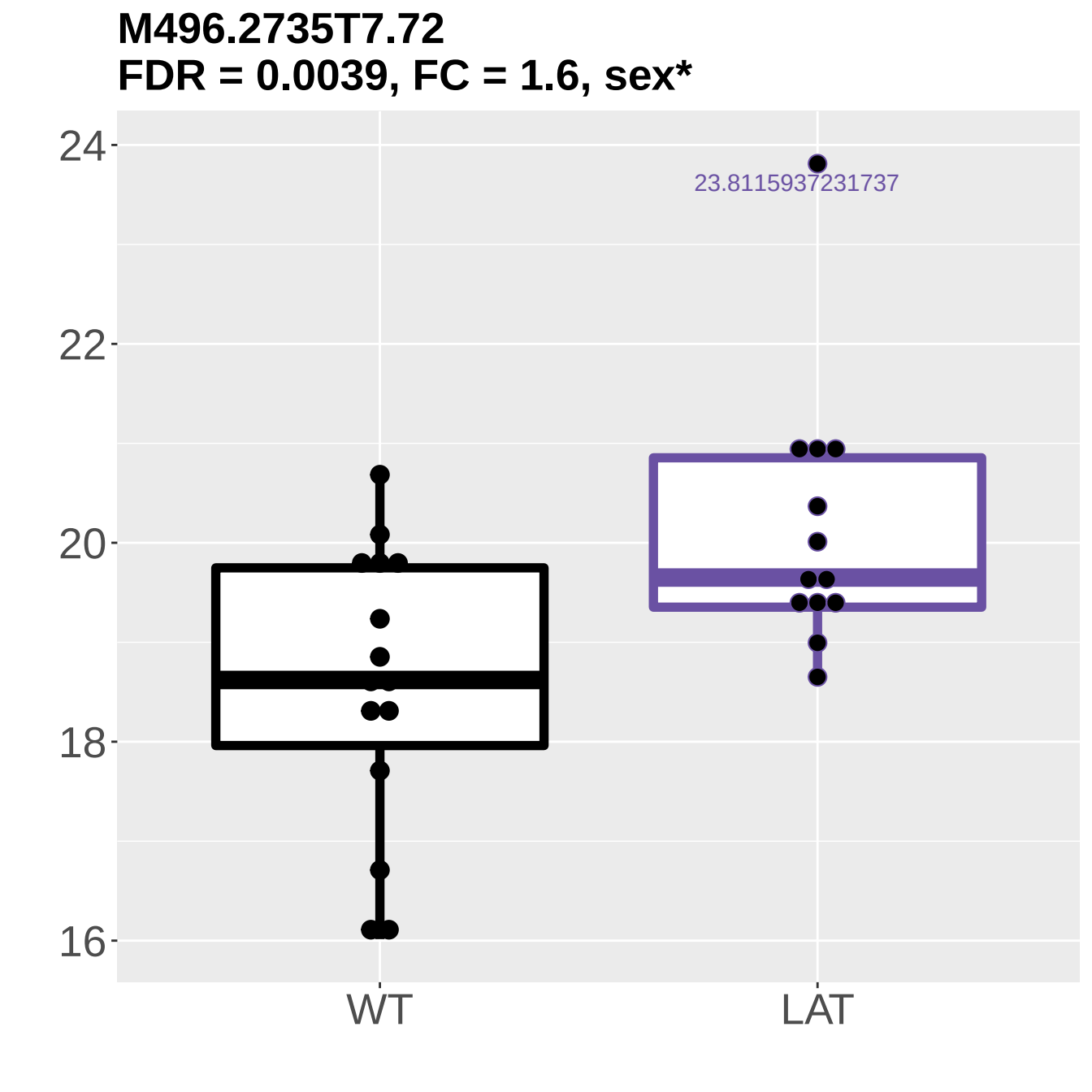
WT
LAT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18
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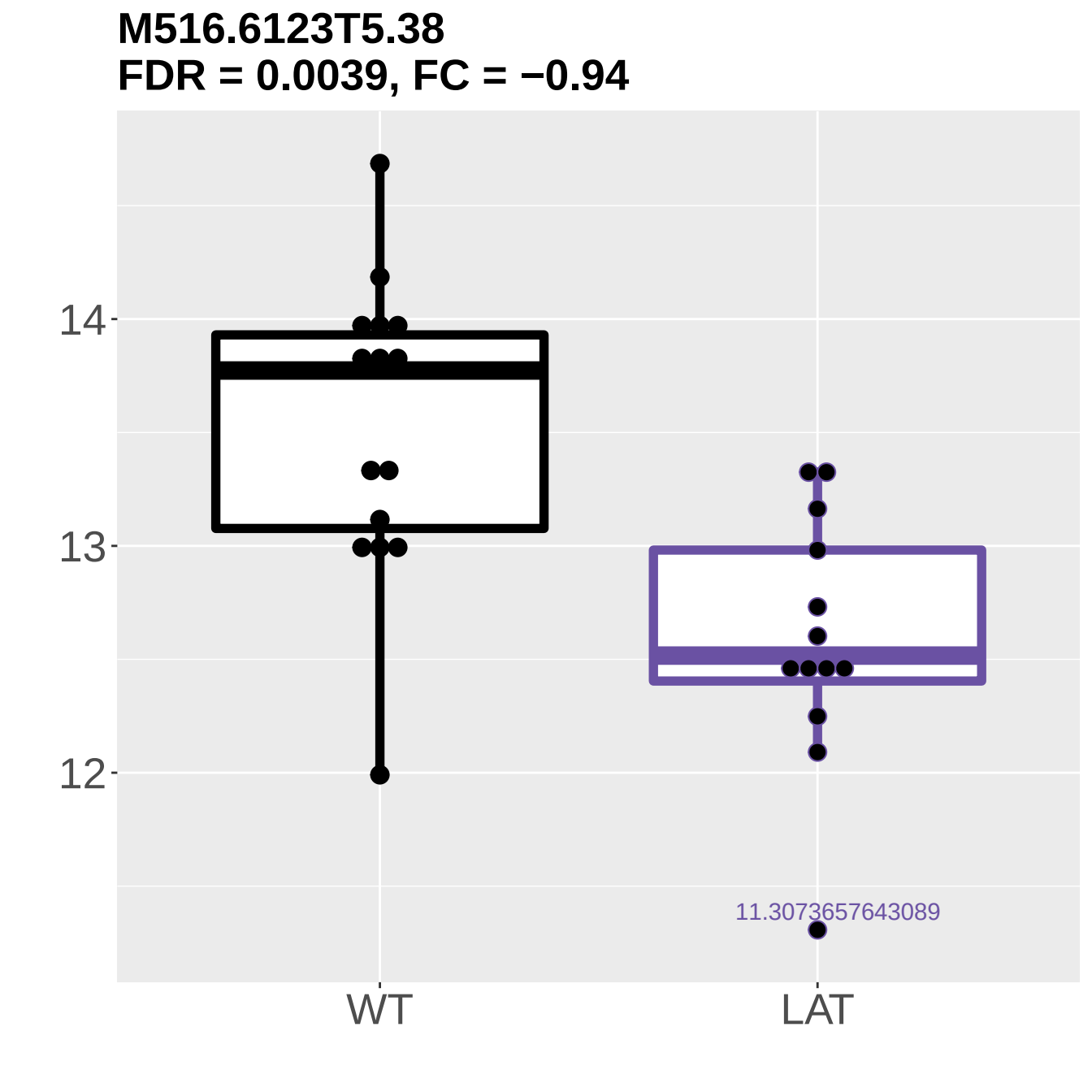
WT
LAT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13
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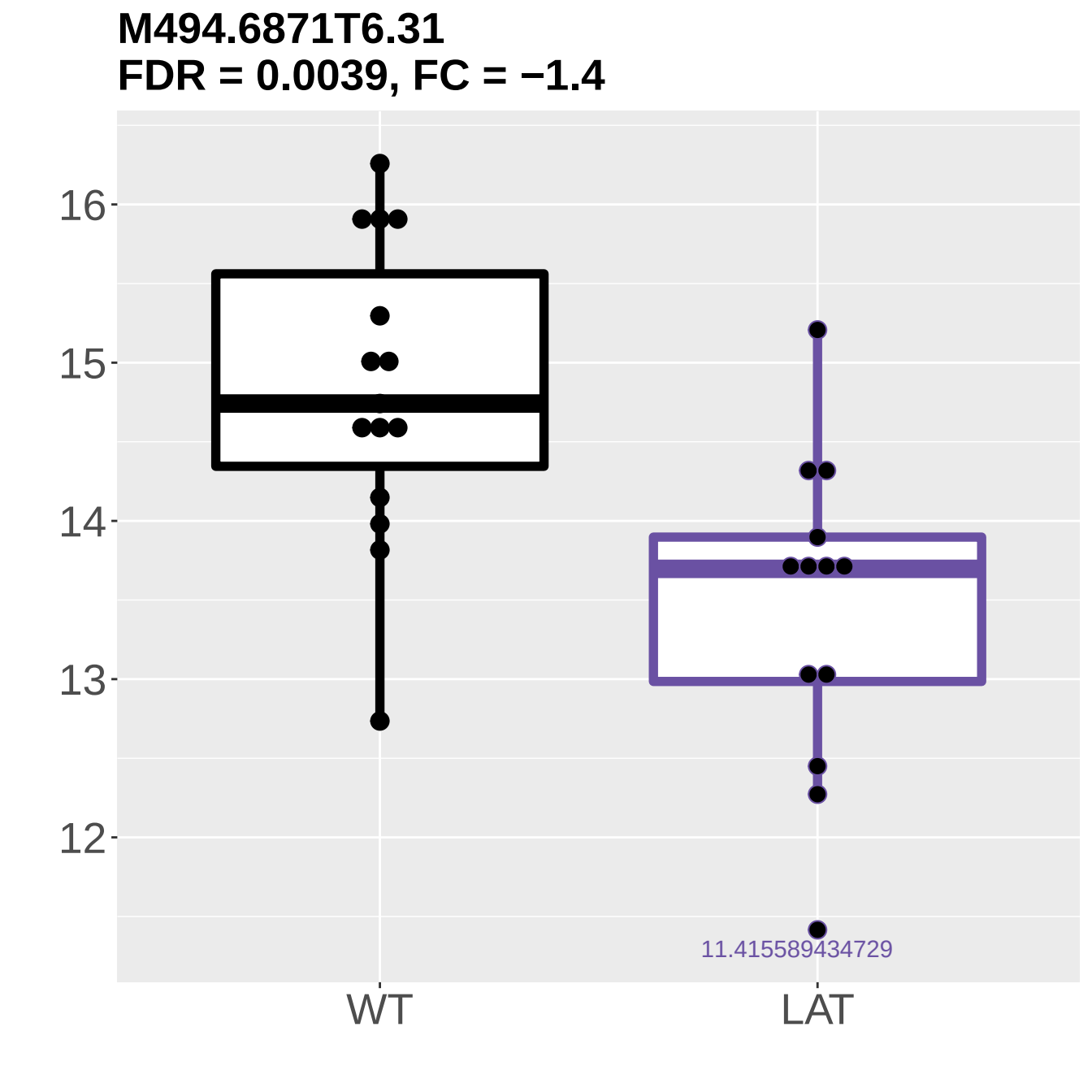
LAT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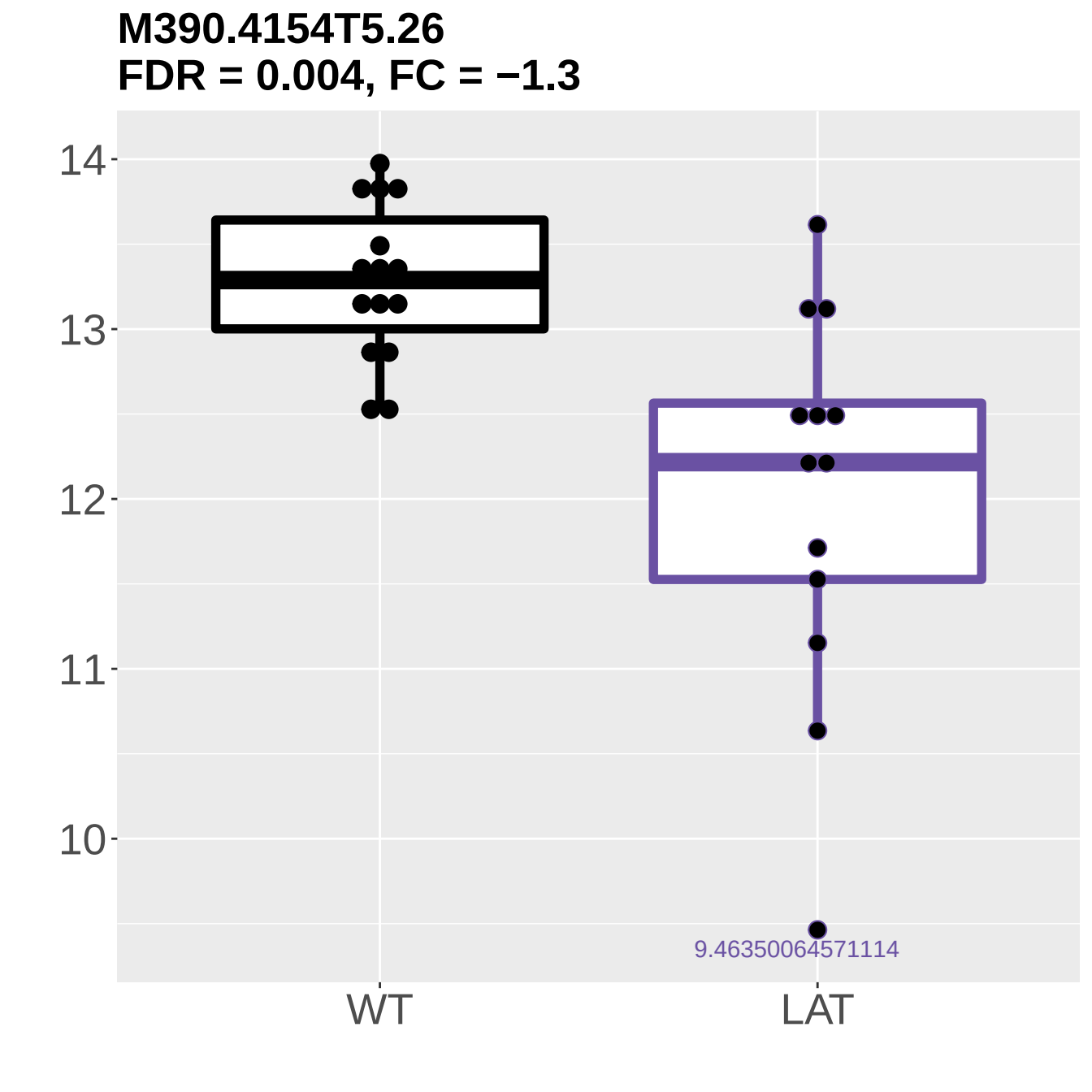
M390.4154T5.26
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11
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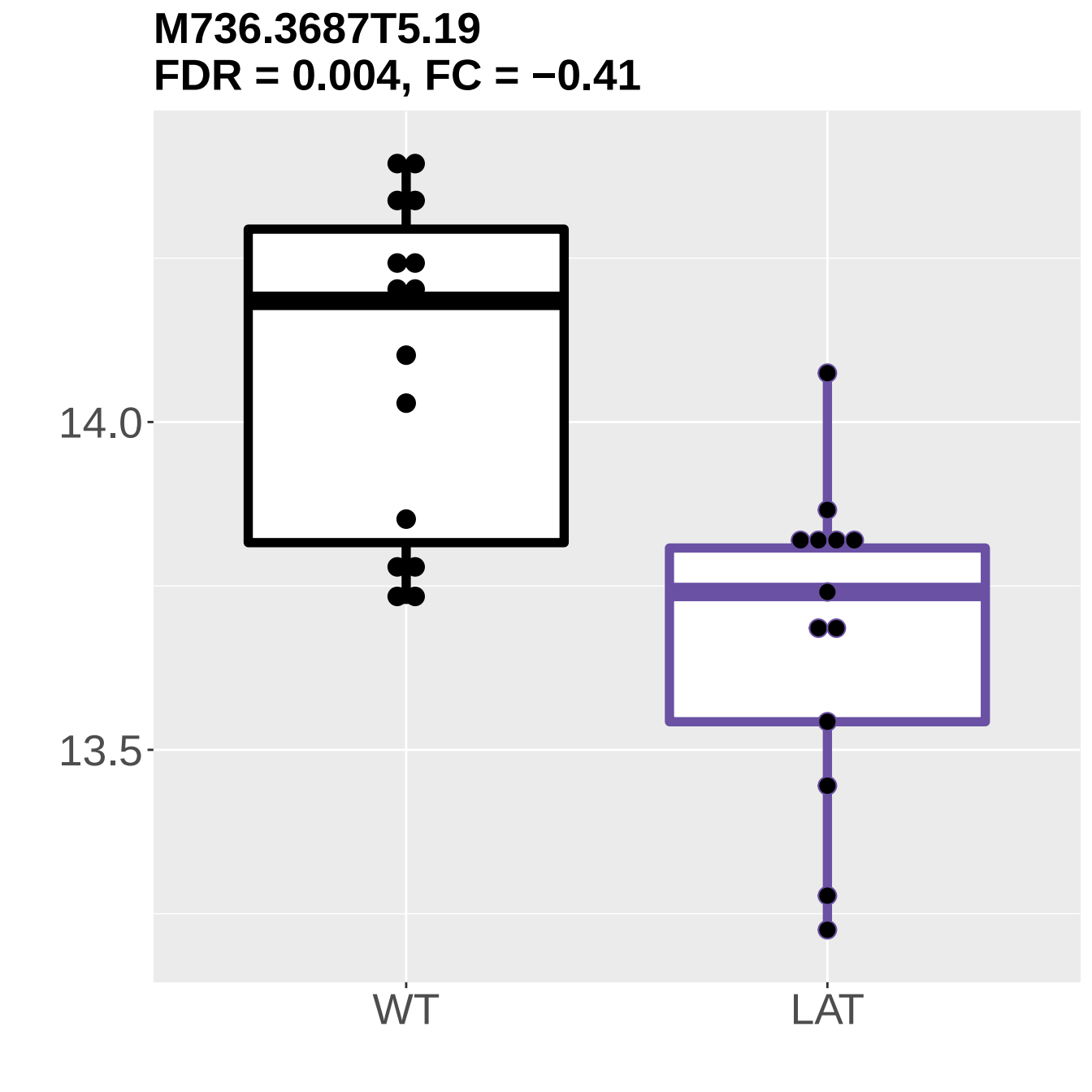
WT
LAT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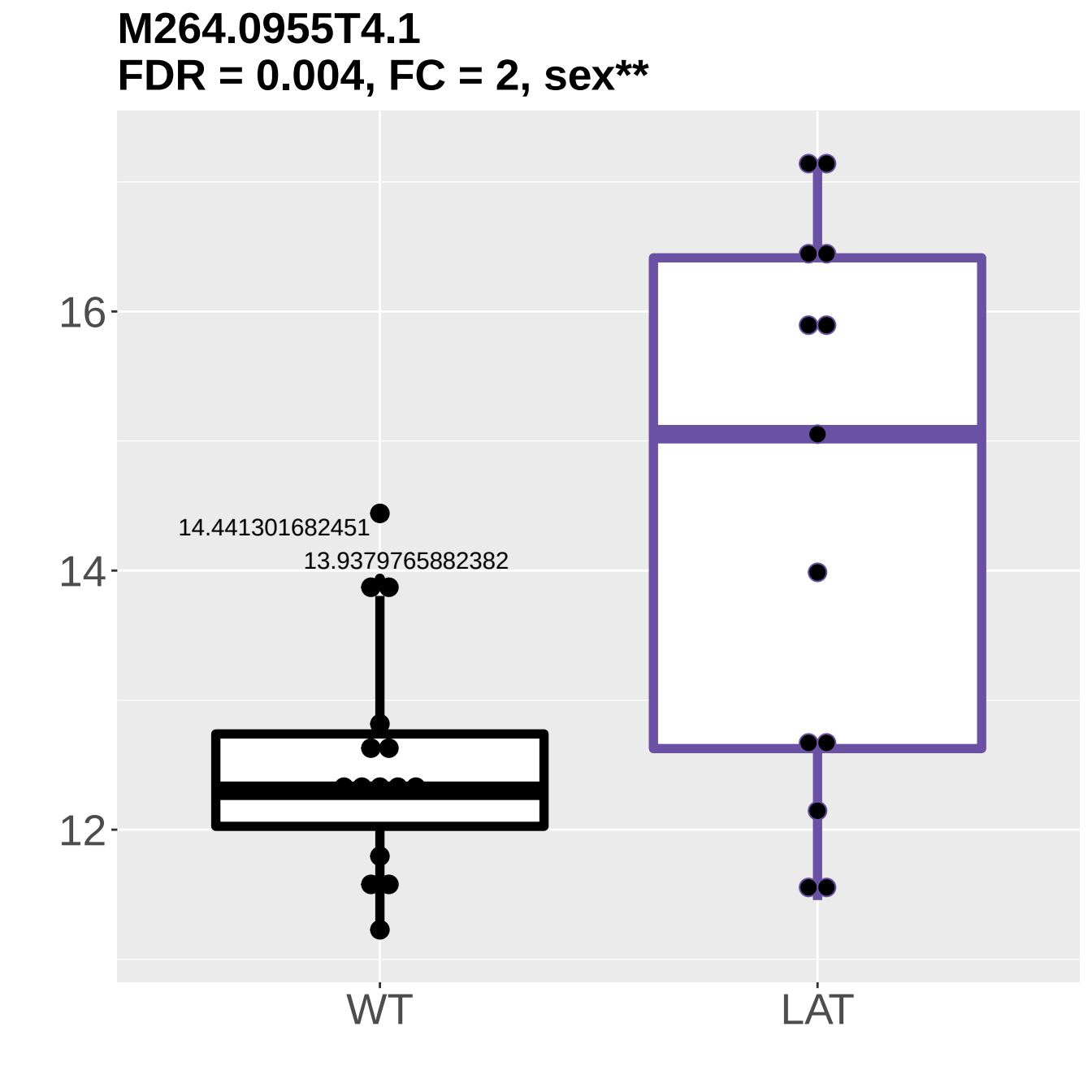
WT
LAT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12
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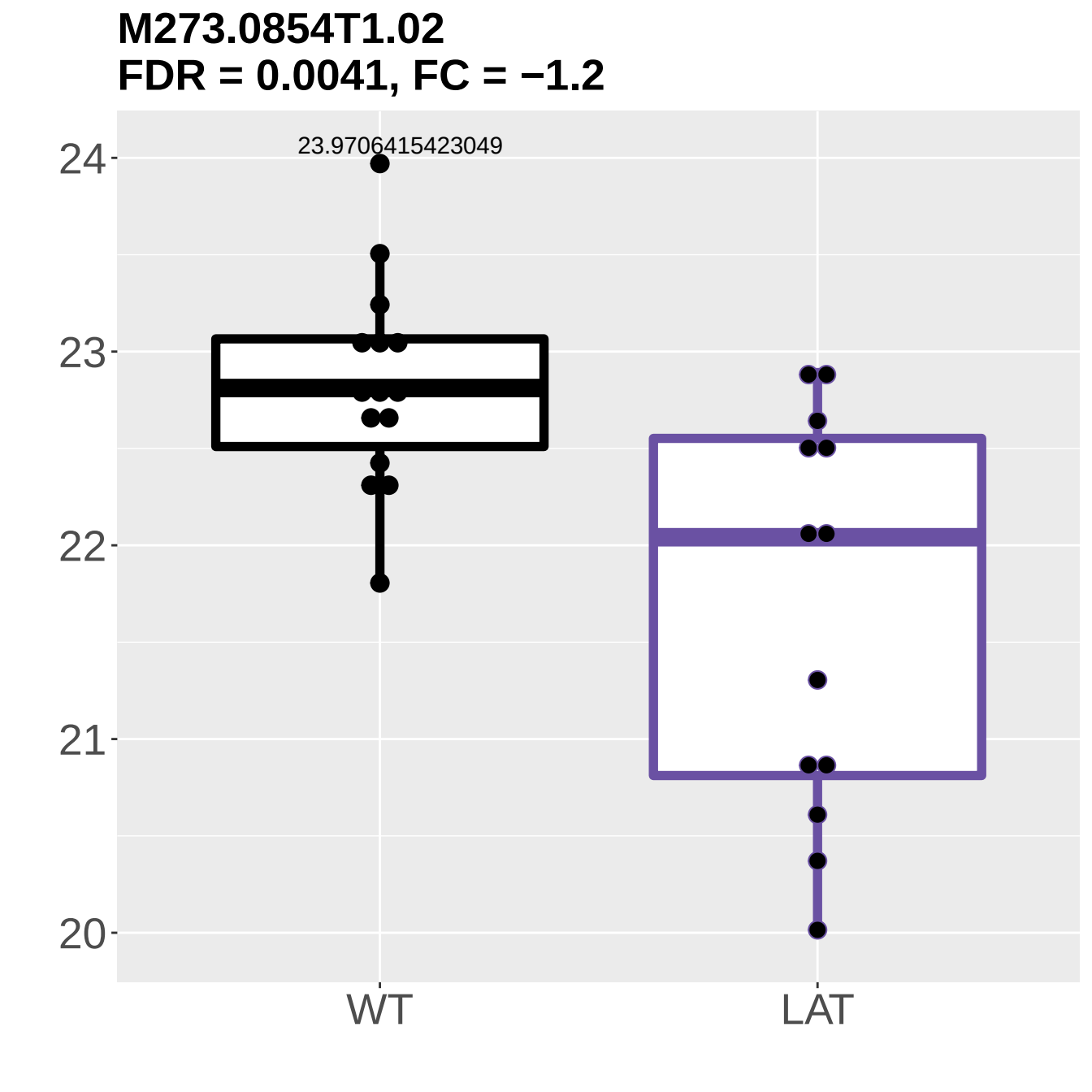
M273.0854T1.02
FDR = 0.0041, FC = −1.2
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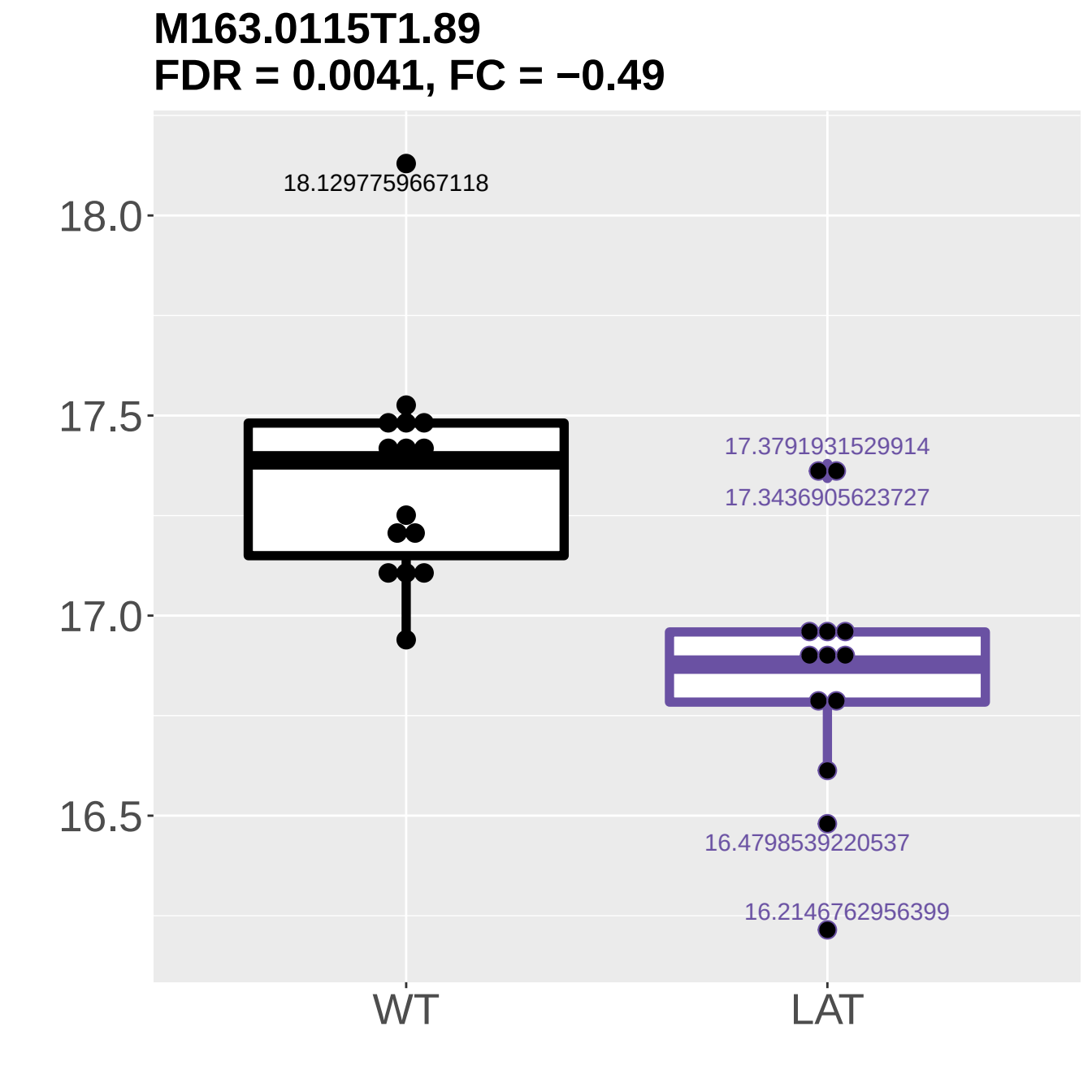
24
23
22
21
20
WT
LAT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FDR = 0.0041, FC = −0.49
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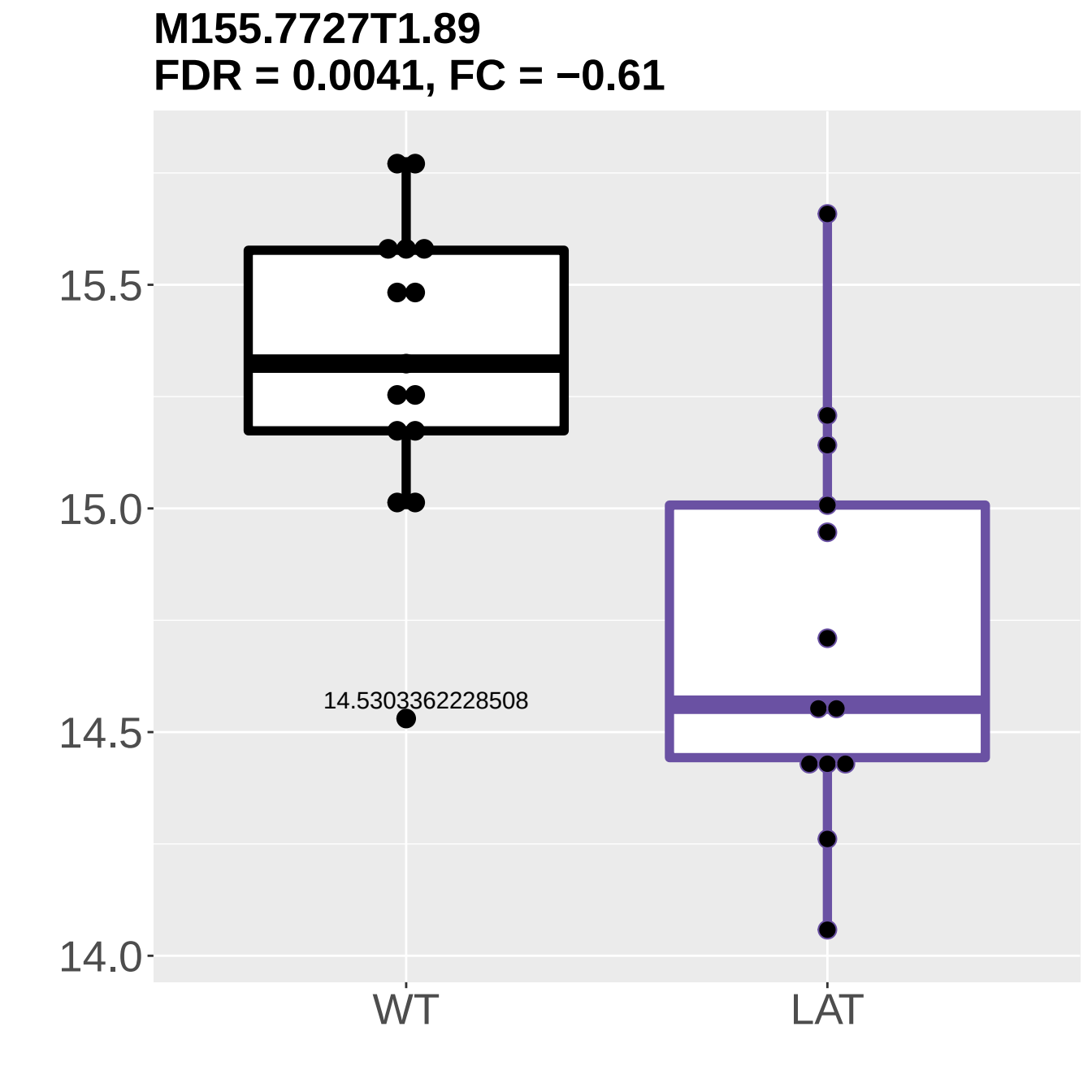
16.4798539220537
16.2146762956399
18.0
17.5
17.0
16.5
WT
LAT


M155.7727T1.89
FDR = 0.0041, FC = −0.61
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15.0
14.5
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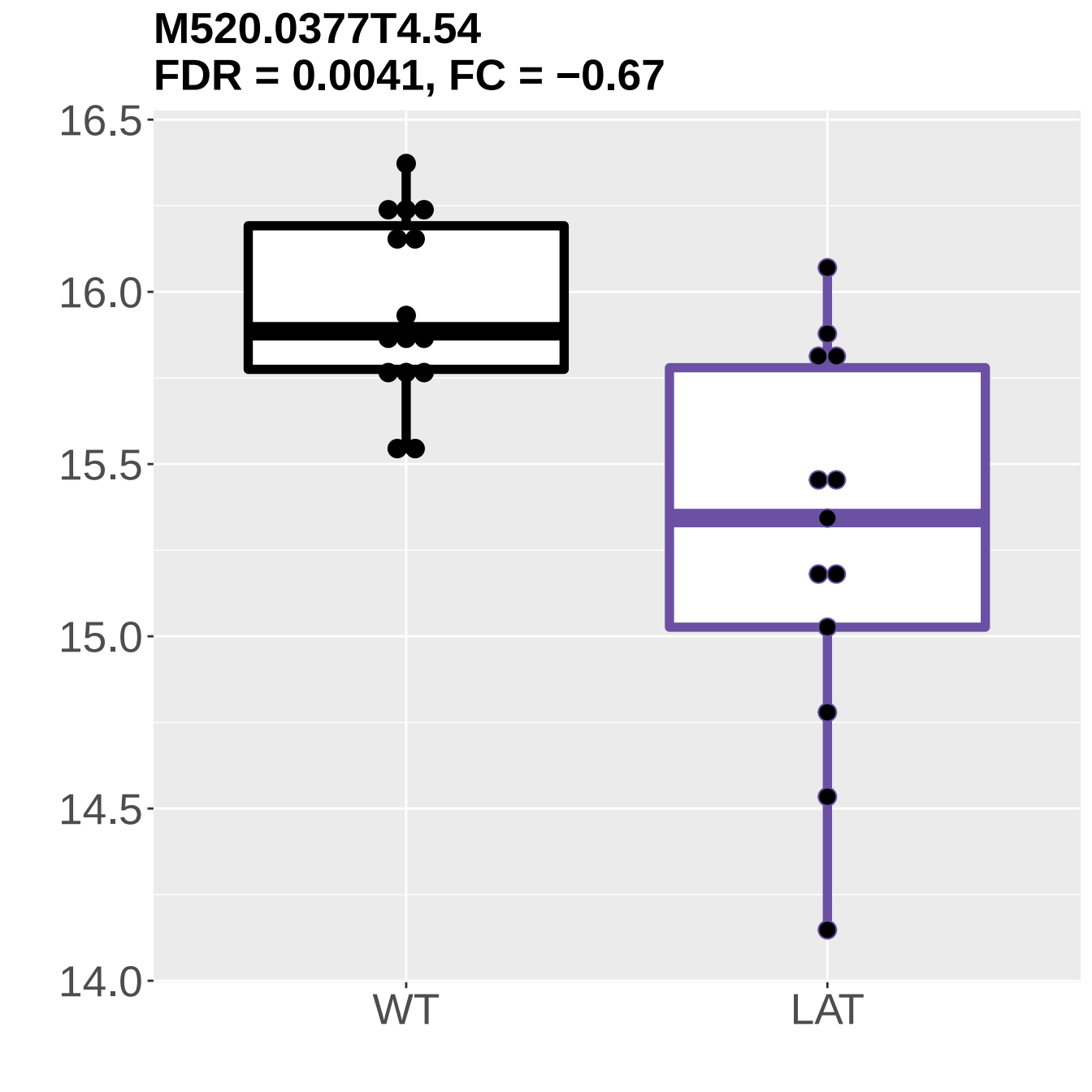
14.5303362228508
WT
LAT


M520.0377T4.54
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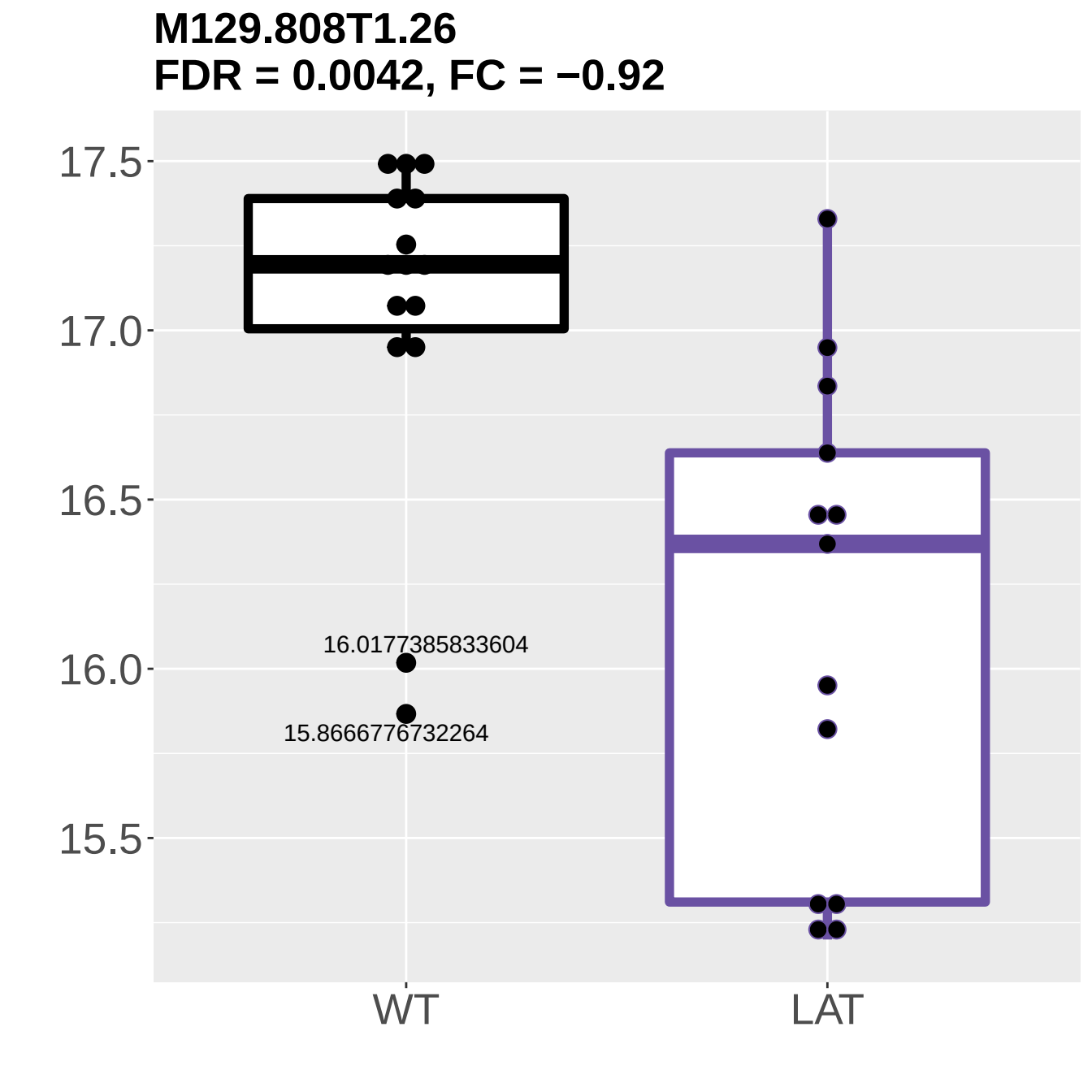
15.5
15.0
14.5
14.0
WT
LAT


M129.808T1.26
FDR = 0.0042, FC = −0.92
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16.0
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WT
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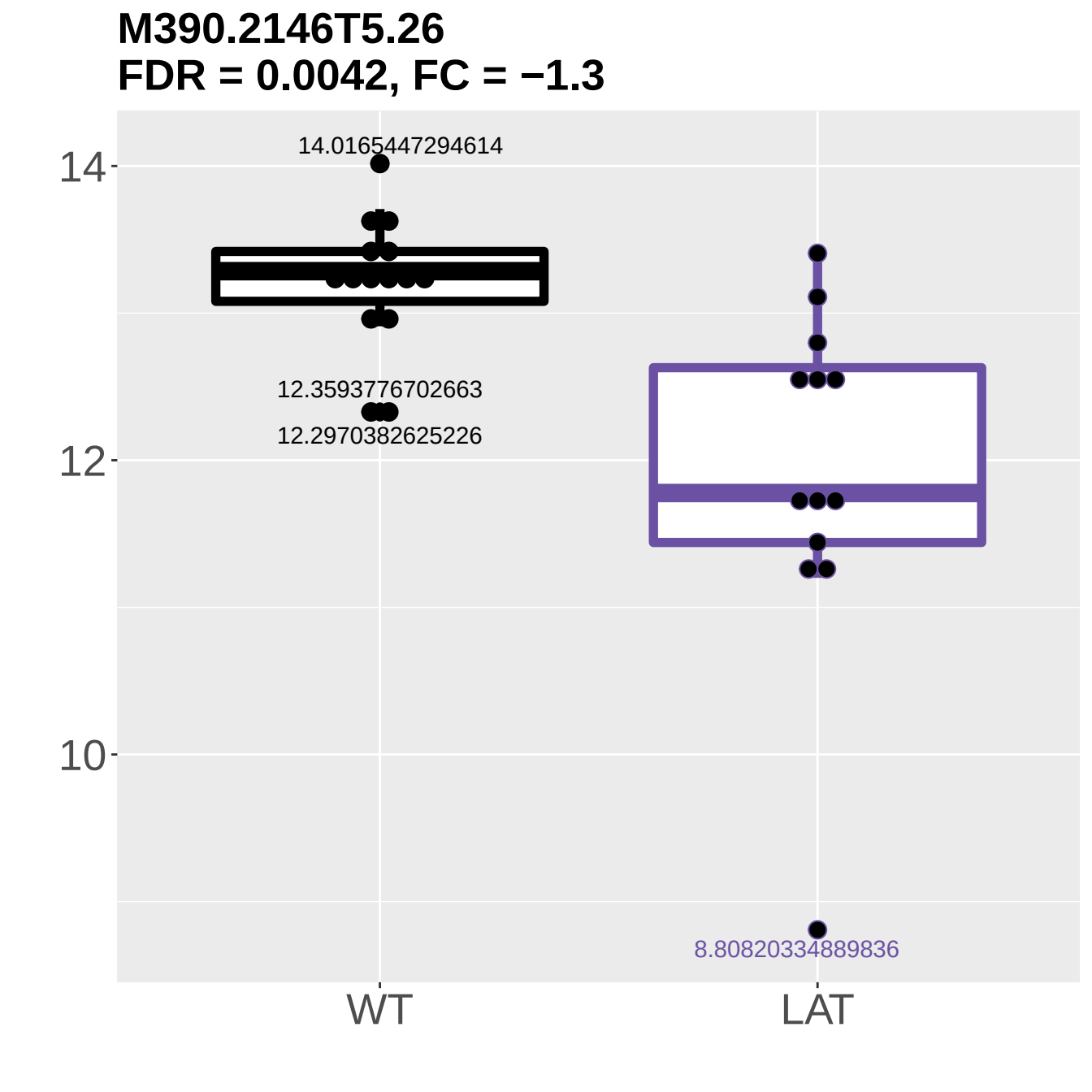
M390.2146T5.26
FDR = 0.0042, FC = −1.3
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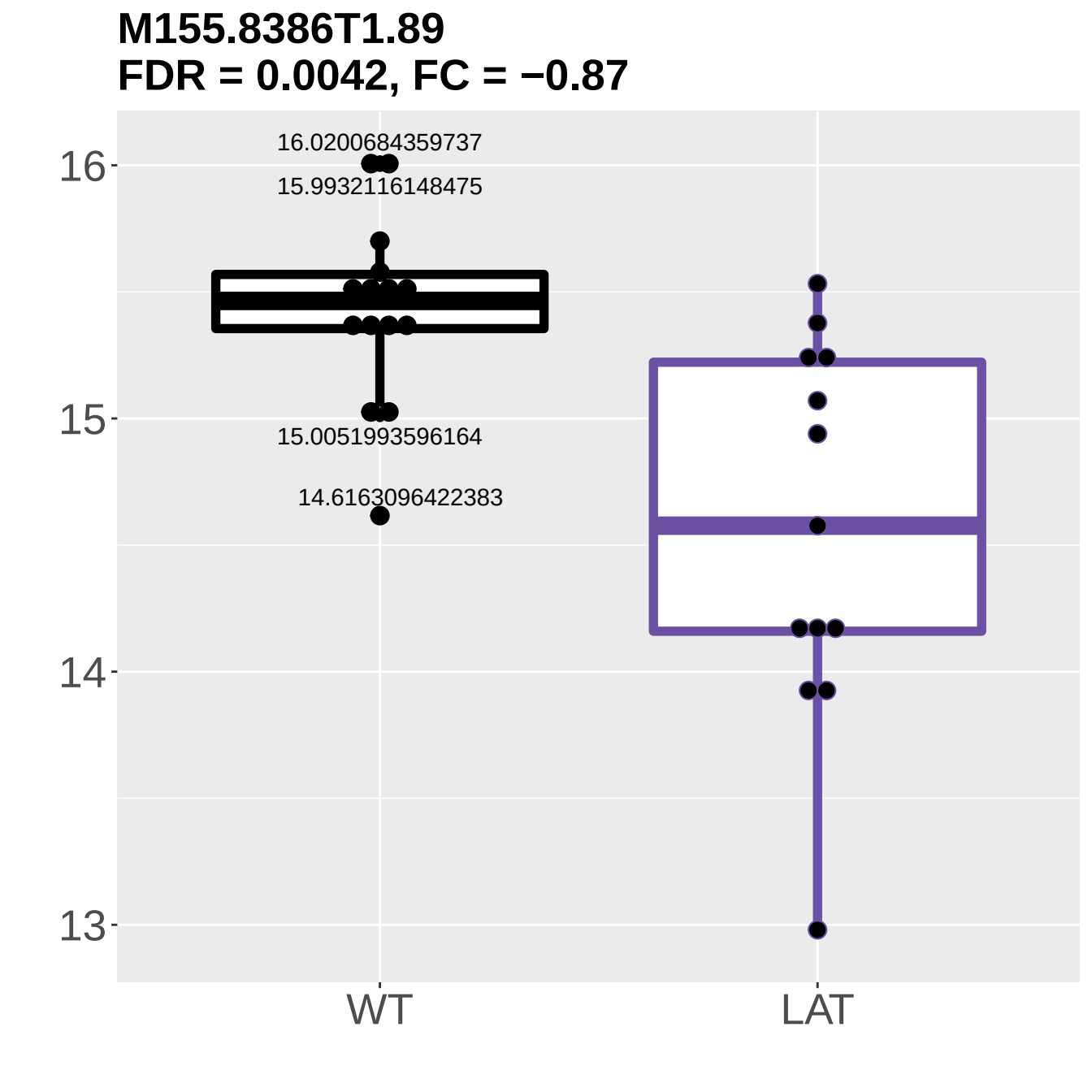
12.3593776702663
12.2970382625226
8.80820334889836
14
12
10
WT
LAT


M155.8386T1.89
FDR = 0.0042, FC = −0.87
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15.9932116148475
15.0051993596164
14.6163096422383
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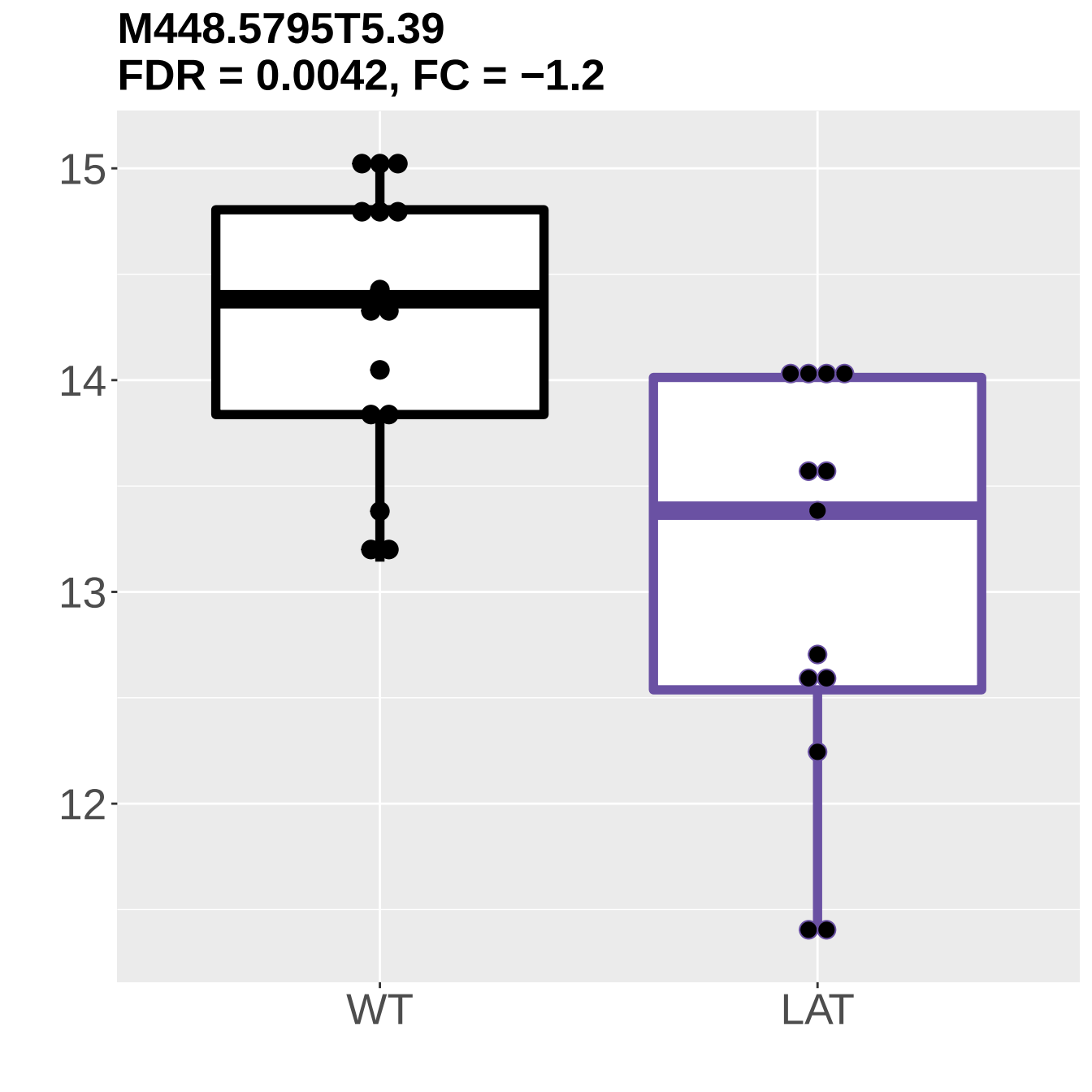
15
14
13
WT
LAT


M448.5795T5.39
FDR = 0.0042, FC = −1.2
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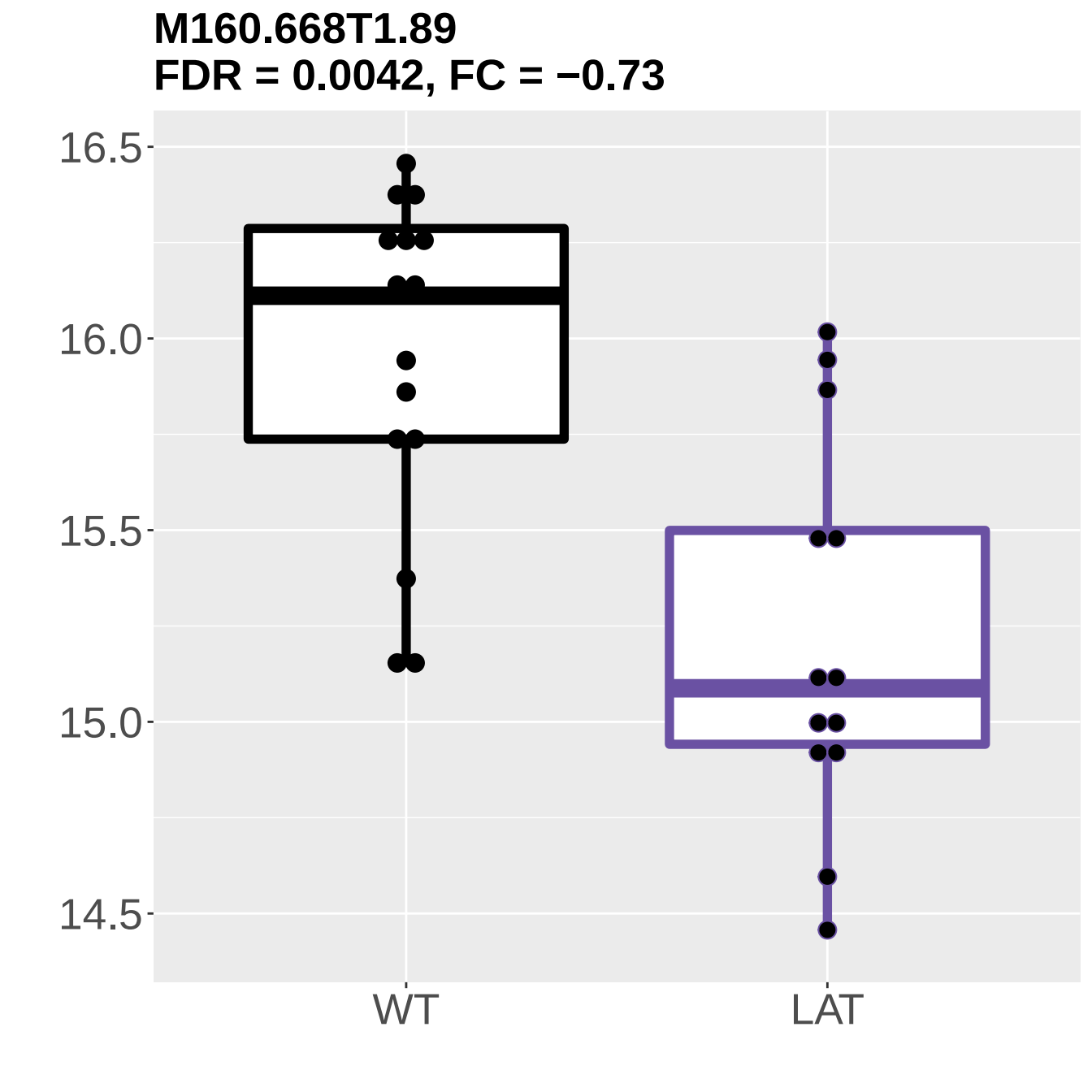
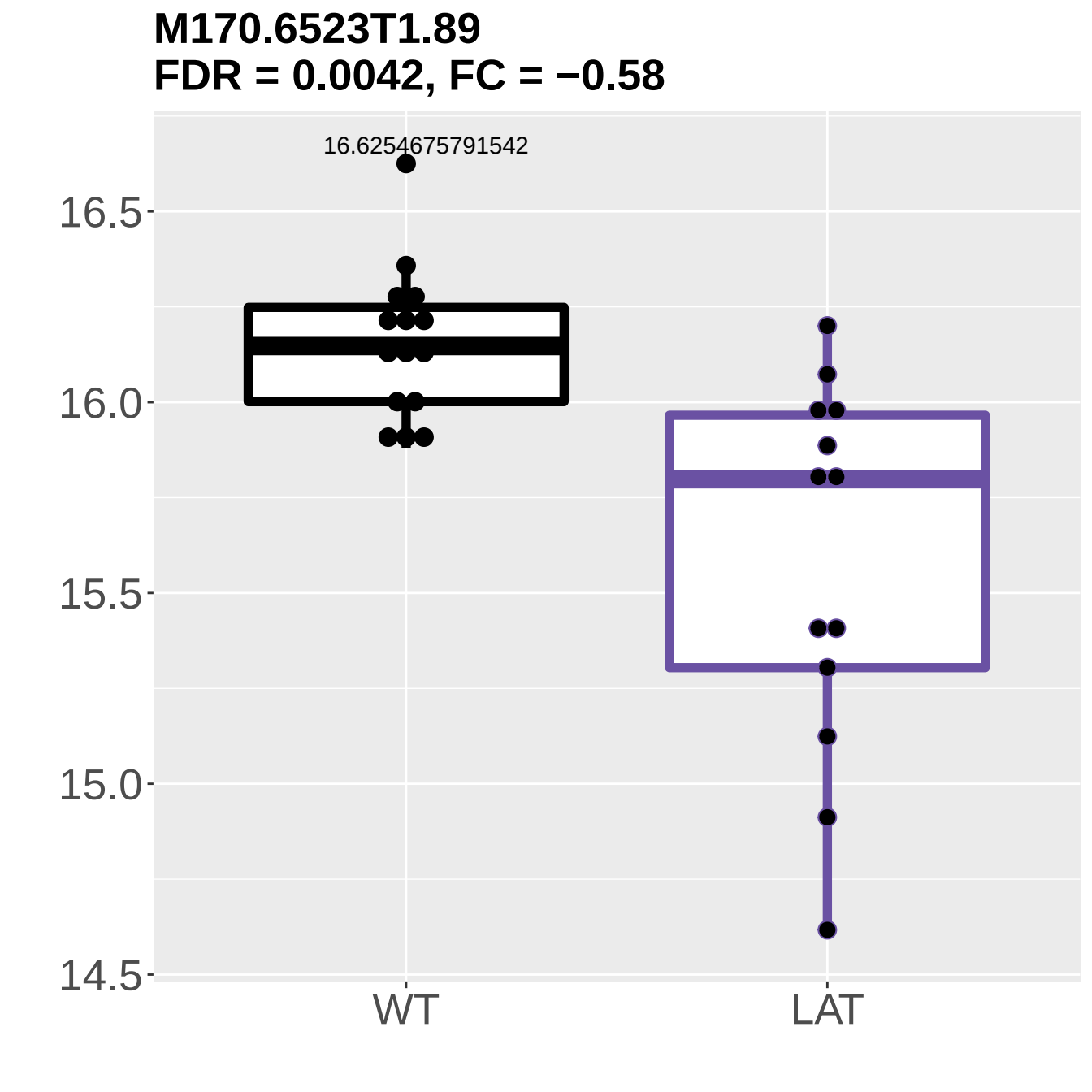
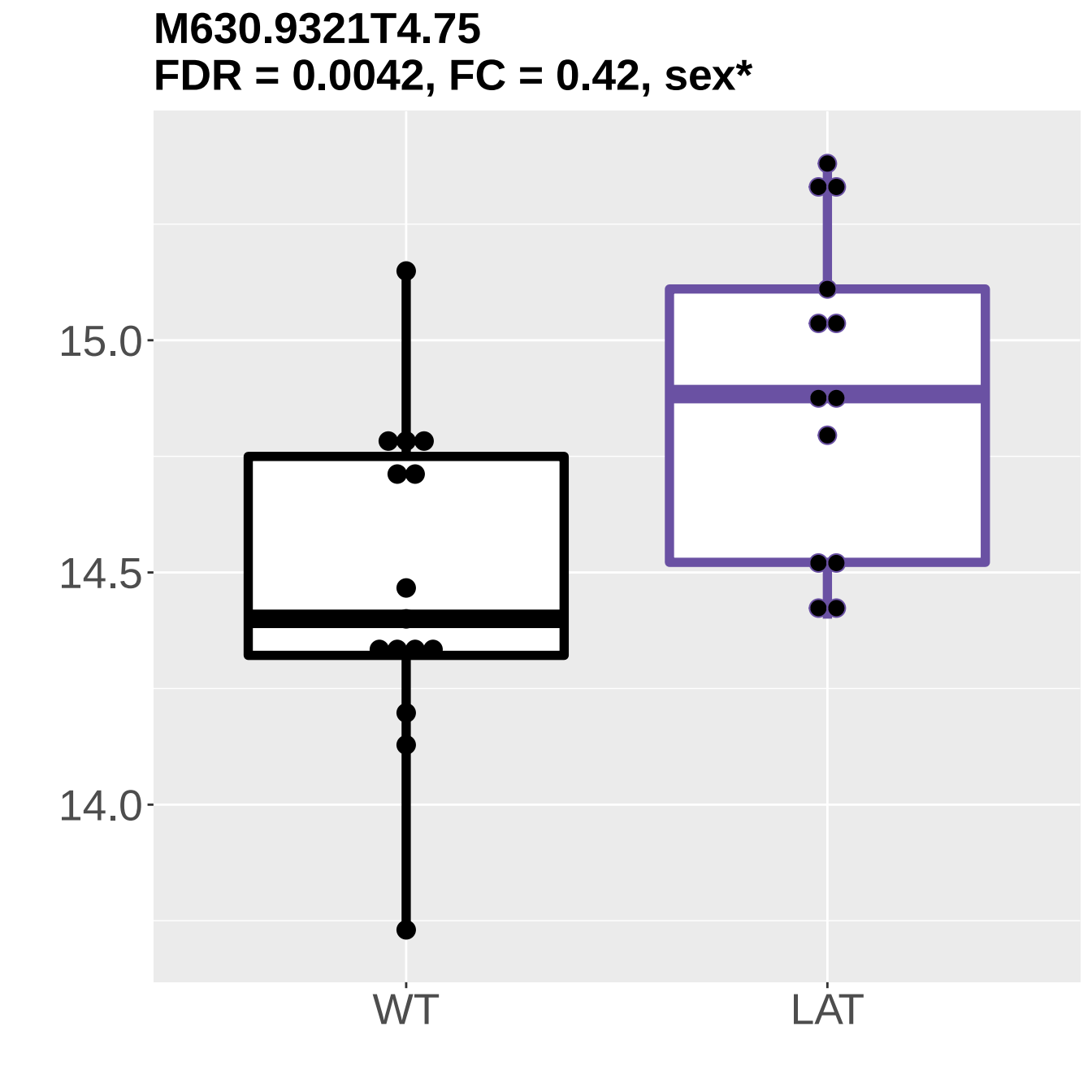
14
13
12
WT
LAT


M160.668T1.89
FDR = 0.0042, FC = −0.73
16.5
16.0
15.5
15.0
14.5
WT
LAT


M170.6523T1.89
FDR = 0.0042, FC = −0.58
16.6254675791542
16.5
16.0
15.5
15.0
14.5
WT
LAT


M630.9321T4.75
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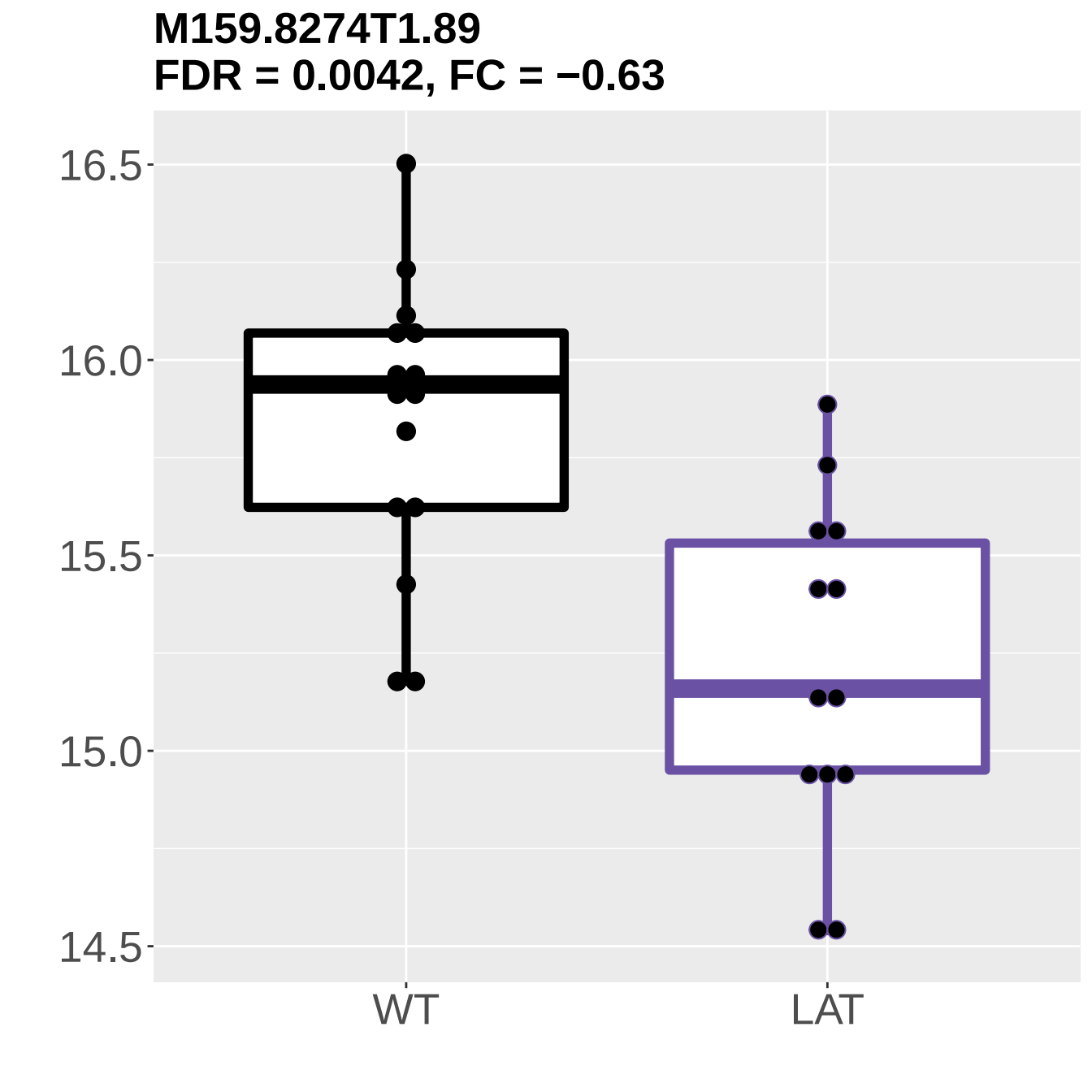
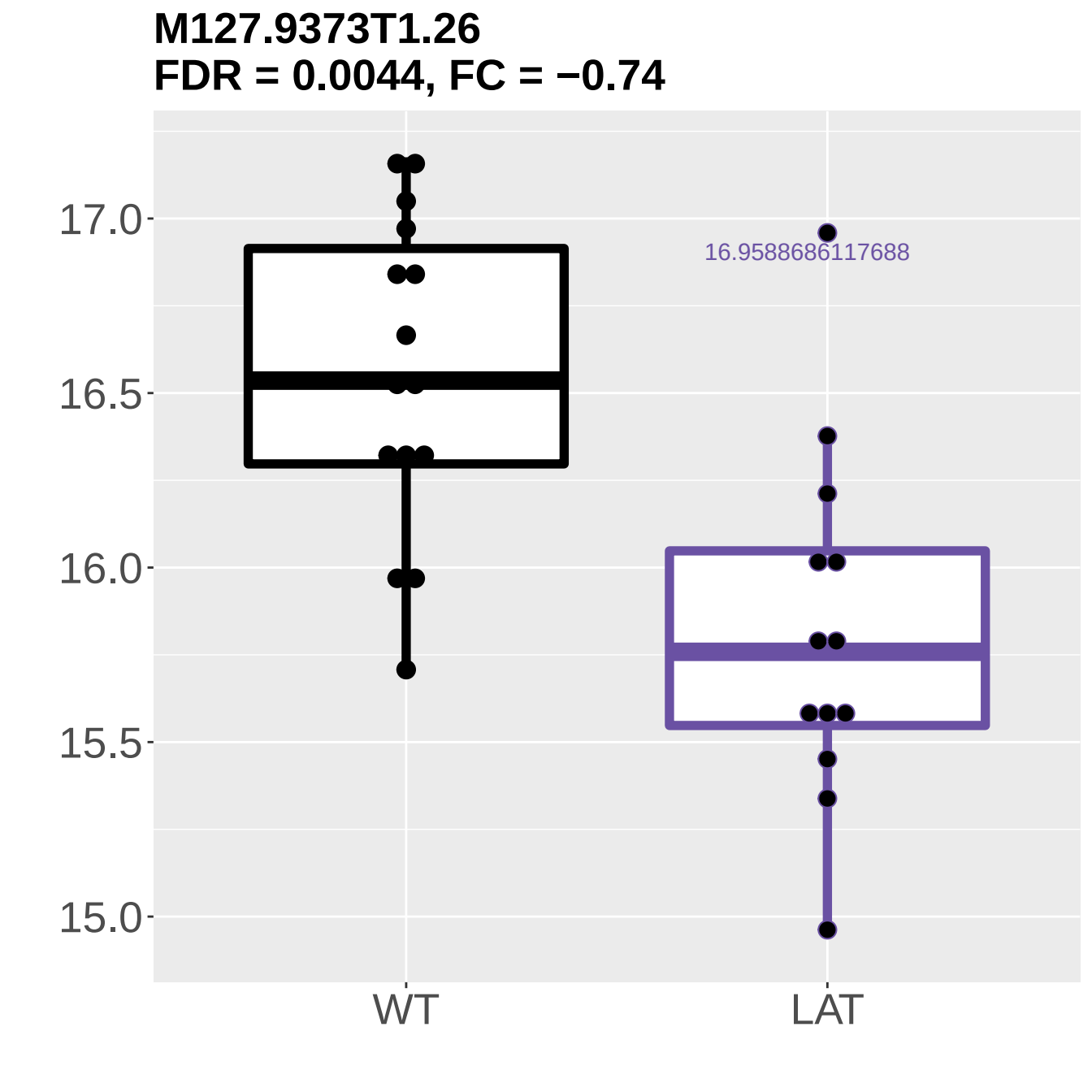
15.0
14.5
14.0
WT
LAT


M159.8274T1.89
FDR = 0.0042, FC = −0.63
16.5
16.0
15.5
15.0
14.5
WT
LAT


M127.9373T1.26
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16.0
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15.0
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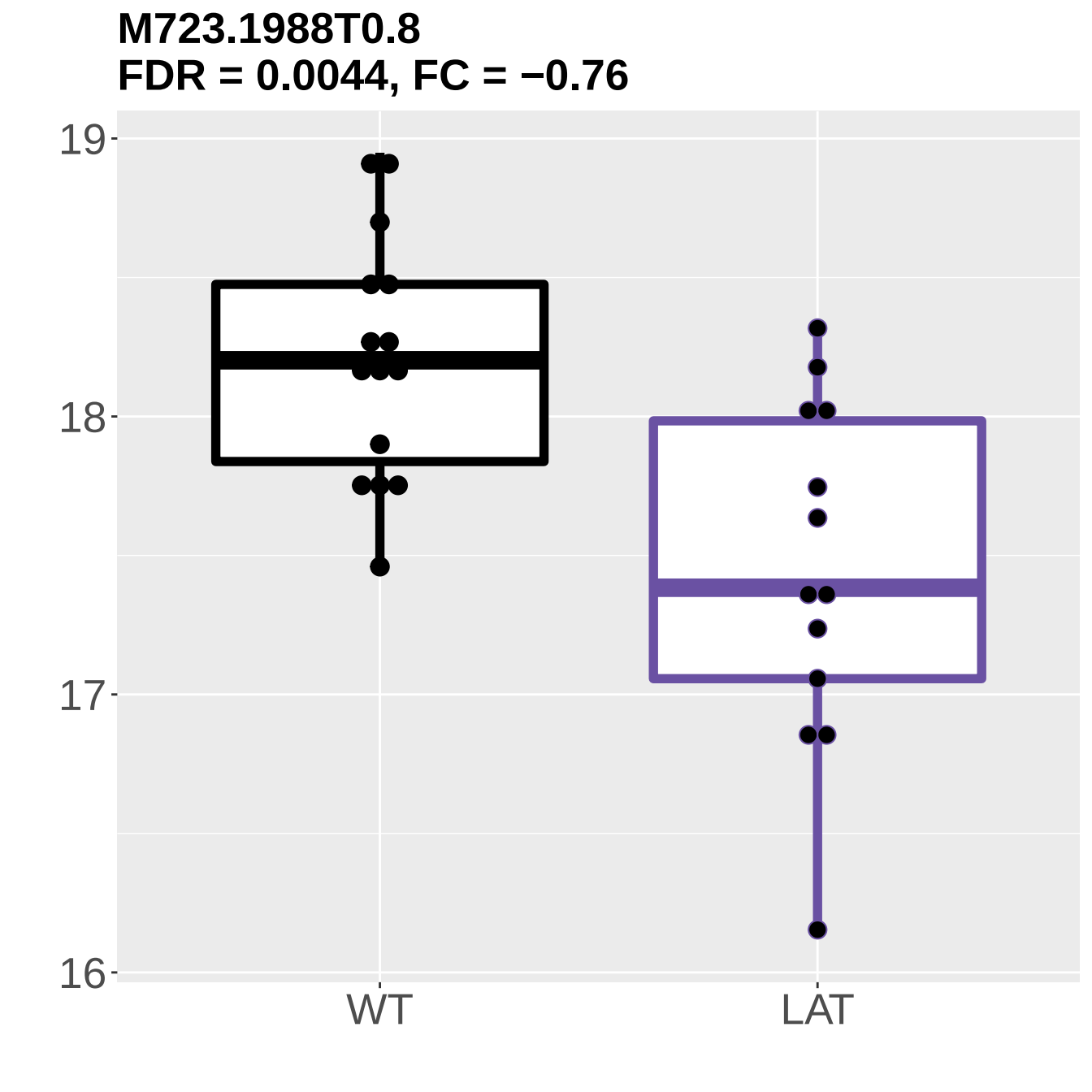
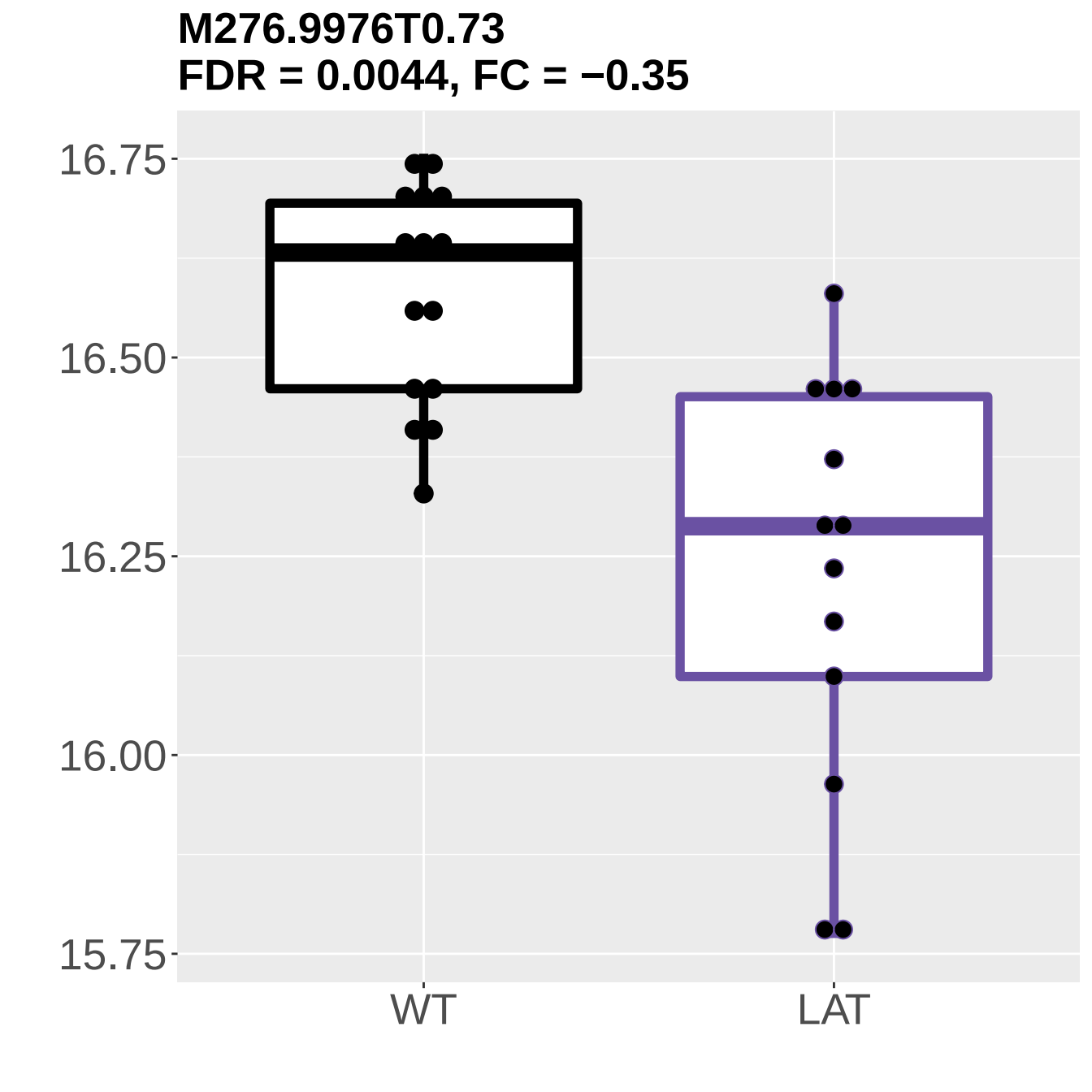
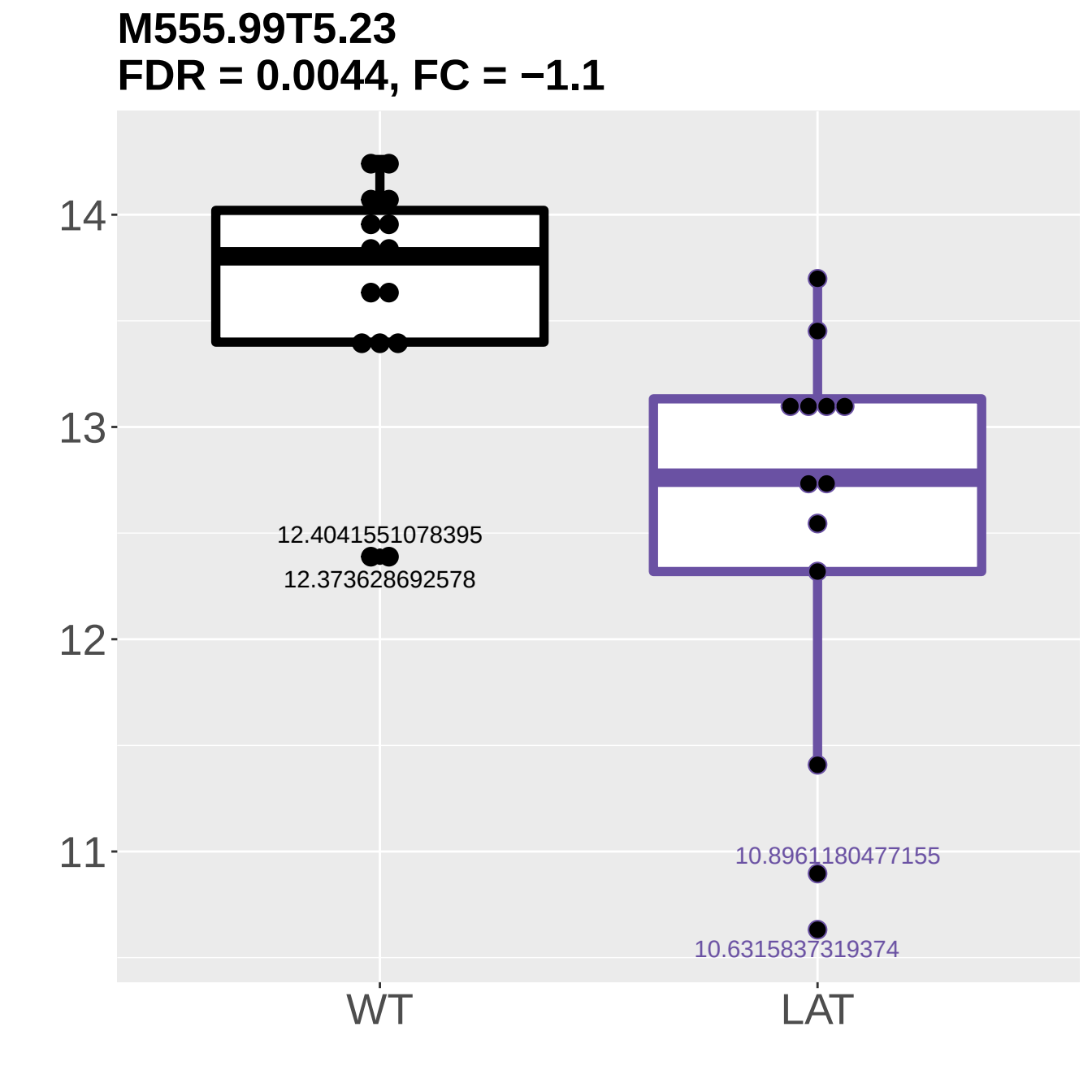
WT
LAT


M723.1988T0.8
FDR = 0.0044, FC = −0.76
19
18
17
16
WT
LAT


M276.9976T0.73
FDR = 0.0044, FC = −0.35
16.75
16.50
16.25
16.00
15.75
WT
LAT


M555.99T5.23
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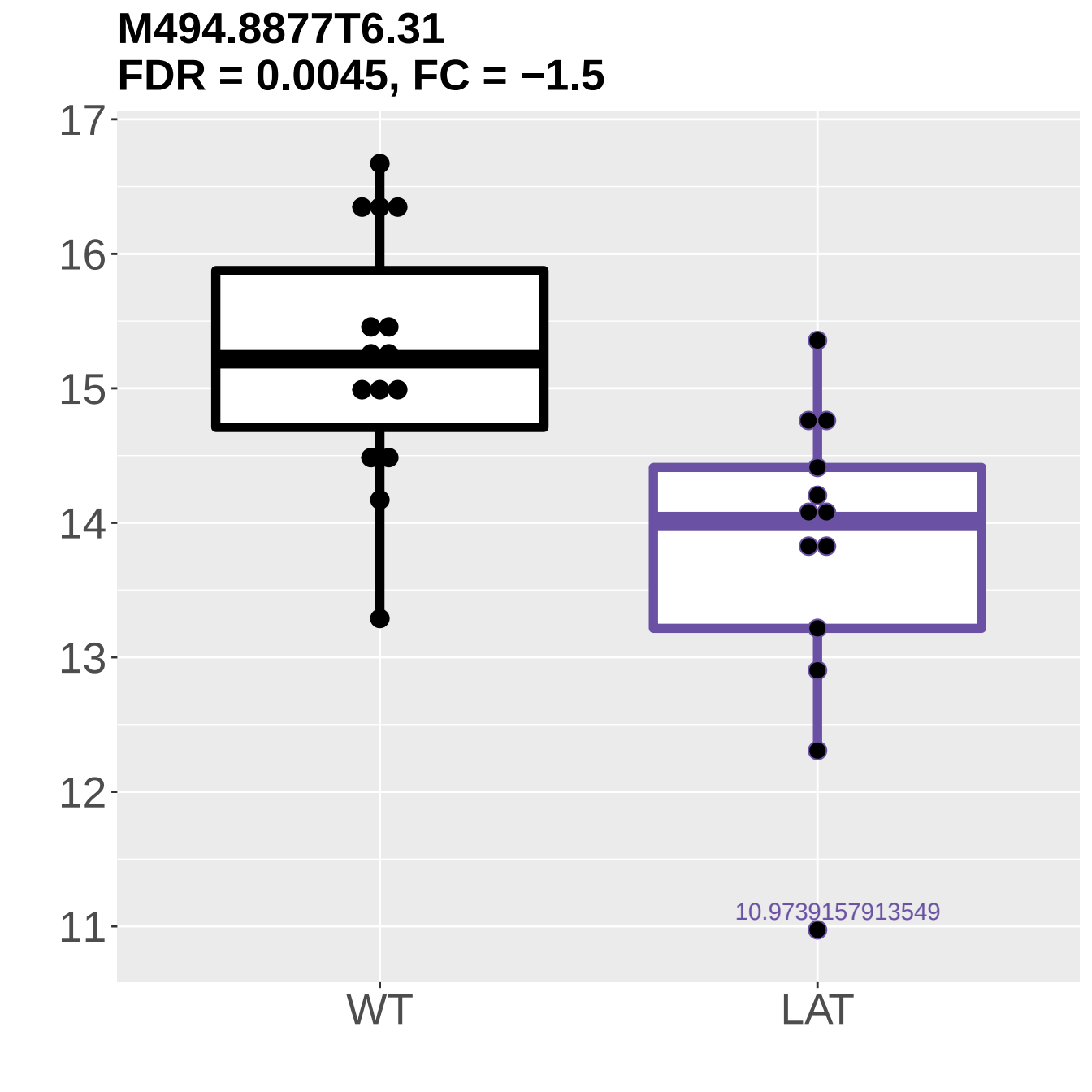
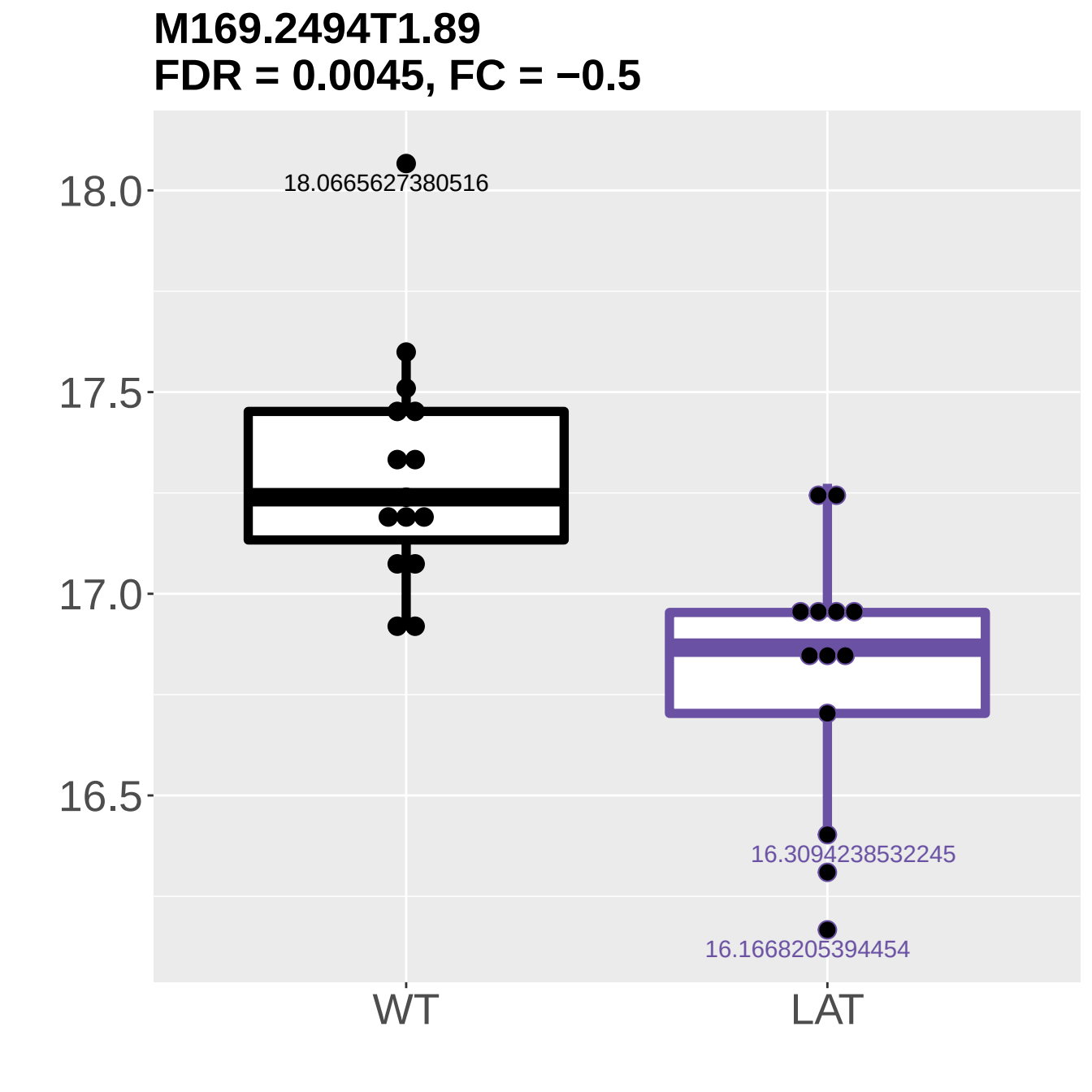
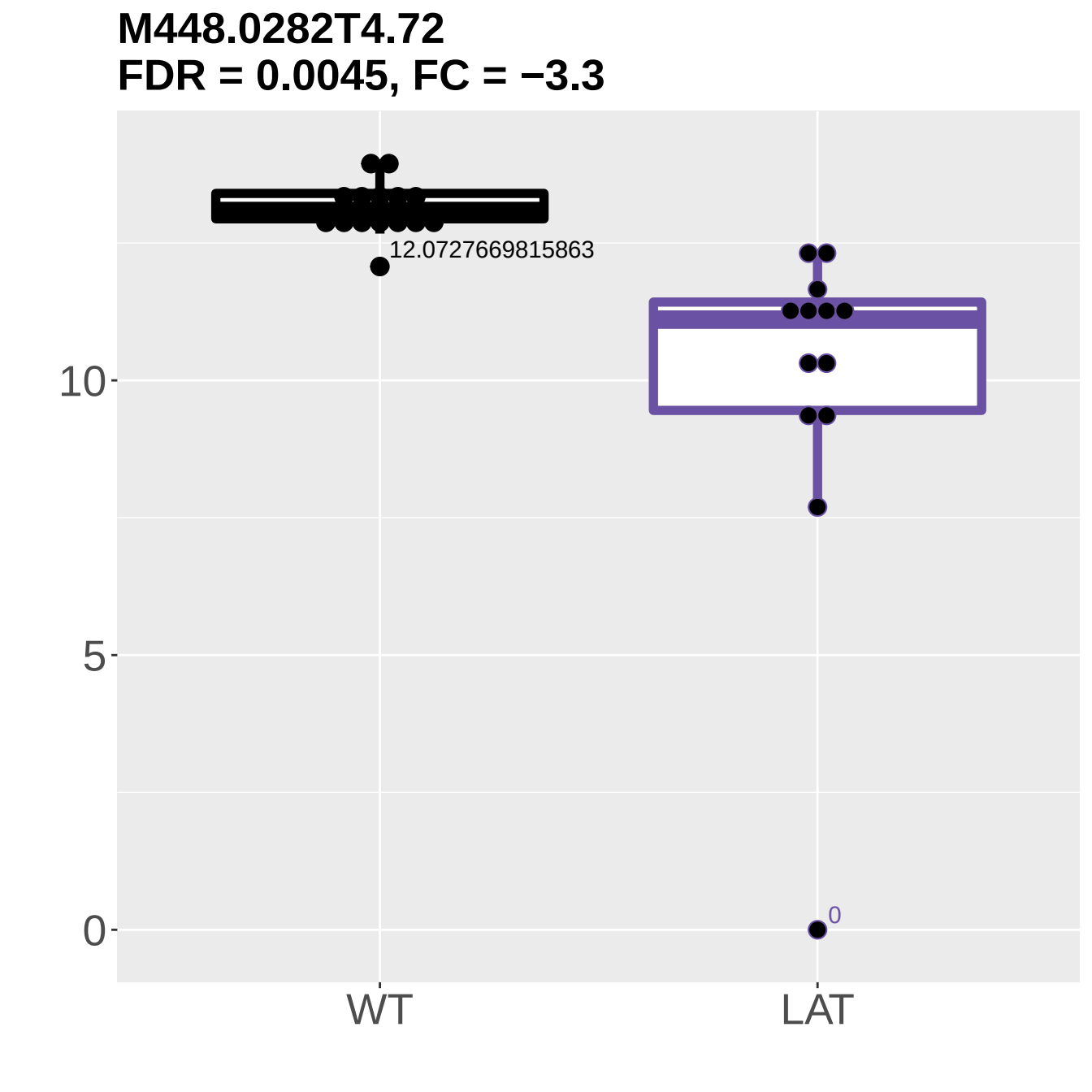
14
13
12
11
12.4041551078395
12.373628692578
10.8961180477155
10.6315837319374
WT
LAT


M494.8877T6.31
FDR = 0.0045, FC = −1.5
17
16
15
14
13
12
11
10.9739157913549
WT
LAT


M169.2494T1.89
FDR = 0.0045, FC = −0.5
18.0
17.5
17.0
16.5
18.0665627380516
16.3094238532245
16.1668205394454
WT
LAT


M448.0282T4.72
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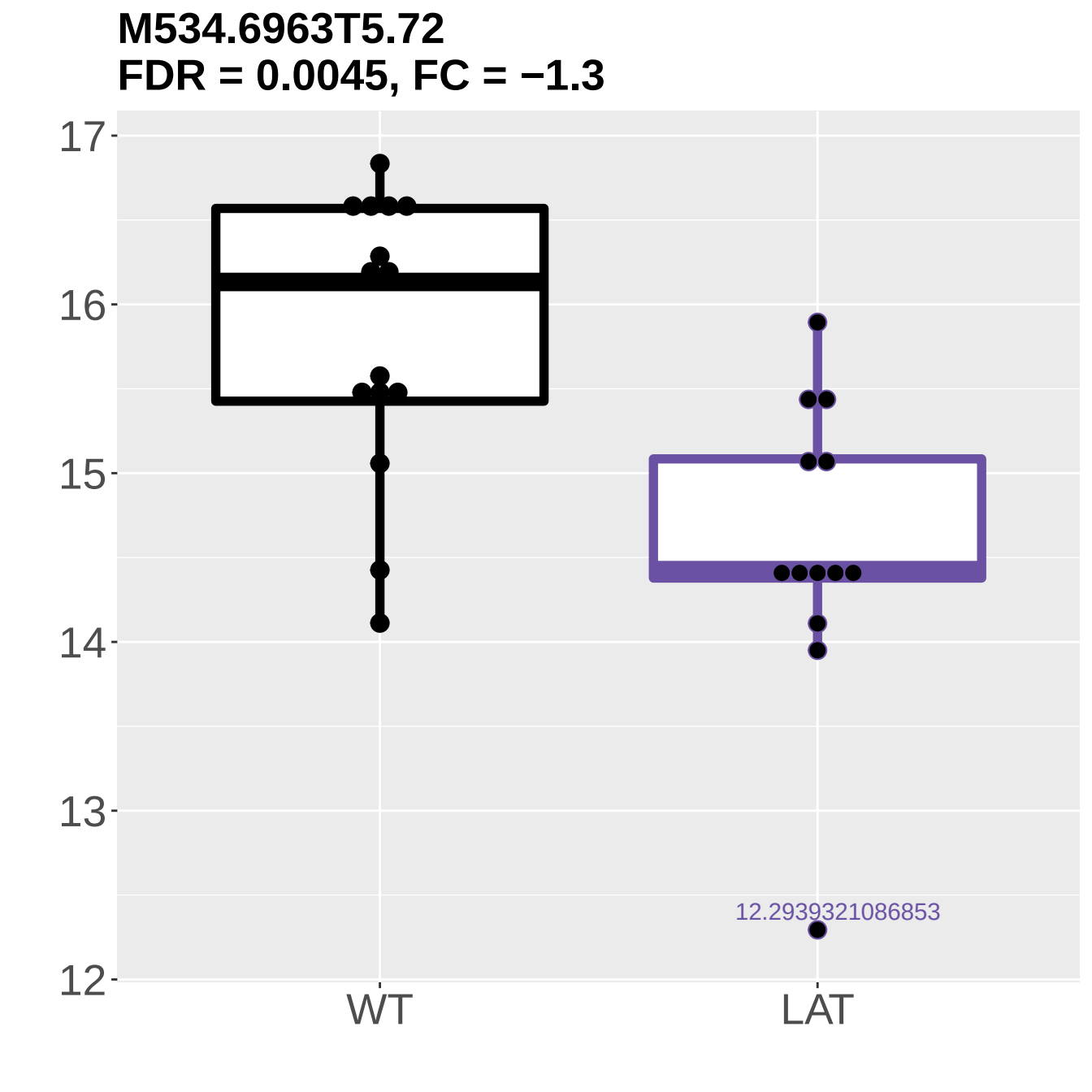
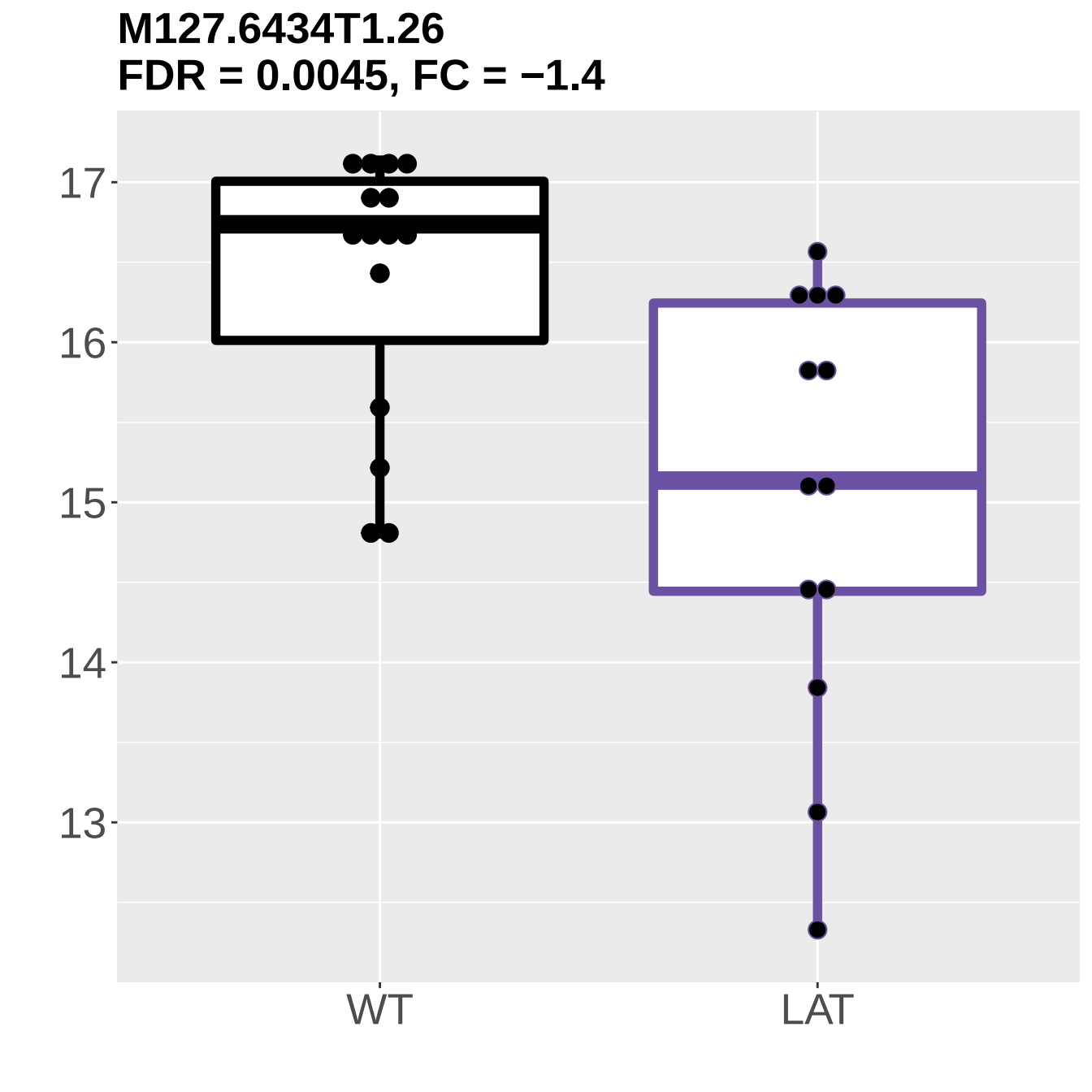
10
5
0
0
WT
LAT


M534.6963T5.72
FDR = 0.0045, FC = −1.3
17
16
15
14
13
12
12.2939321086853
WT
LAT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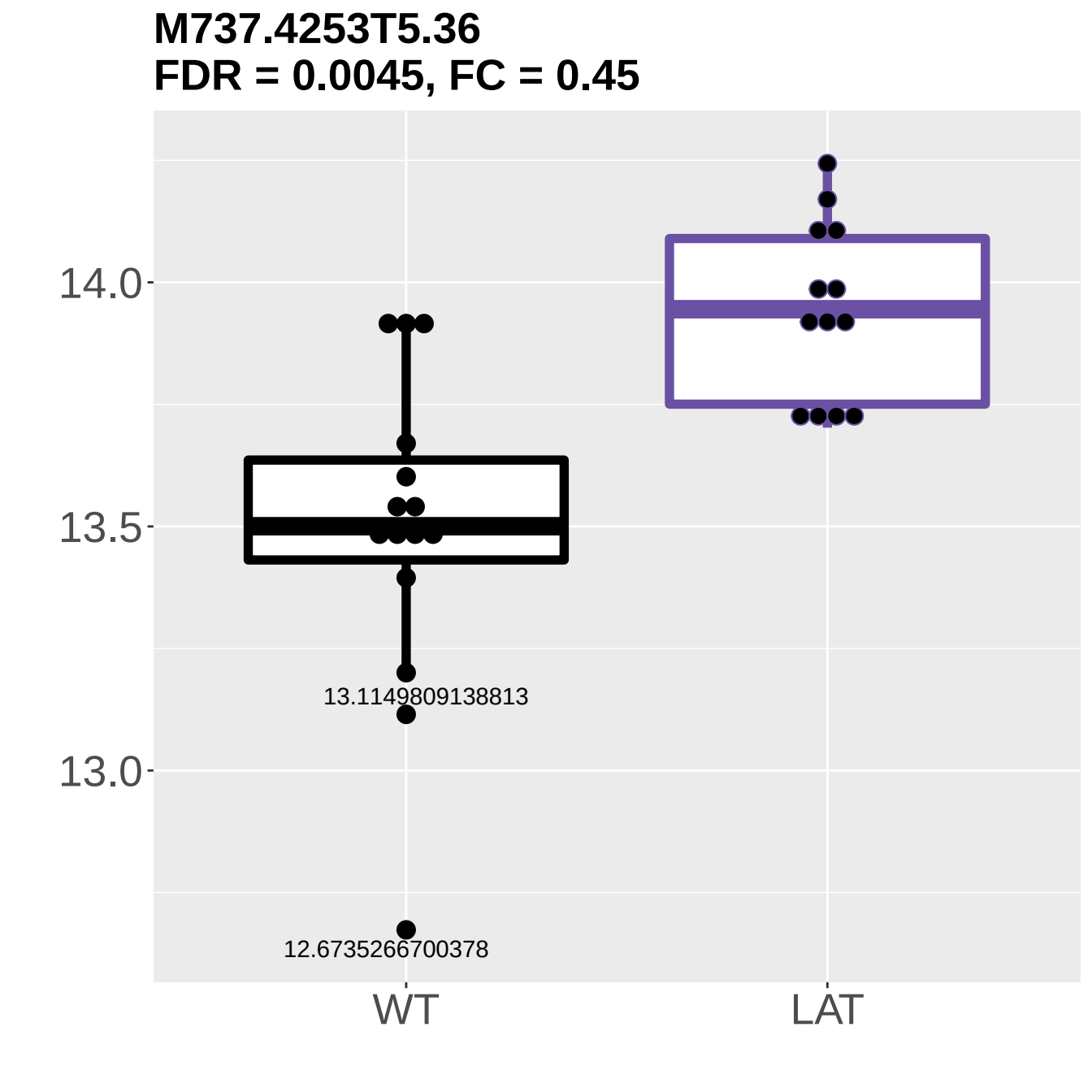
FDR = 0.0045, FC = −1.4
17
16
15
14
13
WT
LAT


M737.4253T5.36
FDR = 0.0045, FC = 0.45
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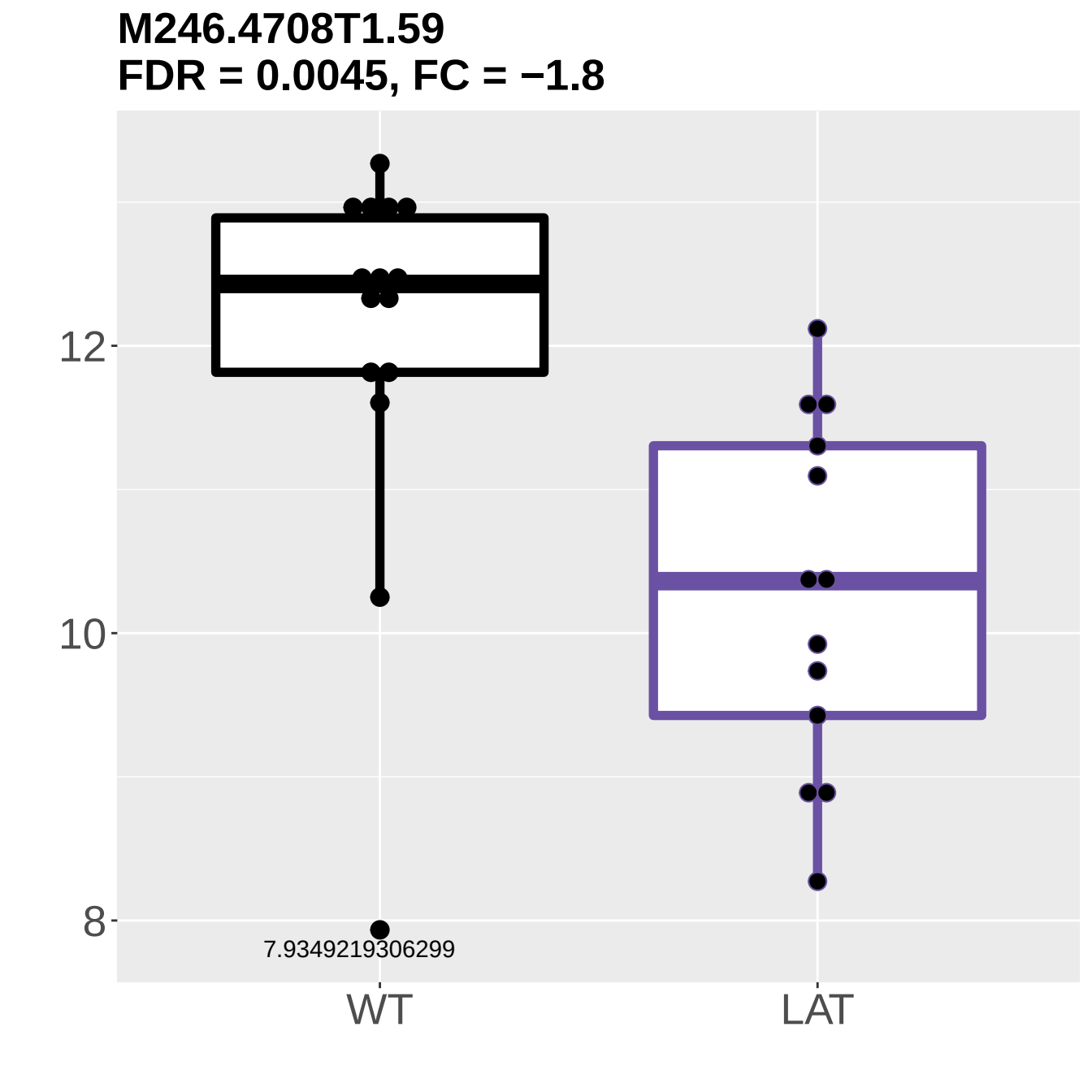
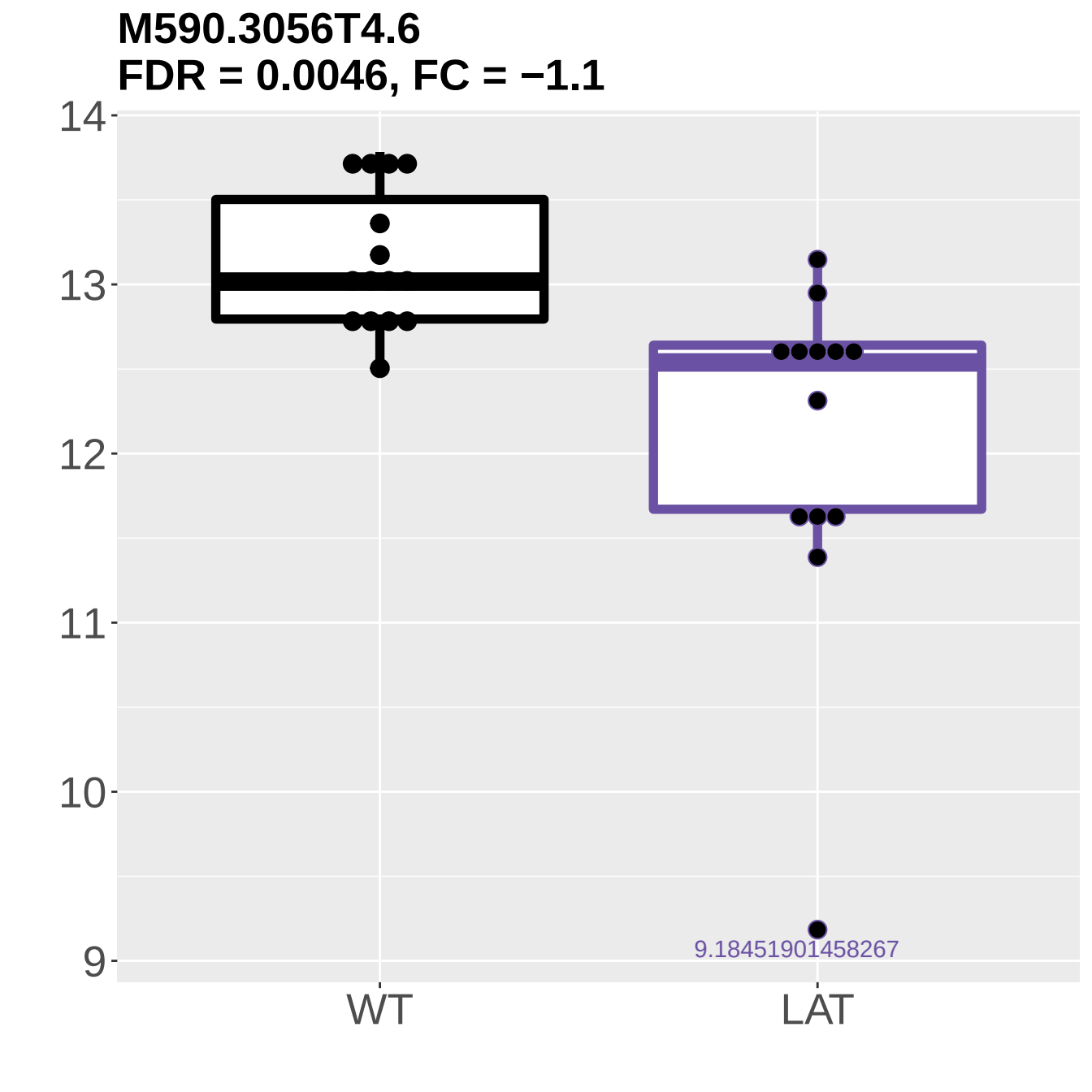
13.5
13.0
13.1149809138813
12.6735266700378
WT
LAT


M246.4708T1.59
FDR = 0.0045, FC = −1.8
12
10
8
7.9349219306299
WT
LAT


M590.3056T4.6
FDR = 0.0046, FC = −1.1
14
13
12
11
10
9
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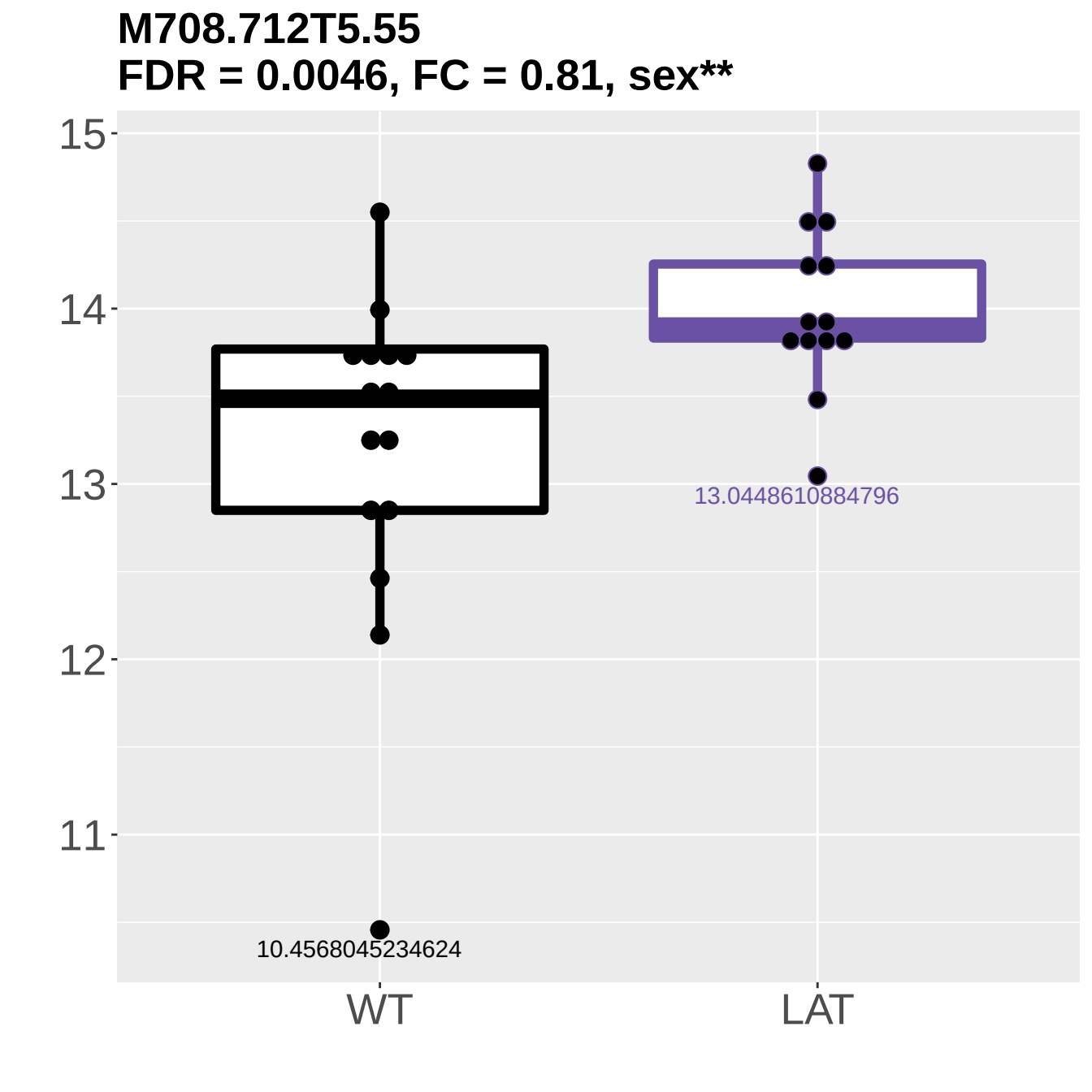
WT
LAT


M708.712T5.55
FDR = 0.0046, FC = 0.81, sex**
15
14
13
12
11
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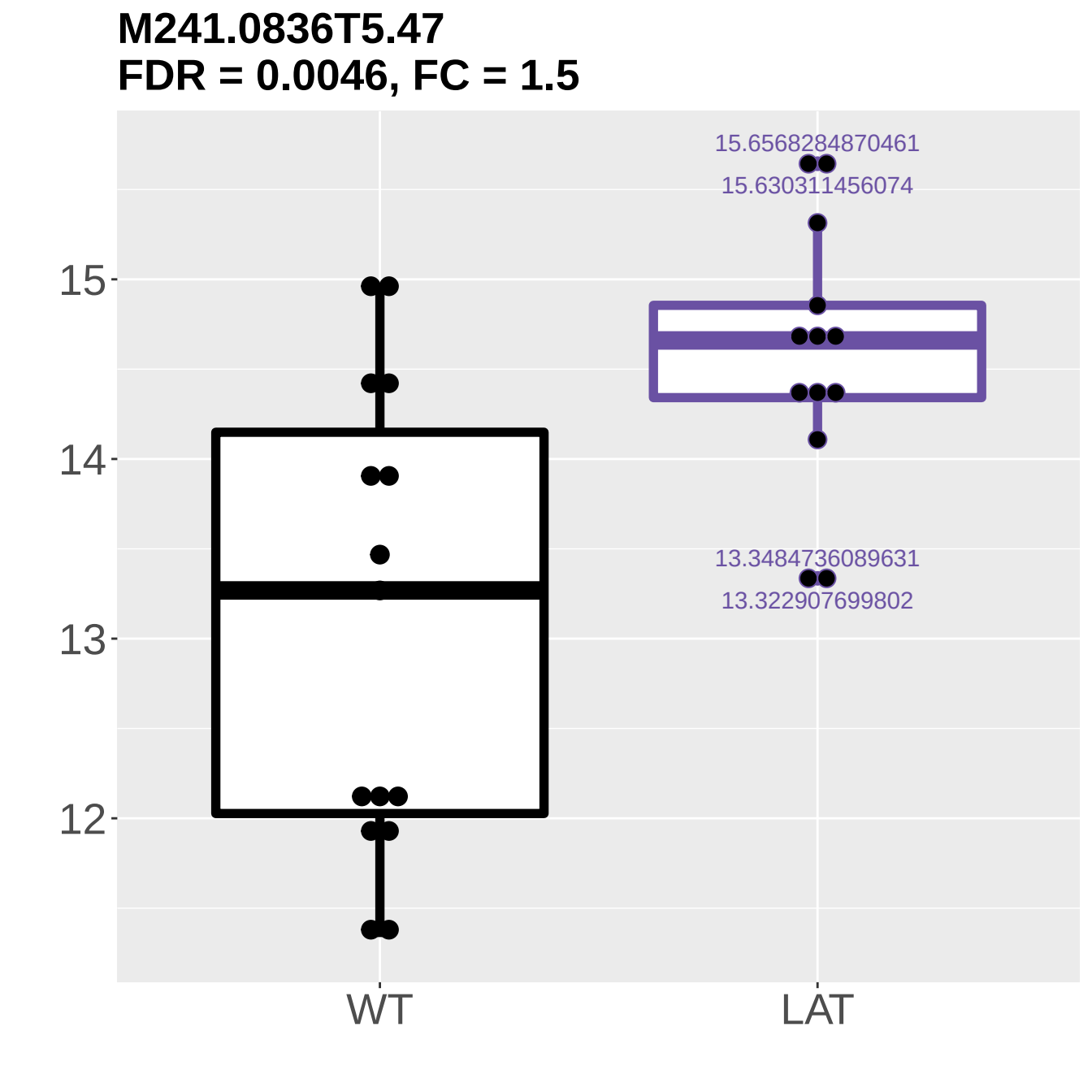
WT
LAT


M241.0836T5.47
FDR = 0.0046, FC = 1.5
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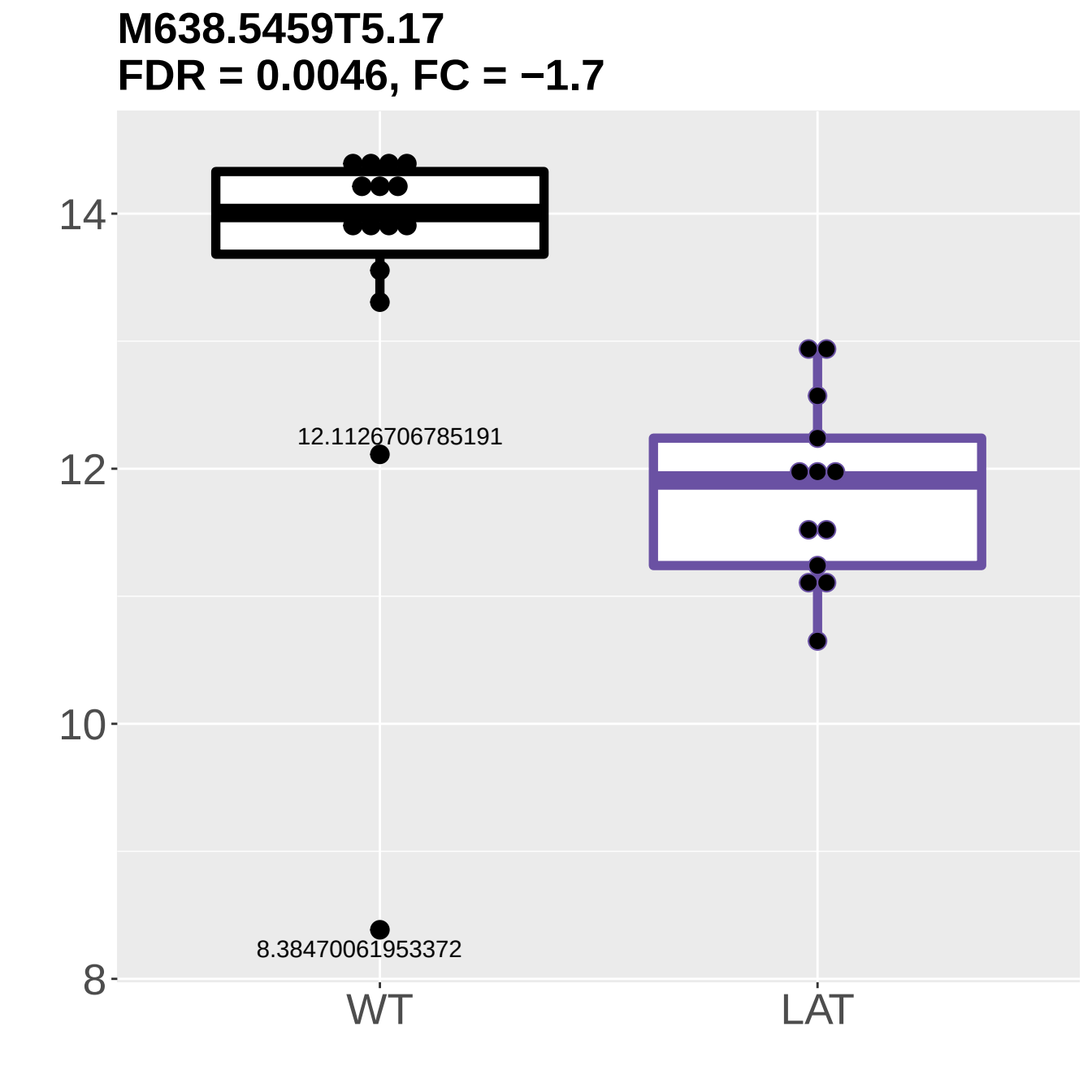
15.630311456074
13.3484736089631
13.322907699802
15
14
13
12
WT
LAT


M638.5459T5.17
FDR = 0.0046, FC = −1.7
14
12
10
8
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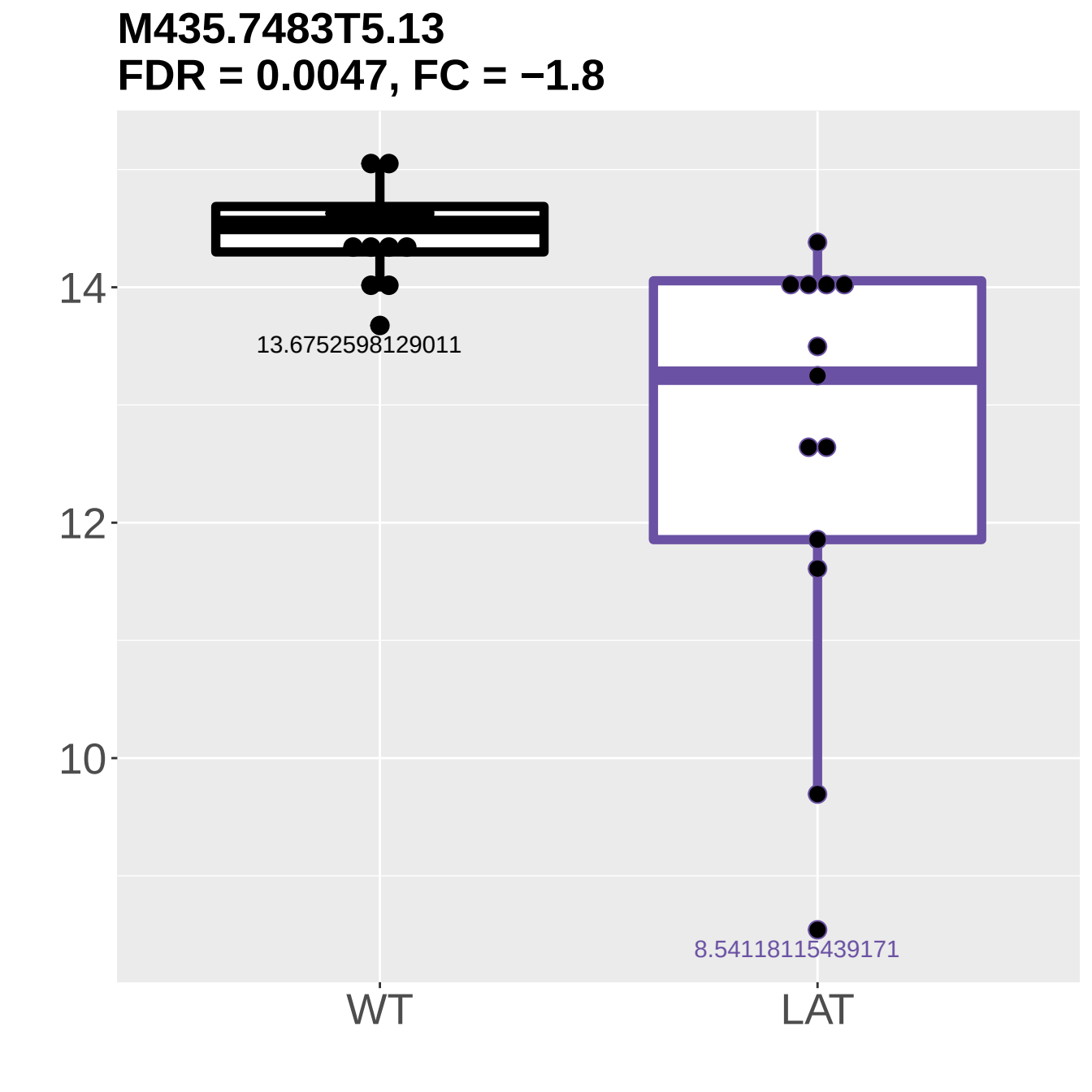
8.38470061953372
WT
LAT


M435.7483T5.13
FDR = 0.0047, FC = −1.8
14
12
10
13.6752598129011
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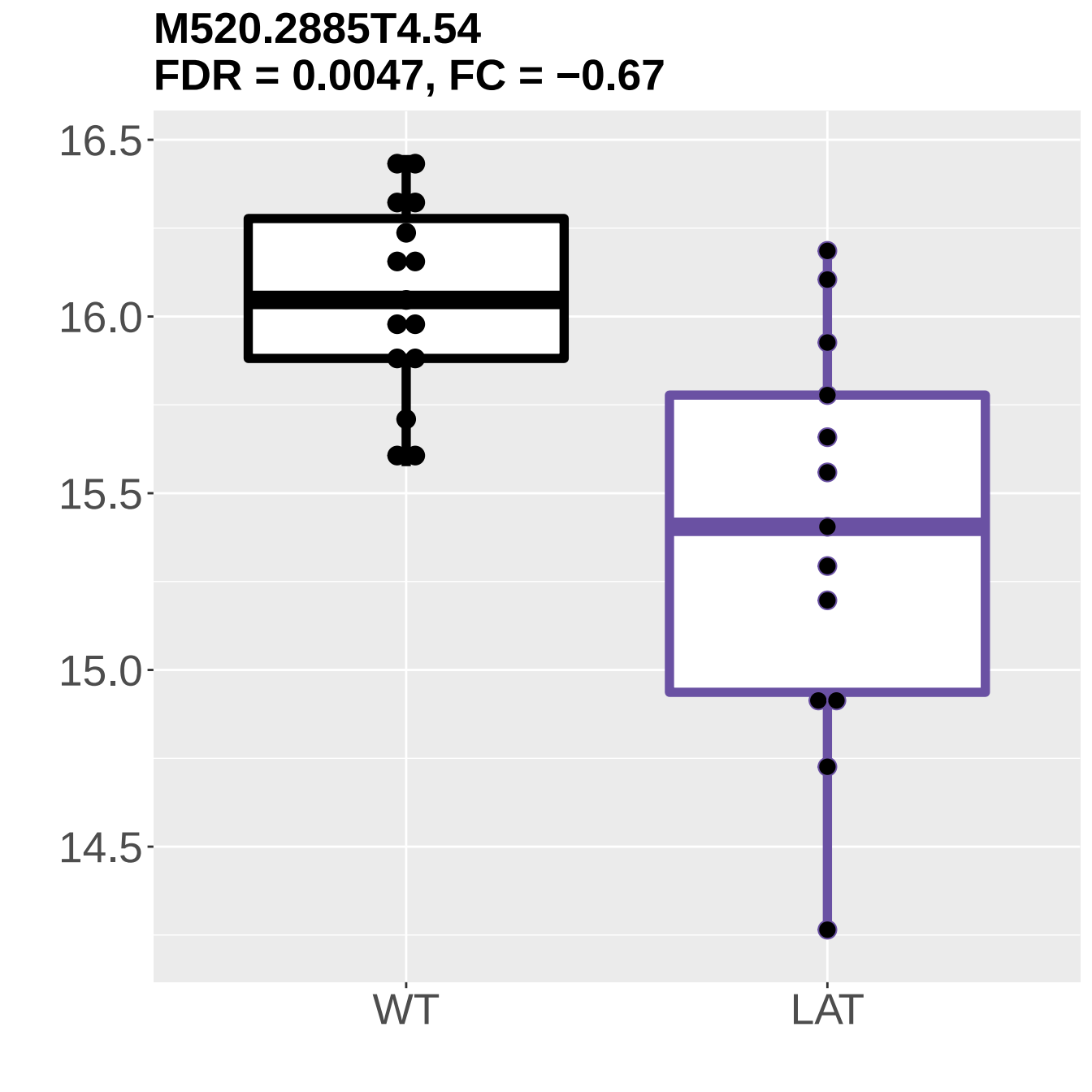
WT
LAT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FDR = 0.0047, FC = −0.67
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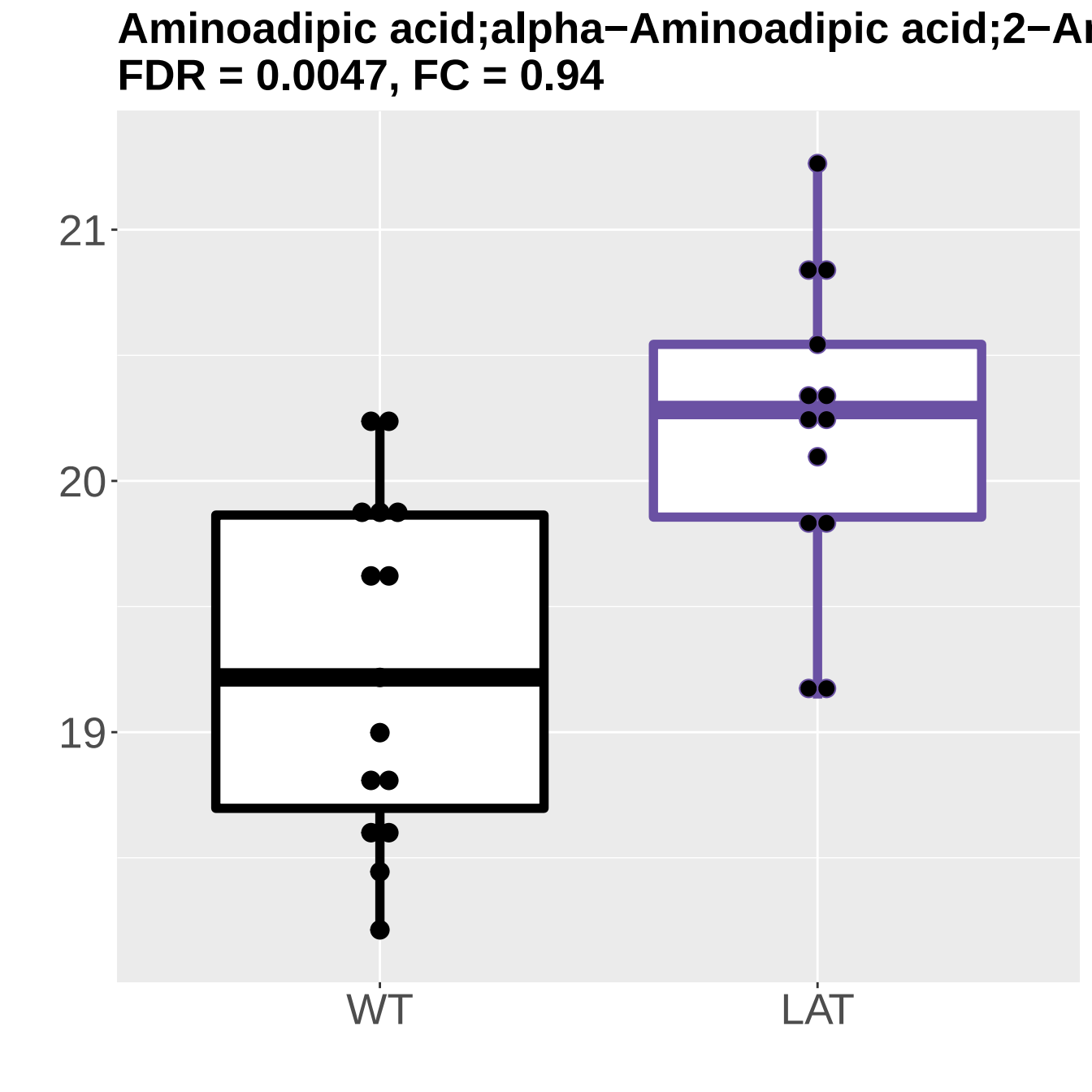
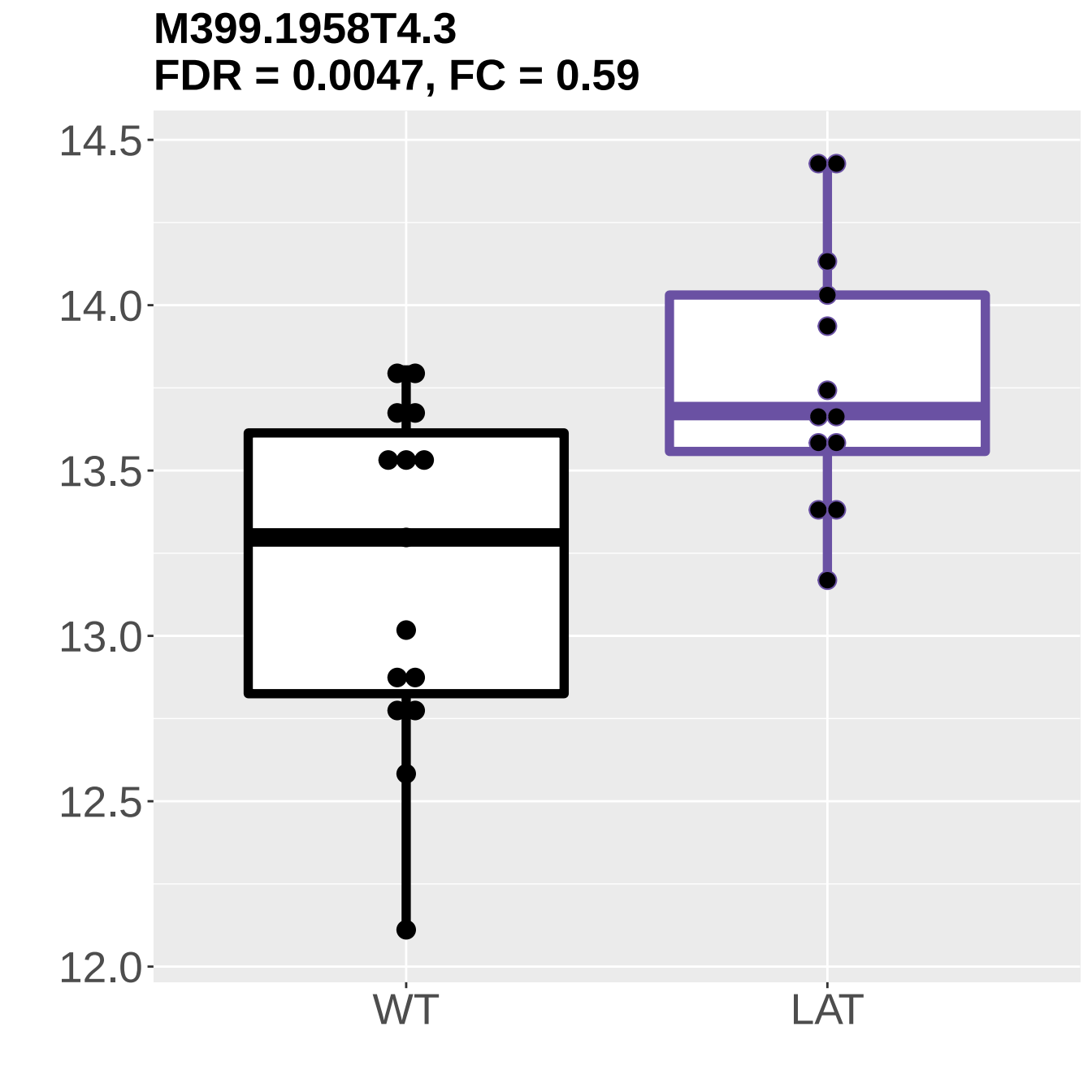
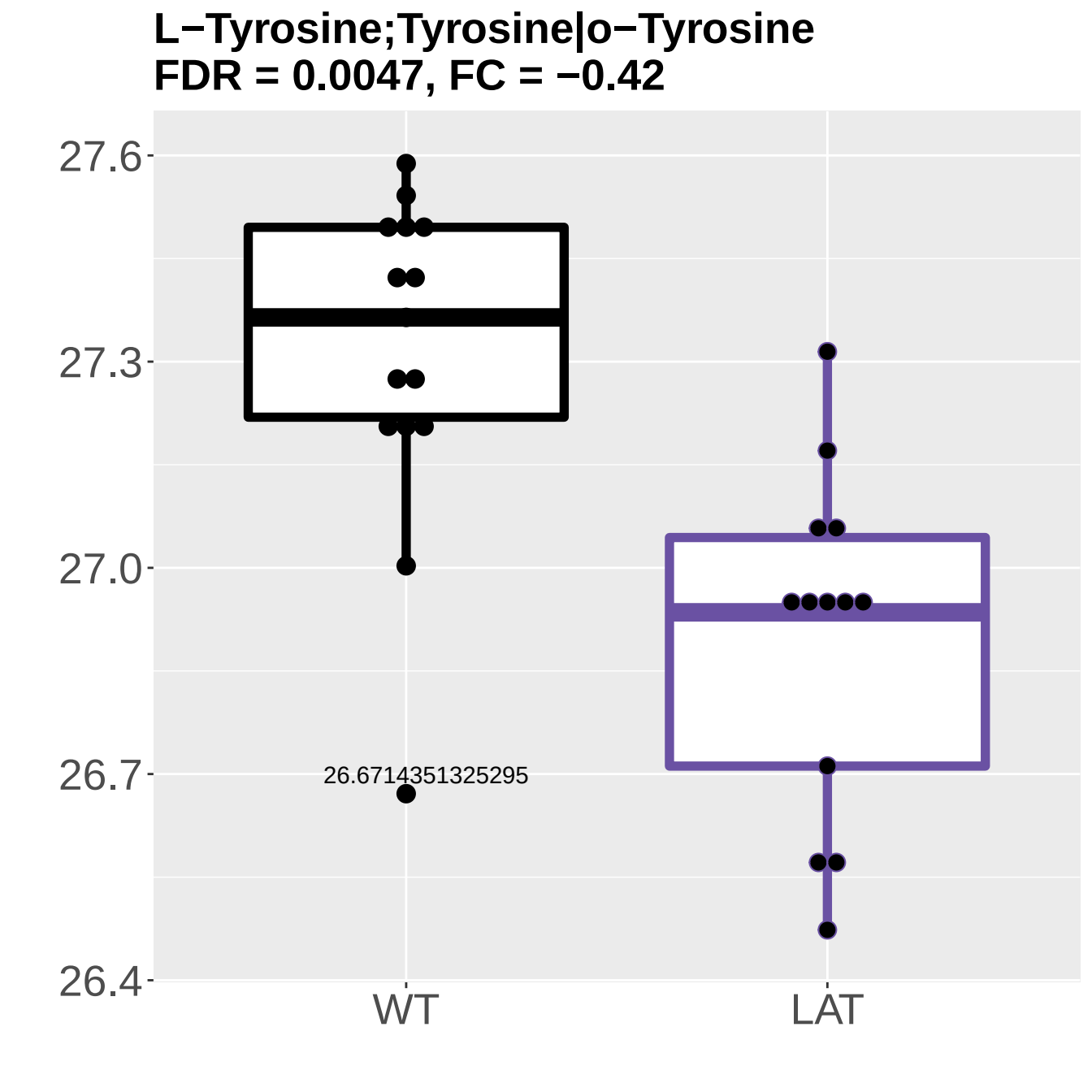
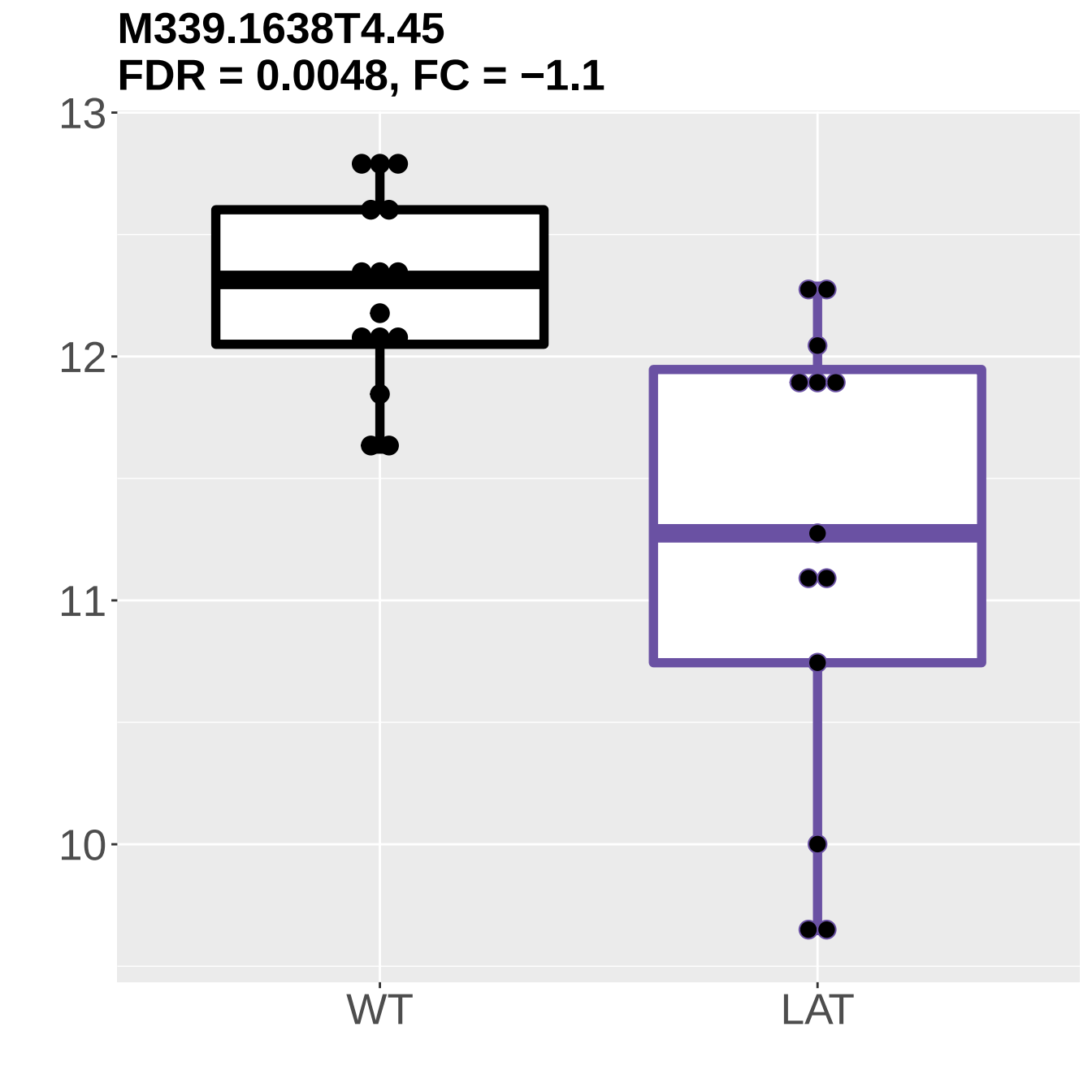
15.5
15.0
14.5
WT
LAT


Aminoadipic acid;alpha−Aminoadipic acid;2−Ar
FDR = 0.0047, FC = 0.94
21
20
19
WT
LAT


M399.1958T4.3
FDR = 0.0047, FC = 0.59
14.5
14.0
13.5
13.0
12.5
12.0
WT
LAT


L−Tyrosine;Tyrosine|o−Tyrosine
FDR = 0.0047, FC = −0.42
27.6
27.3
27.0
26.7
26.4
26.6714351325295
WT
LAT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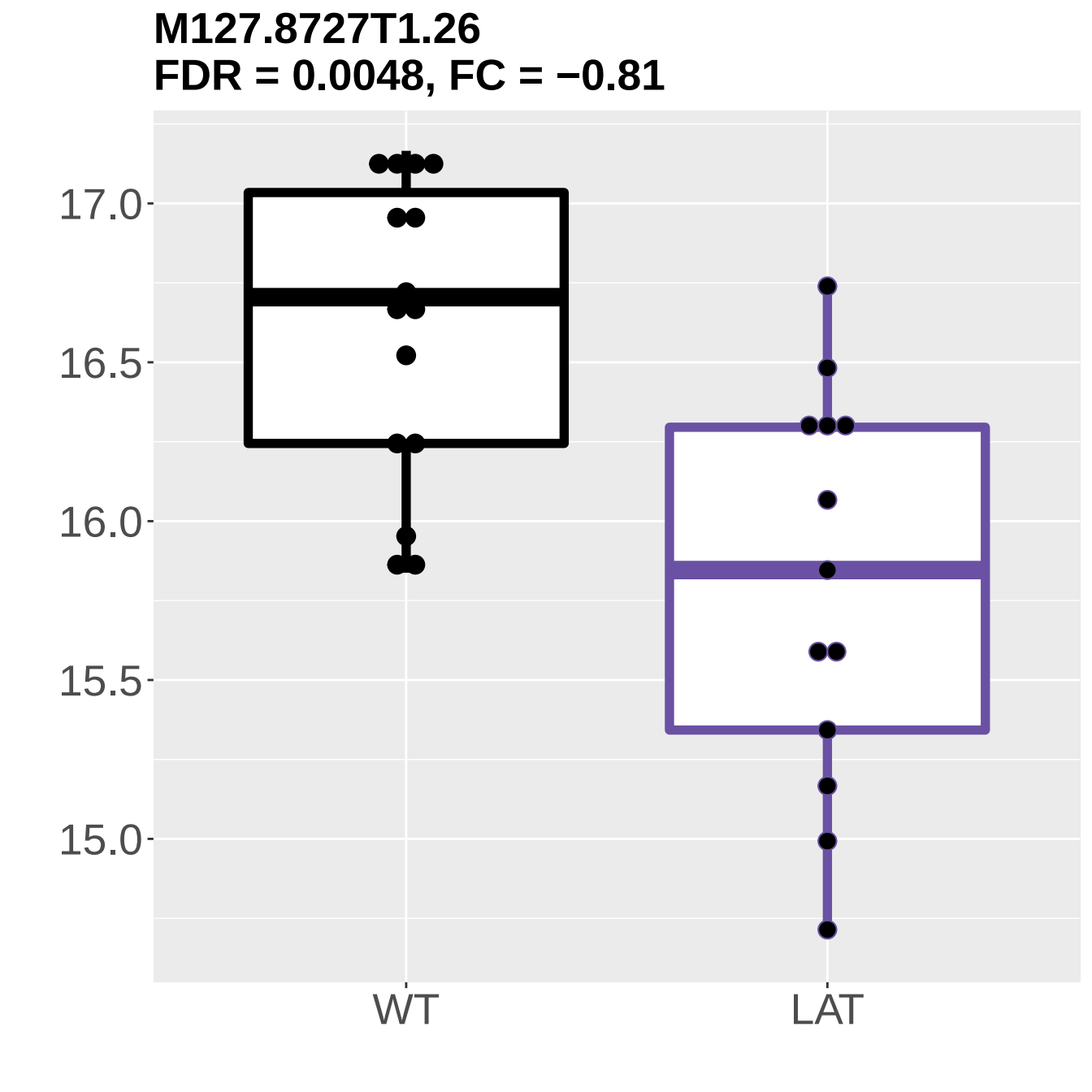
FDR = 0.0048, FC = −1.1
13
12
11
10
WT
LAT


M127.8727T1.26
FDR = 0.0048, FC = −0.81
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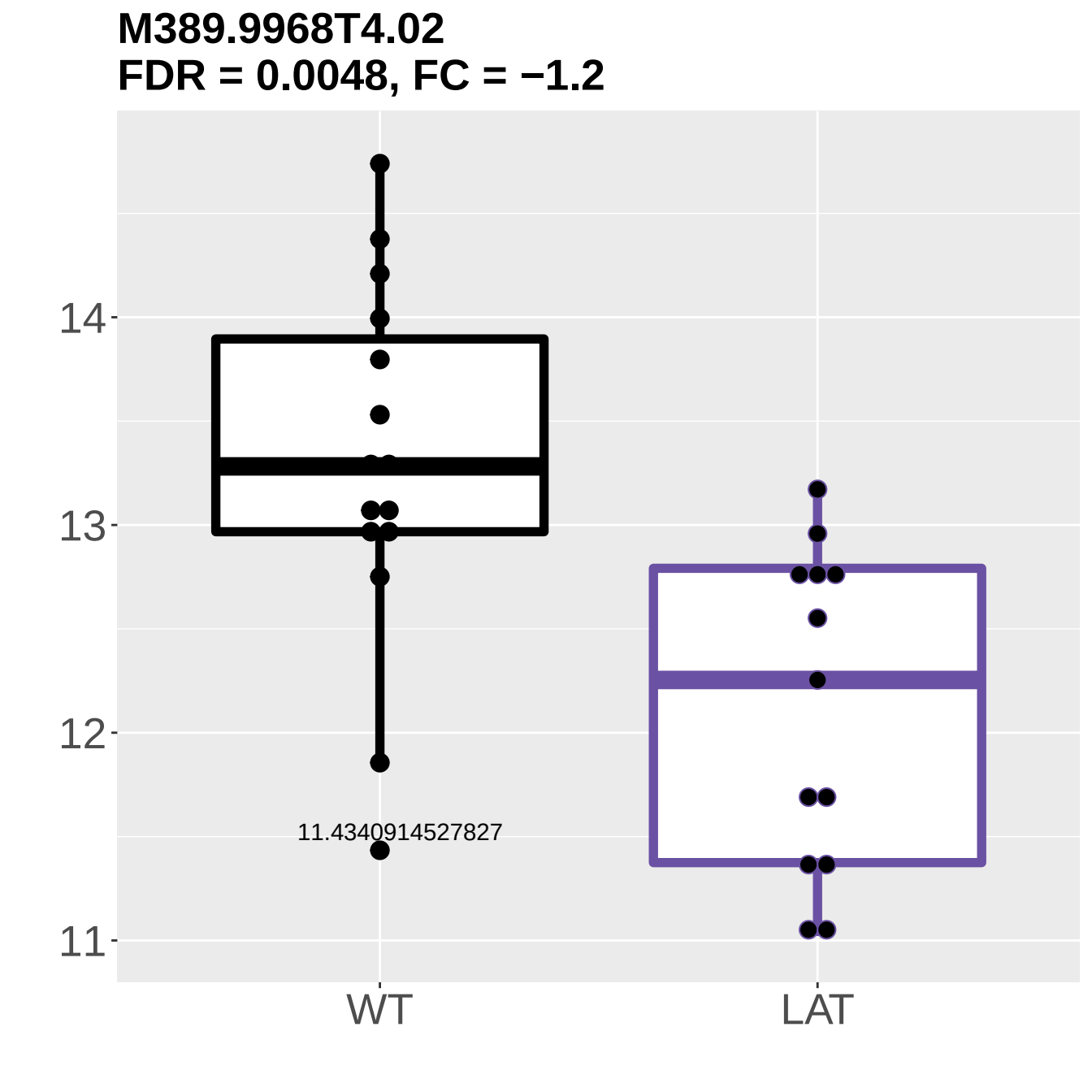
16.0
15.5
15.0
WT
LAT


M389.9968T4.02
FDR = 0.0048, FC = −1.2
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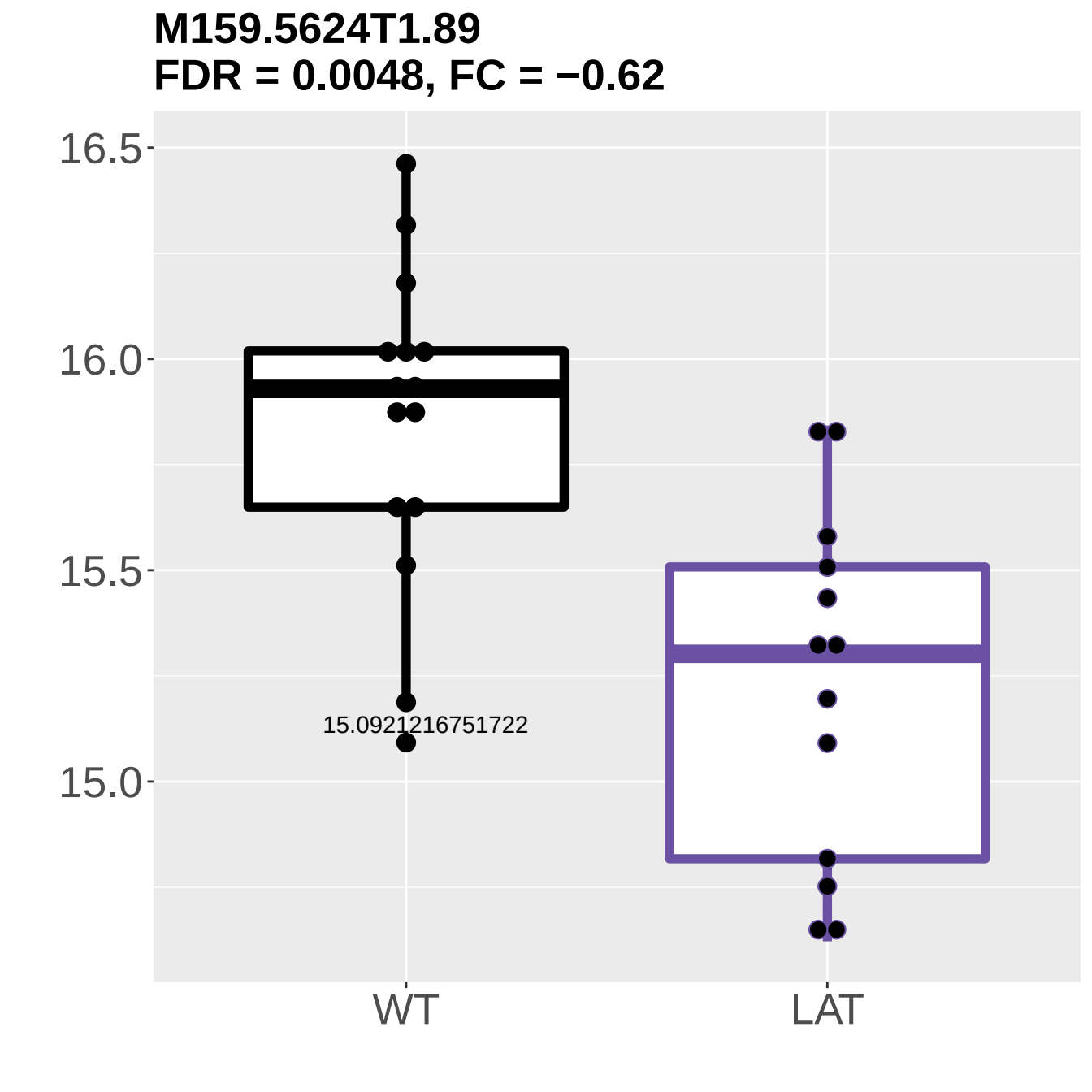
13
12
11
11.4340914527827
WT
LAT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16.0
15.5
15.0
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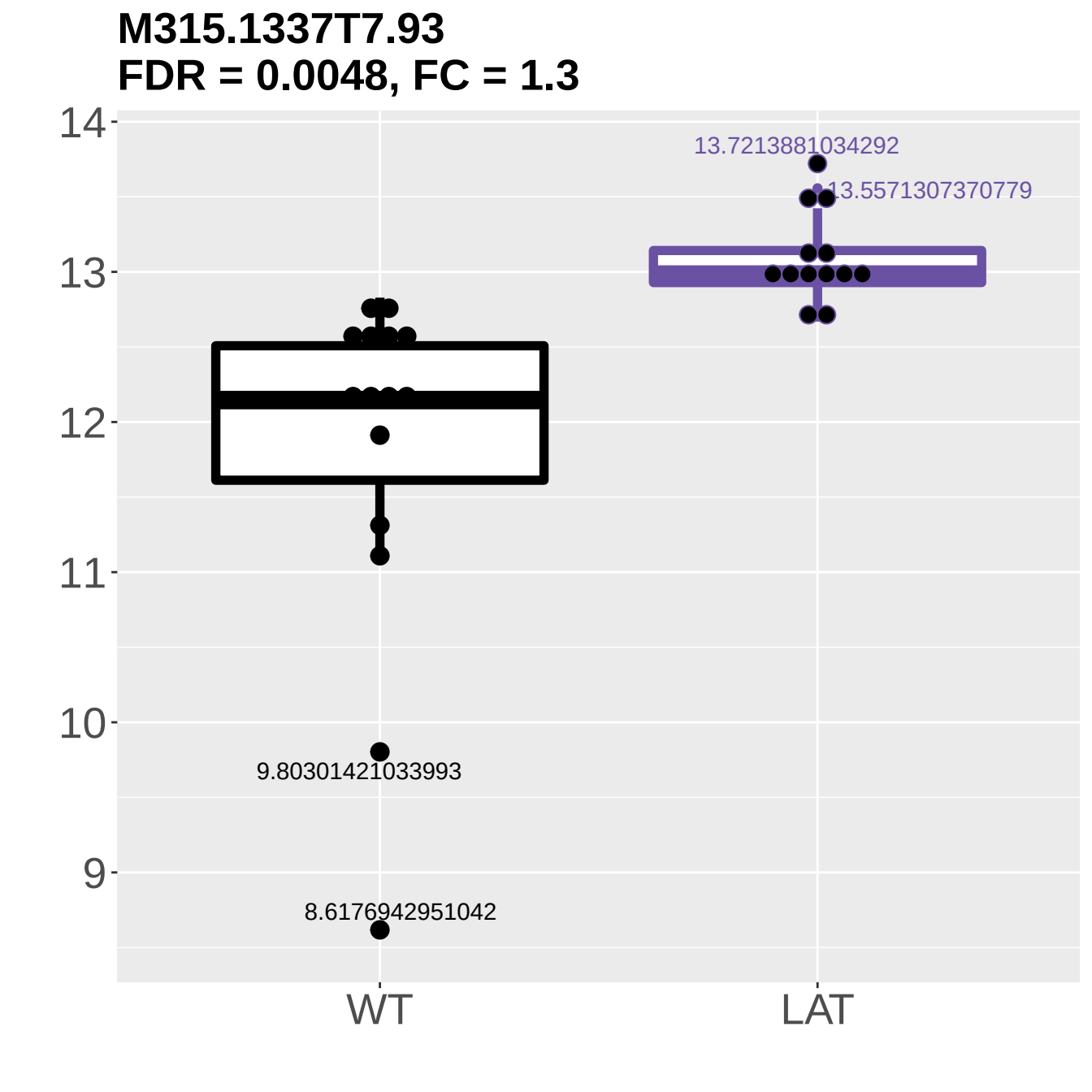
WT
LAT


M315.1337T7.93
FDR = 0.0048, FC = 1.3
14
13
12
11
10
9
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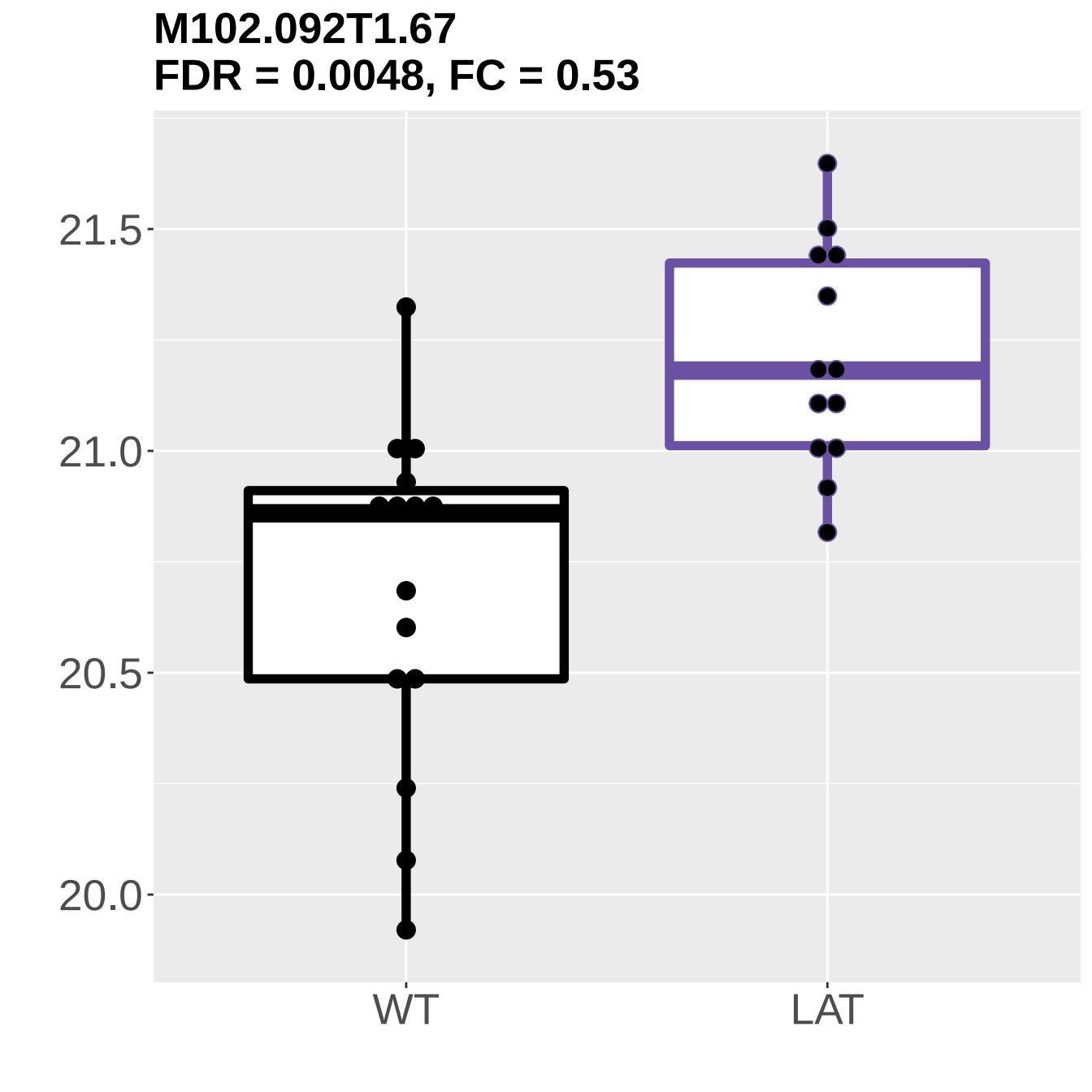
13.5571307370779
9.80301421033993
8.6176942951042
WT
LAT


M102.092T1.67
FDR = 0.0048, FC = 0.53
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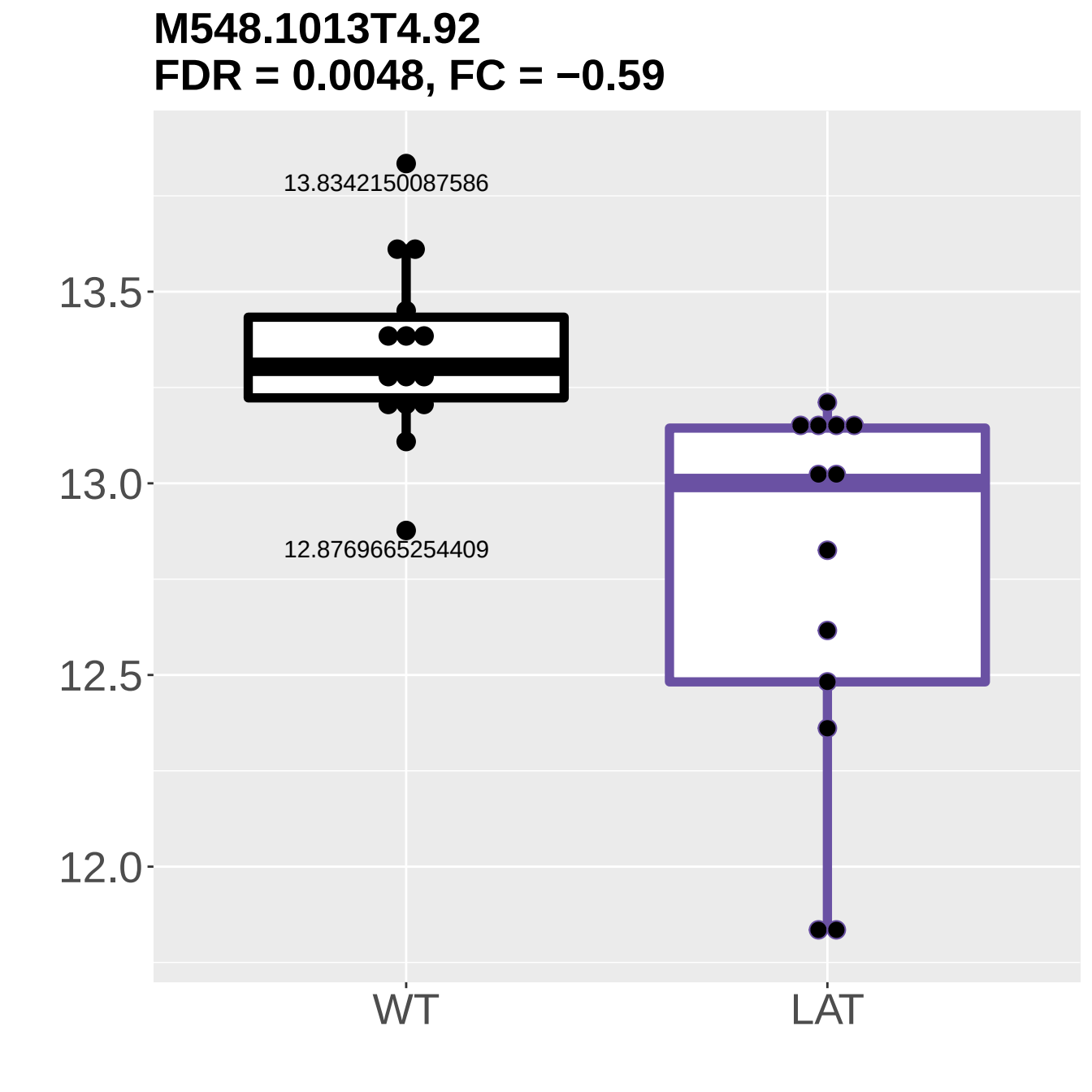
21.0
20.5
20.0
WT
LAT


M548.1013T4.92
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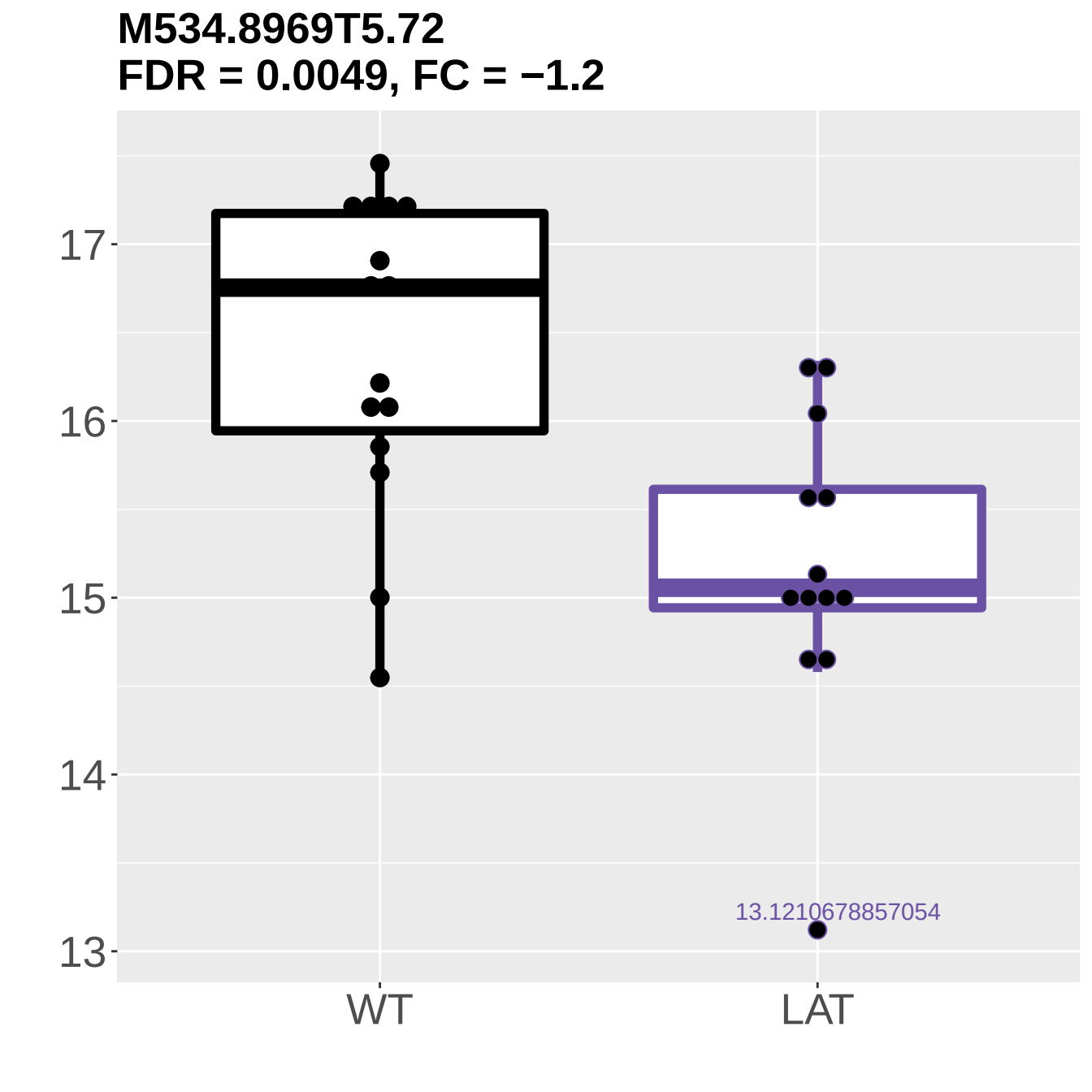
13.8342150087586
12.8769665254409
13.5
13.0
12.5
12.0
WT
LAT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FDR = 0.0049, FC = −1.2
17
16
15
14
13
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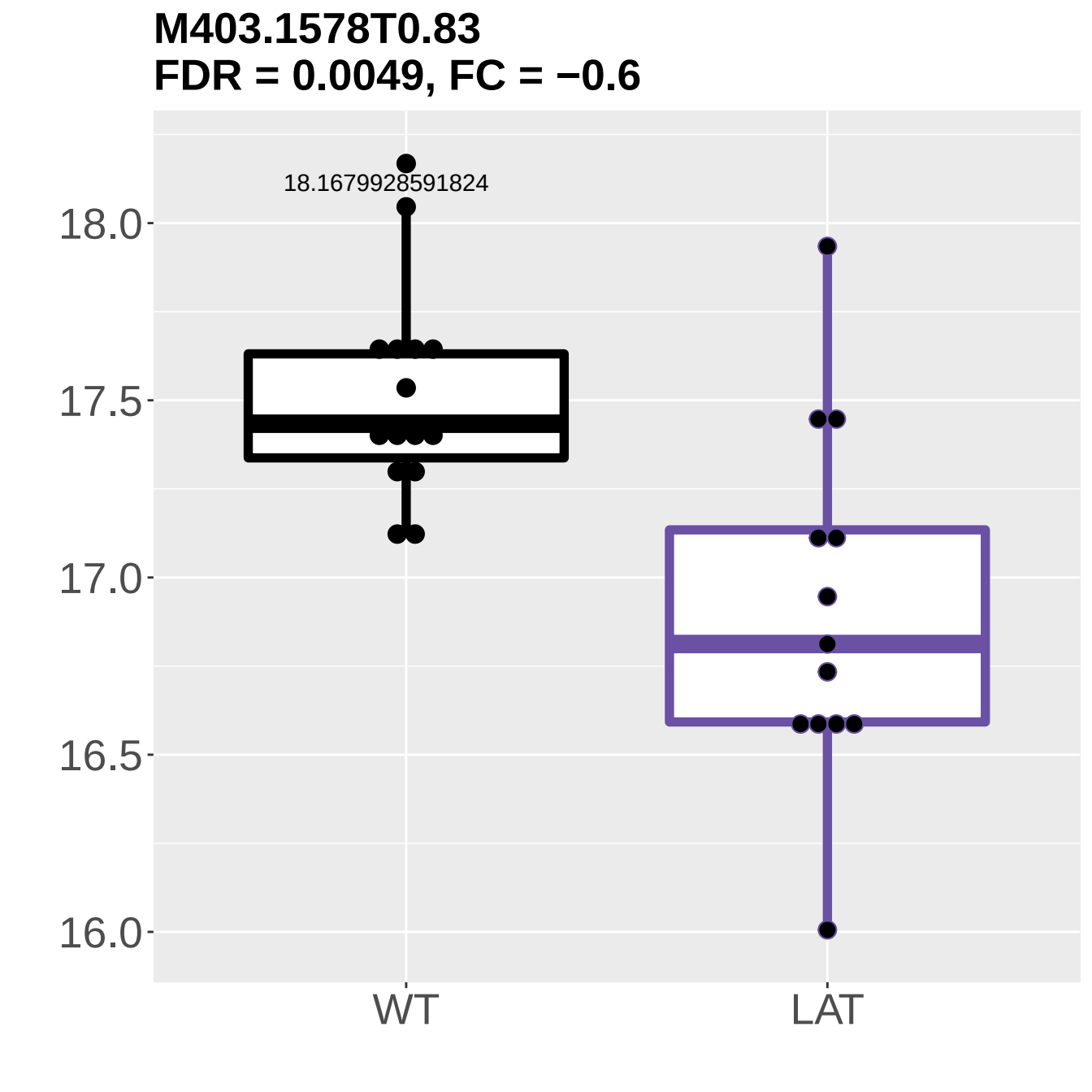
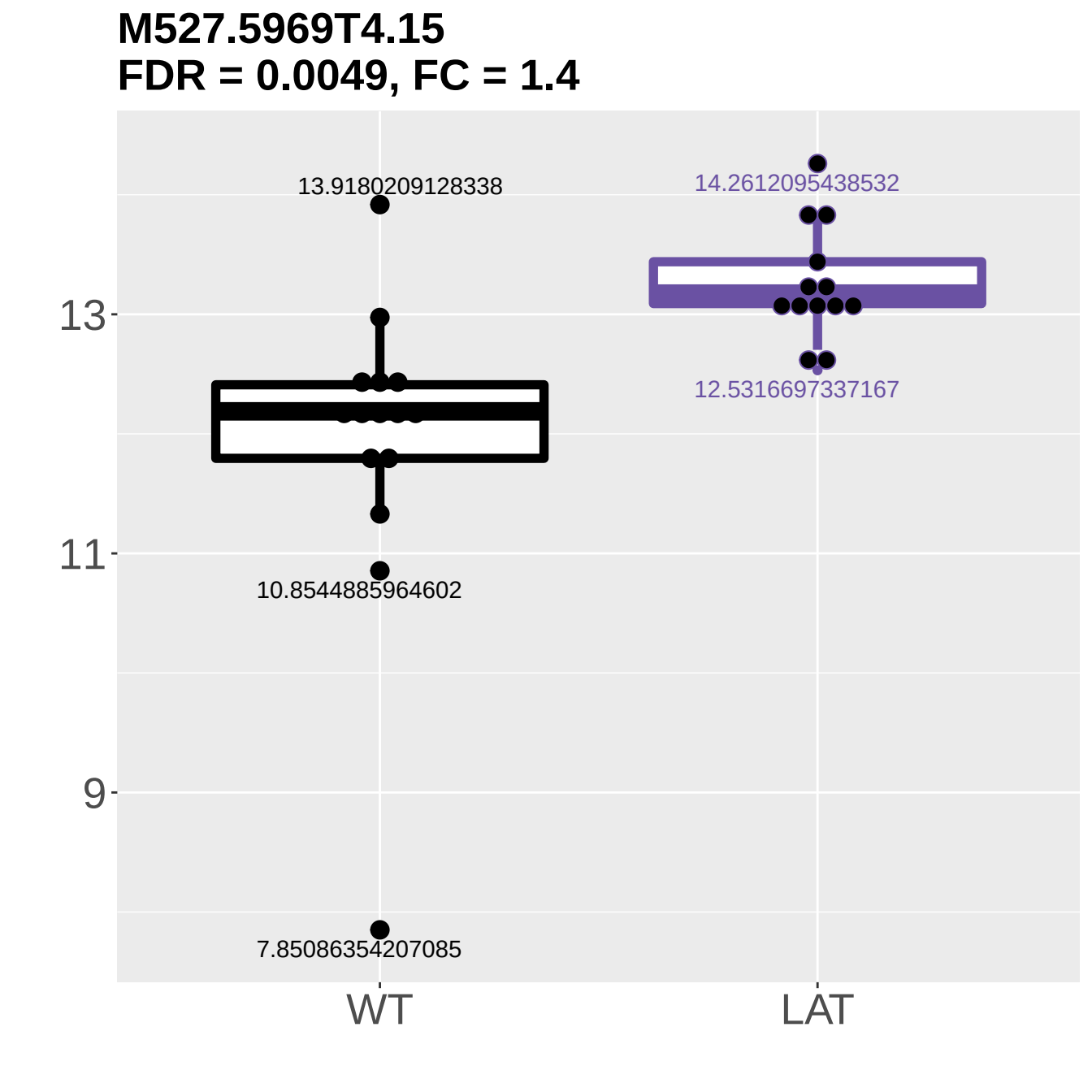
WT
LAT


M403.1578T0.83
FDR = 0.0049, FC = −0.6
18.1679928591824
18.0
17.5
17.0
16.5
16.0
WT
LAT


M527.5969T4.15
FDR = 0.0049, FC = 1.4
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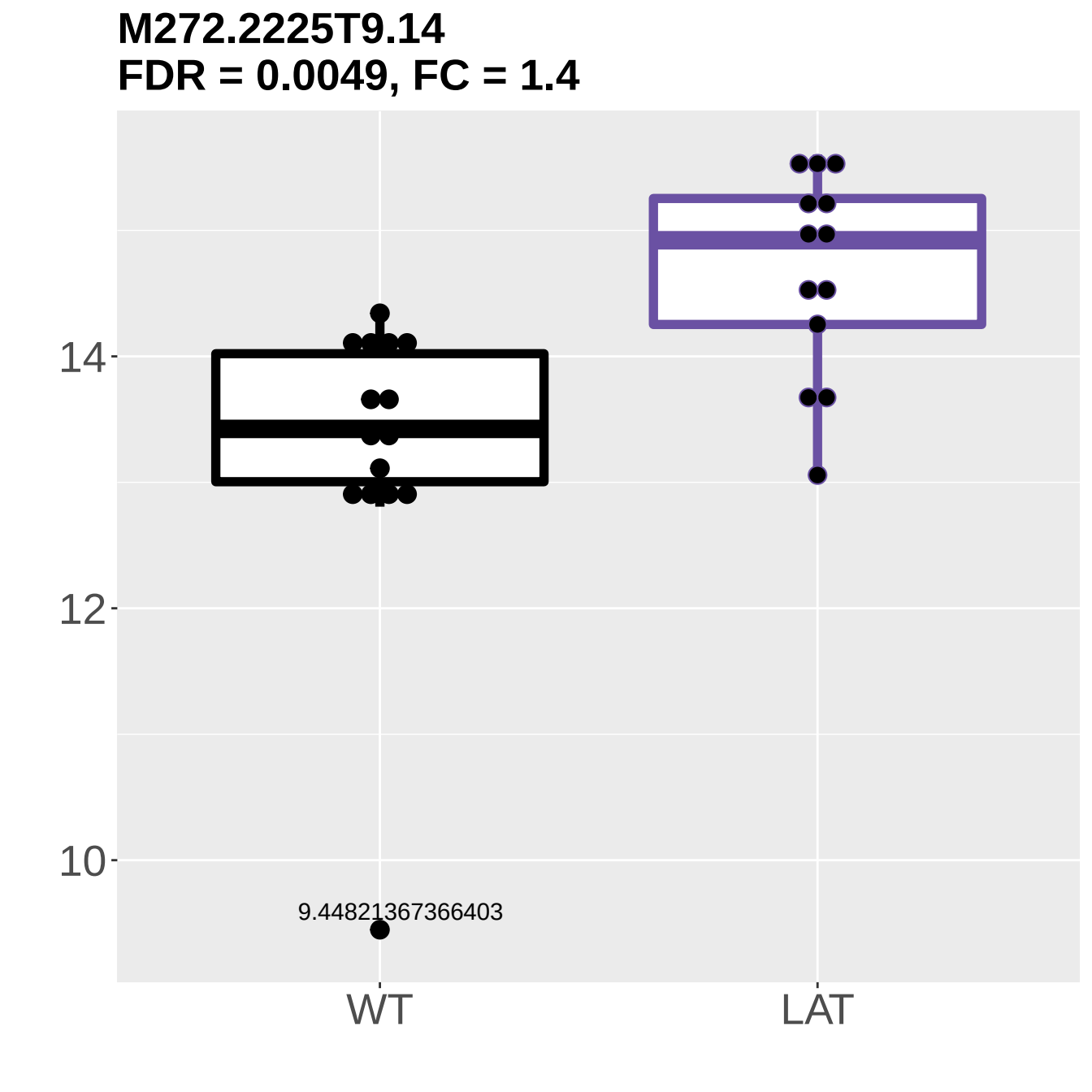
14.2612095438532
12.5316697337167
10.8544885964602
7.85086354207085
13
11
9
WT
LAT


M272.2225T9.14
FDR = 0.0049, FC = 1.4
14
12
10
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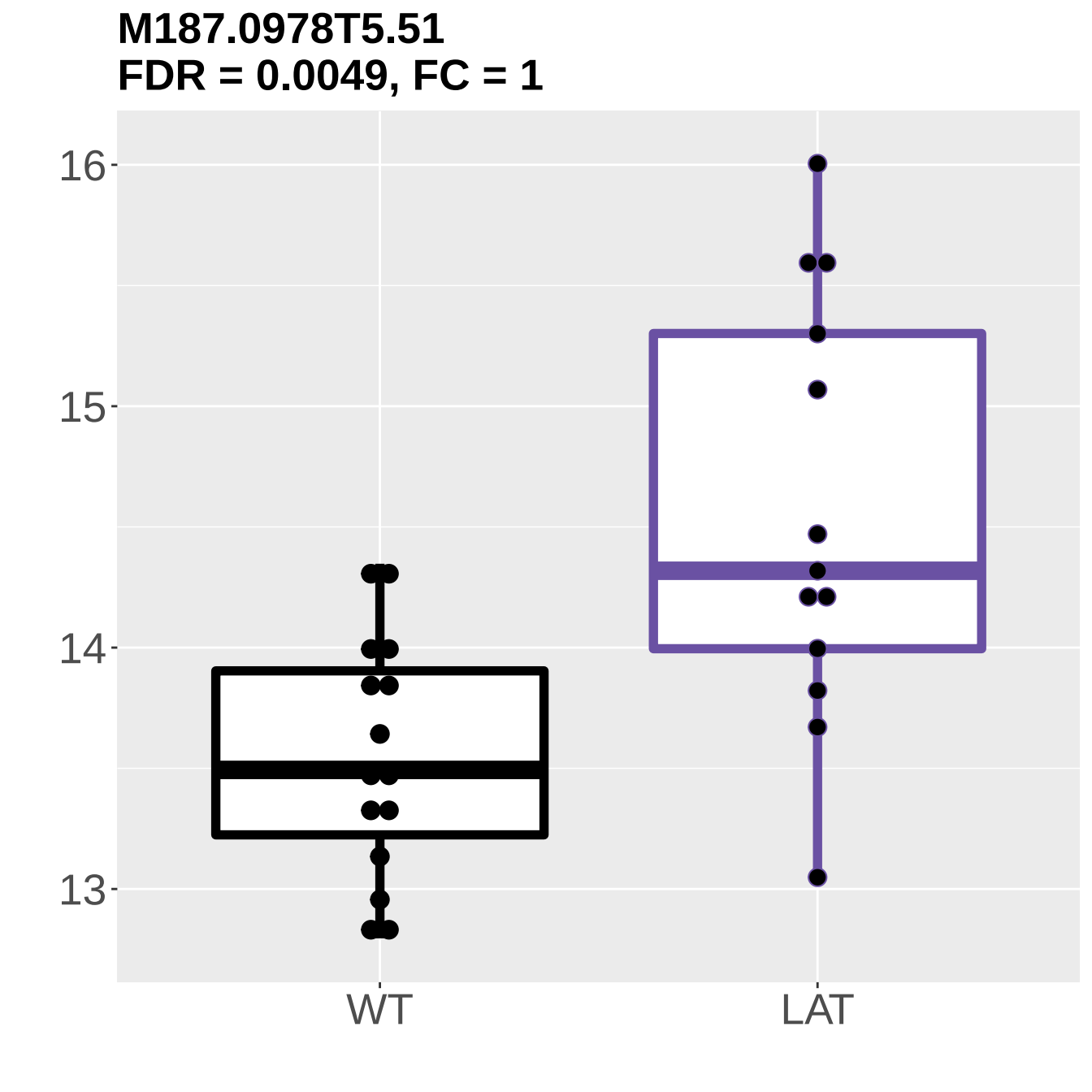
WT
LAT


M187.0978T5.51
FDR = 0.0049, FC = 1
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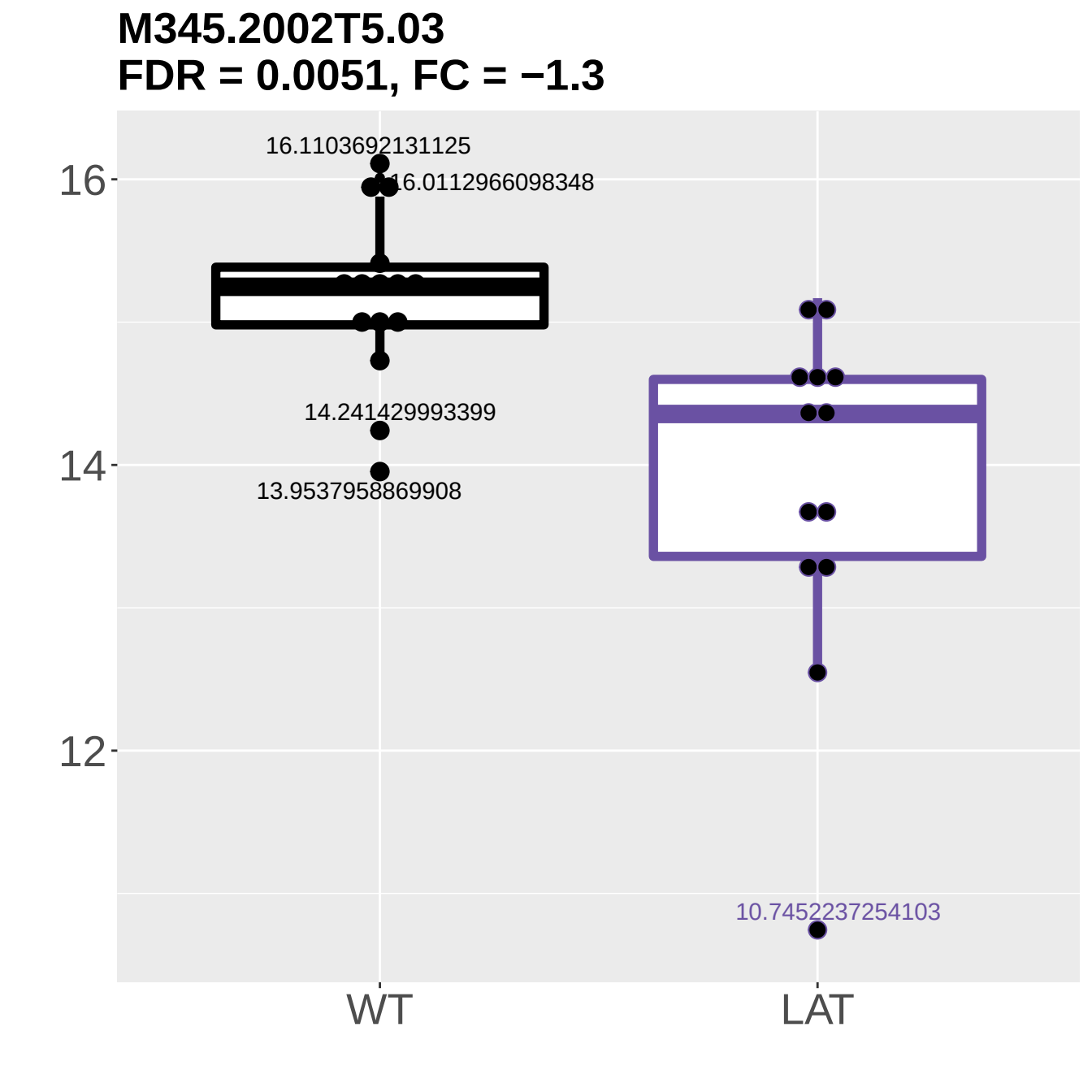
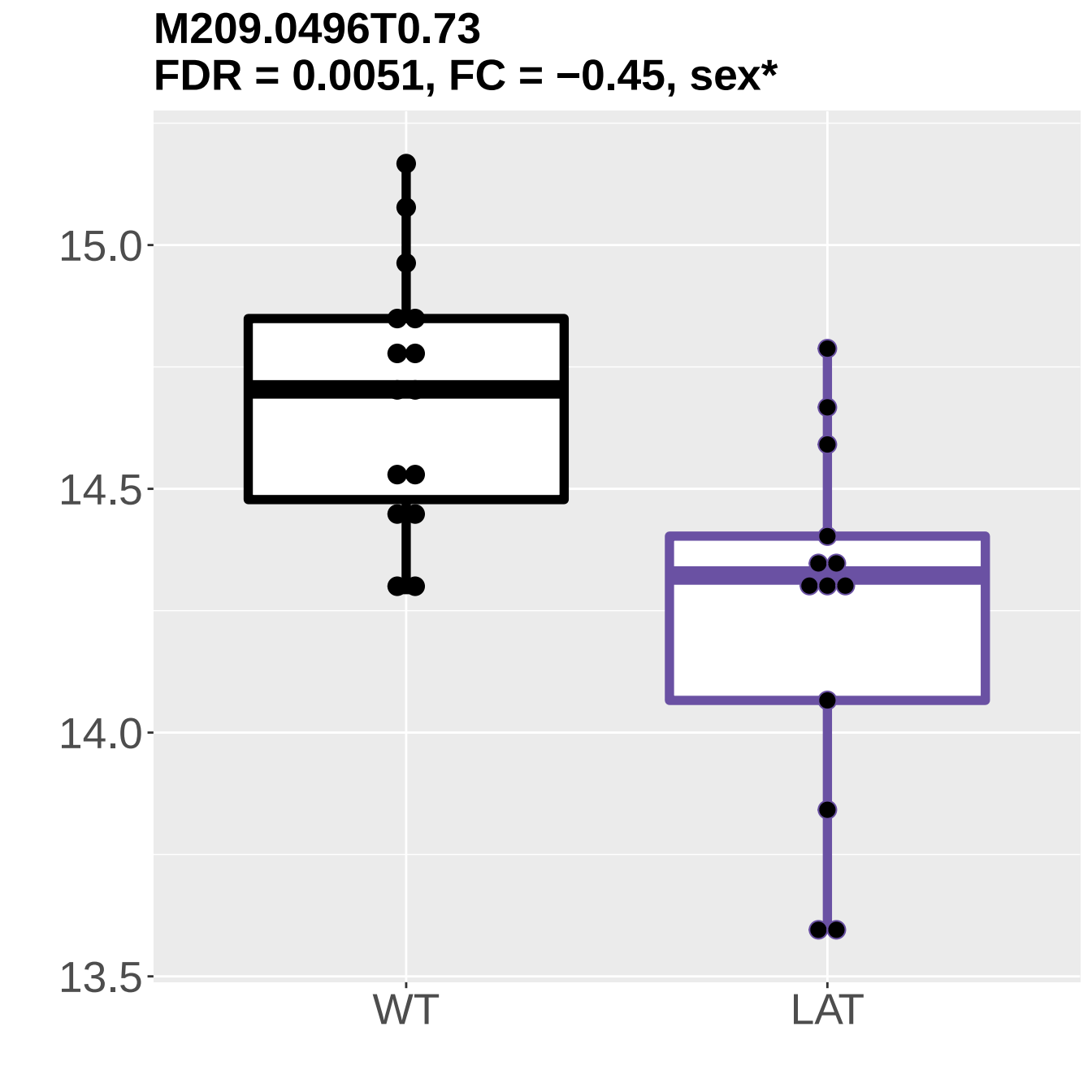
13
WT
LAT


M345.2002T5.03
FDR = 0.0051, FC = −1.3
16.1103692131125
16.0112966098348
14.241429993399
13.9537958869908
10.7452237254103
16
14
12
WT
LAT


M209.0496T0.73
FDR = 0.0051, FC = −0.45, sex*
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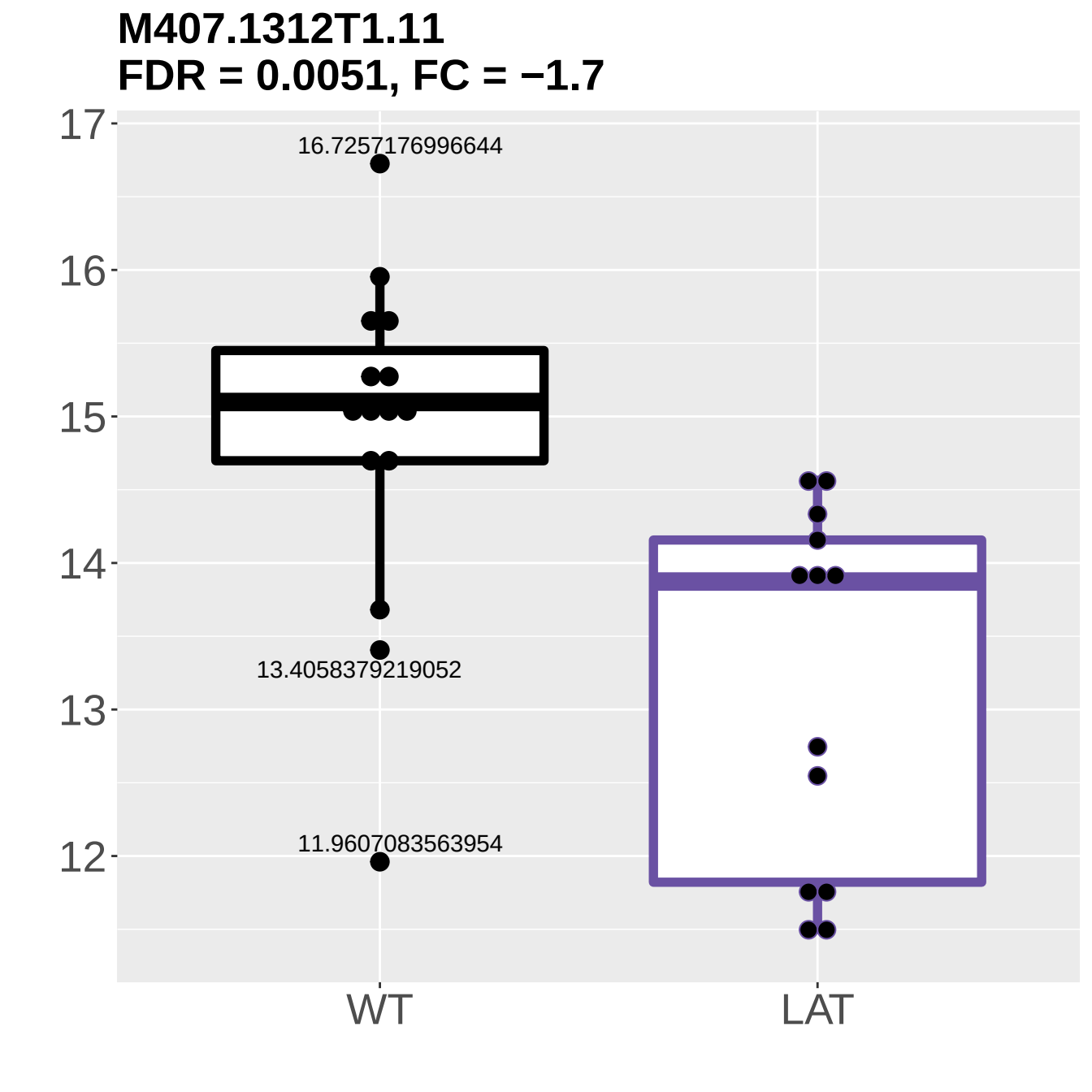
14.5
14.0
13.5
WT
LAT


M407.1312T1.11
FDR = 0.0051, FC = −1.7
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16
15
14
13
12
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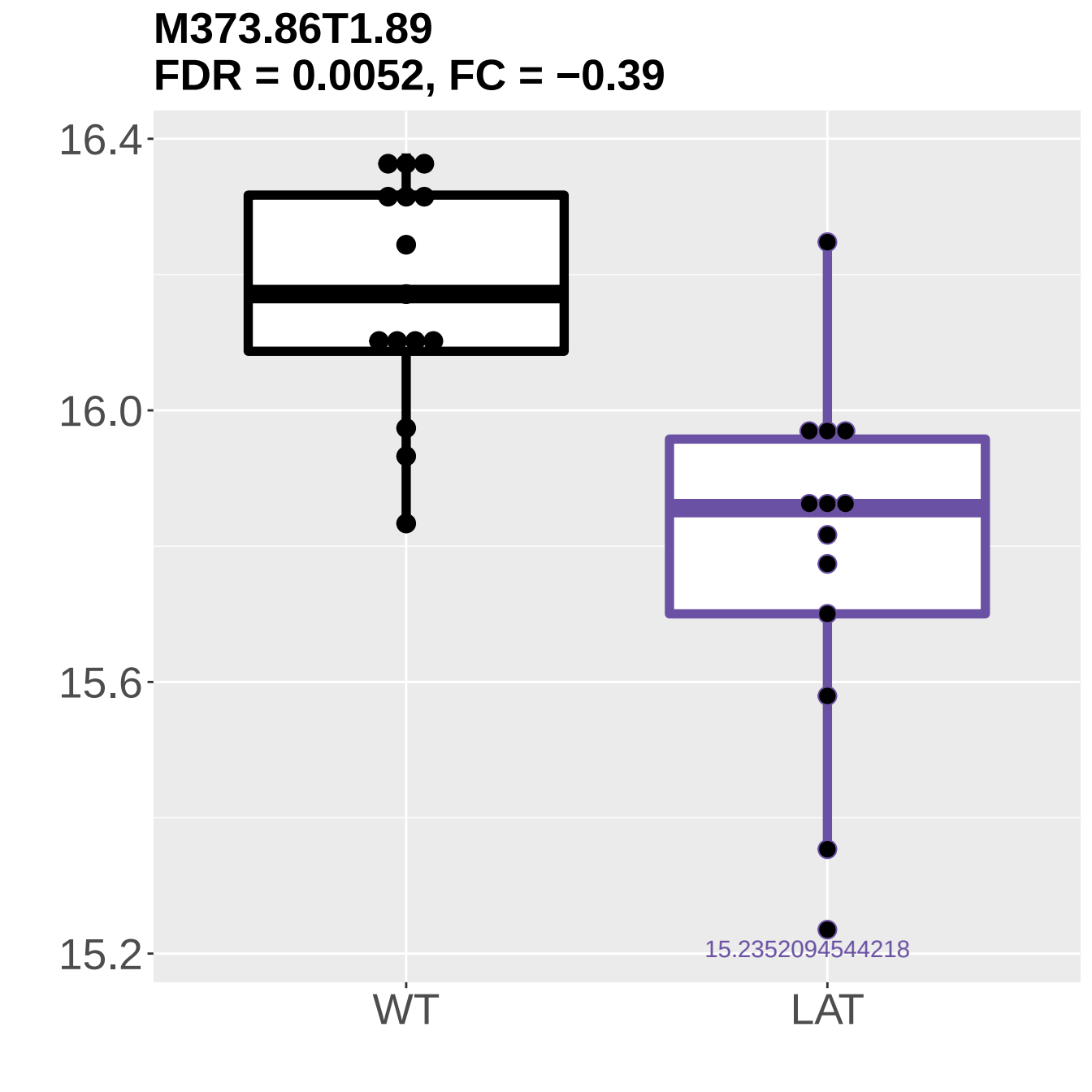
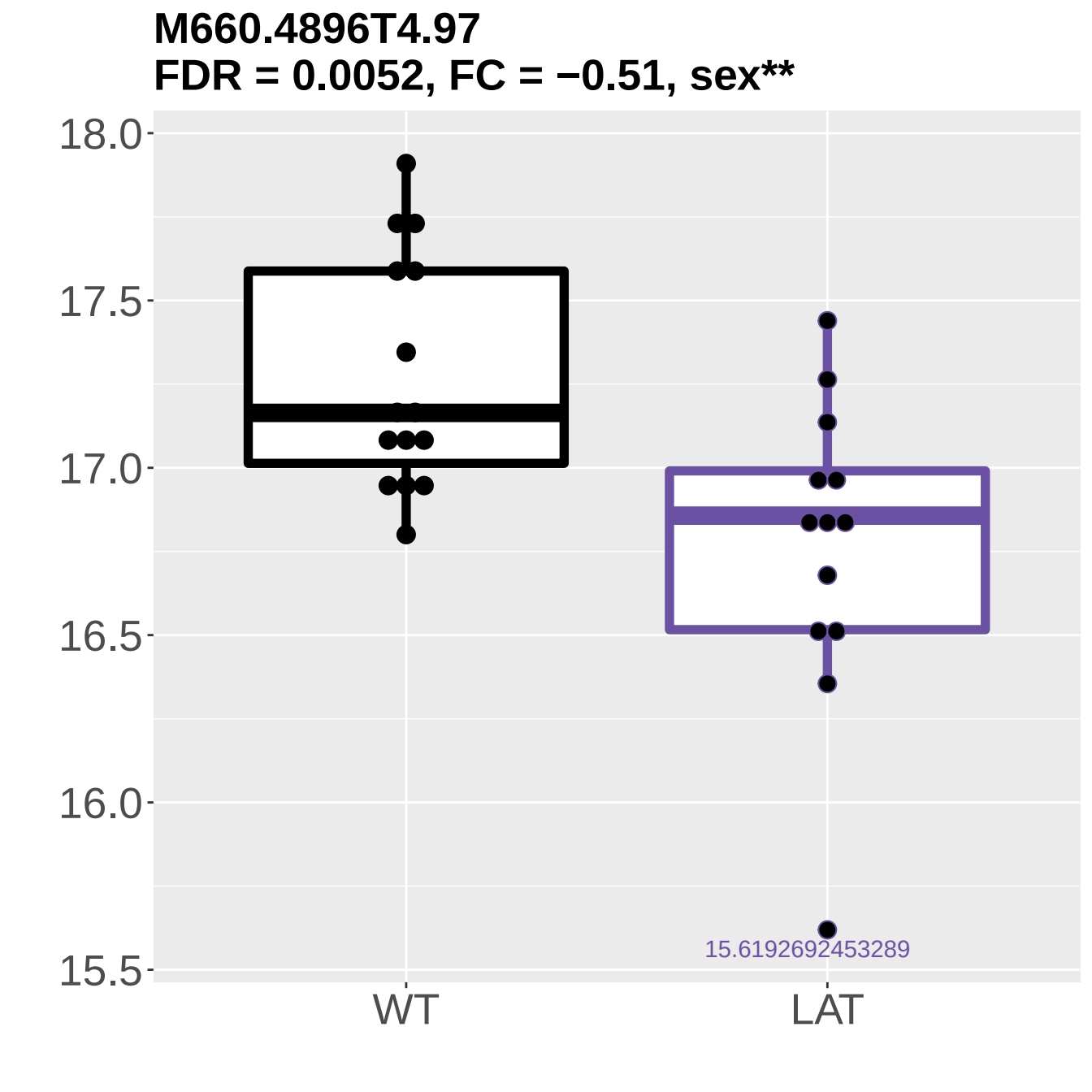
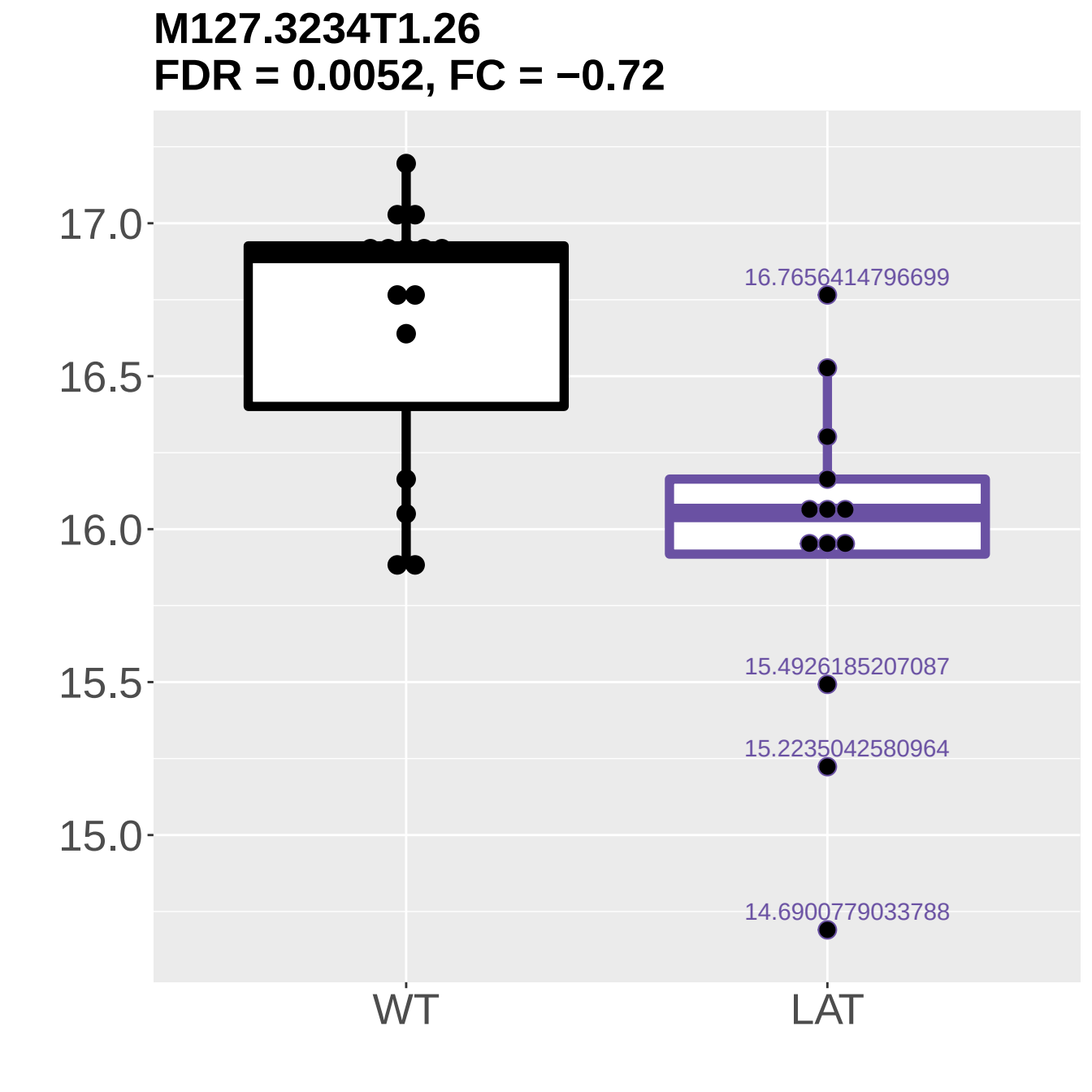
11.9607083563954
WT
LAT


M373.86T1.89
FDR = 0.0052, FC = −0.39
16.4
16.0
15.6
15.2
15.2352094544218
WT
LAT


M660.4896T4.97
FDR = 0.0052, FC = −0.51, sex**
18.0
17.5
17.0
16.5
16.0
15.5
15.6192692453289
WT
LAT


M127.3234T1.26
FDR = 0.0052, FC = −0.72
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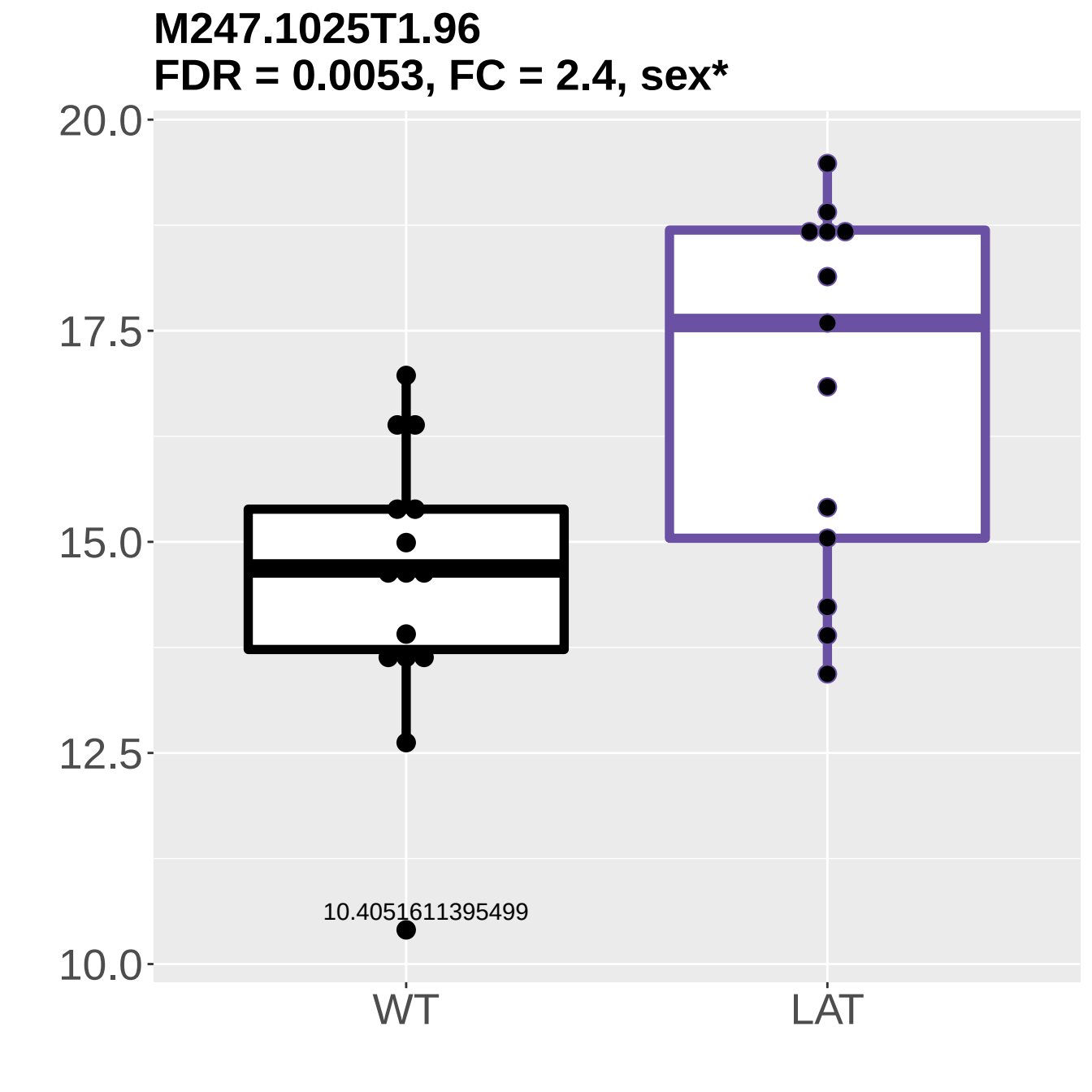
16.5
16.0
15.5
15.0
16.7656414796699
15.4926185207087
15.2235042580964
14.6900779033788
WT
LAT


M247.1025T1.96
FDR = 0.0053, FC = 2.4, sex*
20.0
17.5
15.0
12.5
10.0
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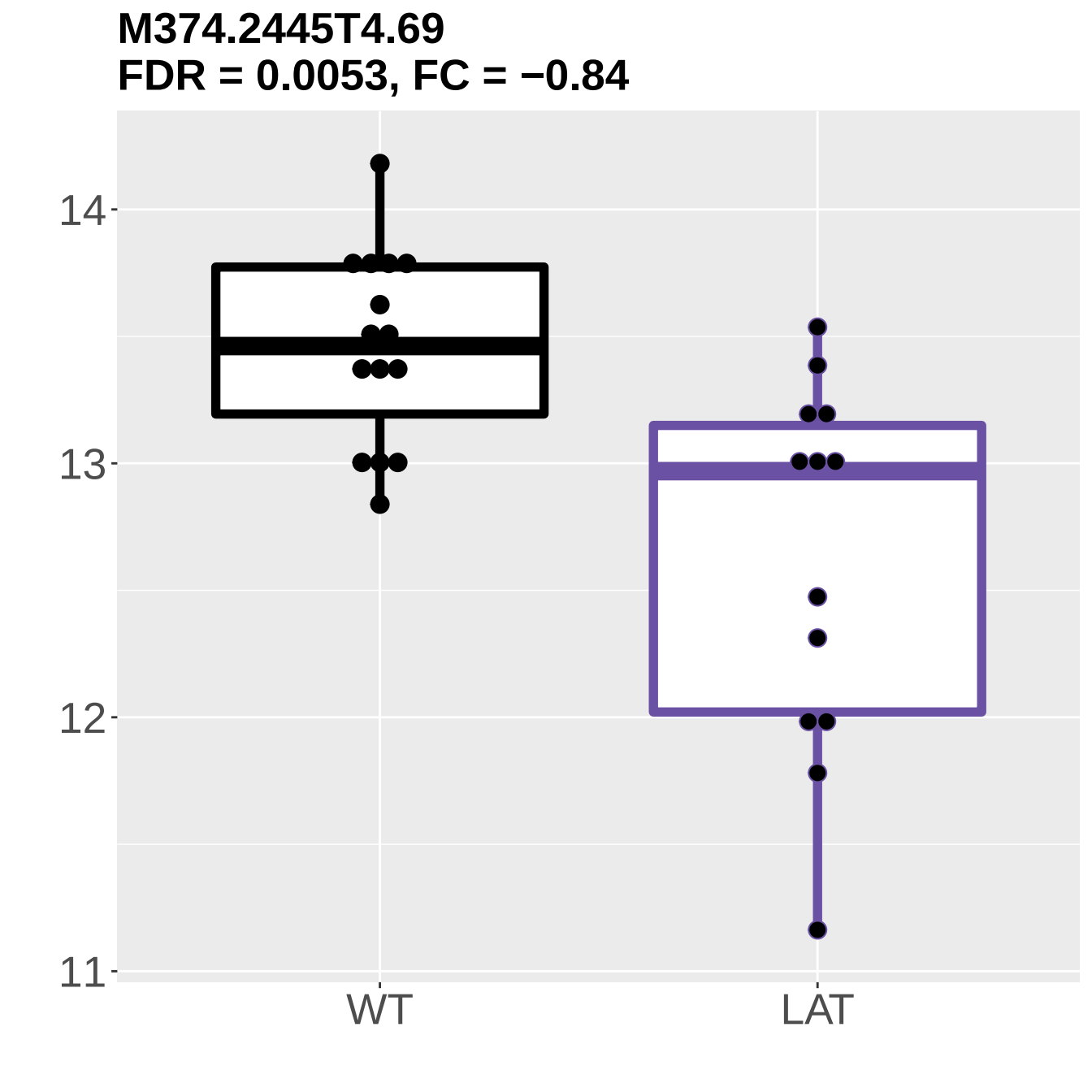
WT
LAT


M374.2445T4.69
FDR = 0.0053, FC = −0.84
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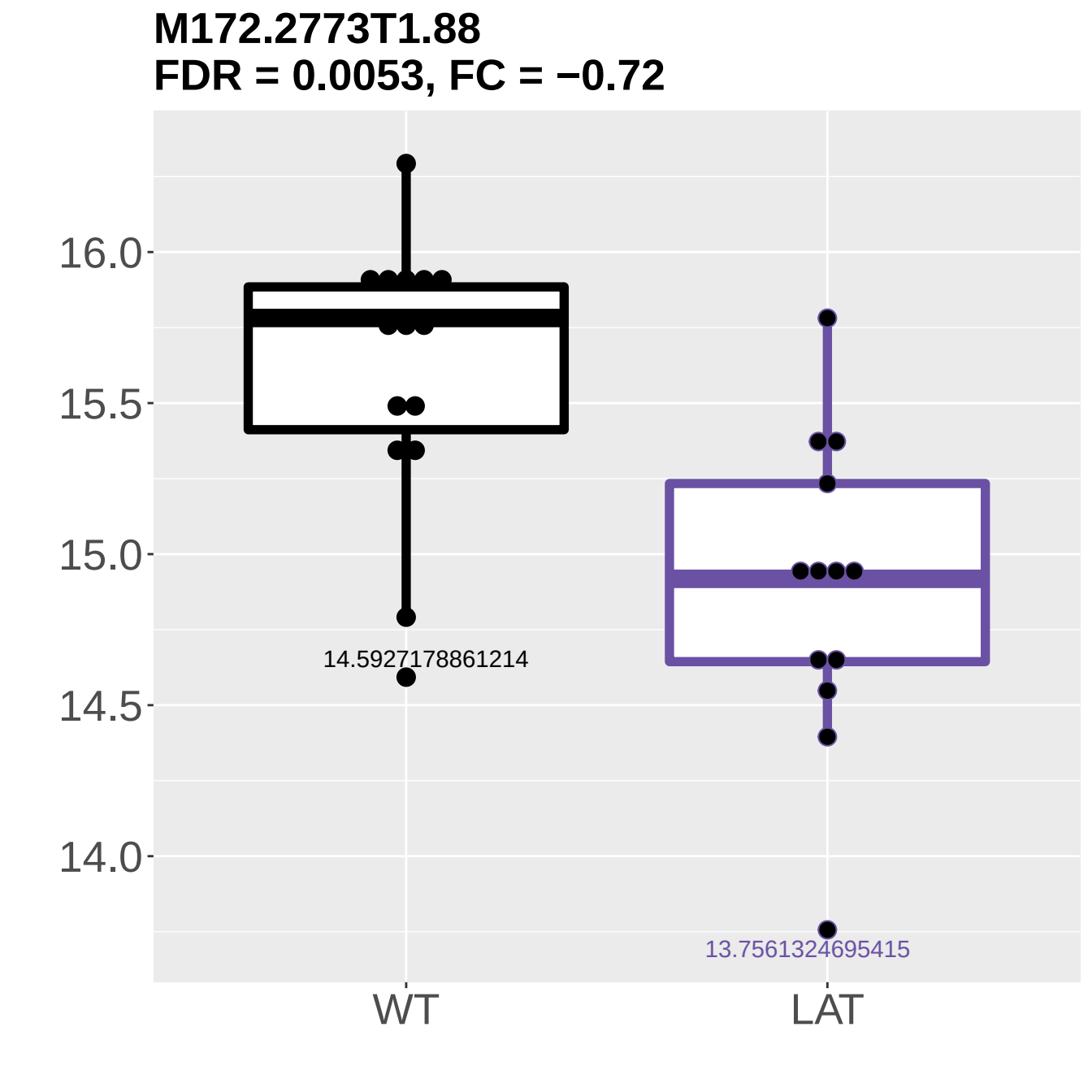
13
12
11
WT
LAT


M172.2773T1.88
FDR = 0.0053, FC = −0.72
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14.0
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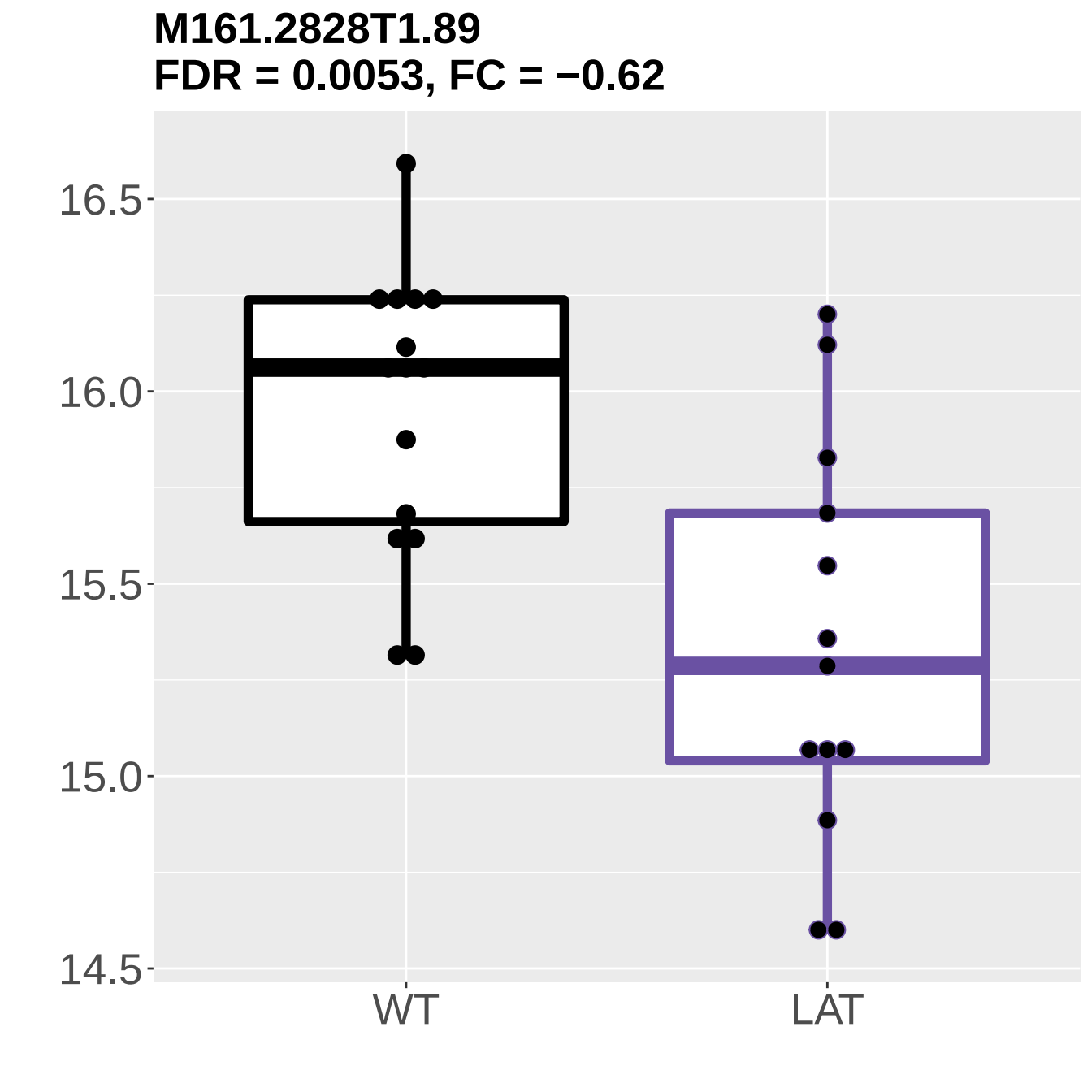
13.7561324695415
WT
LAT


M161.2828T1.89
FDR = 0.0053, FC = −0.62
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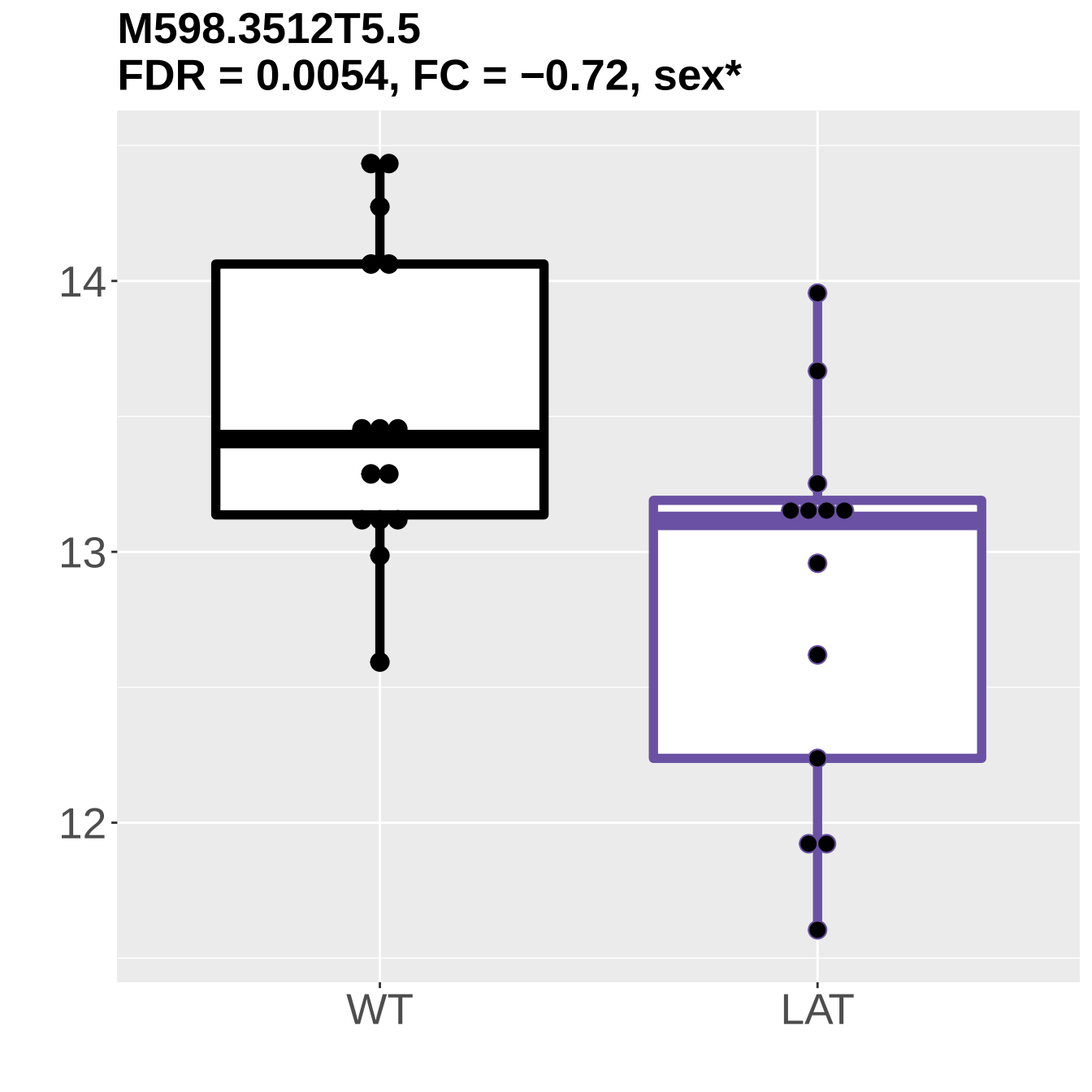
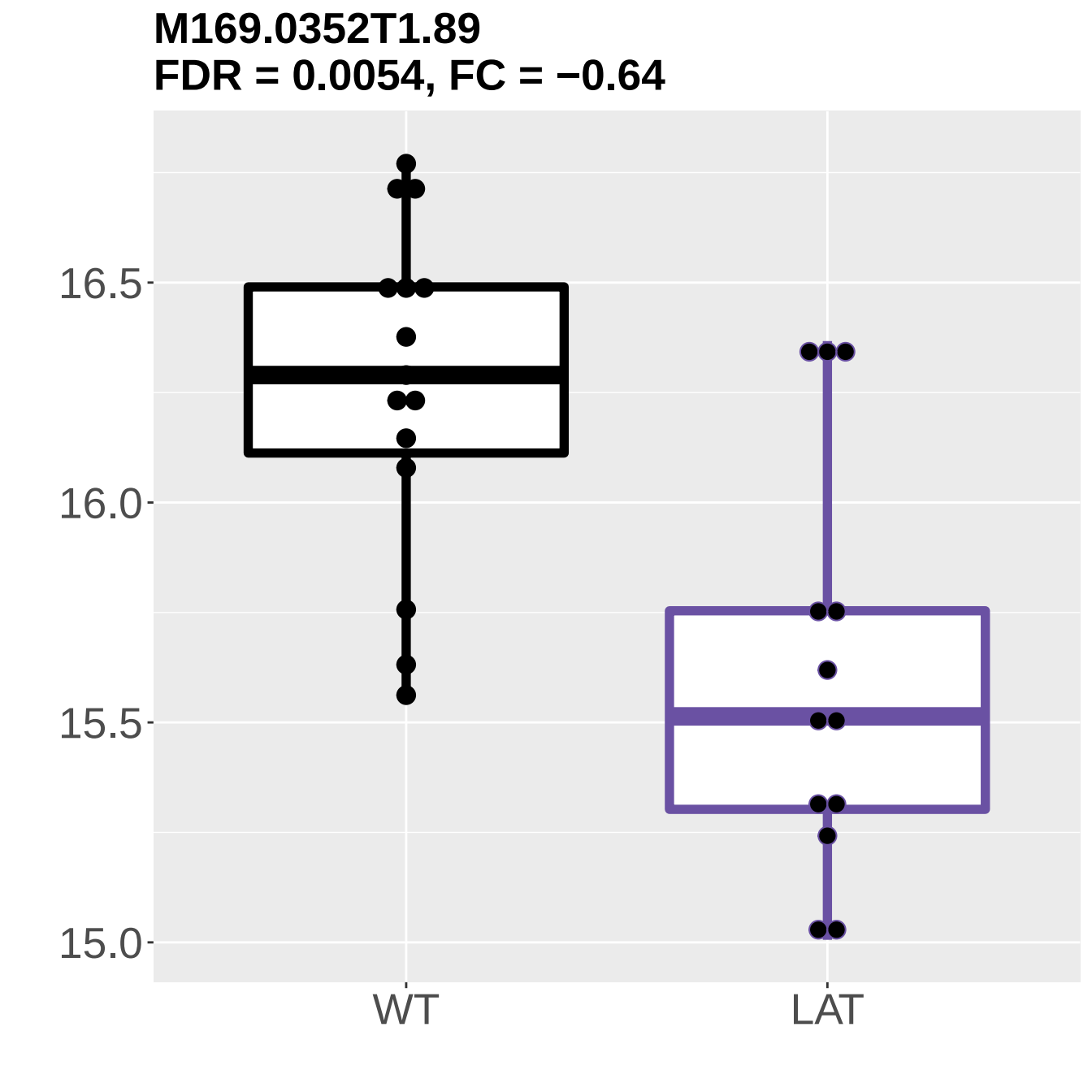
16.0
15.5
15.0
14.5
WT
LAT


M598.3512T5.5
FDR = 0.0054, FC = −0.72, sex*
14
13
12
WT
LAT


M169.0352T1.89
FDR = 0.0054, FC = −0.64
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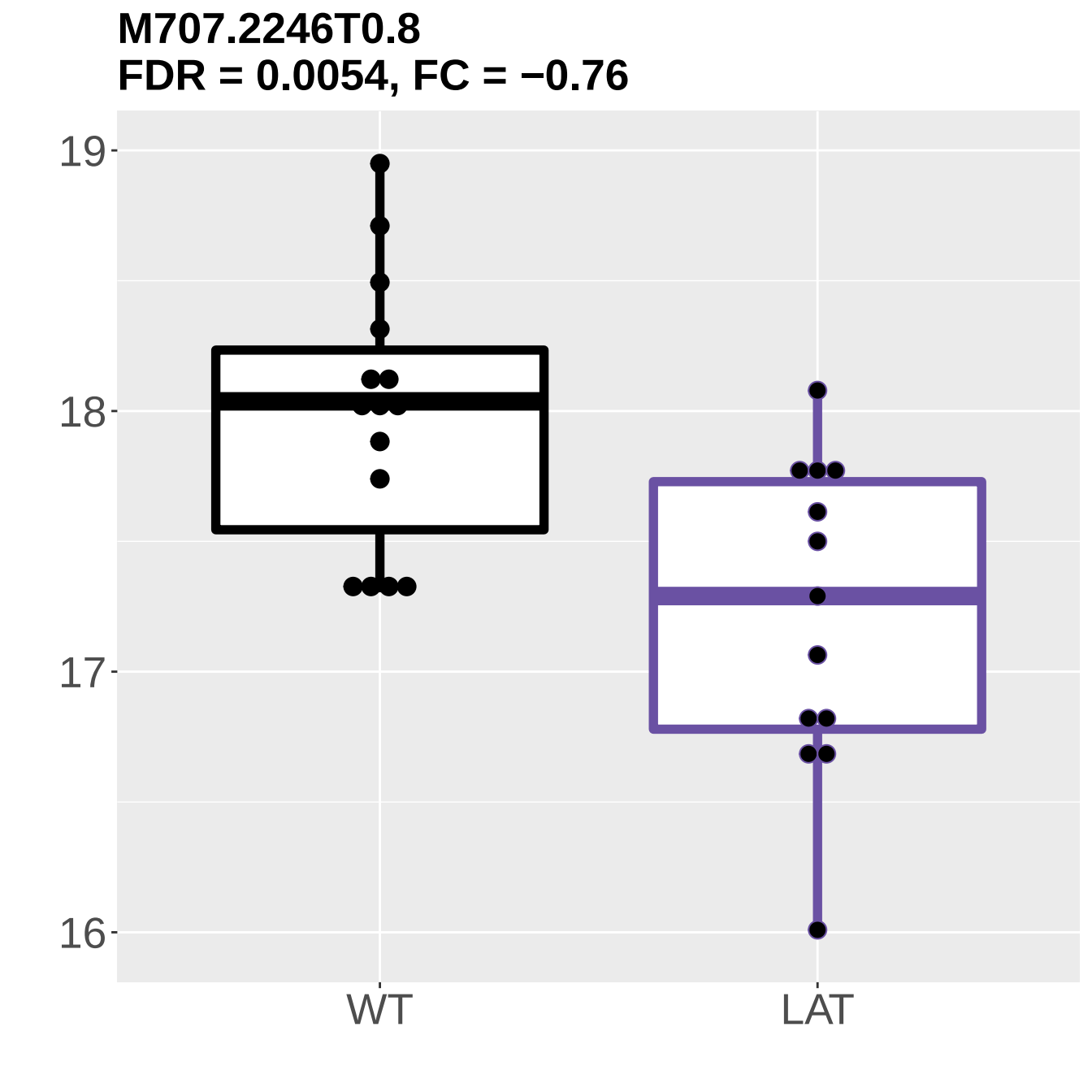
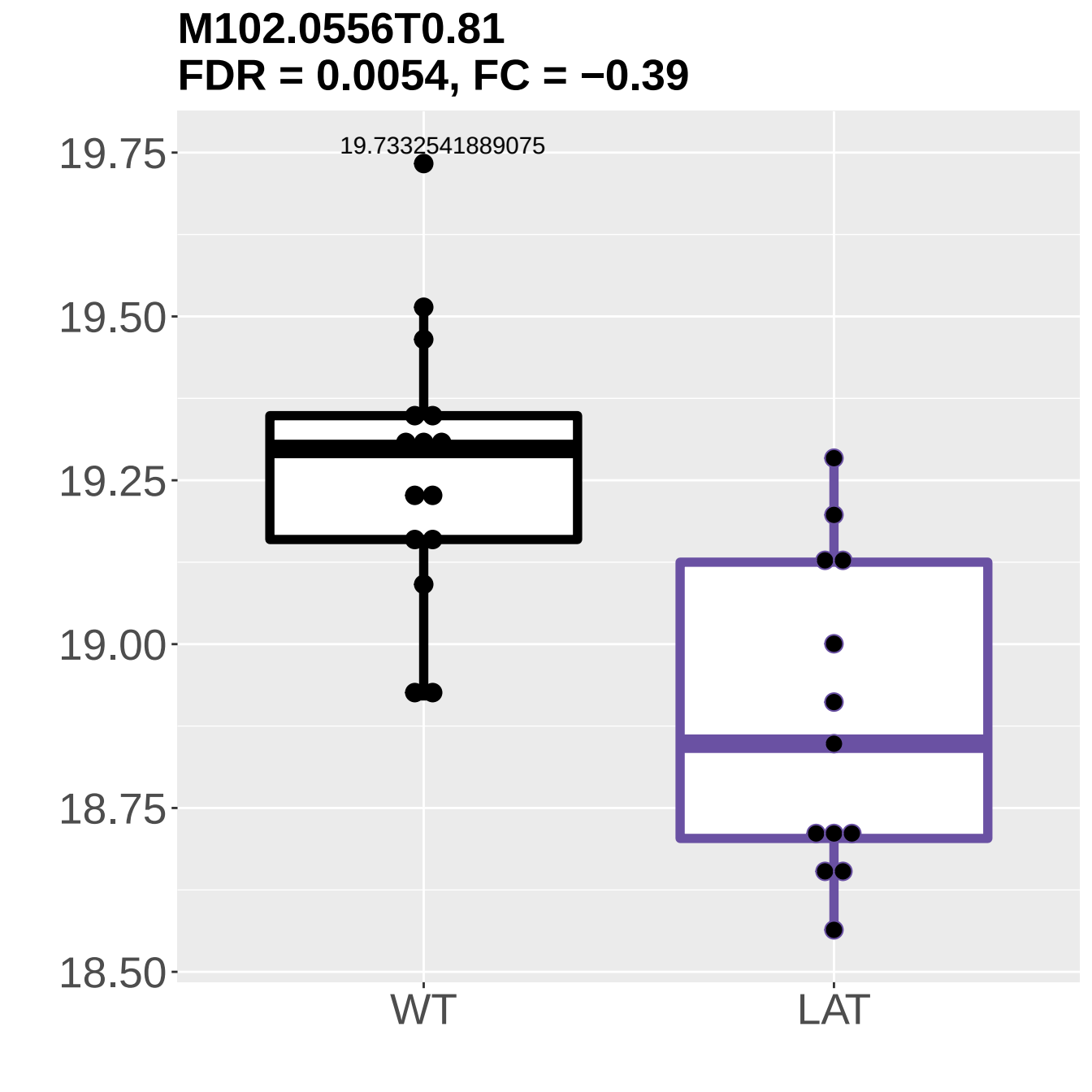
16.0
15.5
15.0
WT
LAT


M707.2246T0.8
FDR = 0.0054, FC = −0.76
19
18
17
16
WT
LAT


M102.0556T0.81
FDR = 0.0054, FC = −0.39
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19.50
19.25
19.00
18.75
18.50
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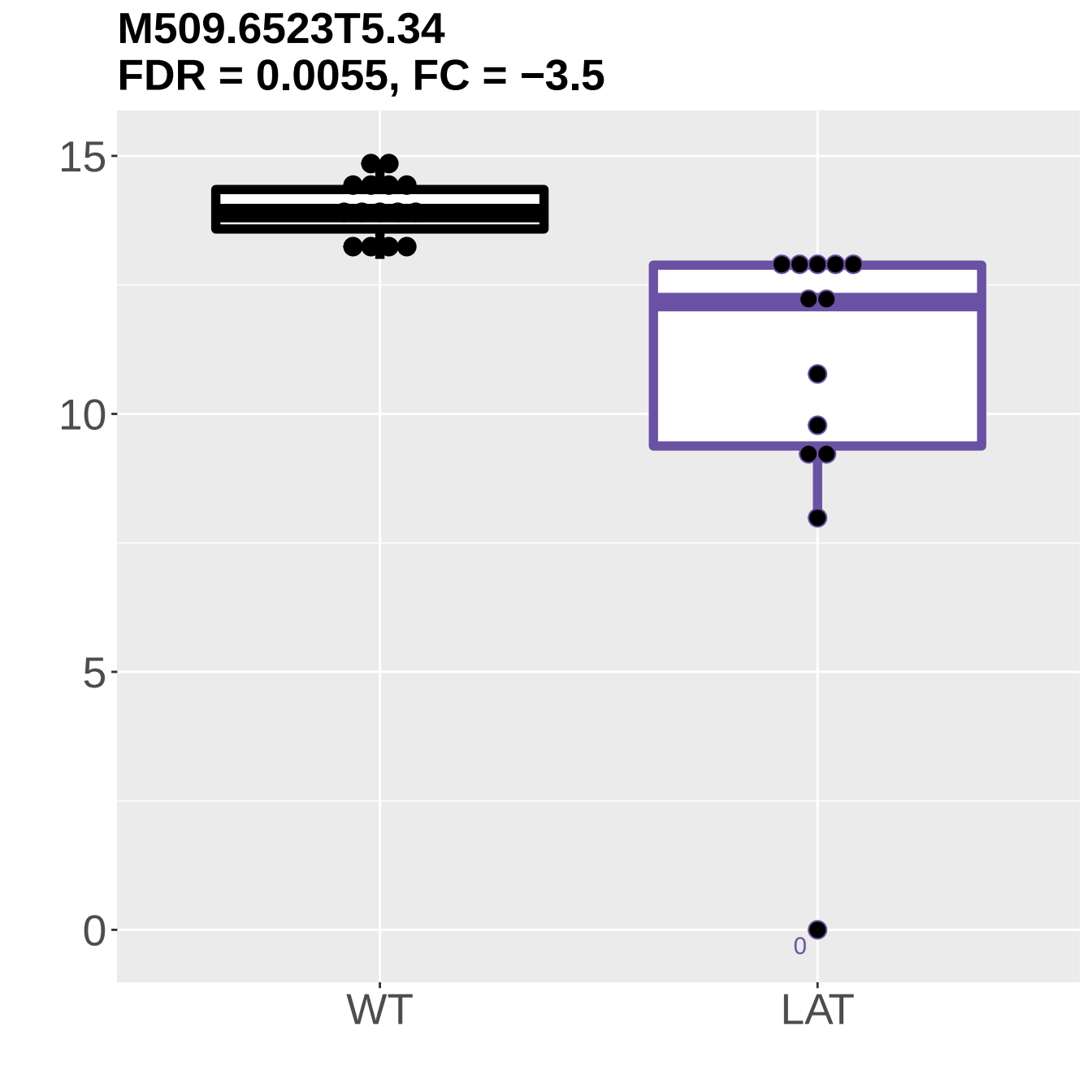
WT
LAT


M509.6523T5.34
FDR = 0.0055, FC = −3.5
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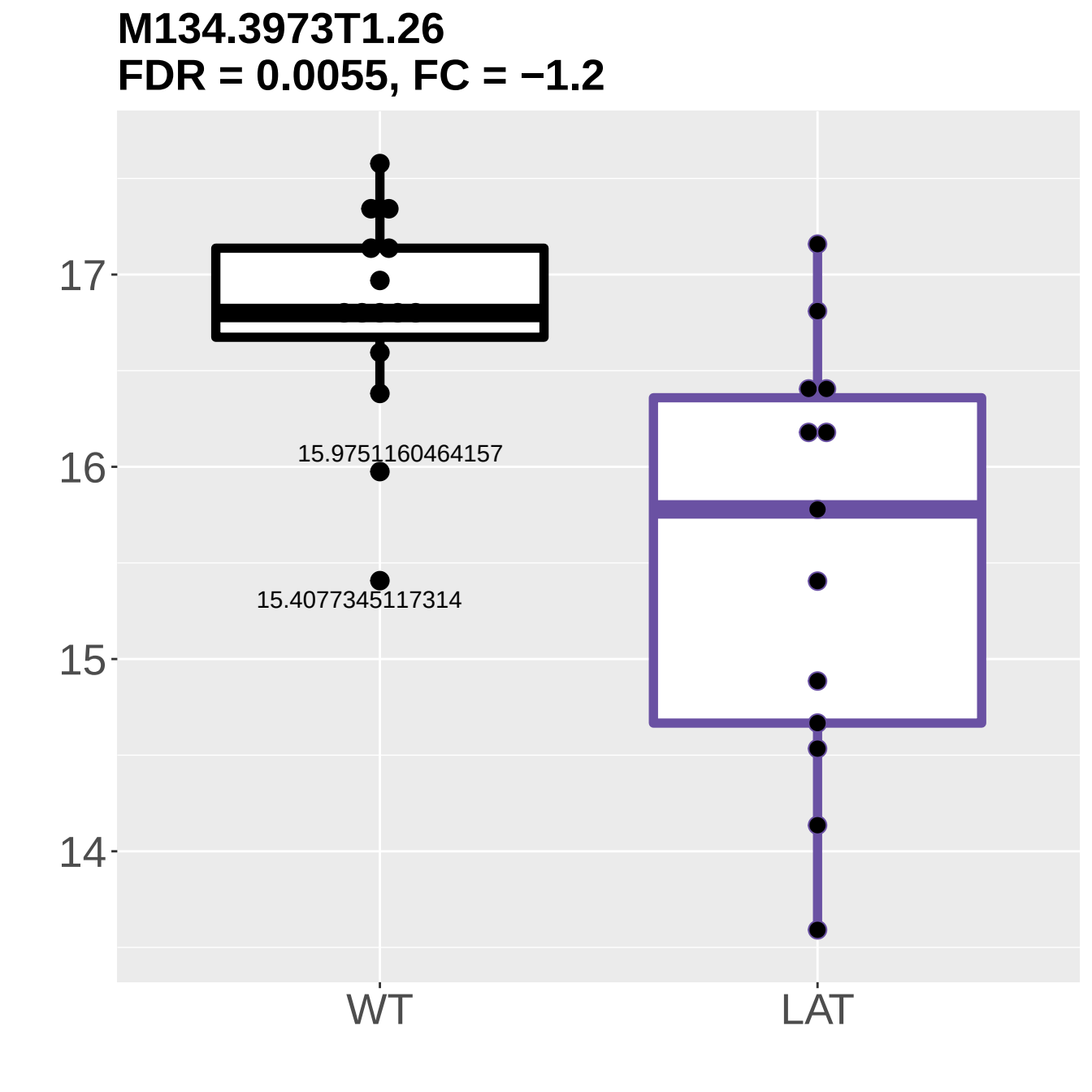
10
5
0
0
WT
LAT


M134.3973T1.26
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16
15
14
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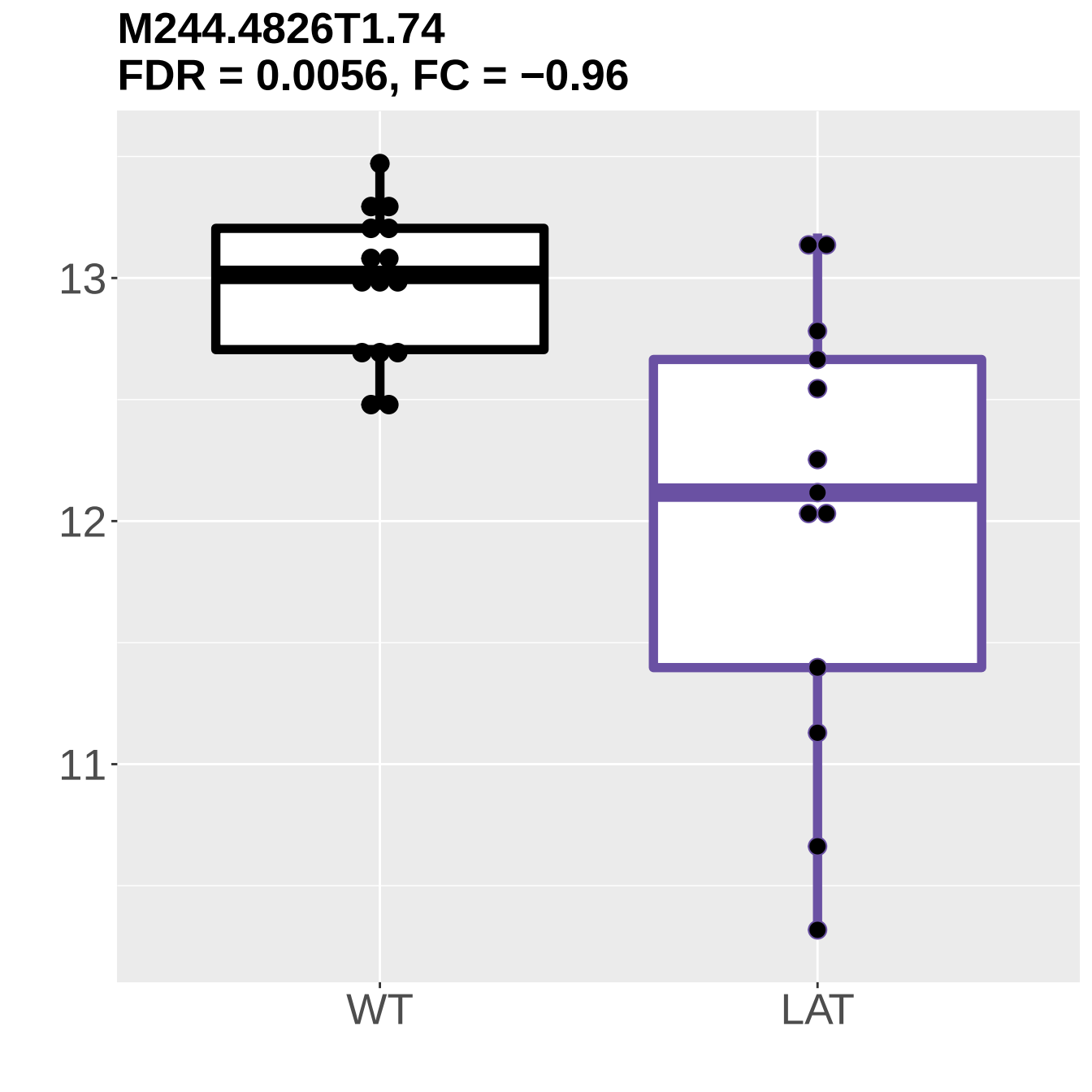
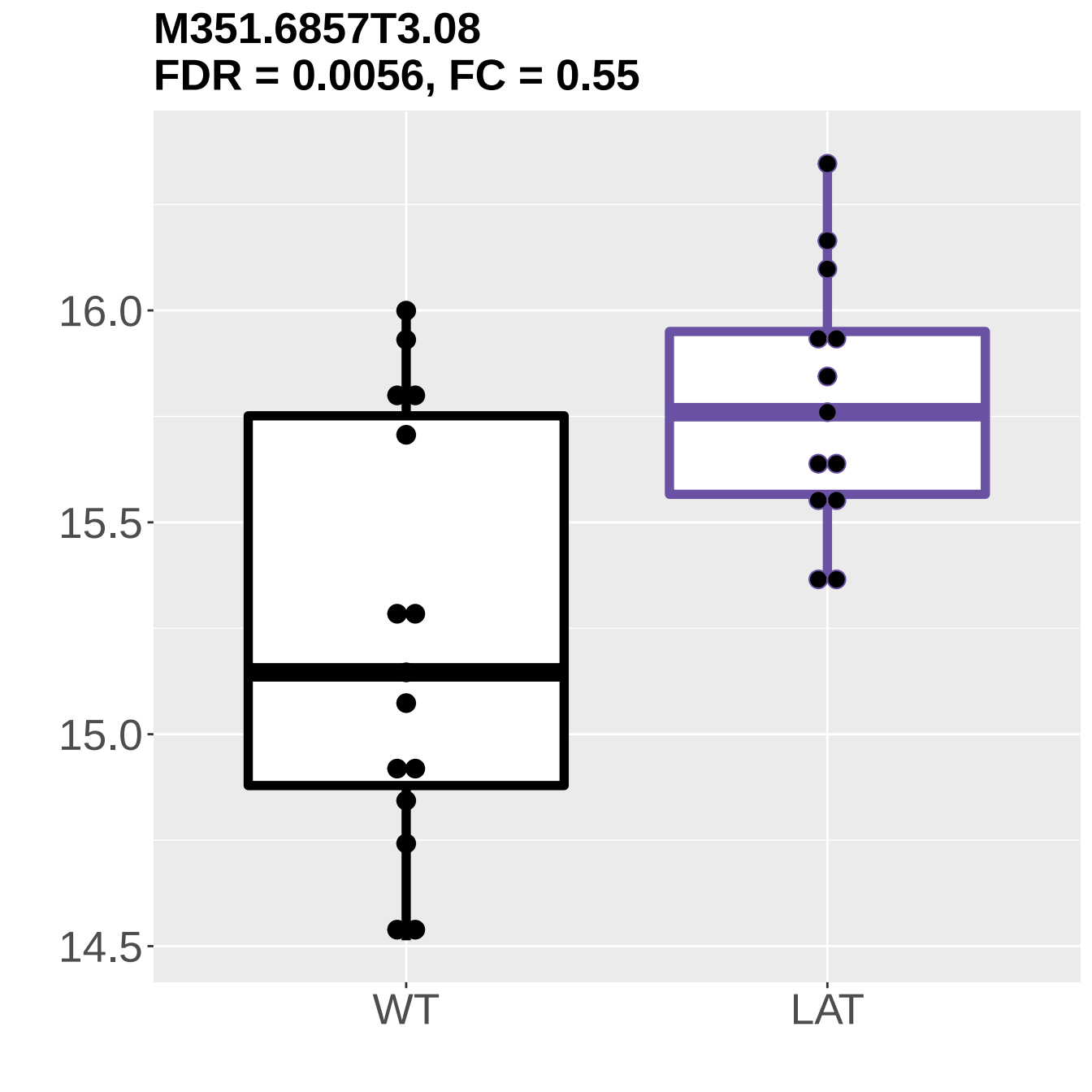
15.4077345117314
WT
LAT


M244.4826T1.74
FDR = 0.0056, FC = −0.96
13
12
11
WT
LAT


M351.6857T3.08
FDR = 0.0056, FC = 0.55
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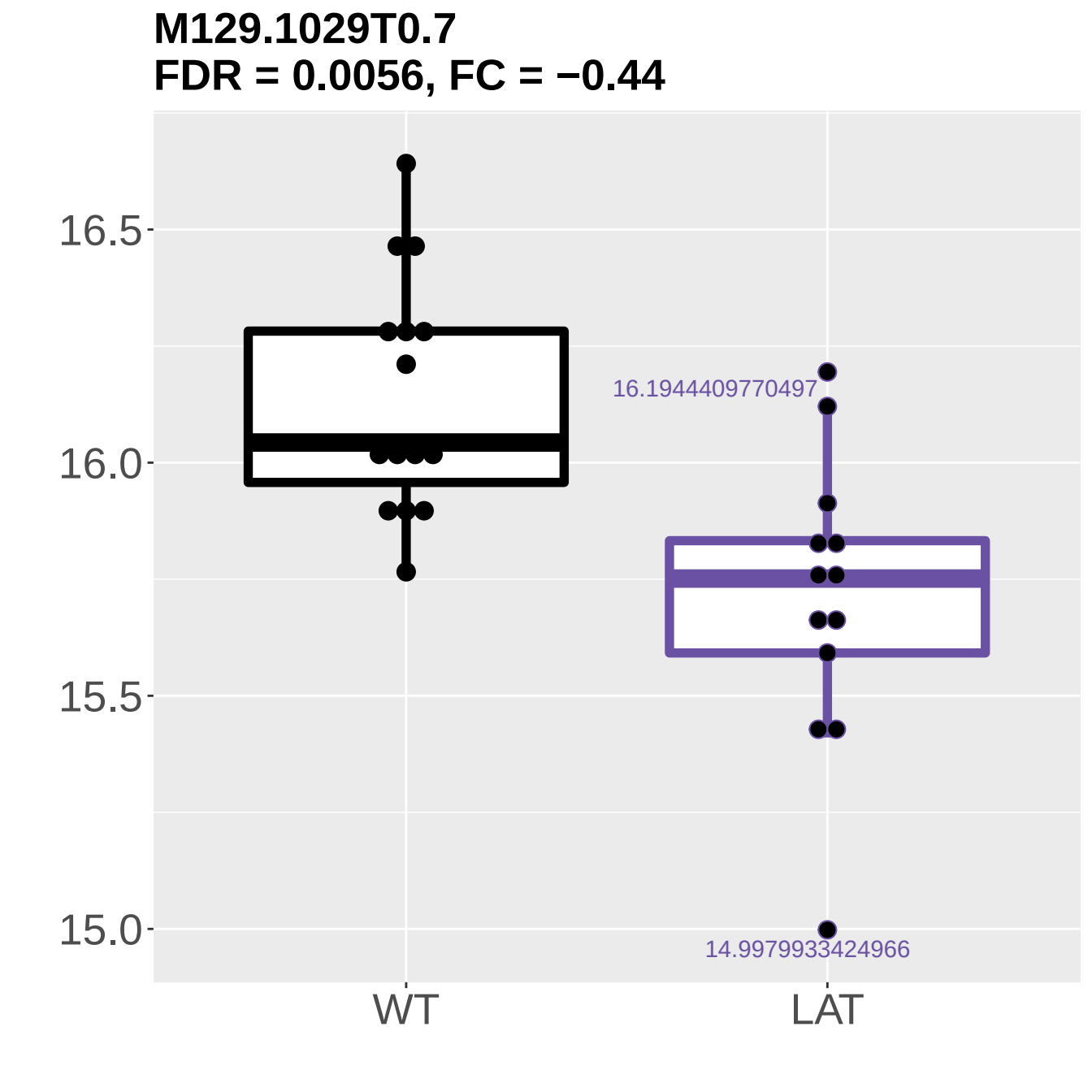
15.5
15.0
14.5
WT
LAT


M129.1029T0.7
FDR = 0.0056, FC = −0.44
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15.5
15.0
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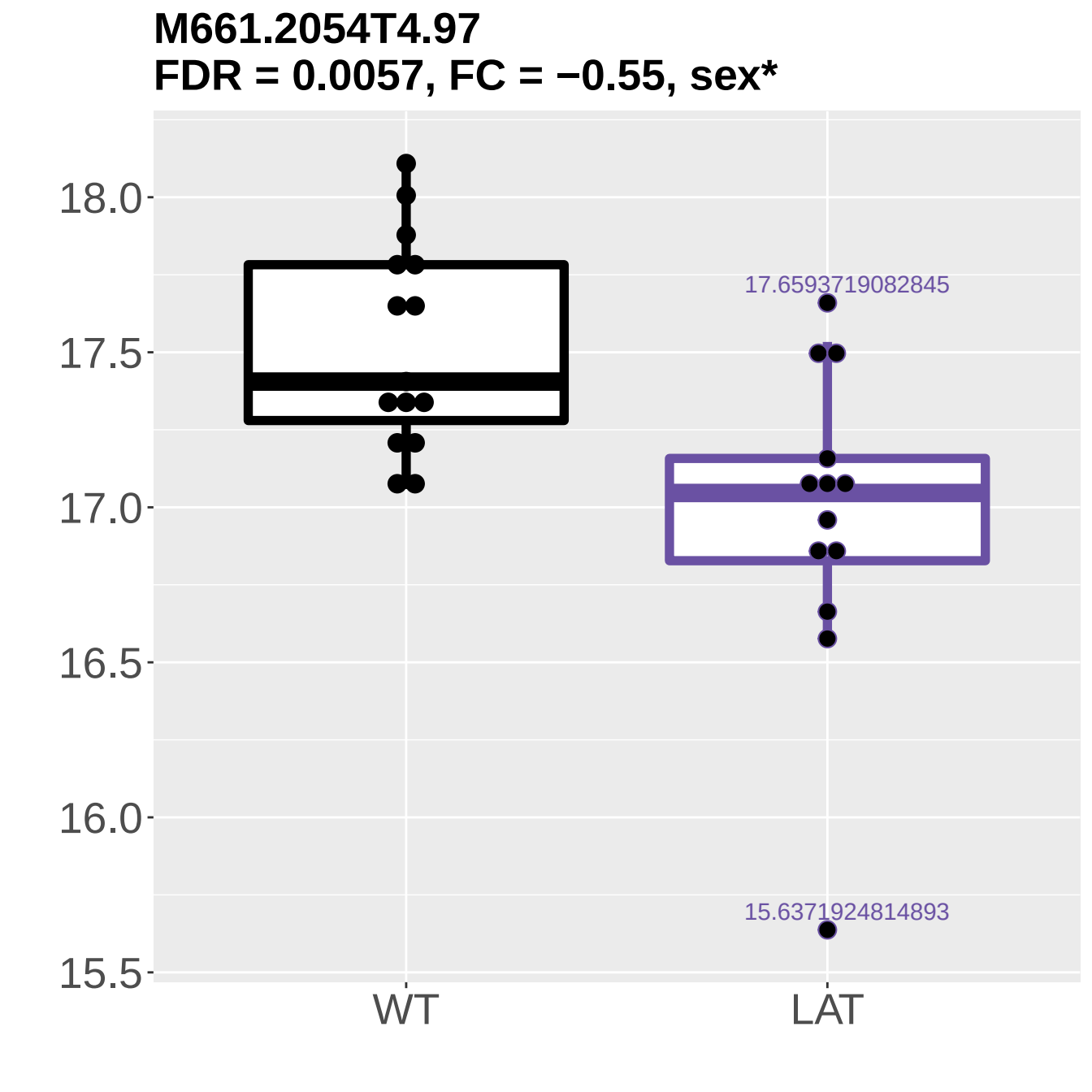
14.9979933424966
WT
LAT


M661.2054T4.97
FDR = 0.0057, FC = −0.55, sex*
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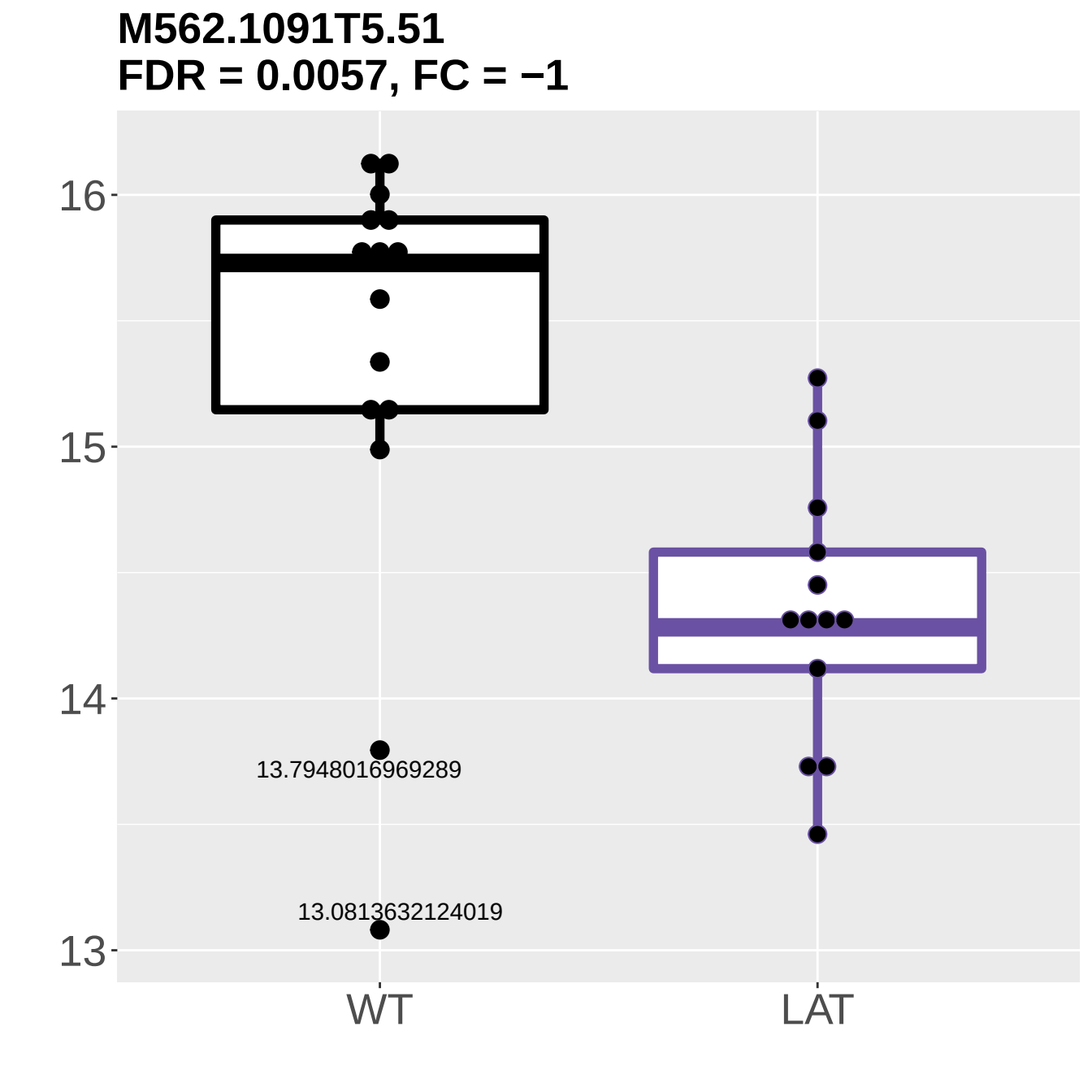
17.0
16.5
16.0
15.5
17.6593719082845
15.6371924814893
WT
LAT


M562.1091T5.51
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15
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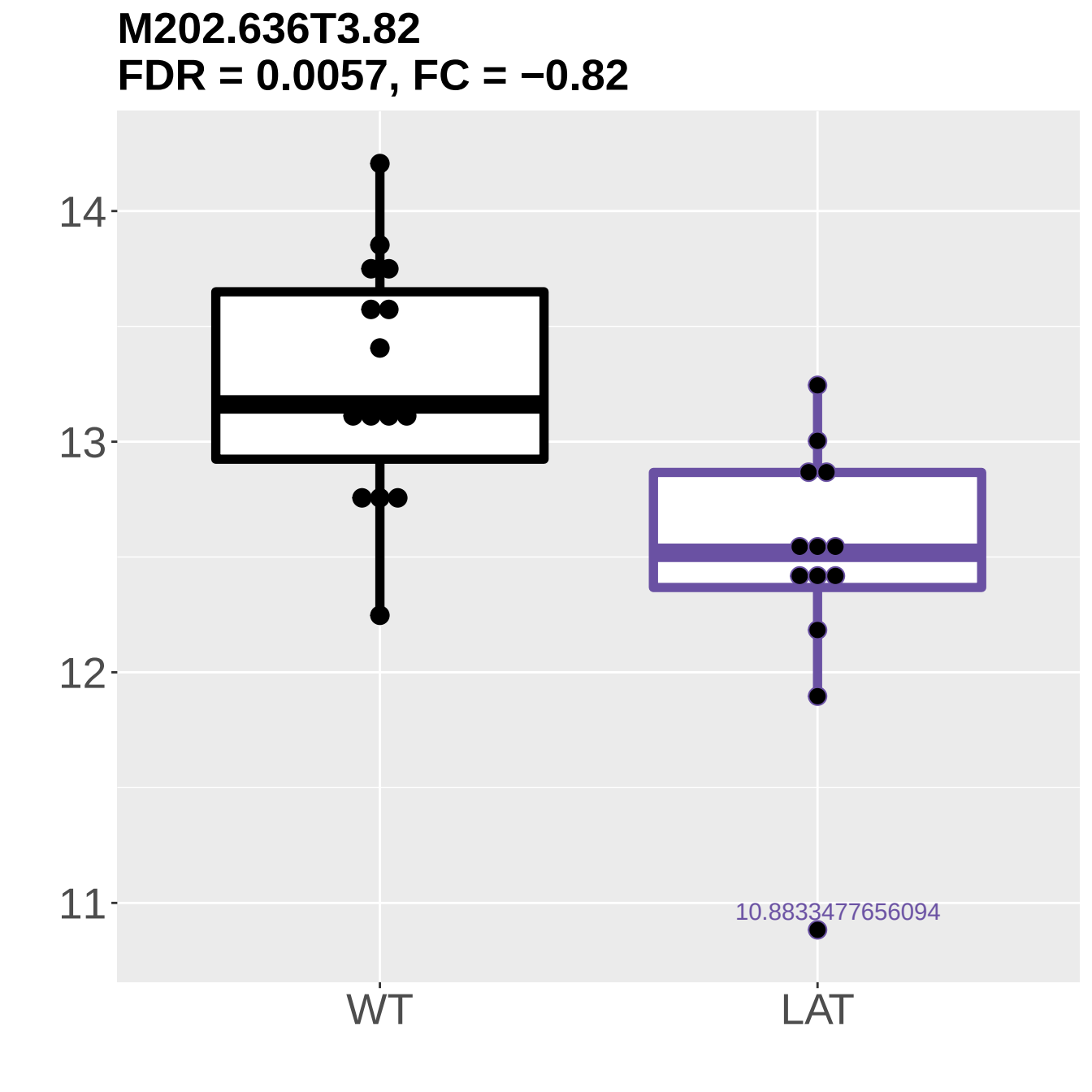
13
13.7948016969289
13.0813632124019
WT
LAT


M202.636T3.82
FDR = 0.0057, FC = −0.82
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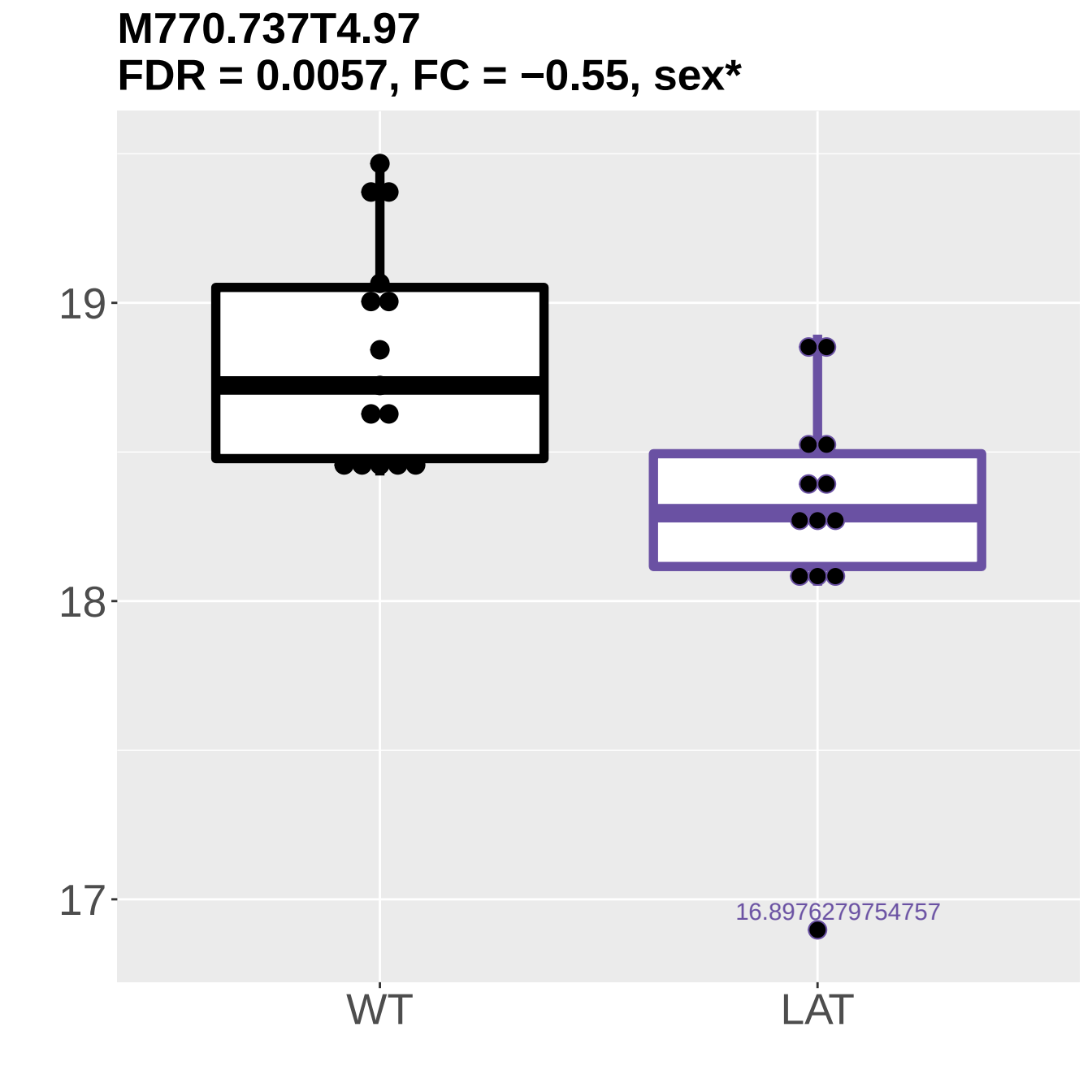
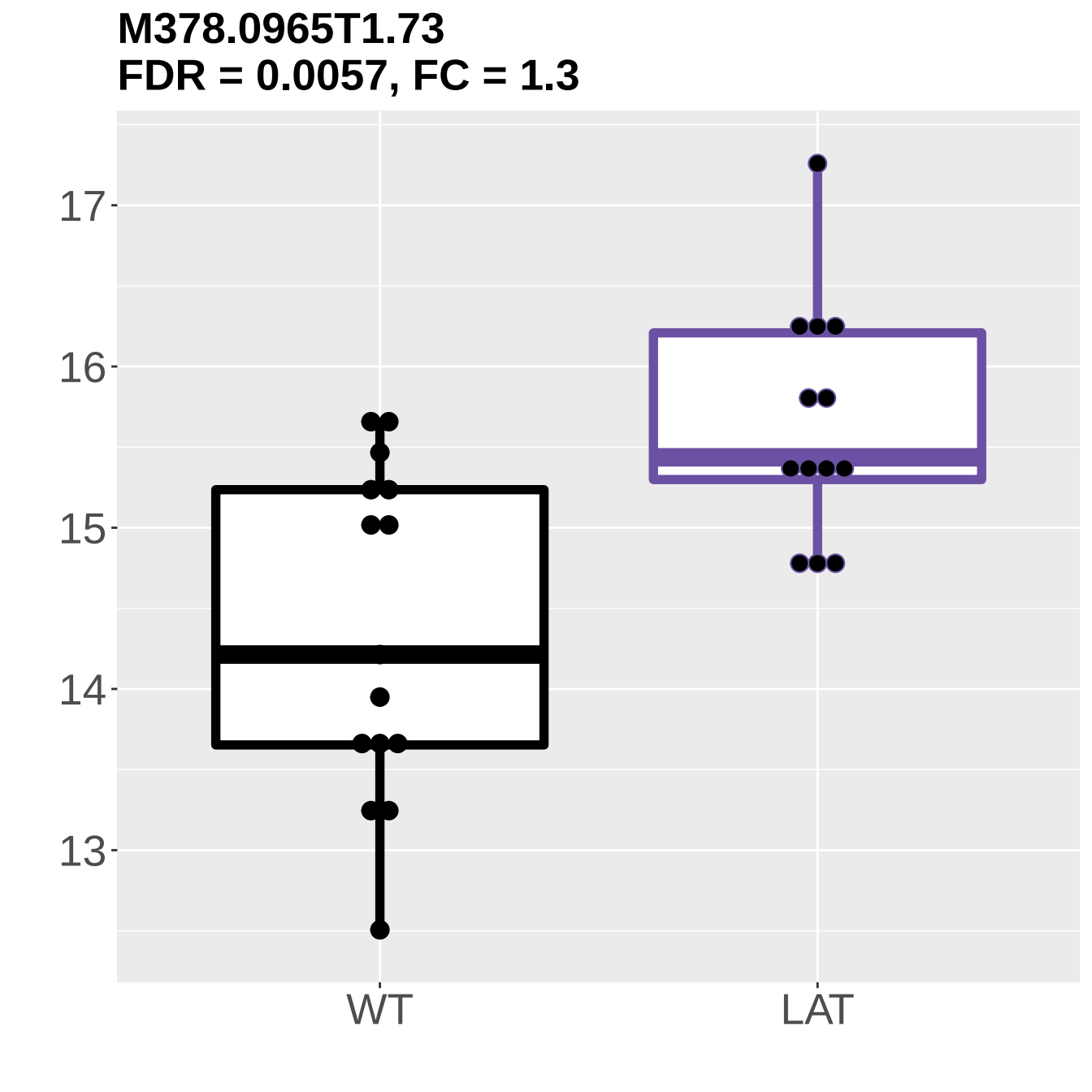
13
12
11
10.8833477656094
WT
LAT


M770.737T4.97
FDR = 0.0057, FC = −0.55, sex*
19
18
17
16.8976279754757
WT
LAT


M378.0965T1.73
FDR = 0.0057, FC = 1.3
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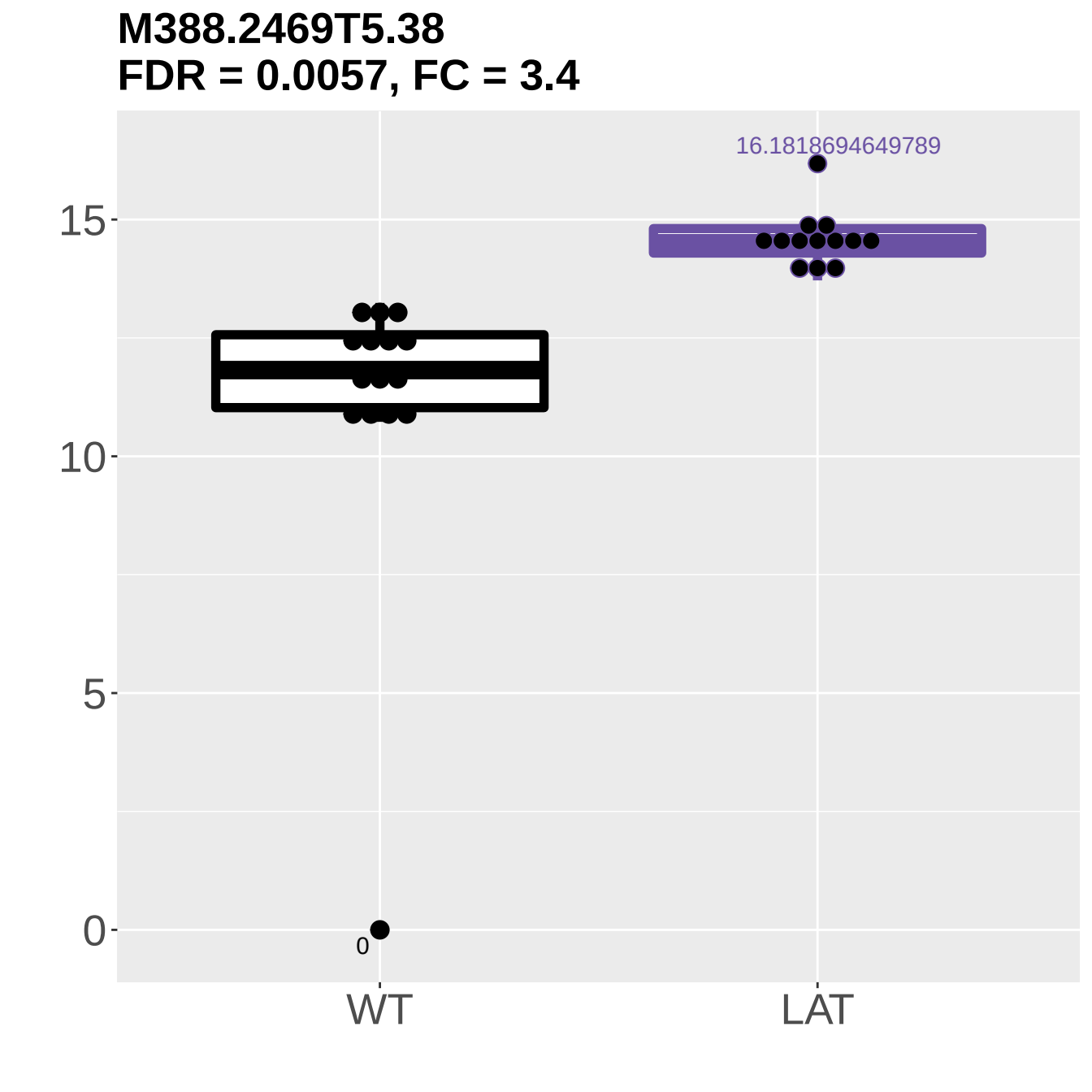
16
15
14
13
WT
LAT


M388.2469T5.38
FDR = 0.0057, FC = 3.4
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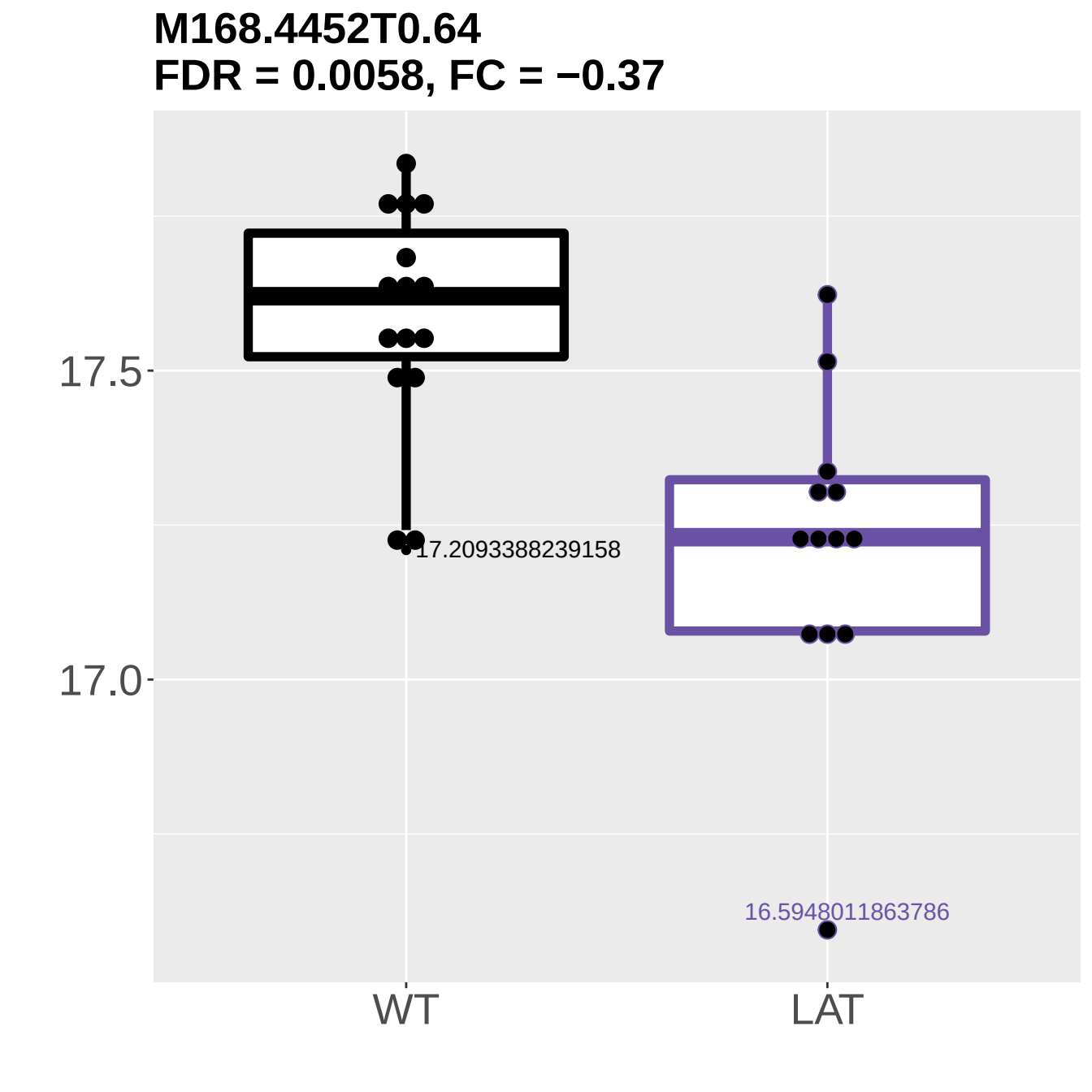
10
5
0
0
WT
LAT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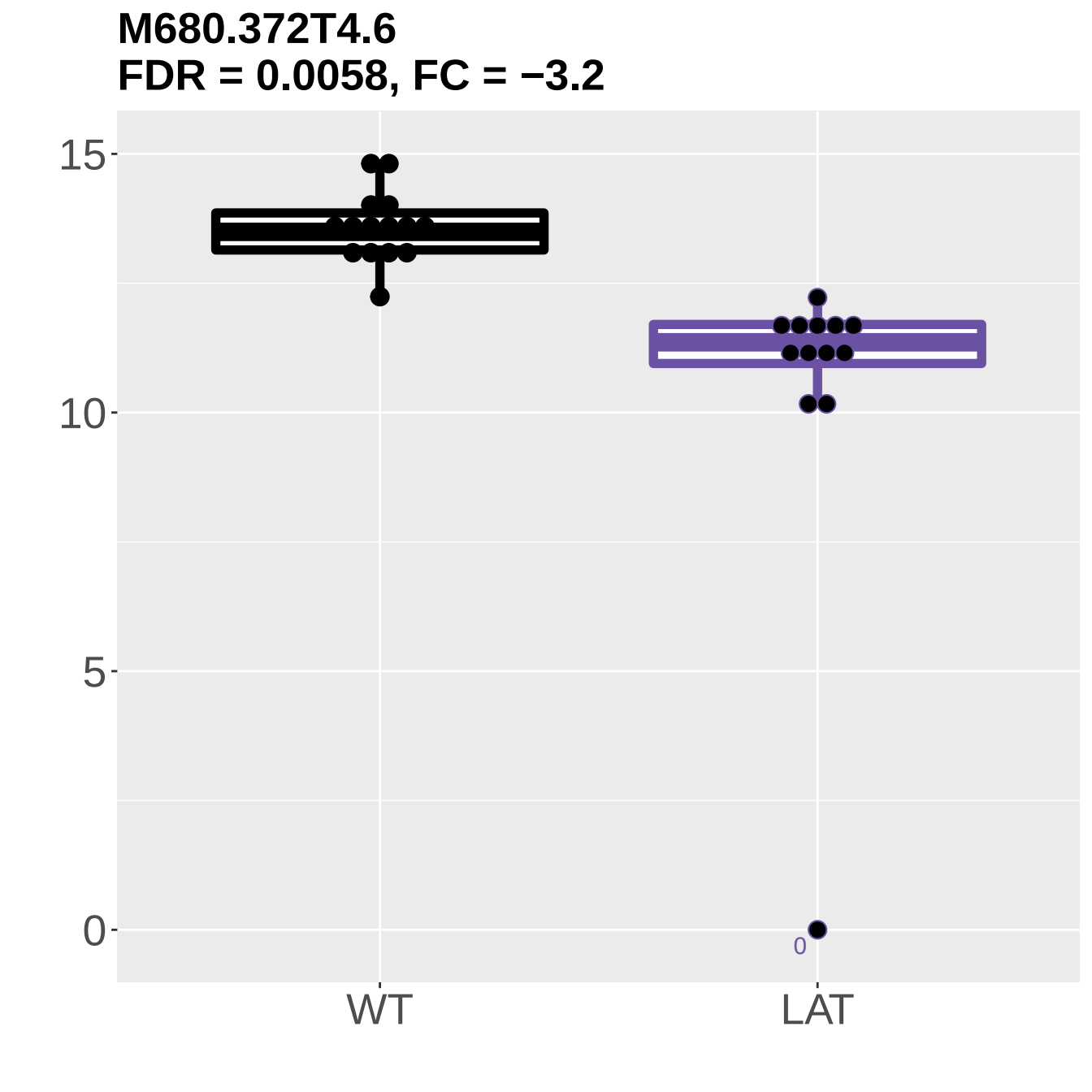
WT
LAT


M680.372T4.6
FDR = 0.0058, FC = −3.2
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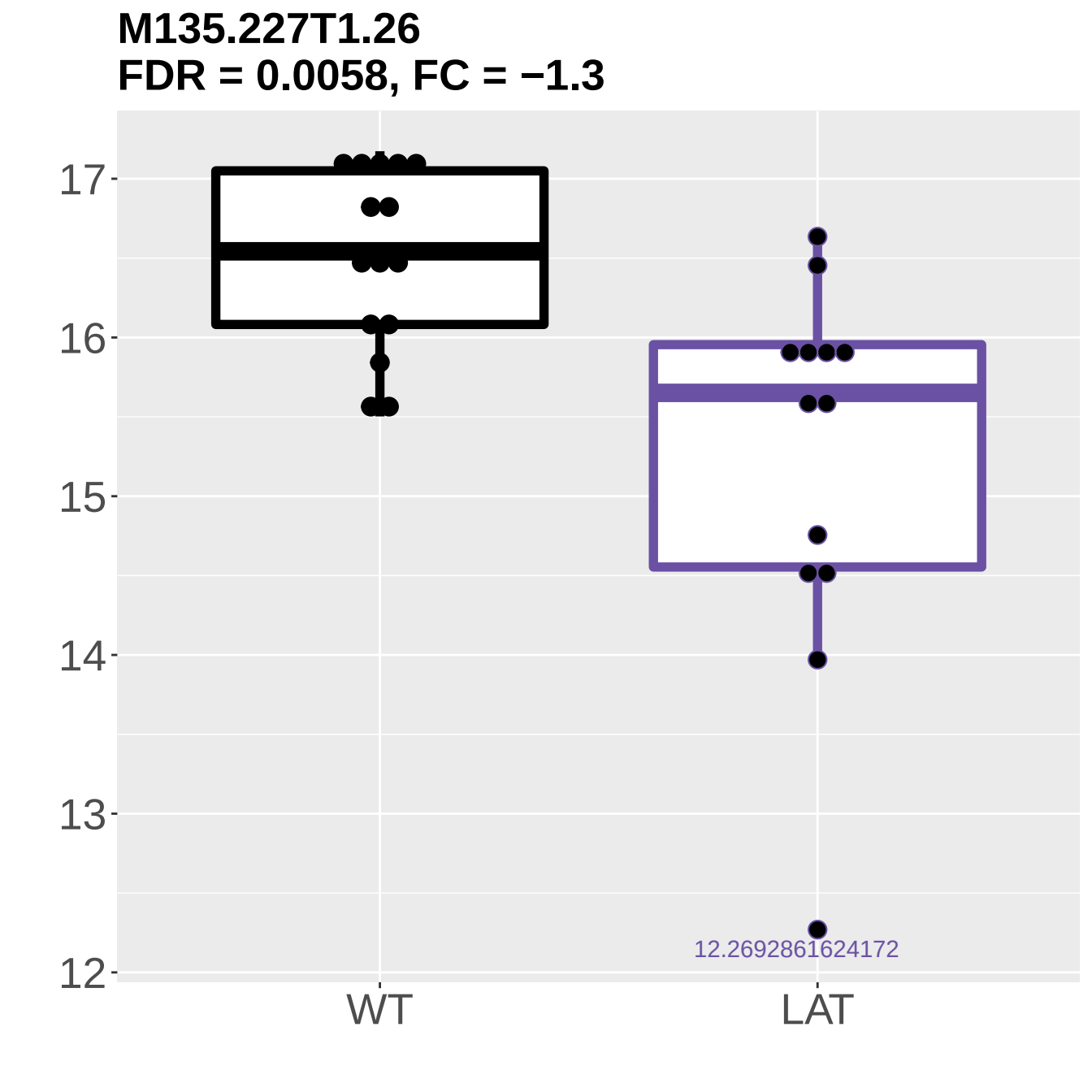
10
5
0
0
WT
LAT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16
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14
13
12
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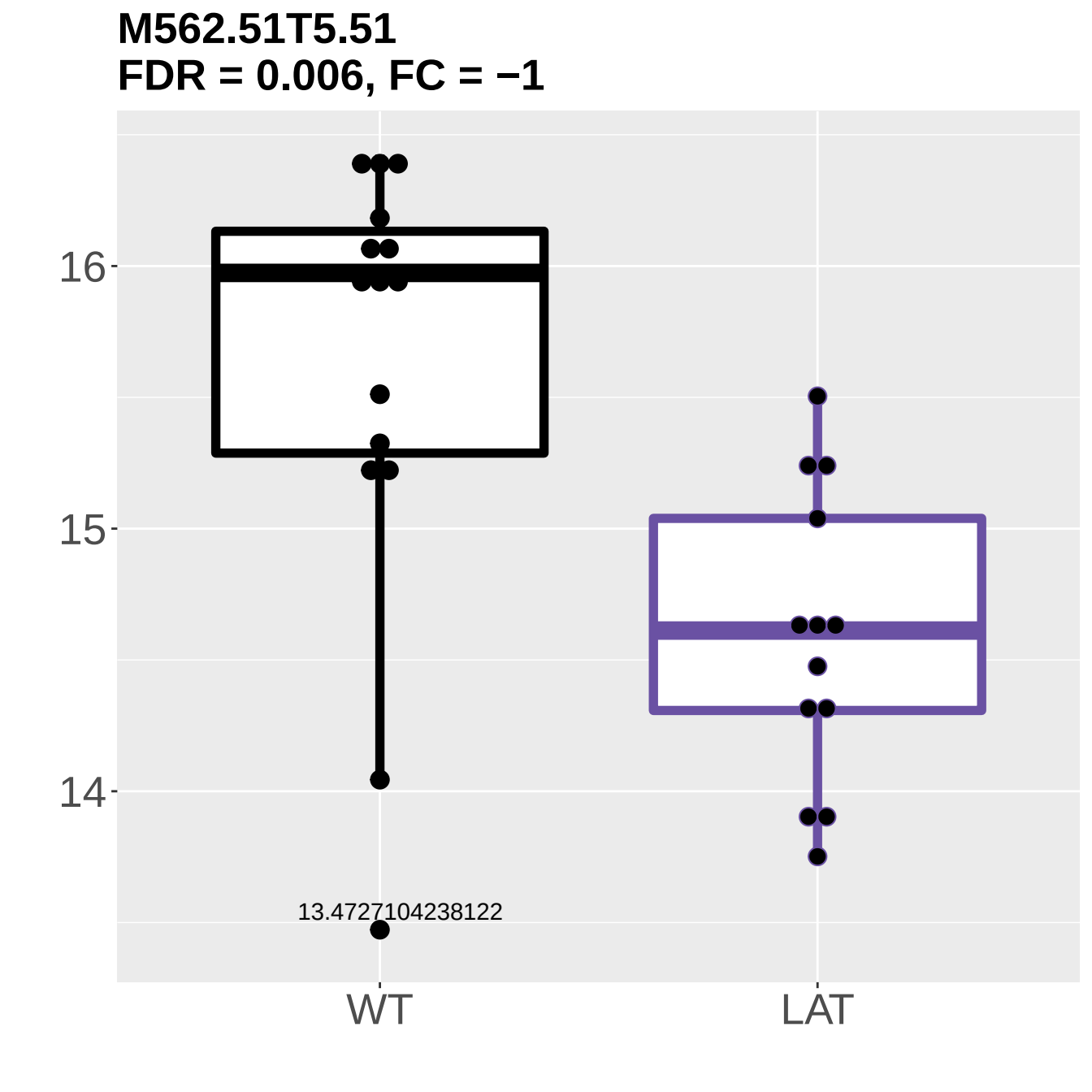
WT
LAT


M562.51T5.51
FDR = 0.006, FC = −1
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15
14
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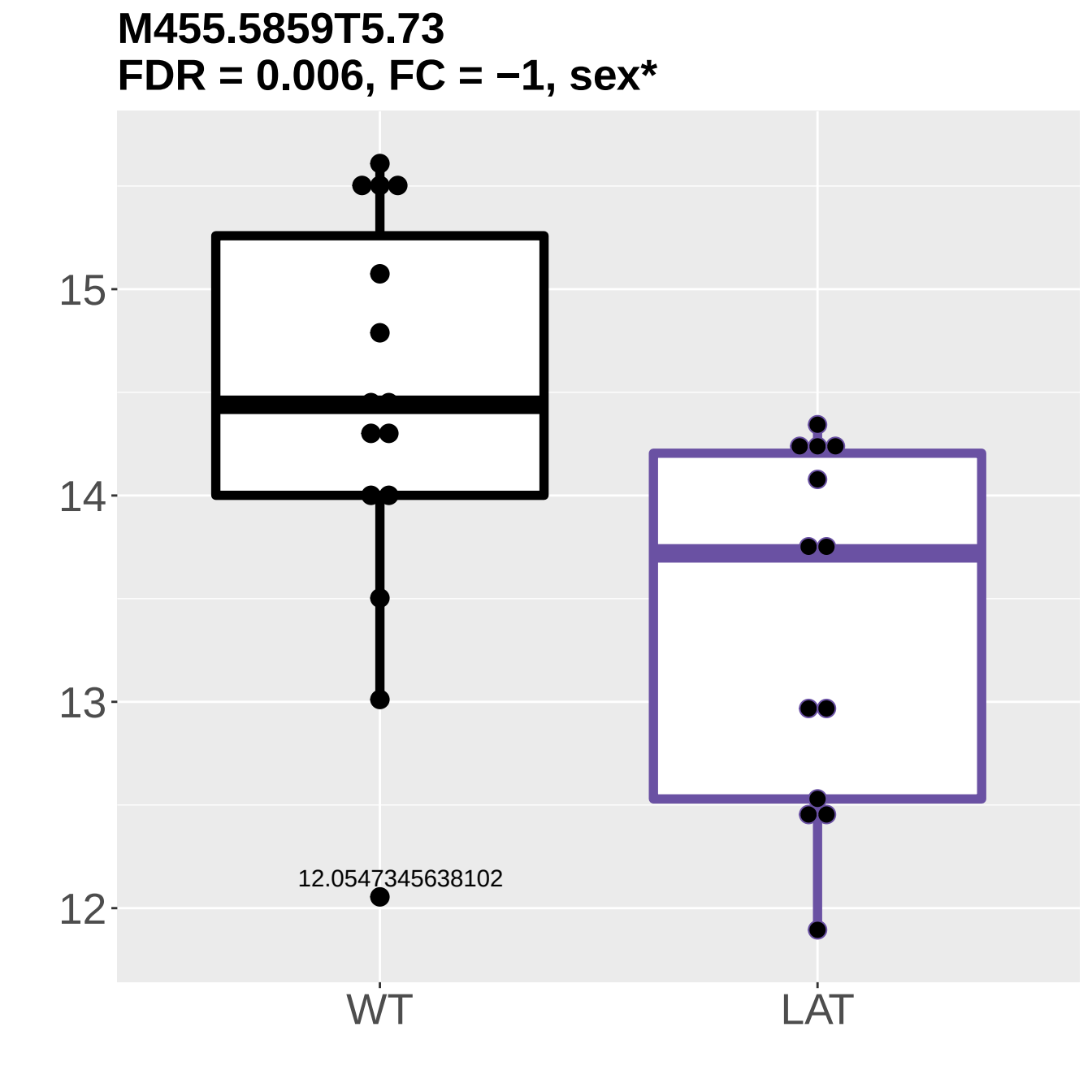
WT
LAT


M455.5859T5.73
FDR = 0.006, FC = −1, sex*
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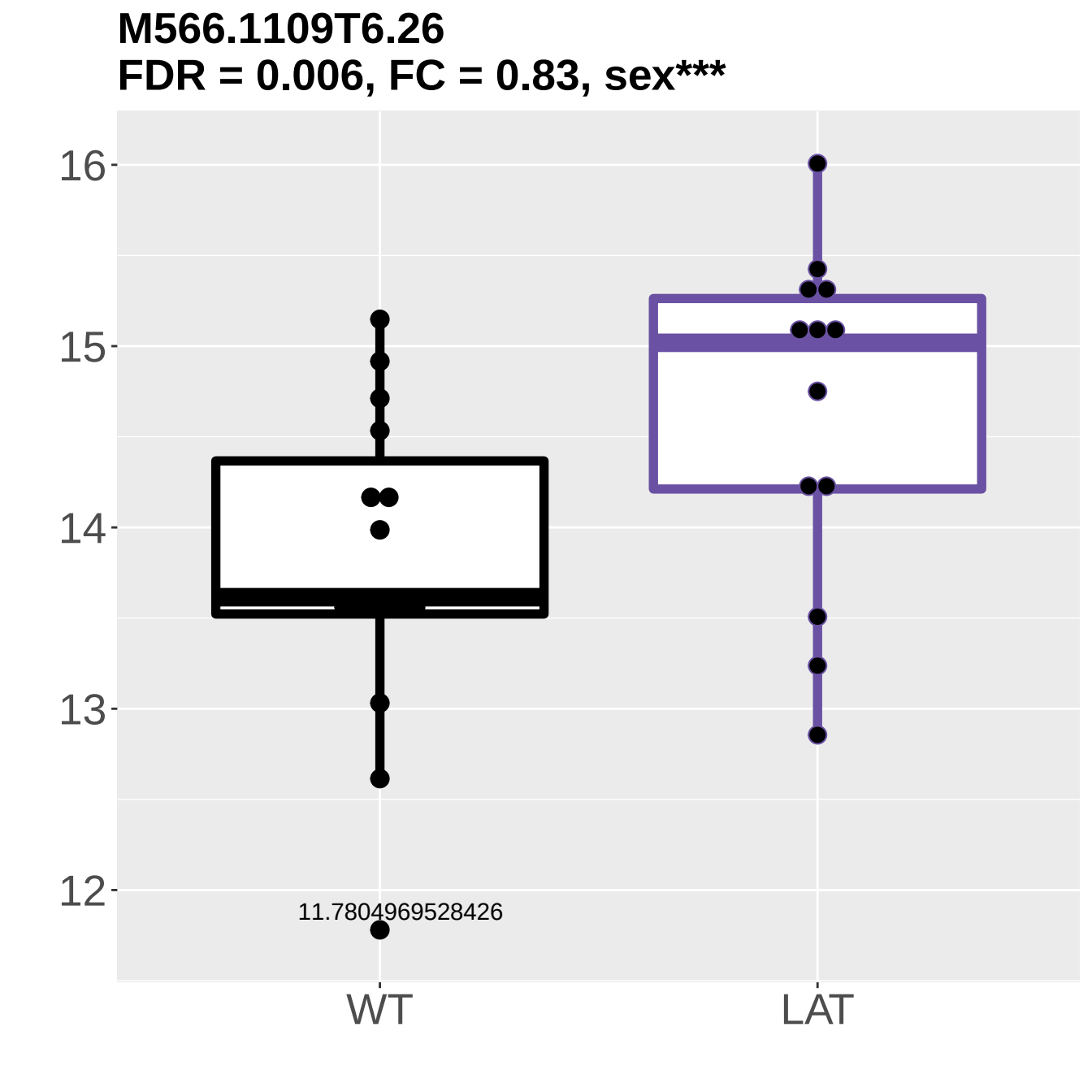
14
13
12
12.0547345638102
WT
LAT


M566.1109T6.26
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14
13
12
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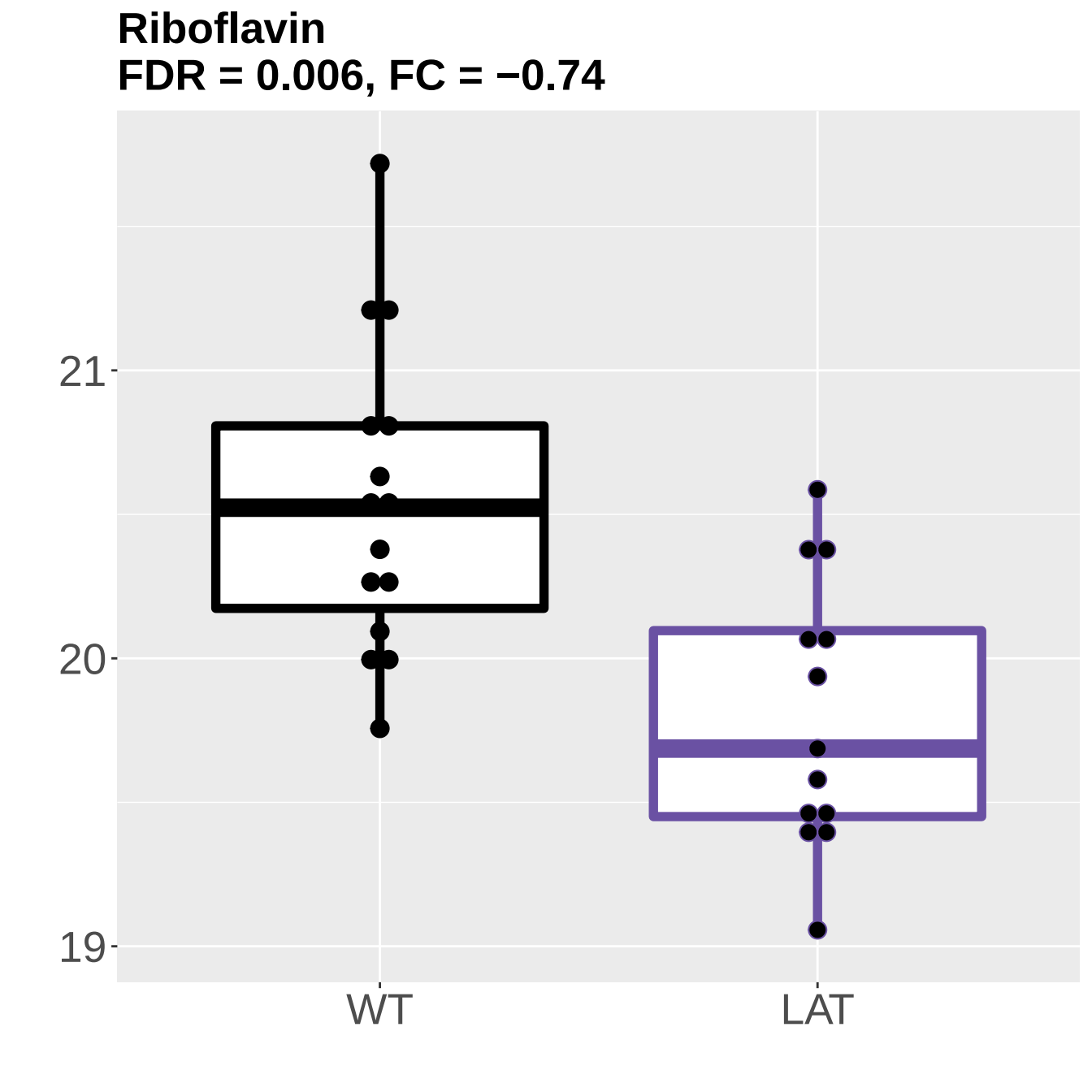
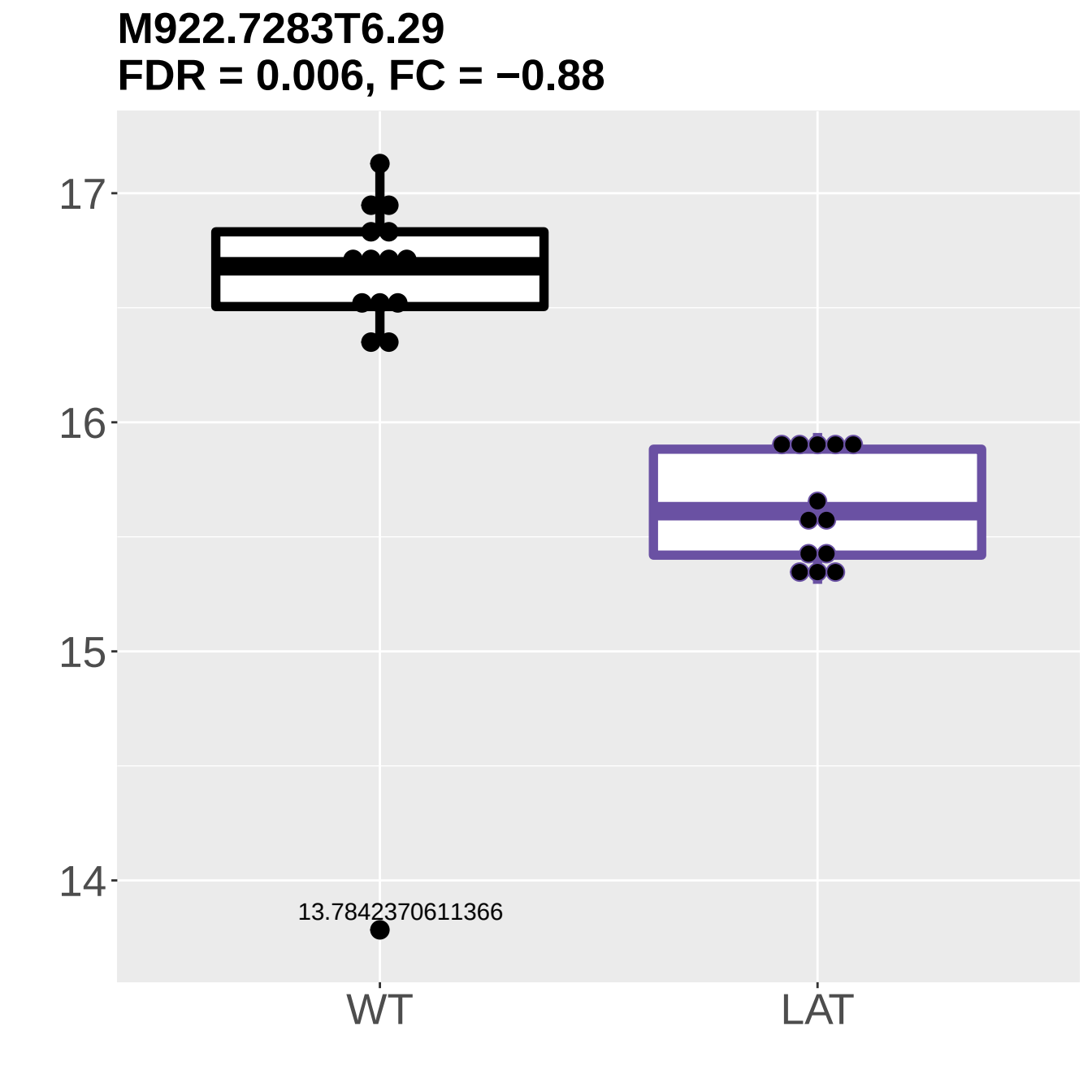
WT
LAT


Riboflavin
FDR = 0.006, FC = −0.74
21
20
19
WT
LAT


M922.7283T6.29
FDR = 0.006, FC = −0.88
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16
15
14
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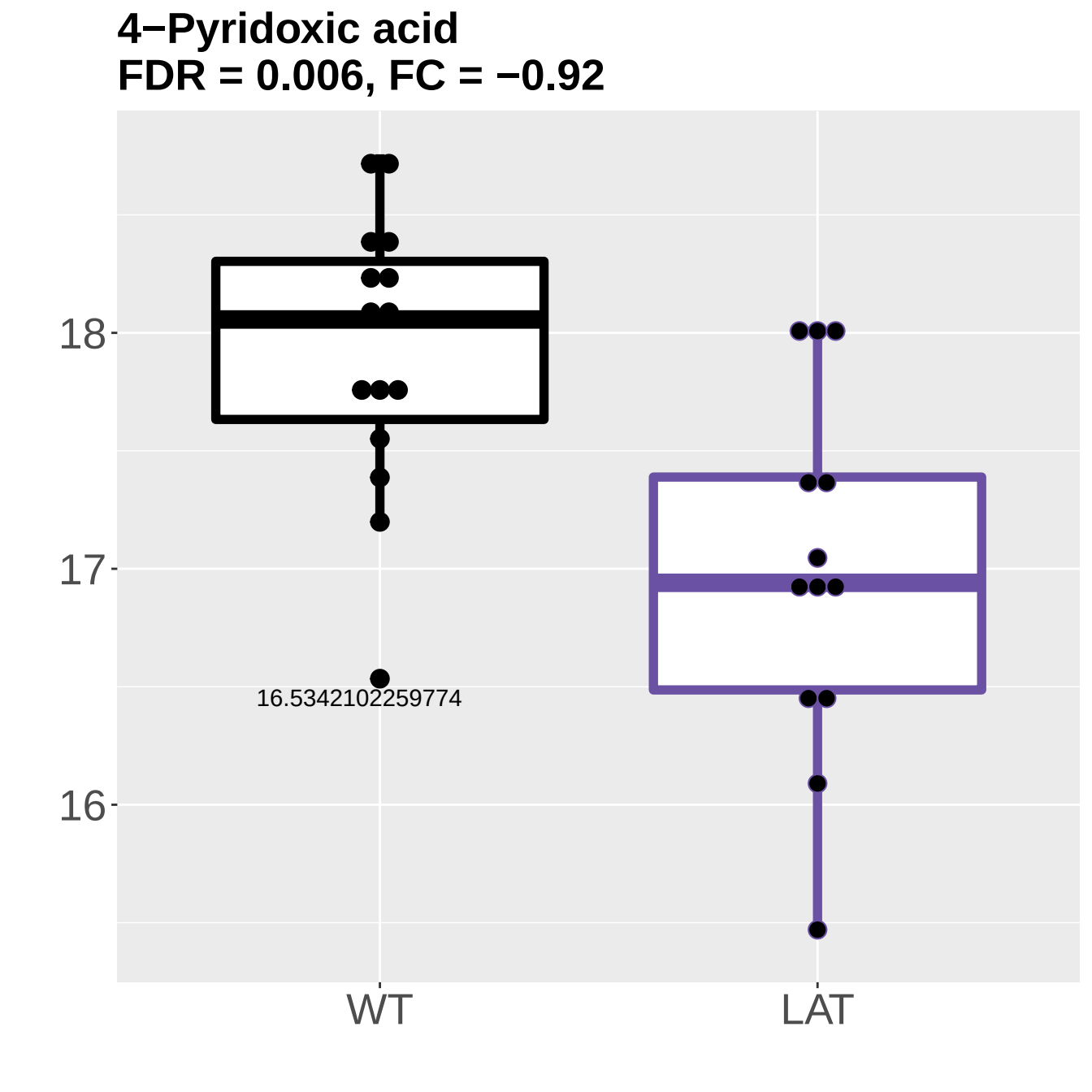
WT
LAT


4−Pyridoxic acid
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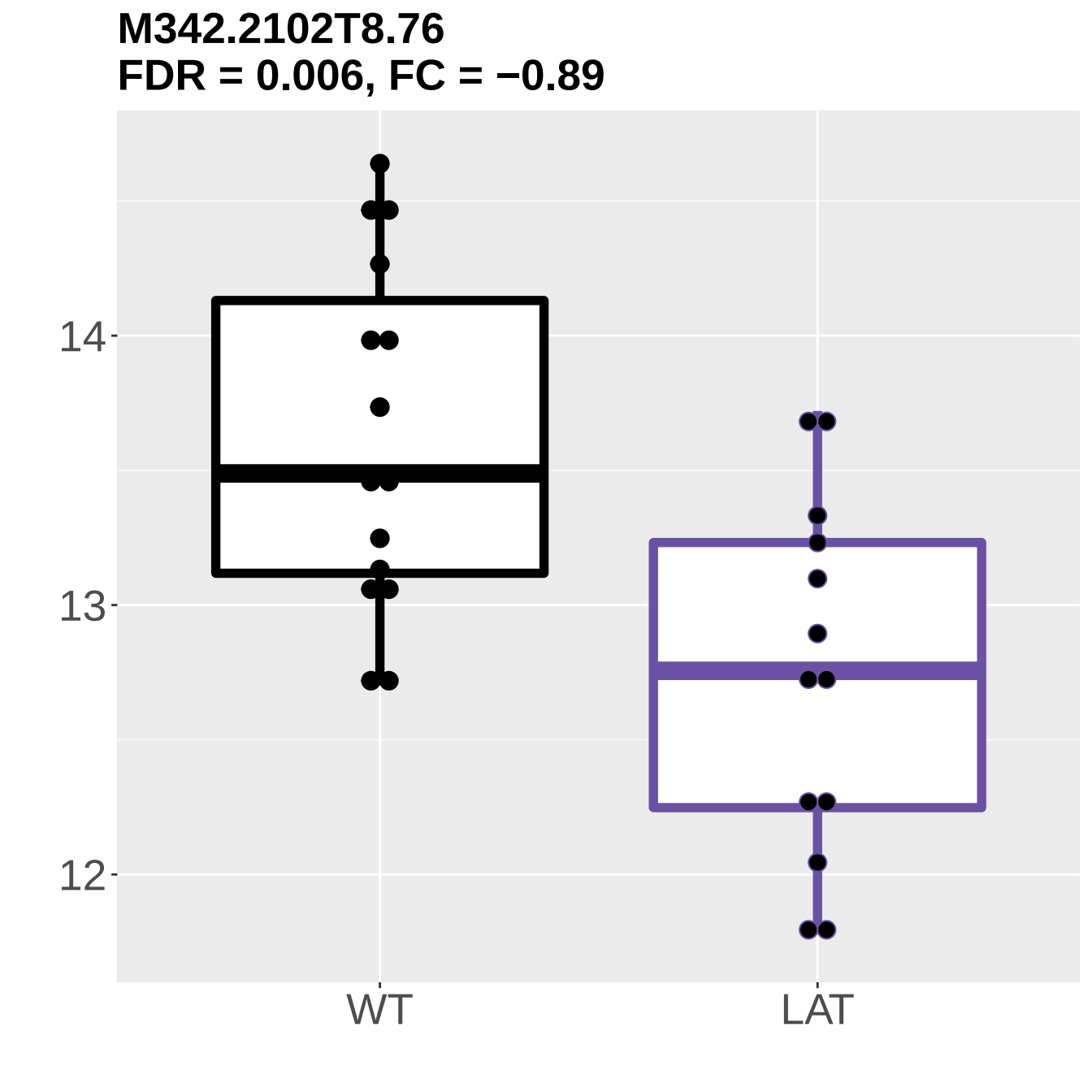
18
17
16
16.5342102259774
WT
LAT


M342.2102T8.76
FDR = 0.006, FC = −0.89
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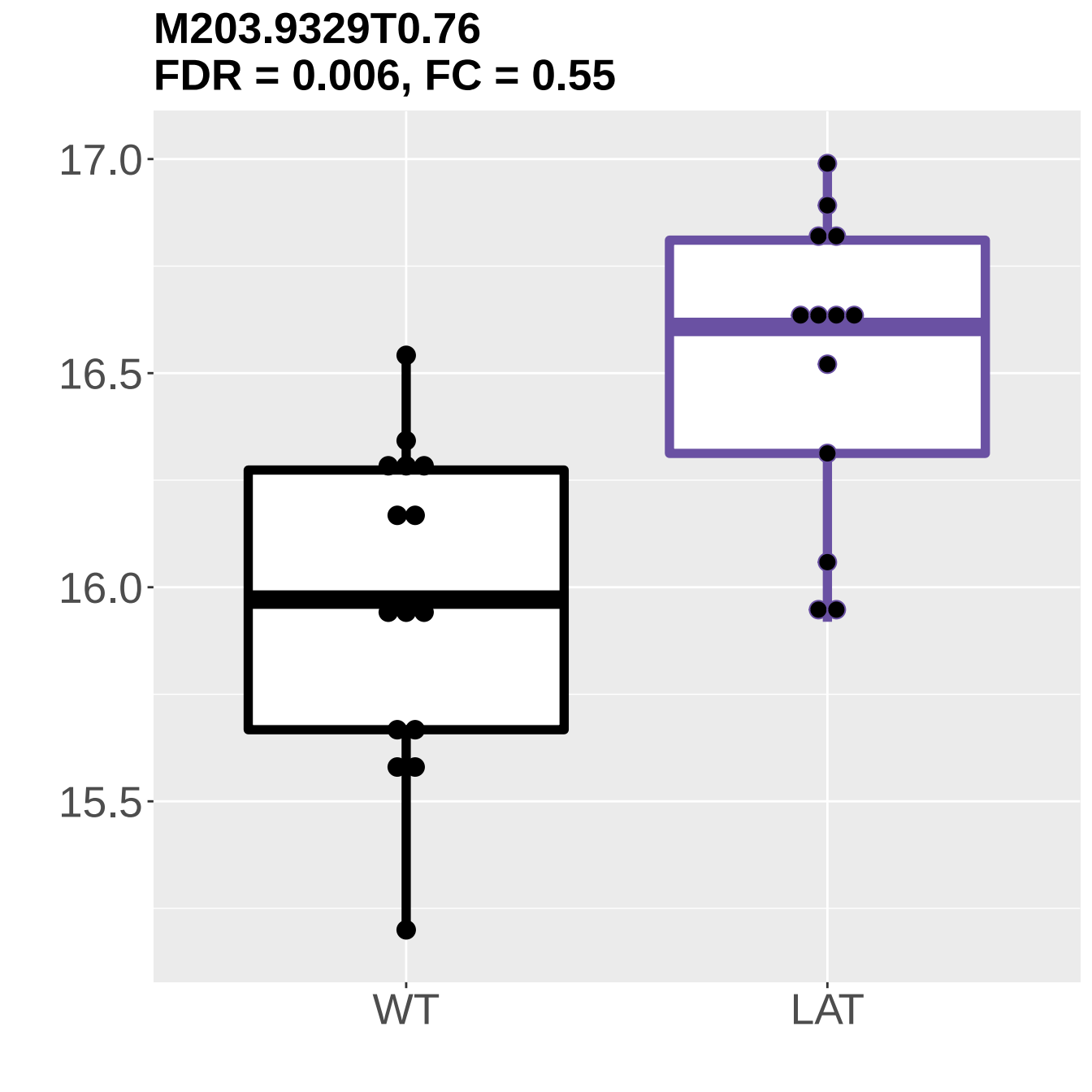
13
12
WT
LAT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FDR = 0.006, FC = 0.55
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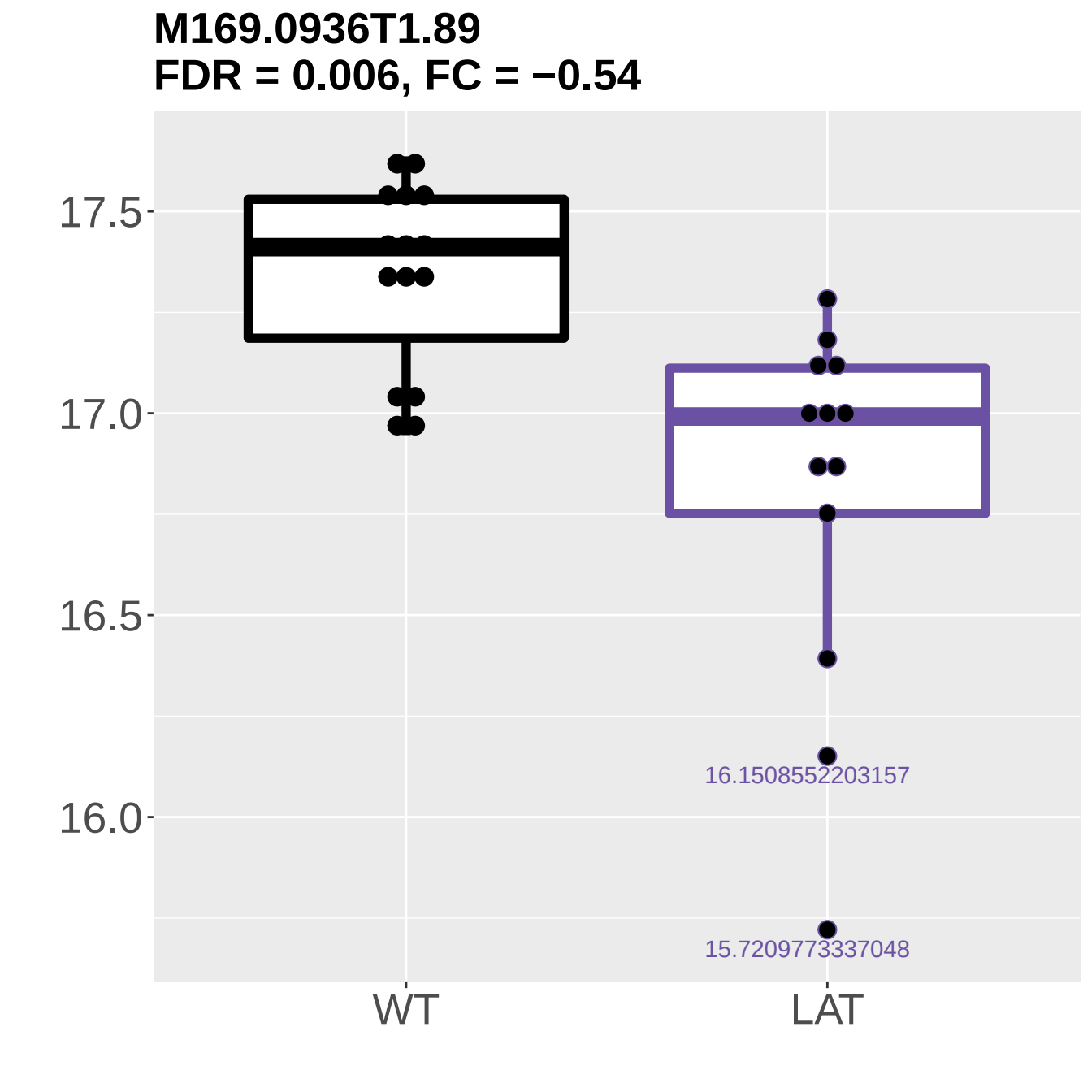
16.0
15.5
WT
LAT


M169.0936T1.89
FDR = 0.006, FC = −0.54
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16.5
16.0
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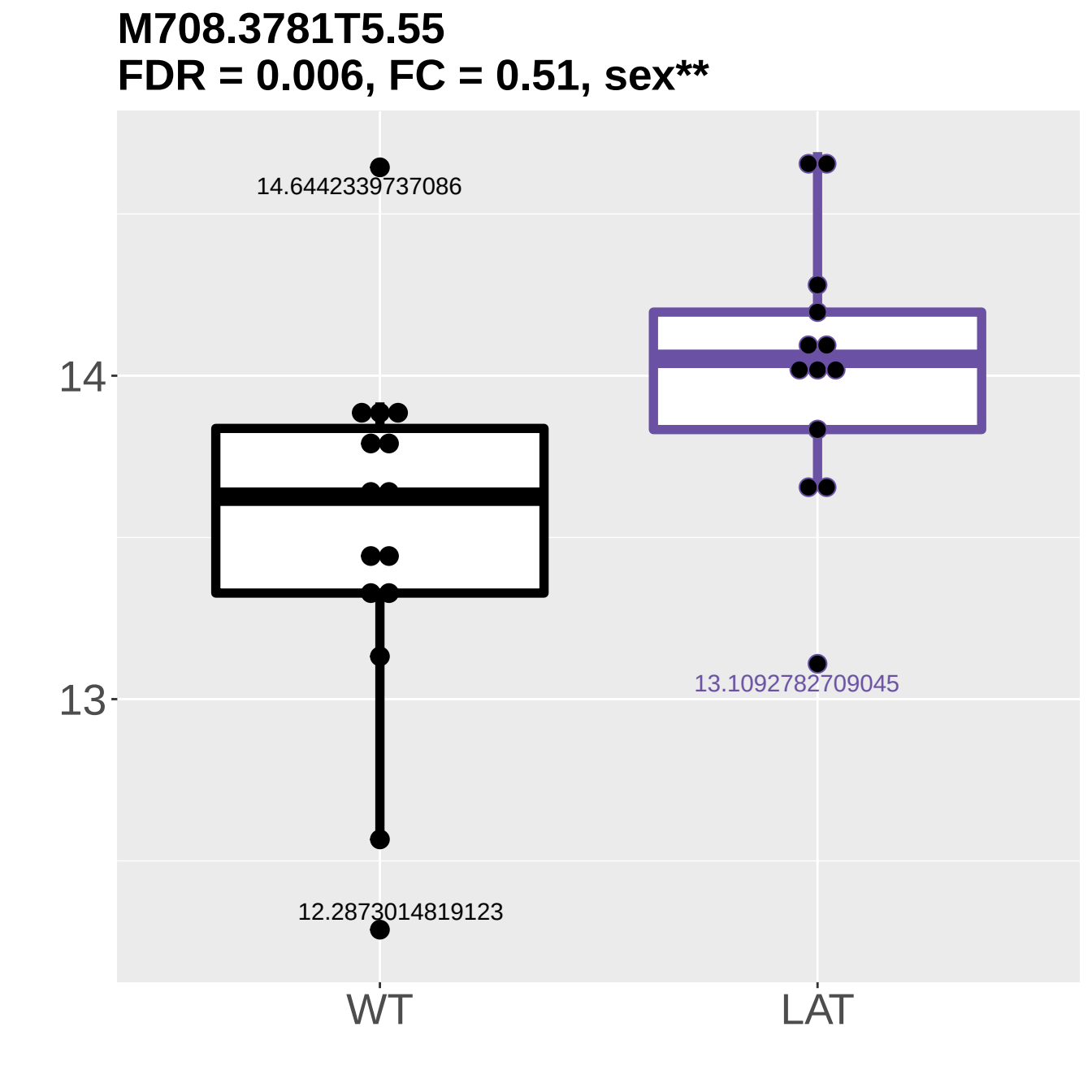
15.7209773337048
WT
LAT


M708.3781T5.55
FDR = 0.006, FC = 0.51, sex**
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13
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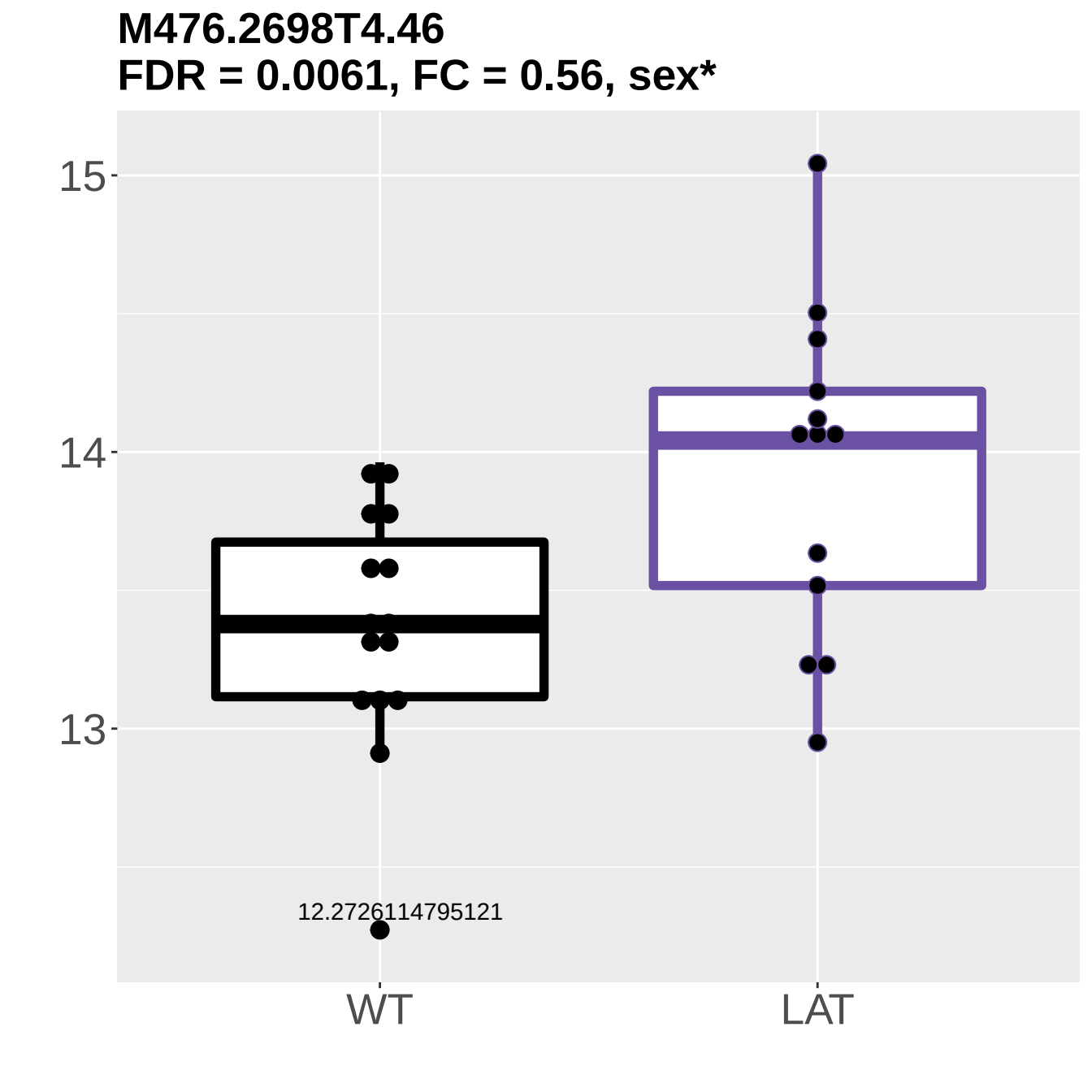
12.2873014819123
WT
LAT


M476.2698T4.46
FDR = 0.0061, FC = 0.56, sex*
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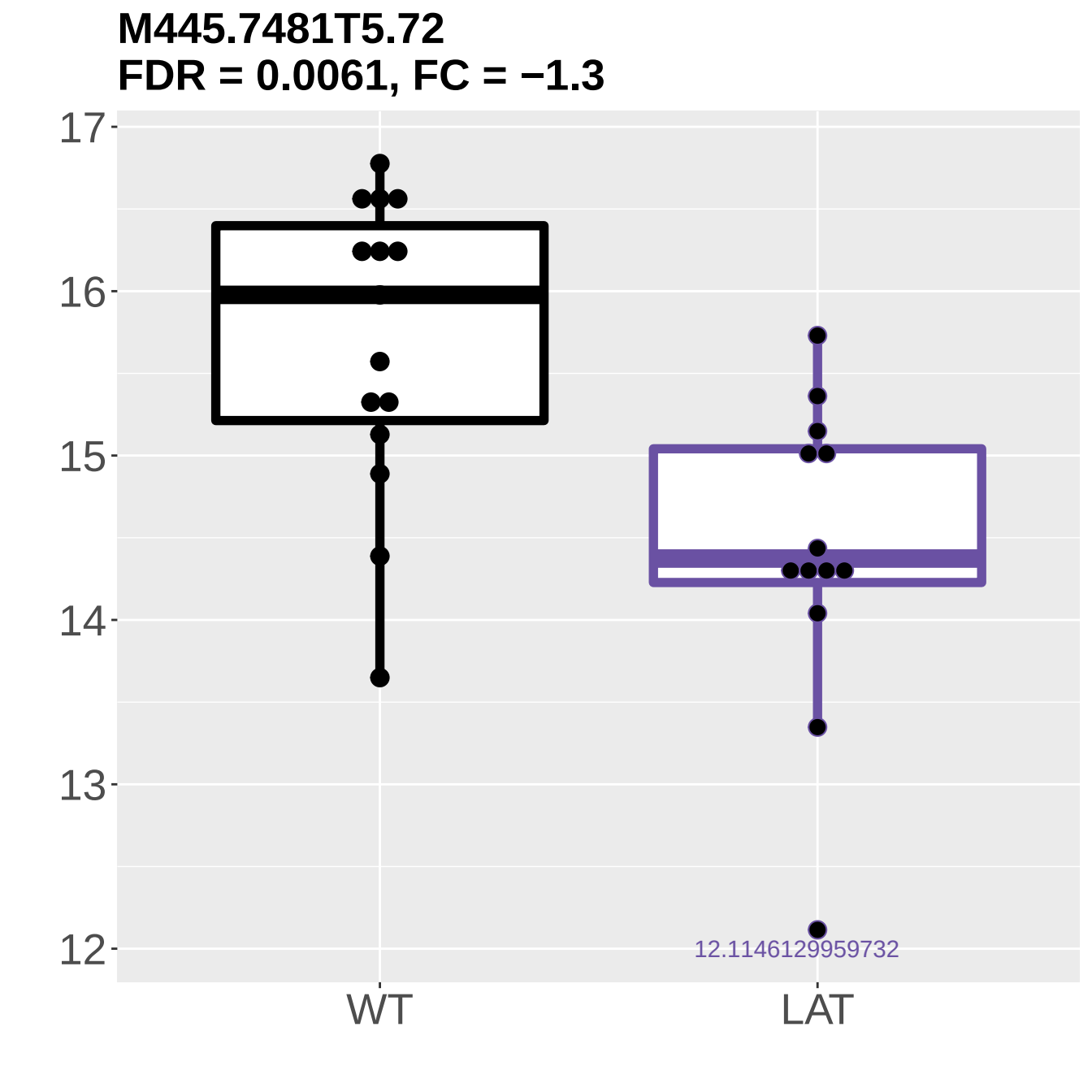
14
13
12.2726114795121
WT
LAT


M445.7481T5.72
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16
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14
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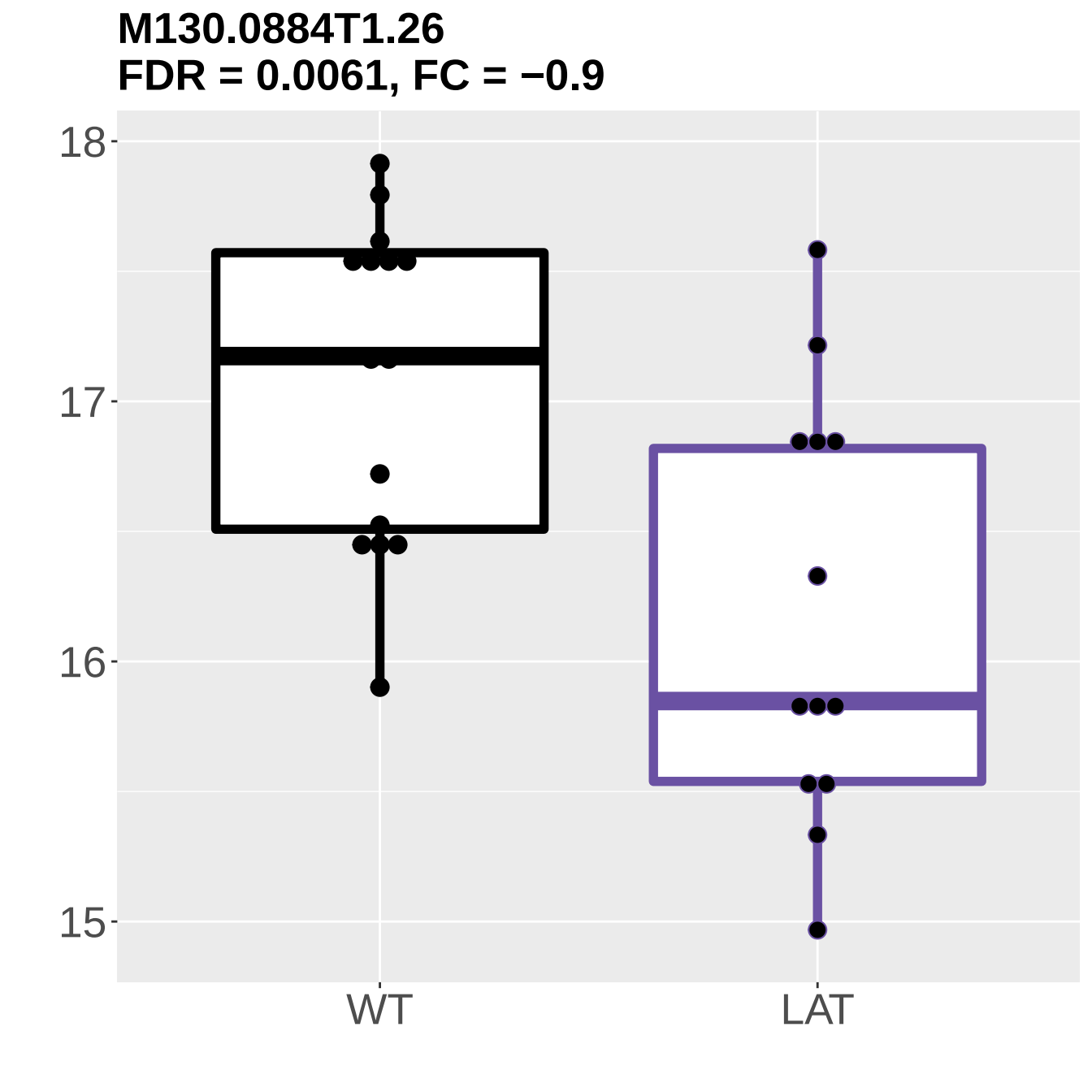
WT
LAT


M130.0884T1.26
FDR = 0.0061, FC = −0.9
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17
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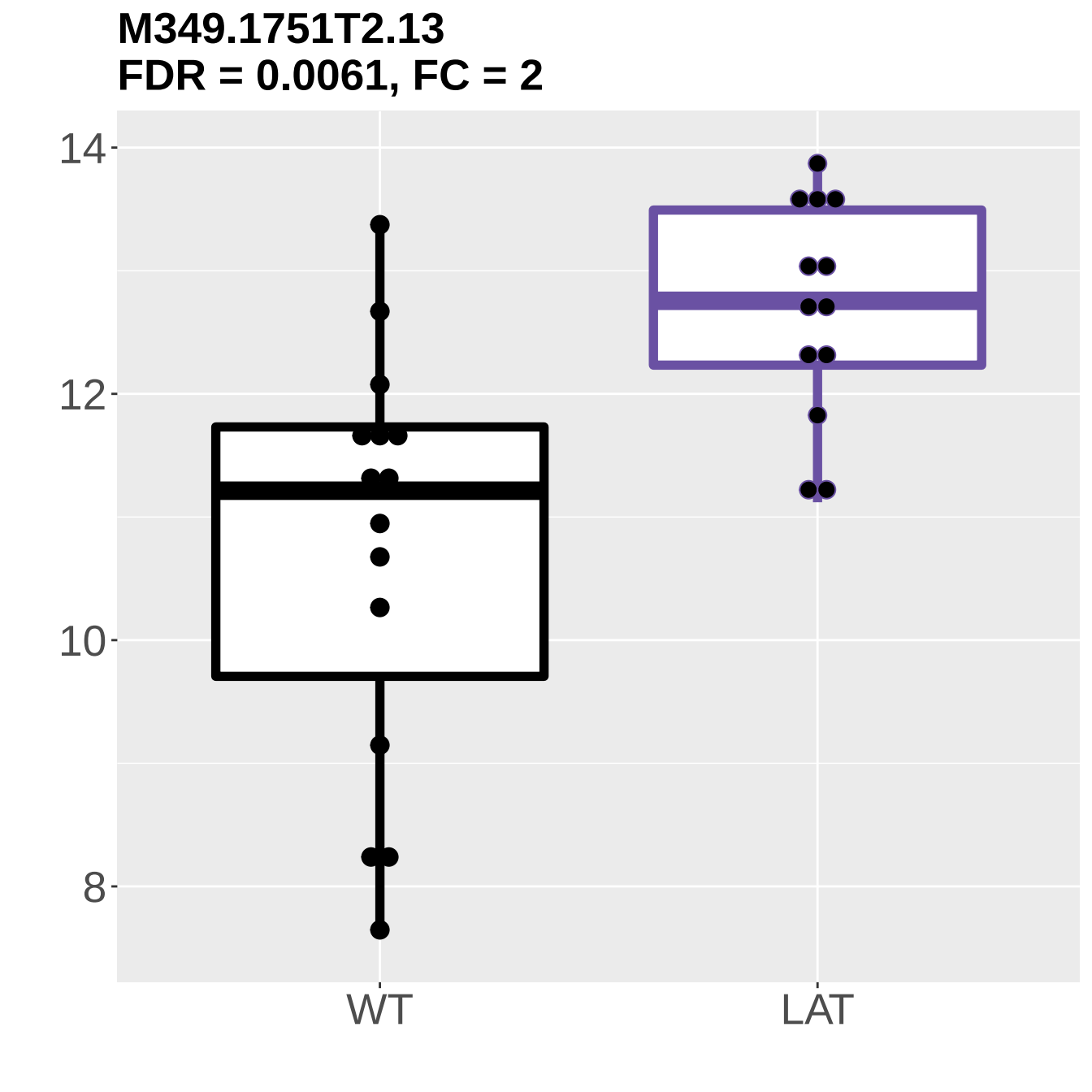
15
WT
LAT


M349.1751T2.13
FDR = 0.0061, FC = 2
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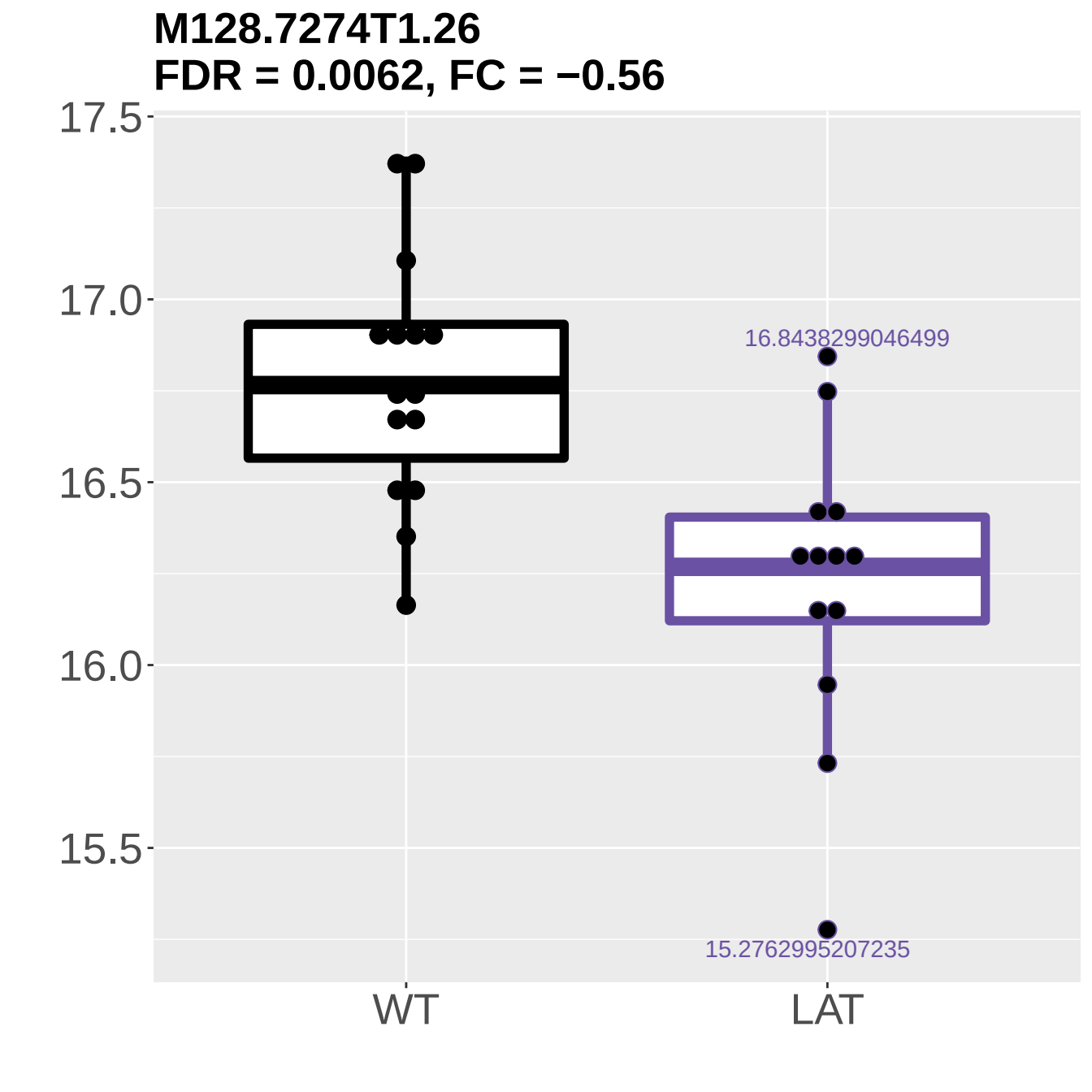
12
10
8
WT
LAT


M128.7274T1.26
FDR = 0.0062, FC = −0.56
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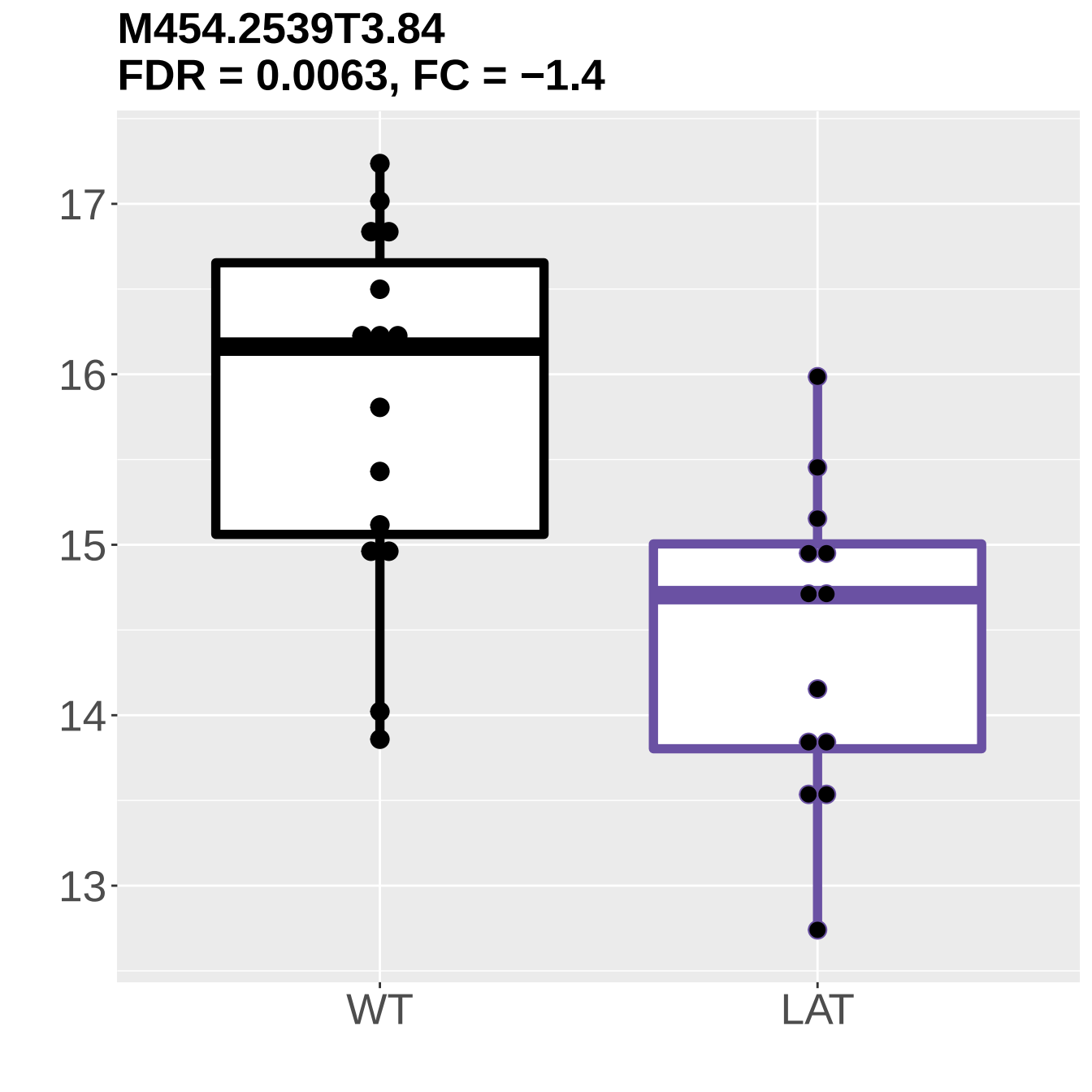
16.5
16.0
15.5
16.8438299046499
15.2762995207235
WT
LAT


M454.2539T3.84
FDR = 0.0063, FC = −1.4
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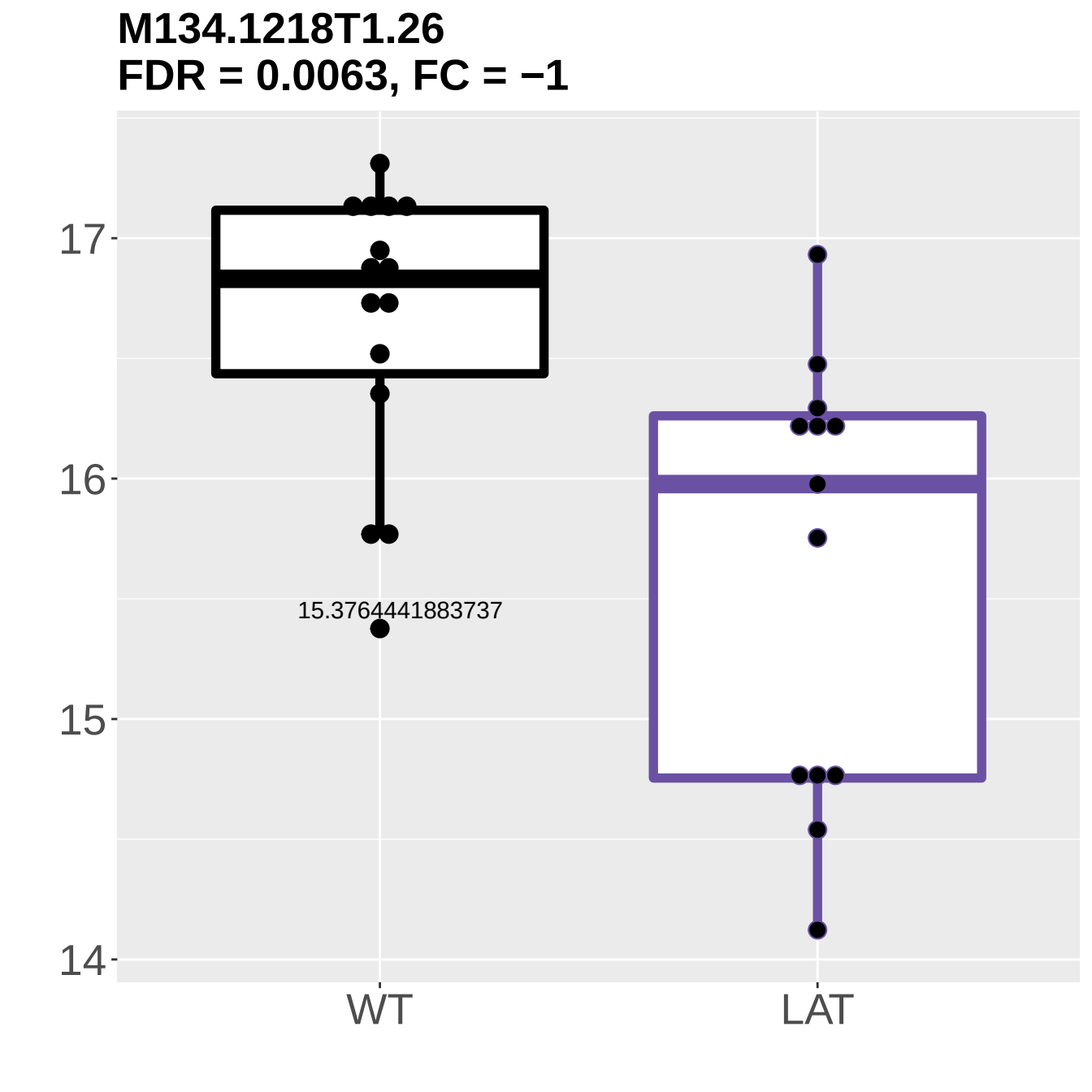
16
15
14
13
WT
LAT


M134.1218T1.26
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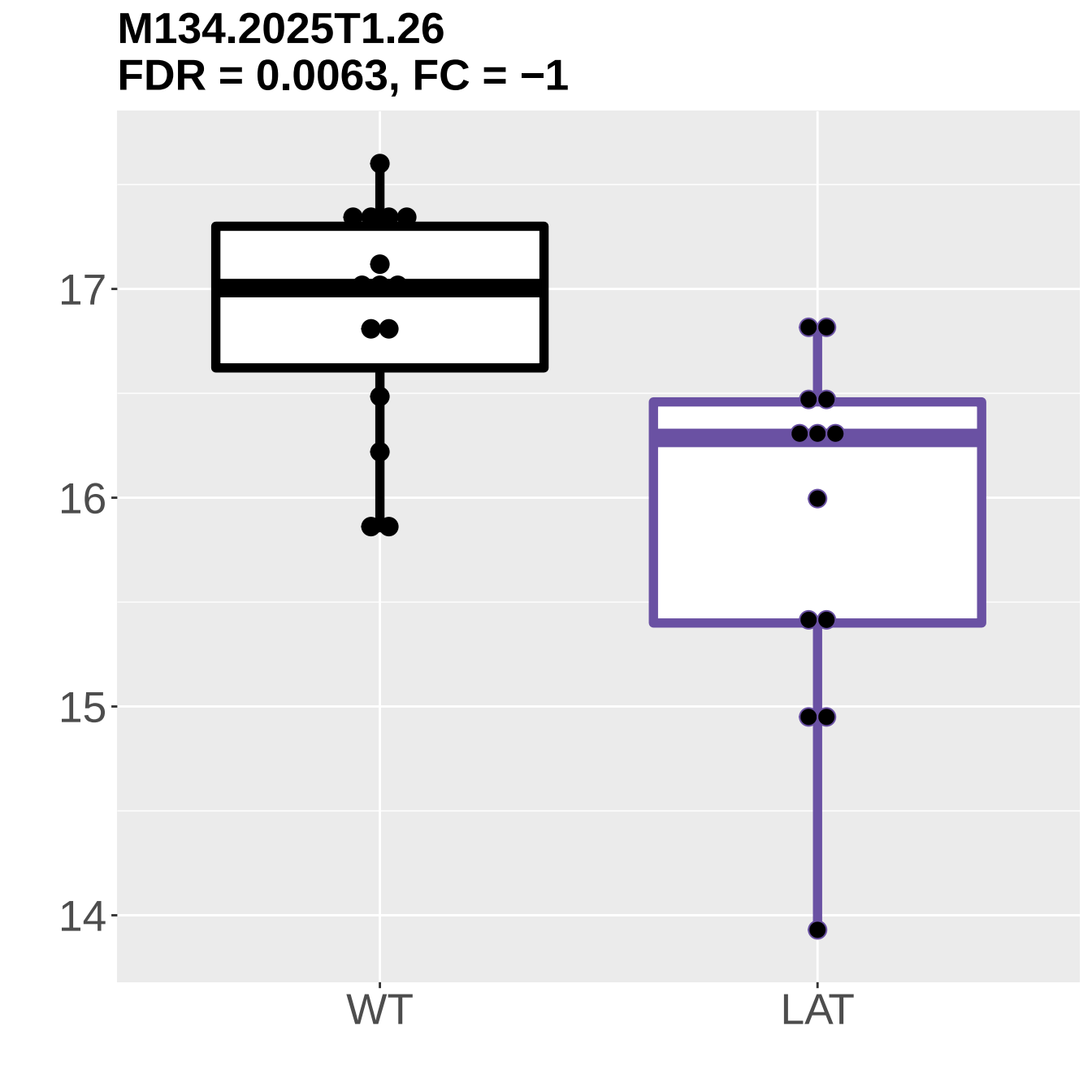
16
15
14
15.3764441883737
WT
LAT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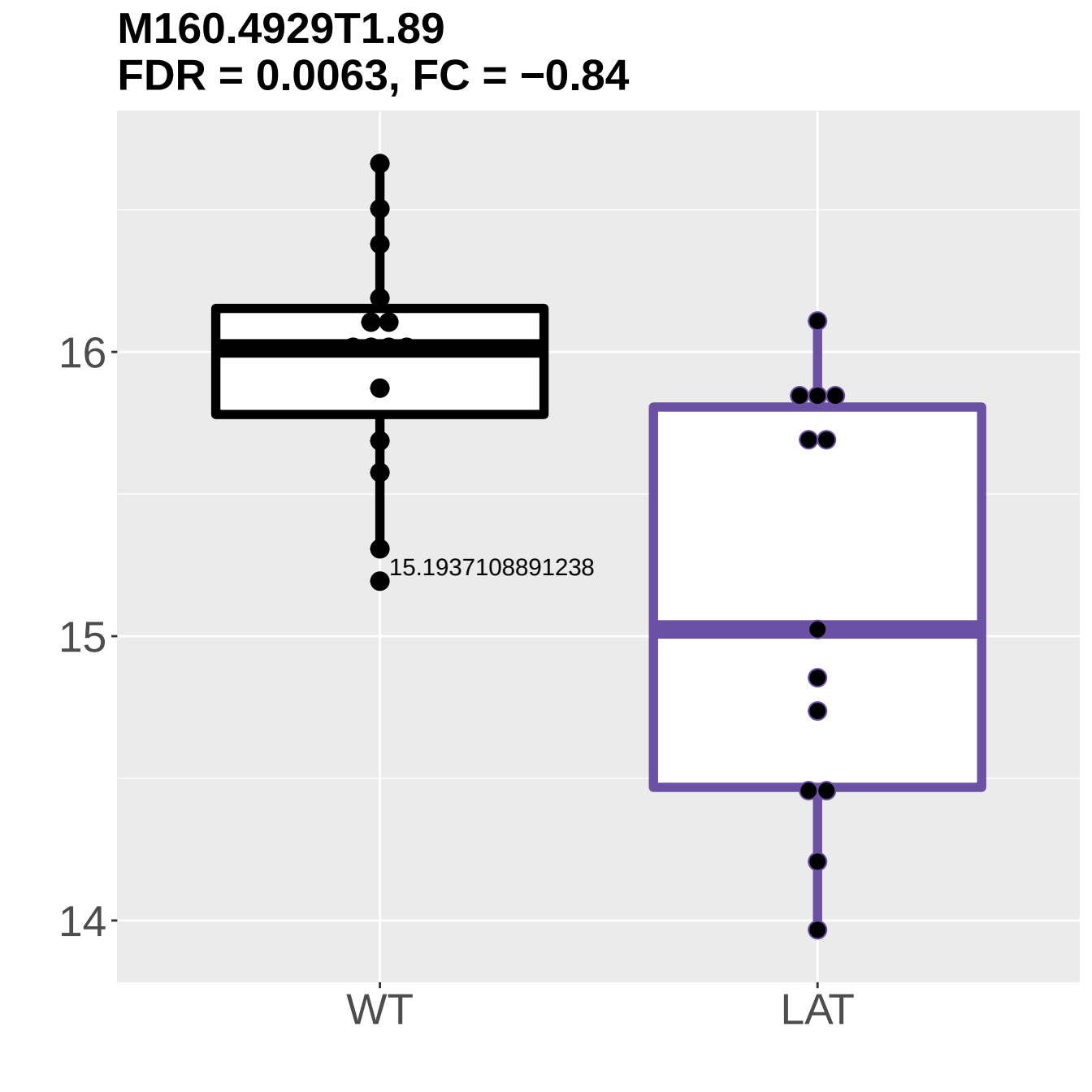
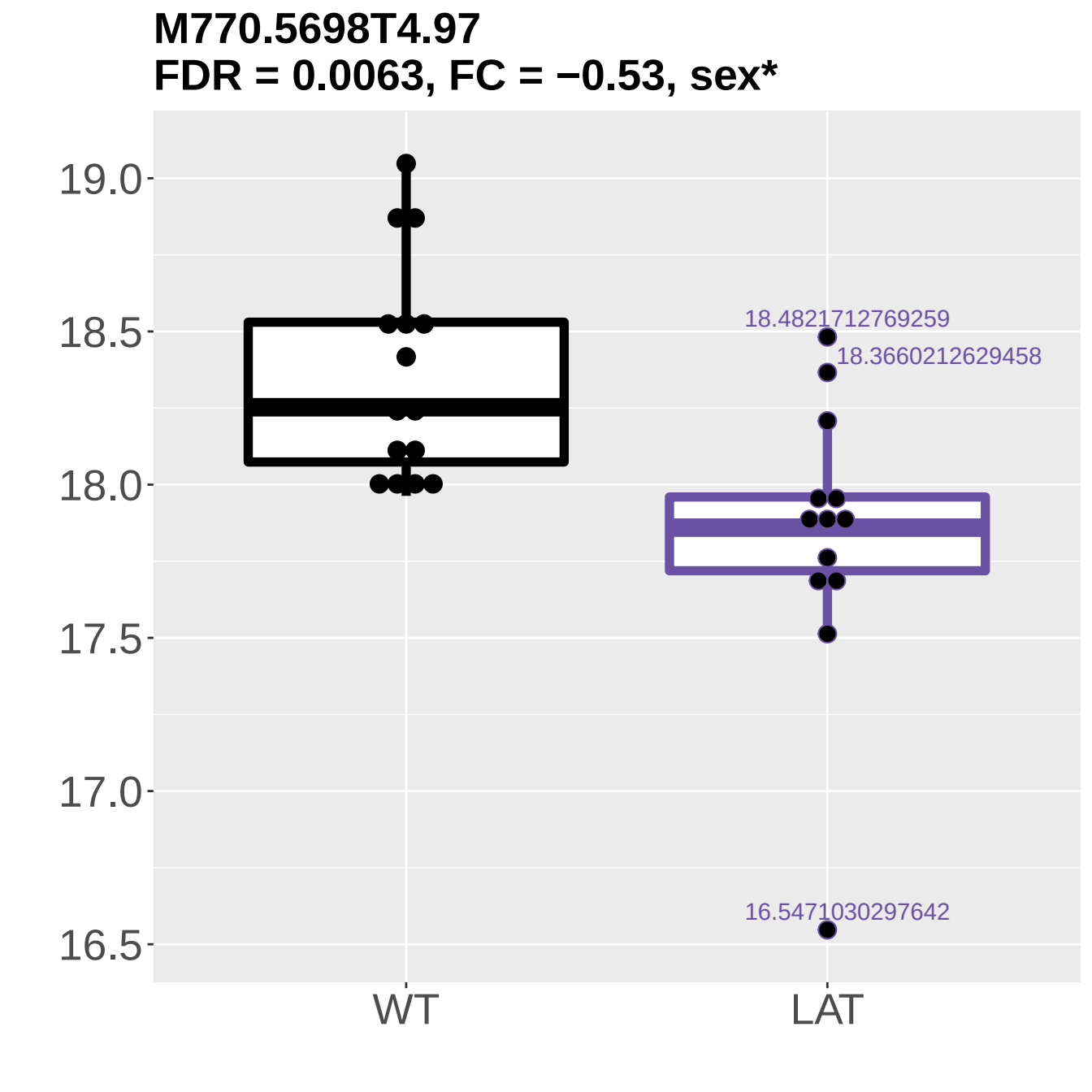
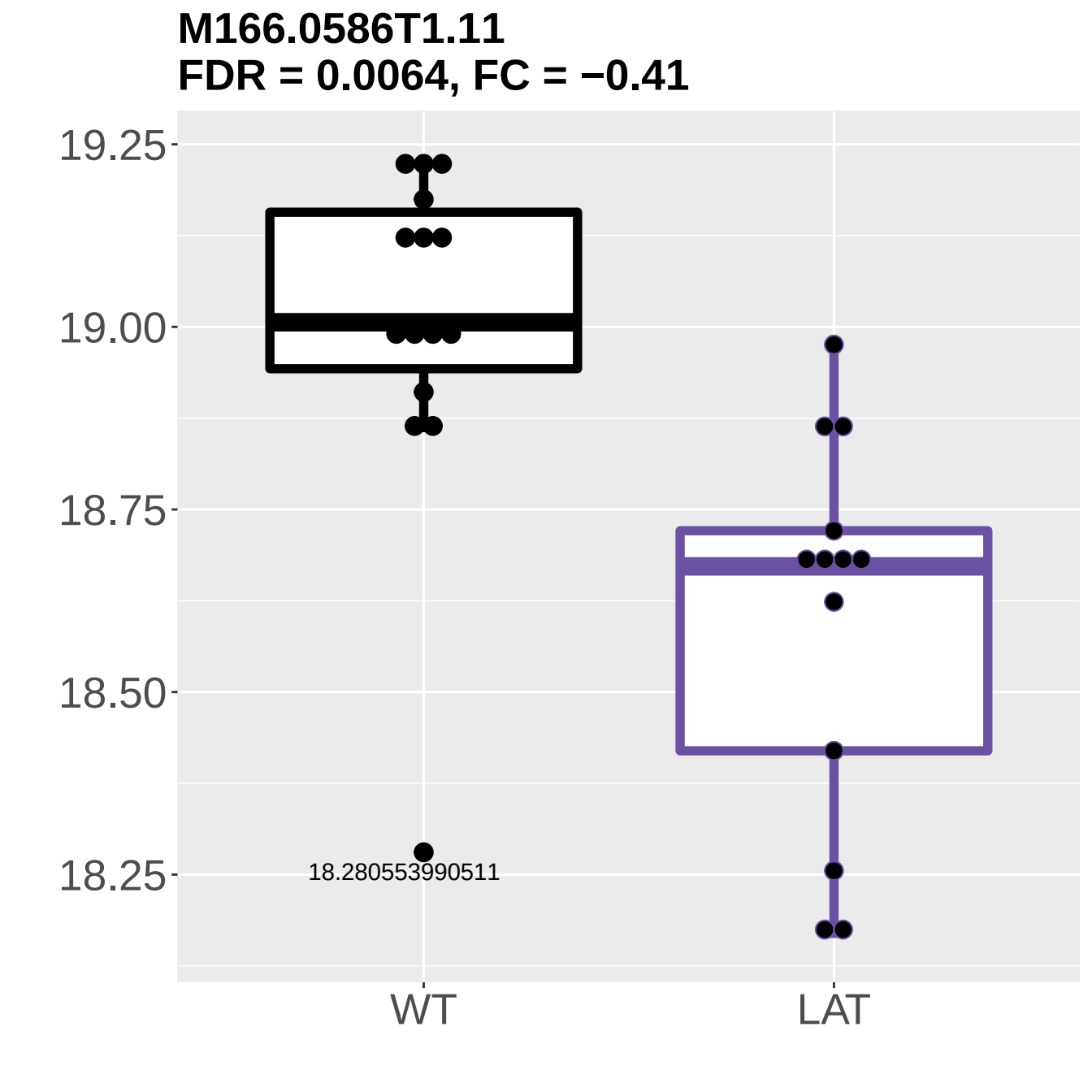
16
15
14
WT
LAT


M160.4929T1.89
FDR = 0.0063, FC = −0.84
16
15
14
15.1937108891238
WT
LAT


M770.5698T4.97
FDR = 0.0063, FC = −0.53, sex*
19.0
18.5
18.0
17.5
17.0
16.5
18.4821712769259
18.3660212629458
16.5471030297642
WT
LAT


M166.0586T1.11
FDR = 0.0064, FC = −0.41
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19.00
18.75
18.50
18.25
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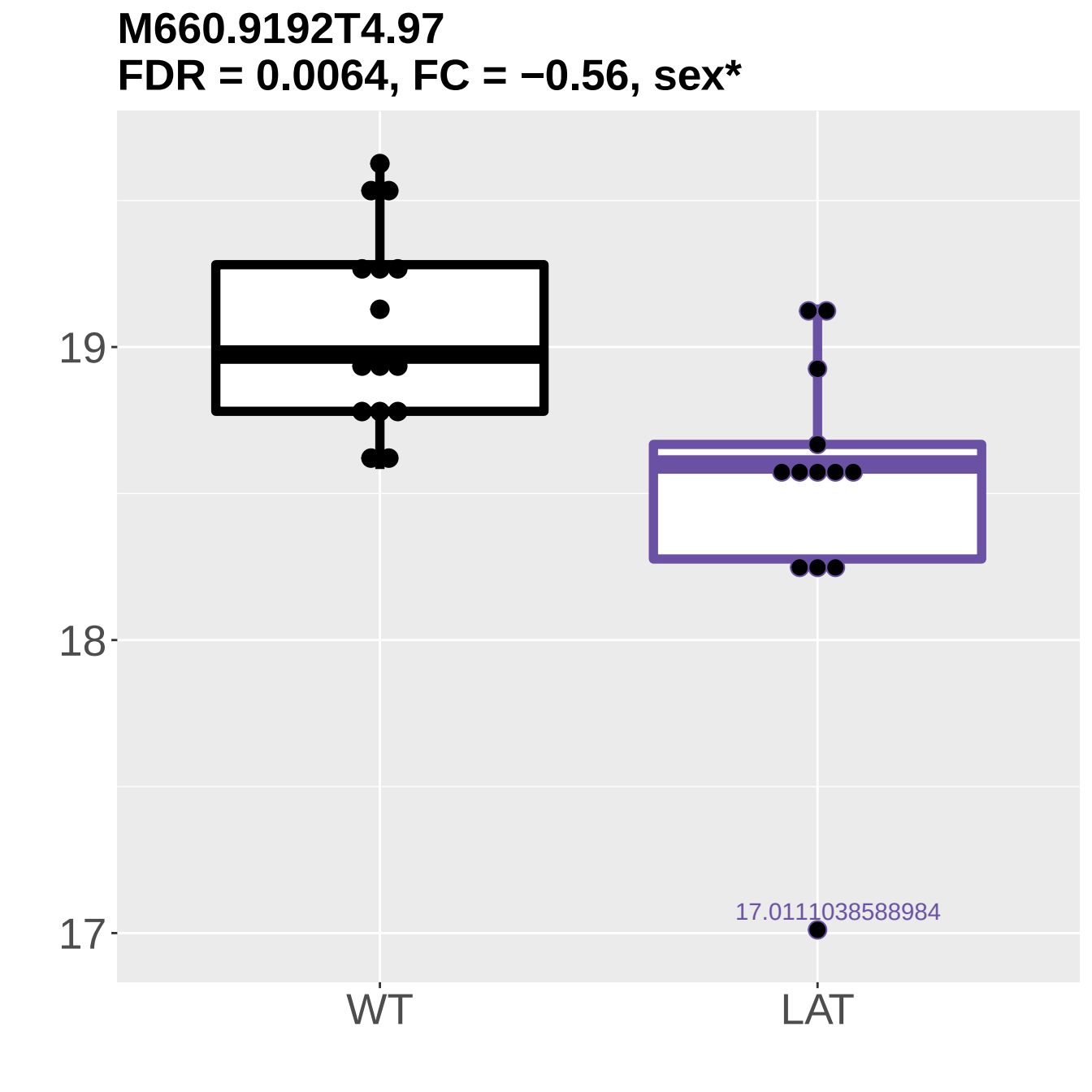
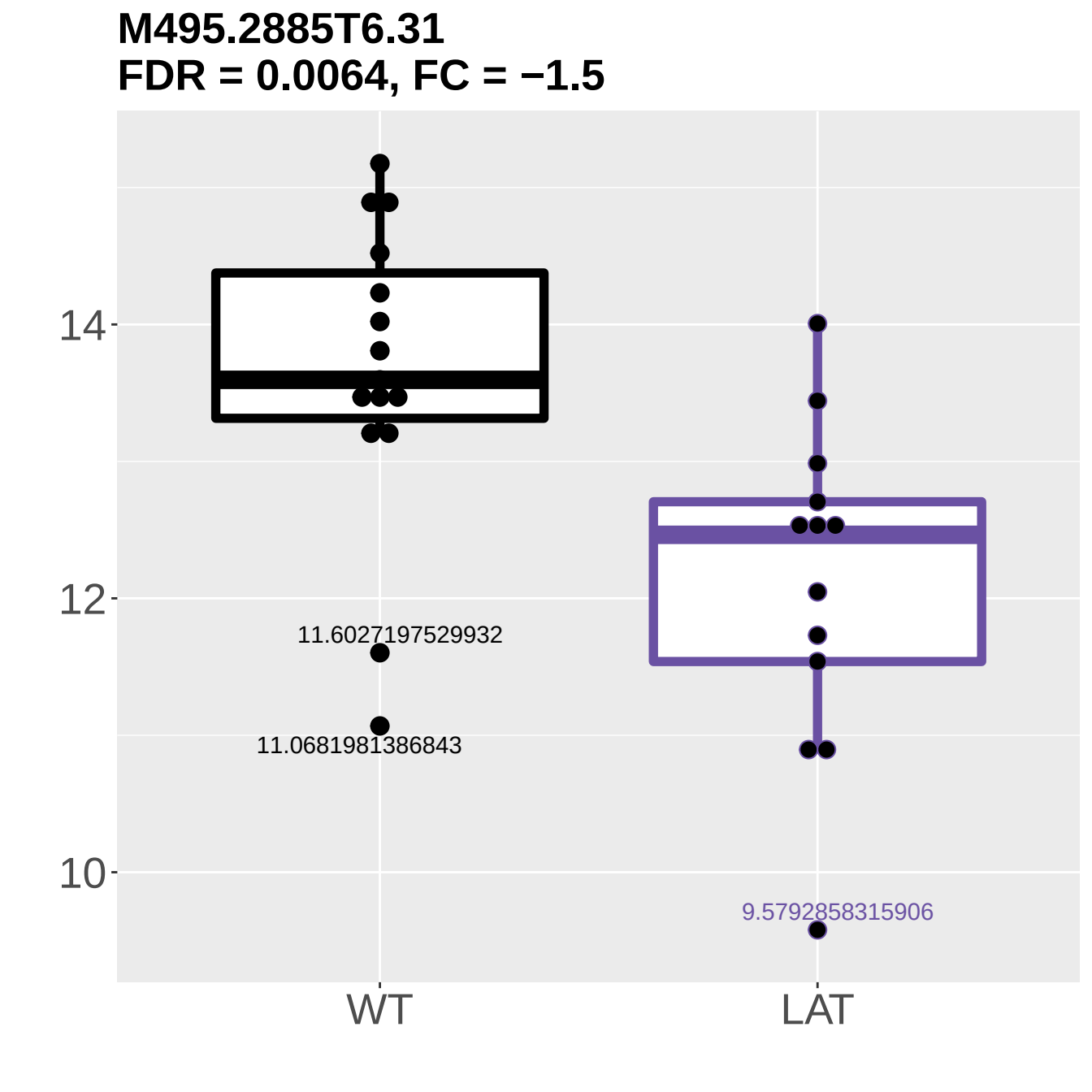
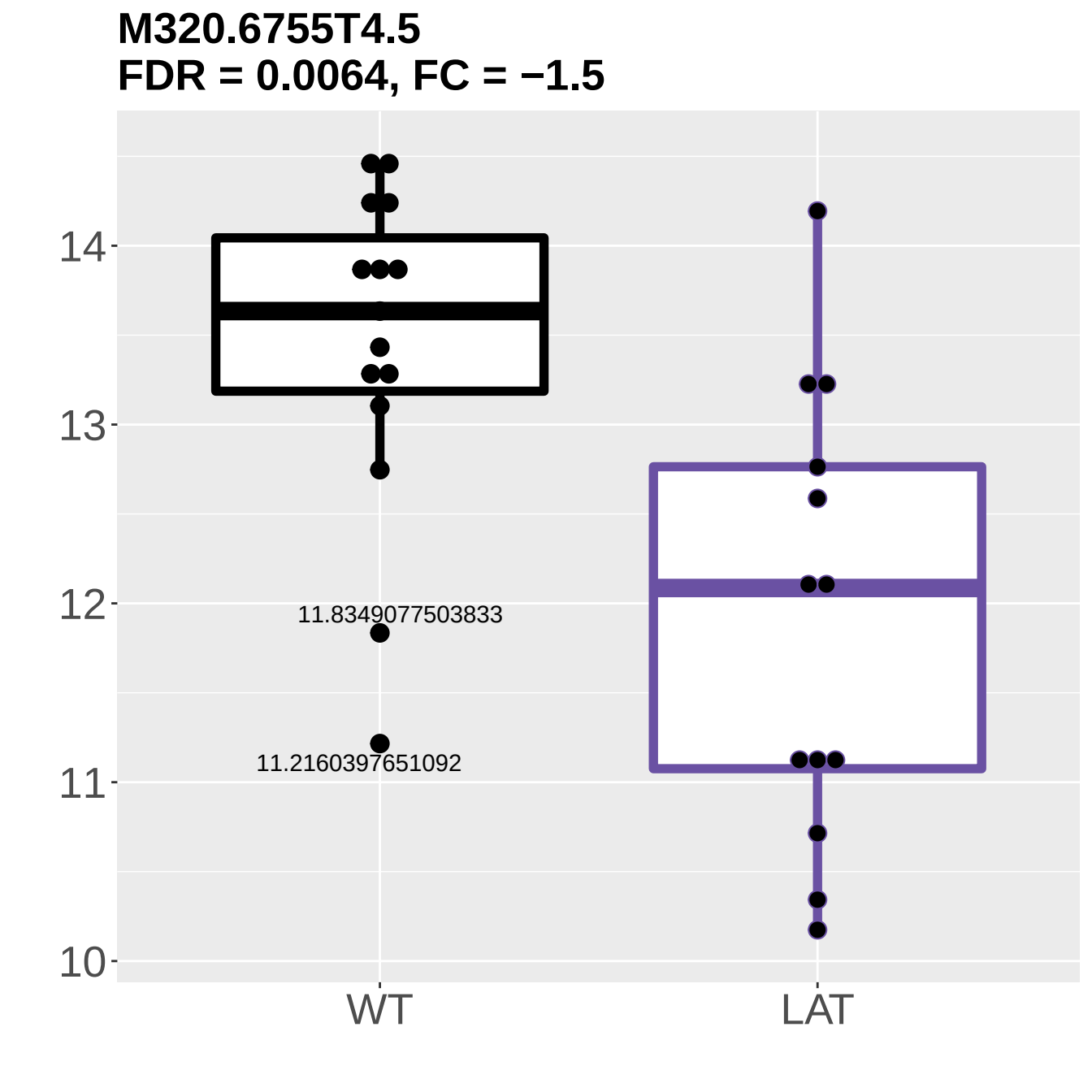
WT
LAT


M660.9192T4.97
FDR = 0.0064, FC = −0.56, sex*
19
18
17
17.0111038588984
WT
LAT


M495.2885T6.31
FDR = 0.0064, FC = −1.5
14
12
10
11.6027197529932
11.0681981386843
9.5792858315906
WT
LAT


M320.6755T4.5
FDR = 0.0064, FC = −1.5
14
13
12
11
10
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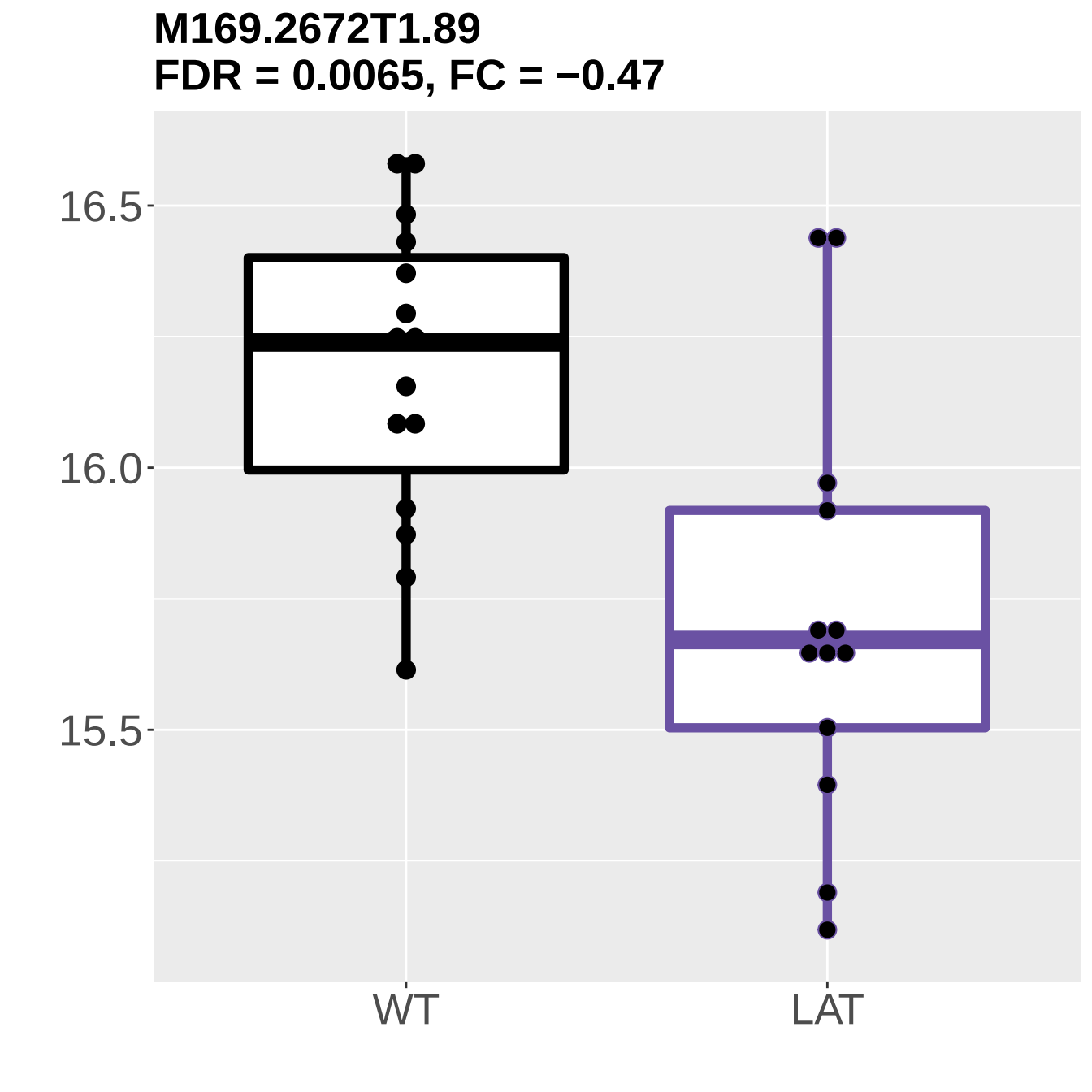
11.2160397651092
WT
LAT


M169.2672T1.89
FDR = 0.0065, FC = −0.47
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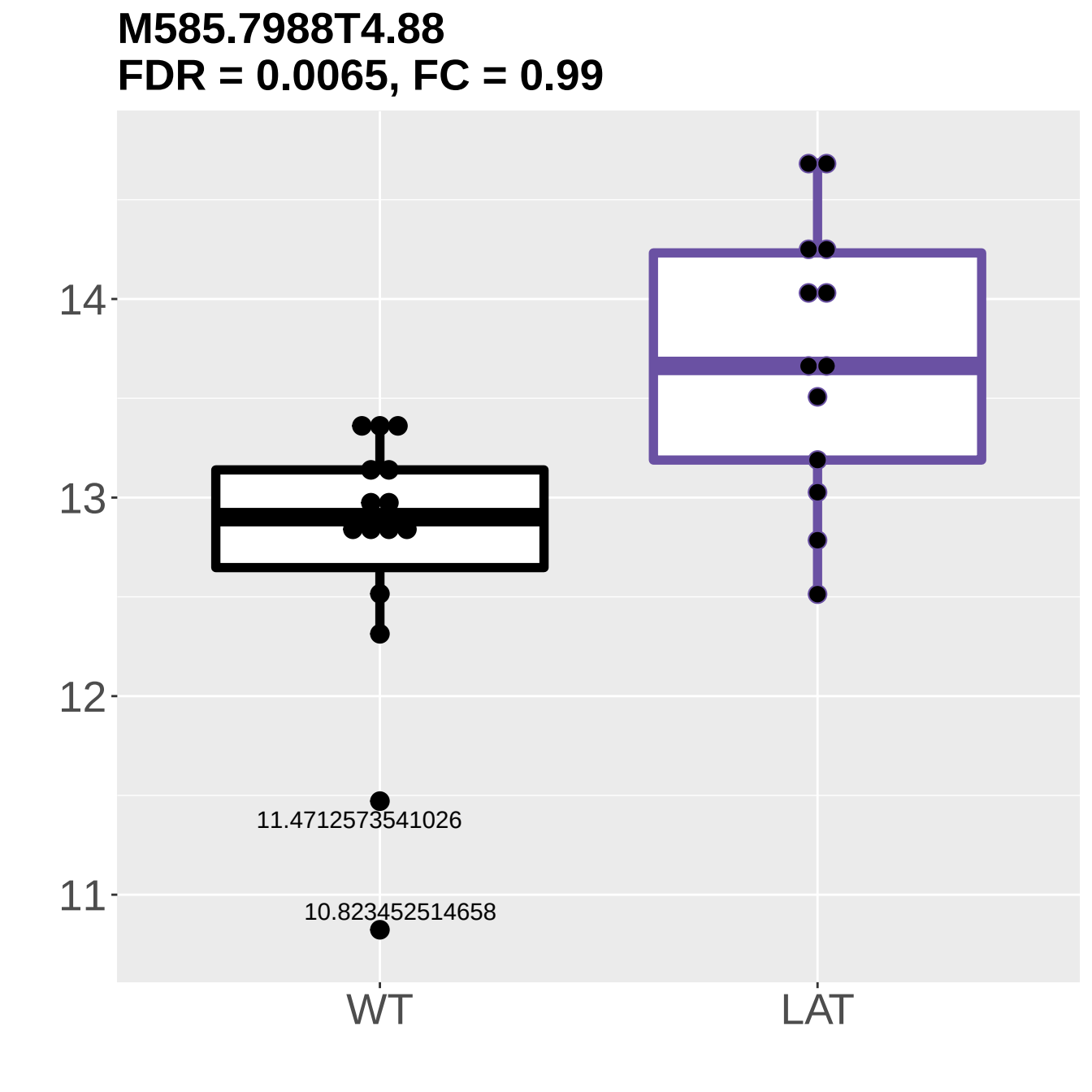
16.0
15.5
WT
LAT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13
12
11
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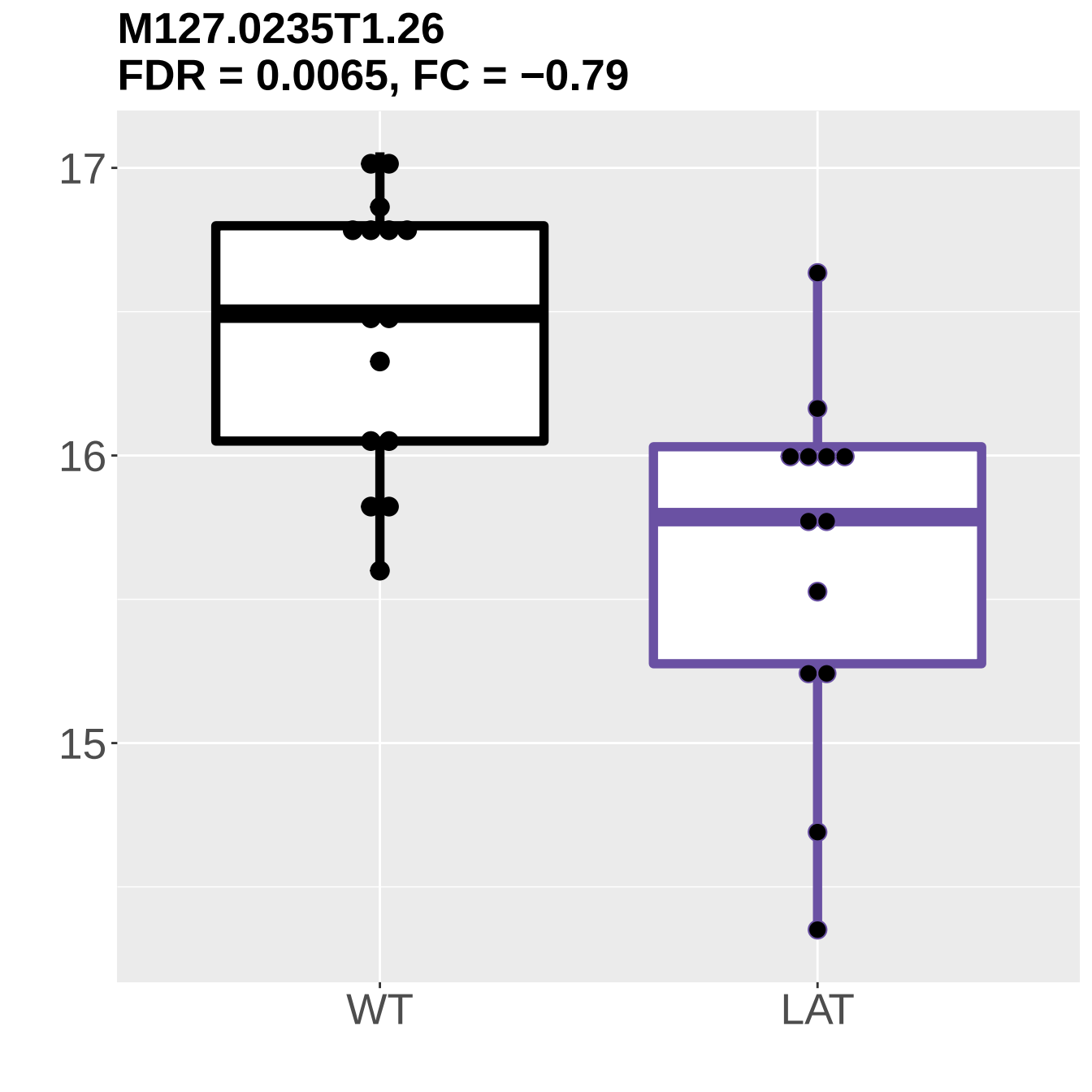
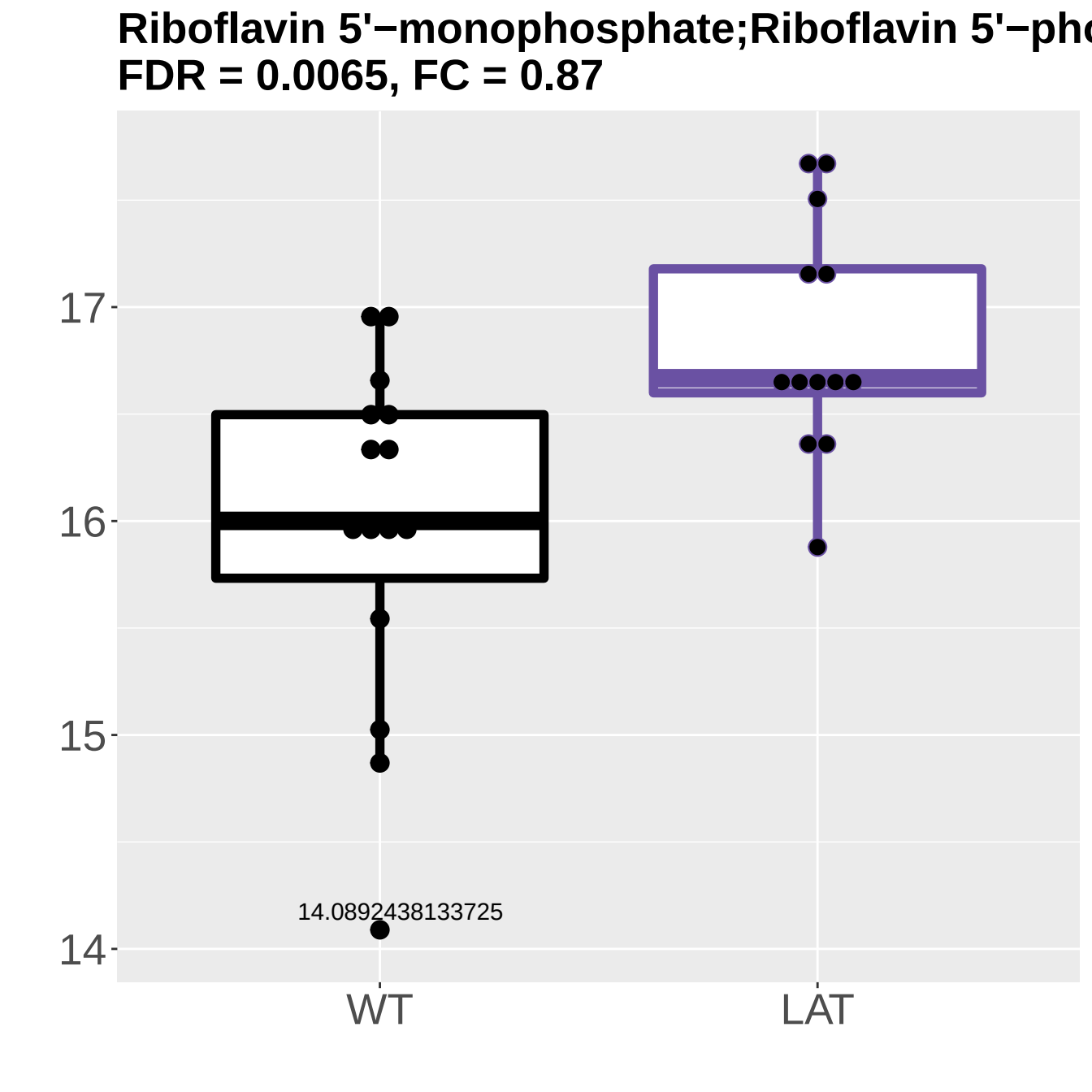
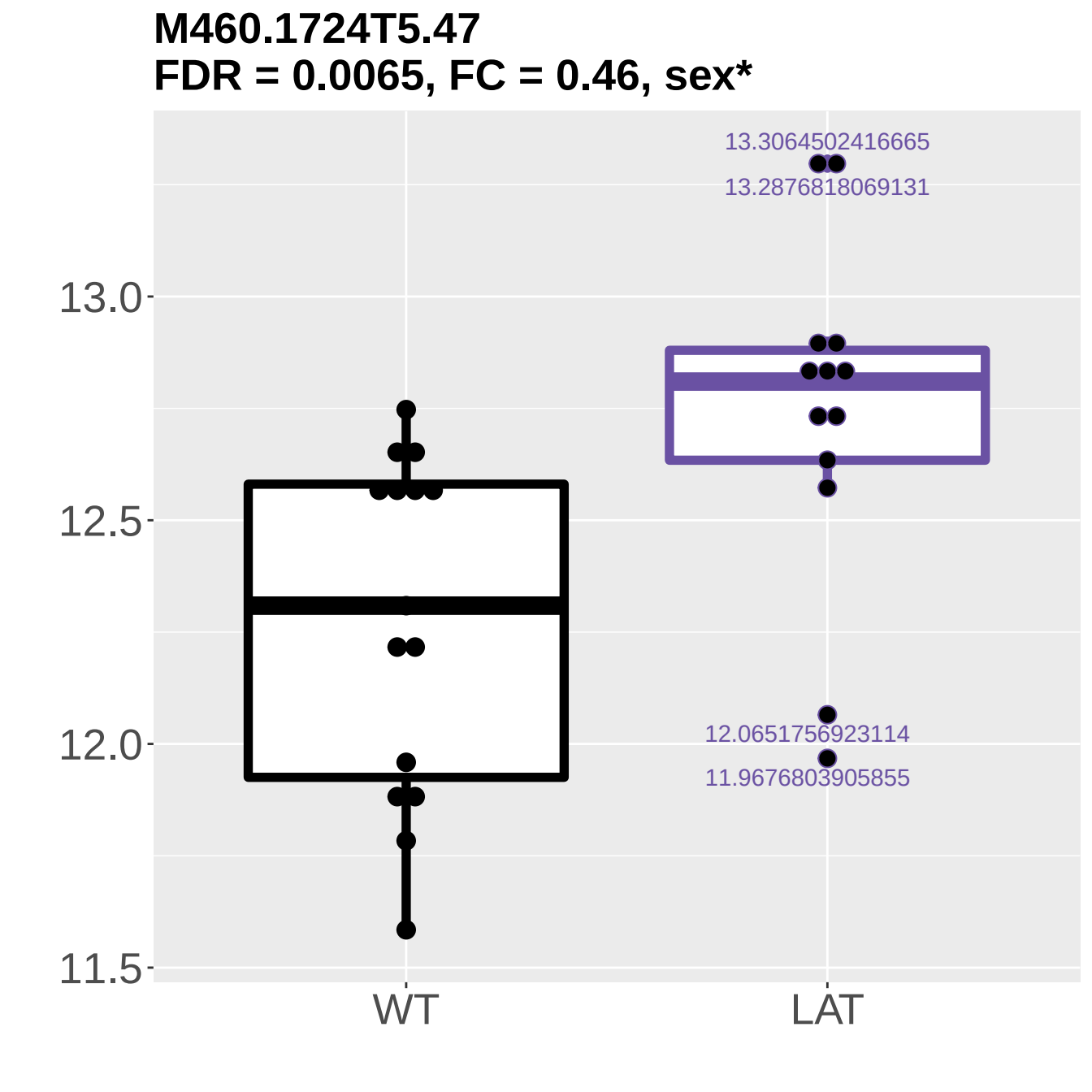
WT
LAT


M127.0235T1.26
FDR = 0.0065, FC = −0.79
17
16
15
WT
LAT


Riboflavin 5'−monophosphate;Riboflavin 5'−pho
FDR = 0.0065, FC = 0.87
17
16
15
14
14.0892438133725
WT
LAT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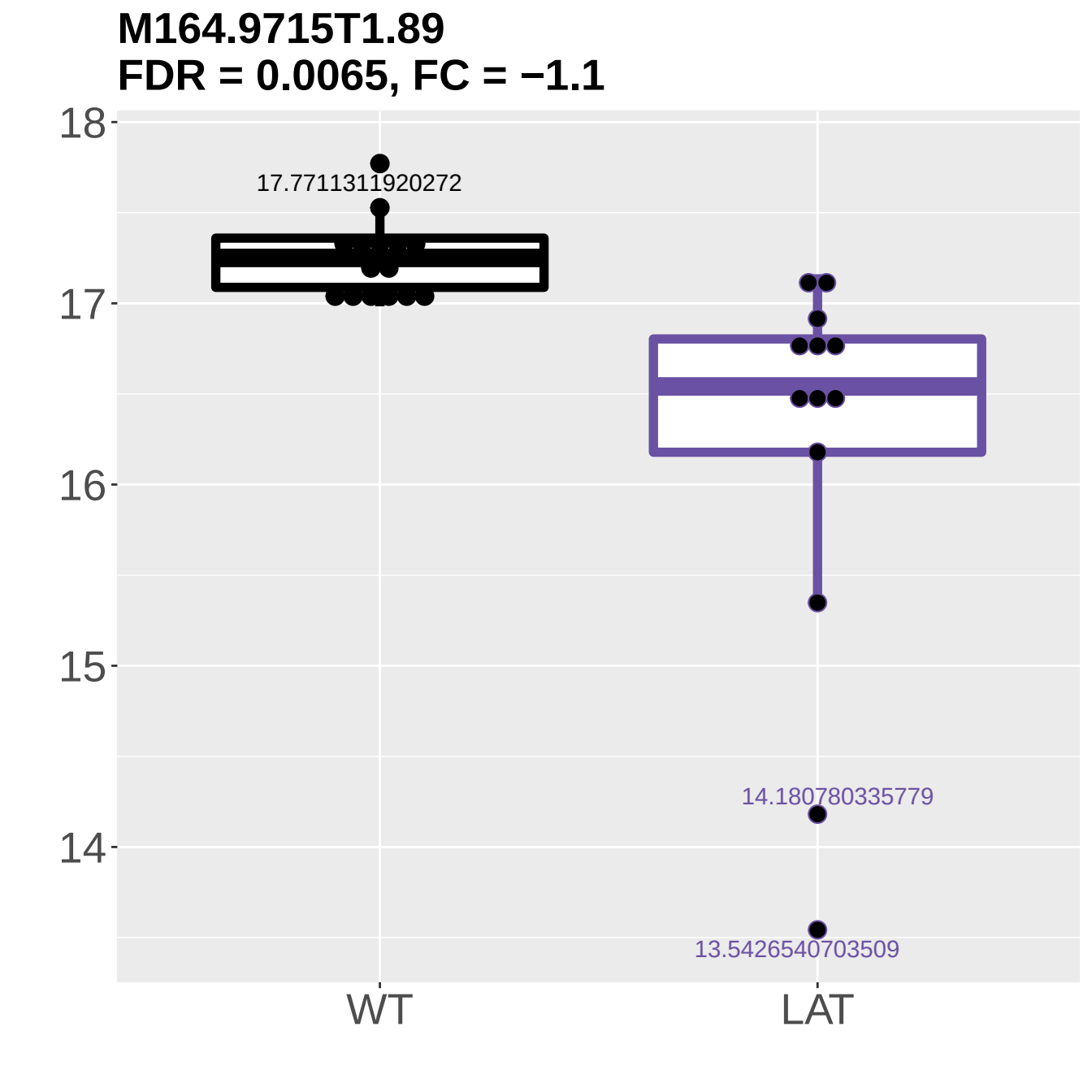
FDR = 0.0065, FC = 0.46, sex*
13.3064502416665
13.2876818069131
12.0651756923114
11.9676803905855
13.0
12.5
12.0
11.5
WT
LAT


M164.9715T1.89
FDR = 0.0065, FC = −1.1
18
17
16
15
14
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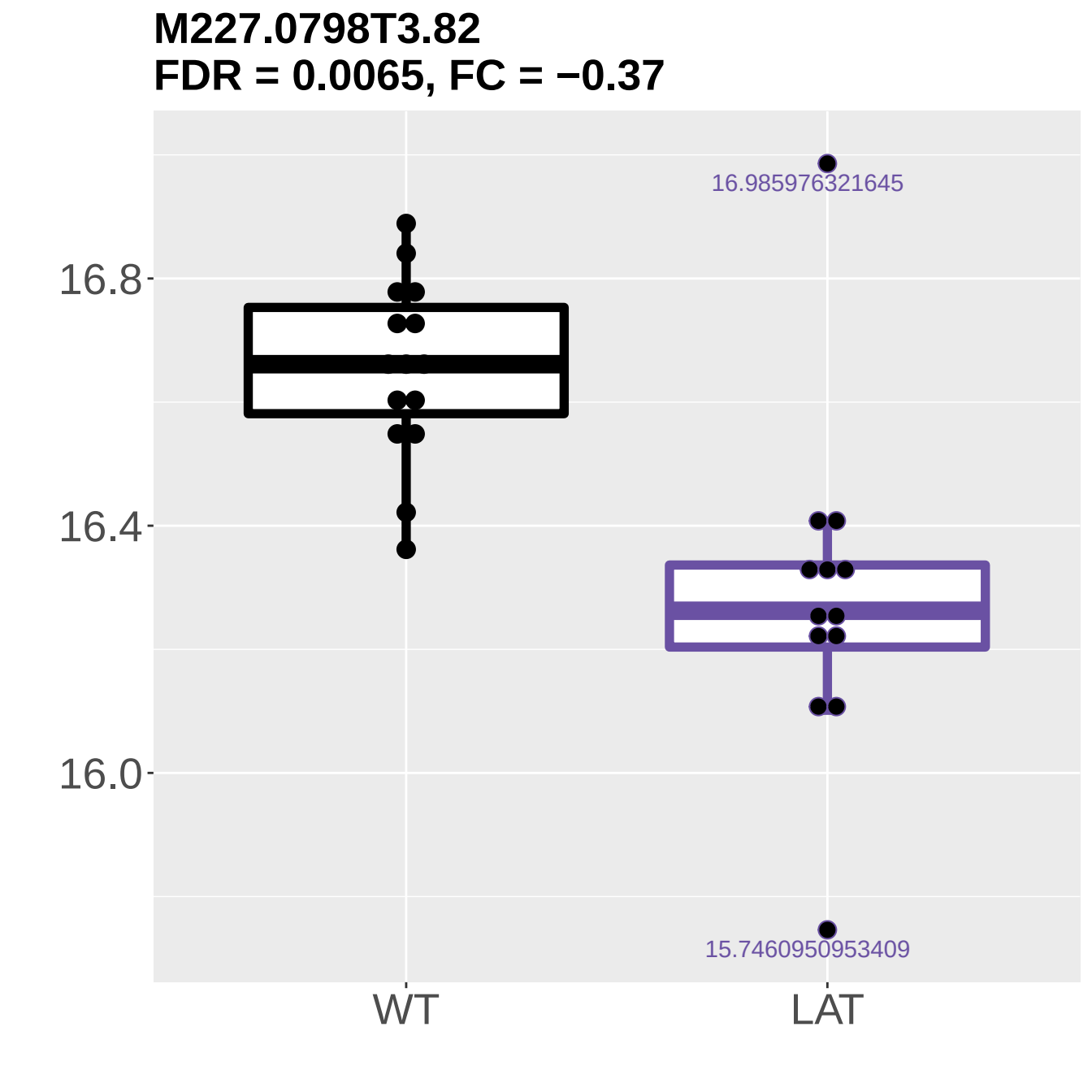
14.180780335779
13.5426540703509
WT
LAT


M227.0798T3.82
FDR = 0.0065, FC = −0.37
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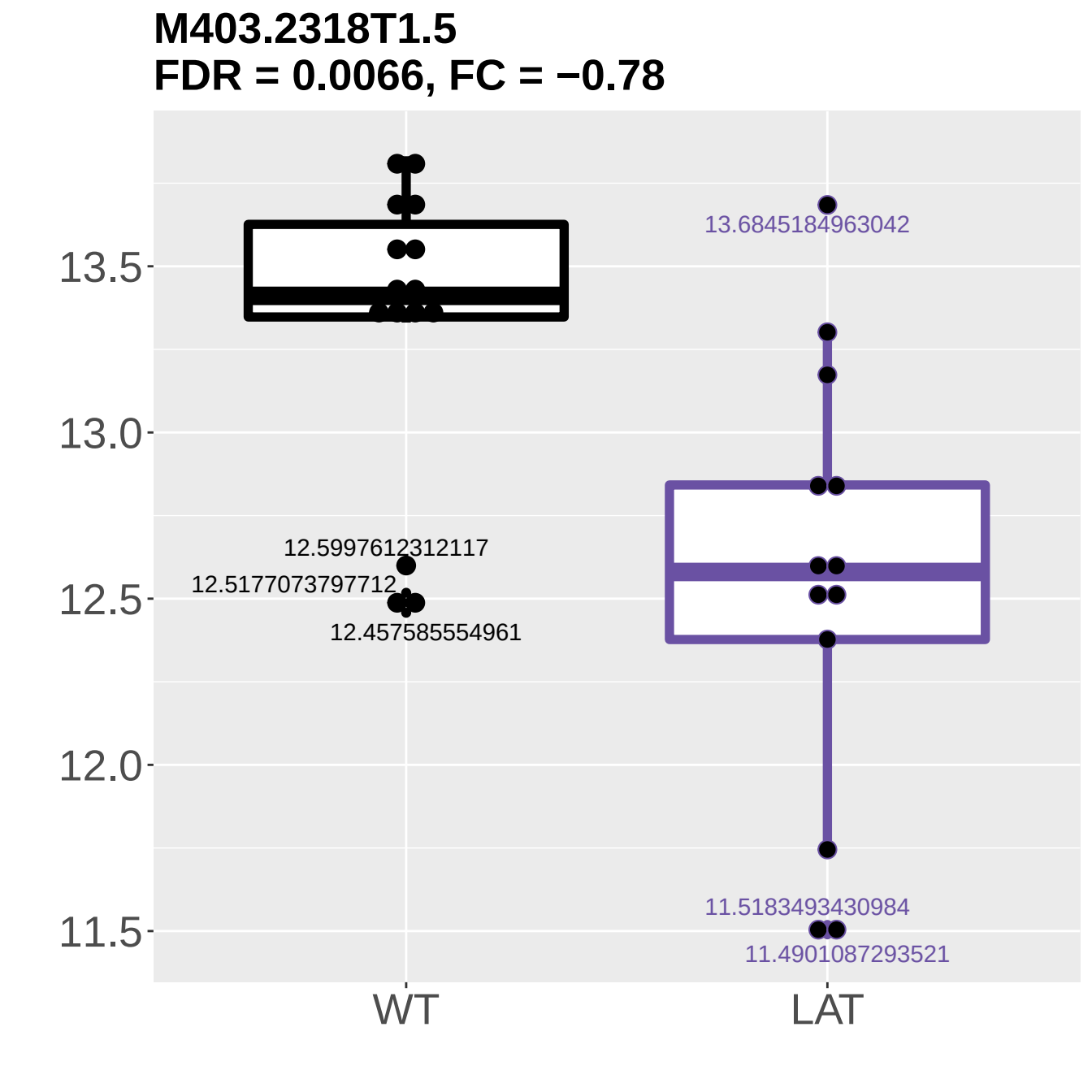
15.7460950953409
16.8
16.4
16.0
WT
LAT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FDR = 0.0066, FC = −0.78
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13.0
12.5
12.0
11.5
13.6845184963042
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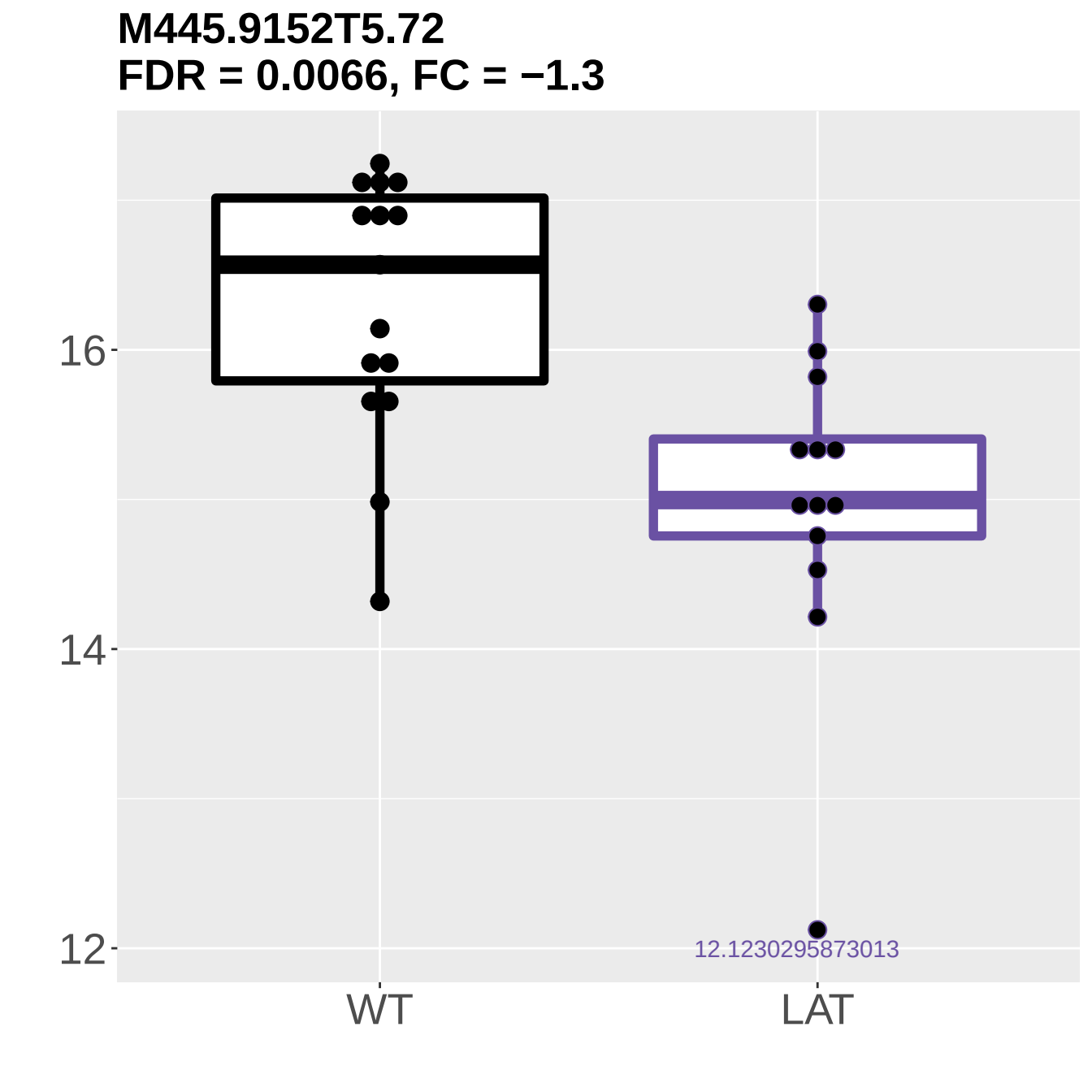
12.5177073797712
12.457585554961
11.5183493430984
11.4901087293521
WT
LAT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14
12
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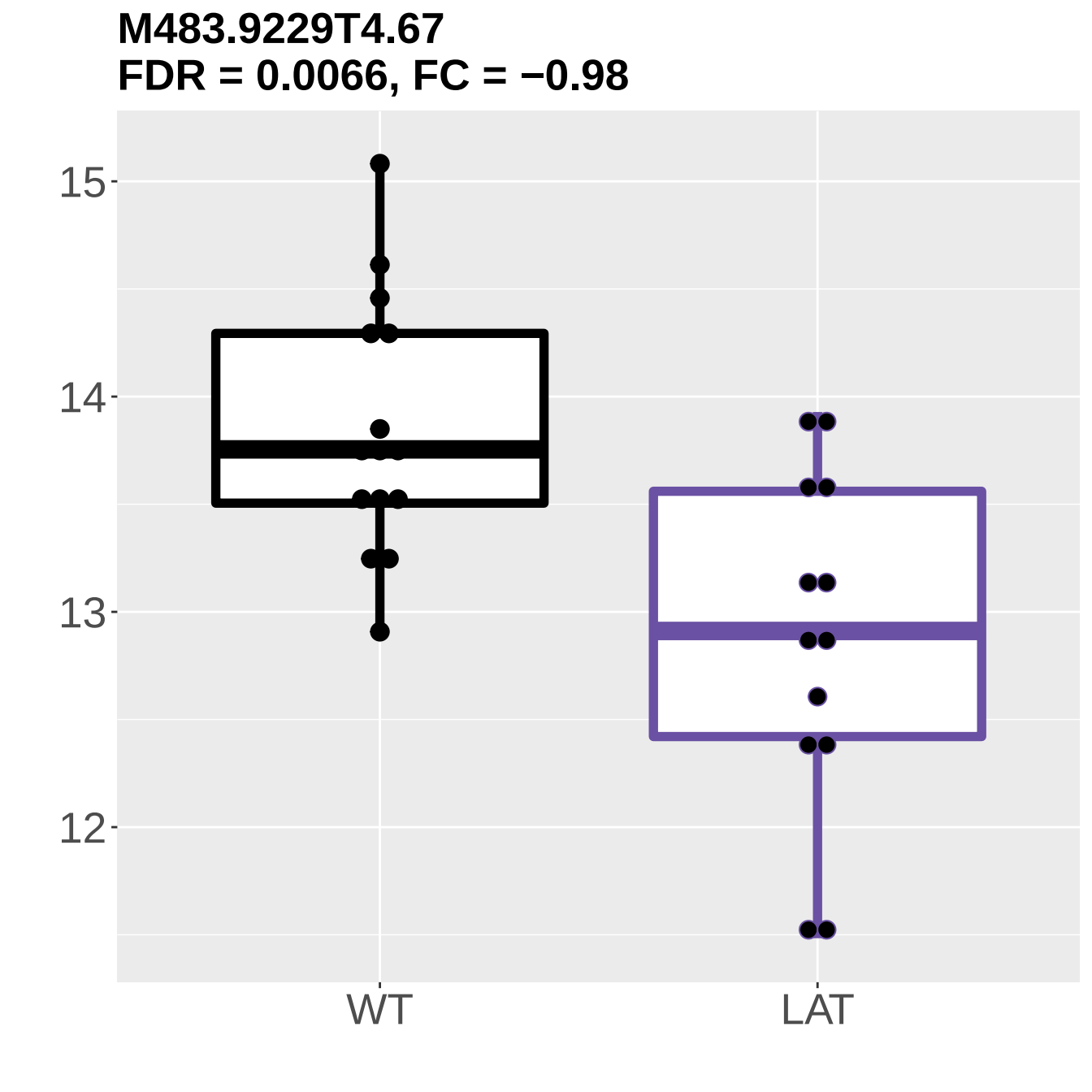
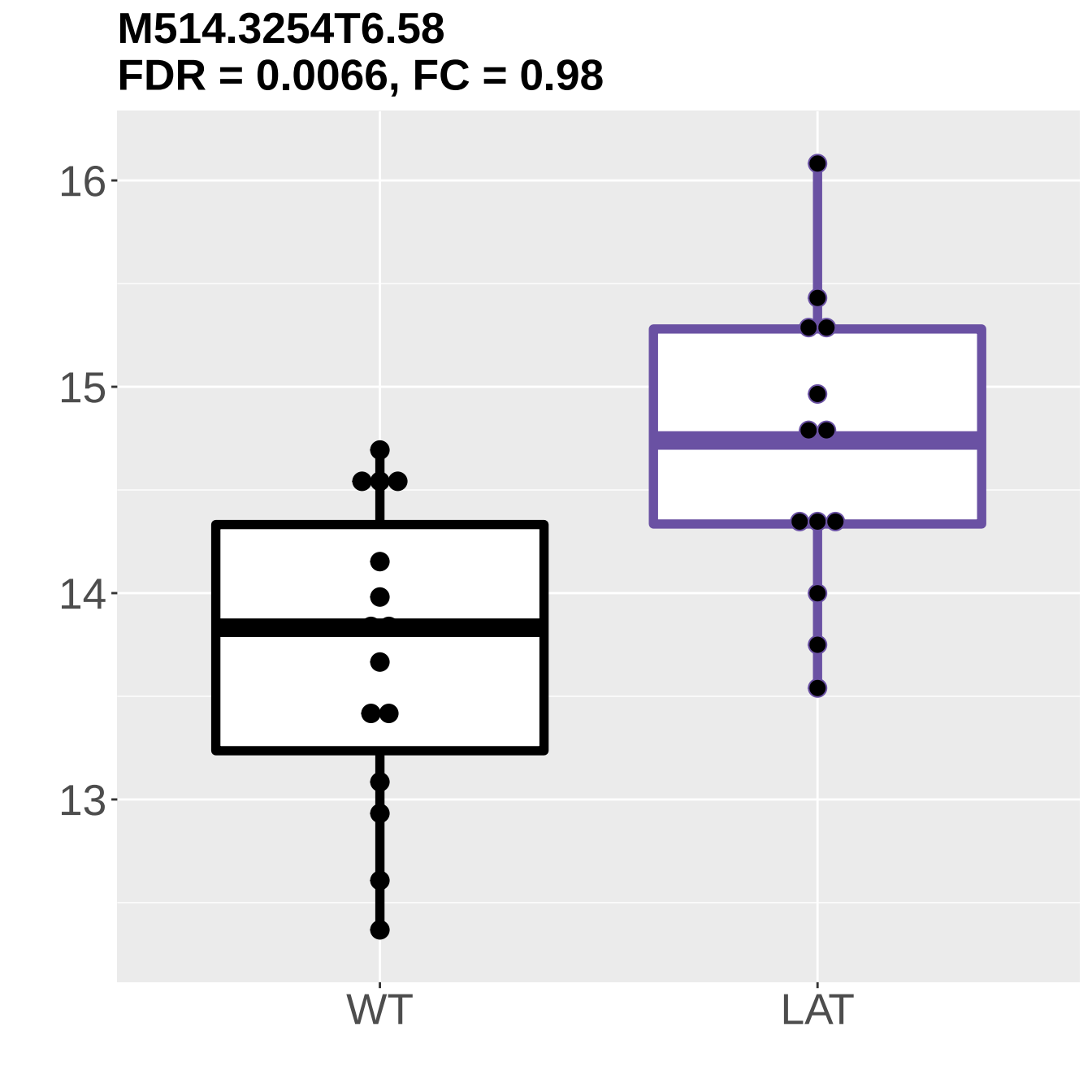
WT
LAT


M483.9229T4.67
FDR = 0.0066, FC = −0.98
15
14
13
12
WT
LAT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FDR = 0.0066, FC = 0.98
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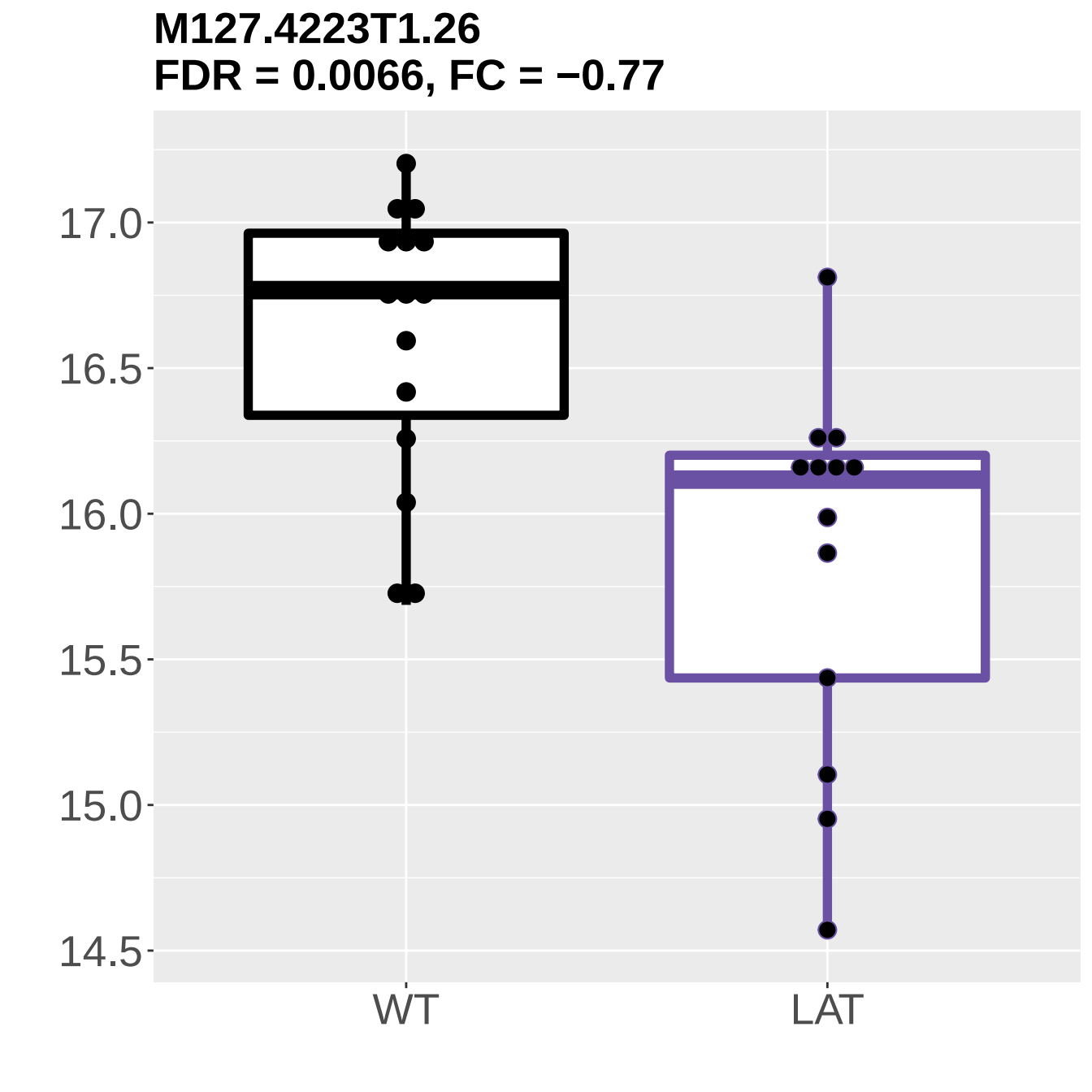
15
14
13
WT
LAT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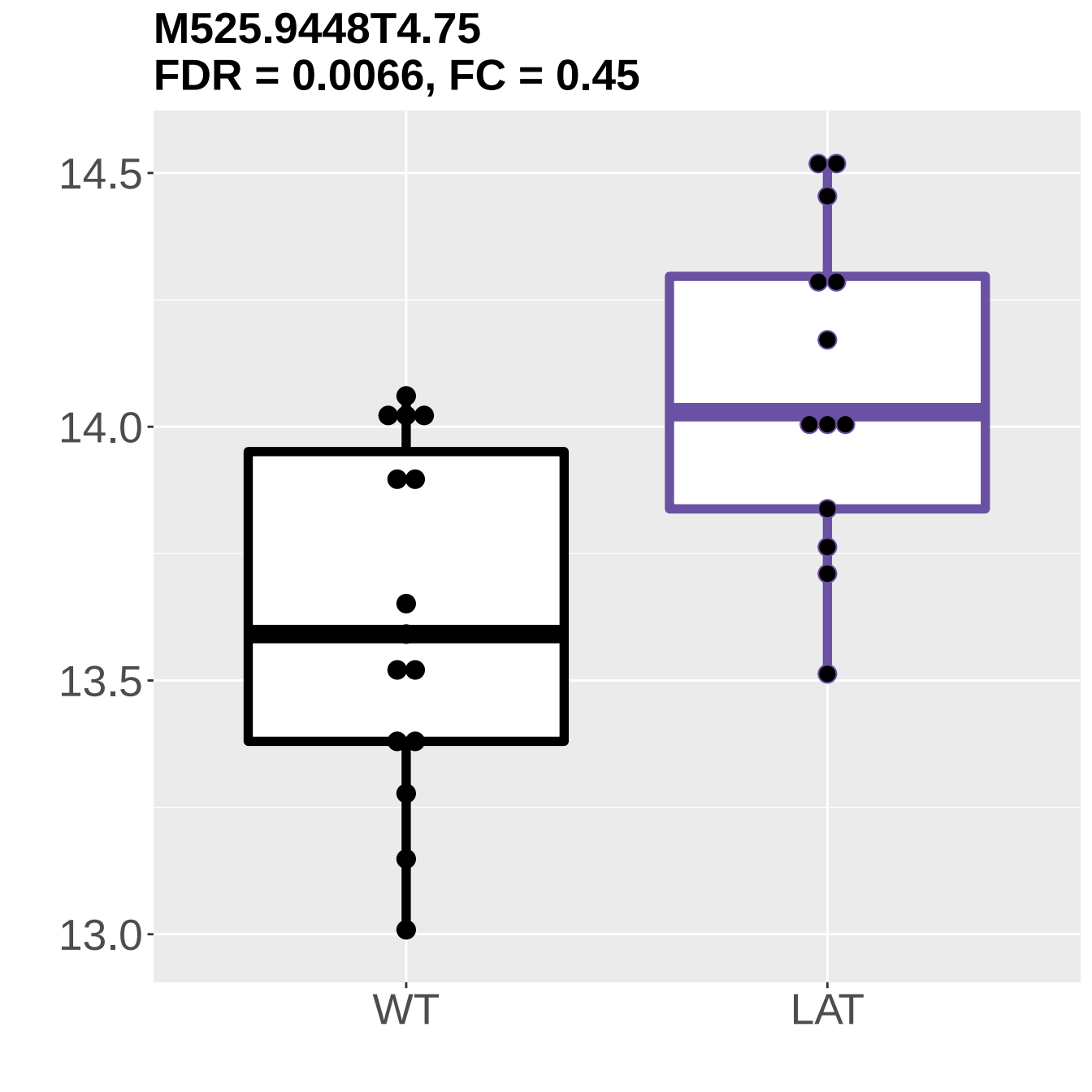
16.0
15.5
15.0
14.5
WT
LAT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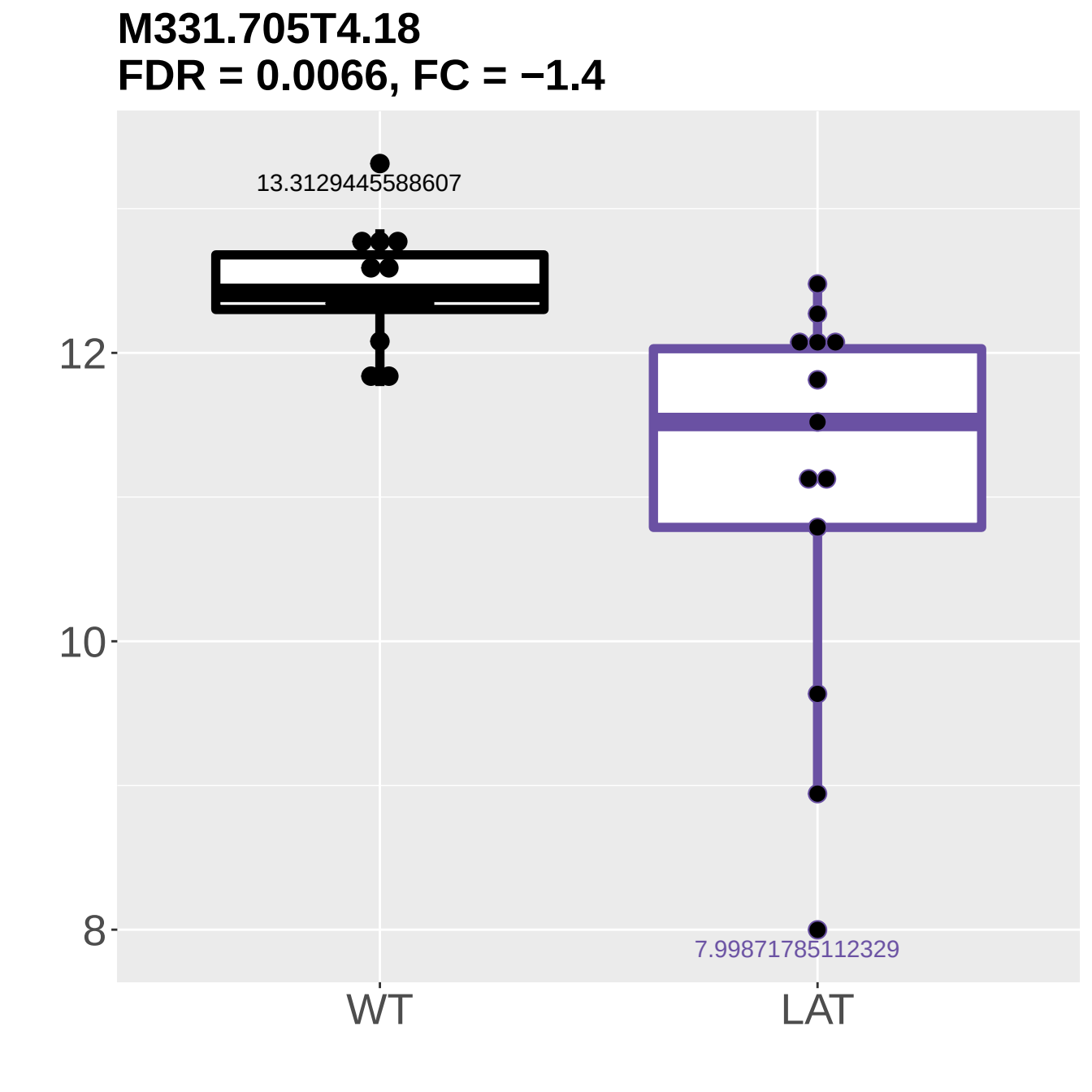
14.0
13.5
13.0
WT
LAT


M331.705T4.18
FDR = 0.0066, FC = −1.4
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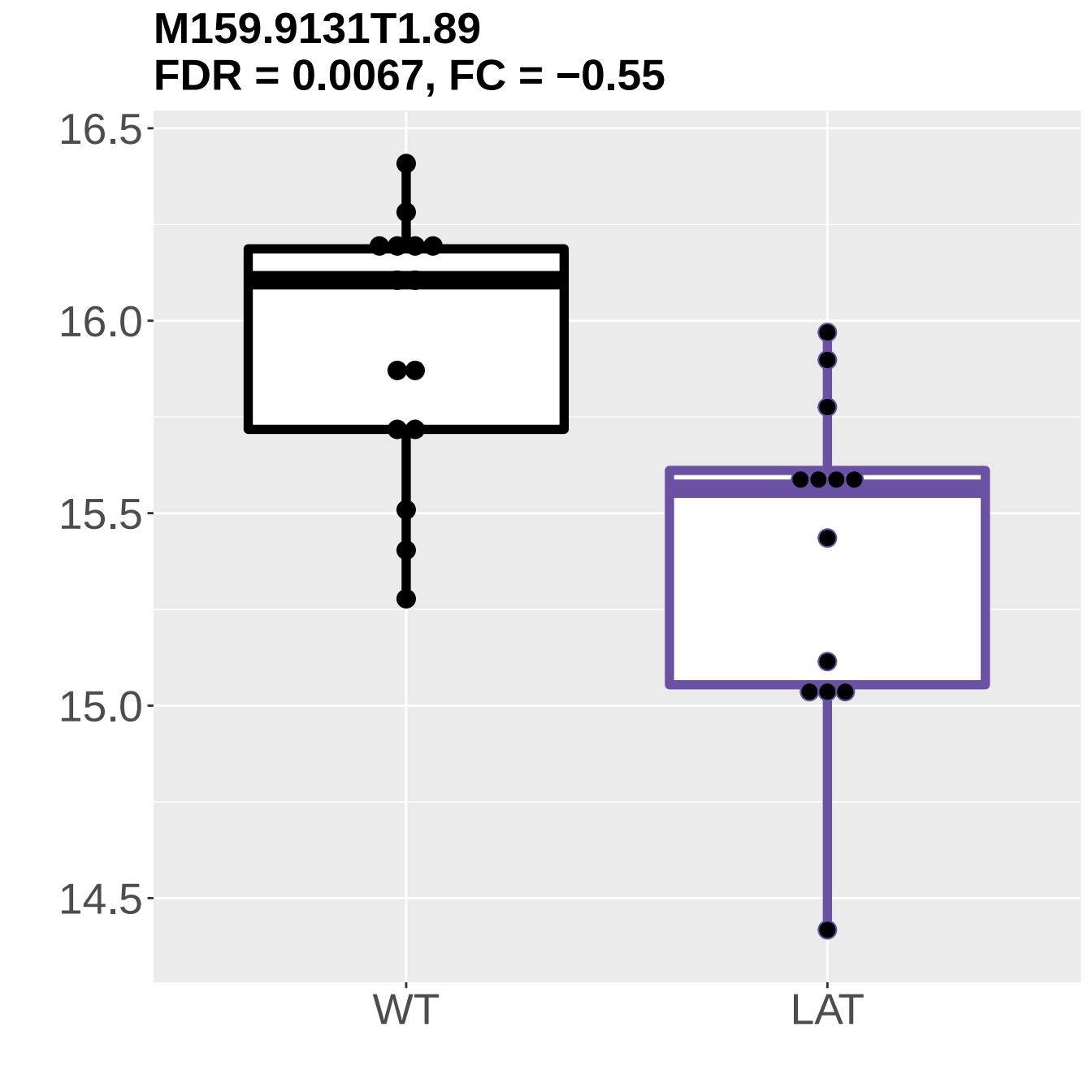
7.99871785112329
12
10
8
WT
LAT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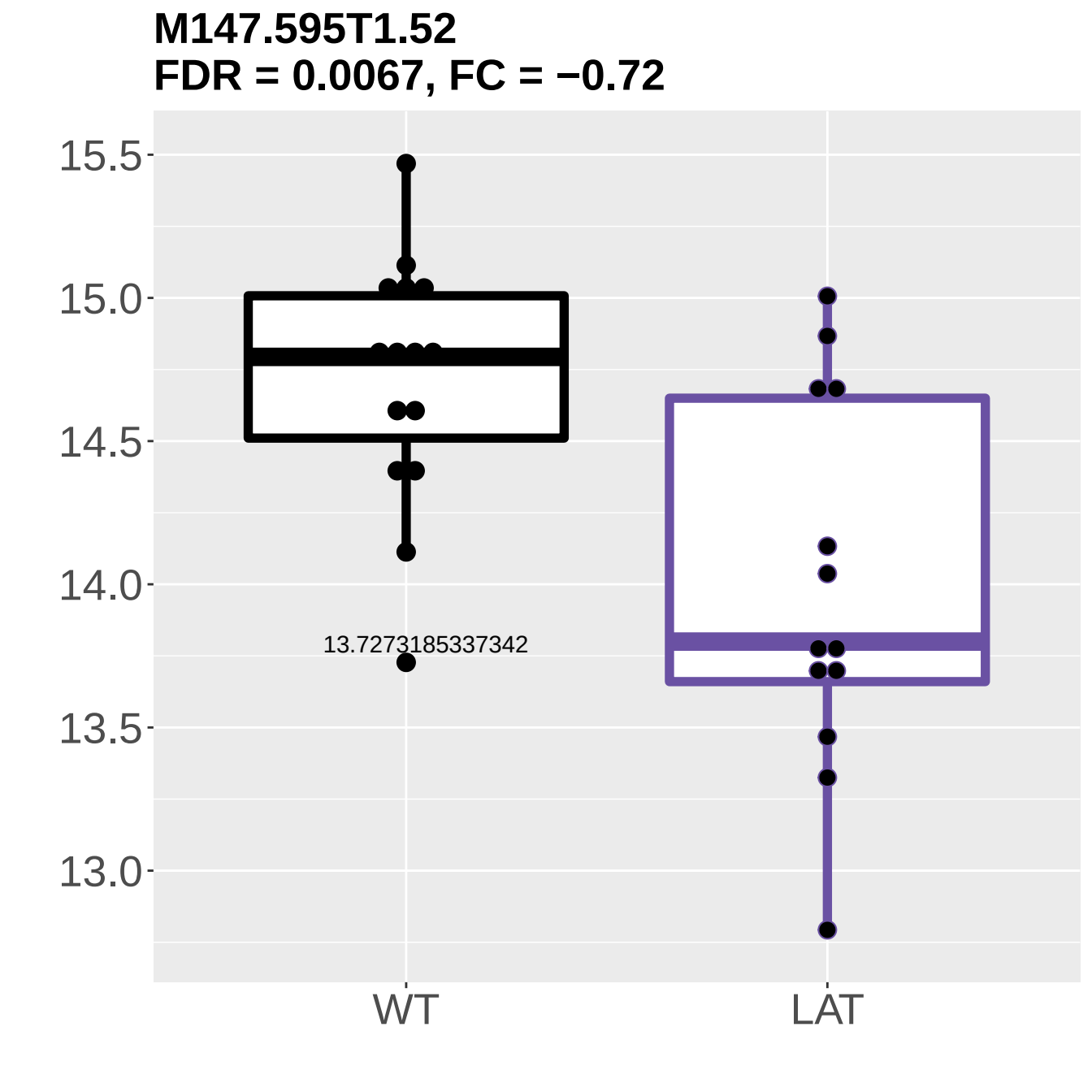
15.5
15.0
14.5
WT
LAT


M147.595T1.52
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14.5
14.0
13.5
13.0
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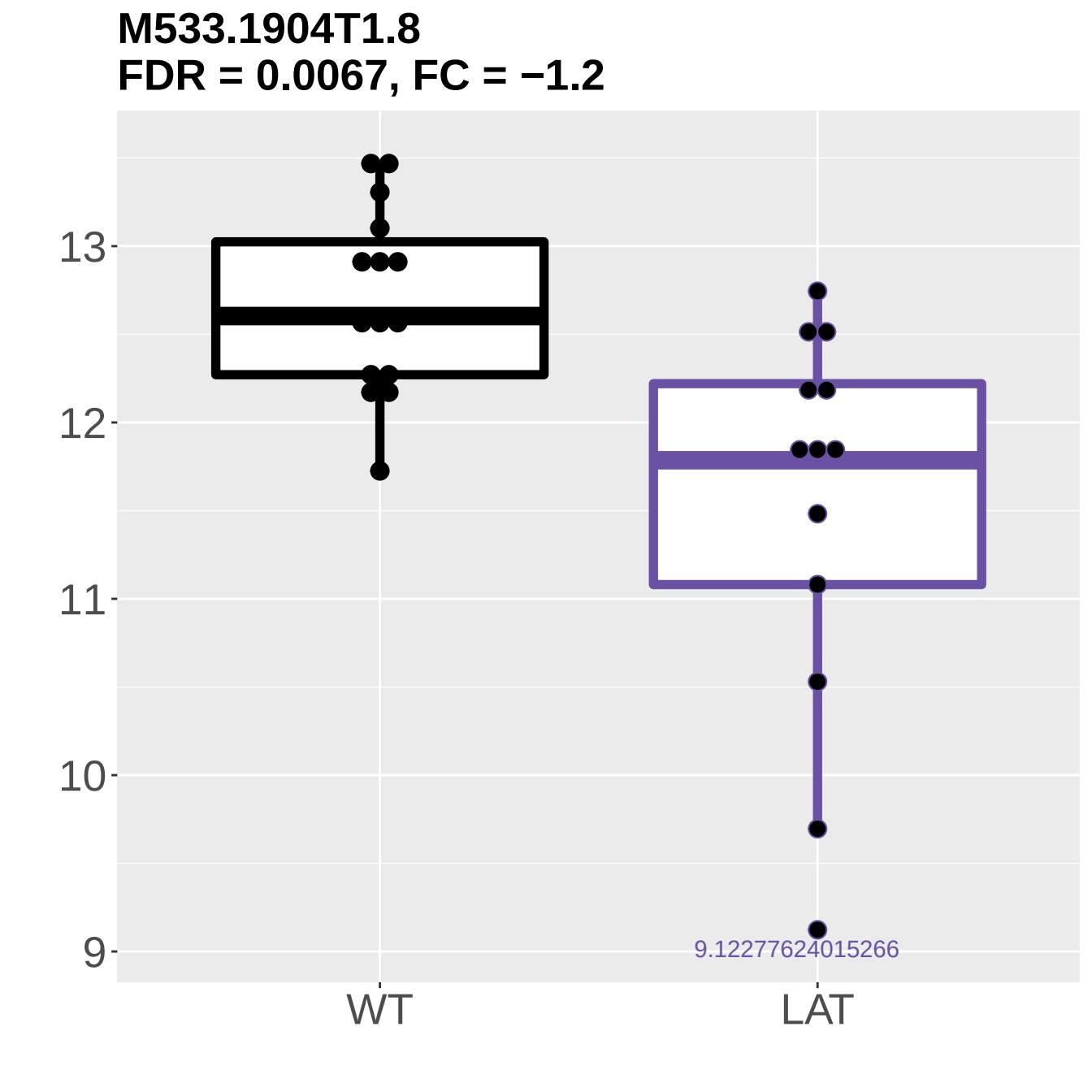
WT
LAT


M533.1904T1.8
FDR = 0.0067, FC = −1.2
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12
11
10
9
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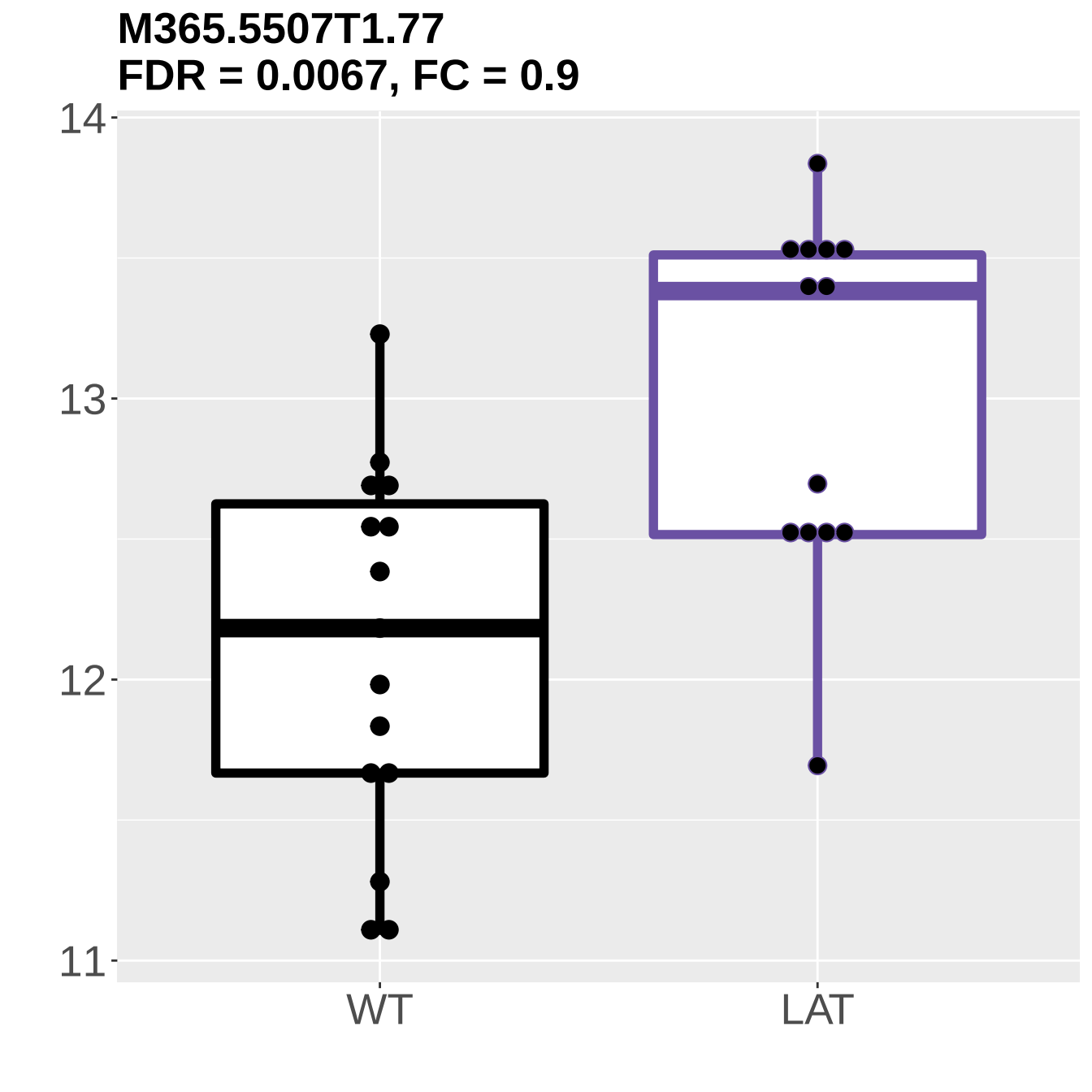
WT
LAT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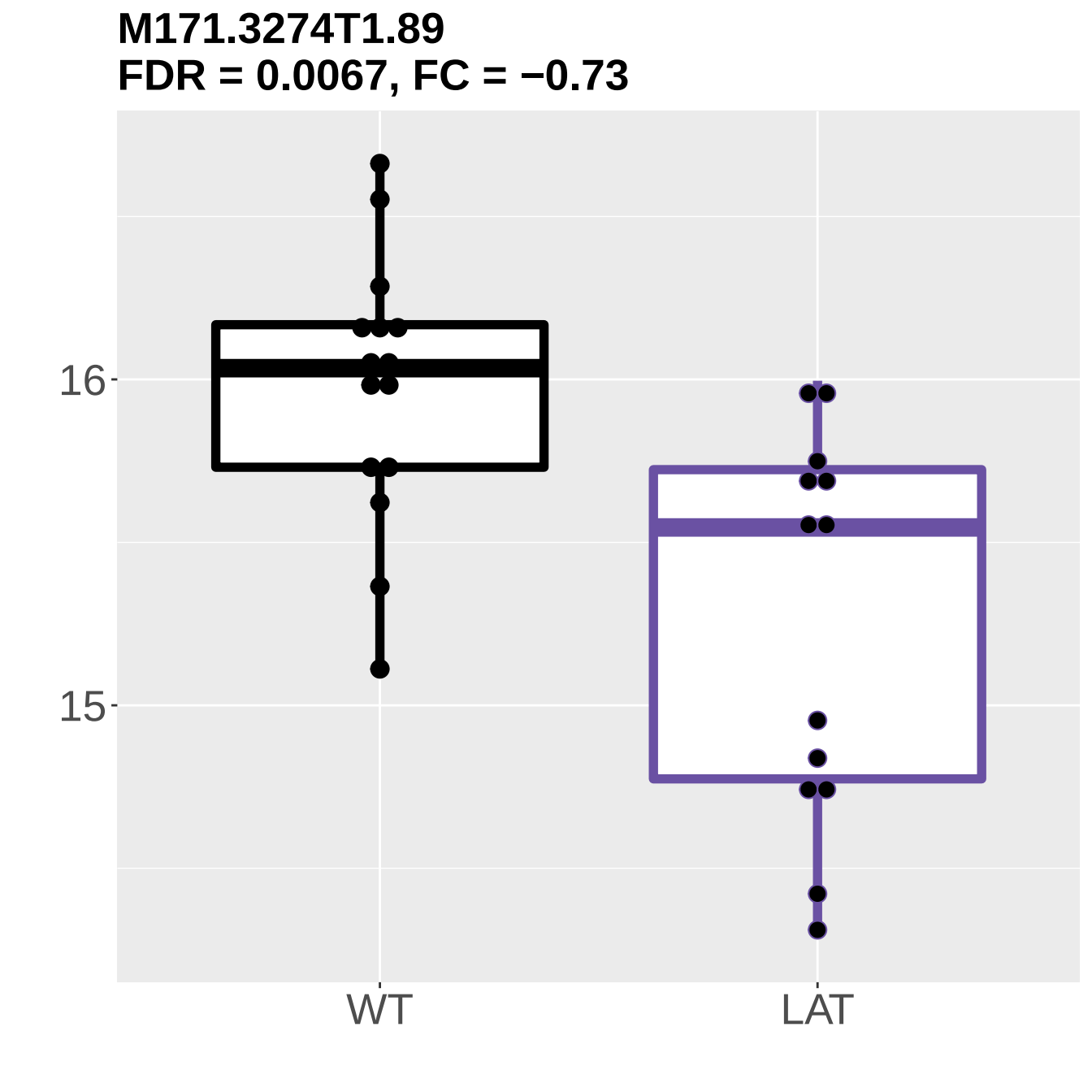
13
12
11
WT
LAT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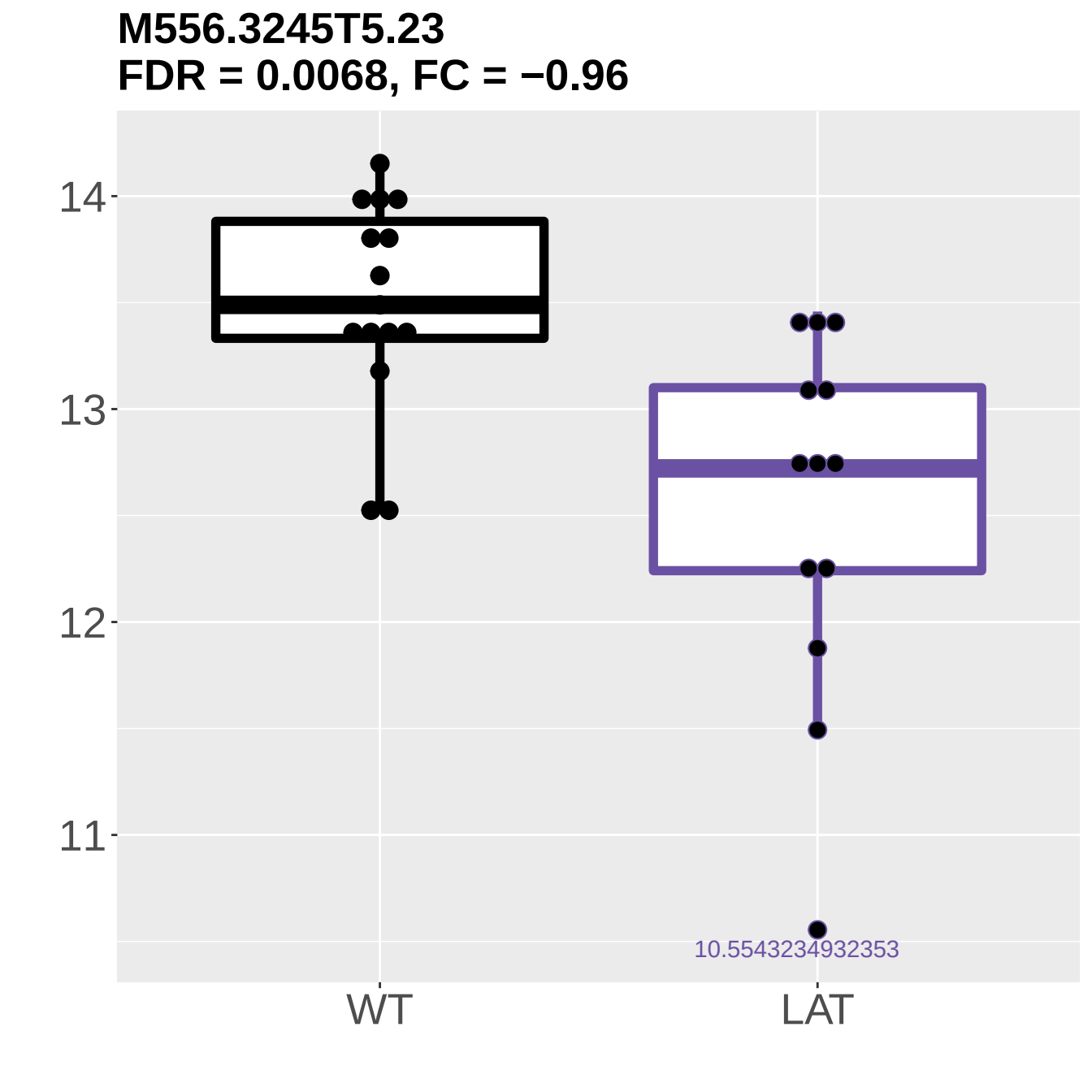
15
WT
LAT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FDR = 0.0068, FC = −0.96
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13
12
11
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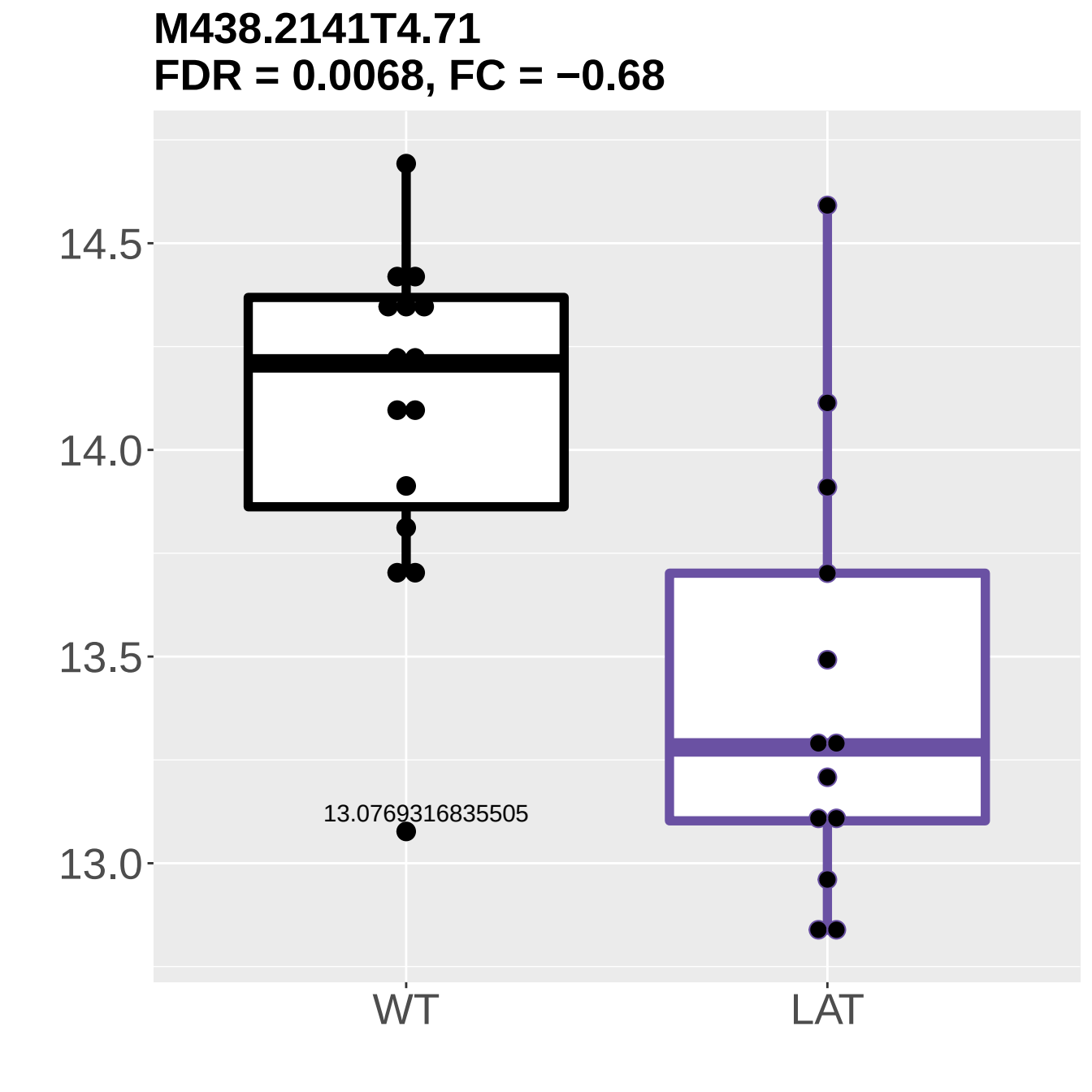
WT
LAT


M438.2141T4.71
FDR = 0.0068, FC = −0.68
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14.0
13.5
13.0
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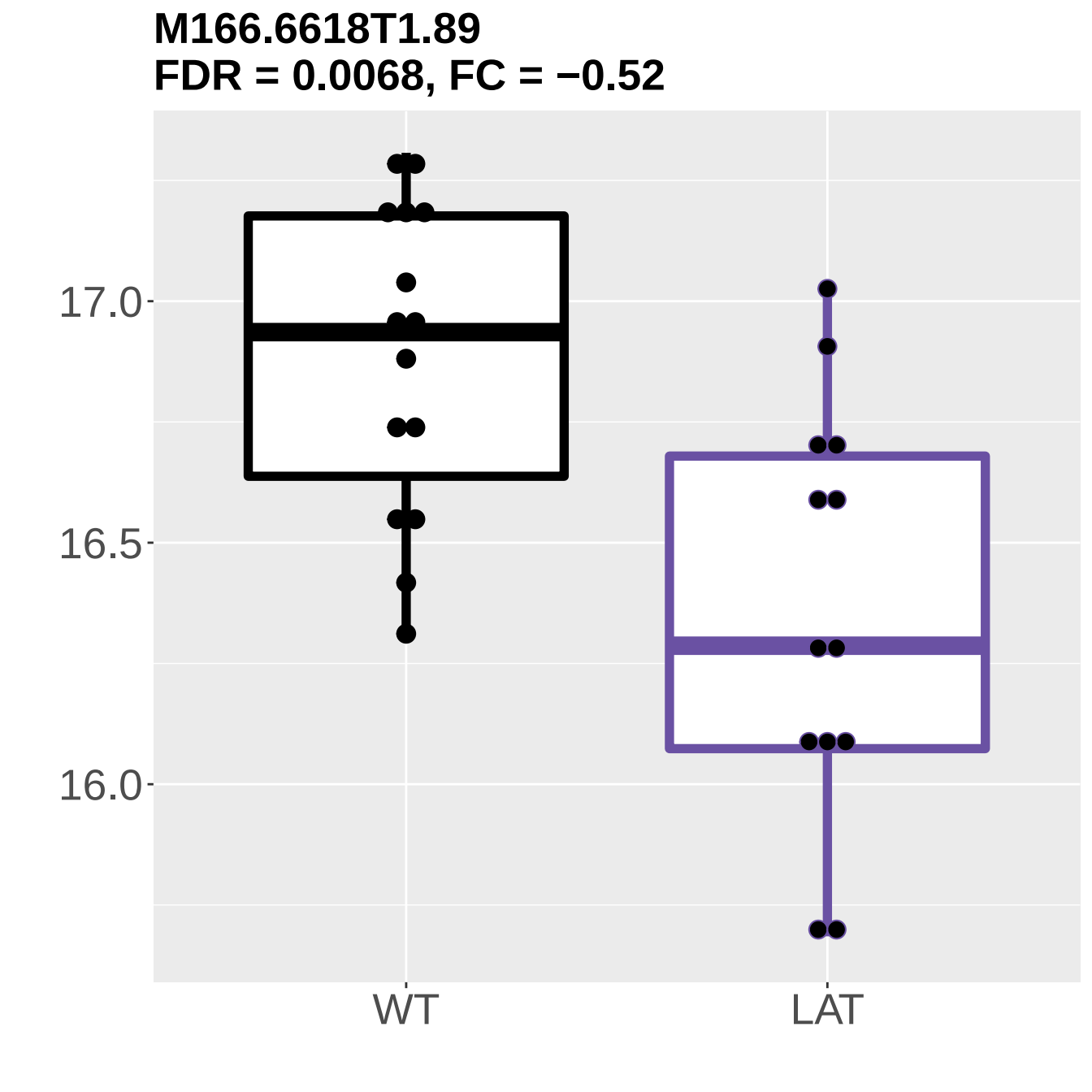
WT
LAT


M166.6618T1.89
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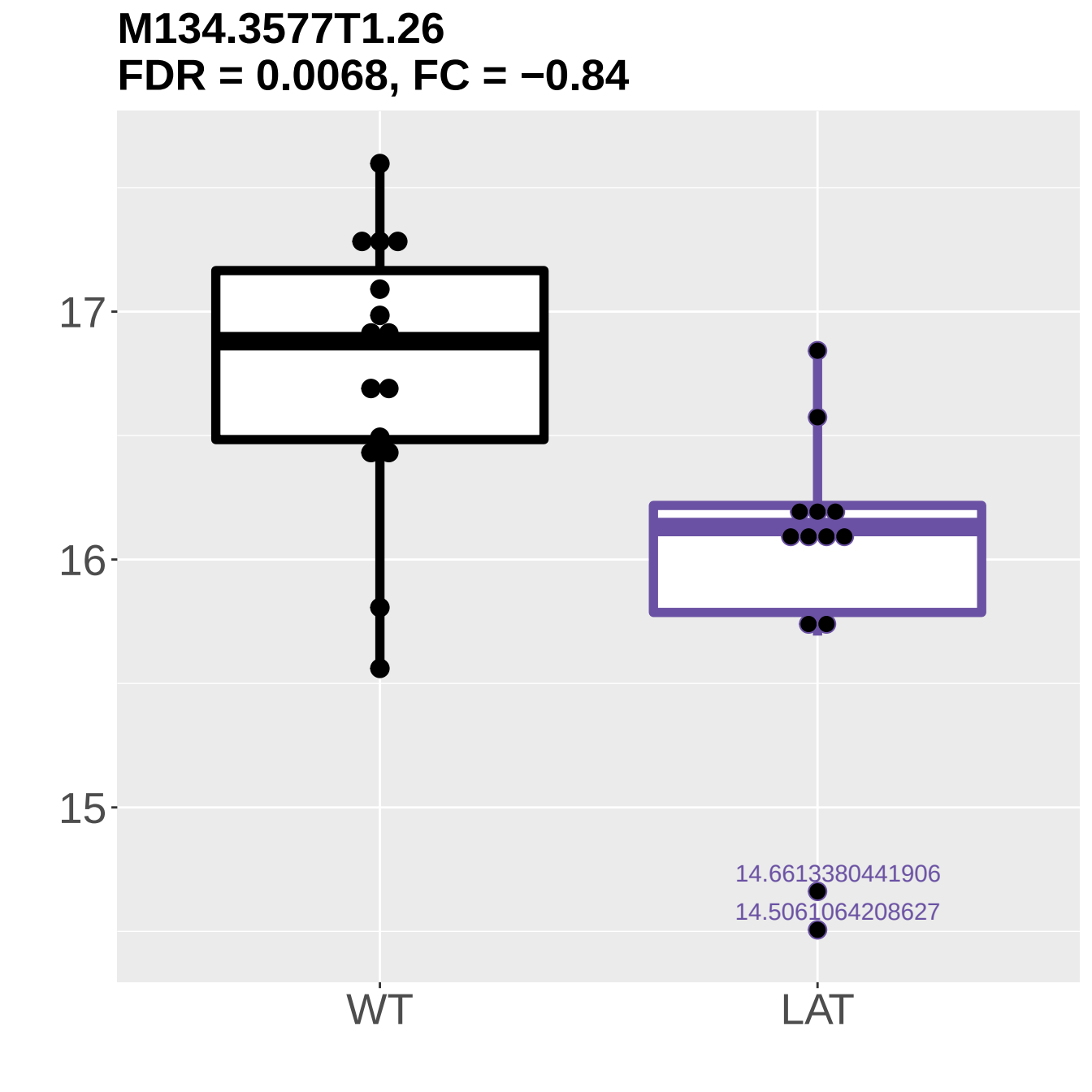
16.0
WT
LAT


M134.3577T1.26
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16
15
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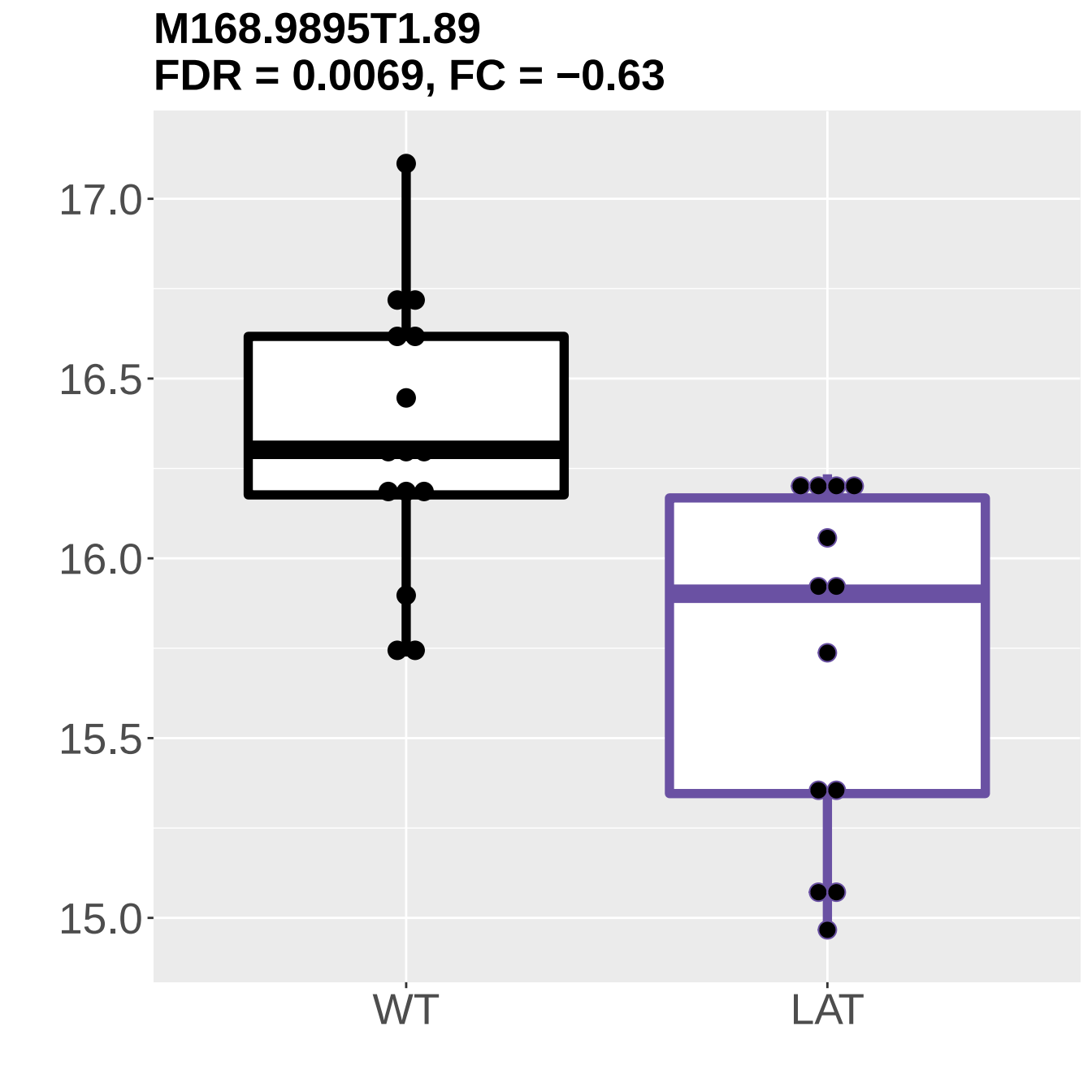
WT
LAT


M168.9895T1.89
FDR = 0.0069, FC = −0.63
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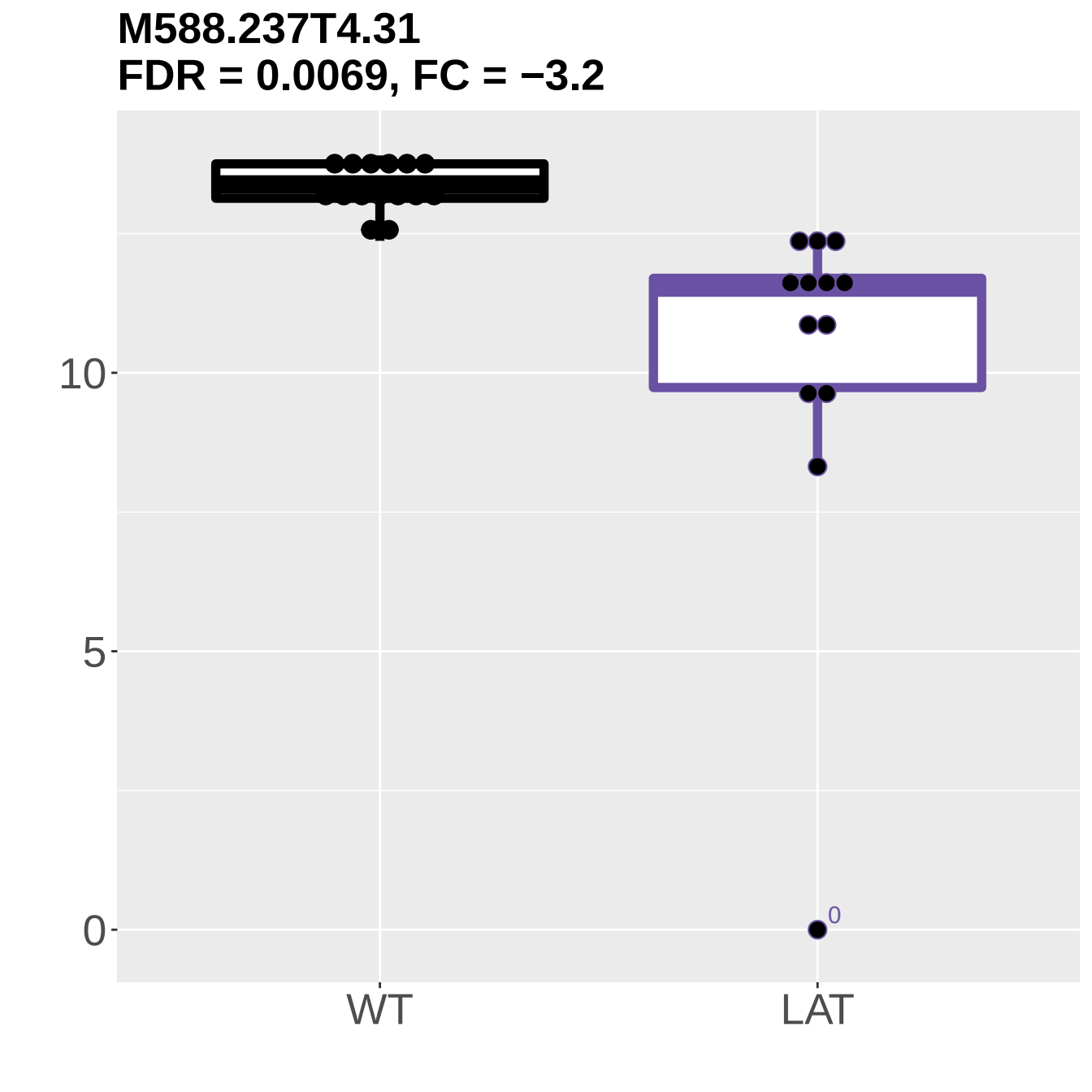
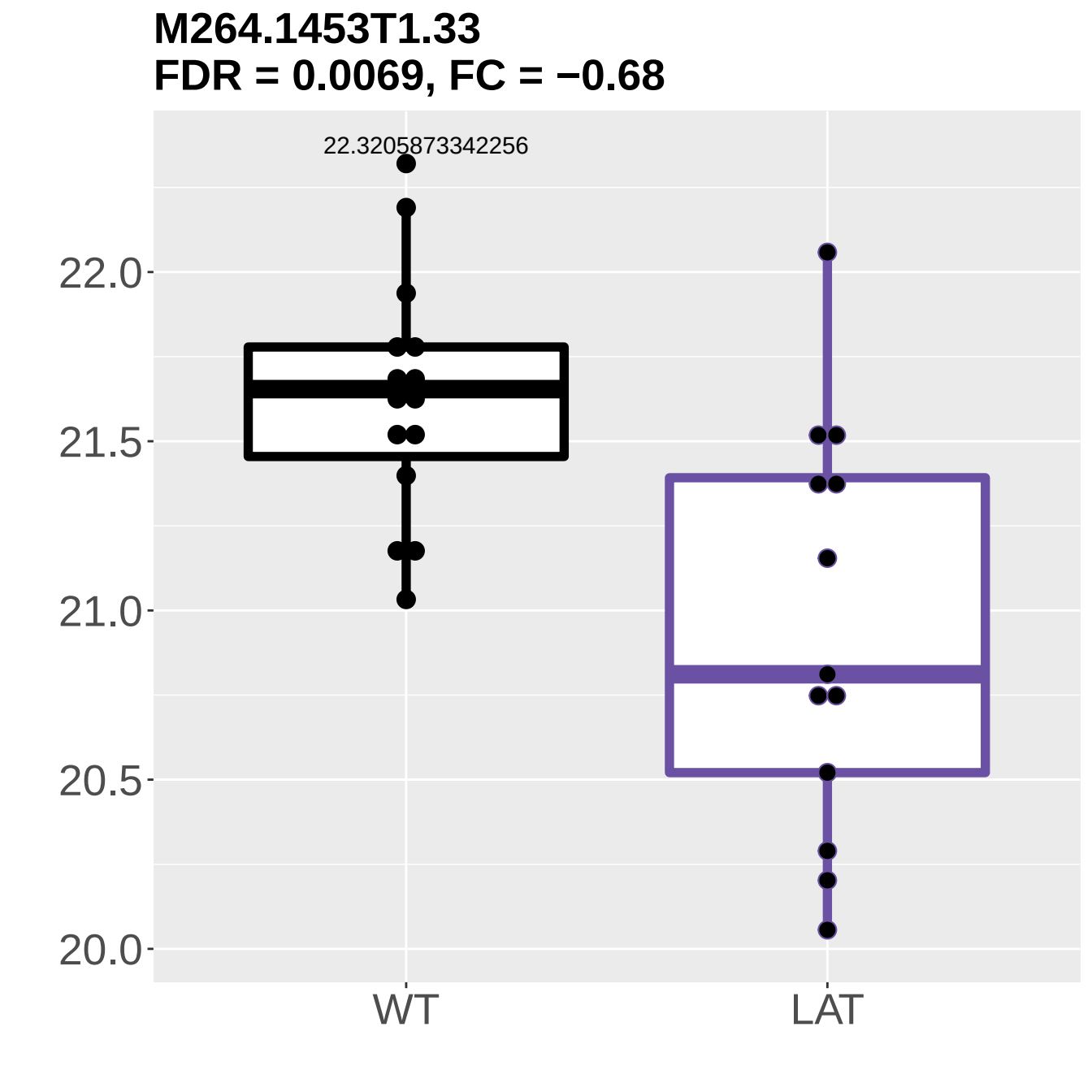
16.0
15.5
15.0
WT
LAT


M588.237T4.31
FDR = 0.0069, FC = −3.2
10
5
0
0
WT
LAT


M264.1453T1.33
FDR = 0.0069, FC = −0.68
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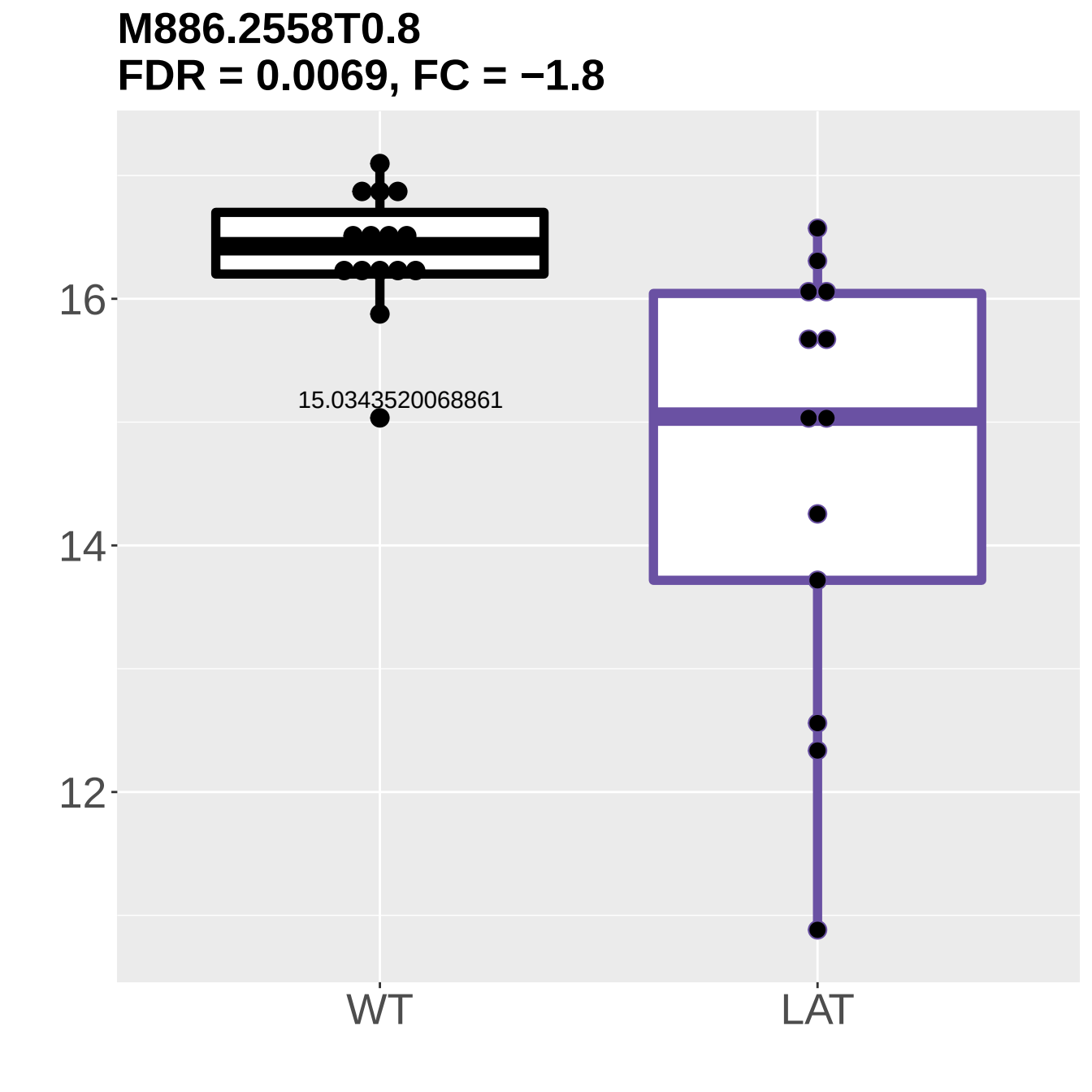
22.0
21.5
21.0
20.5
20.0
WT
LAT


M886.2558T0.8
FDR = 0.0069, FC = −1.8
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14
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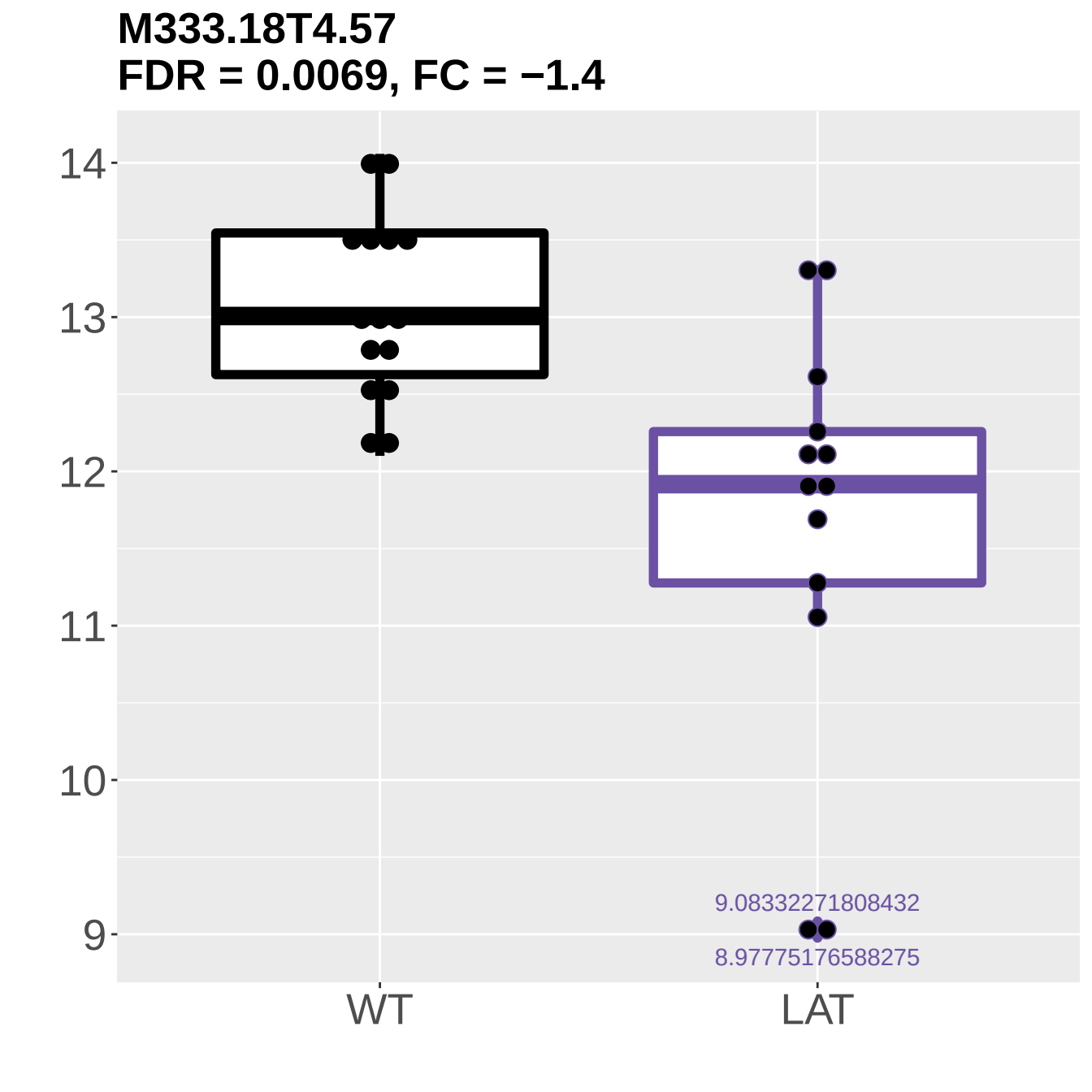
WT
LAT


M333.18T4.57
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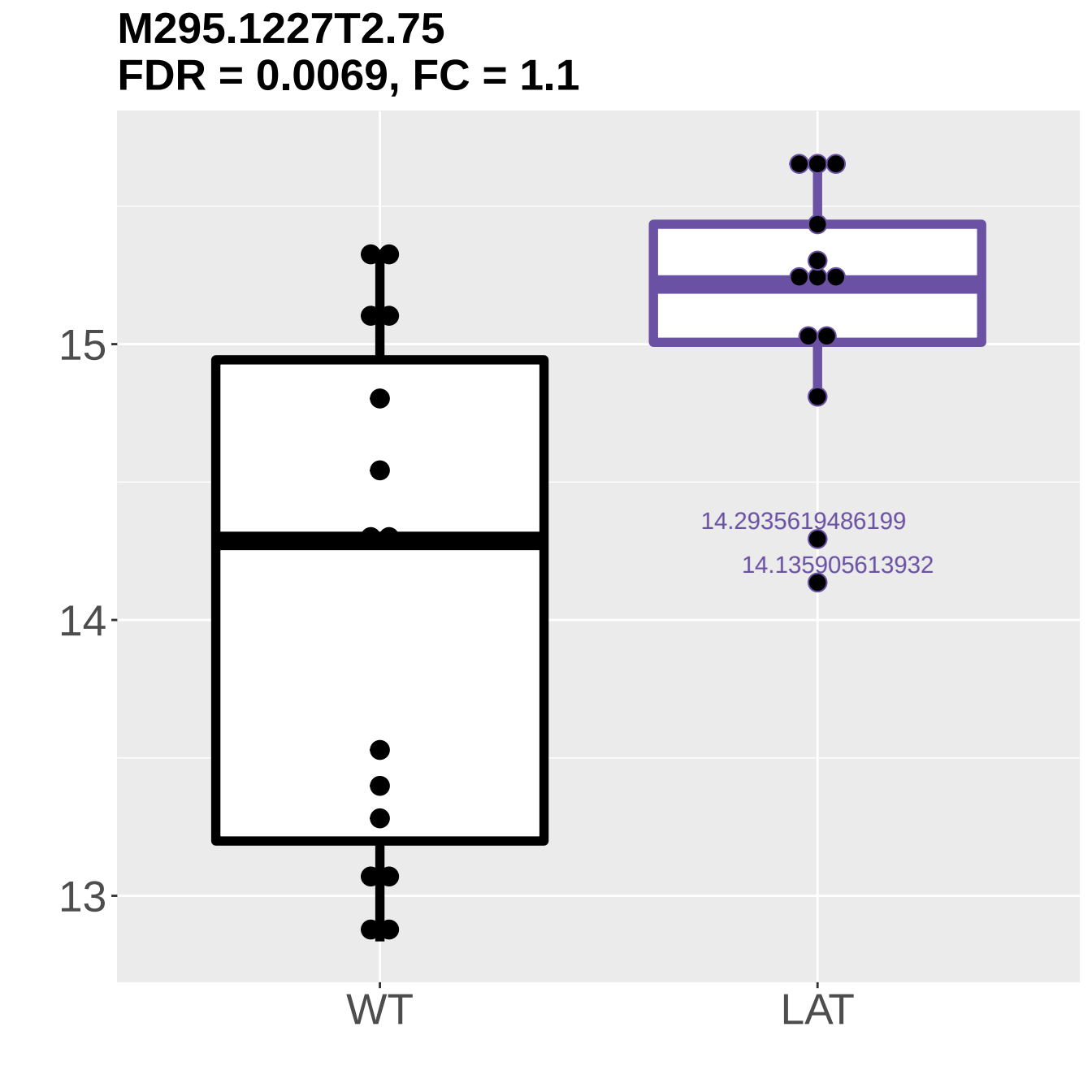
WT
LAT


M295.1227T2.75
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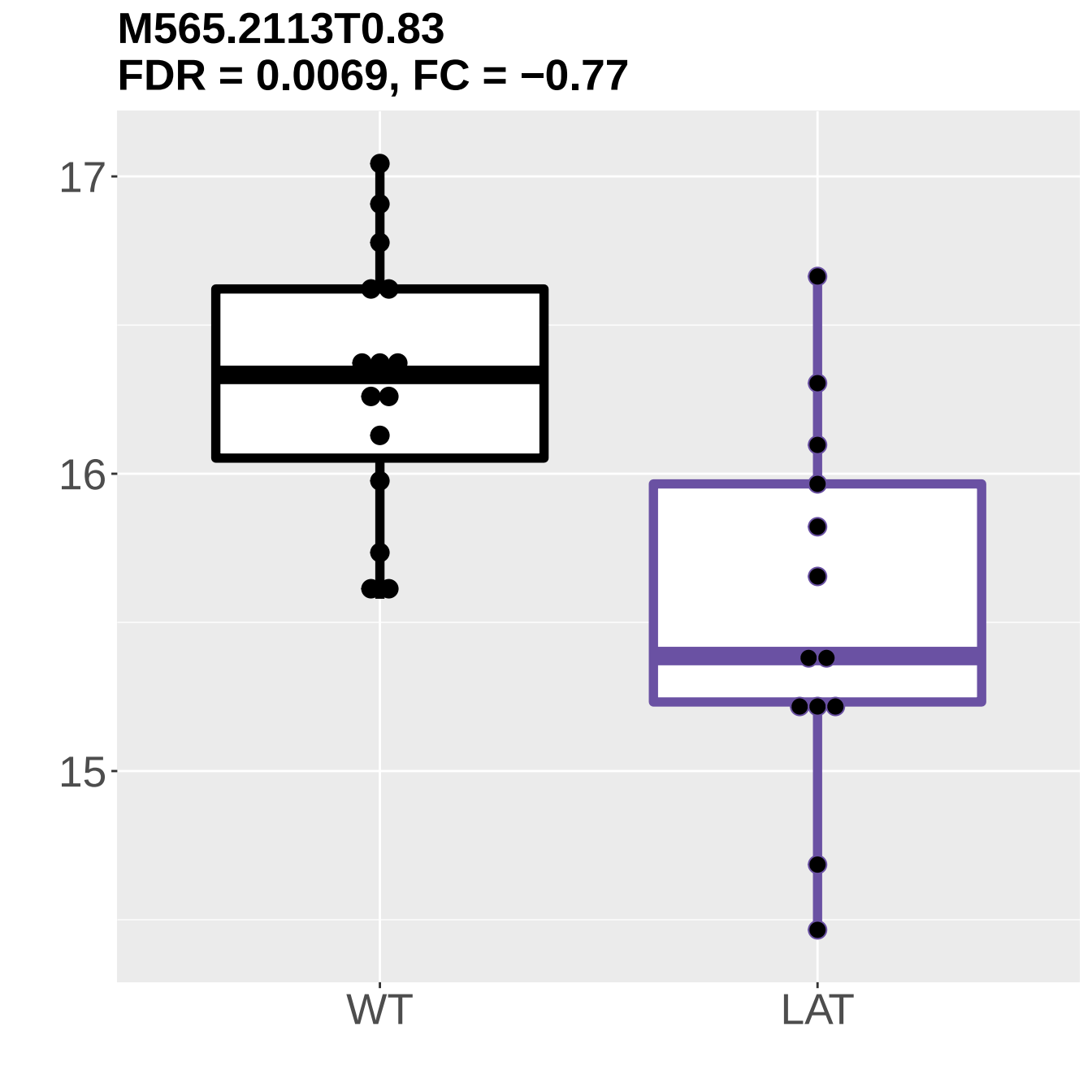
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FDR = 0.0069, FC = −0.77
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WT
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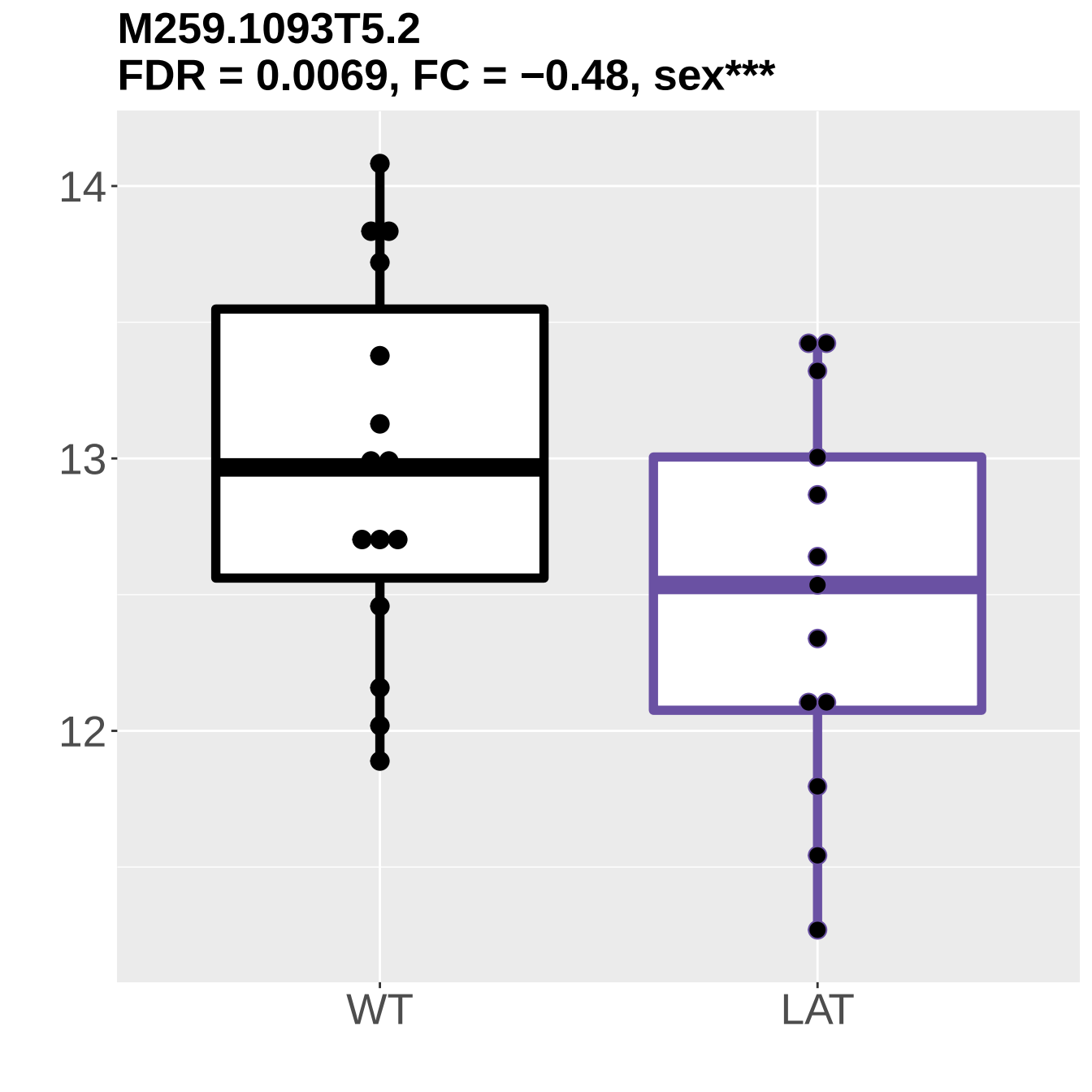
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12
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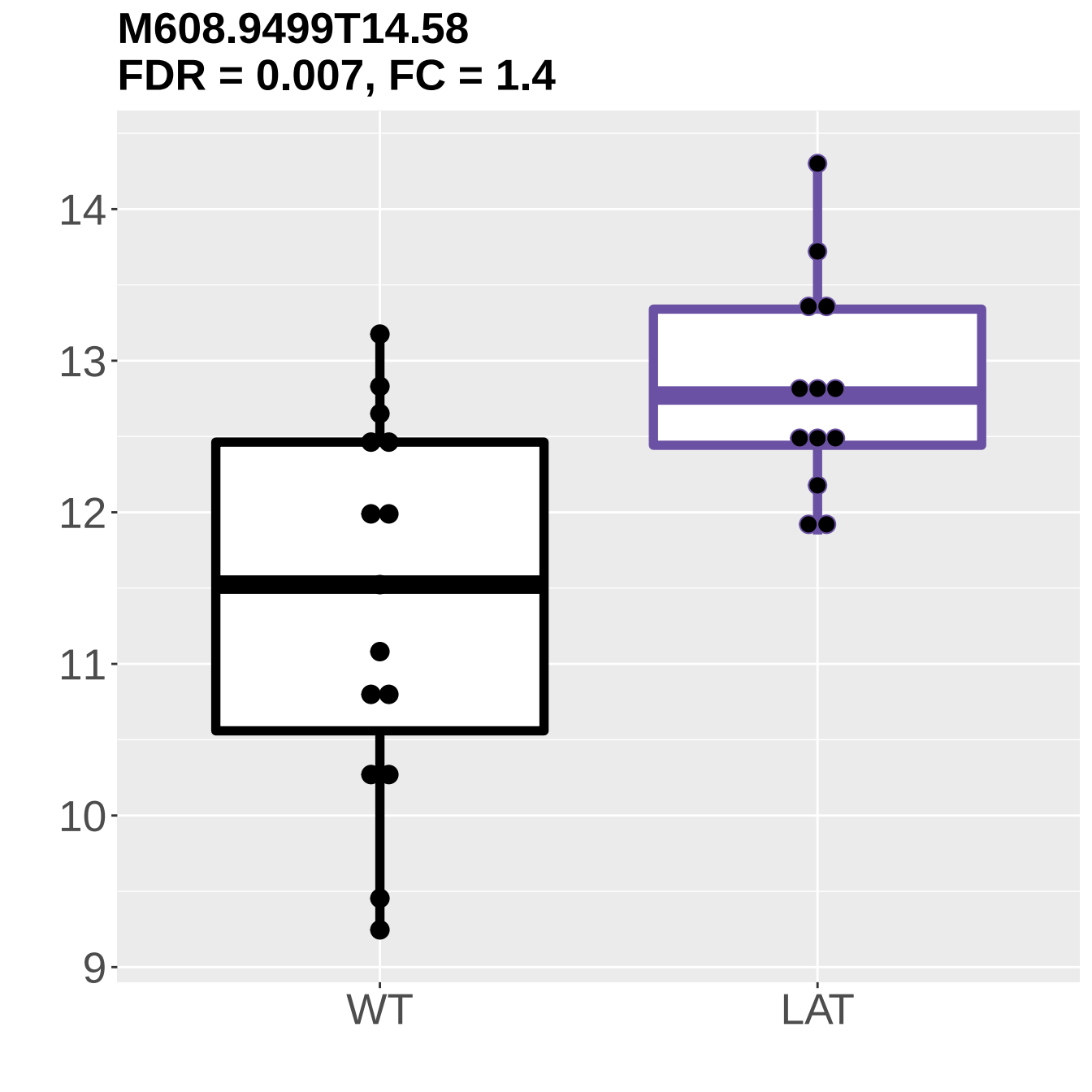
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WT
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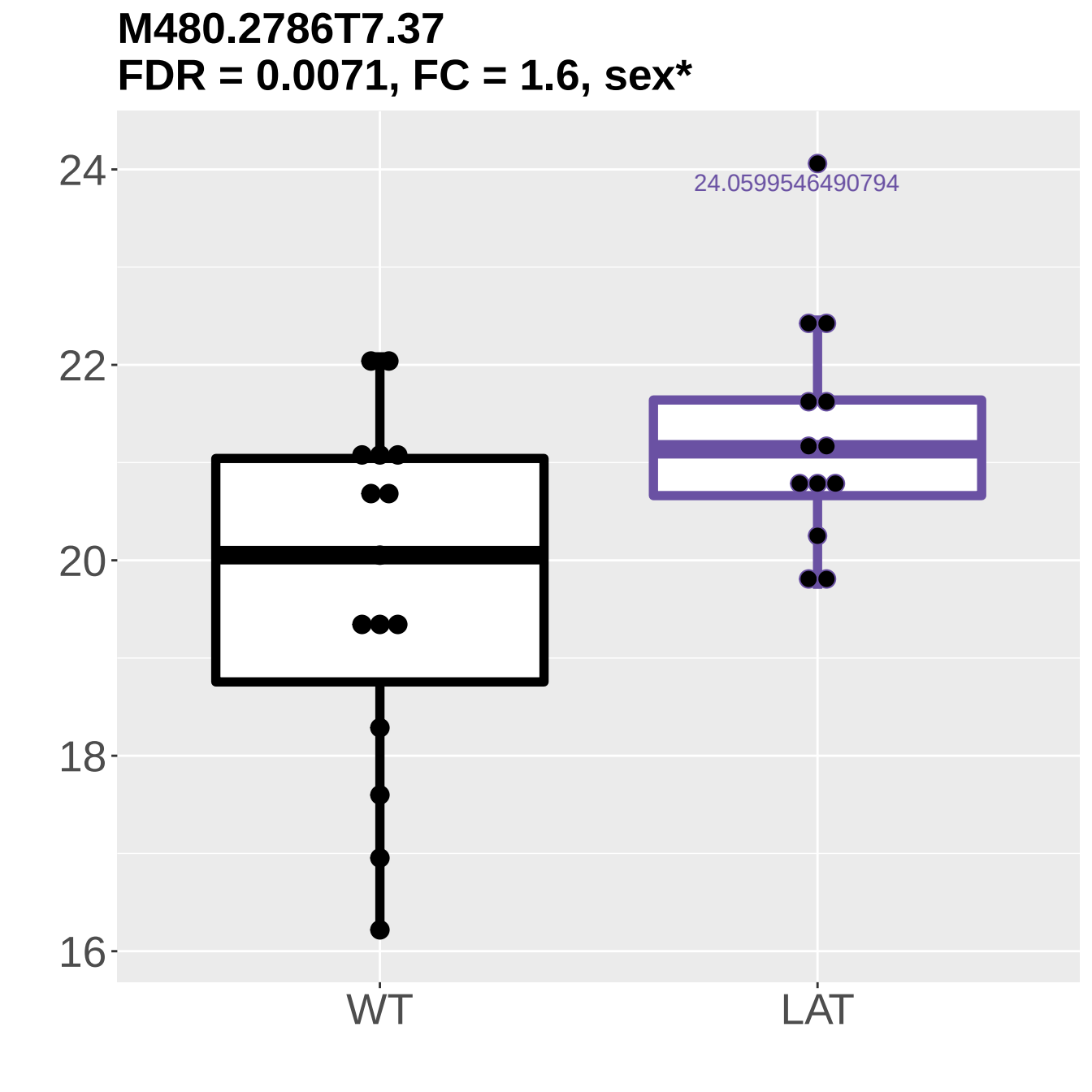
M480.2786T7.37
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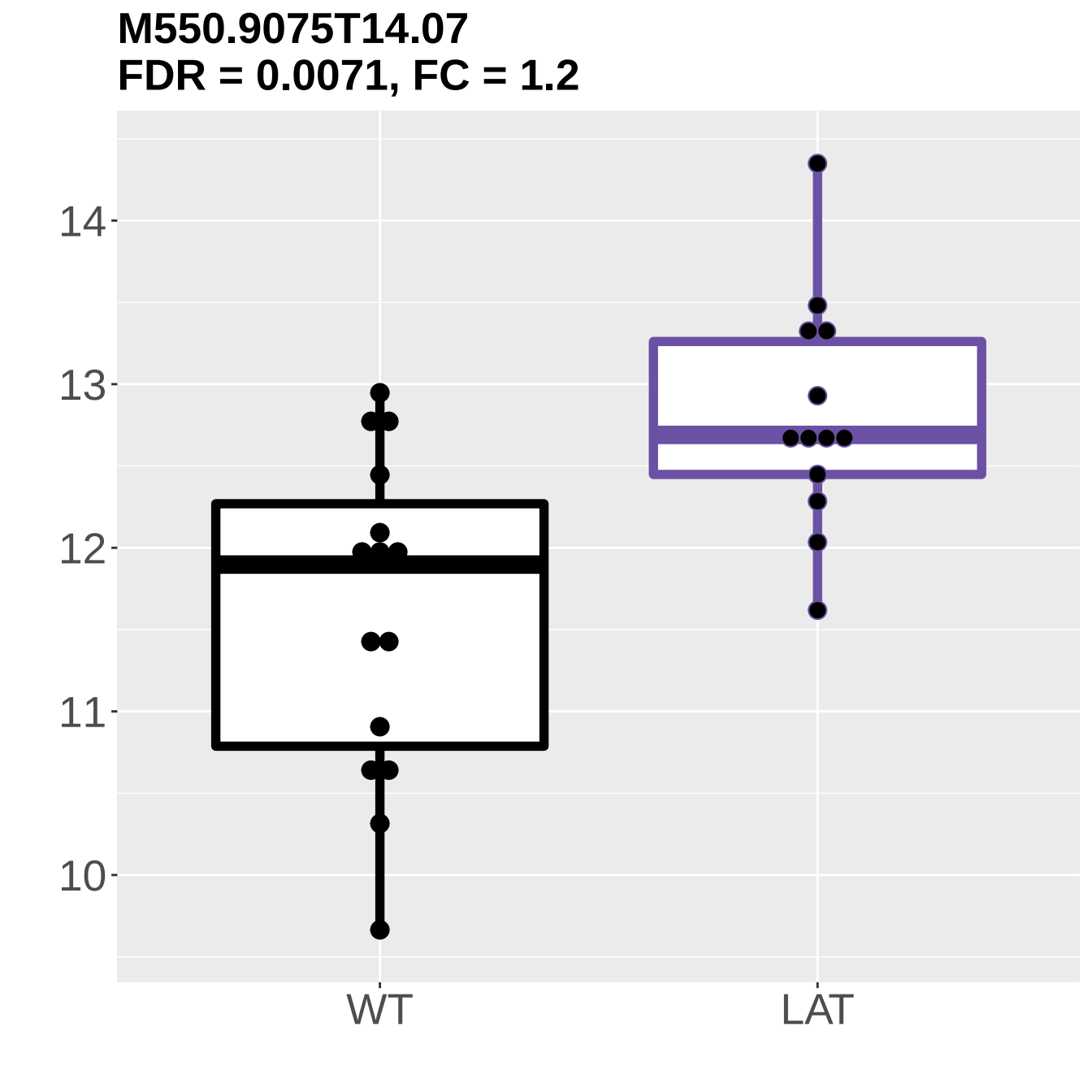
WT
LAT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WT
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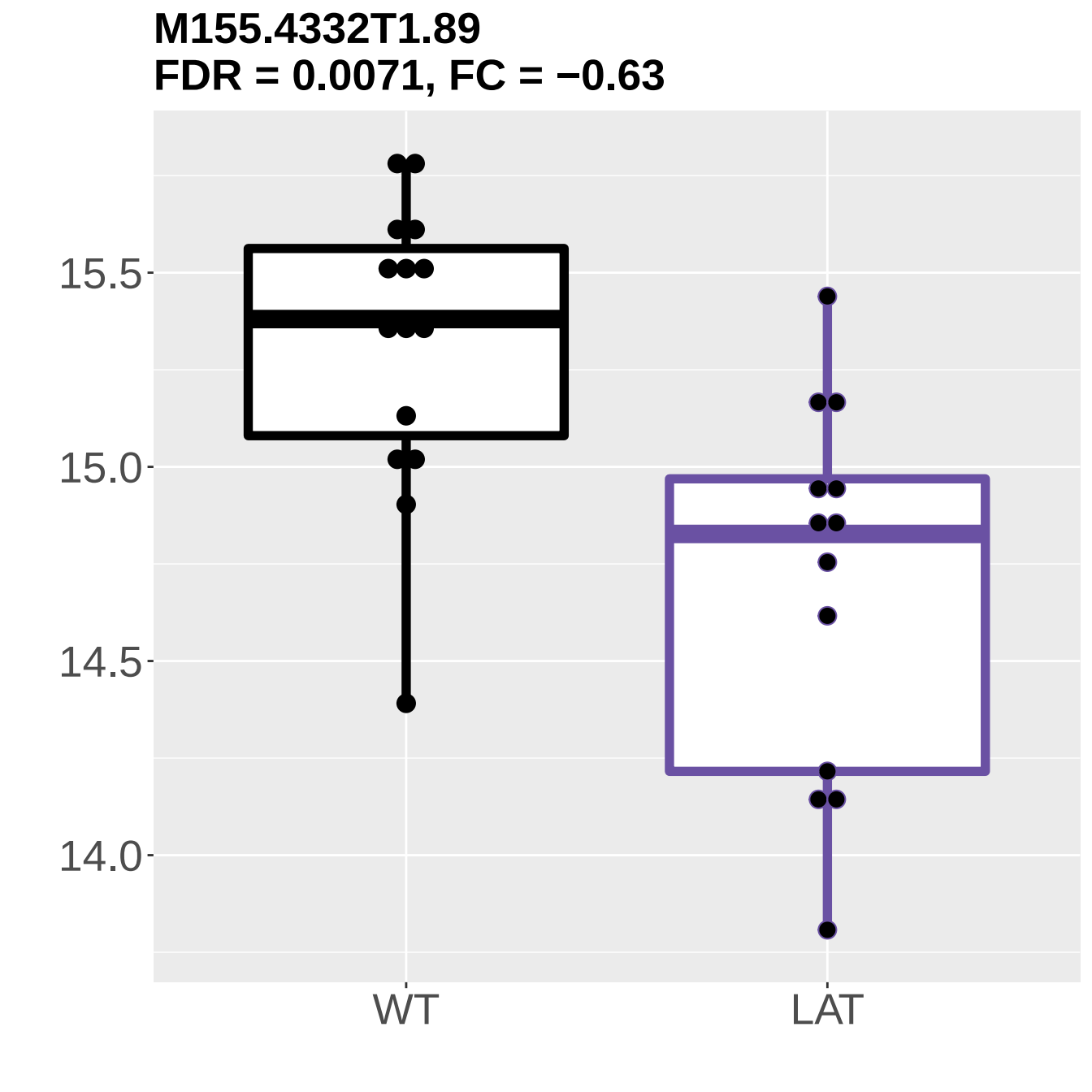
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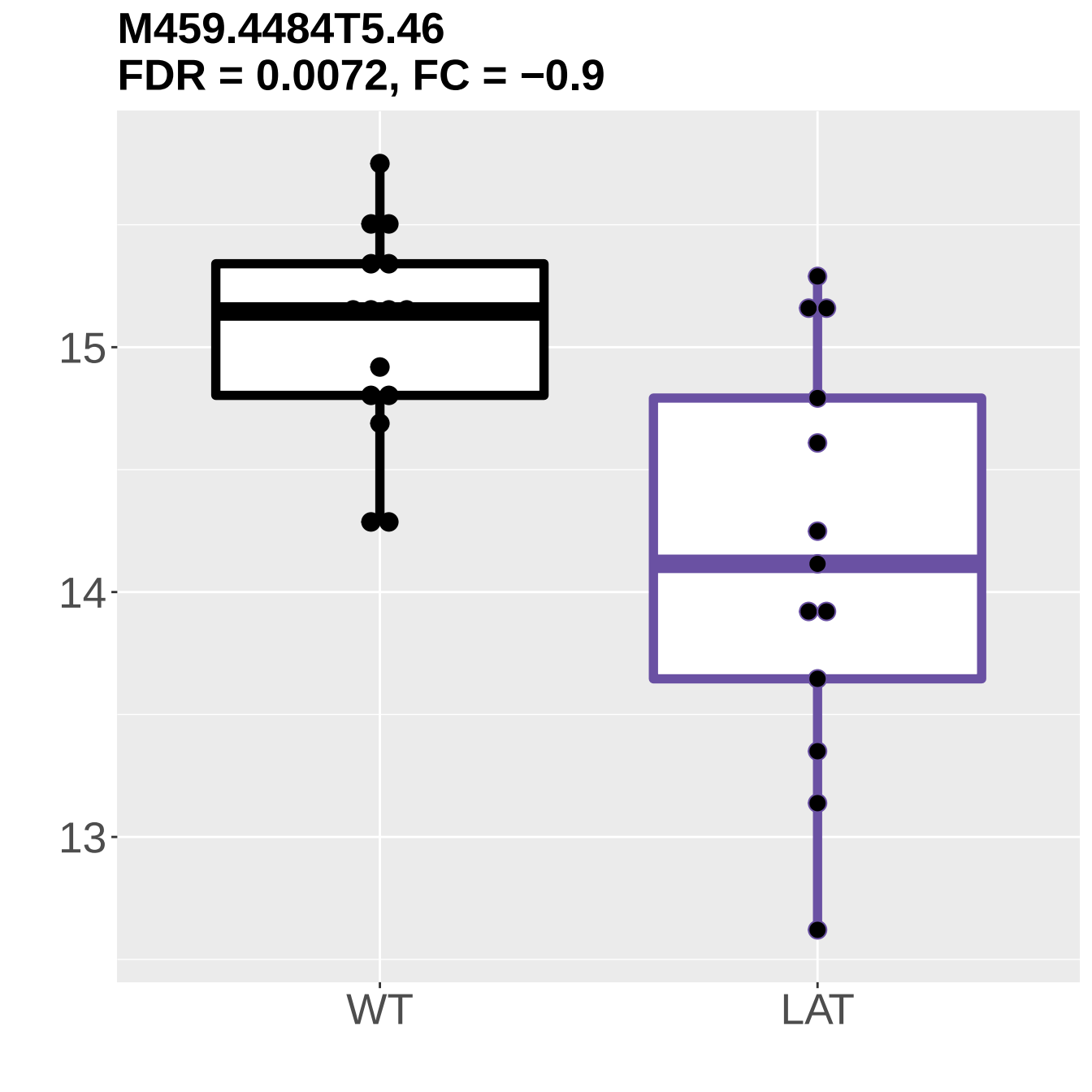
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WT
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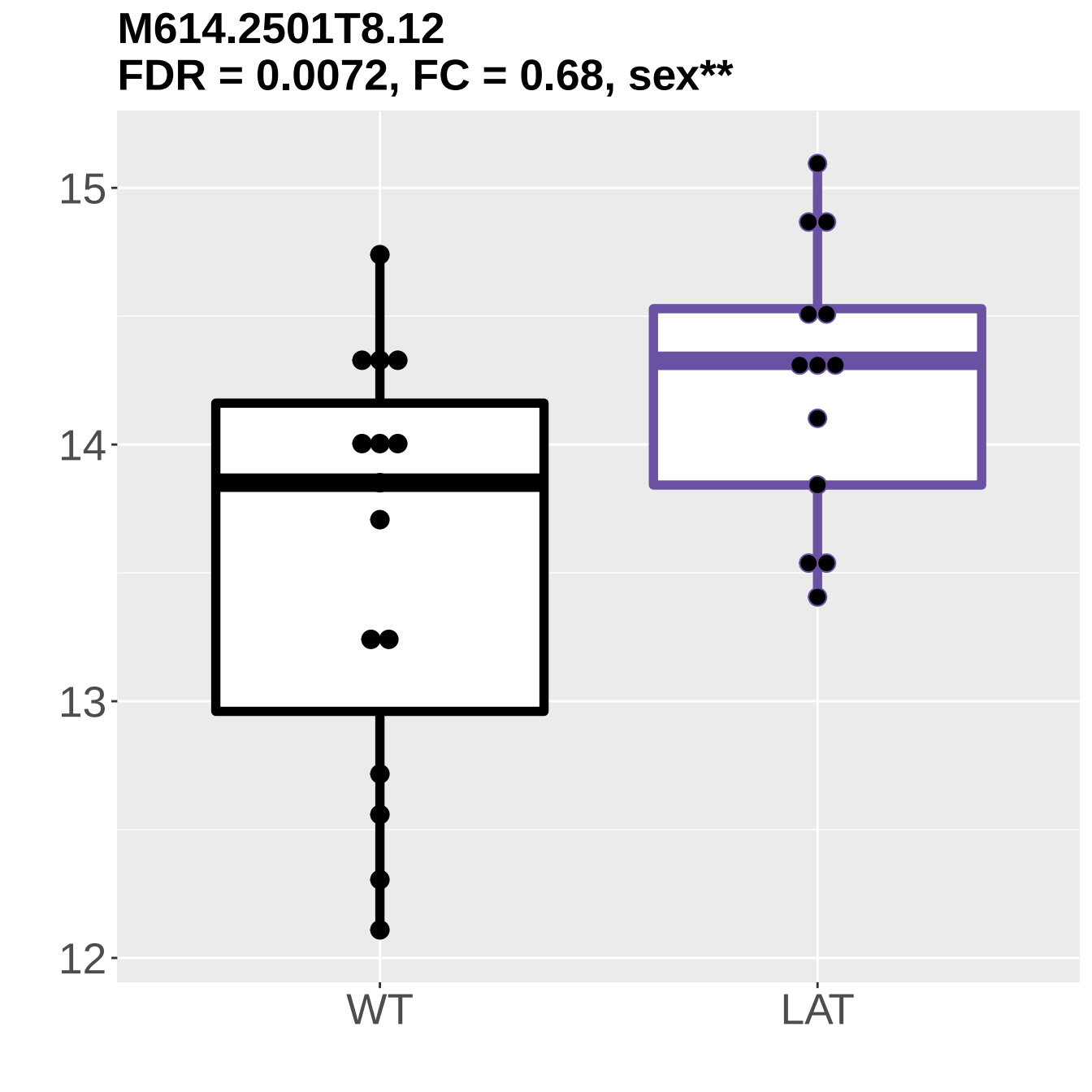
M614.2501T8.12
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12
WT
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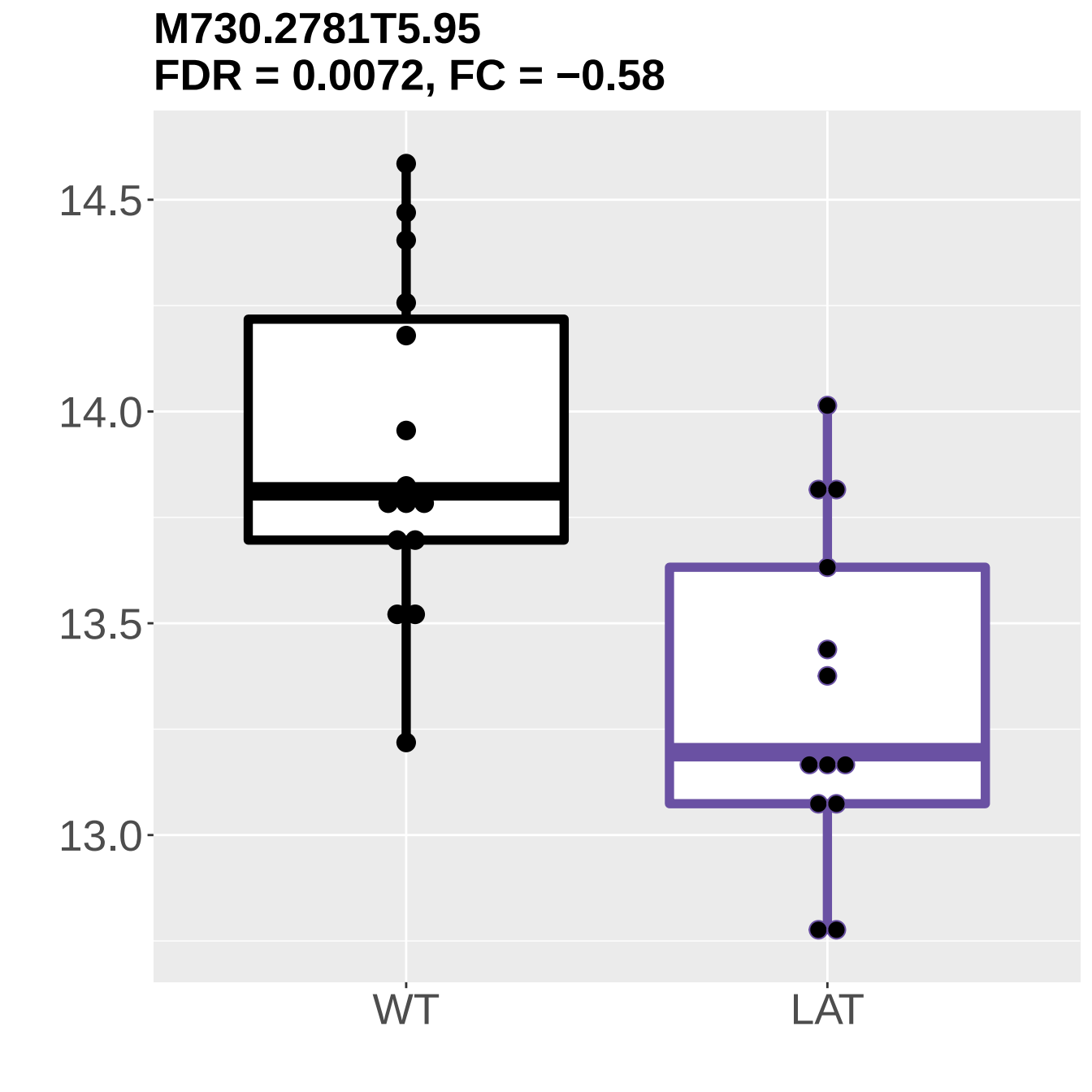
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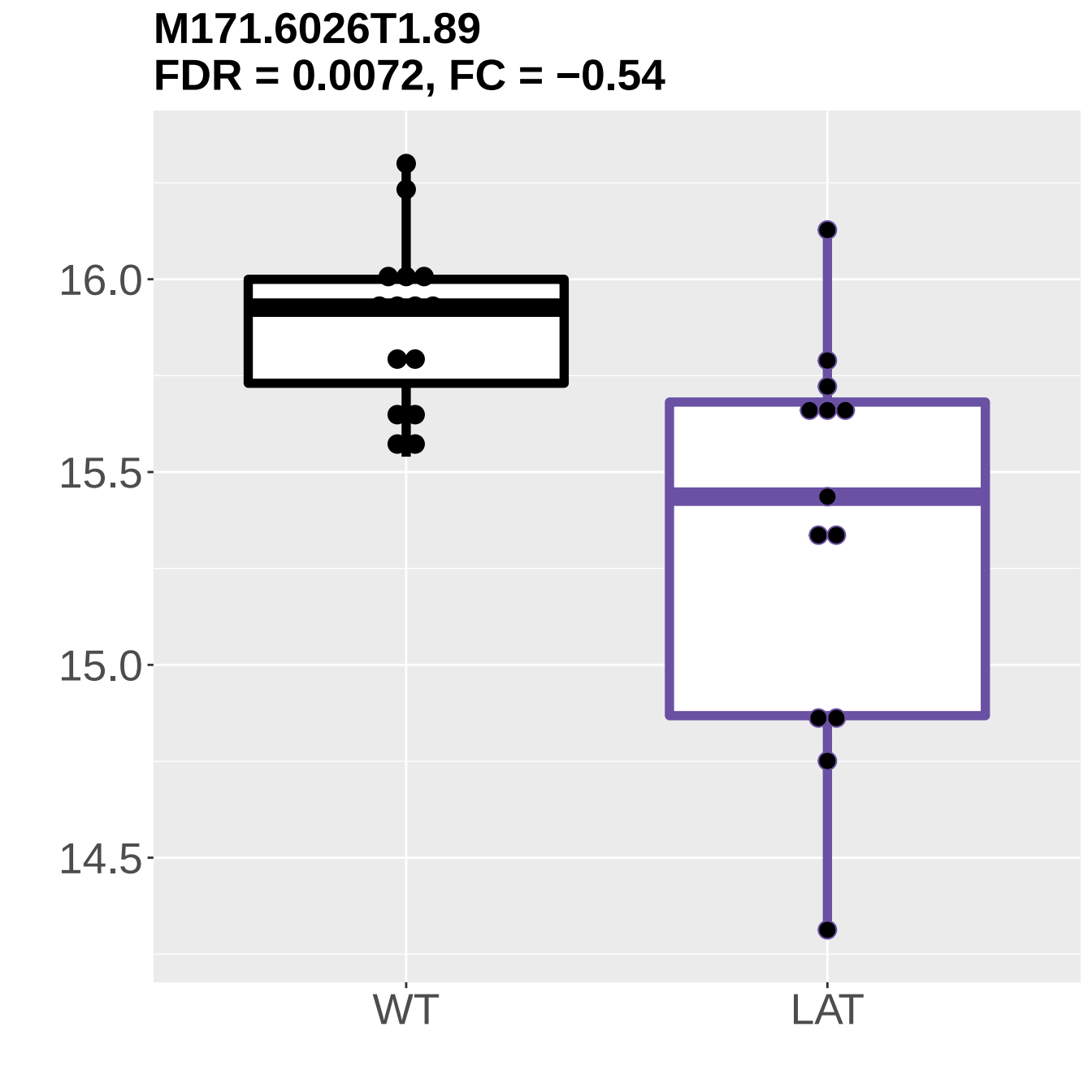
WT
LAT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15.0
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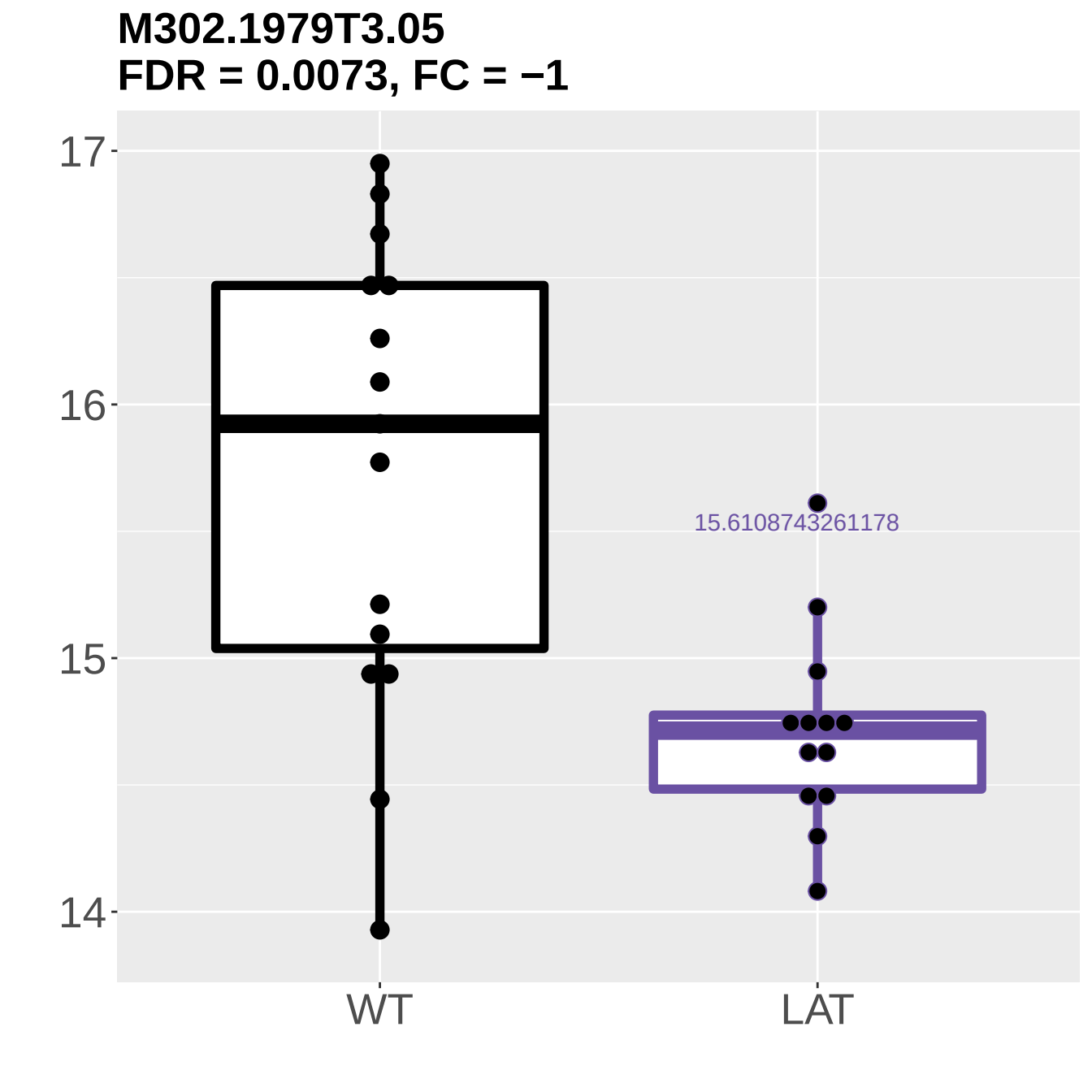
WT
LAT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16
15
14
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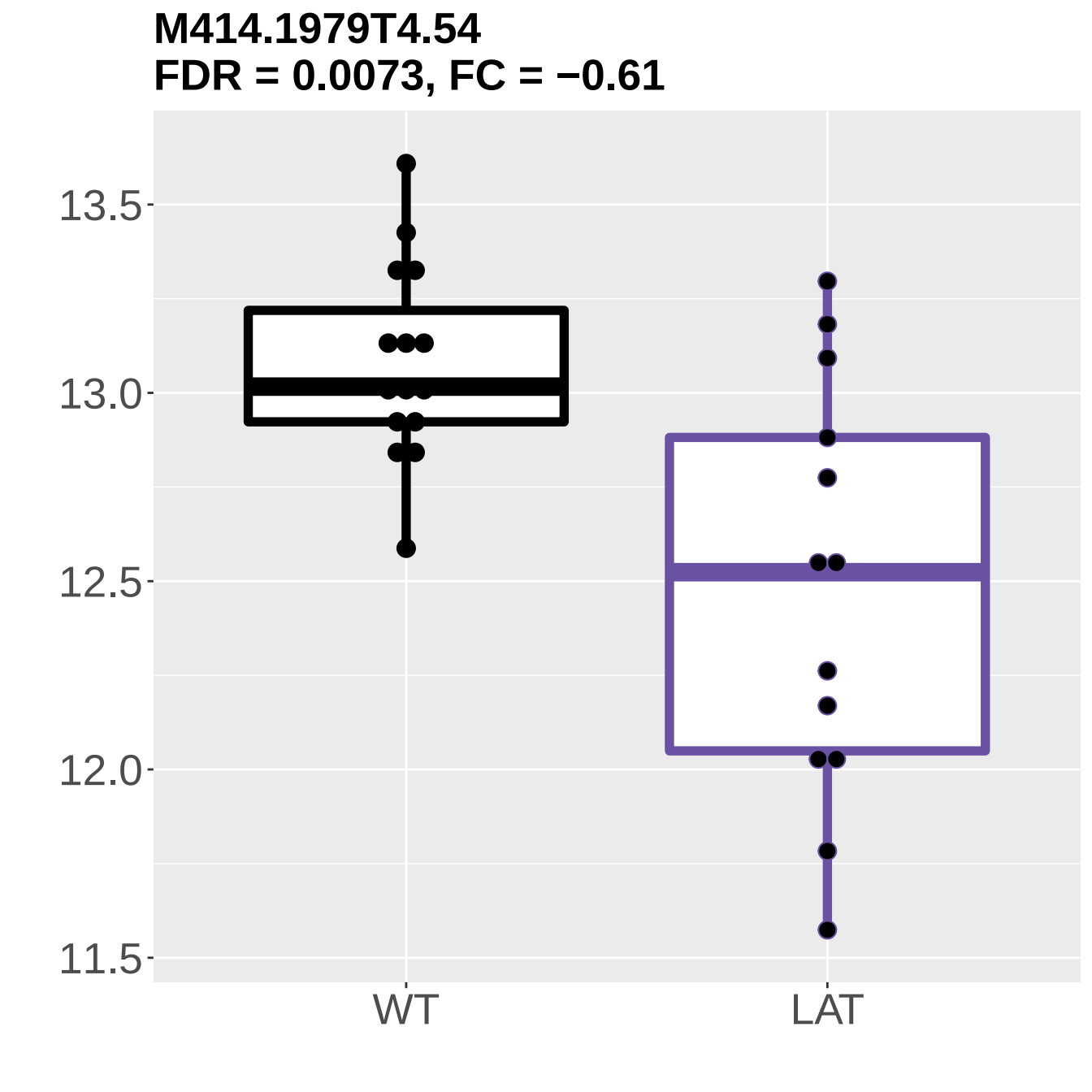
WT
LAT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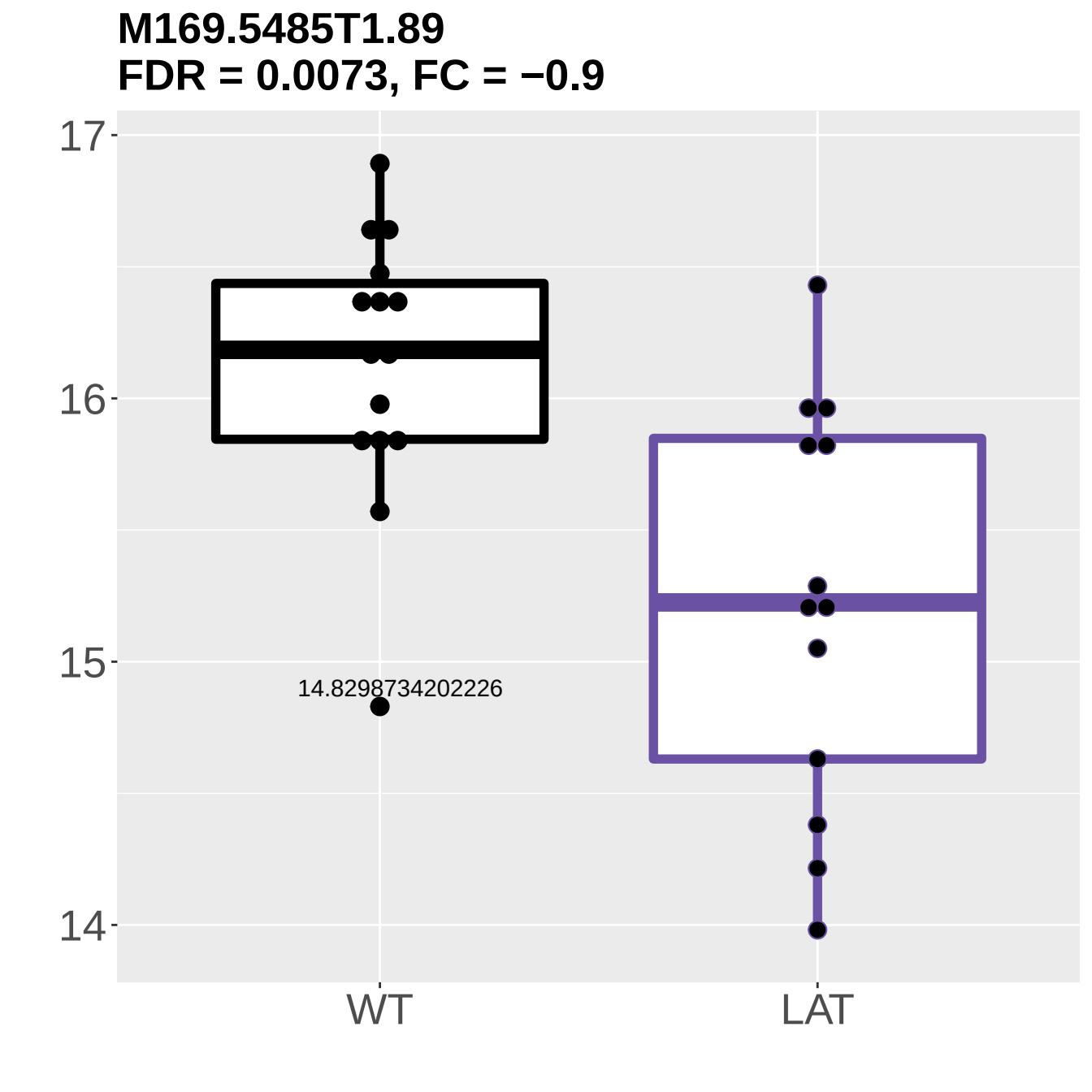
WT
LAT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16
15
14
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WT
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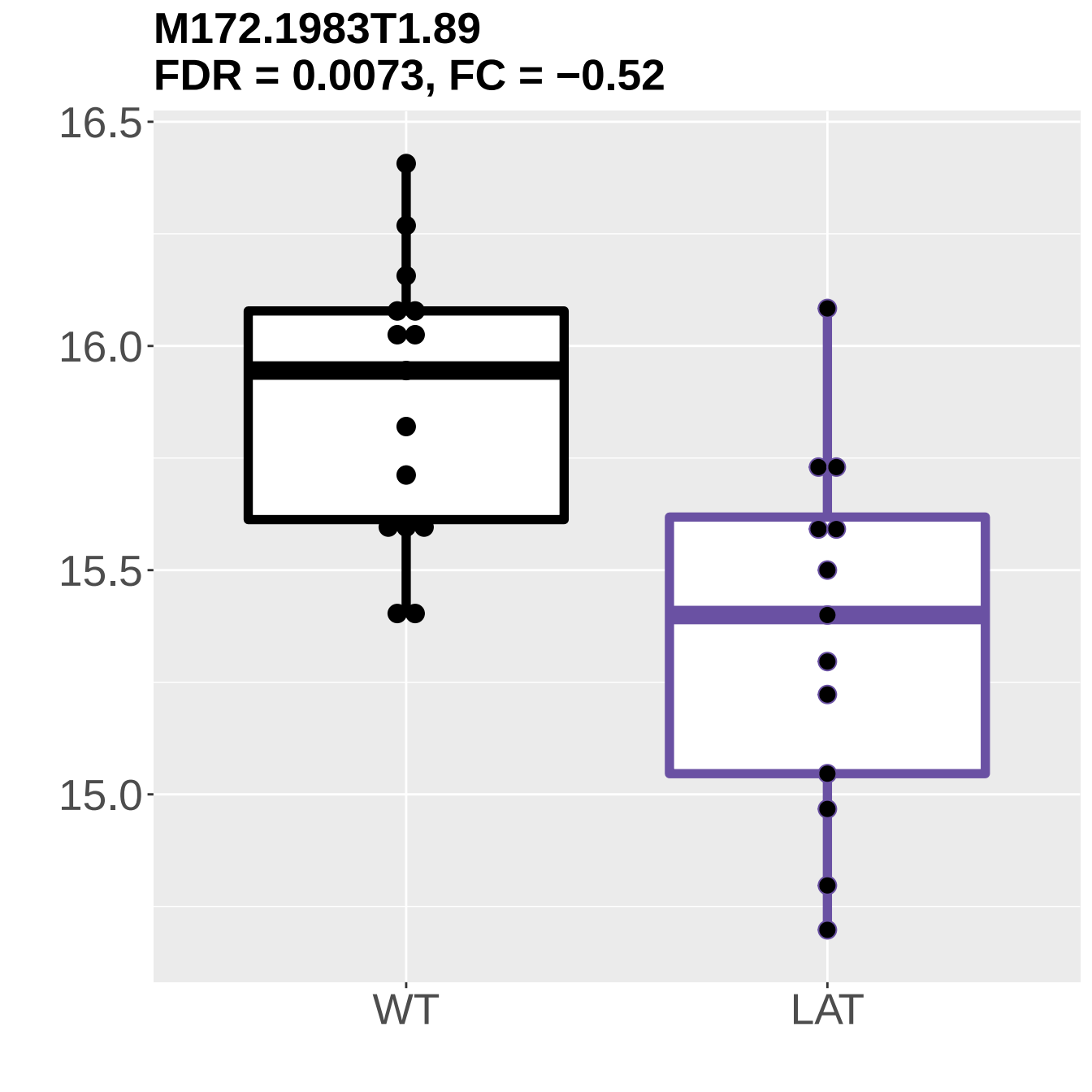
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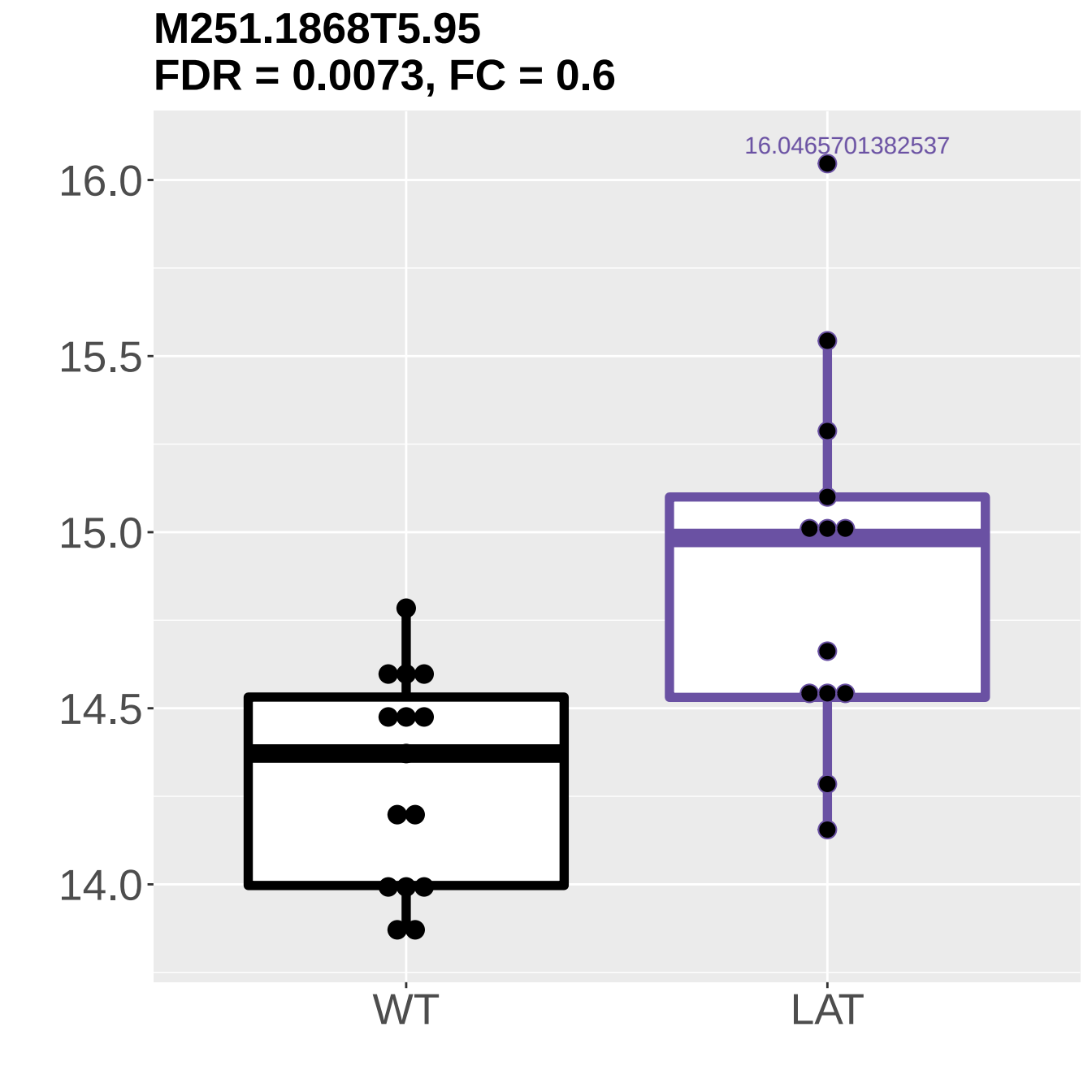
15.0
WT
LAT


M251.1868T5.95
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15.0
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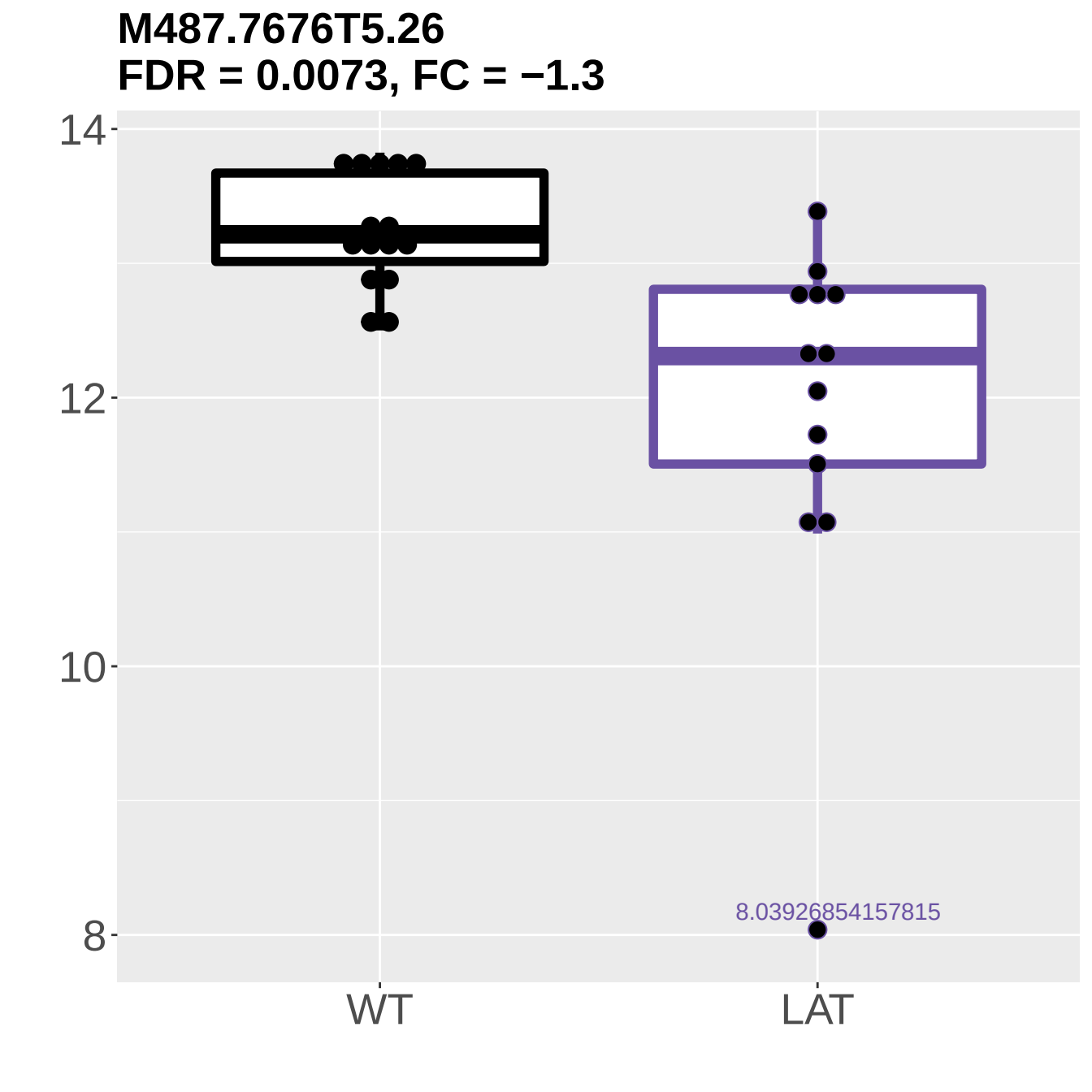
14.0
WT
LAT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12
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8
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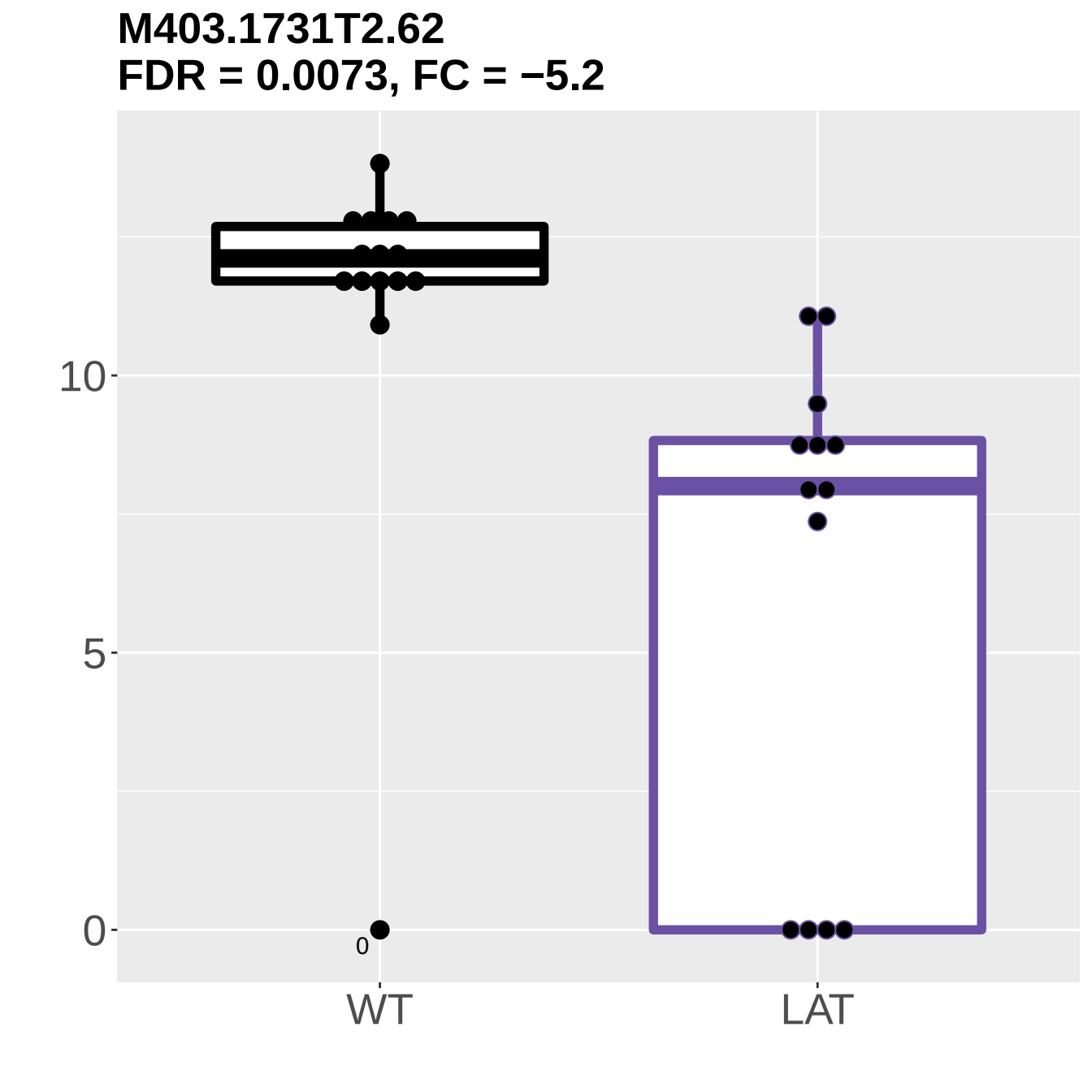
WT
LAT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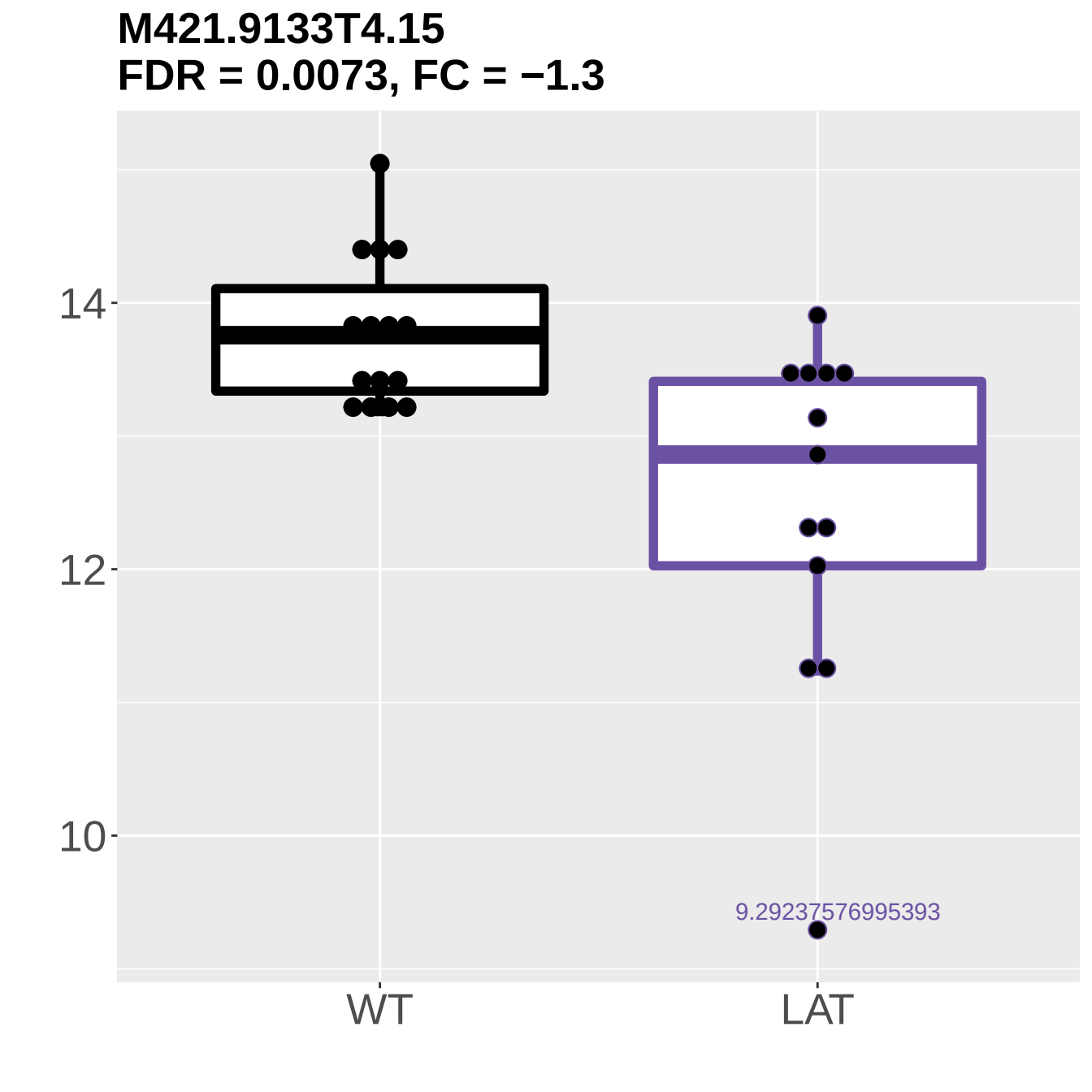
5
0
0
WT
LAT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12
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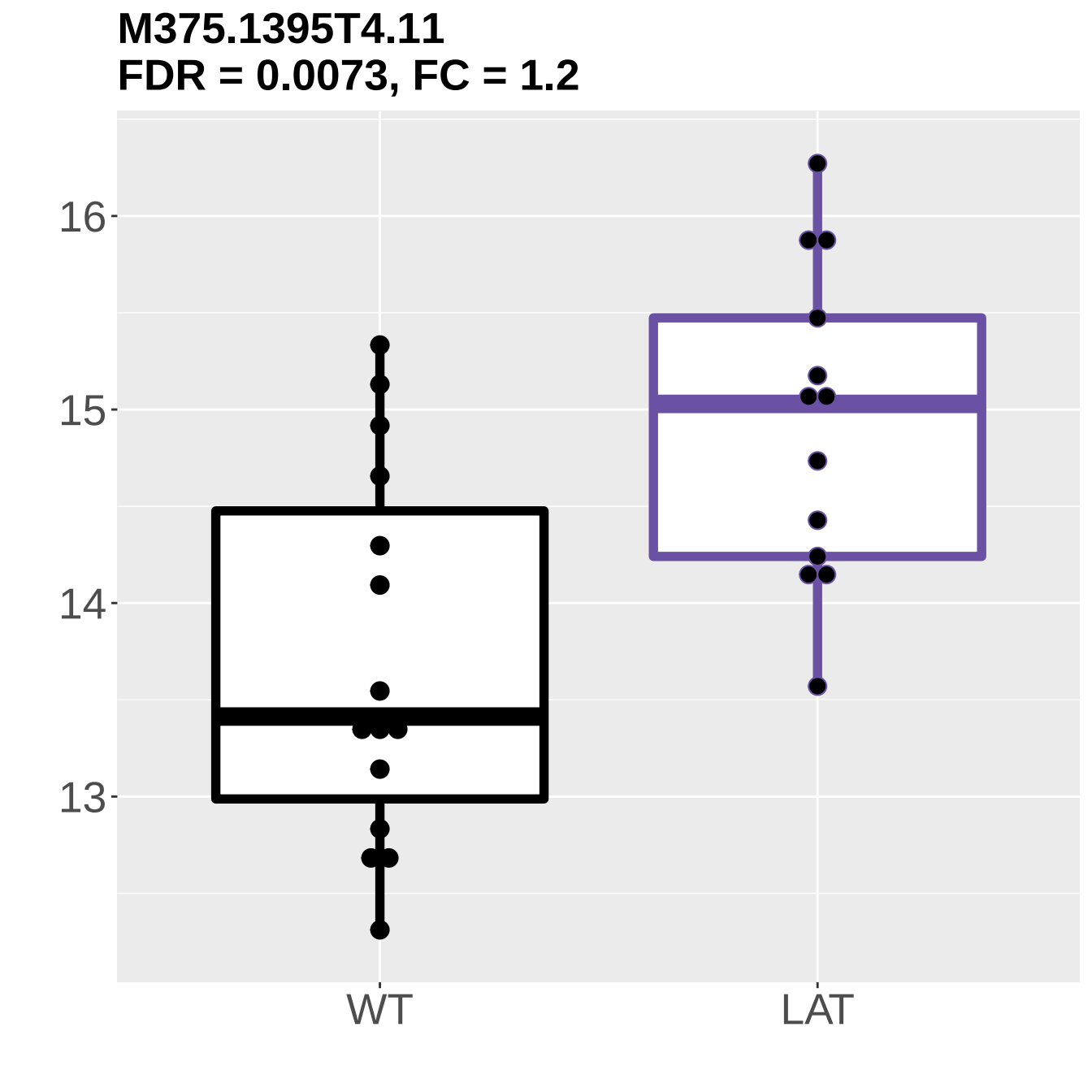
WT
LAT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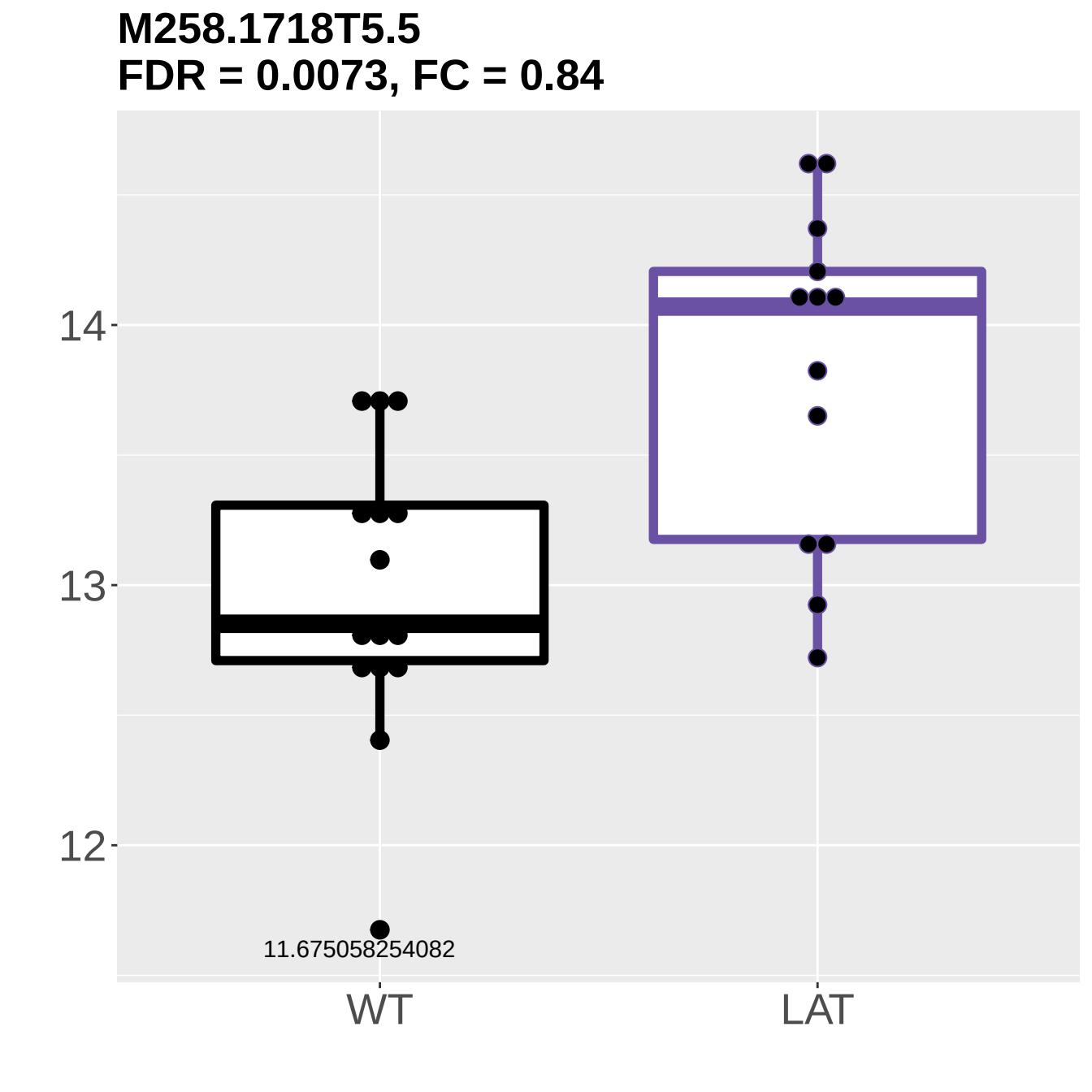
15
14
13
WT
LAT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13
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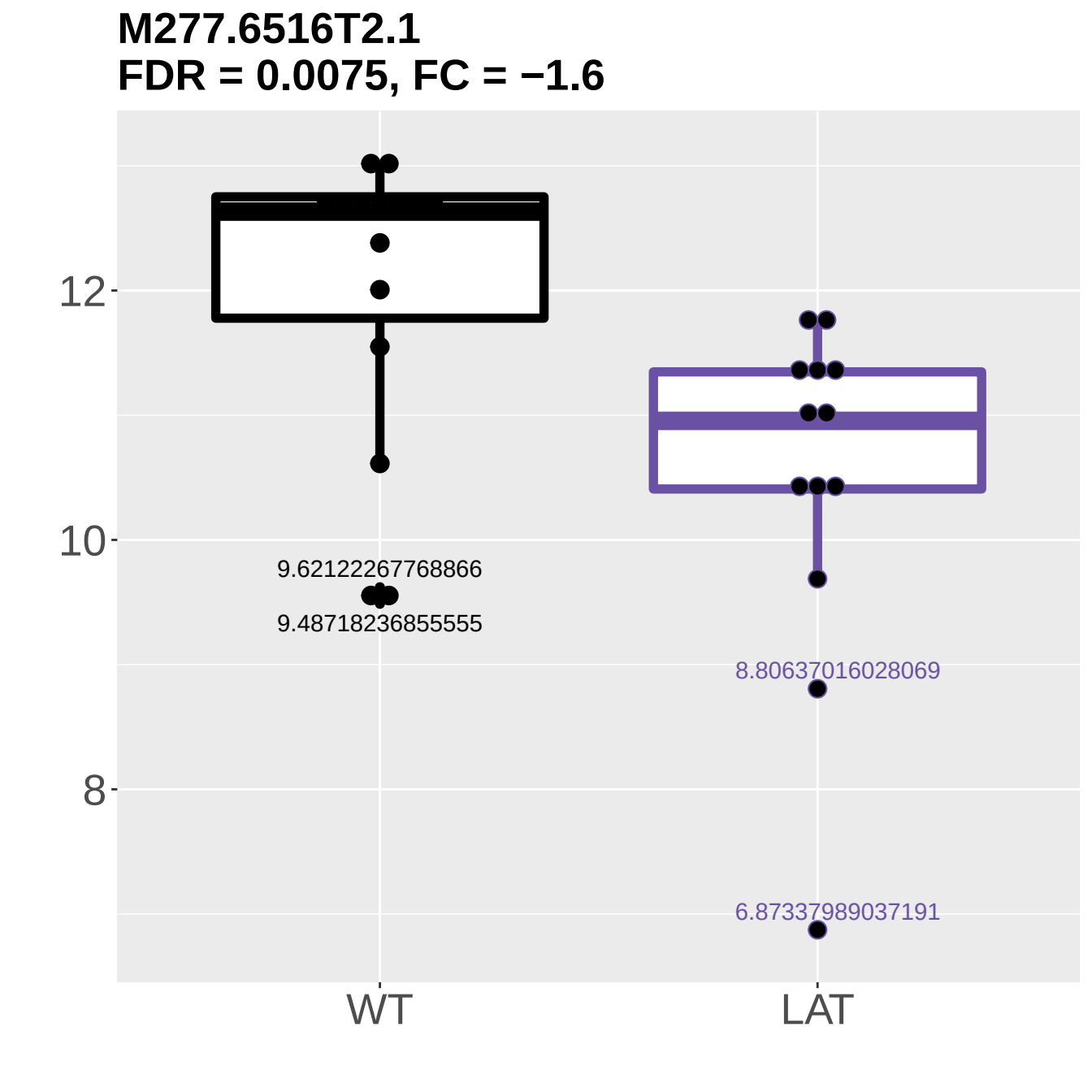
WT
LAT


M277.6516T2.1
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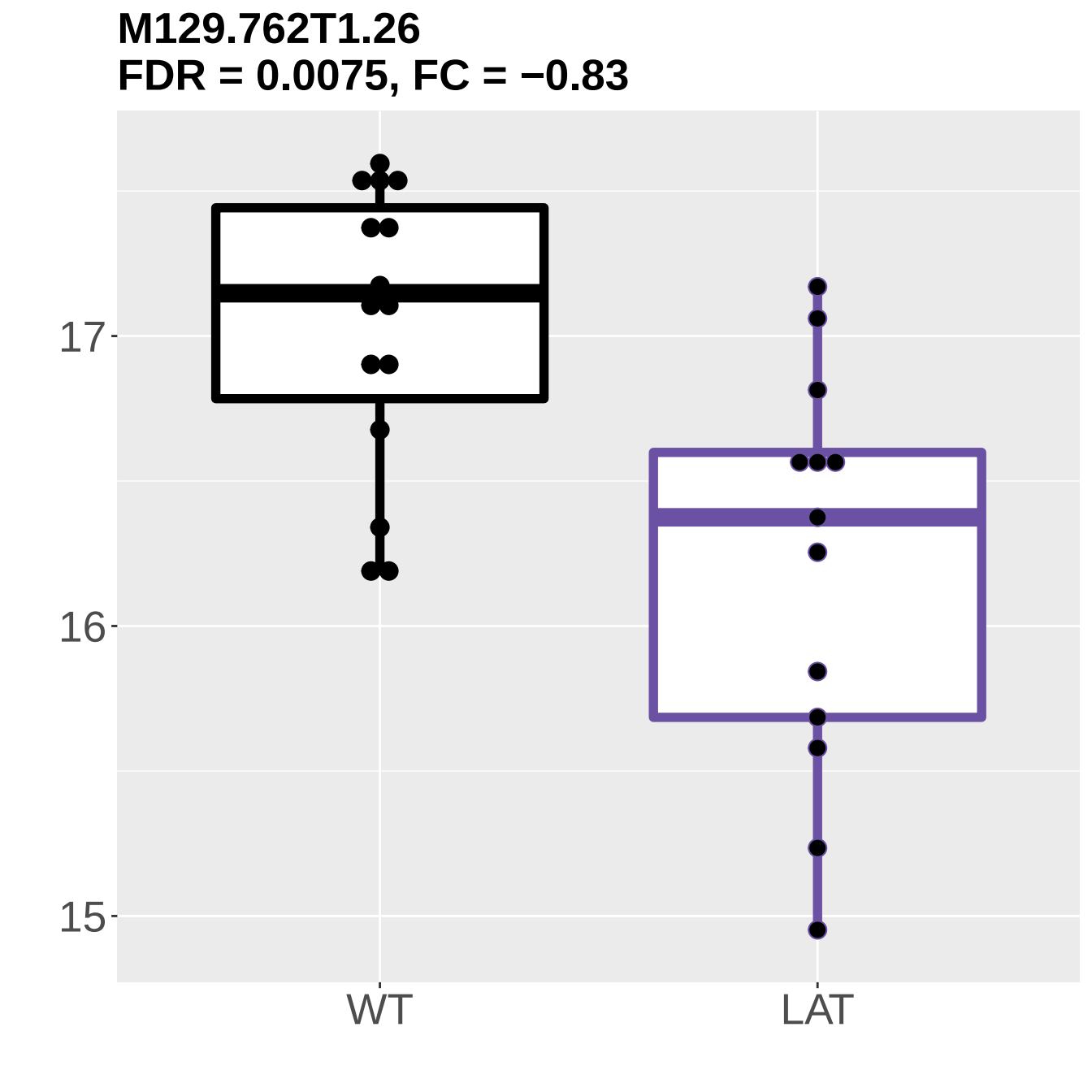
WT
LAT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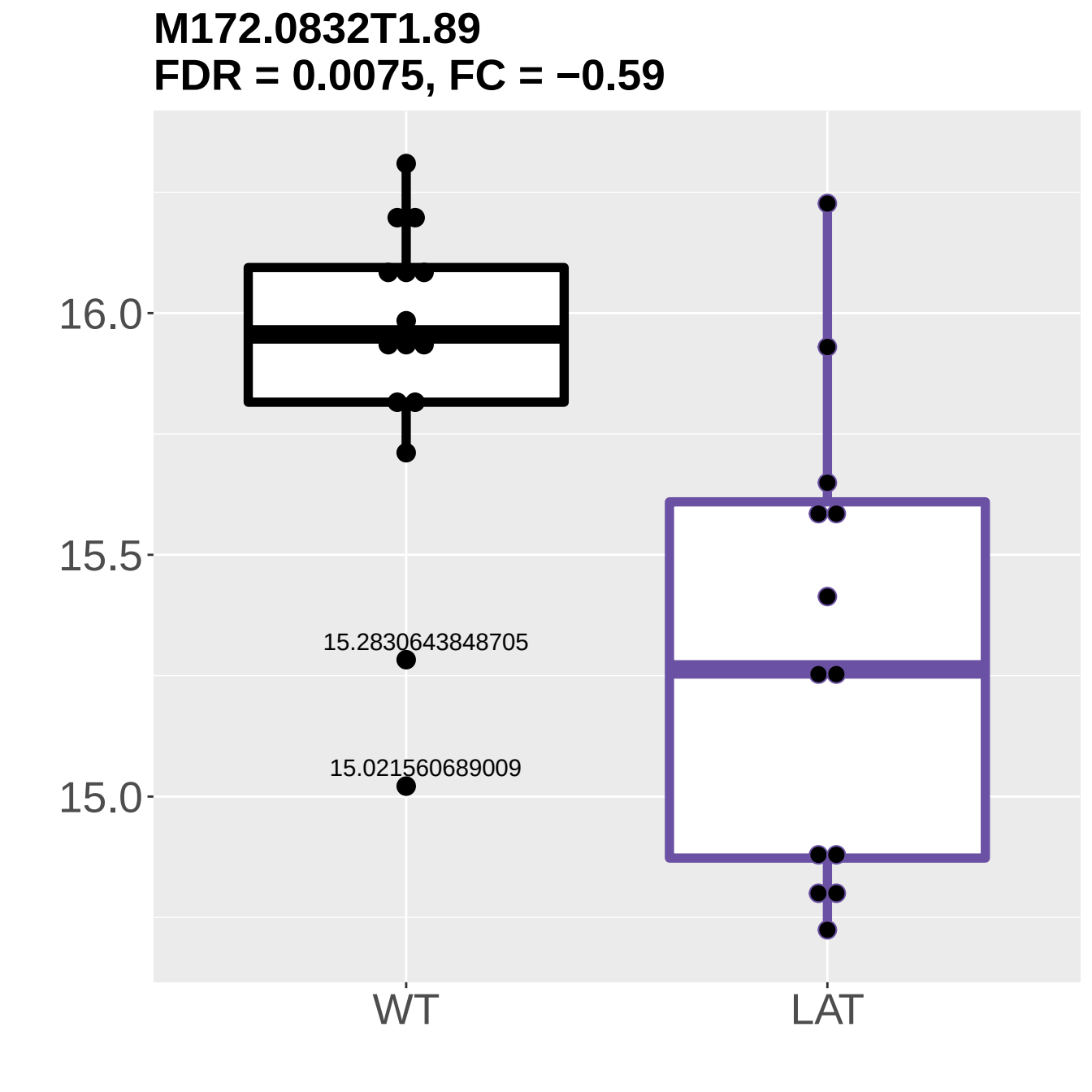
16
15
WT
LAT


M172.0832T1.89
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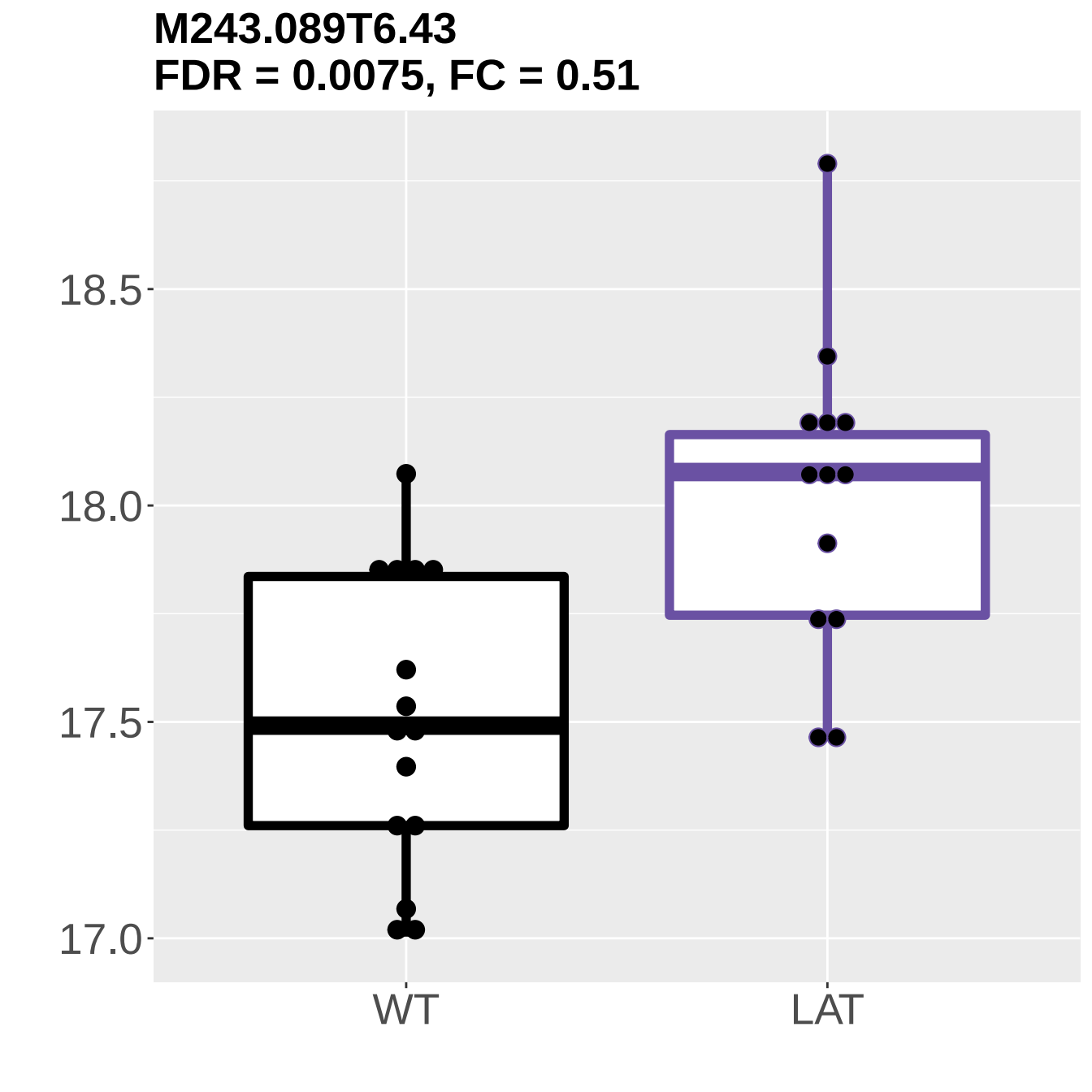
LAT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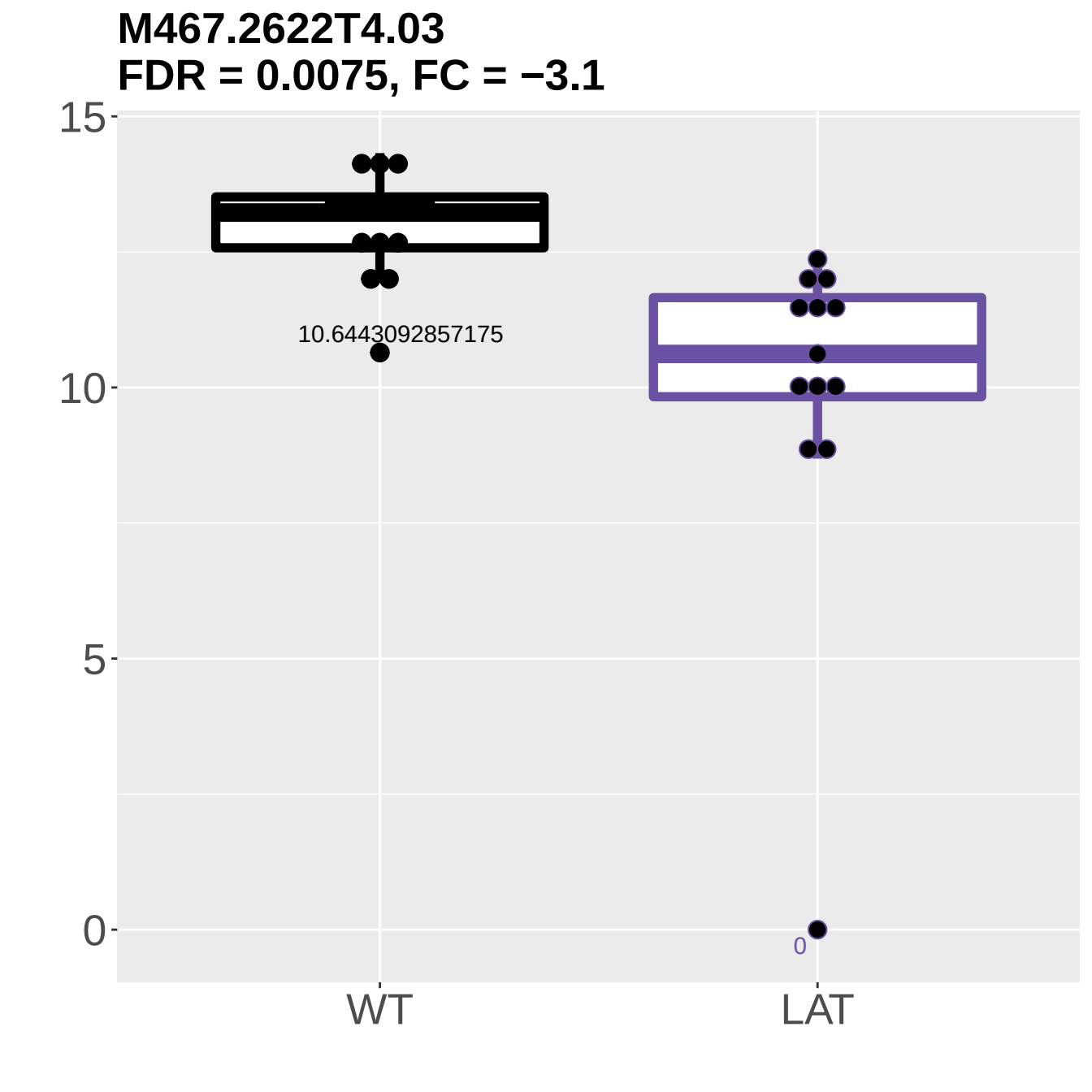
17.0
WT
LAT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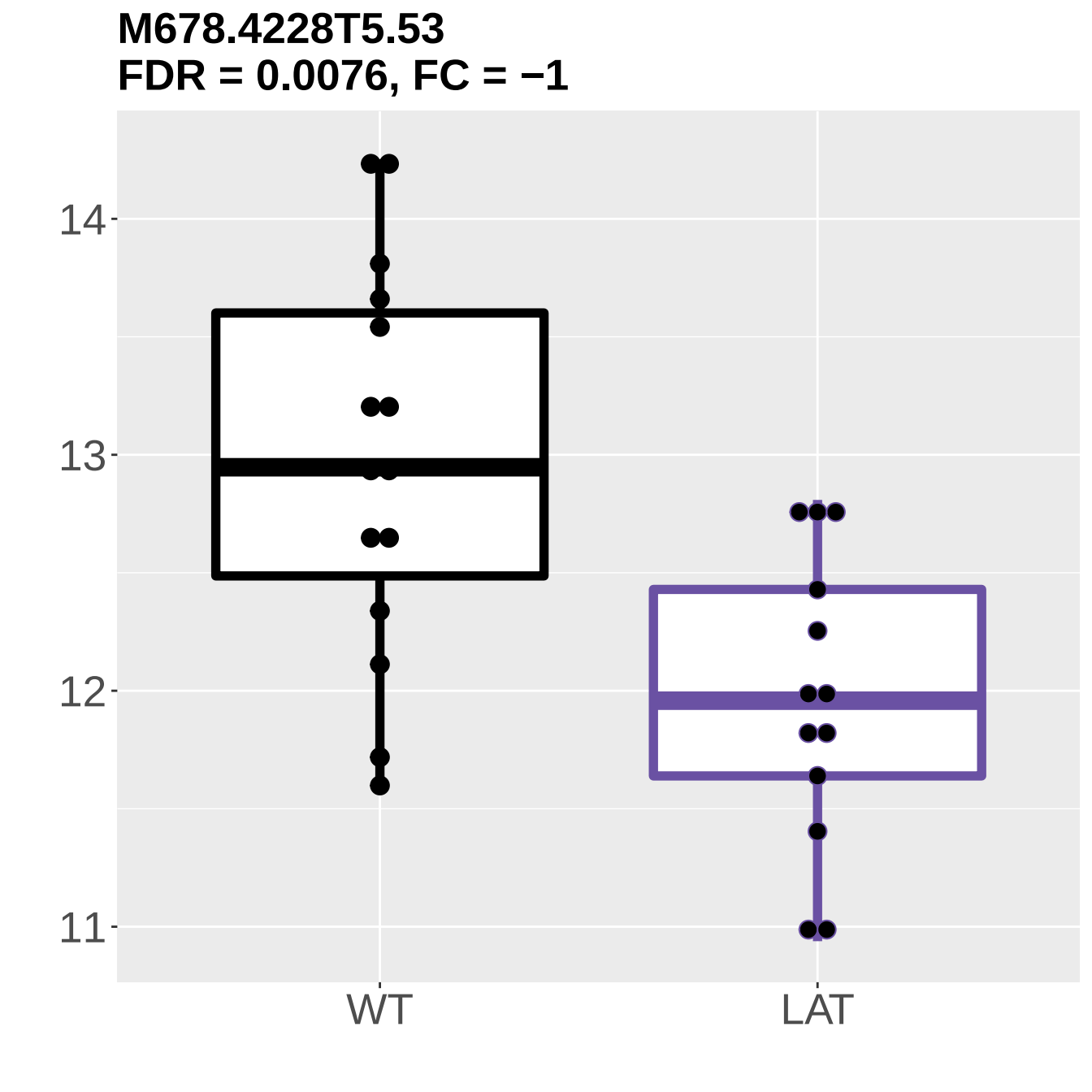
WT
LAT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13
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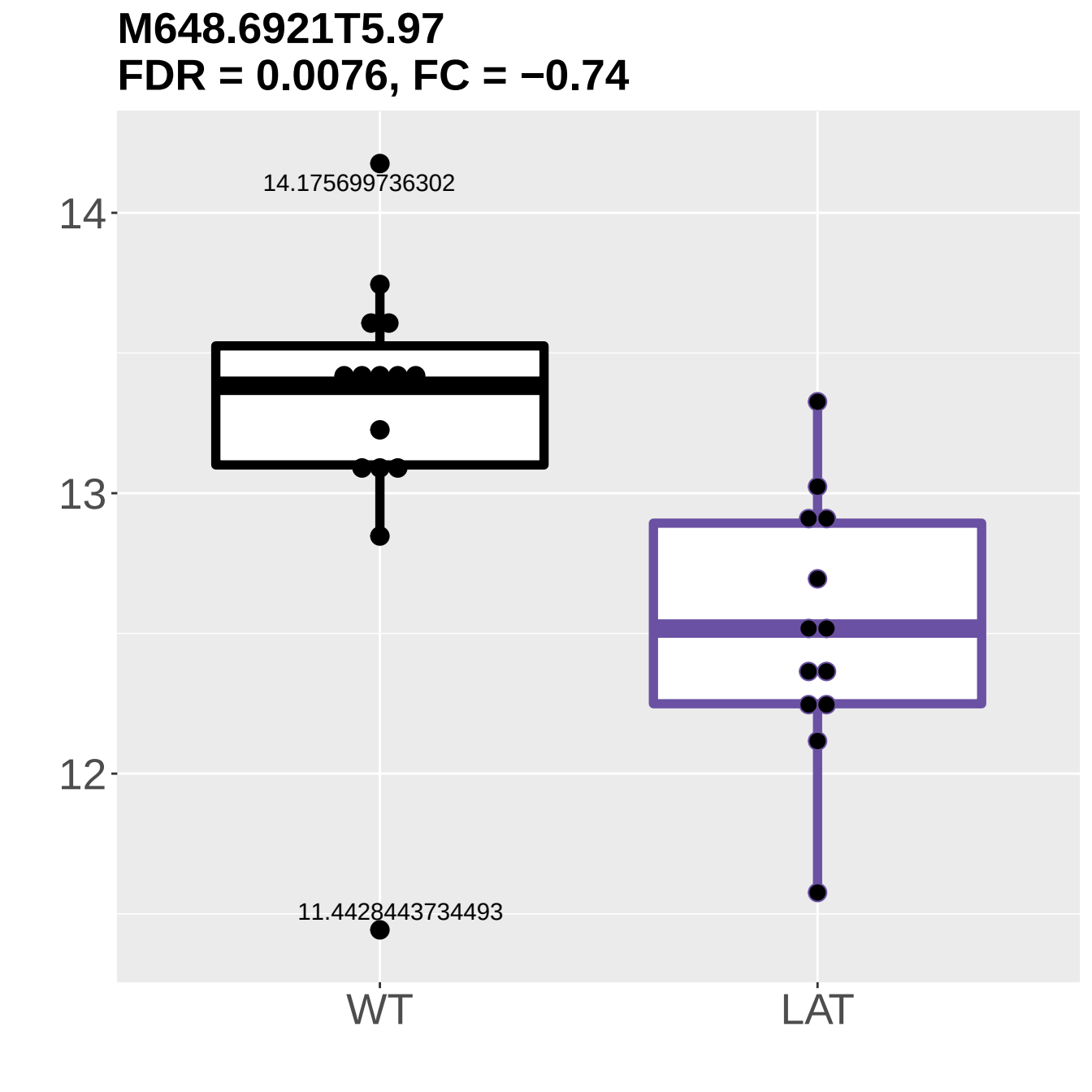
11
WT
LAT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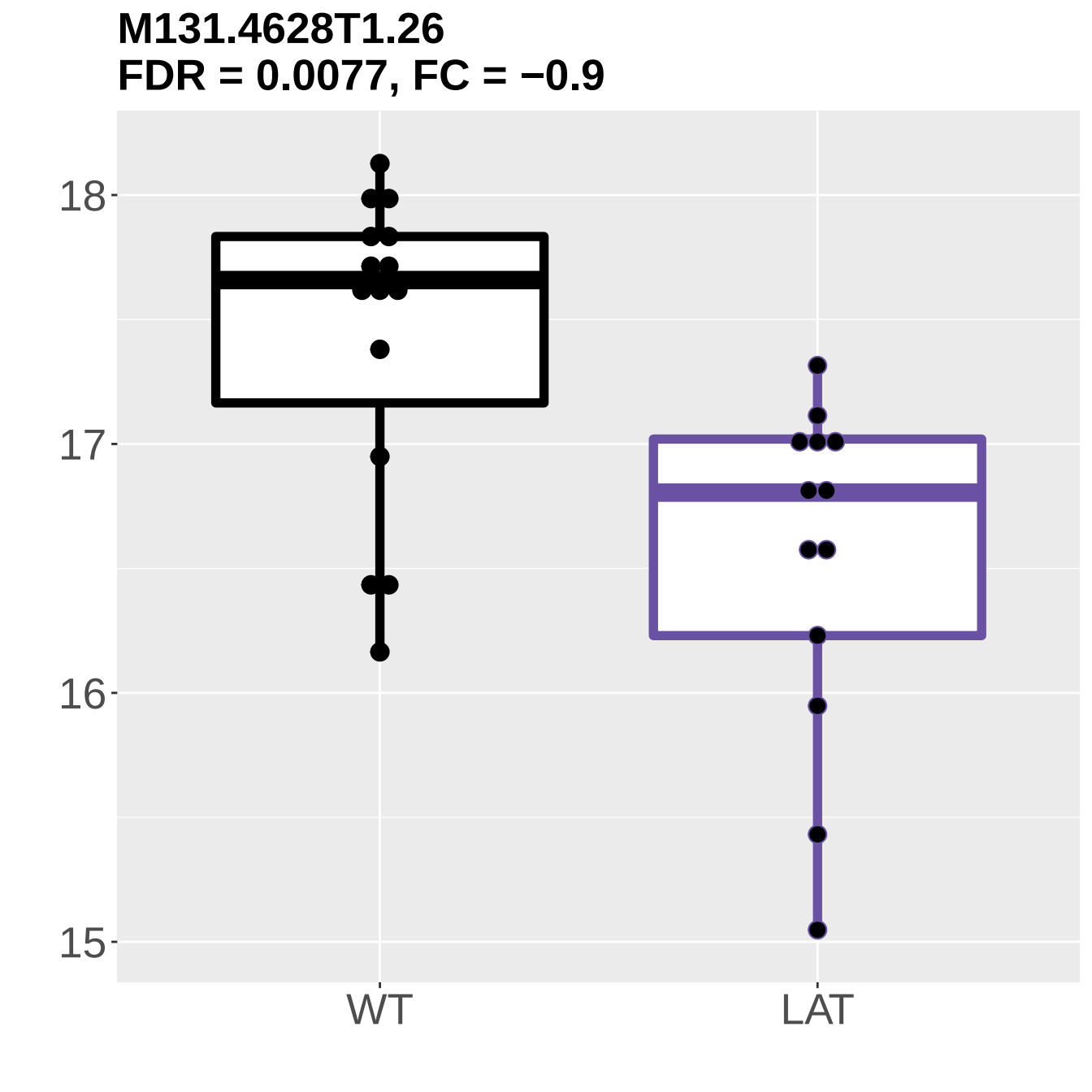
14
13
12
WT
LAT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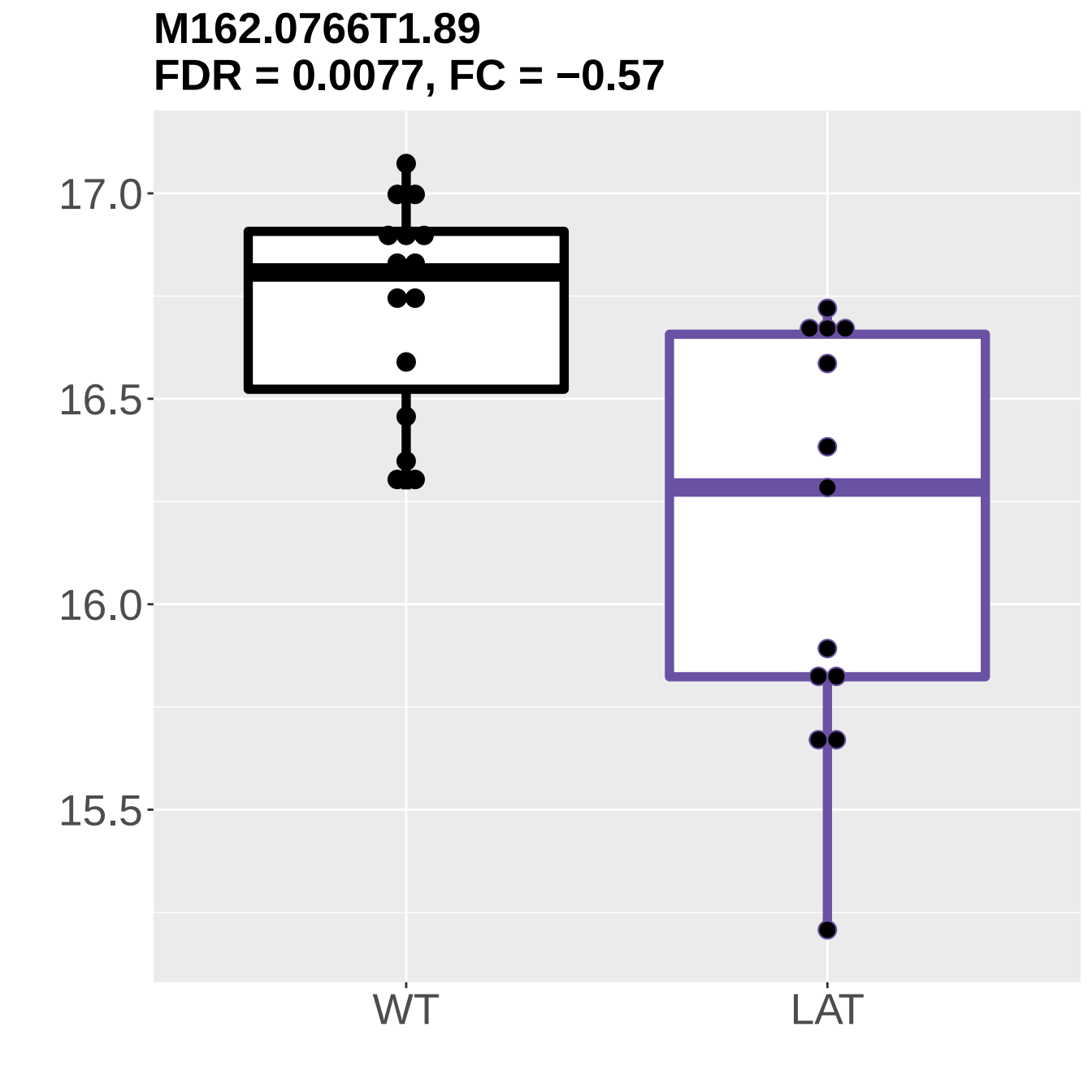
17
16
15
WT
LAT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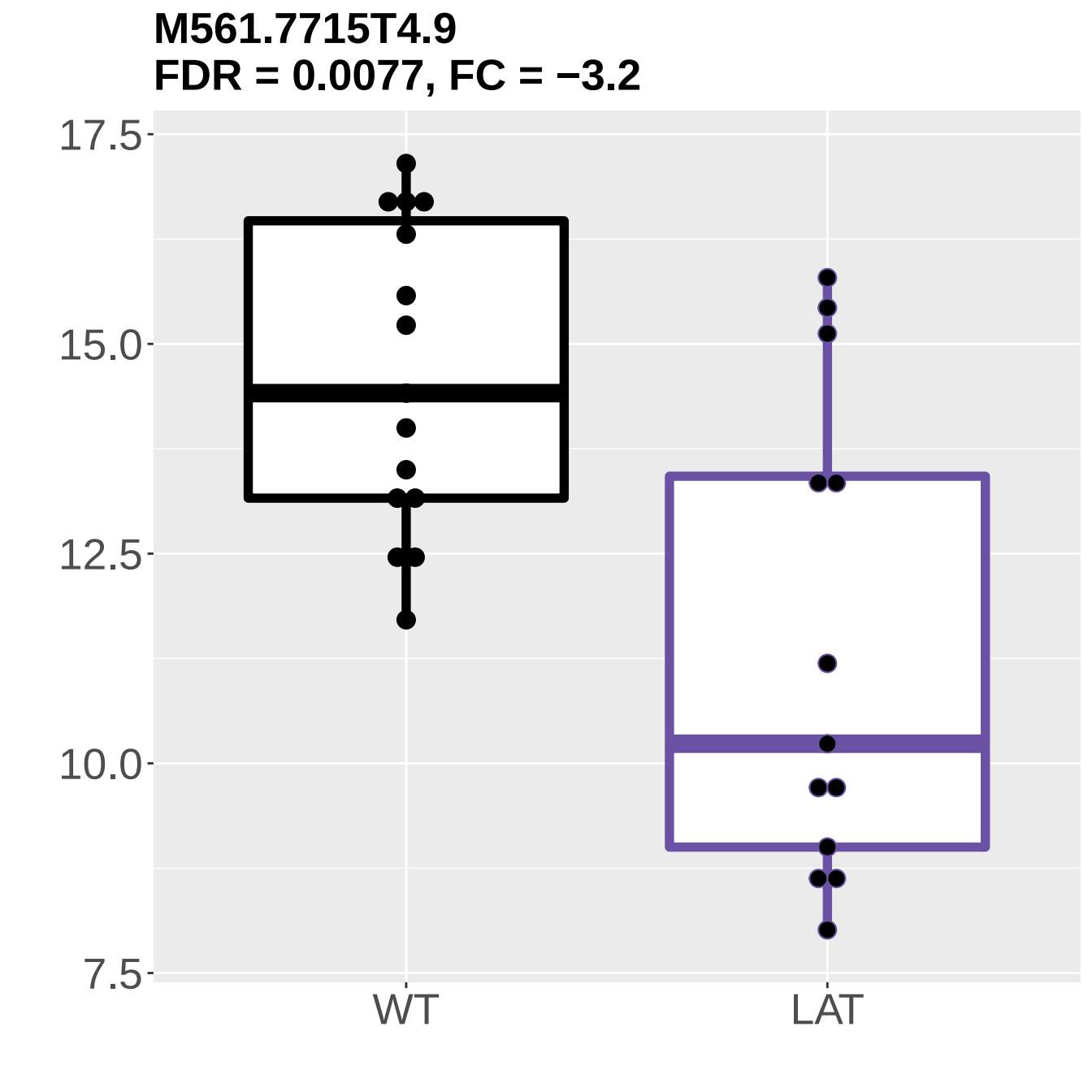
16.0
15.5
WT
LAT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10.0
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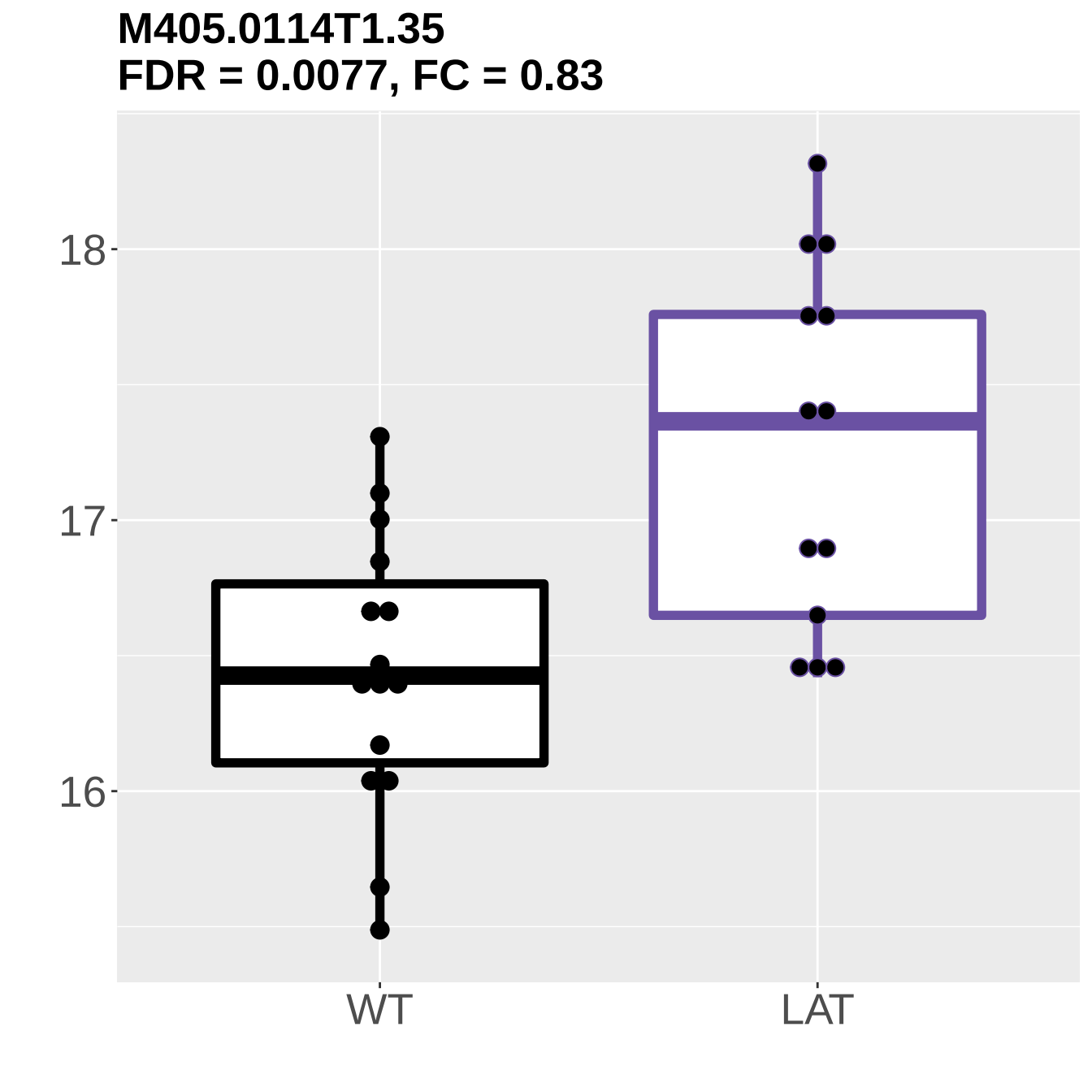
WT
LAT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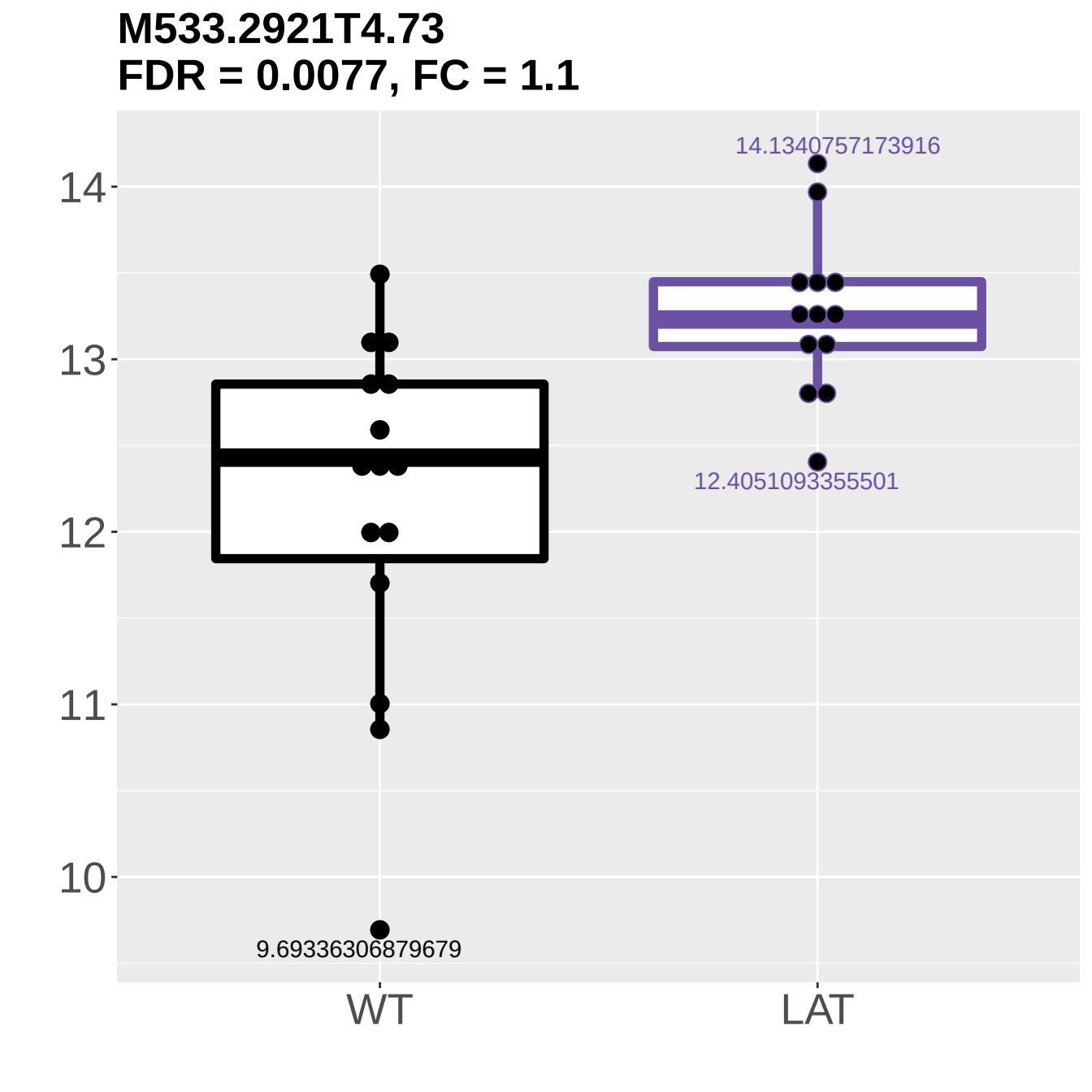
17
16
WT
LAT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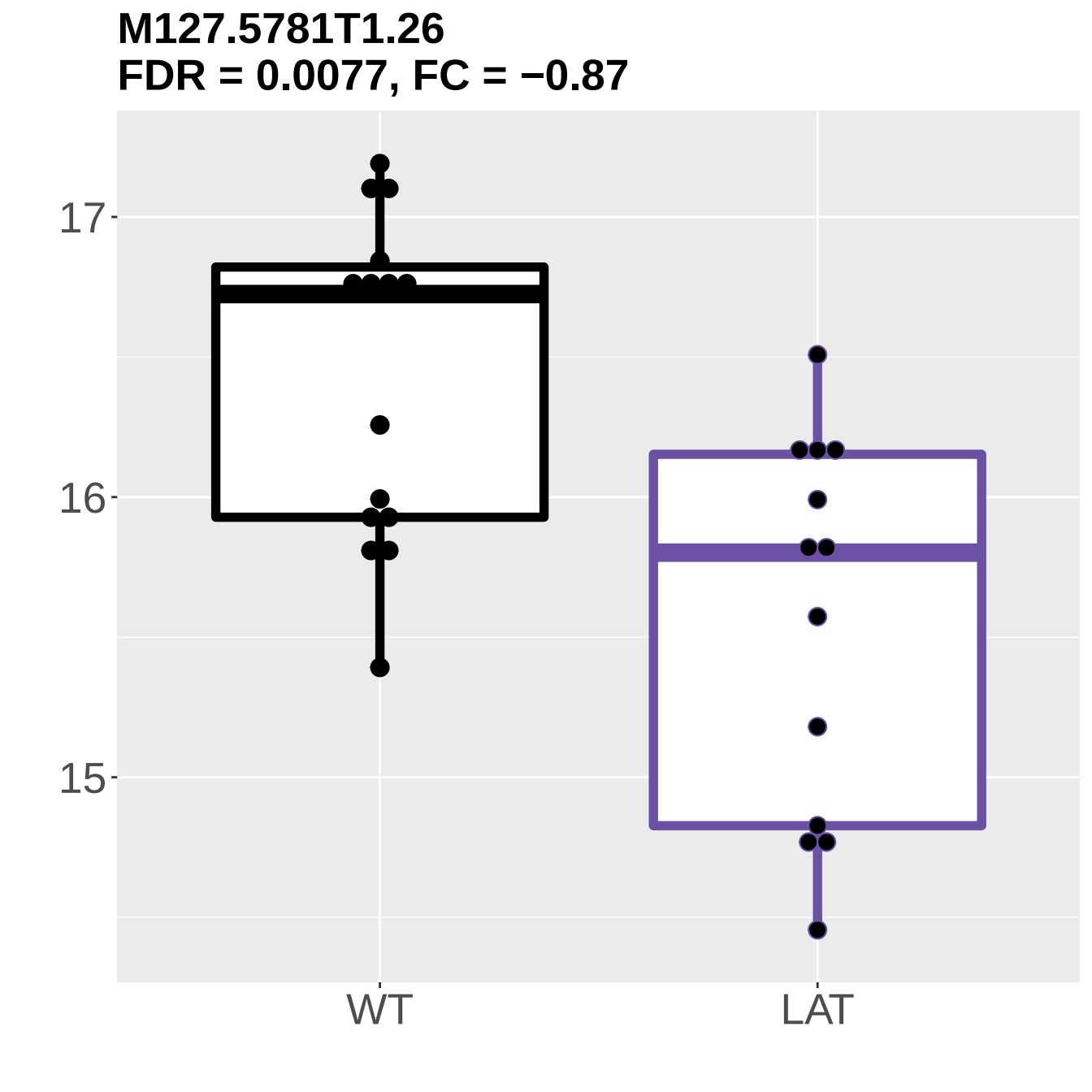
WT
LAT


M127.5781T1.26
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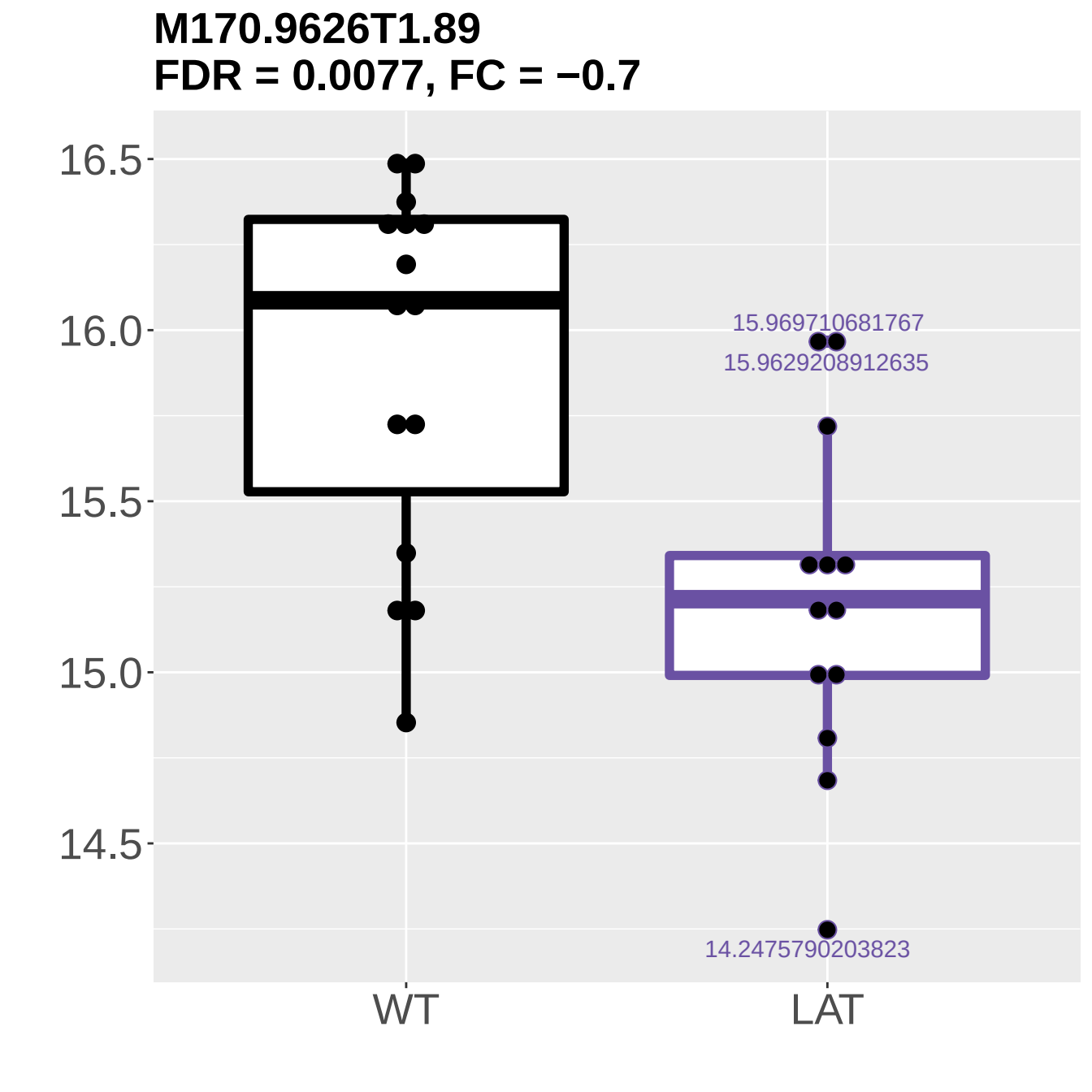
16
15
WT
LAT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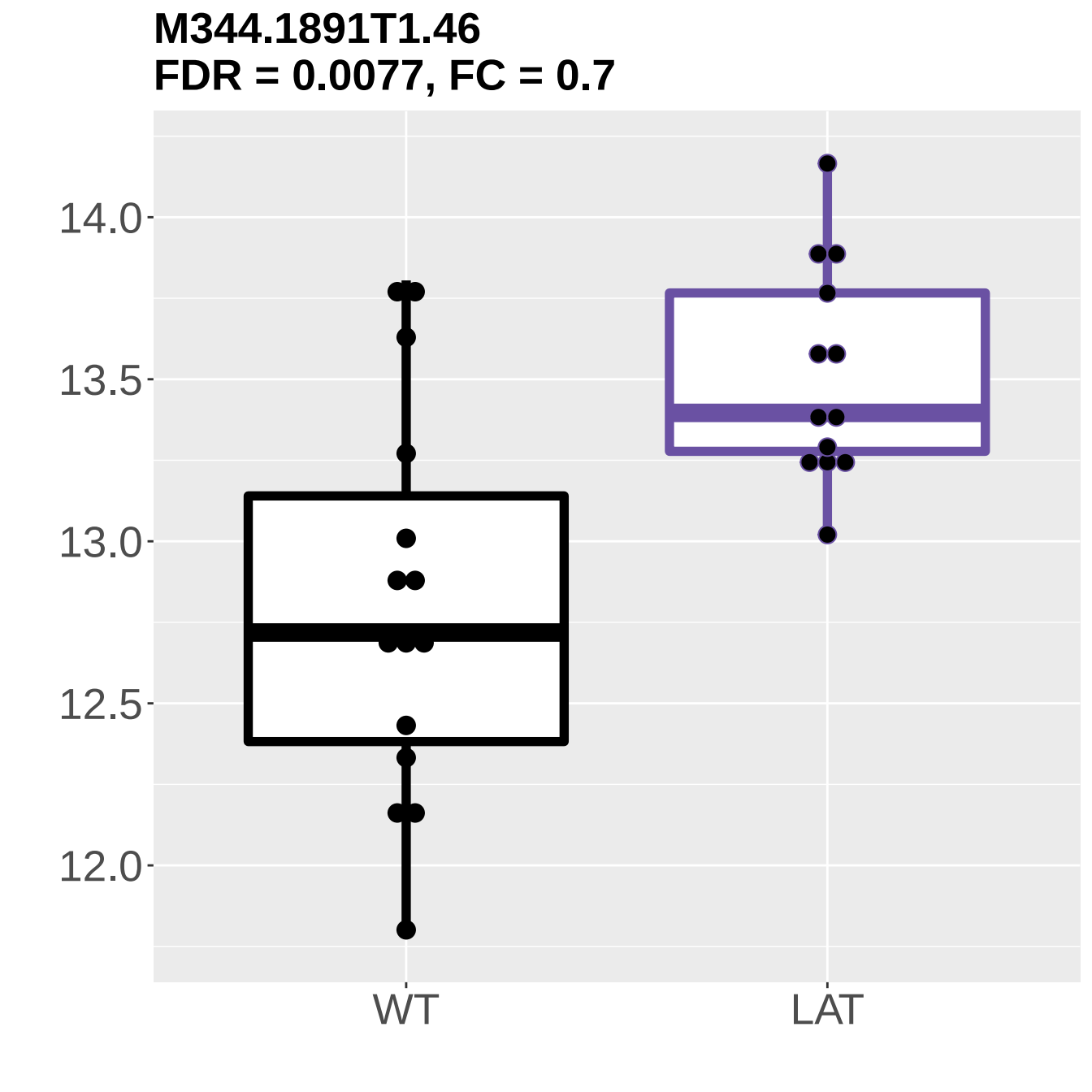
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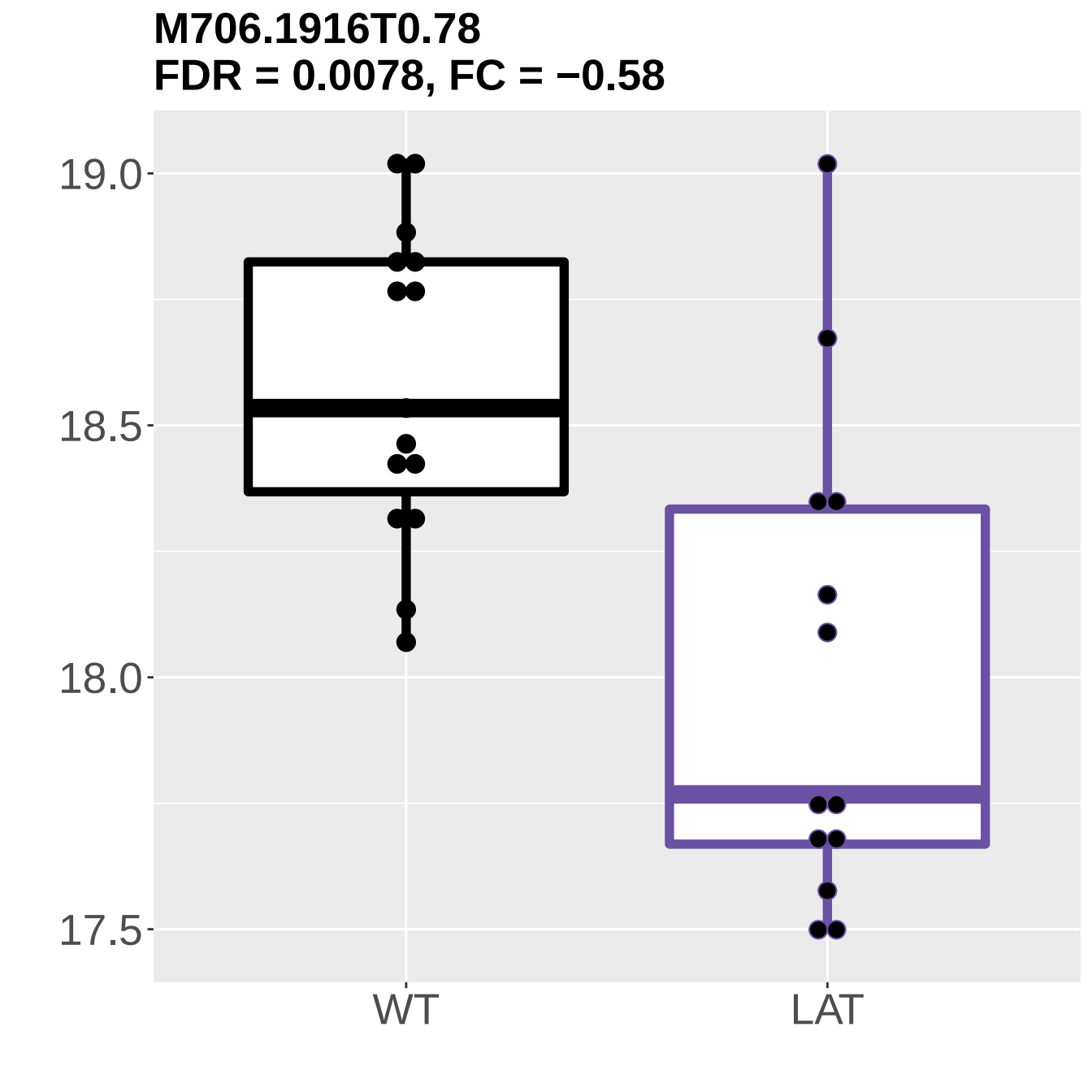
13.0
12.5
12.0
WT
LAT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18.0
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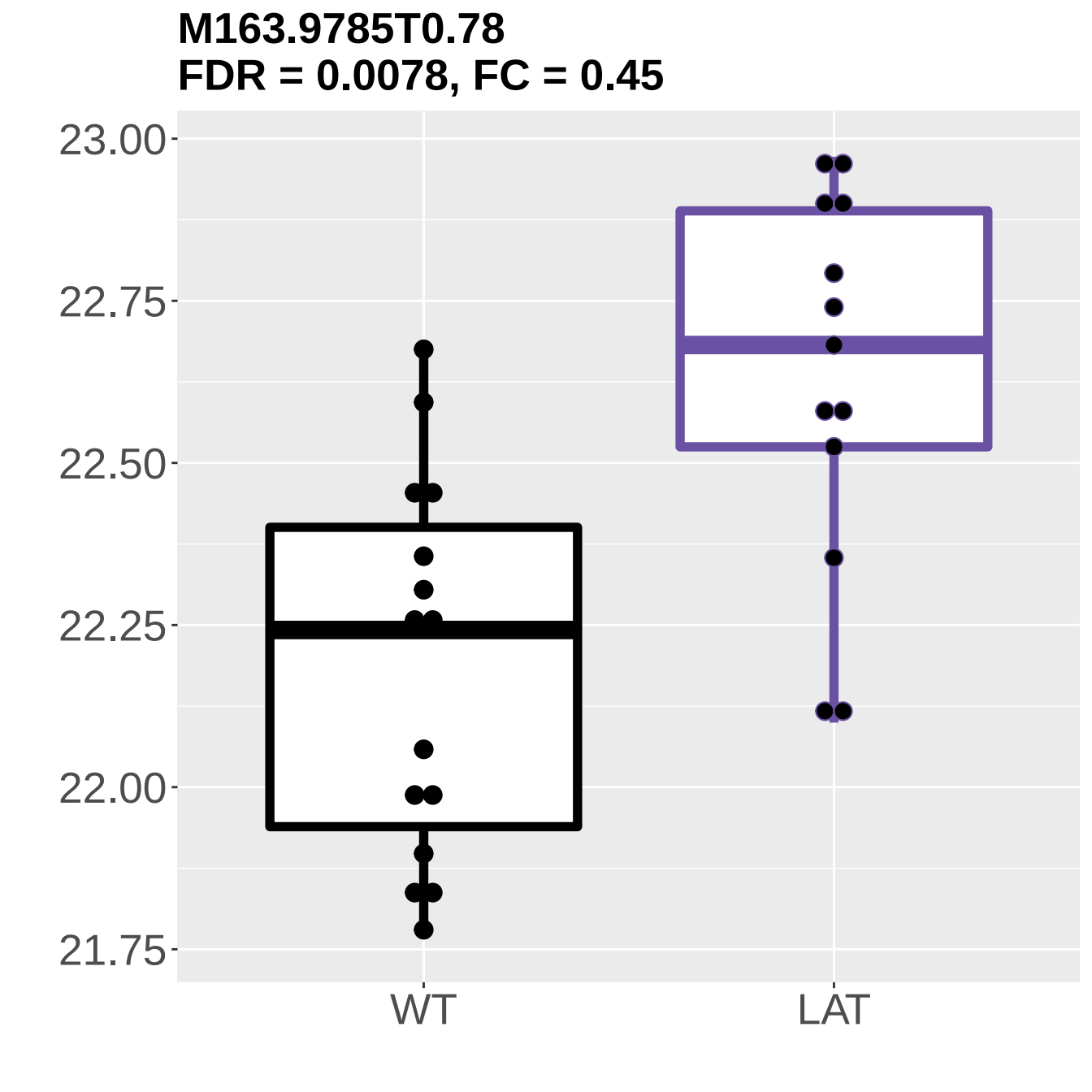
WT
LAT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22.25
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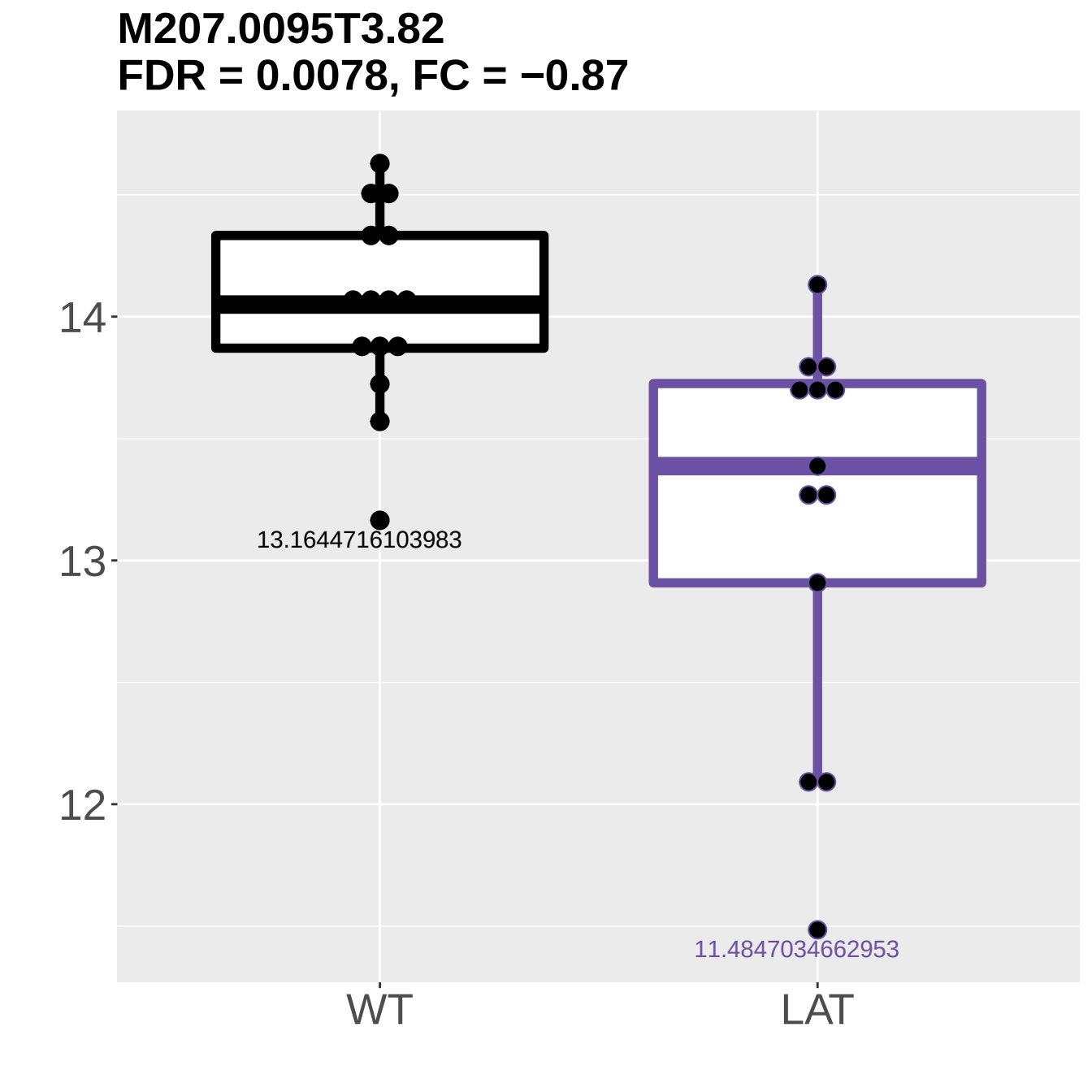
21.75
WT
LAT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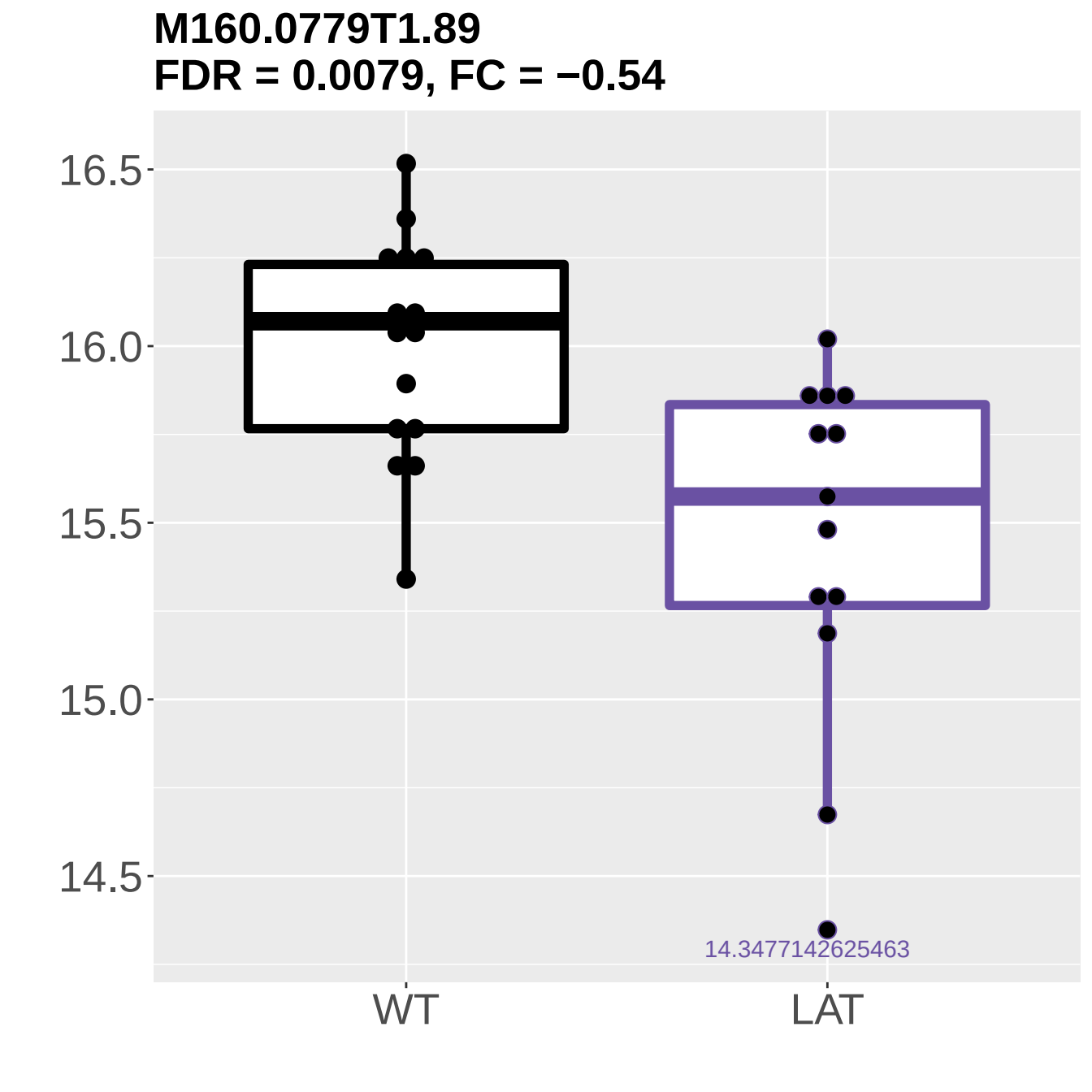
WT
LAT


M160.0779T1.89
FDR = 0.0079, FC = −0.54
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16.0
15.5
15.0
14.5
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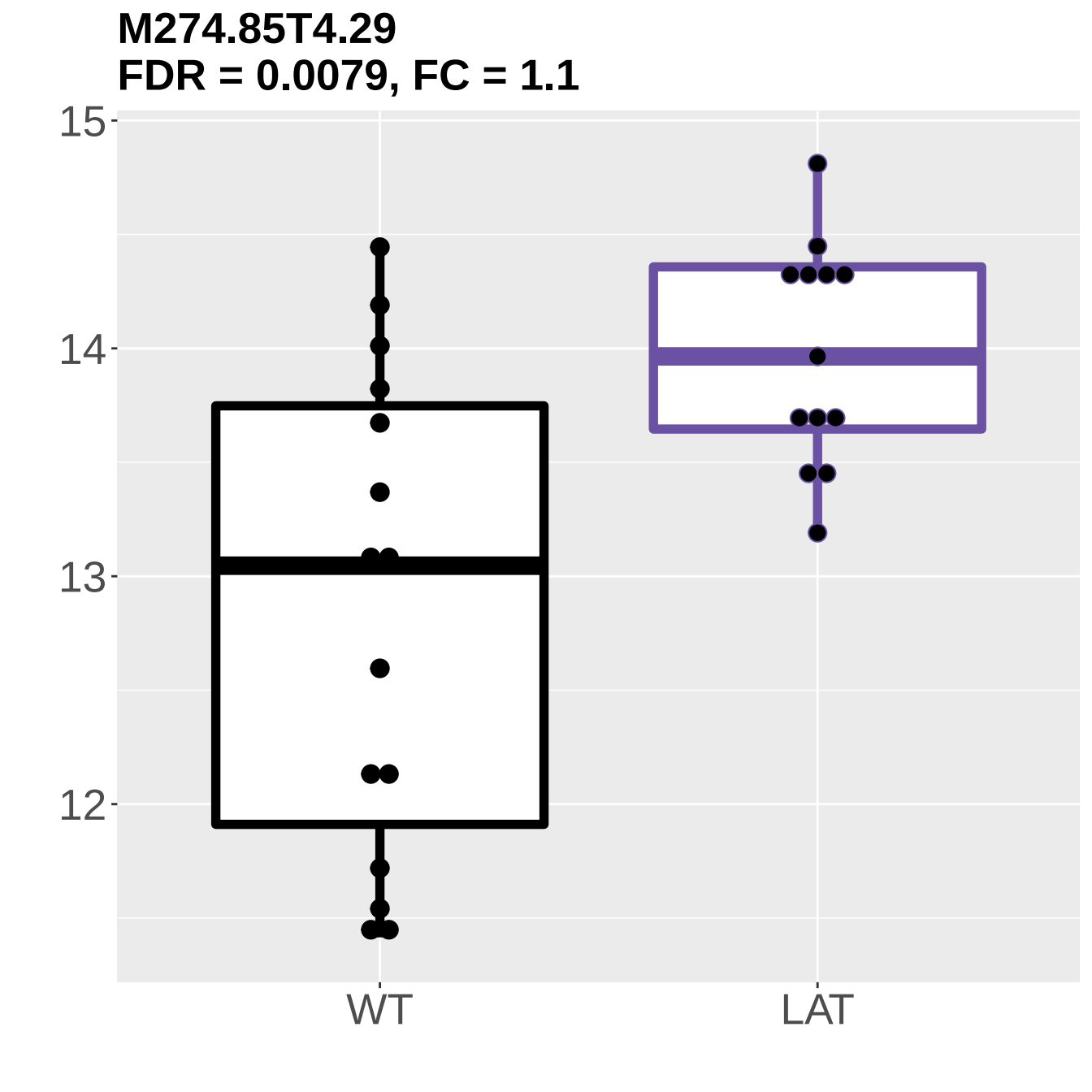
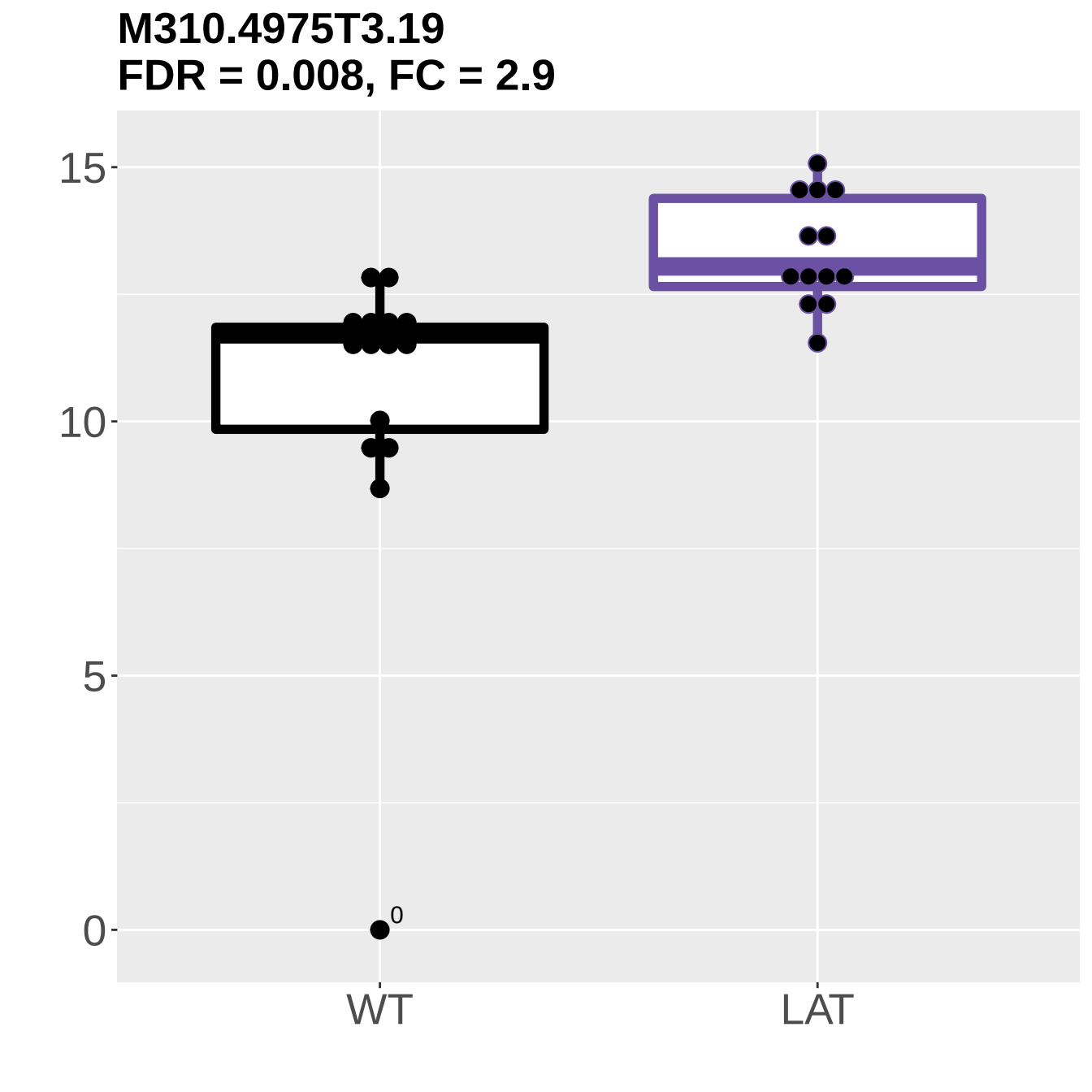
WT
LAT


M274.85T4.29
FDR = 0.0079, FC = 1.1
15
14
13
12
WT
LAT


M310.4975T3.19
FDR = 0.008, FC = 2.9
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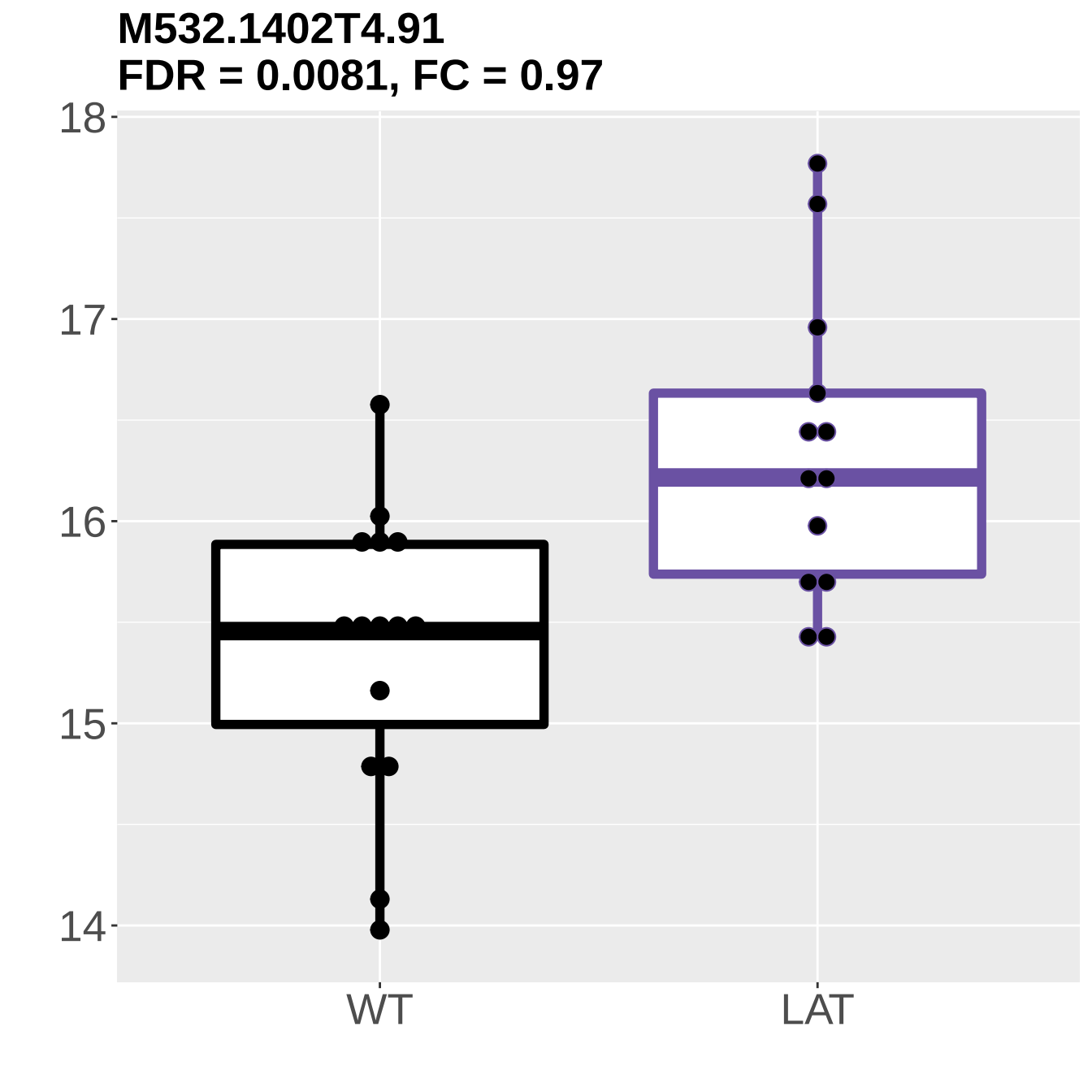
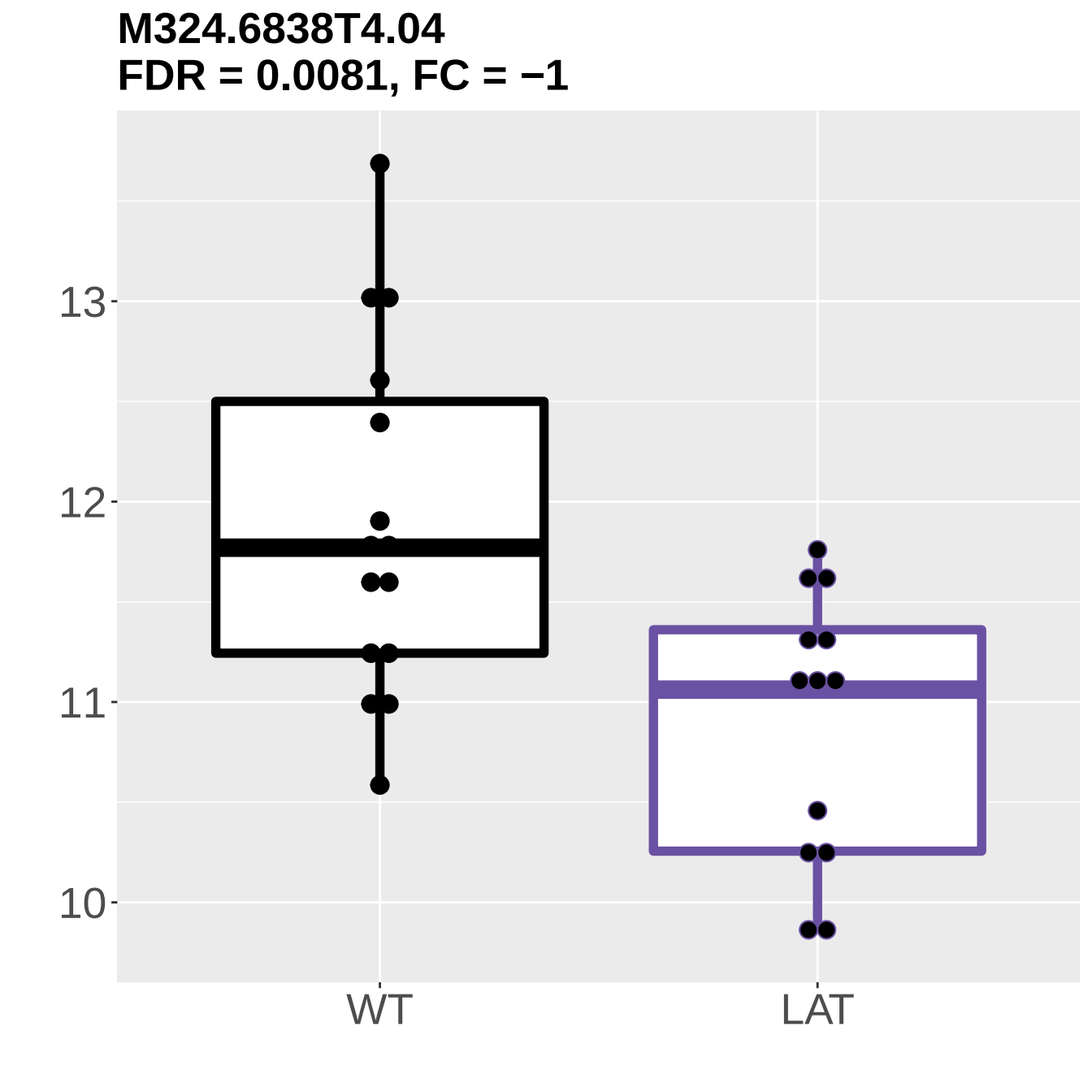
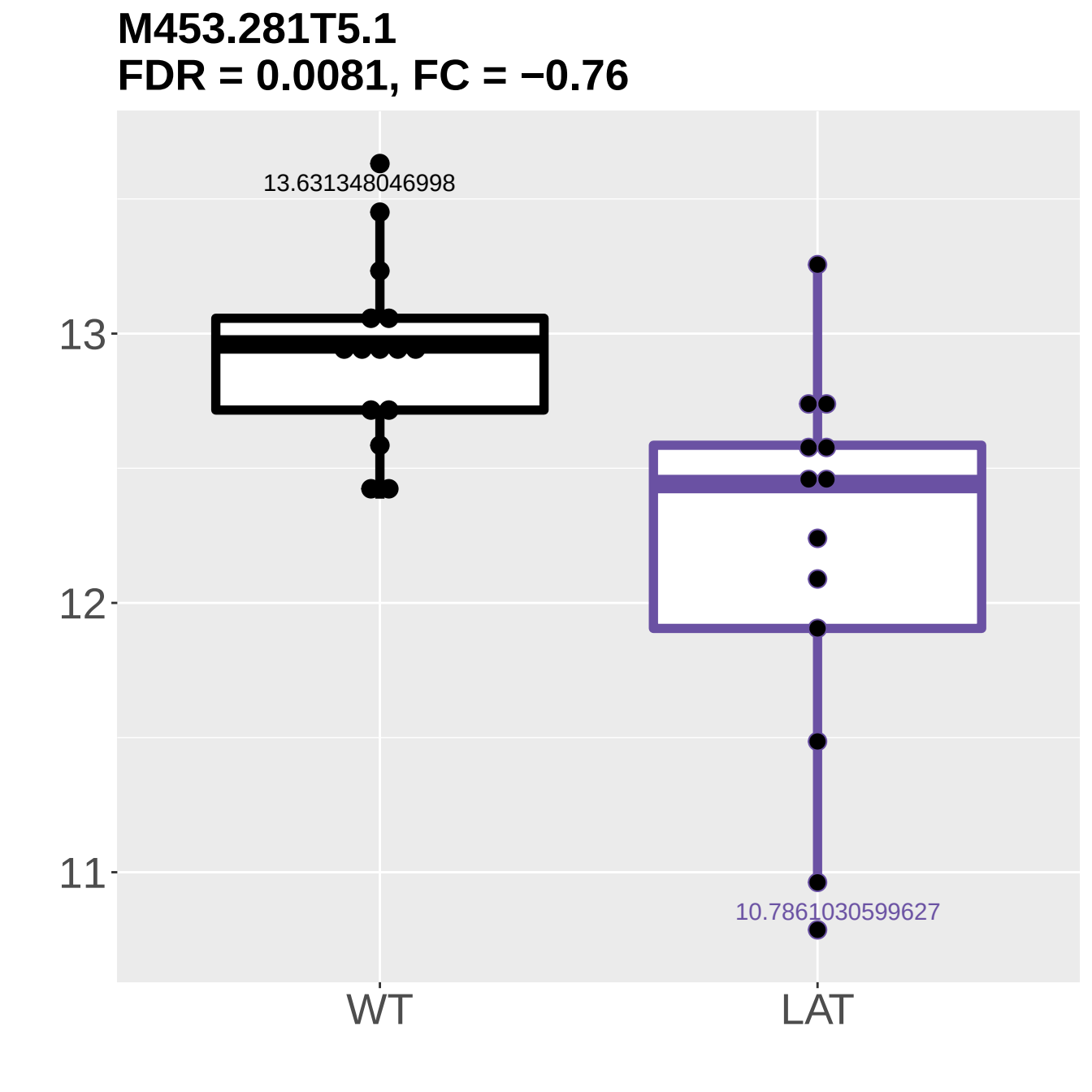
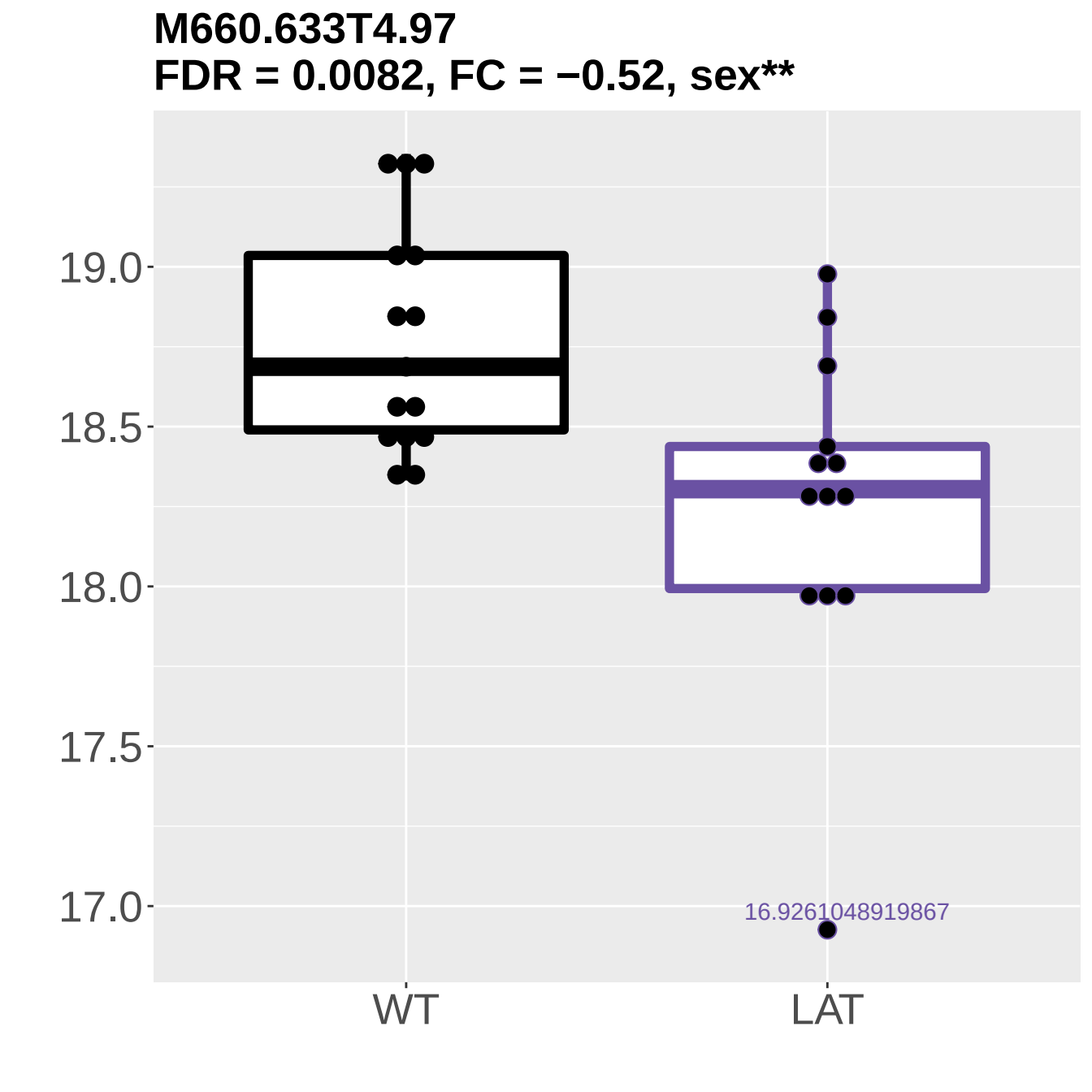
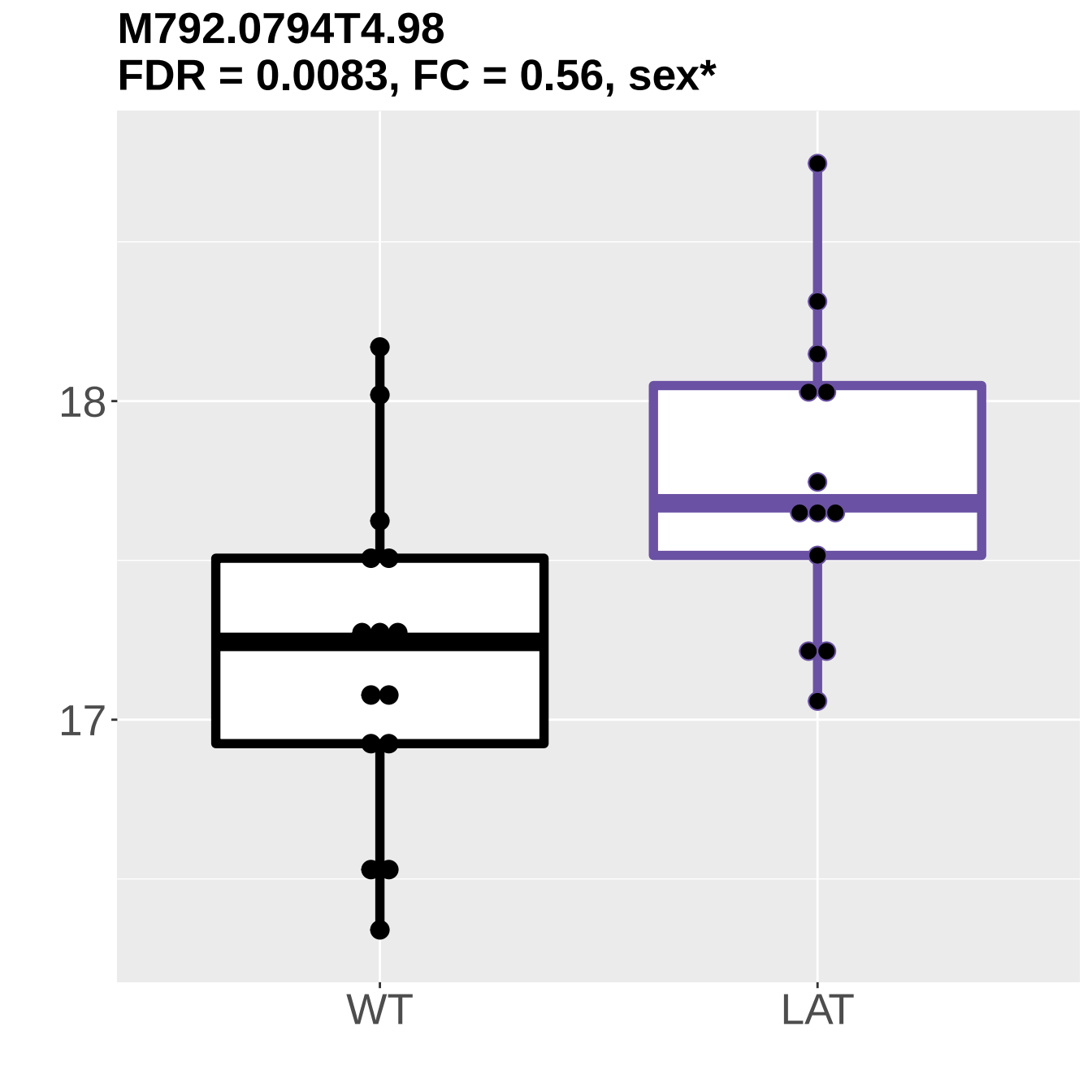
10
5
0
0
WT
LAT

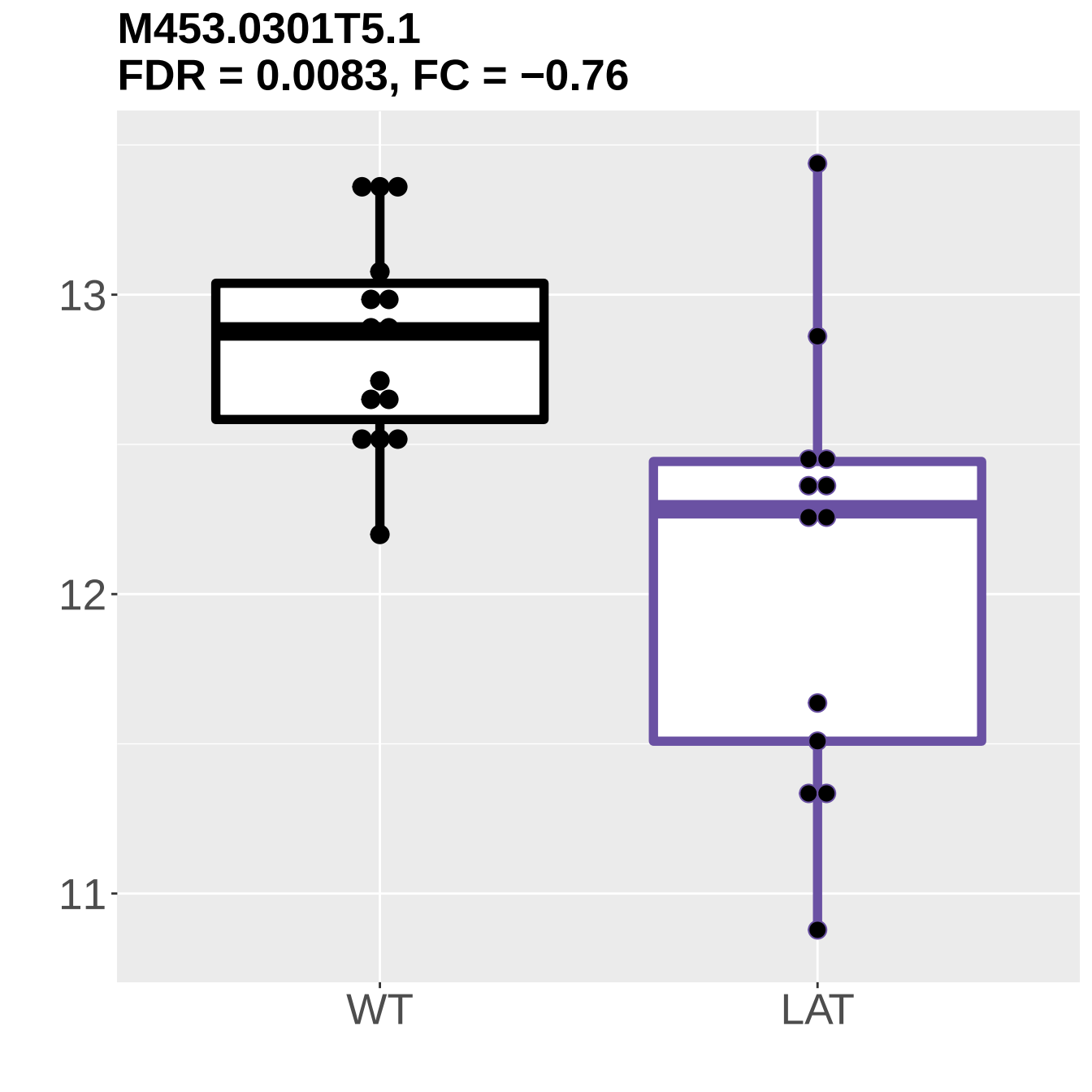

M532.1402T4.91
FDR = 0.0081, FC = 0.97
18
17
16
15
14
WT
LAT

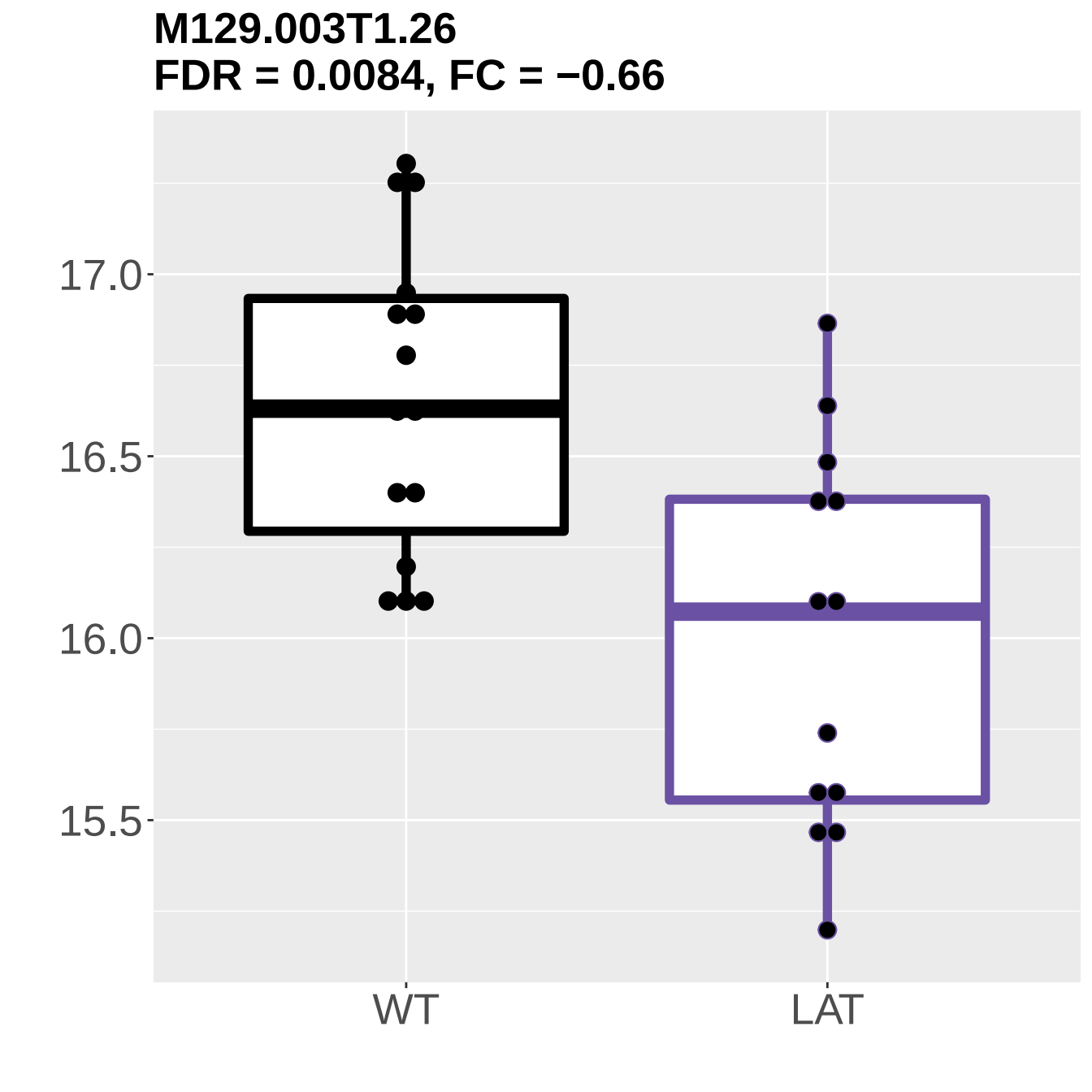

M324.6838T4.04
FDR = 0.0081, FC = −1
13
12
11
10
WT
LAT


M453.281T5.1
FDR = 0.0081, FC = −0.76
13.631348046998
10.7861030599627
13
12
11
WT
LAT


M660.633T4.97
FDR = 0.0082, FC = −0.52, sex**
19.0
18.5
18.0
17.5
17.0
16.9261048919867
WT
LAT


M792.0794T4.98
FDR = 0.0083, FC = 0.56, sex*
18
17
WT
LAT


M453.0301T5.1
FDR = 0.0083, FC = −0.76
13
12
11
WT
LAT


M129.003T1.26
FDR = 0.0084, FC = −0.66
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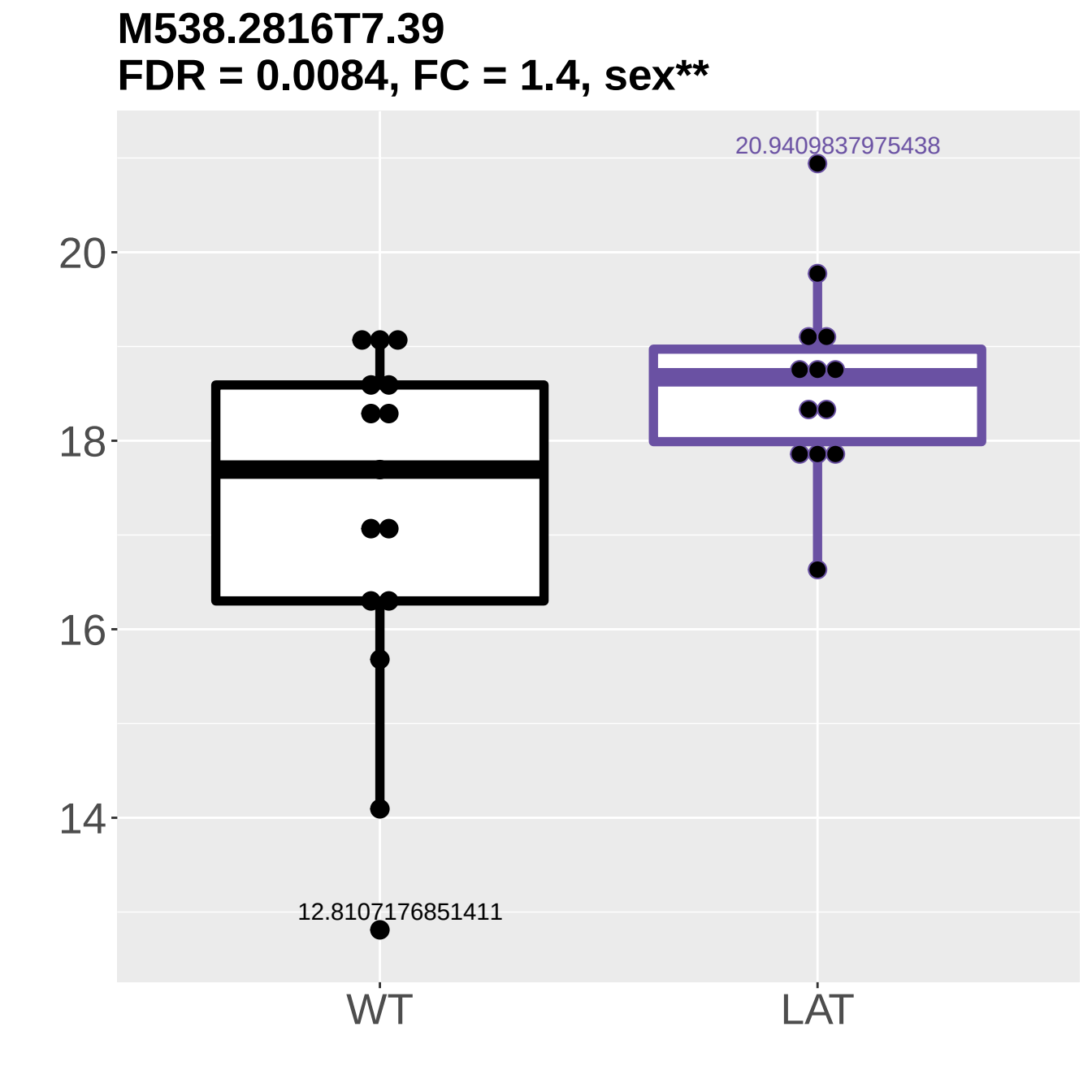
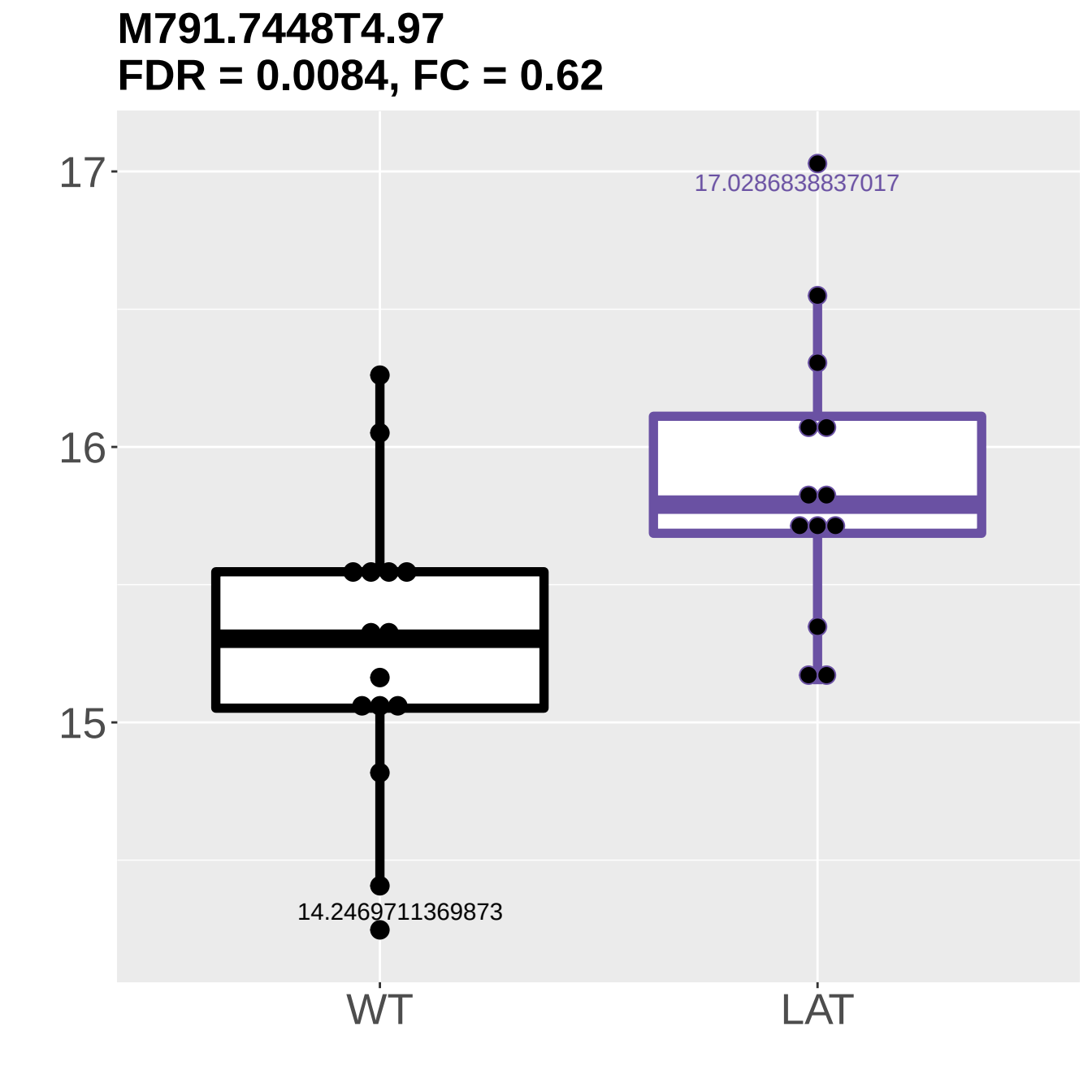
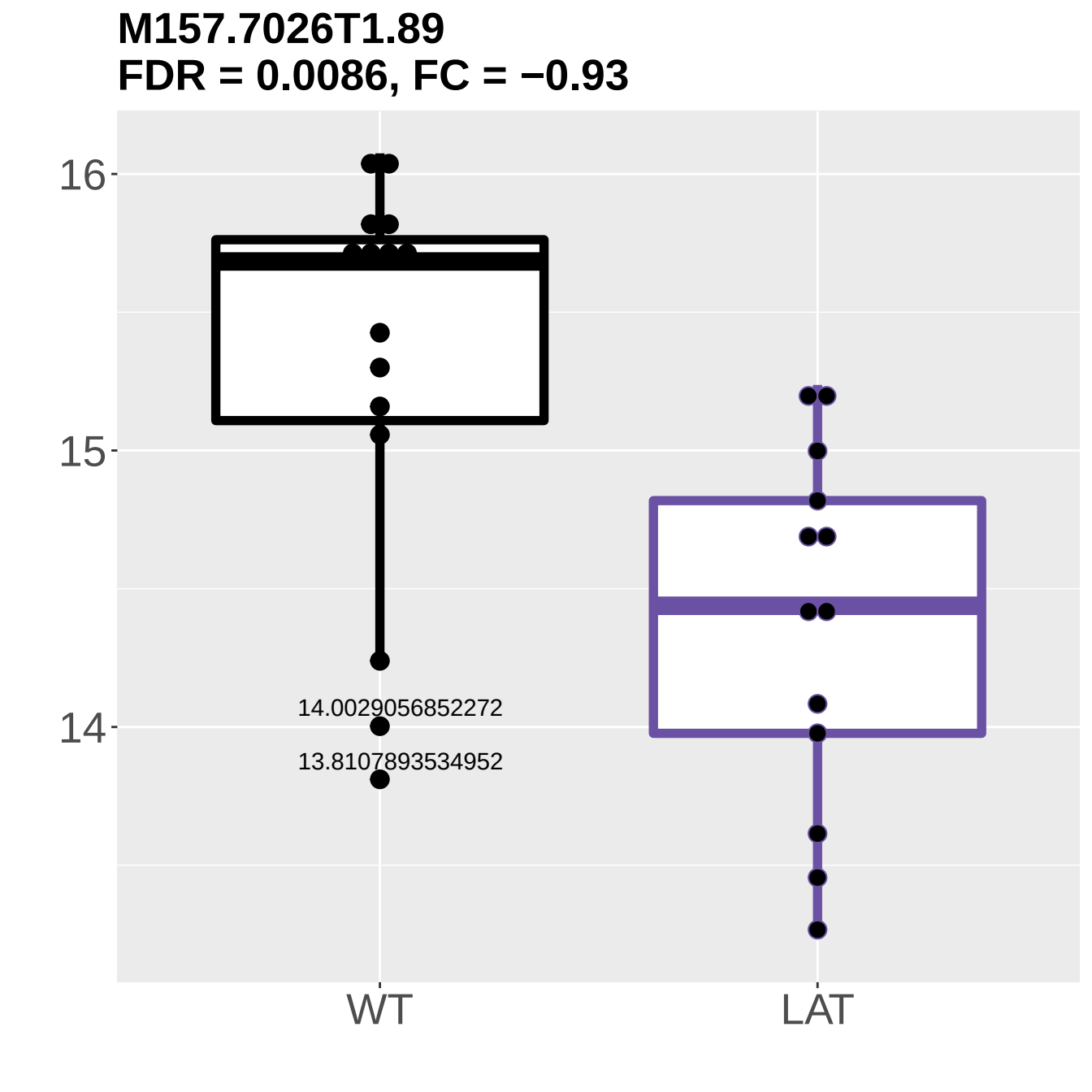
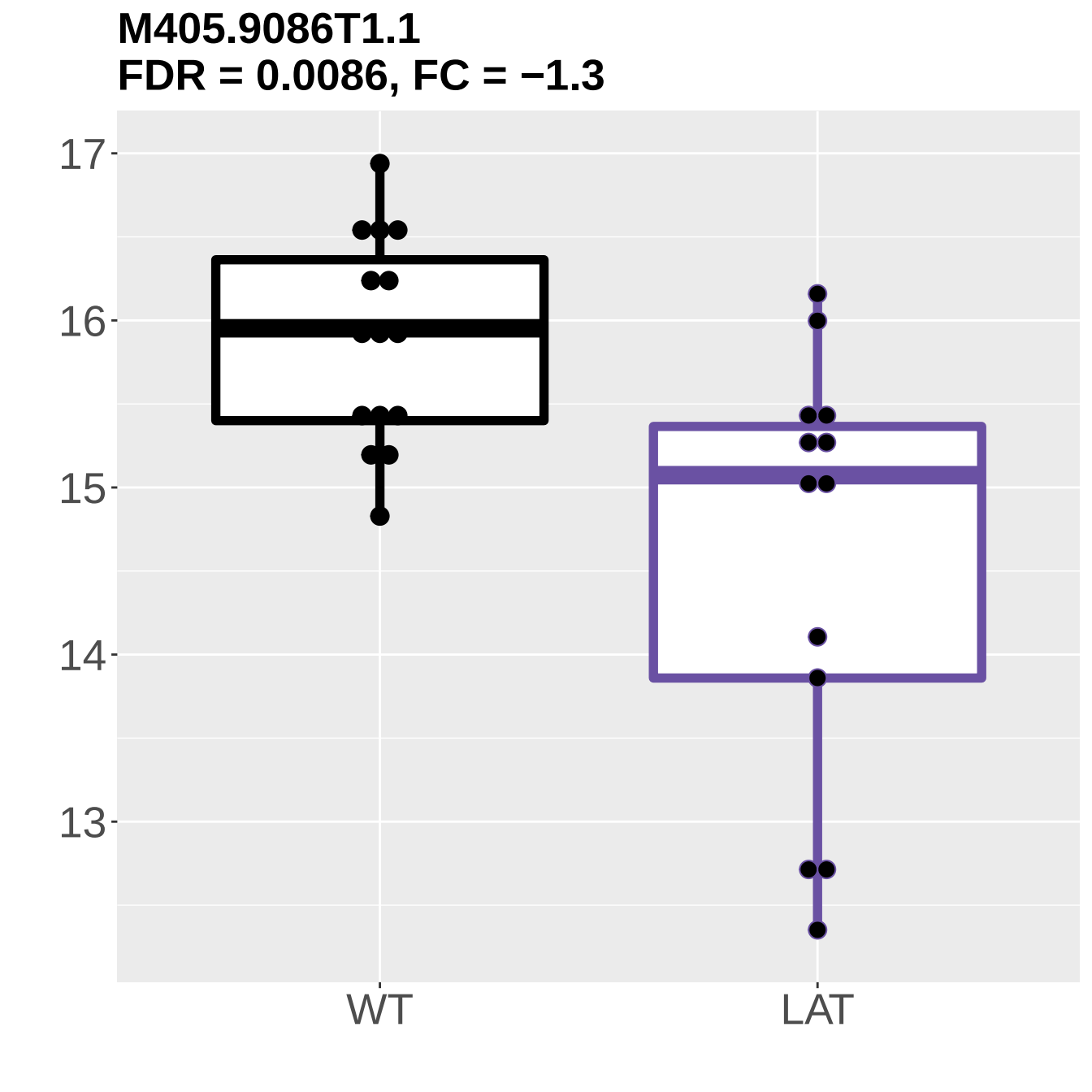
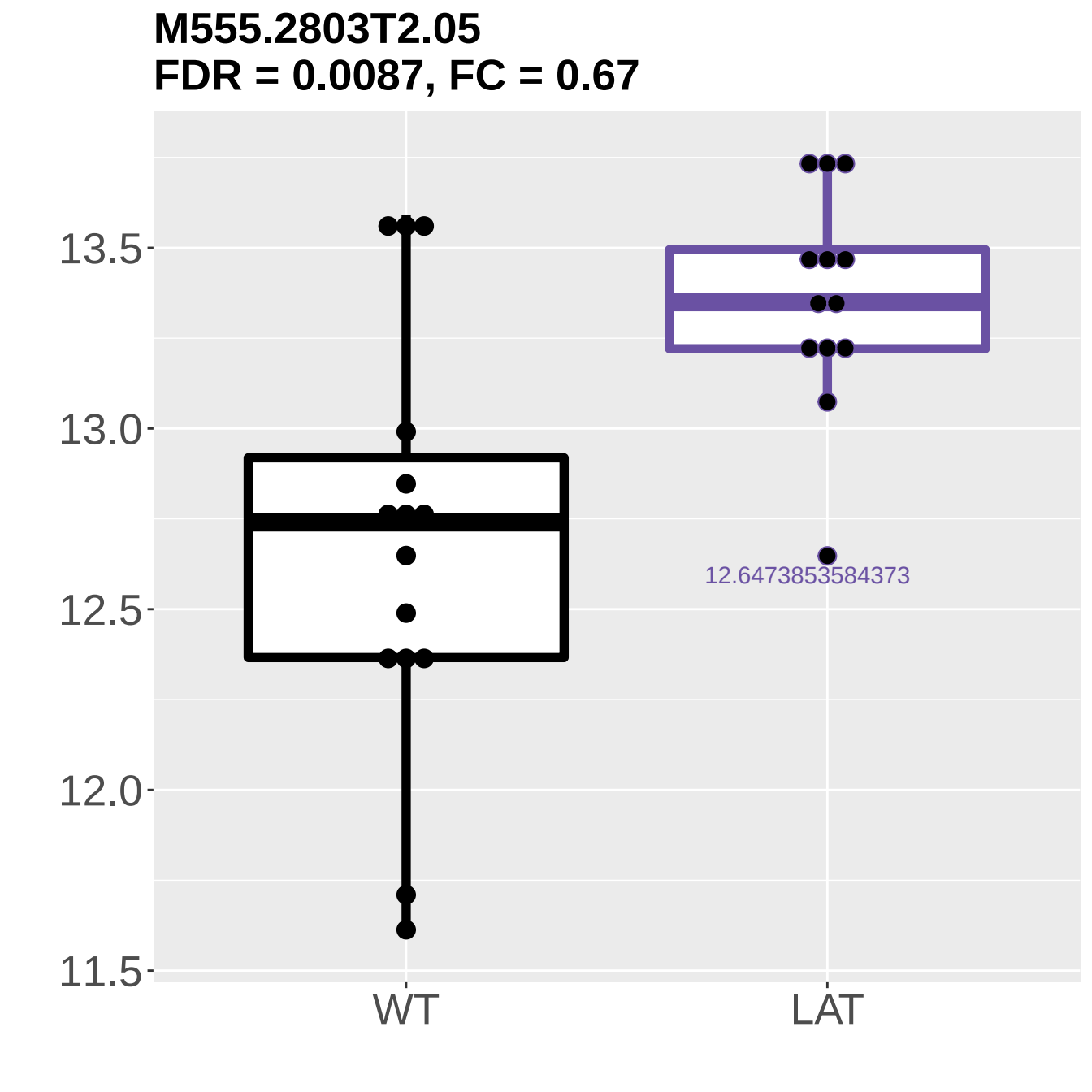
16.5
16.0
15.5
WT
LAT


M538.2816T7.39
FDR = 0.0084, FC = 1.4, sex**
20.9409837975438
20
18
16
14
12.8107176851411
WT
LAT


M791.7448T4.97
FDR = 0.0084, FC = 0.62
17
16
15
17.0286838837017
14.2469711369873
WT
LAT


M157.7026T1.89
FDR = 0.0086, FC = −0.93
16
15
14
14.0029056852272
13.8107893534952
WT
LAT


M405.9086T1.1
FDR = 0.0086, FC = −1.3
17
16
15
14
13
WT
LAT


M555.2803T2.05
FDR = 0.0087, FC = 0.67
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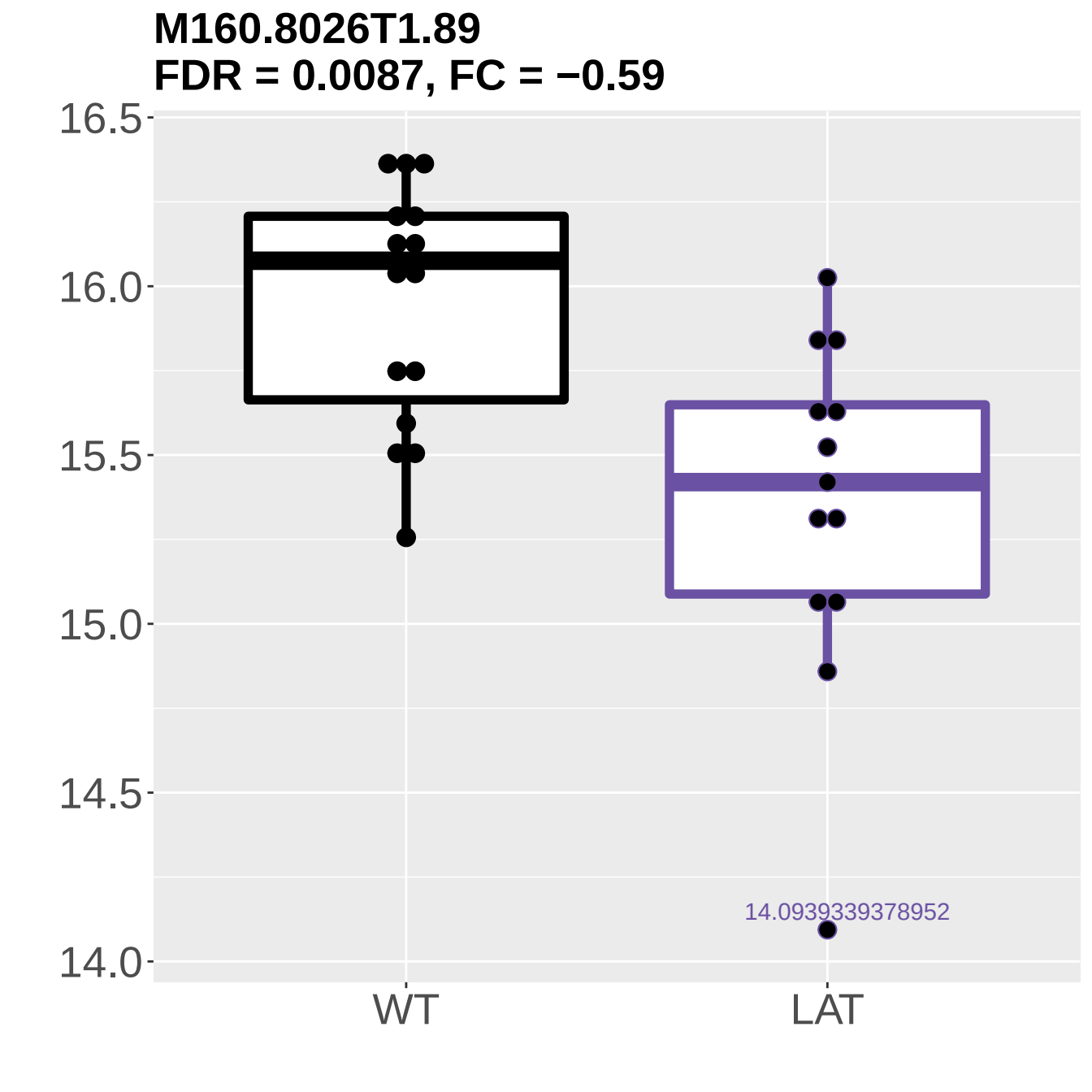
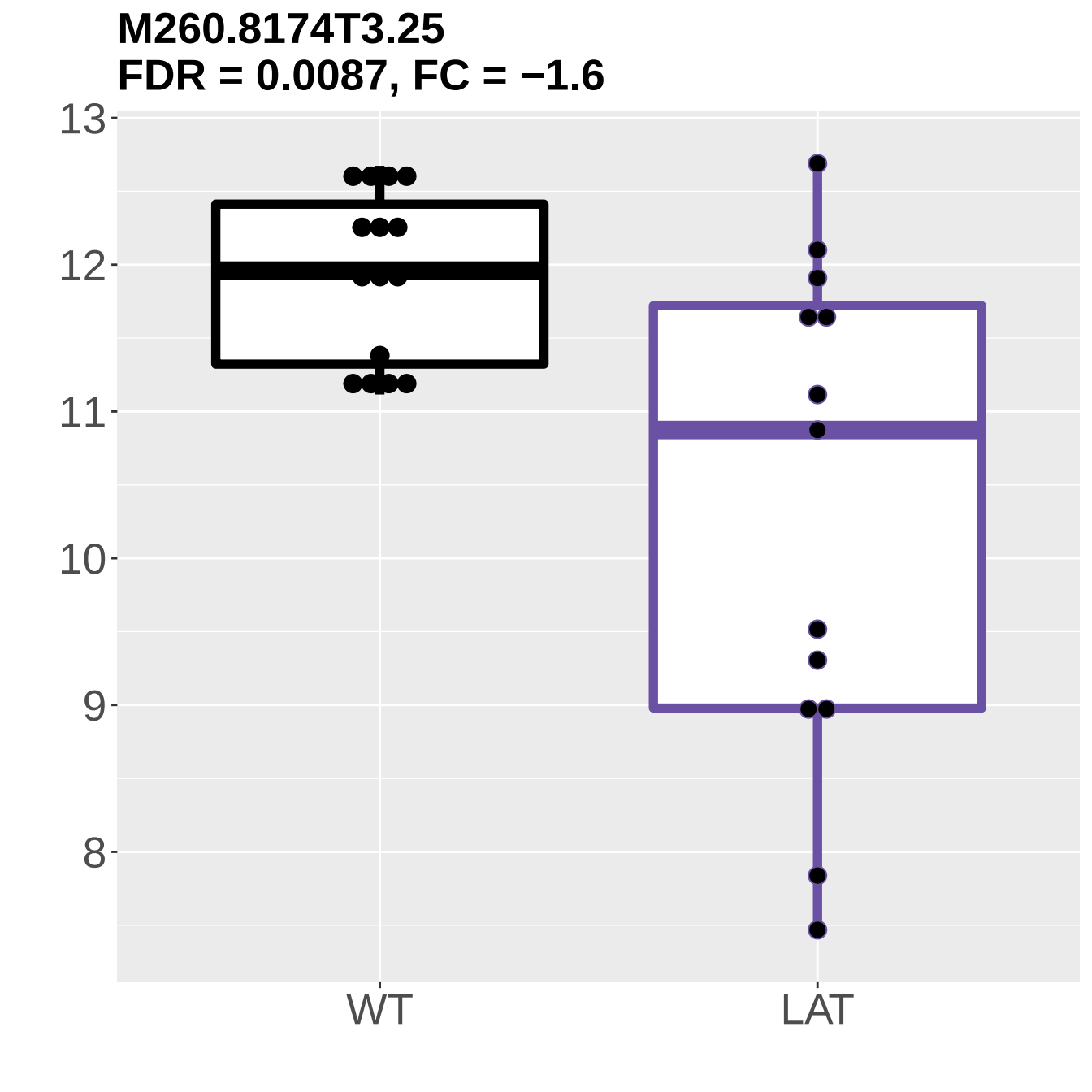
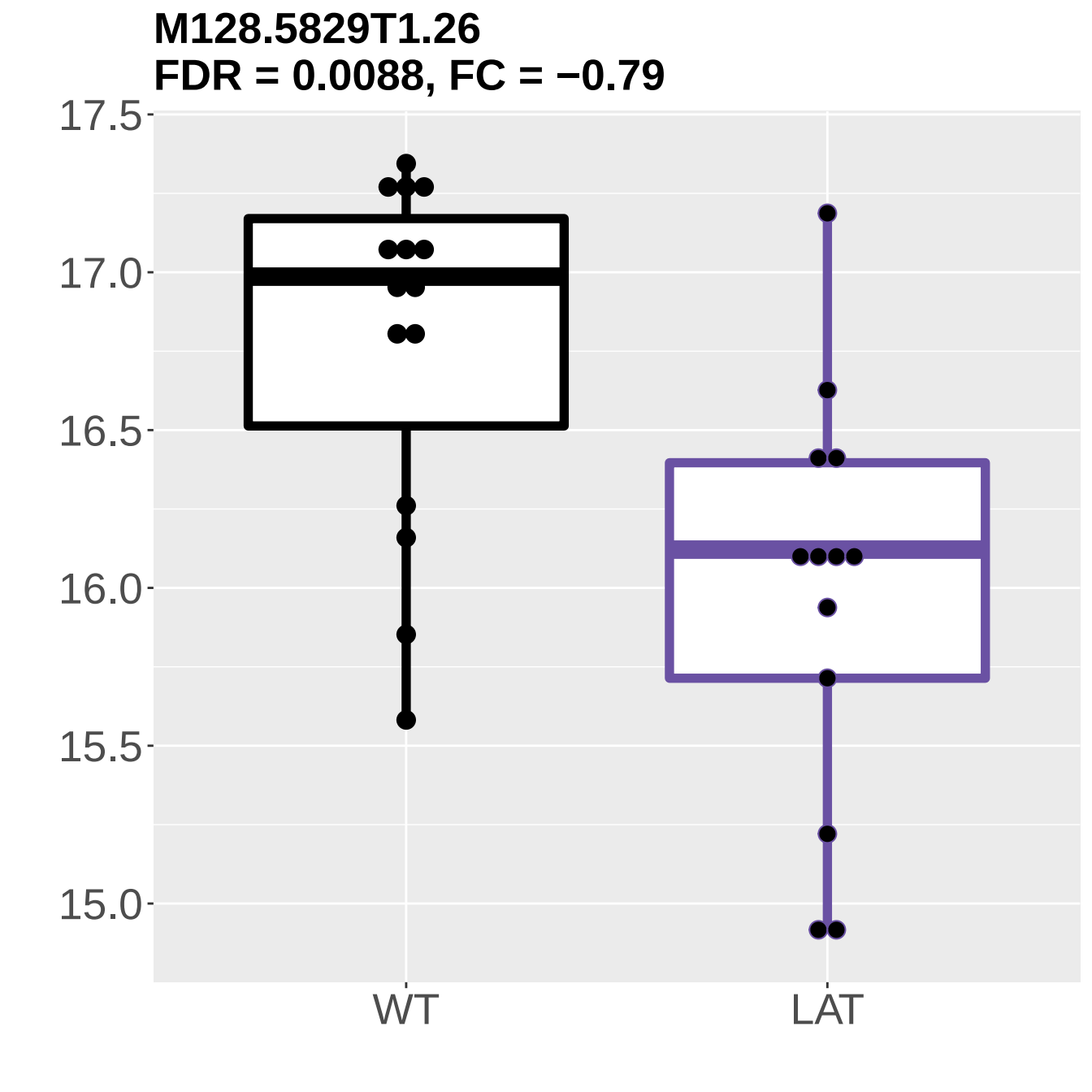
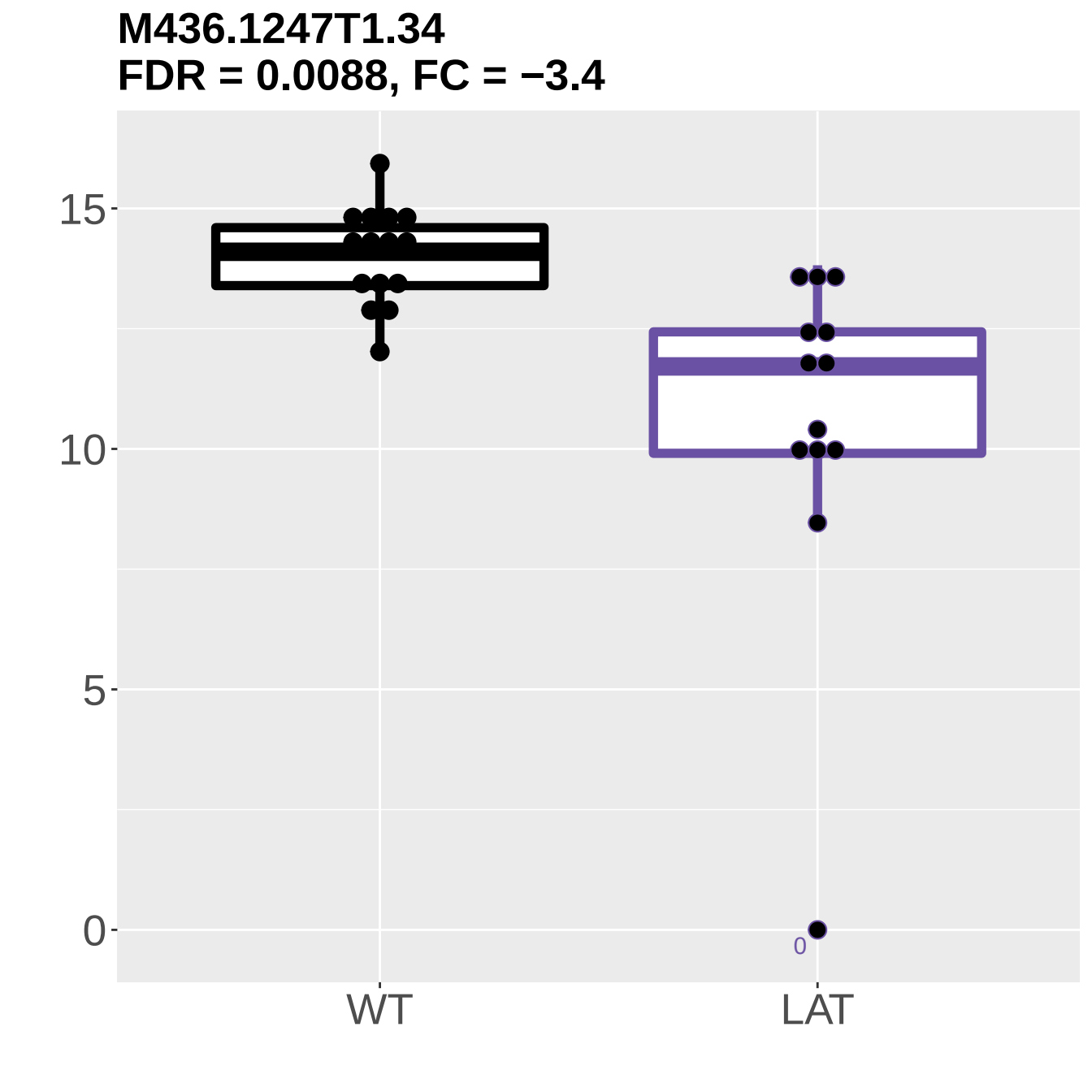
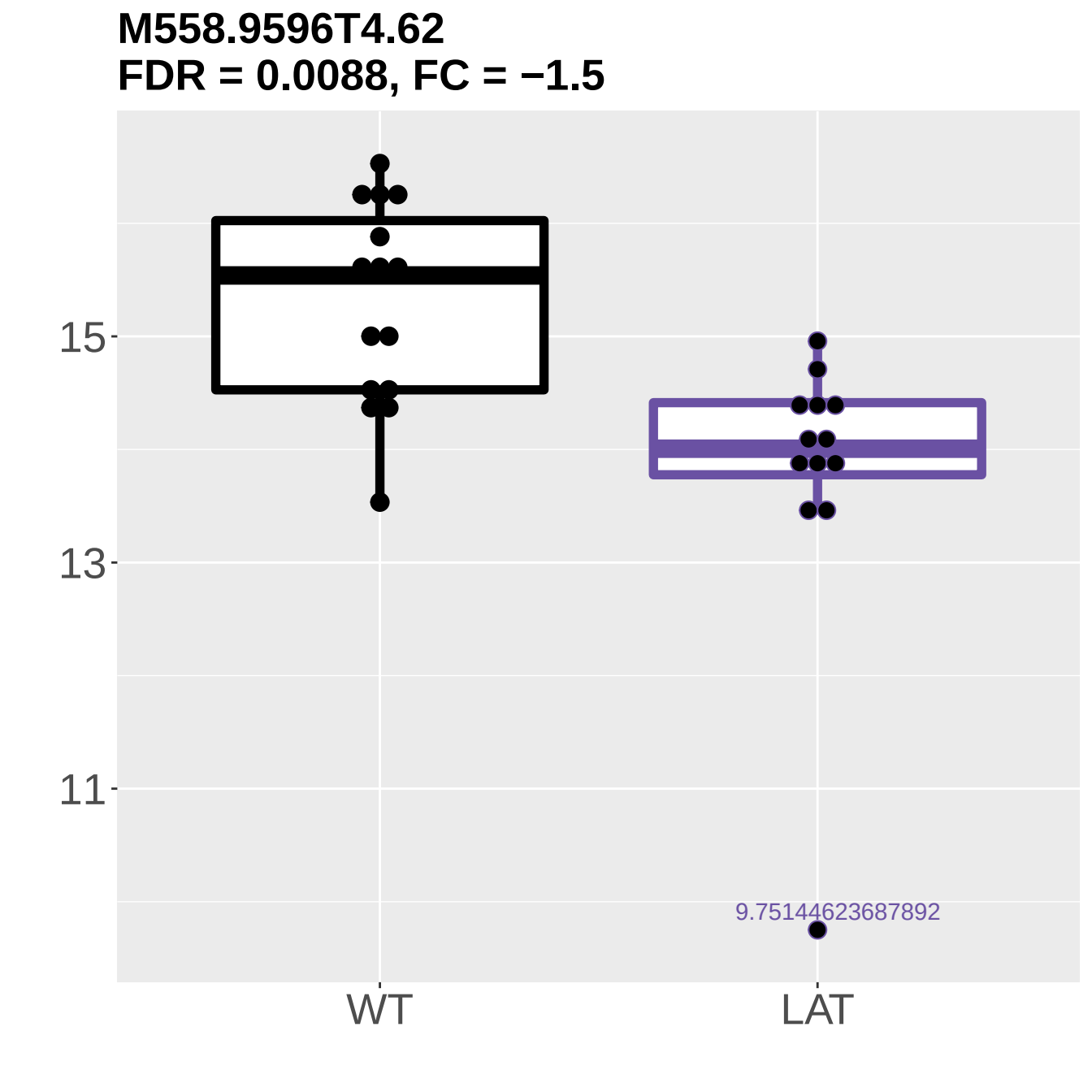
13.0
12.5
12.0
11.5
12.6473853584373
WT
LAT

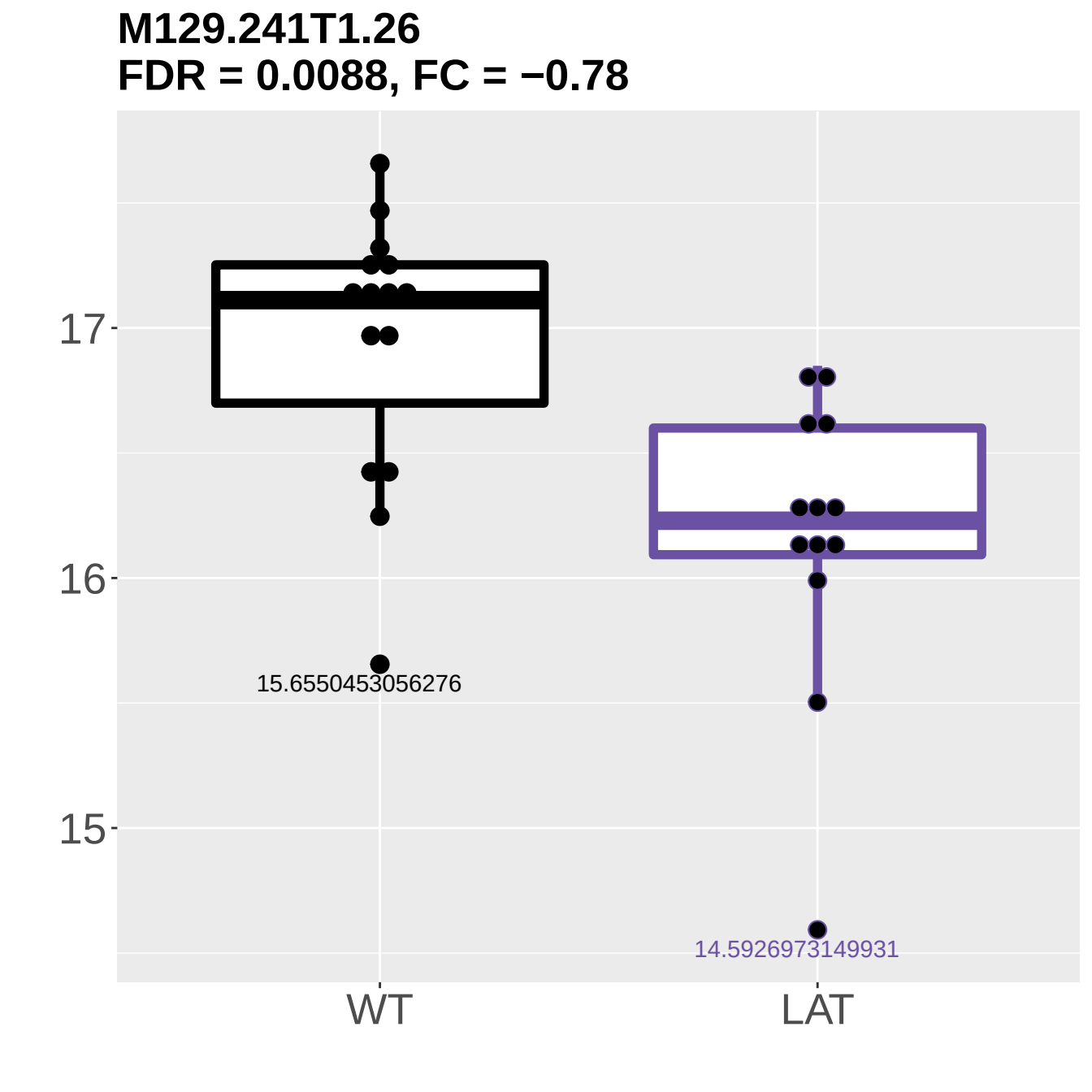

M160.8026T1.89
FDR = 0.0087, FC = −0.59
16.5
16.0
15.5
15.0
14.5
14.0
14.0939339378952
WT
LAT

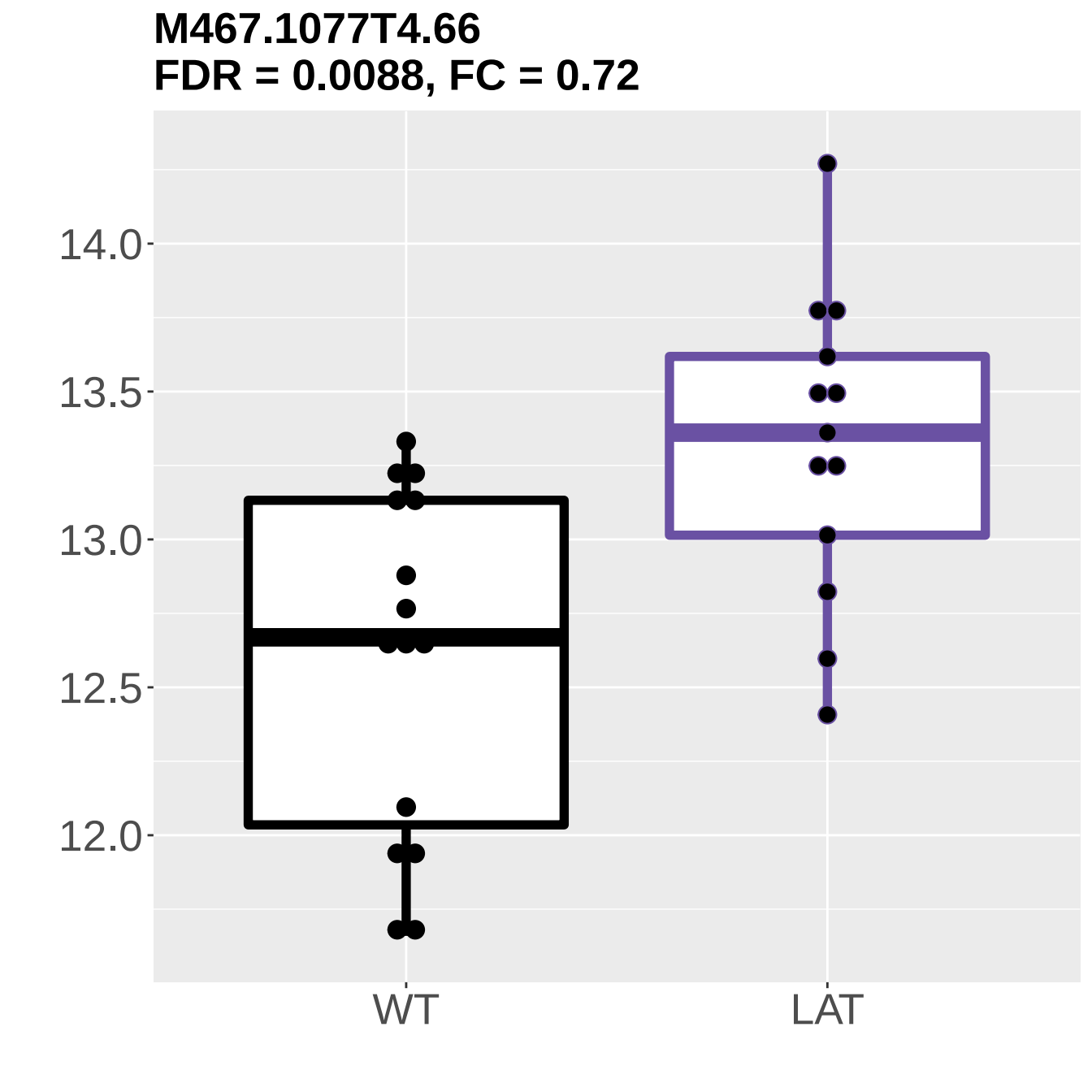

M260.8174T3.25
FDR = 0.0087, FC = −1.6
13
12
11
10
9
8
WT
LAT


M128.5829T1.26
FDR = 0.0088, FC = −0.79
17.5
17.0
16.5
16.0
15.5
15.0
WT
LAT


M436.1247T1.34
FDR = 0.0088, FC = −3.4
15
10
5
0
0
WT
LAT


M558.9596T4.62
FDR = 0.0088, FC = −1.5
15
13
11
9.75144623687892
WT
LAT


M129.241T1.26
FDR = 0.0088, FC = −0.78
17
16
15
15.6550453056276
14.5926973149931
WT
LAT


M467.1077T4.66
FDR = 0.0088, FC = 0.72
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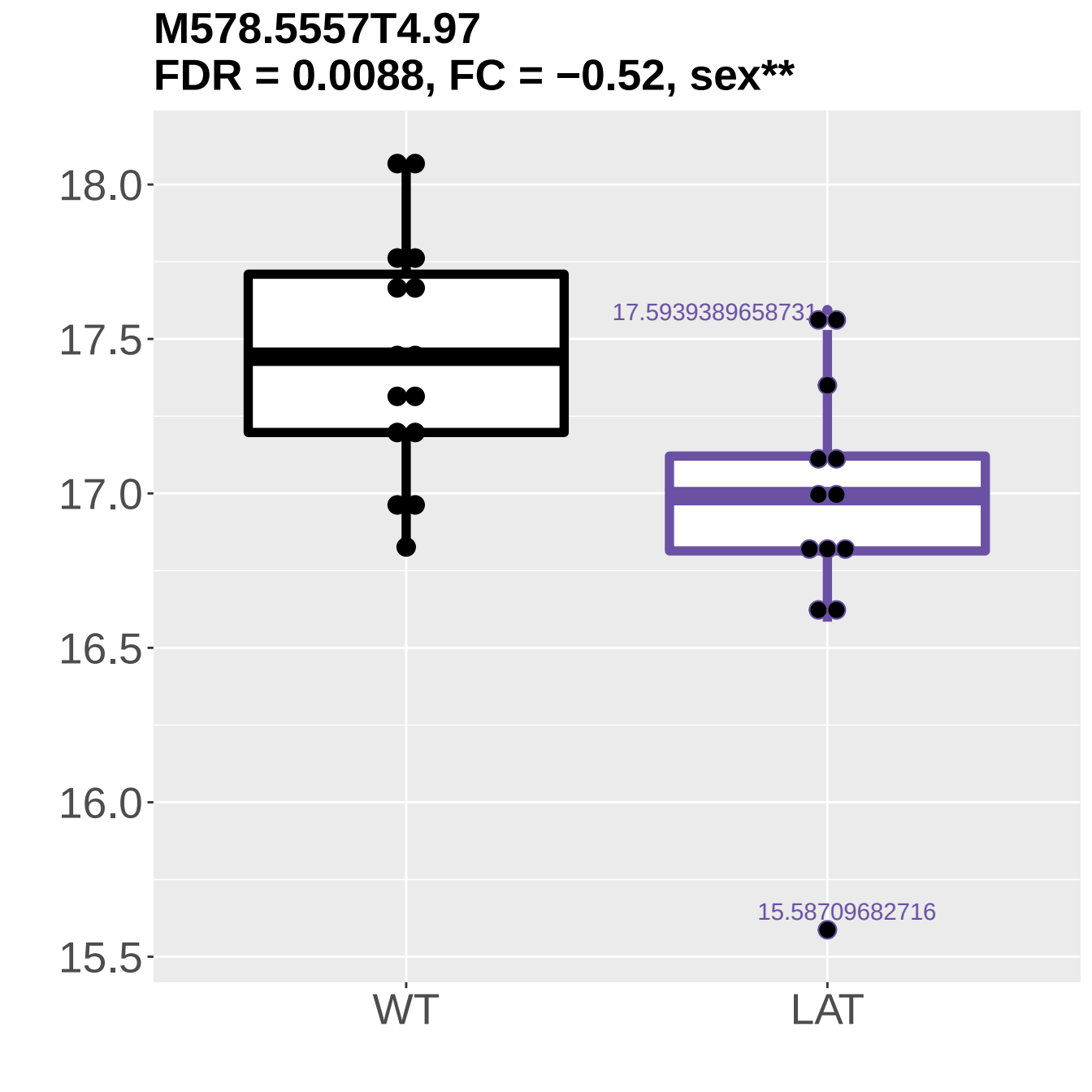
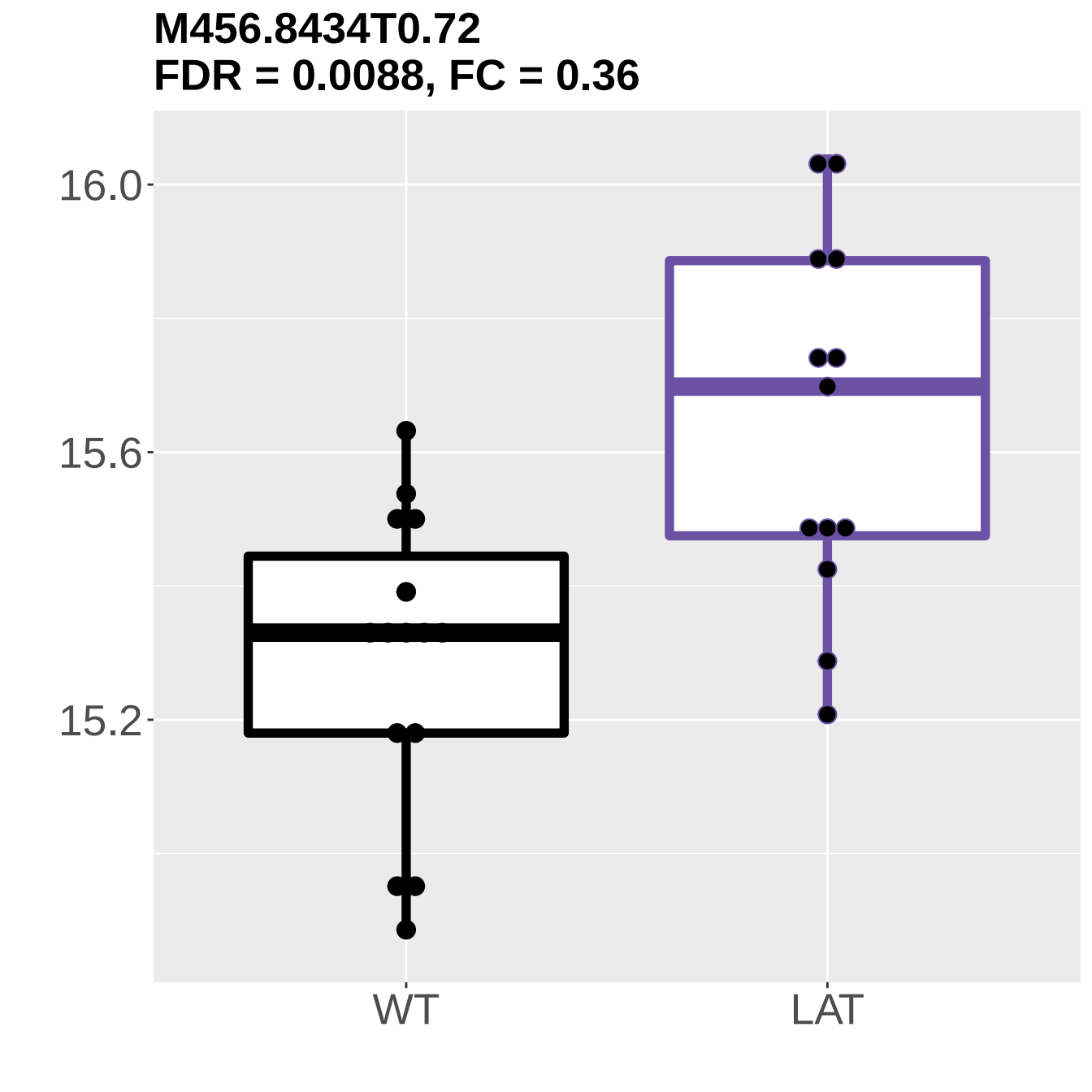
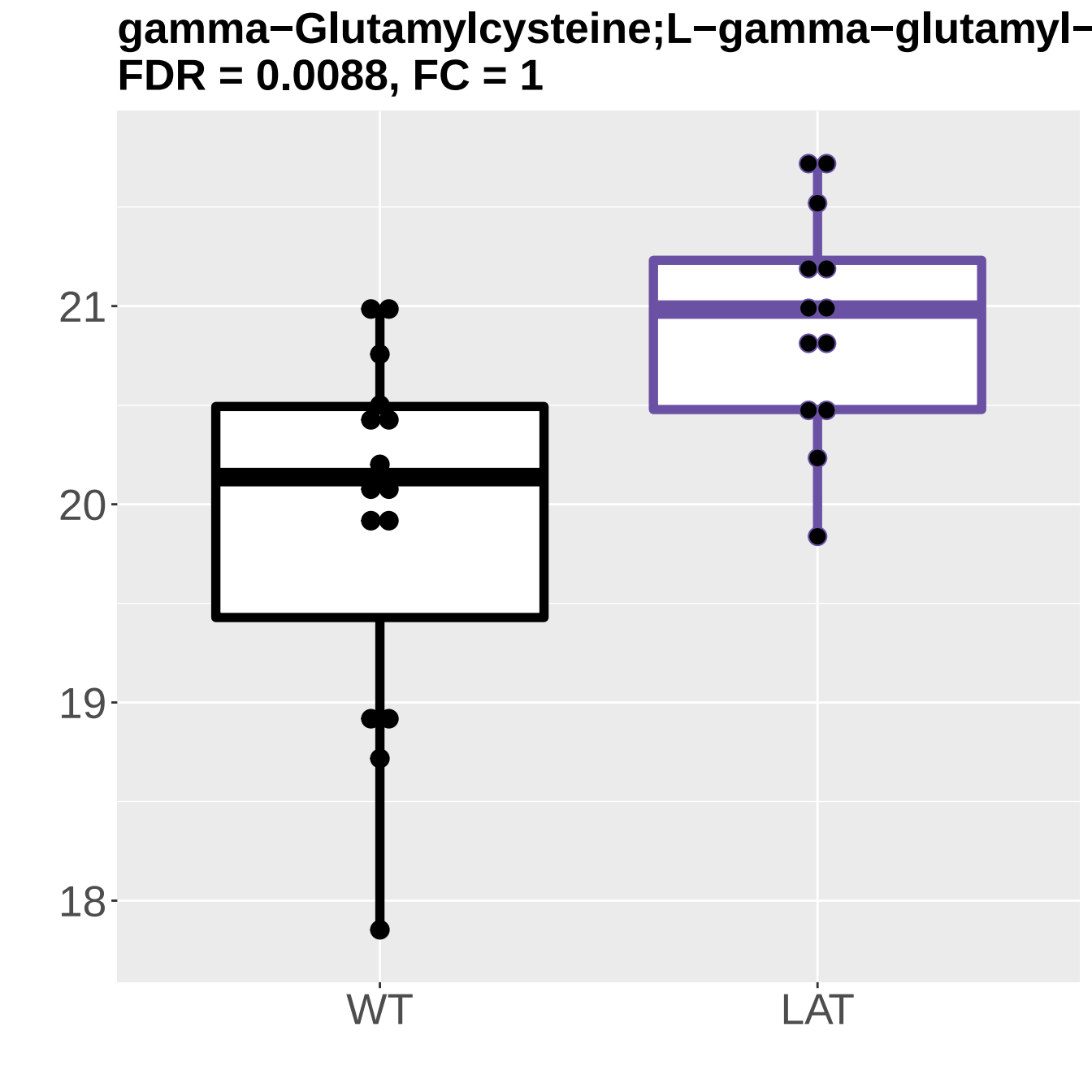
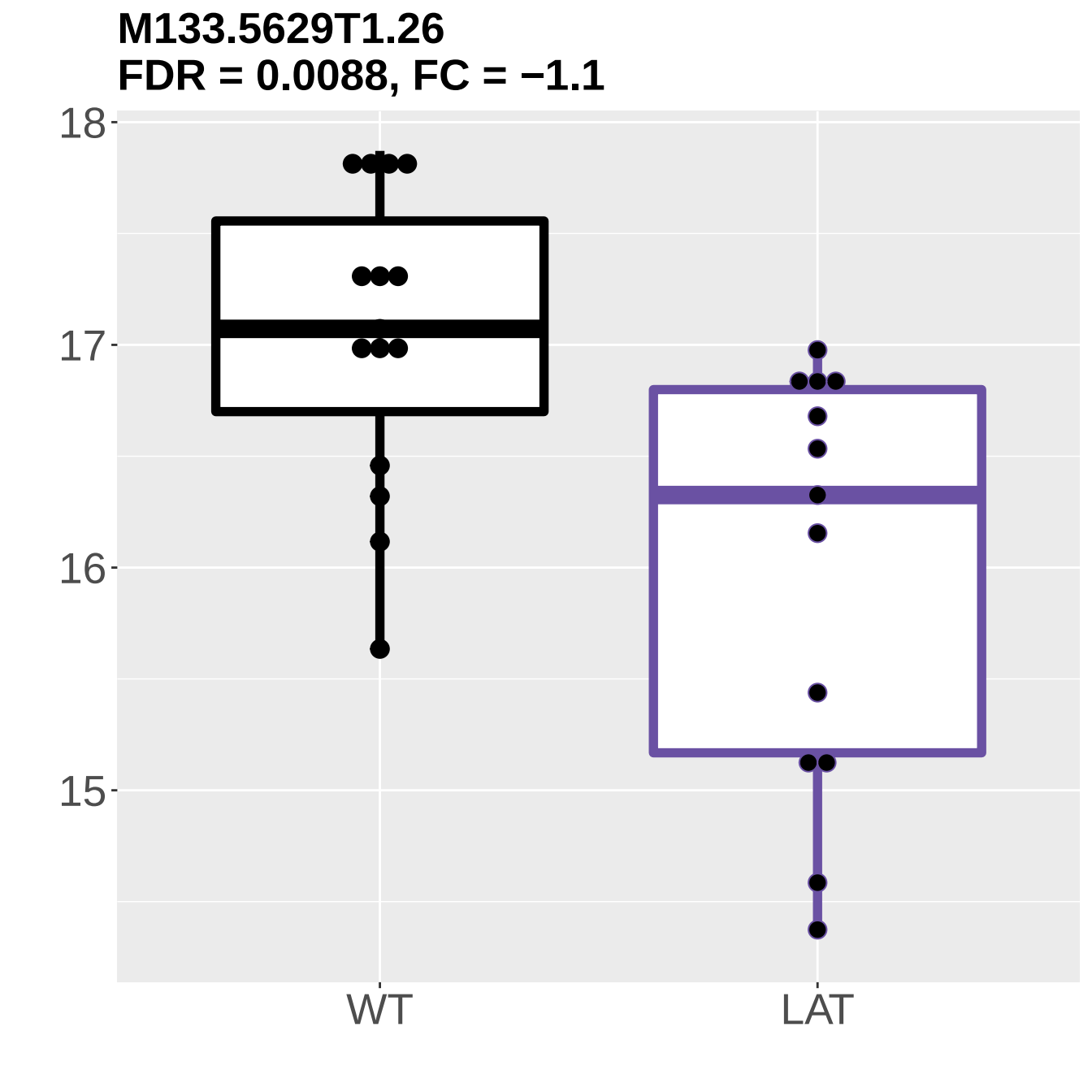
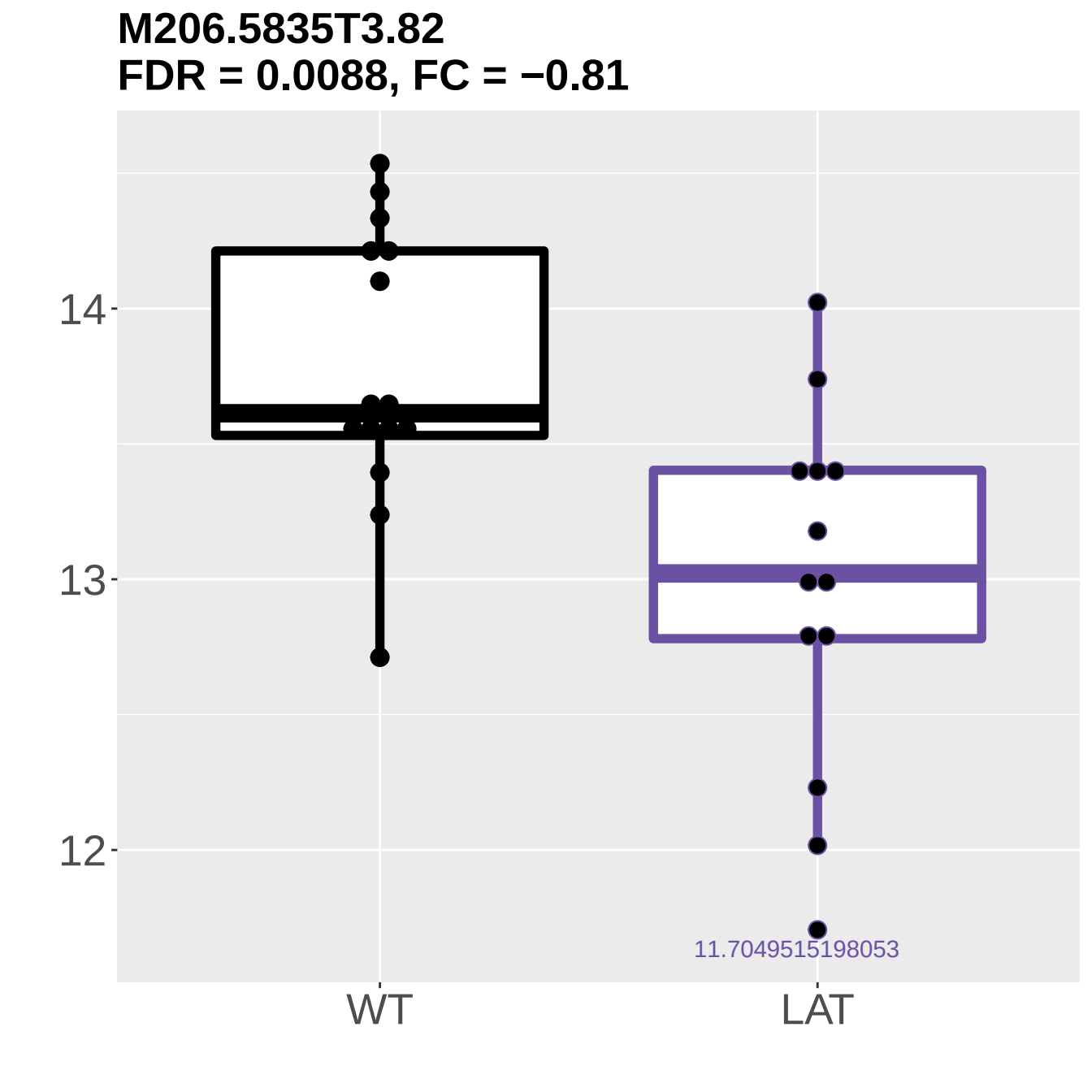
13.5
13.0
12.5
12.0
WT
LAT

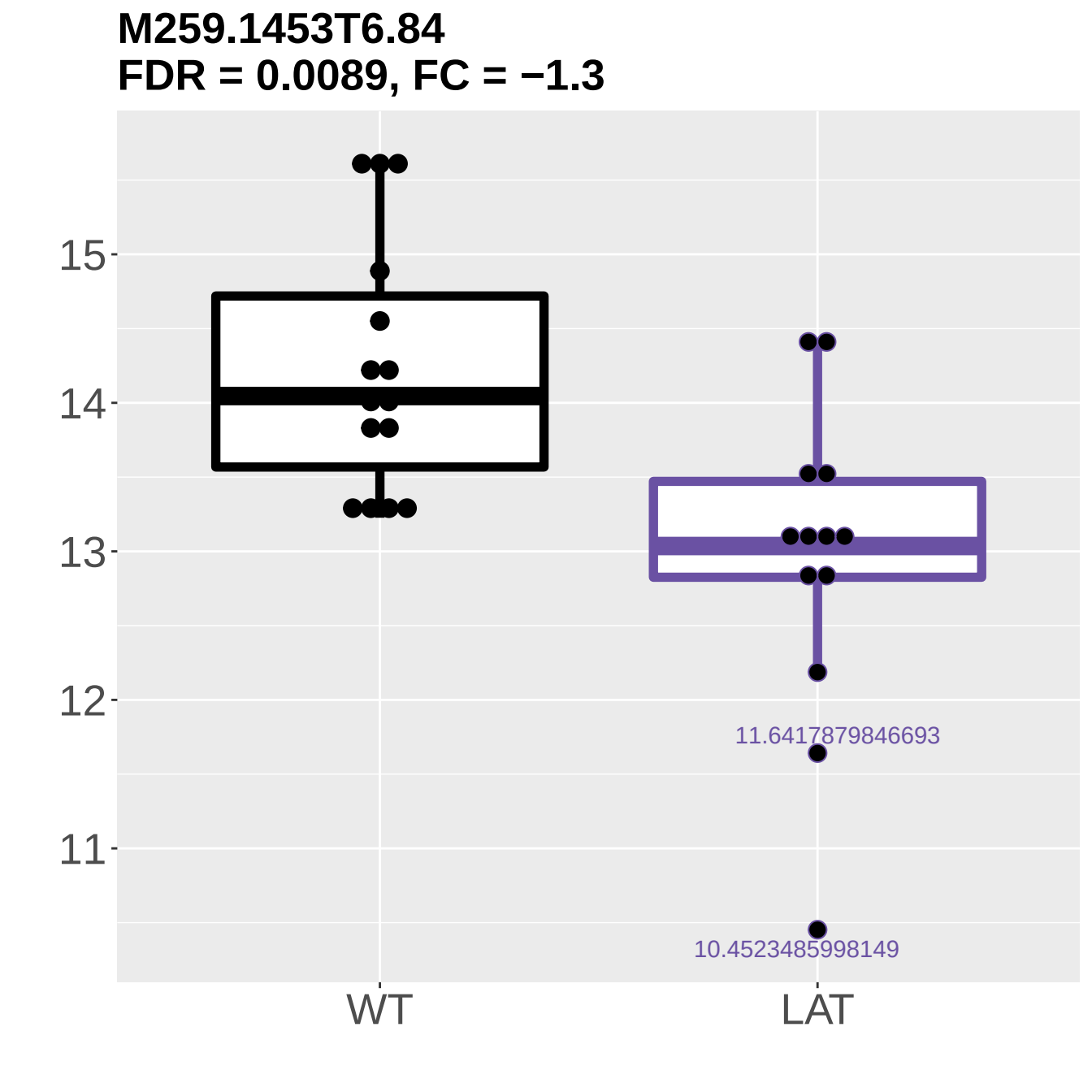

M578.5557T4.97
FDR = 0.0088, FC = −0.52, sex**
18.0
17.5
17.0
16.5
16.0
15.5
17.5939389658731
15.58709682716
WT
LAT


M456.8434T0.72
FDR = 0.0088, FC = 0.36
16.0
15.6
15.2
WT
LAT


gamma−Glutamylcysteine;L−gamma−glutamyl−
FDR = 0.0088, FC = 1
21
20
19
18
WT
LAT


M133.5629T1.26
FDR = 0.0088, FC = −1.1
18
17
16
15
WT
LAT


M206.5835T3.82
FDR = 0.0088, FC = −0.81
14
13
12
11.7049515198053
WT
LAT


M259.1453T6.84
FDR = 0.0089, FC = −1.3
15
14
13
12
11
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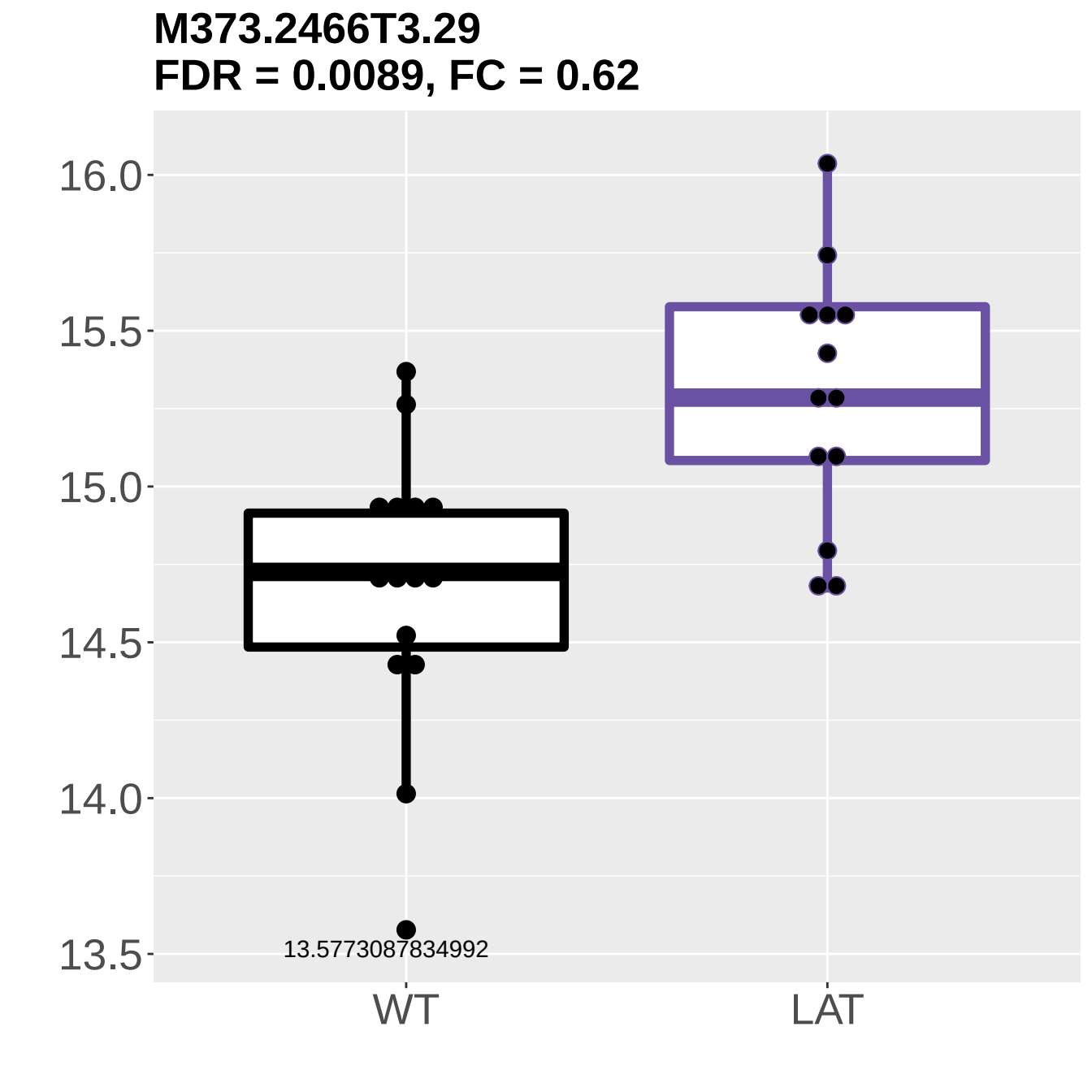
10.4523485998149
WT
LAT


M373.2466T3.29
FDR = 0.0089, FC = 0.62
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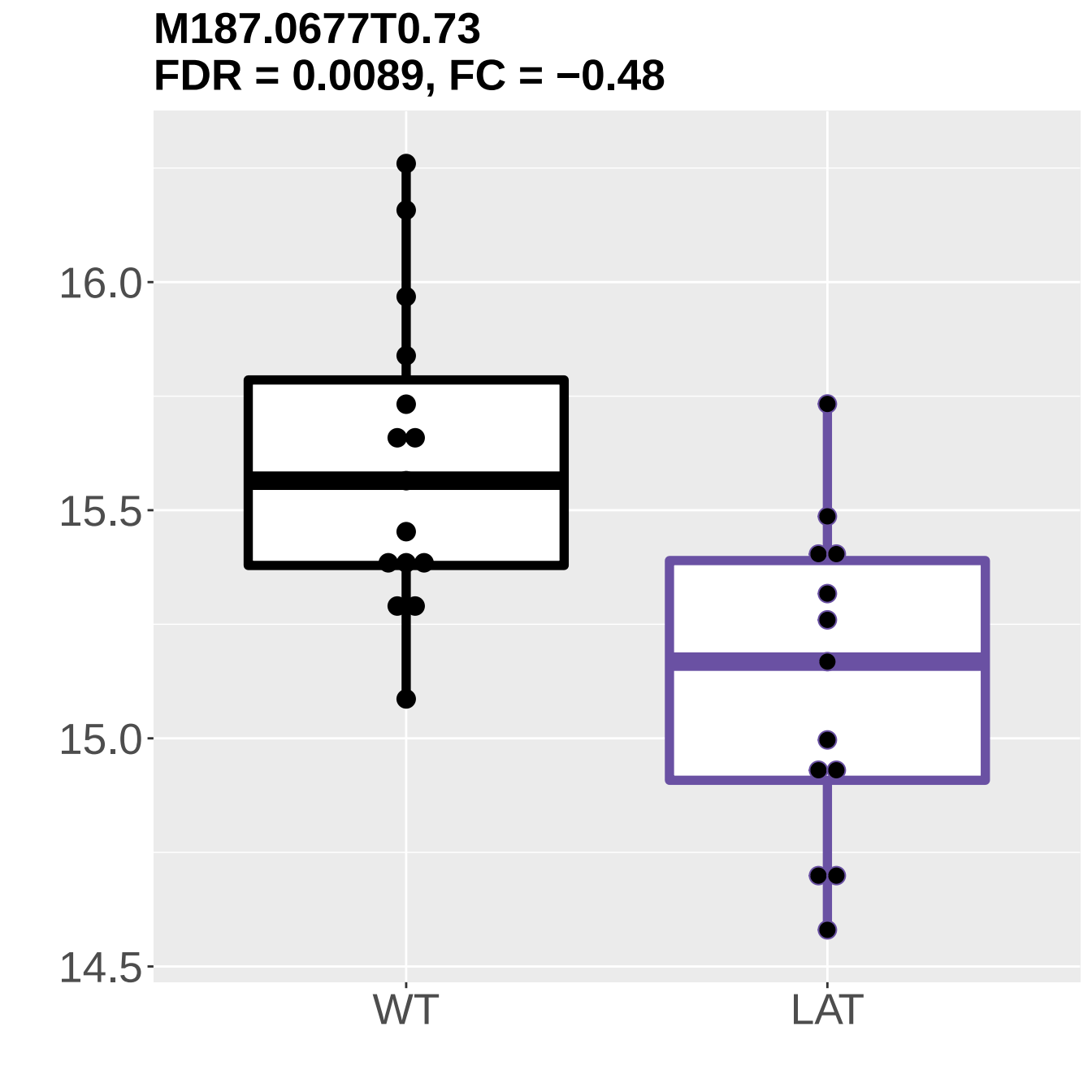
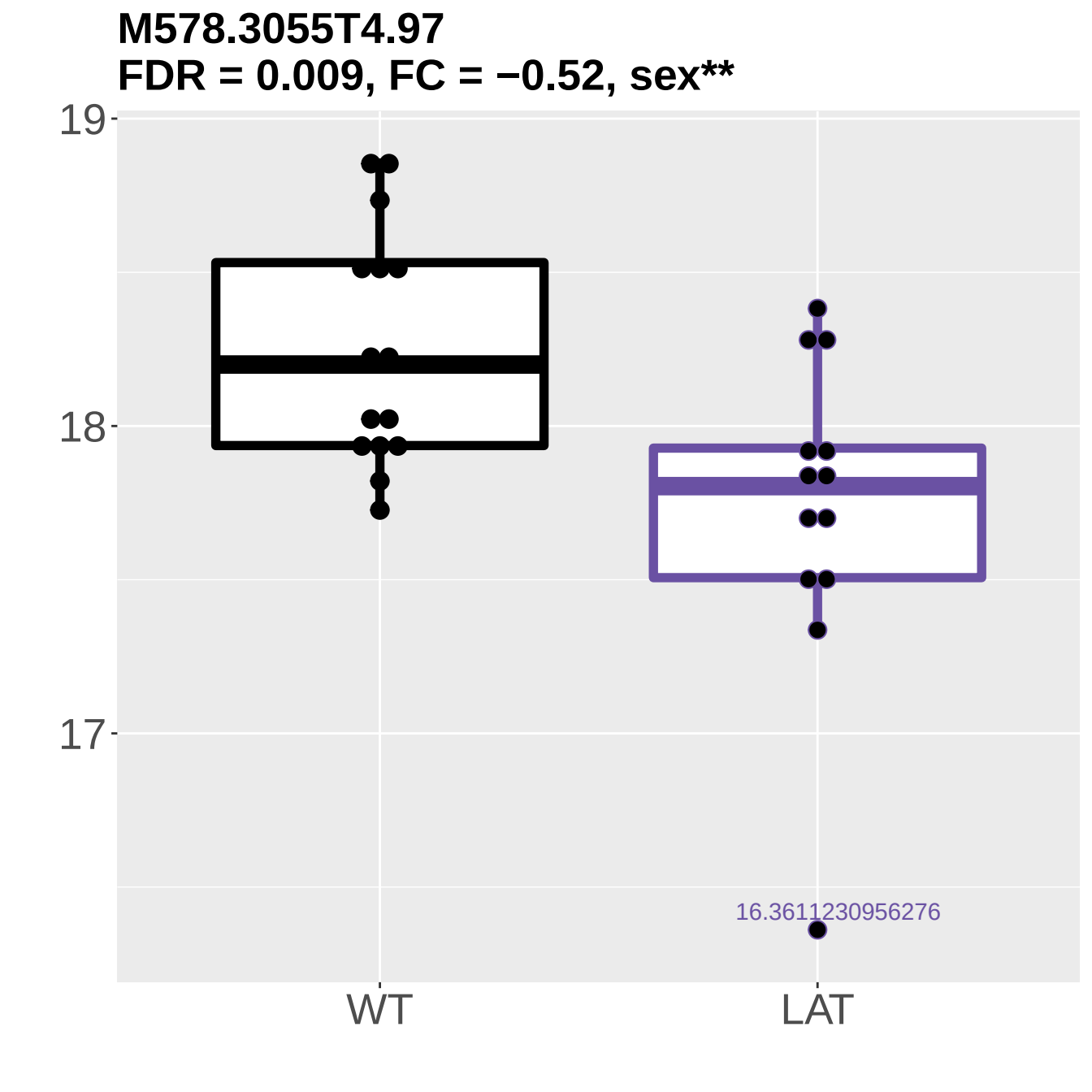
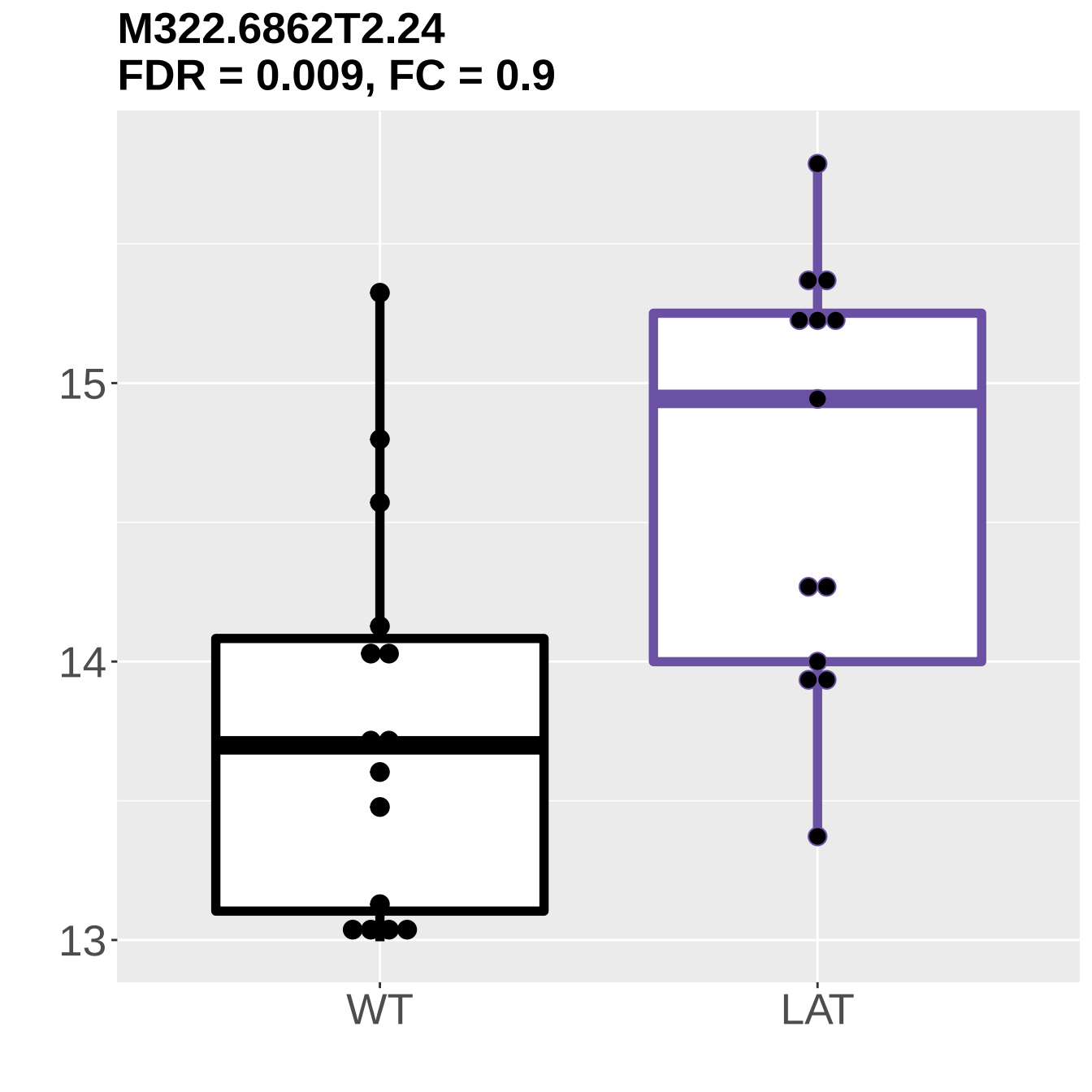
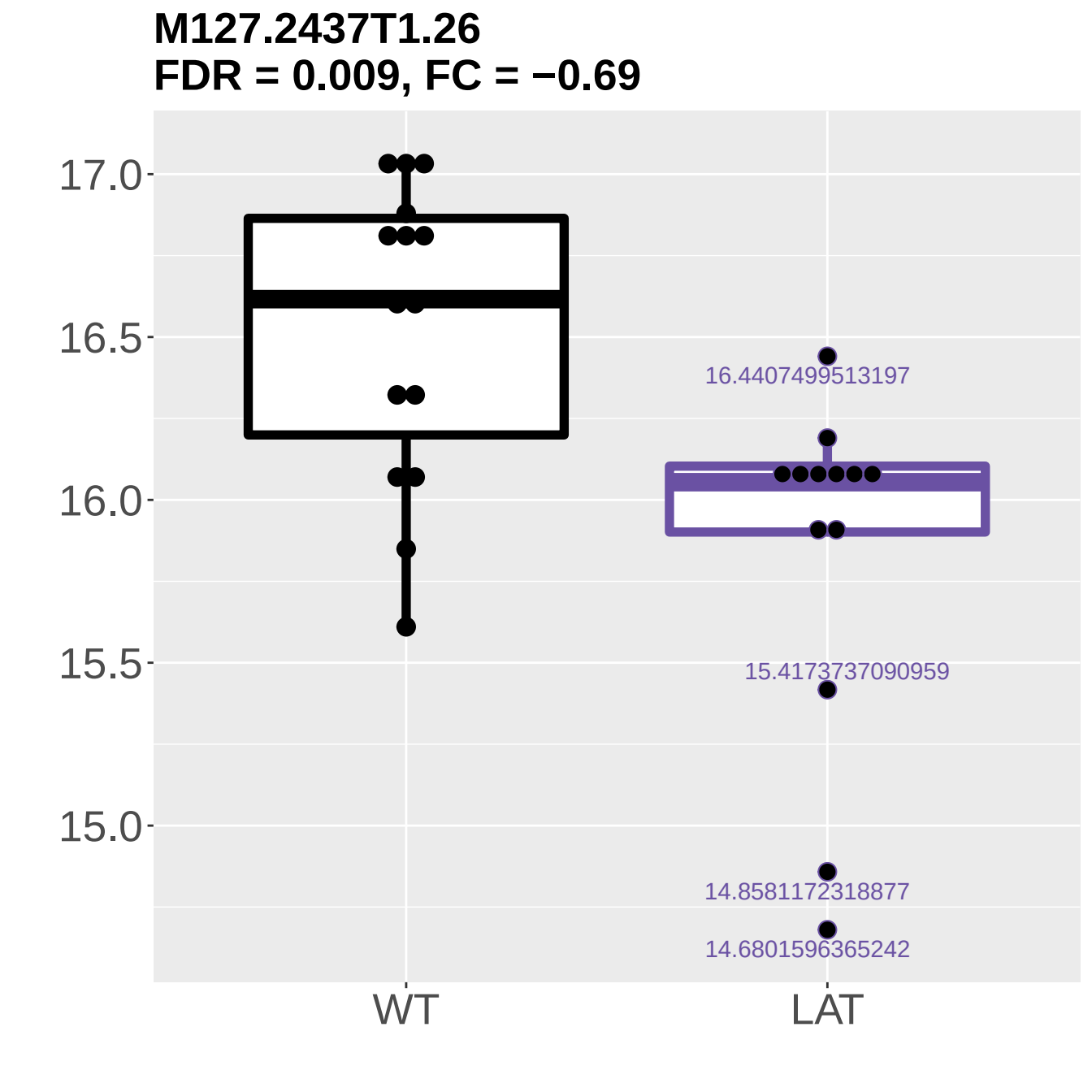
15.5
15.0
14.5
14.0
13.5
13.5773087834992
WT
LAT


M187.0677T0.73
FDR = 0.0089, FC = −0.48
16.0
15.5
15.0
14.5
WT
LAT


M578.3055T4.97
FDR = 0.009, FC = −0.52, sex**
19
18
17
16.3611230956276
WT
LAT


M322.6862T2.24
FDR = 0.009, FC = 0.9
15
14
13
WT
LAT


M127.2437T1.26
FDR = 0.009, FC = −0.69
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16.5
16.0
15.5
15.0
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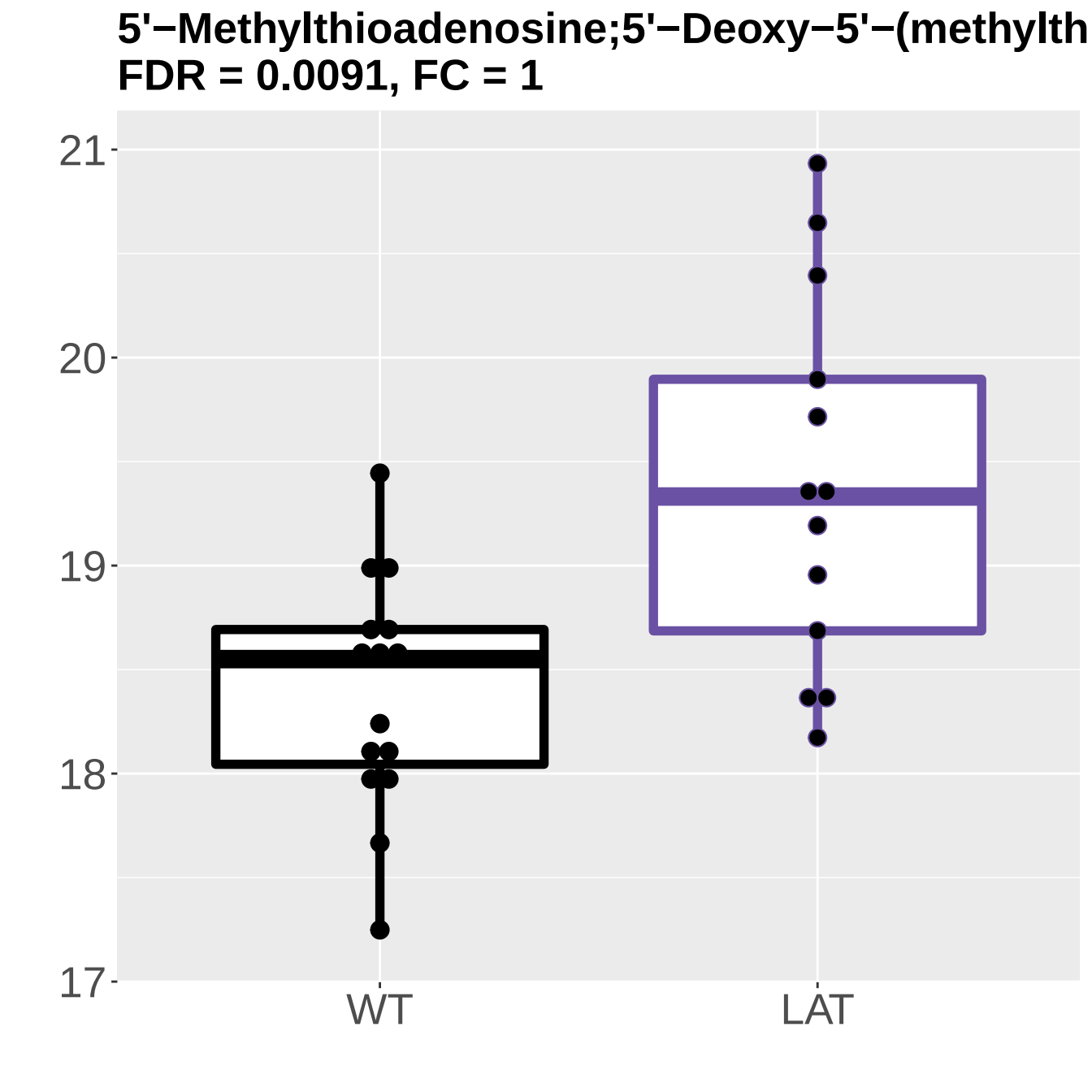
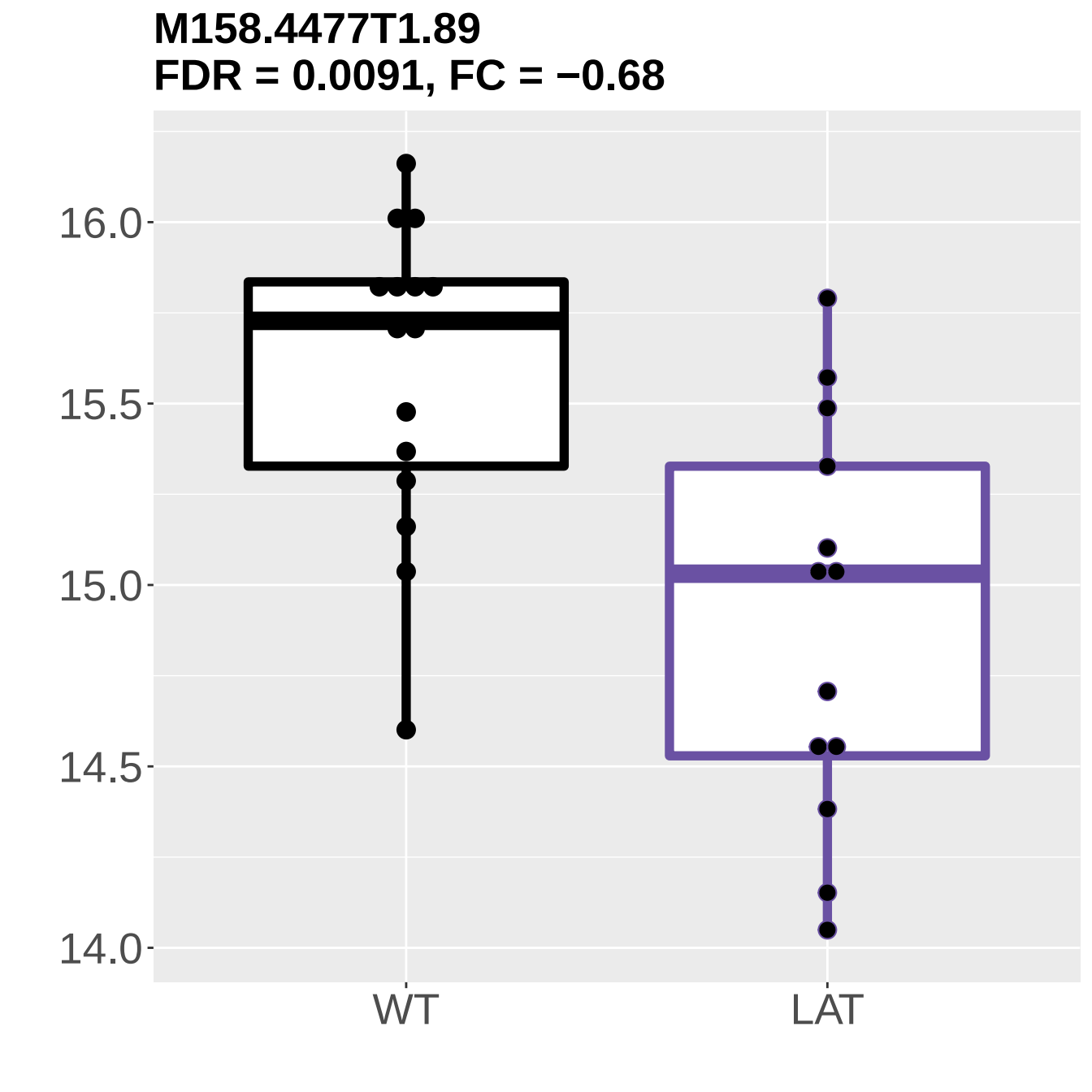
15.4173737090959
14.8581172318877
14.6801596365242
WT
LAT


5'−Methylthioadenosine;5'−Deoxy−5'−(methylth
FDR = 0.0091, FC = 1
21
20
19
18
17
WT
LAT


M158.4477T1.89
FDR = 0.0091, FC = −0.68
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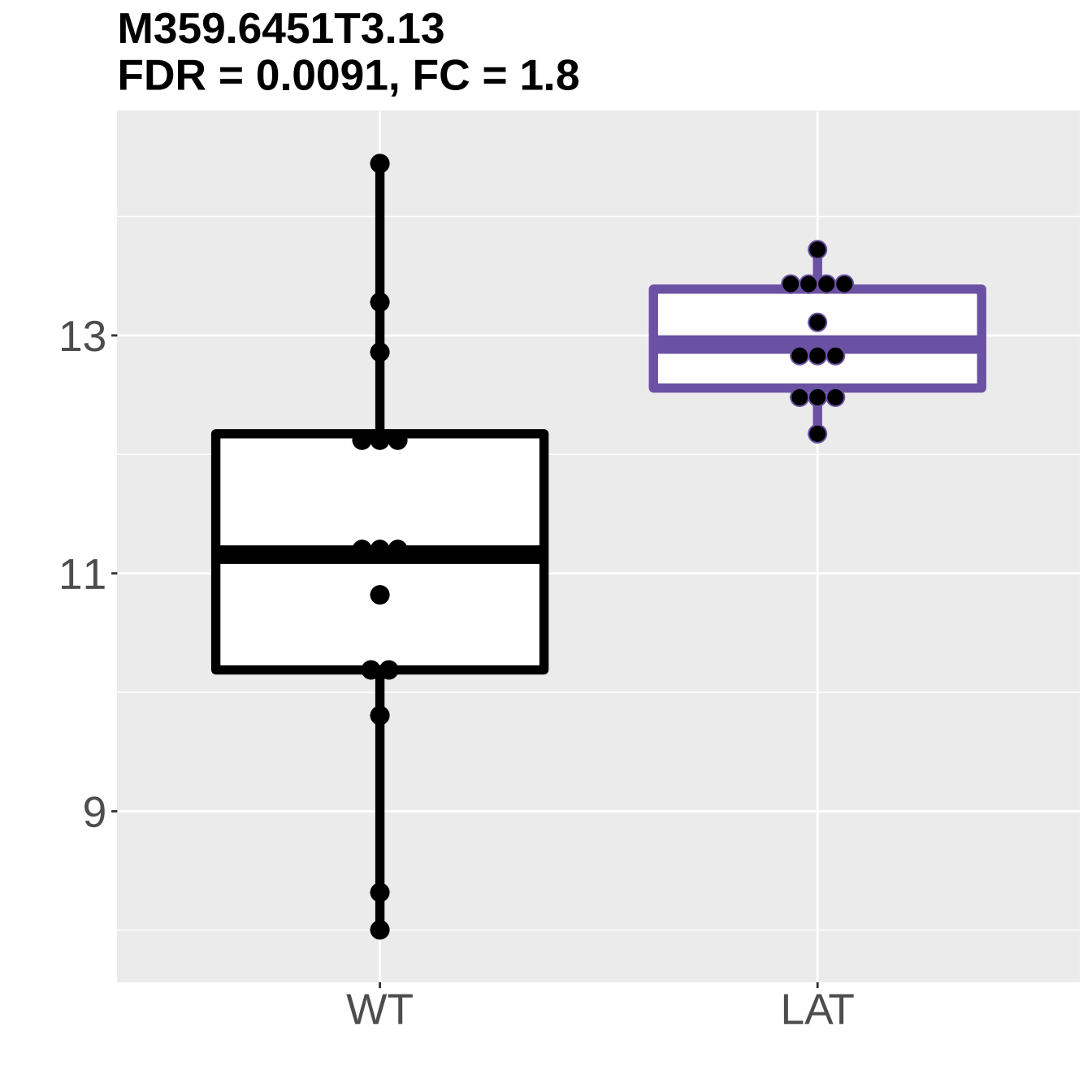
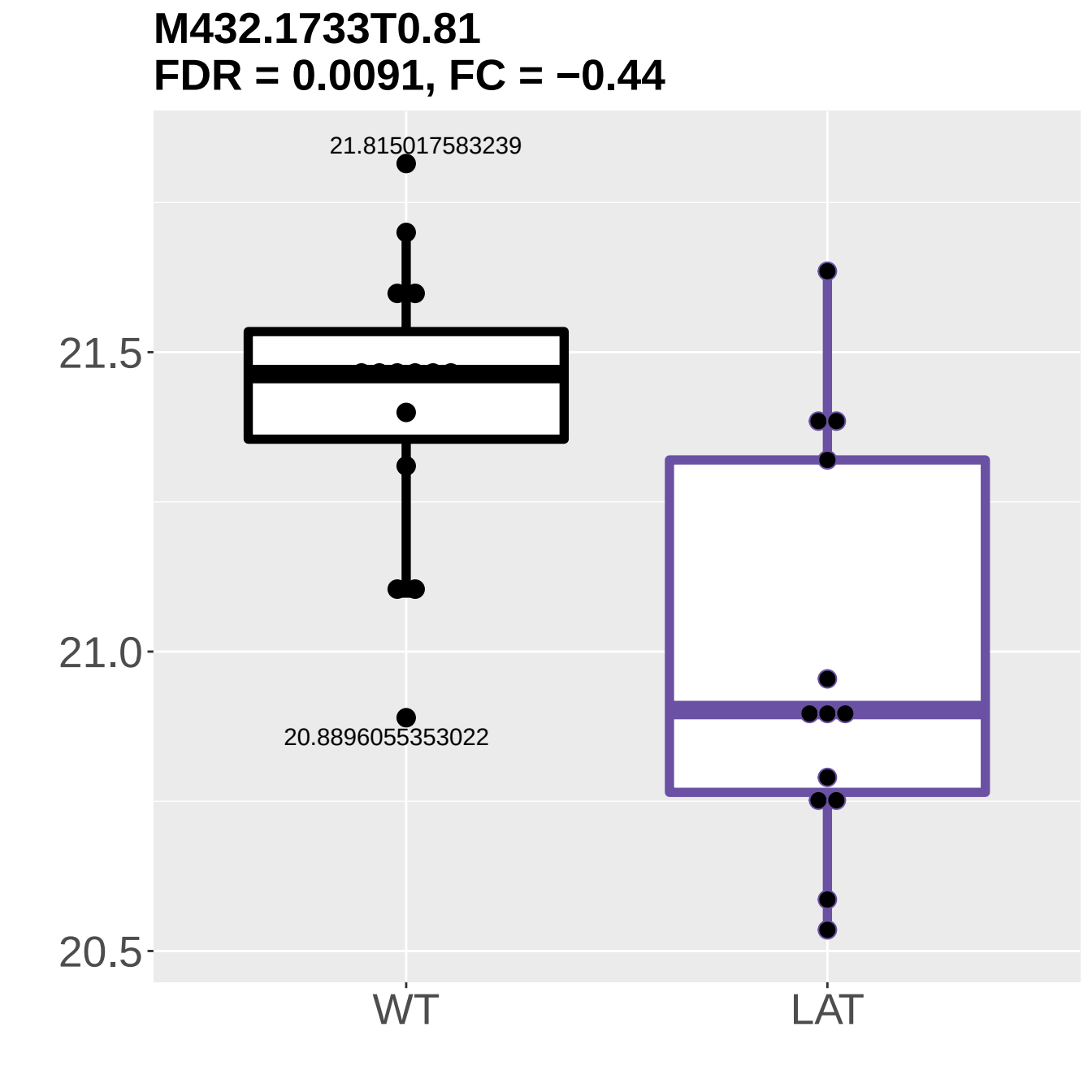
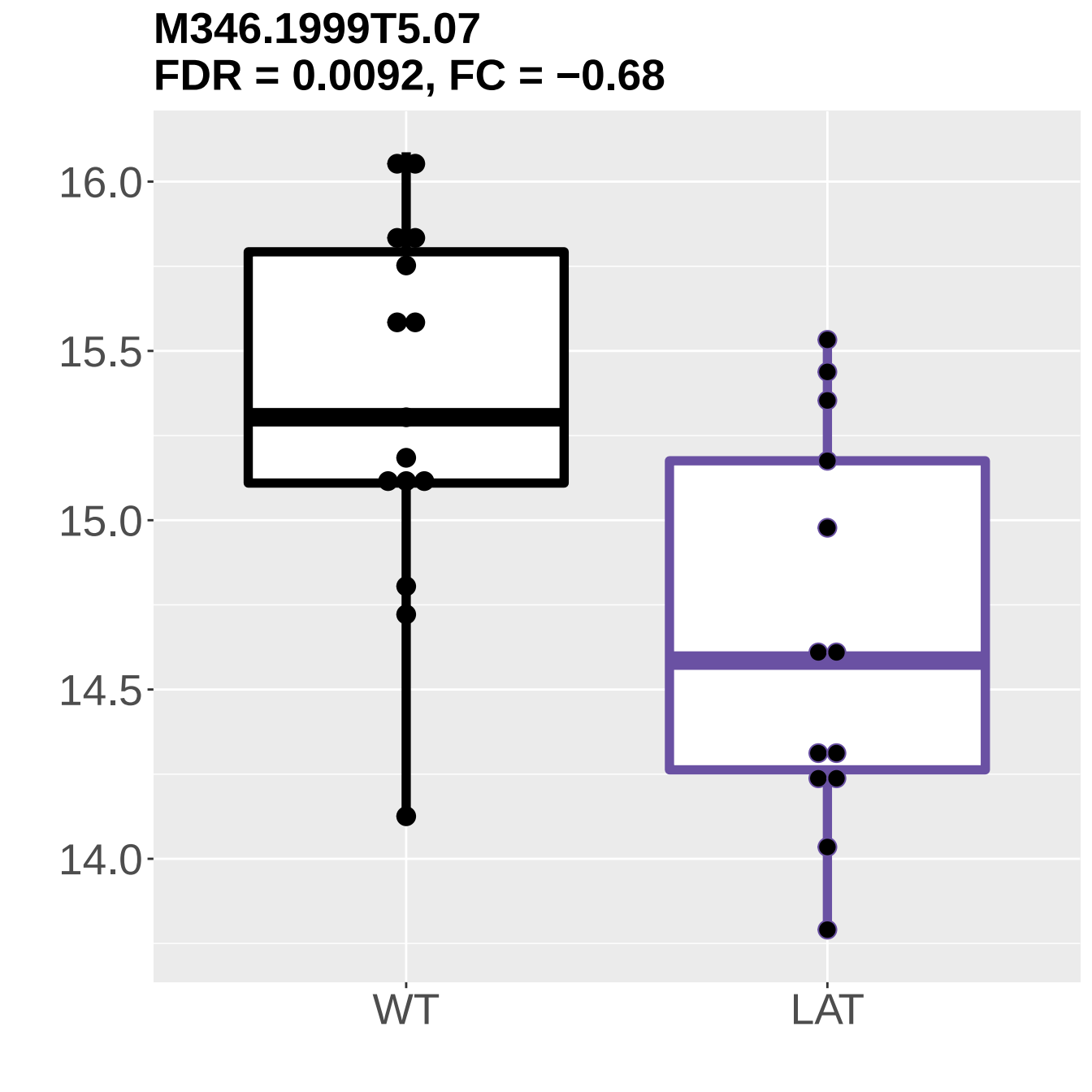
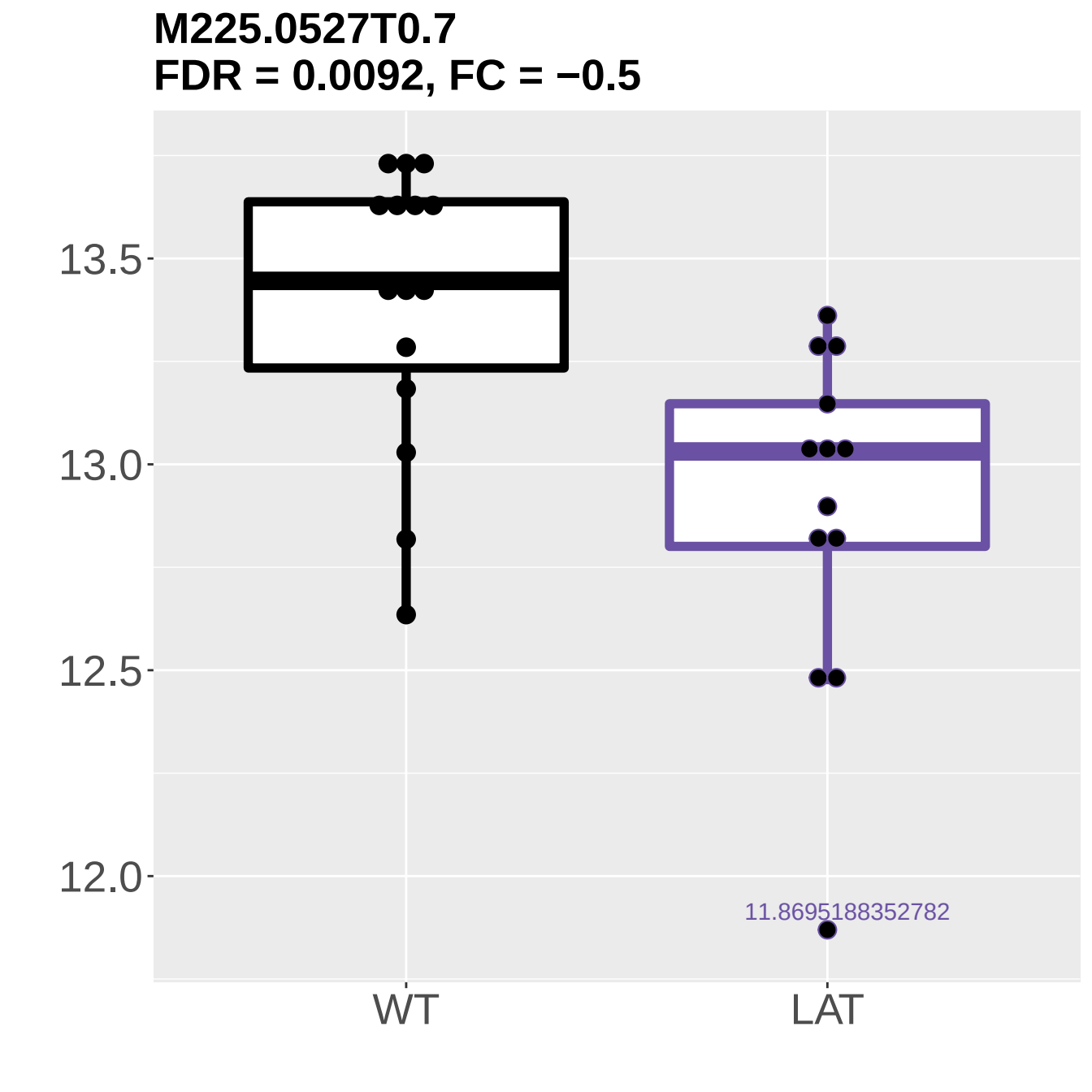
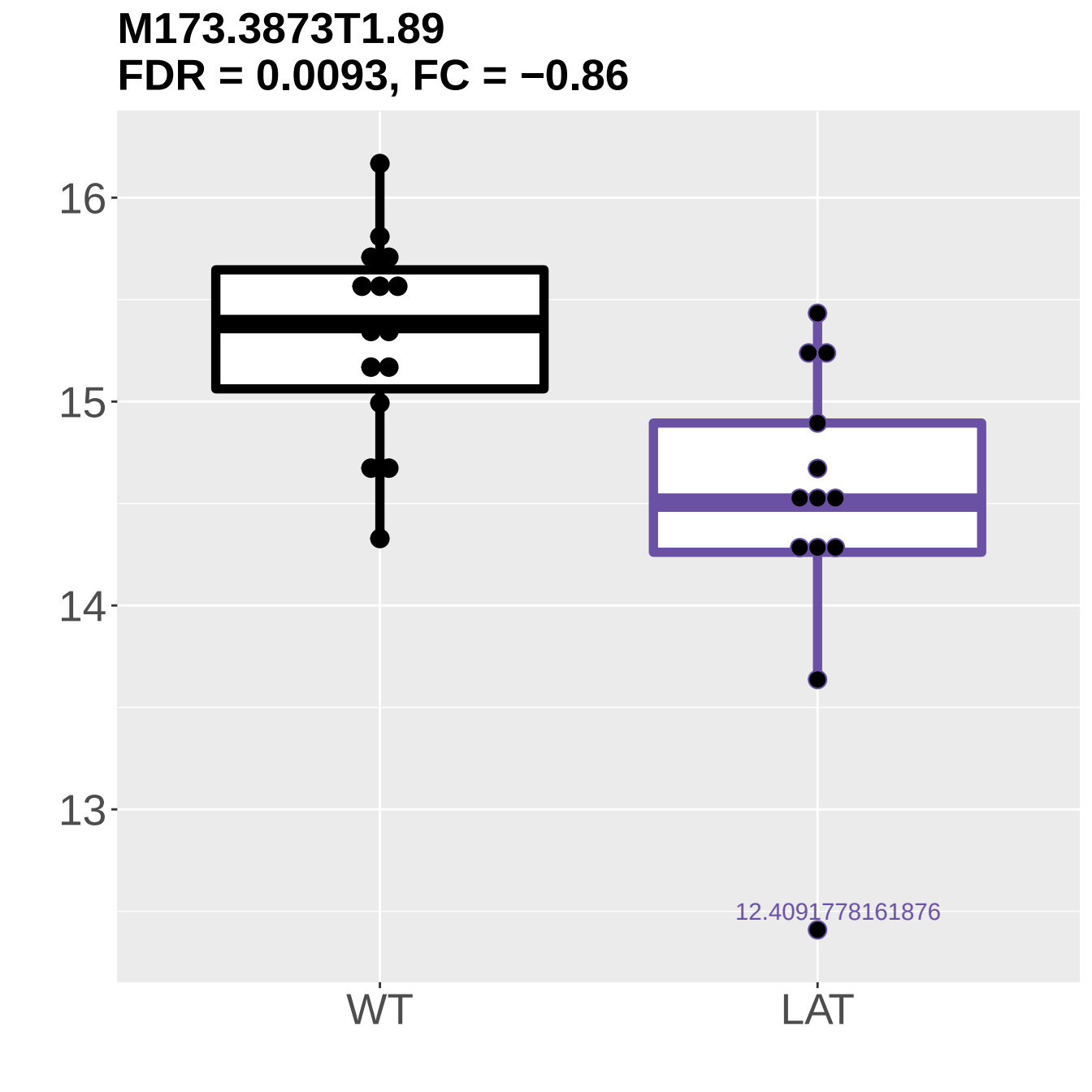
15.5
15.0
14.5
14.0
WT
LAT

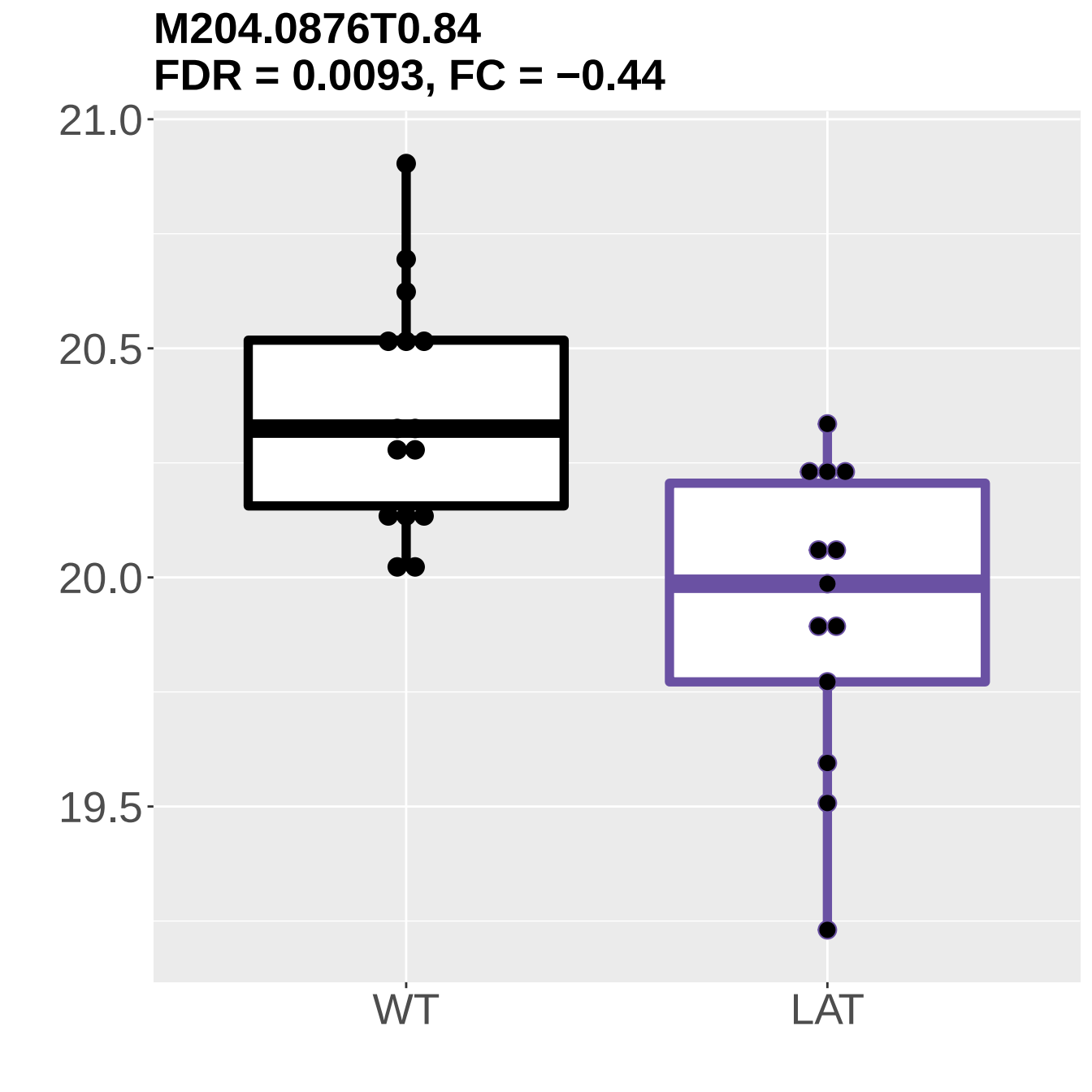

M359.6451T3.13
FDR = 0.0091, FC = 1.8
13
11
9
WT
LAT

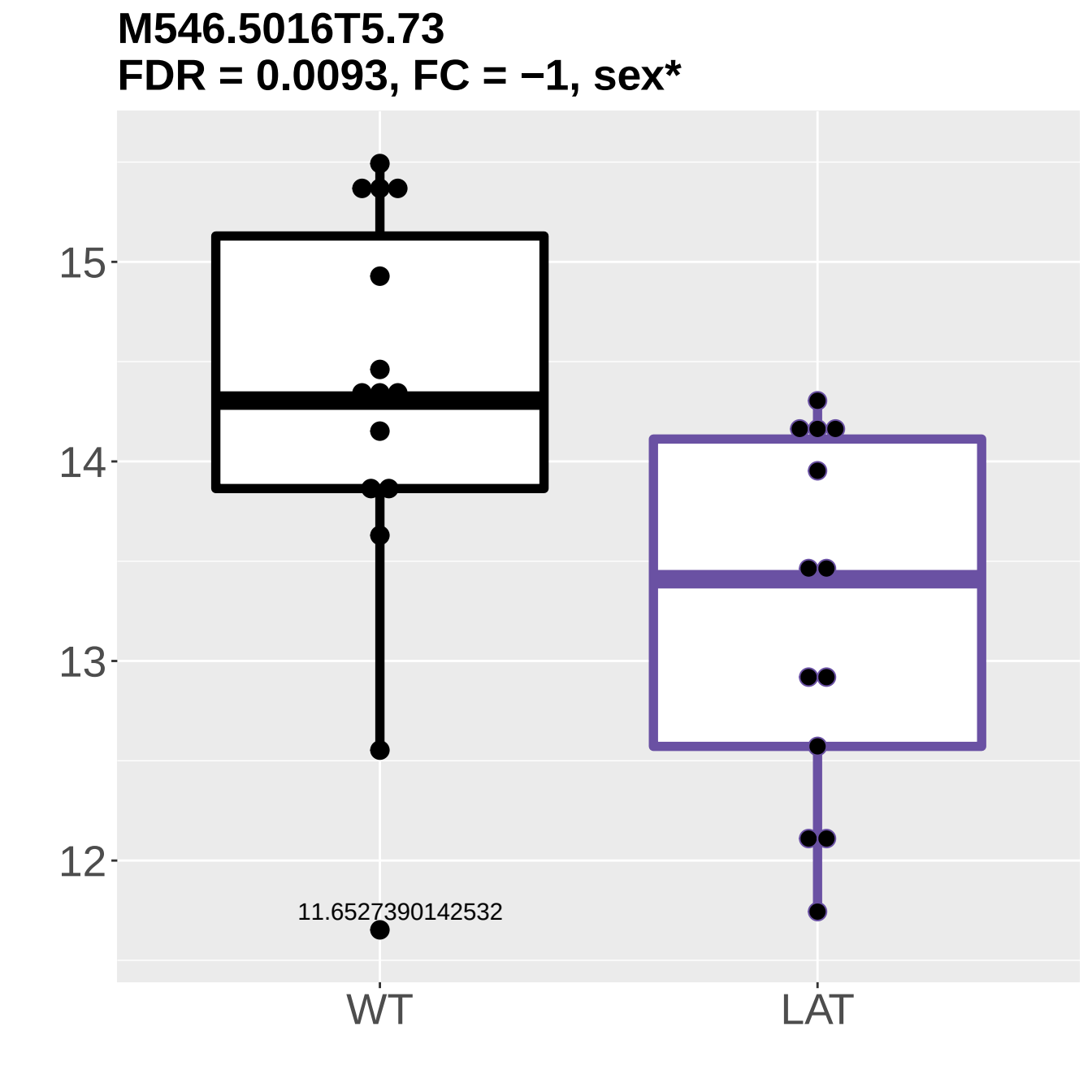

M432.1733T0.81
FDR = 0.0091, FC = −0.44
21.815017583239
20.8896055353022
21.5
21.0
20.5
WT
LAT

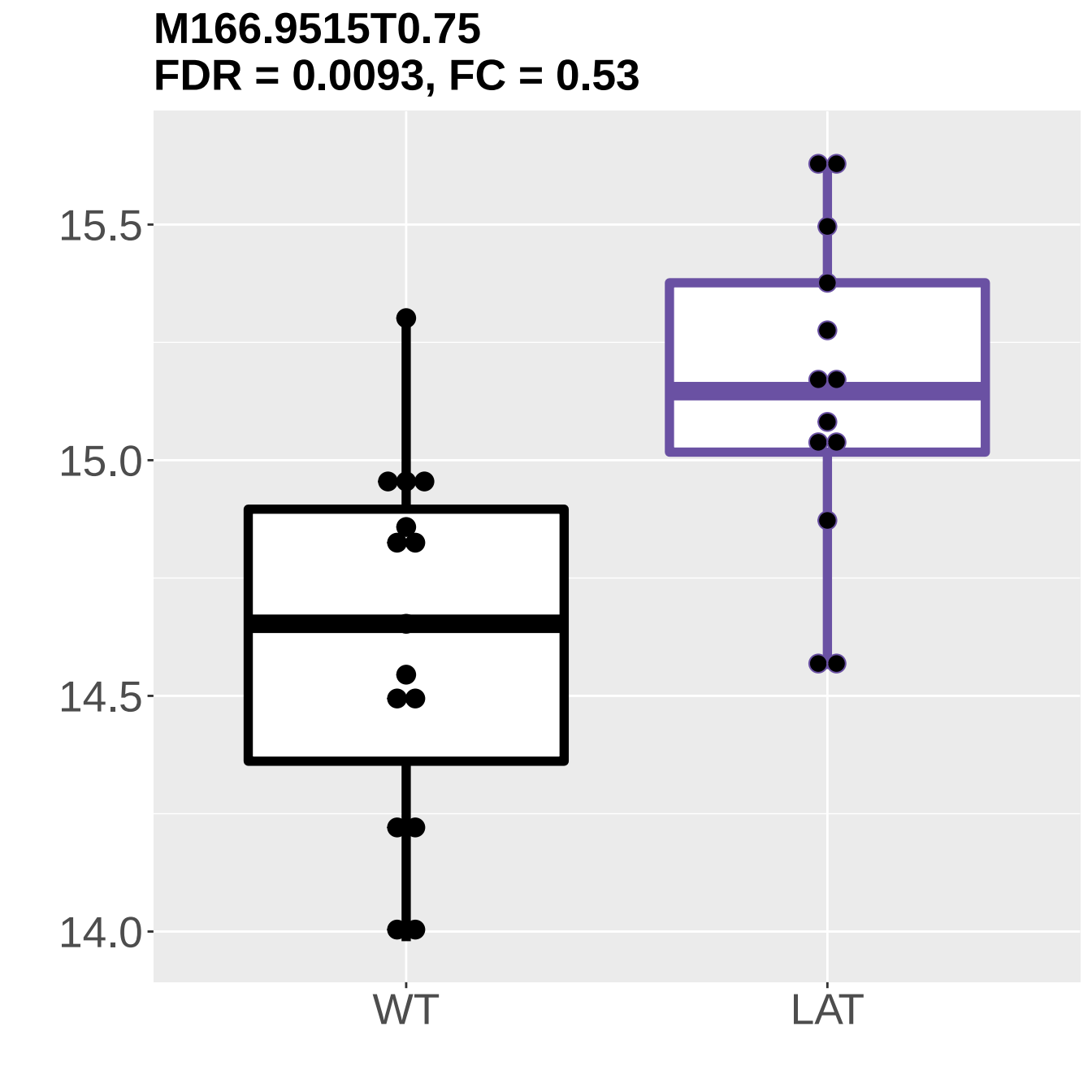

M346.1999T5.07
FDR = 0.0092, FC = −0.68
16.0
15.5
15.0
14.5
14.0
WT
LAT


M225.0527T0.7
FDR = 0.0092, FC = −0.5
13.5
13.0
12.5
12.0
11.8695188352782
WT
LAT


M173.3873T1.89
FDR = 0.0093, FC = −0.86
16
15
14
13
12.4091778161876
WT
LAT


M204.0876T0.84
FDR = 0.0093, FC = −0.44
21.0
20.5
20.0
19.5
WT
LAT


M546.5016T5.73
FDR = 0.0093, FC = −1, sex*
15
14
13
12
11.6527390142532
WT
LAT


M166.9515T0.75
FDR = 0.0093, FC = 0.53
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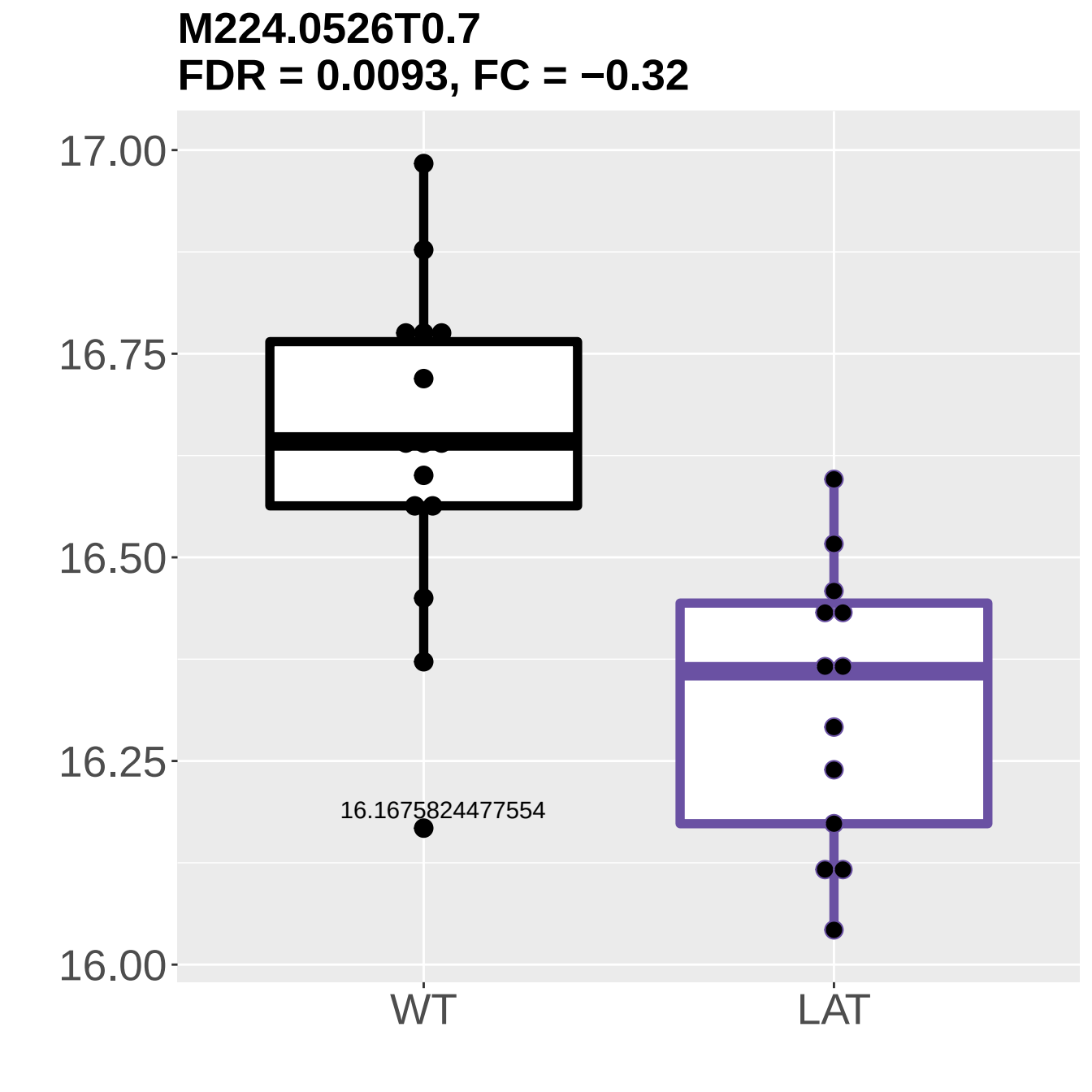
15.0
14.5
14.0
WT
LAT


M224.0526T0.7
FDR = 0.0093, FC = −0.32
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16.75
16.50
16.25
16.00
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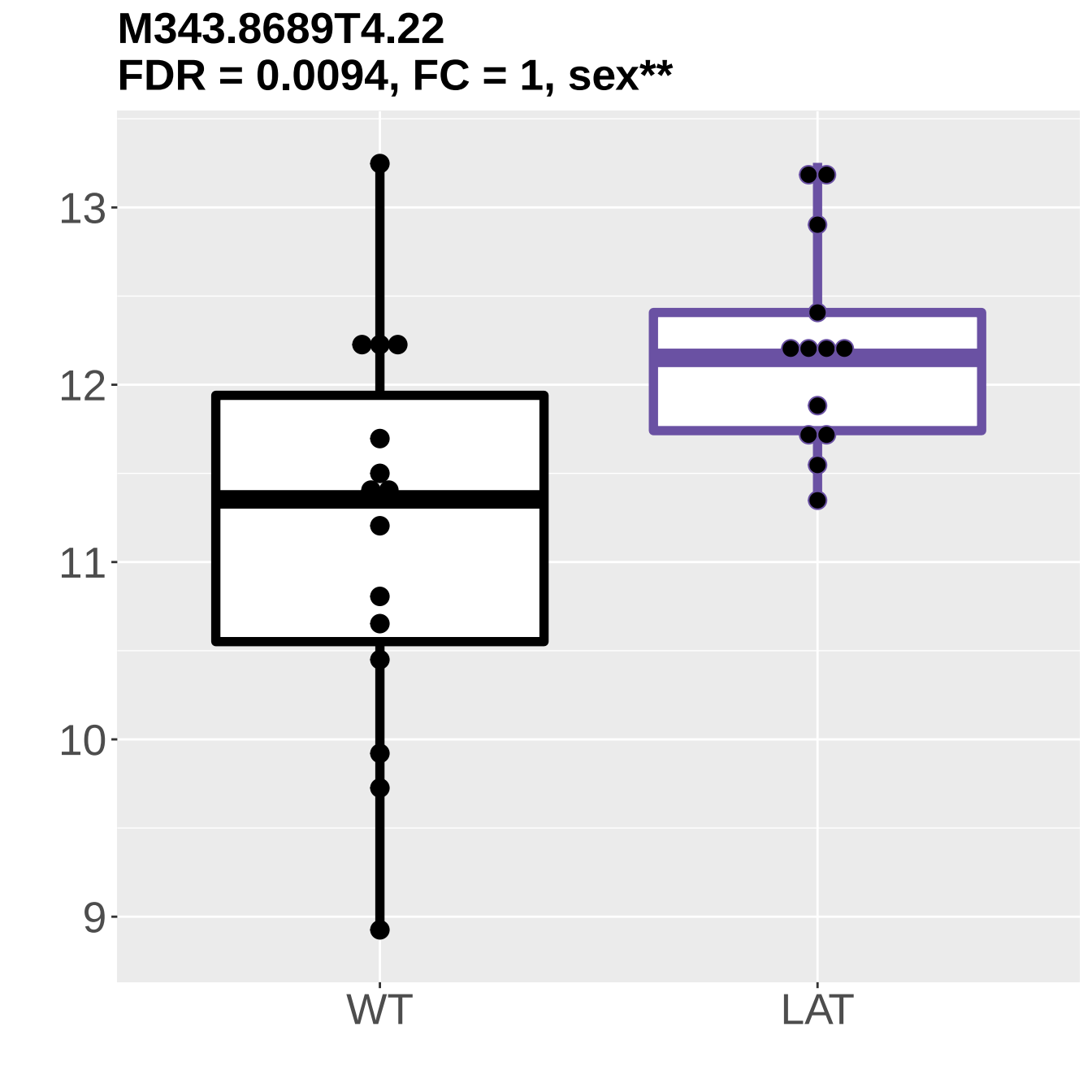
WT
LAT


M343.8689T4.22
FDR = 0.0094, FC = 1, sex**
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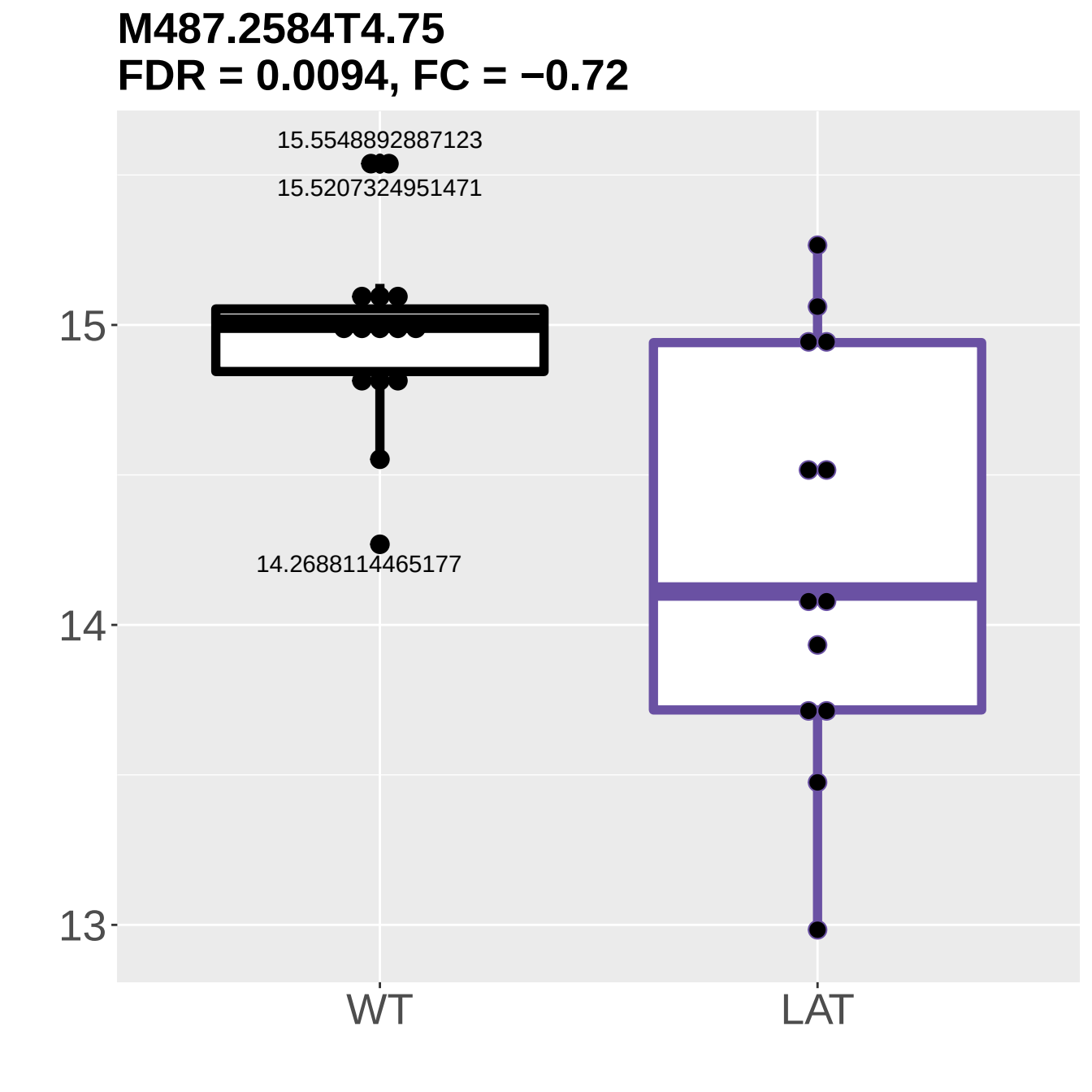
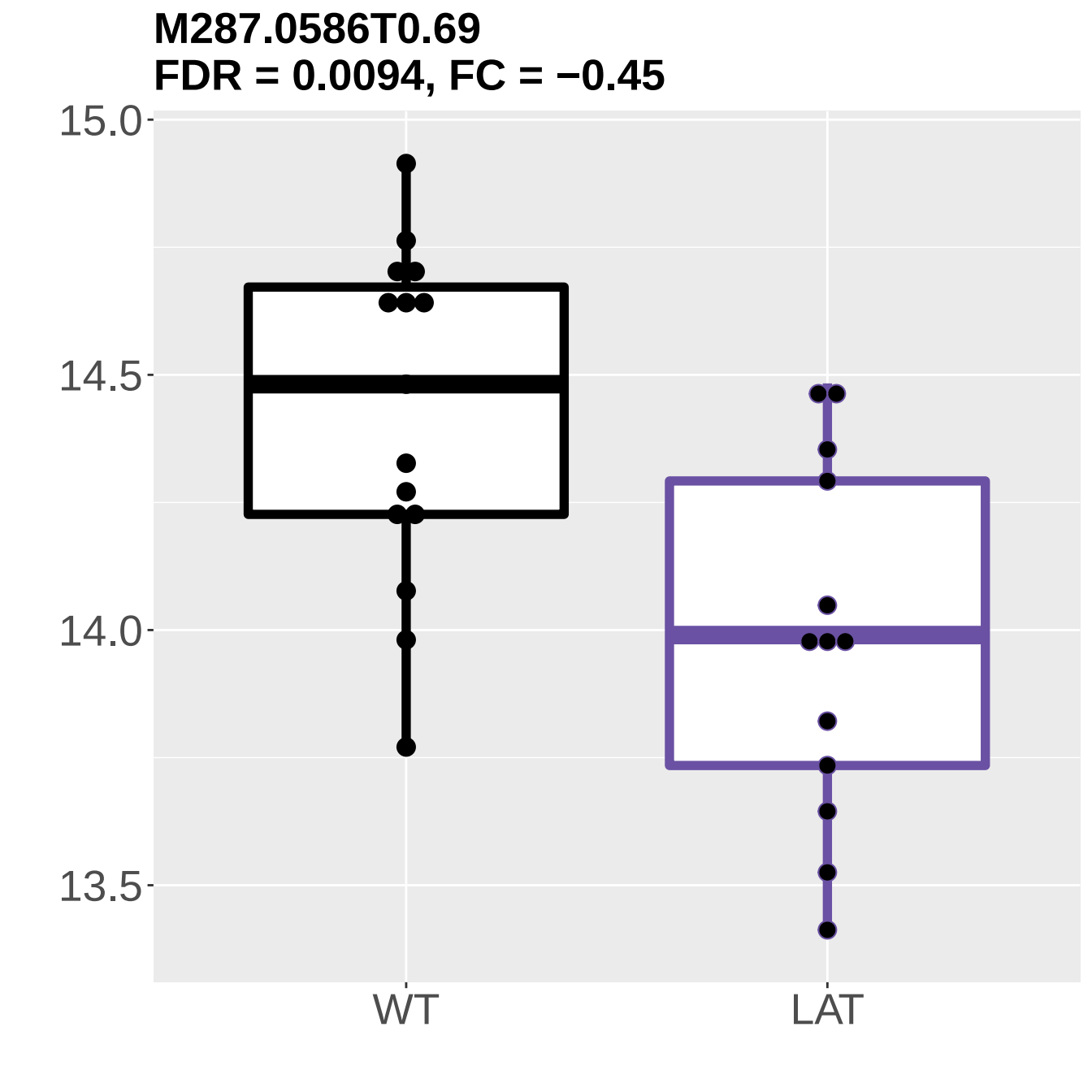
12
11
10
9
WT
LAT


M487.2584T4.75
FDR = 0.0094, FC = −0.72
15.5548892887123
15.5207324951471
14.2688114465177
15
14
13
WT
LAT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FDR = 0.0094, FC = −0.45
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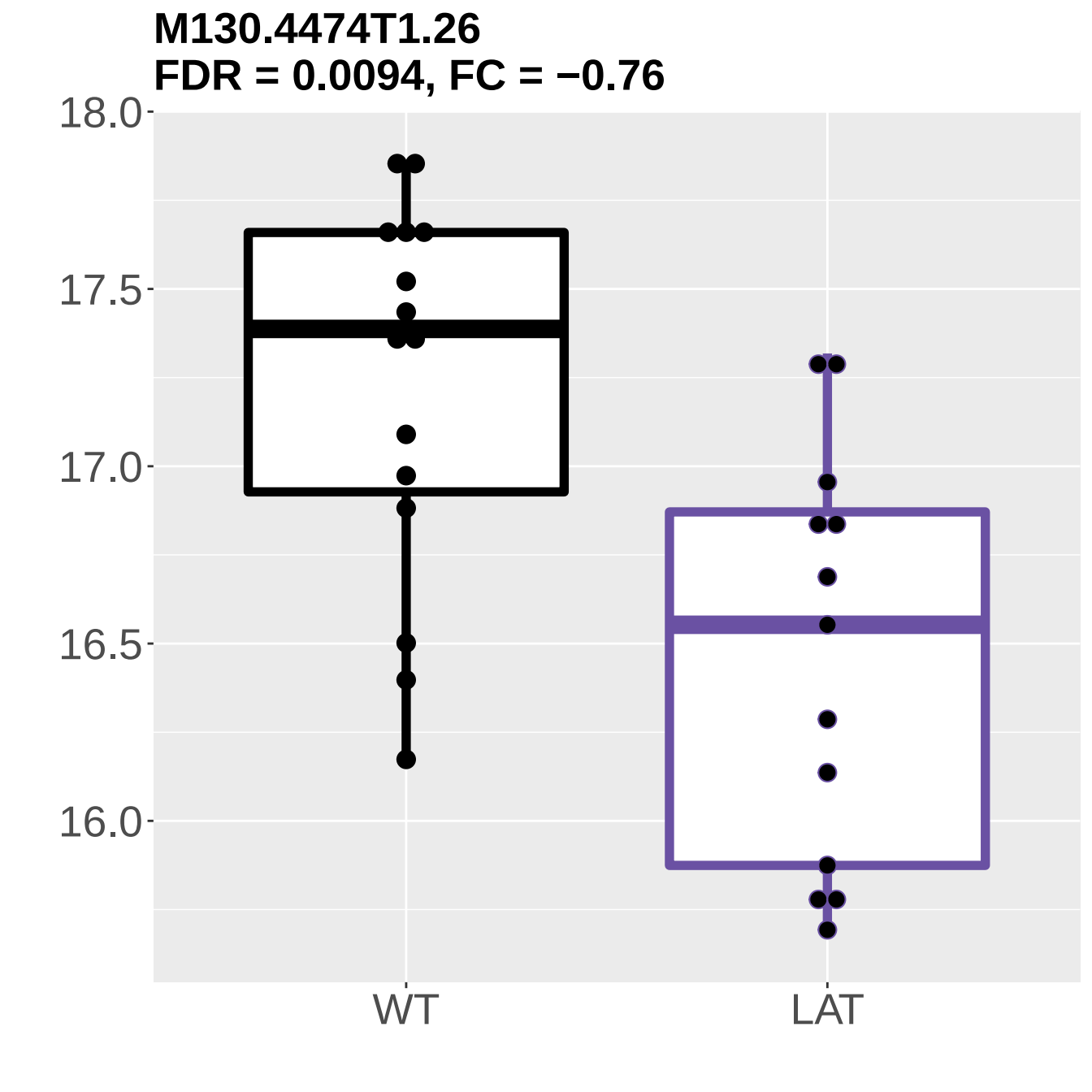
14.5
14.0
13.5
WT
LAT


M130.4474T1.26
FDR = 0.0094, FC = −0.76
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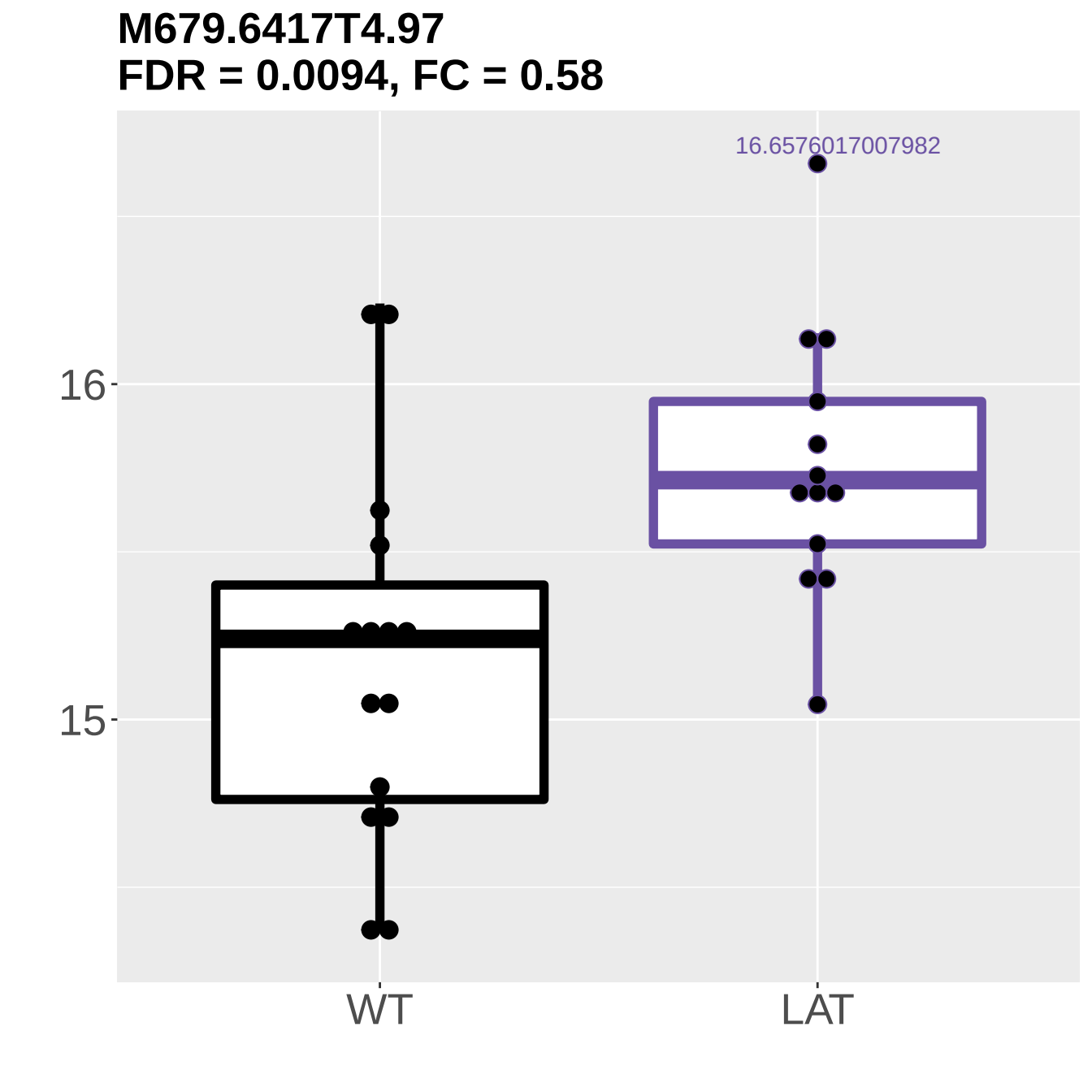
17.0
16.5
16.0
WT
LAT


M679.6417T4.97
FDR = 0.0094, FC = 0.58
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16
15
WT
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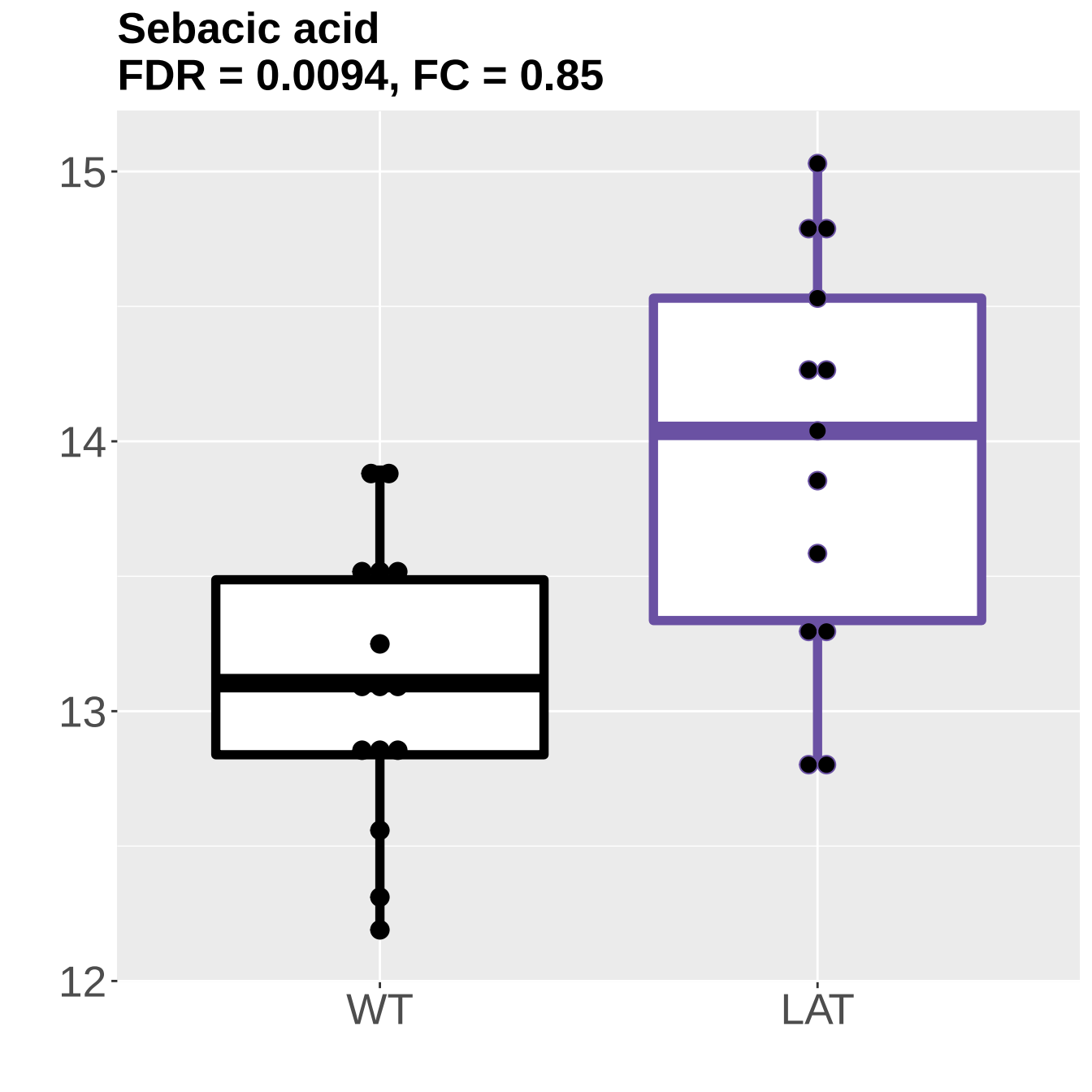
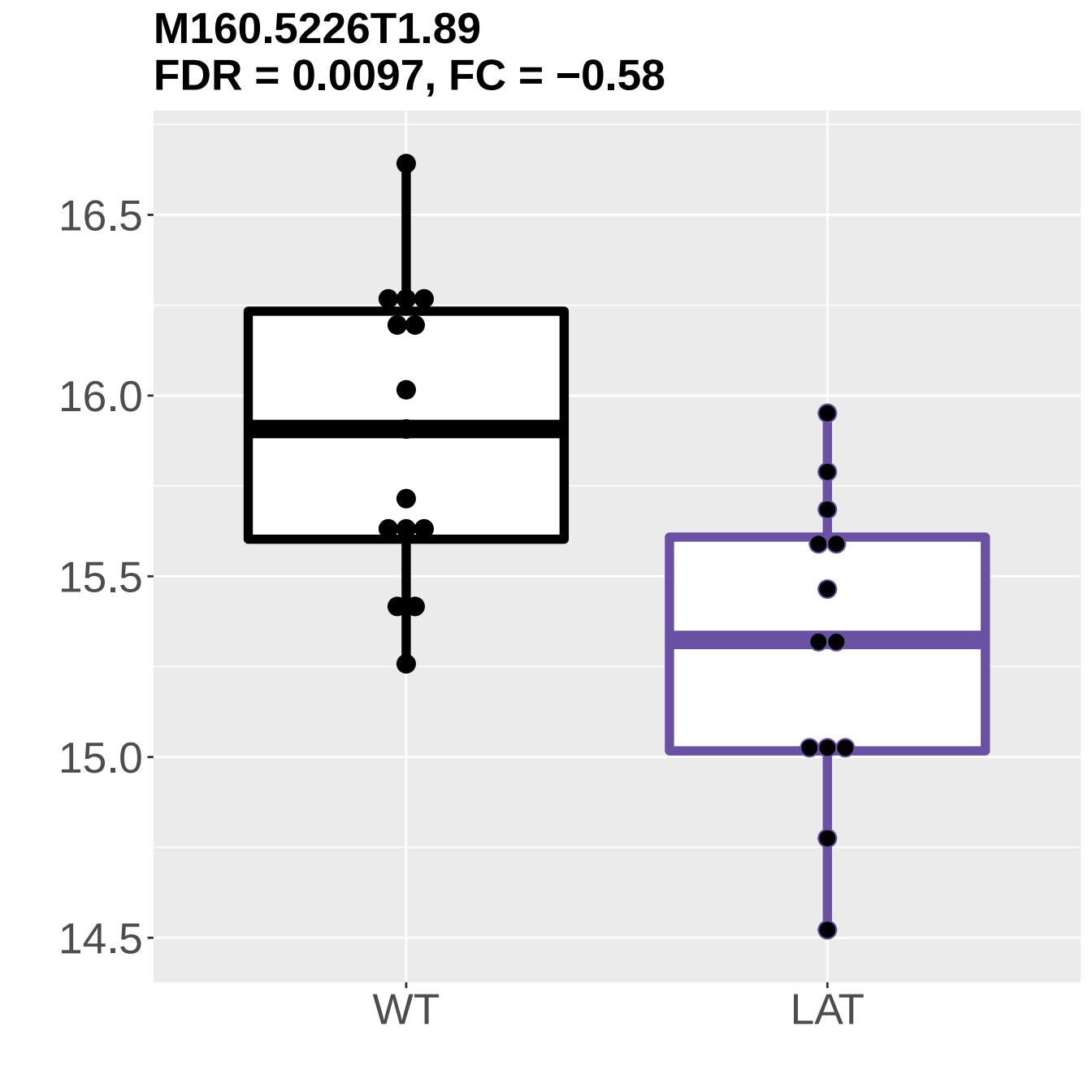

Sebacic acid
FDR = 0.0094, FC = 0.85
15
14
13
12
WT
LAT


M160.5226T1.89
FDR = 0.0097, FC = −0.58
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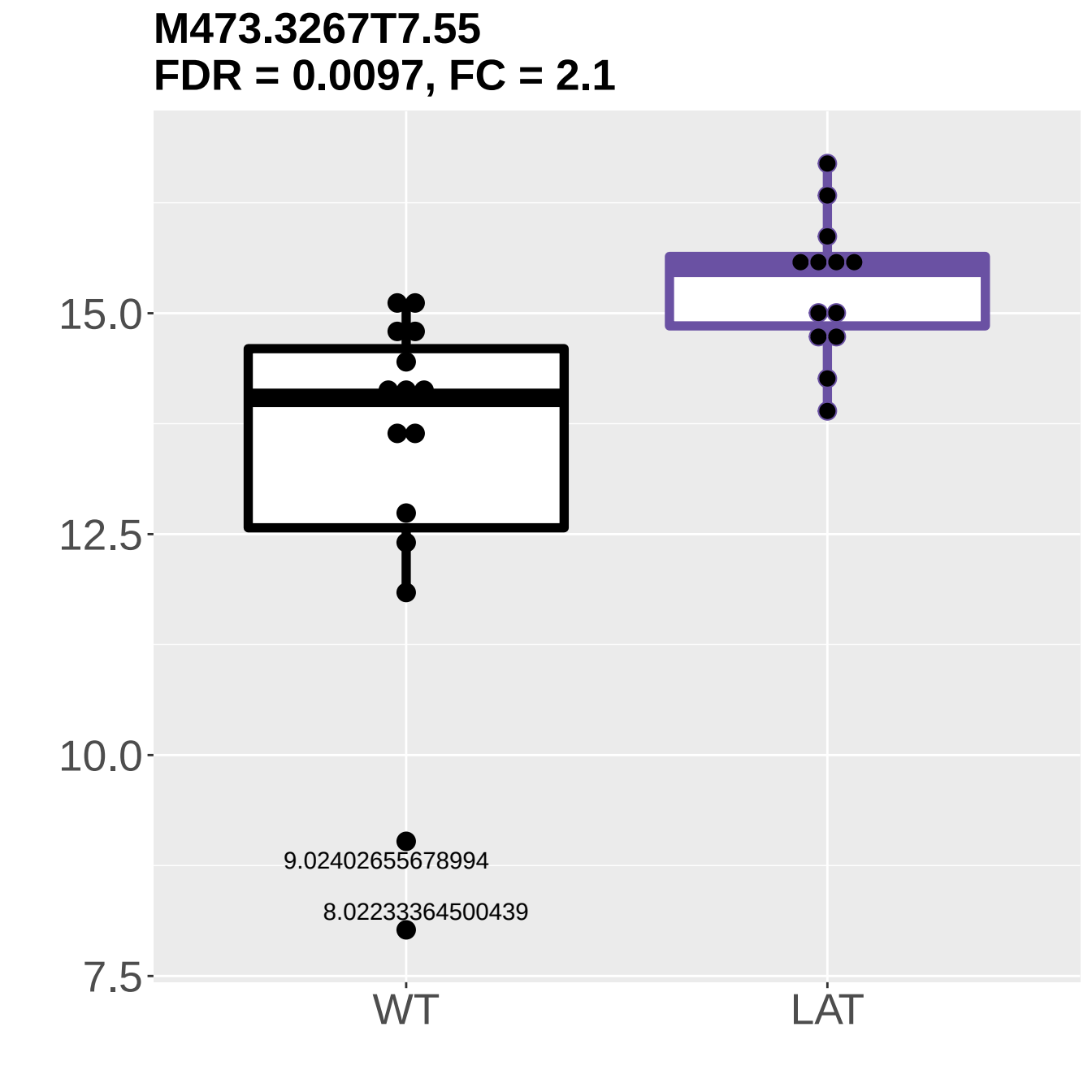
16.0
15.5
15.0
14.5
WT
LAT


M473.3267T7.55
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12.5
10.0
7.5
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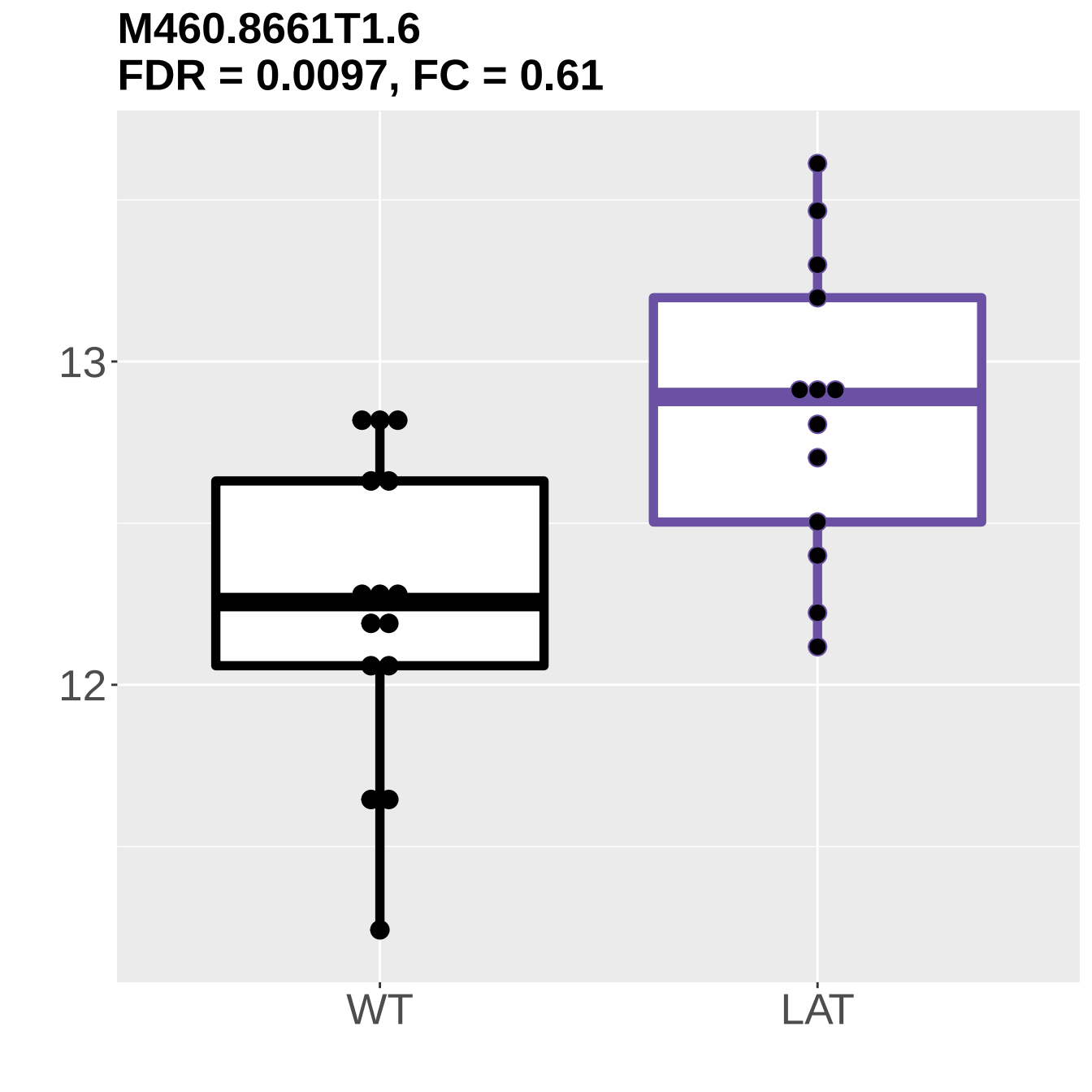
WT
LAT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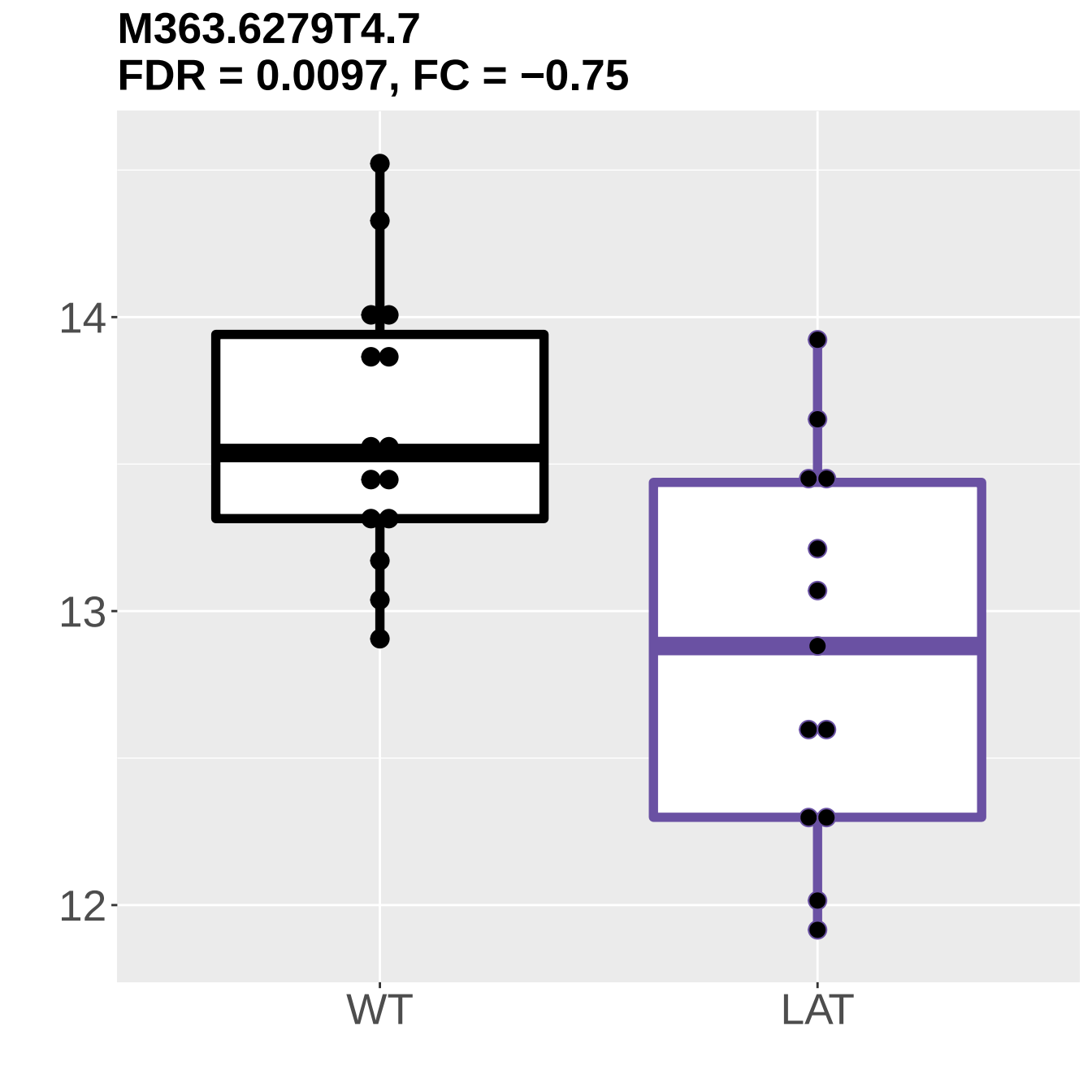
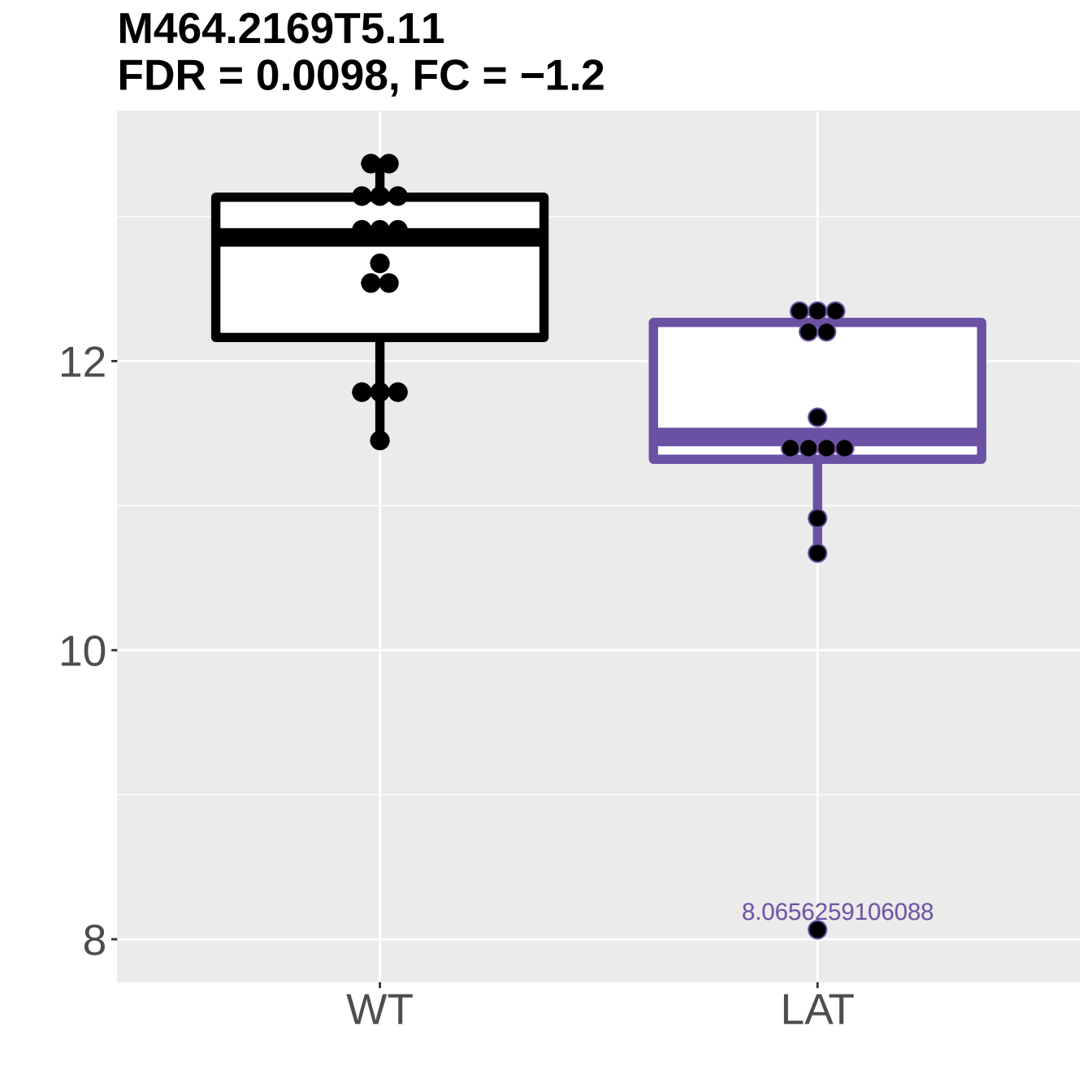
FDR = 0.0097, FC = 0.61
13
12
WT
LAT


M363.6279T4.7
FDR = 0.0097, FC = −0.75
14
13
12
WT
LAT


M464.2169T5.11
FDR = 0.0098, FC = −1.2
12
10
8
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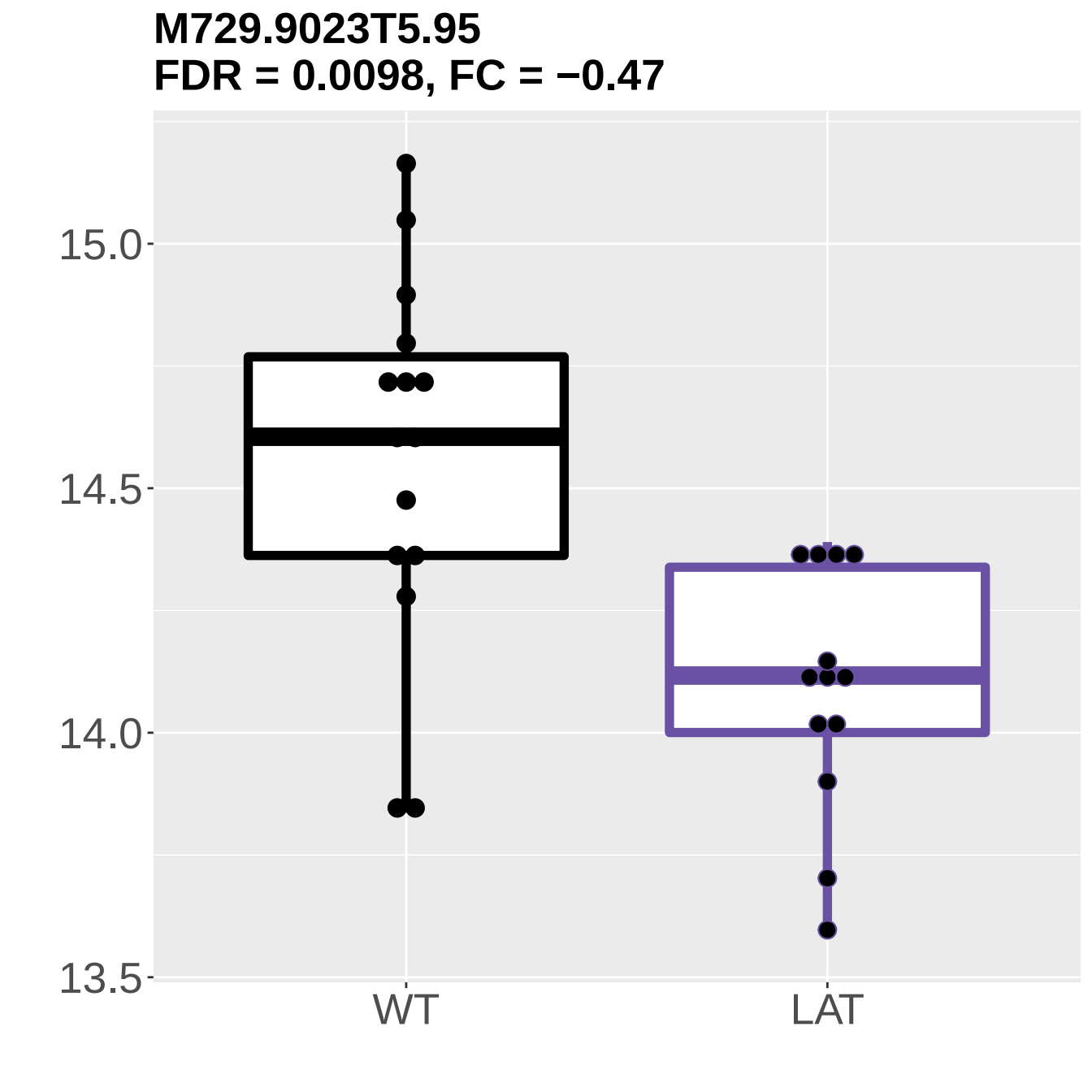
WT
LAT


M729.9023T5.95
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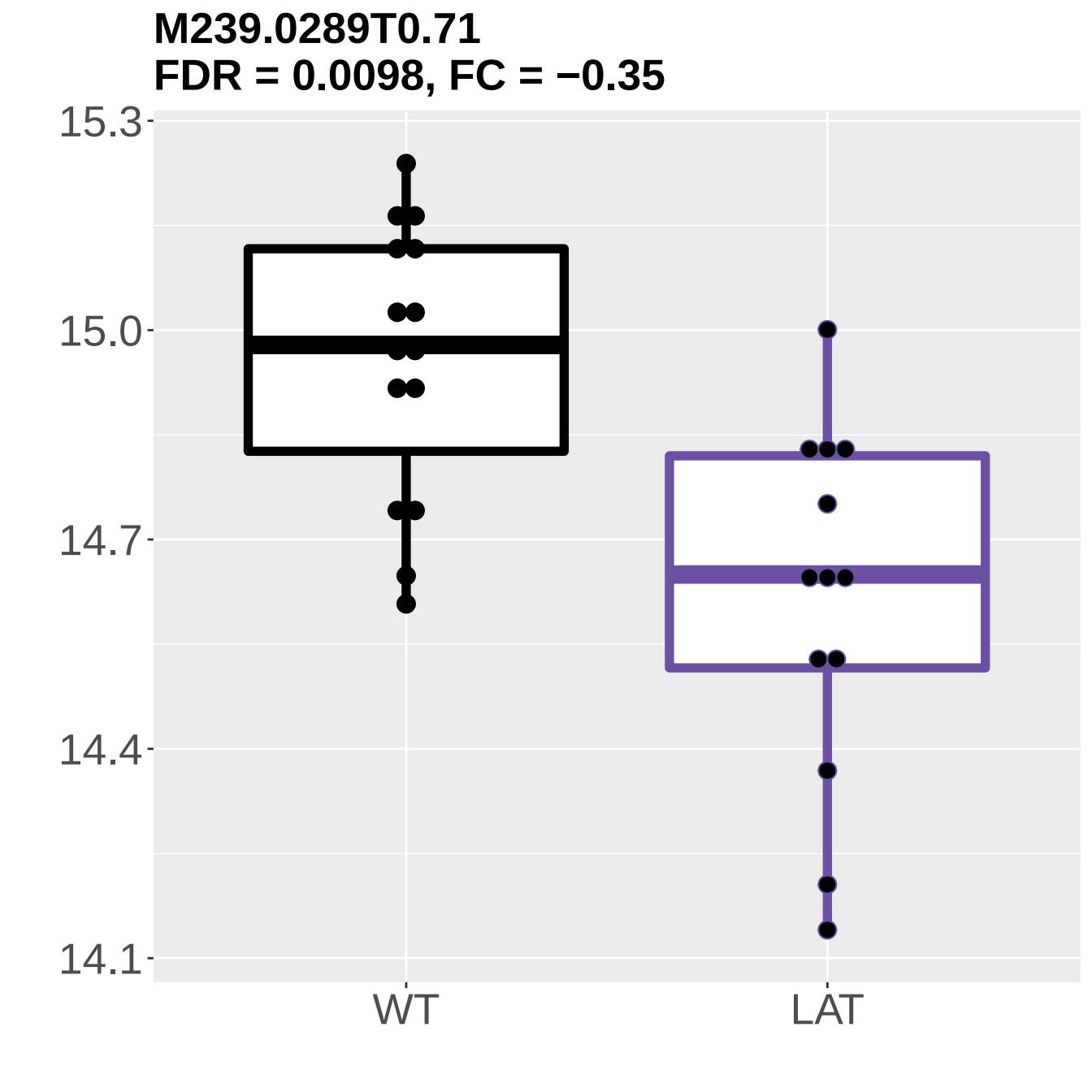
14.0
13.5
WT
LAT


M239.0289T0.71
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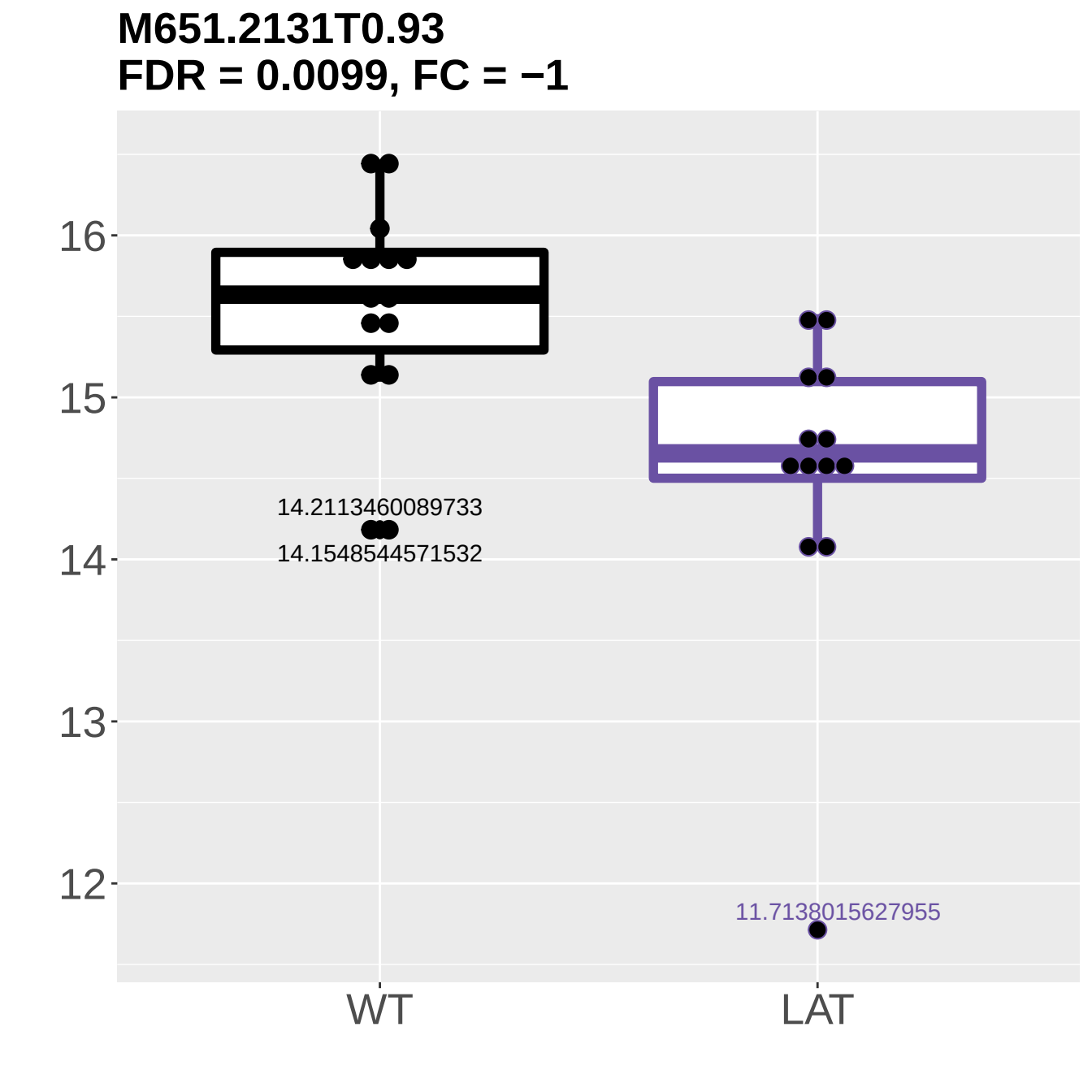
14.7
14.4
14.1
WT
LAT


M651.2131T0.93
FDR = 0.0099, FC = −1
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15
14
13
12
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14.1548544571532
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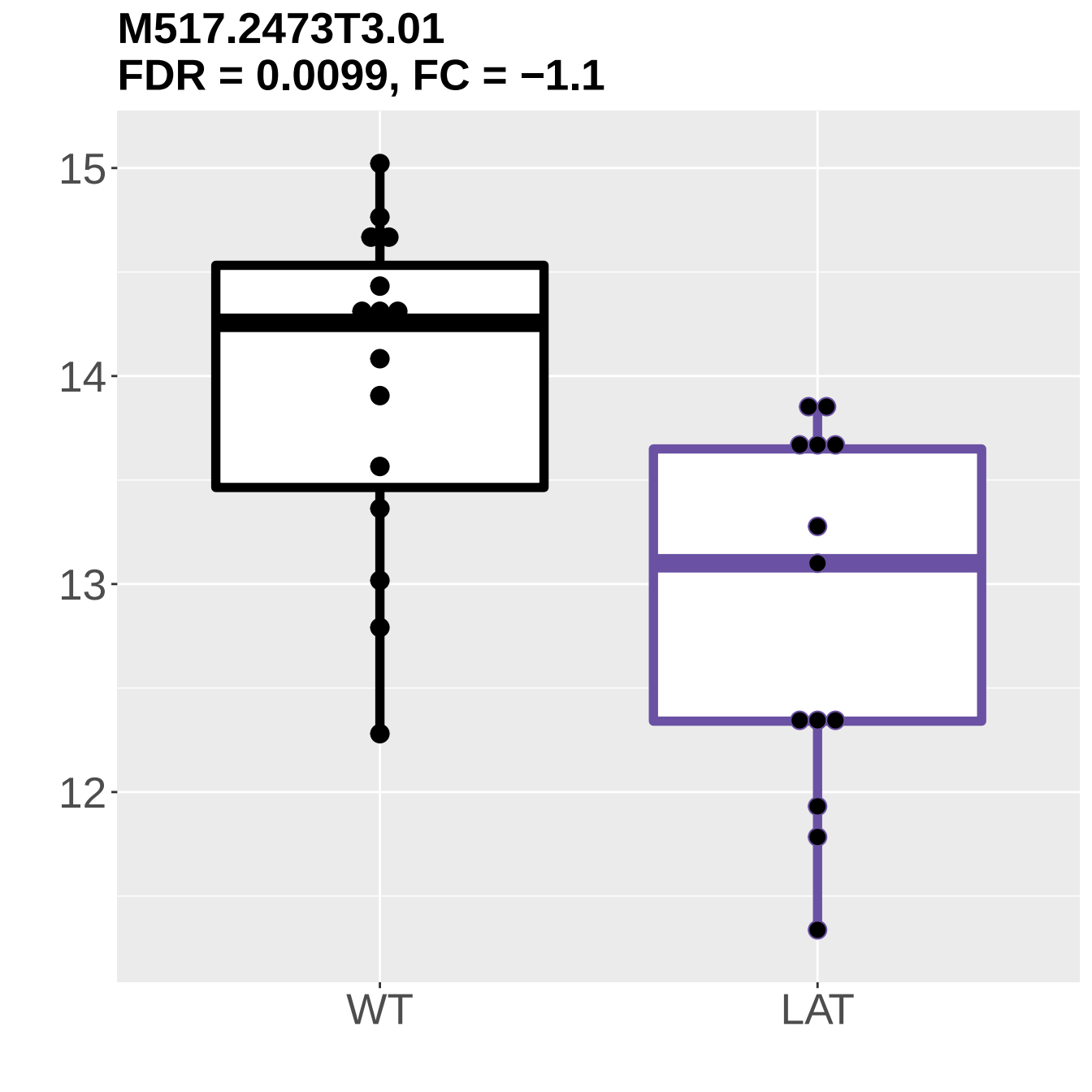
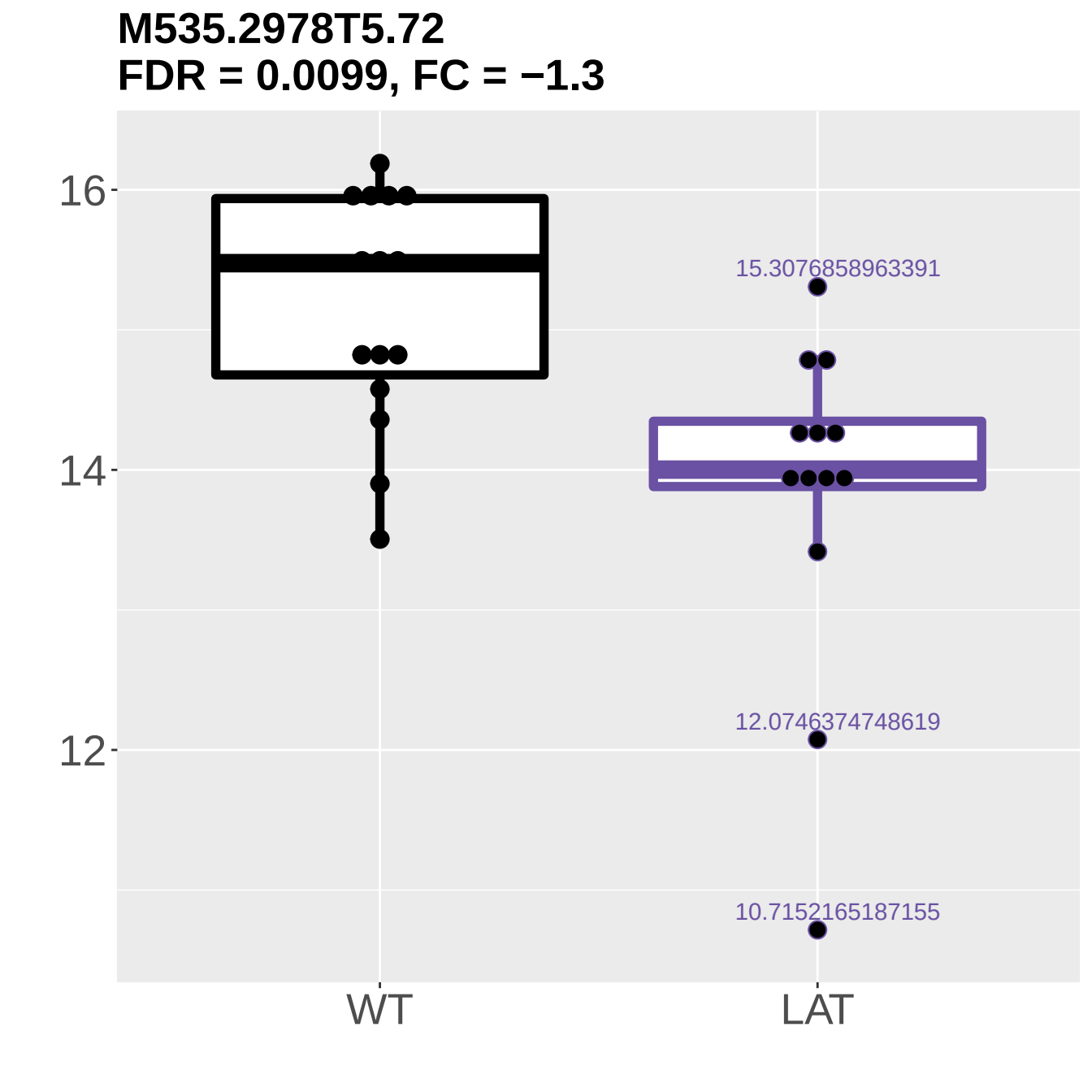
WT
LAT


M517.2473T3.01
FDR = 0.0099, FC = −1.1
15
14
13
12
WT
LAT


M535.2978T5.72
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14
12
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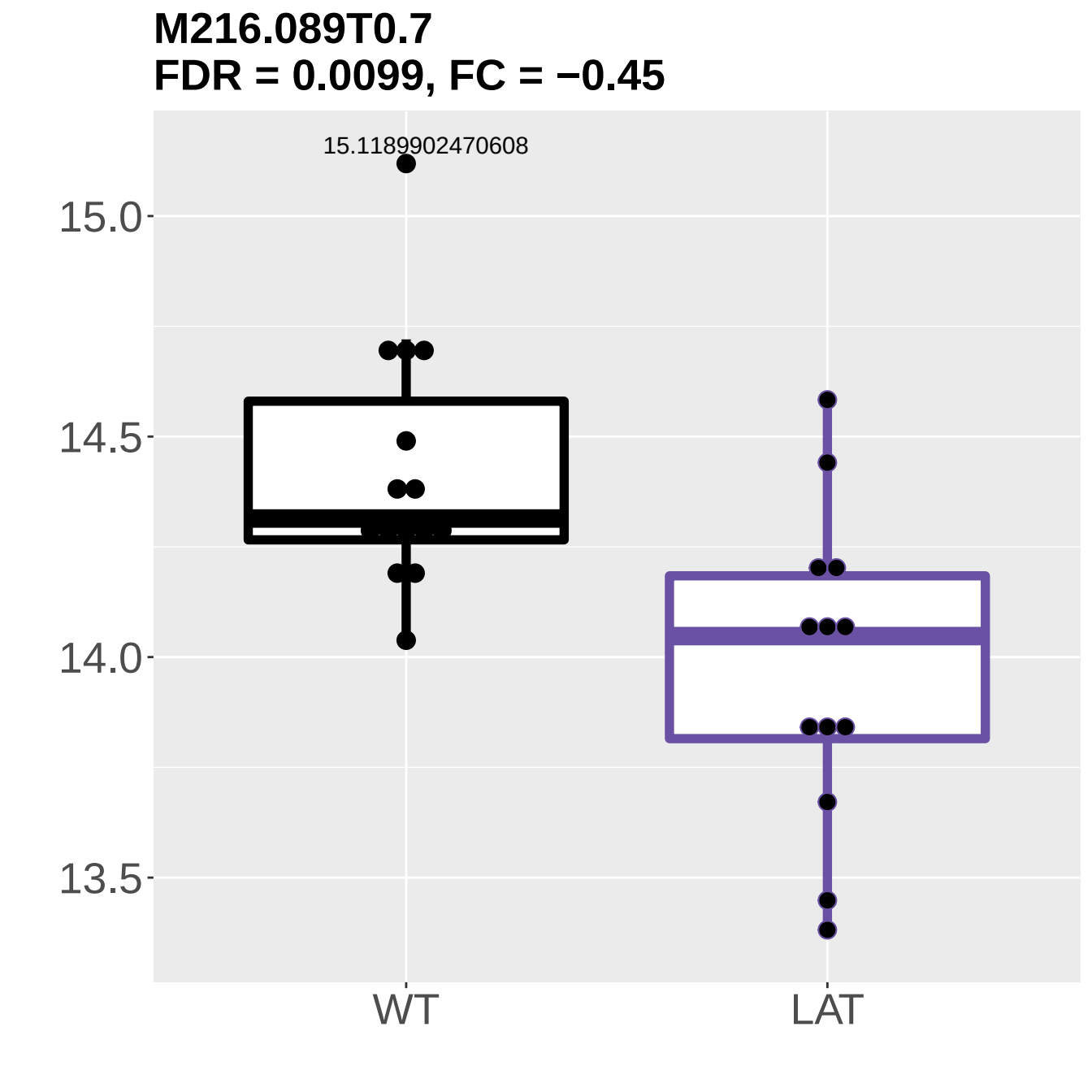
WT
LAT


M216.089T0.7
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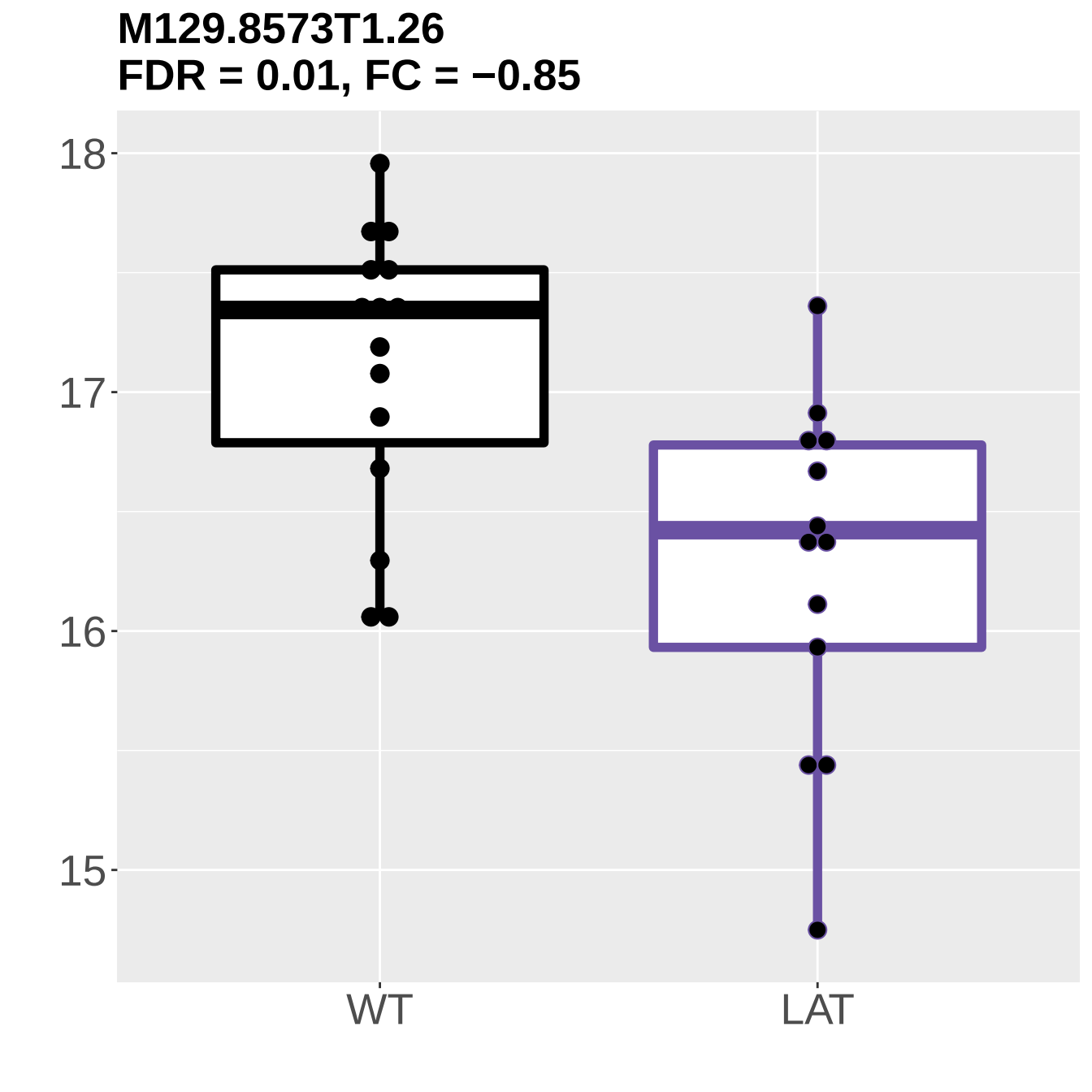
14.5
14.0
13.5
WT
LAT


M129.8573T1.26
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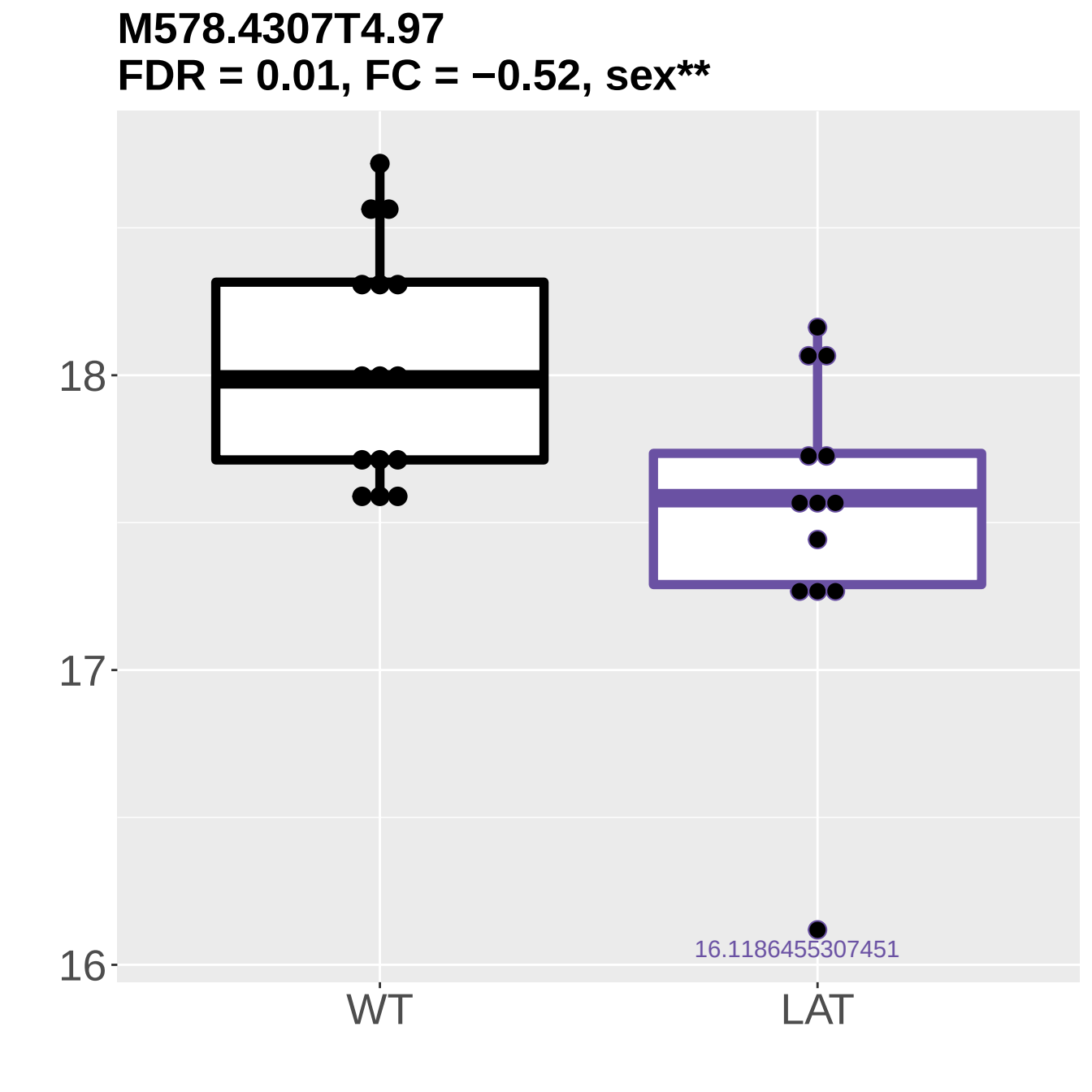
18
17
16
15
WT
LAT


M578.4307T4.97
FDR = 0.01, FC = −0.52, sex**
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17
16
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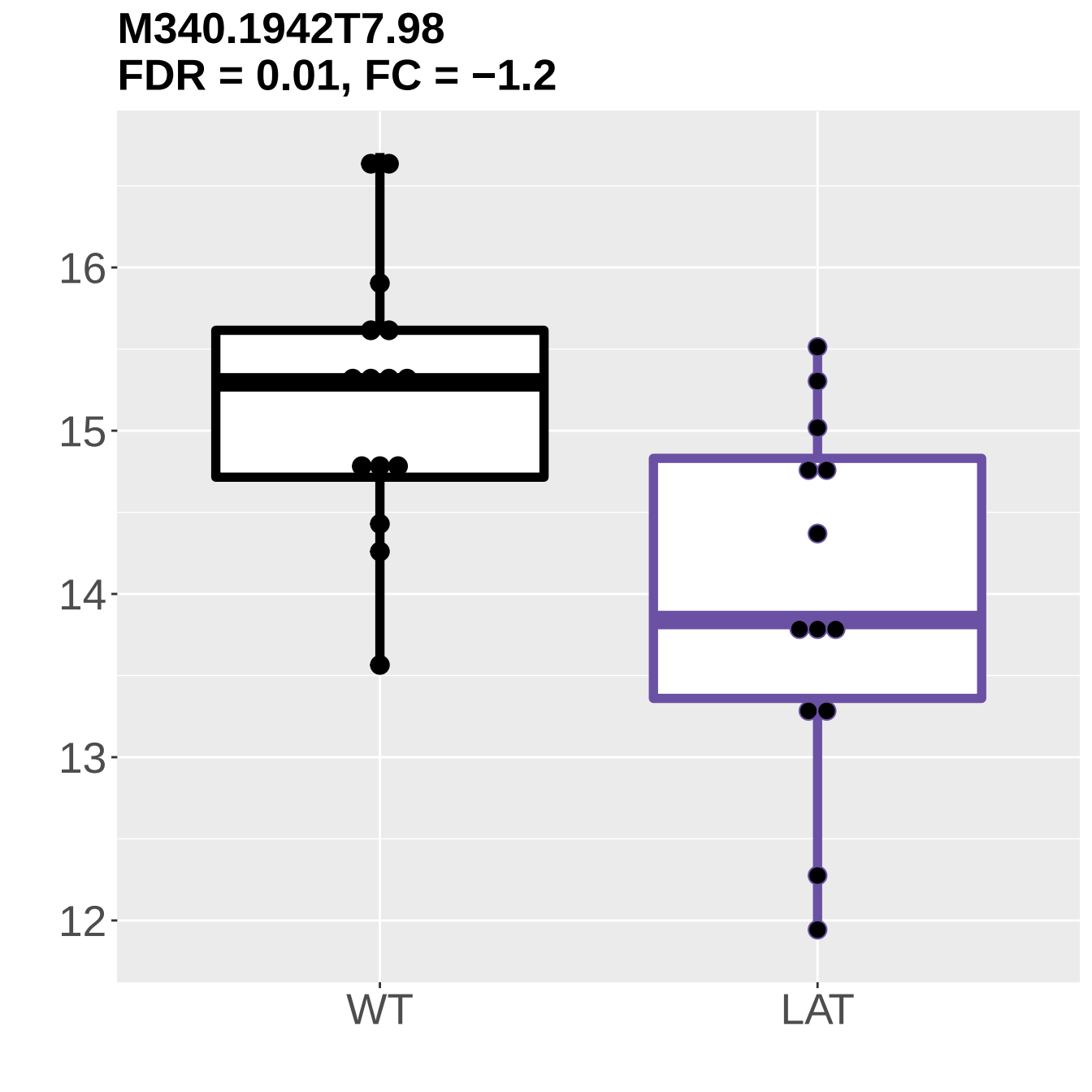
WT
LAT


M340.1942T7.98
FDR = 0.01, FC = −1.2
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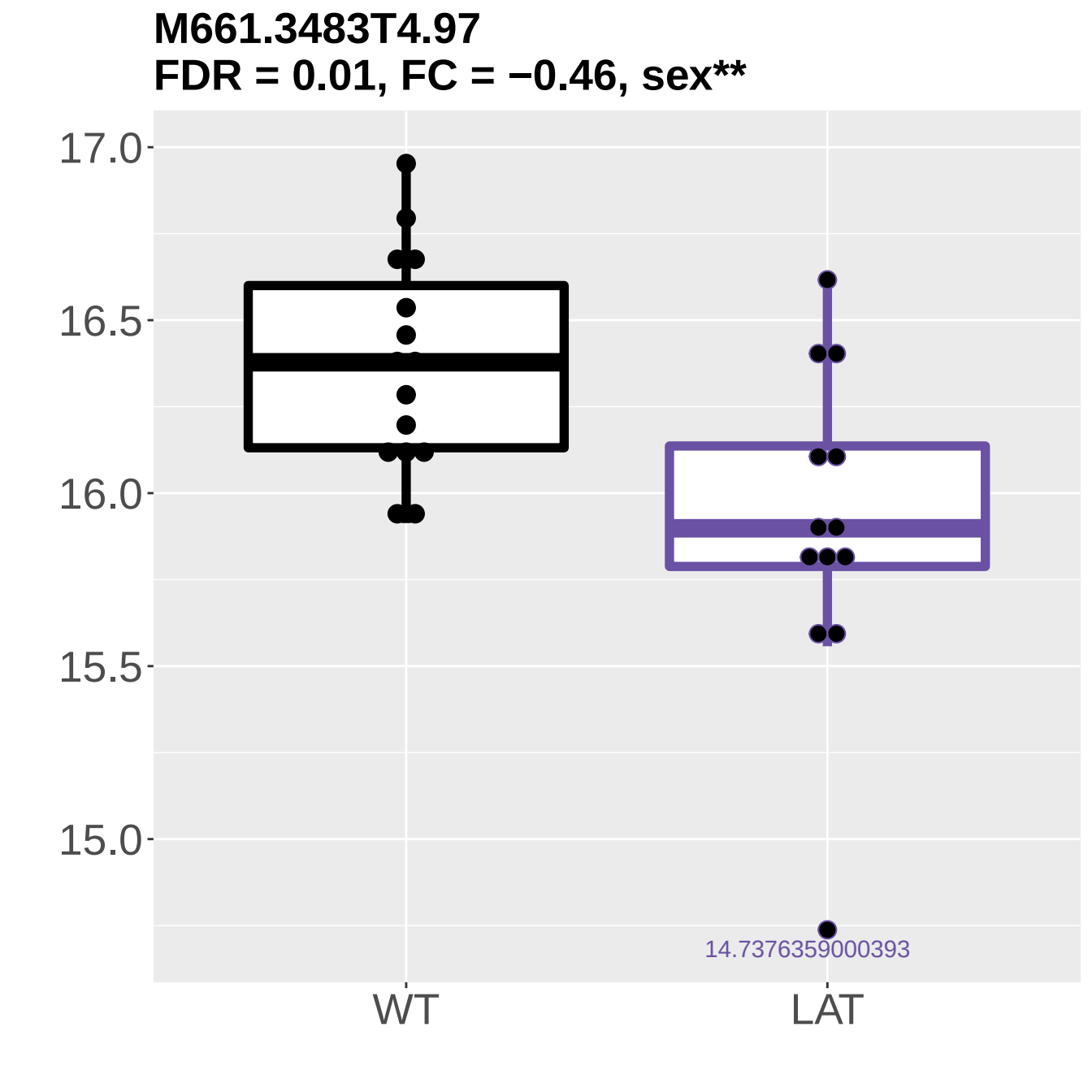
15
14
13
12
WT
LAT


M661.3483T4.97
FDR = 0.01, FC = −0.46, sex**
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16.0
15.5
15.0
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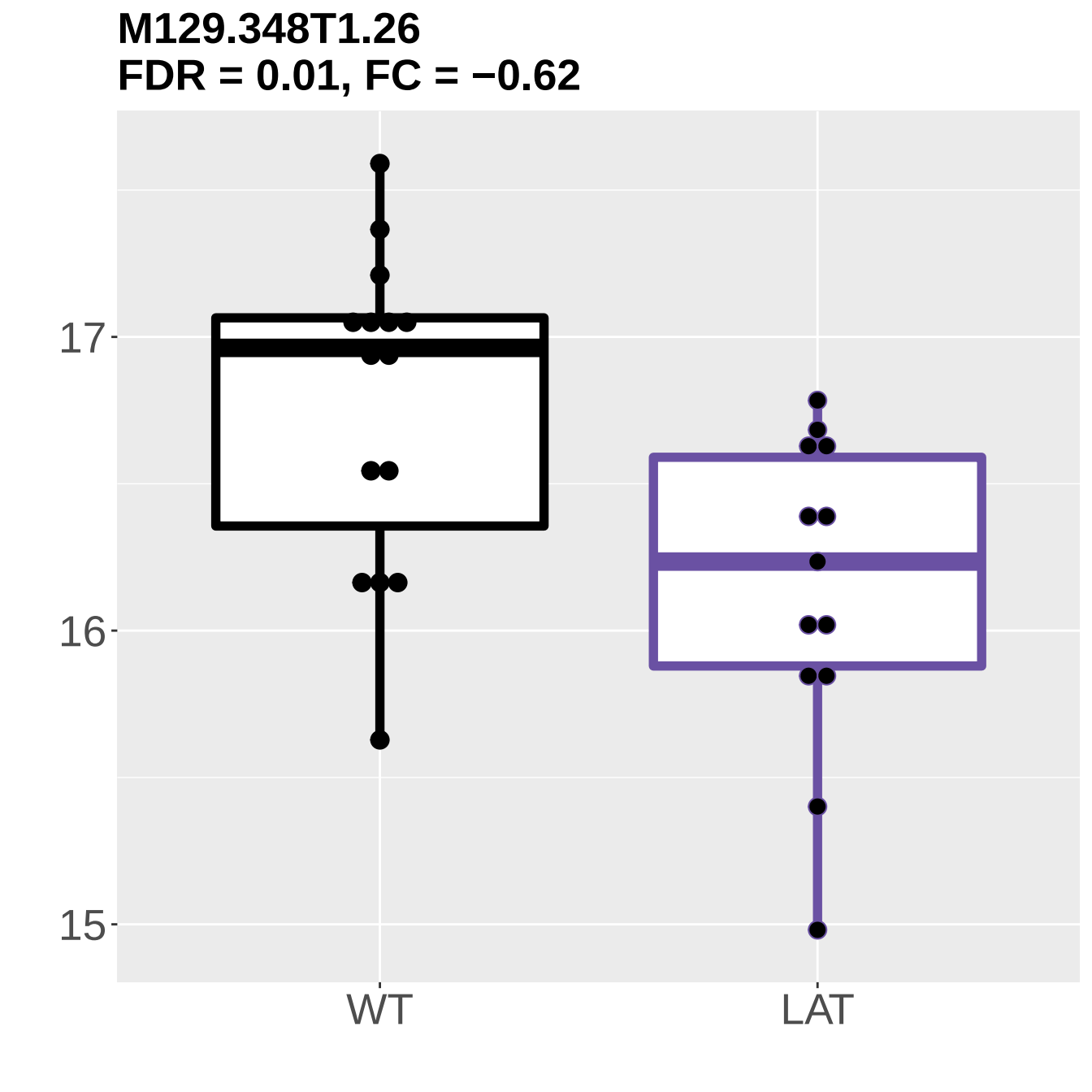
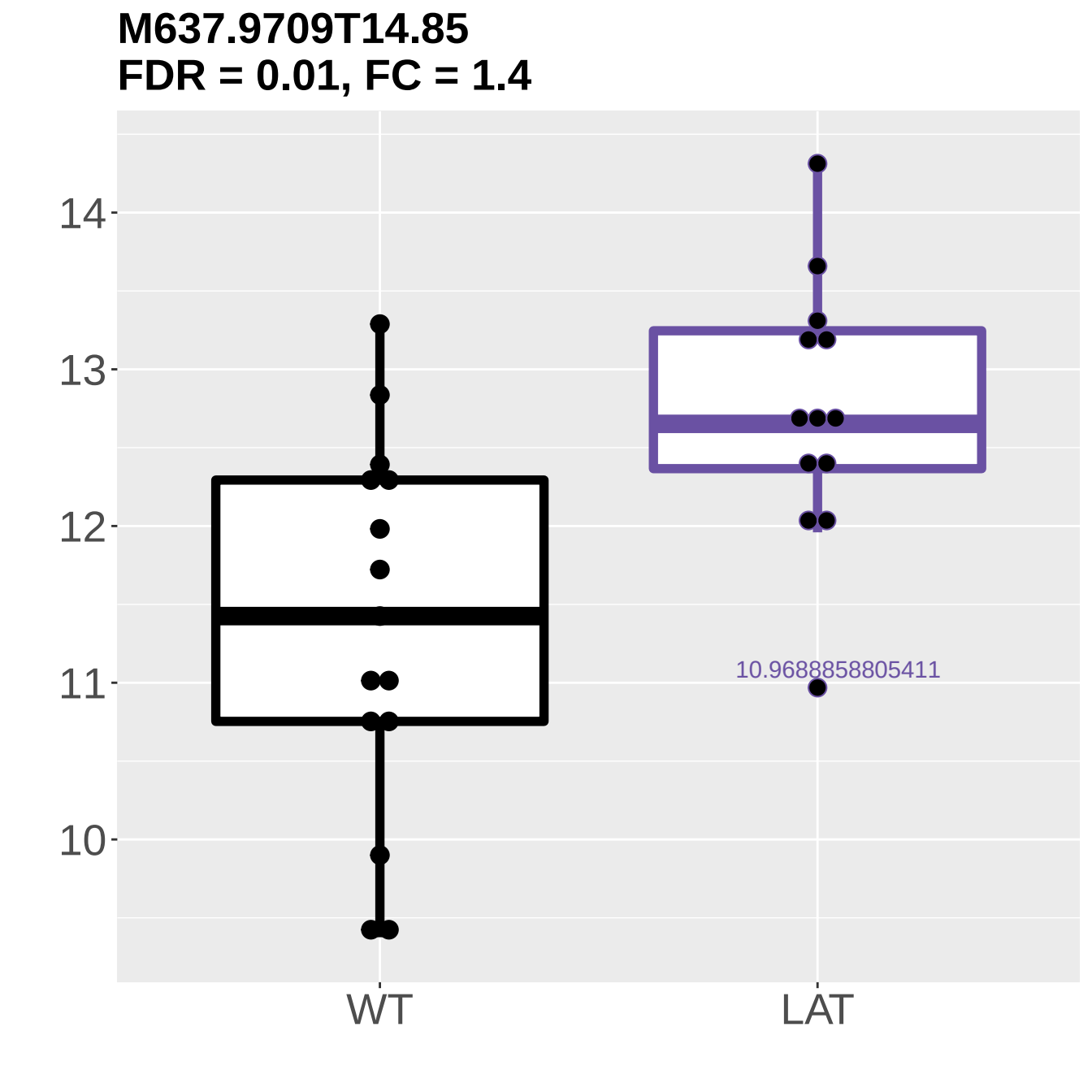
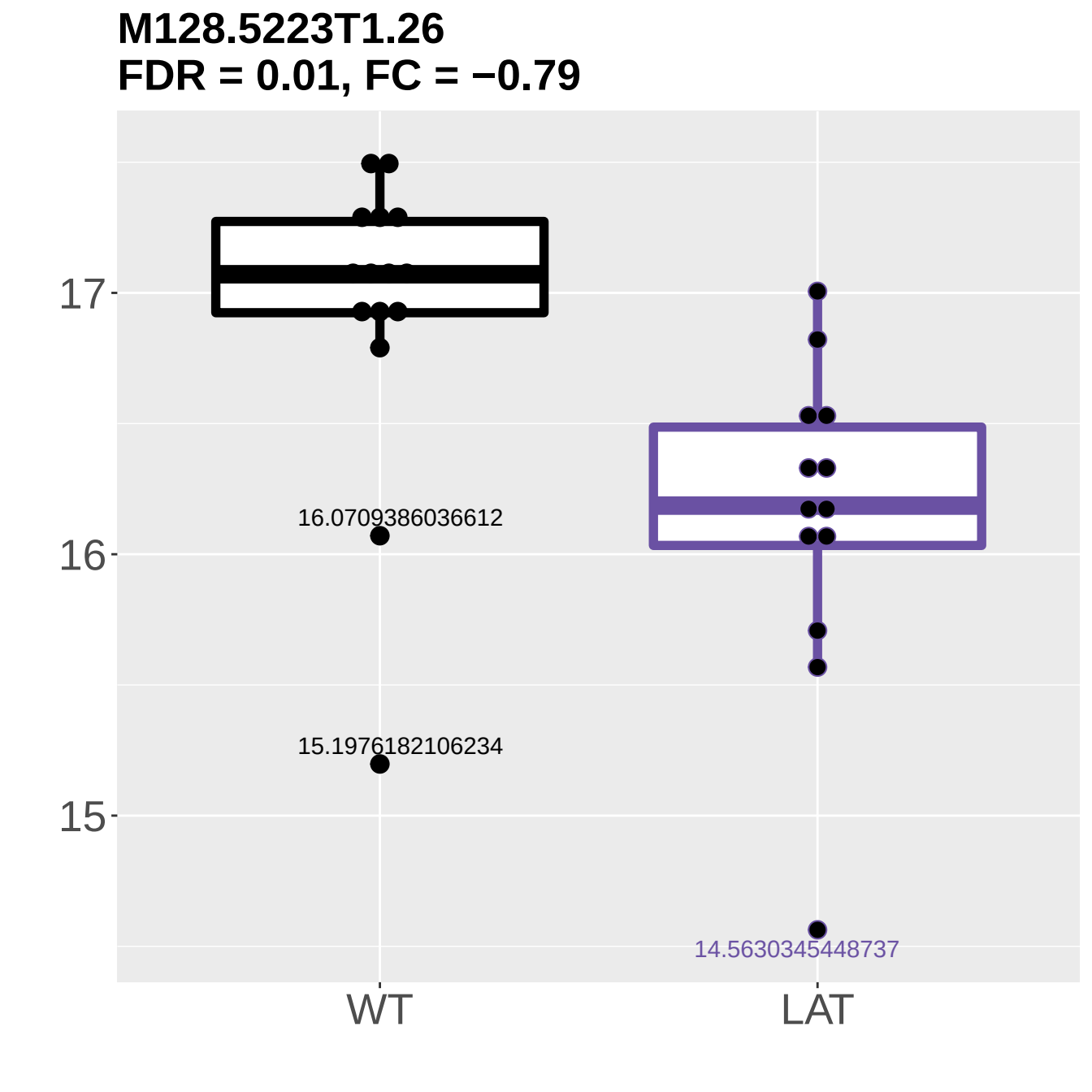
WT
LAT


M129.348T1.26
FDR = 0.01, FC = −0.62
17
16
15
WT
LAT


M637.9709T14.85
FDR = 0.01, FC = 1.4
14
13
12
11
10
10.9688858805411
WT
LAT


M128.5223T1.26
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16
15
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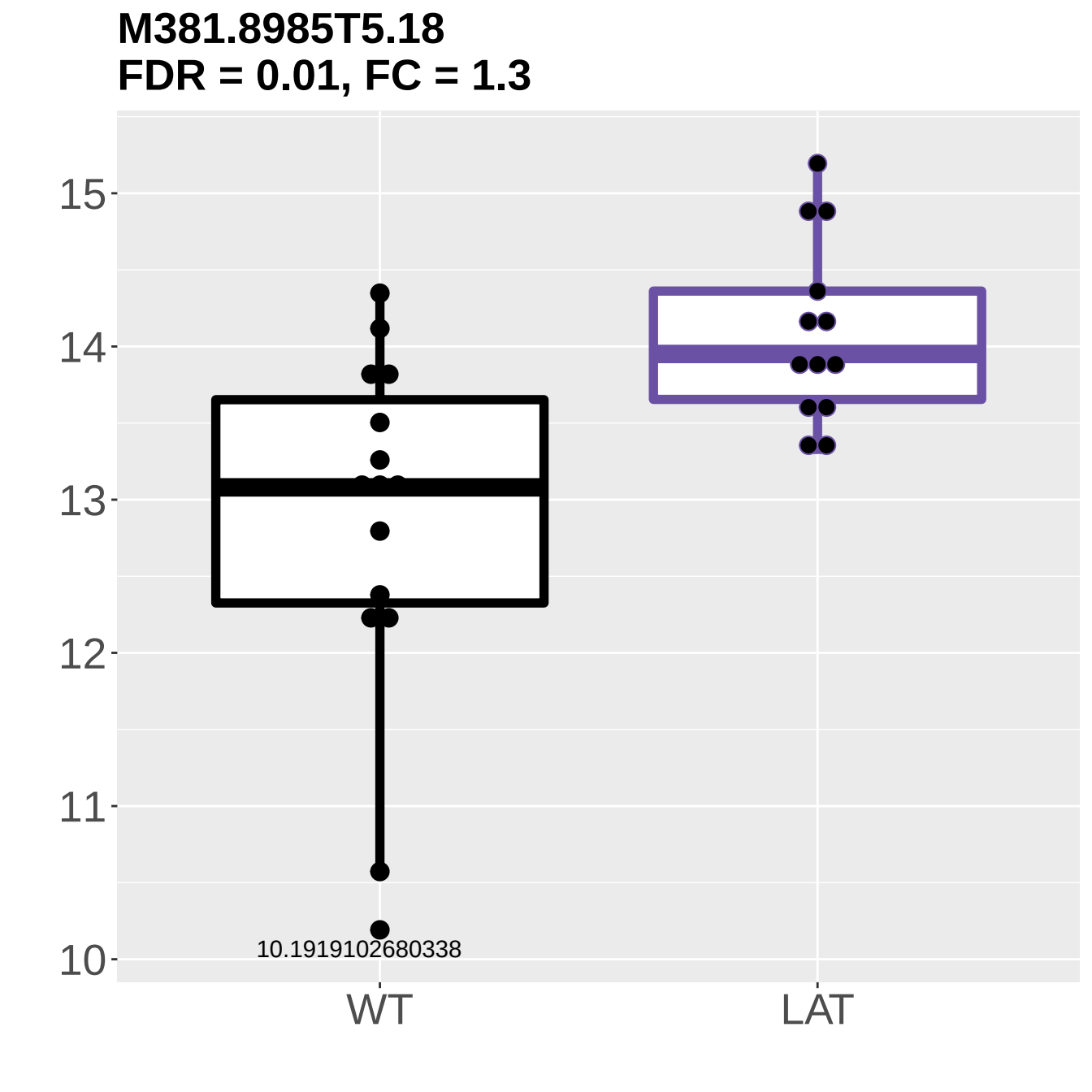
14.5630345448737
WT
LAT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14
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12
11
10
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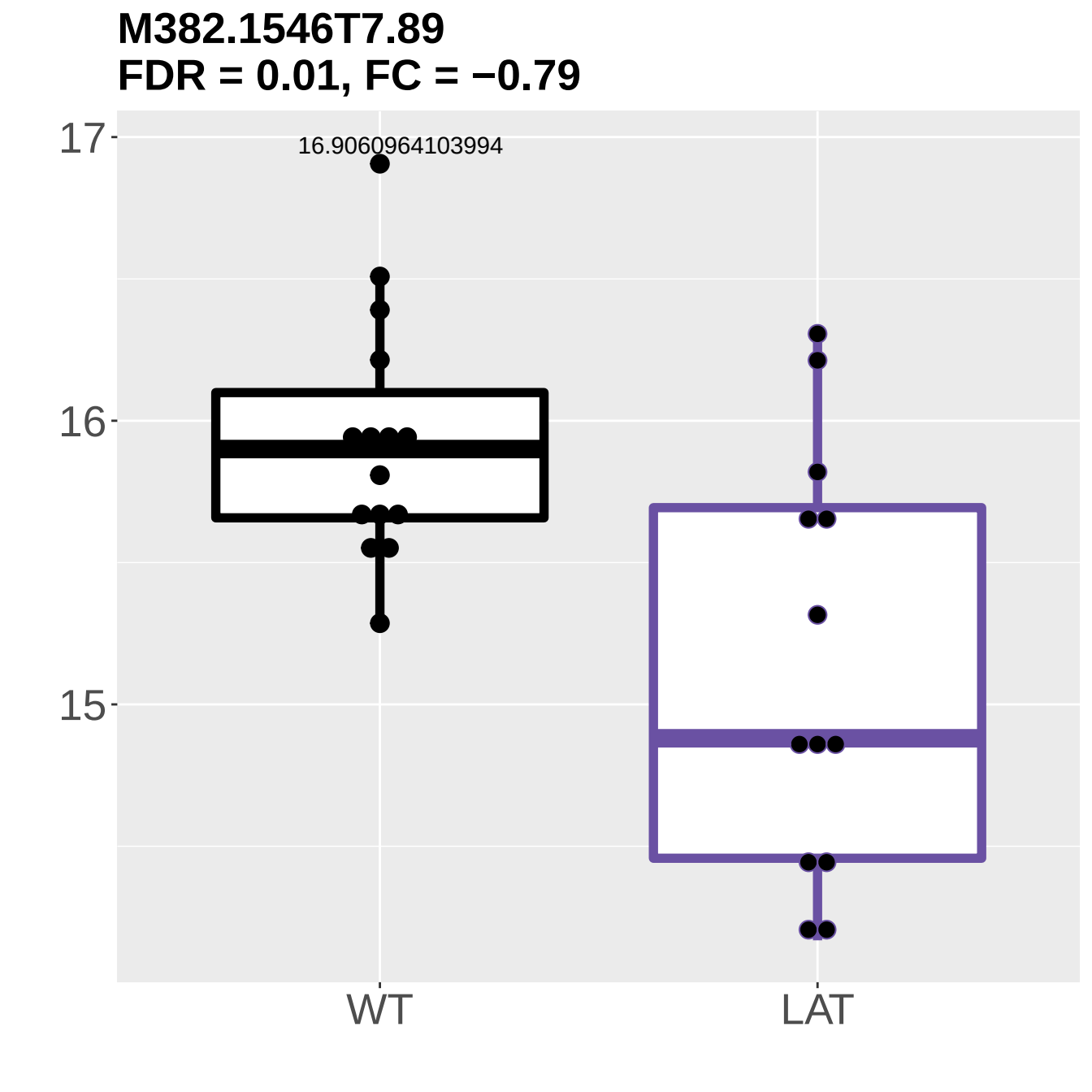
WT
LAT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16
15
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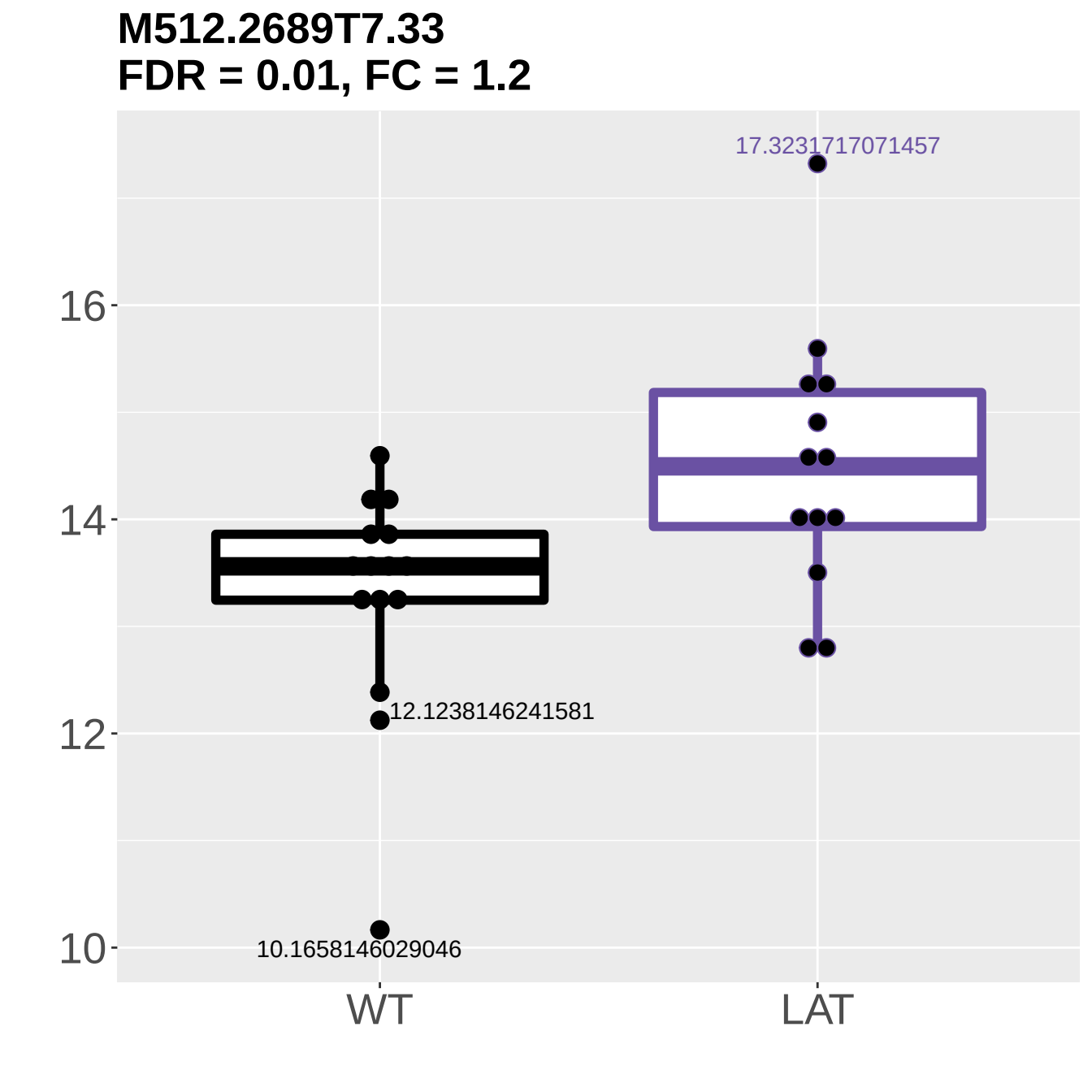
WT
LAT


M512.2689T7.33
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16
14
12
12.1238146241581
10
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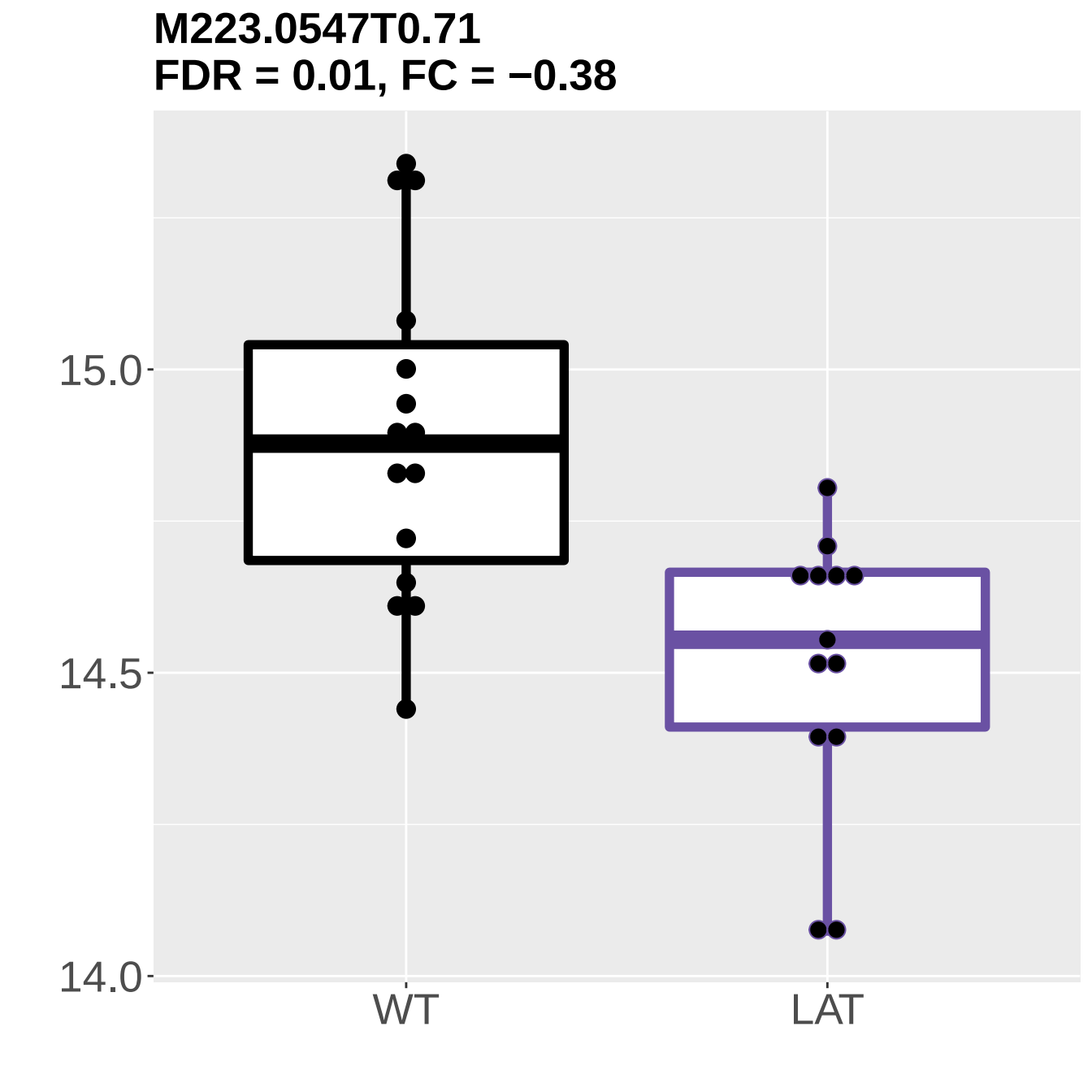
WT
LAT


M223.0547T0.71
FDR = 0.01, FC = −0.38
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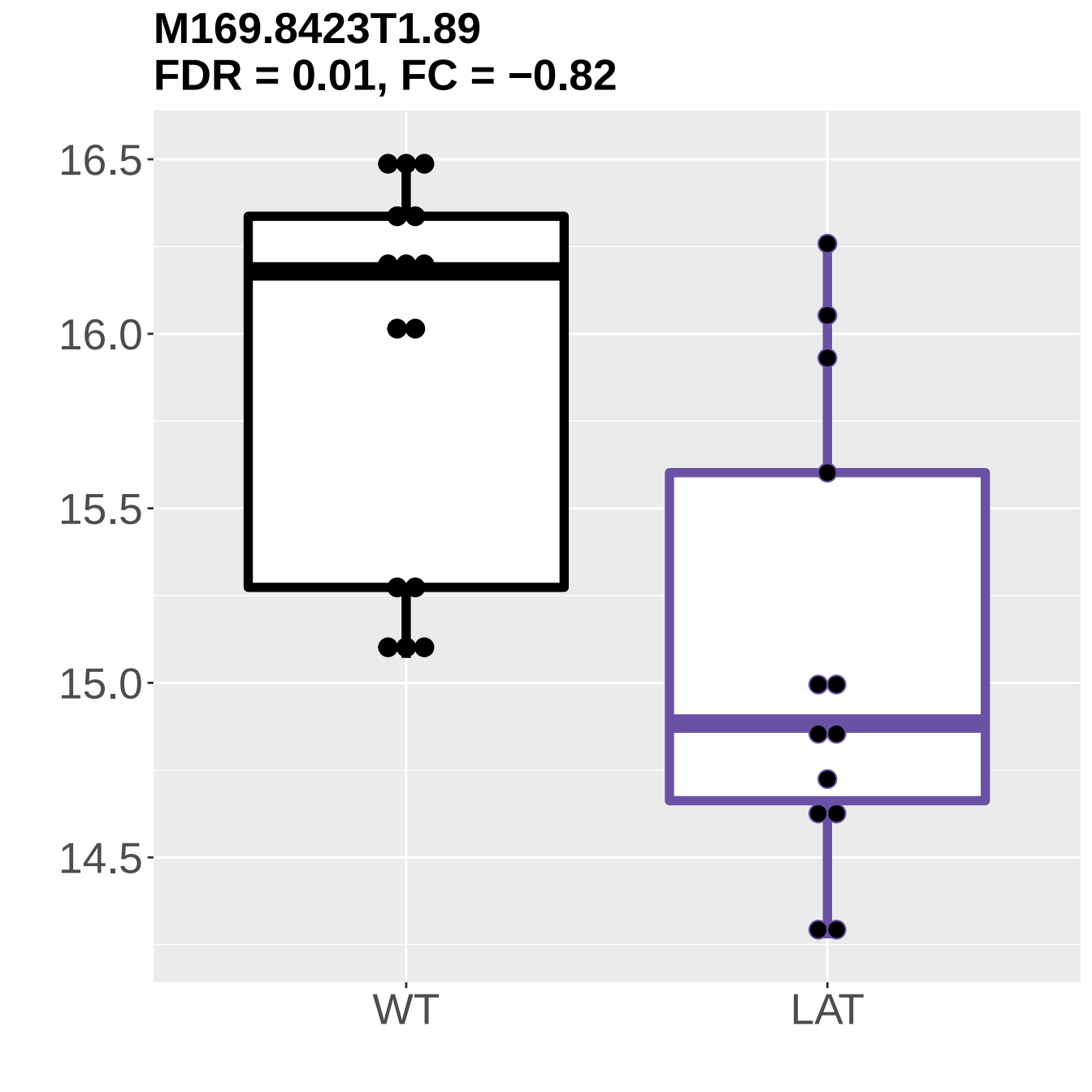
14.0
WT
LAT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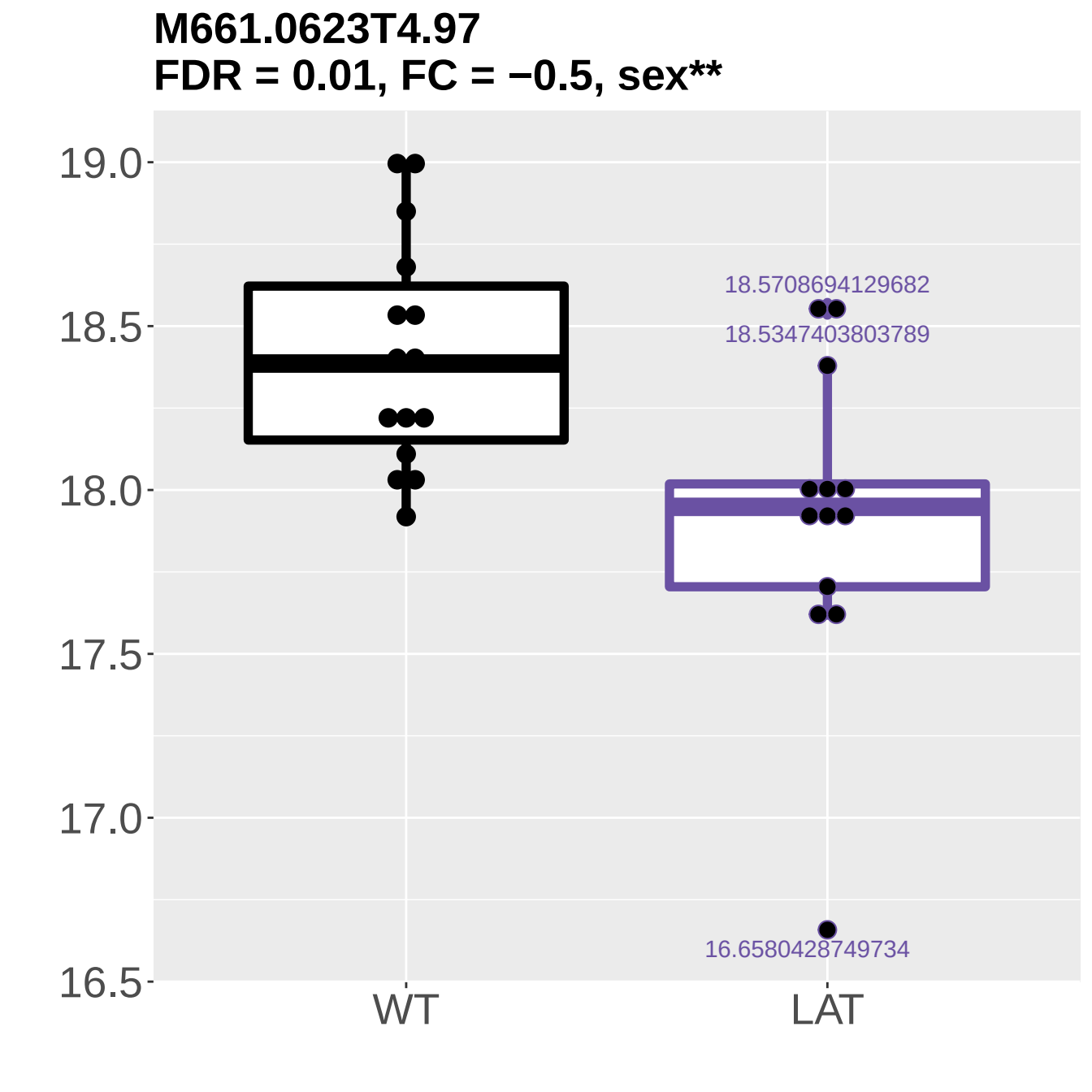
15.0
14.5
WT
LAT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FDR = 0.01, FC = −0.5, sex**
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18.0
17.5
17.0
16.5
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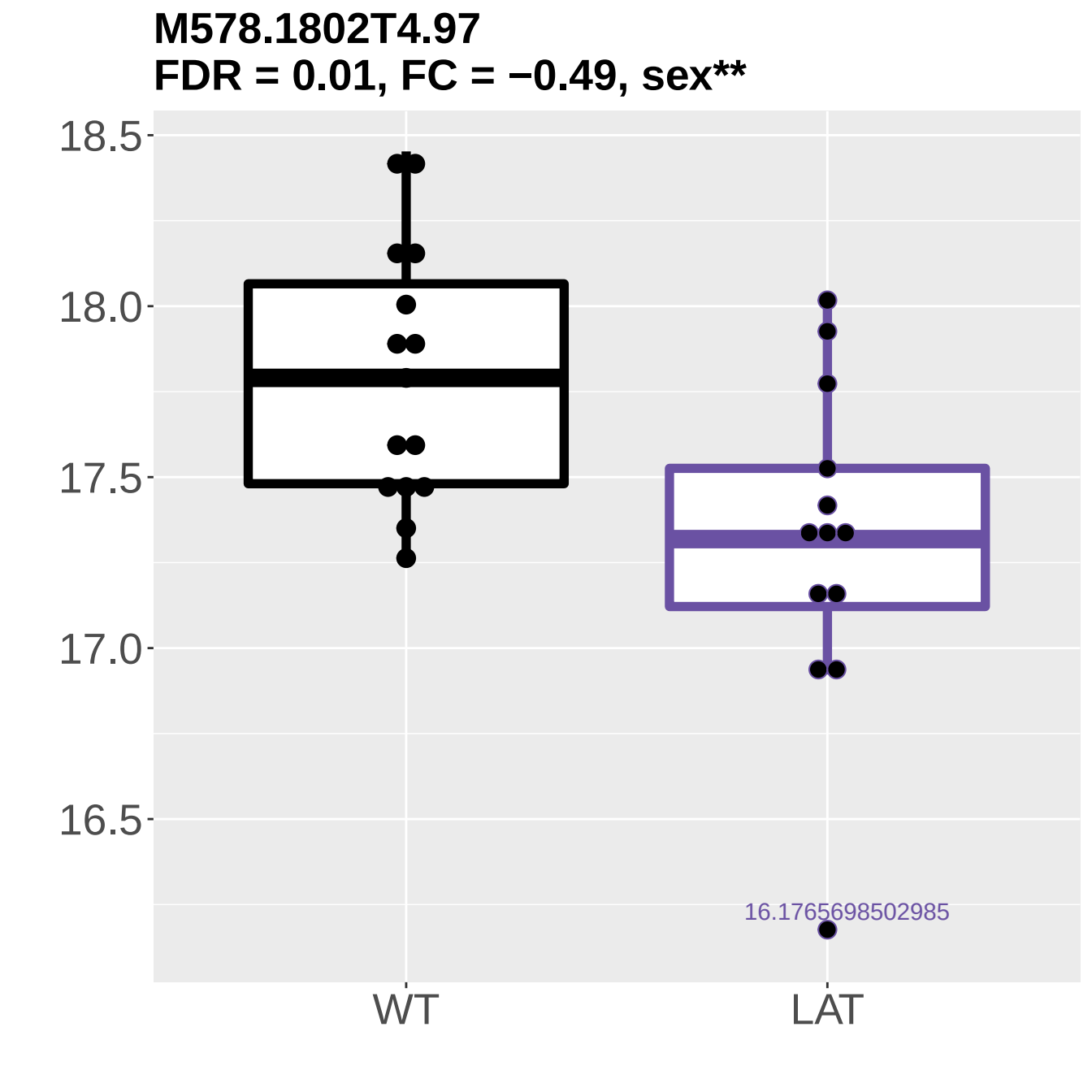
WT
LAT


M578.1802T4.97
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17.0
16.5
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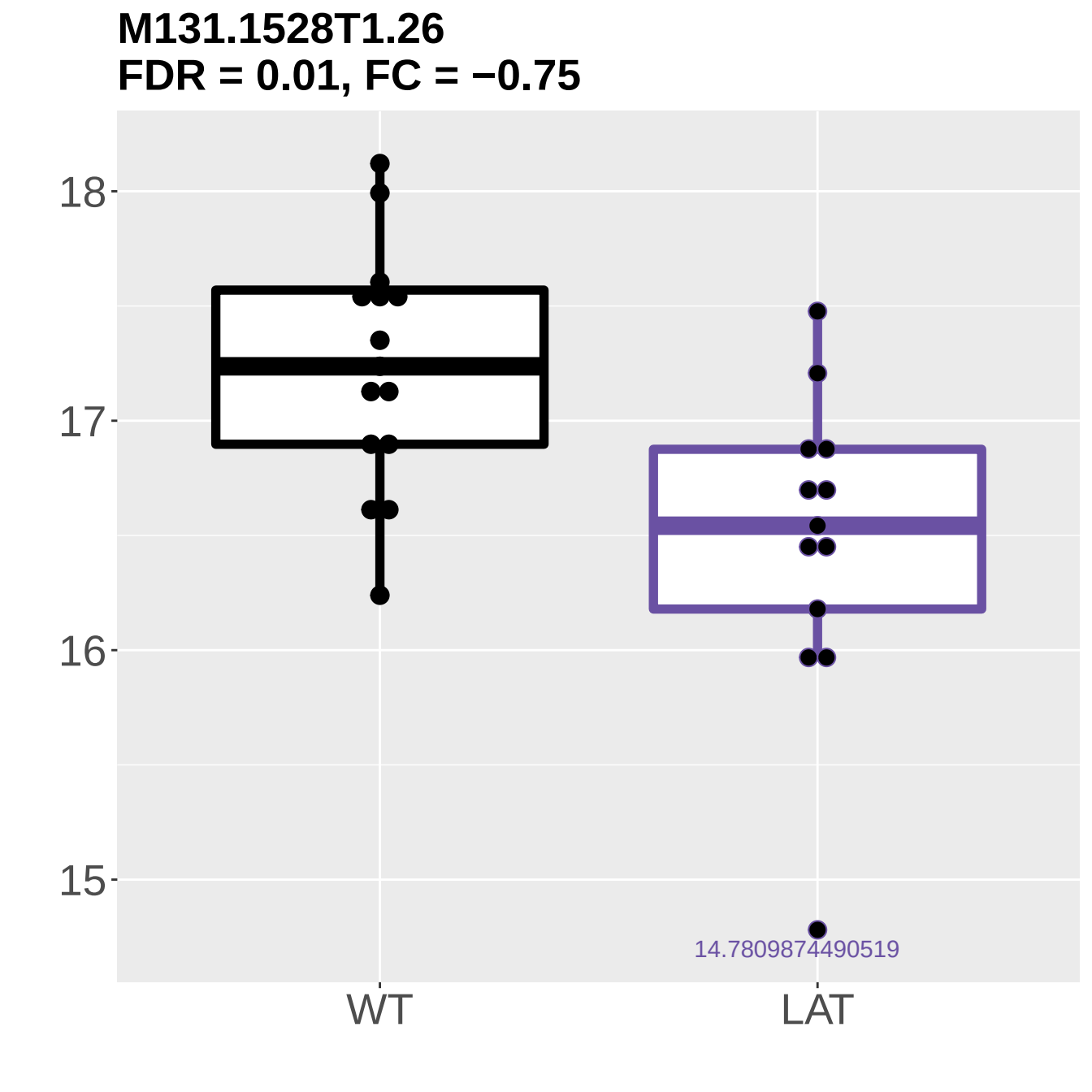
WT
LAT


M131.1528T1.26
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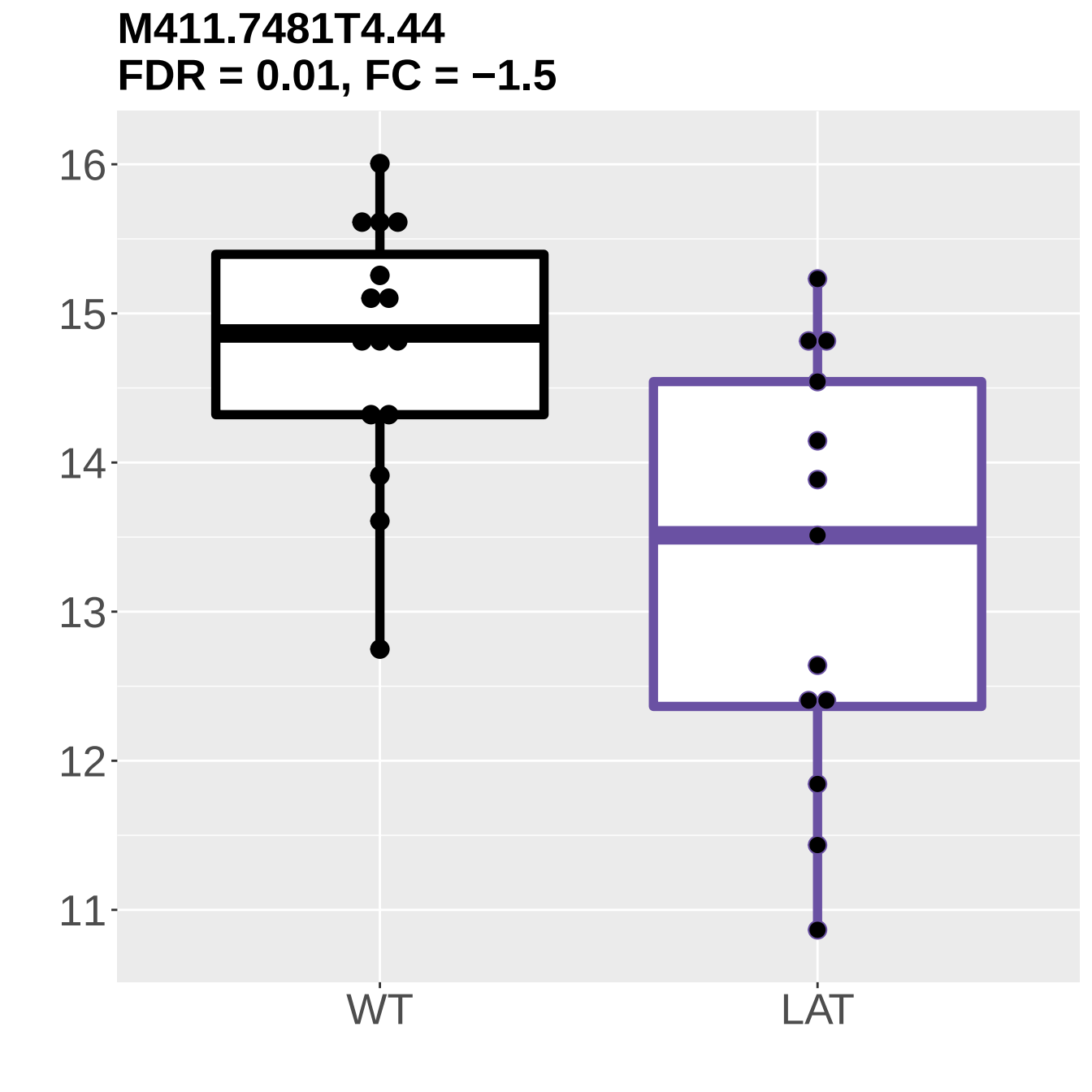
18
17
16
15
14.7809874490519
WT
LAT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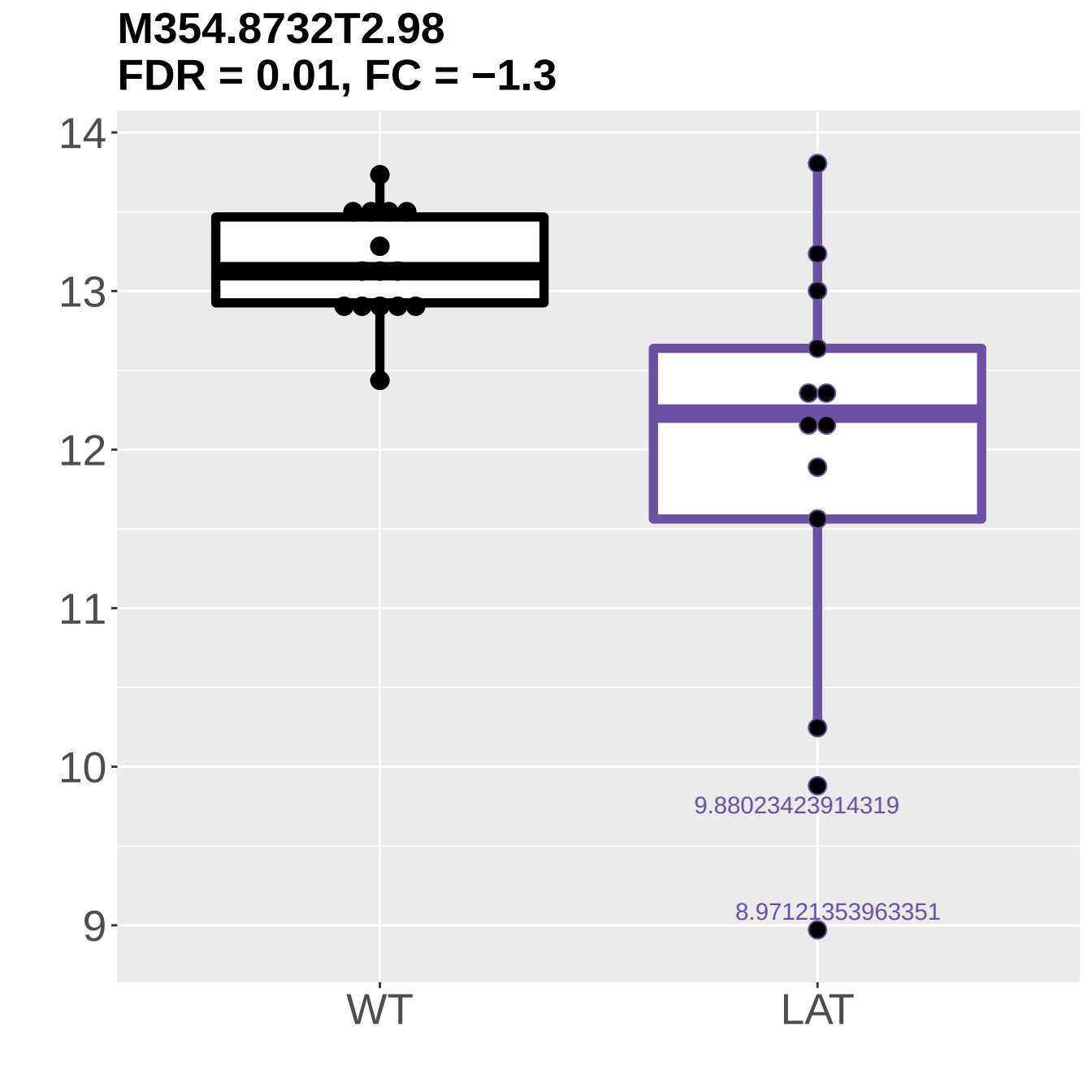
15
14
13
12
11
WT
LAT


M354.8732T2.98
FDR = 0.01, FC = −1.3
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13
12
11
10
9
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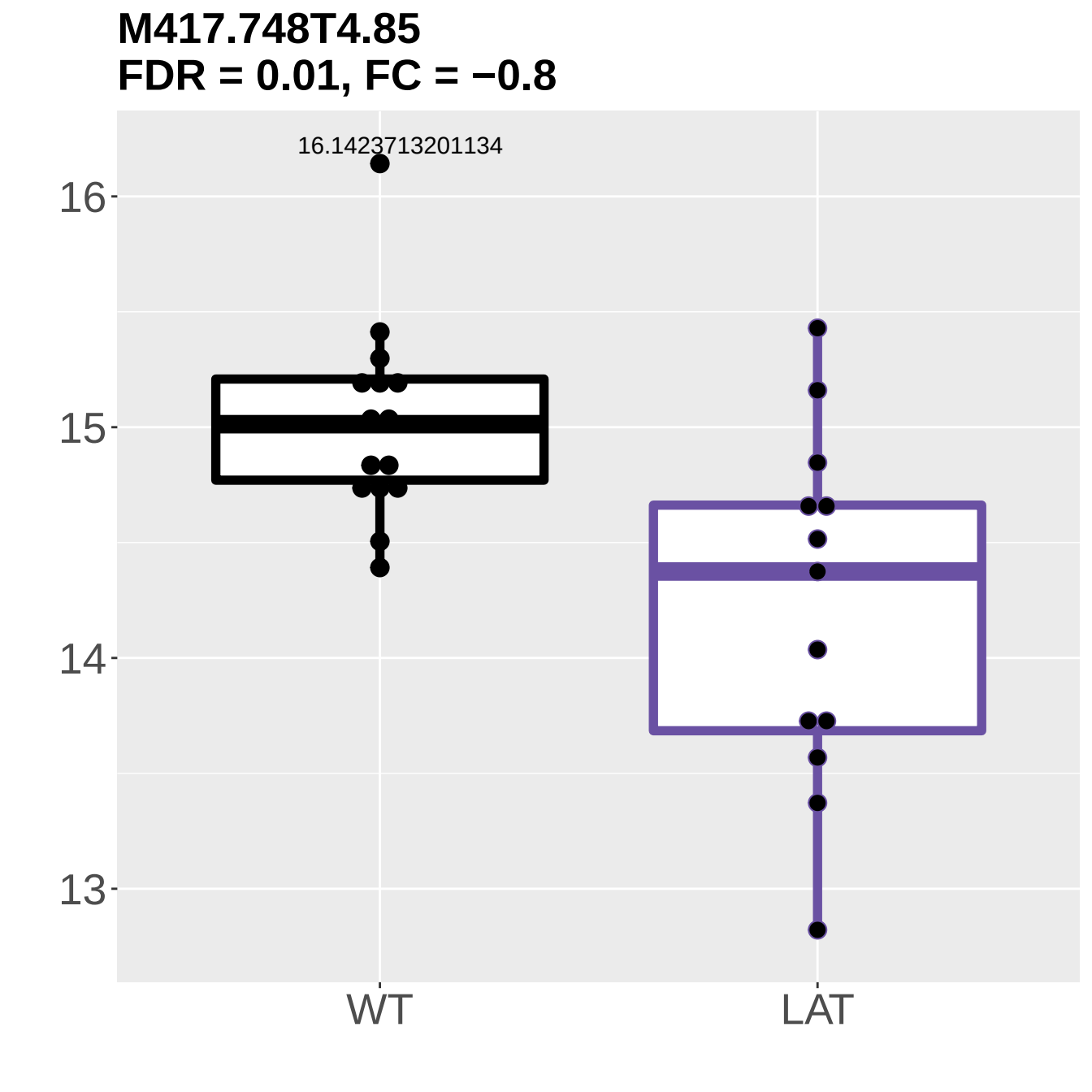
8.97121353963351
WT
LAT


M417.748T4.85
FDR = 0.01, FC = −0.8
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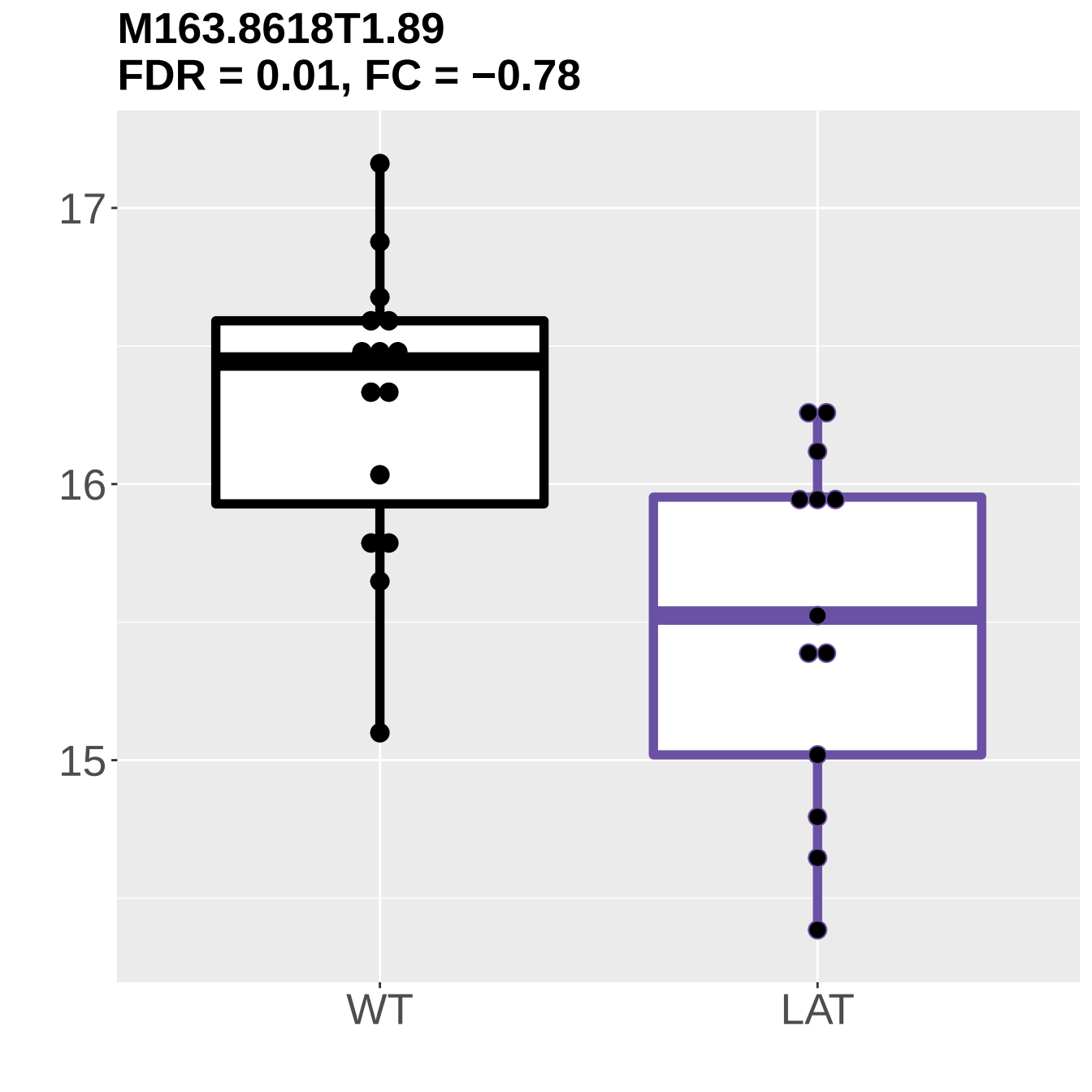
16
15
14
13
WT
LAT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FDR = 0.01, FC = −0.78
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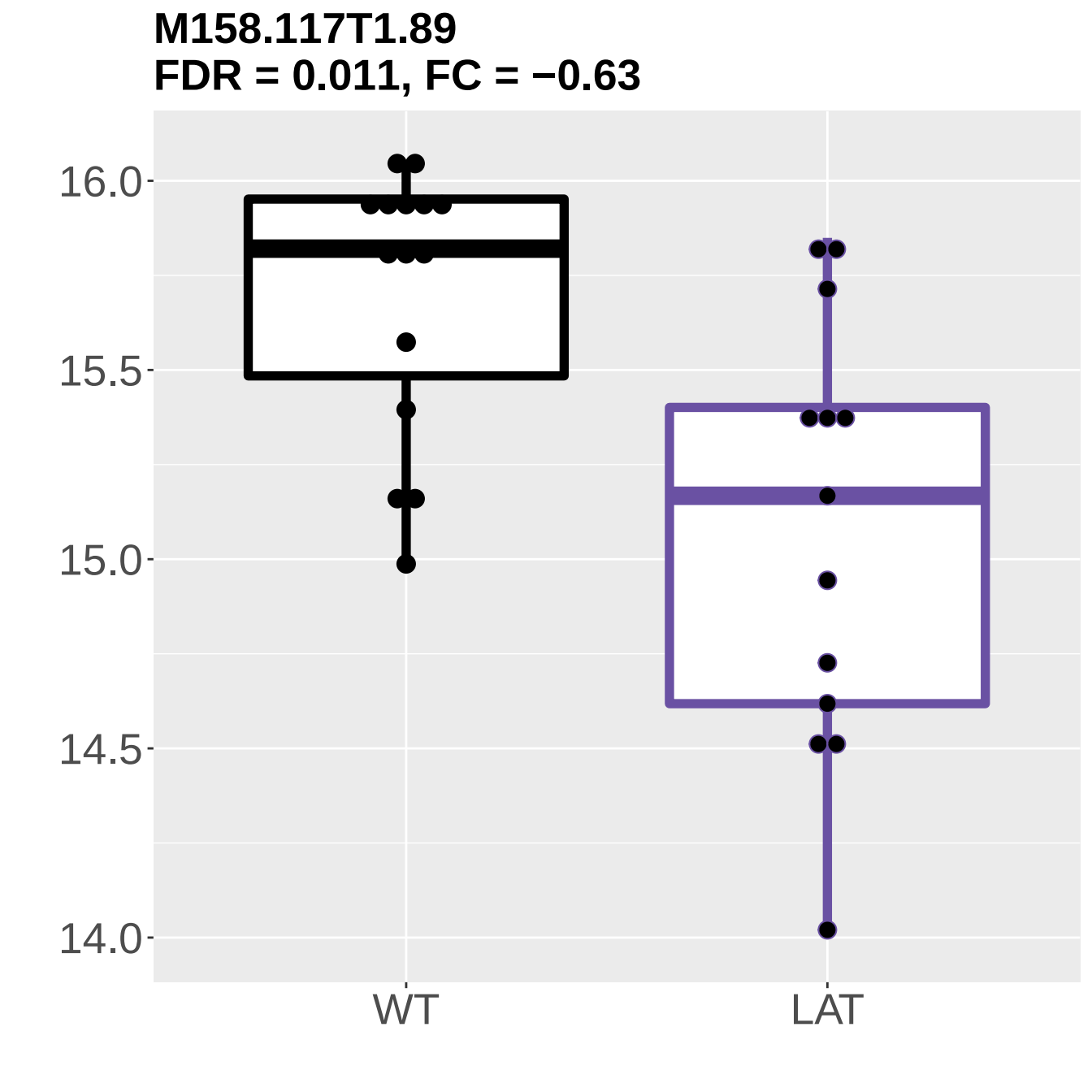
16
15
WT
LAT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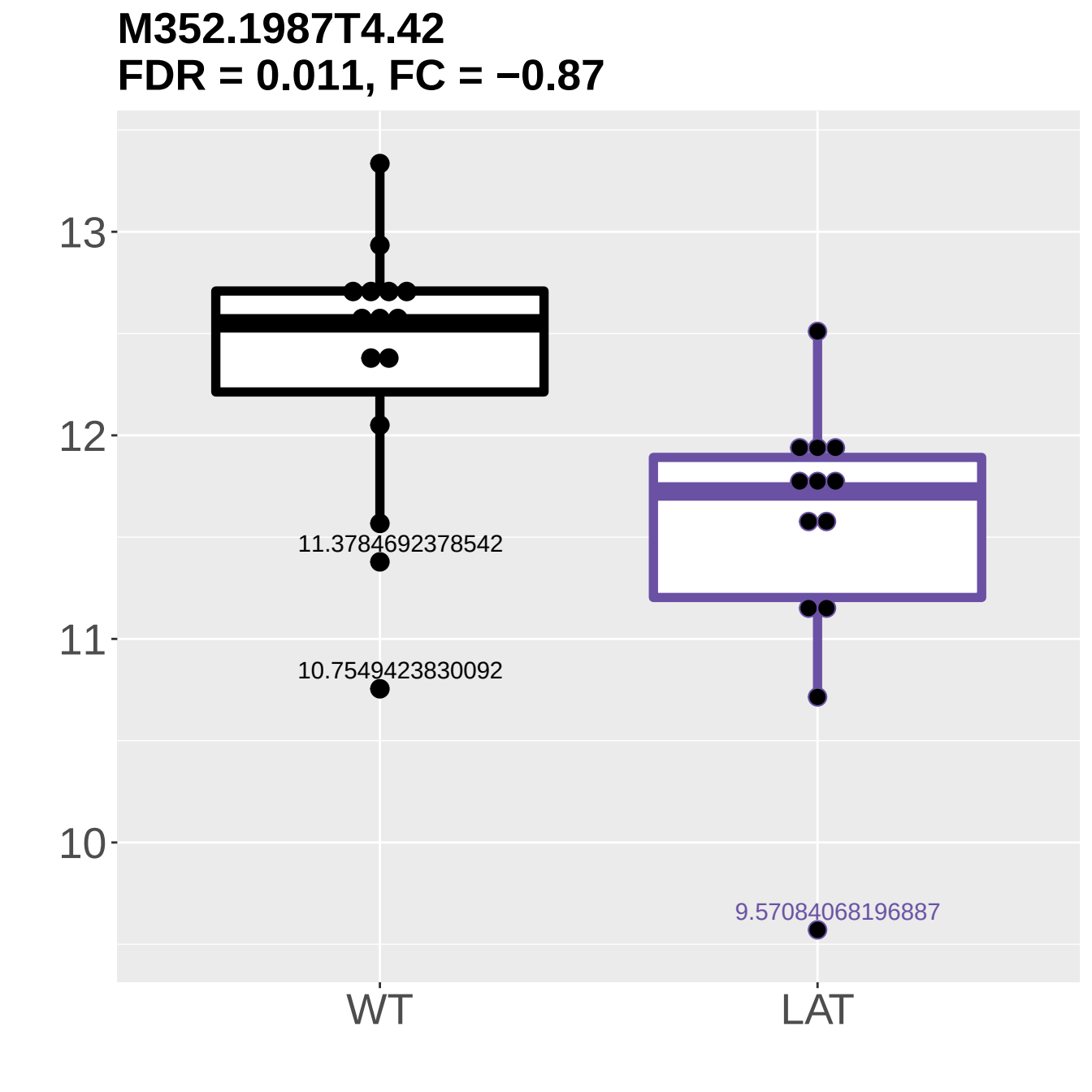
15.0
14.5
14.0
WT
LAT


M352.1987T4.42
FDR = 0.011, FC = −0.87
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12
11
10
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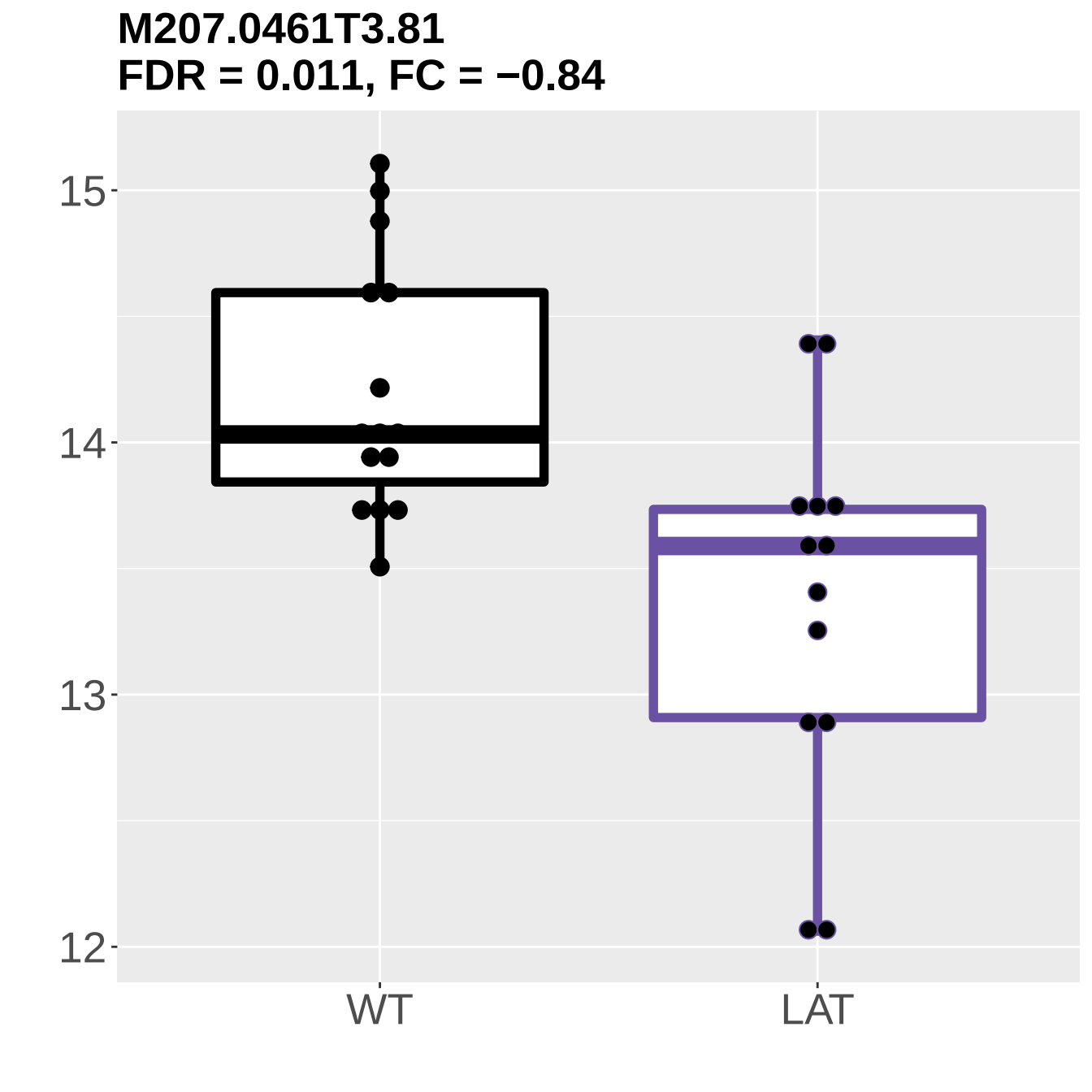
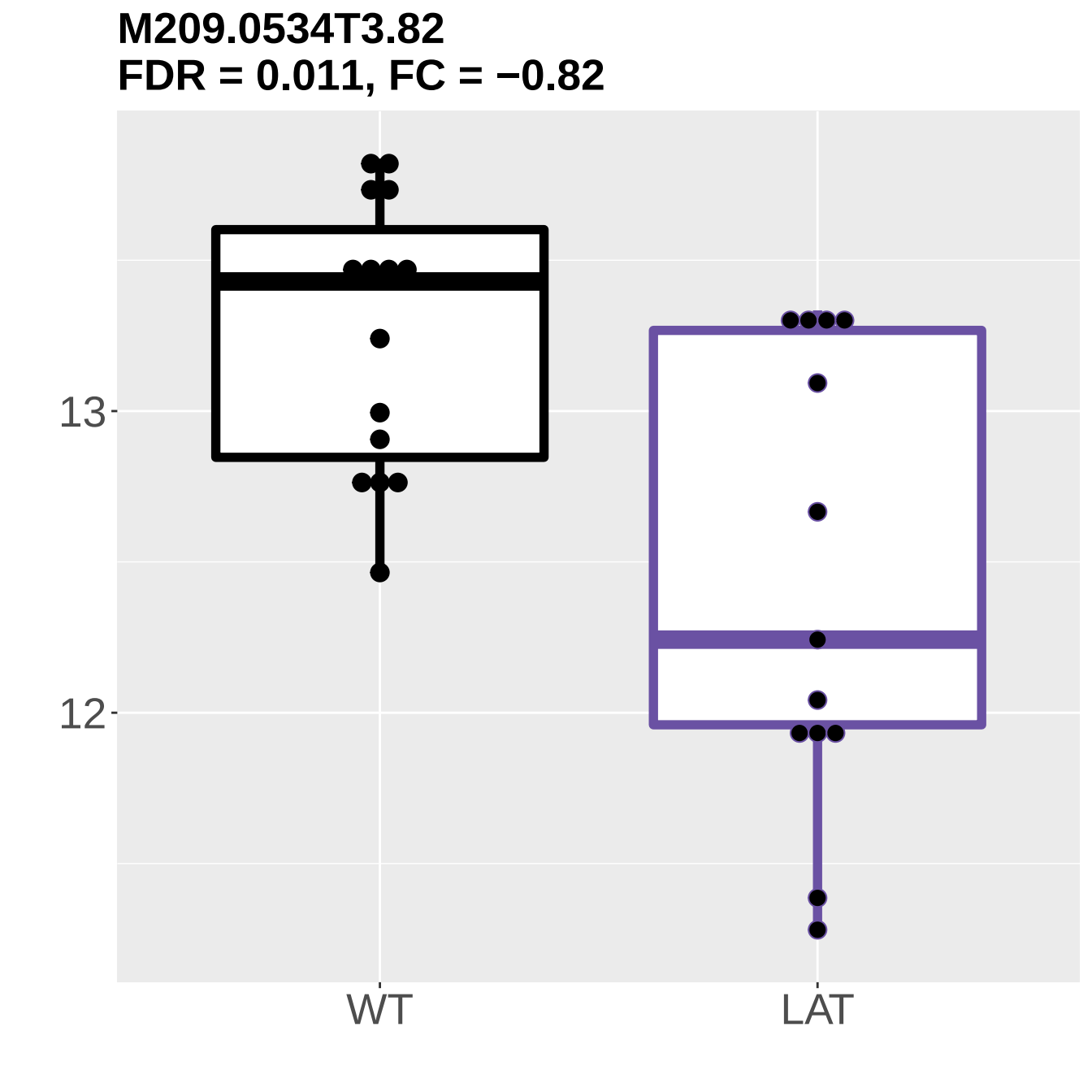
10.7549423830092
9.57084068196887
WT
LAT


M207.0461T3.81
FDR = 0.011, FC = −0.84
15
14
13
12
WT
LAT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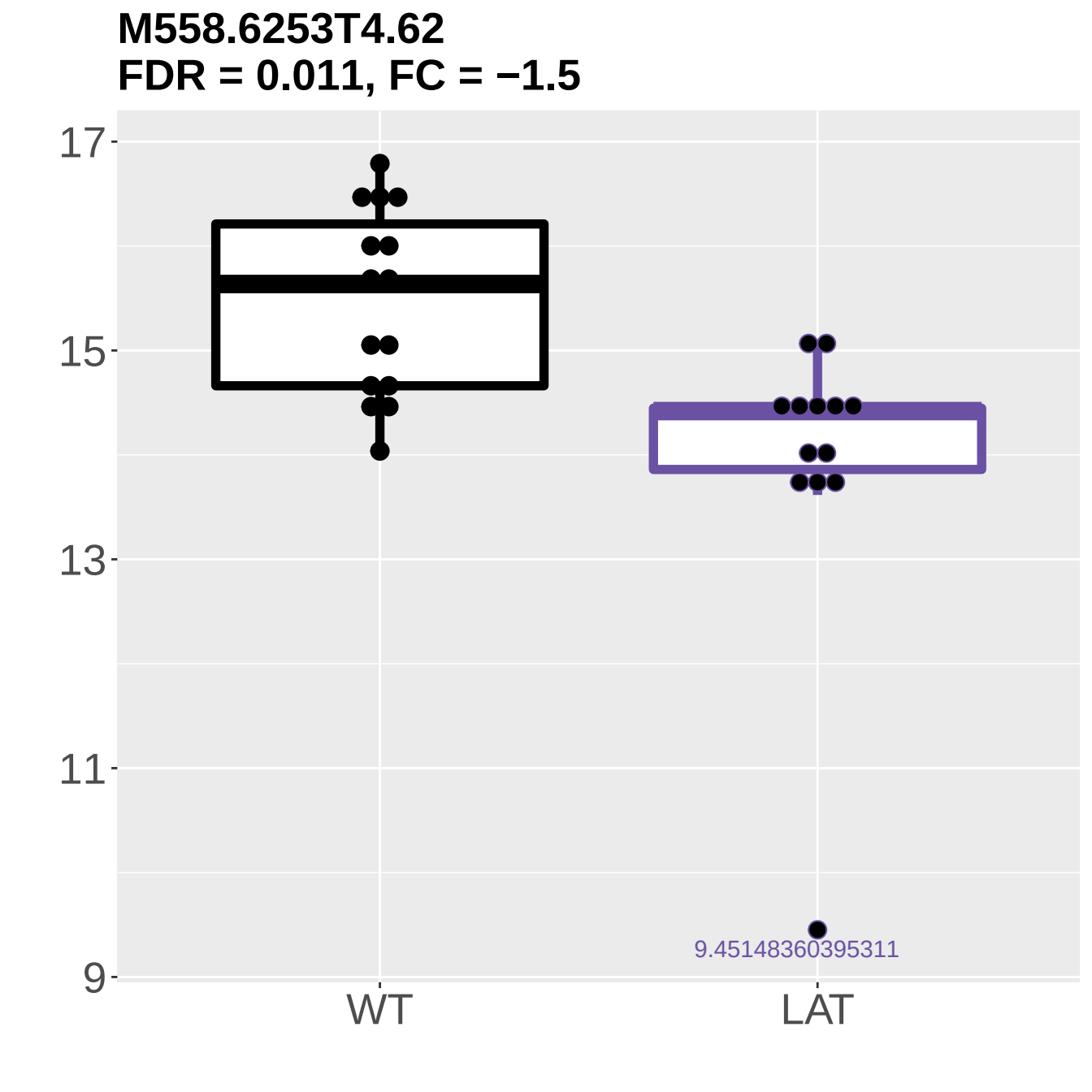
12
WT
LAT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FDR = 0.011, FC = −1.5
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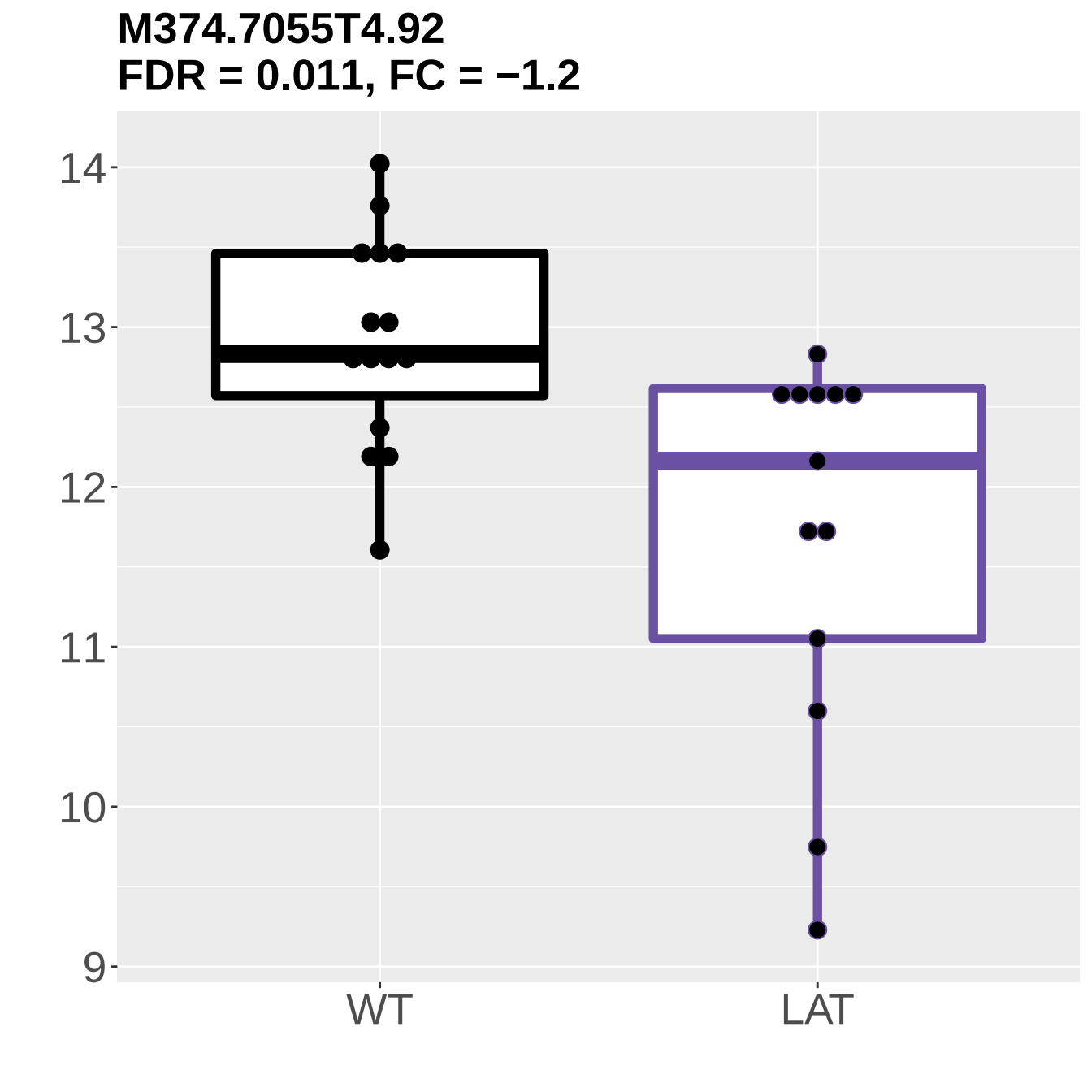
WT
LAT


M374.7055T4.92
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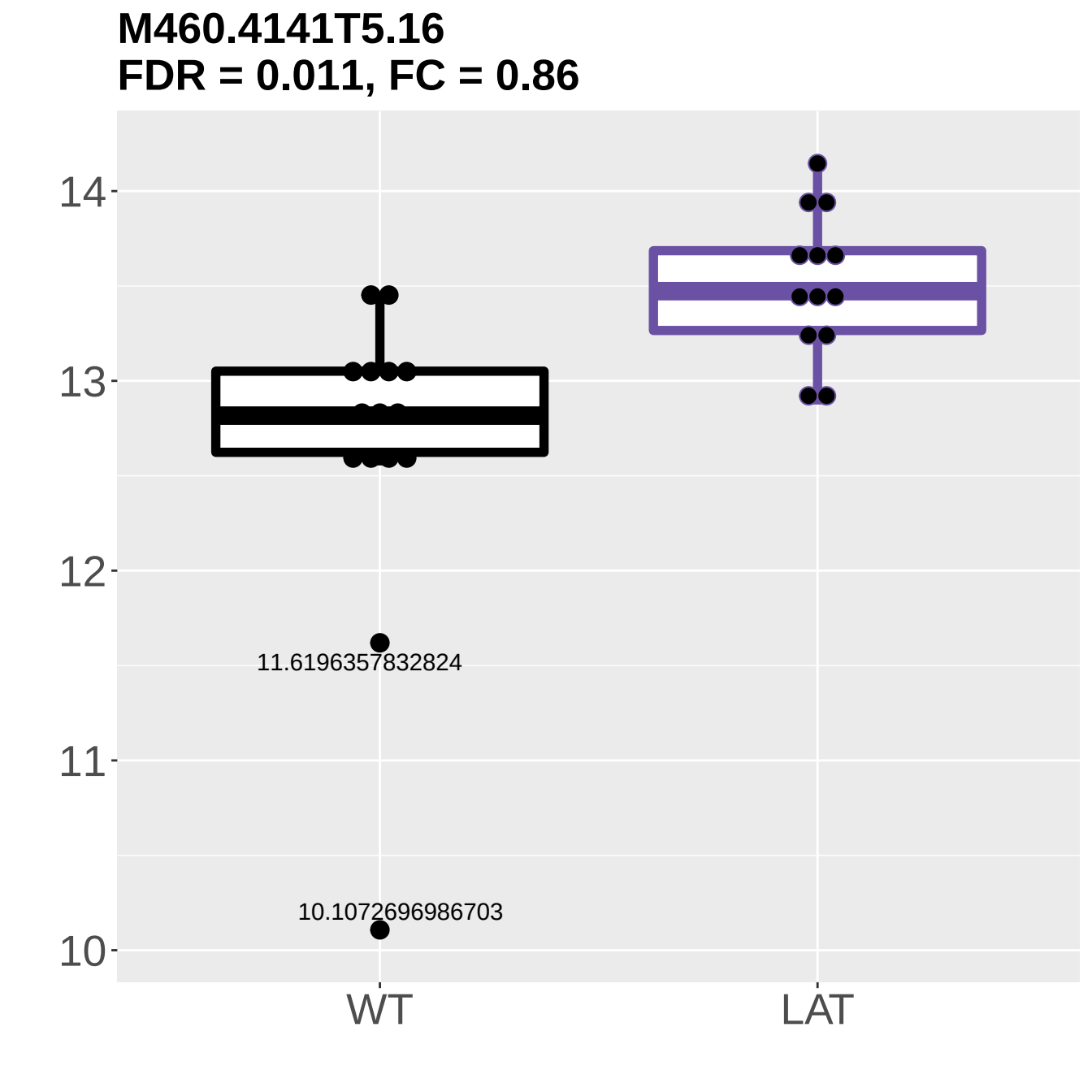
13
12
11
10
9
WT
LAT


M460.4141T5.16
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12
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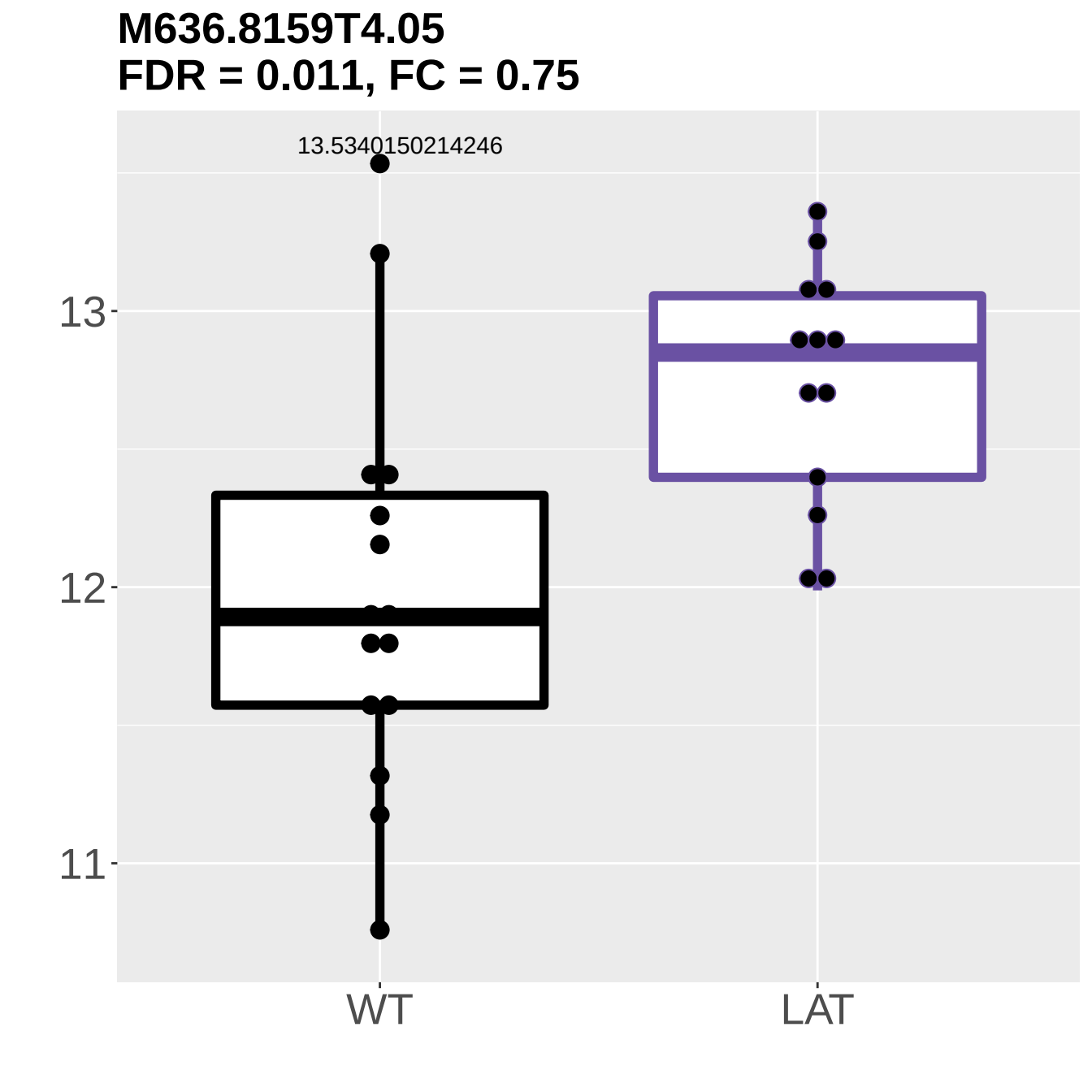
WT
LAT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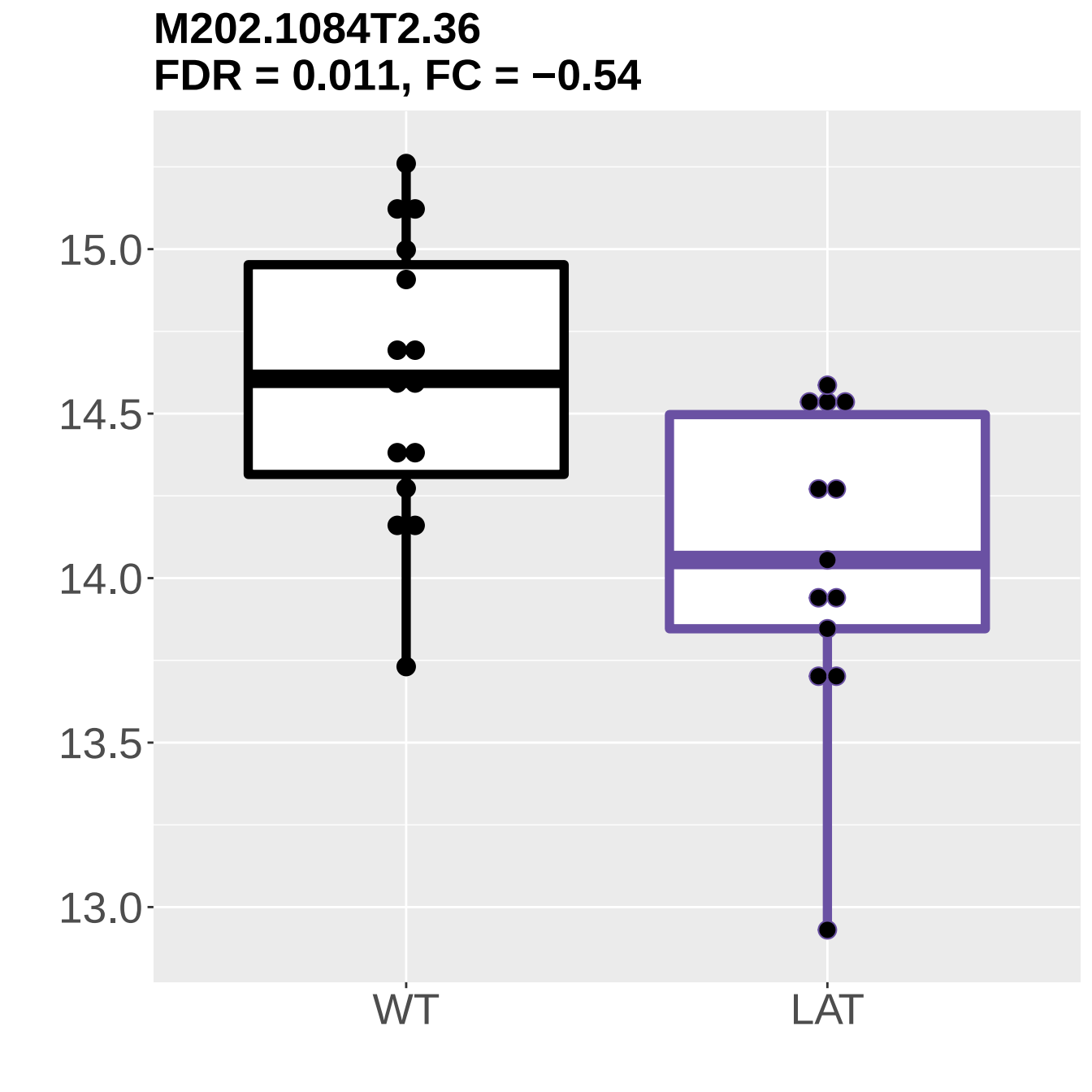
12
11
WT
LAT


M202.1084T2.36
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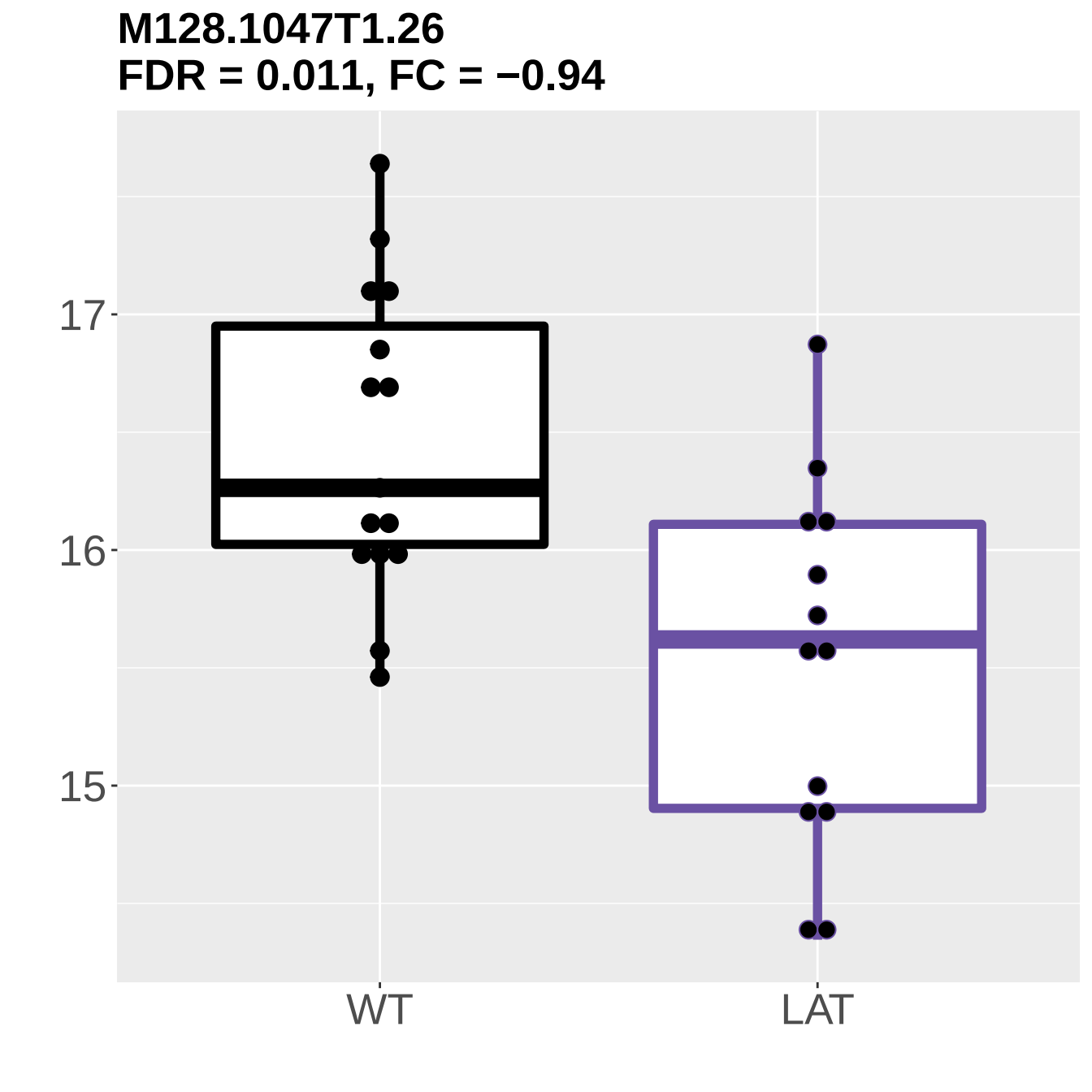
14.0
13.5
13.0
WT
LAT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16
15
WT
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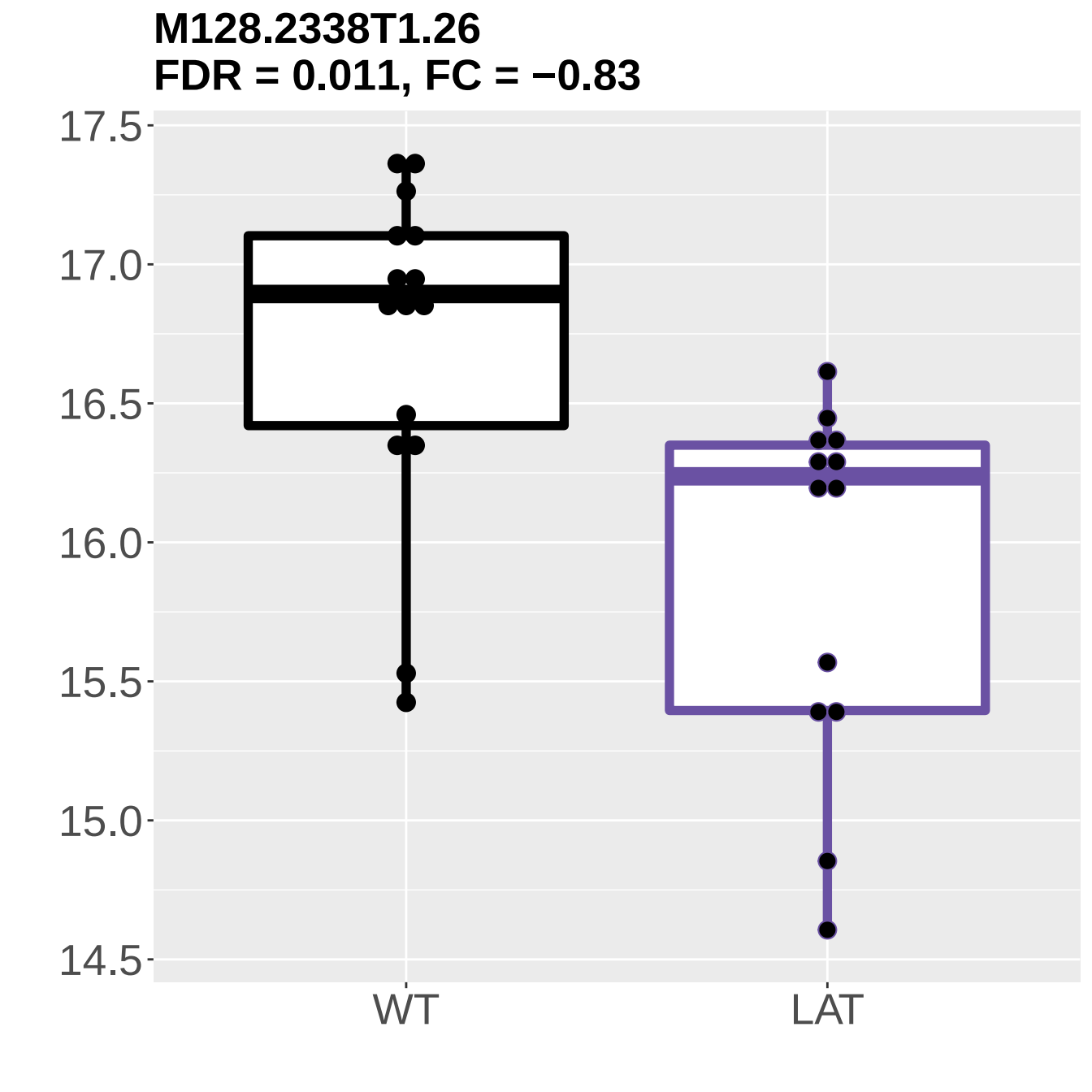
M128.2338T1.26
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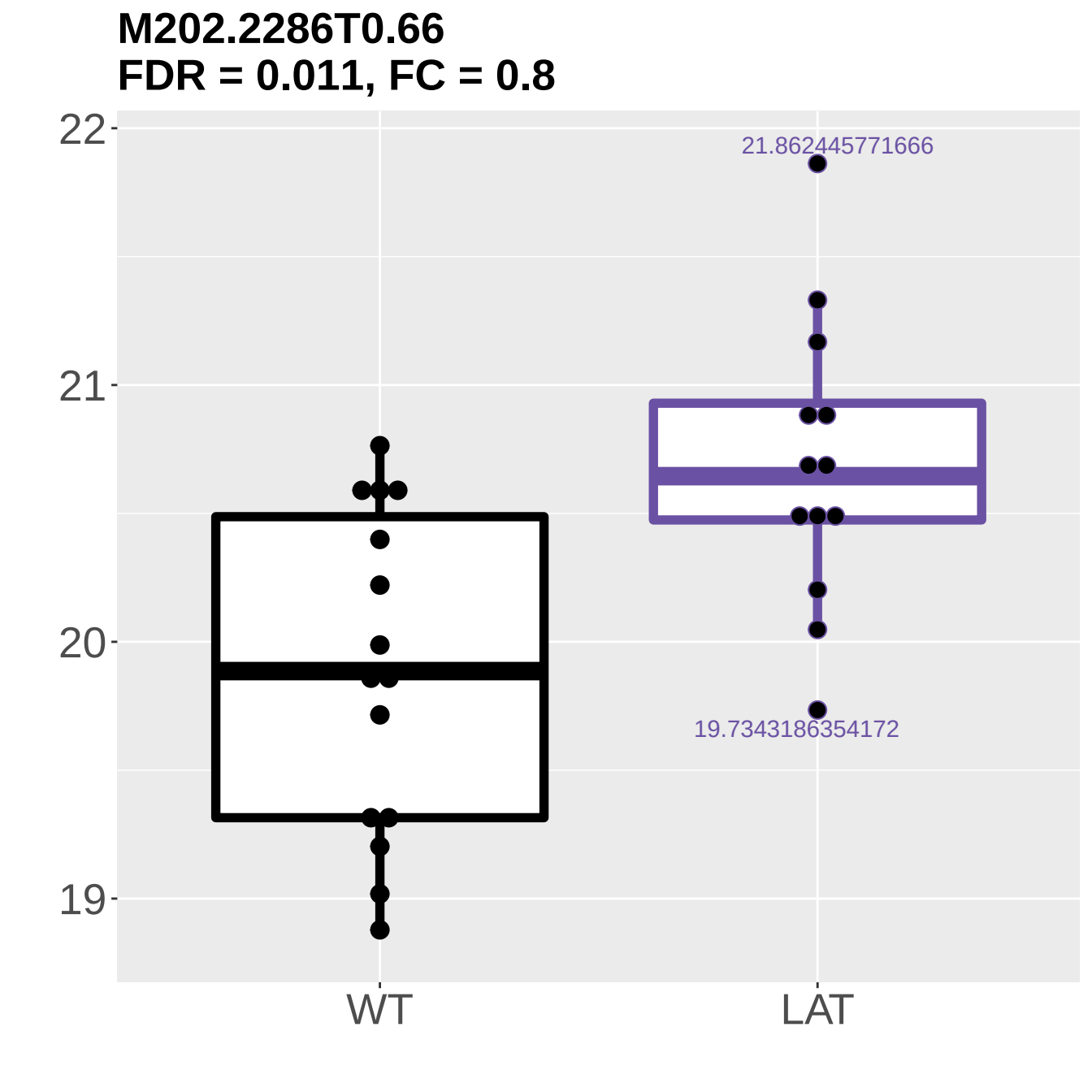
17.0
16.5
16.0
15.5
15.0
14.5
WT
LAT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21
20
19
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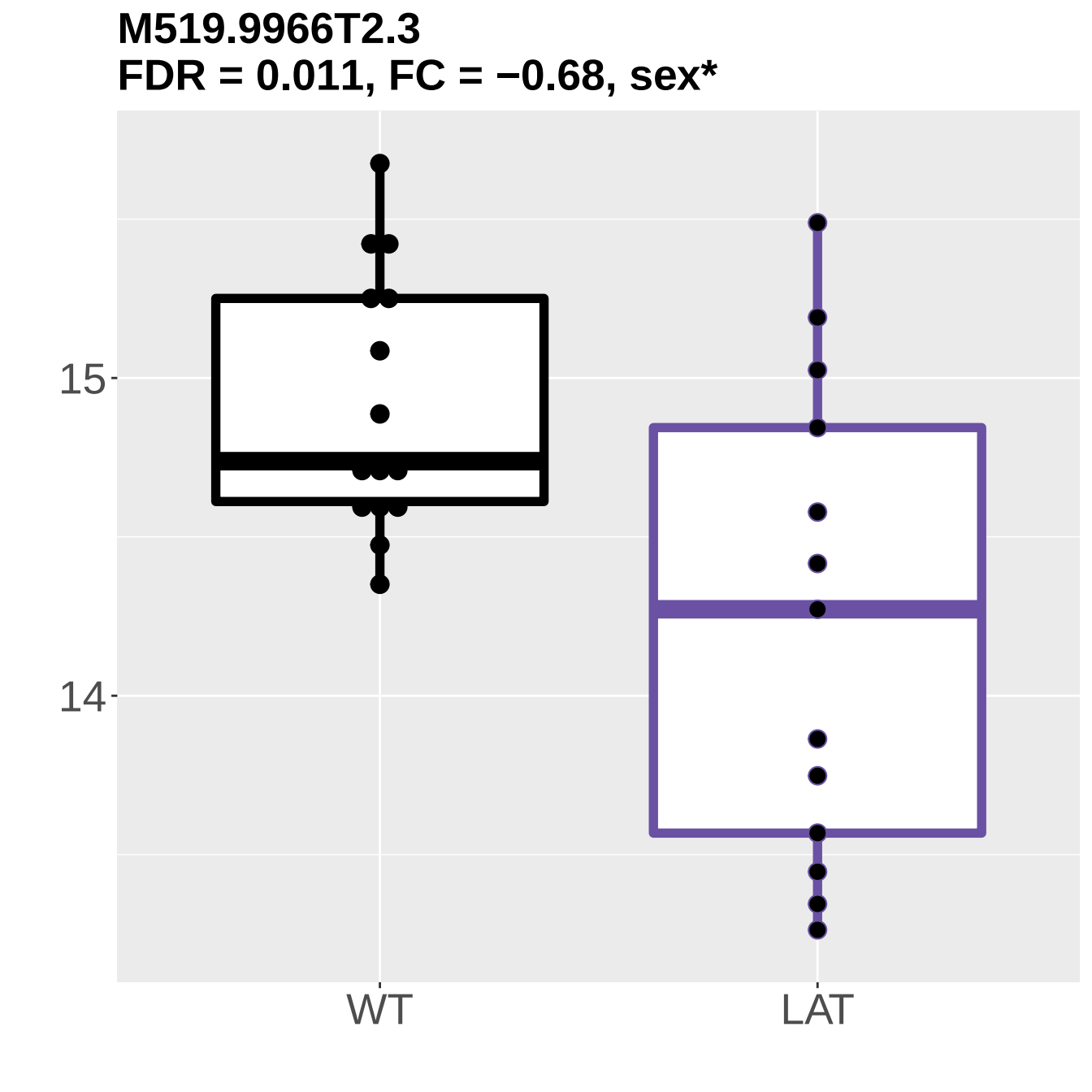
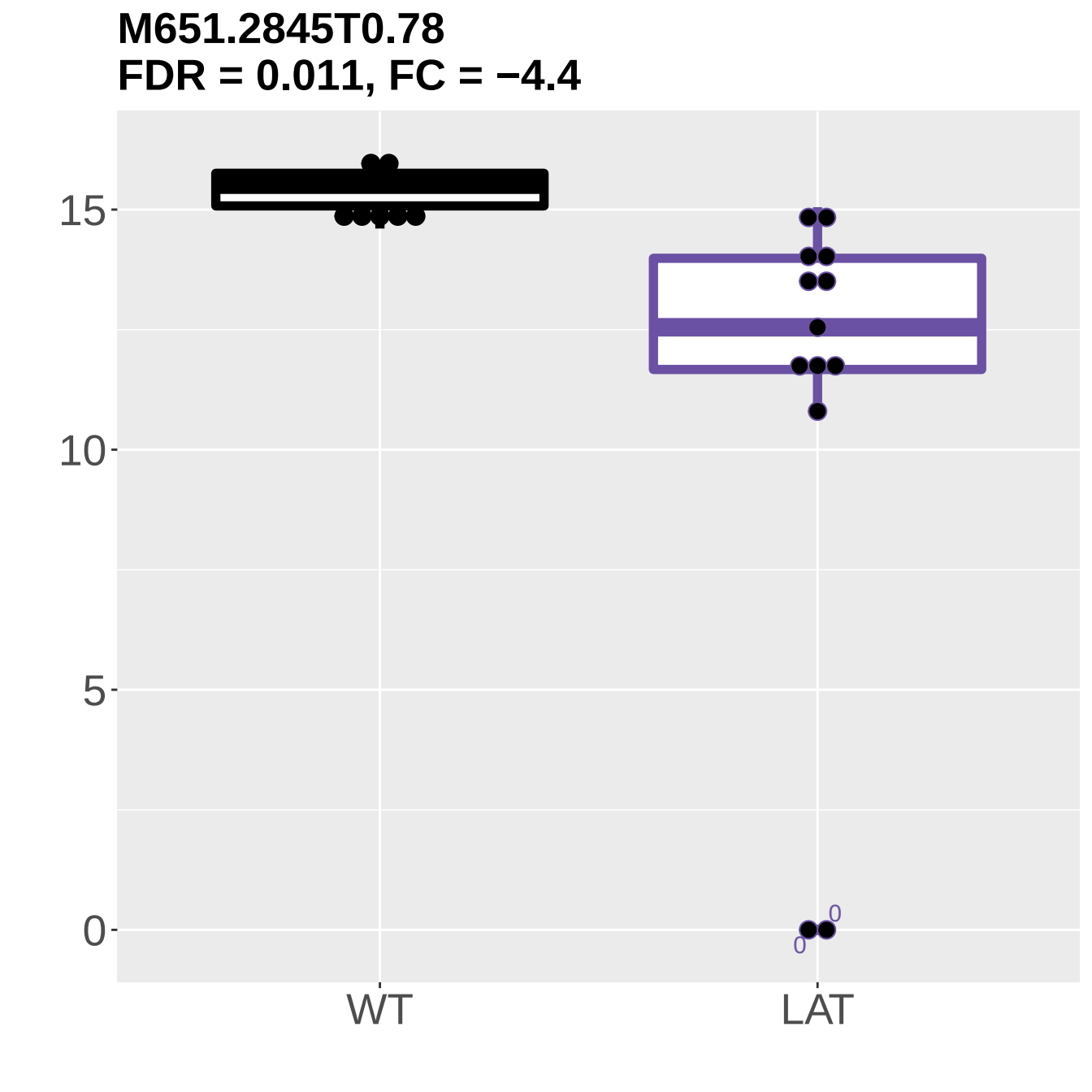
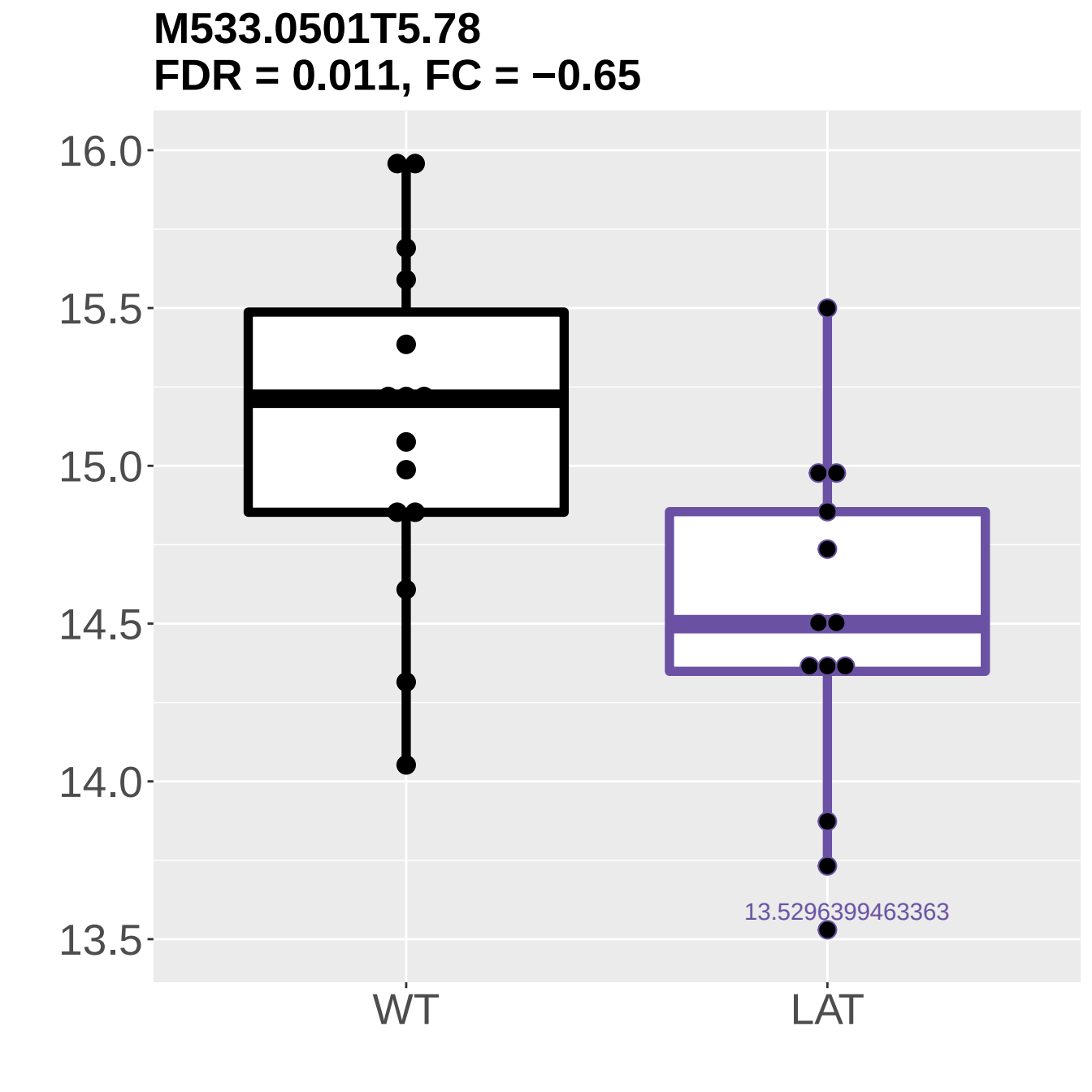
WT
LAT


M519.9966T2.3
FDR = 0.011, FC = −0.68, sex*
15
14
WT
LAT


M651.2845T0.78
FDR = 0.011, FC = −4.4
15
10
5
0
0
0
WT
LAT


M533.0501T5.78
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15.5
15.0
14.5
14.0
13.5
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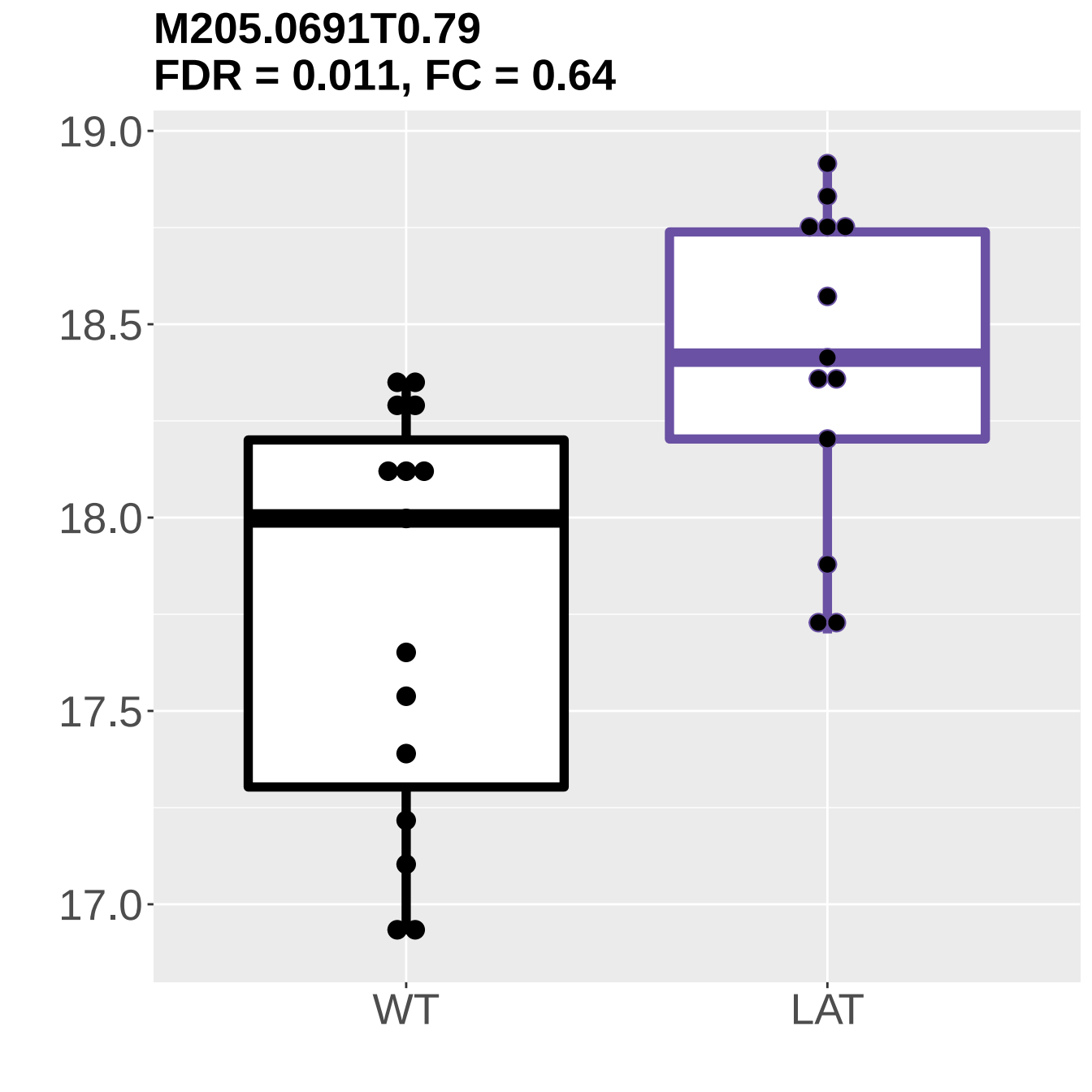
WT
LAT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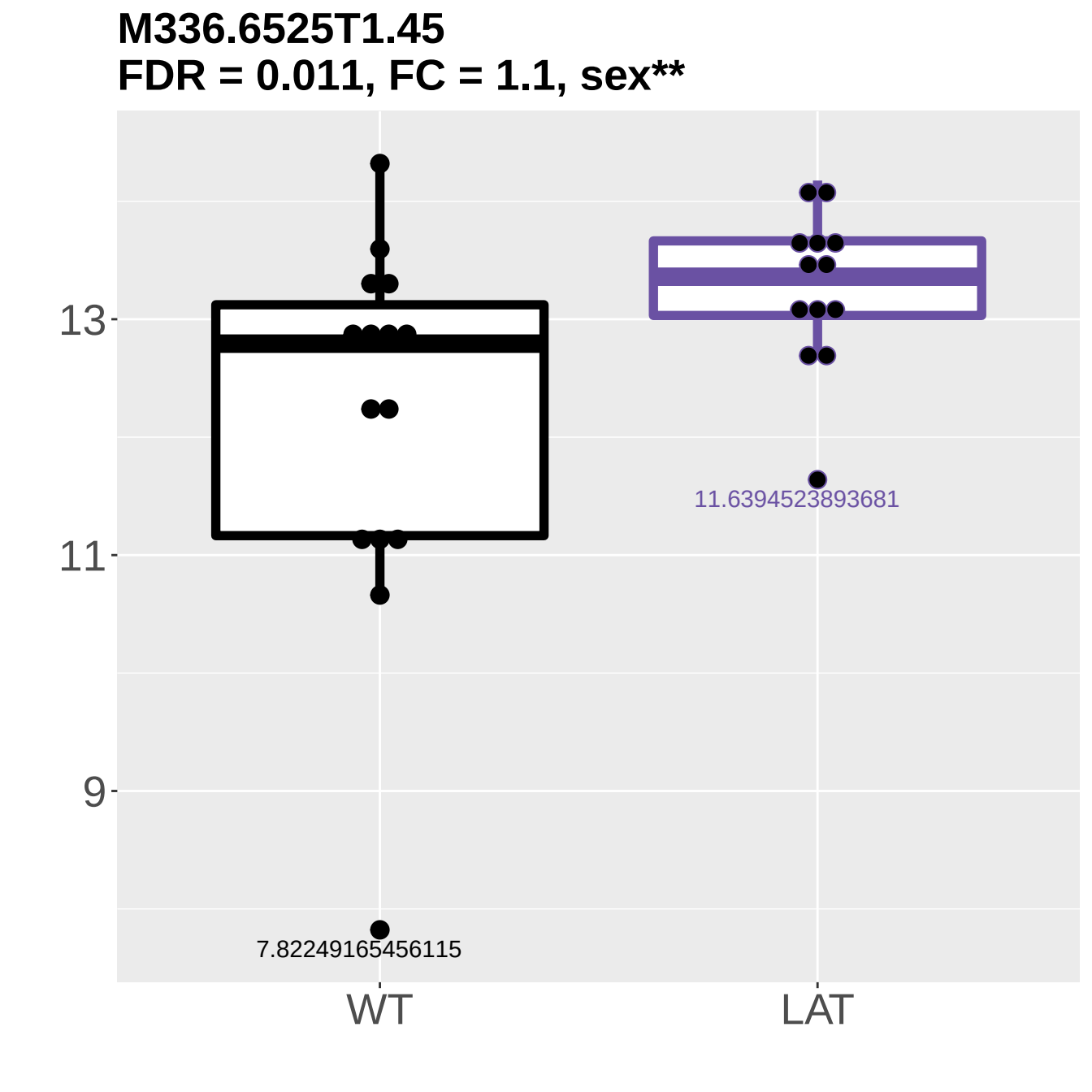
18.5
18.0
17.5
17.0
WT
LAT


M336.6525T1.45
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11
9
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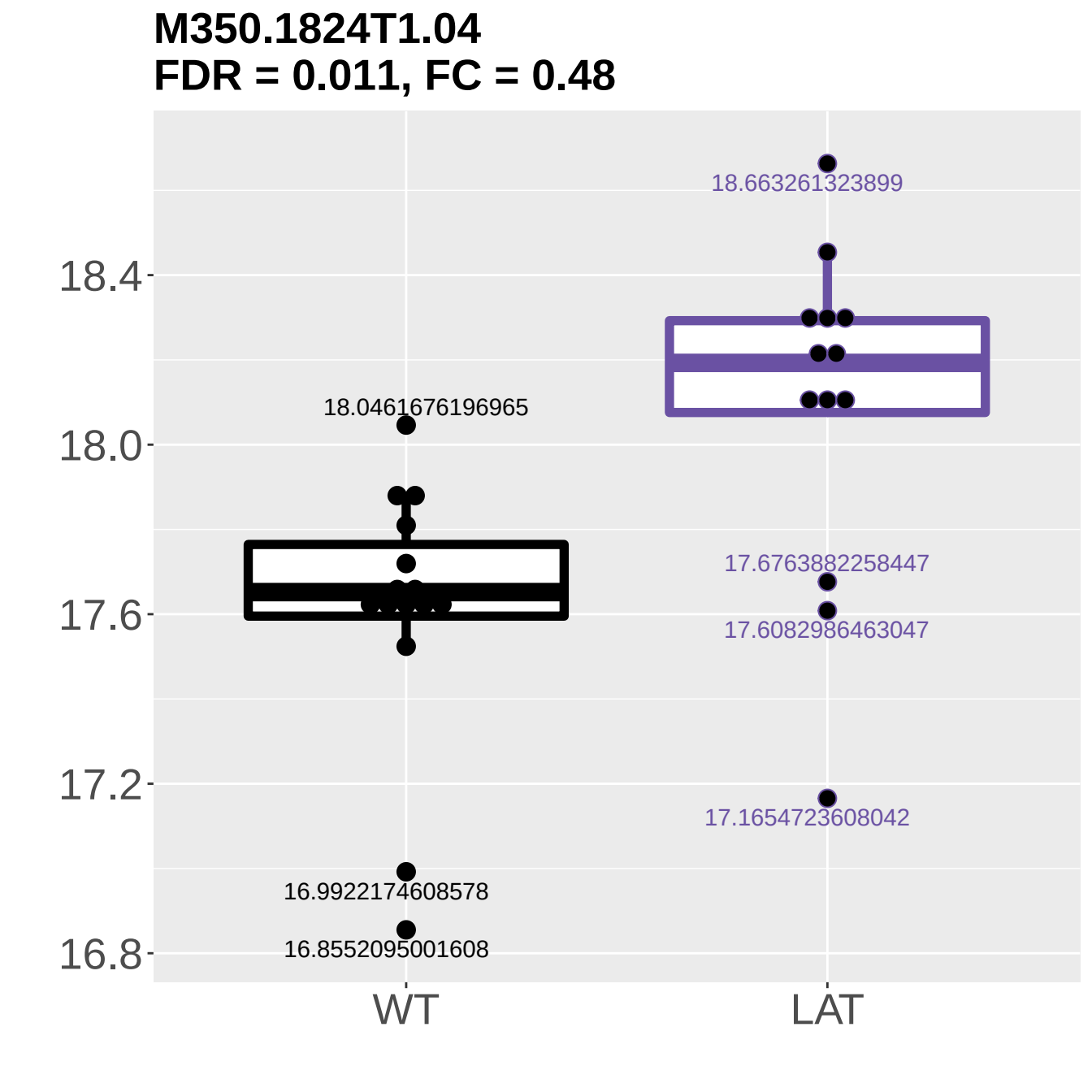
7.82249165456115
WT
LAT


M350.1824T1.04
FDR = 0.011, FC = 0.48
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18.0
17.6
17.2
16.8
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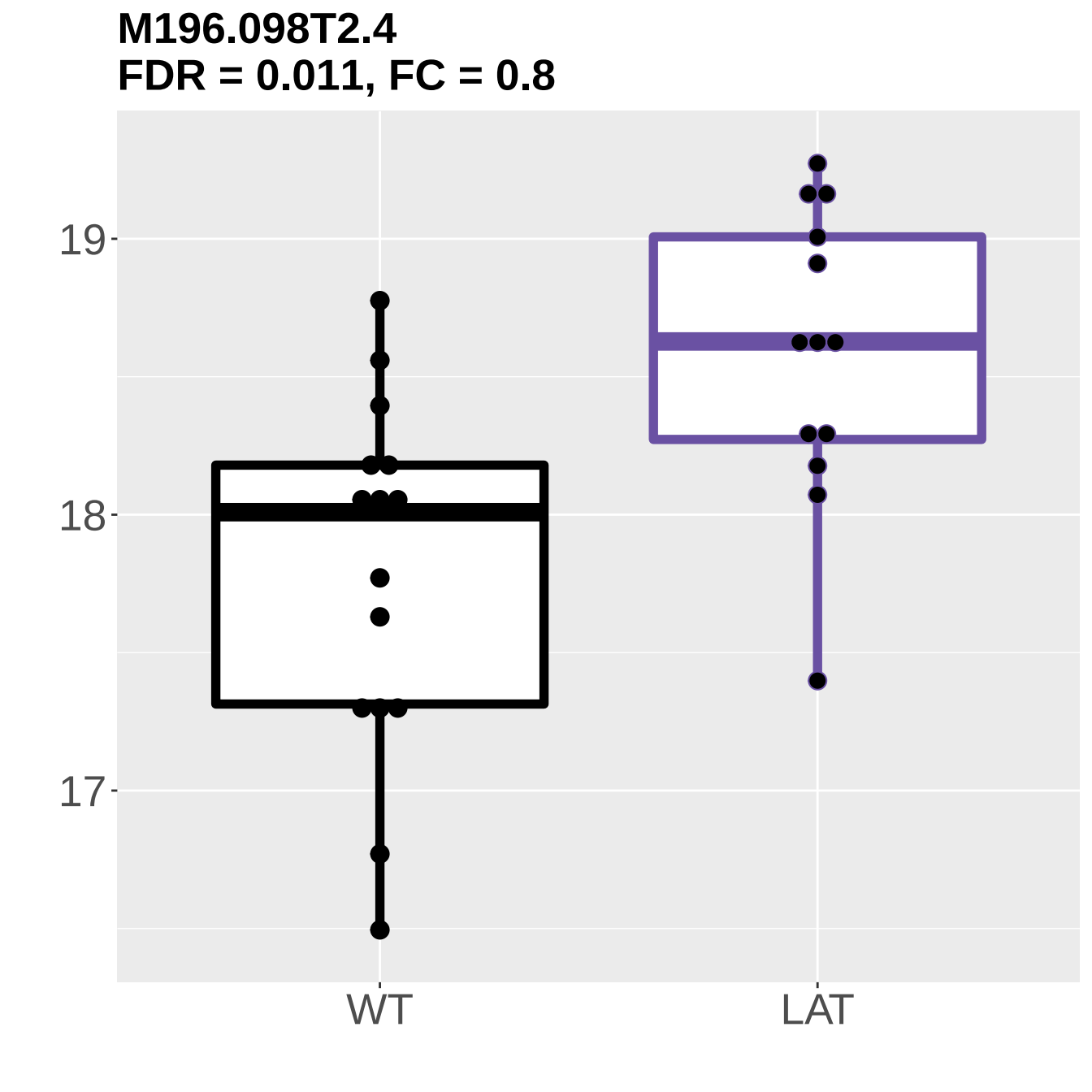
17.6082986463047
17.1654723608042
16.9922174608578
16.8552095001608
WT
LAT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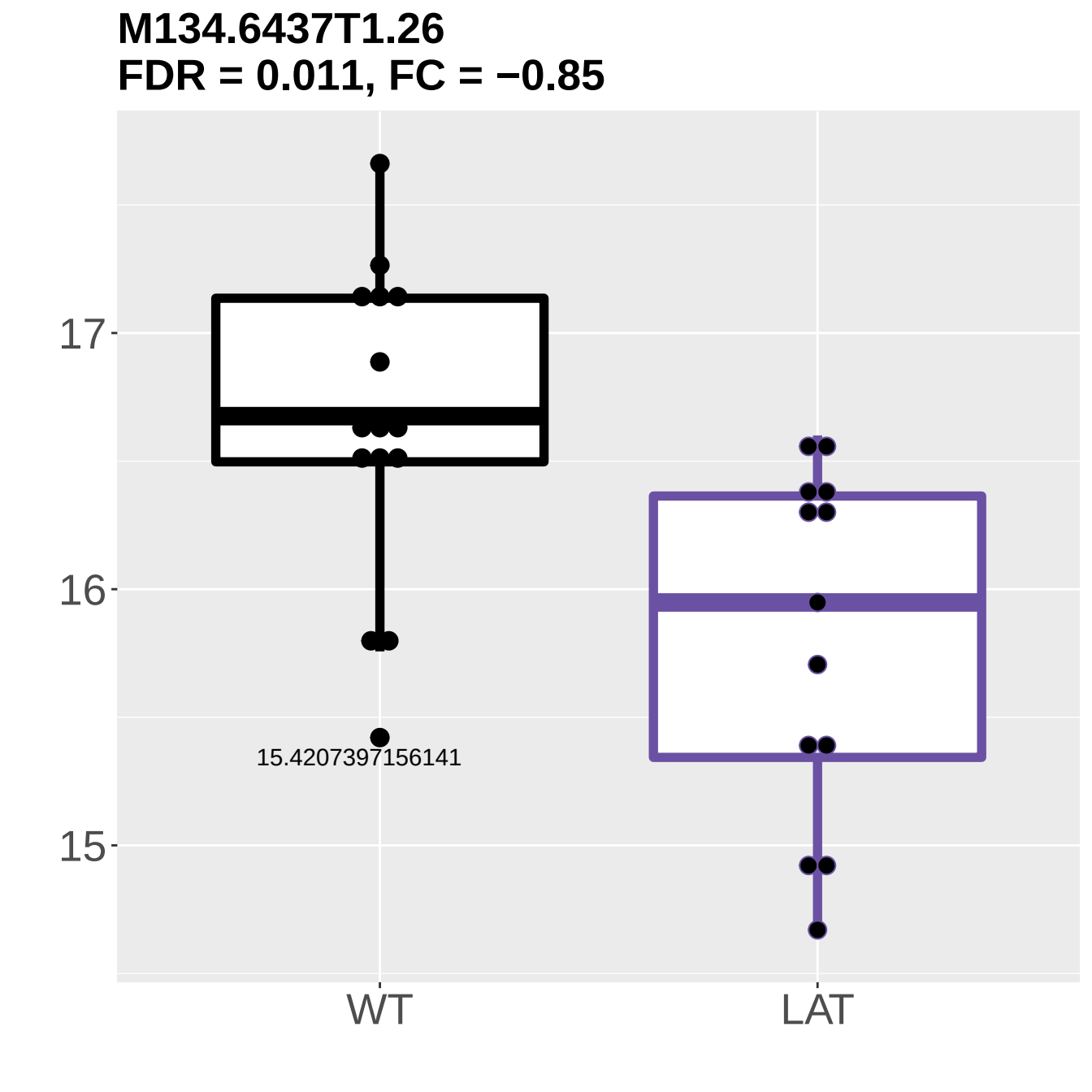
FDR = 0.011, FC = 0.8
19
18
17
WT
LAT


M134.6437T1.26
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16
15
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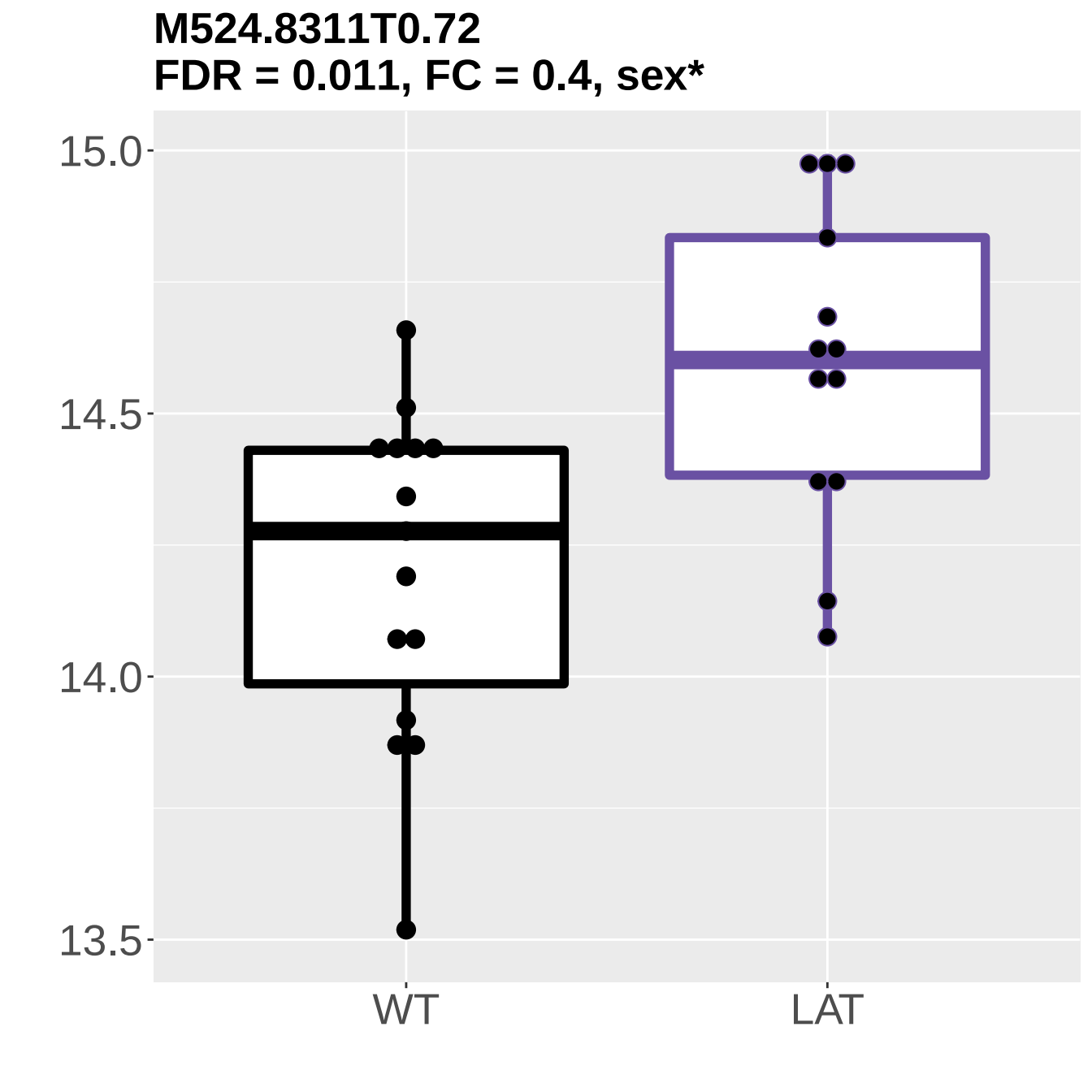
WT
LAT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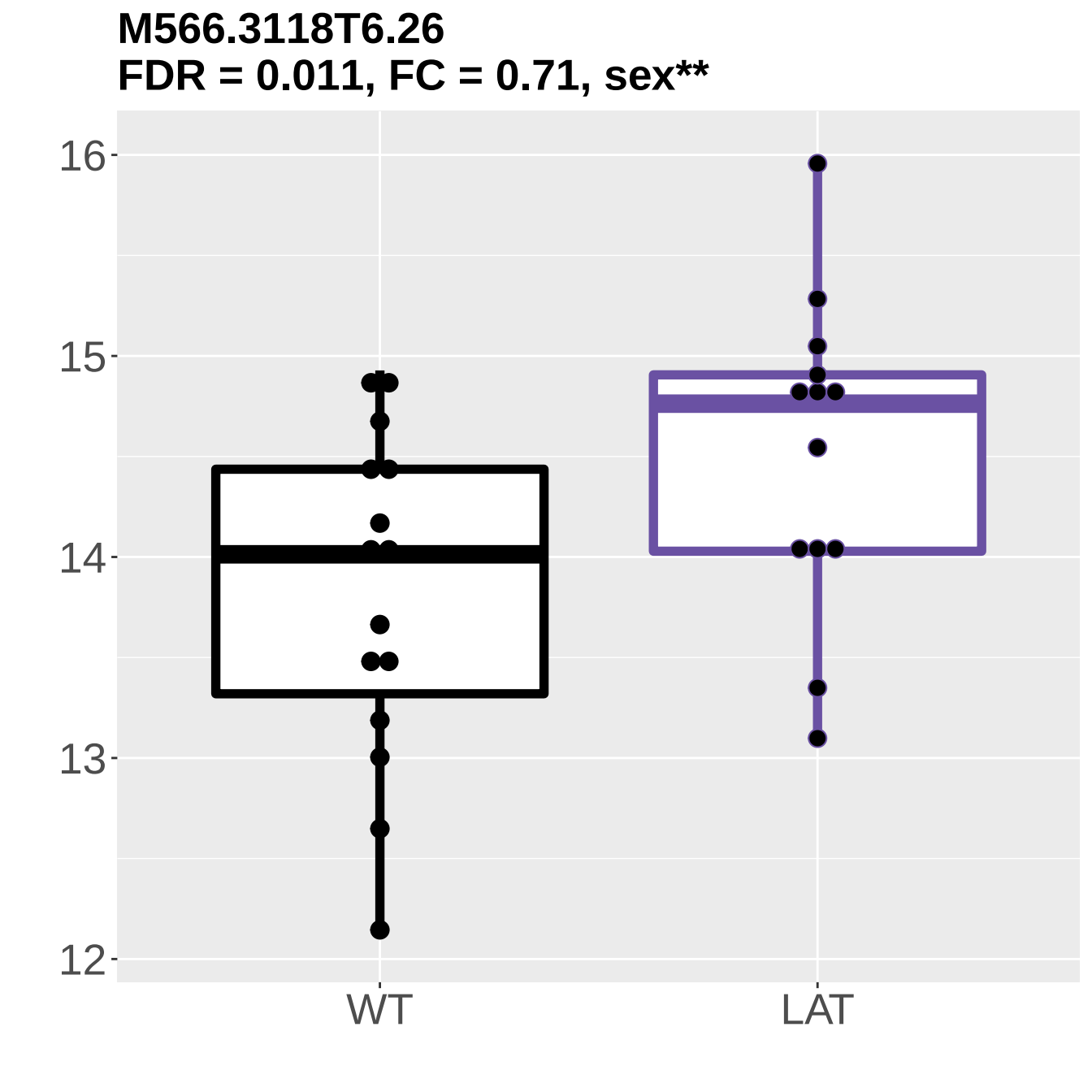
14.0
13.5
WT
LAT


M566.3118T6.26
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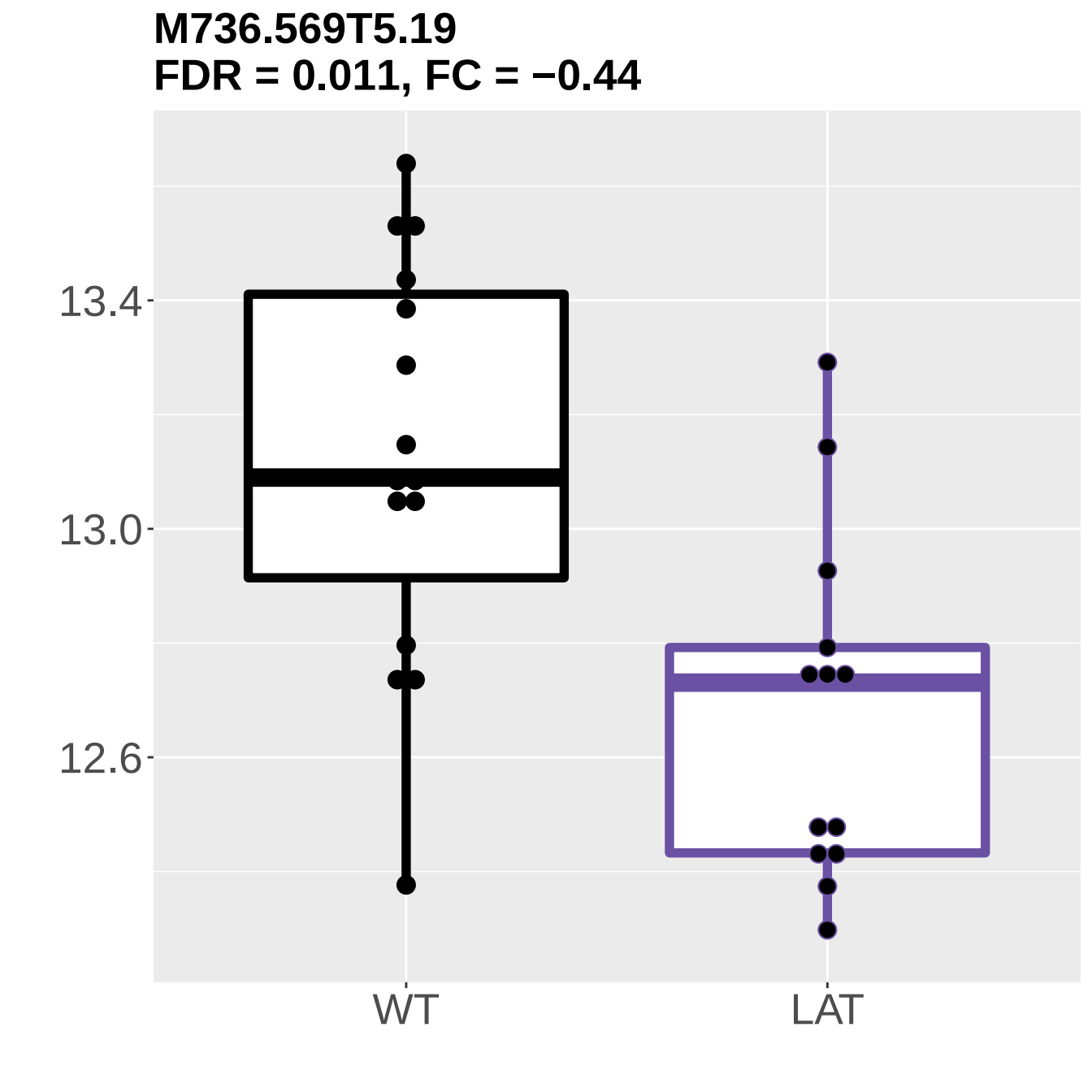
15
14
13
12
WT
LAT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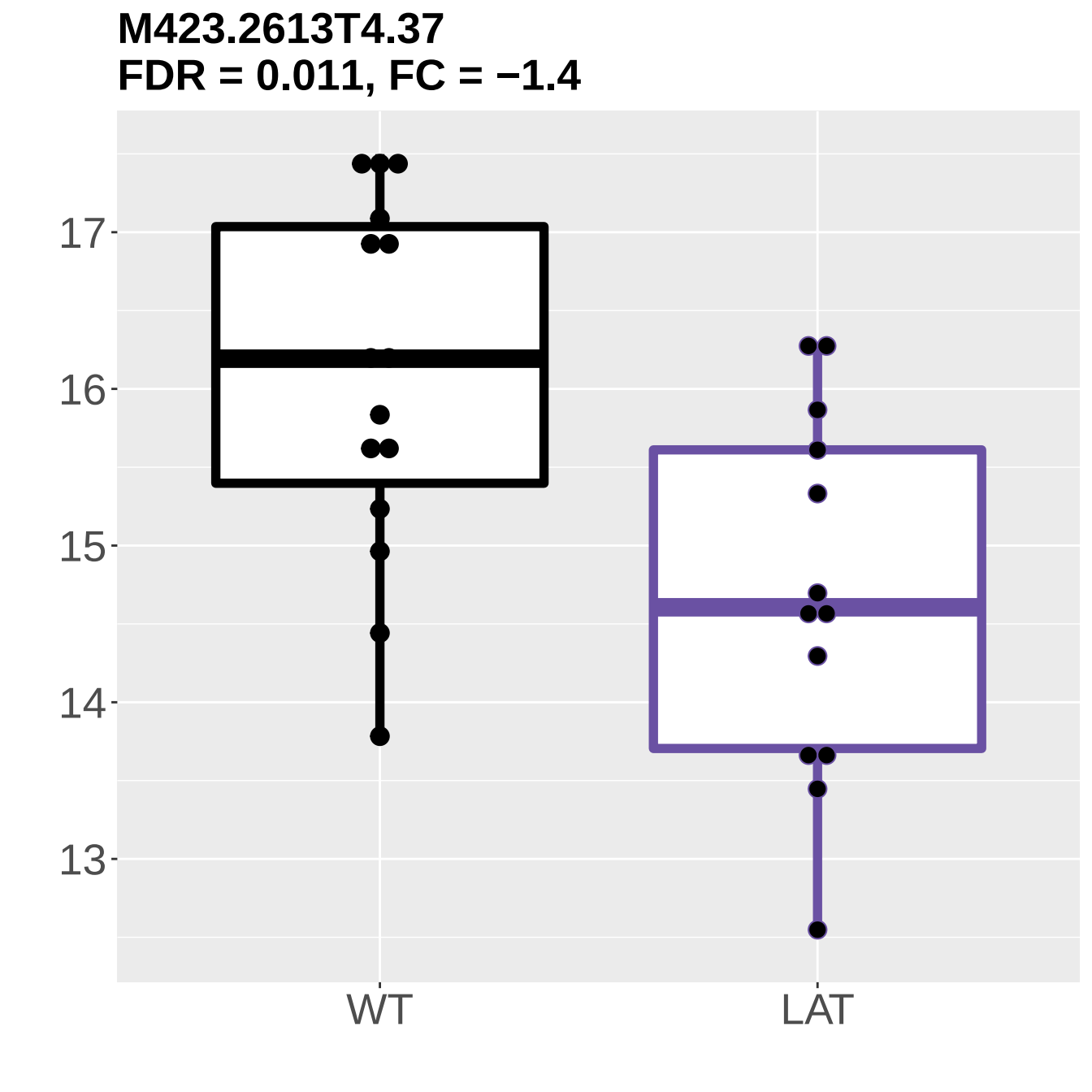
13.0
12.6
WT
LAT


M423.2613T4.37
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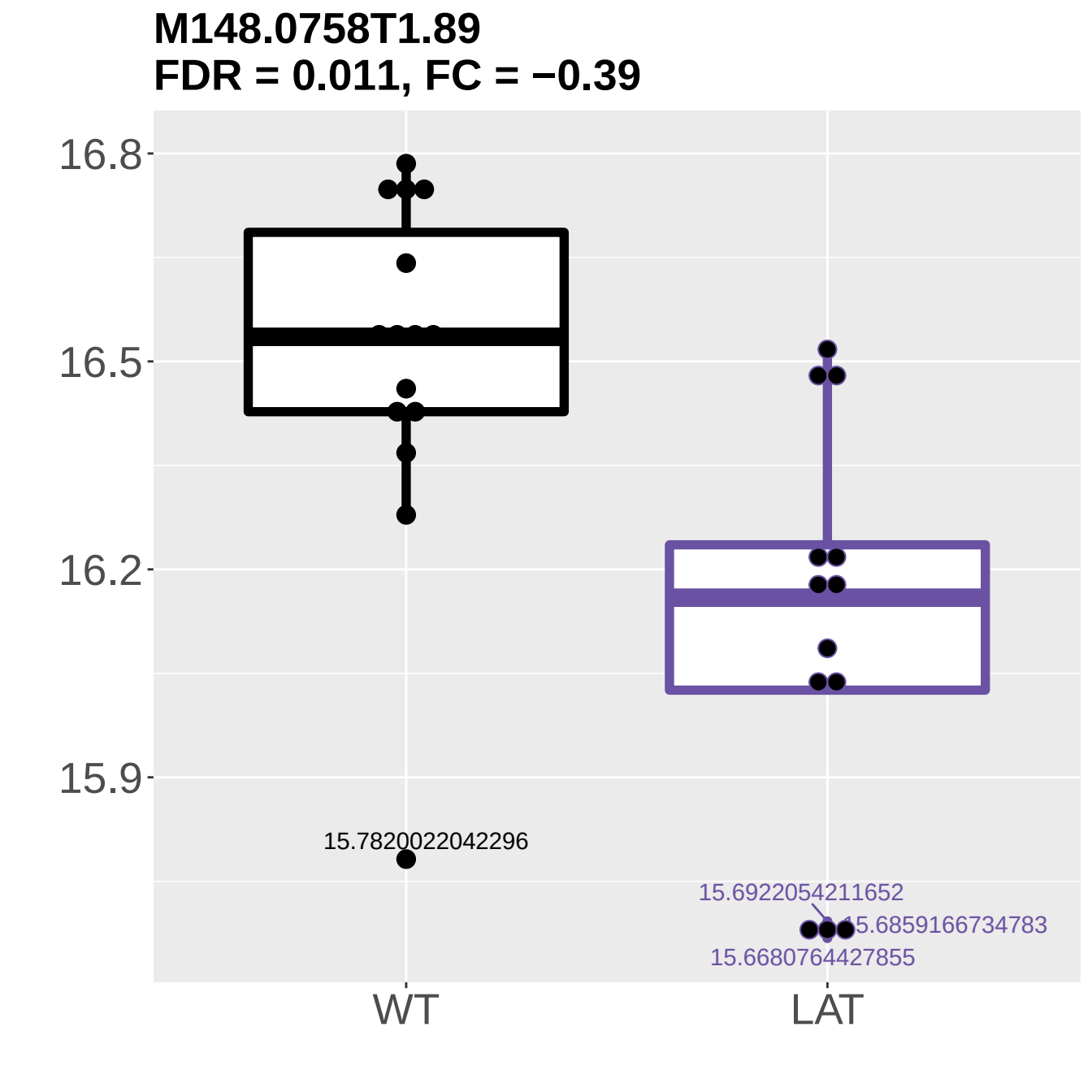
16
15
14
13
WT
LAT


M148.0758T1.89
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WT
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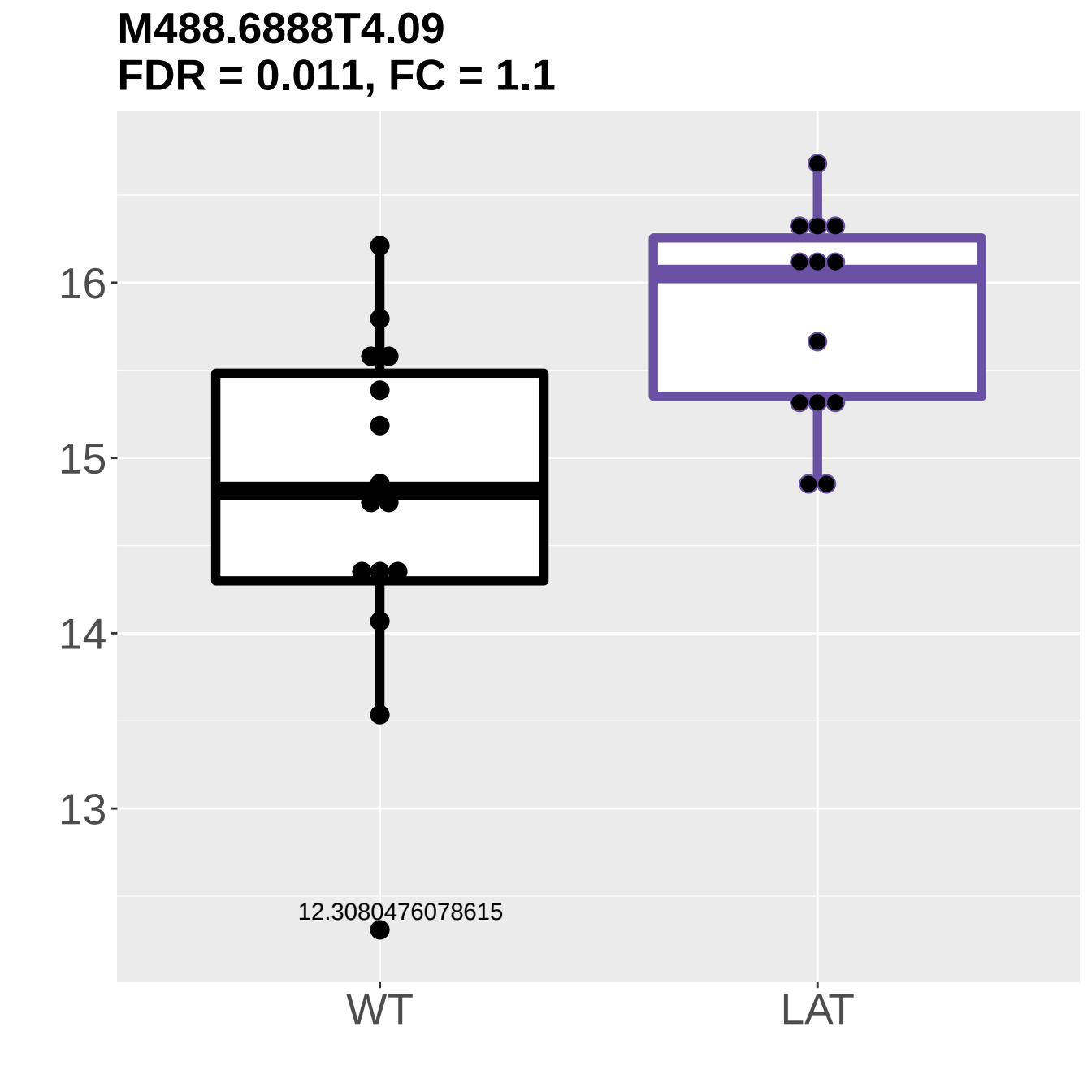
M488.6888T4.09
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15
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13
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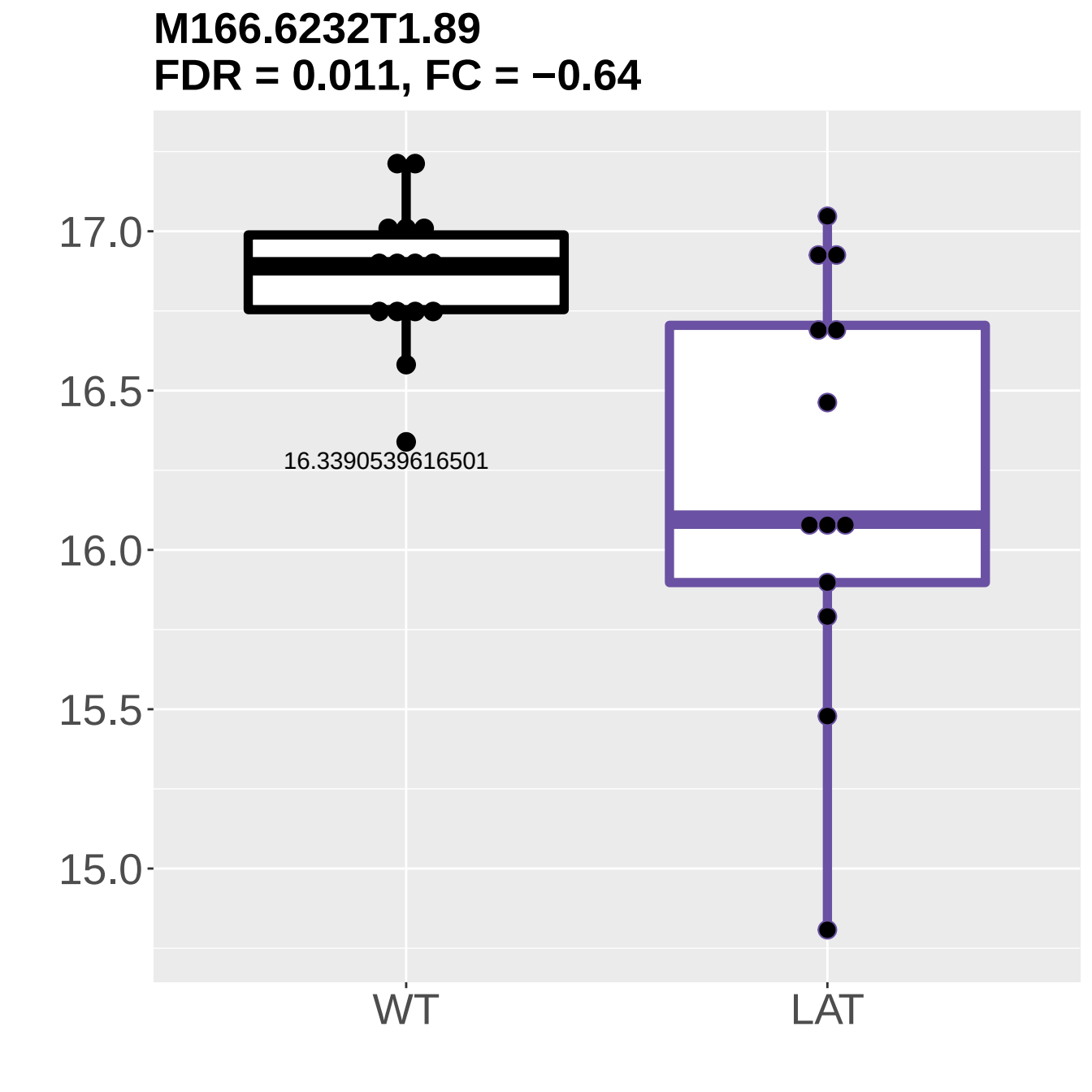
WT
LAT


M166.6232T1.89
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15.5
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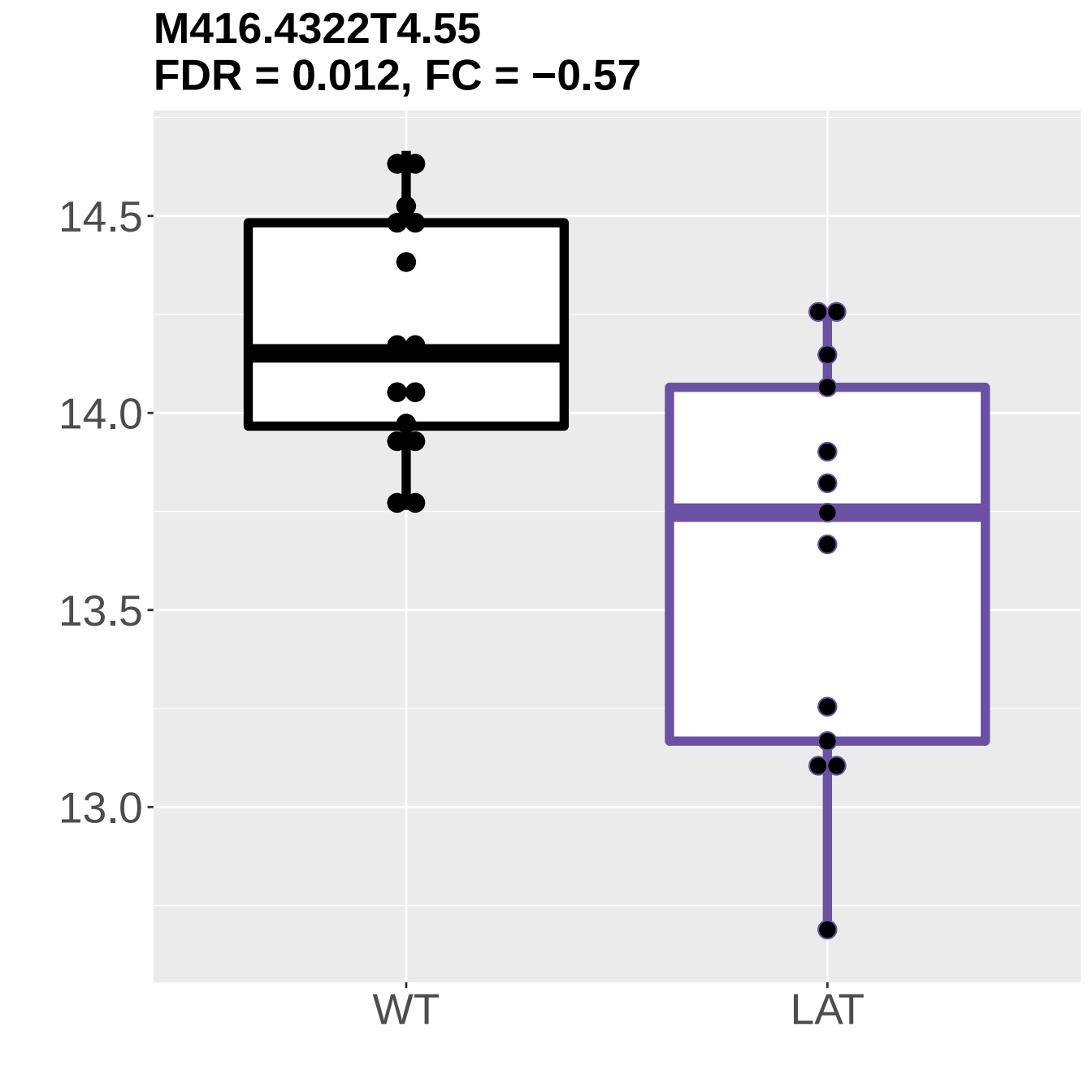
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13.5
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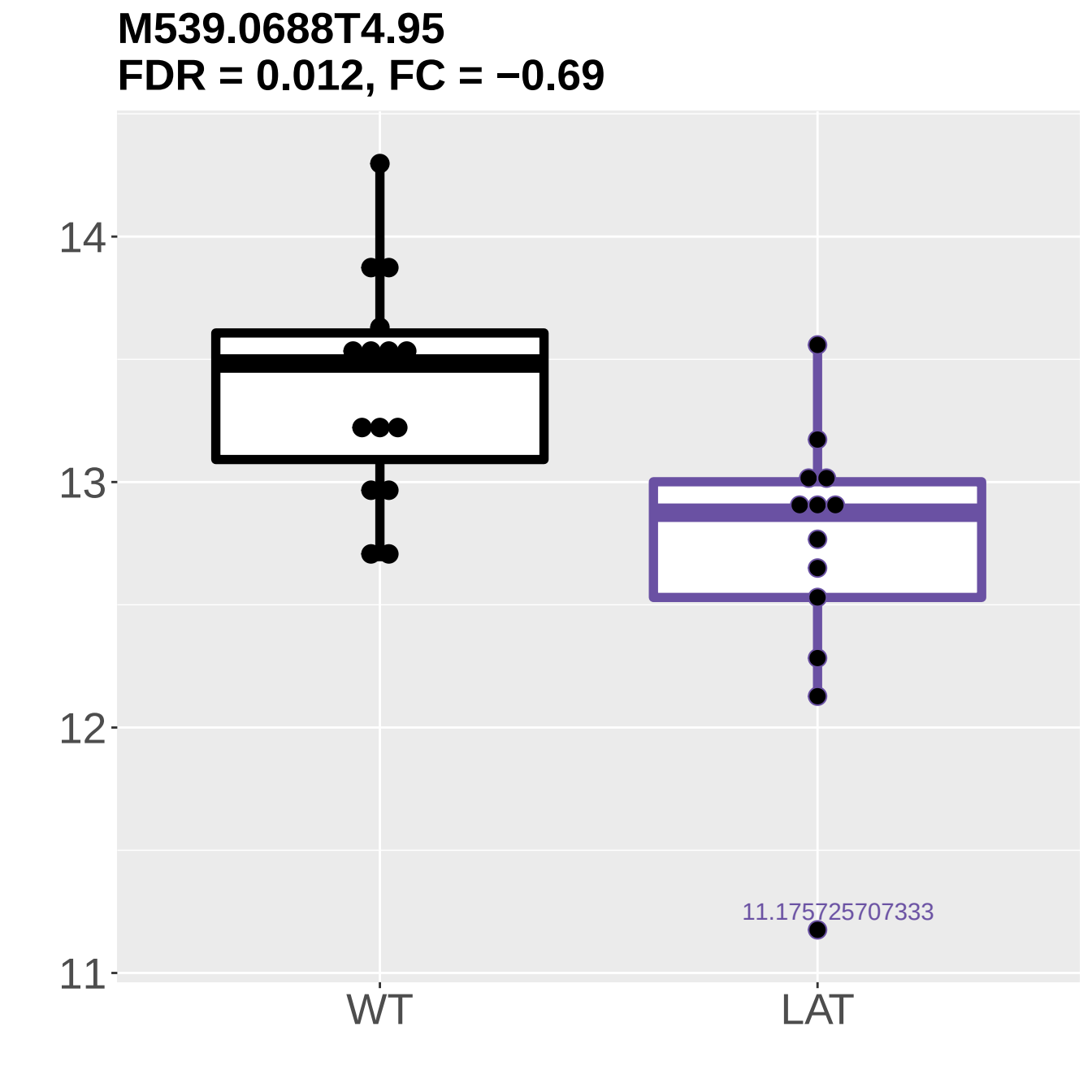
WT
LAT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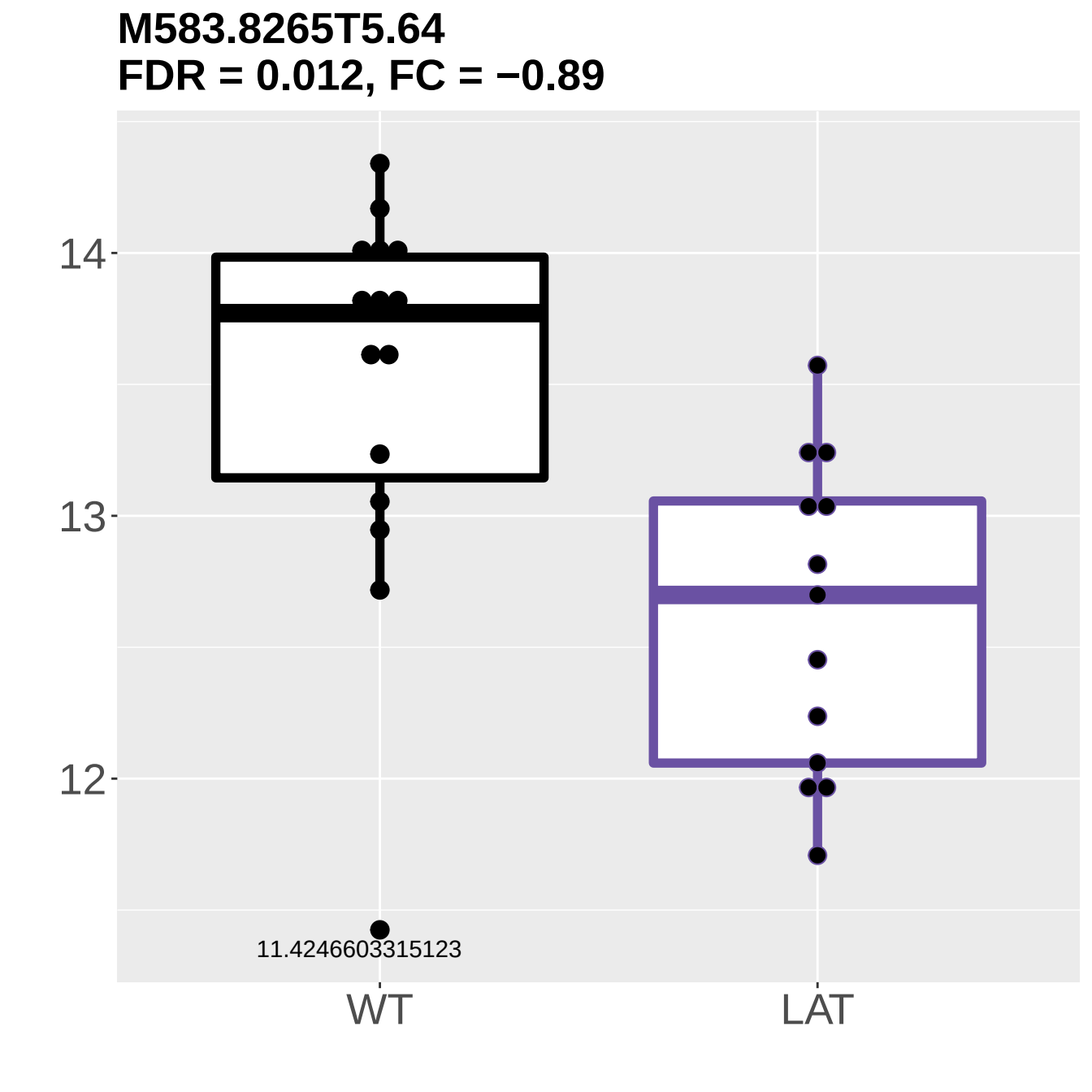
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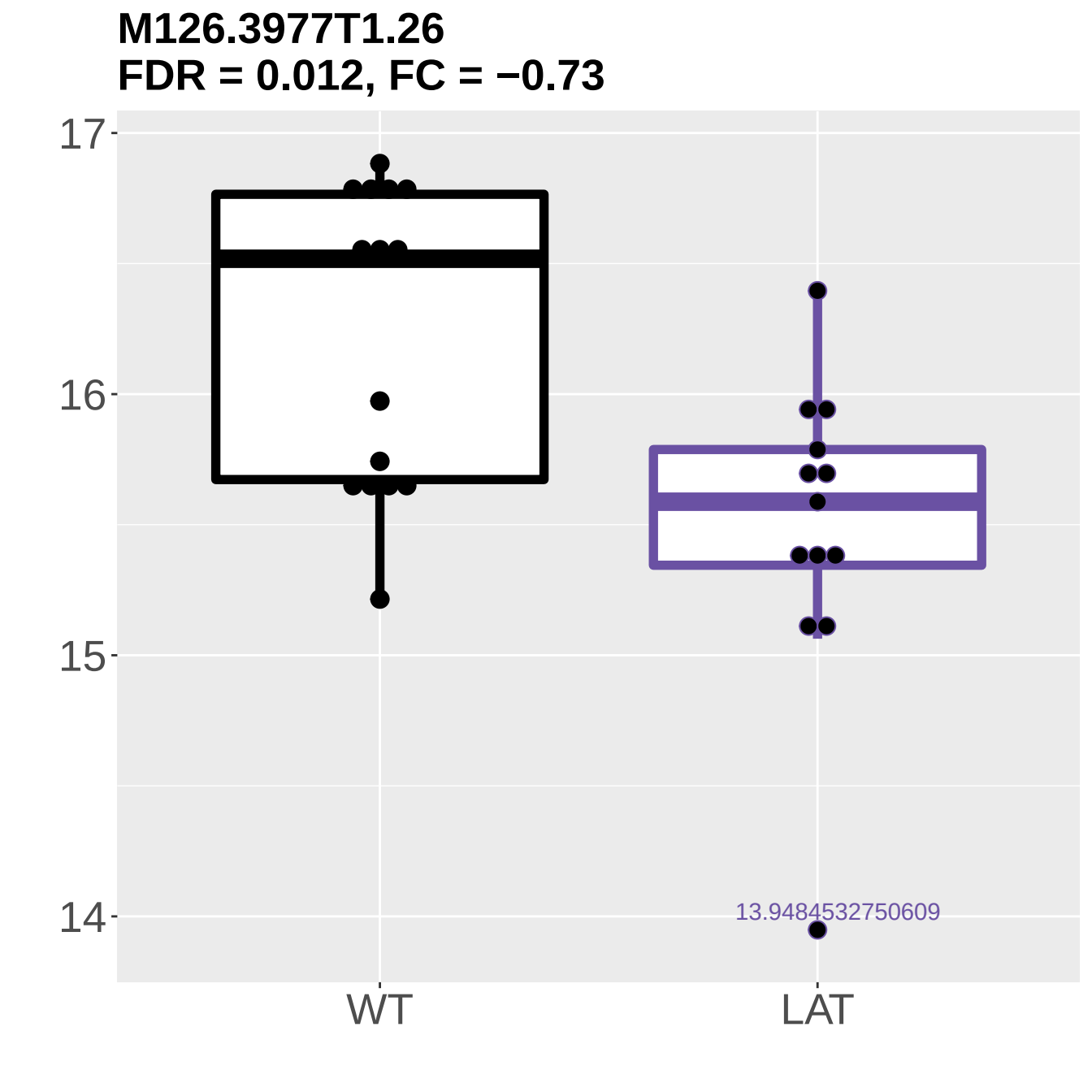
WT
LAT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16
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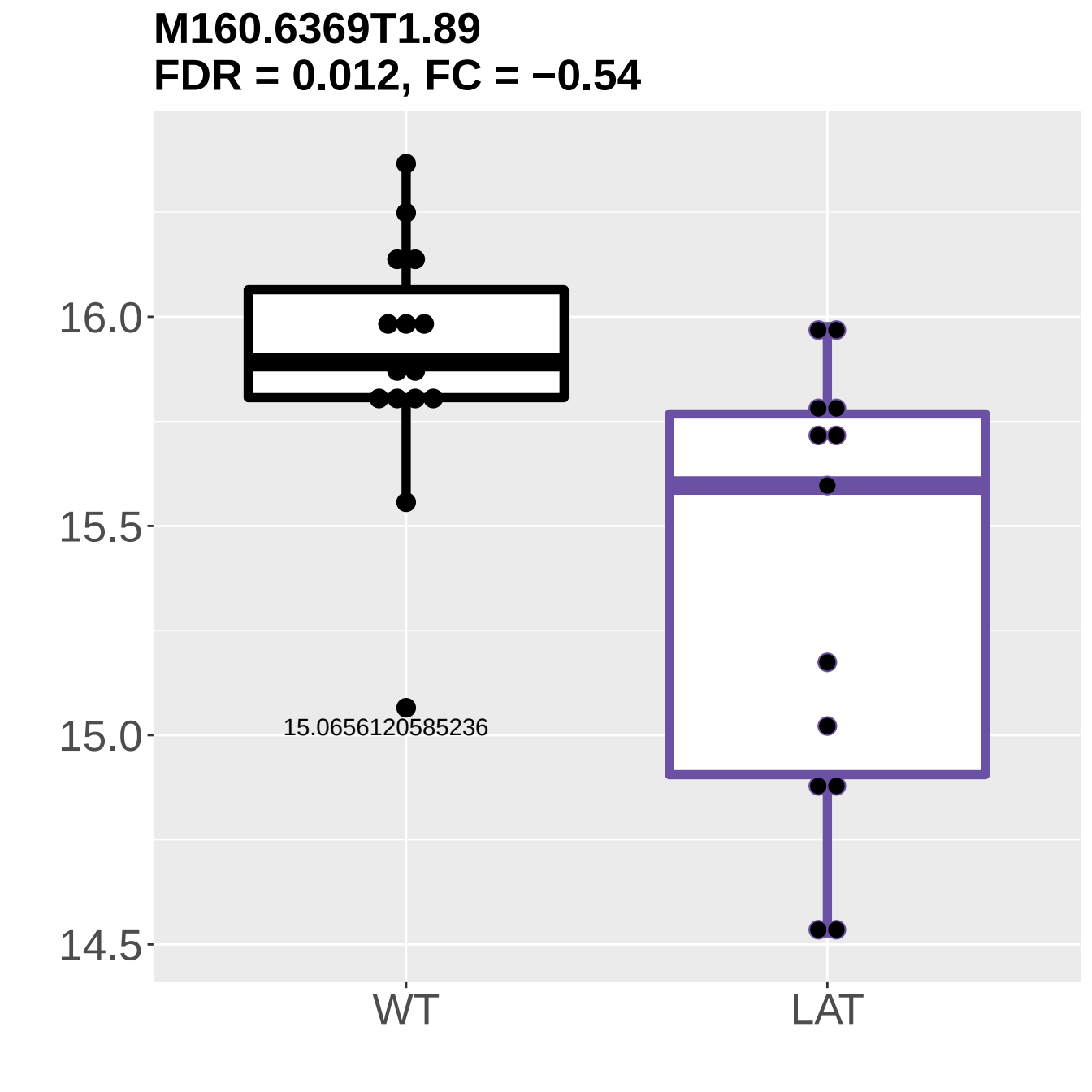
WT
LAT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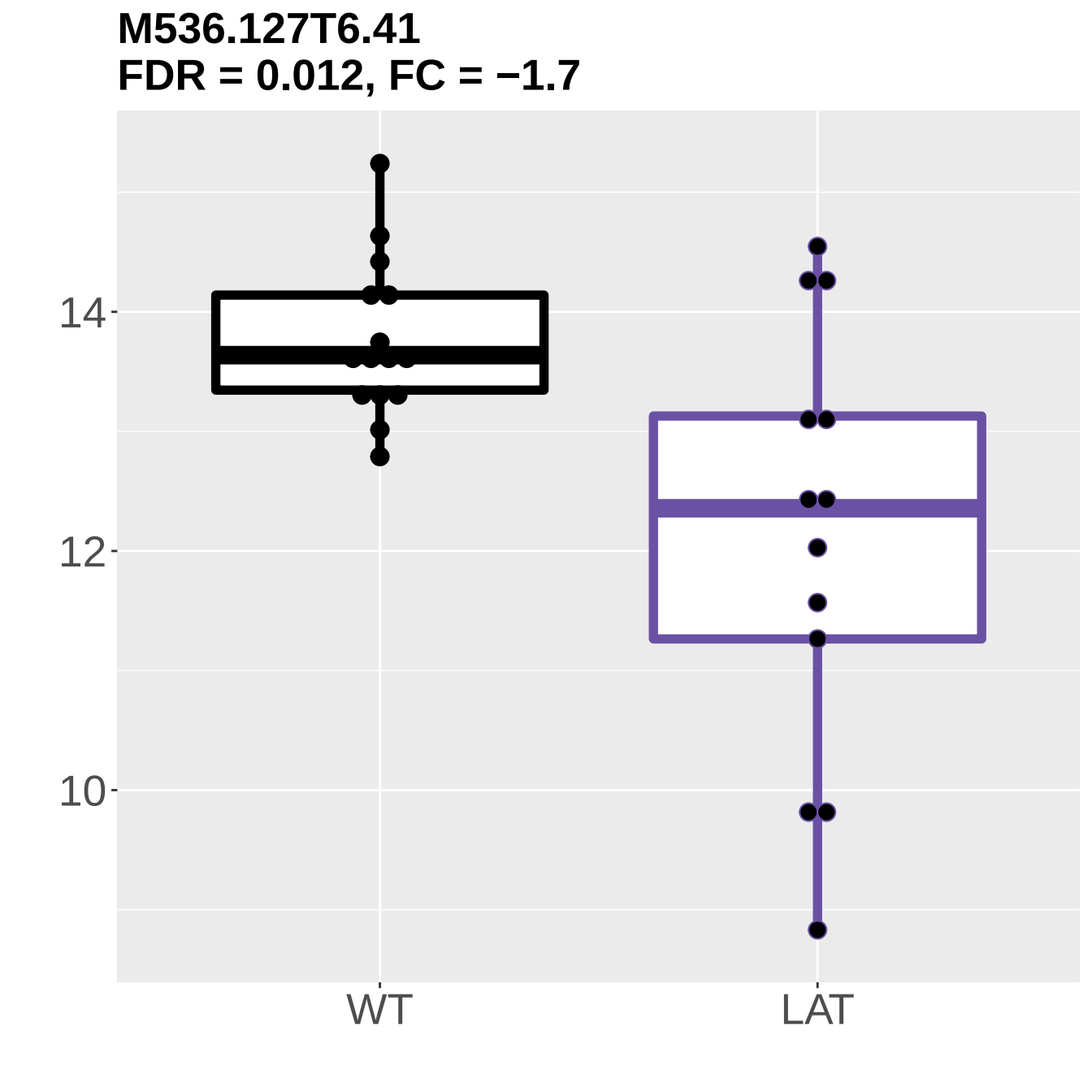
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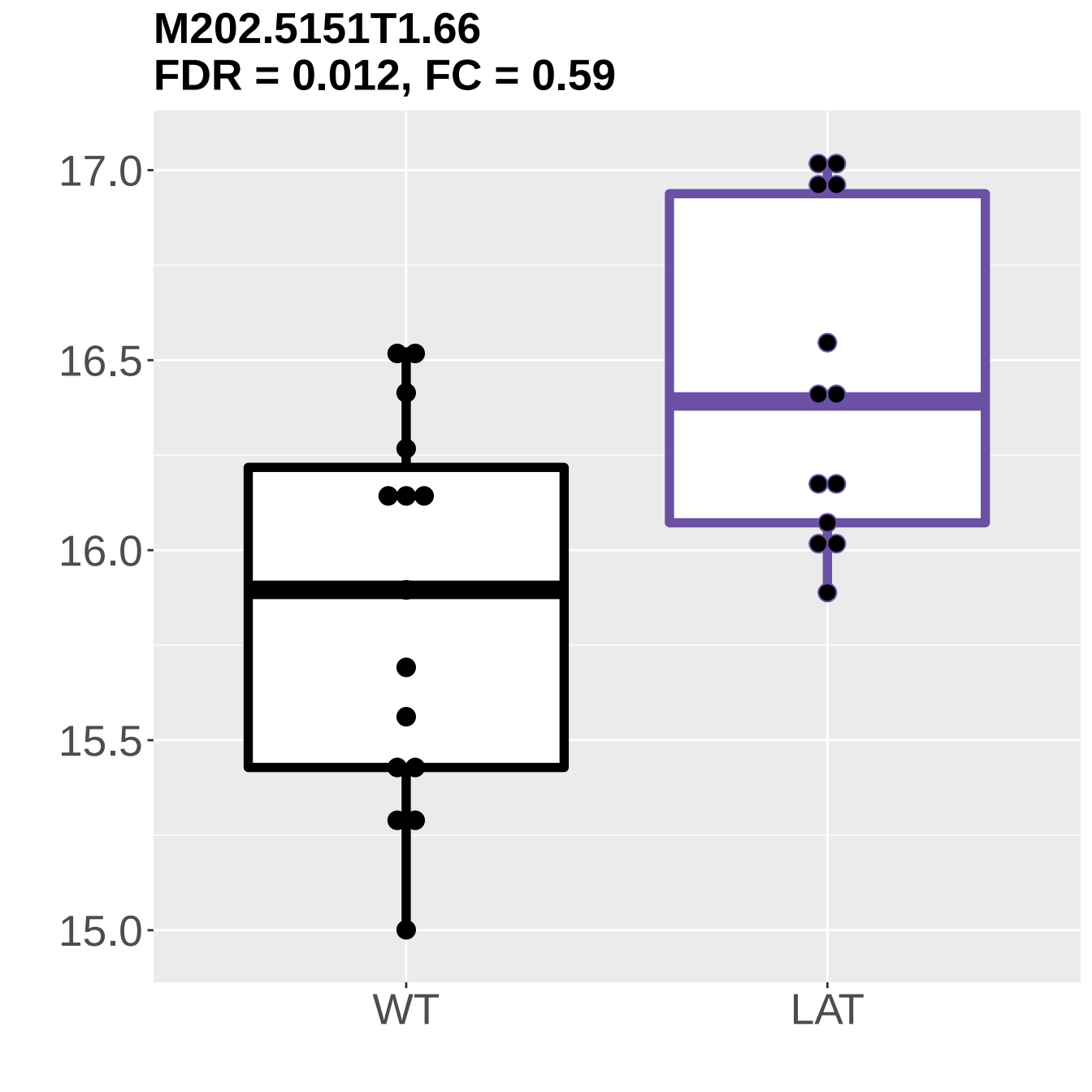
12
10
WT
LAT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WT
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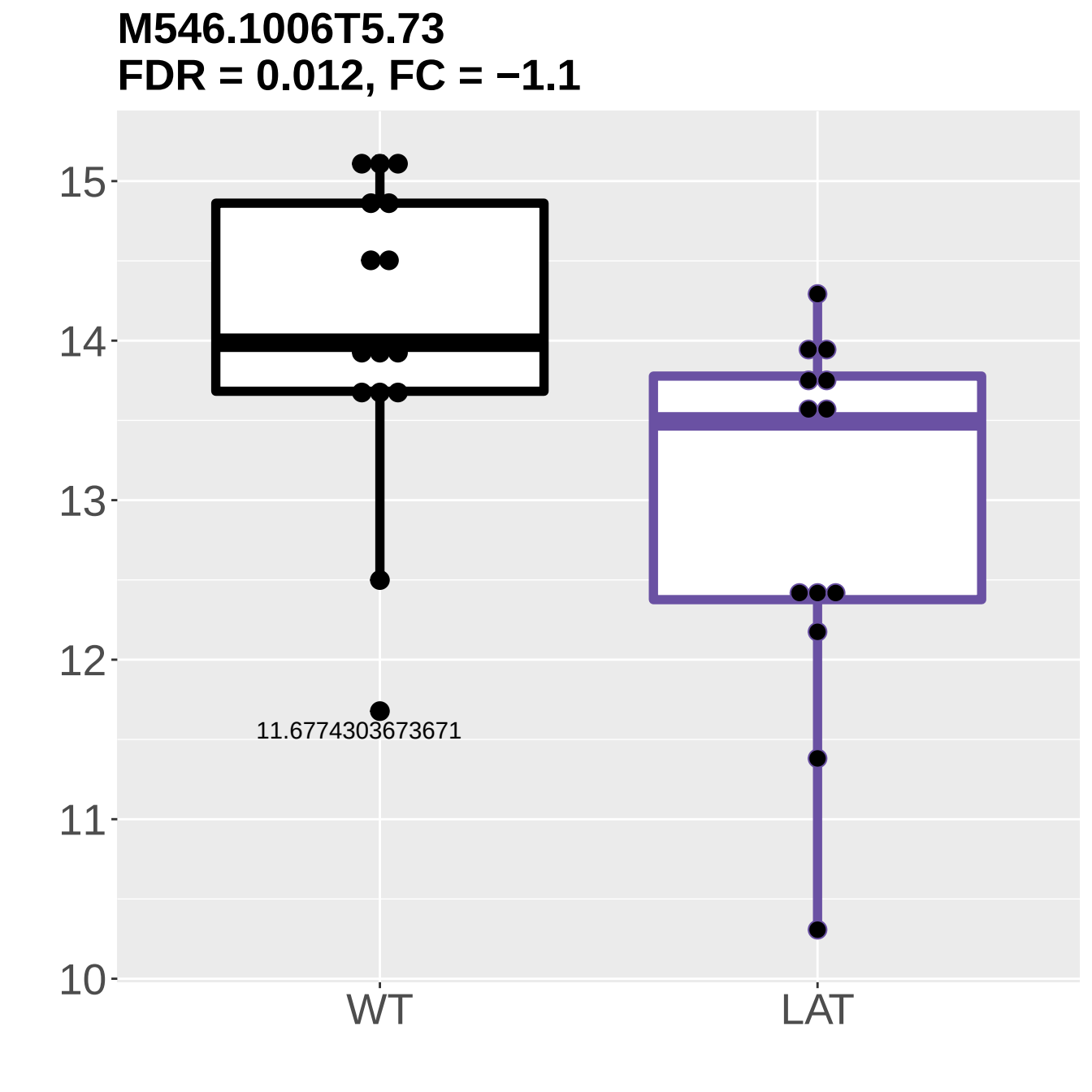
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14
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12
11
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WT
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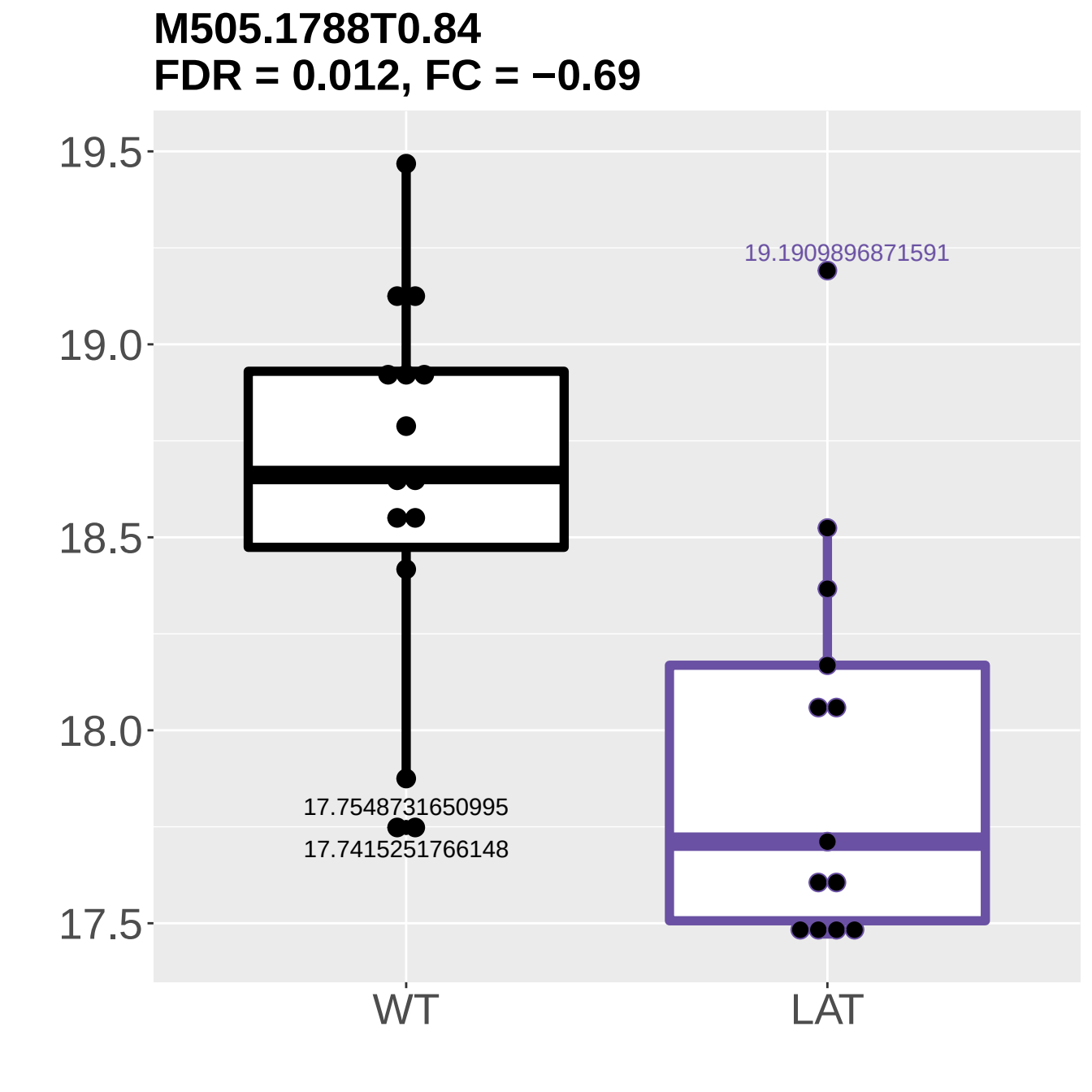
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WT
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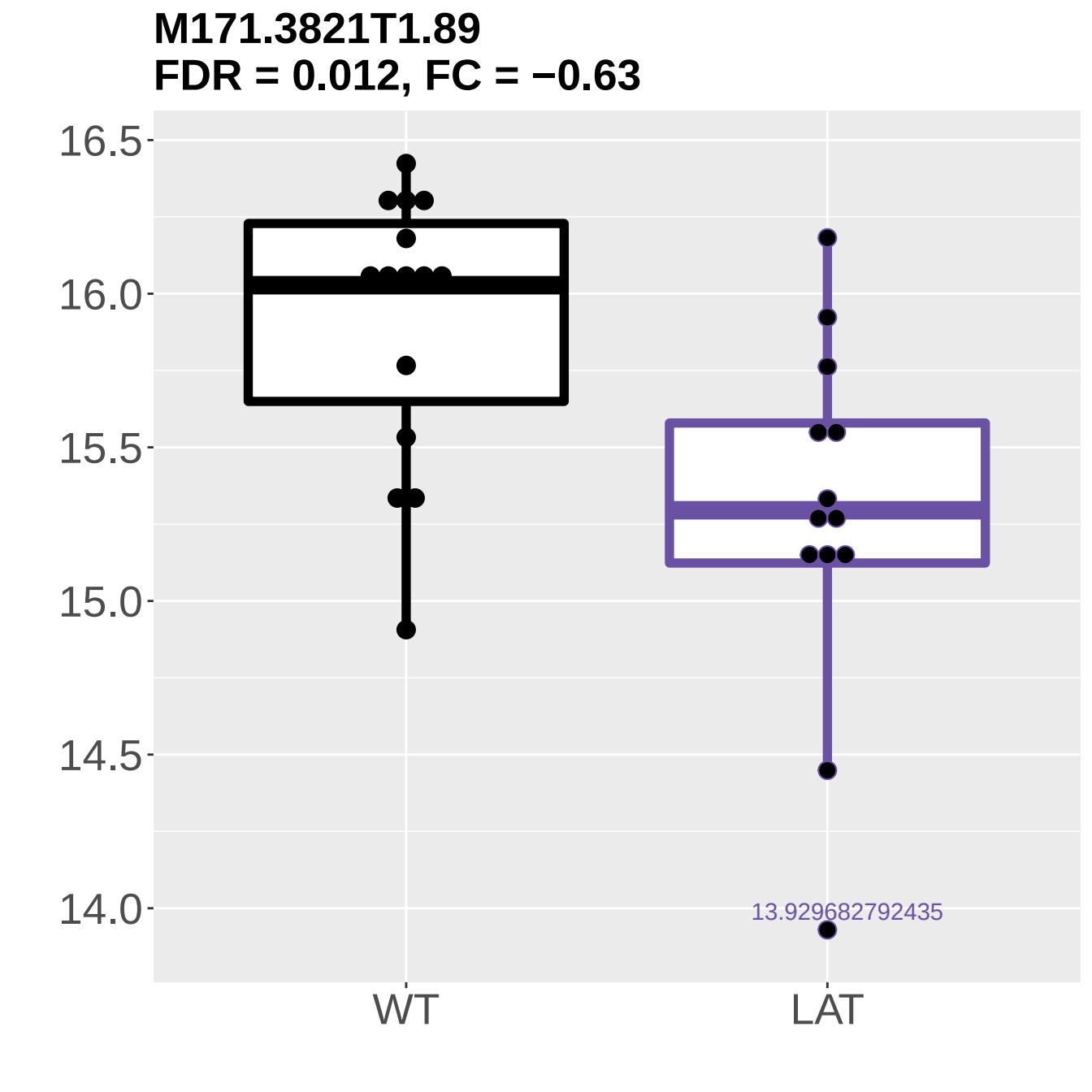
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WT
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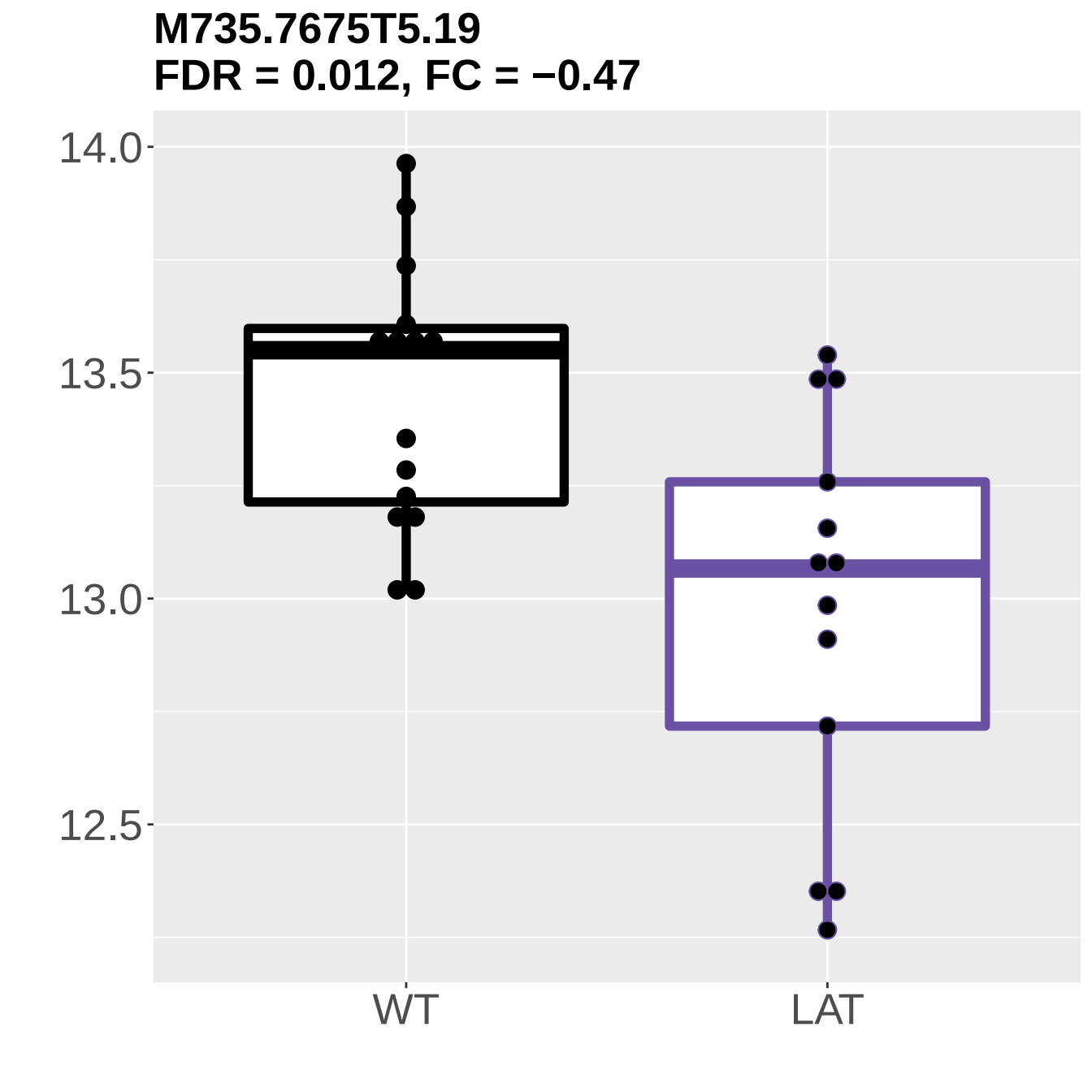
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13.0
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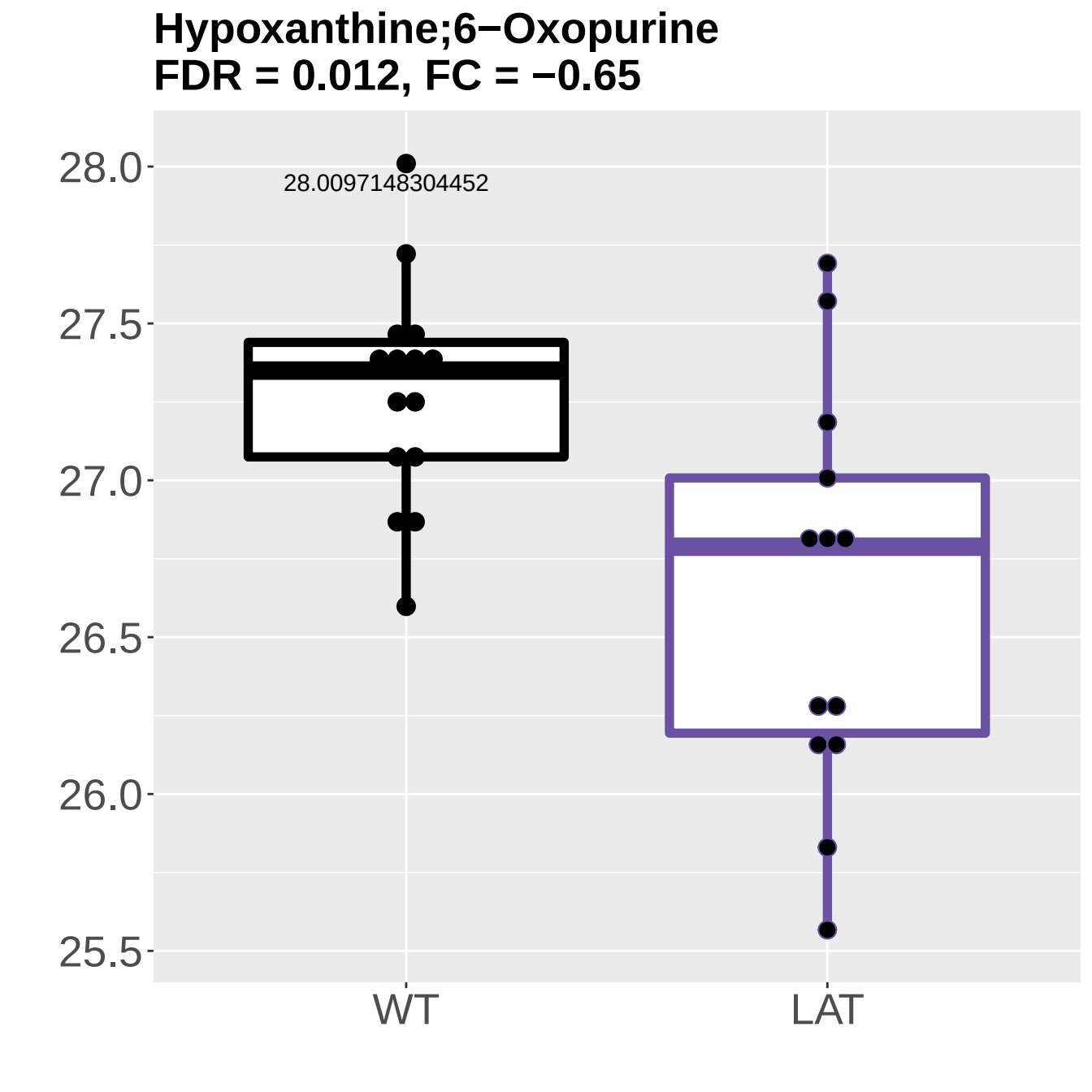
WT
LAT


Hypoxanthine;6−Oxopurine
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27.0
26.5
26.0
25.5
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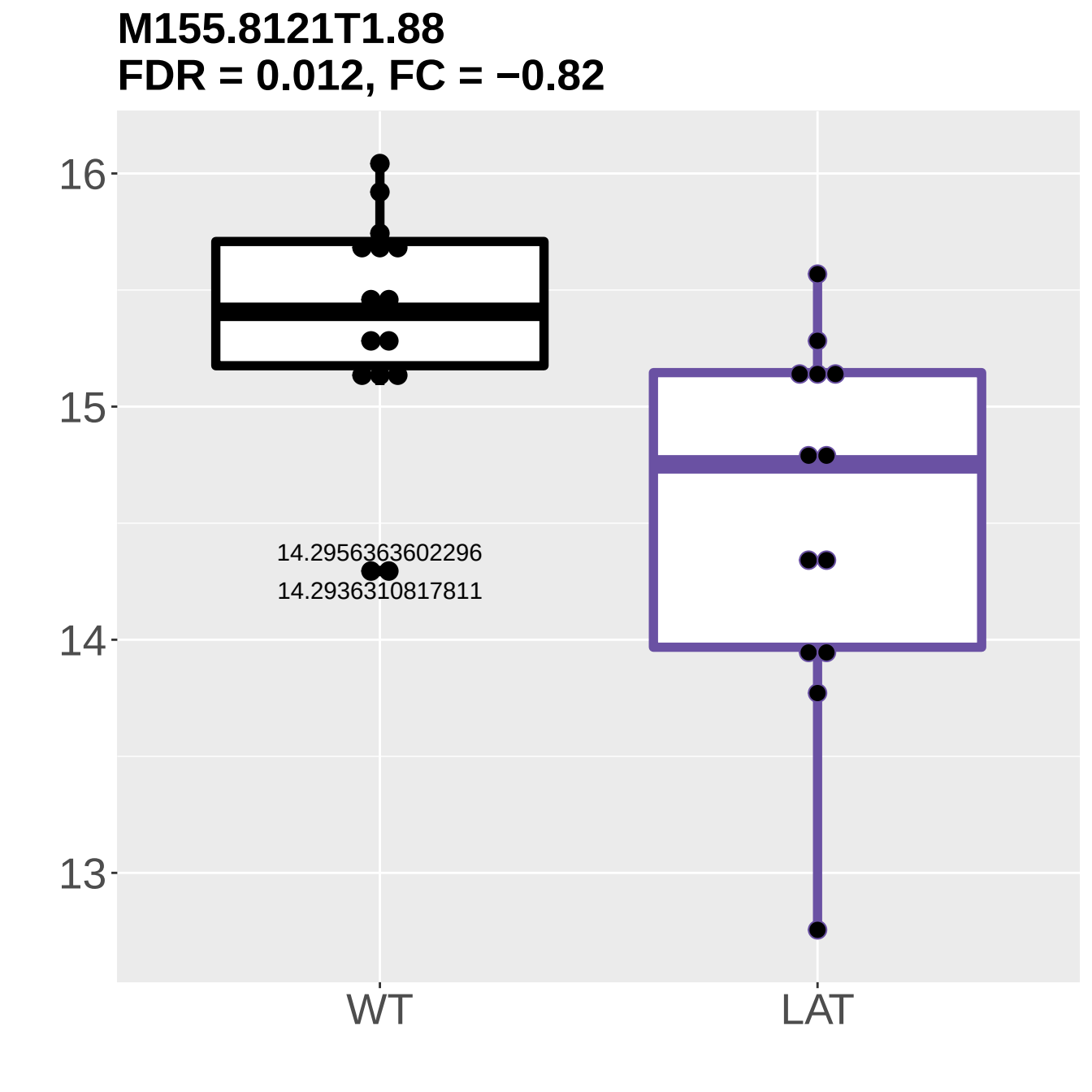
WT
LAT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15
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13
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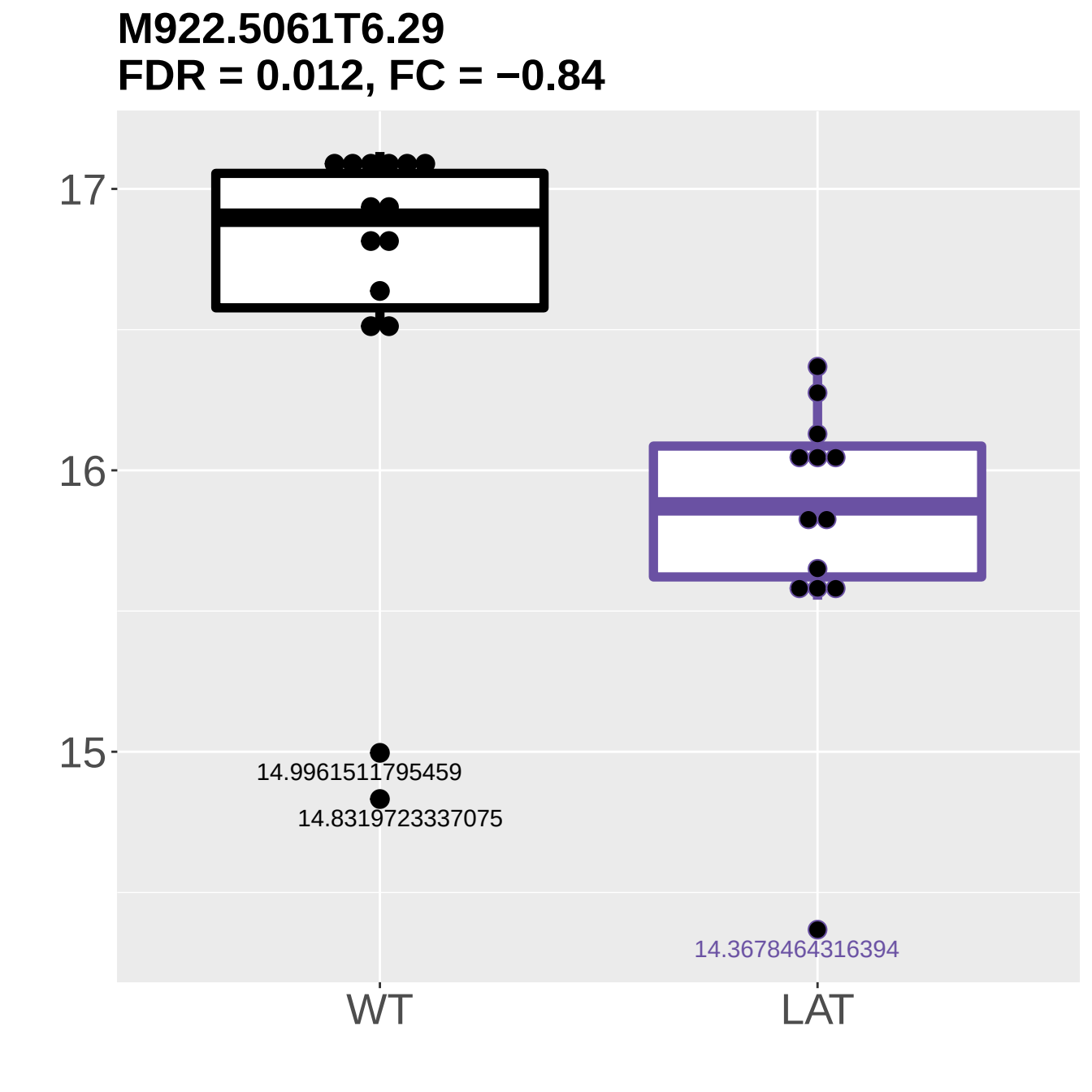
WT
LAT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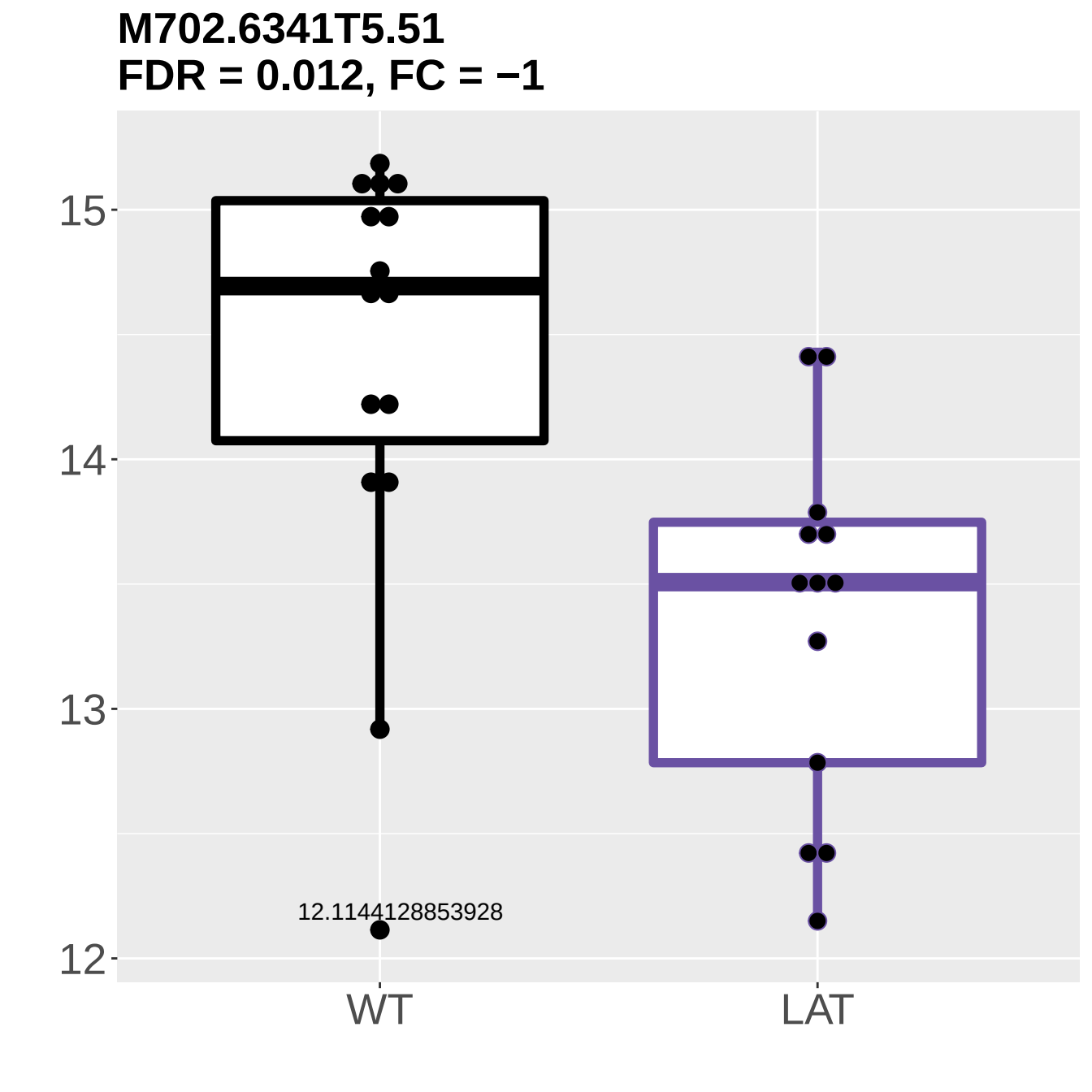
WT
LAT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13
12
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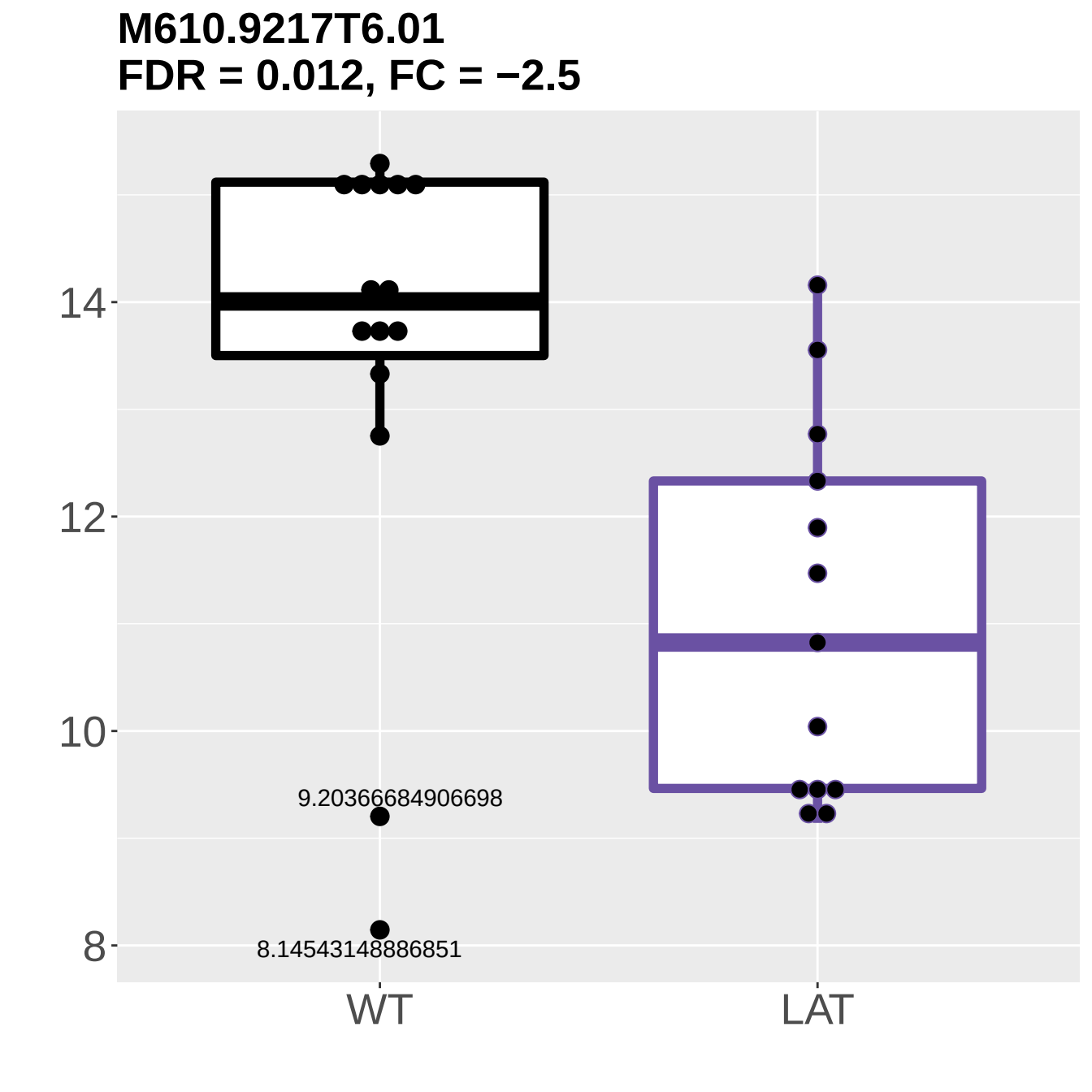
WT
LAT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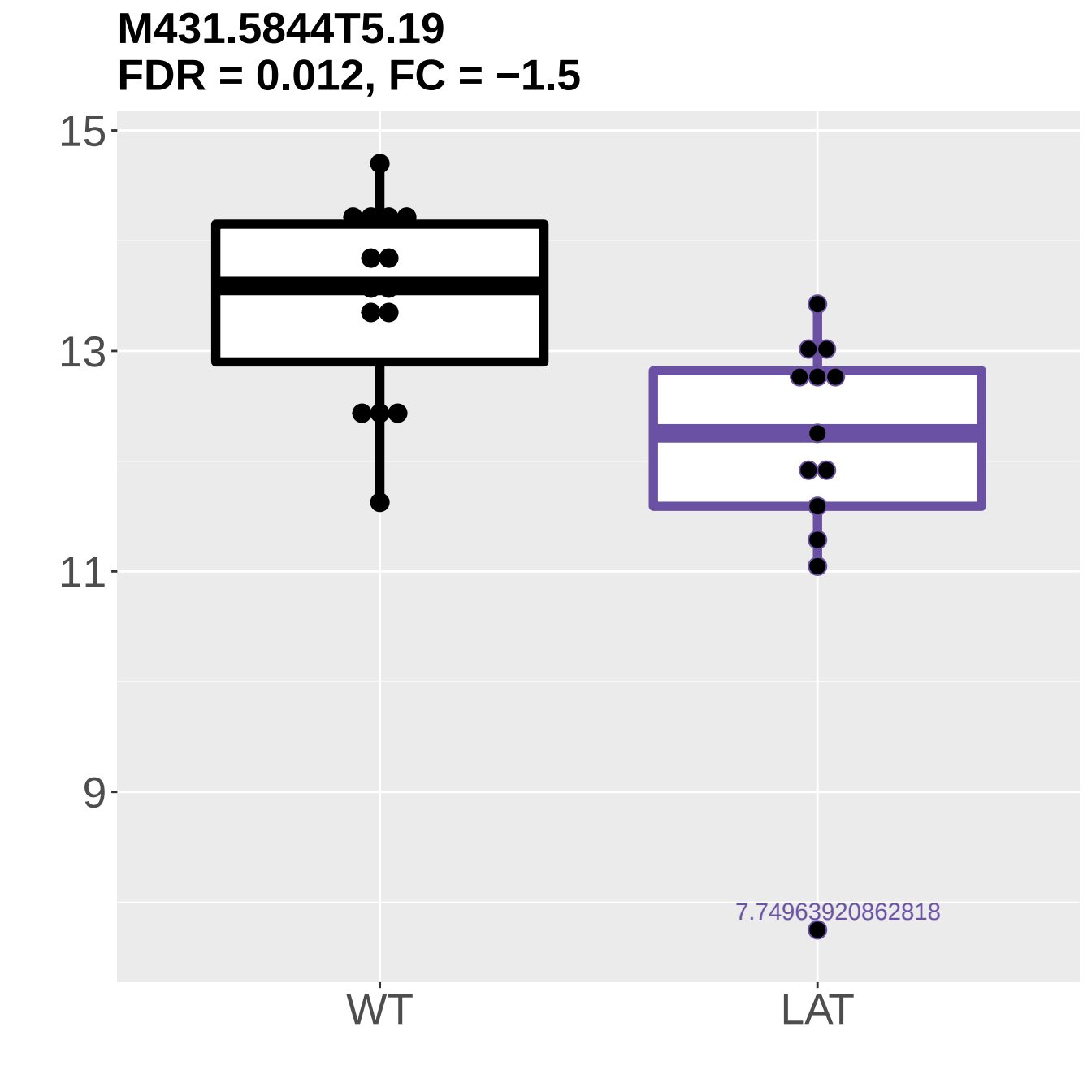
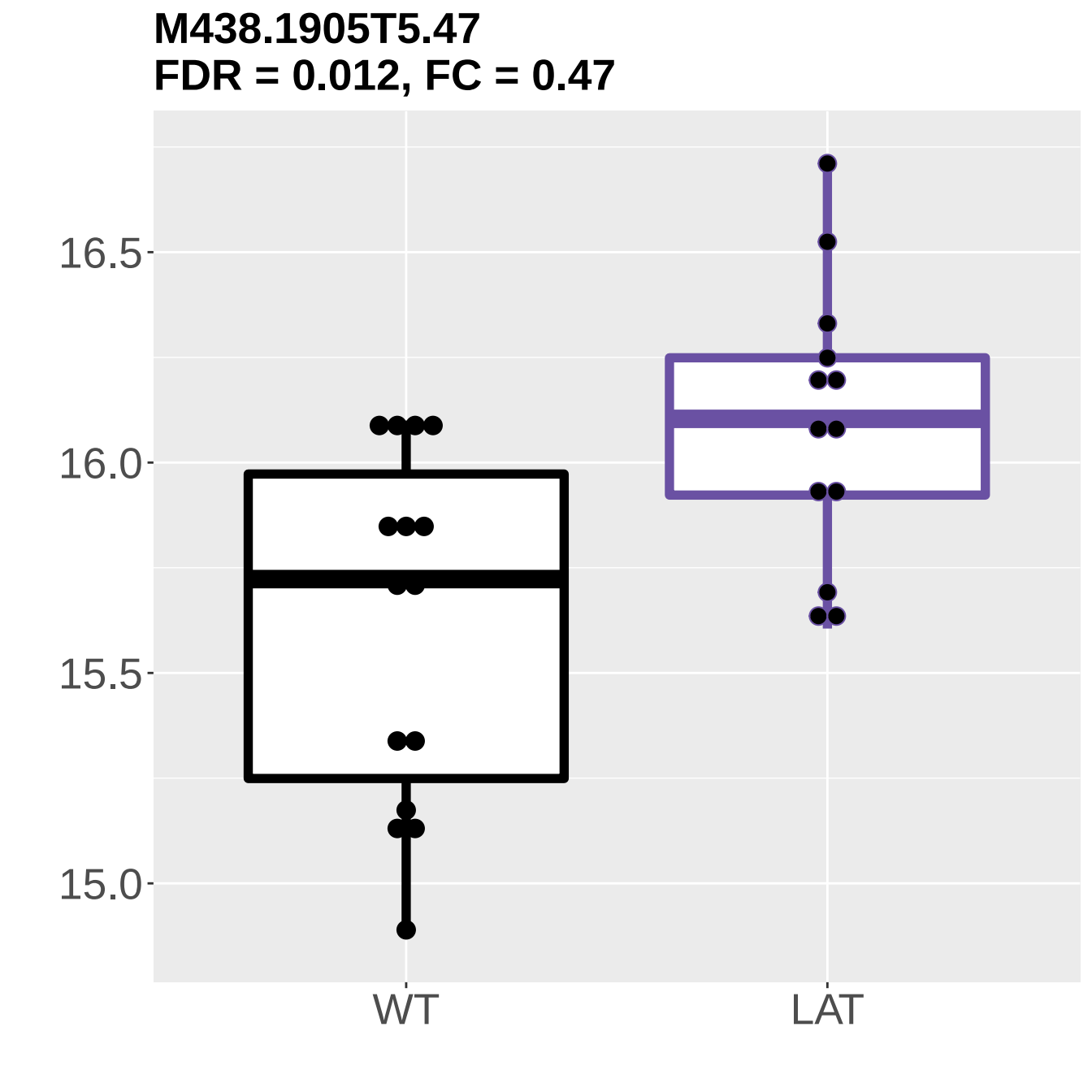
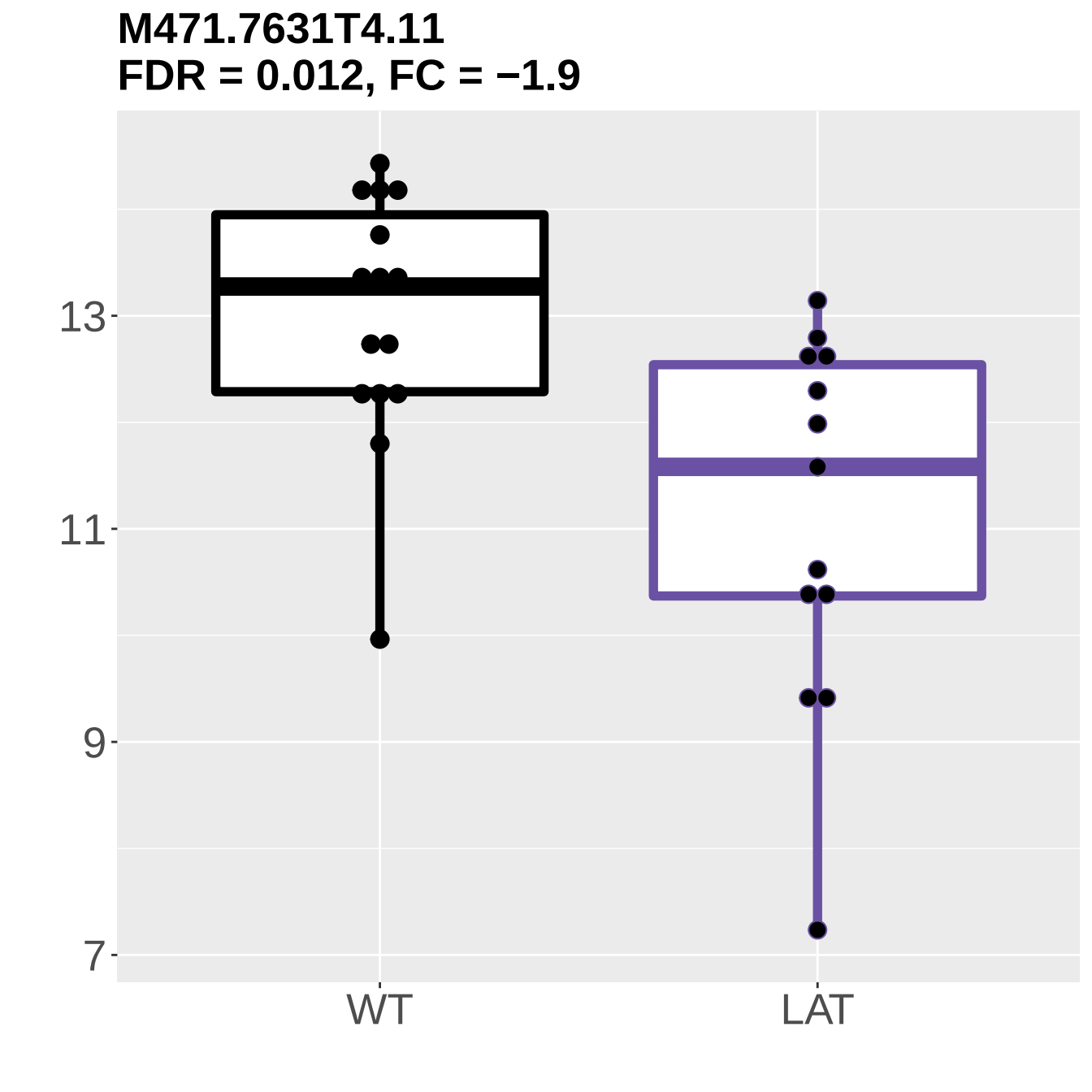
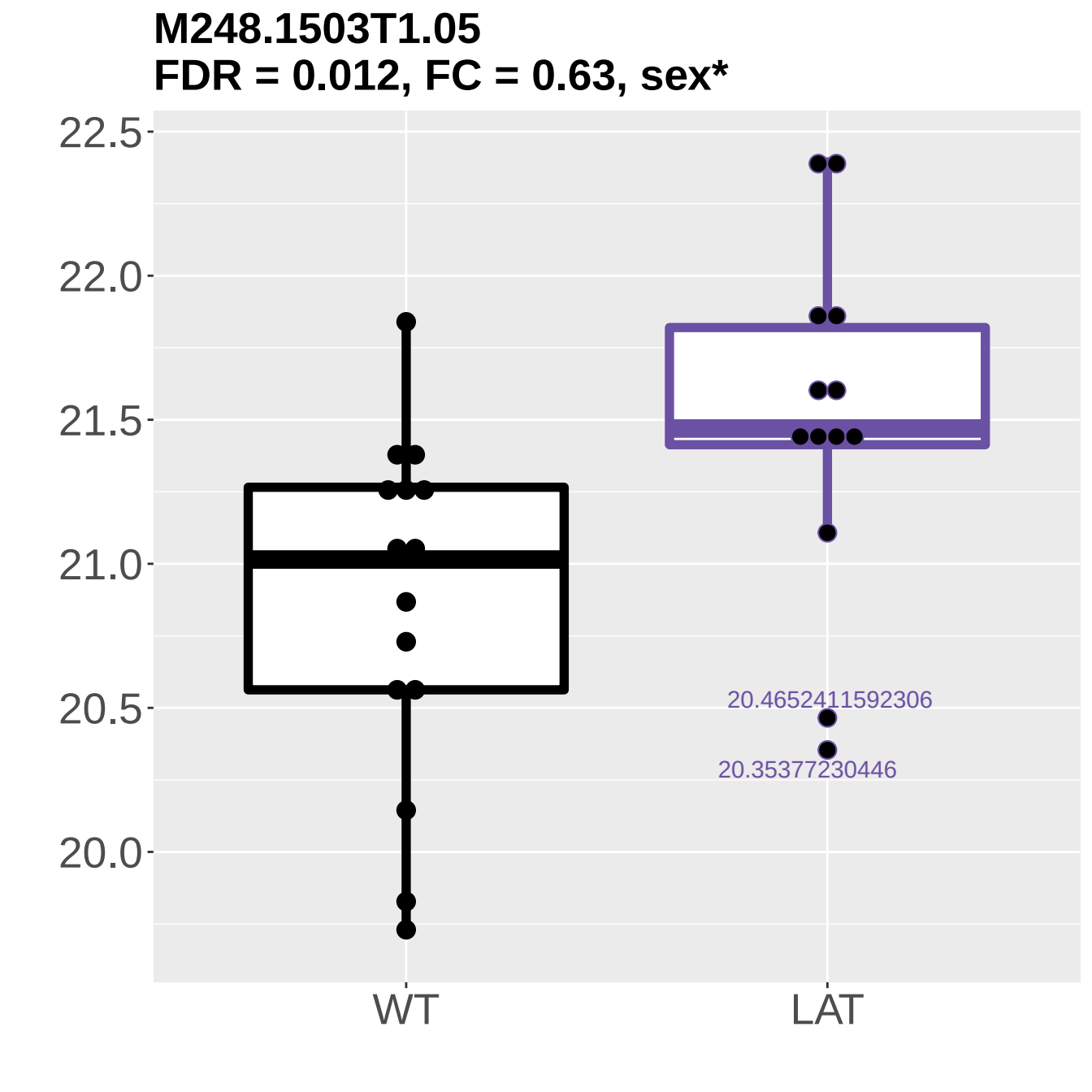
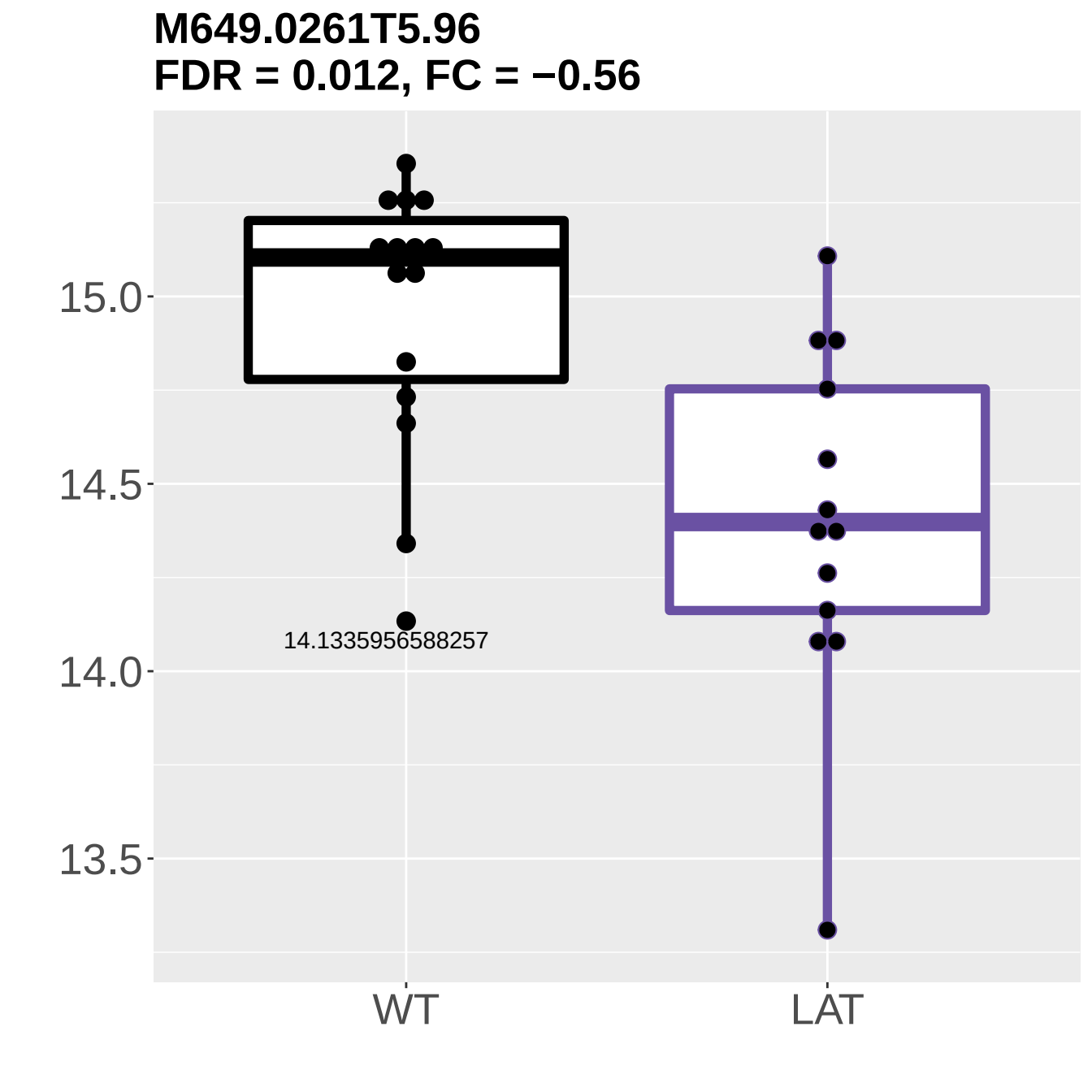
LAT


M431.5844T5.19
FDR = 0.012, FC = −1.5
15
13
11
9
7.74963920862818
WT
LAT


M438.1905T5.47
FDR = 0.012, FC = 0.47
16.5
16.0
15.5
15.0
WT
LAT


M471.7631T4.11
FDR = 0.012, FC = −1.9
13
11
9
7
WT
LAT


M248.1503T1.05
FDR = 0.012, FC = 0.63, sex*
22.5
22.0
21.5
21.0
20.5
20.0
20.4652411592306
20.35377230446
WT
LAT


M649.0261T5.96
FDR = 0.012, FC = −0.56
15.0
14.5
14.0
13.5
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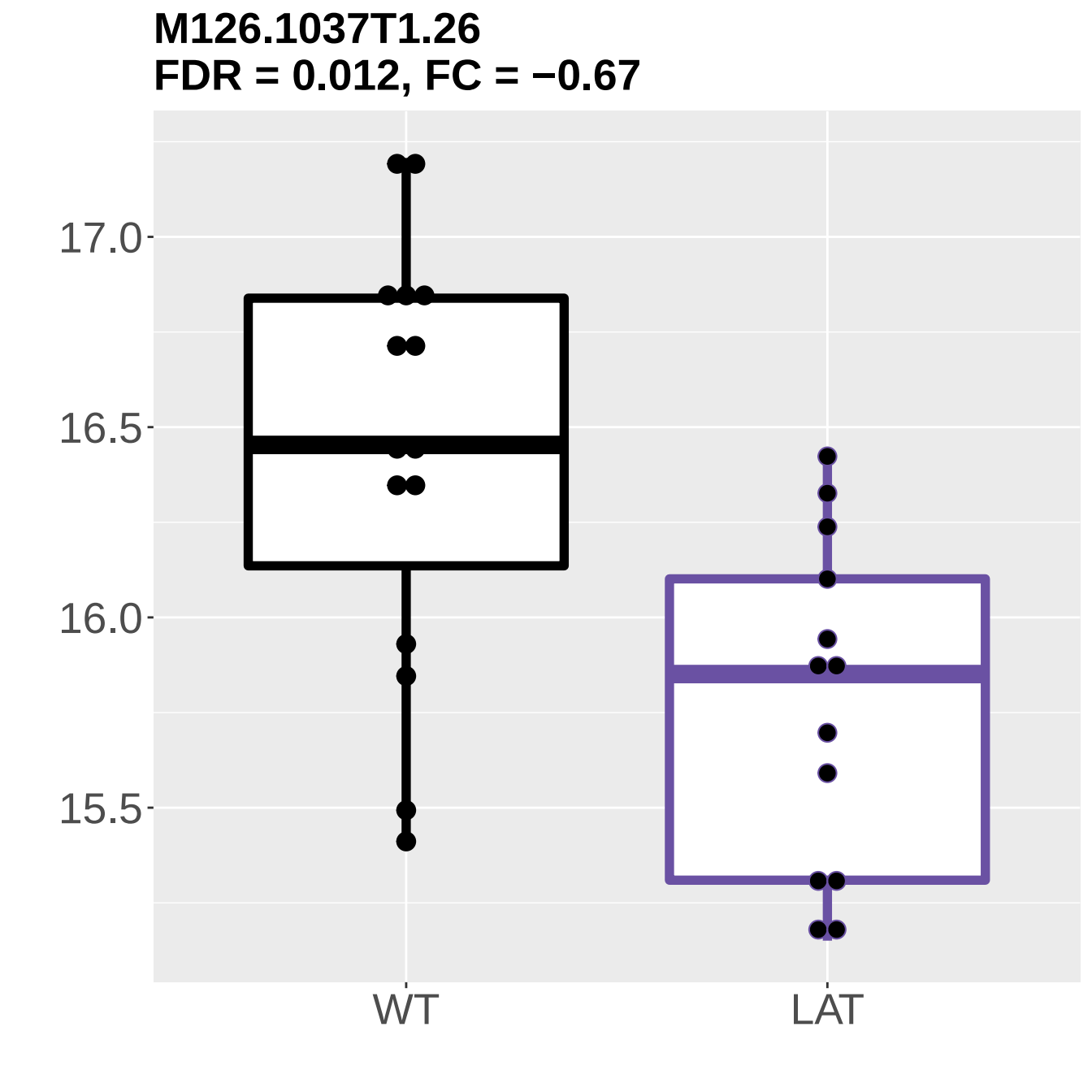
WT
LAT


M126.1037T1.26
FDR = 0.012, FC = −0.67
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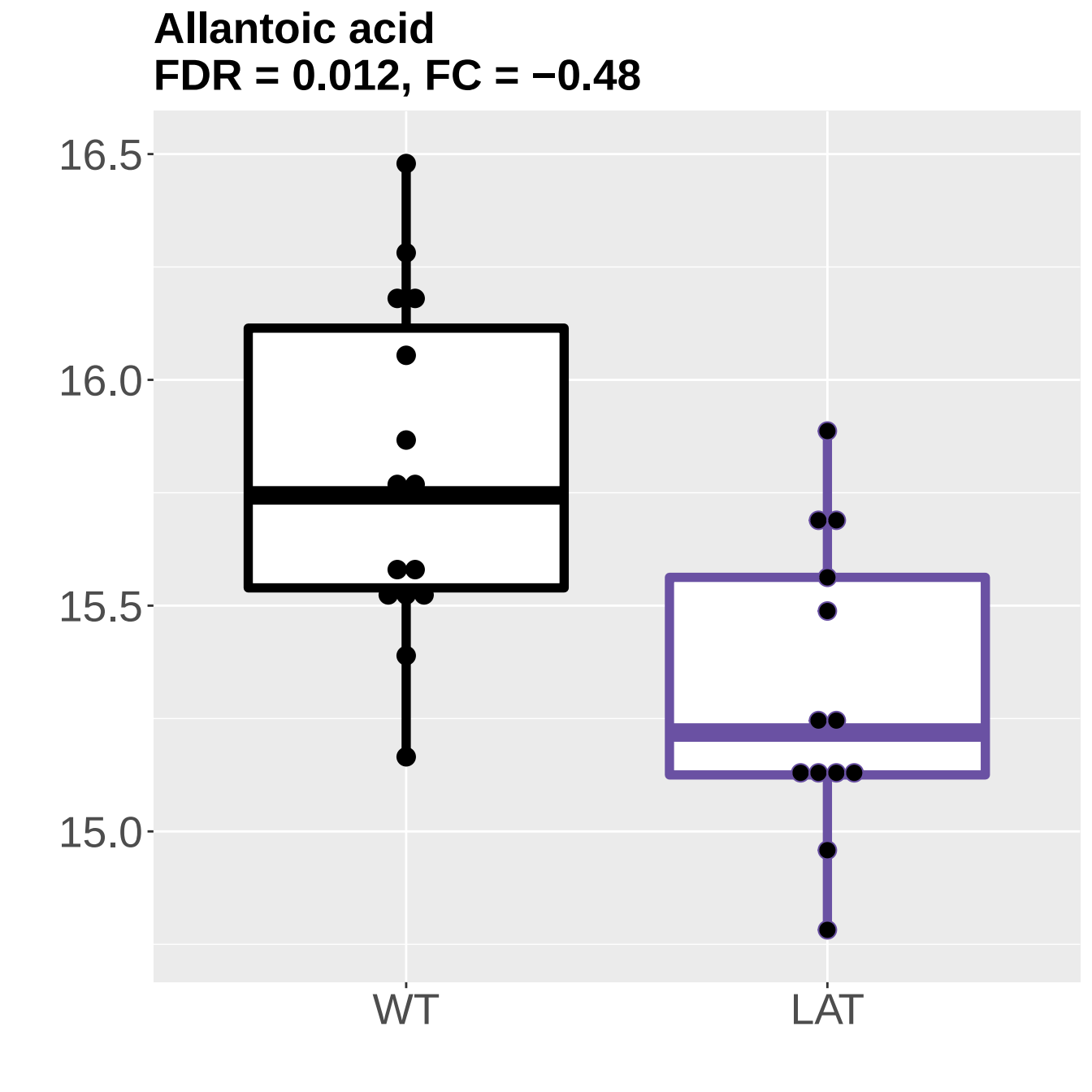
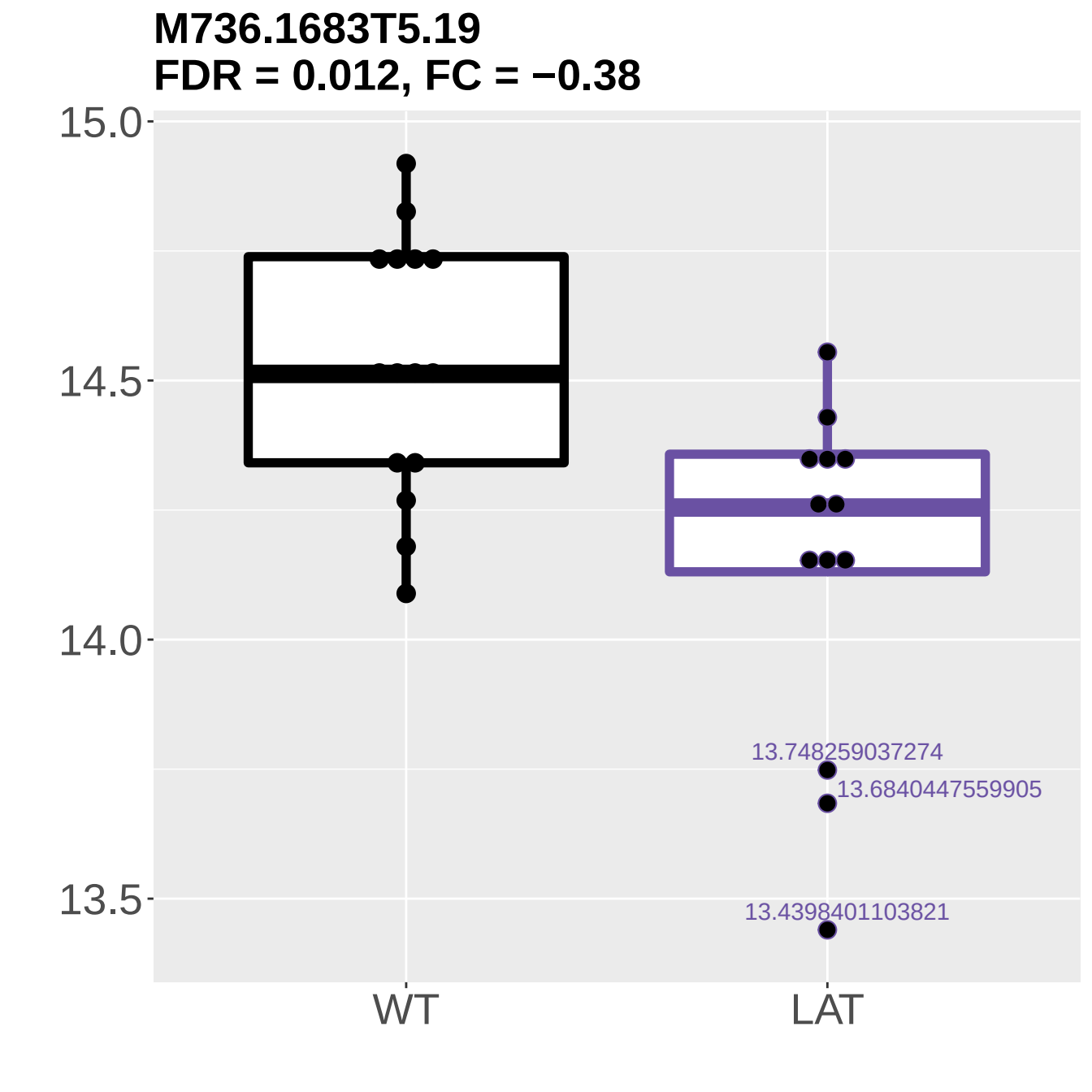
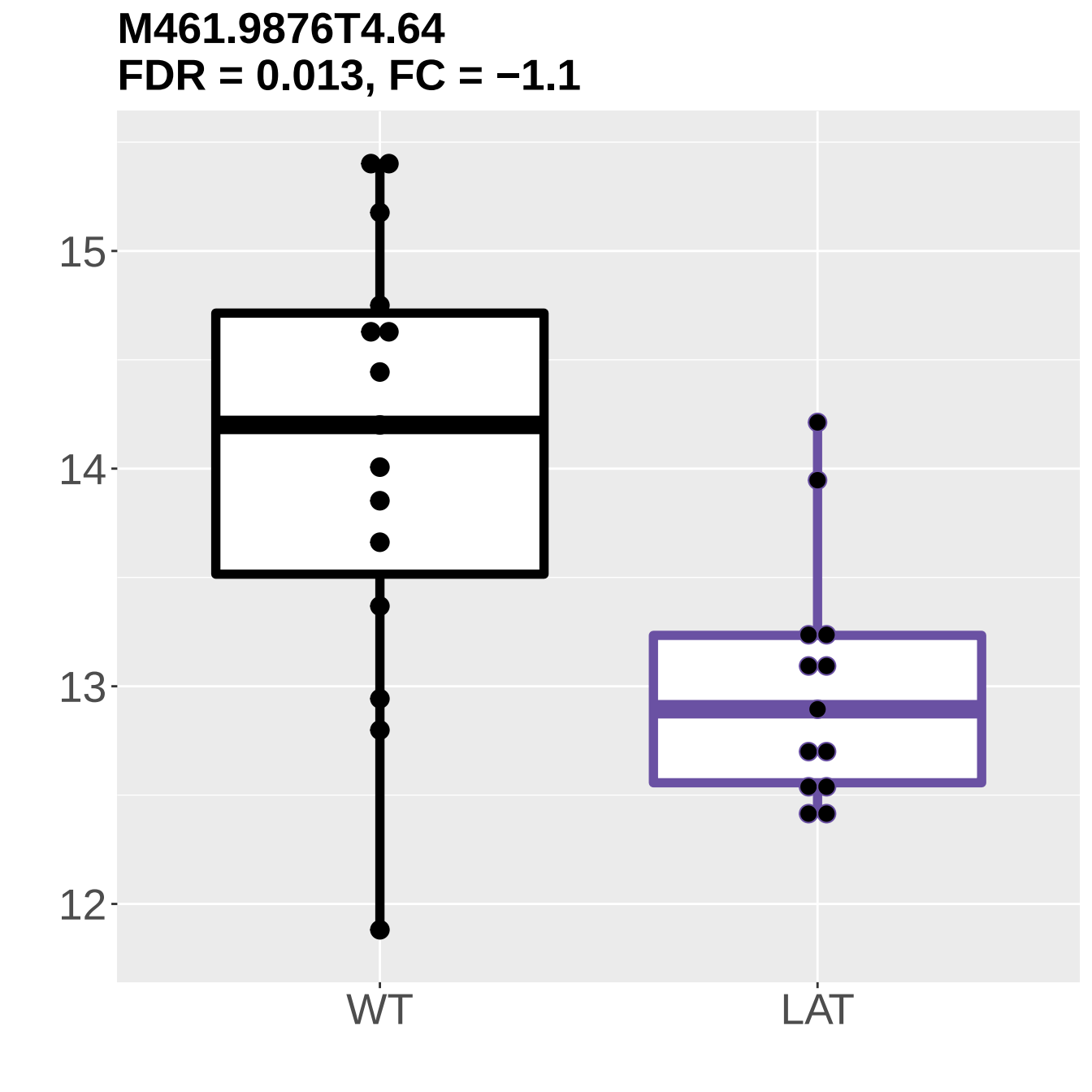
16.5
16.0
15.5
WT
LAT


Allantoic acid
FDR = 0.012, FC = −0.48
16.5
16.0
15.5
15.0
WT
LAT


M736.1683T5.19
FDR = 0.012, FC = −0.38
15.0
14.5
14.0
13.5
13.748259037274
13.6840447559905
13.4398401103821
WT
LAT


M461.9876T4.64
FDR = 0.013, FC = −1.1
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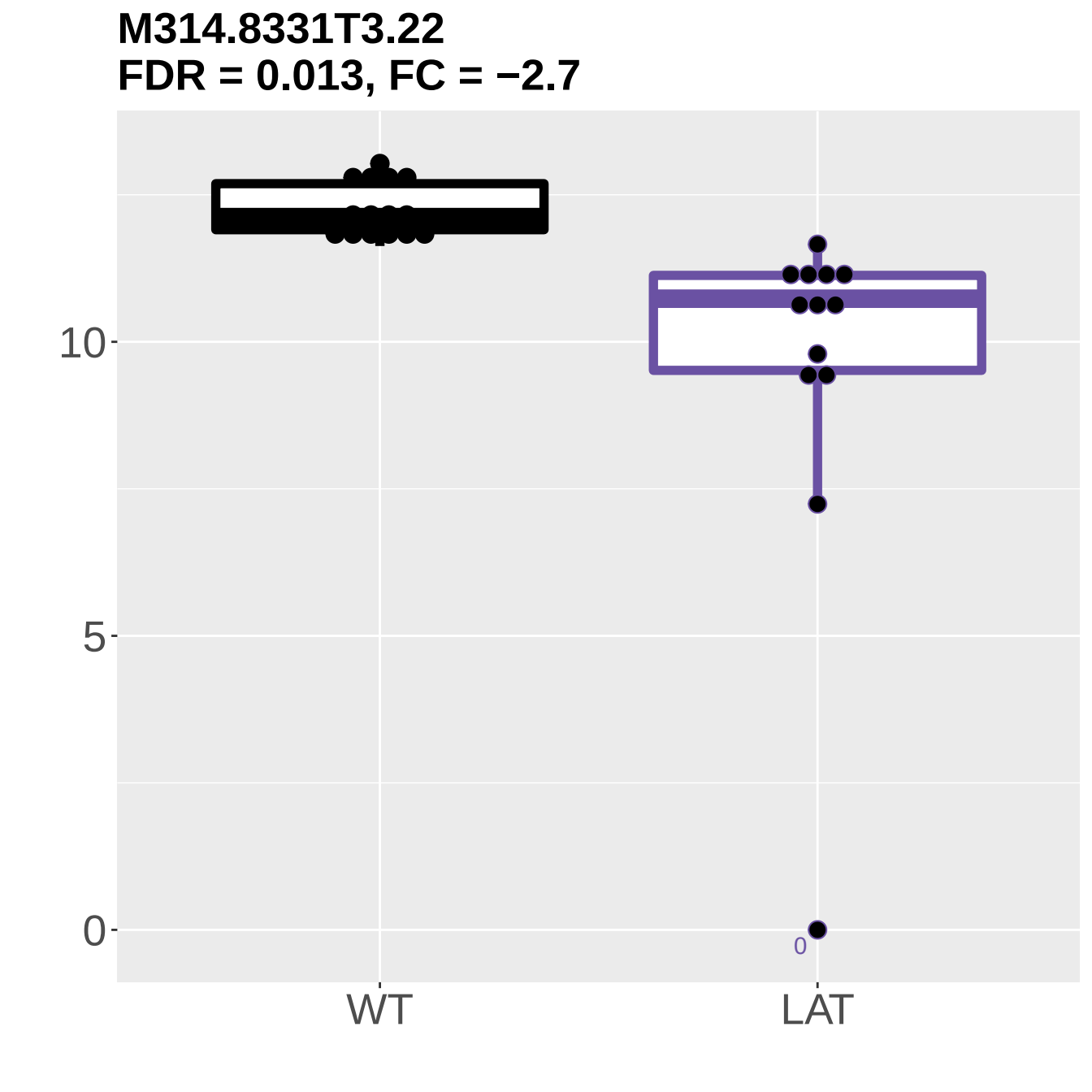
14
13
12
WT
LAT


M314.8331T3.22
FDR = 0.013, FC = −2.7
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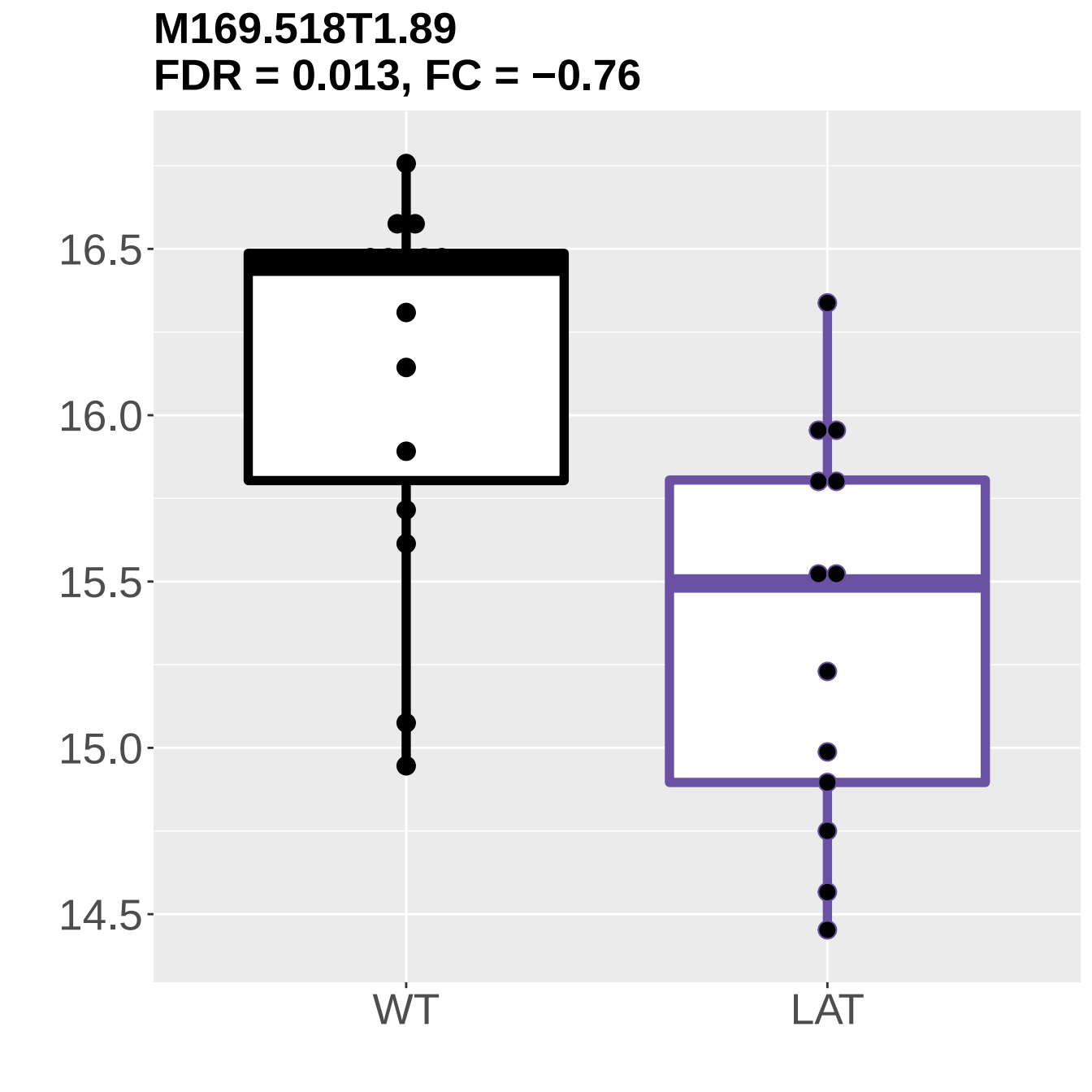
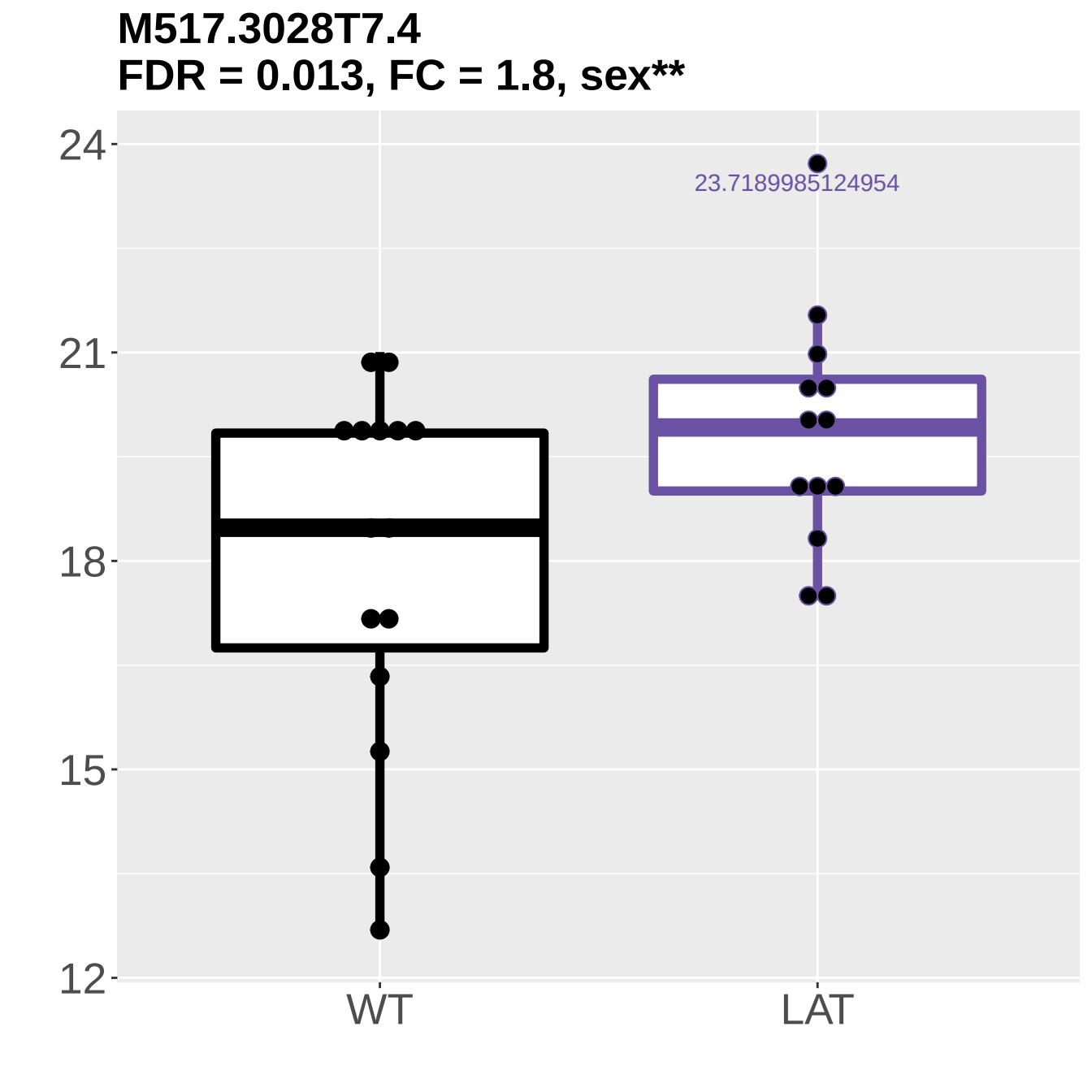
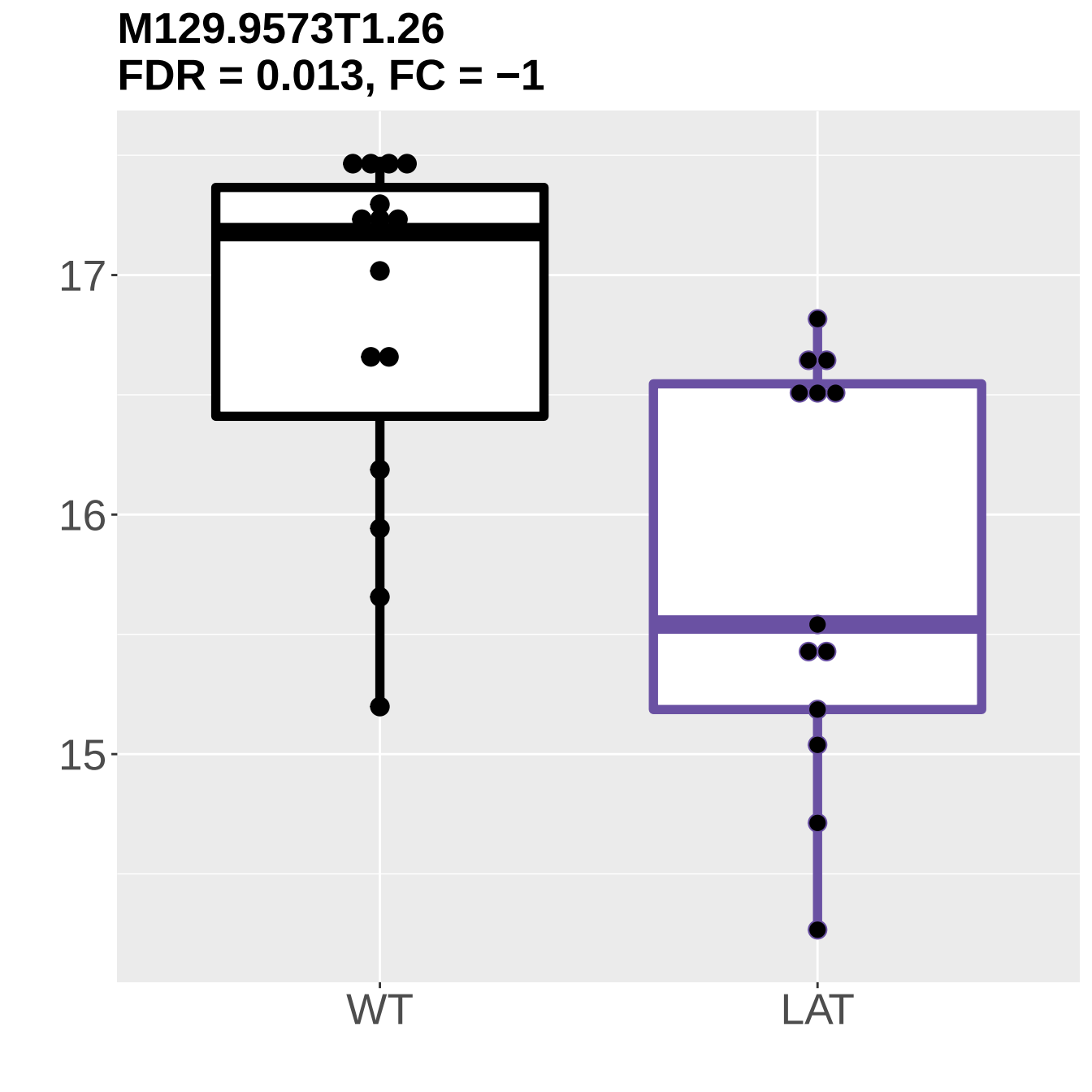
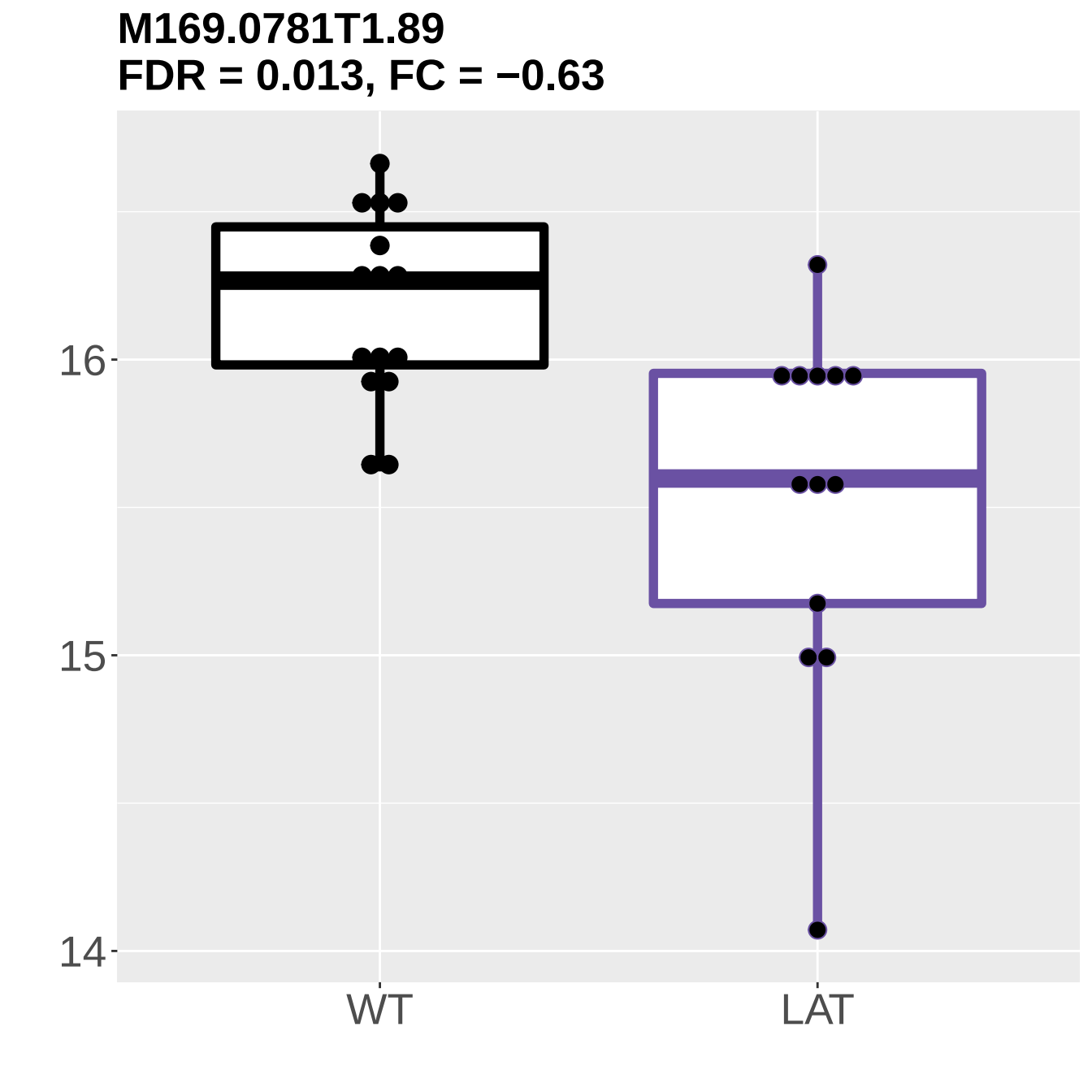
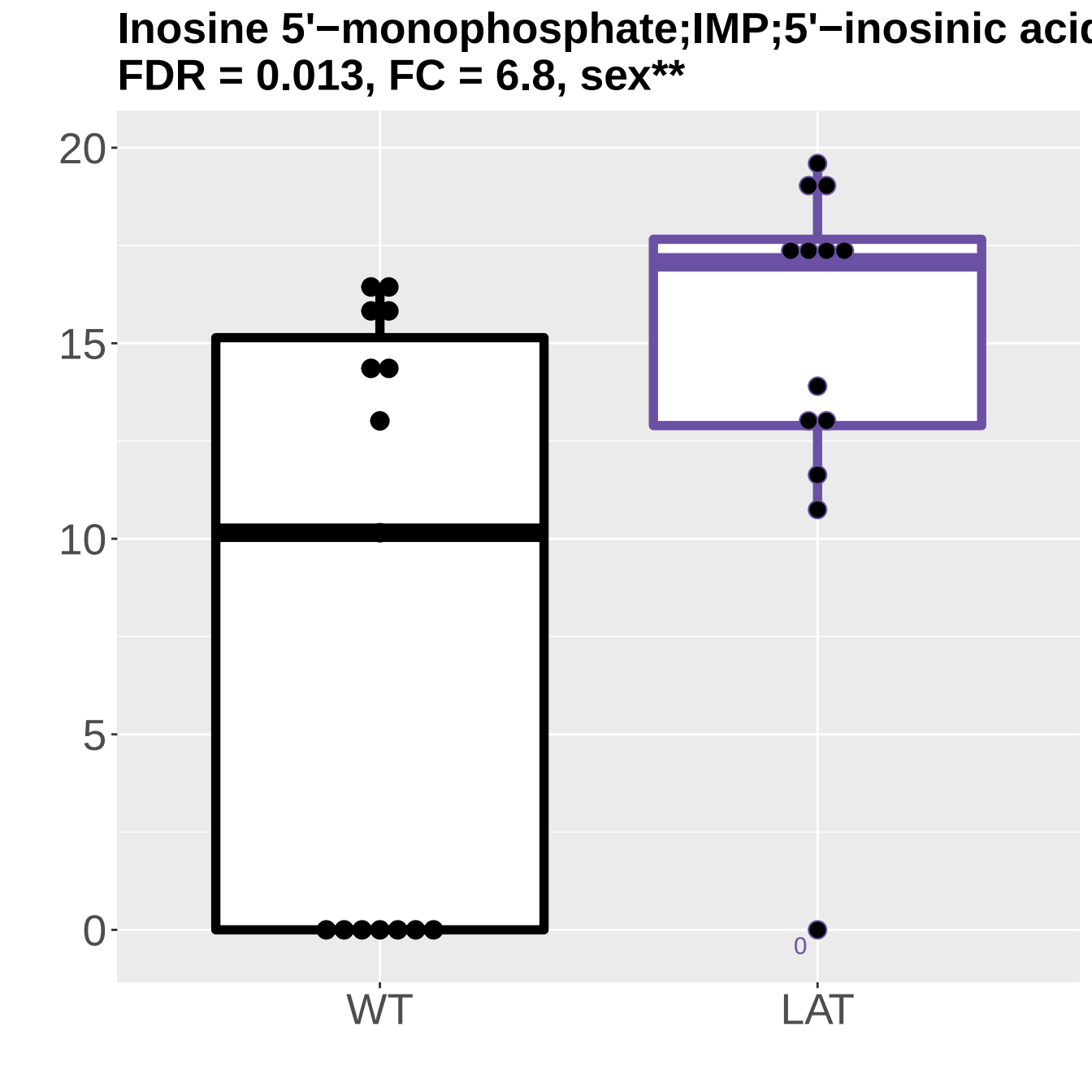
5
0
0
WT
LAT

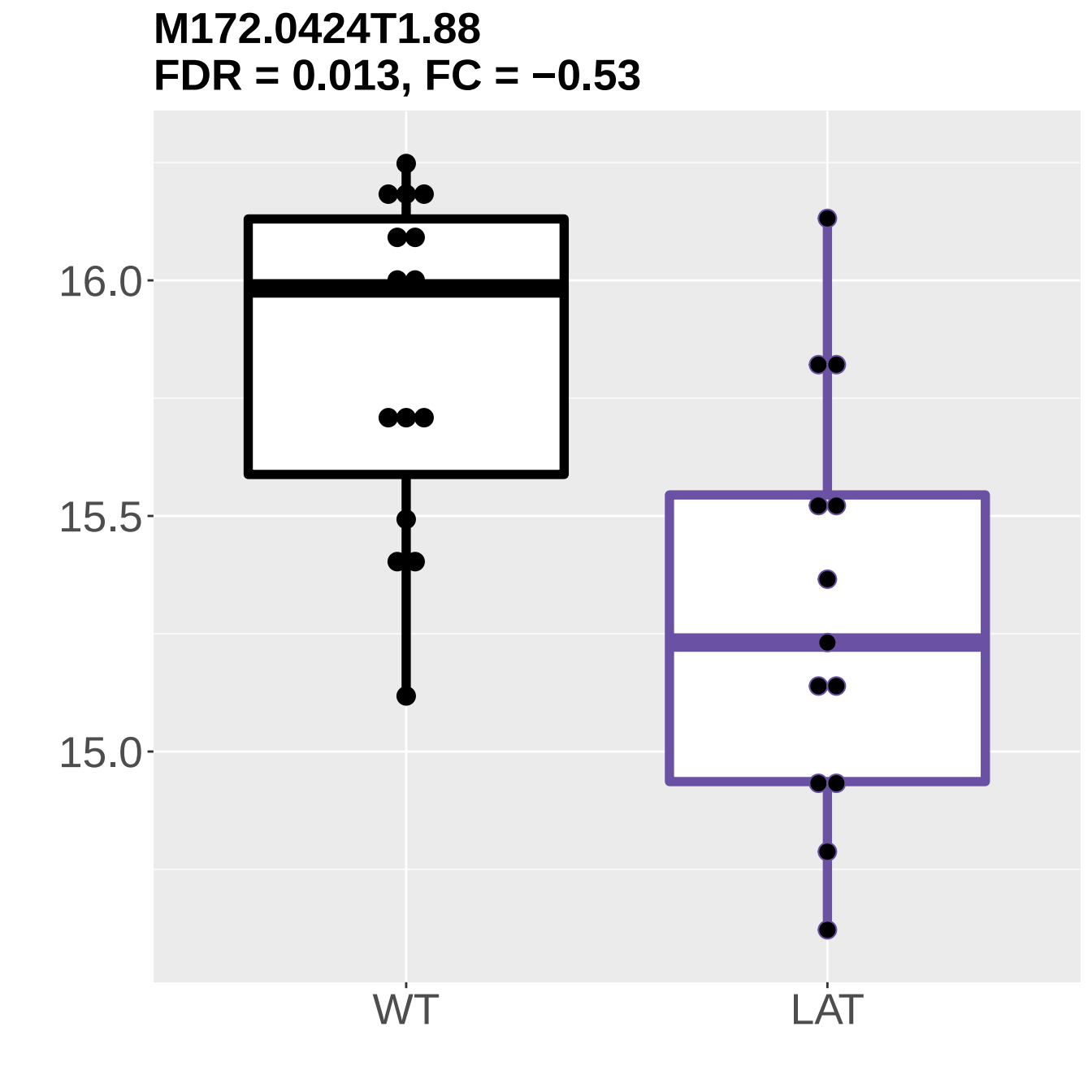

M169.518T1.89
FDR = 0.013, FC = −0.76
16.5
16.0
15.5
15.0
14.5
WT
LAT


M517.3028T7.4
FDR = 0.013, FC = 1.8, sex**
24
21
18
15
12
23.7189985124954
WT
LAT


M129.9573T1.26
FDR = 0.013, FC = −1
17
16
15
WT
LAT


M169.0781T1.89
FDR = 0.013, FC = −0.63
16
15
14
WT
LAT


Inosine 5'−monophosphate;IMP;5'−inosinic acid
FDR = 0.013, FC = 6.8, sex**
20
15
10
5
0
0
WT
LAT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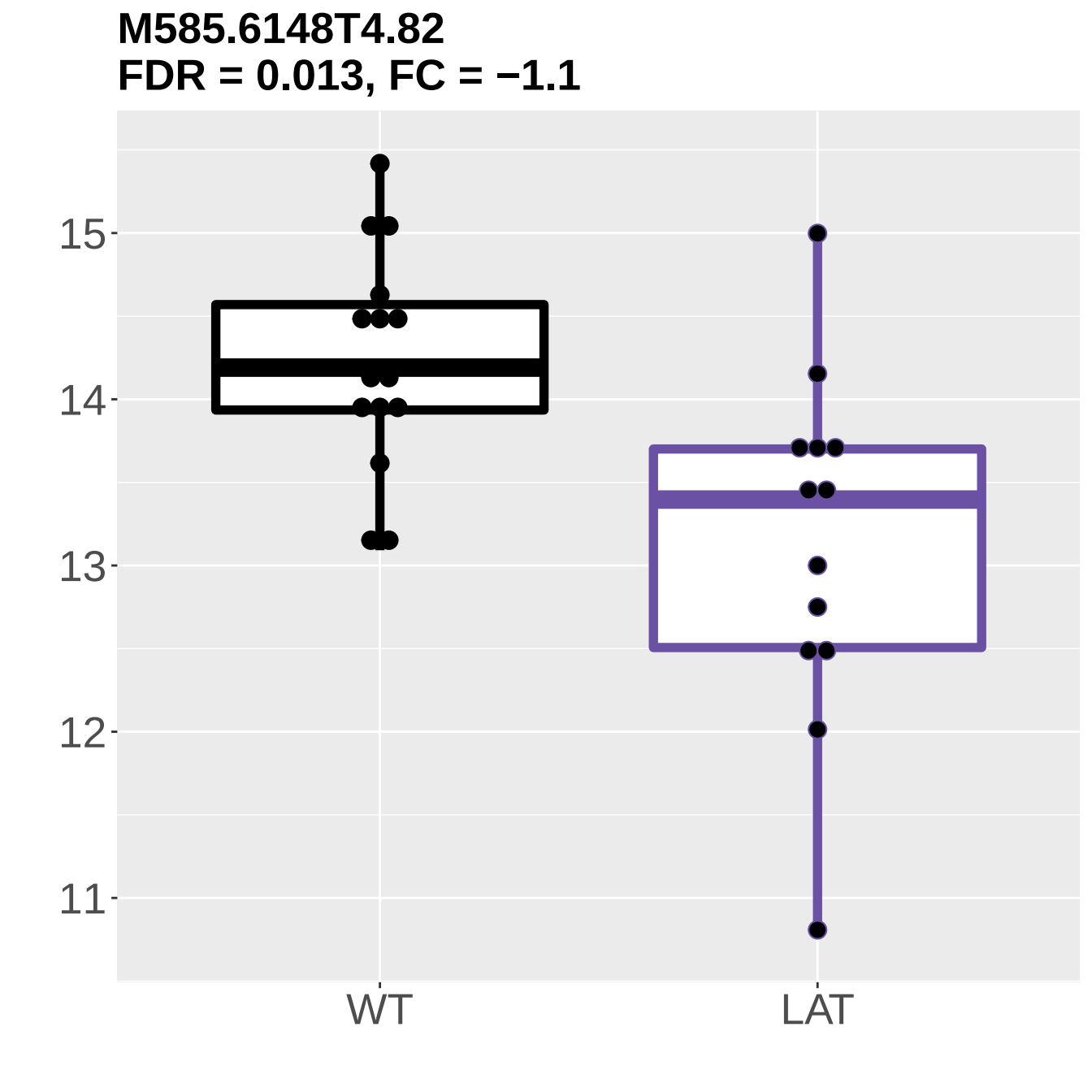
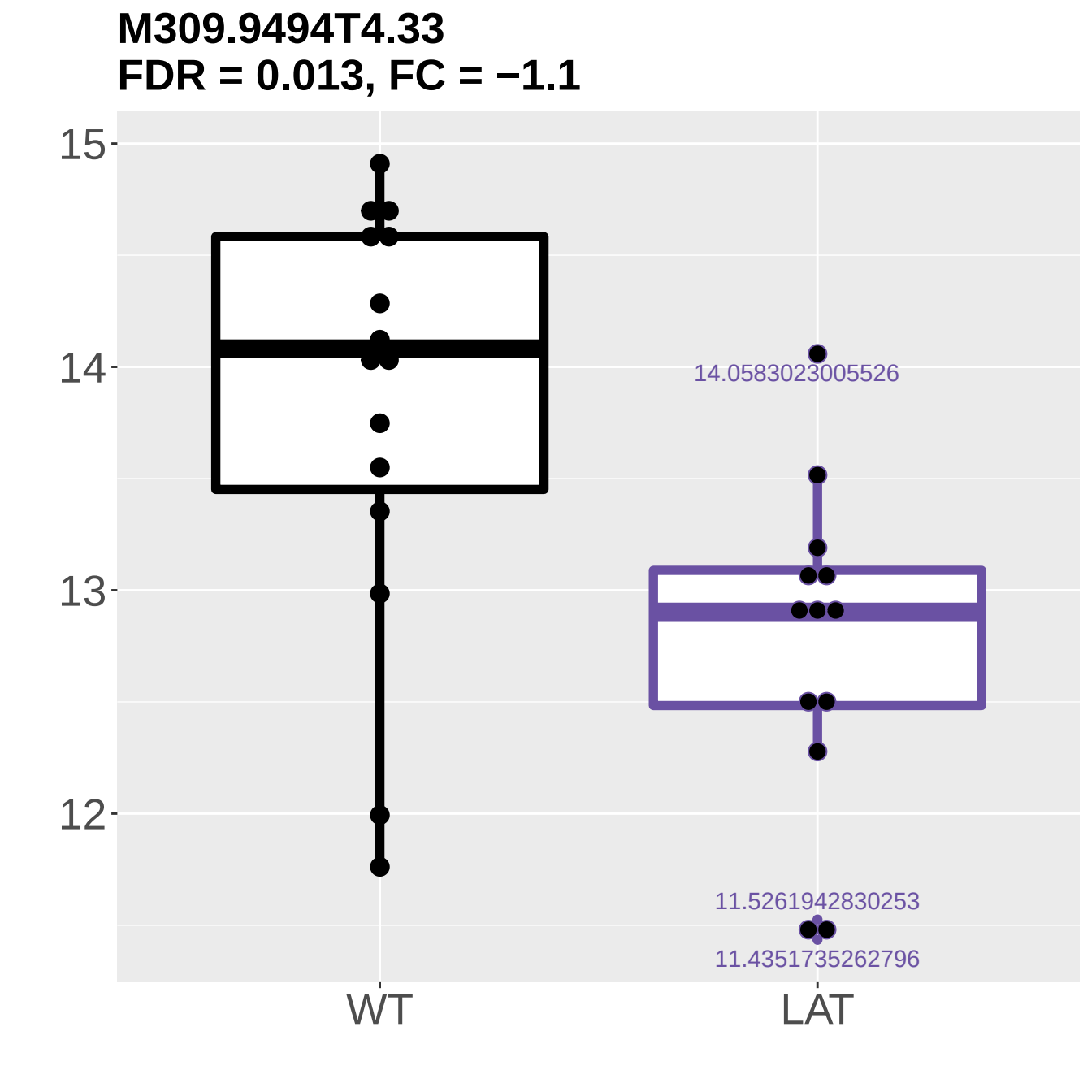
FDR = 0.013, FC = −0.53
16.0
15.5
15.0
WT
LAT


M585.6148T4.82
FDR = 0.013, FC = −1.1
15
14
13
12
11
WT
LAT


M309.9494T4.33
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15
14
13
12
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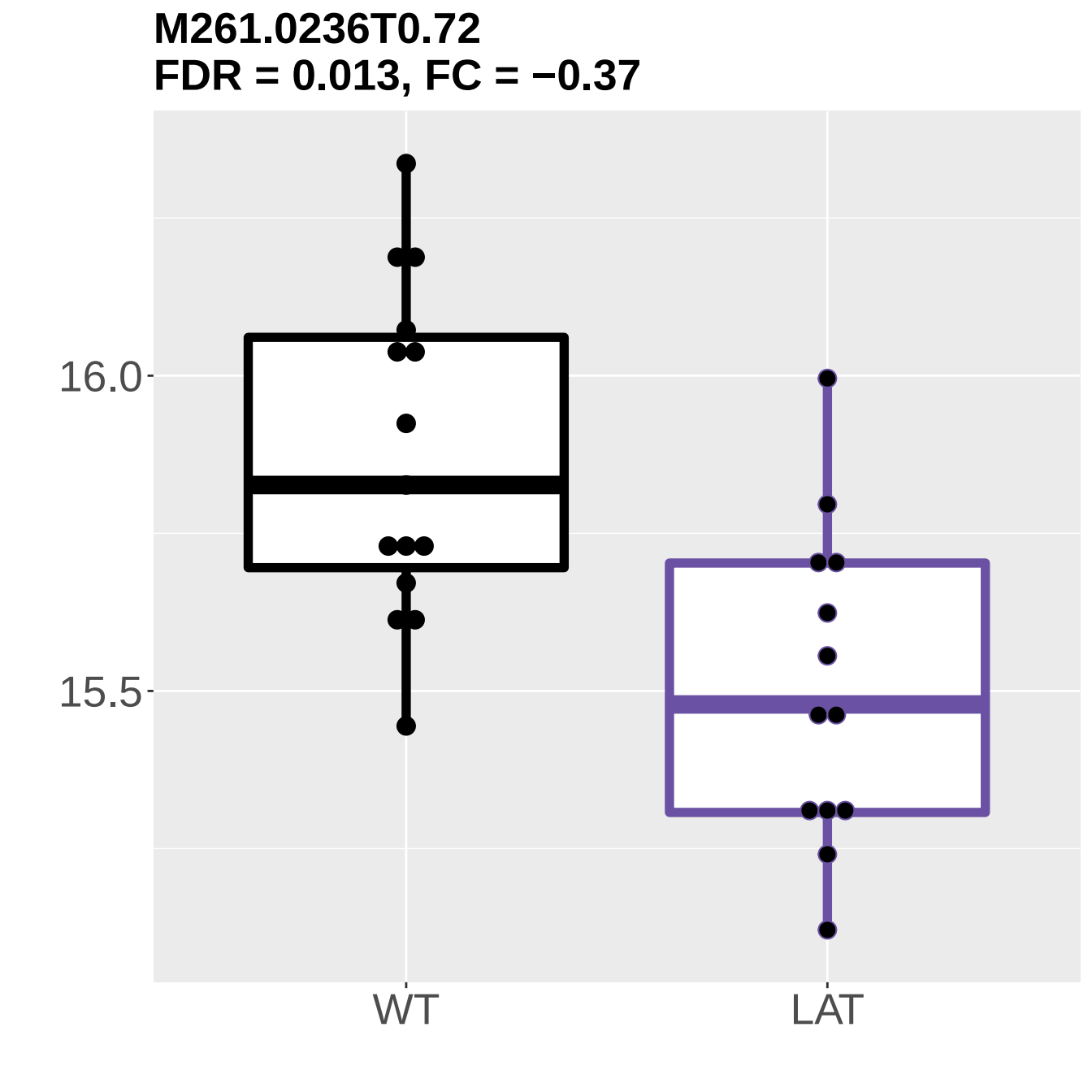
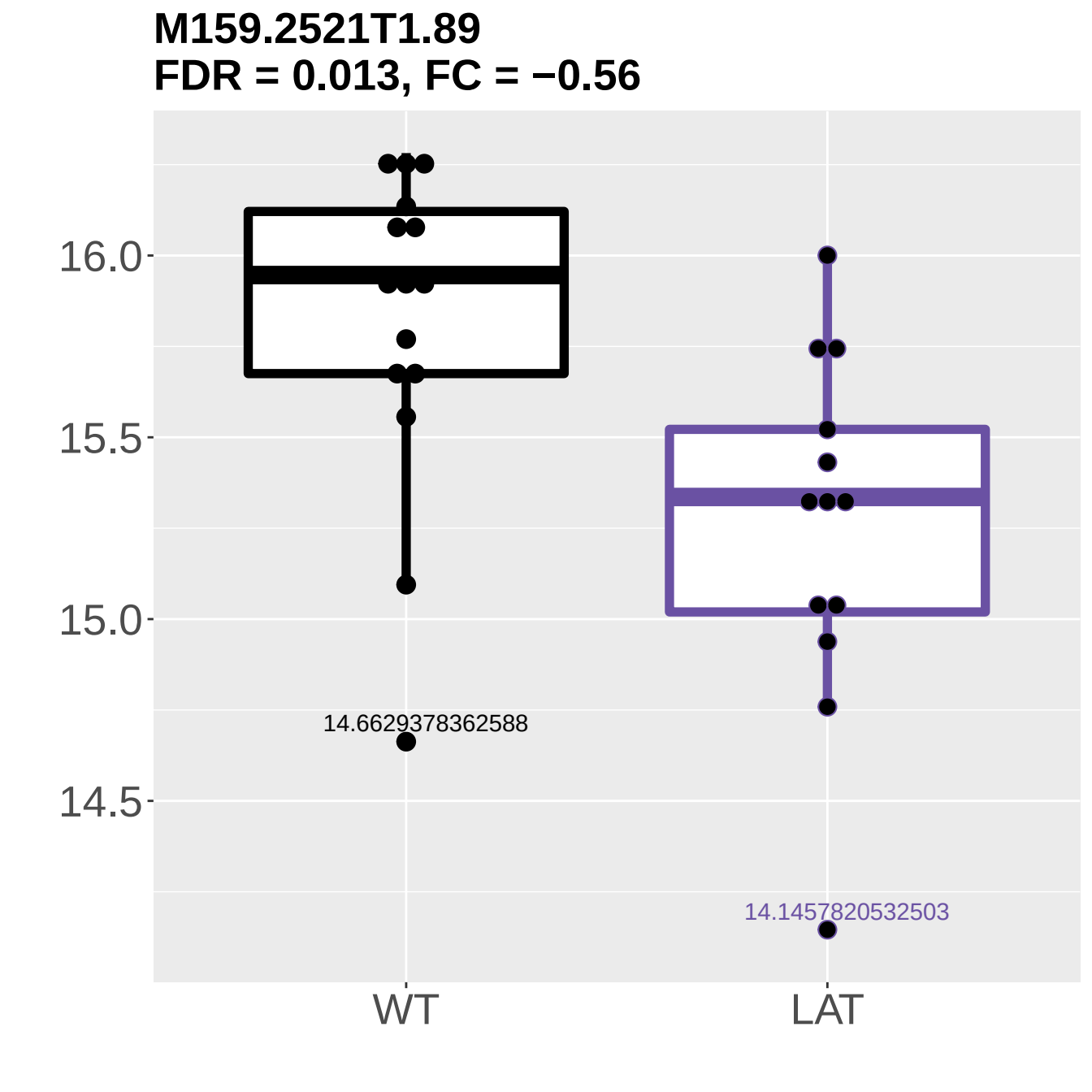
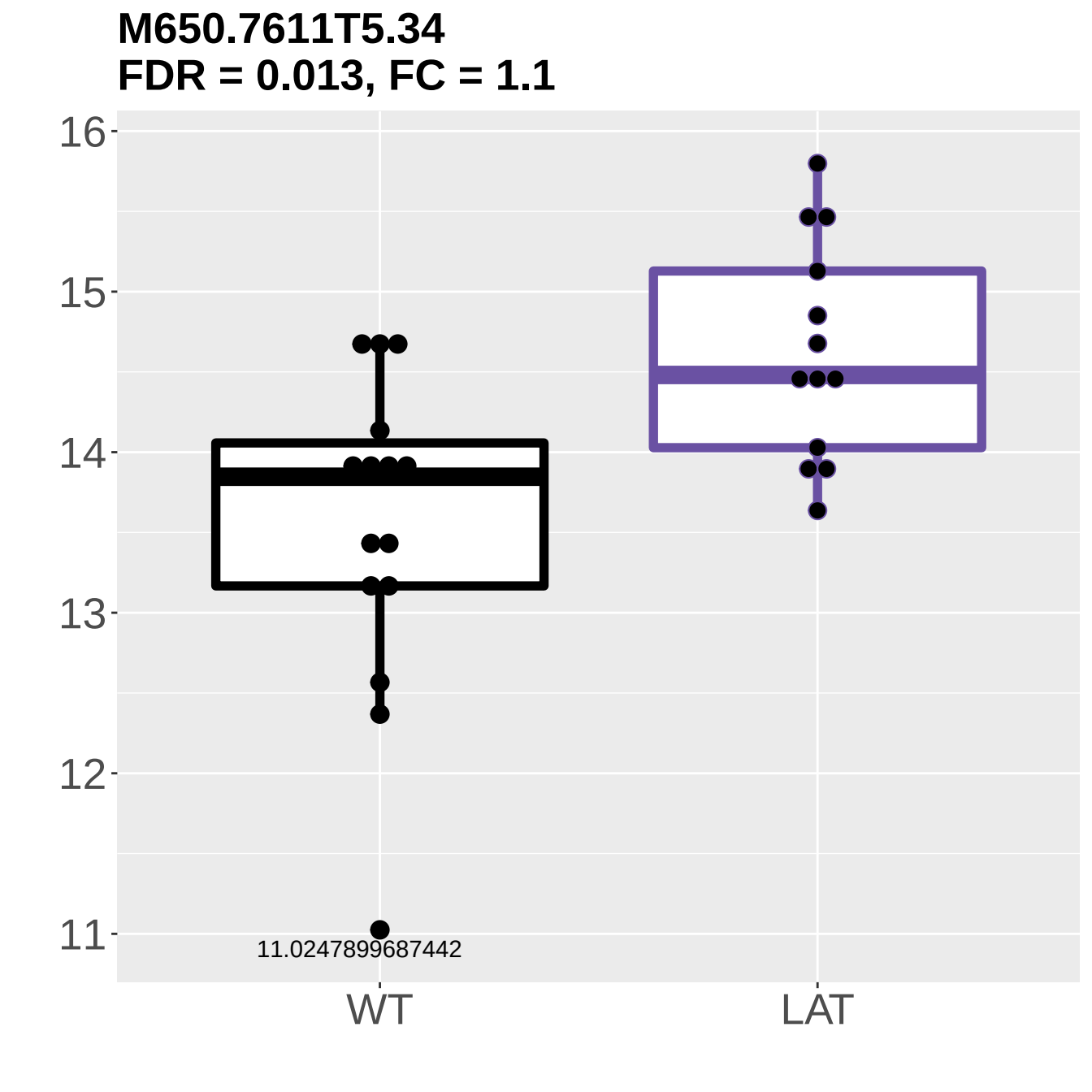
11.5261942830253
11.4351735262796
WT
LAT


M261.0236T0.72
FDR = 0.013, FC = −0.37
16.0
15.5
WT
LAT


M159.2521T1.89
FDR = 0.013, FC = −0.56
16.0
15.5
15.0
14.5
14.6629378362588
14.1457820532503
WT
LAT


M650.7611T5.34
FDR = 0.013, FC = 1.1
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15
14
13
12
11
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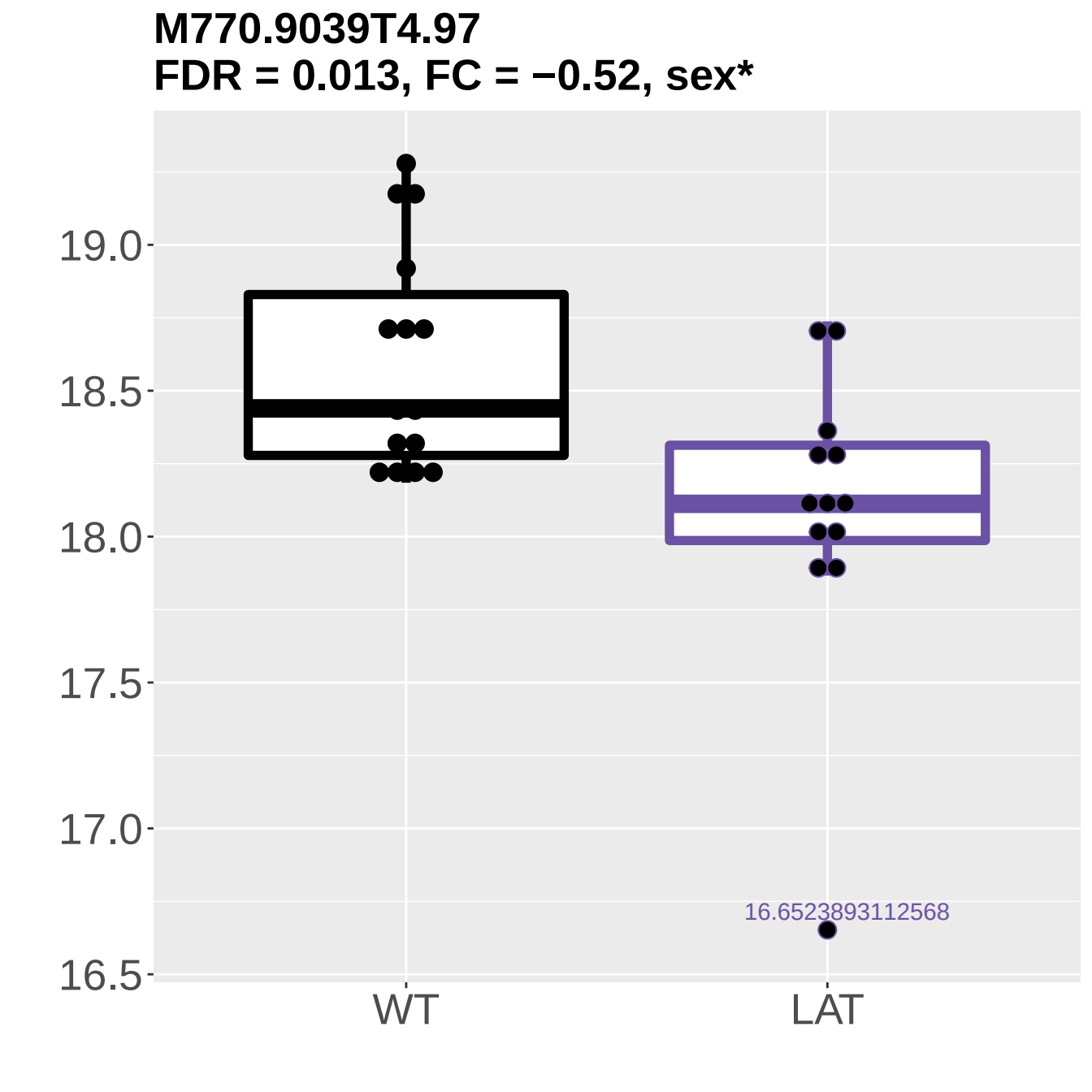
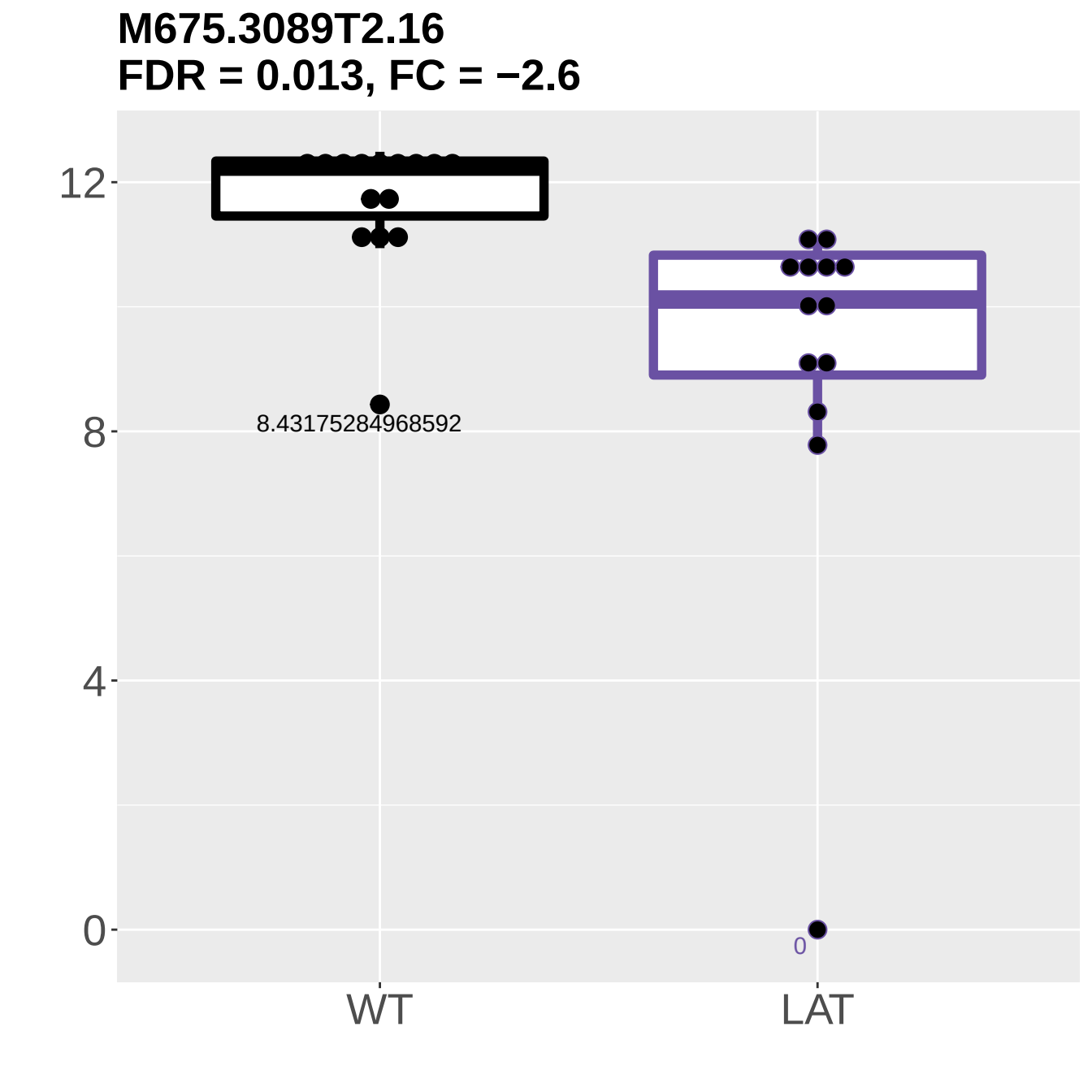
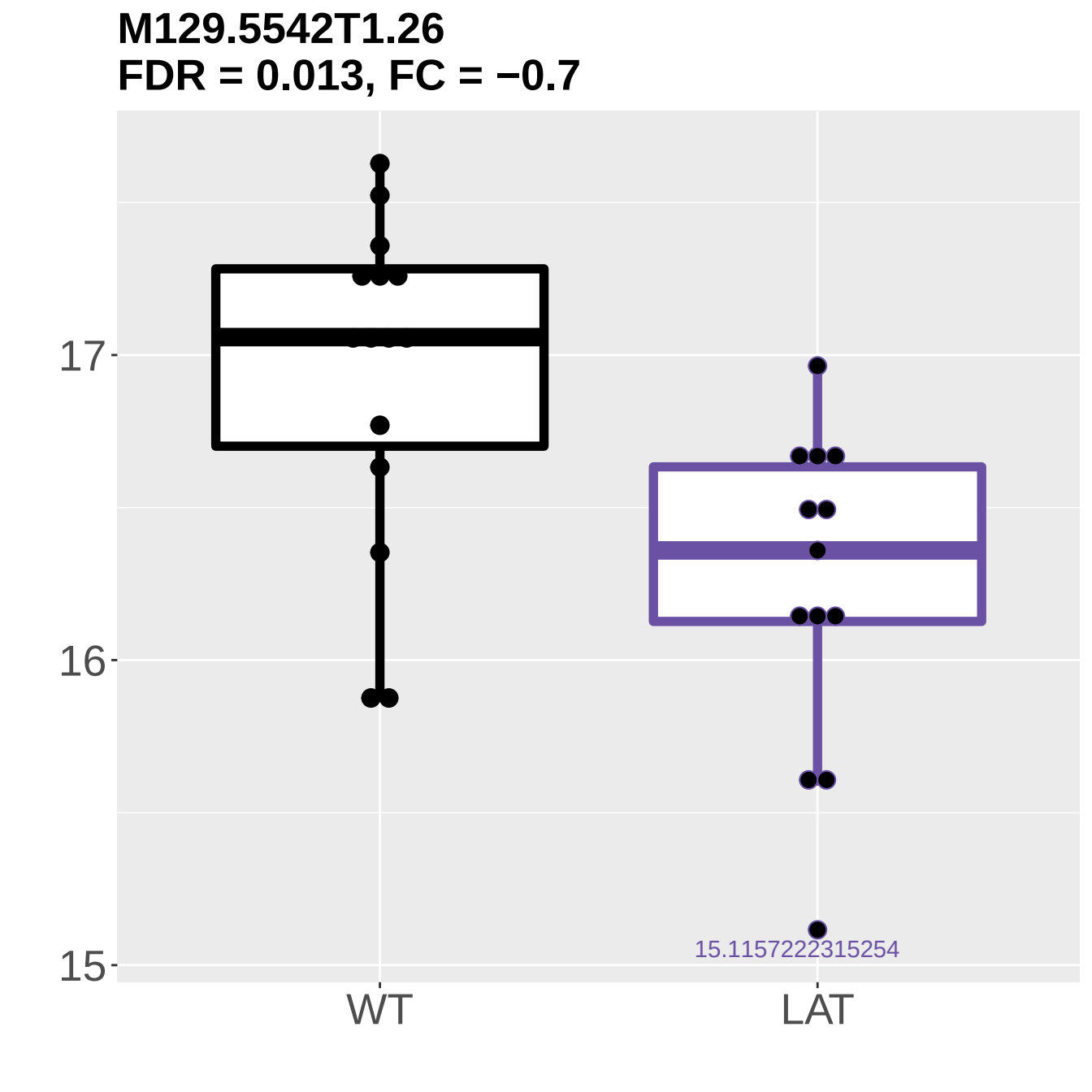
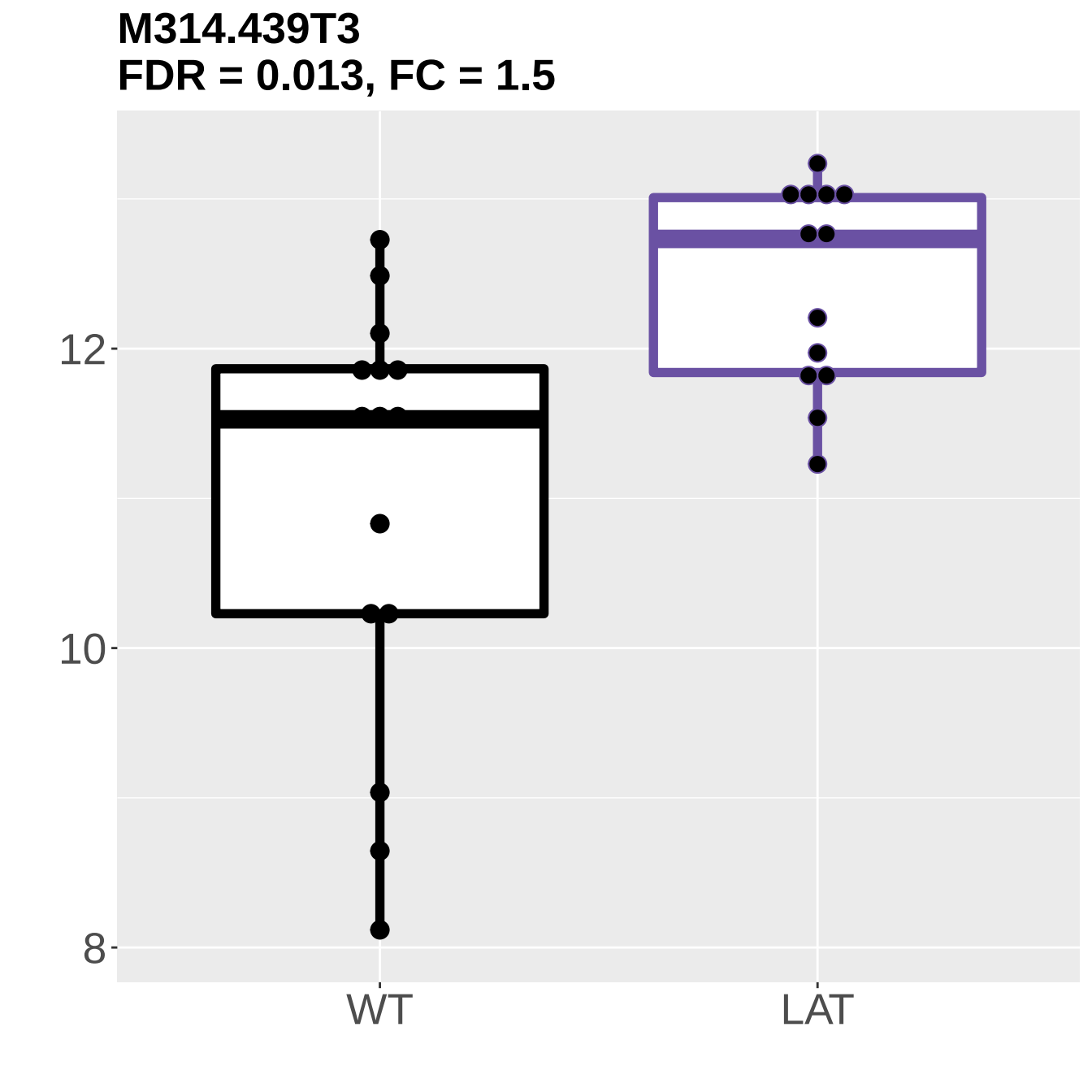
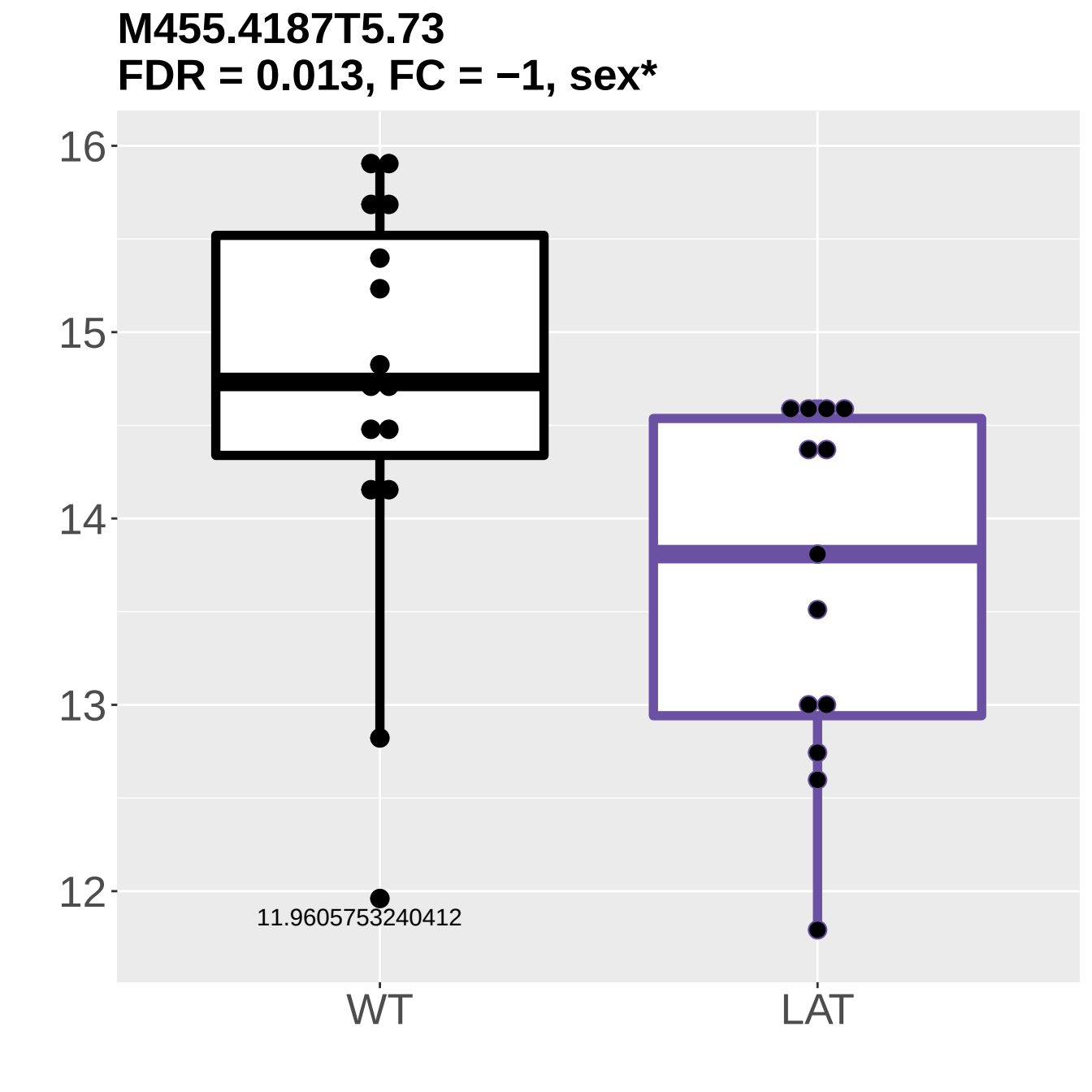
WT
LAT


M770.9039T4.97
FDR = 0.013, FC = −0.52, sex*
19.0
18.5
18.0
17.5
17.0
16.5
16.6523893112568
WT
LAT


M675.3089T2.16
FDR = 0.013, FC = −2.6
12
8
4
0
8.43175284968592
0
WT
LAT


M129.5542T1.26
FDR = 0.013, FC = −0.7
17
16
15
15.1157222315254
WT
LAT


M314.439T3
FDR = 0.013, FC = 1.5
12
10
8
WT
LAT


M455.4187T5.73
FDR = 0.013, FC = −1, sex*
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15
14
13
12
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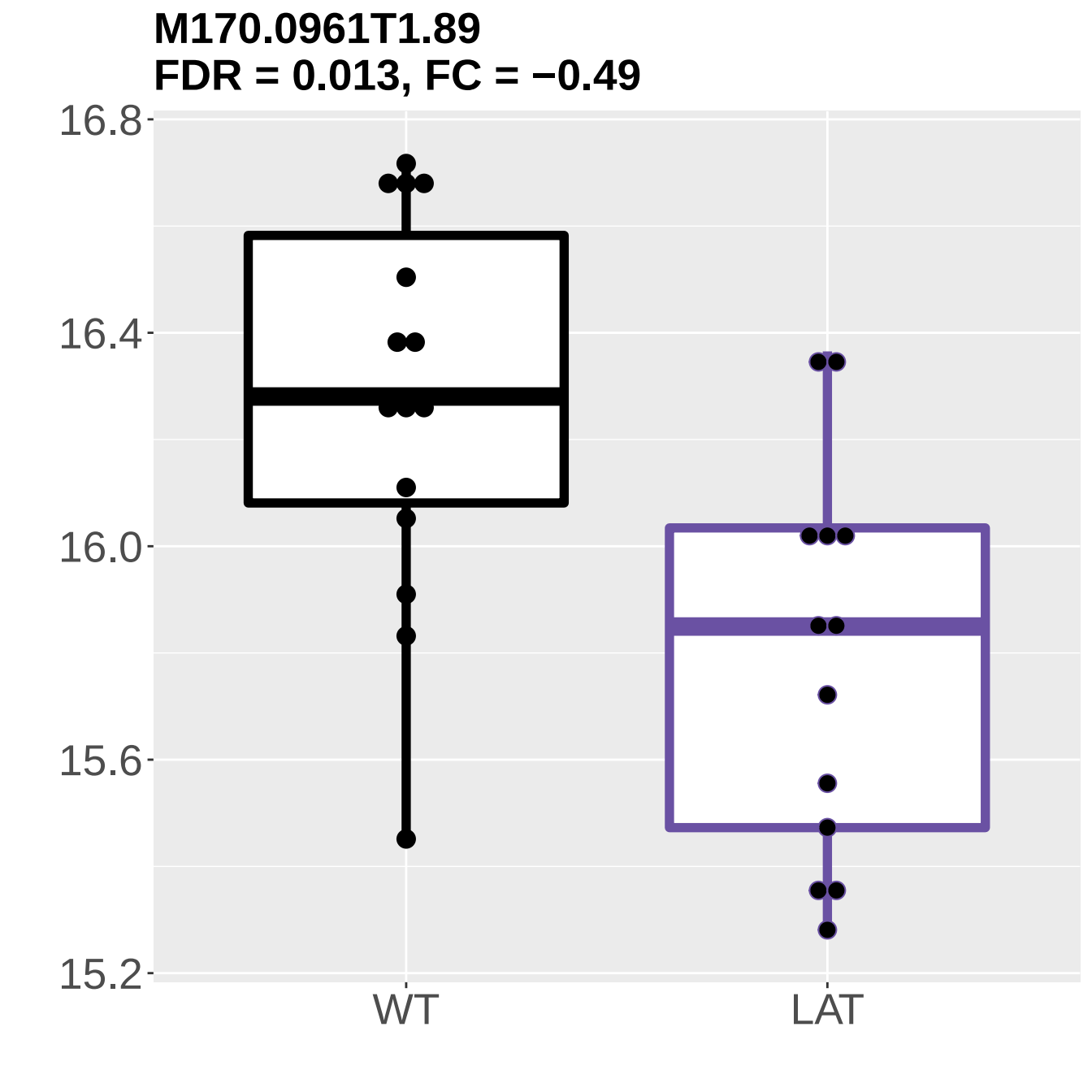
WT
LAT


M170.0961T1.89
FDR = 0.013, FC = −0.49
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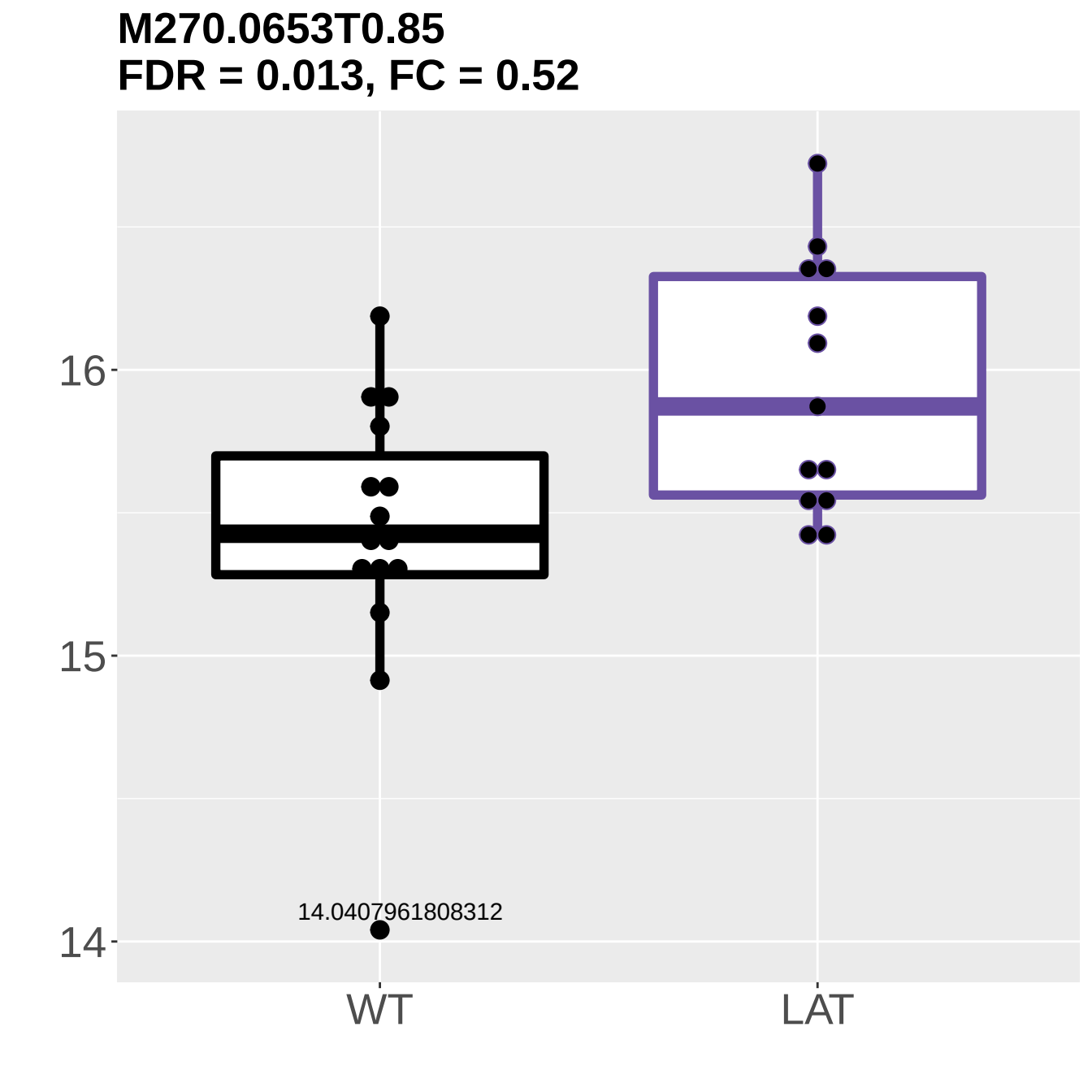
16.4
16.0
15.6
15.2
WT
LAT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15
14
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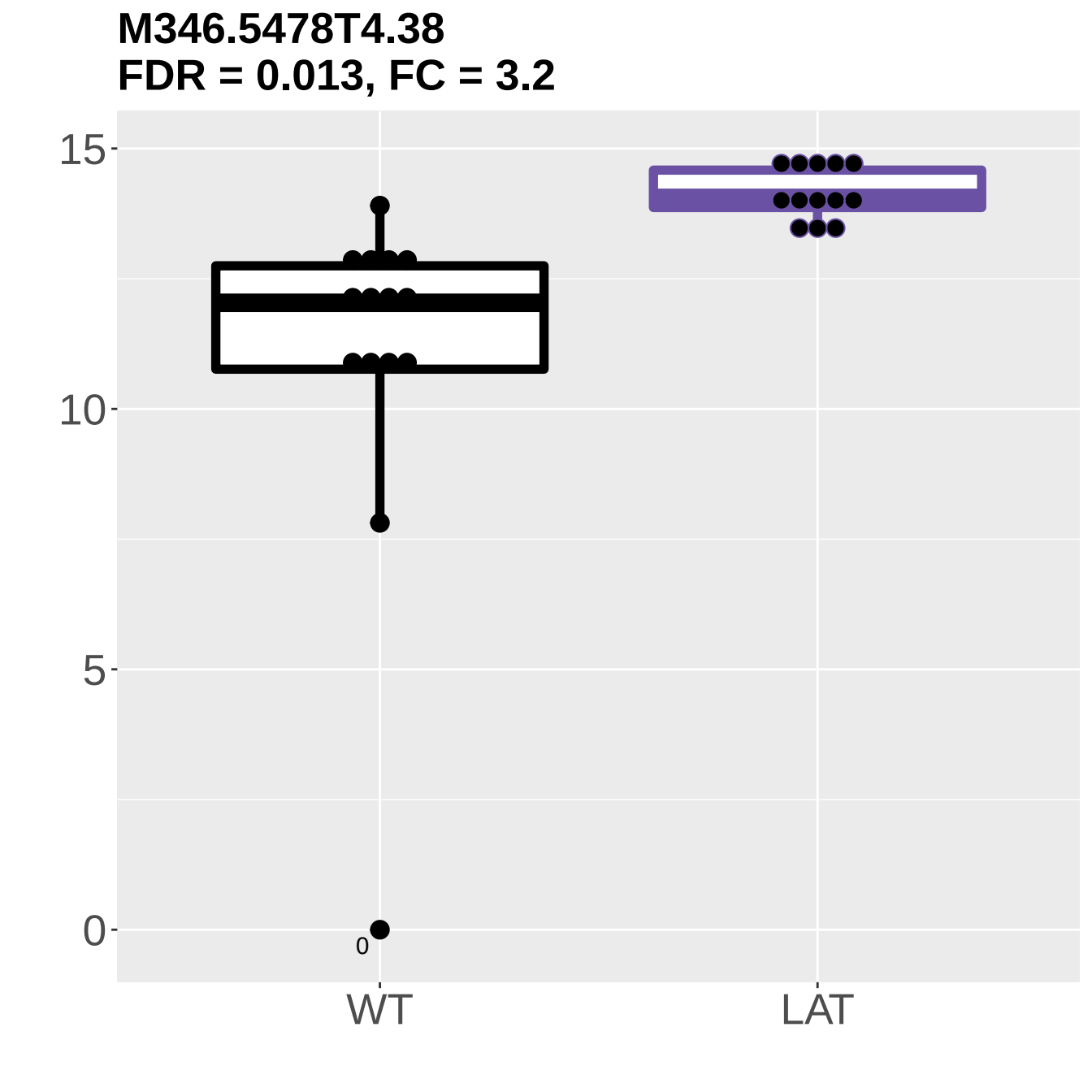
WT
LAT


M346.5478T4.38
FDR = 0.013, FC = 3.2
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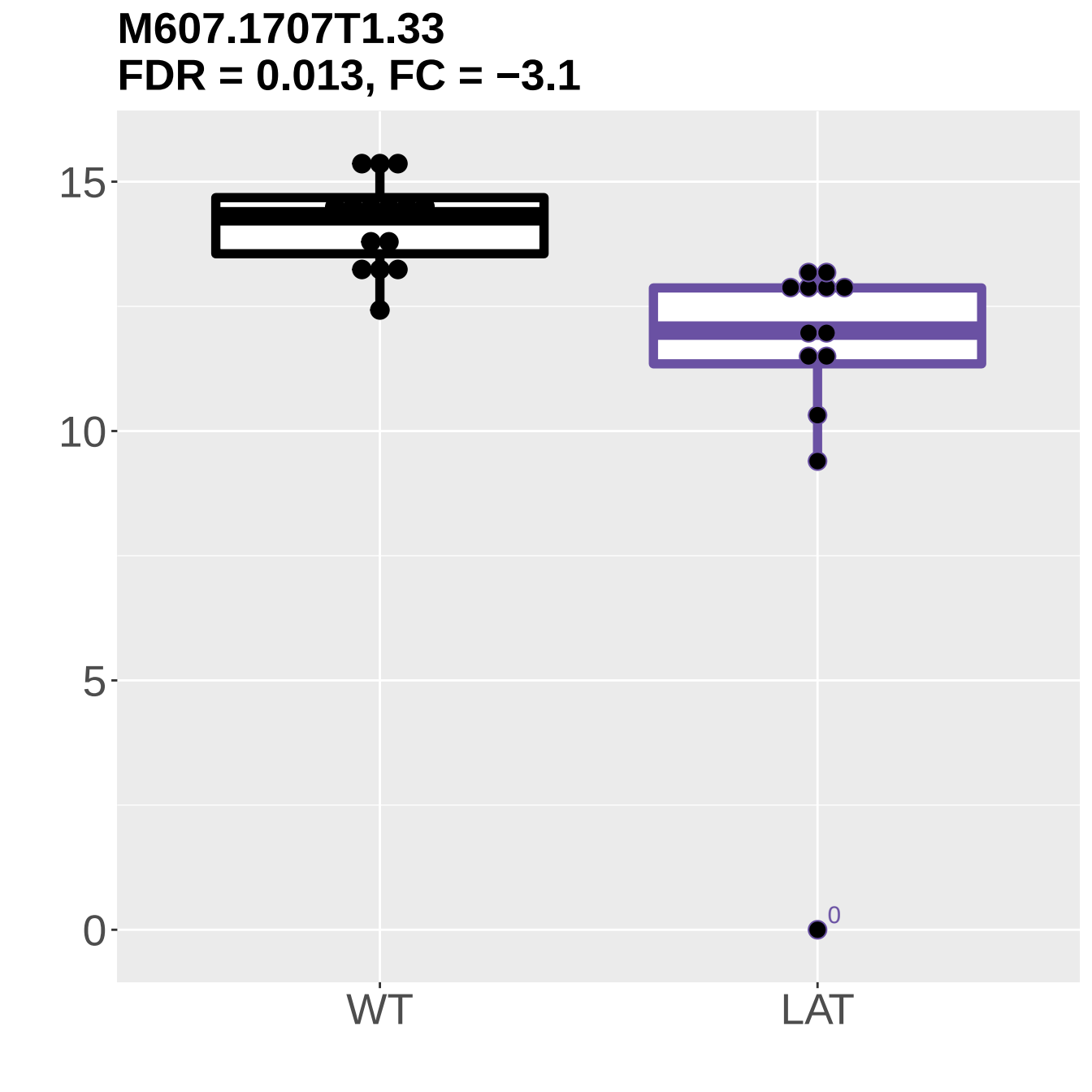
10
5
0
0
WT
LAT


M607.1707T1.33
FDR = 0.013, FC = −3.1
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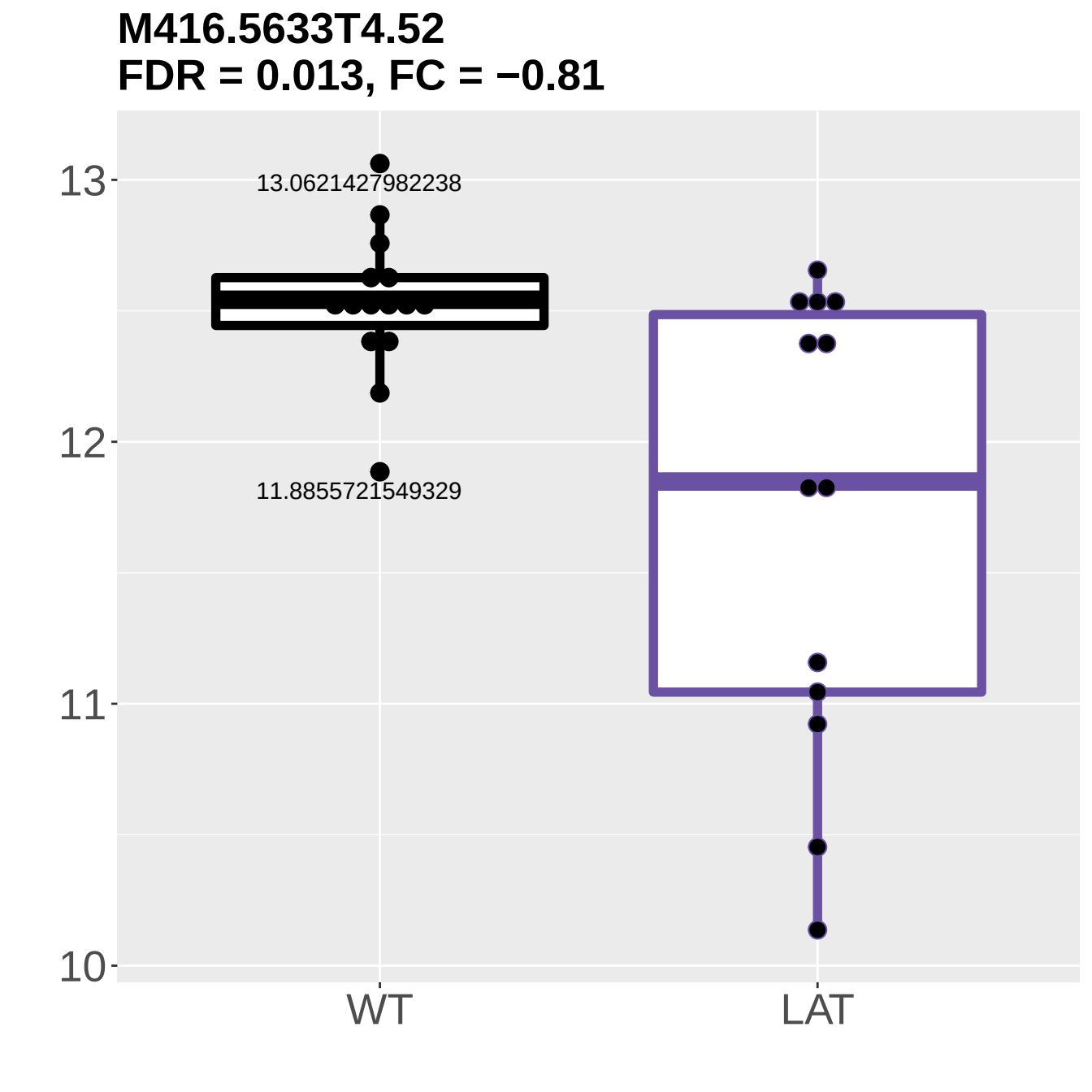
10
5
0
0
WT
LAT


M416.5633T4.52
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13
12
11
10
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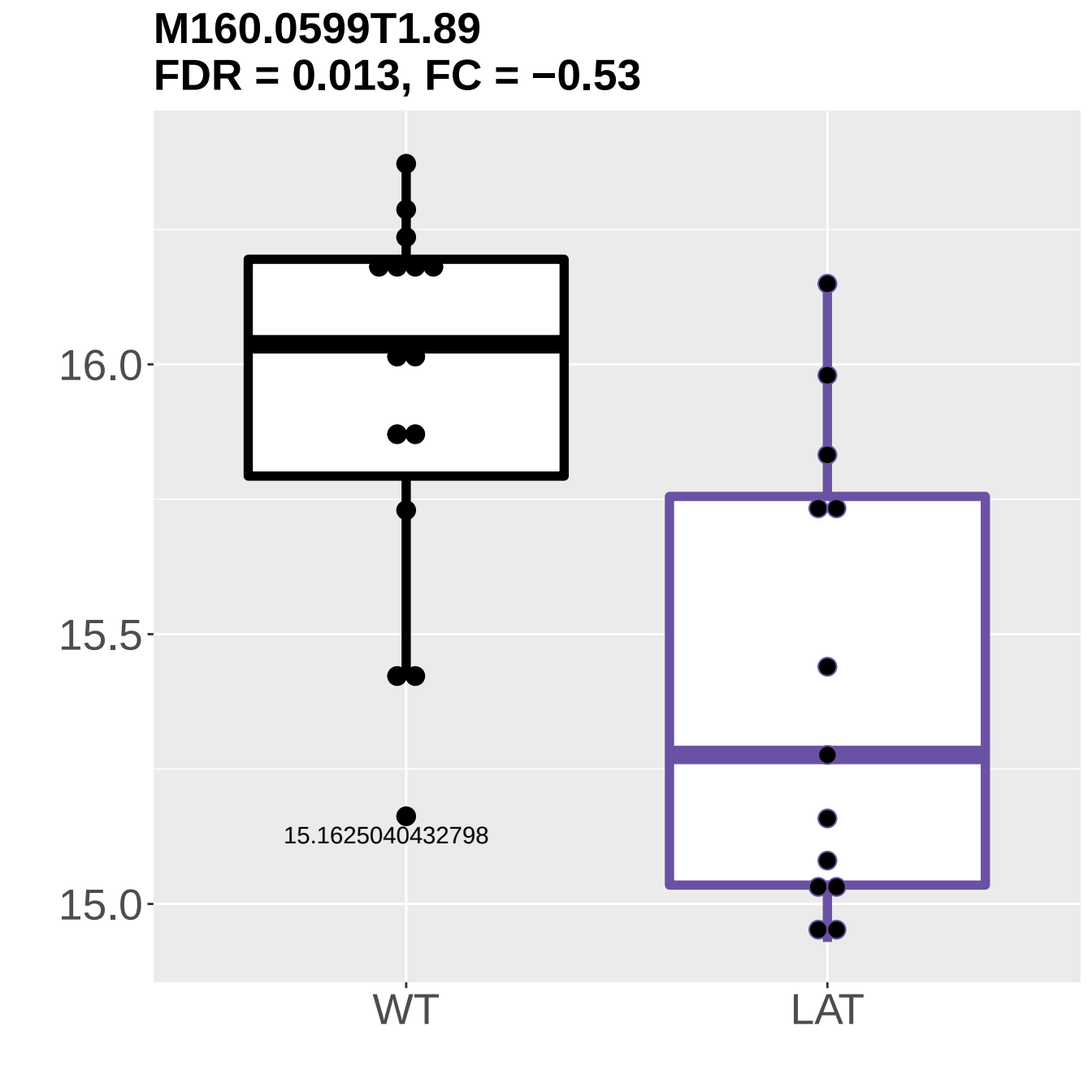
11.8855721549329
WT
LAT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15.5
15.0
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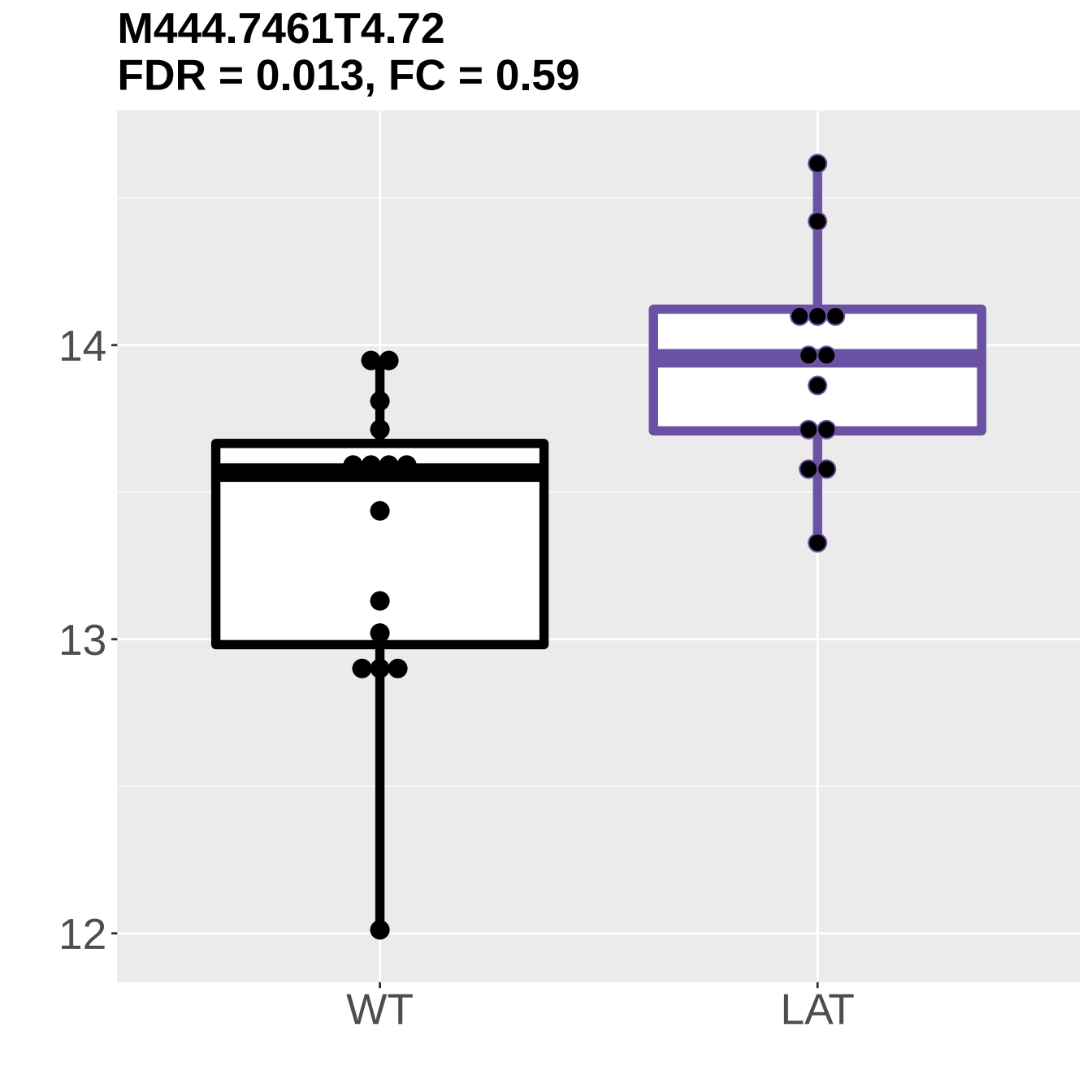
WT
LAT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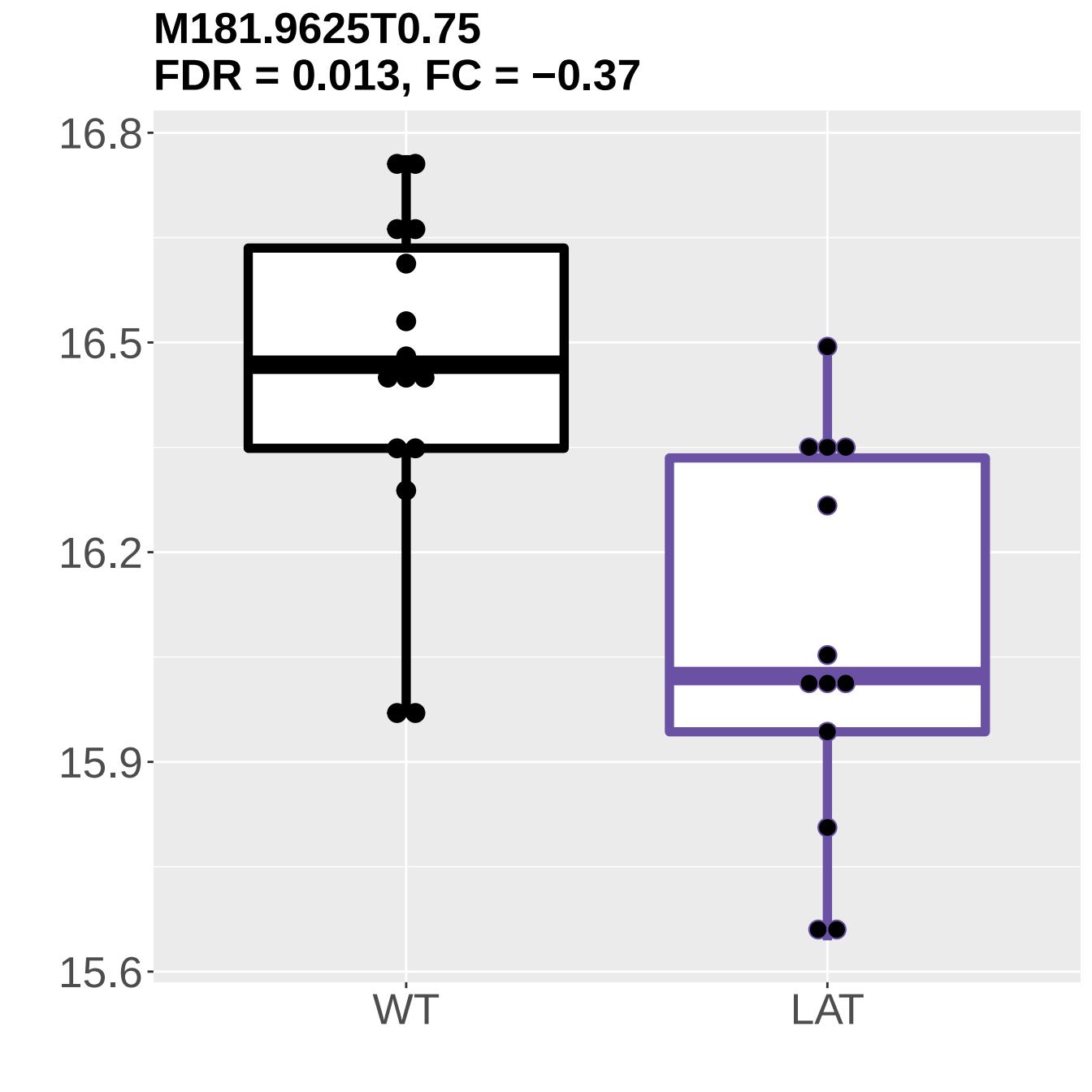
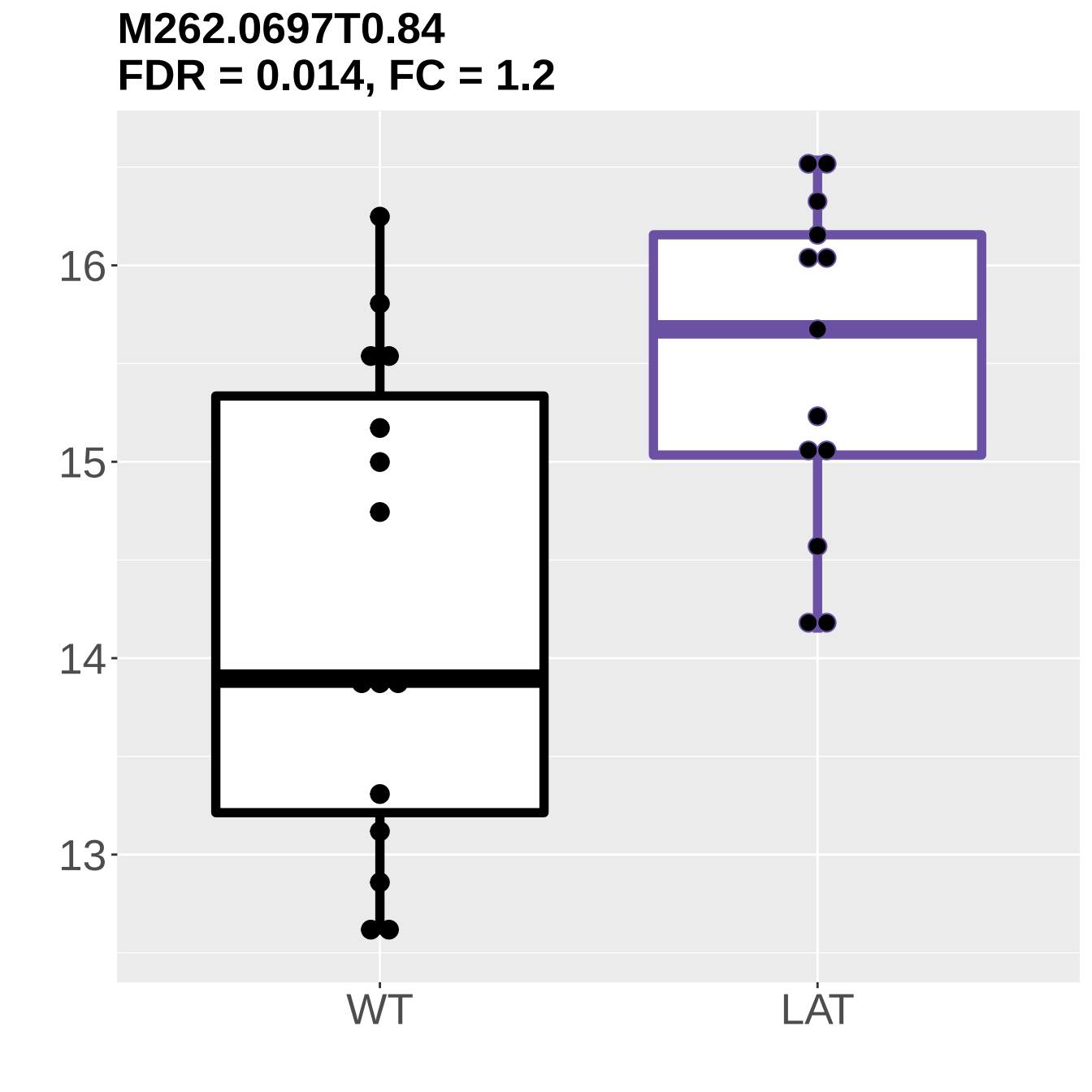
14
13
12
WT
LAT


M181.9625T0.75
FDR = 0.013, FC = −0.37
16.8
16.5
16.2
15.9
15.6
WT
LAT


M262.0697T0.84
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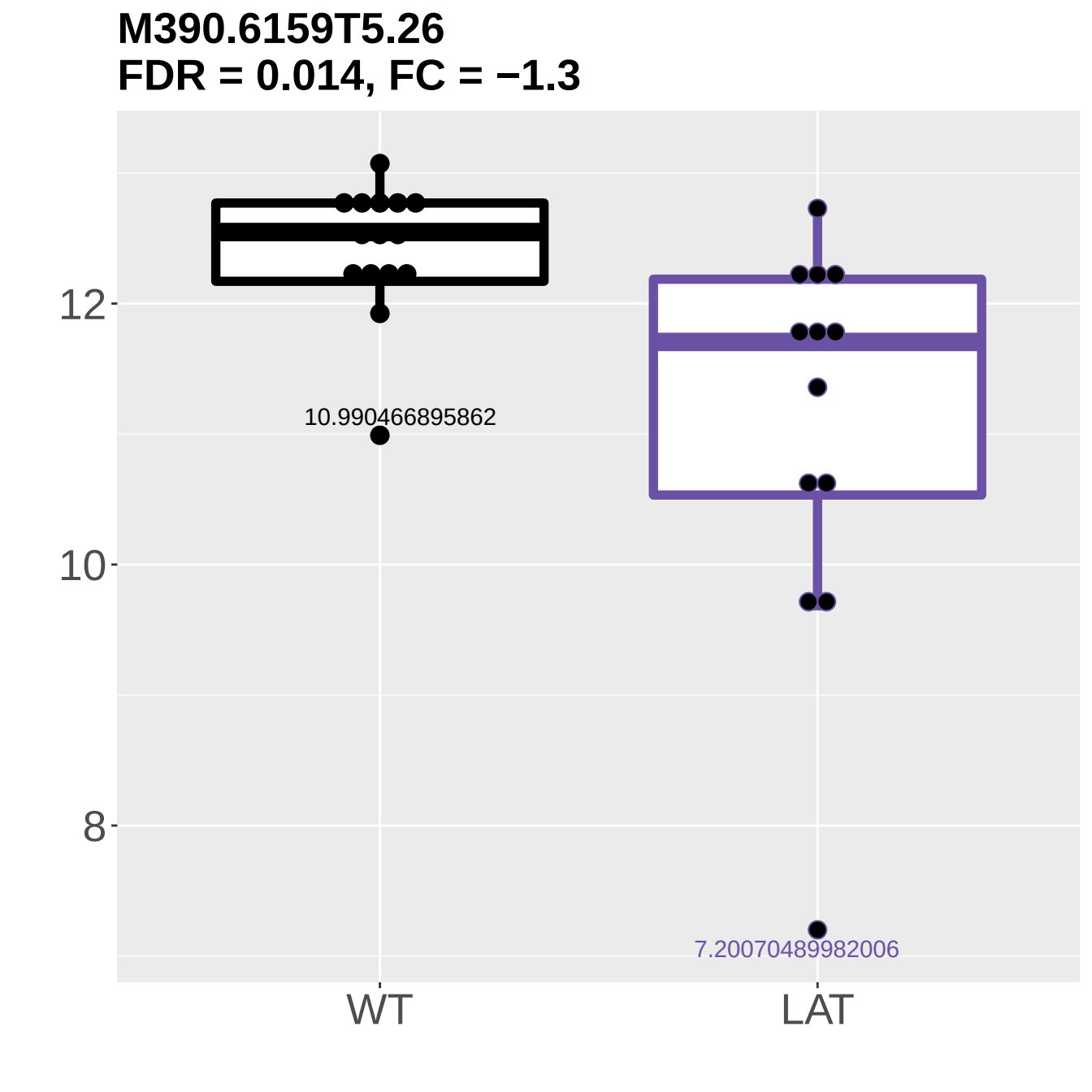
15
14
13
WT
LAT


M390.6159T5.26
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10
8
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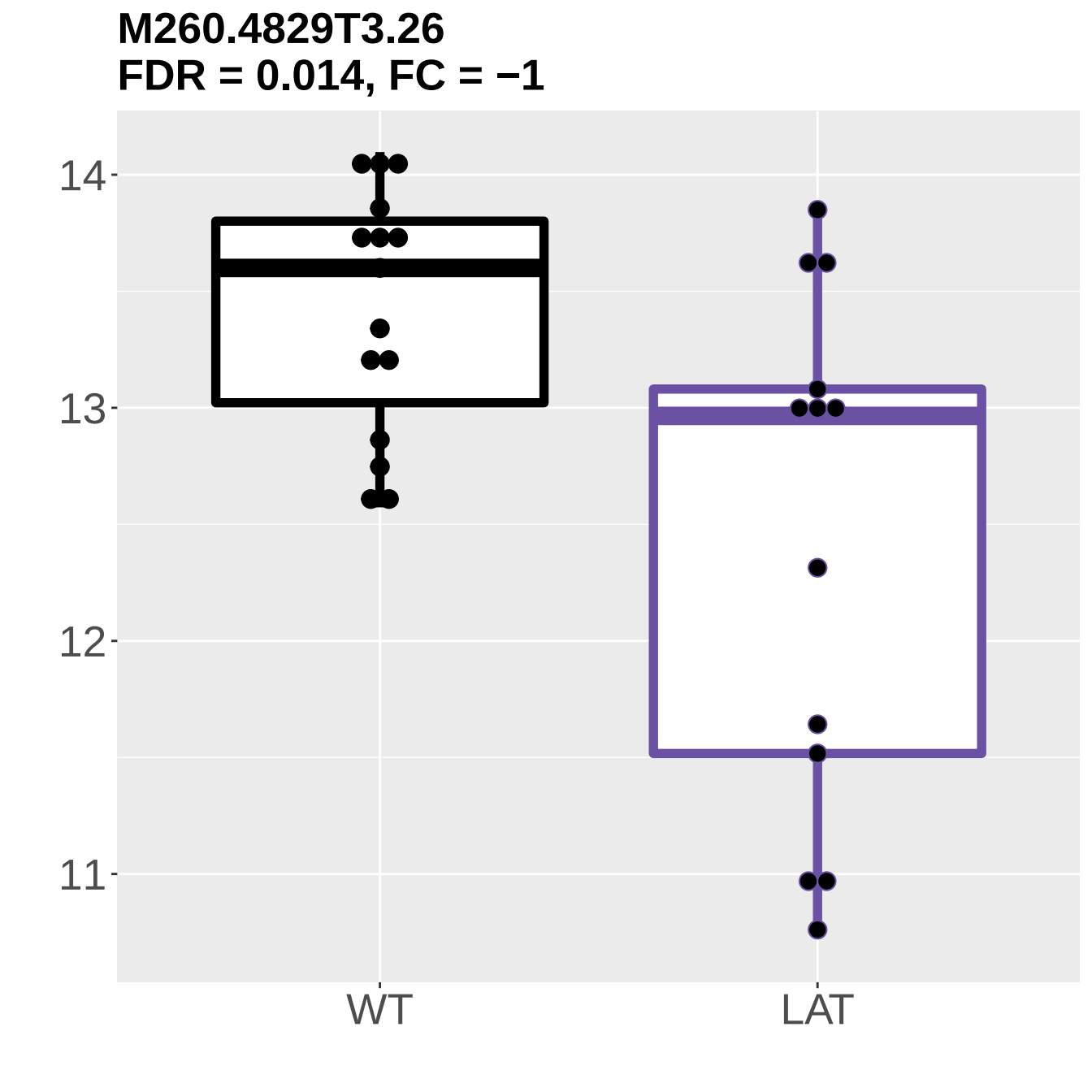
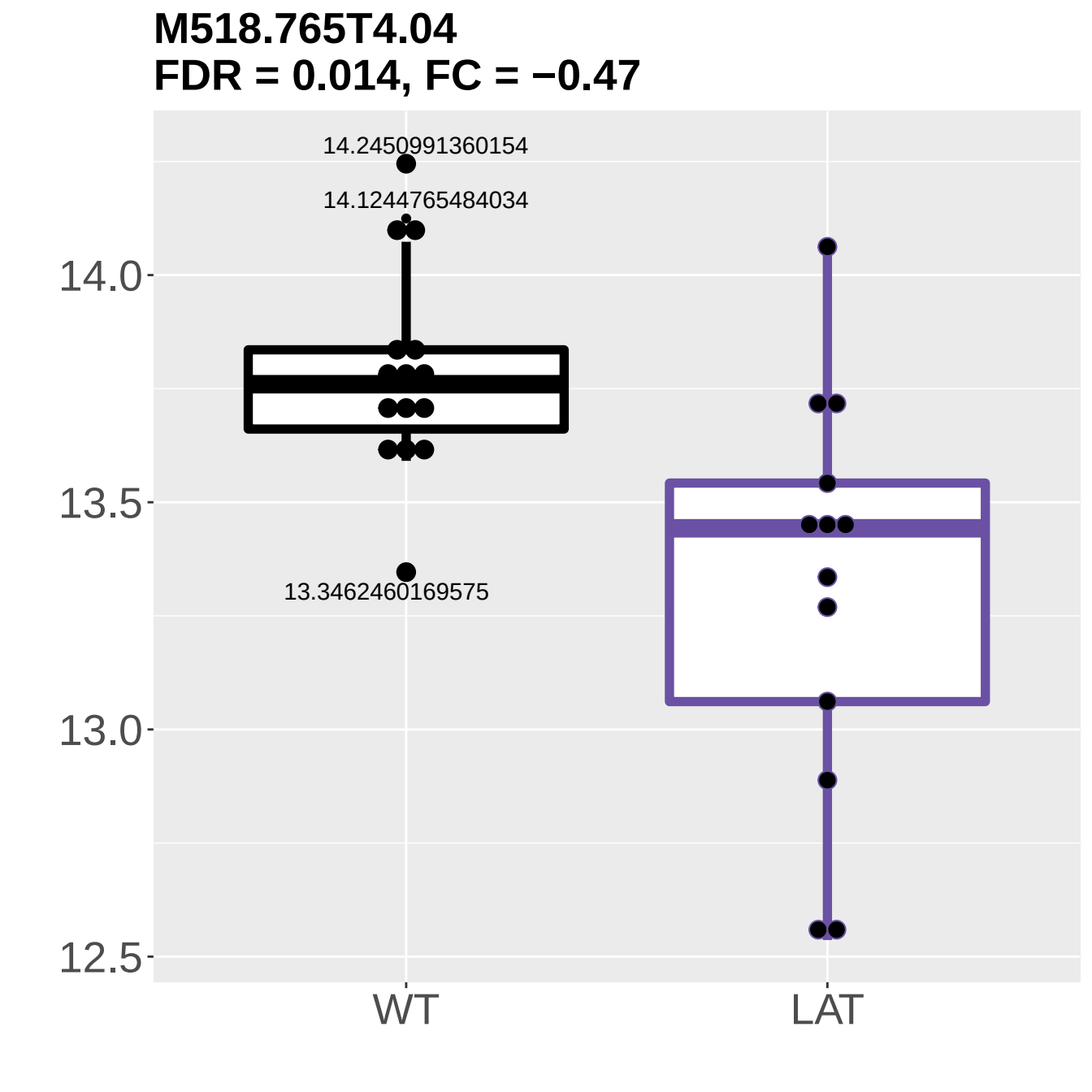
7.20070489982006
WT
LAT


M260.4829T3.26
FDR = 0.014, FC = −1
14
13
12
11
WT
LAT


M518.765T4.04
FDR = 0.014, FC = −0.47
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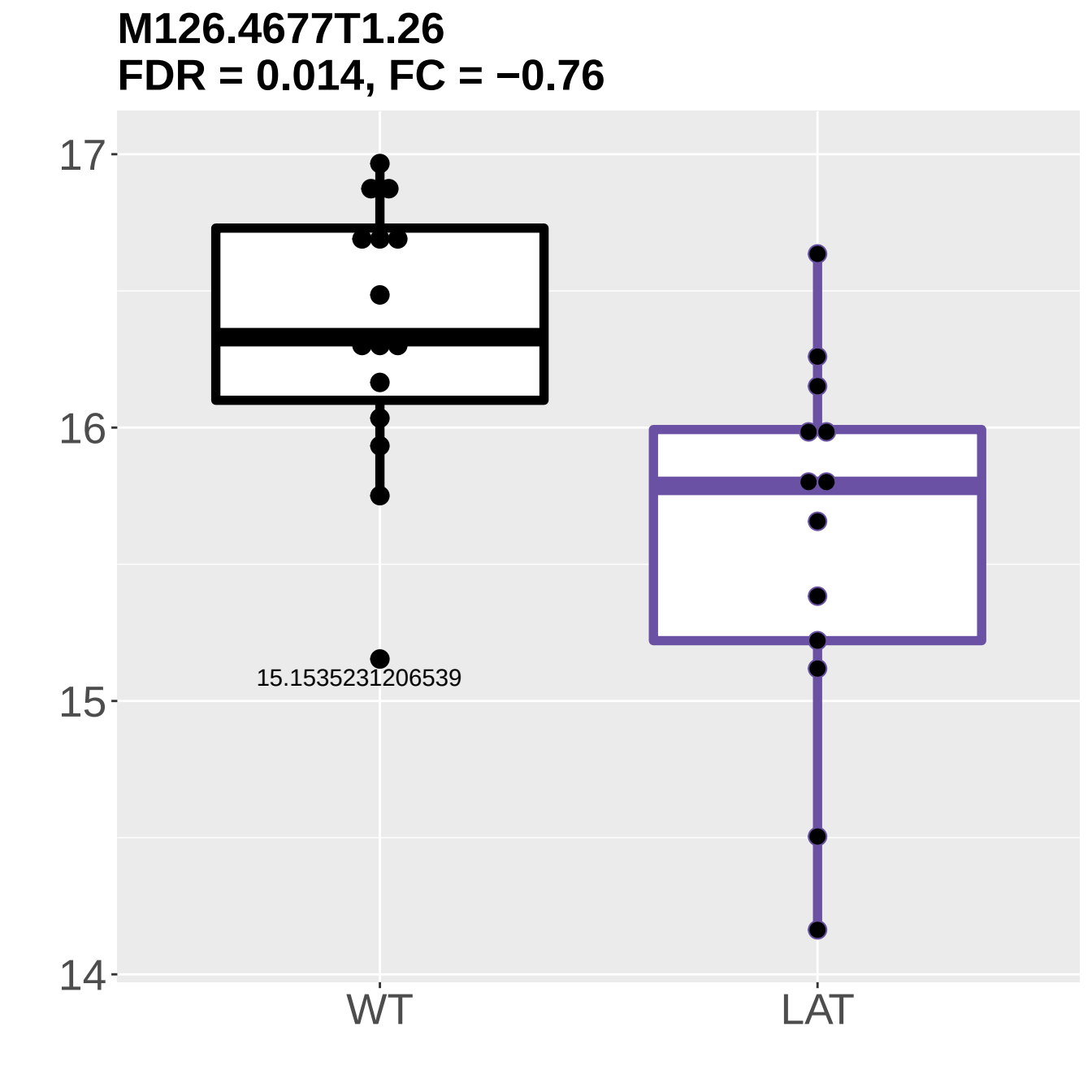
14.1244765484034
13.3462460169575
14.0
13.5
13.0
12.5
WT
LAT


M126.4677T1.26
FDR = 0.014, FC = −0.76
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16
15
14
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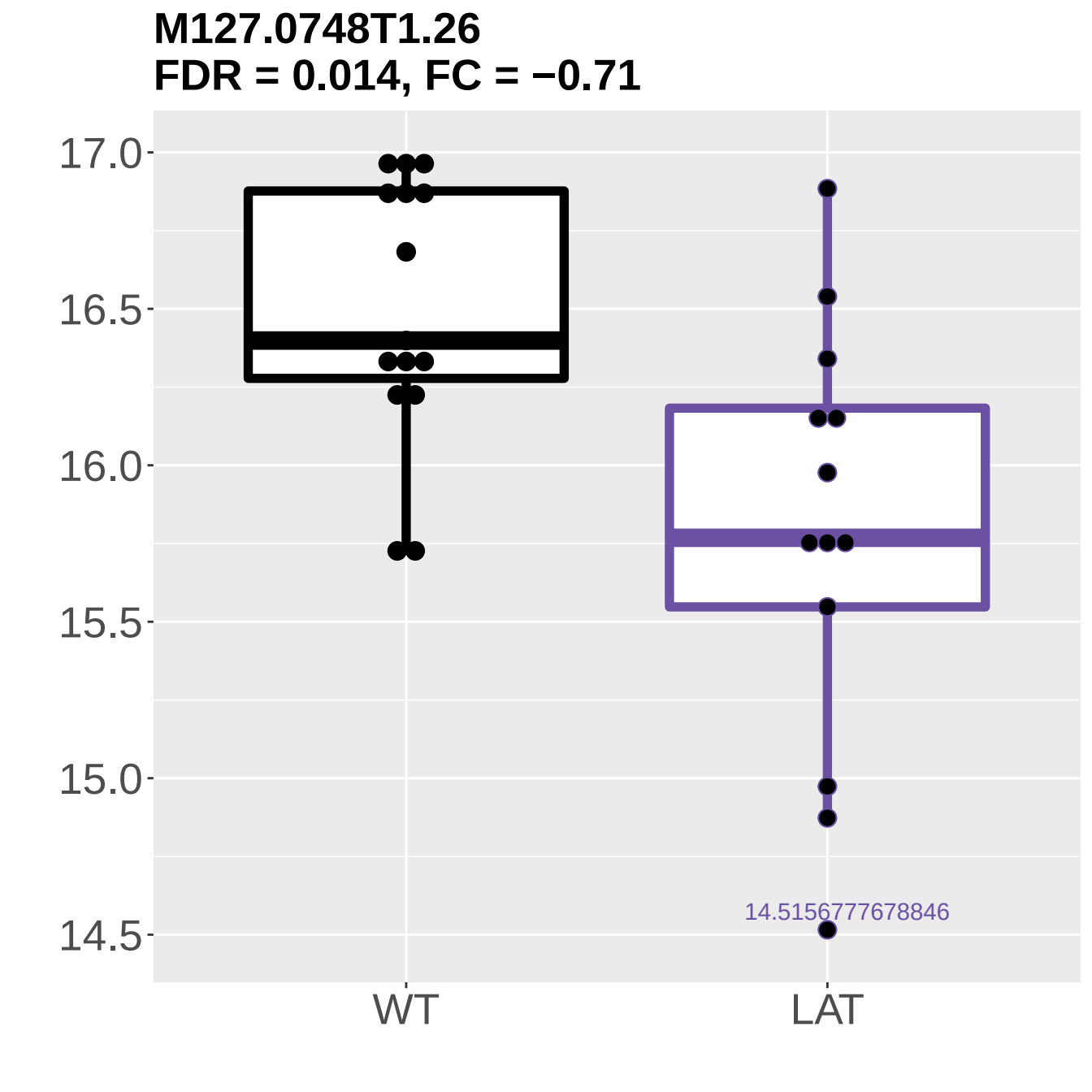
WT
LAT


M127.0748T1.26
FDR = 0.014, FC = −0.71
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16.5
16.0
15.5
15.0
14.5
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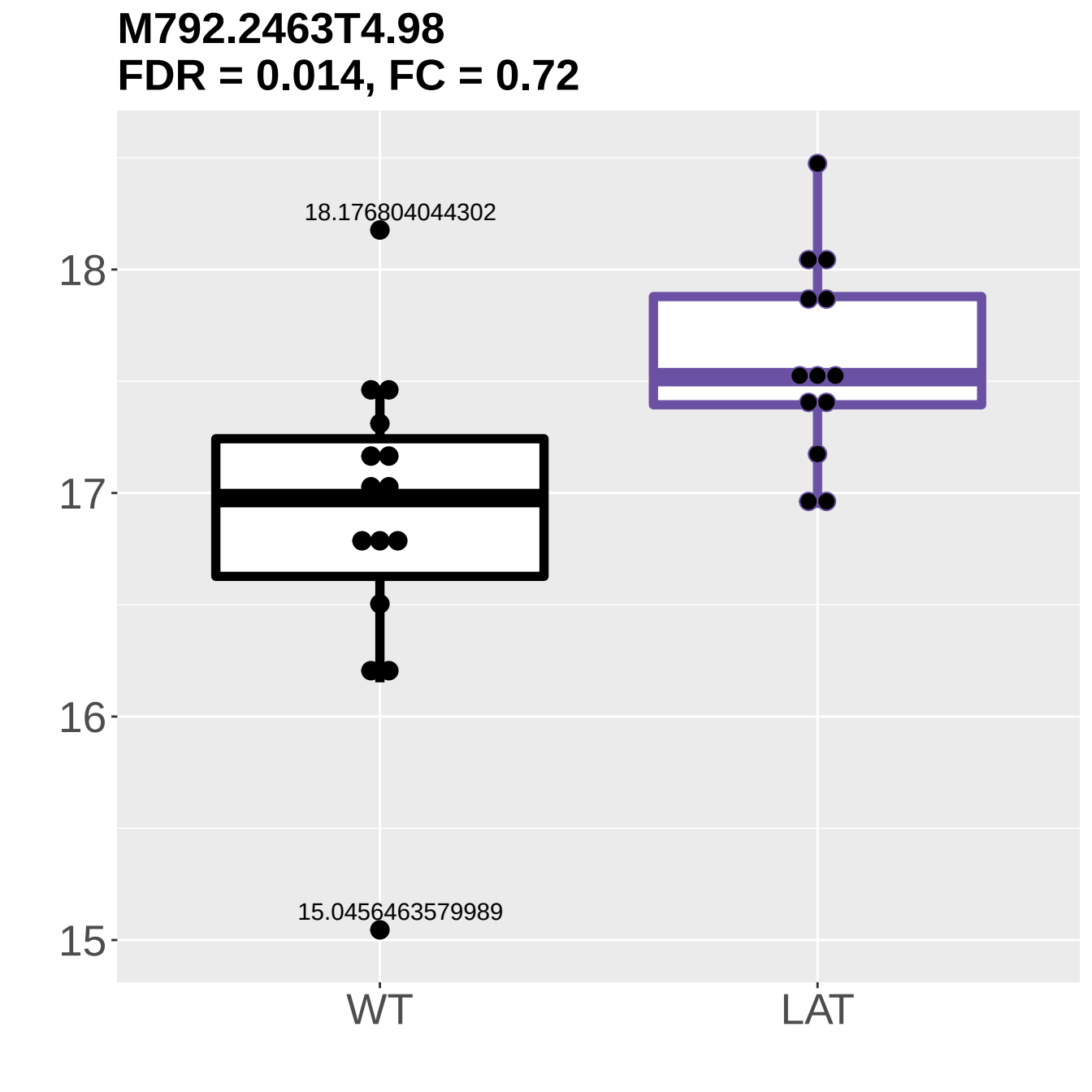
WT
LAT


M792.2463T4.98
FDR = 0.014, FC = 0.72
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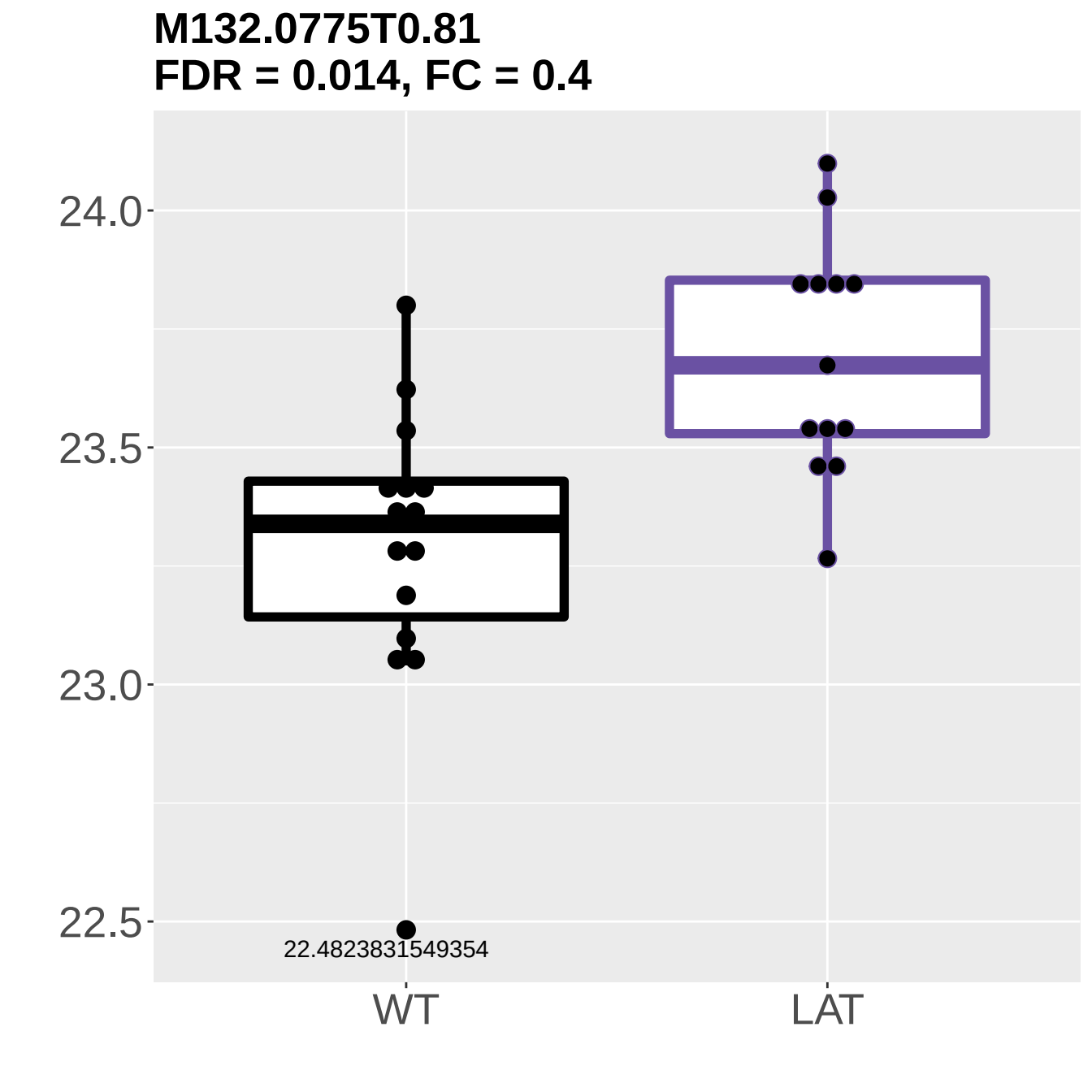
15.0456463579989
18
17
16
15
WT
LAT


M132.0775T0.81
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23.0
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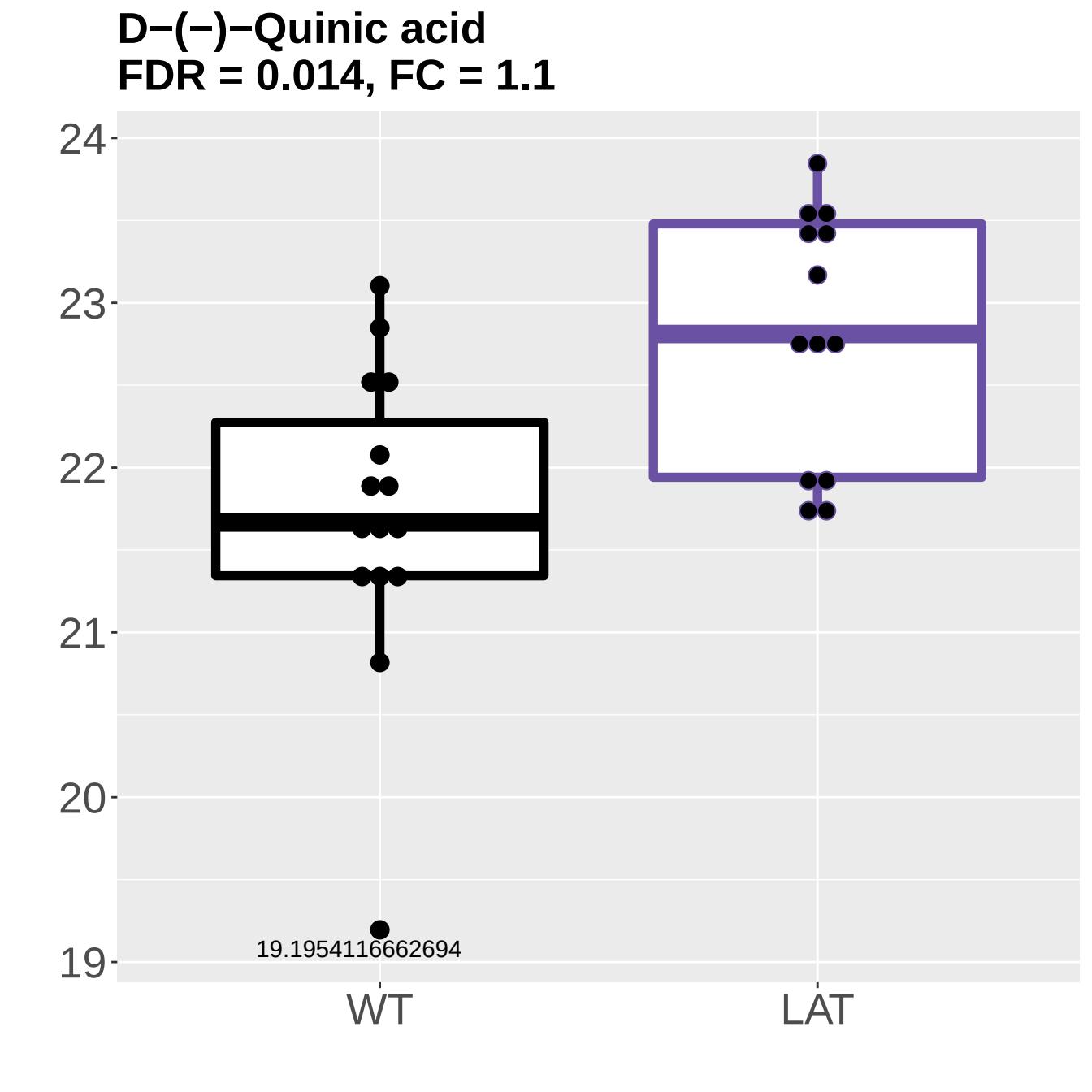
WT
LAT


D−(−)−Quinic acid
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23
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21
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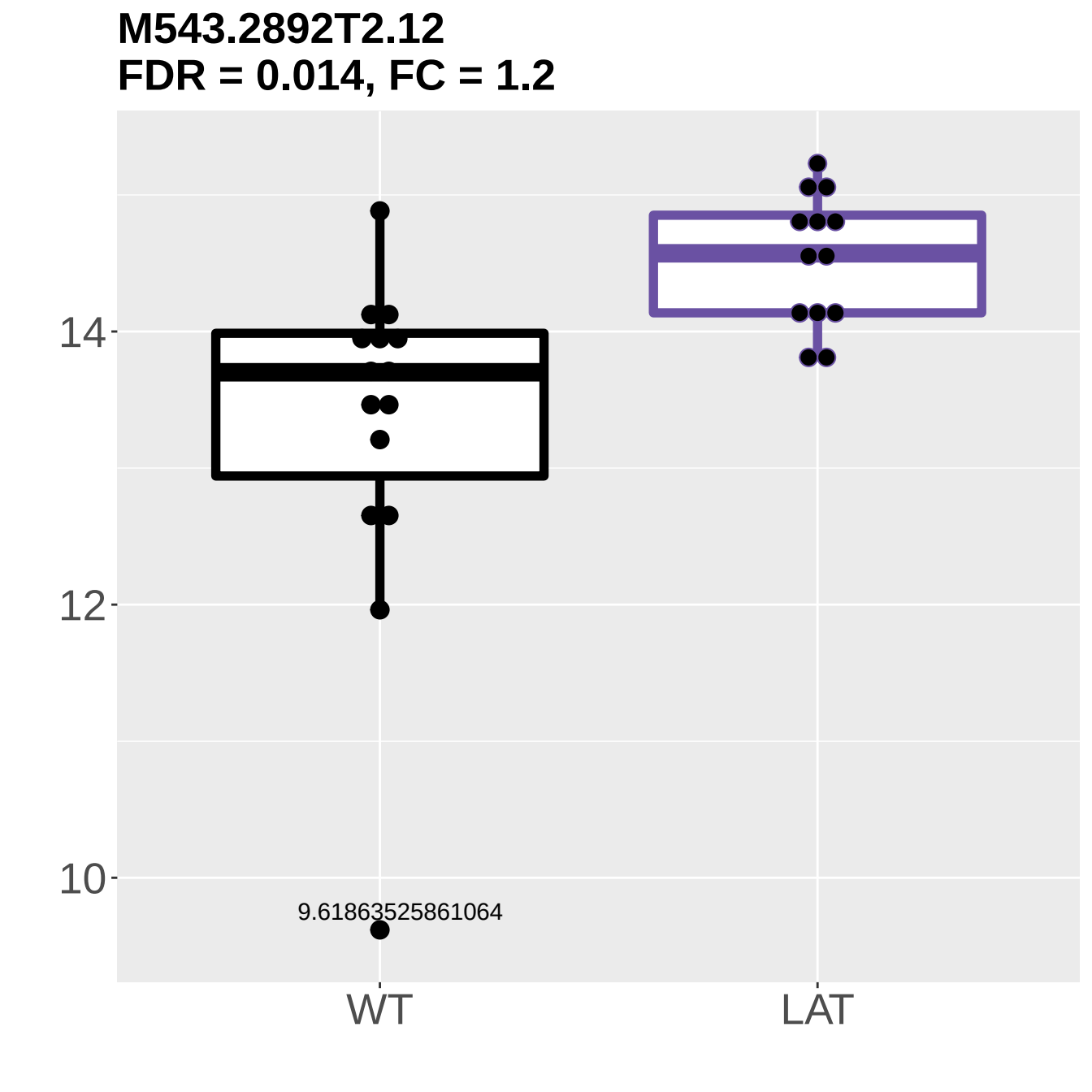
WT
LAT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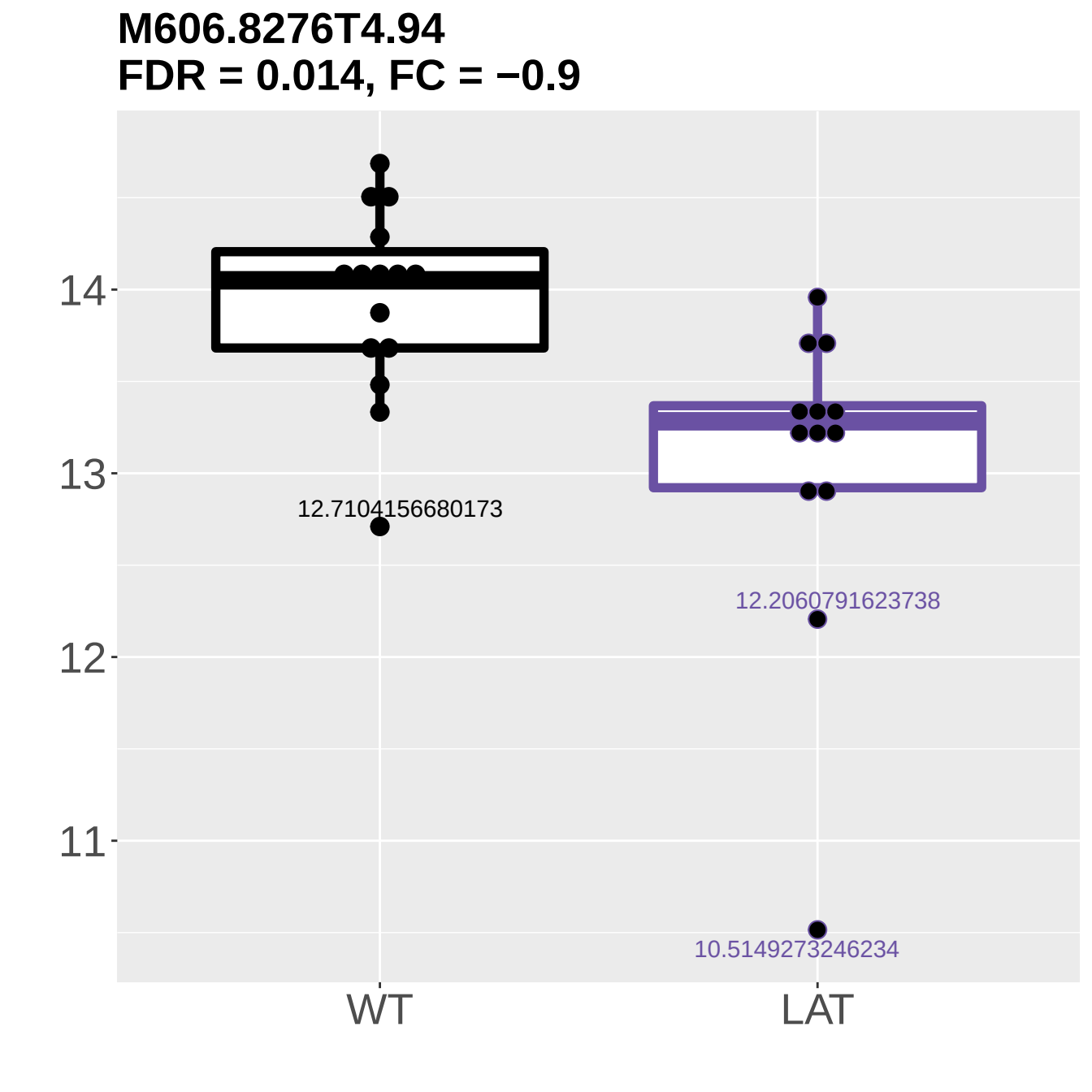
WT
LAT


M606.8276T4.94
FDR = 0.014, FC = −0.9
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13
12
11
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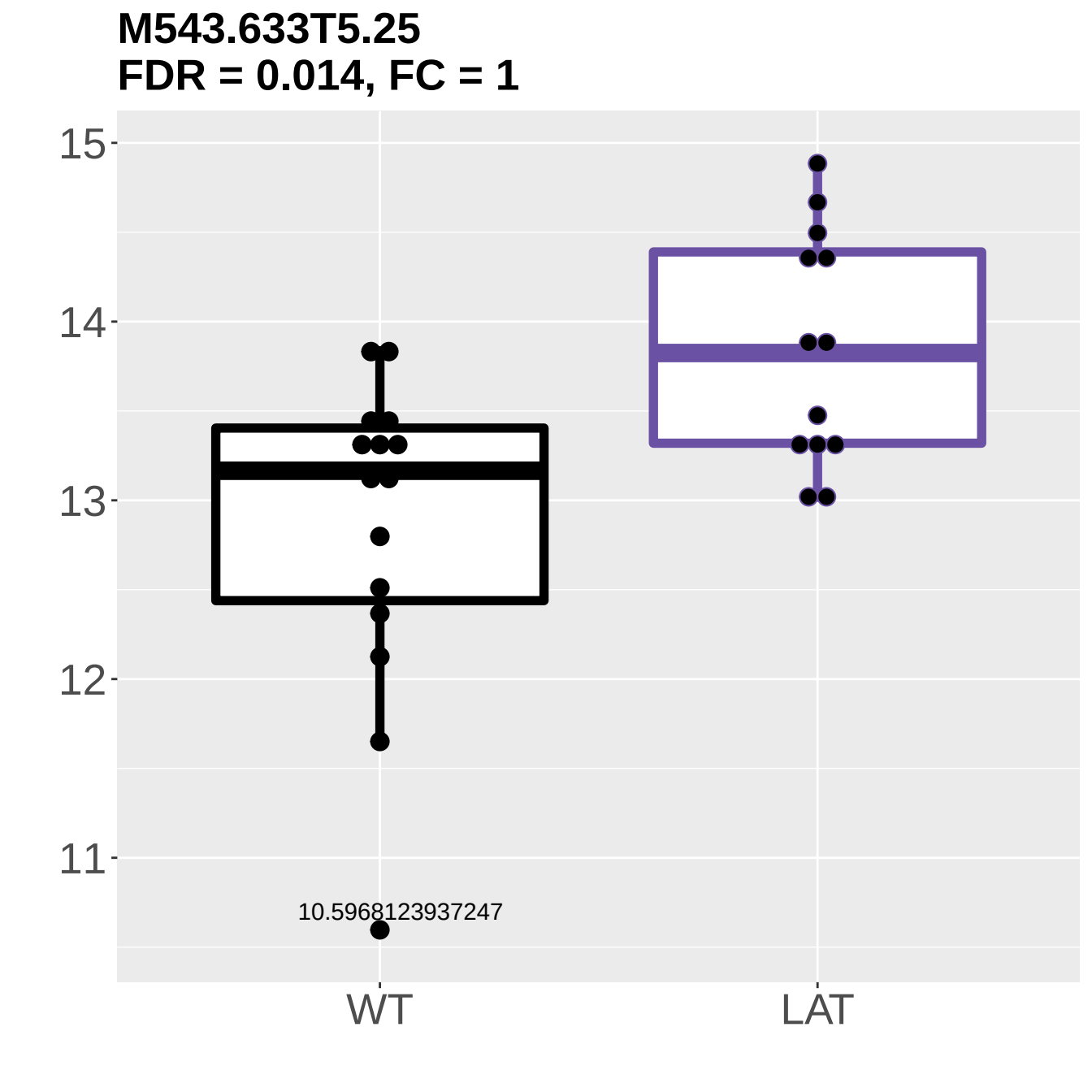
WT
LAT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12
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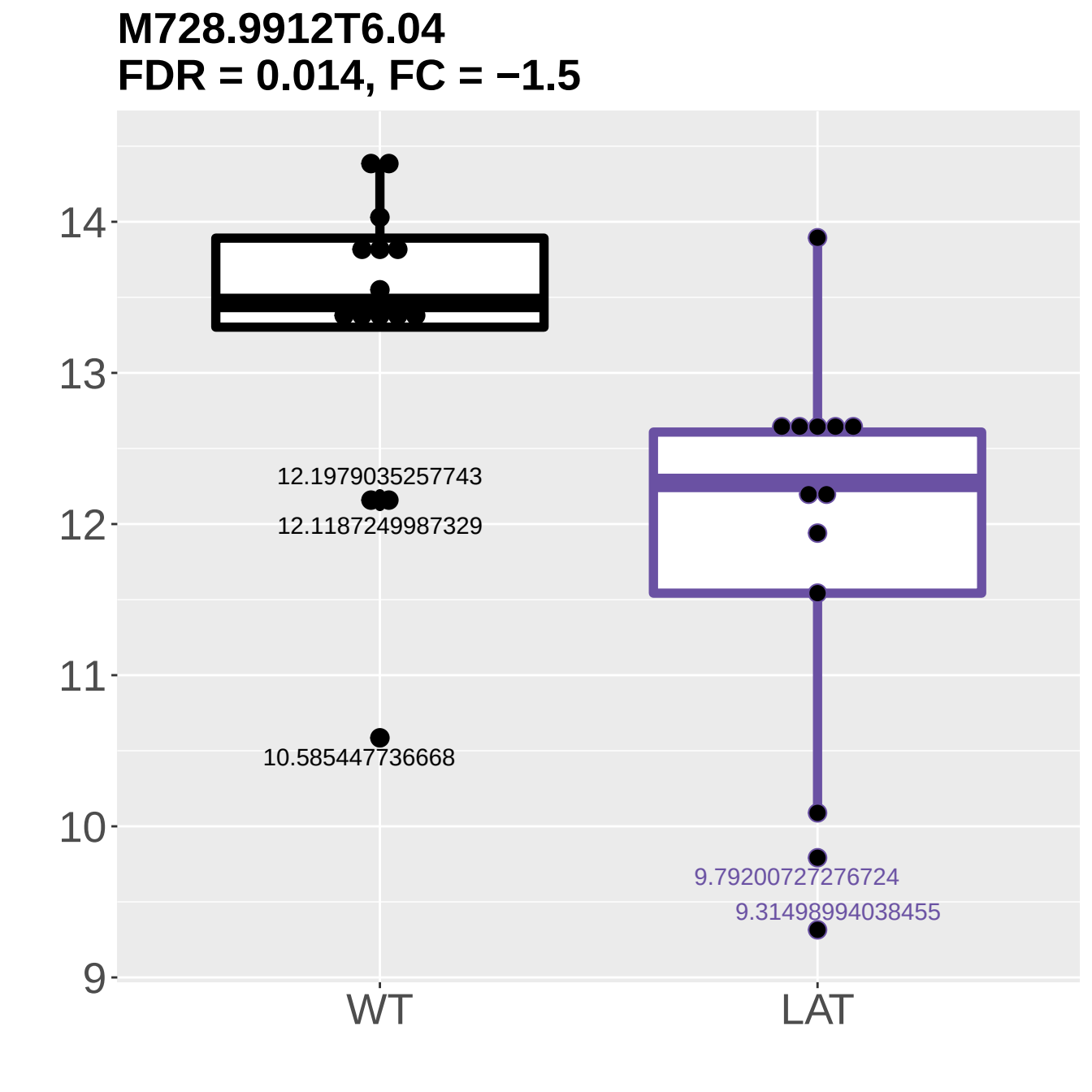
WT
LAT


M728.9912T6.04
FDR = 0.014, FC = −1.5
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13
12
11
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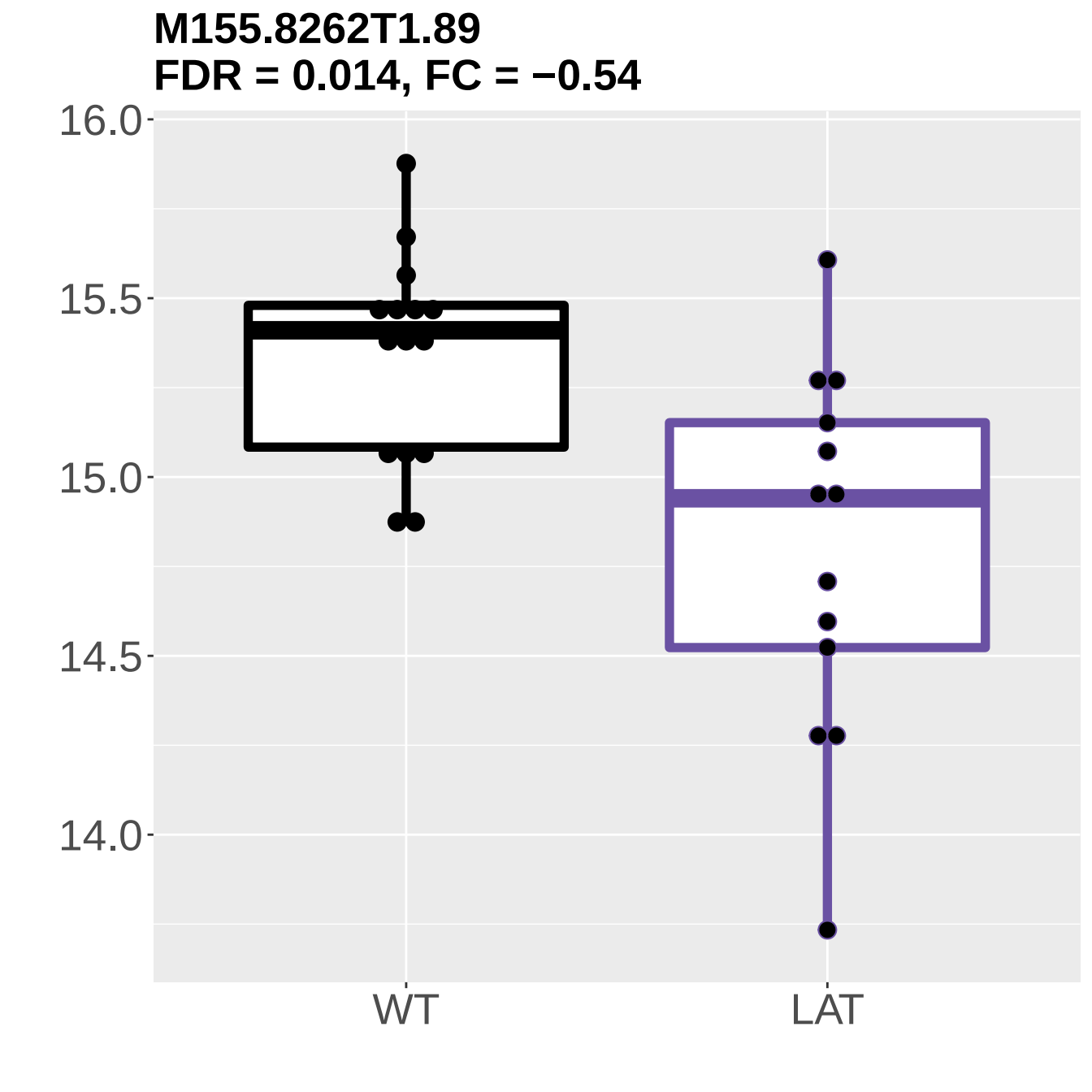
WT
LAT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15.0
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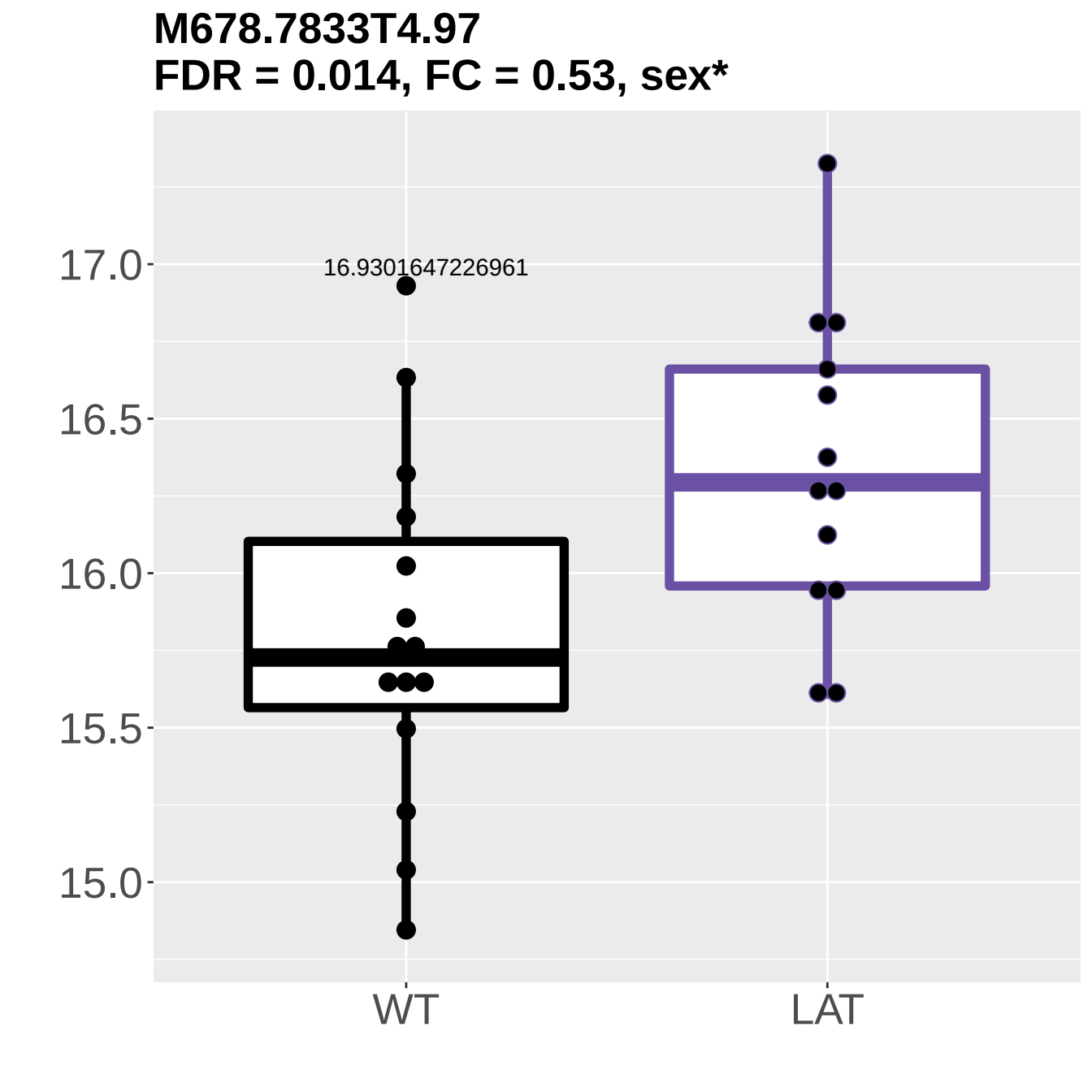
14.0
WT
LAT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15.5
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WT
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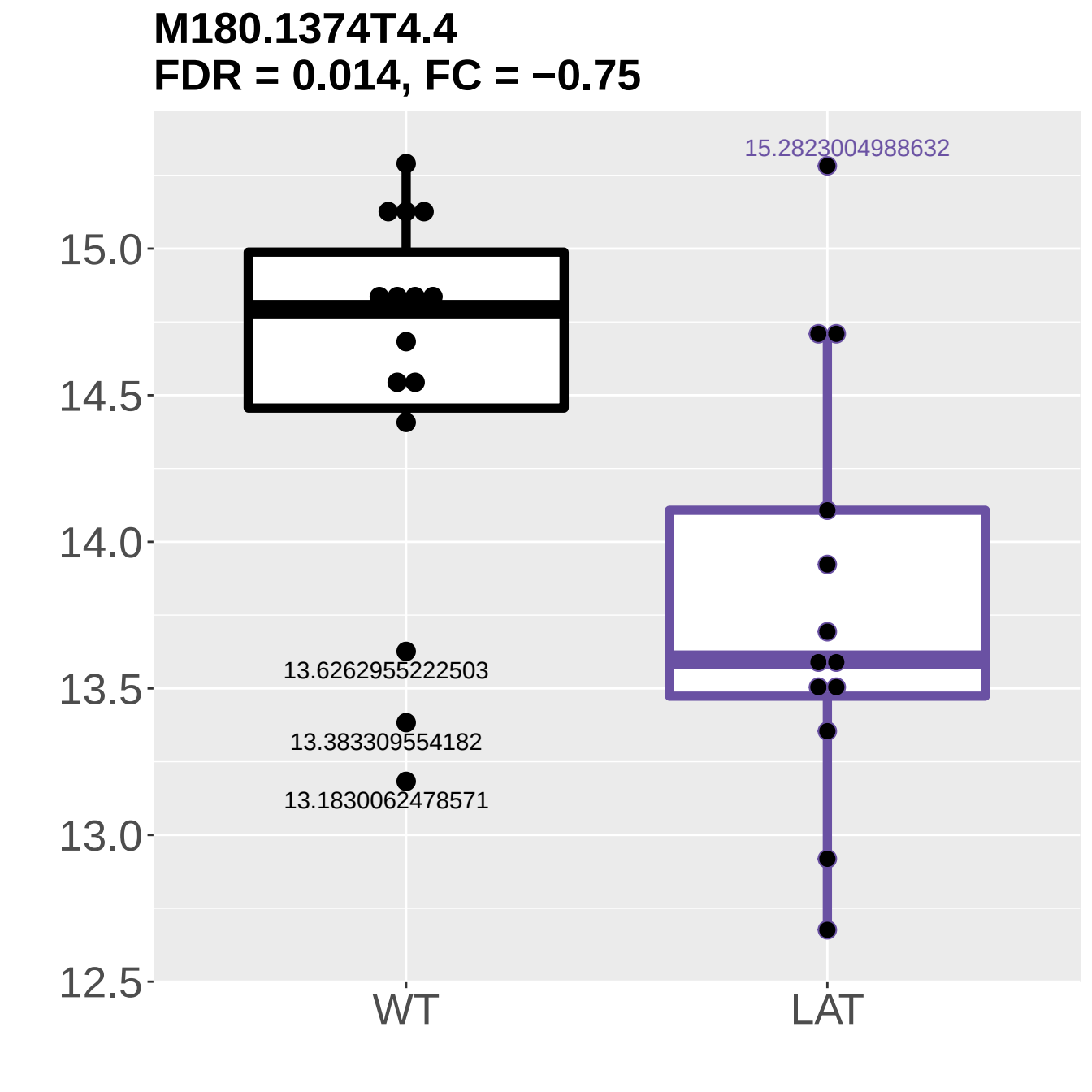
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15.0
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14.0
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13.5
13.383309554182
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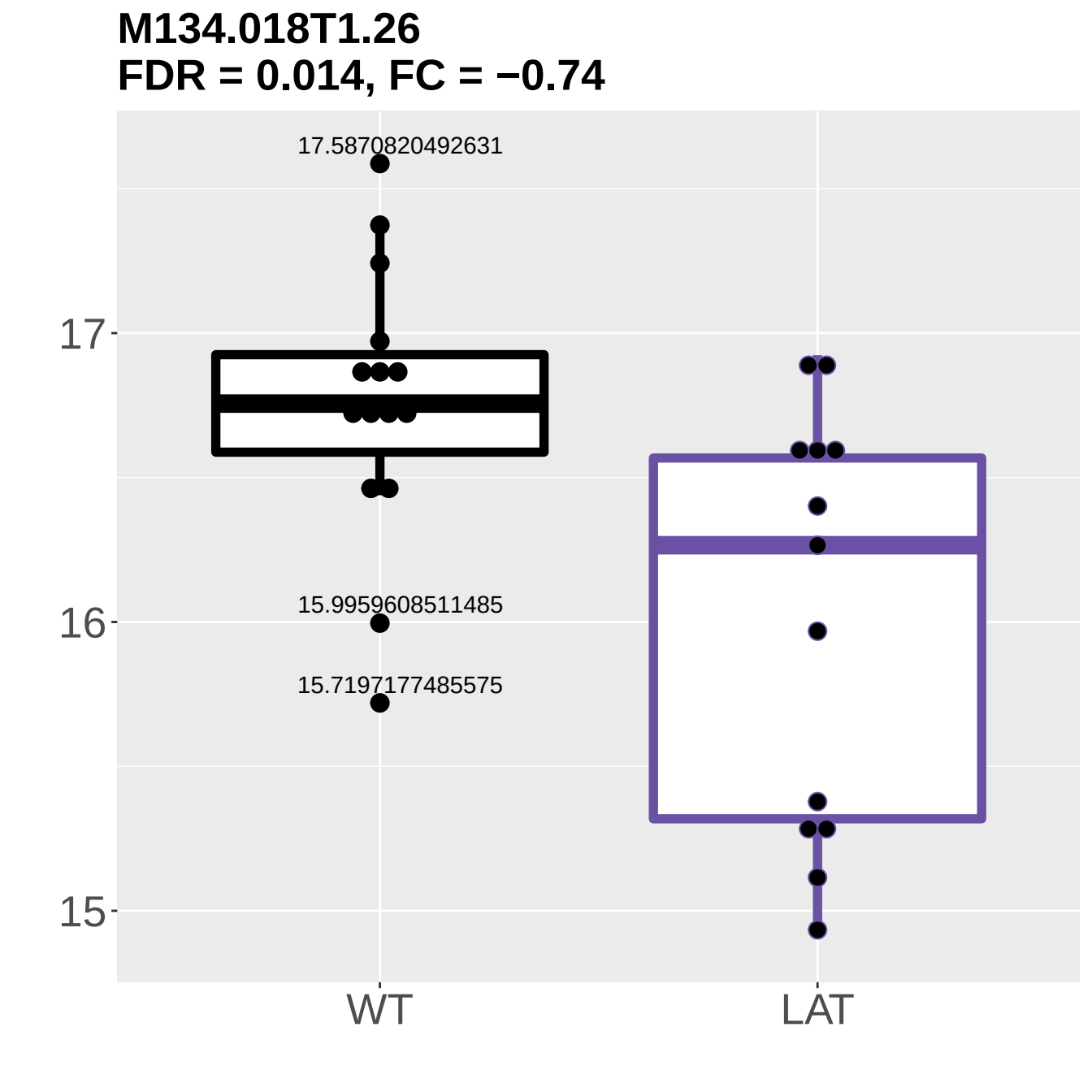
13.0
12.5
WT
LAT


M134.018T1.26
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17
16
15
WT
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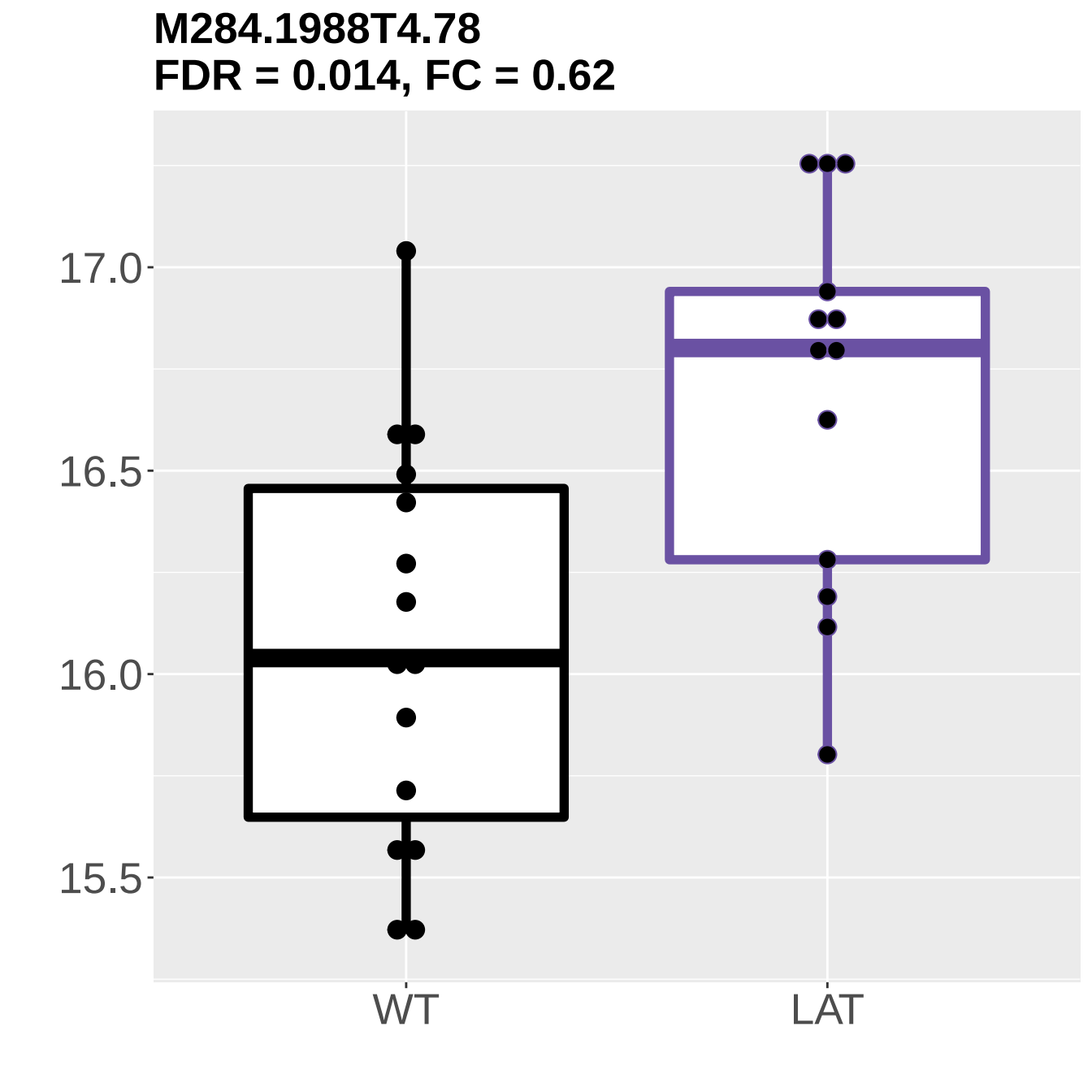
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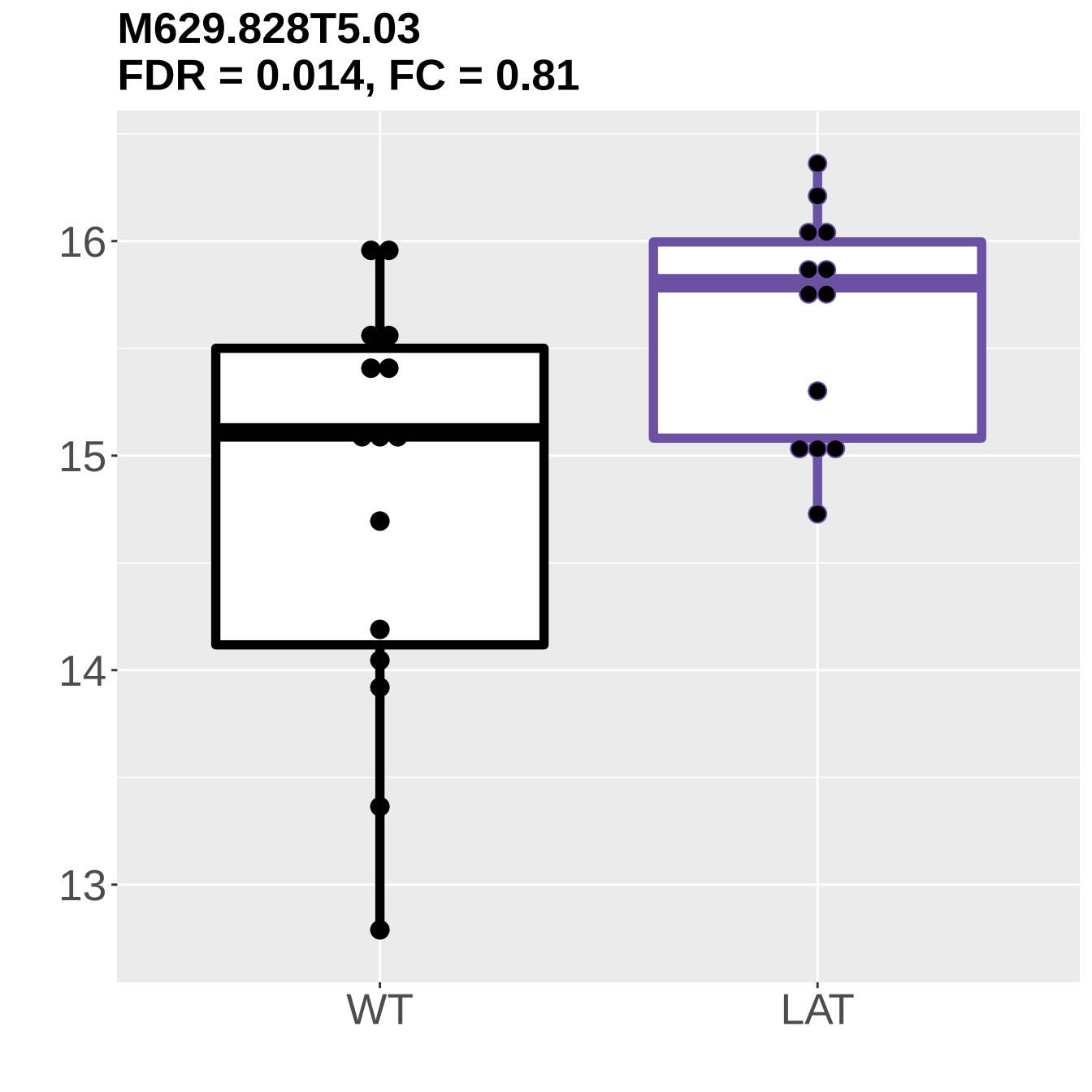
16.5
16.0
15.5
WT
LAT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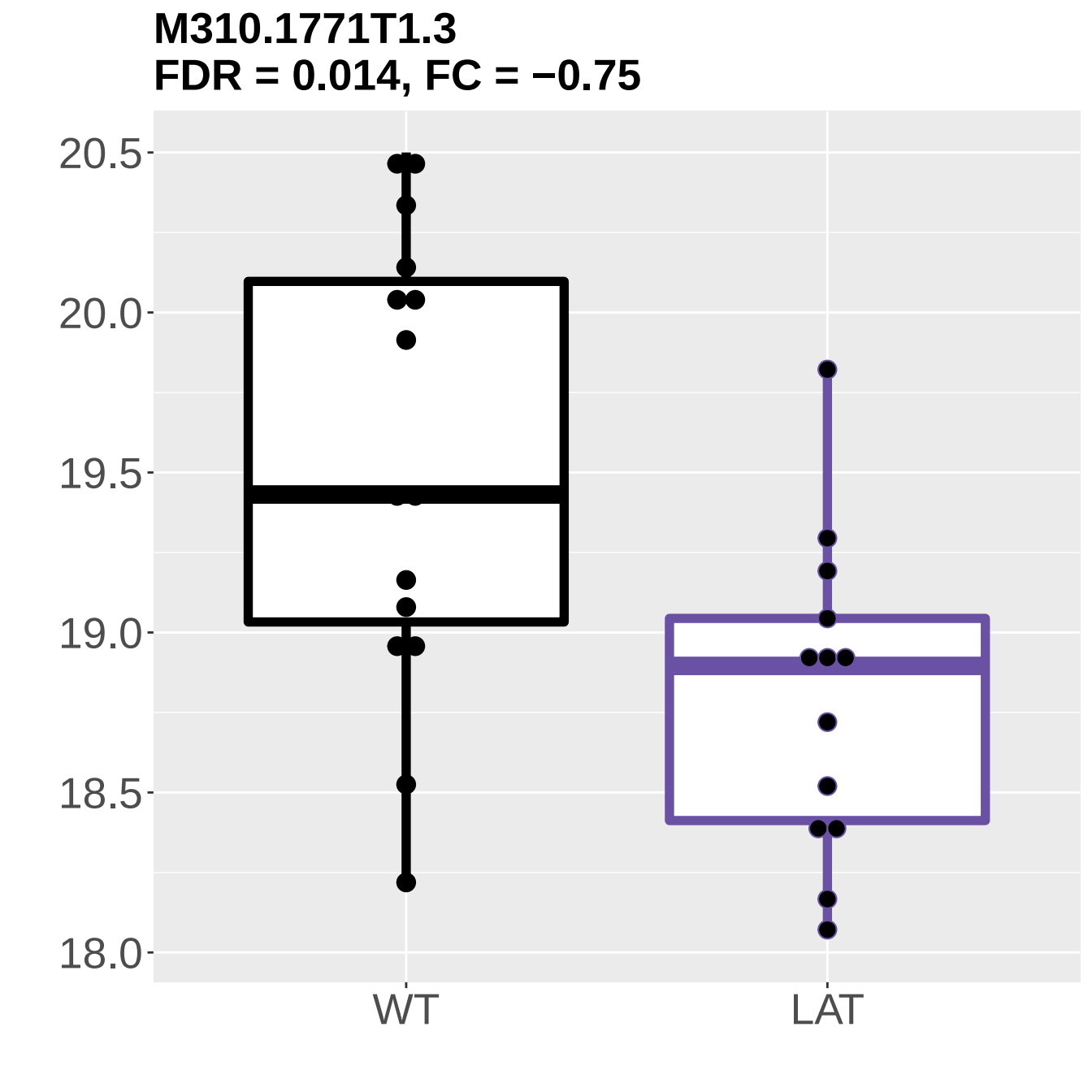
14
13
WT
LAT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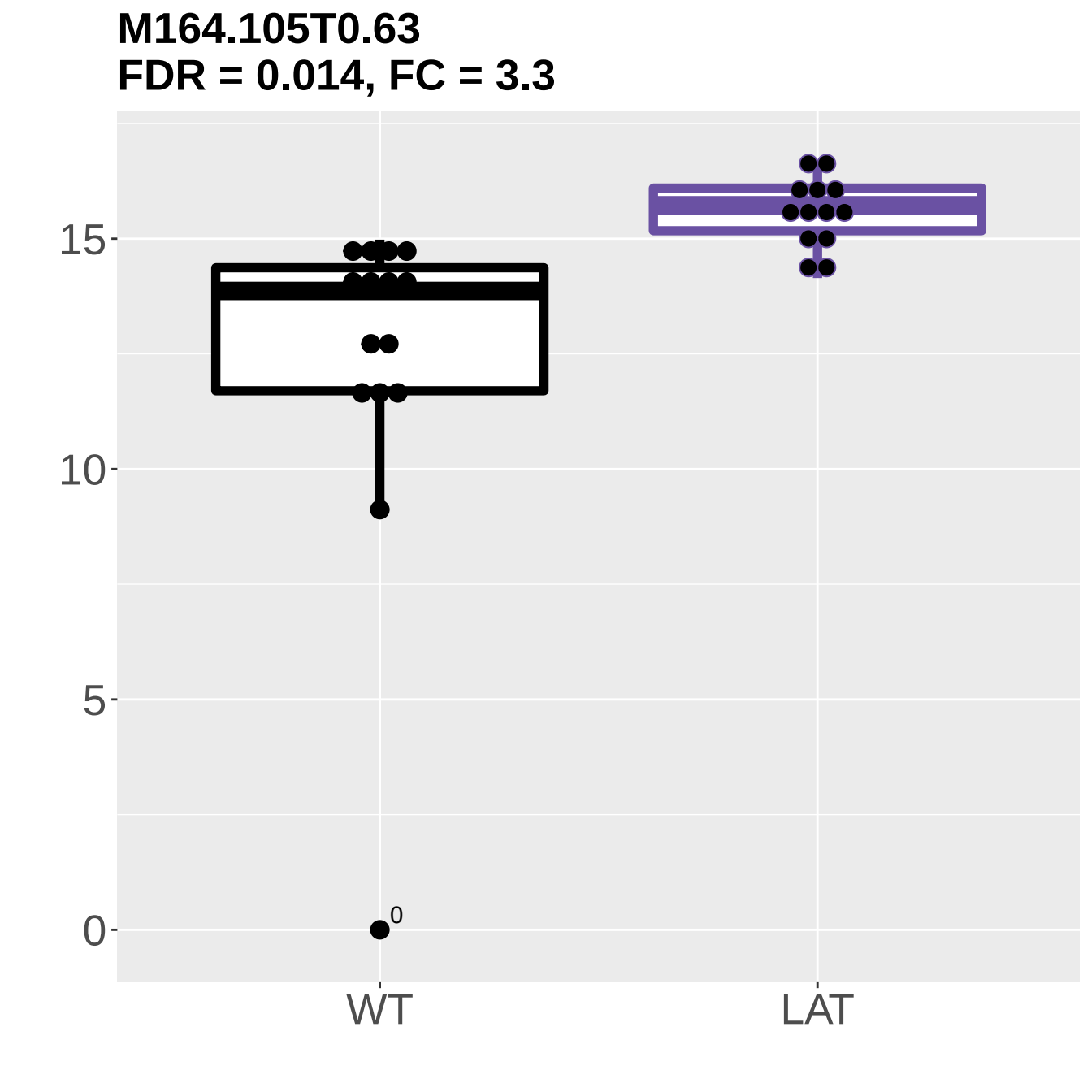
19.5
19.0
18.5
18.0
WT
LAT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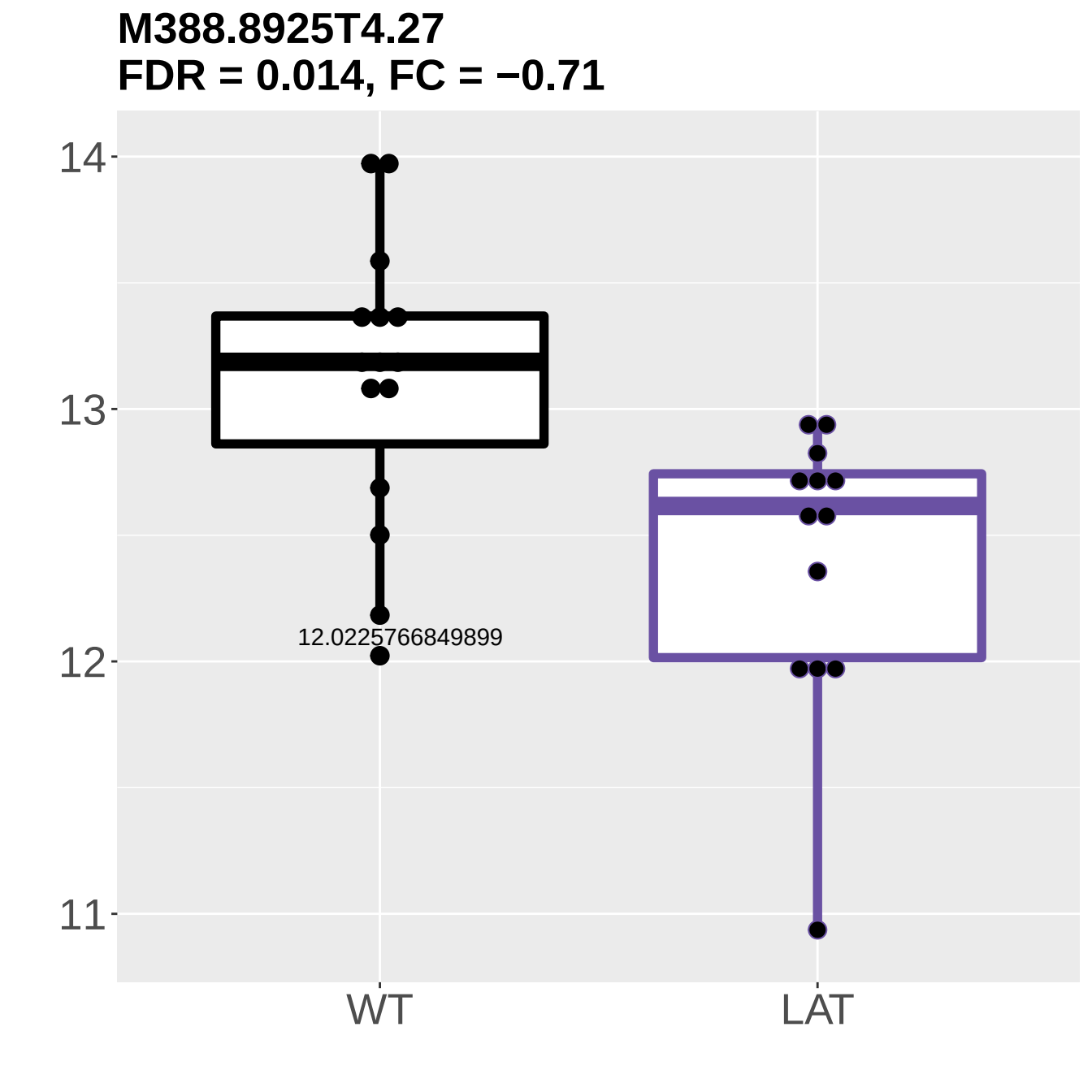
10
5
0
0
WT
LAT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13
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11
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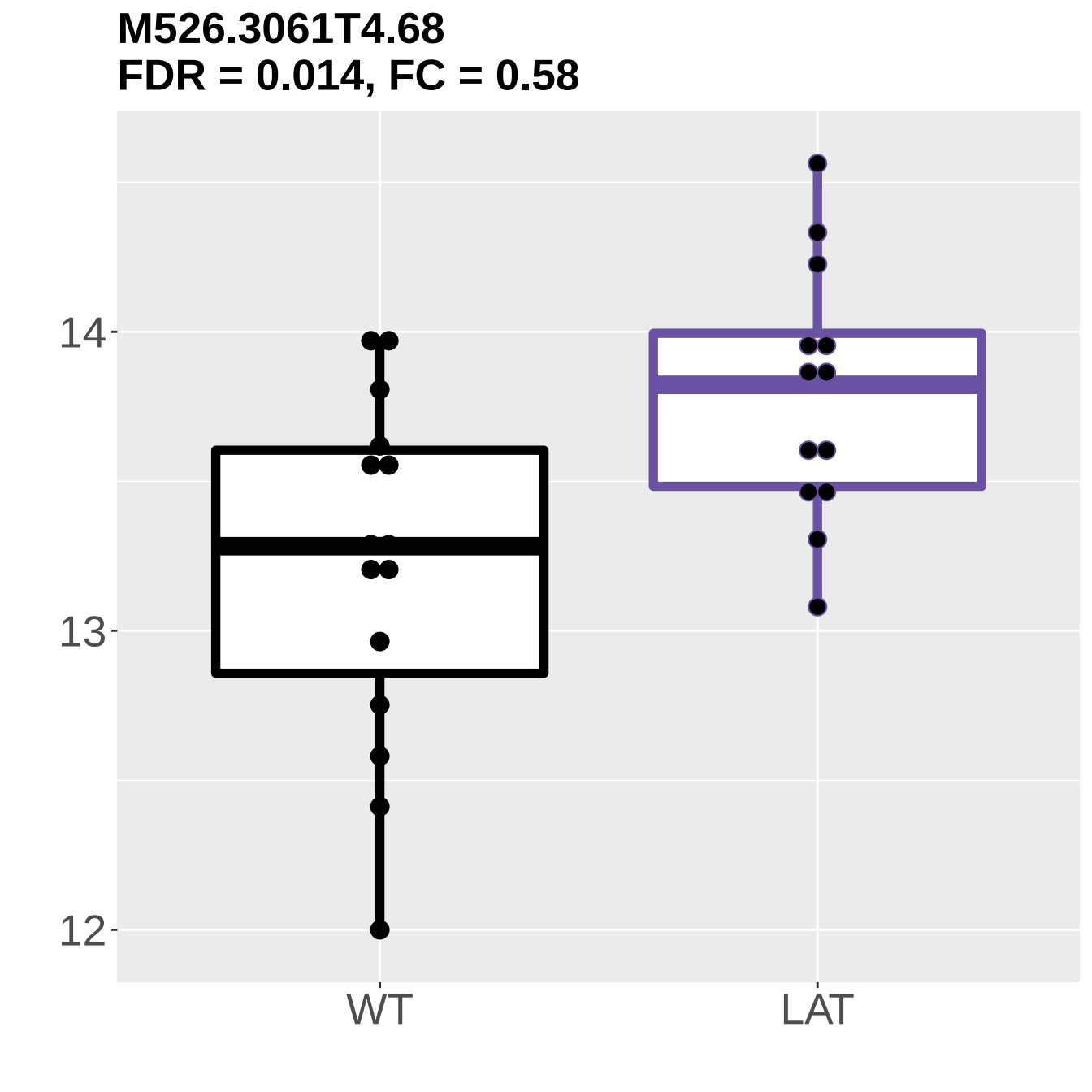
WT
LAT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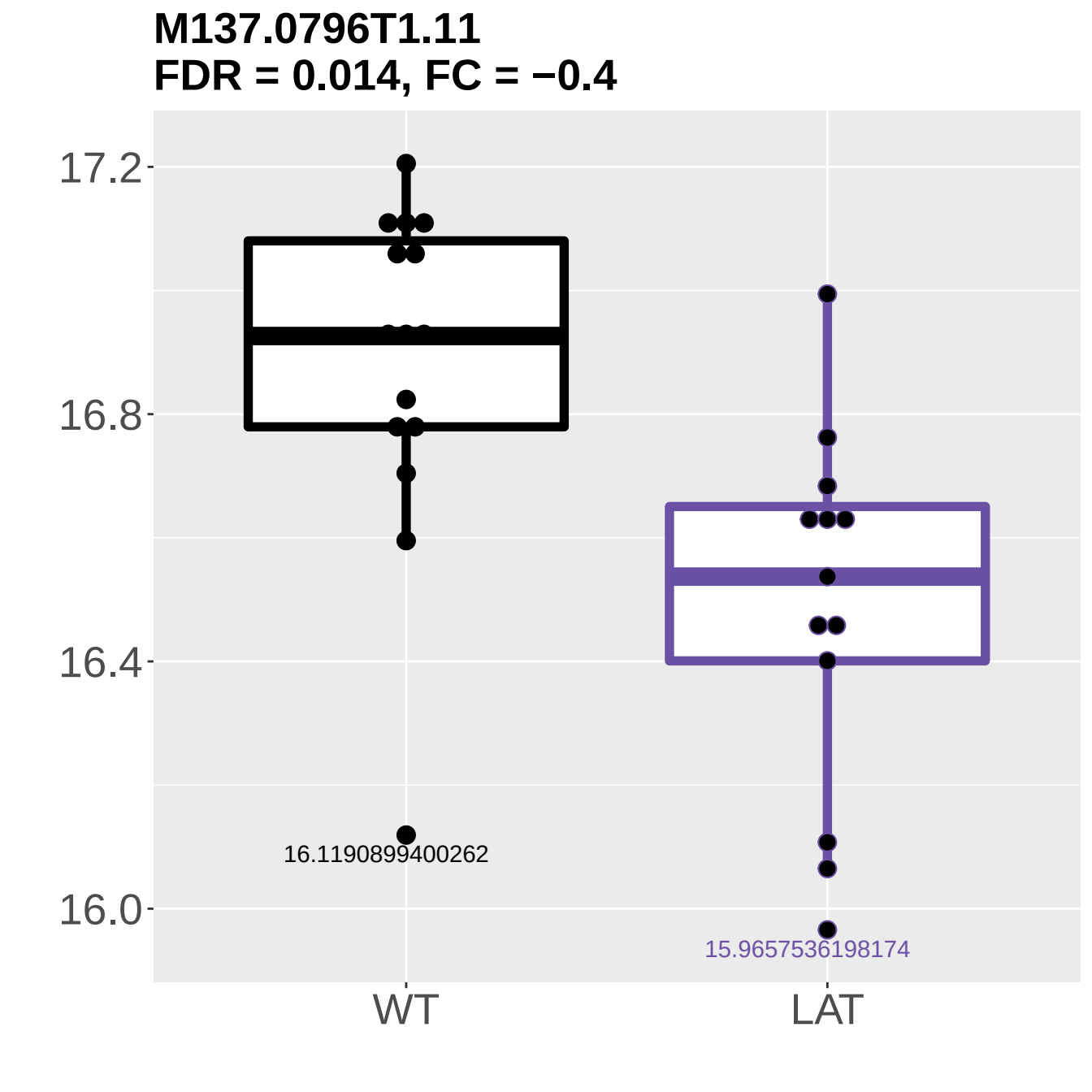
14
13
12
WT
LAT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16.4
16.0
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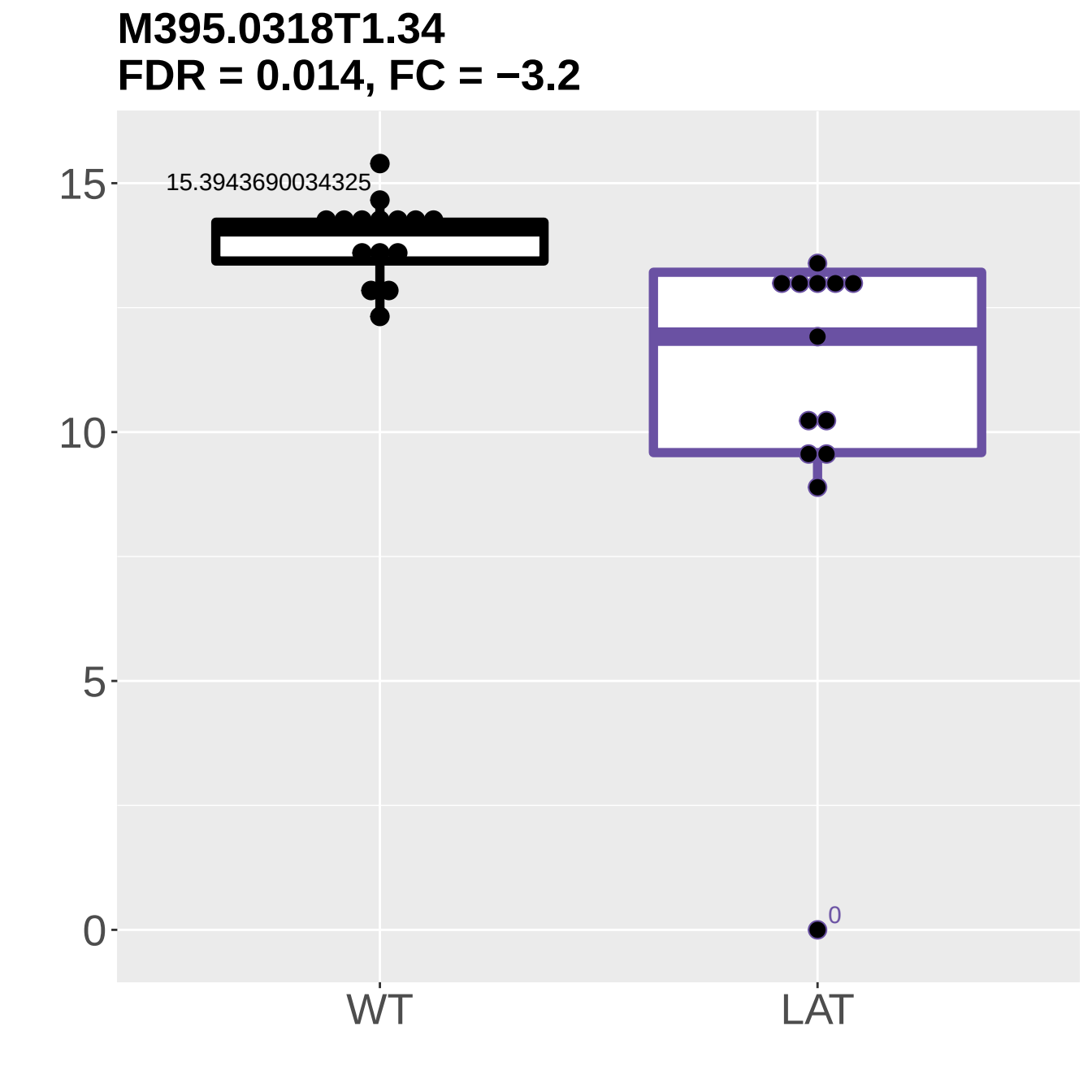
WT
LAT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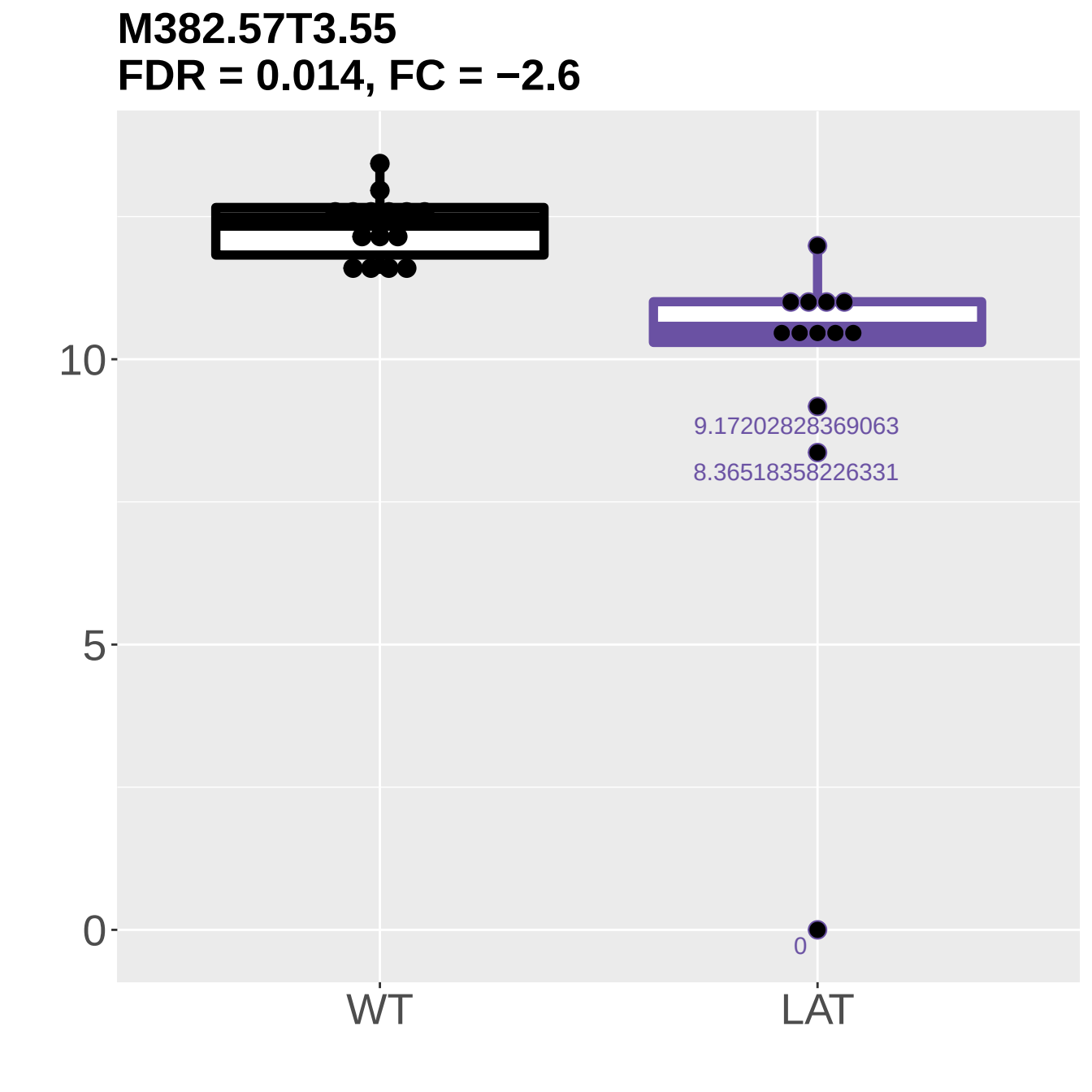
5
0
WT
LAT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5
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WT
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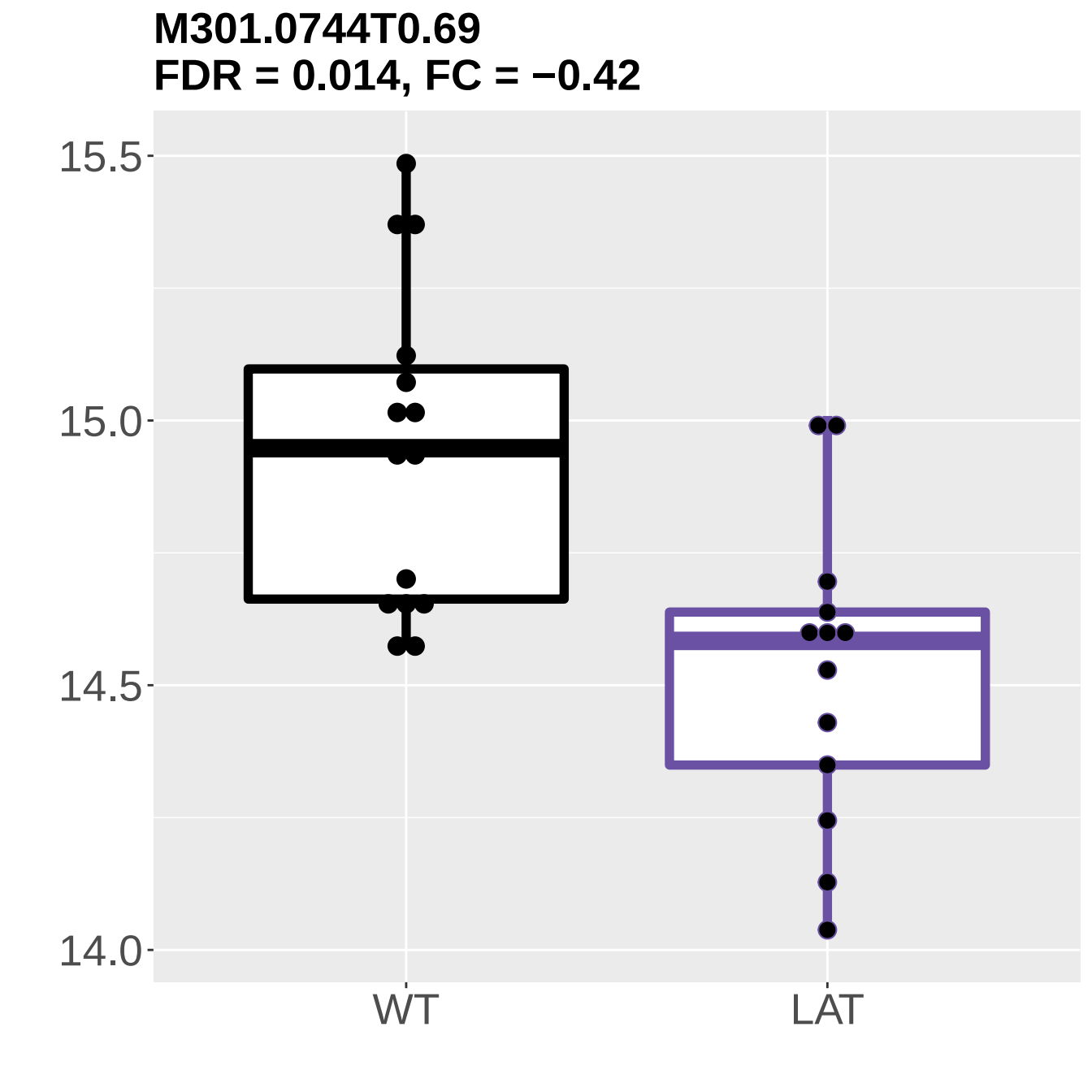
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14.5
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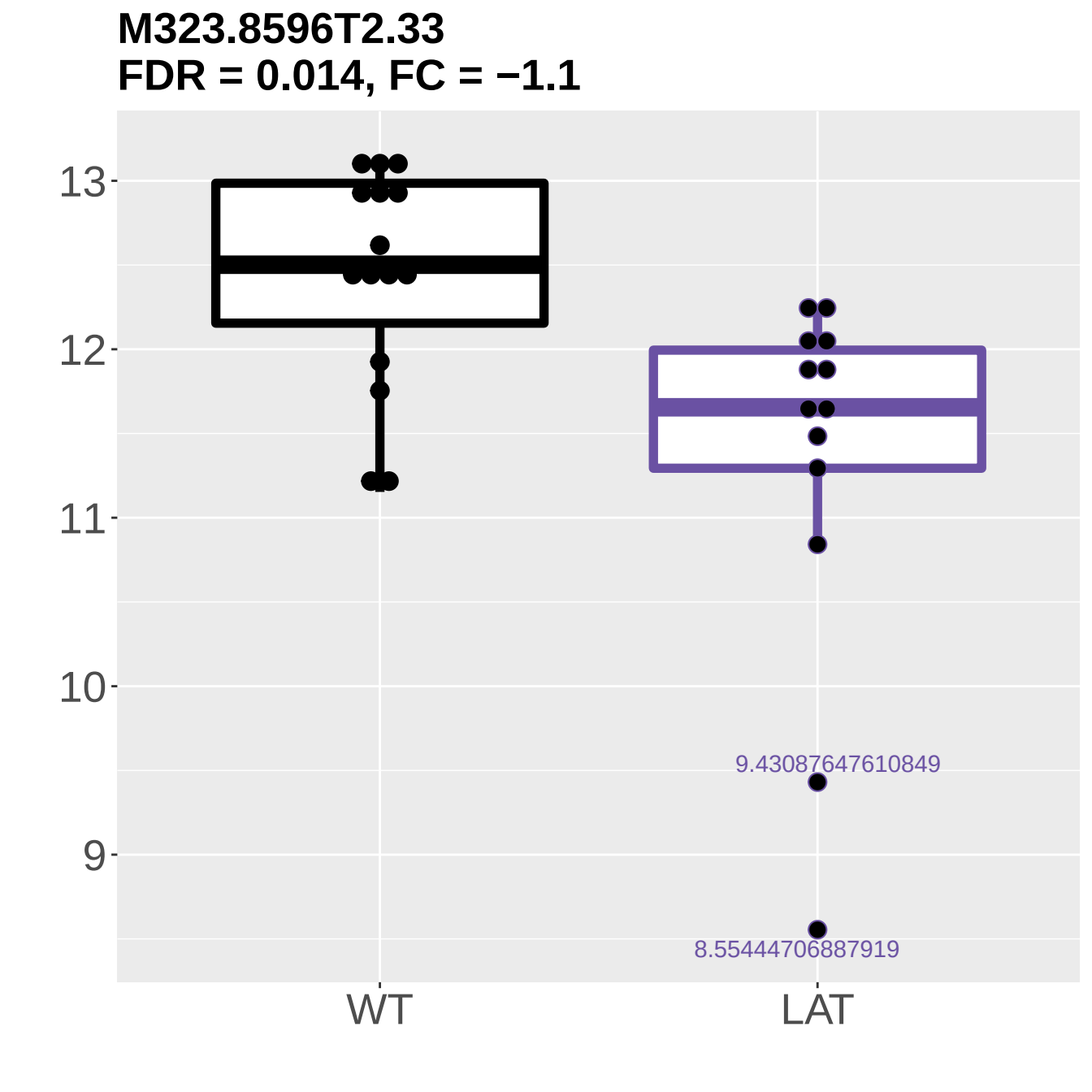
WT
LAT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12
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10
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WT
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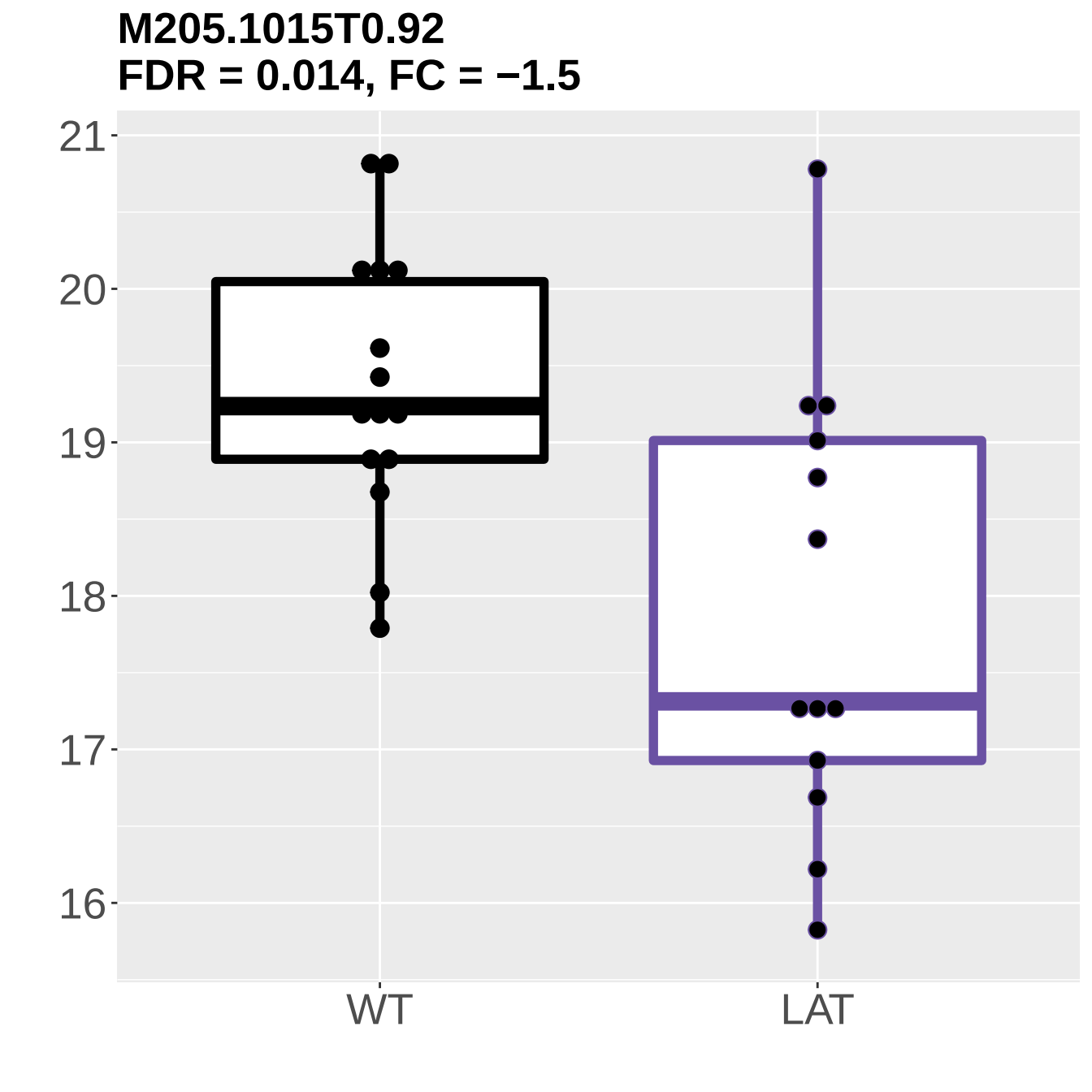
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20
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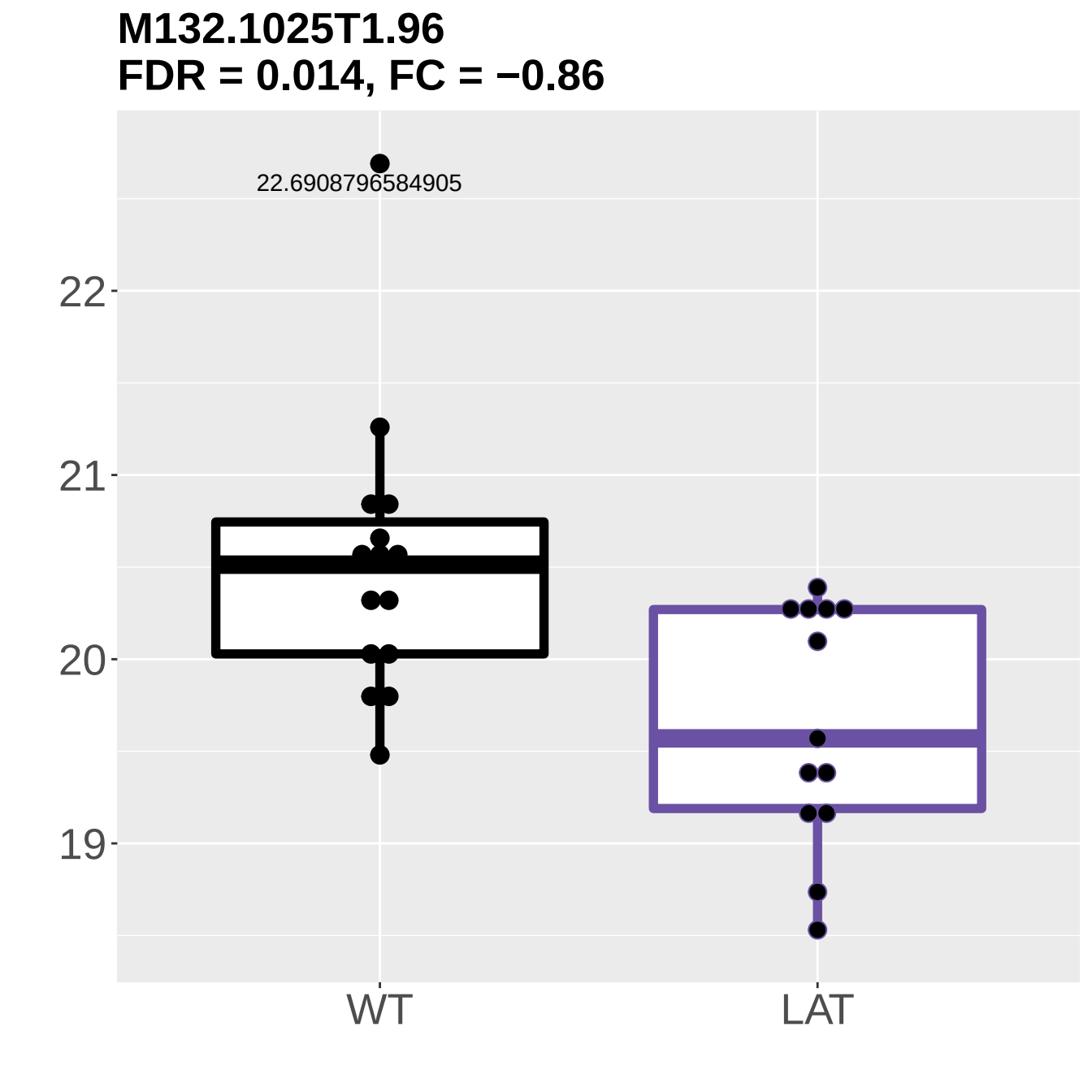
18
17
16
WT
LAT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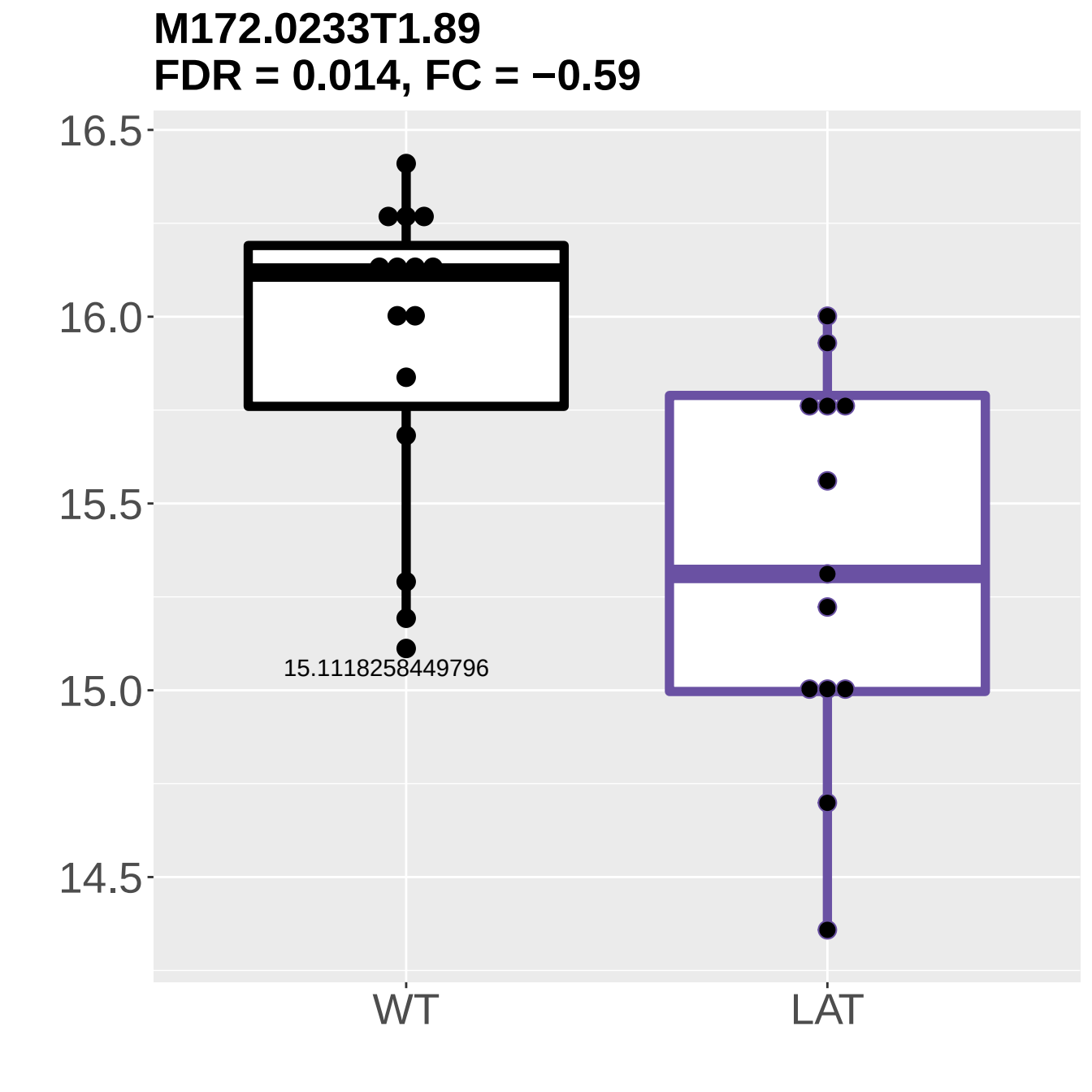
22
21
20
19
WT
LAT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15.0
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WT
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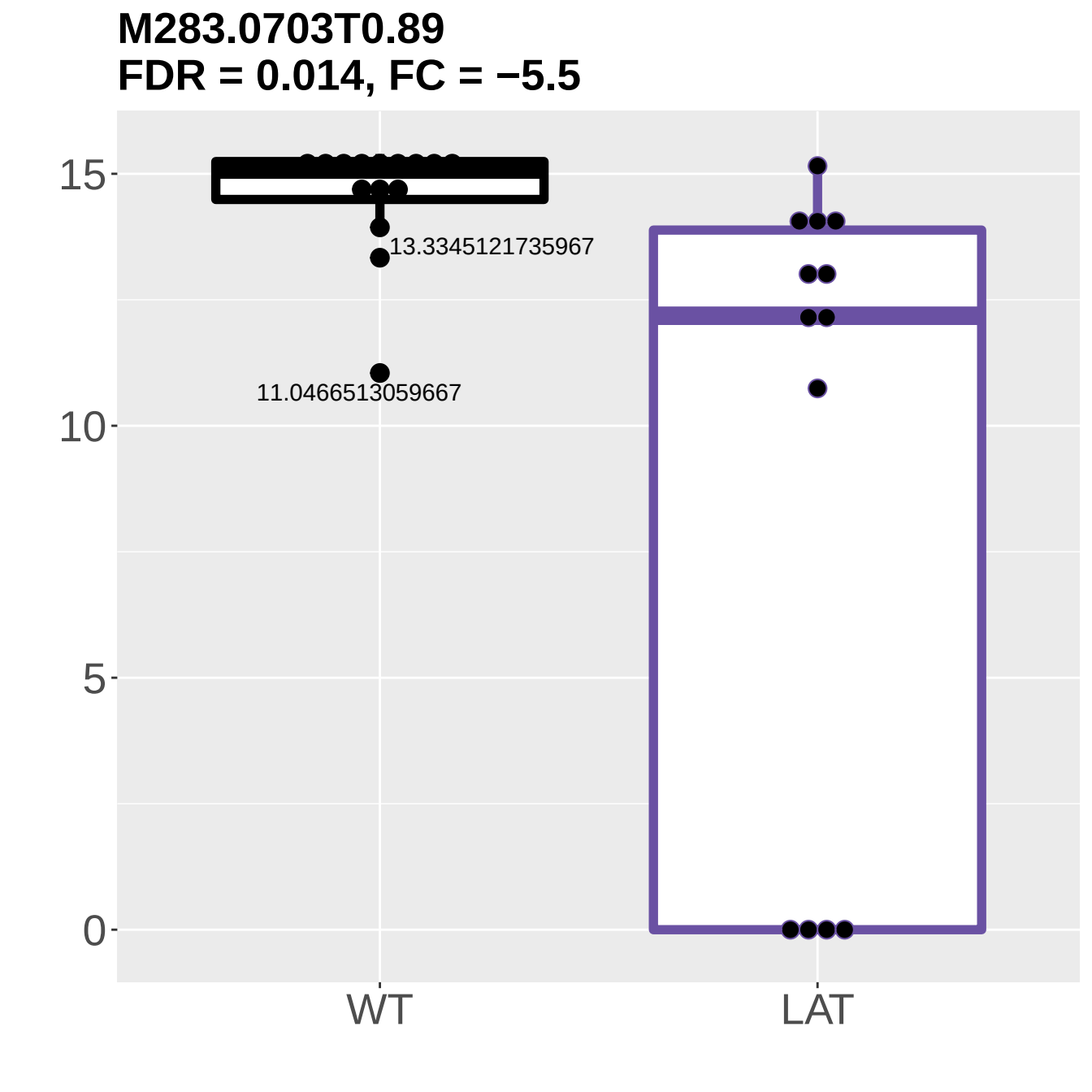
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10
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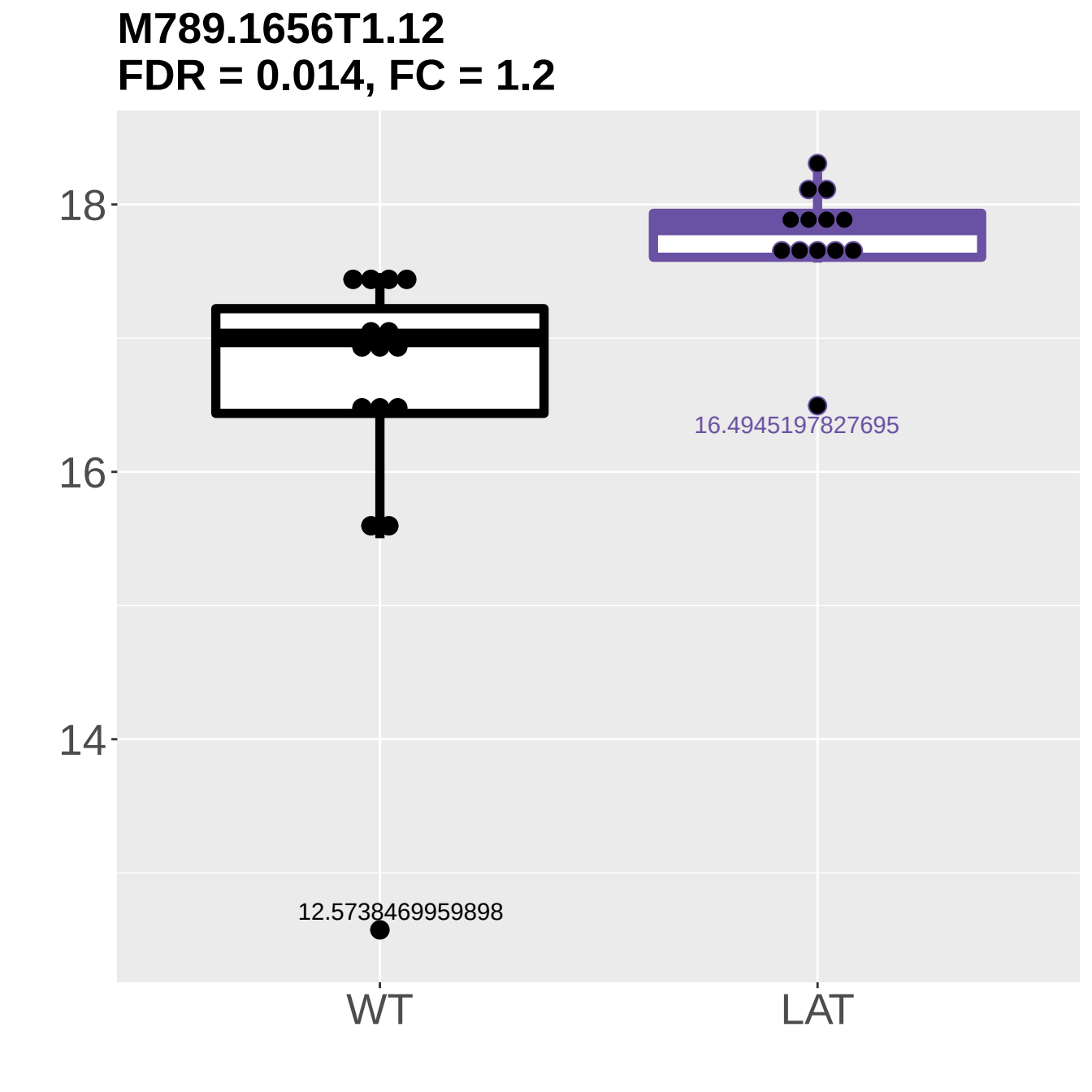
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16
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WT
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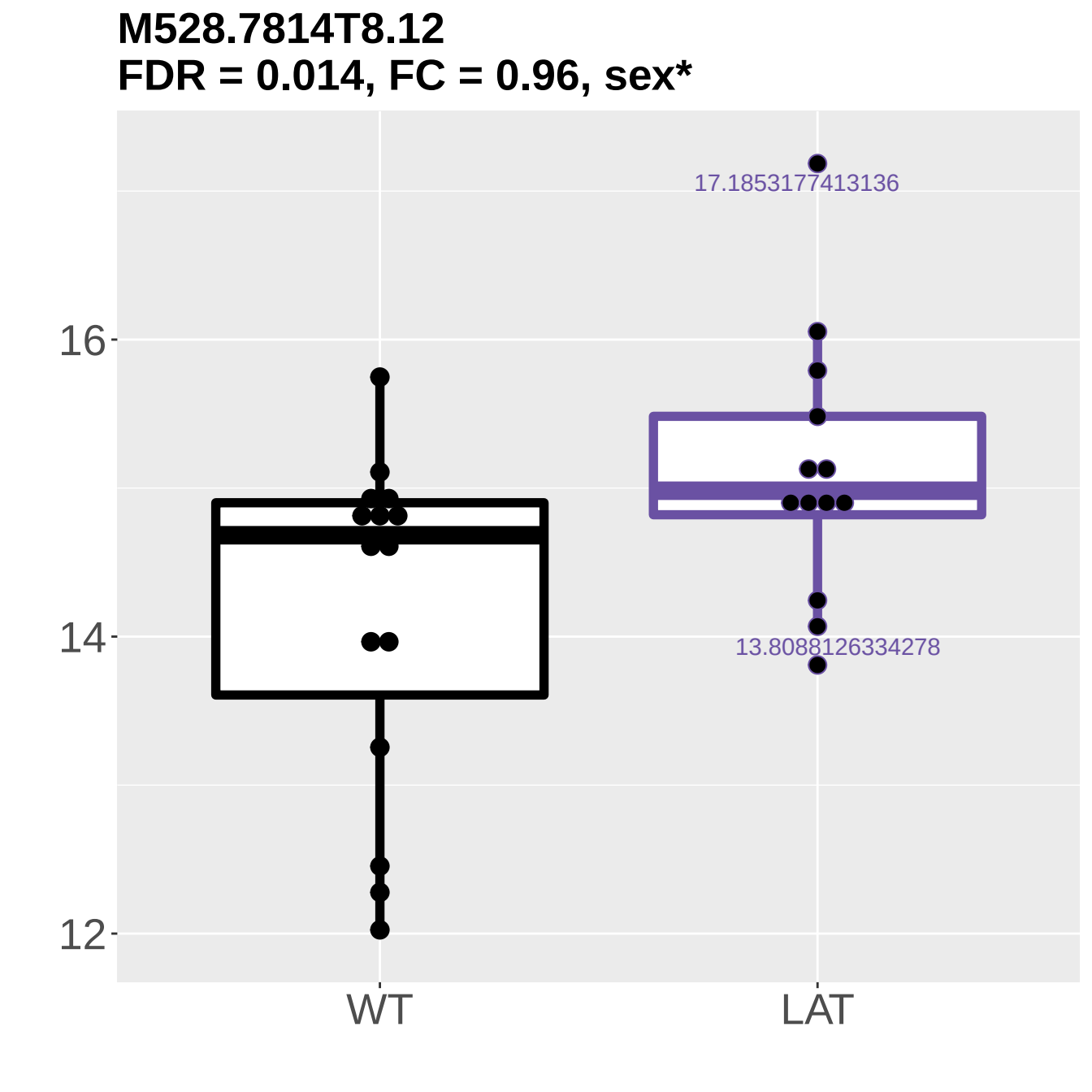
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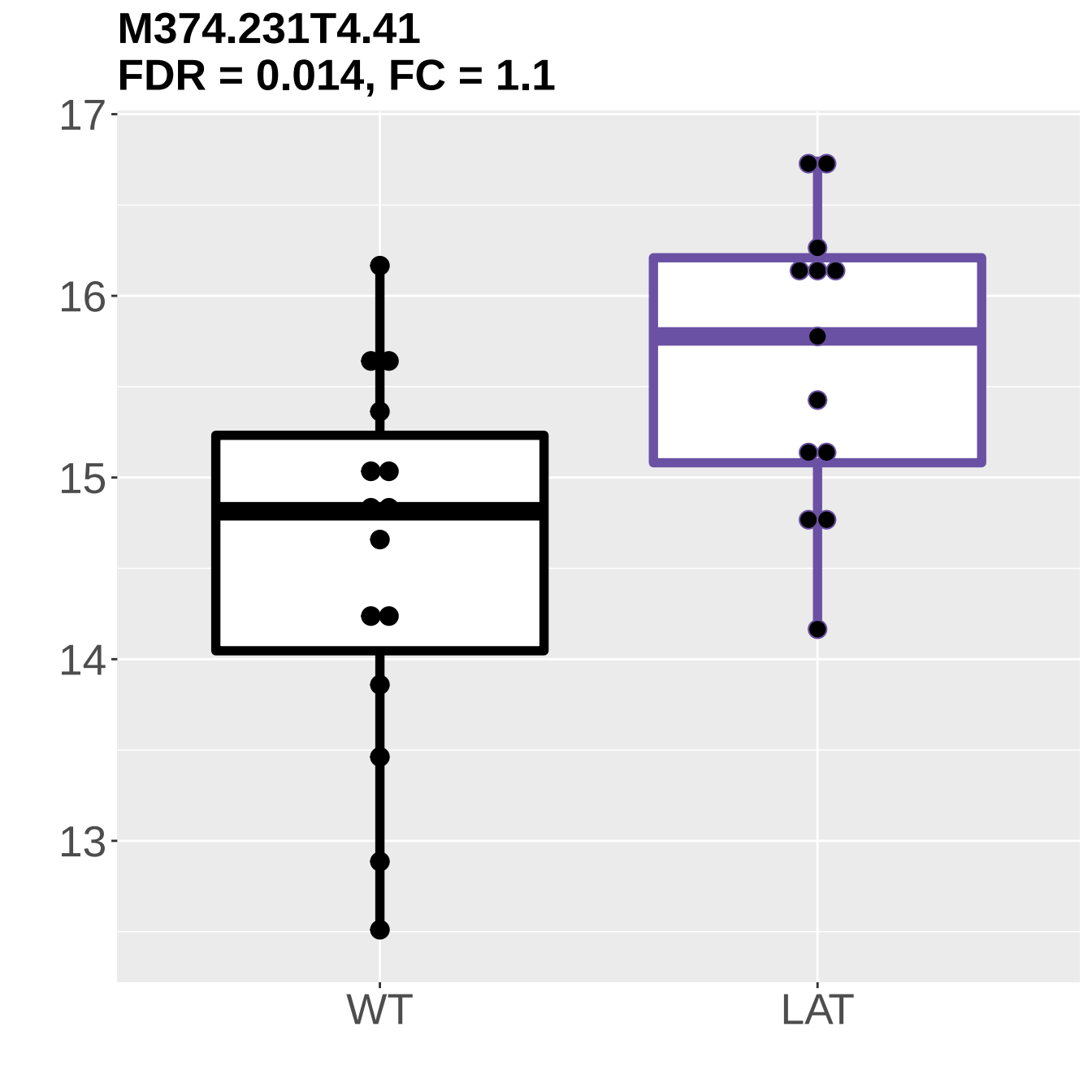
14
12
WT
LAT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16
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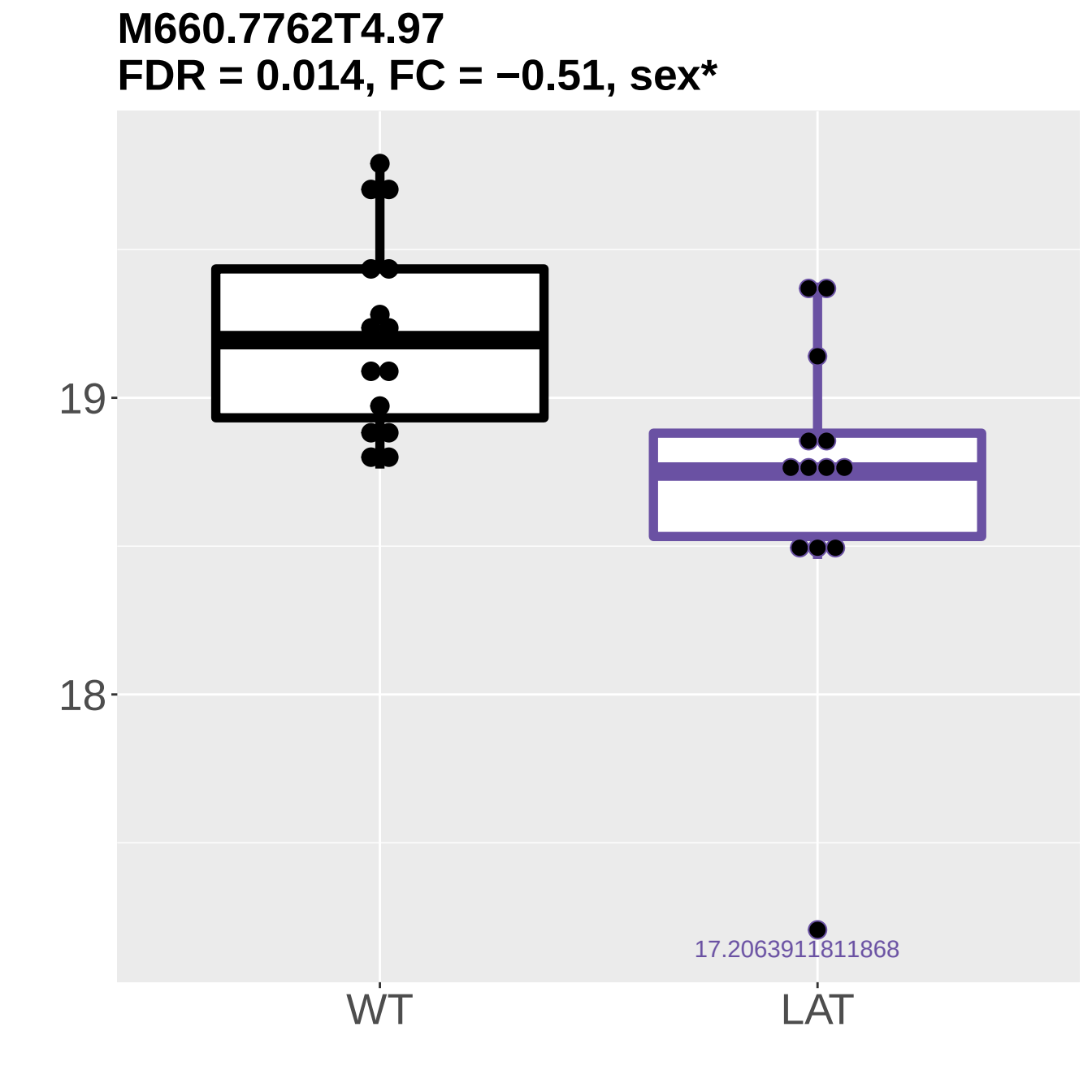
14
13
WT
LAT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18
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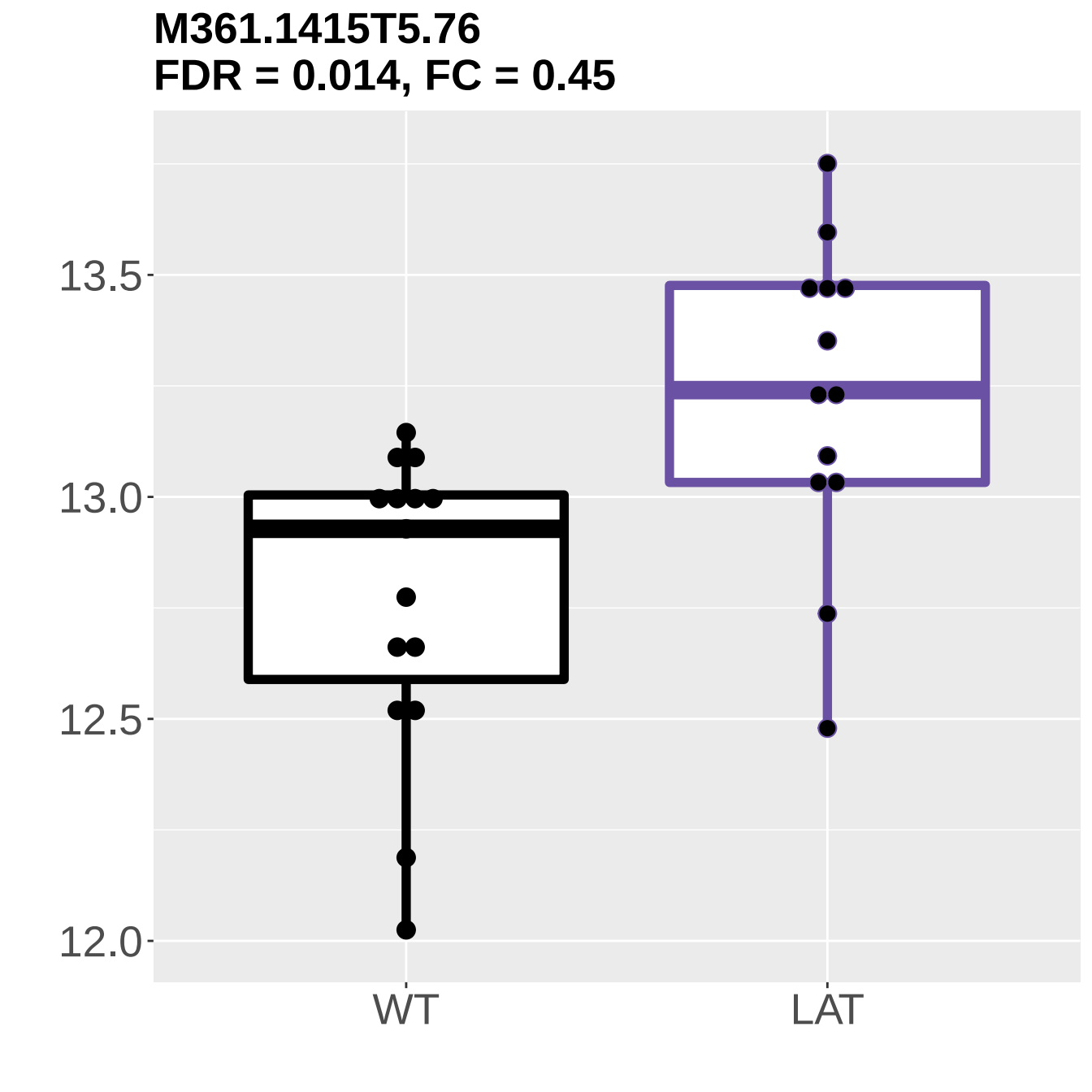
WT
LAT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12.5
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WT
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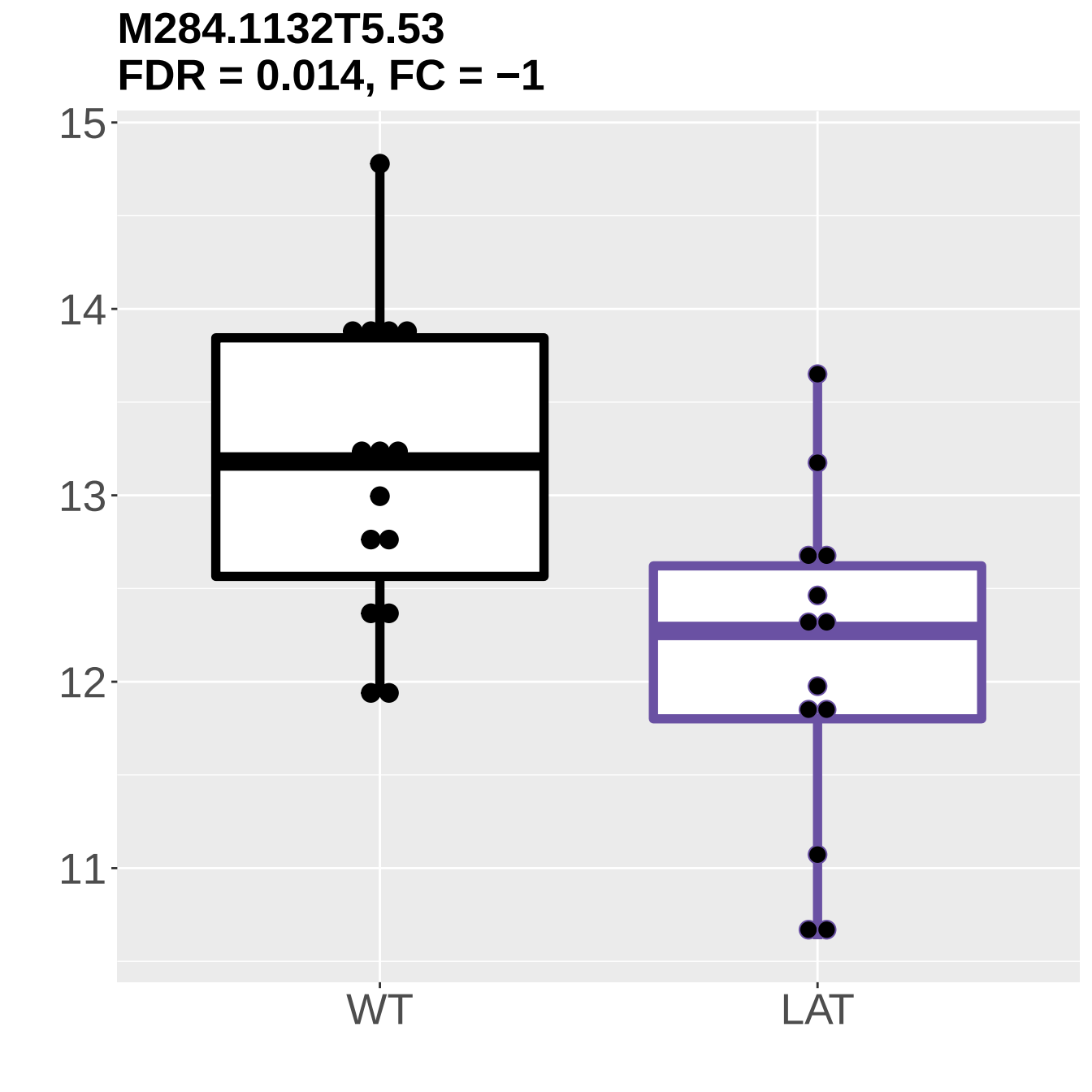
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14
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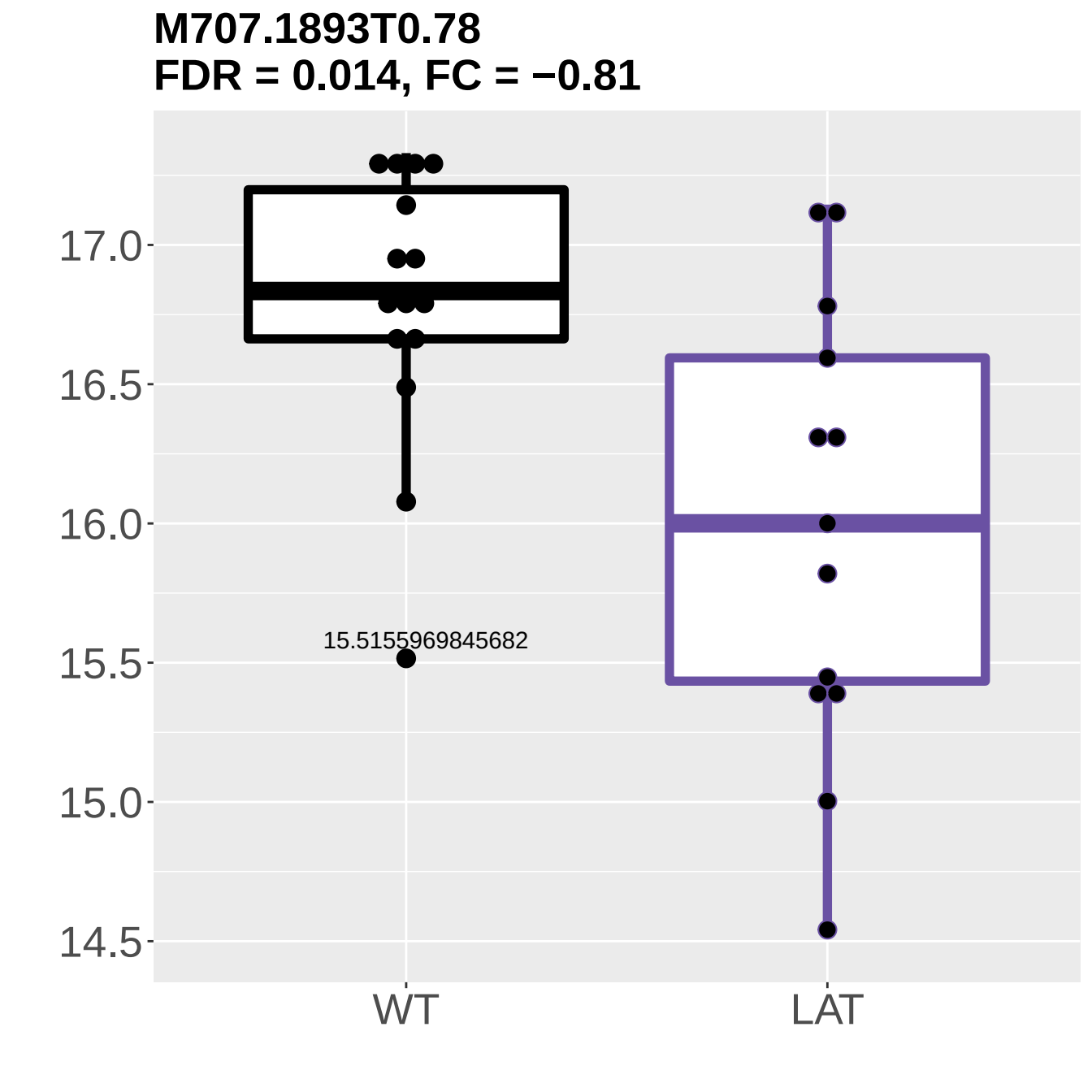
12
11
WT
LAT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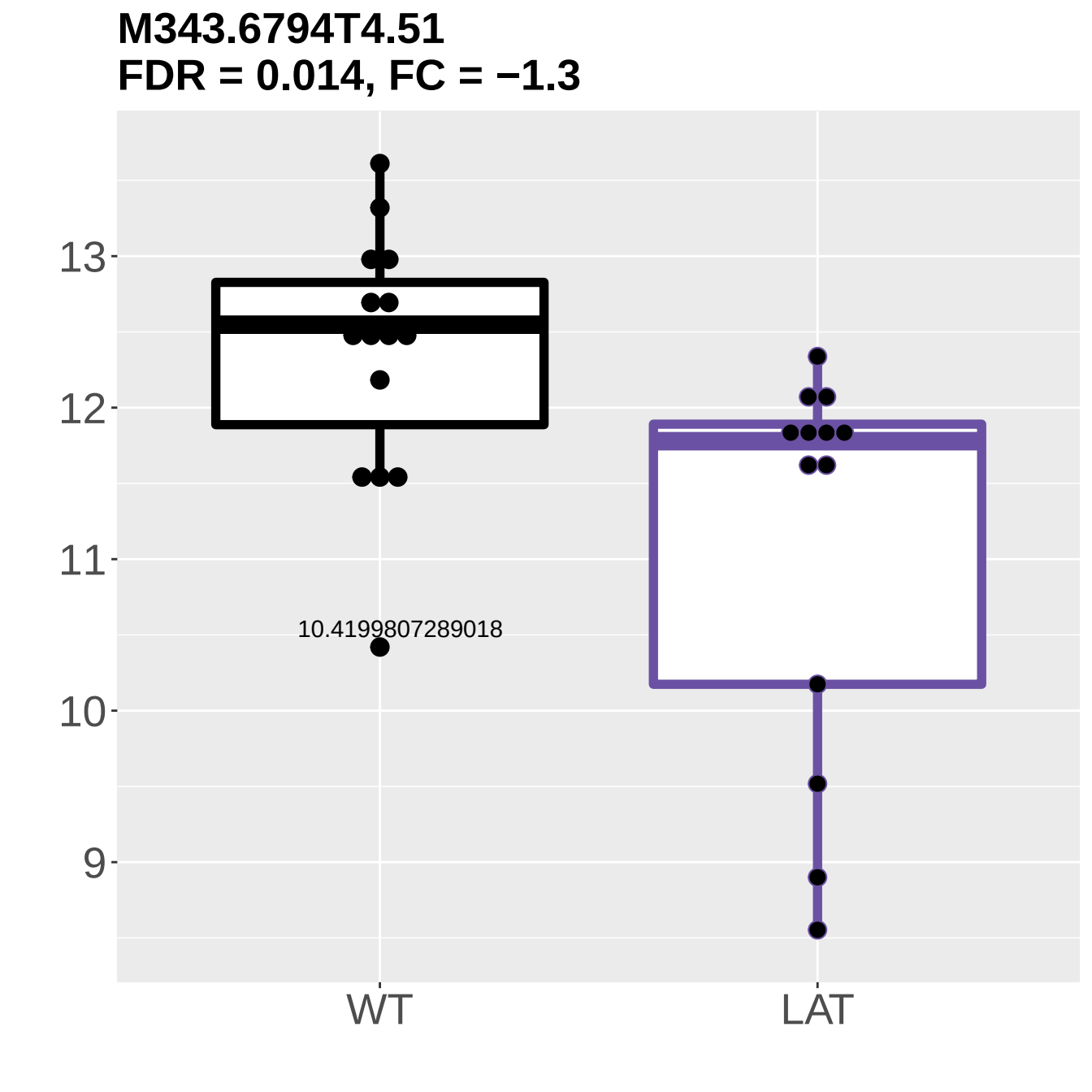
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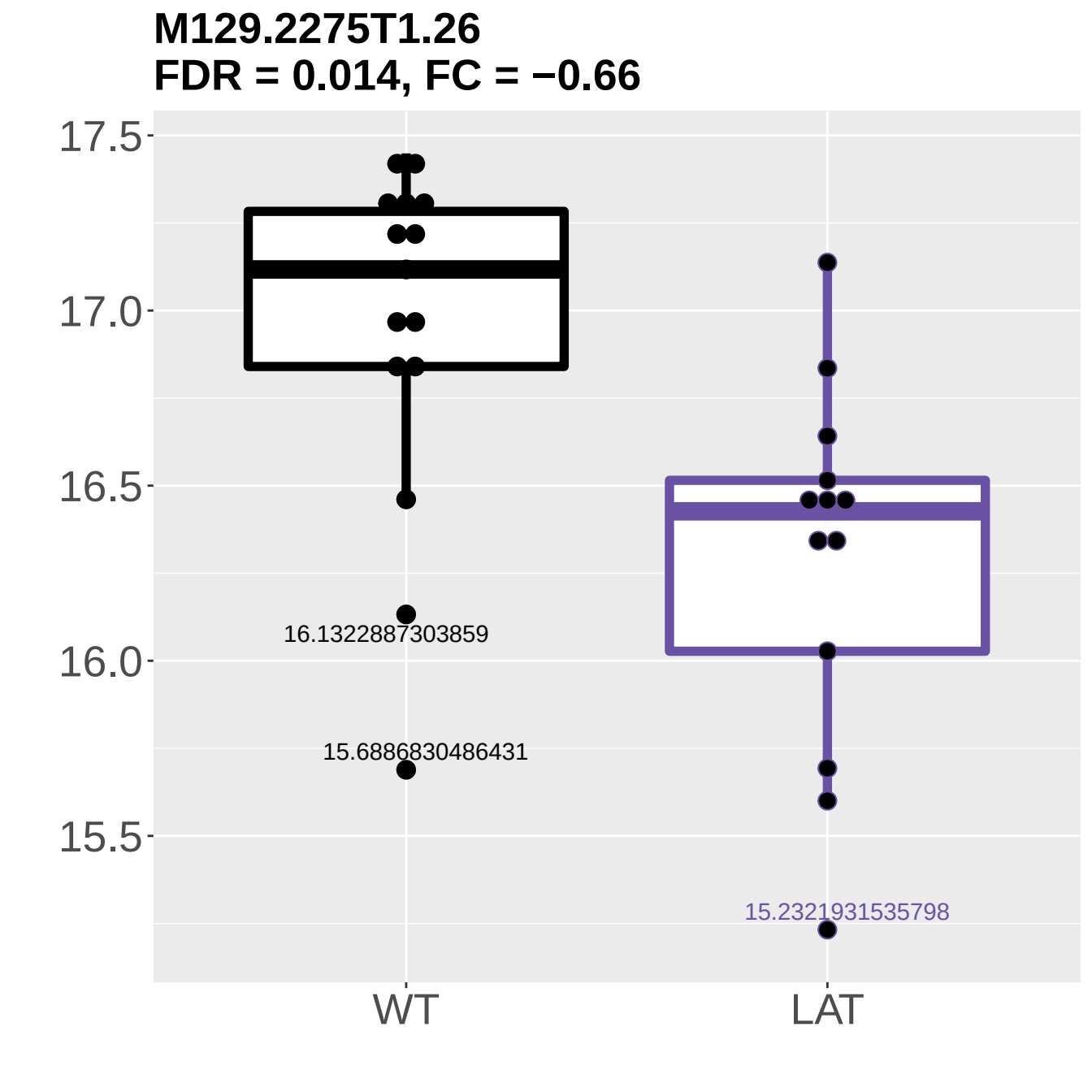
LAT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15.5
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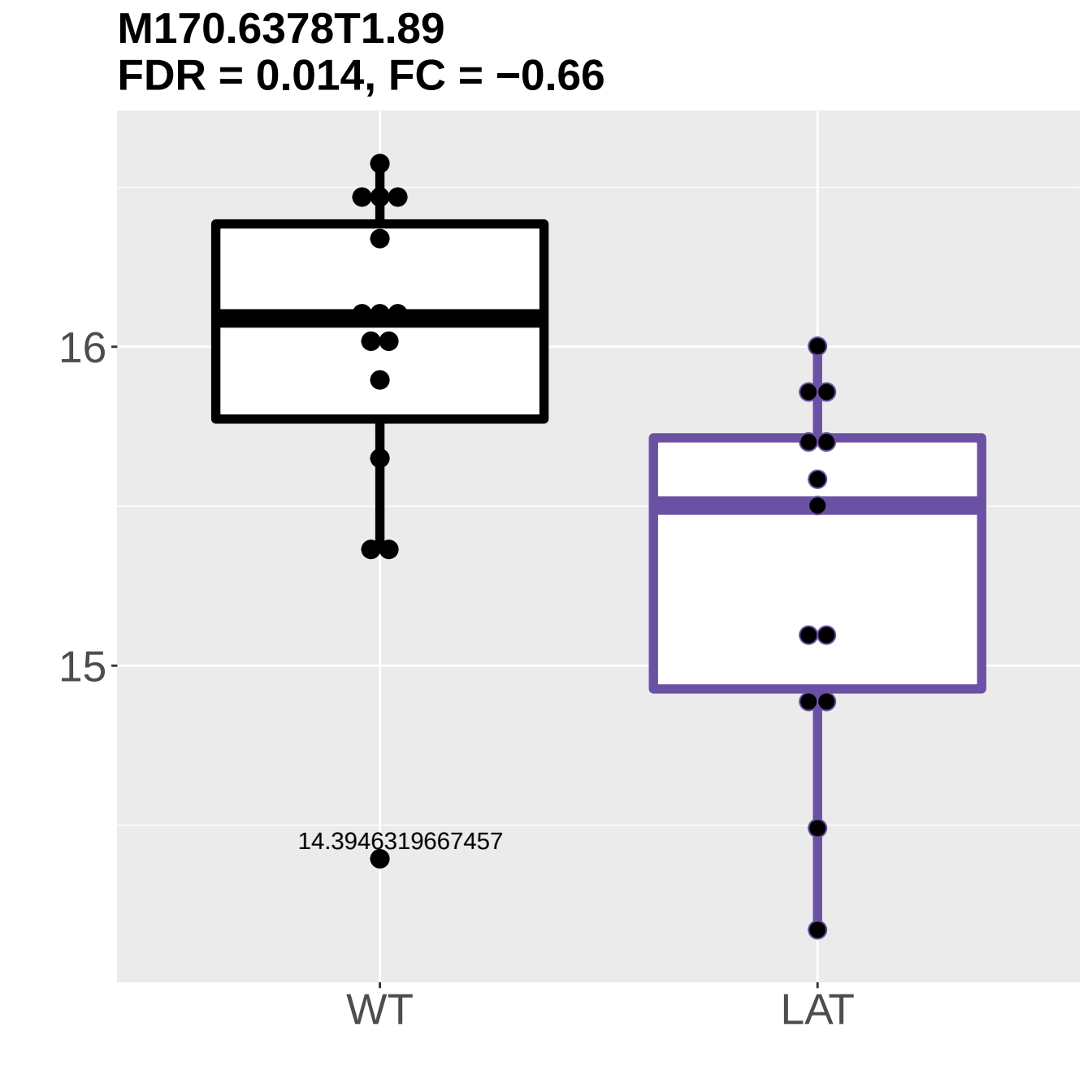
LAT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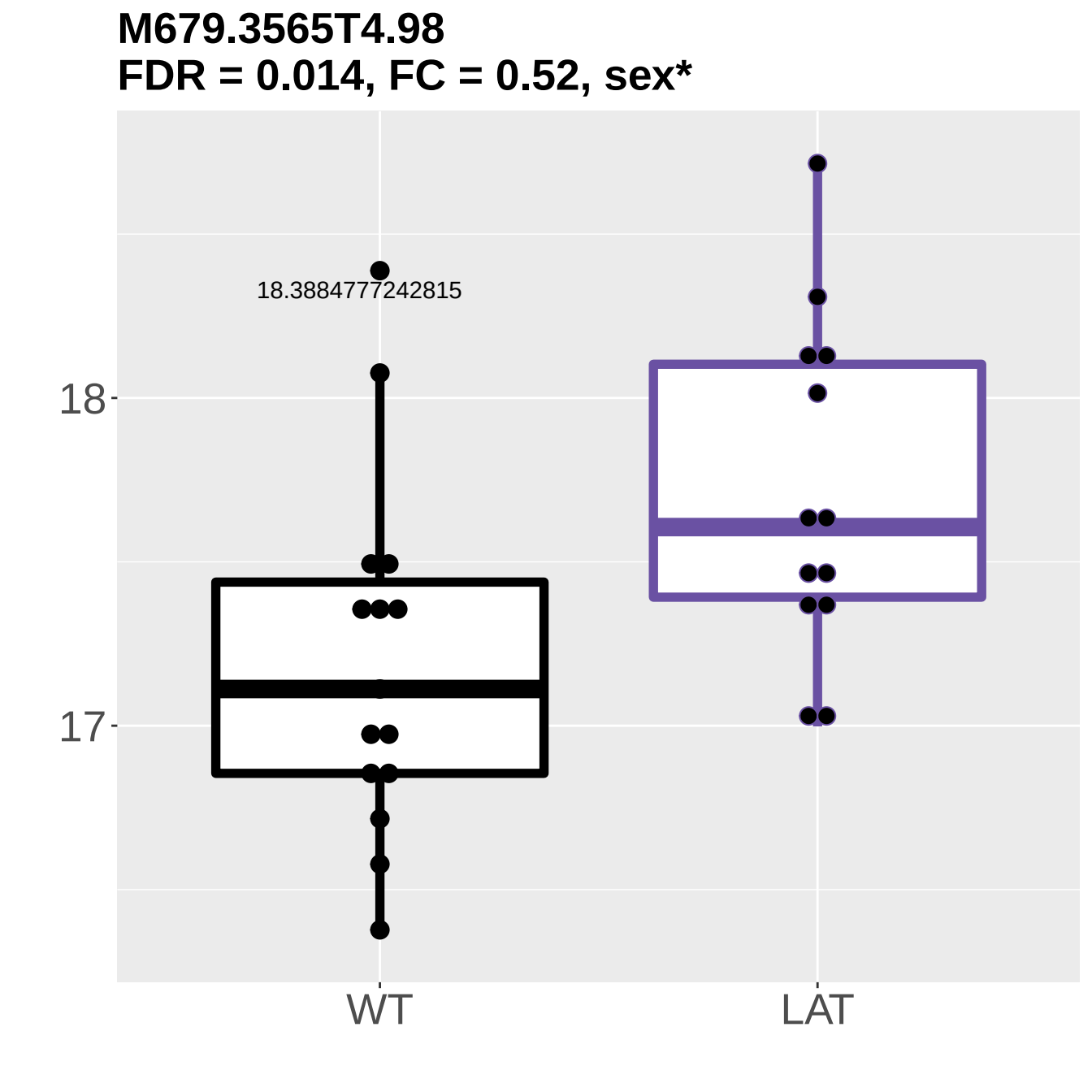
WT
LAT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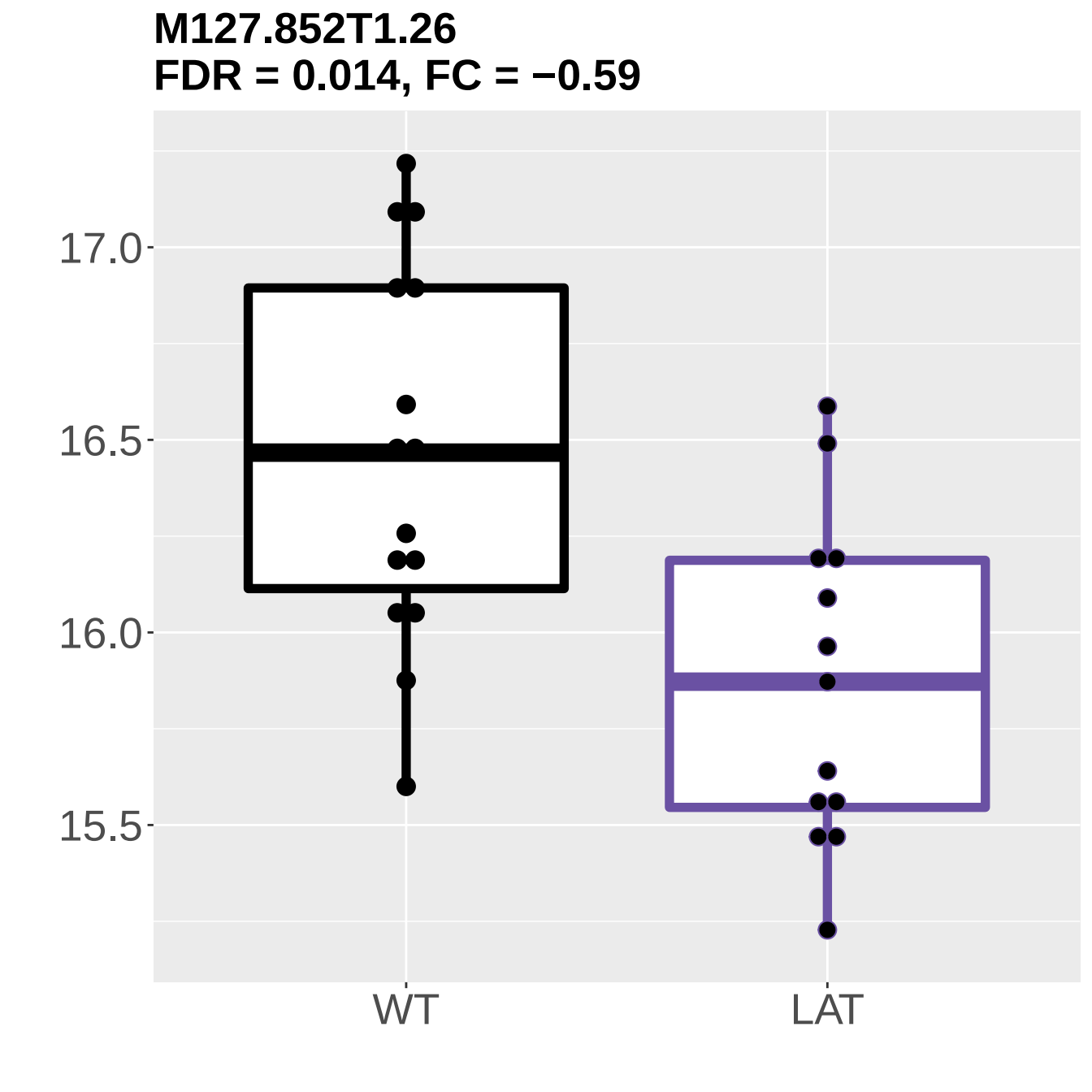
17
WT
LAT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16.0
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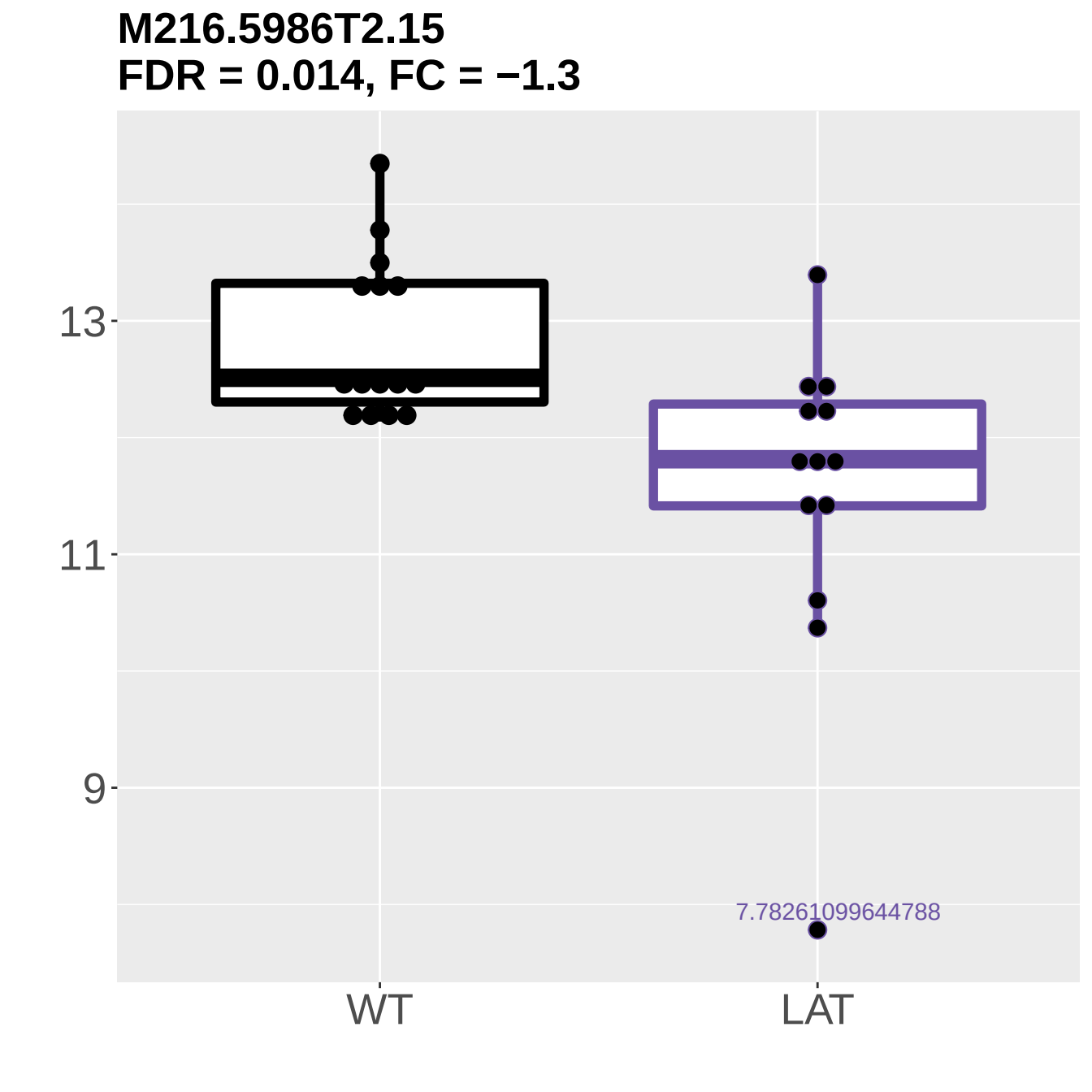
LAT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11
9
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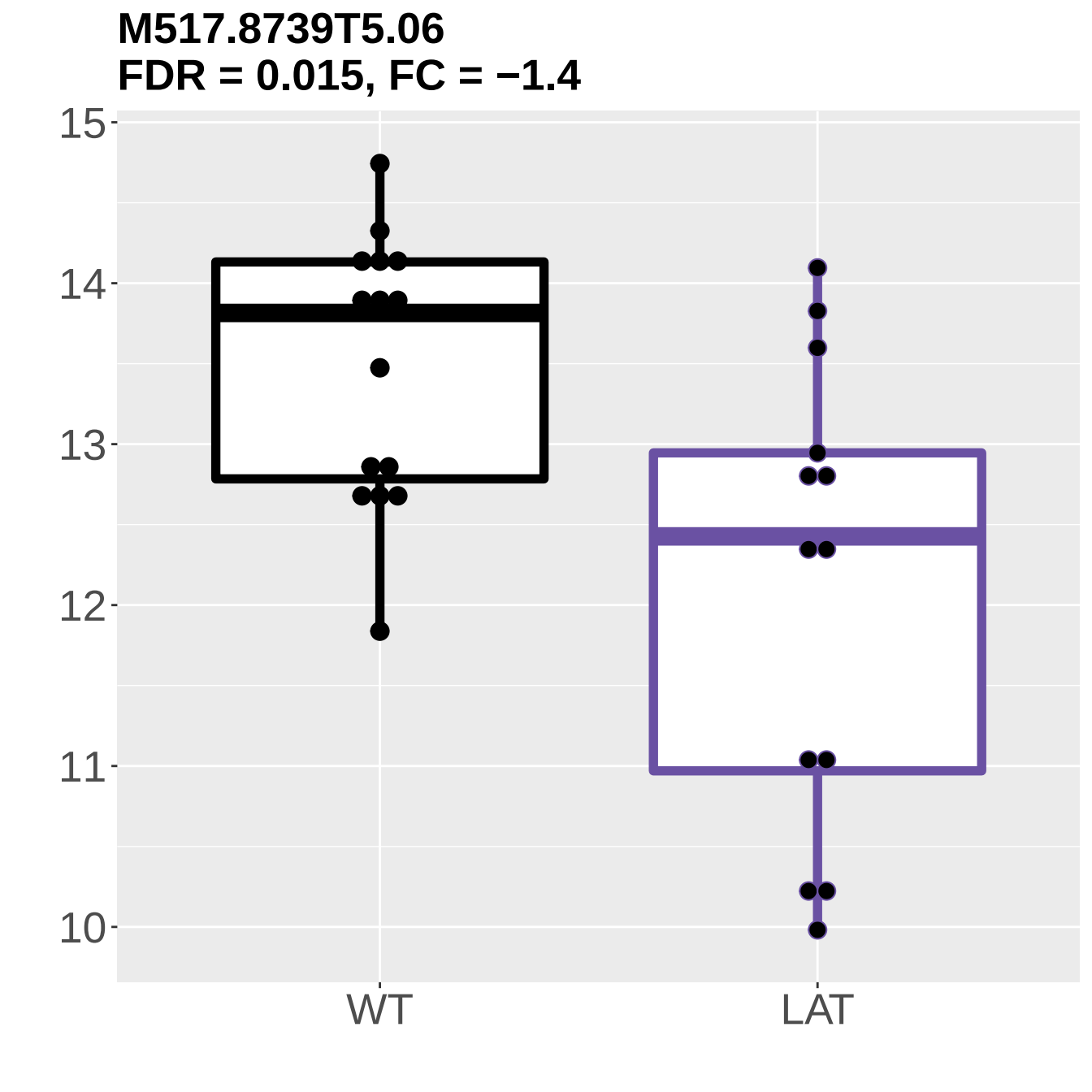
WT
LAT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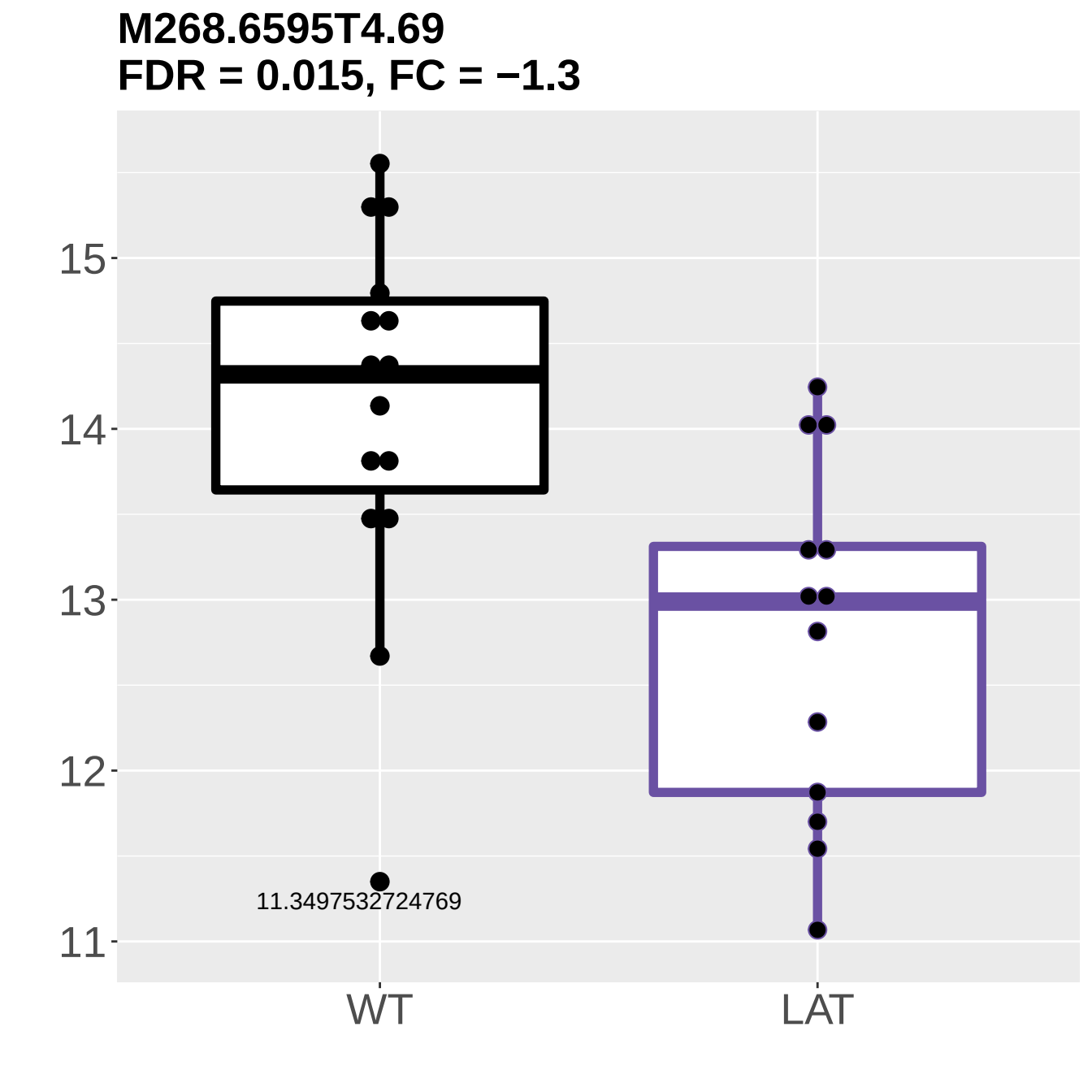
14
13
12
11
10
WT
LAT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13
12
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WT
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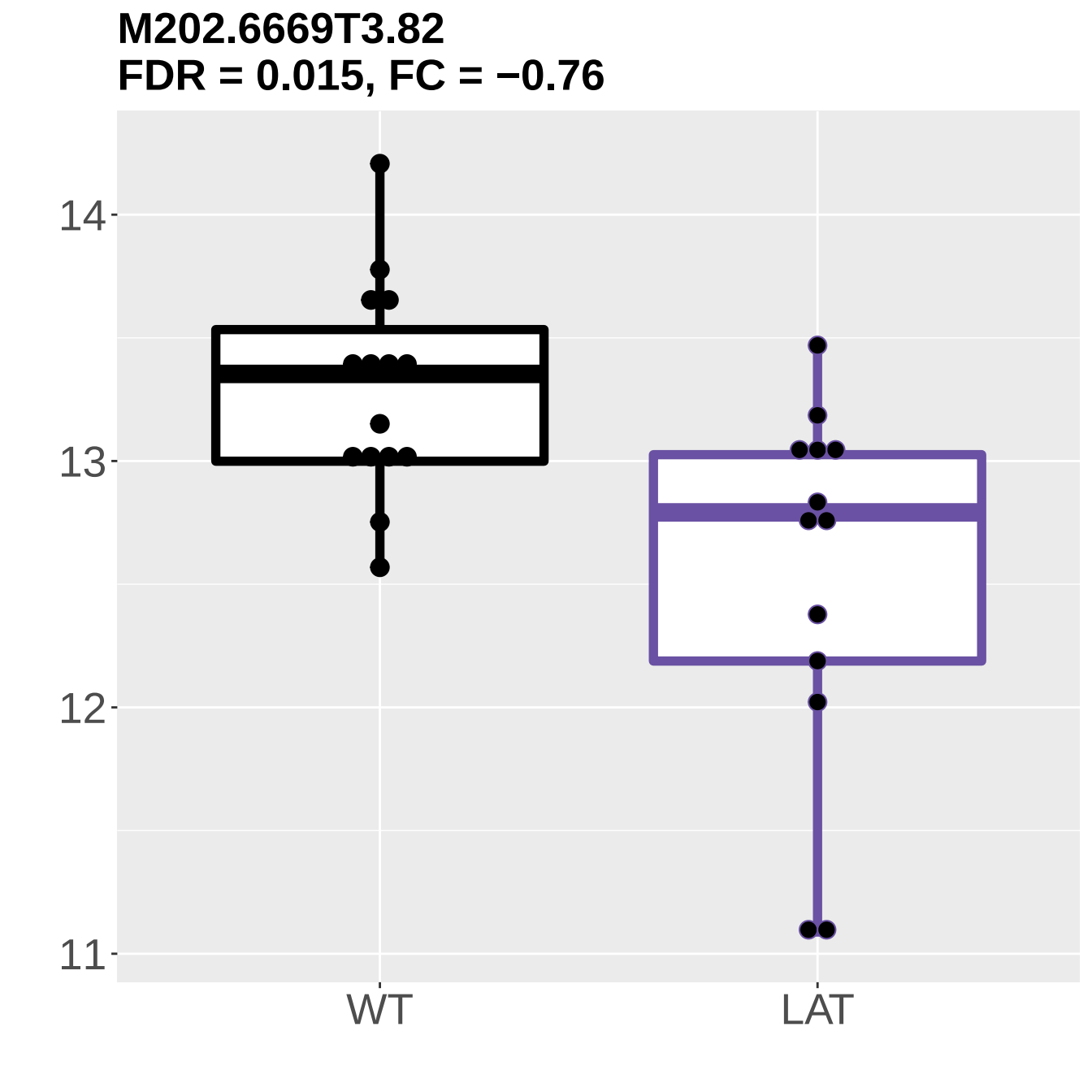
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WT
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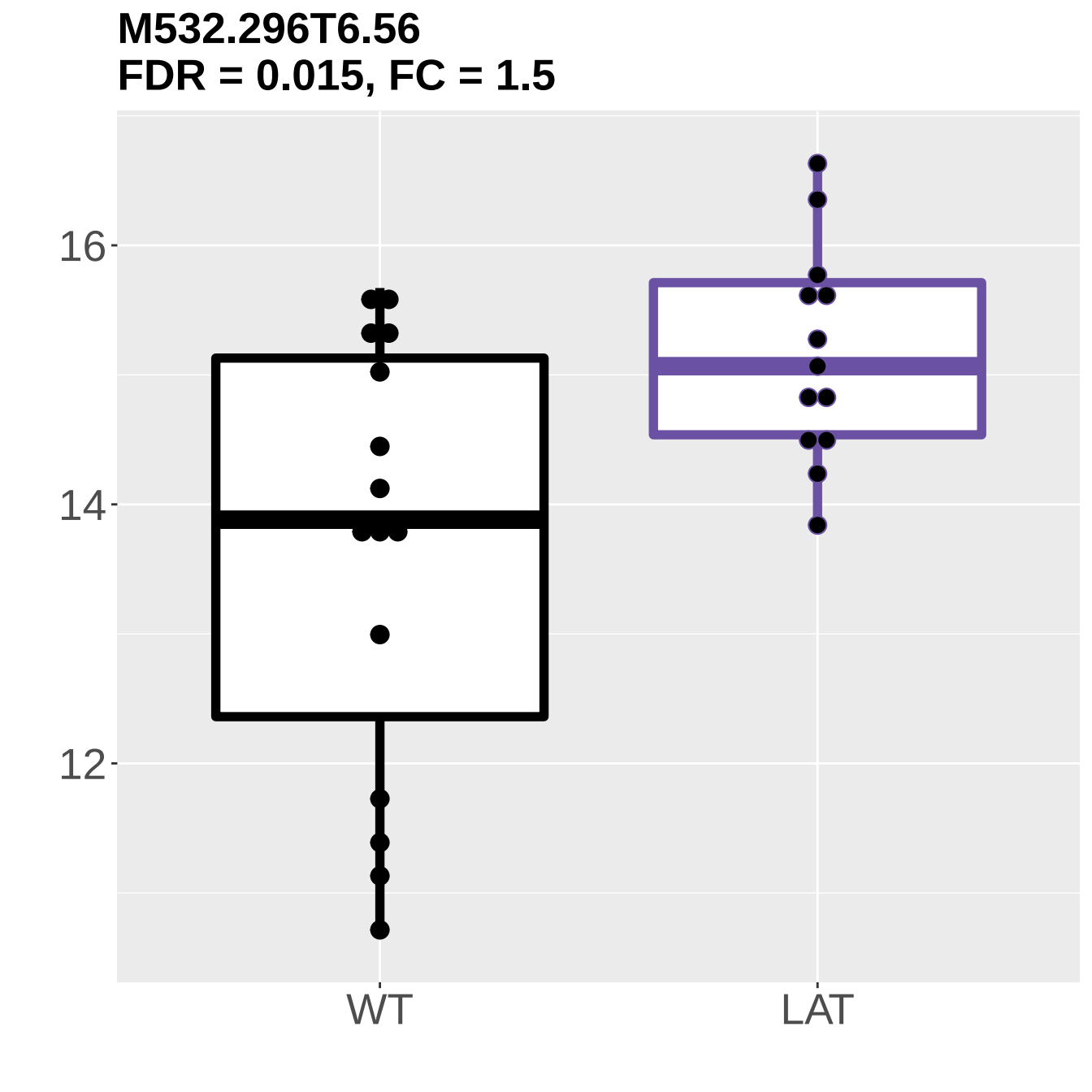
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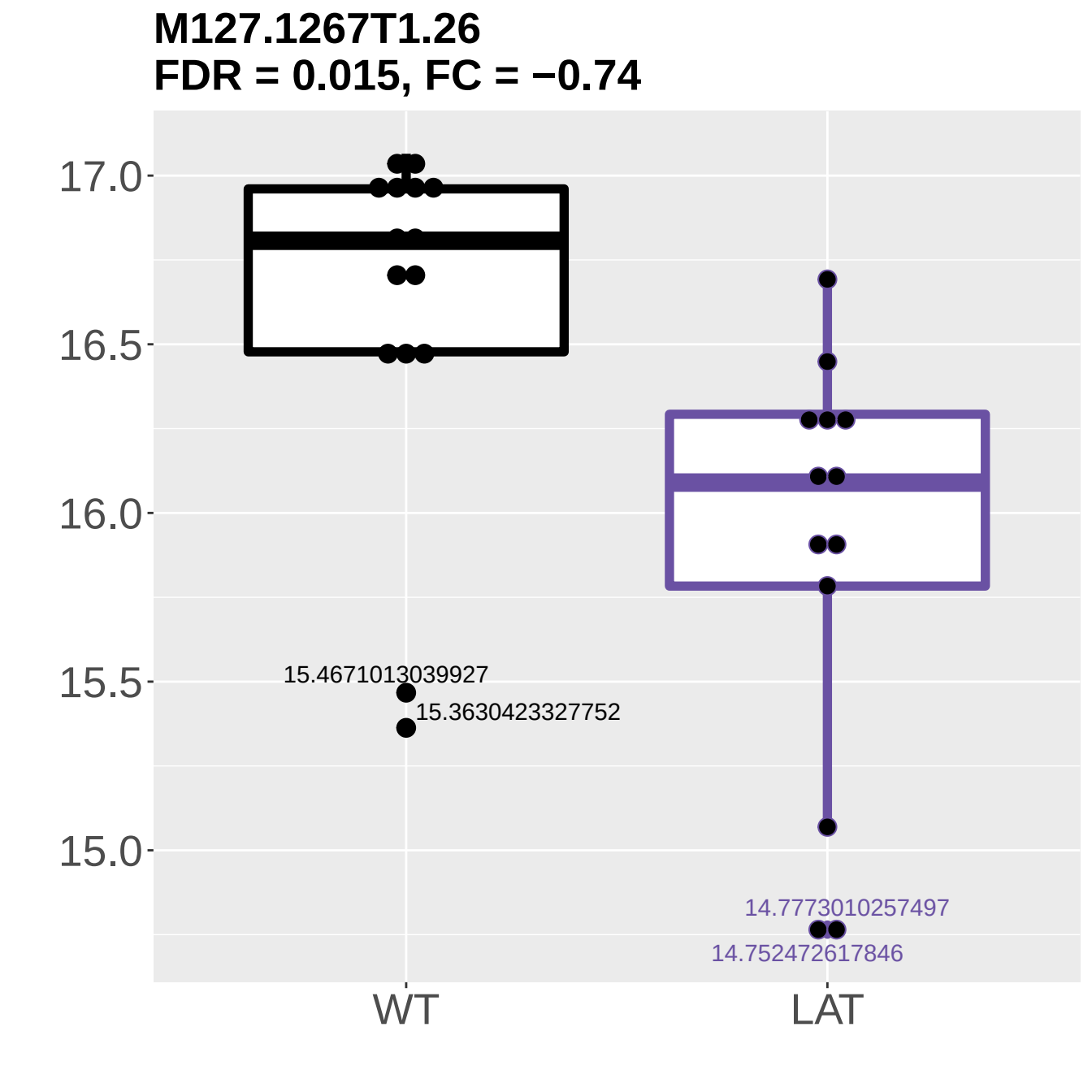
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WT
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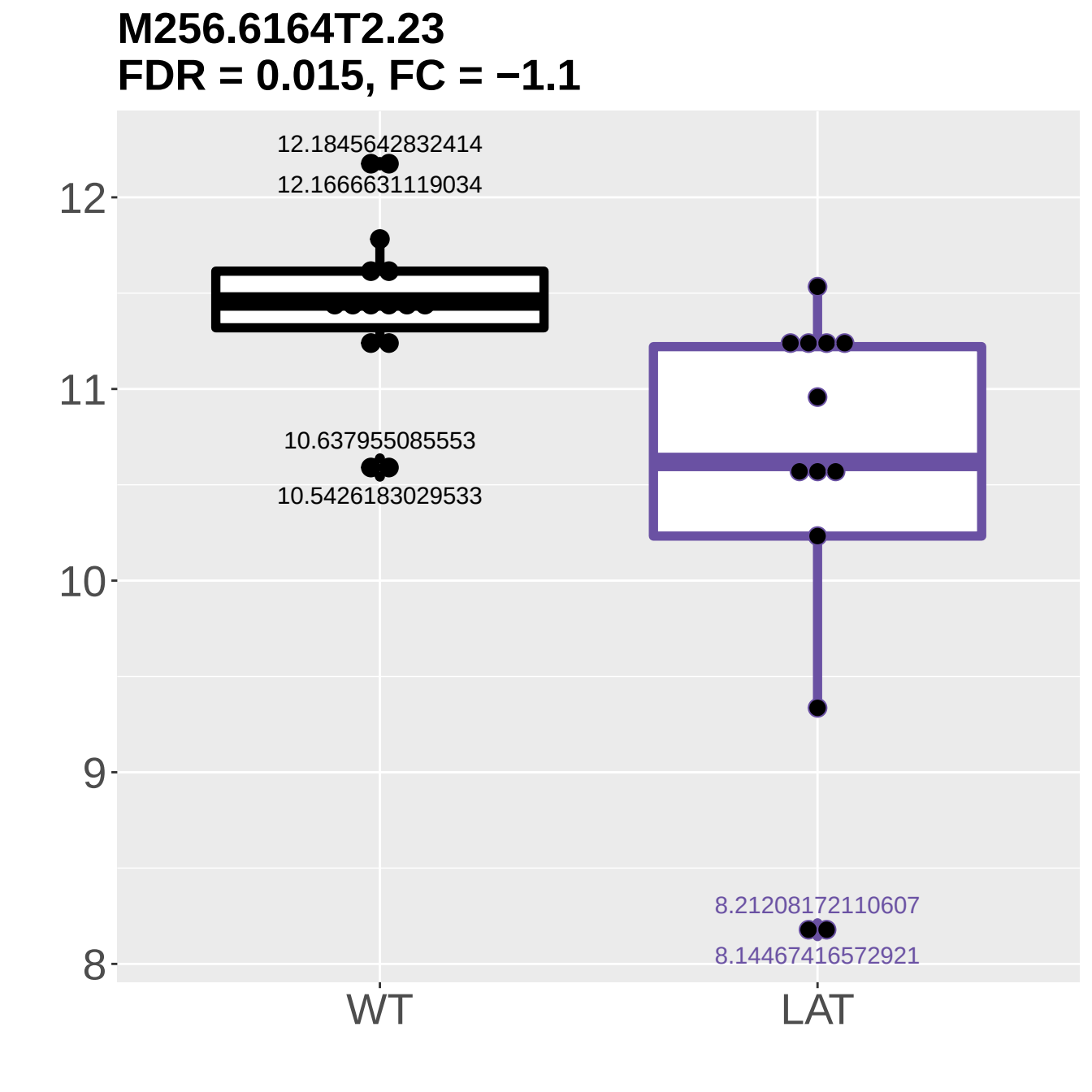
M256.6164T2.23
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12
11
10
9
8
WT
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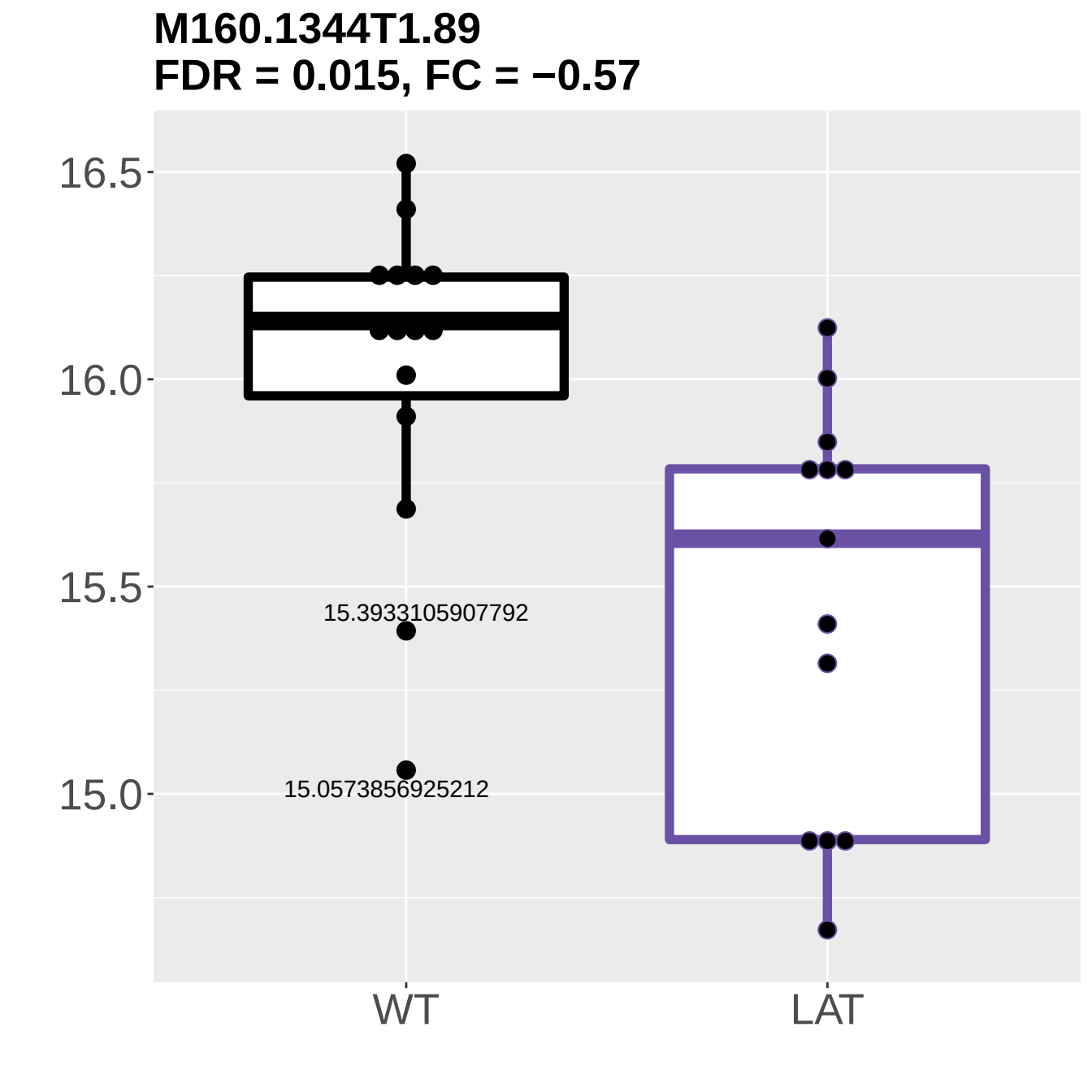
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WT
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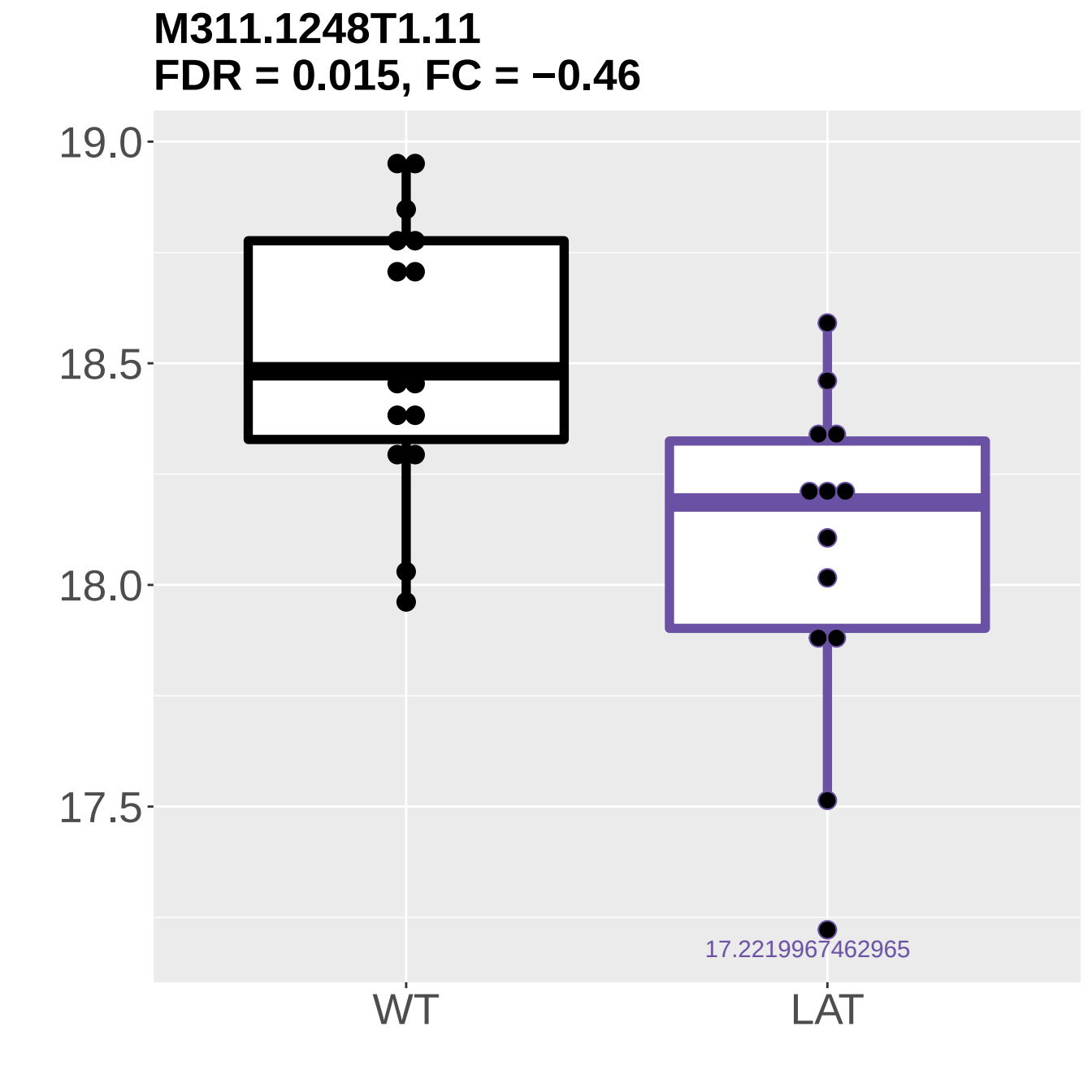
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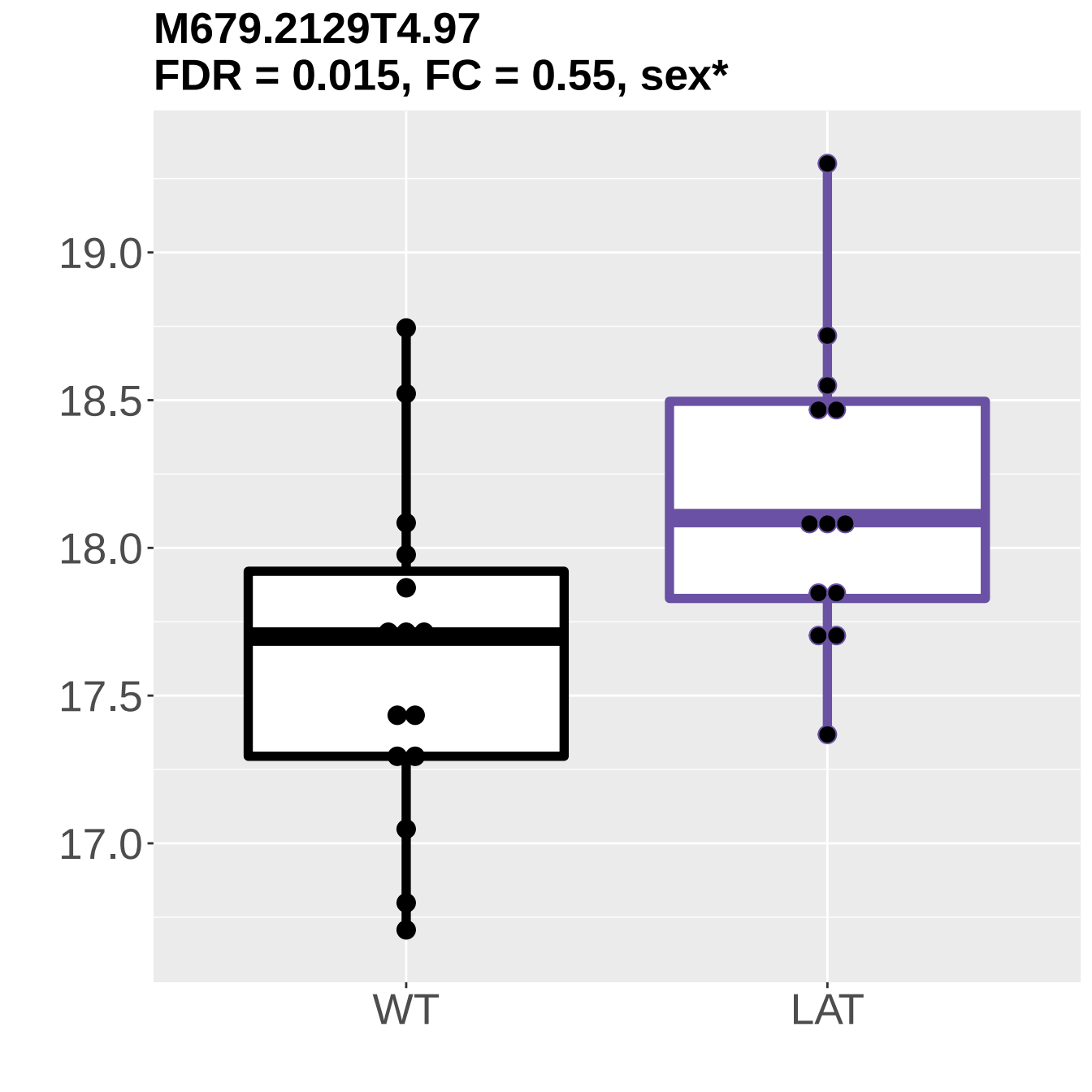
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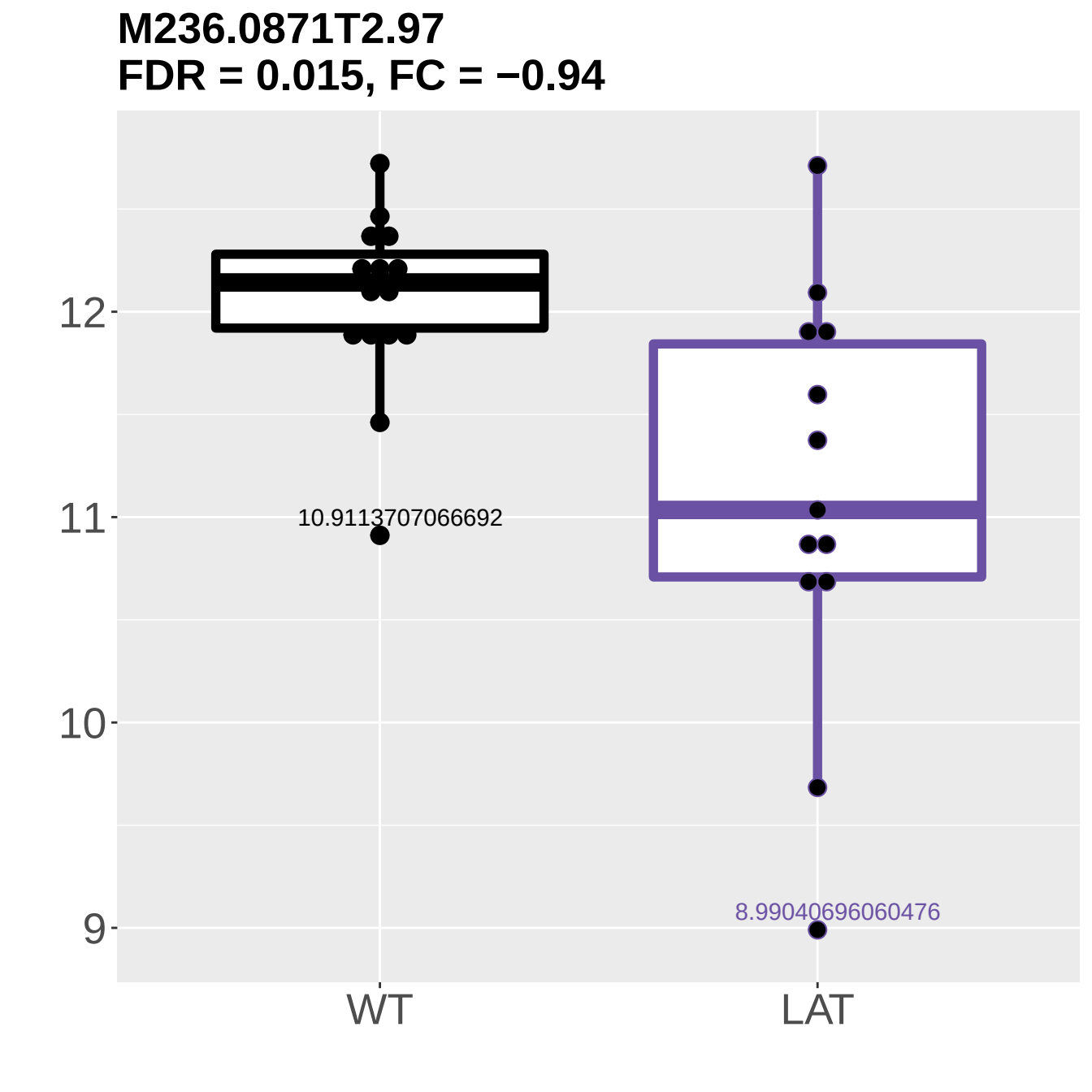
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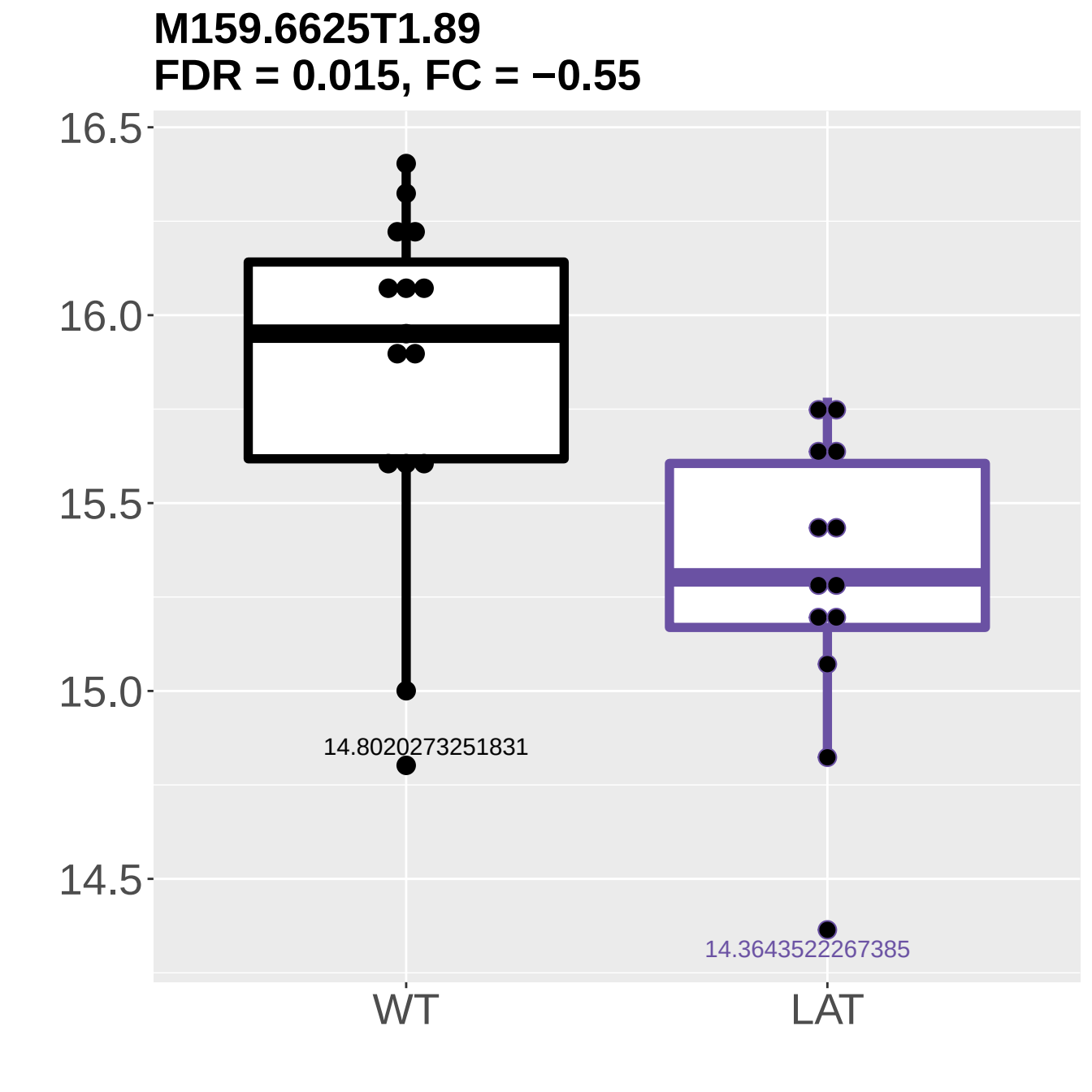
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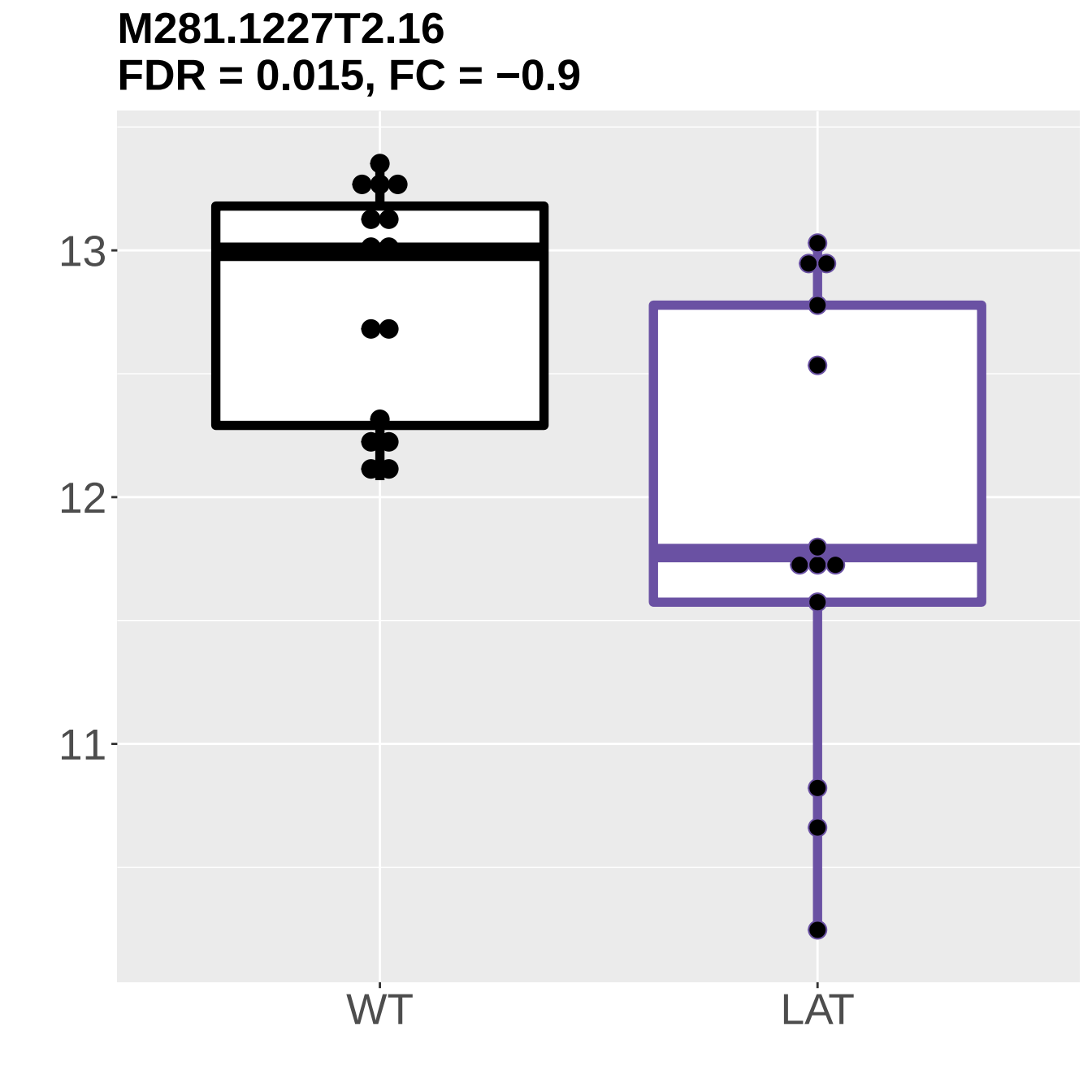
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12
11
WT
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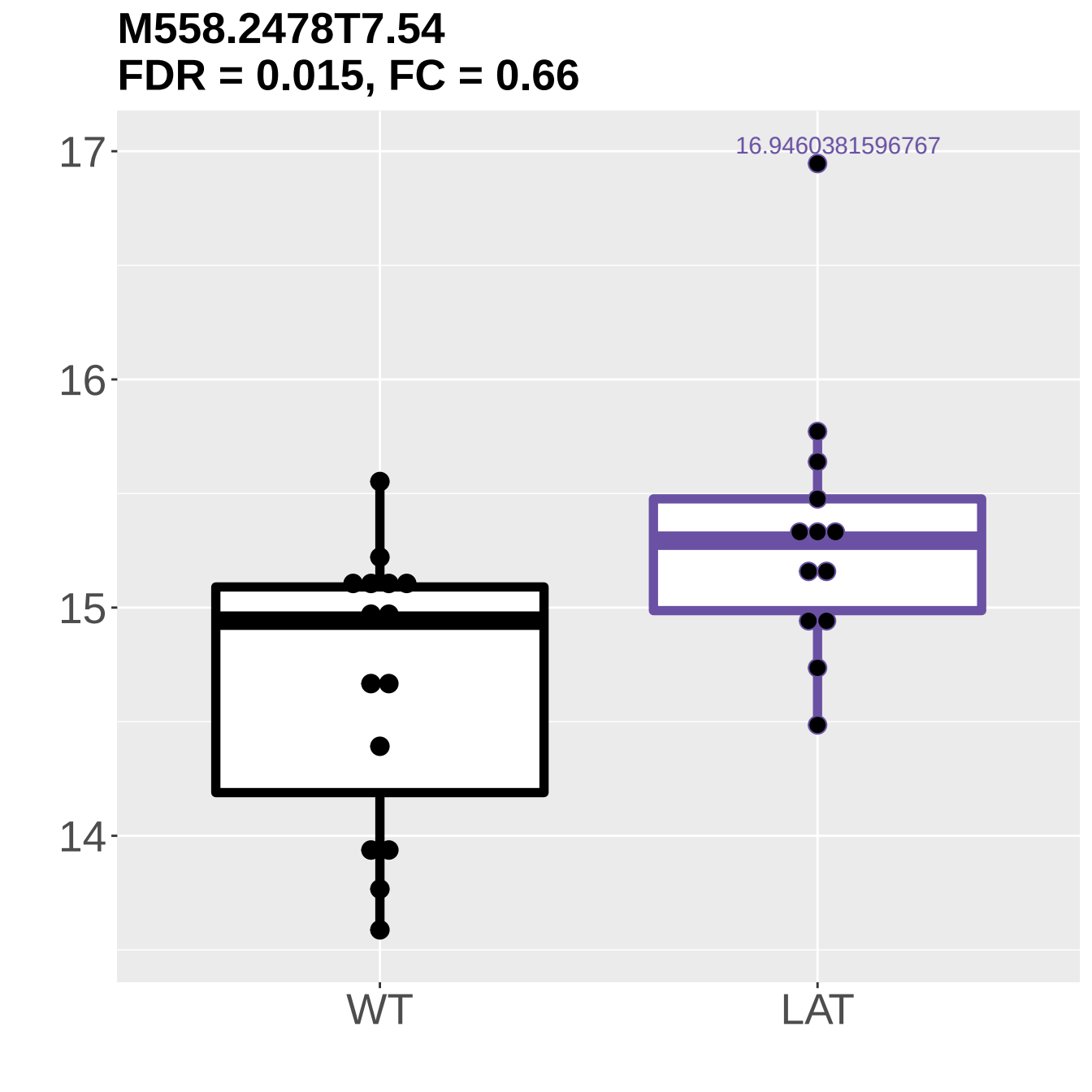
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16
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14
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WT
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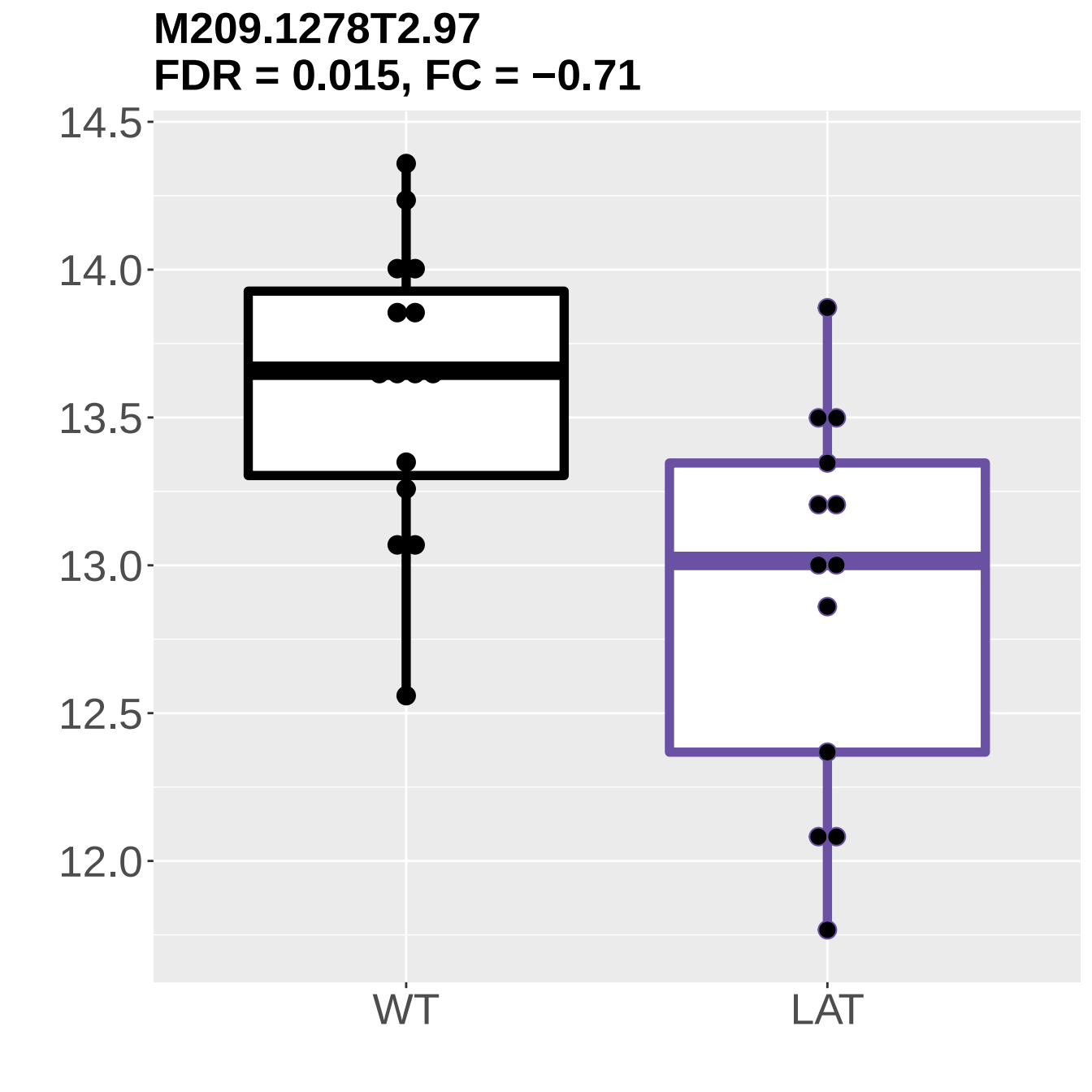
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12.5
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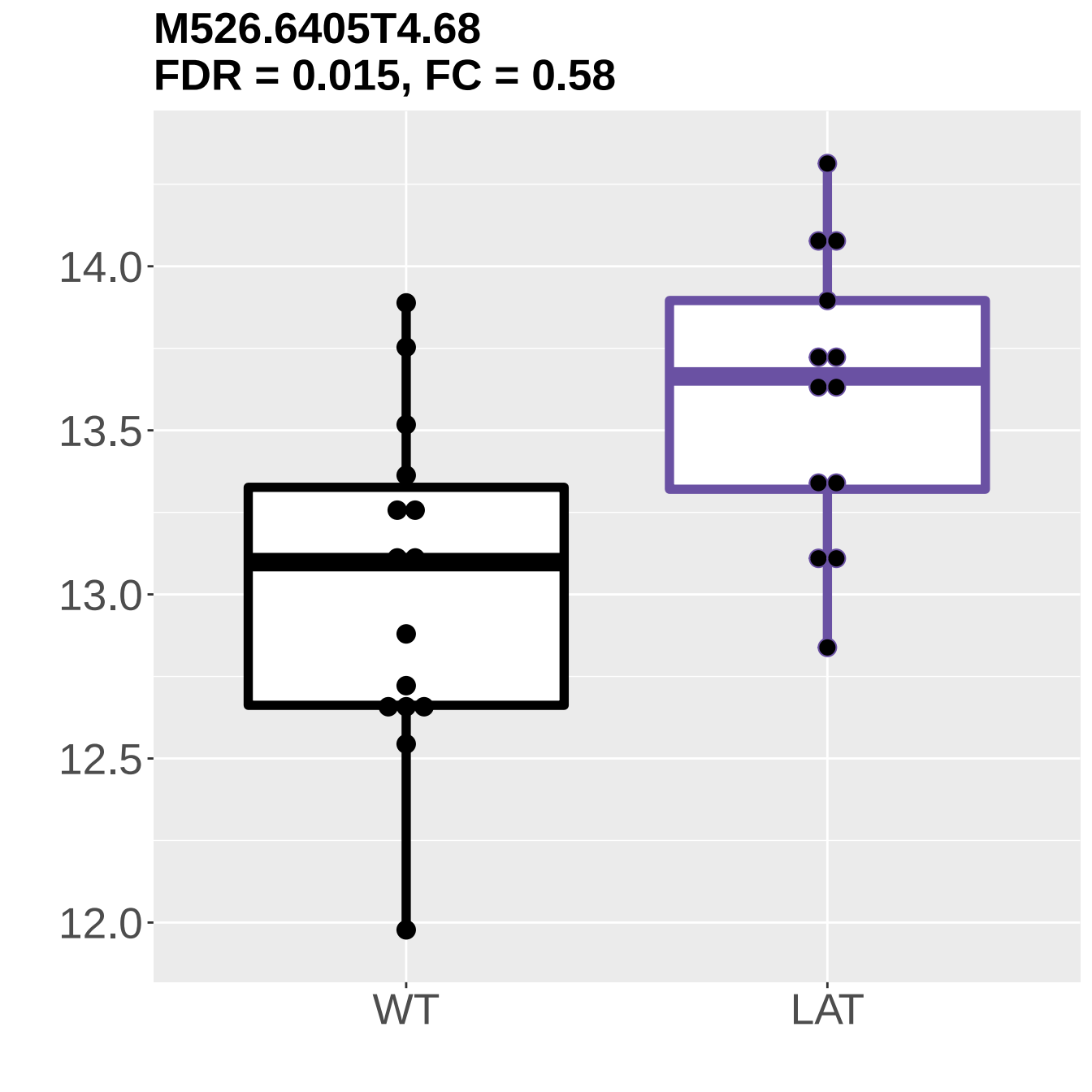
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WT
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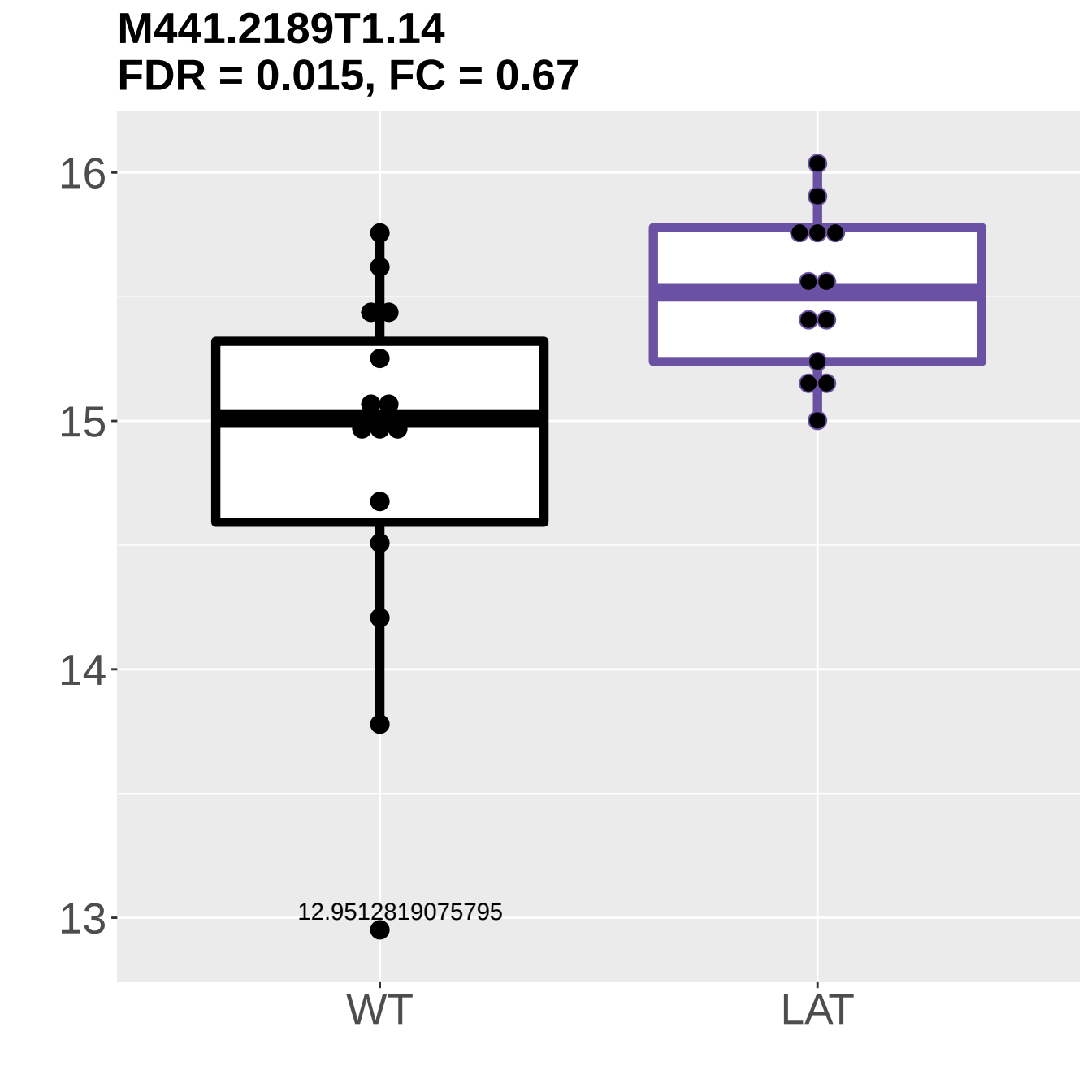
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15
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13
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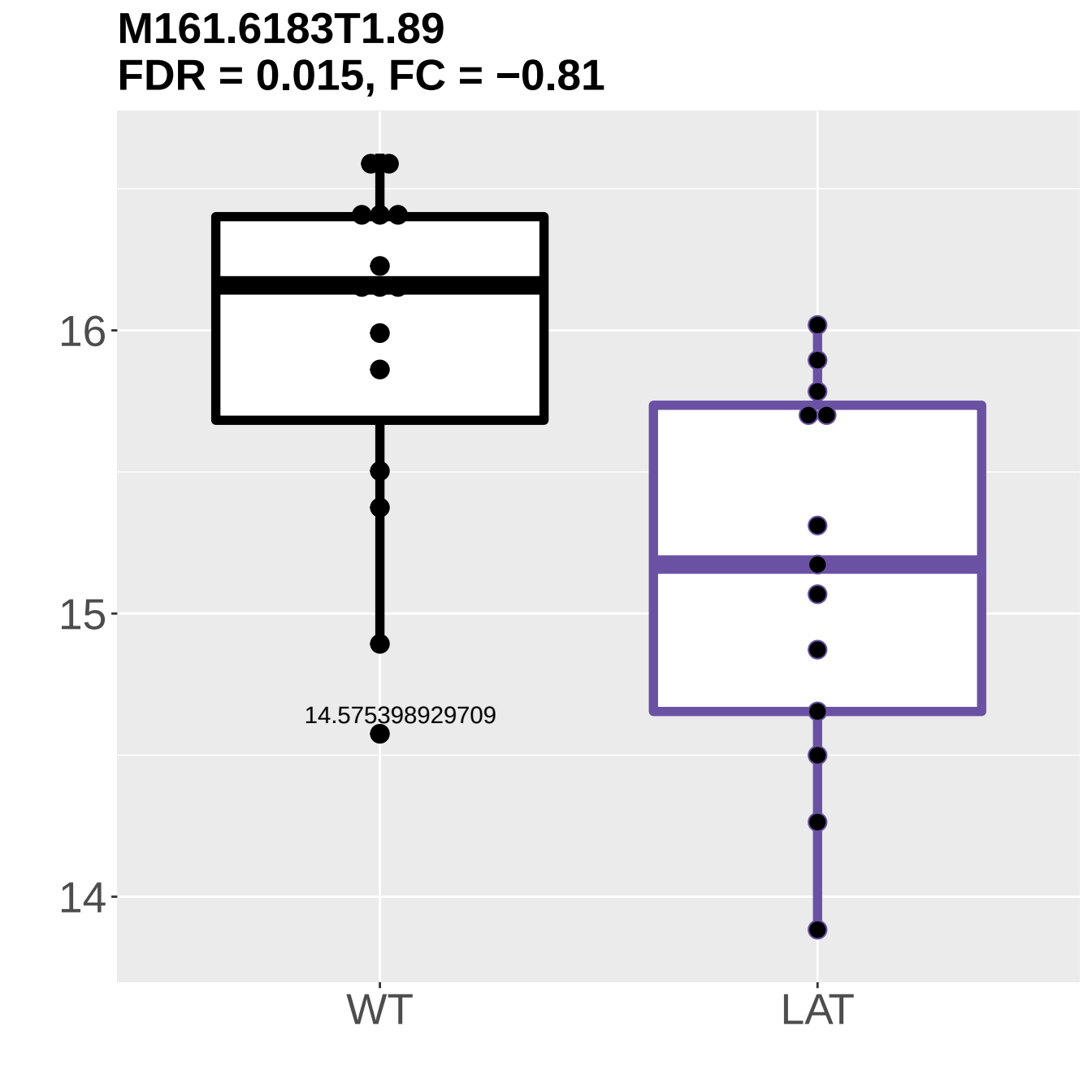
WT
LAT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WT
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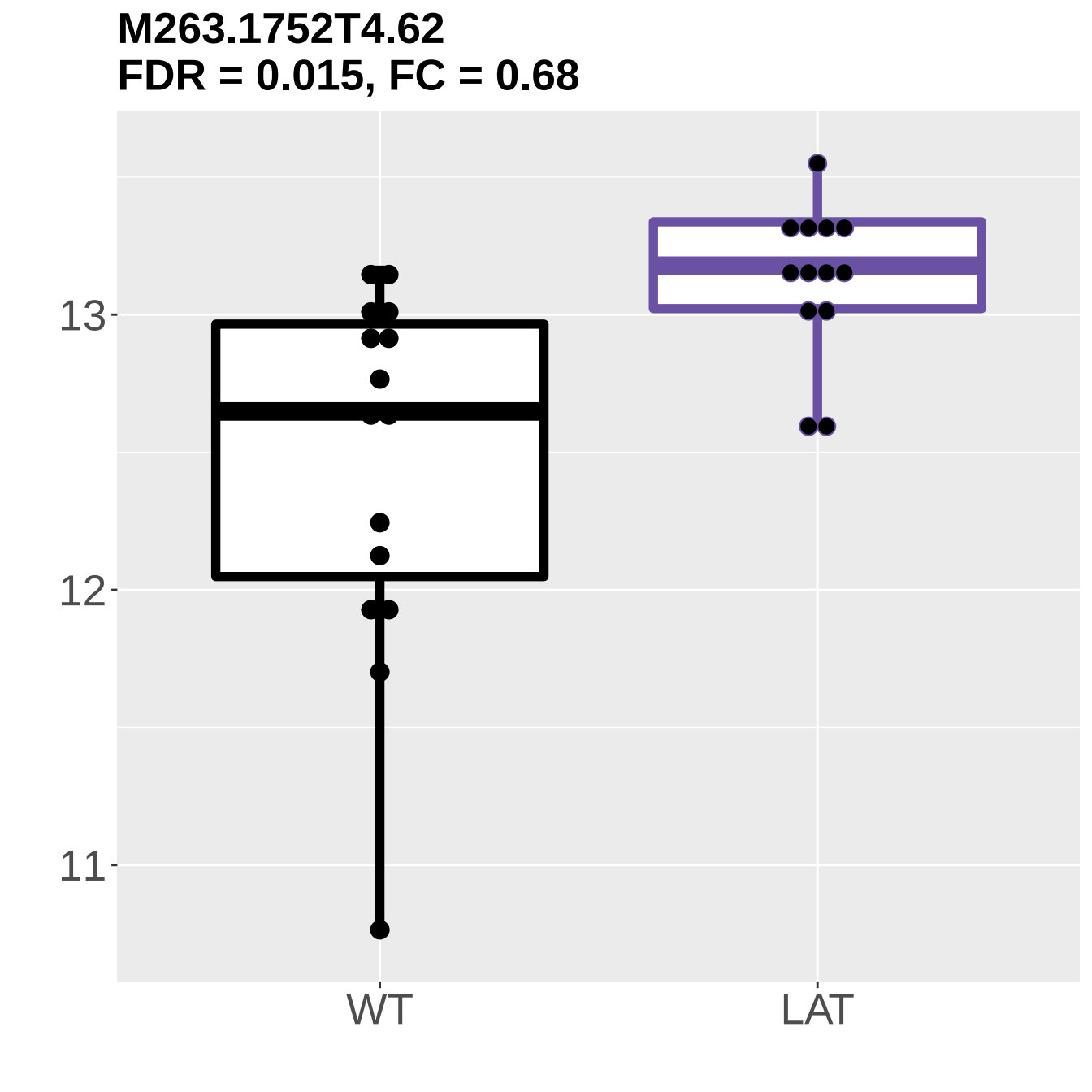
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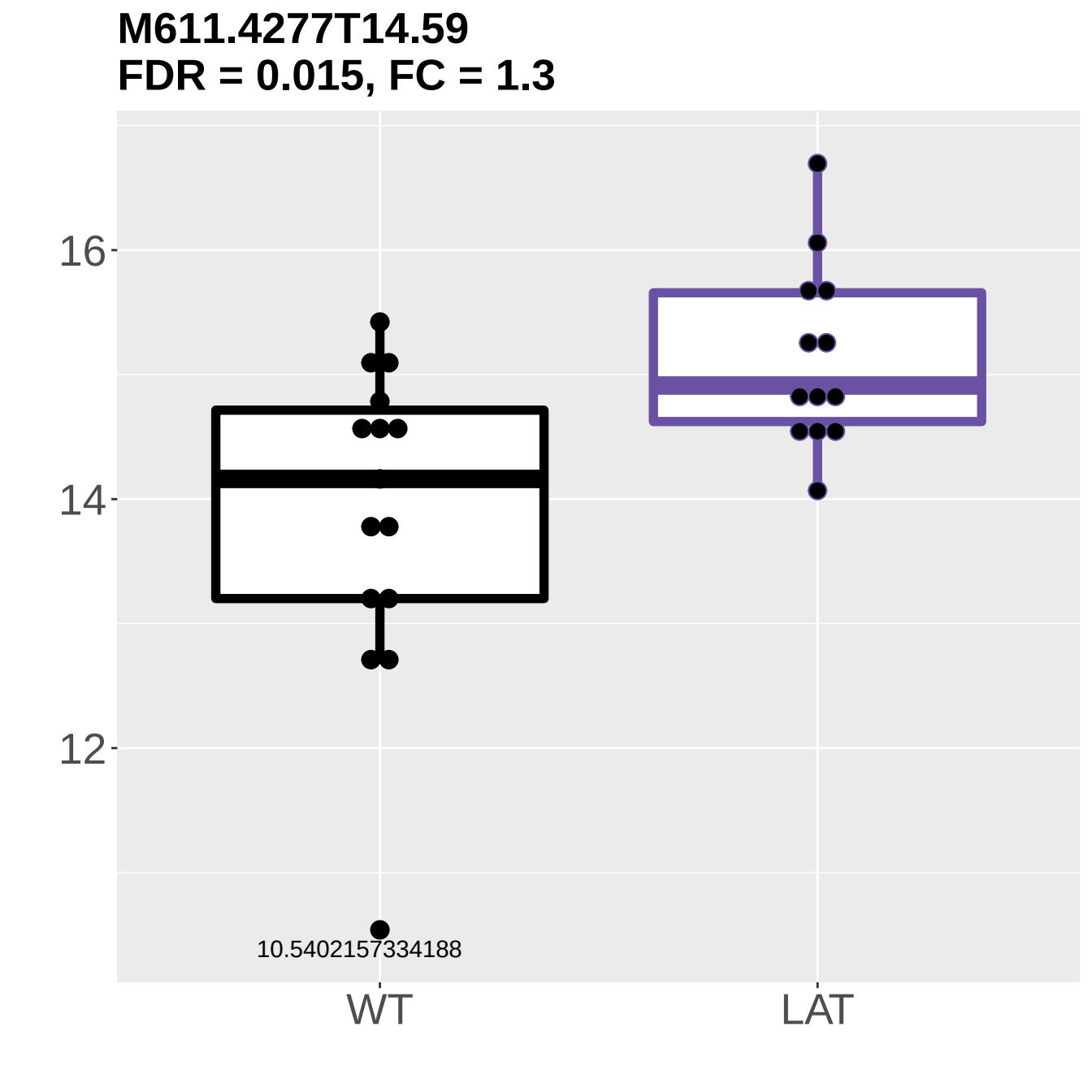
12
11
WT
LAT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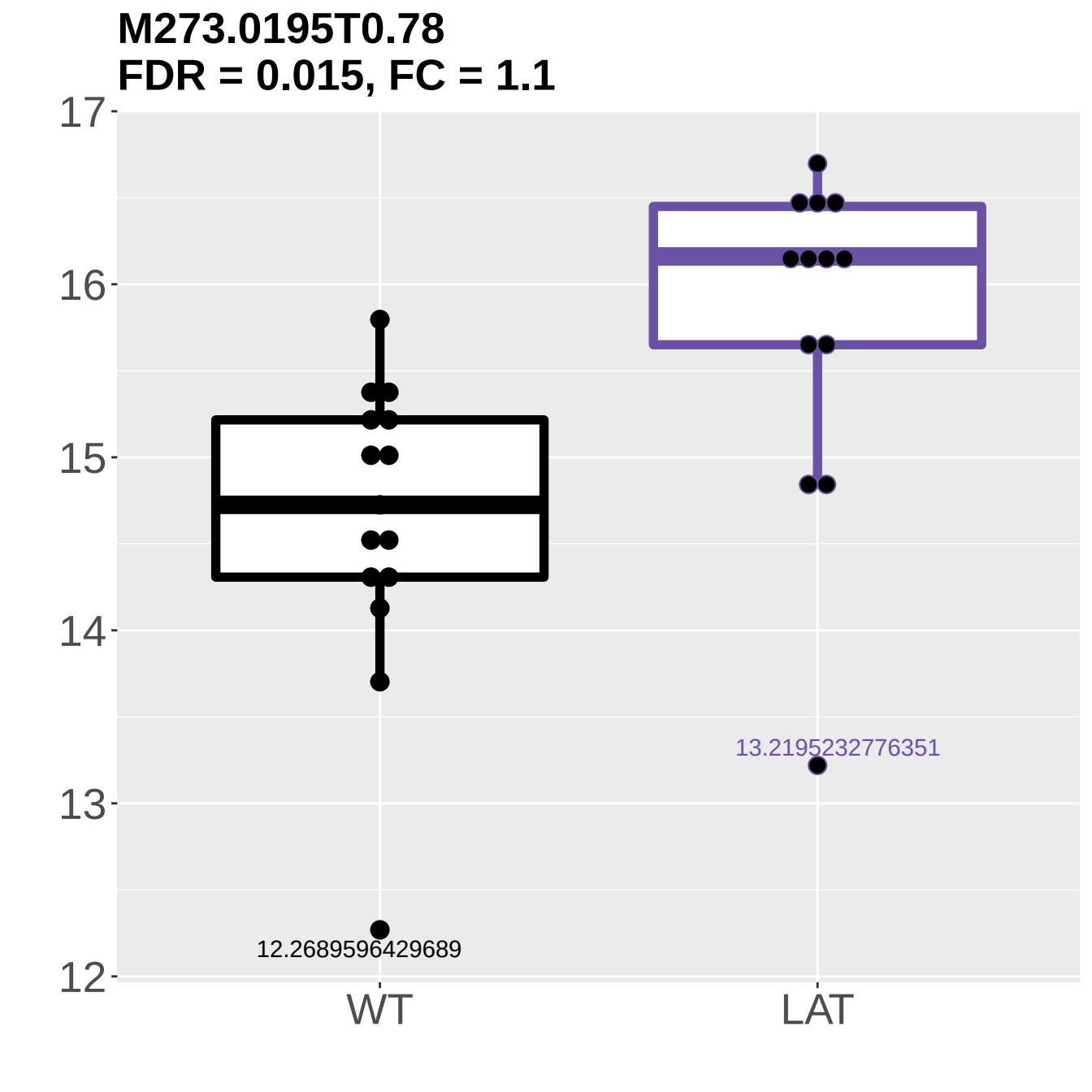
WT
LAT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14
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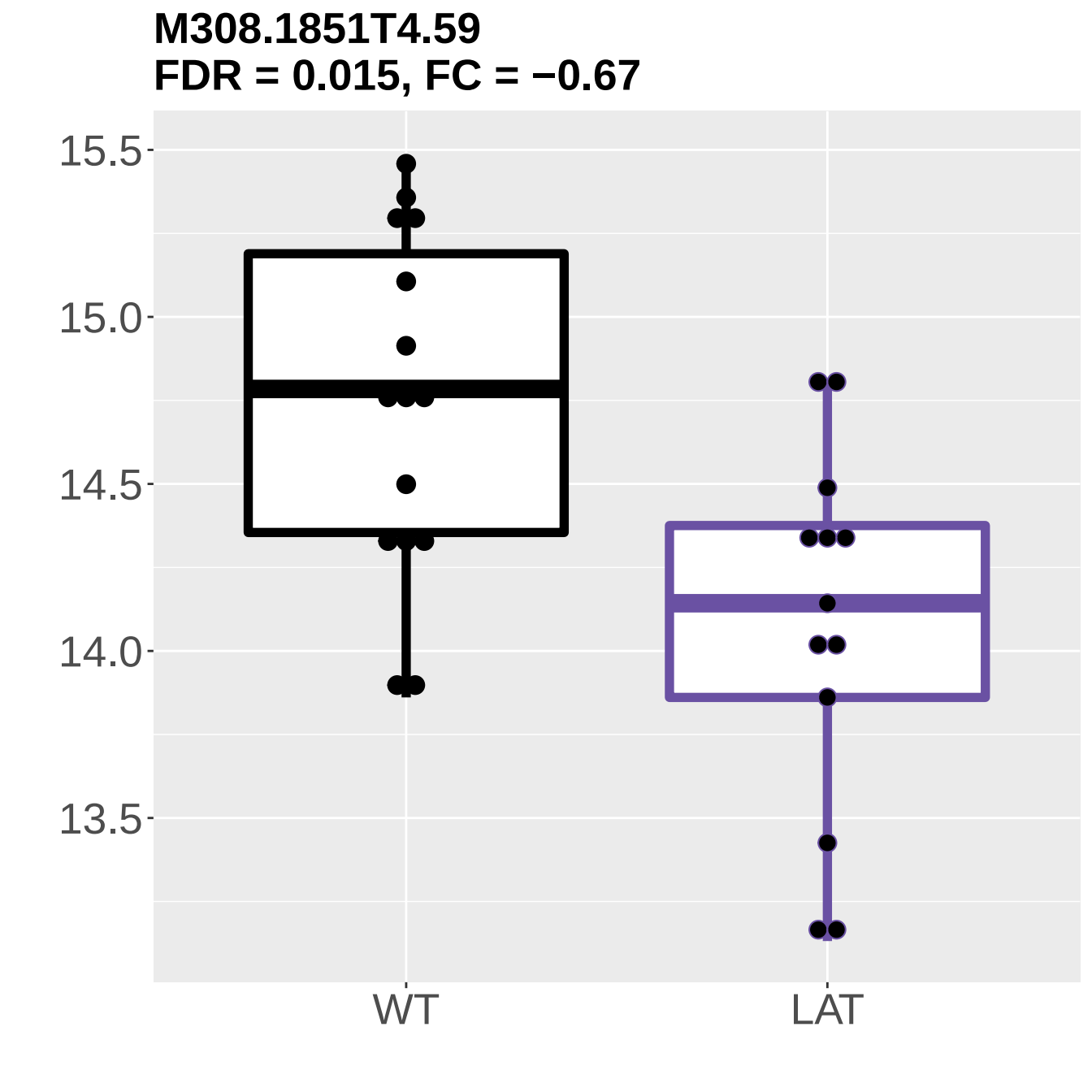
WT
LAT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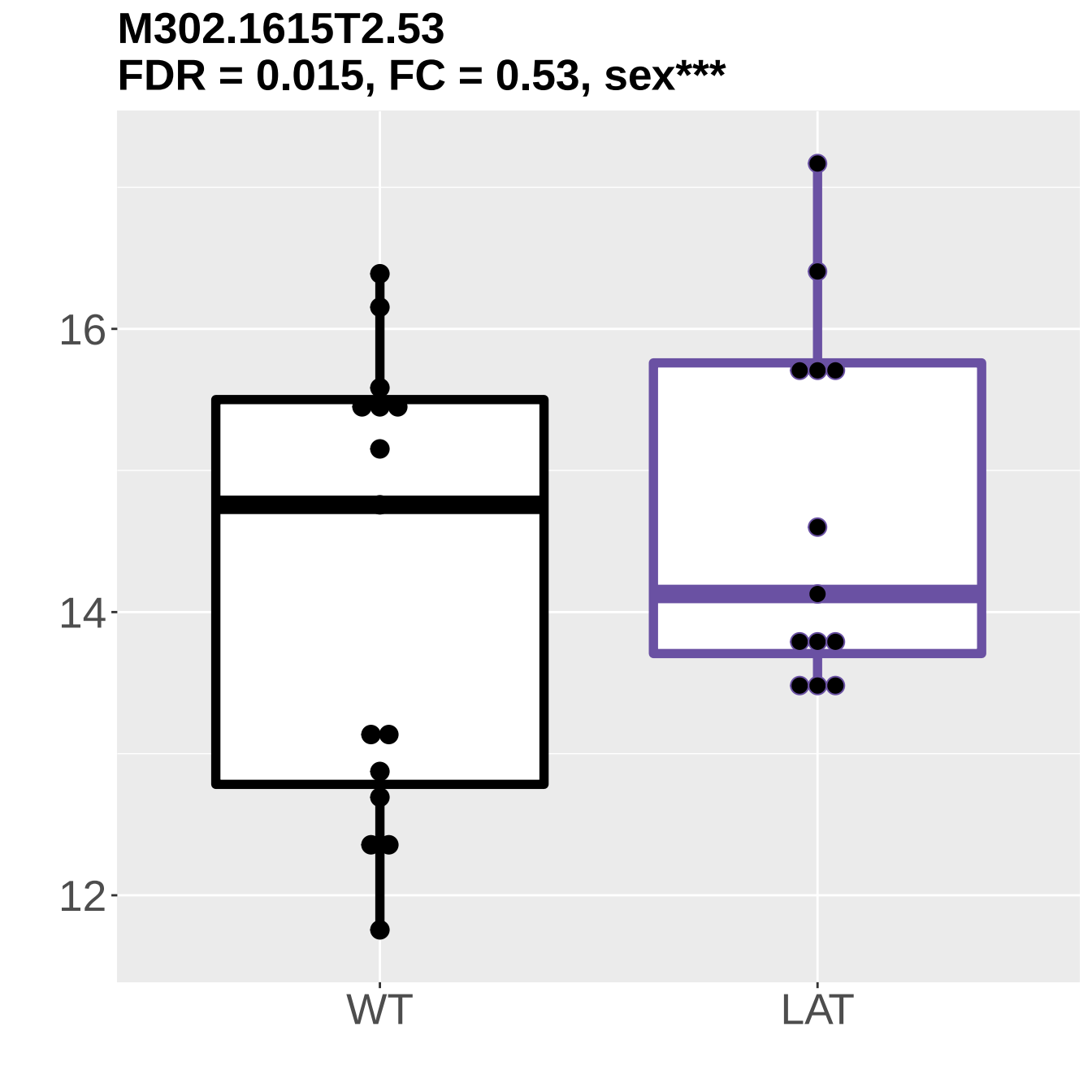
WT
LAT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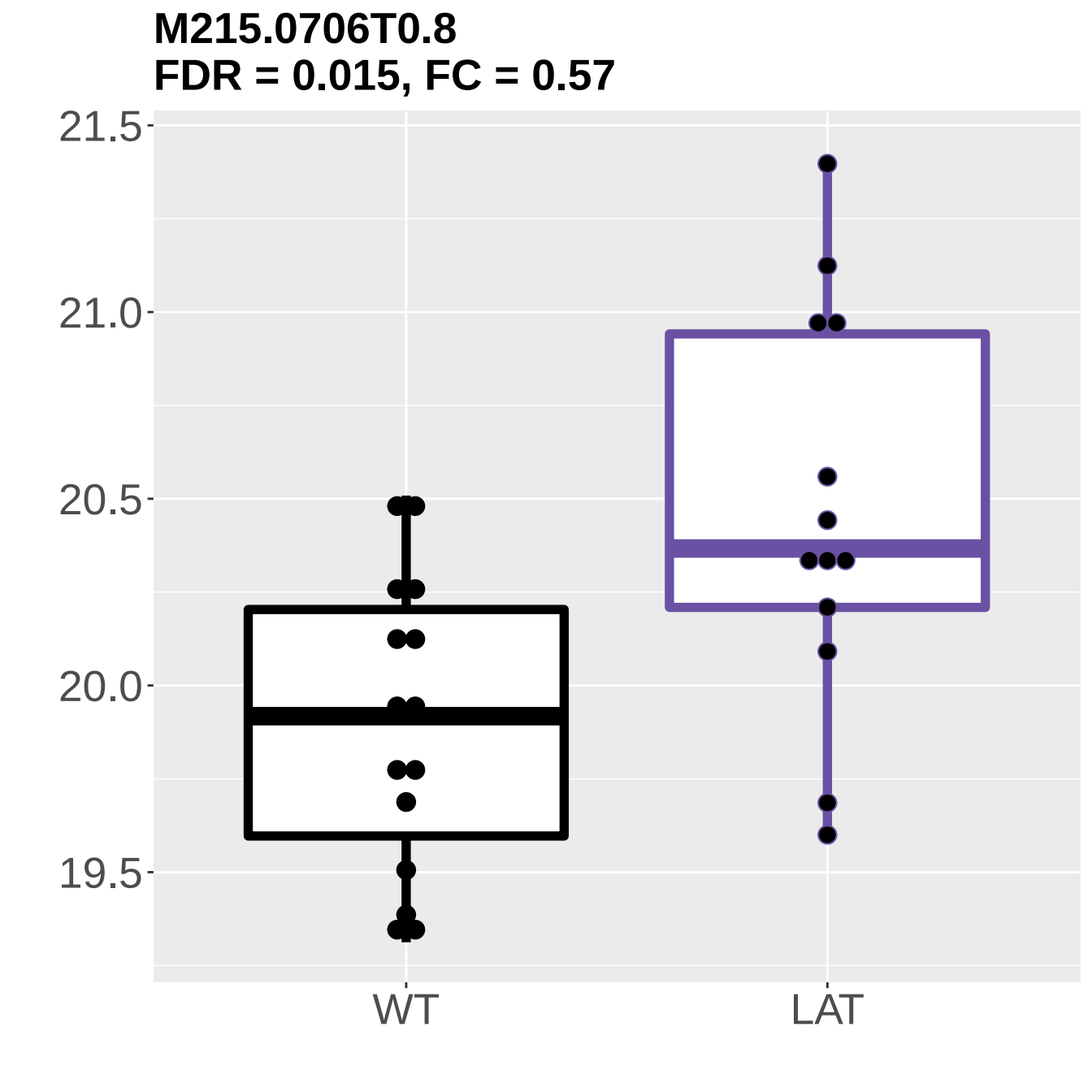
14
12
WT
LAT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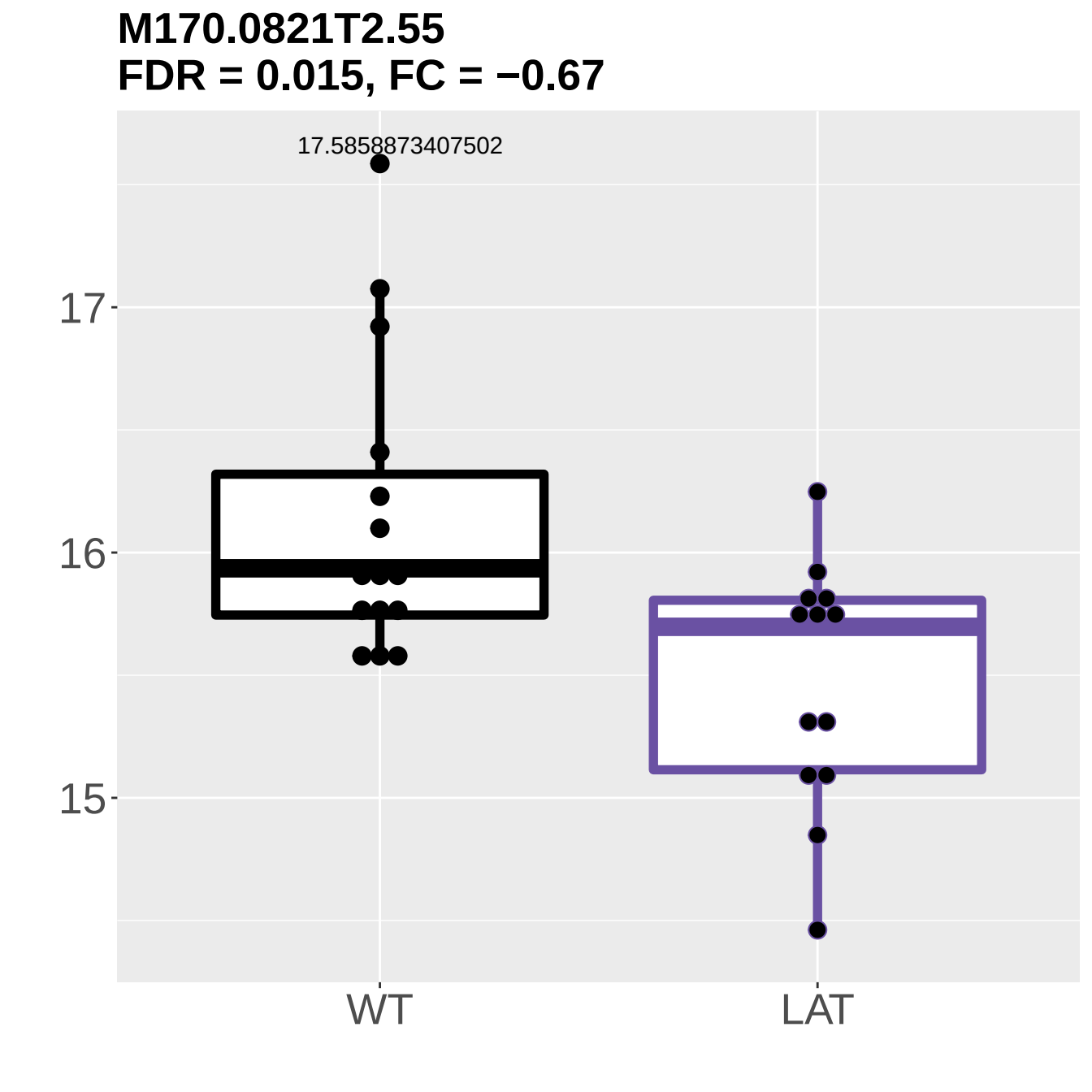
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16
15
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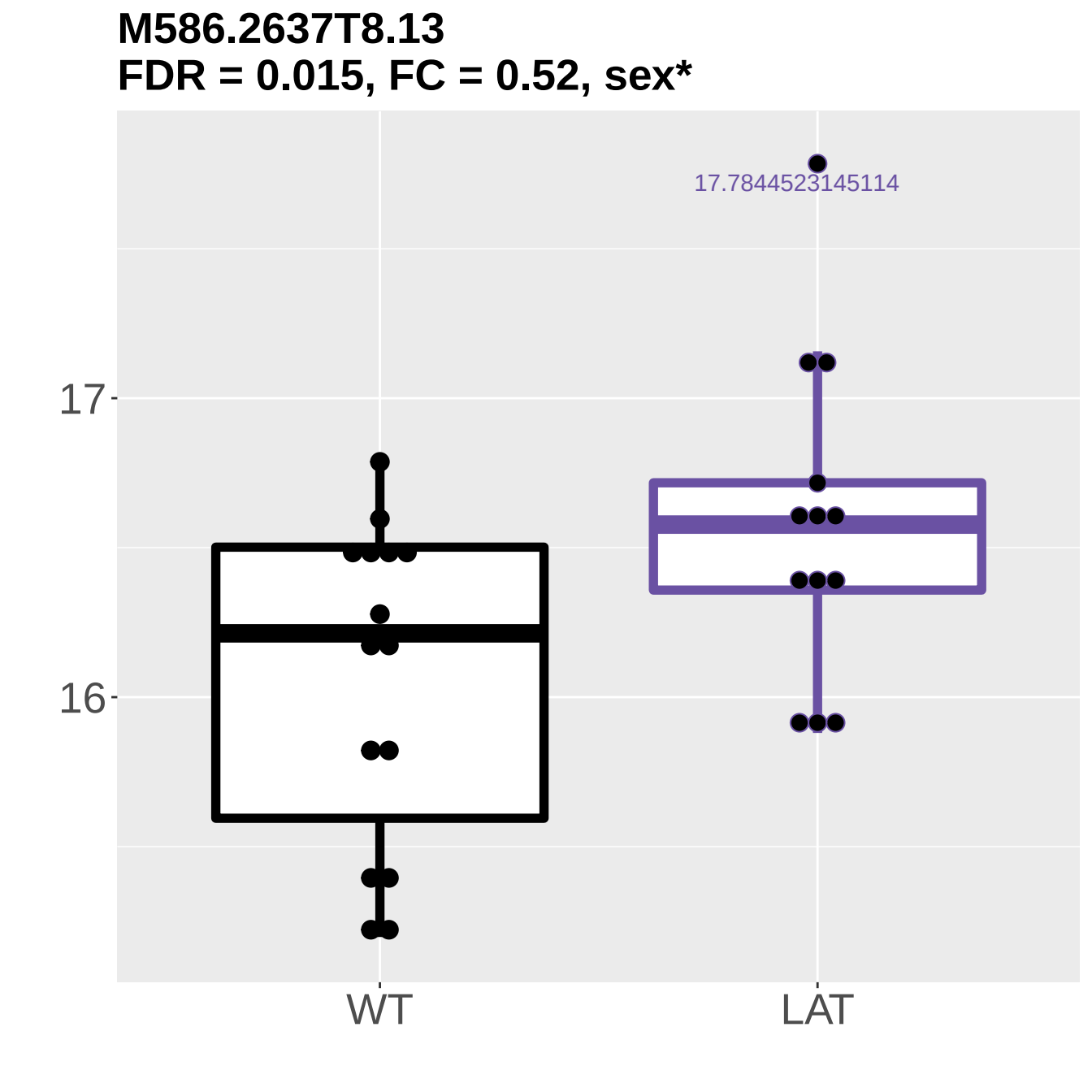
LAT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16
WT
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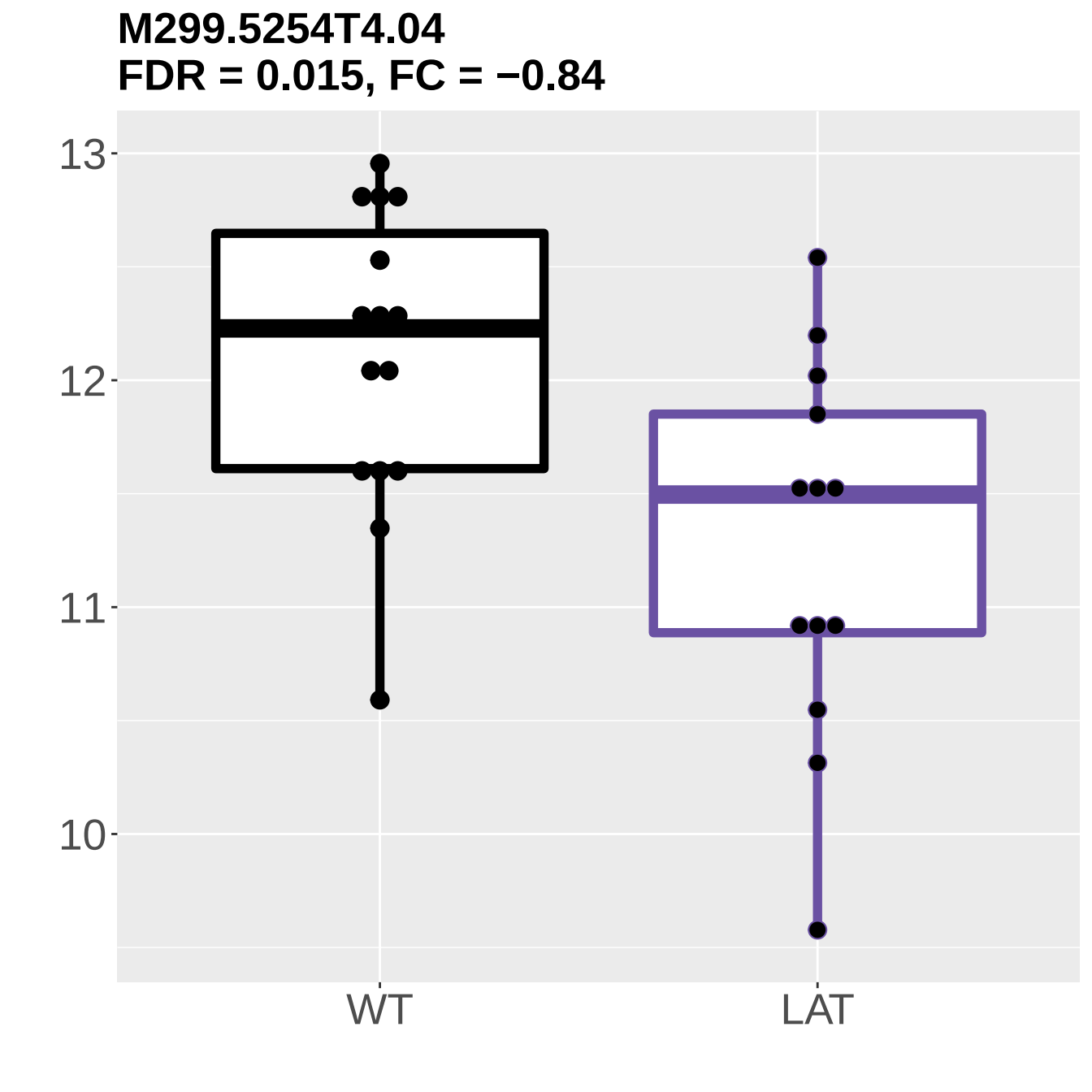
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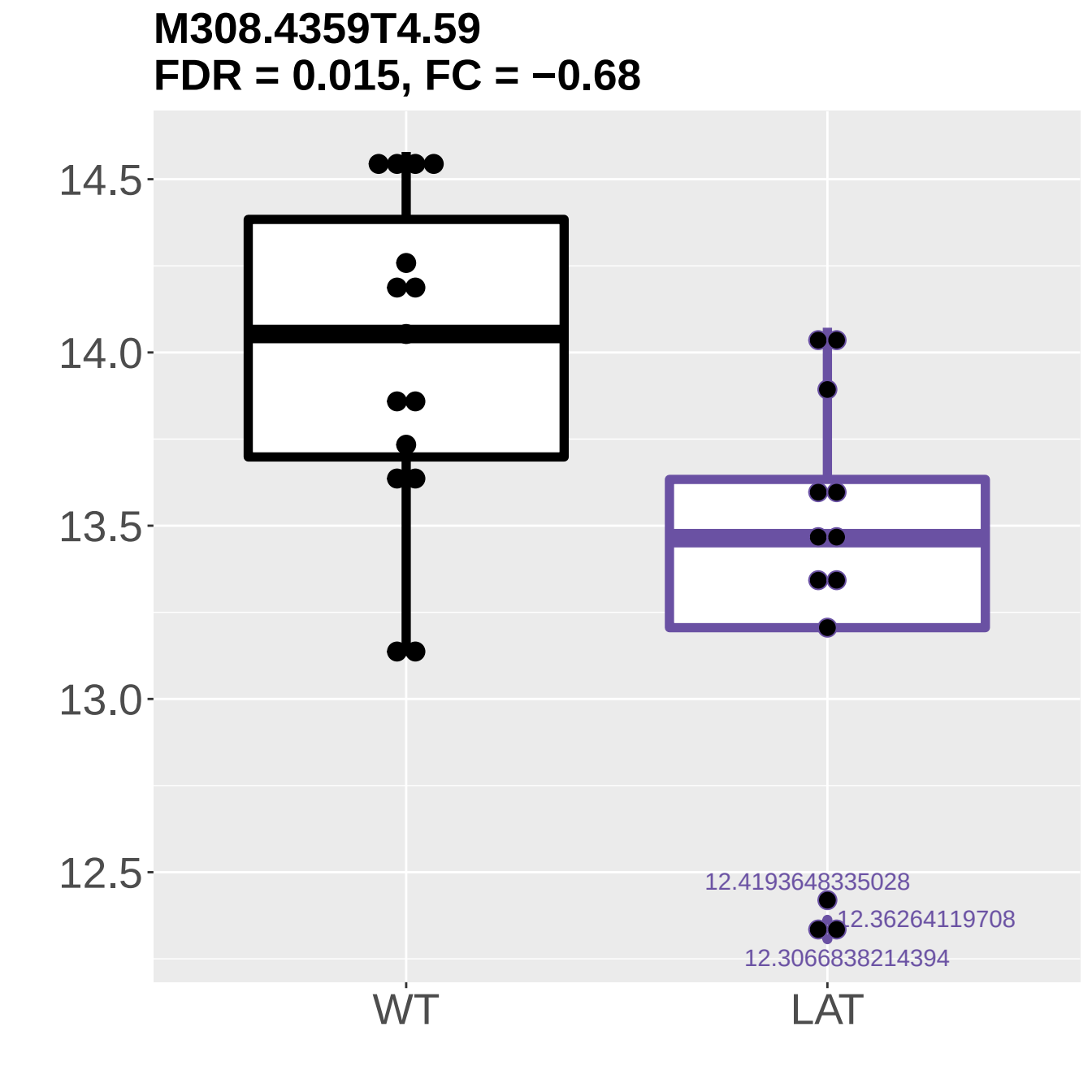
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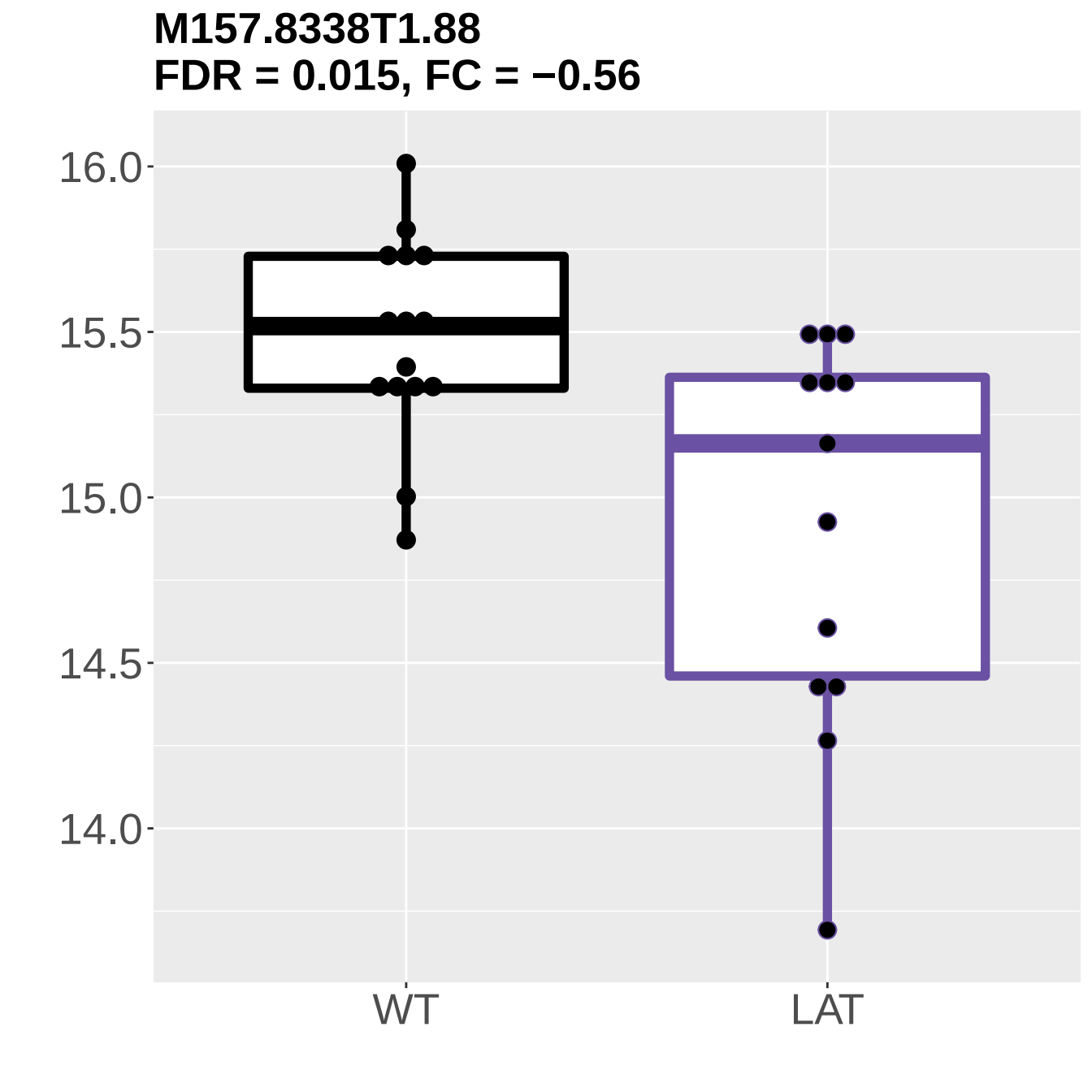
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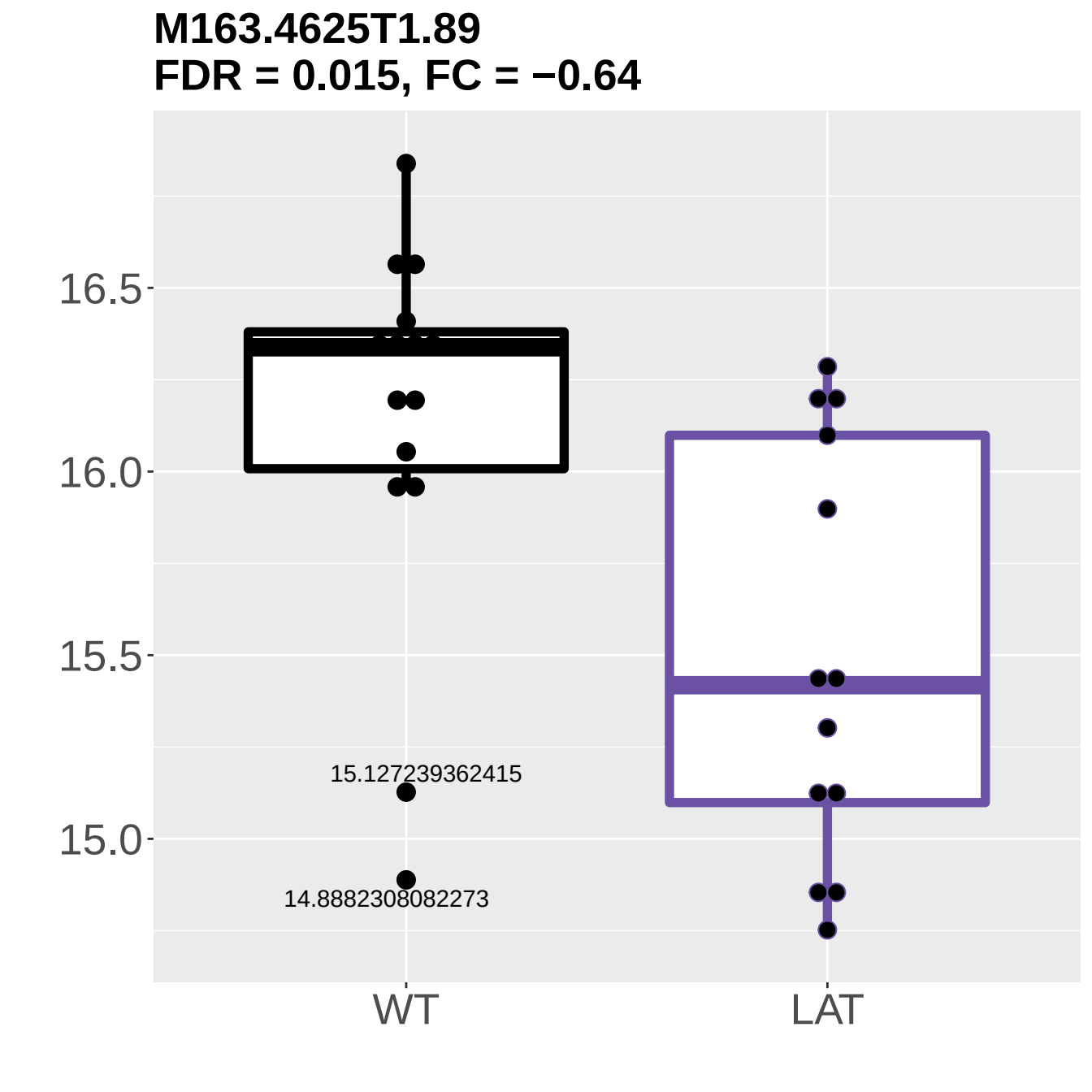
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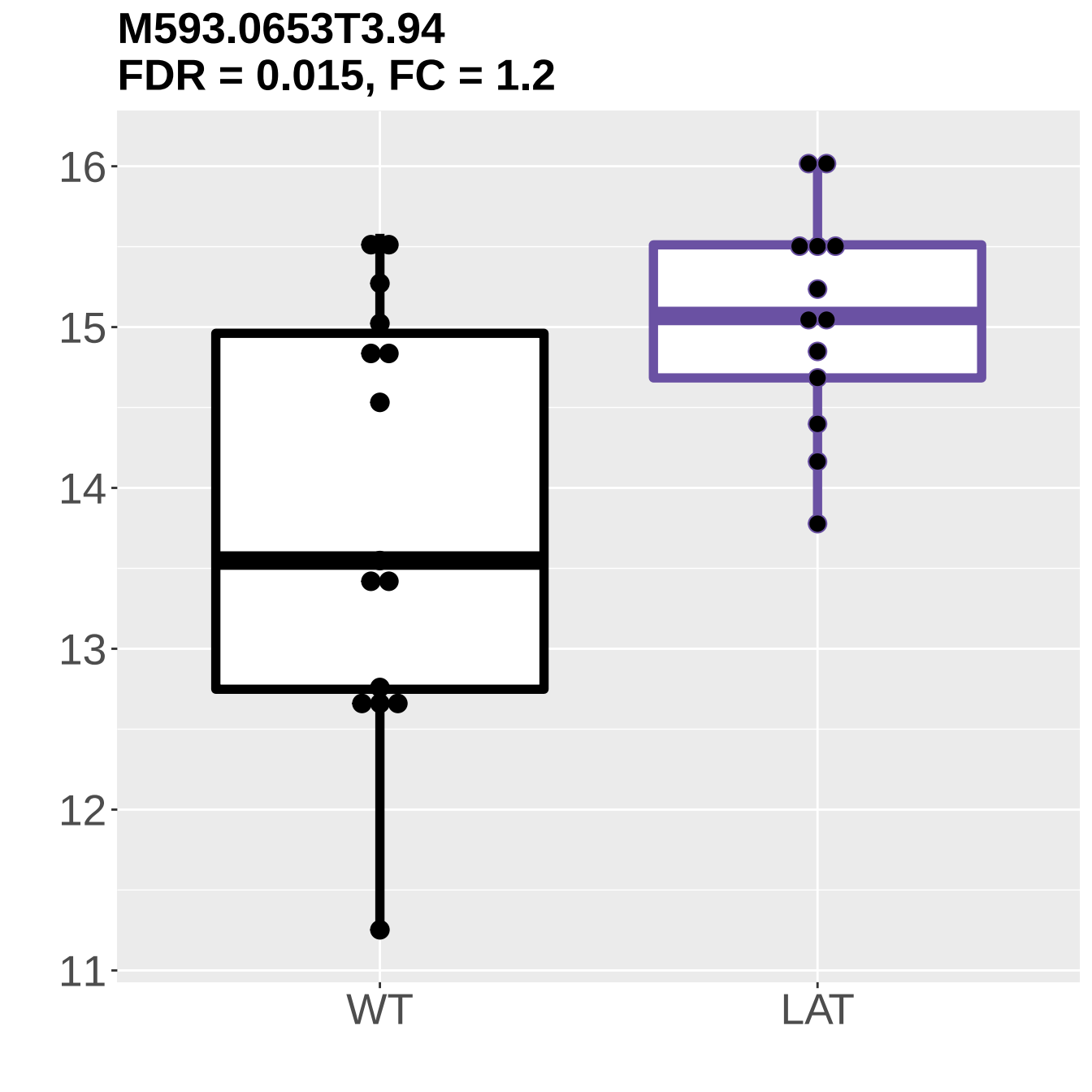
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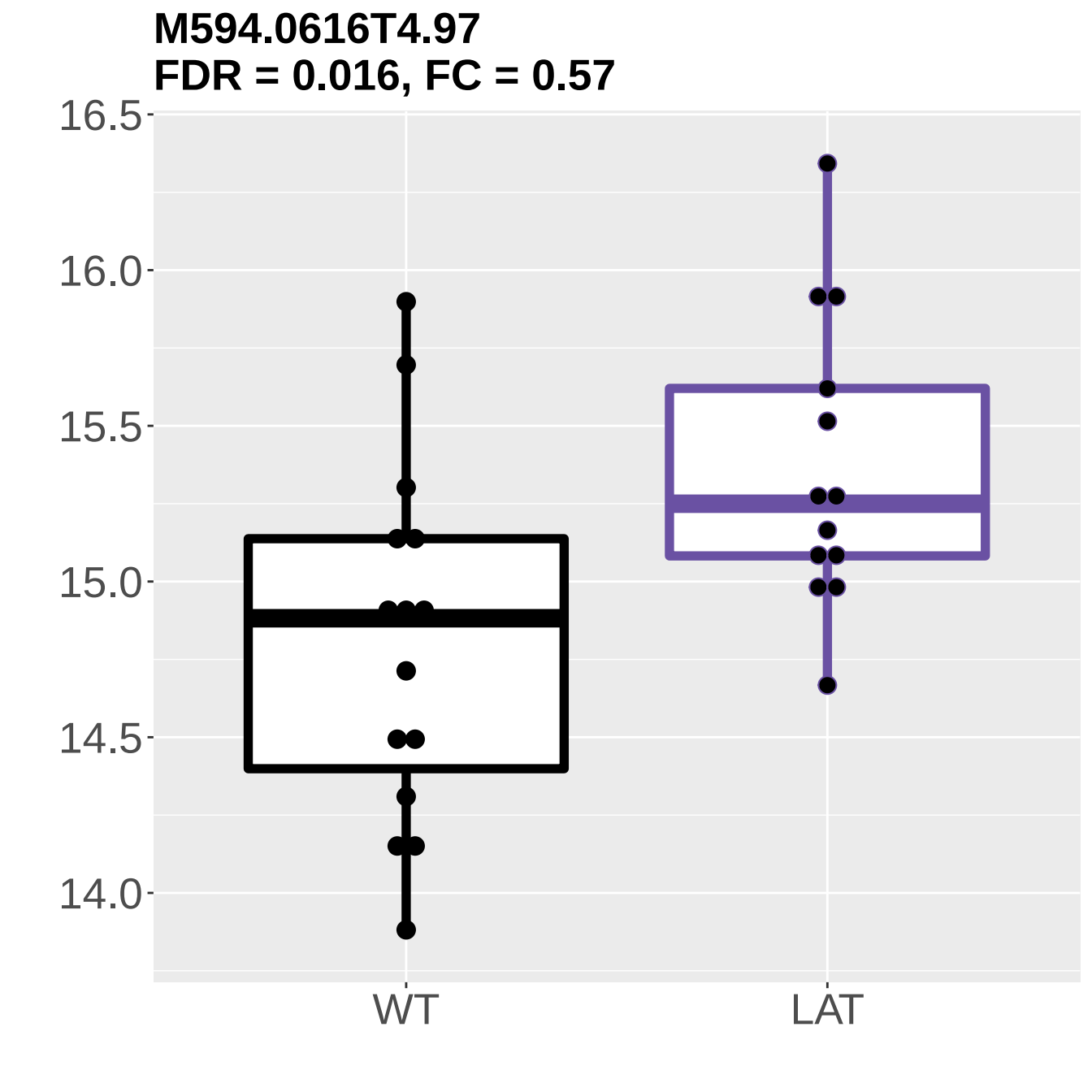
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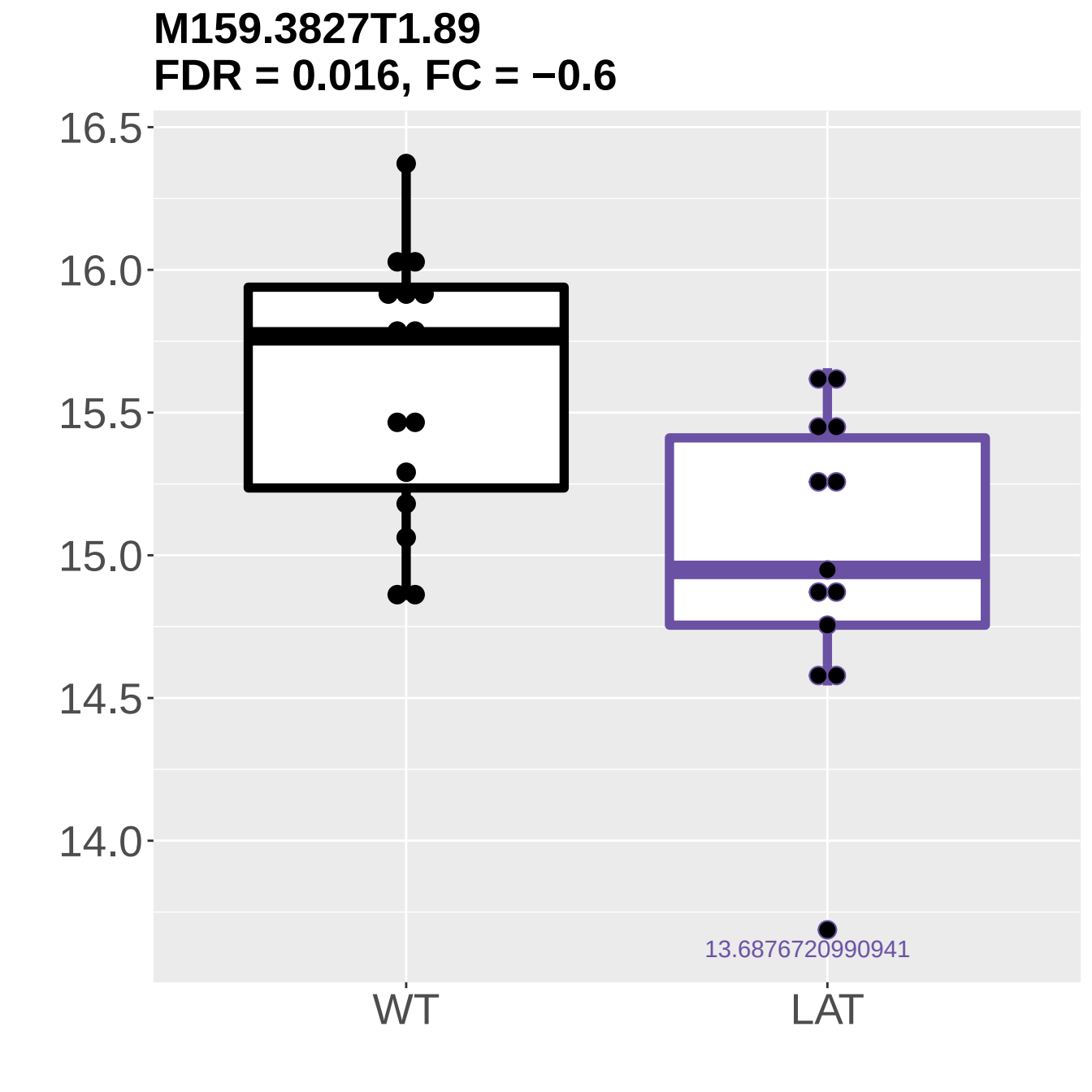
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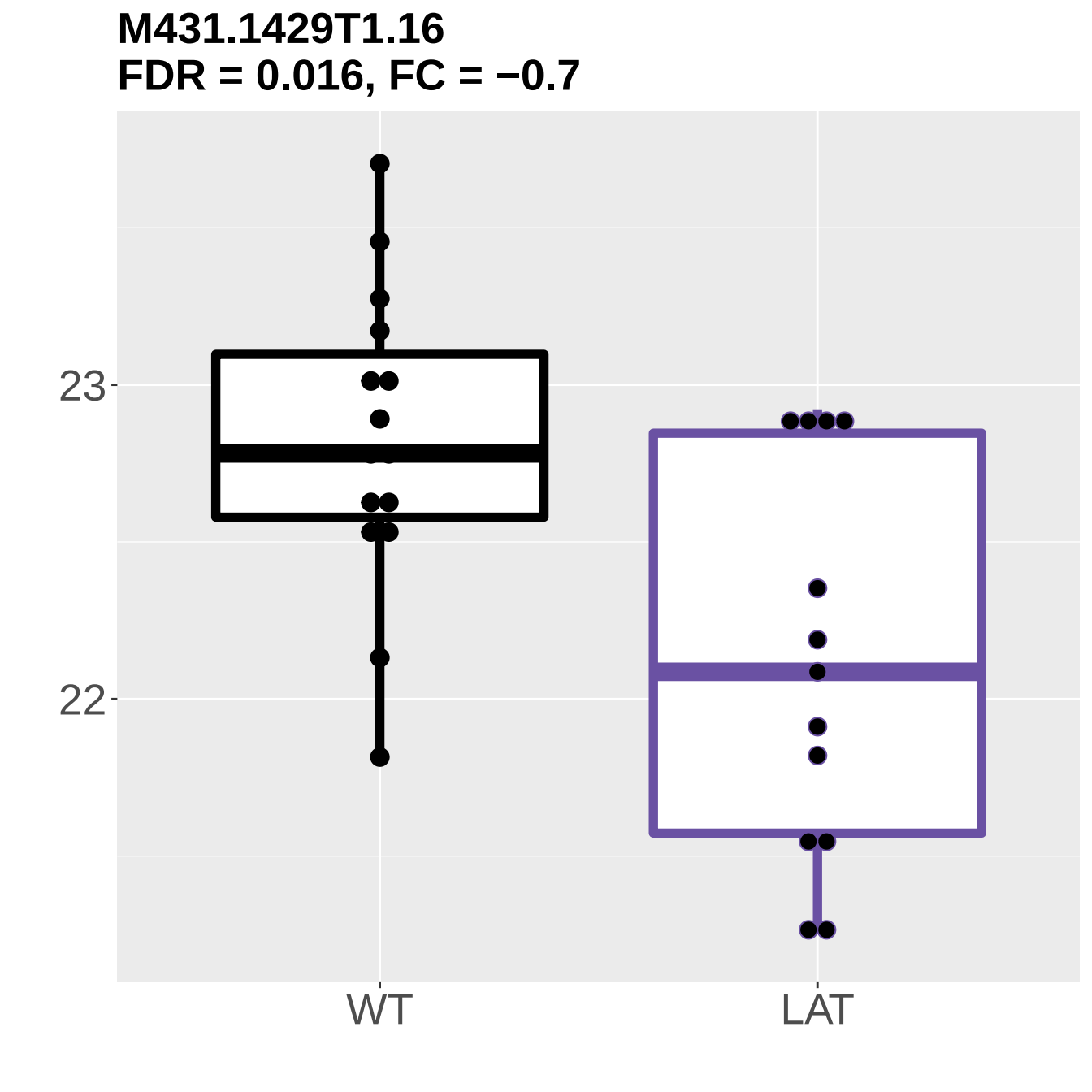
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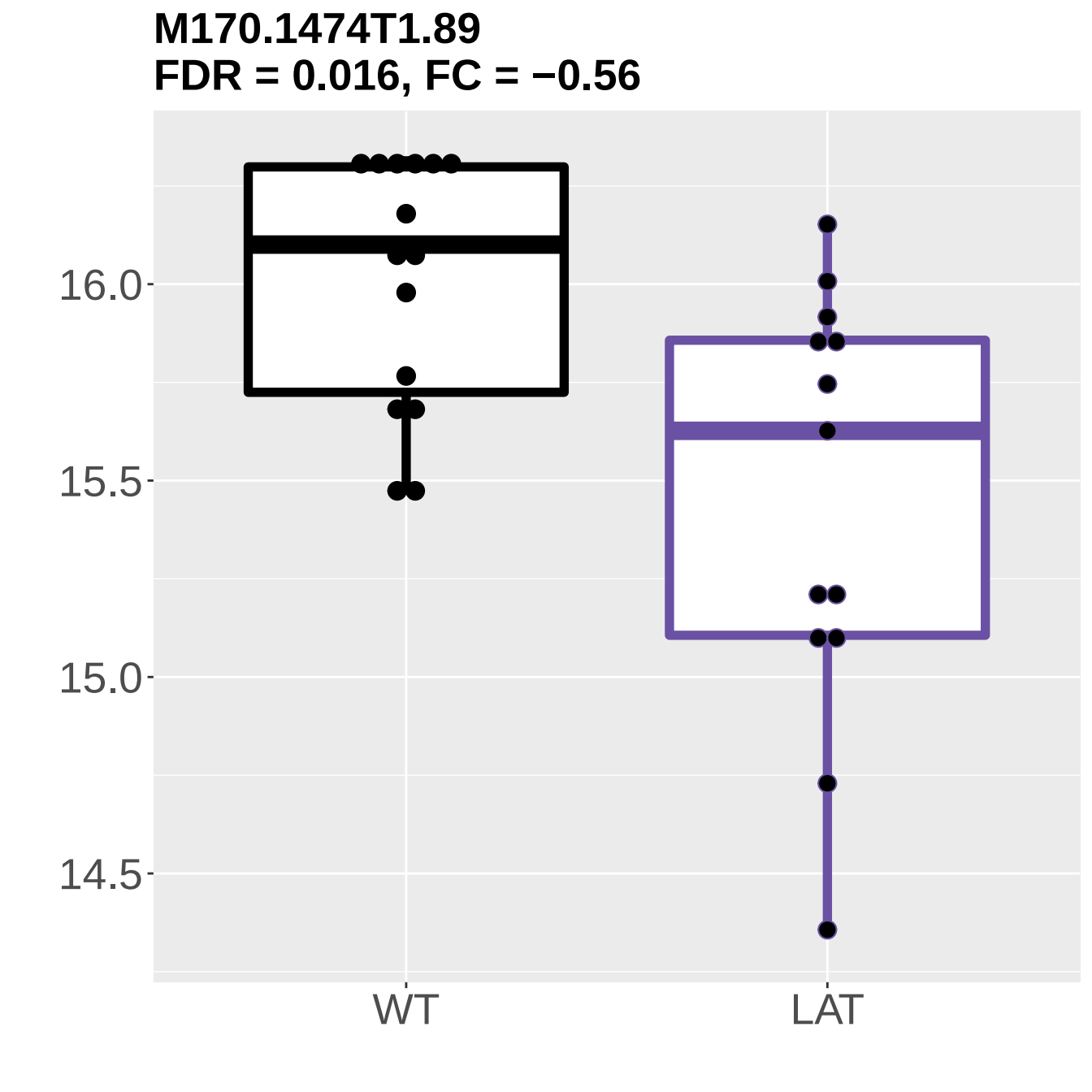
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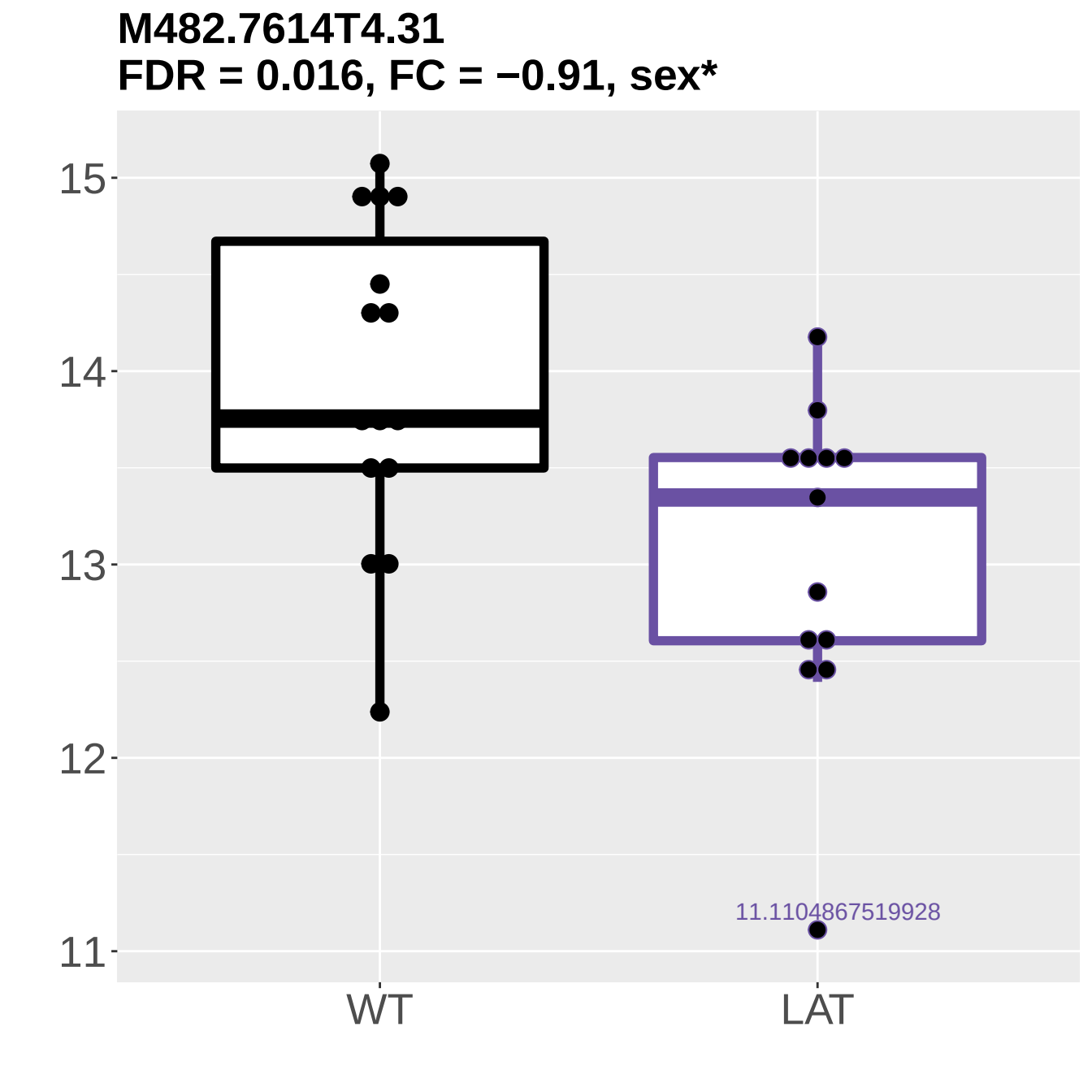
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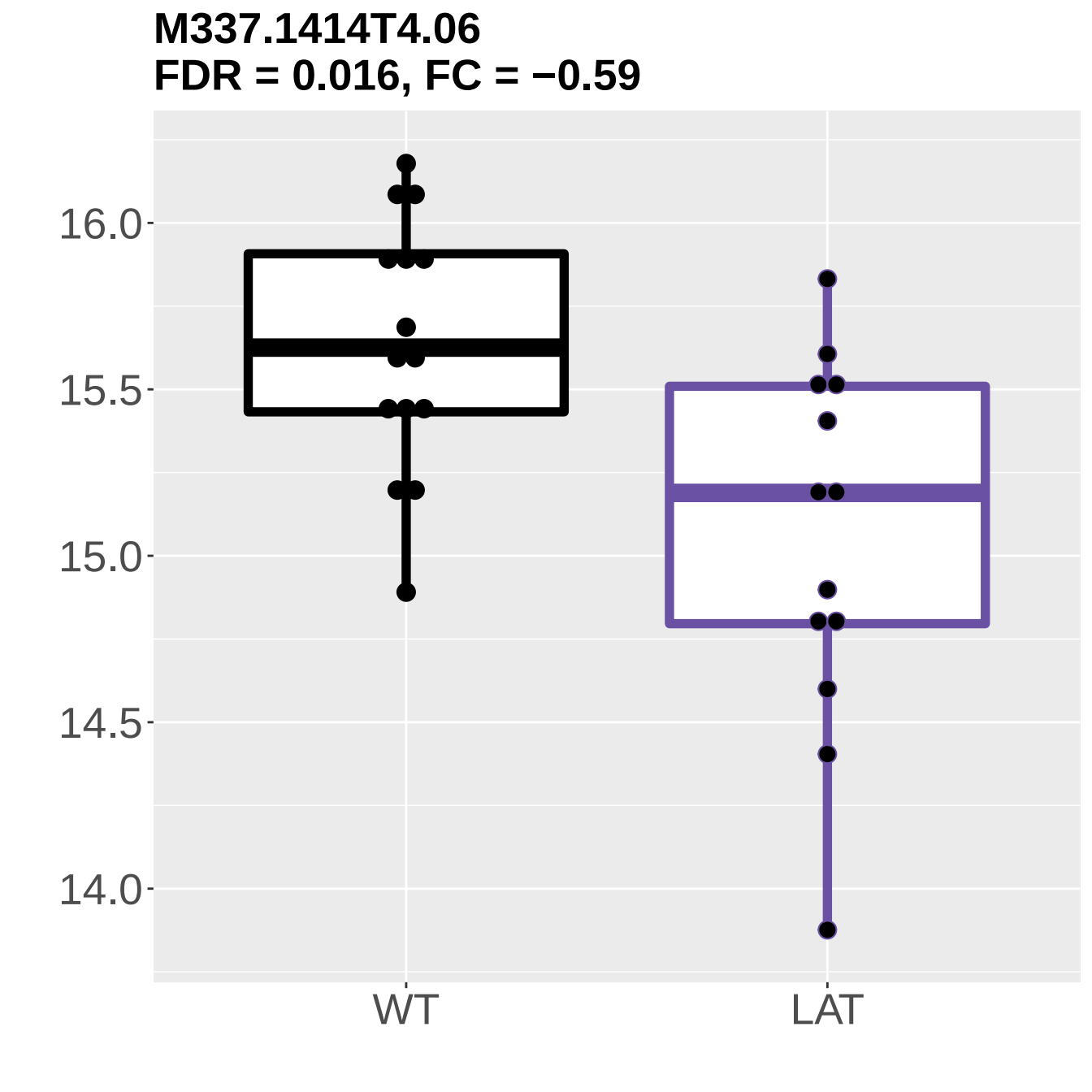
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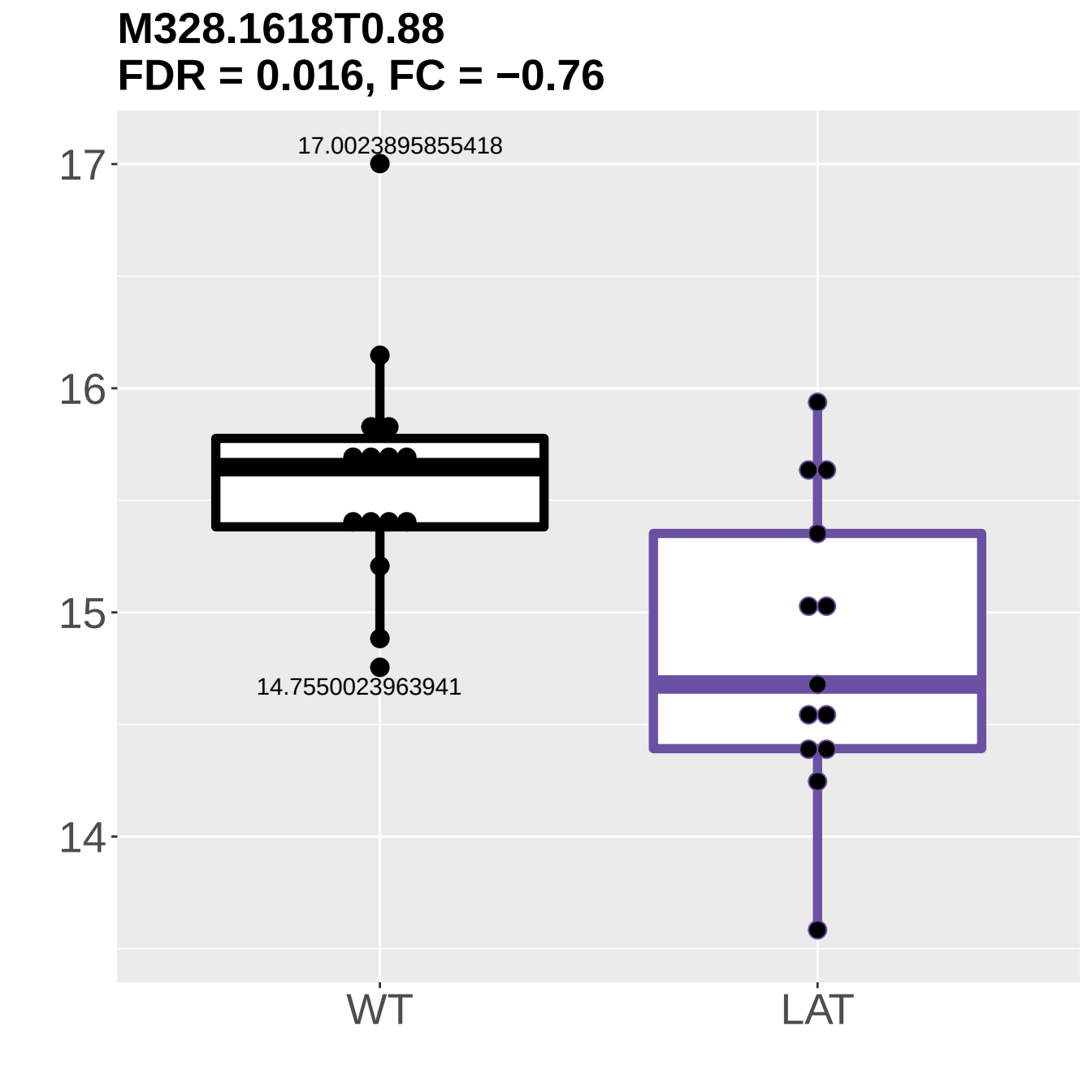
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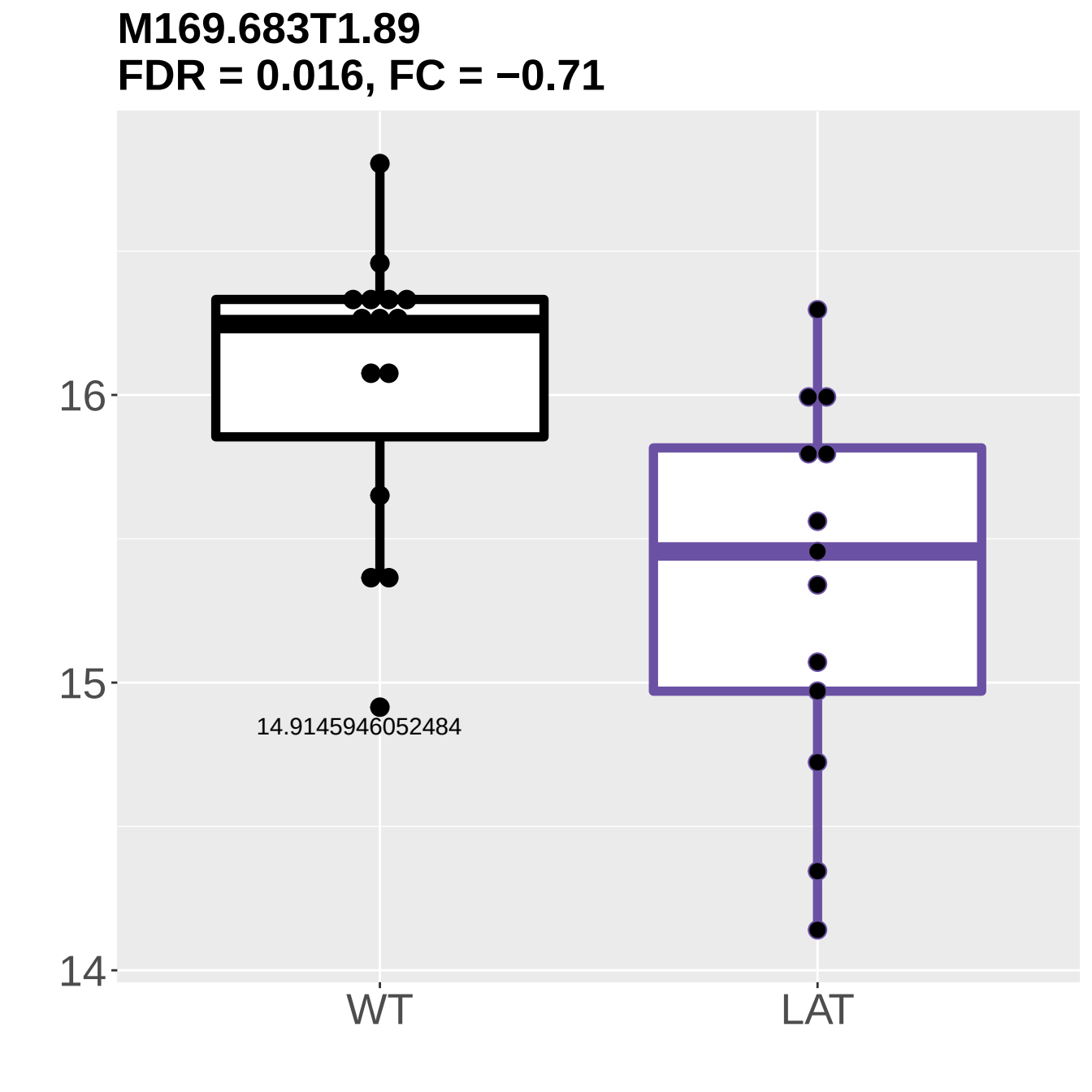
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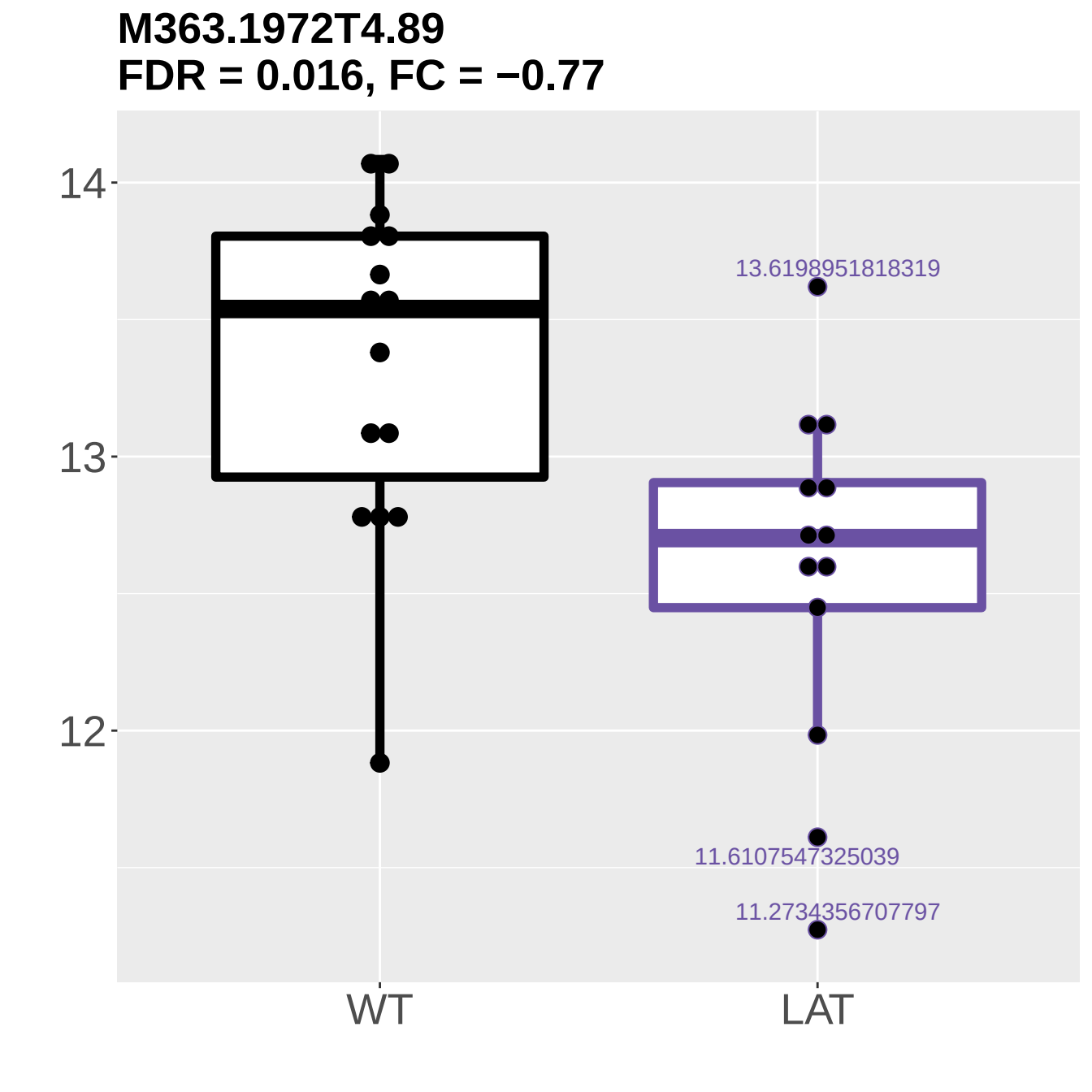
LAT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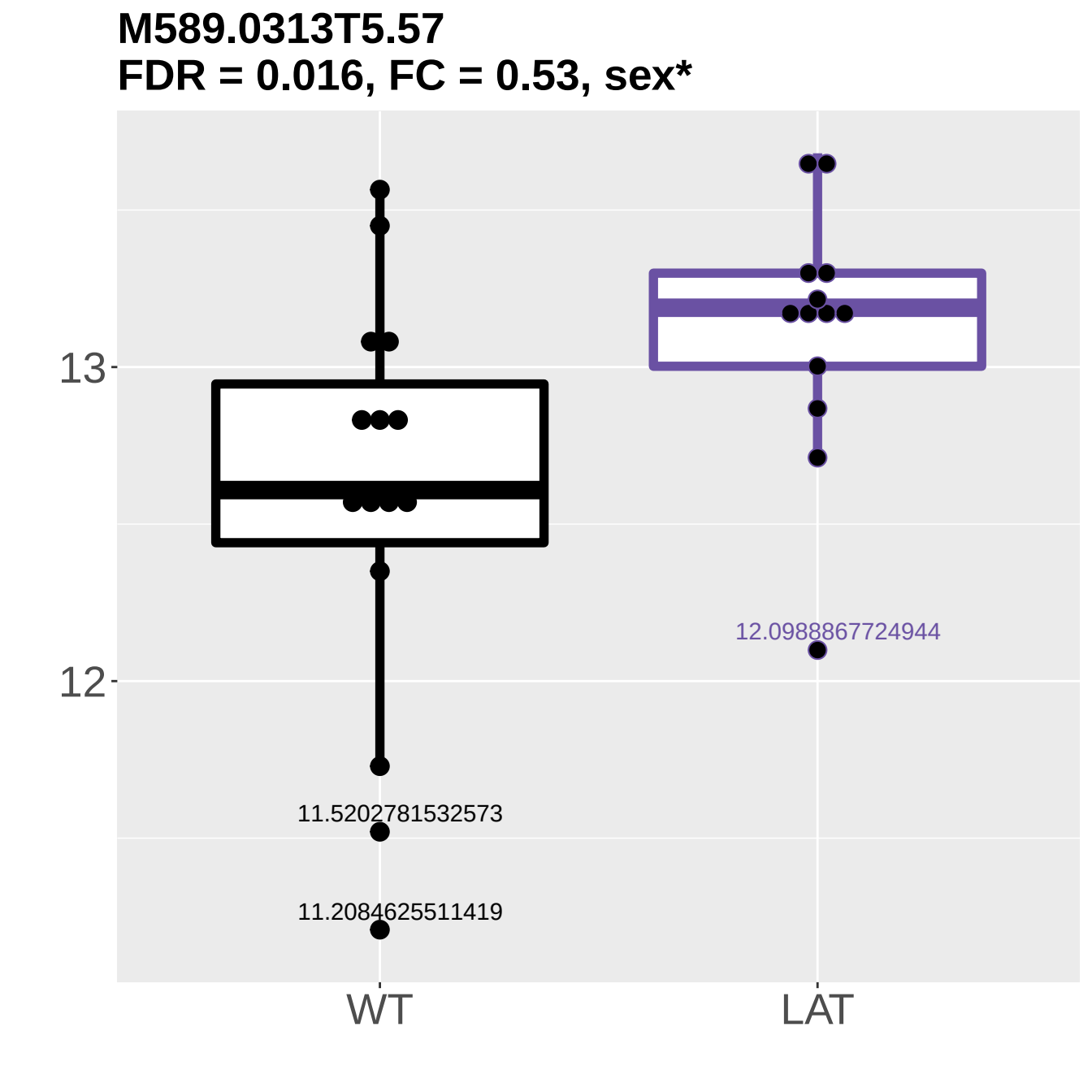
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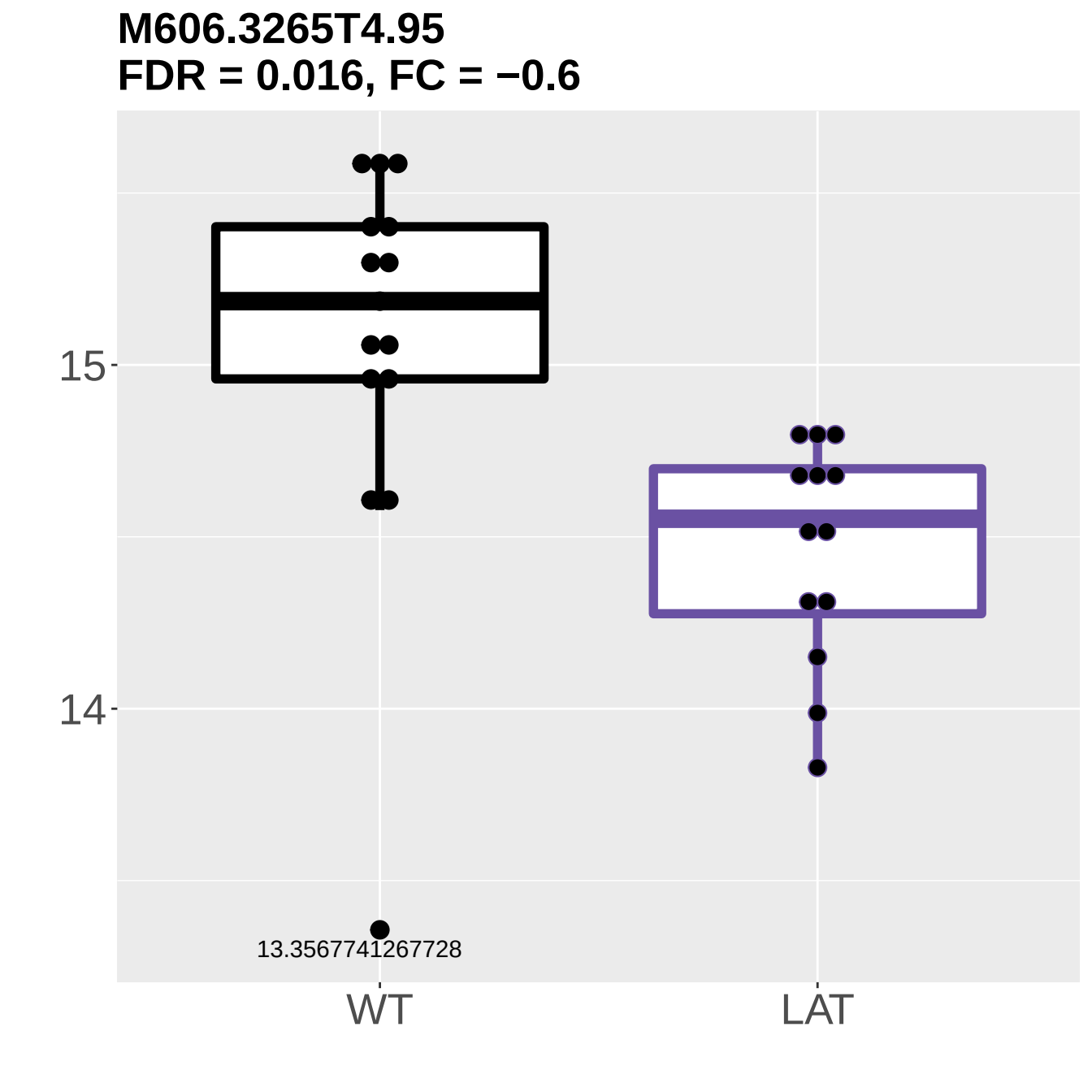
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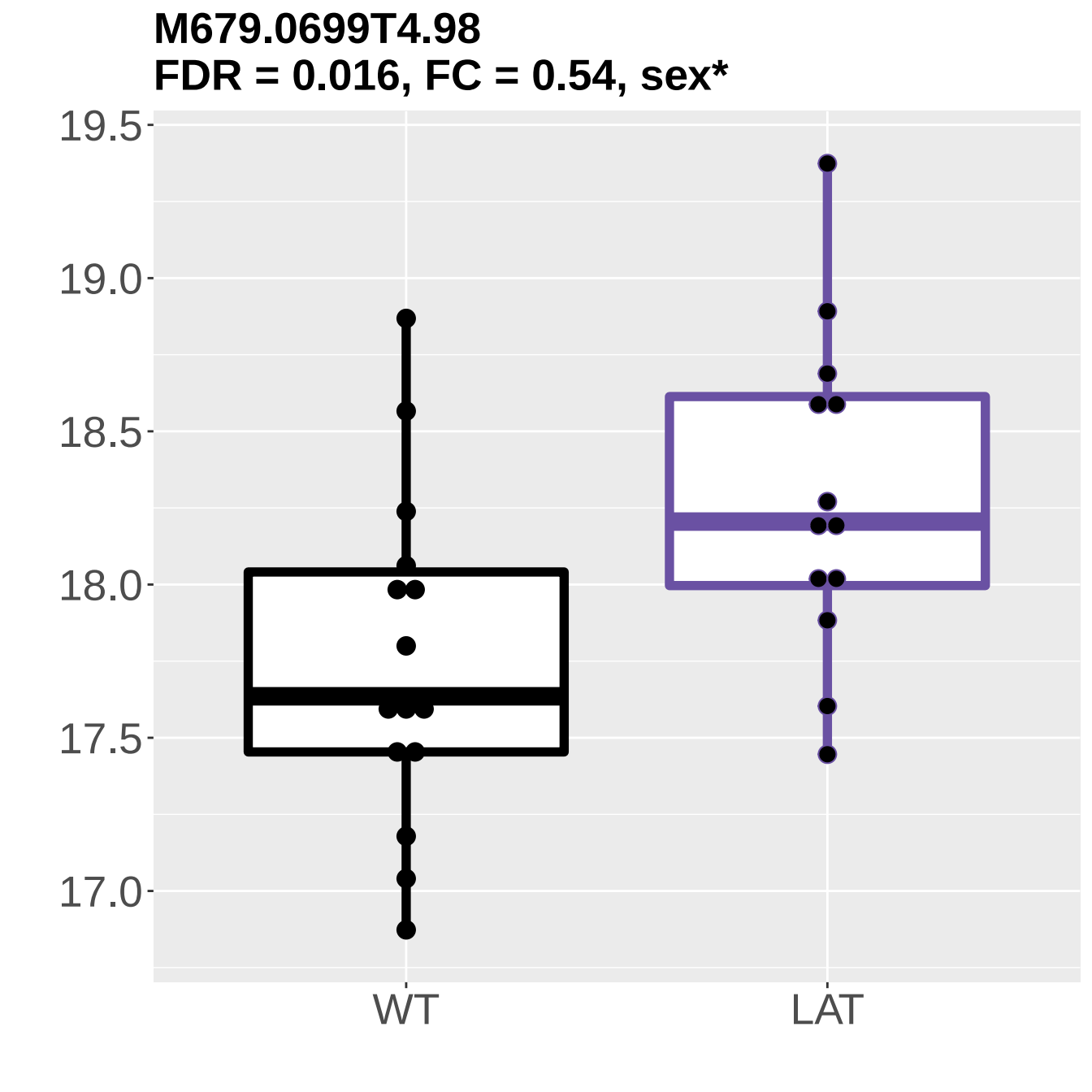
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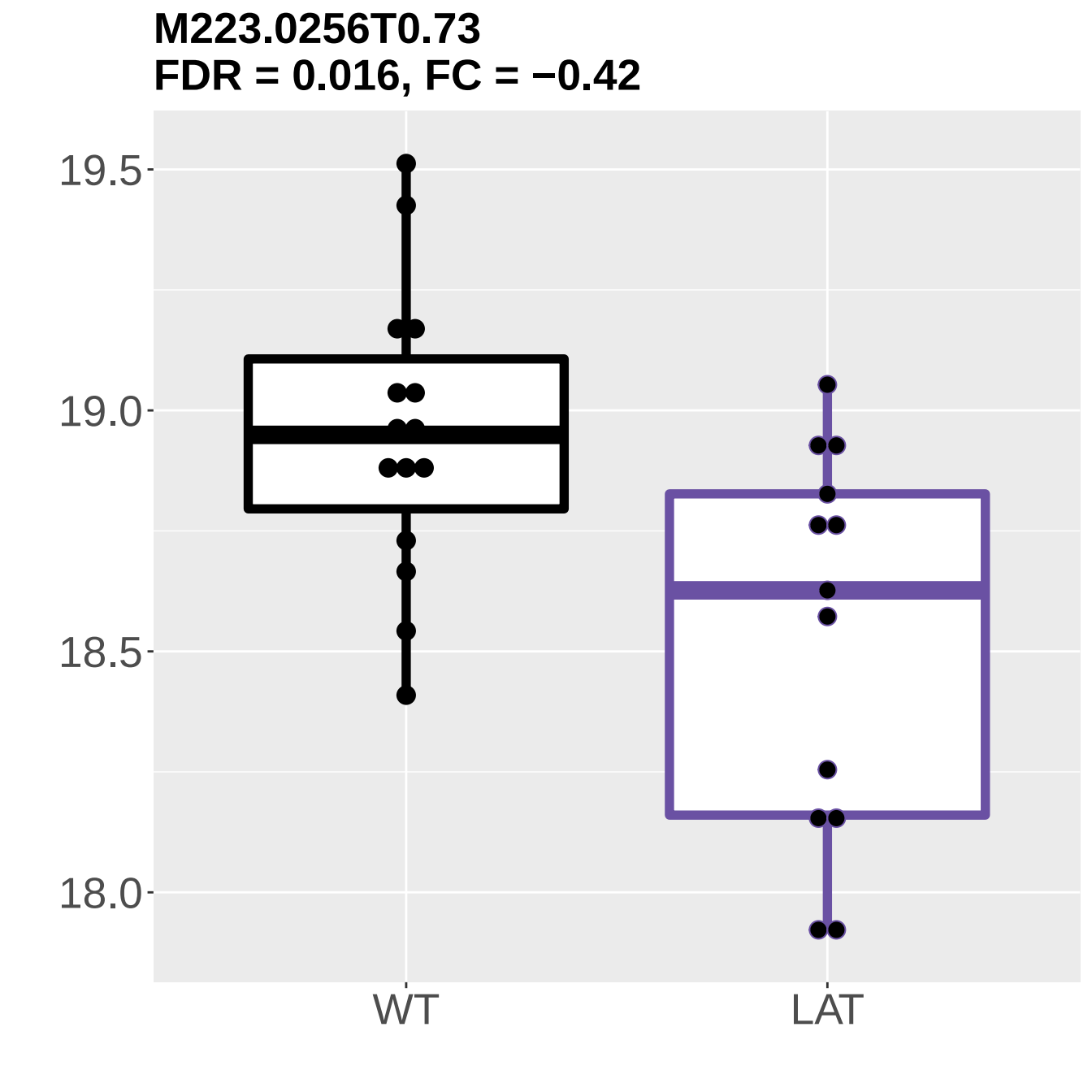
WT
LAT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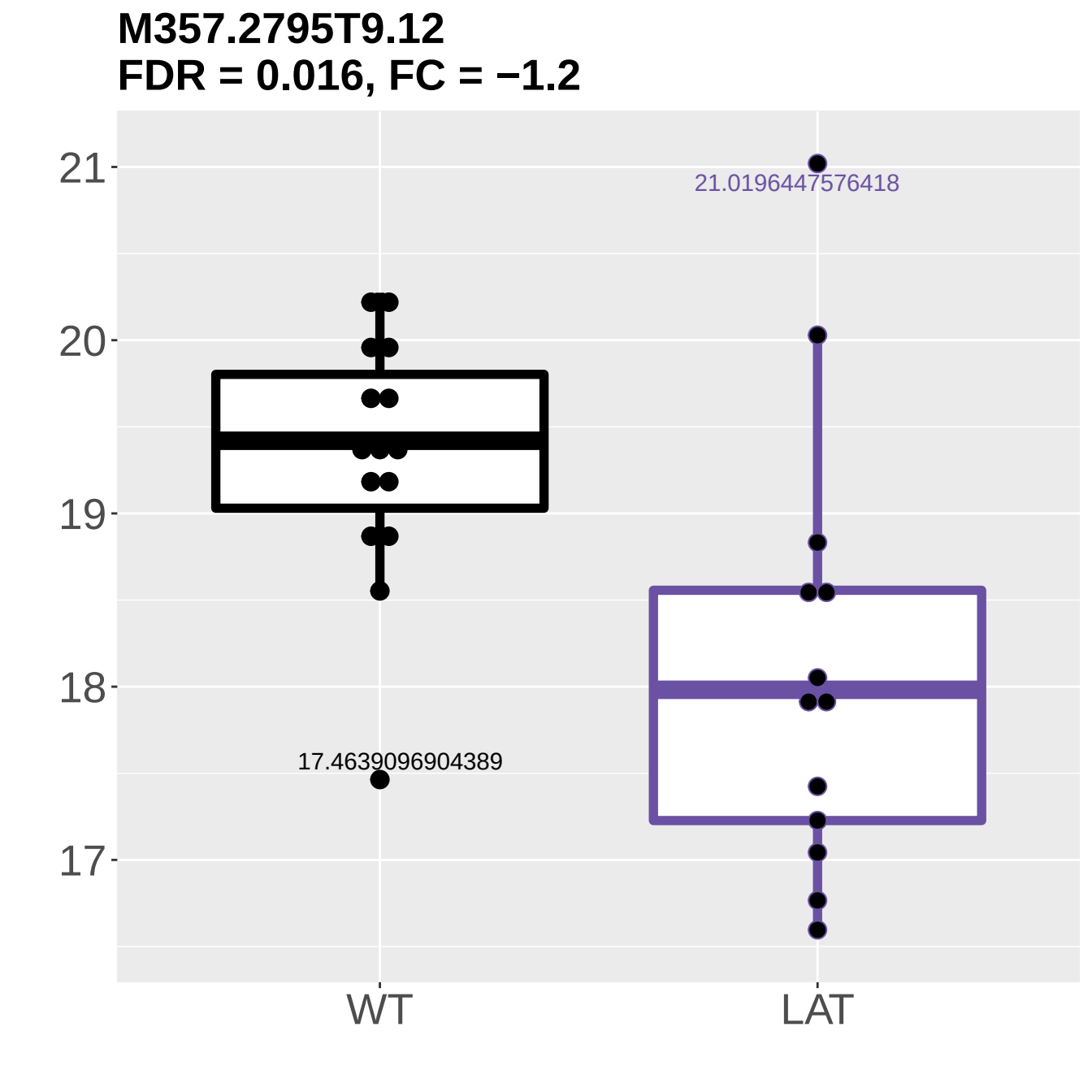
M357.2795T9.12
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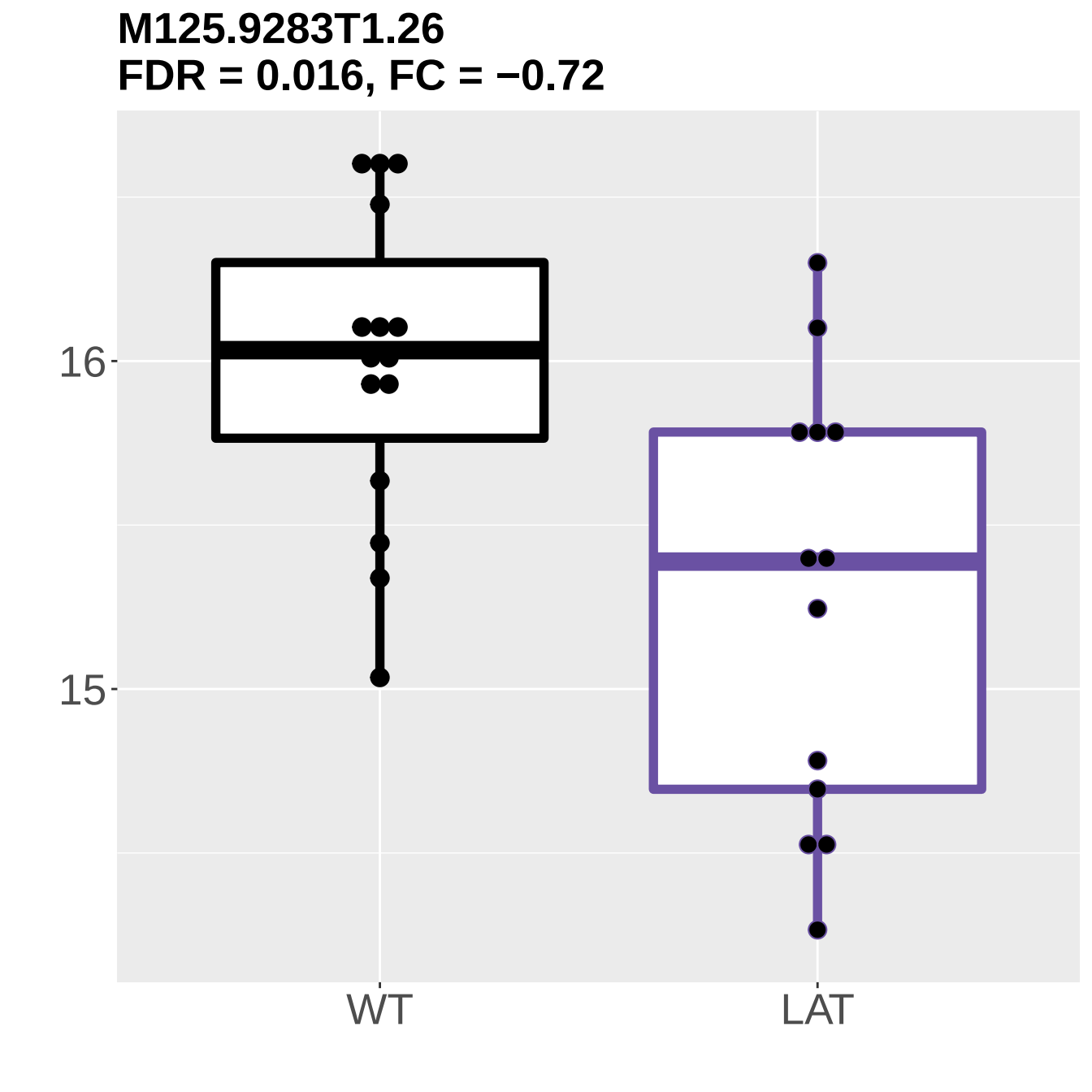
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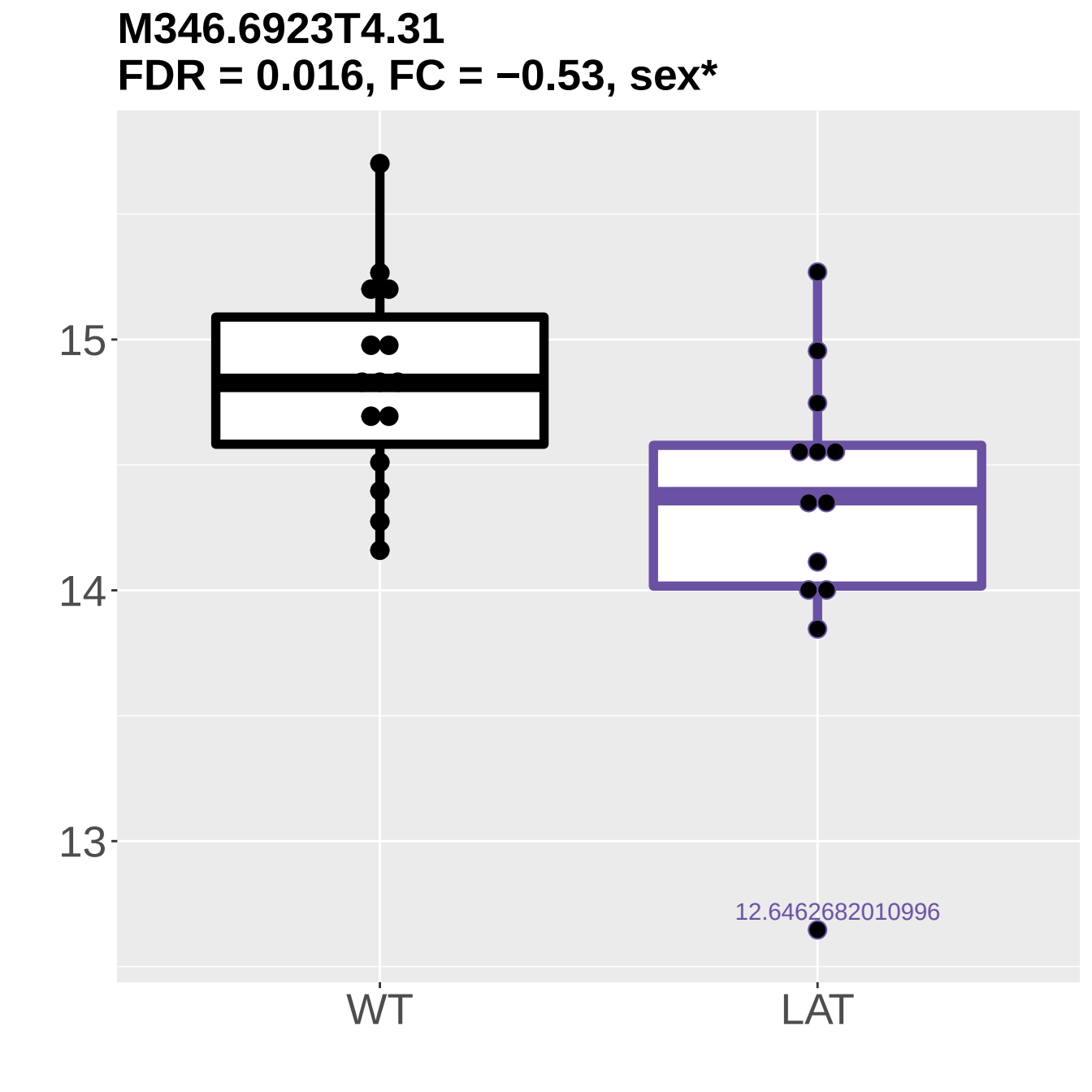
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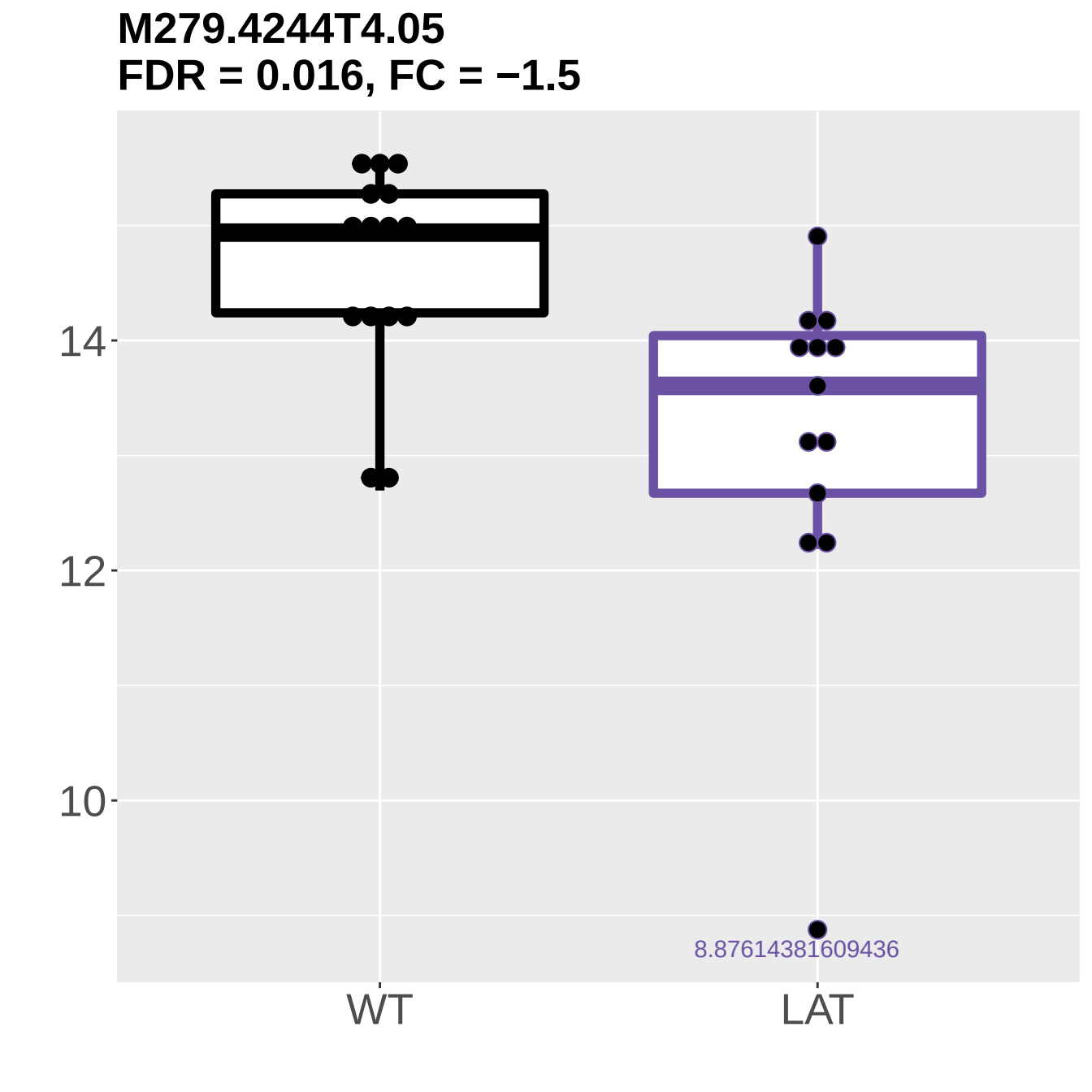
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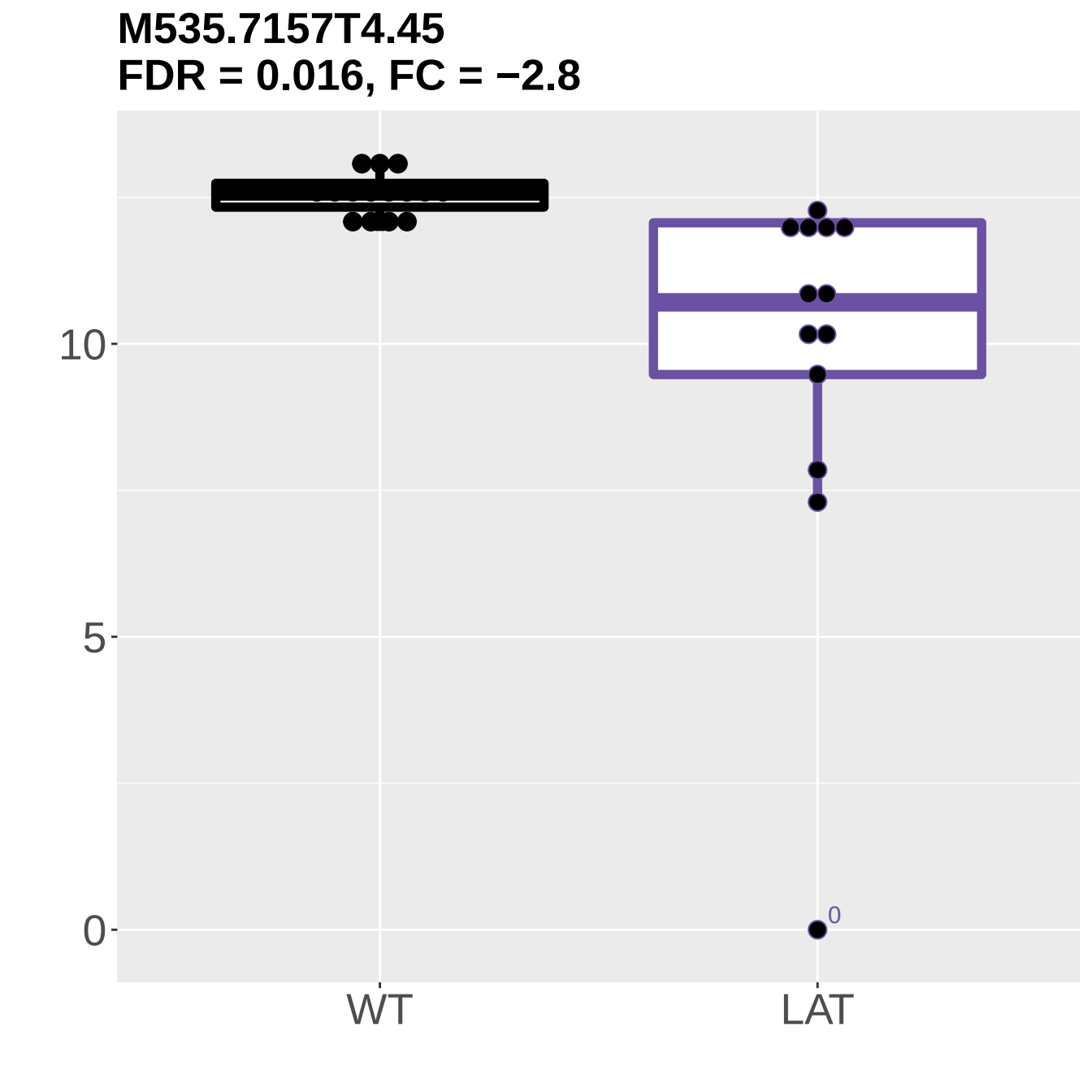
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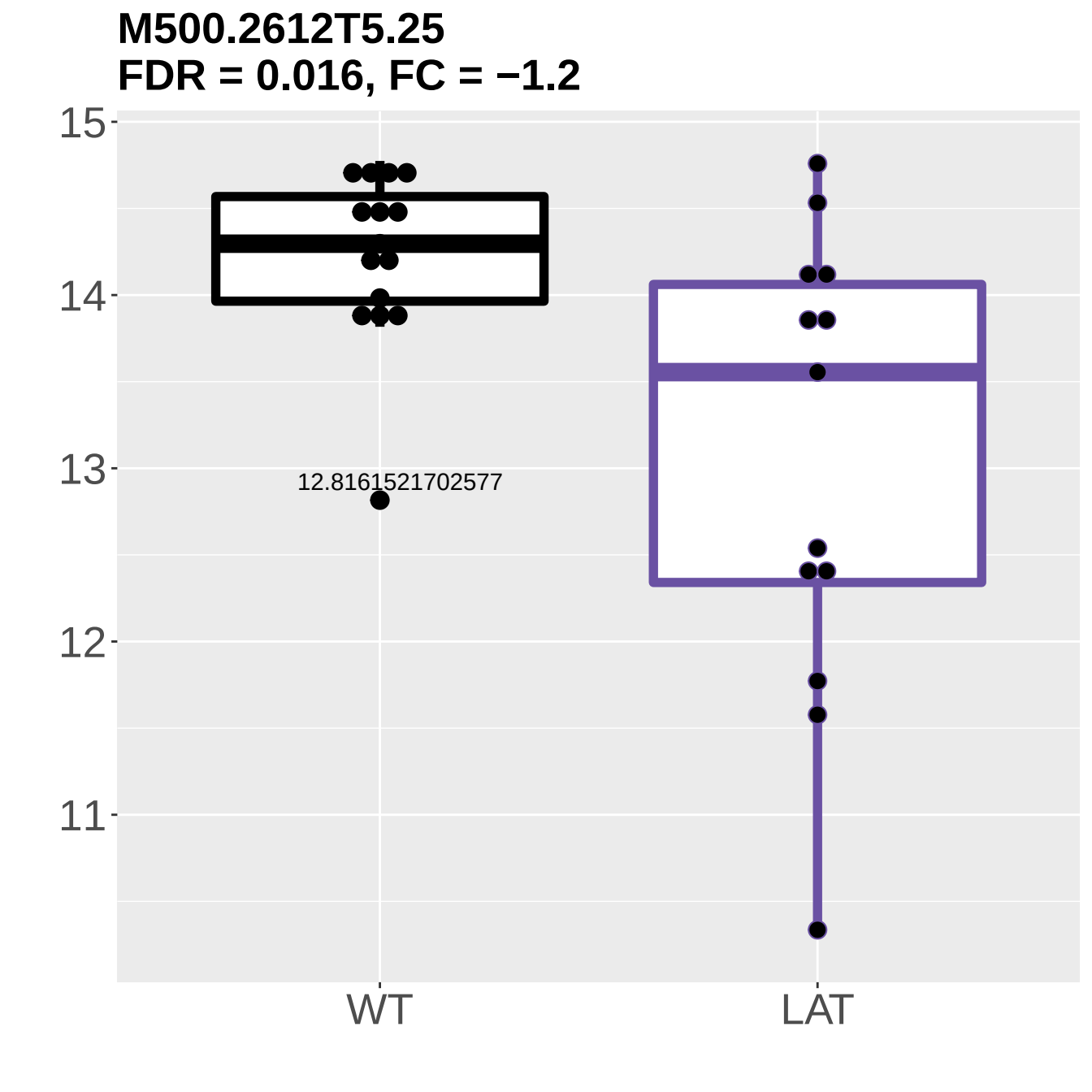
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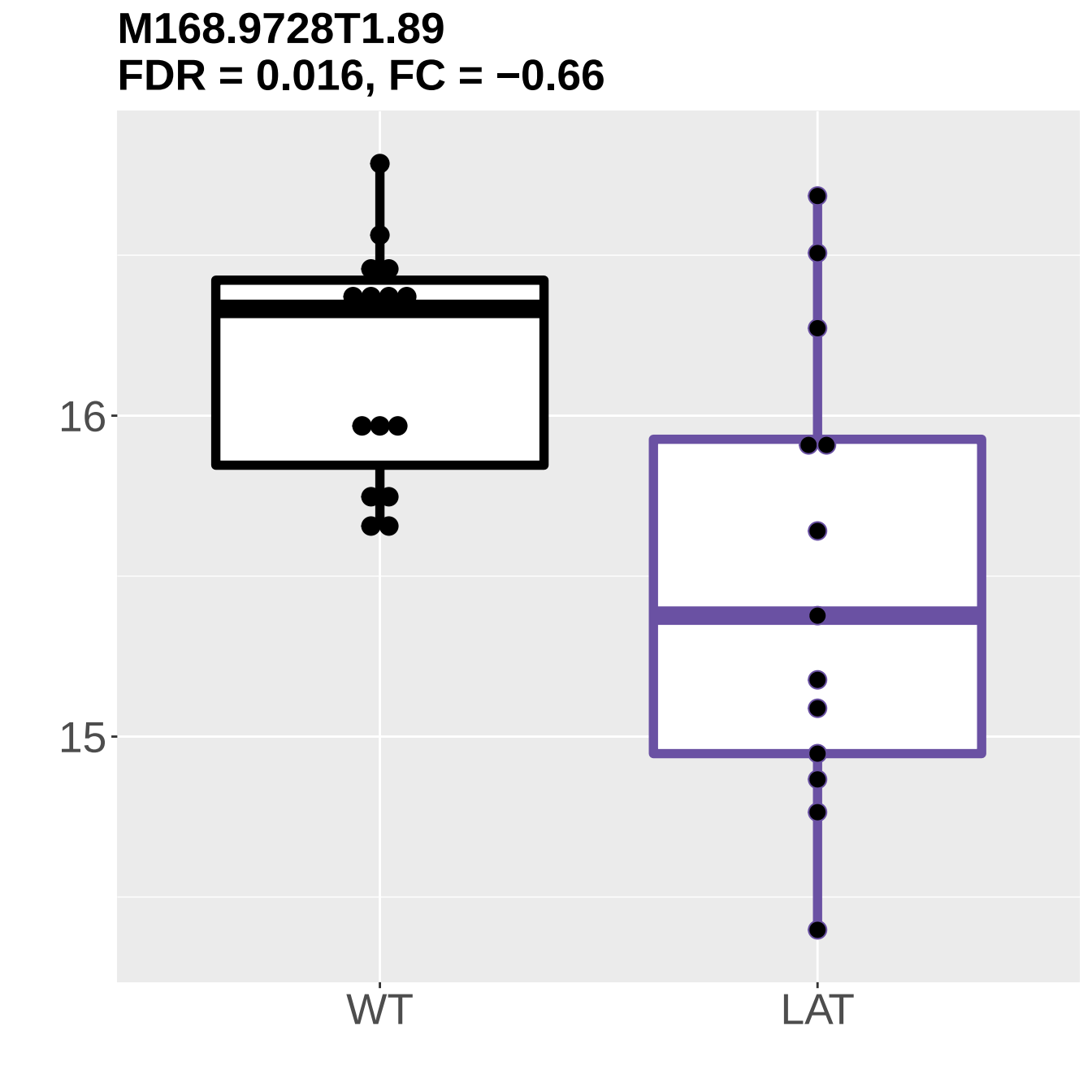
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WT
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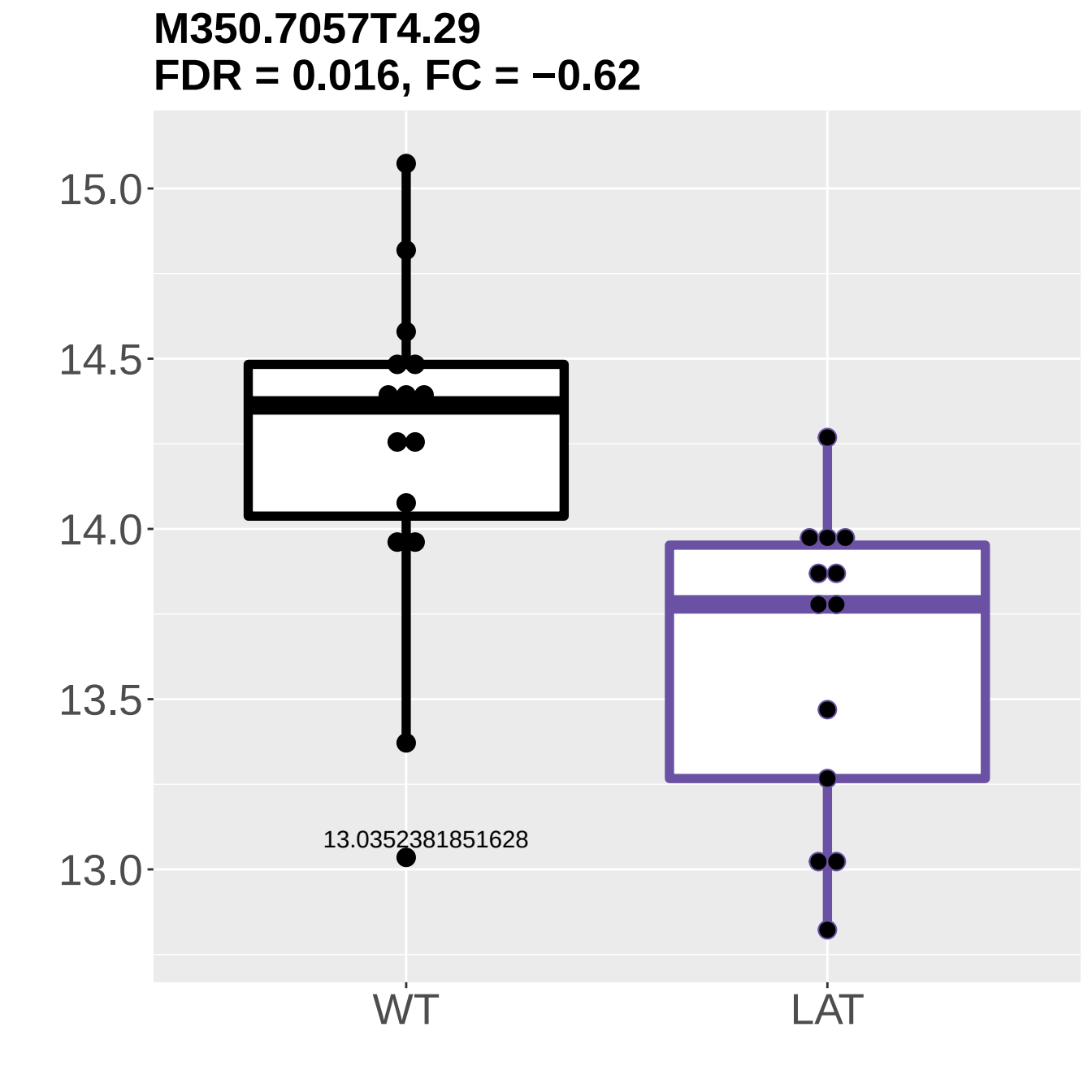
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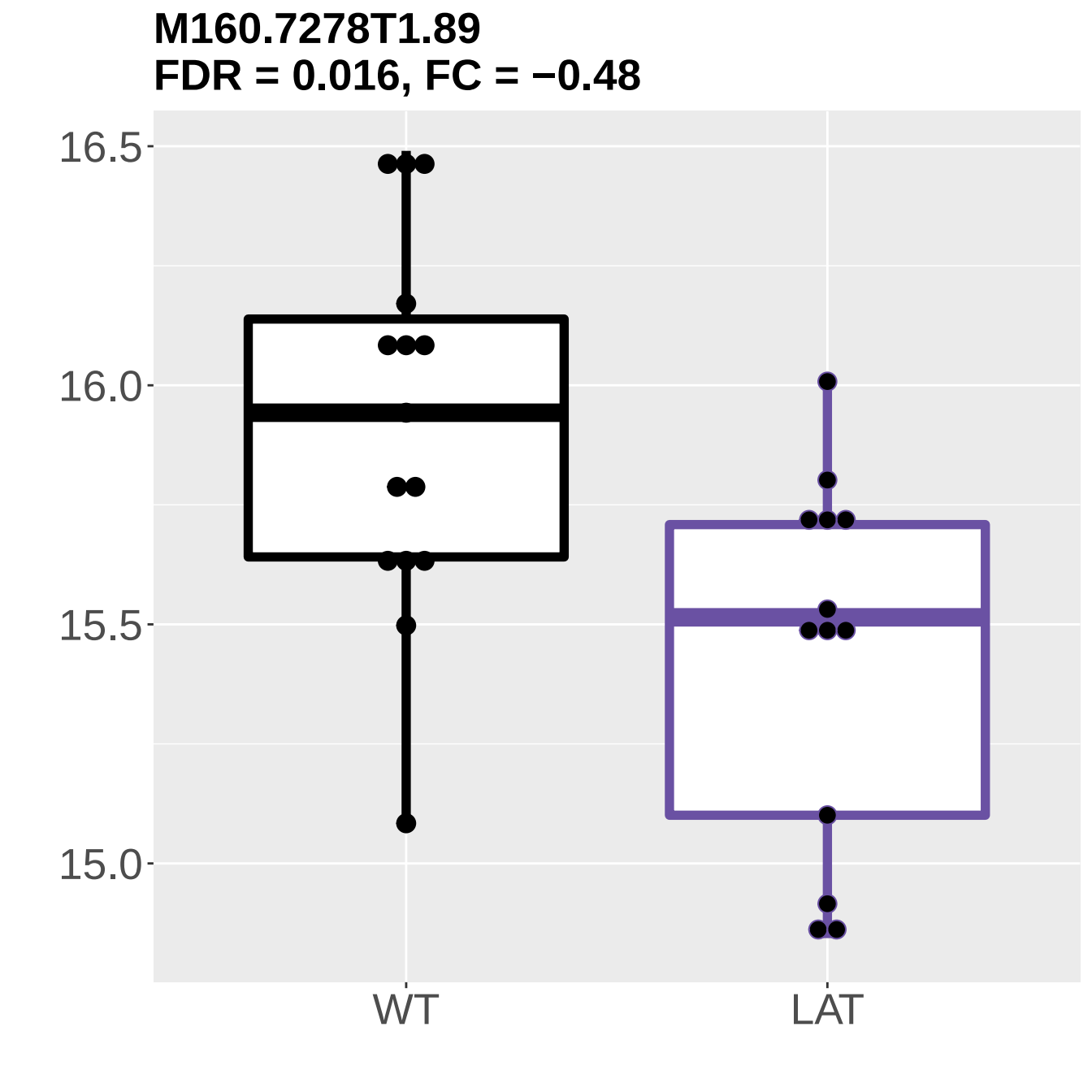
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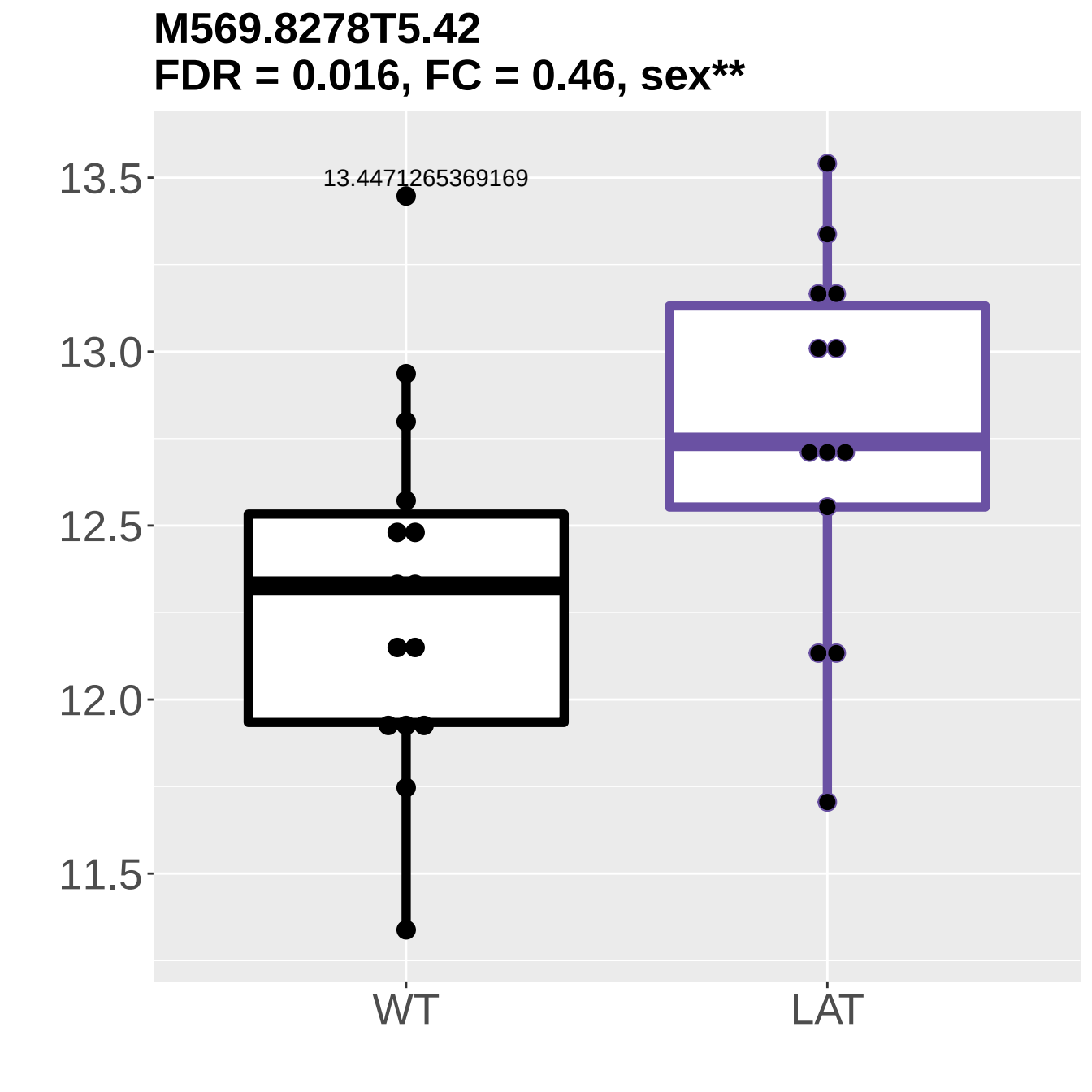
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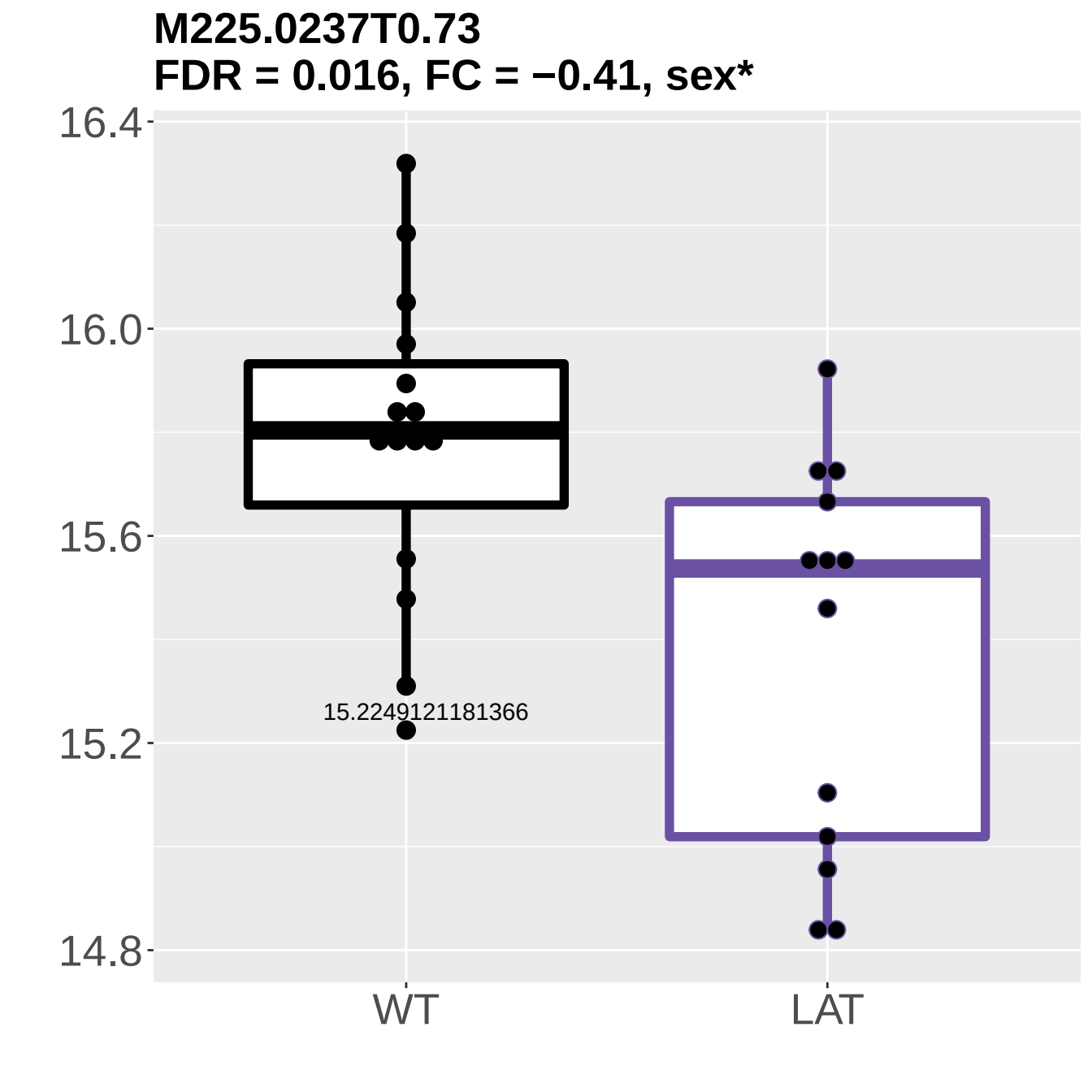
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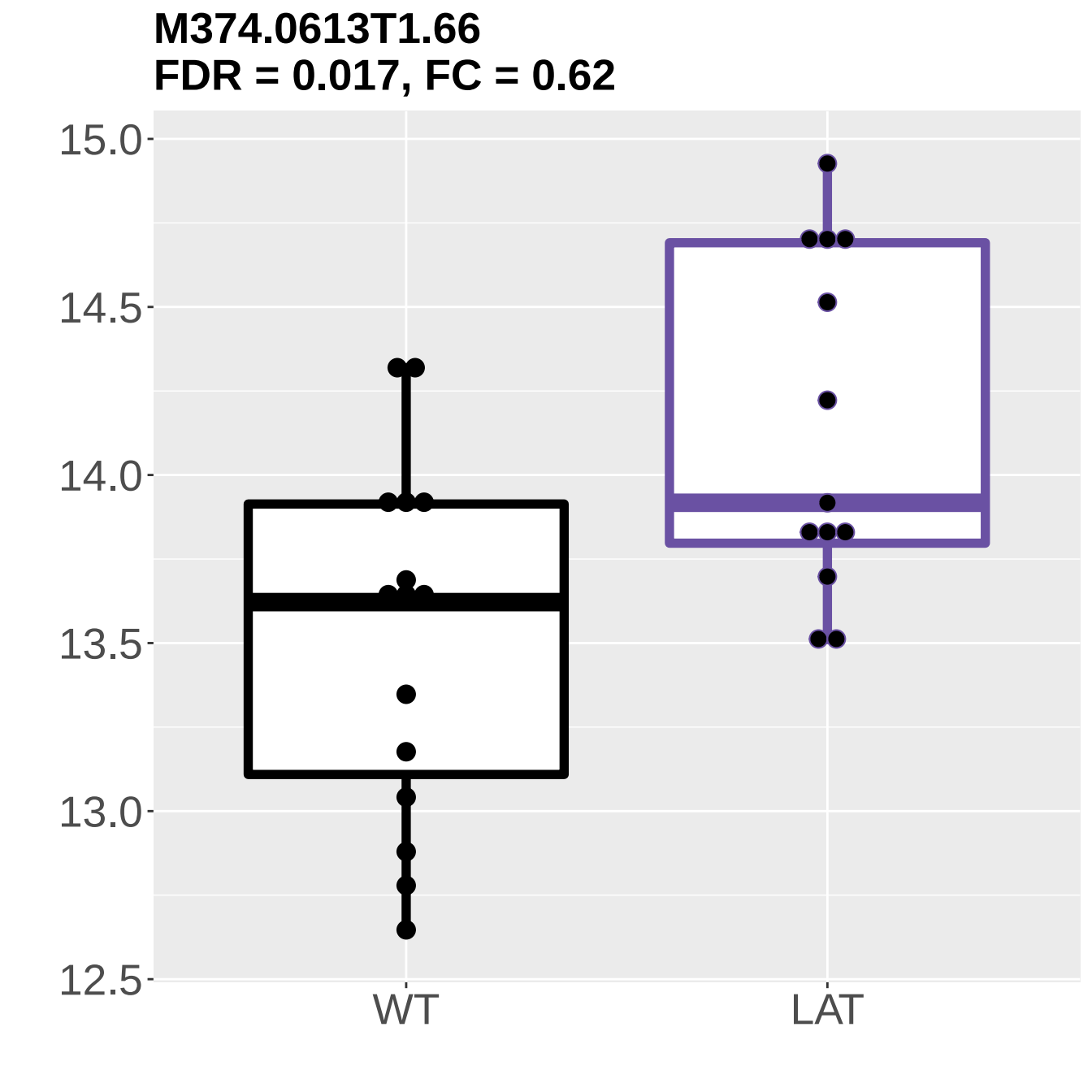
M374.0613T1.66
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13.0
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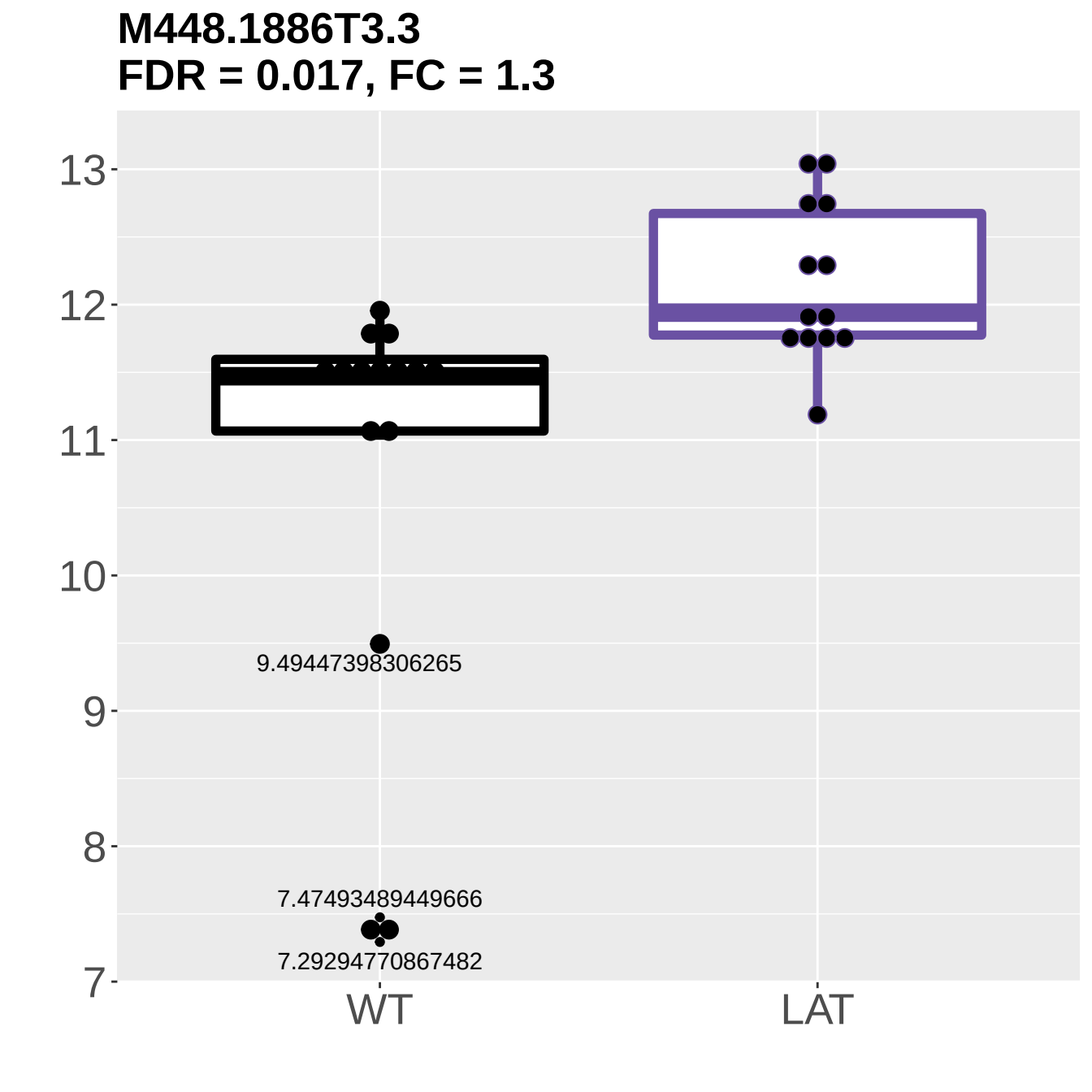
WT
LAT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9
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WT
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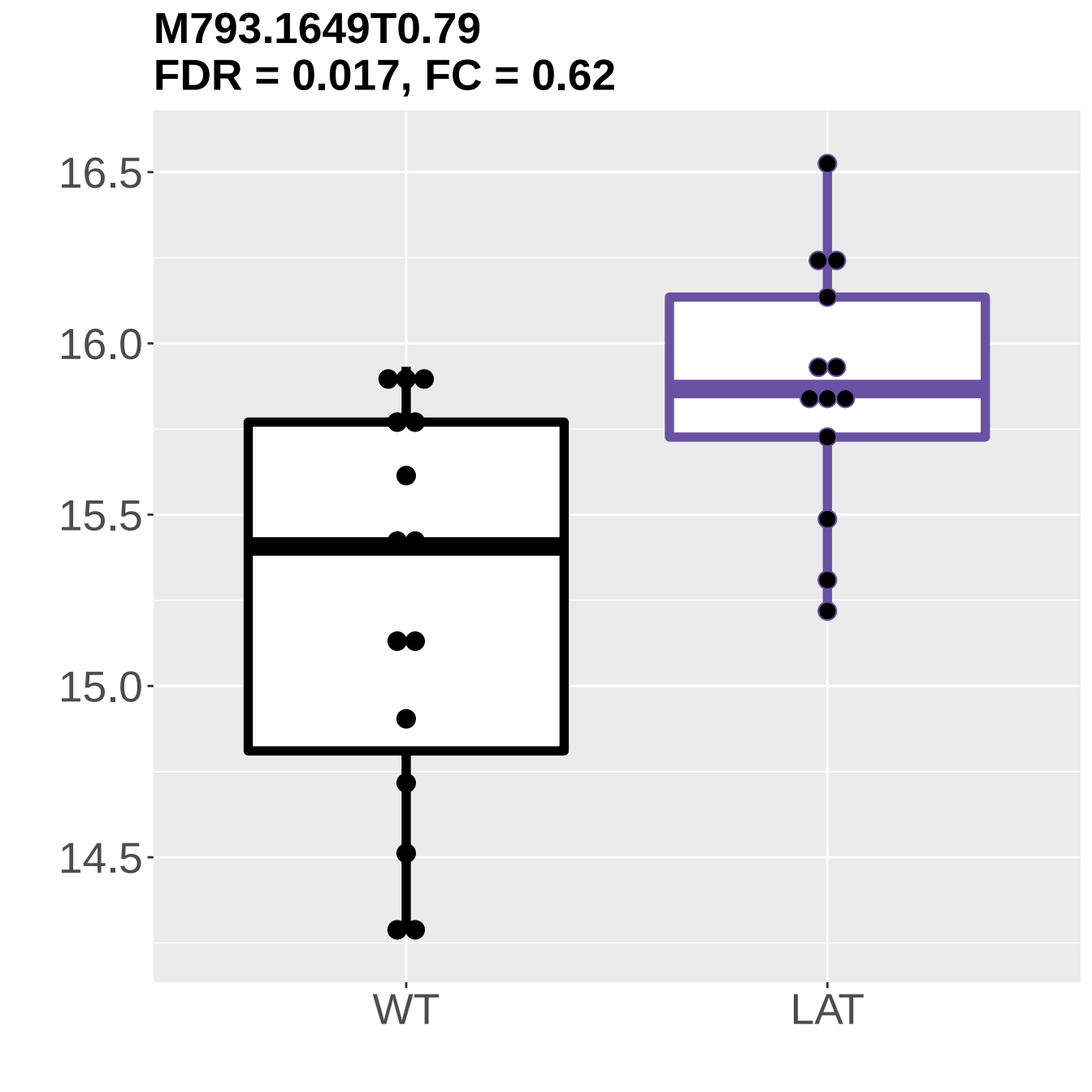
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15.0
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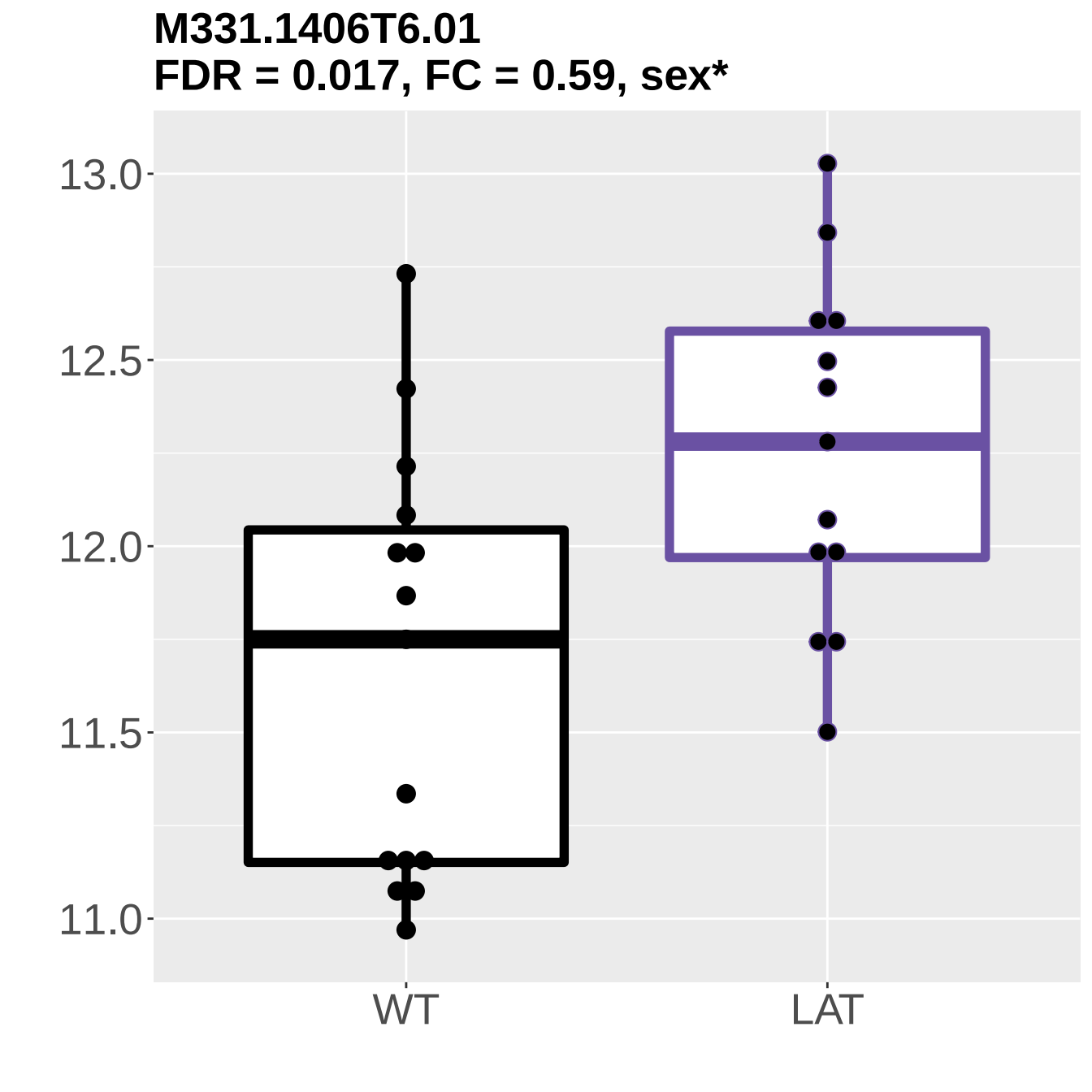
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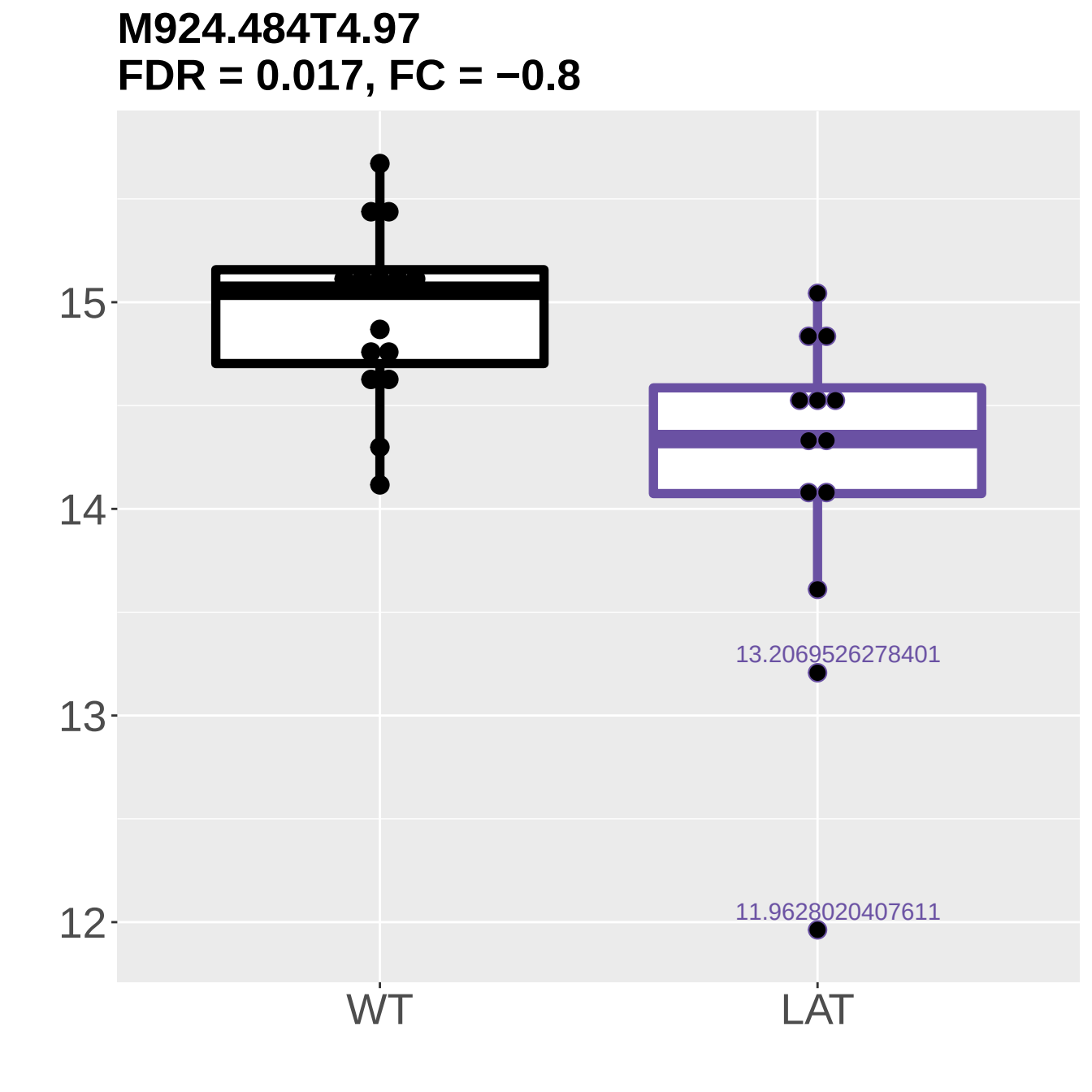
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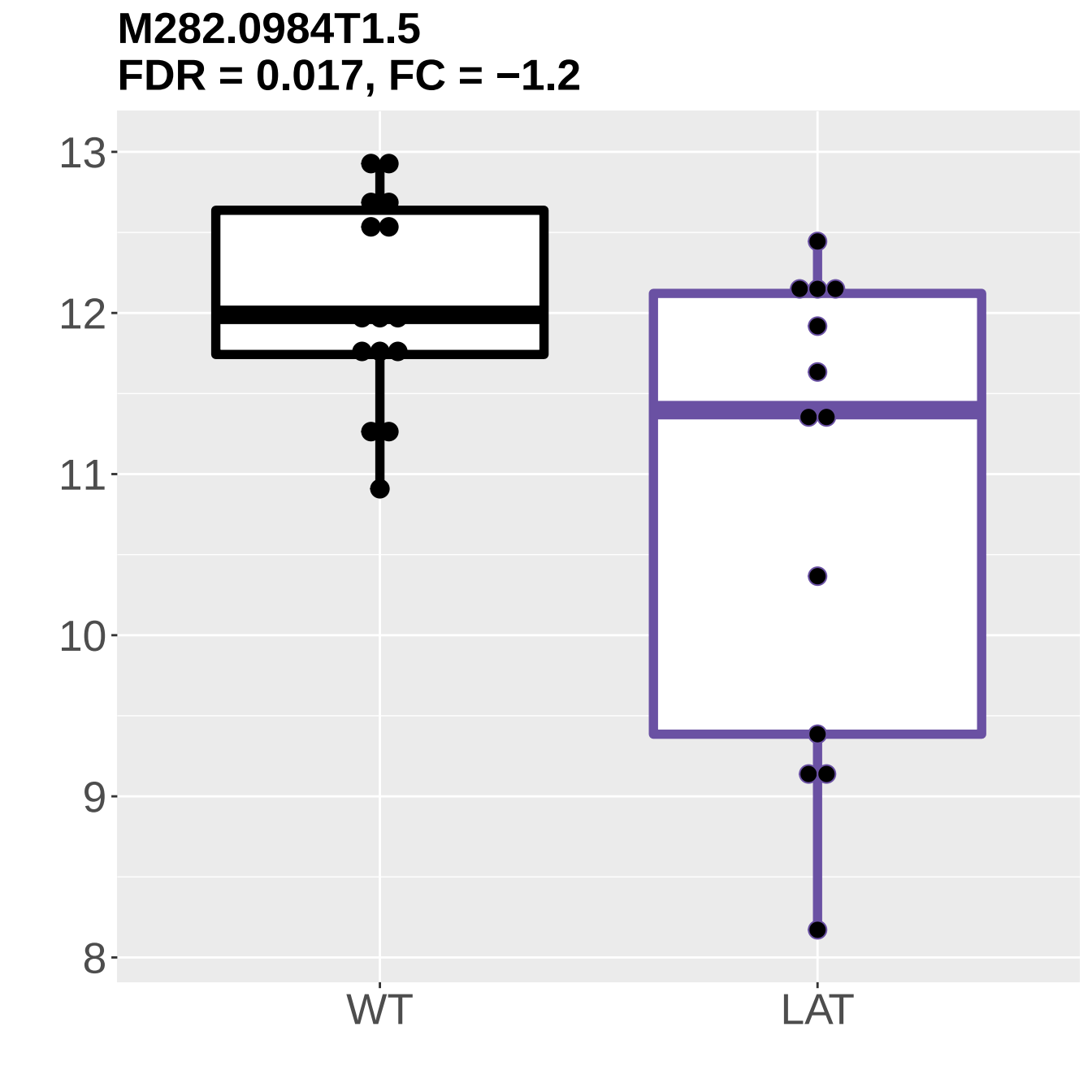
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12
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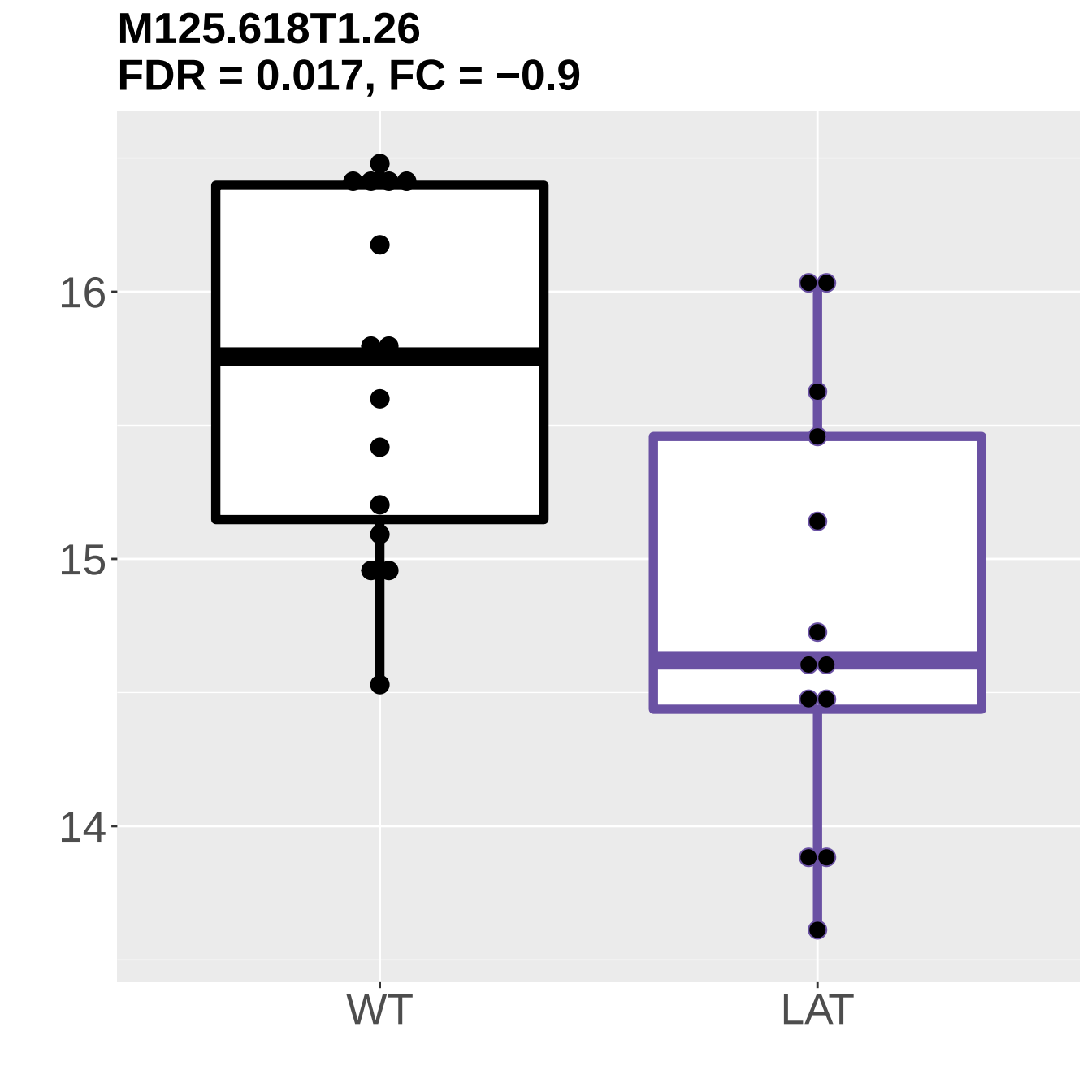
10
9
8
WT
LAT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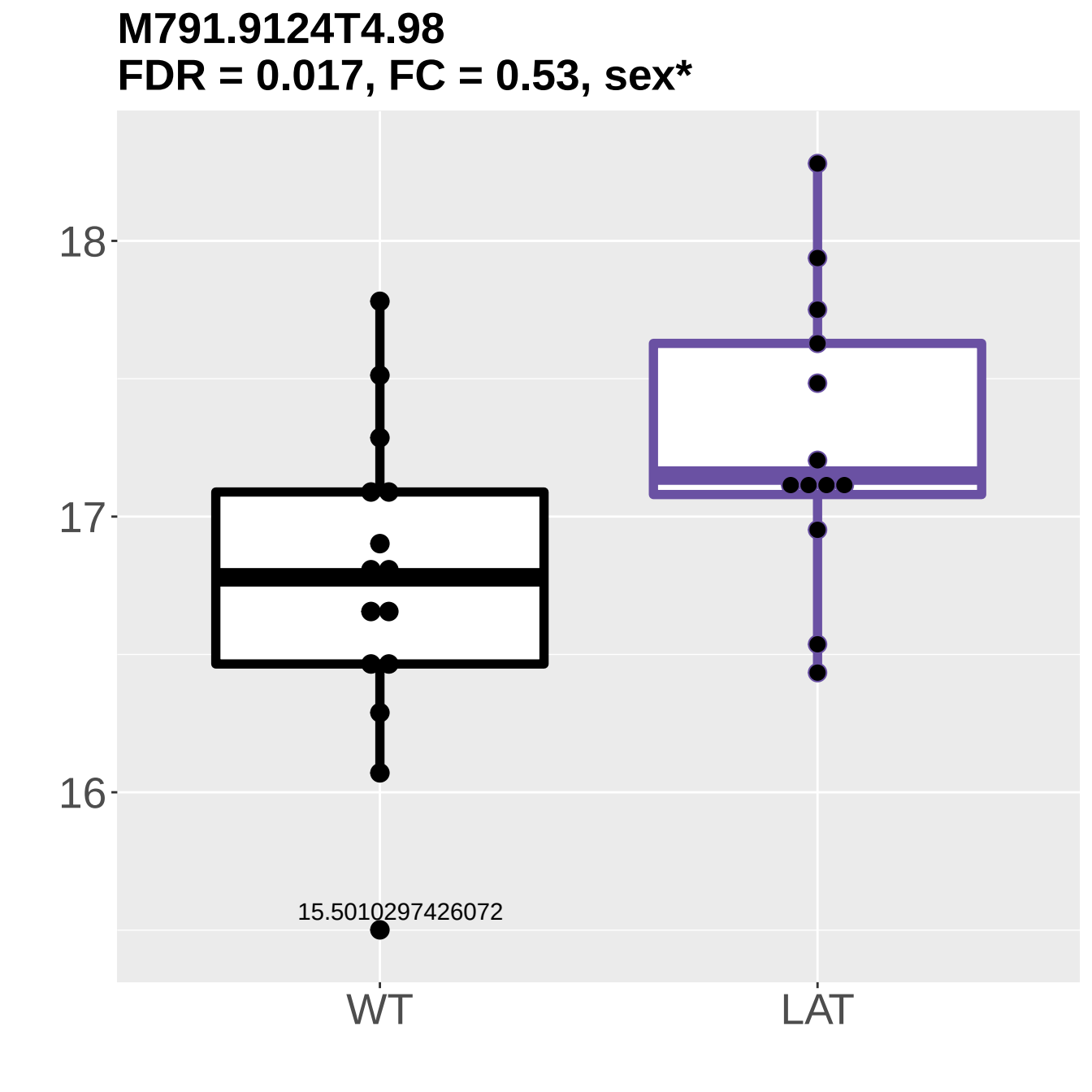
WT
LAT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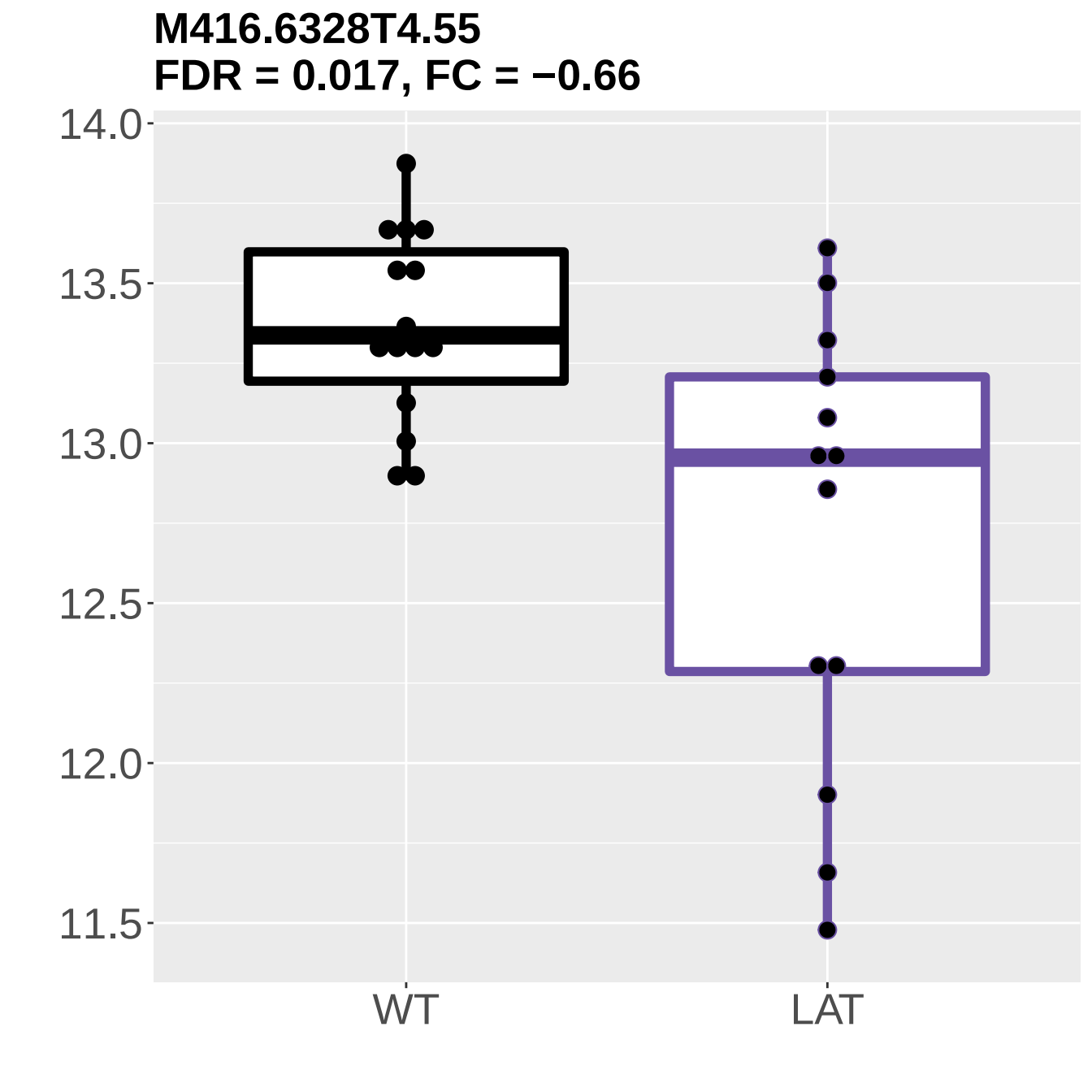
WT
LAT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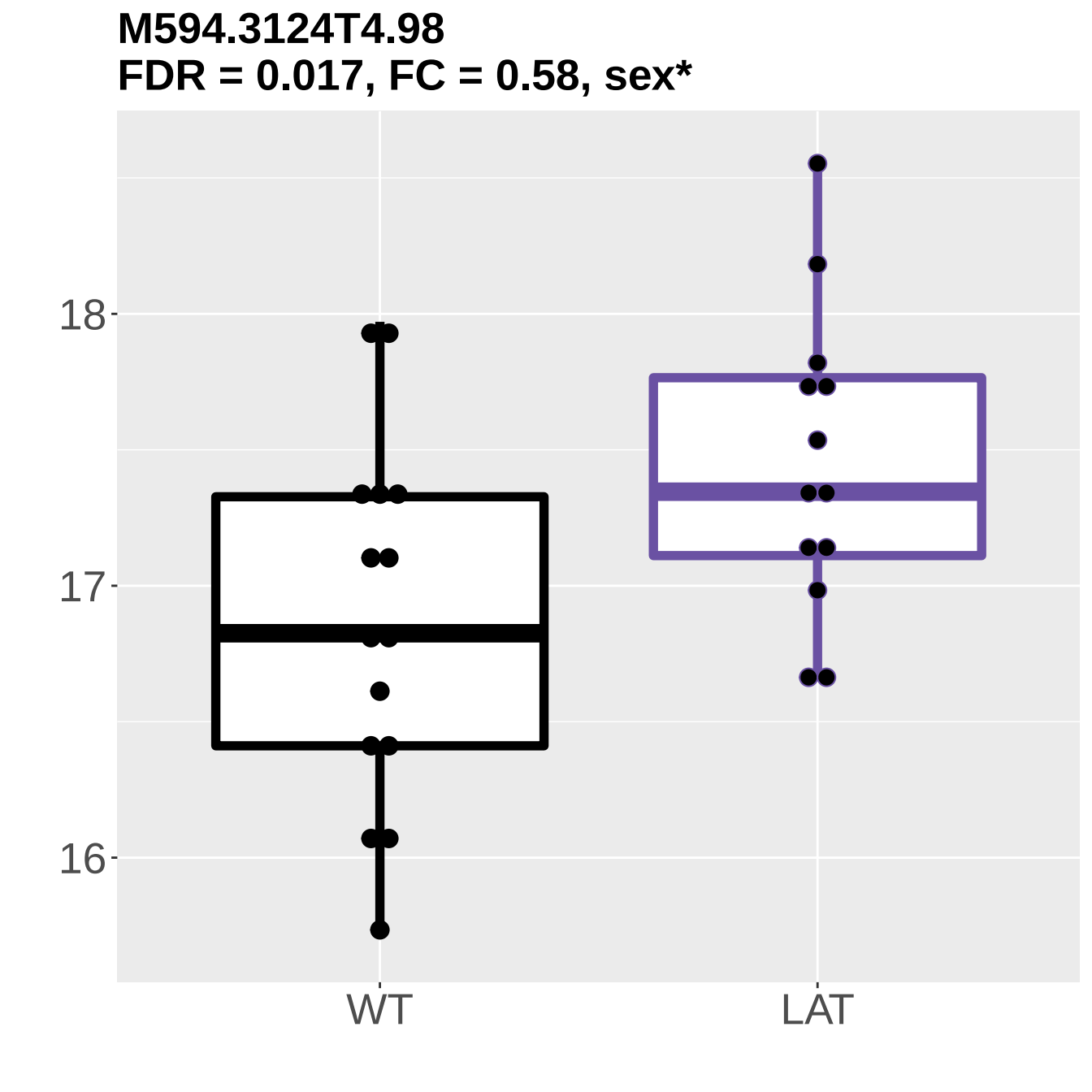
12.0
11.5
WT
LAT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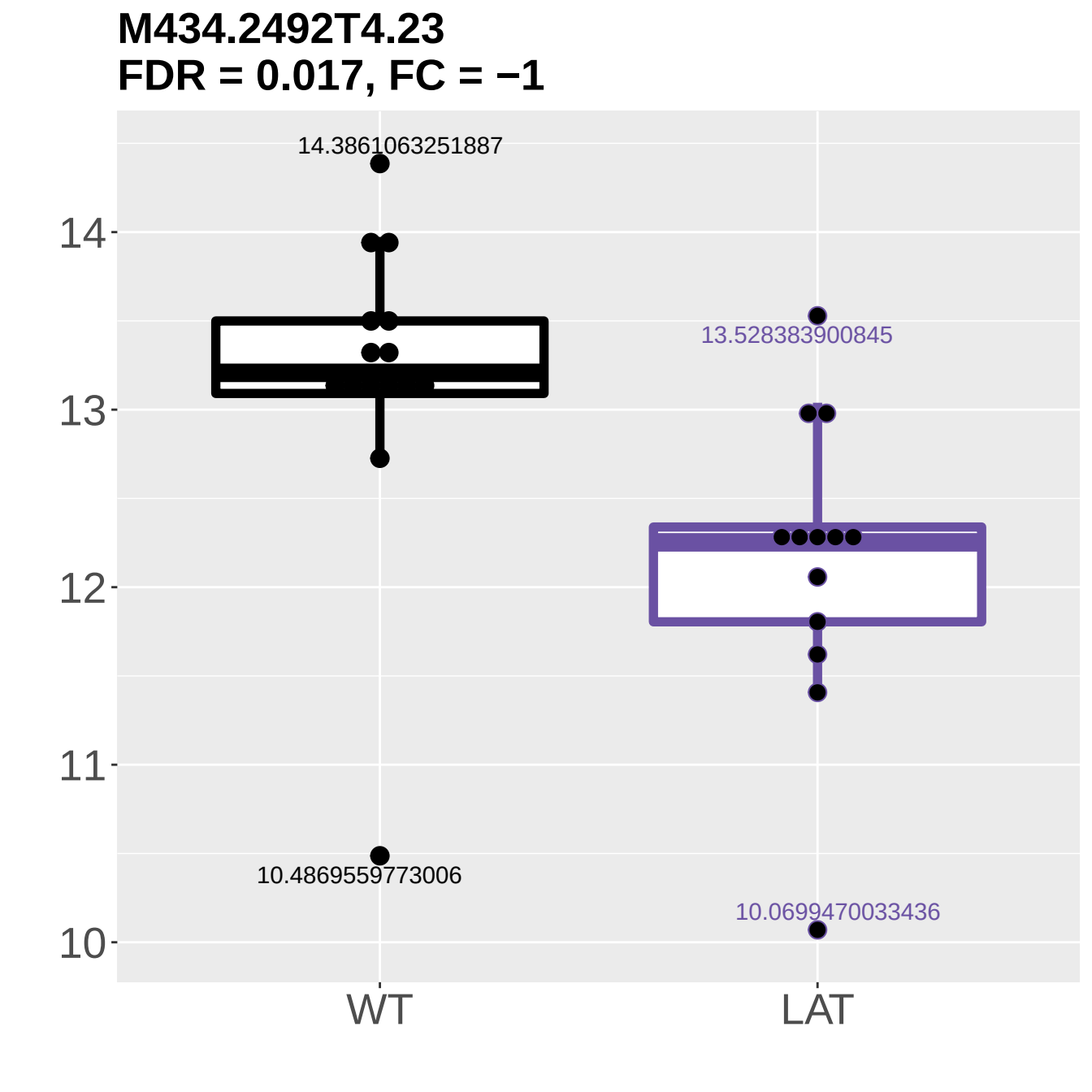
16
WT
LAT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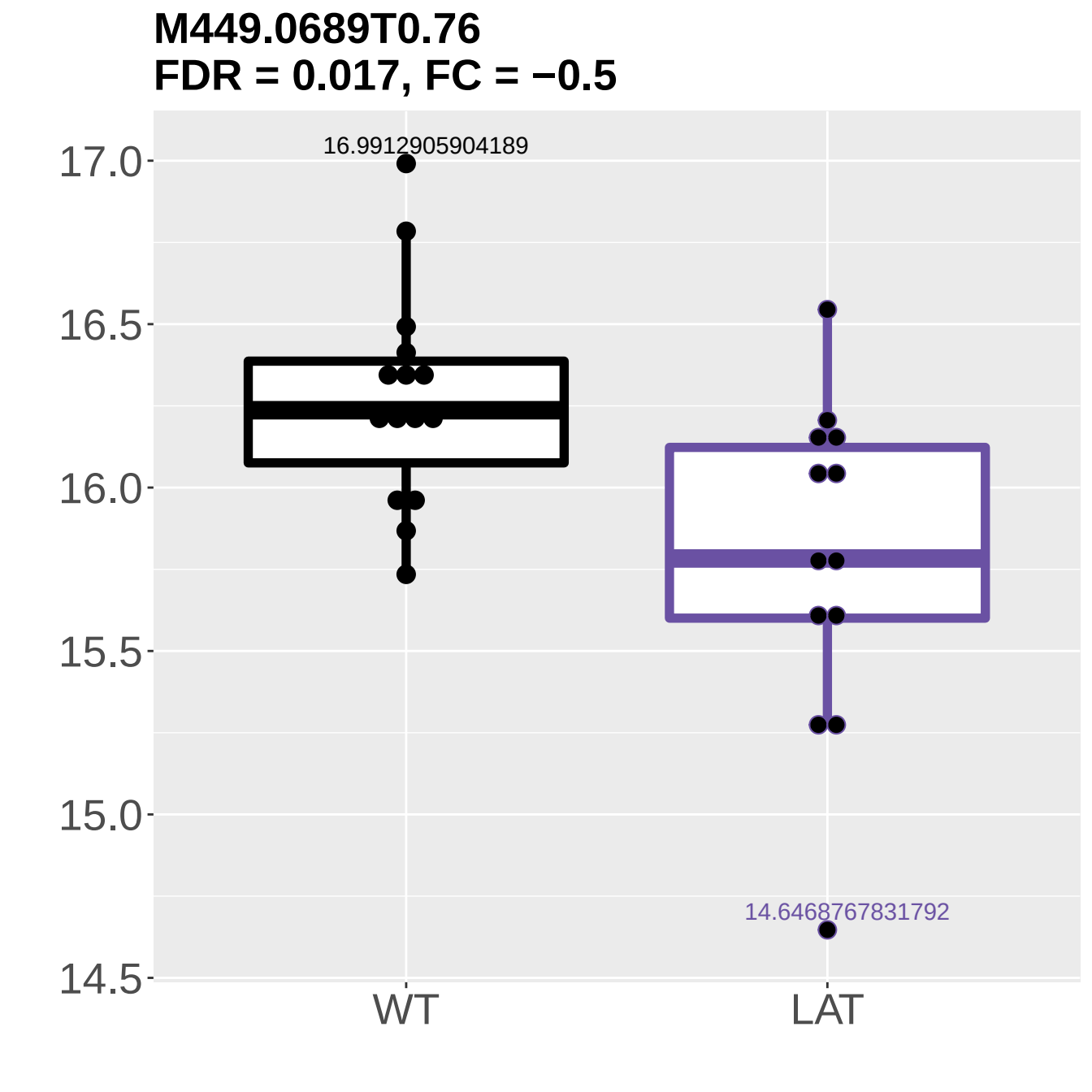
13
12
11
10
WT
LAT


M449.0689T0.76
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WT
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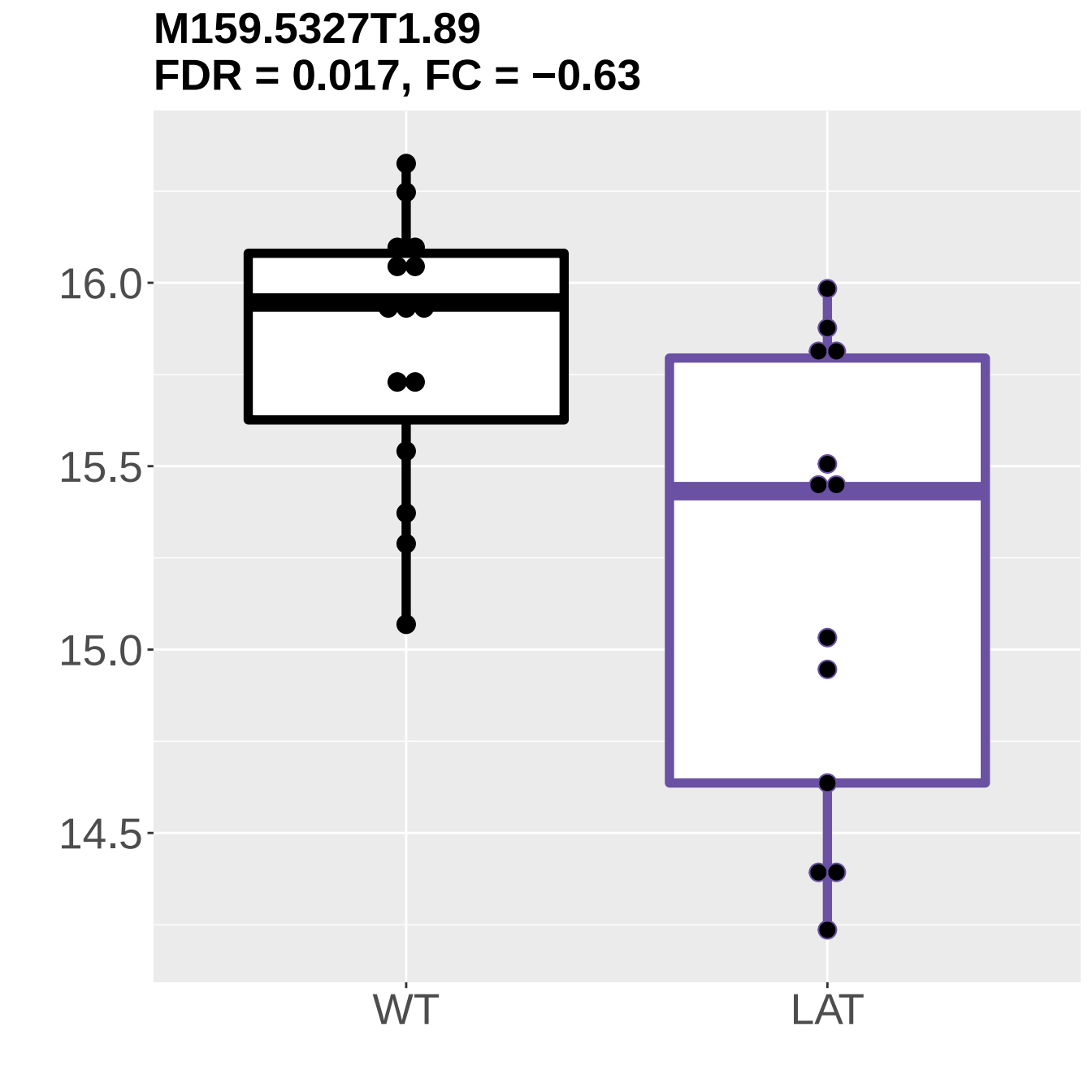
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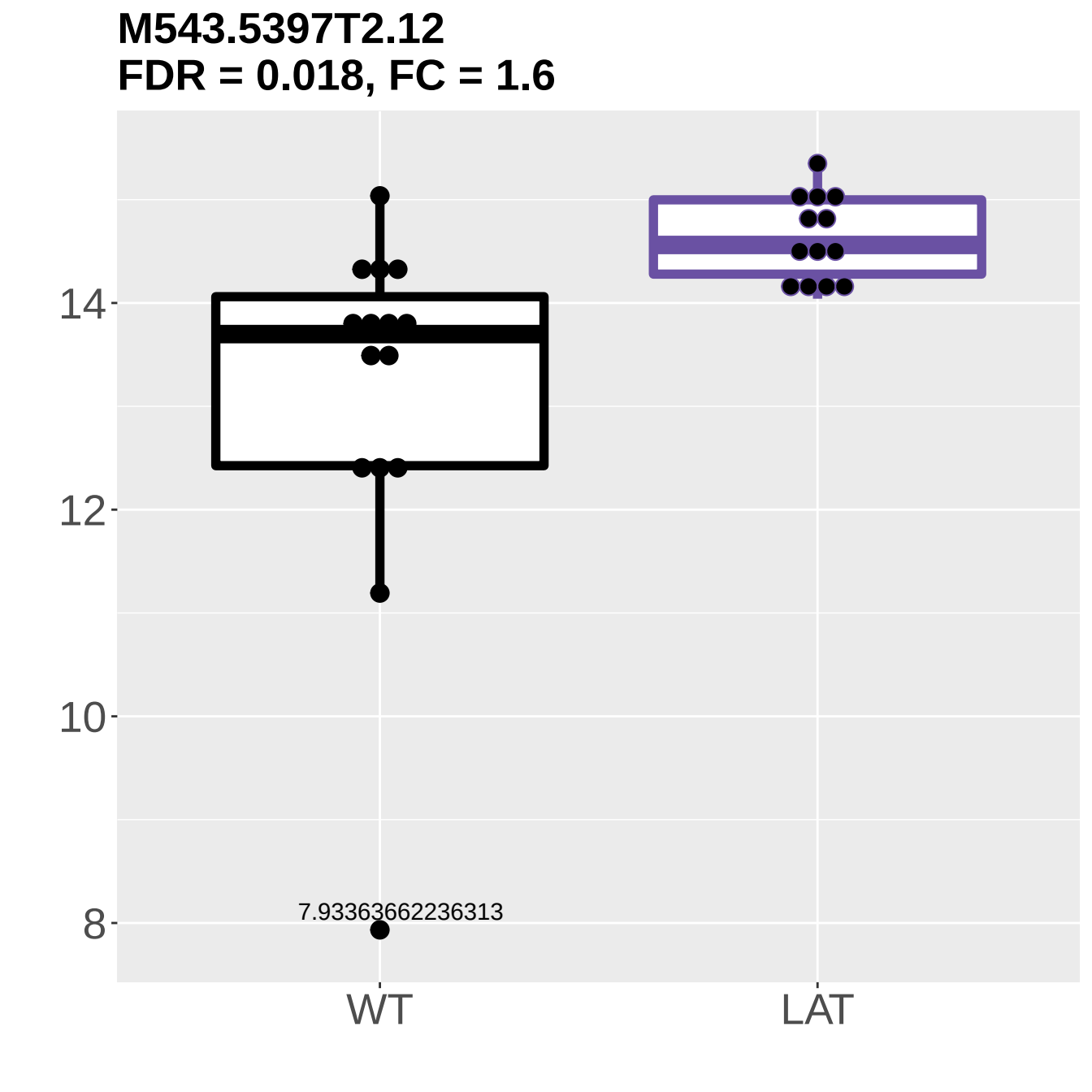
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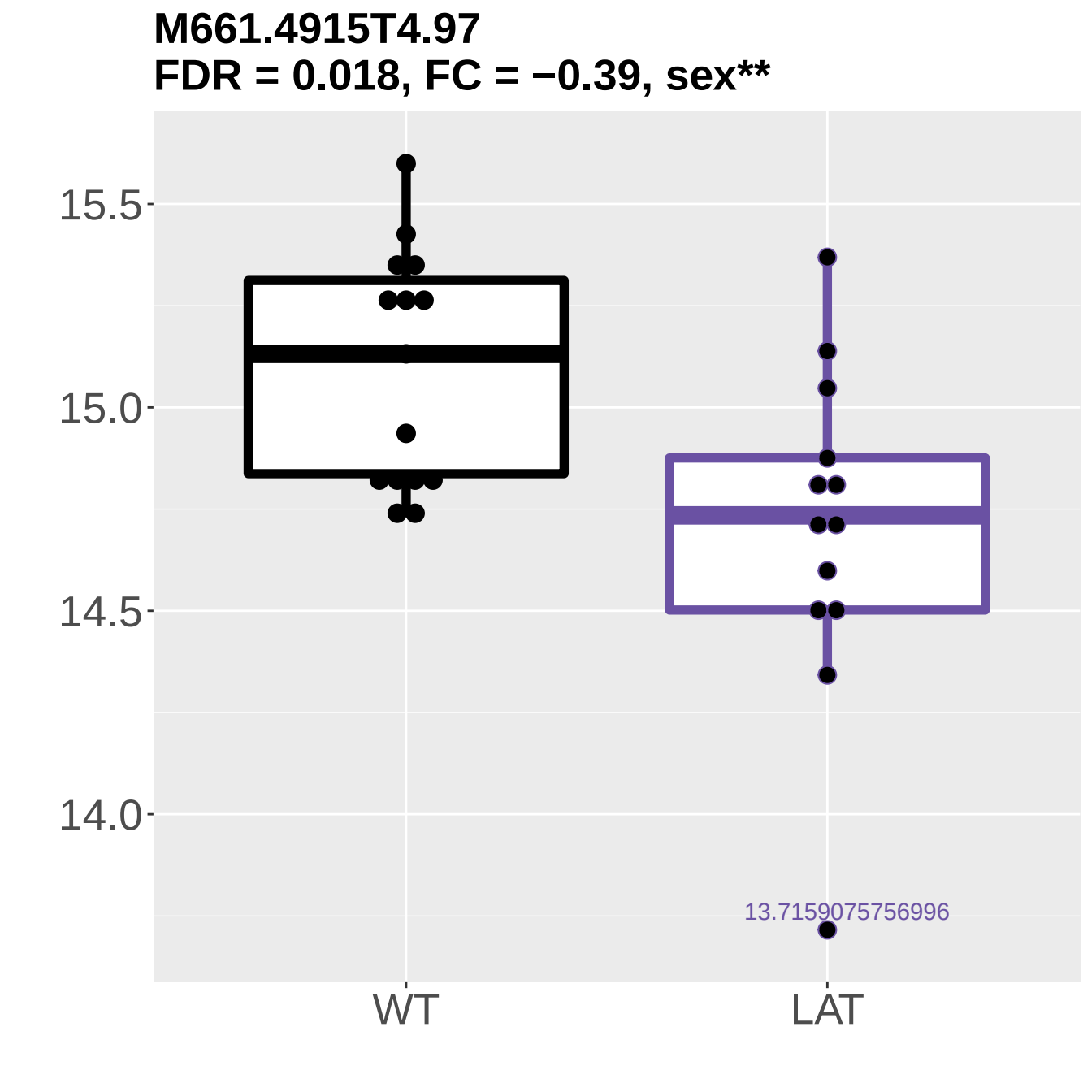
WT
LAT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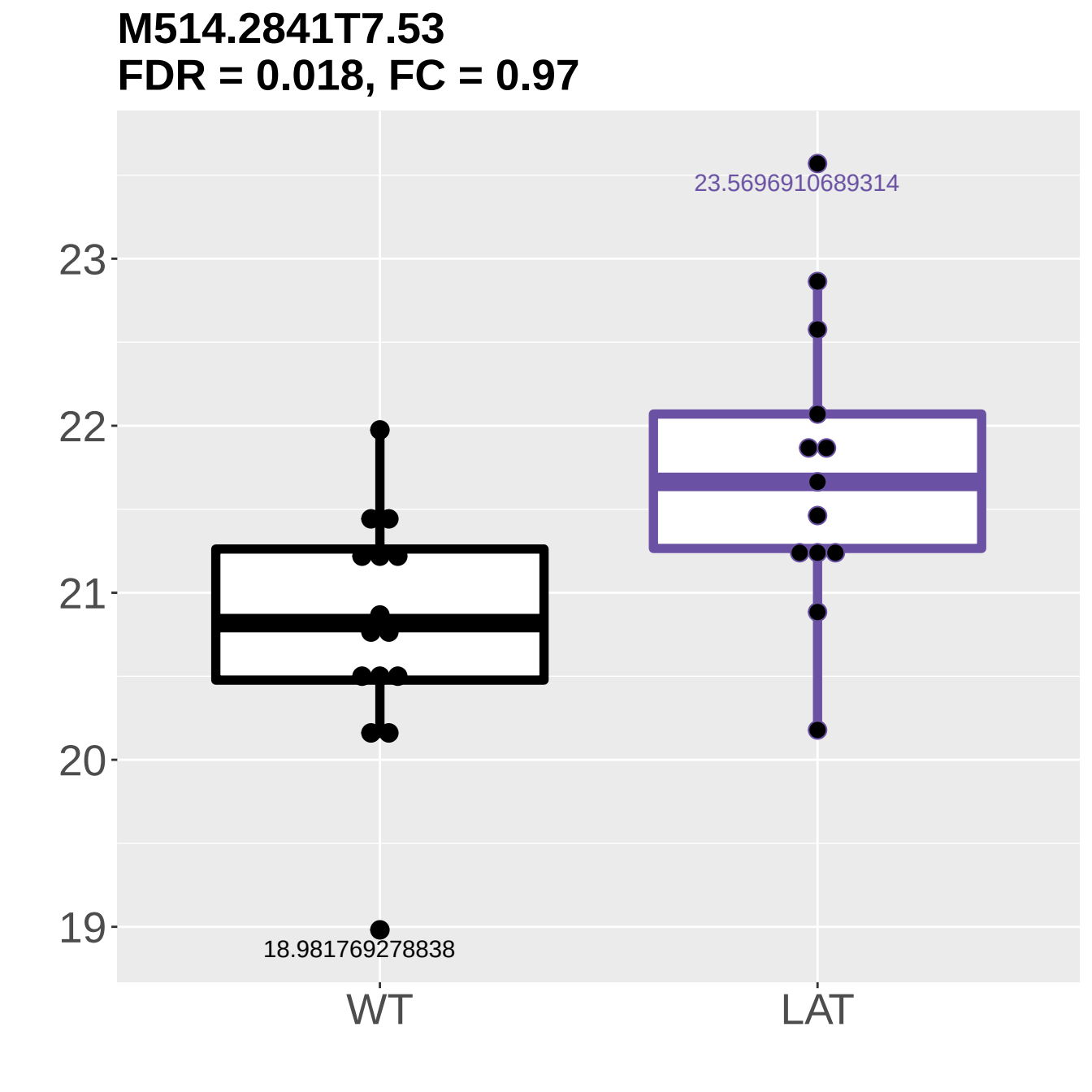
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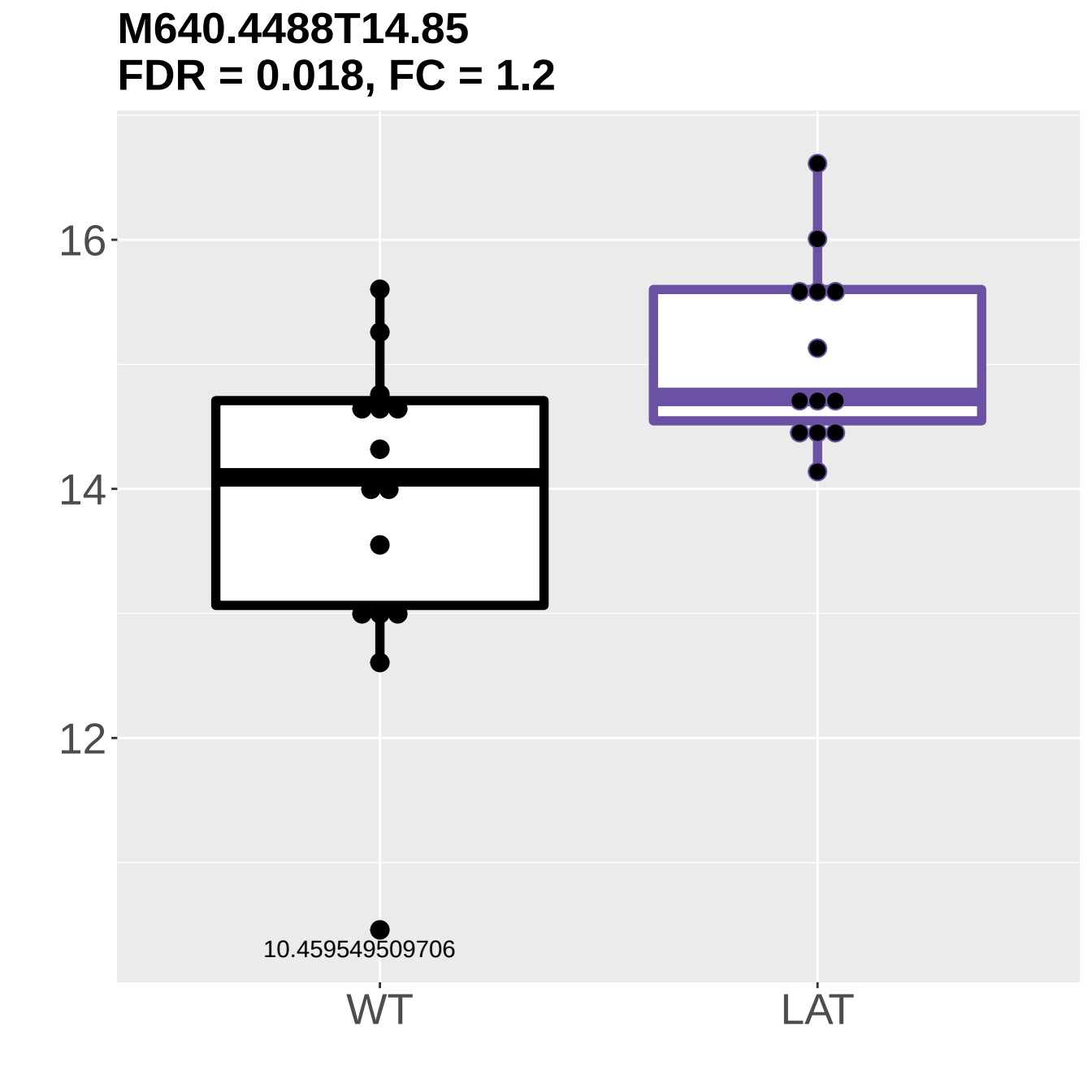
21
20
19
WT
LAT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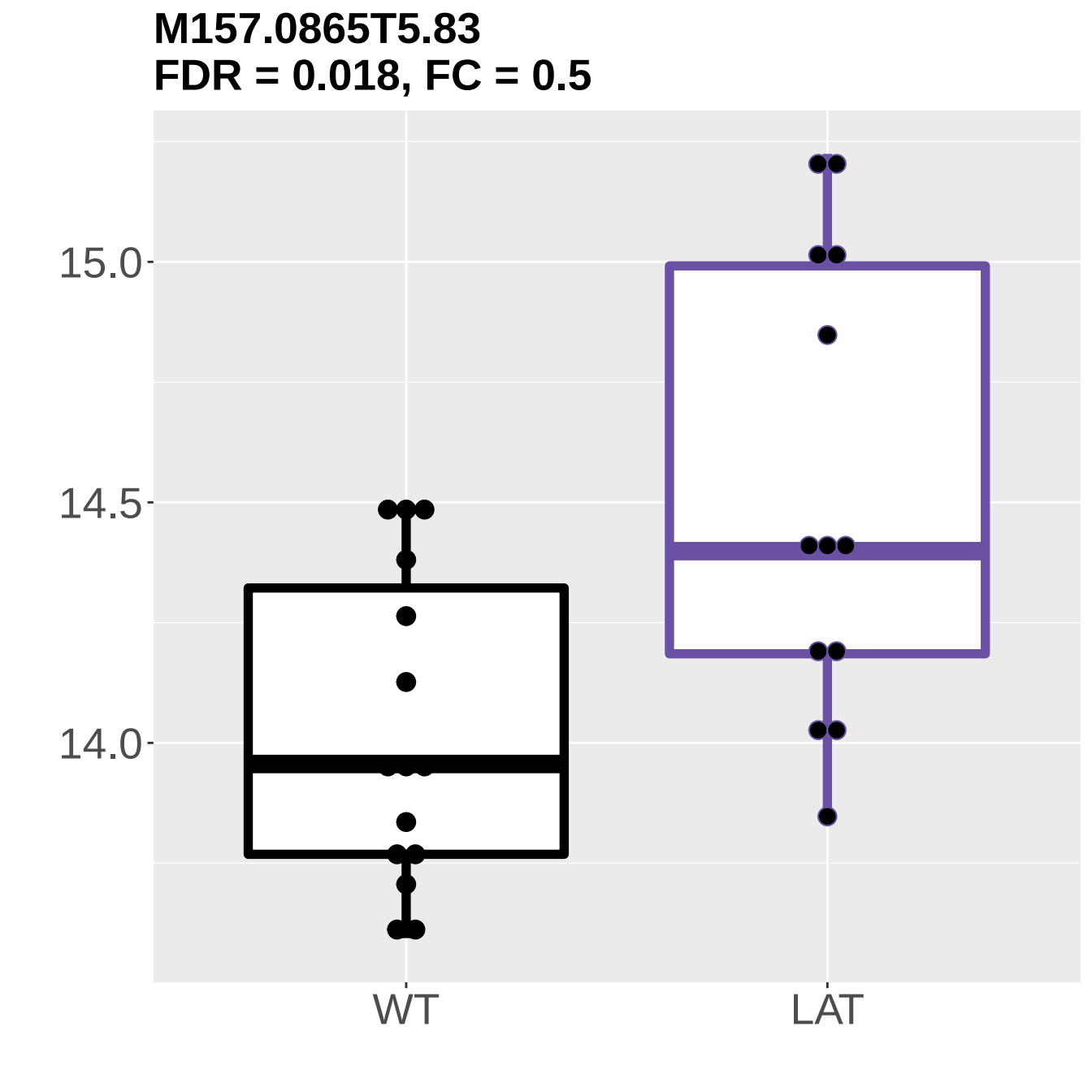
WT
LAT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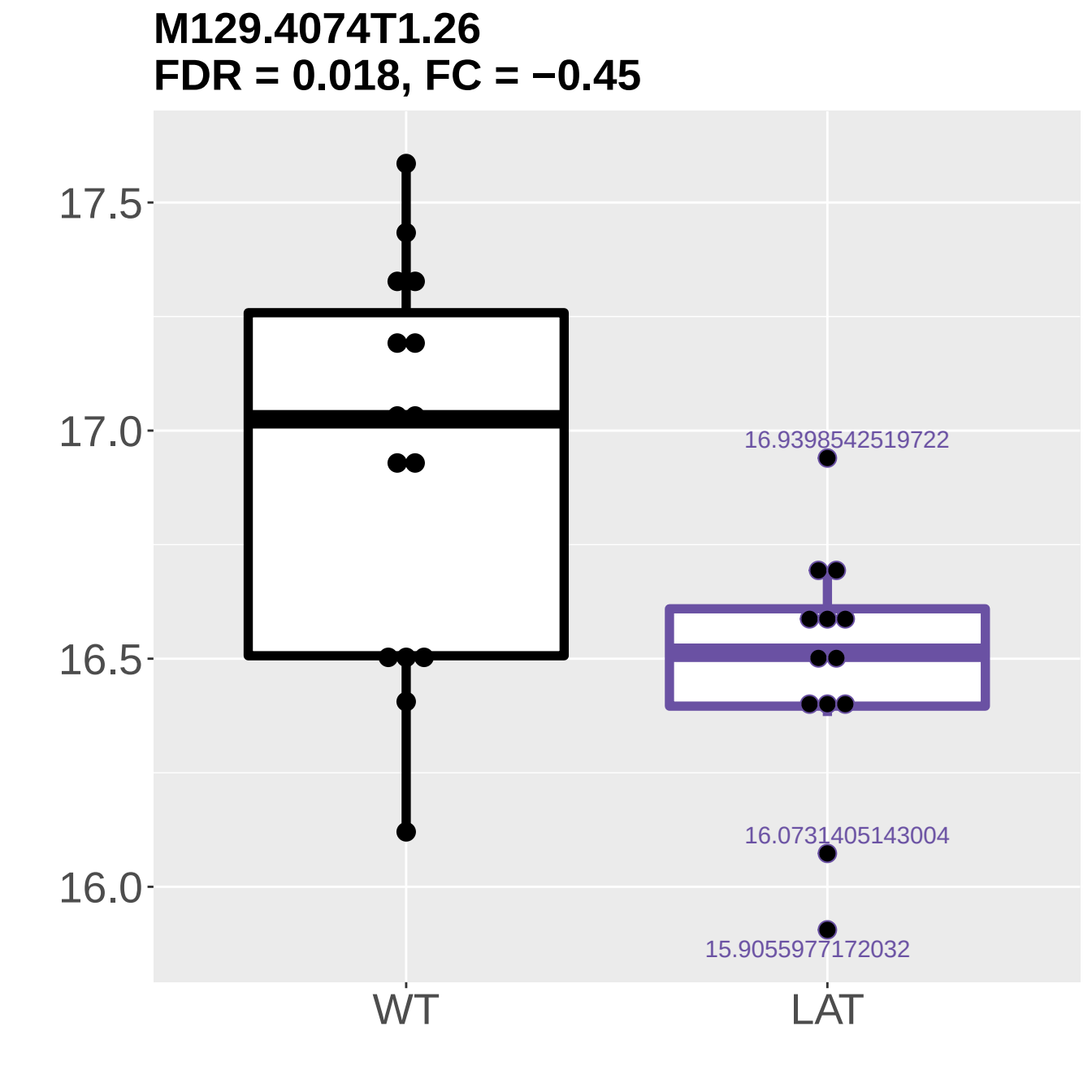
LAT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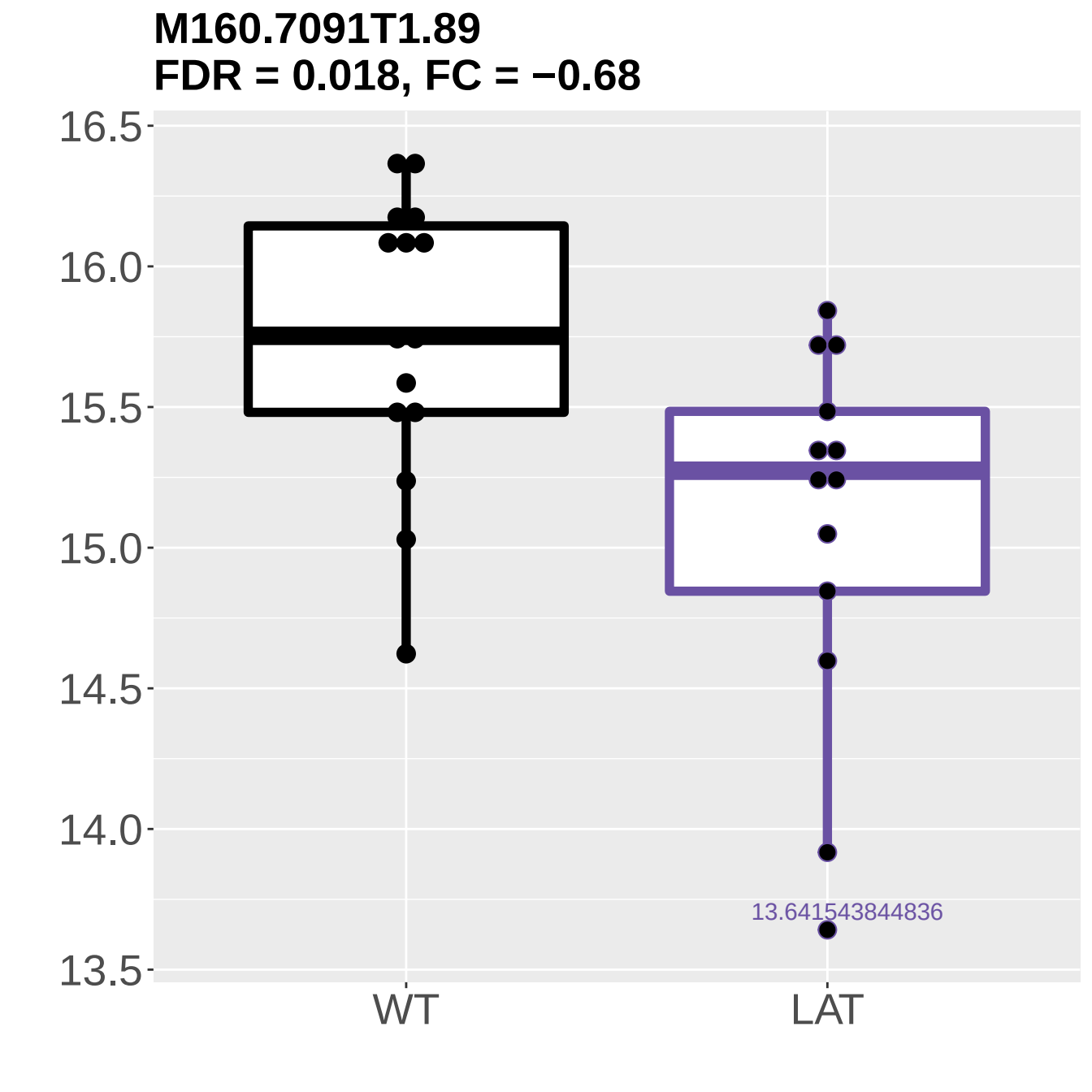
WT
LAT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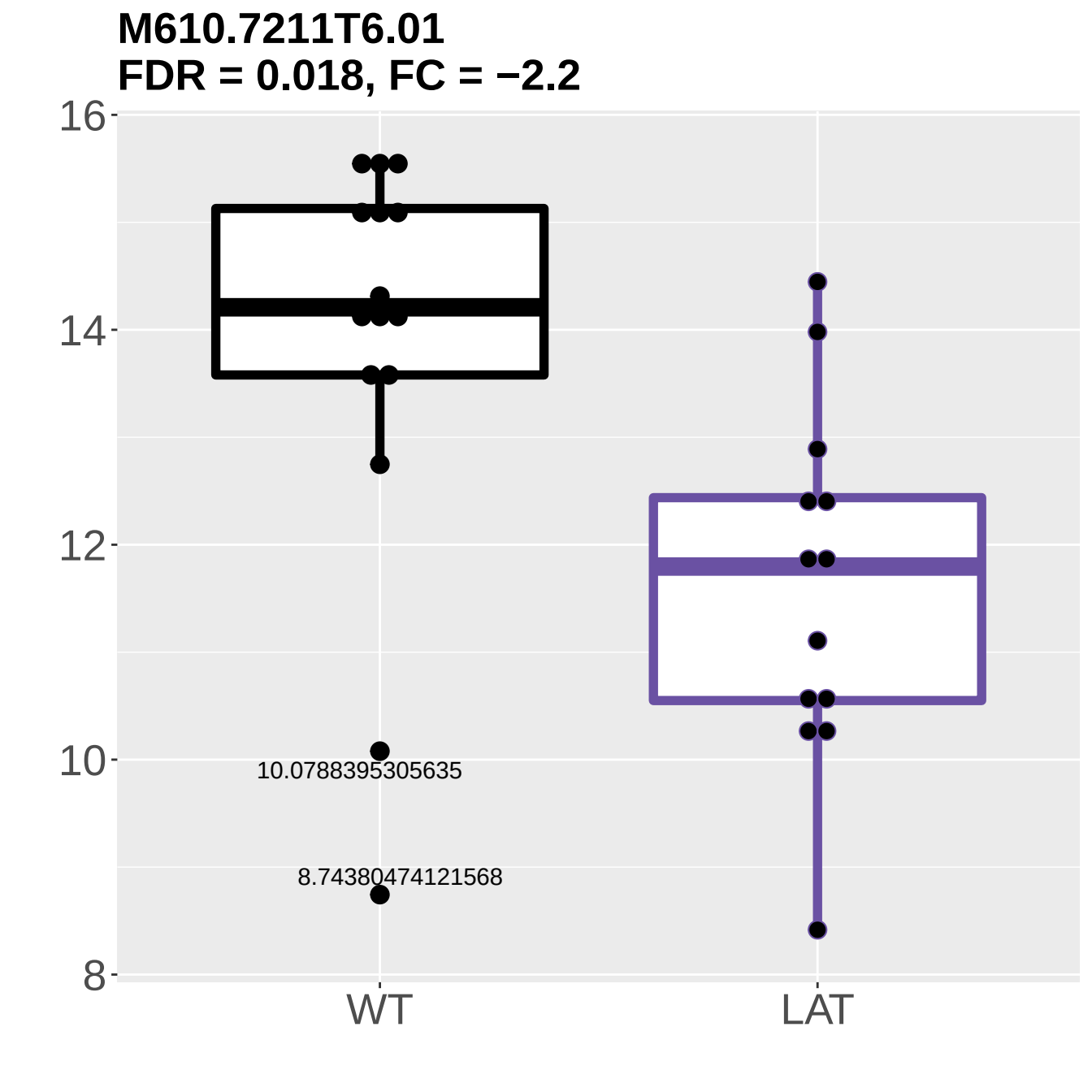
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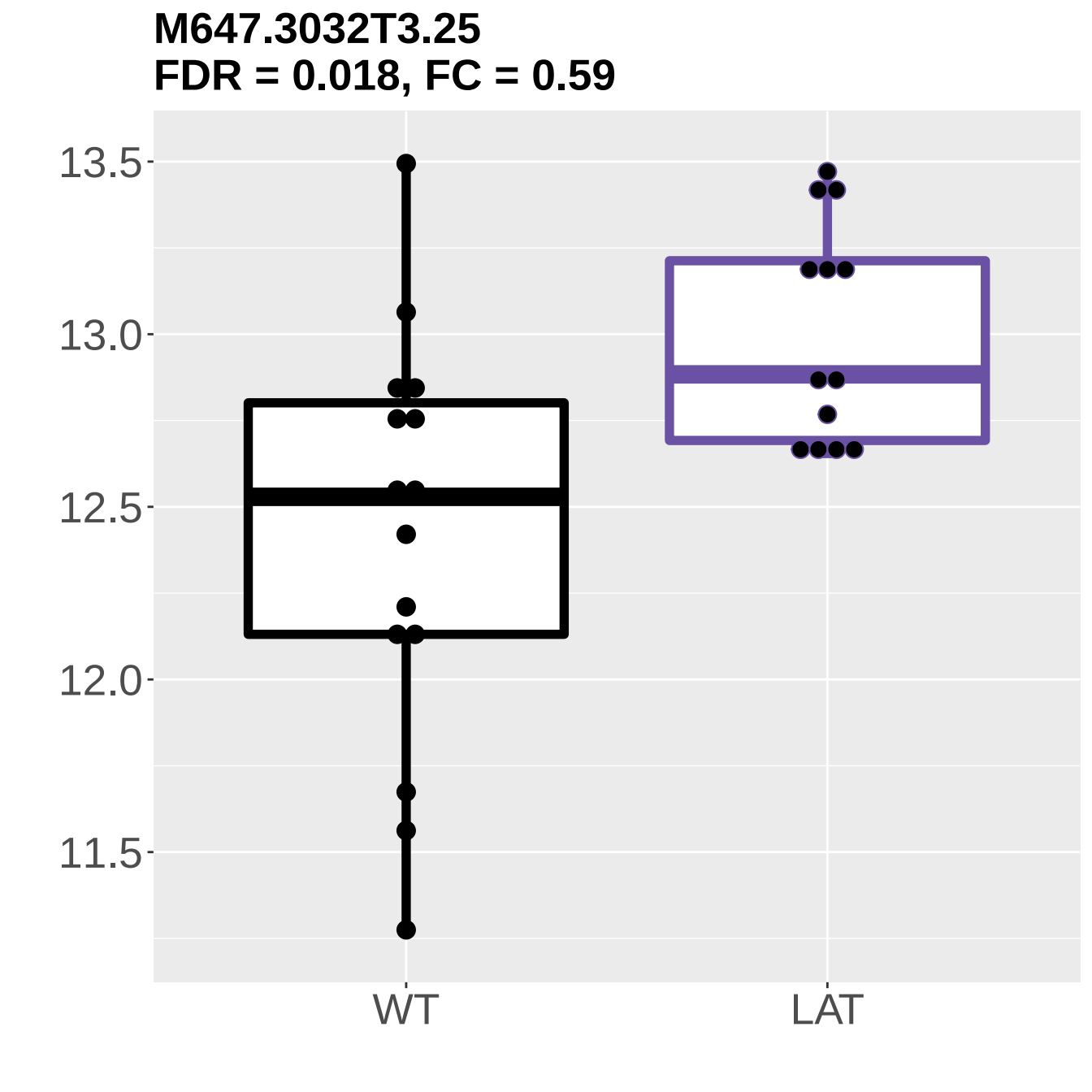
WT
LAT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12.0
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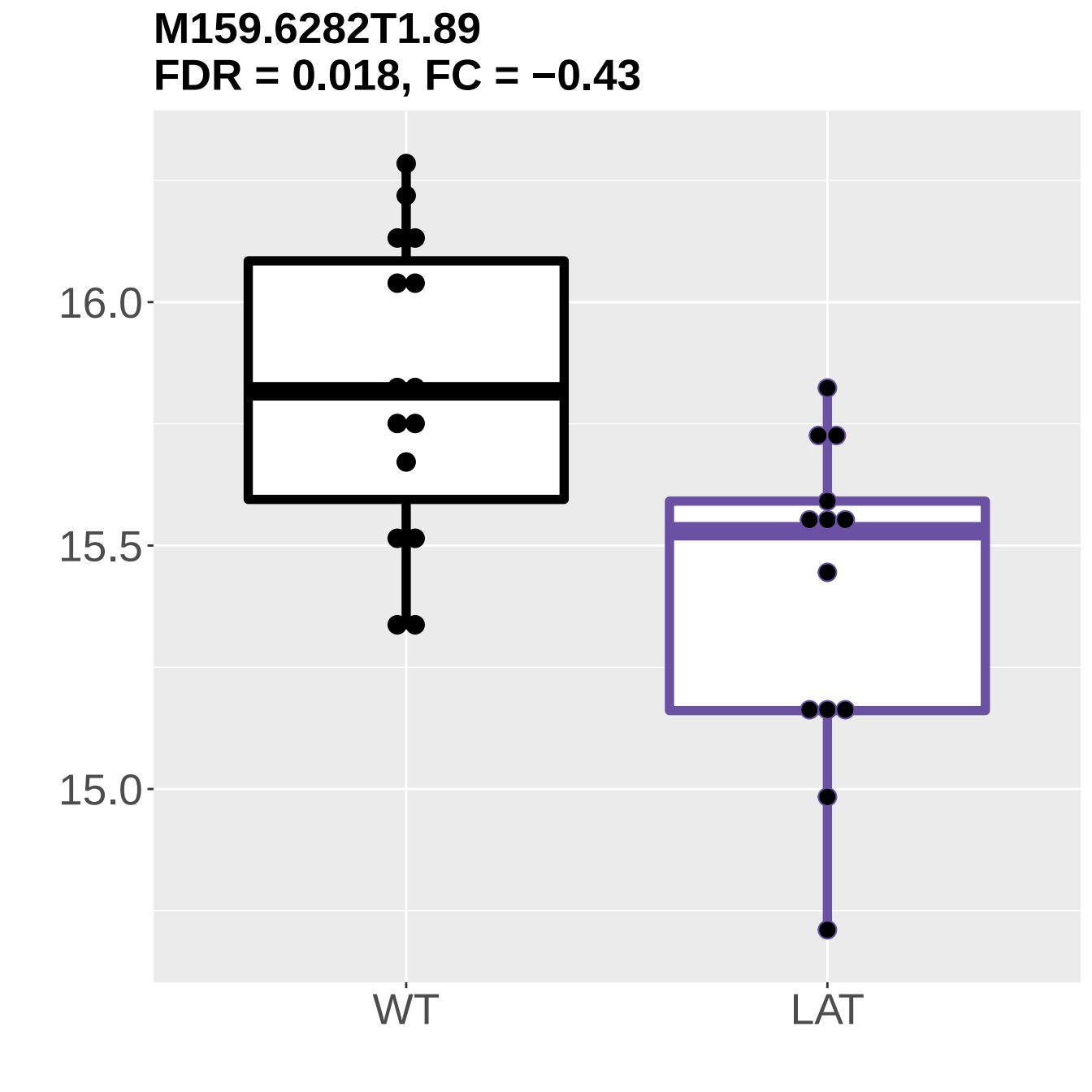
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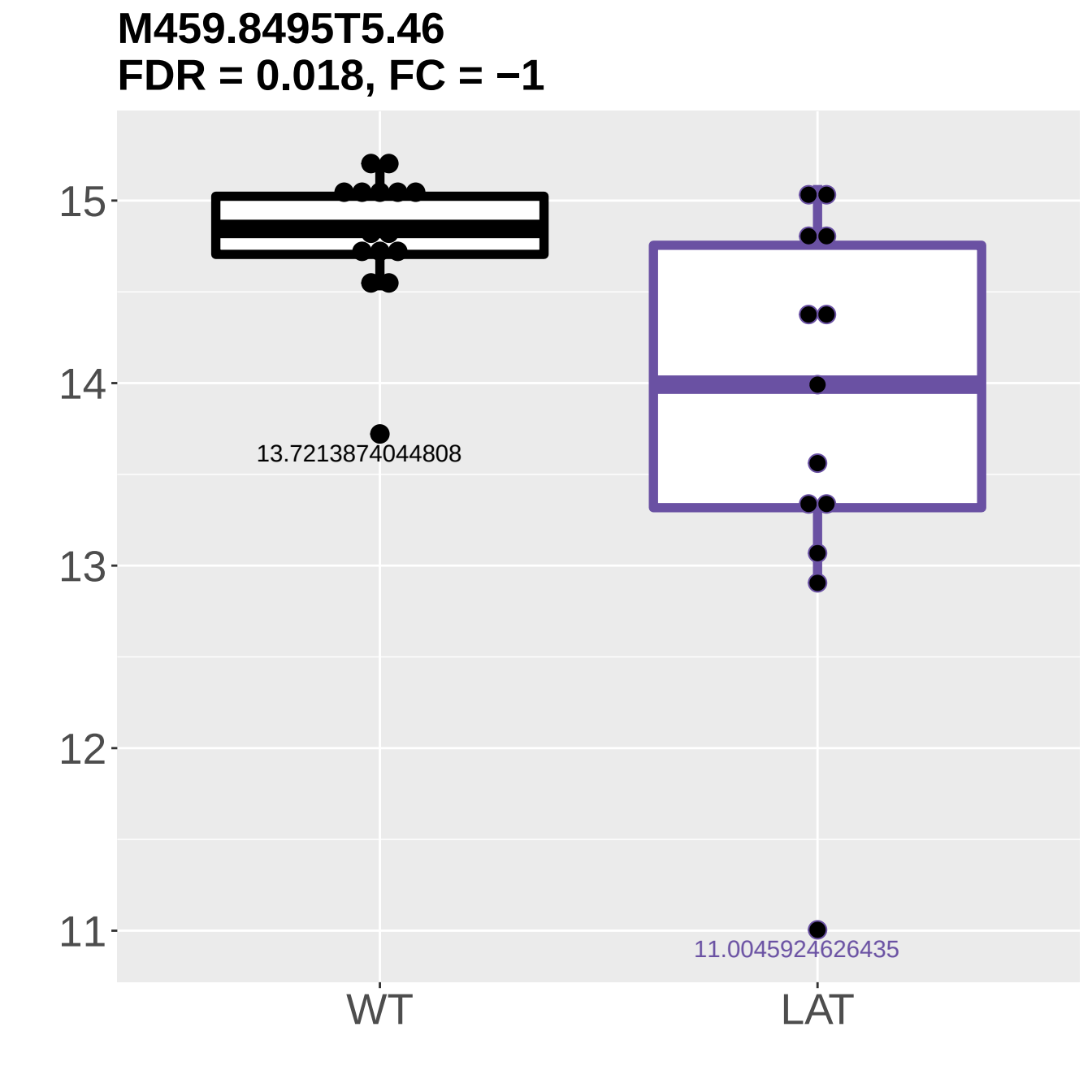
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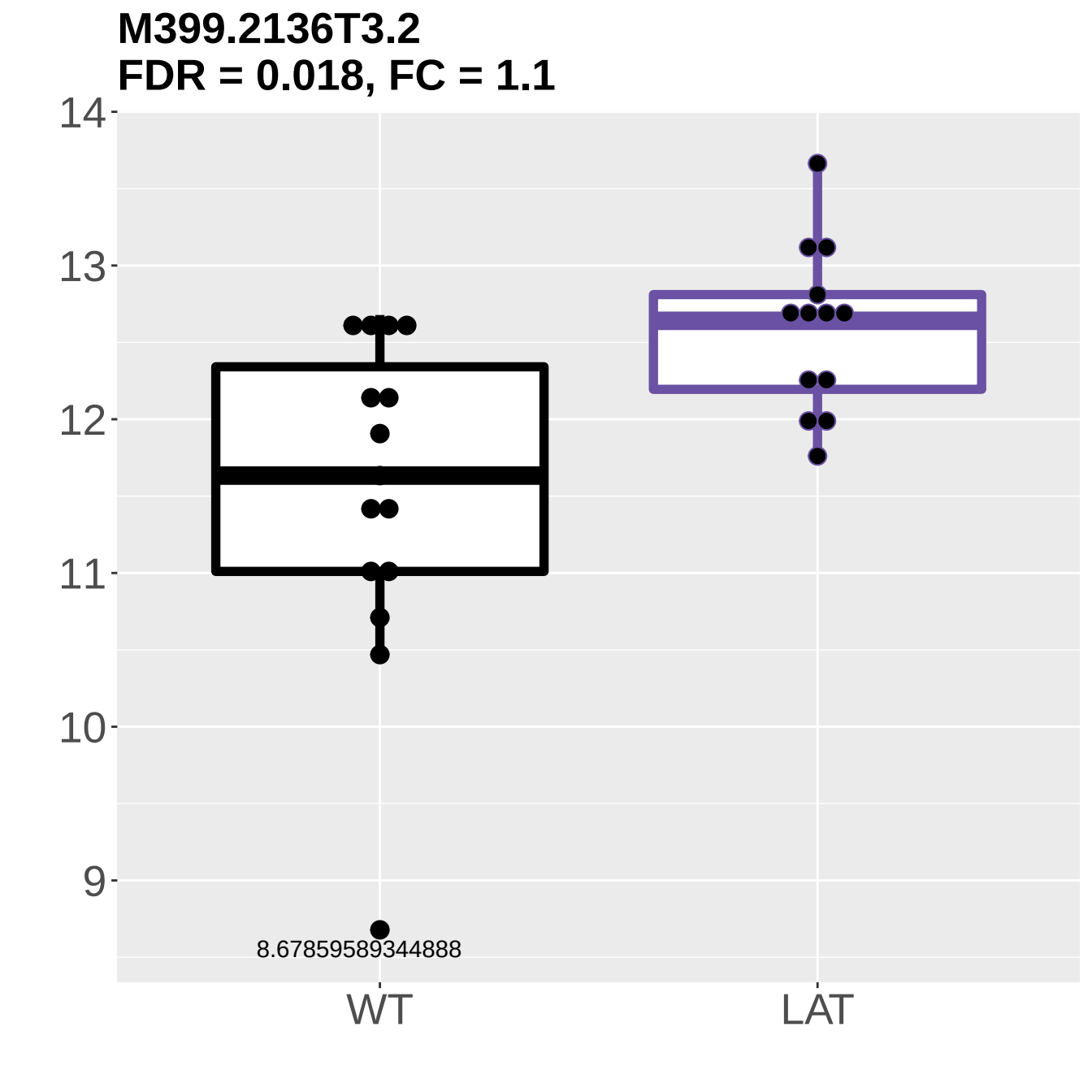
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FDR = 0.018, FC = 1.1
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11
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WT
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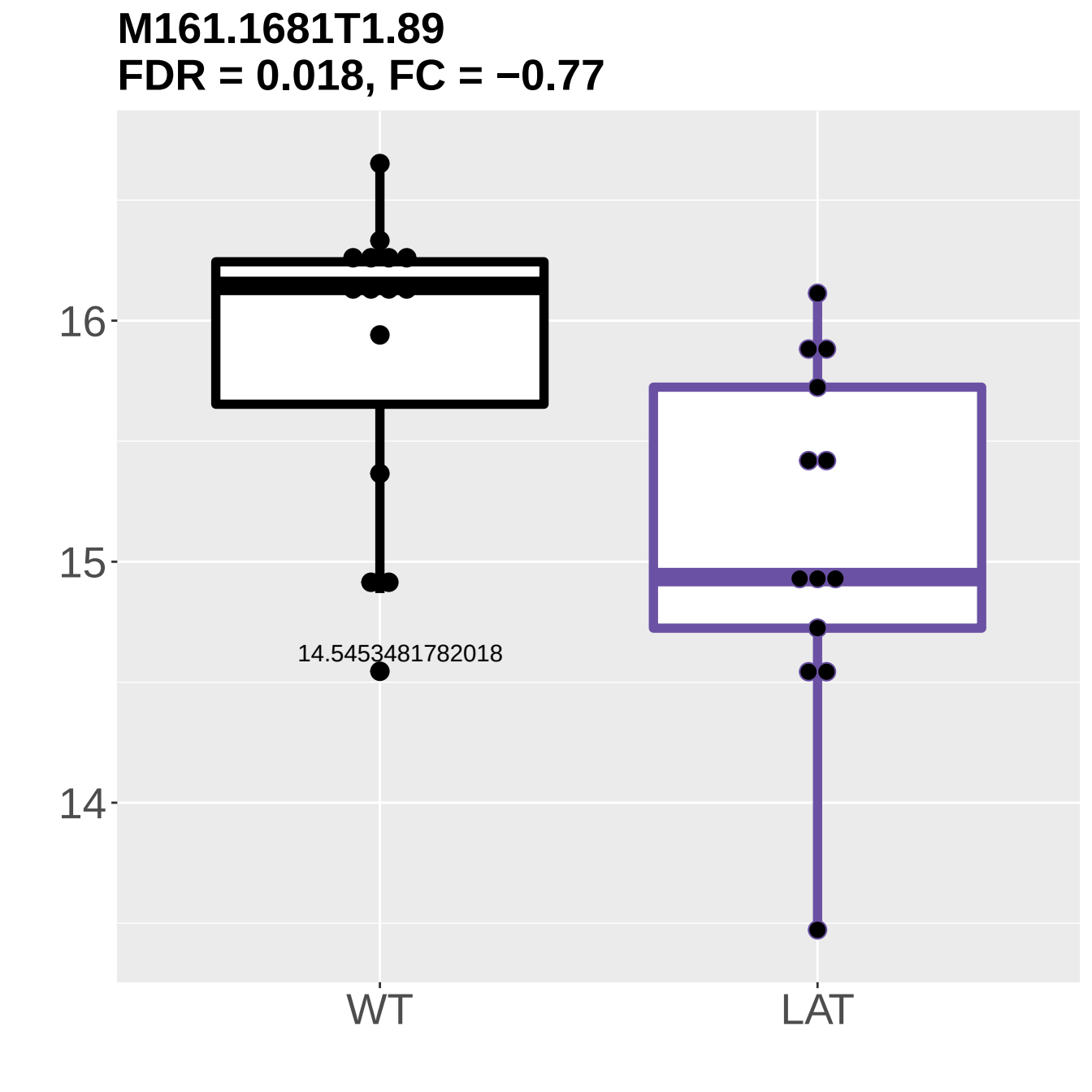
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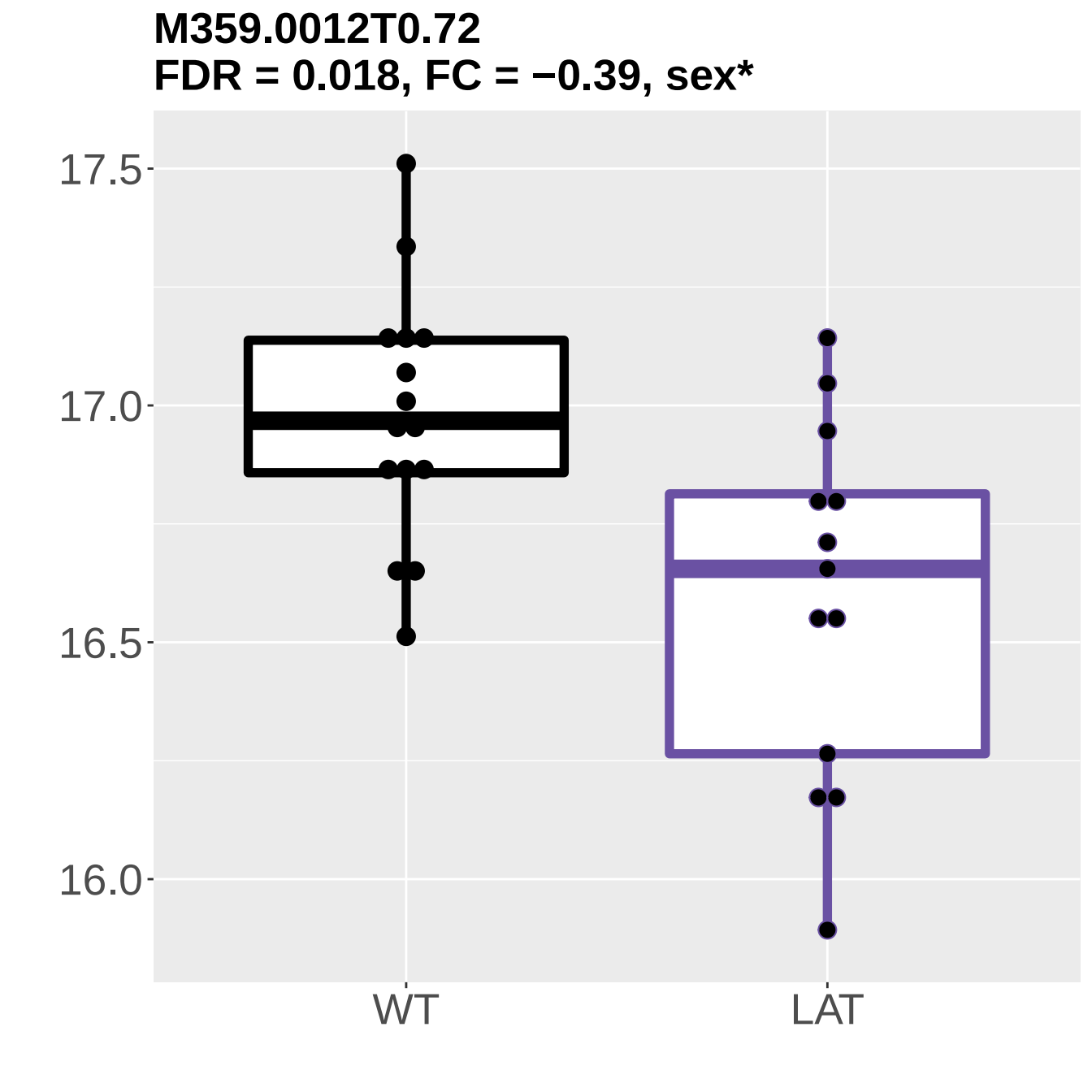
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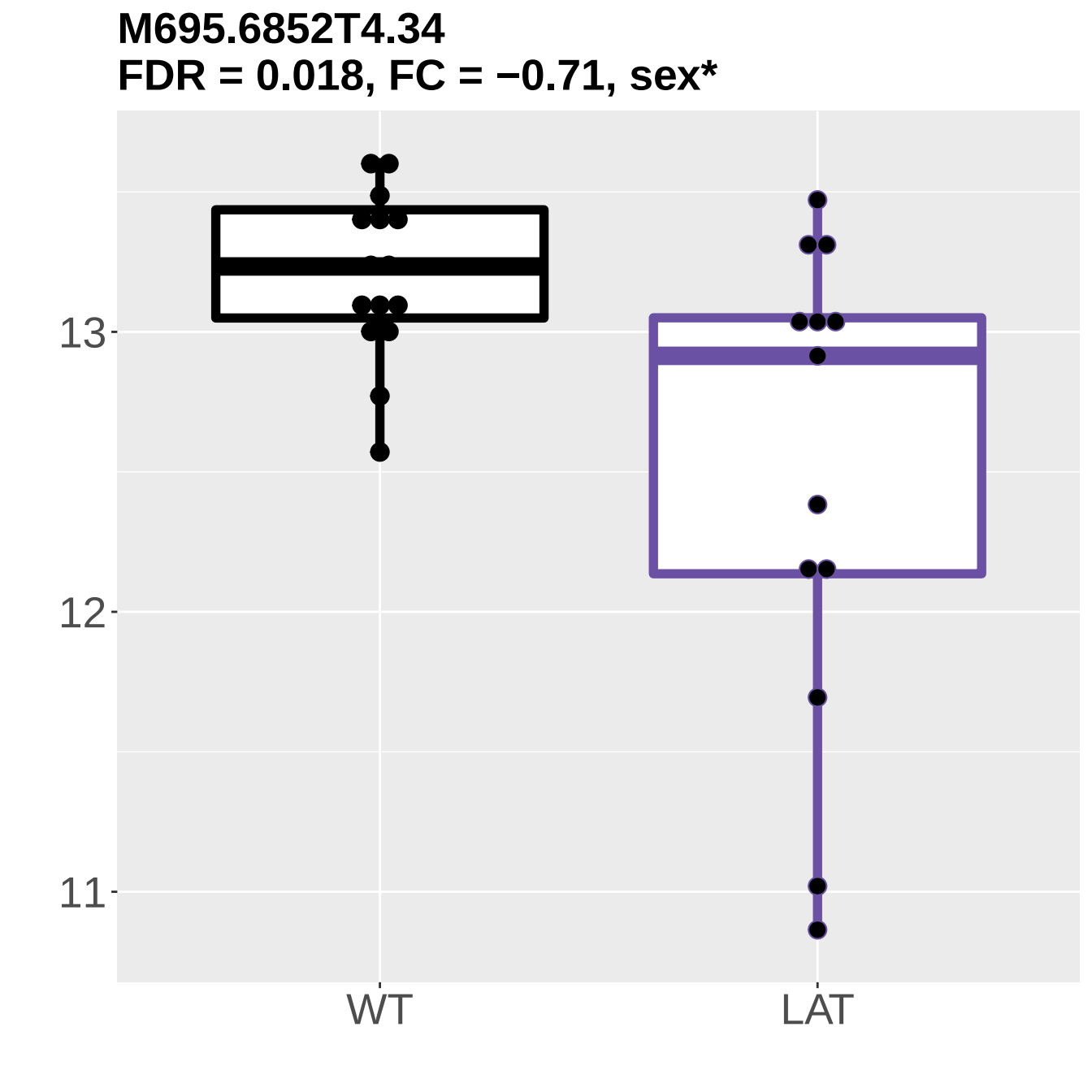
16.5
16.0
WT
LAT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FDR = 0.018, FC = −0.71, sex*
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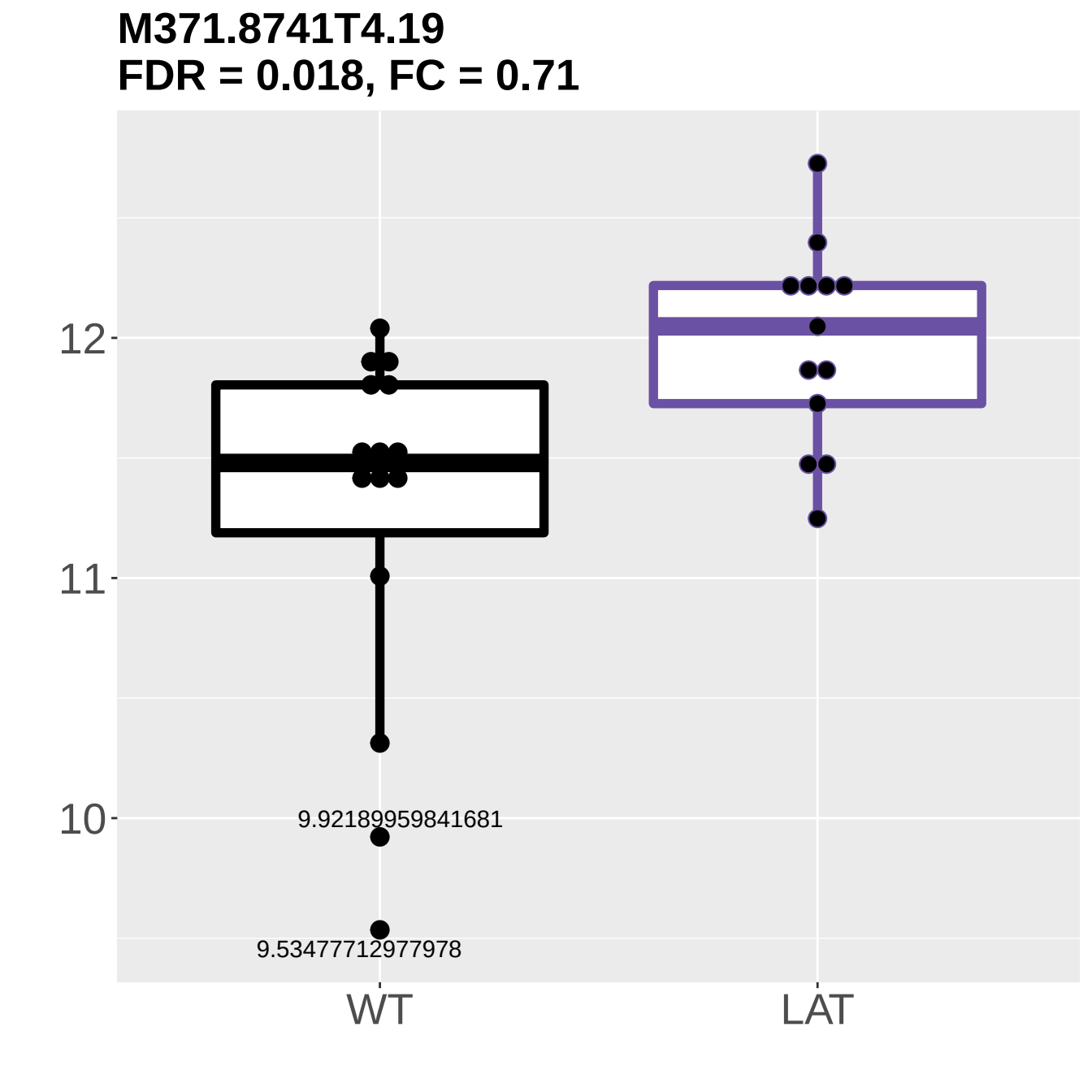
12
11
WT
LAT


M371.8741T4.19
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11
10
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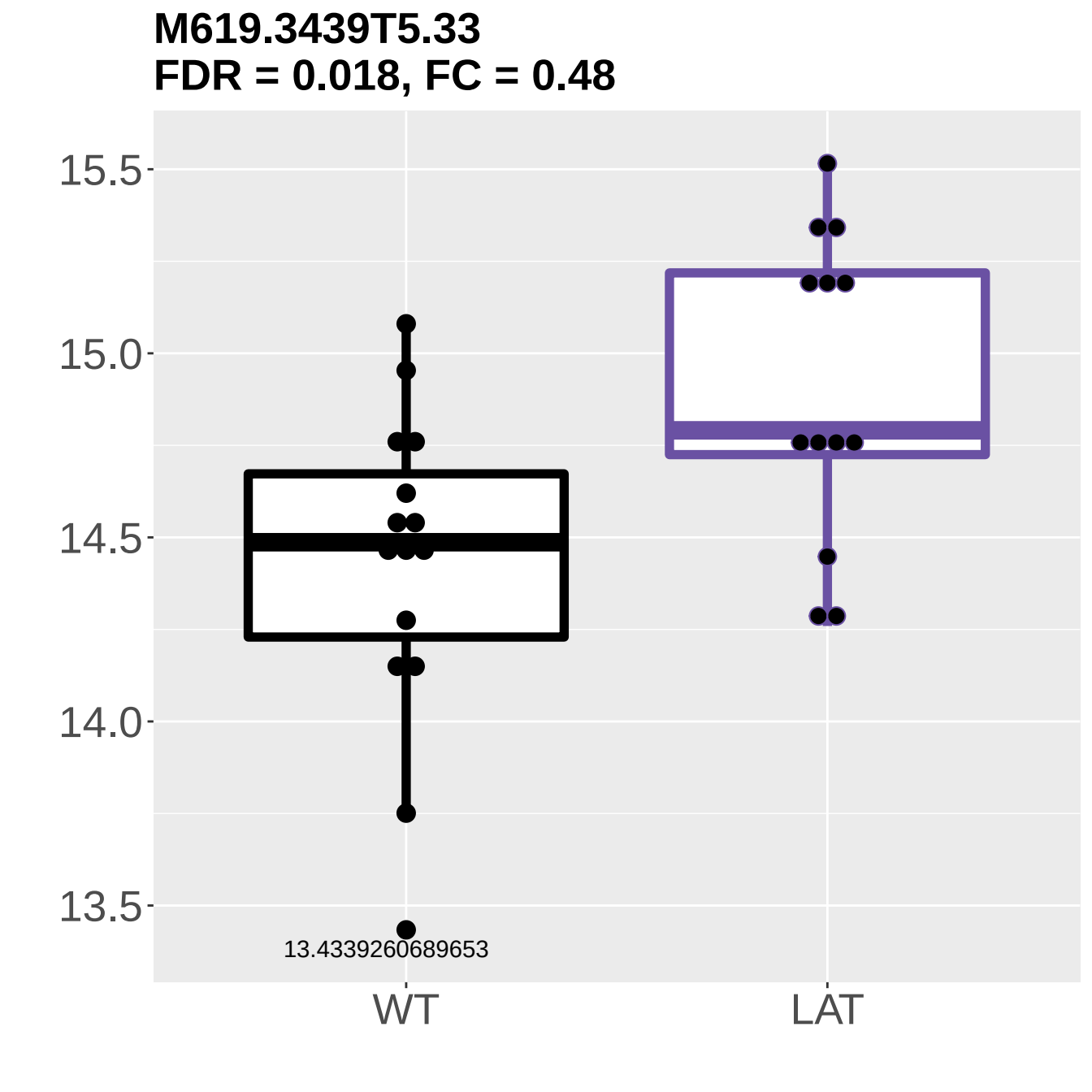
WT
LAT


M619.3439T5.33
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WT
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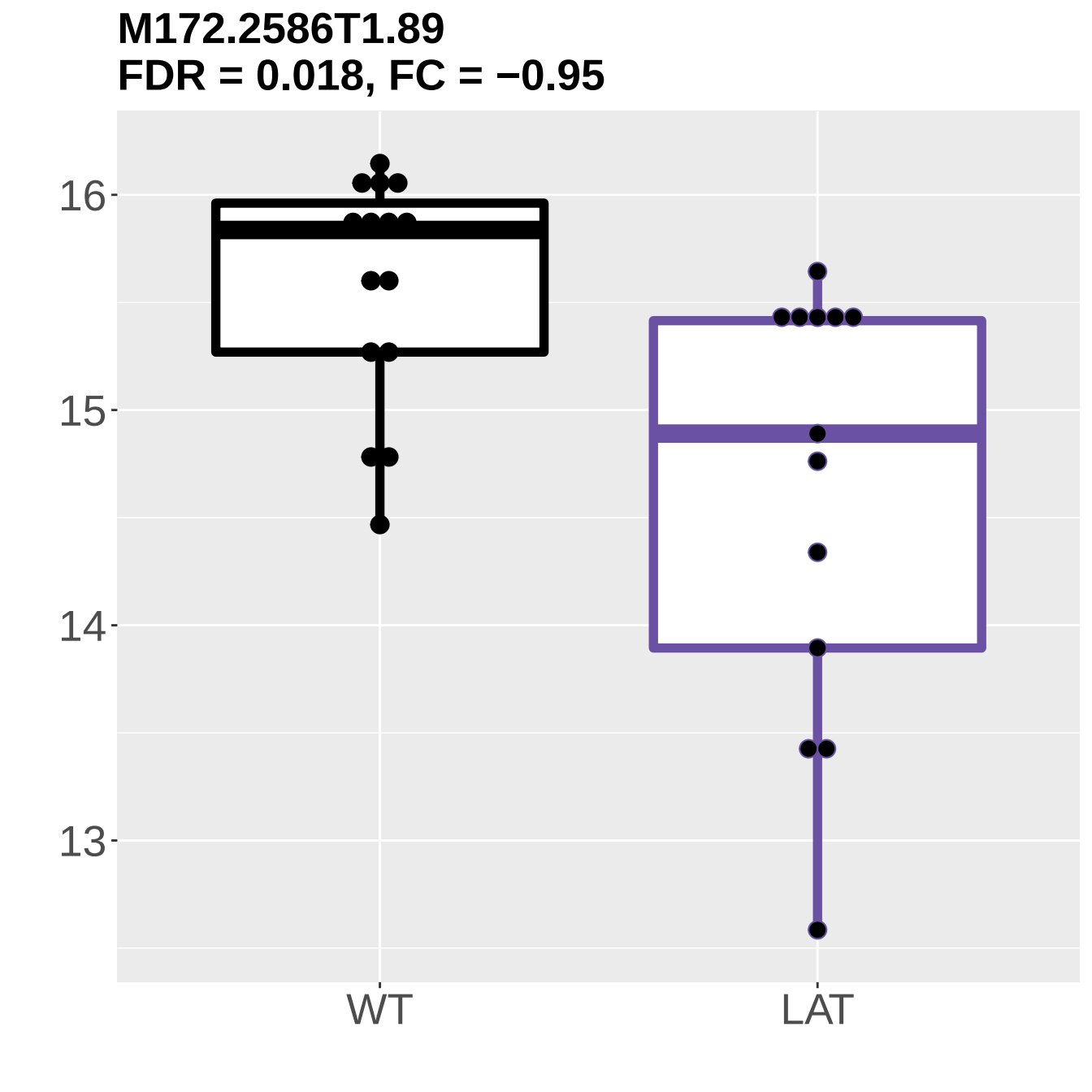
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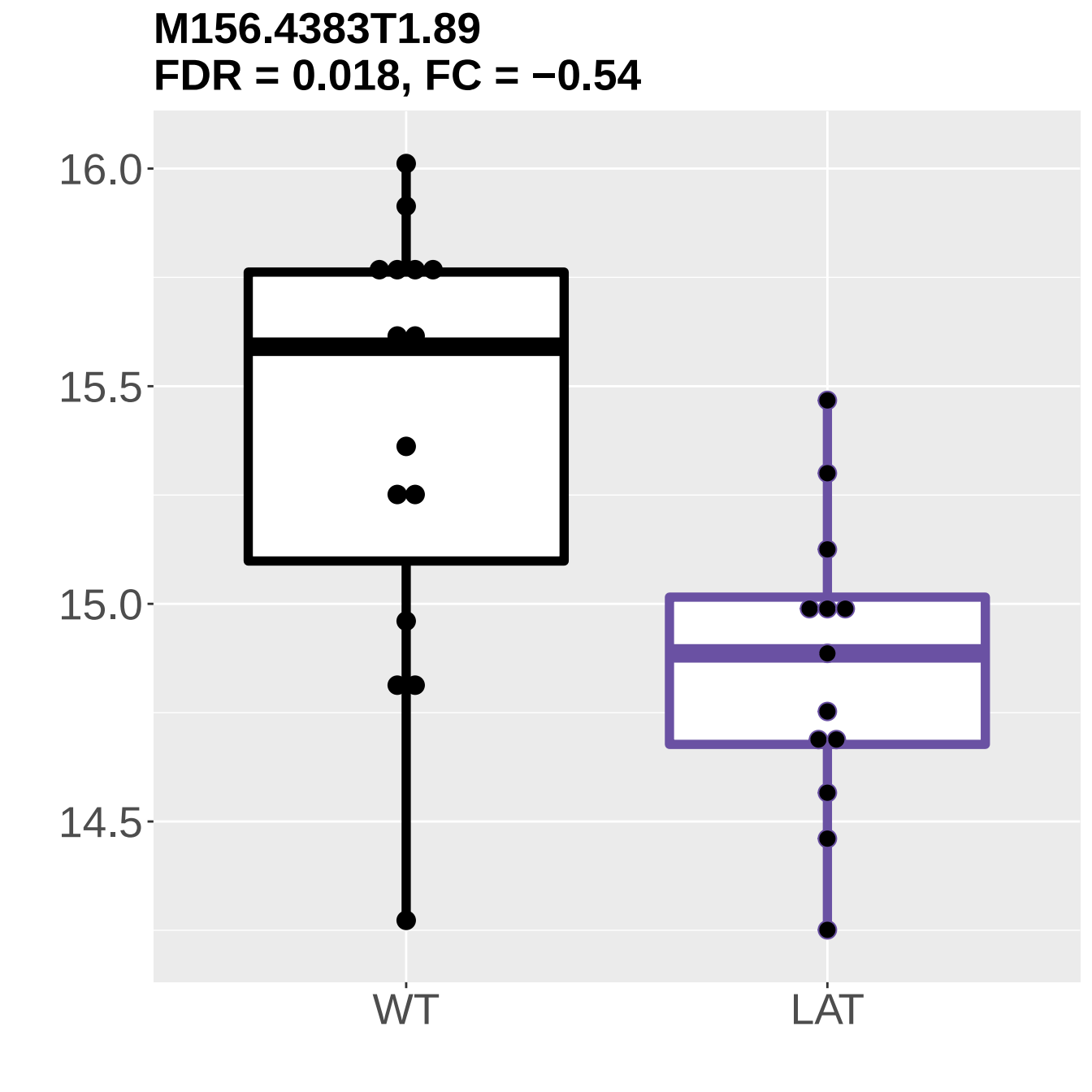
13
WT
LAT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FDR = 0.018, FC = −0.54
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15.0
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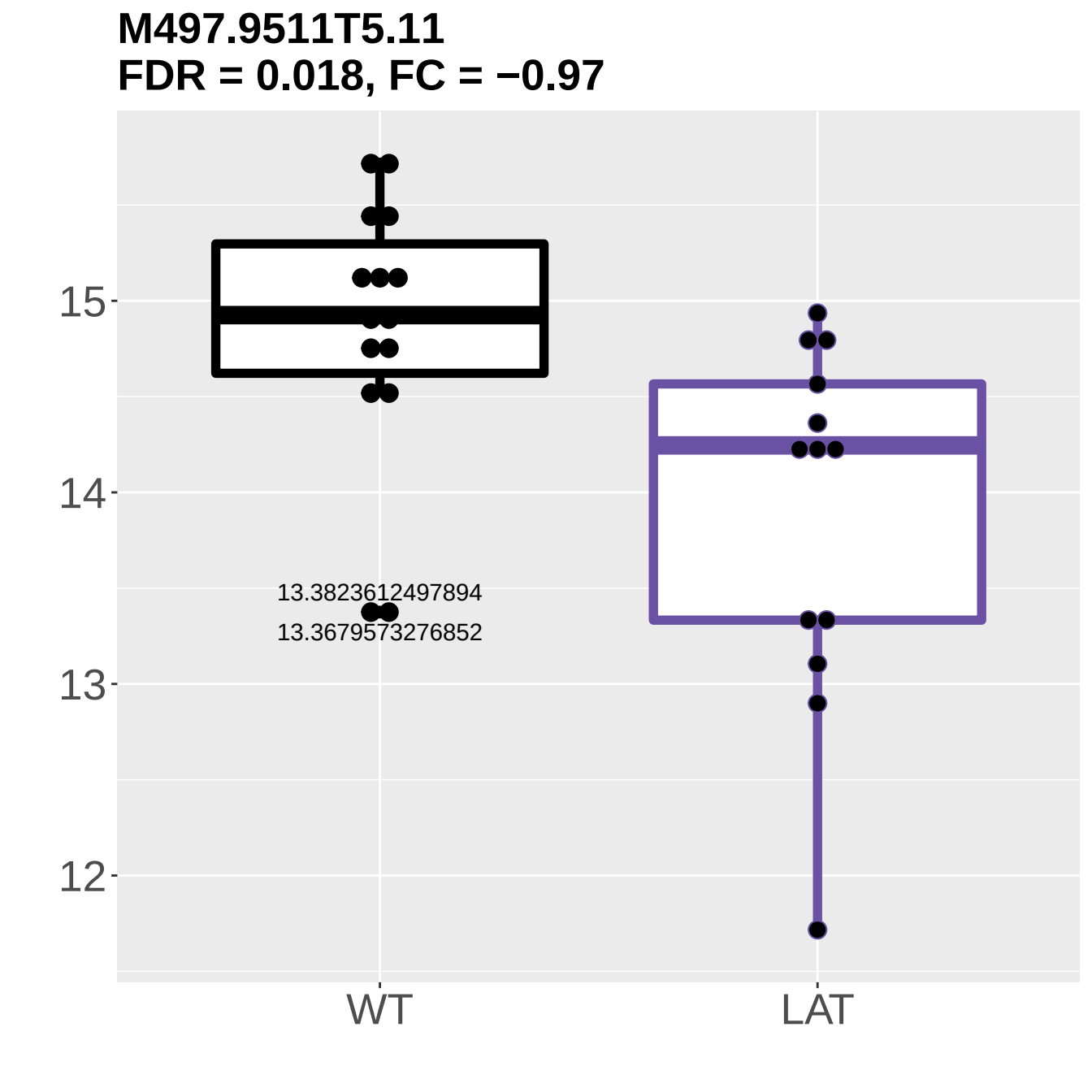
WT
LAT


M497.9511T5.11
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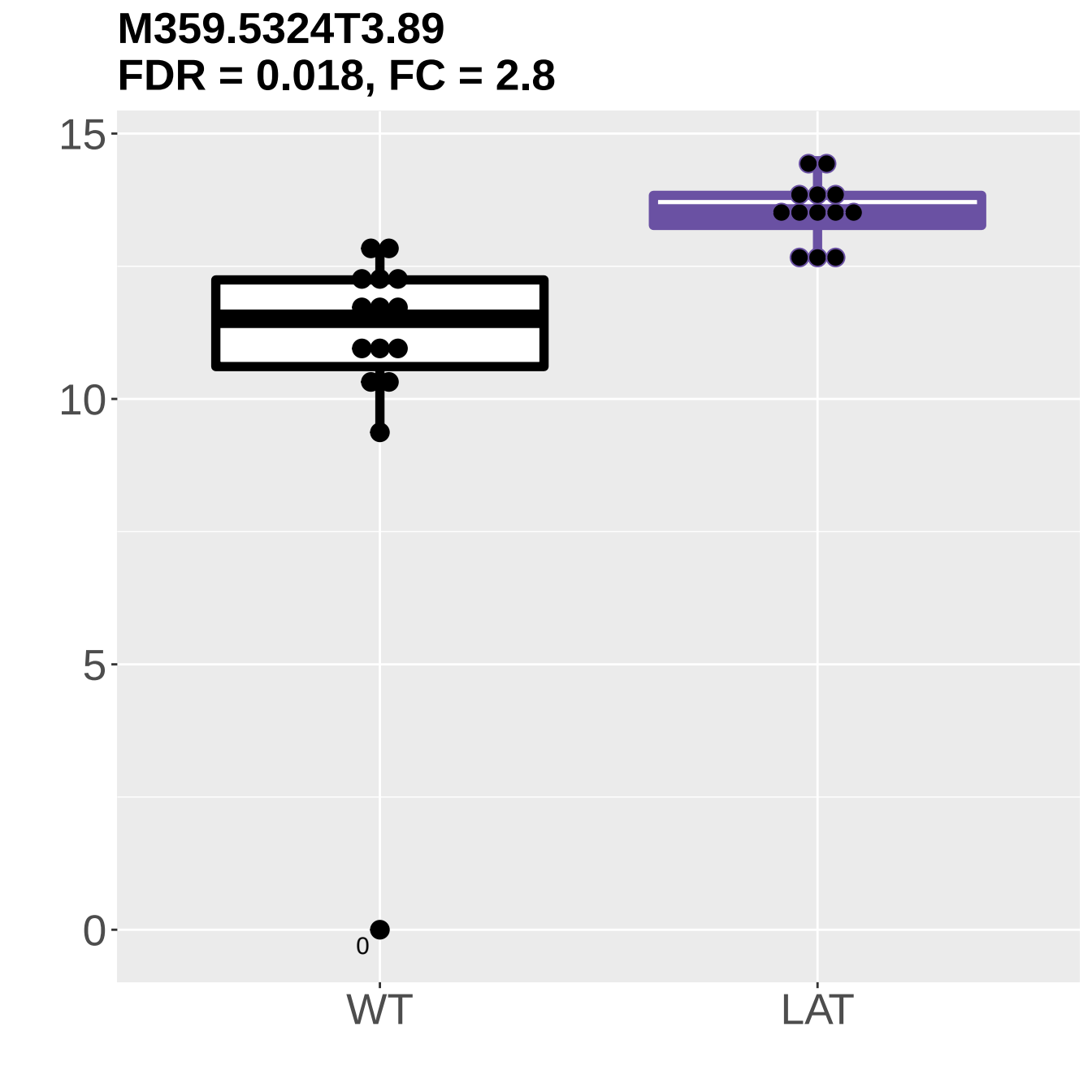
14
13
12
13.3823612497894
13.3679573276852
WT
LAT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FDR = 0.018, FC = 2.8
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10
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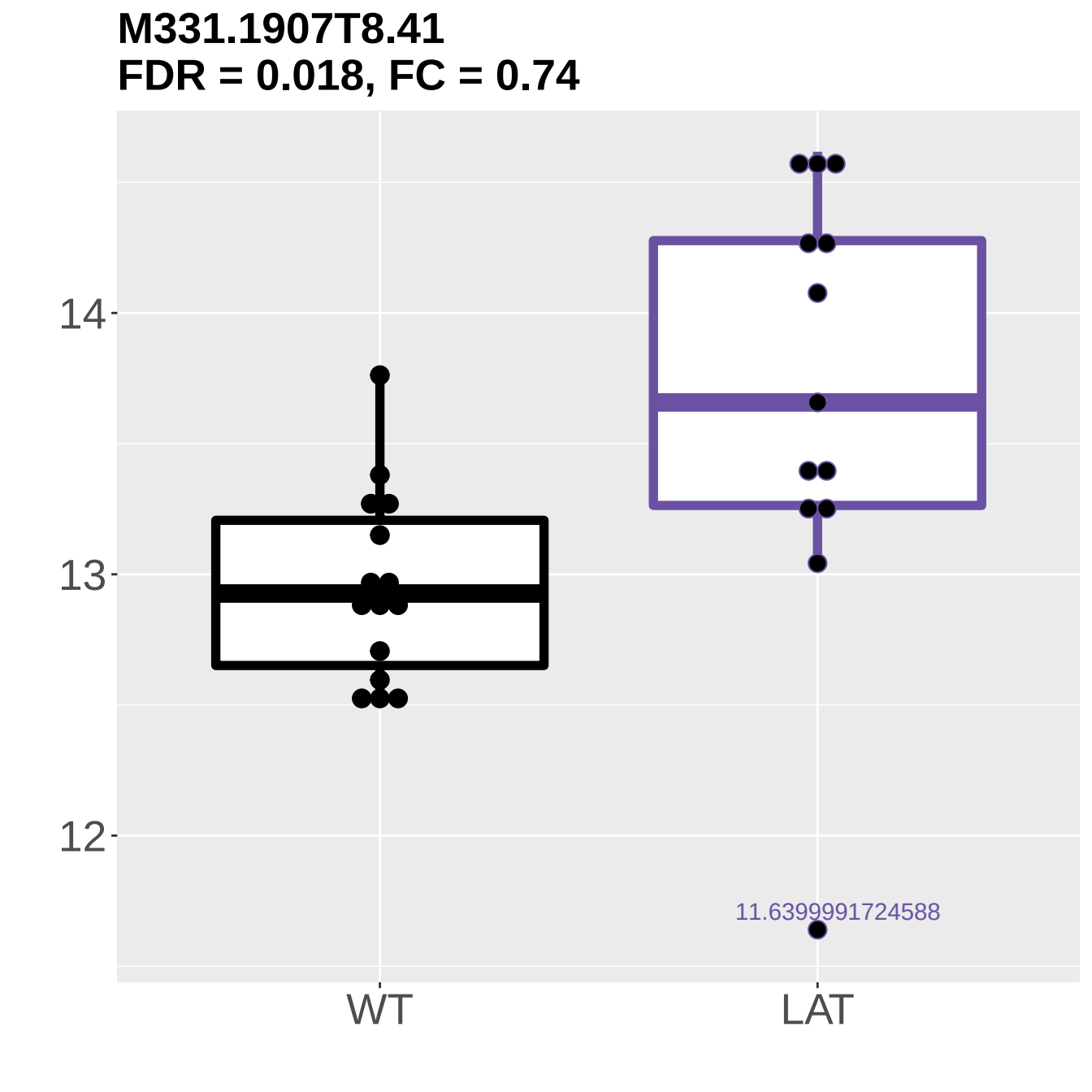
0
0
WT
LAT


M331.1907T8.41
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13
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WT
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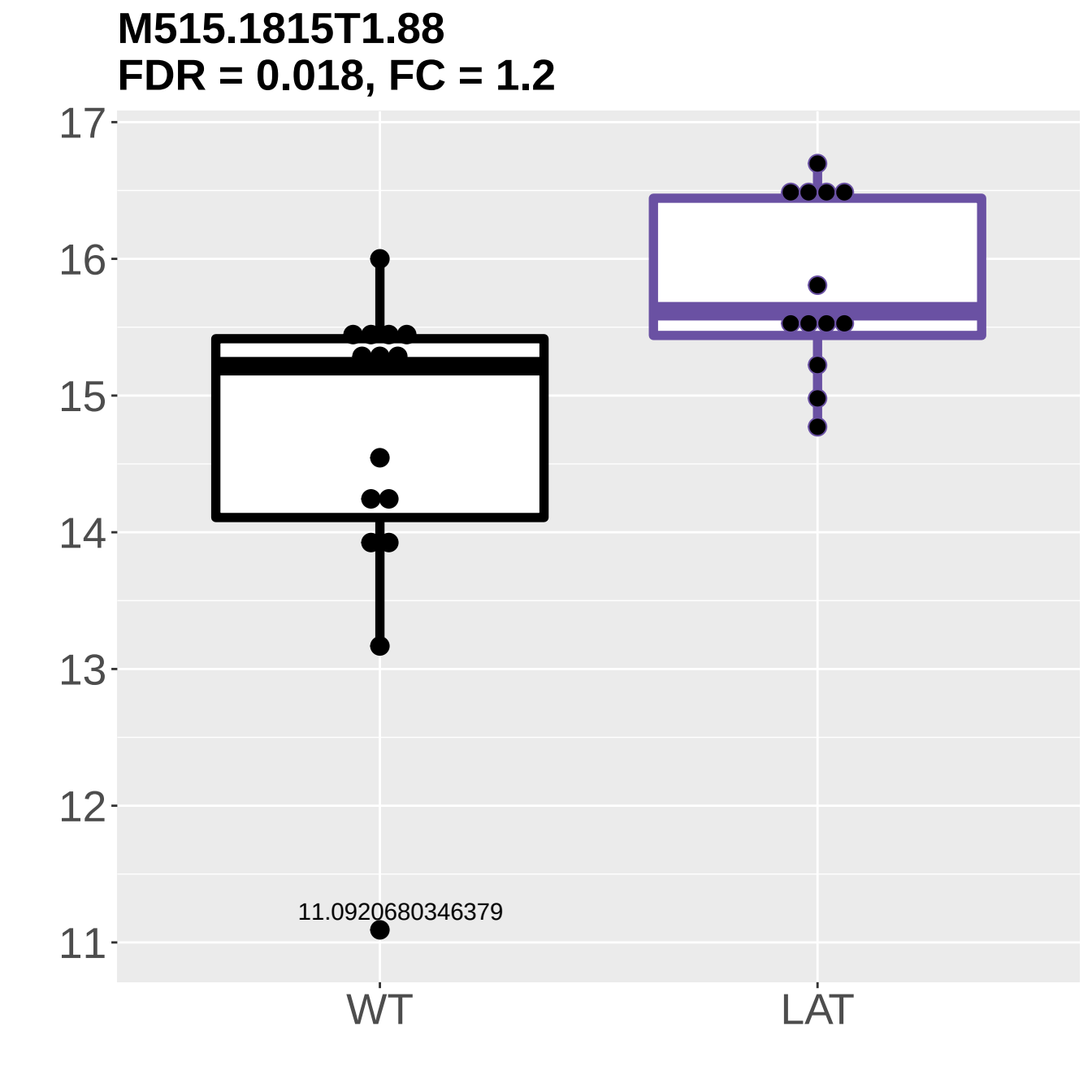
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16
15
14
13
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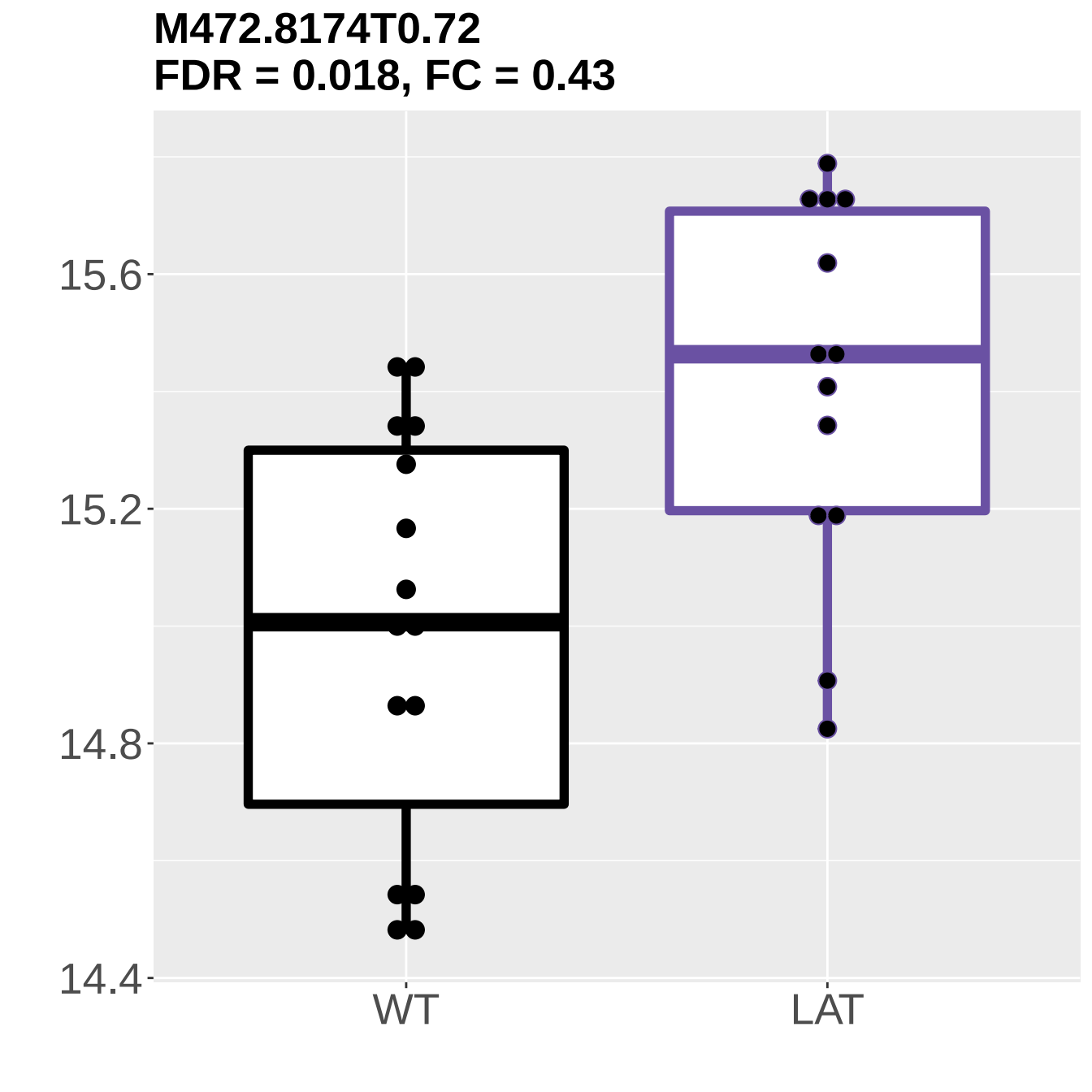
WT
LAT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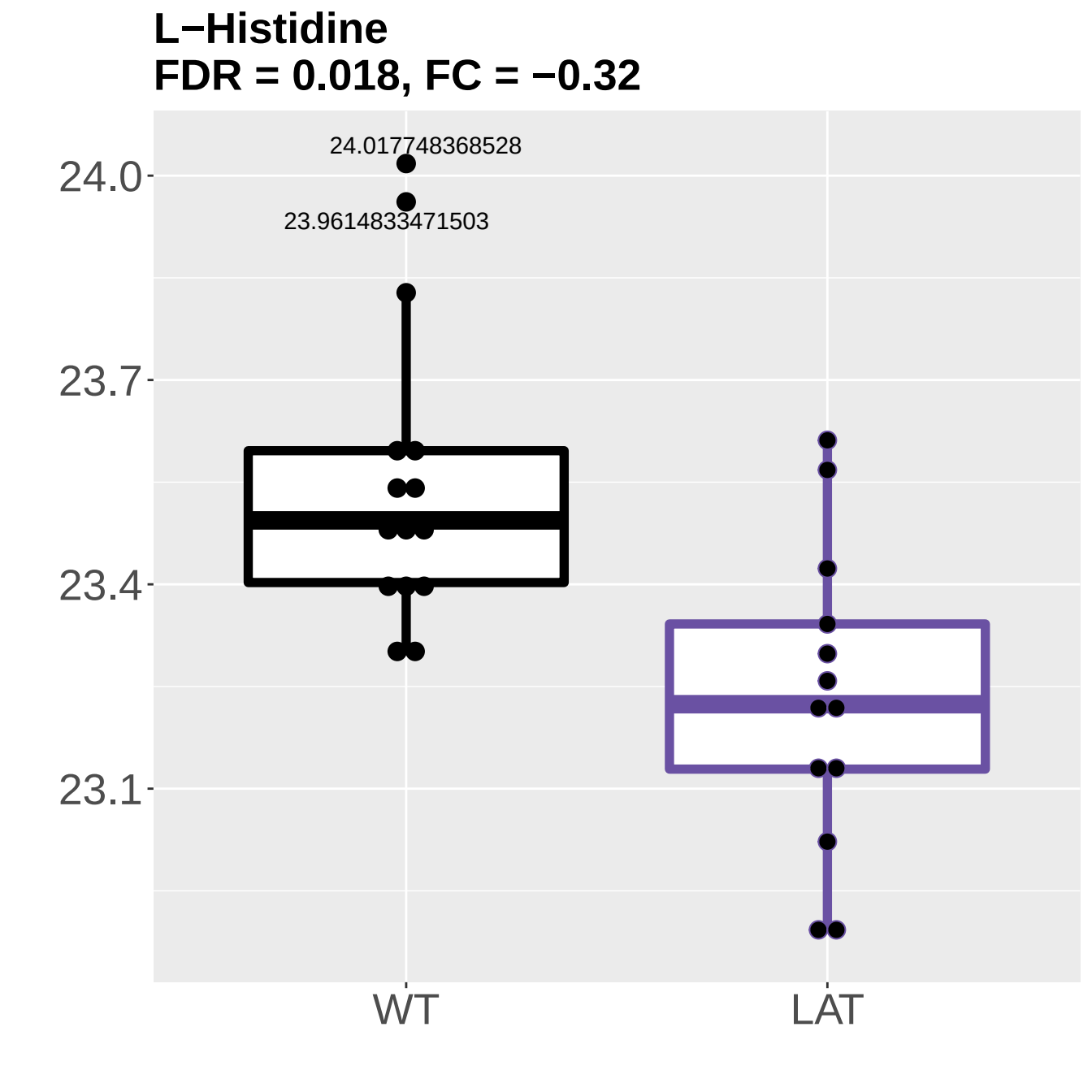
FDR = 0.018, FC = 0.43
15.6
15.2
14.8
14.4
WT
LAT


L−Histidine
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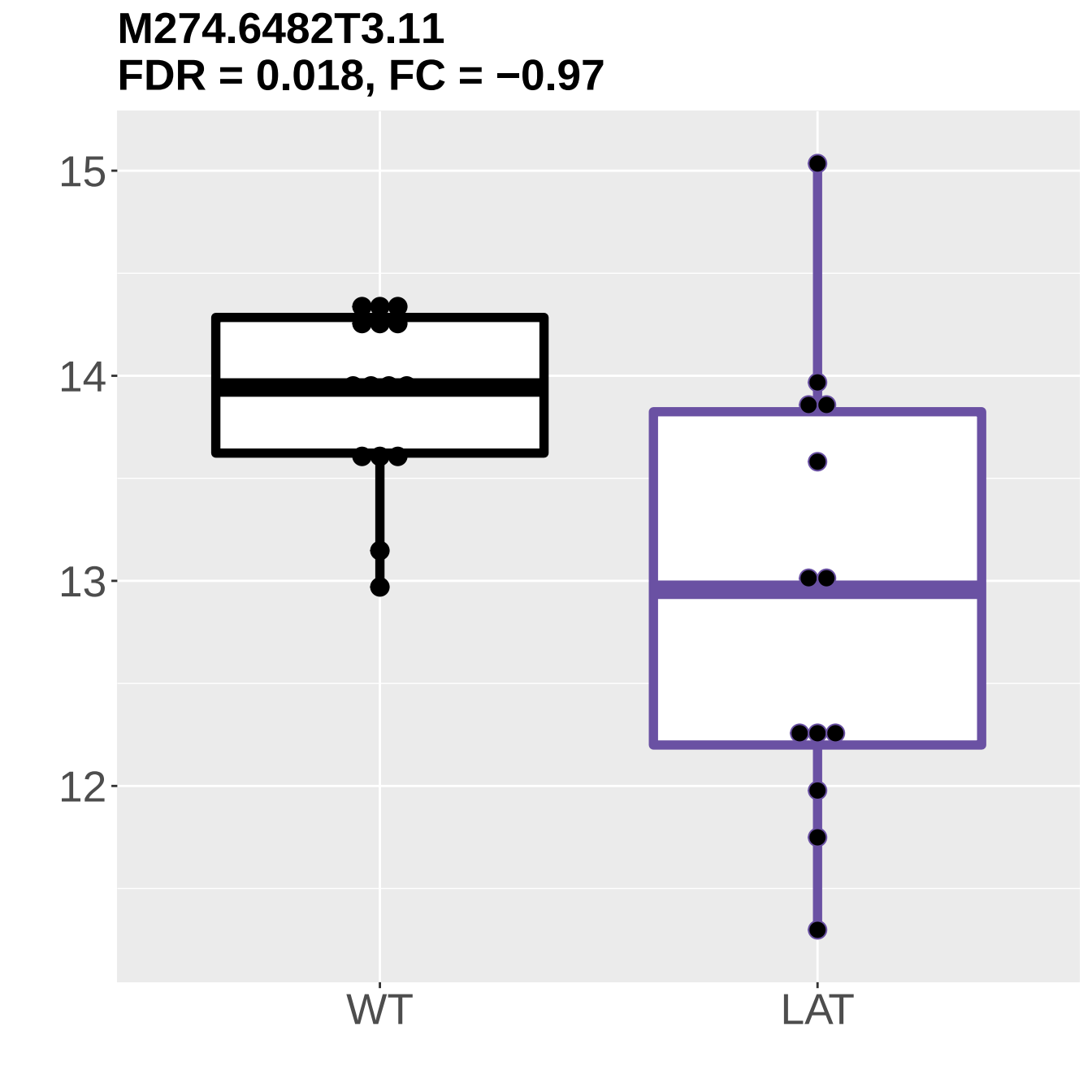
23.9614833471503
24.0
23.7
23.4
23.1
WT
LAT


M274.6482T3.11
FDR = 0.018, FC = −0.97
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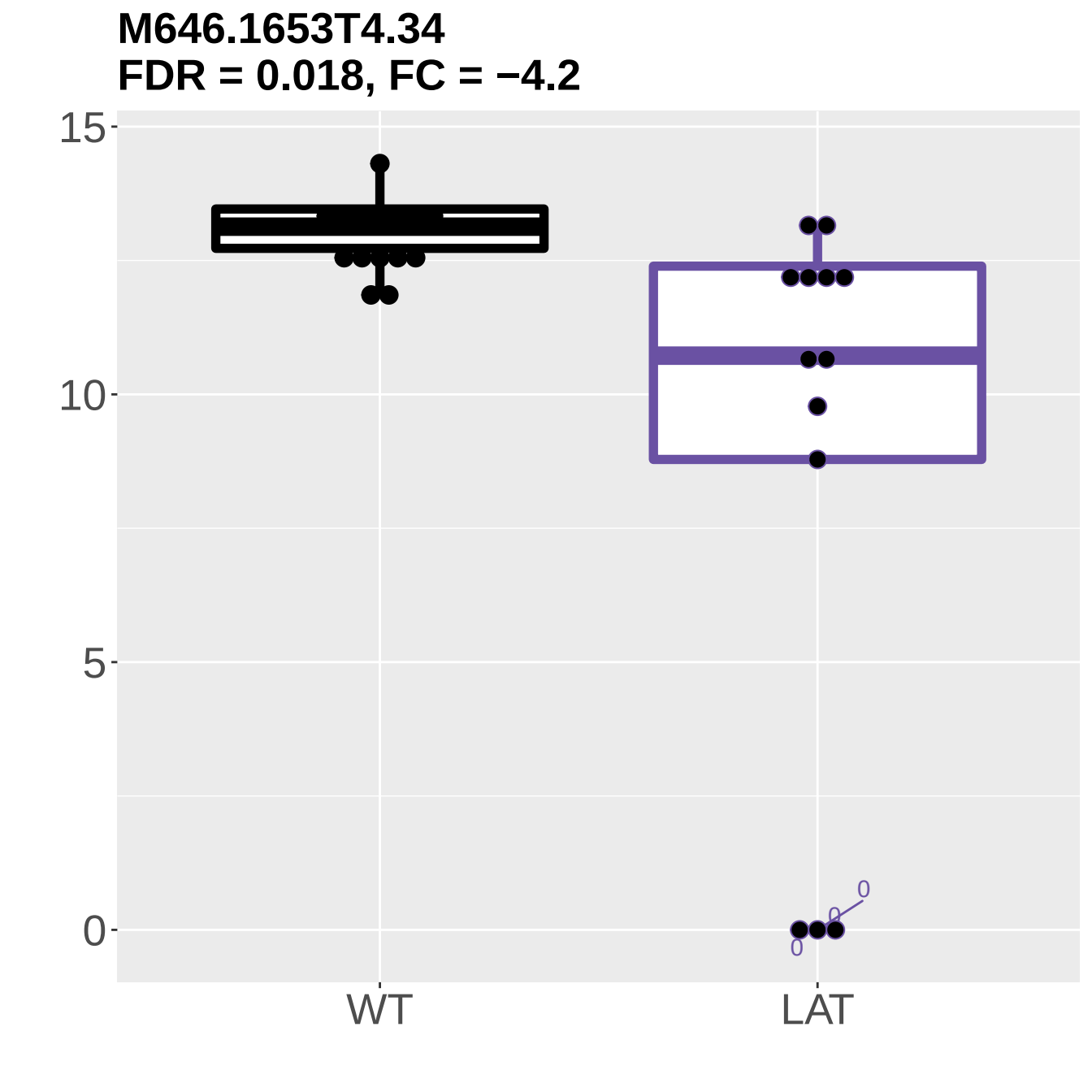
14
13
12
WT
LAT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FDR = 0.018, FC = −4.2
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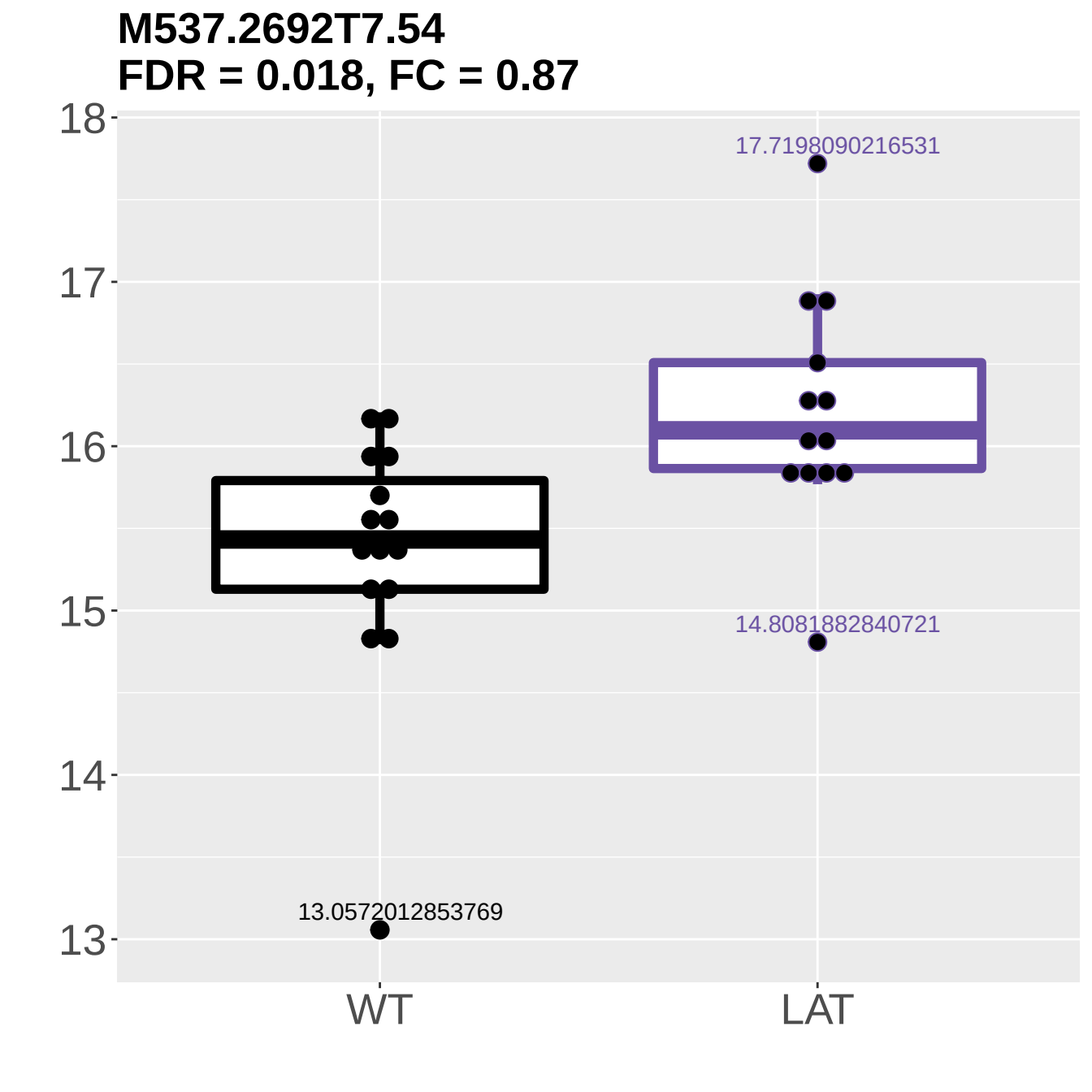
10
5
0
0
0
0
WT
LAT


M537.2692T7.54
FDR = 0.018, FC = 0.87
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17
16
15
14
13
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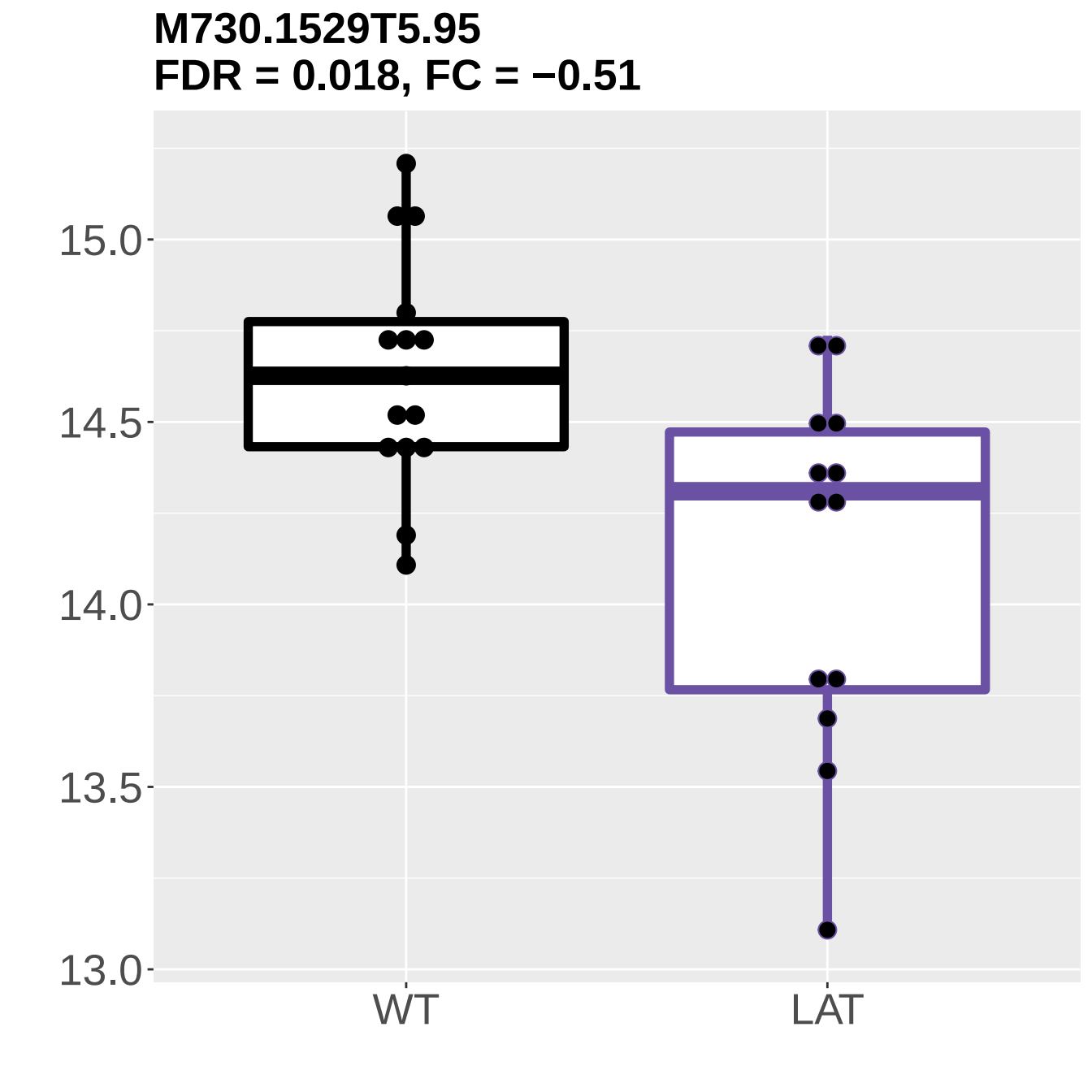
13.0572012853769
WT
LAT


M730.1529T5.95
FDR = 0.018, FC = −0.51
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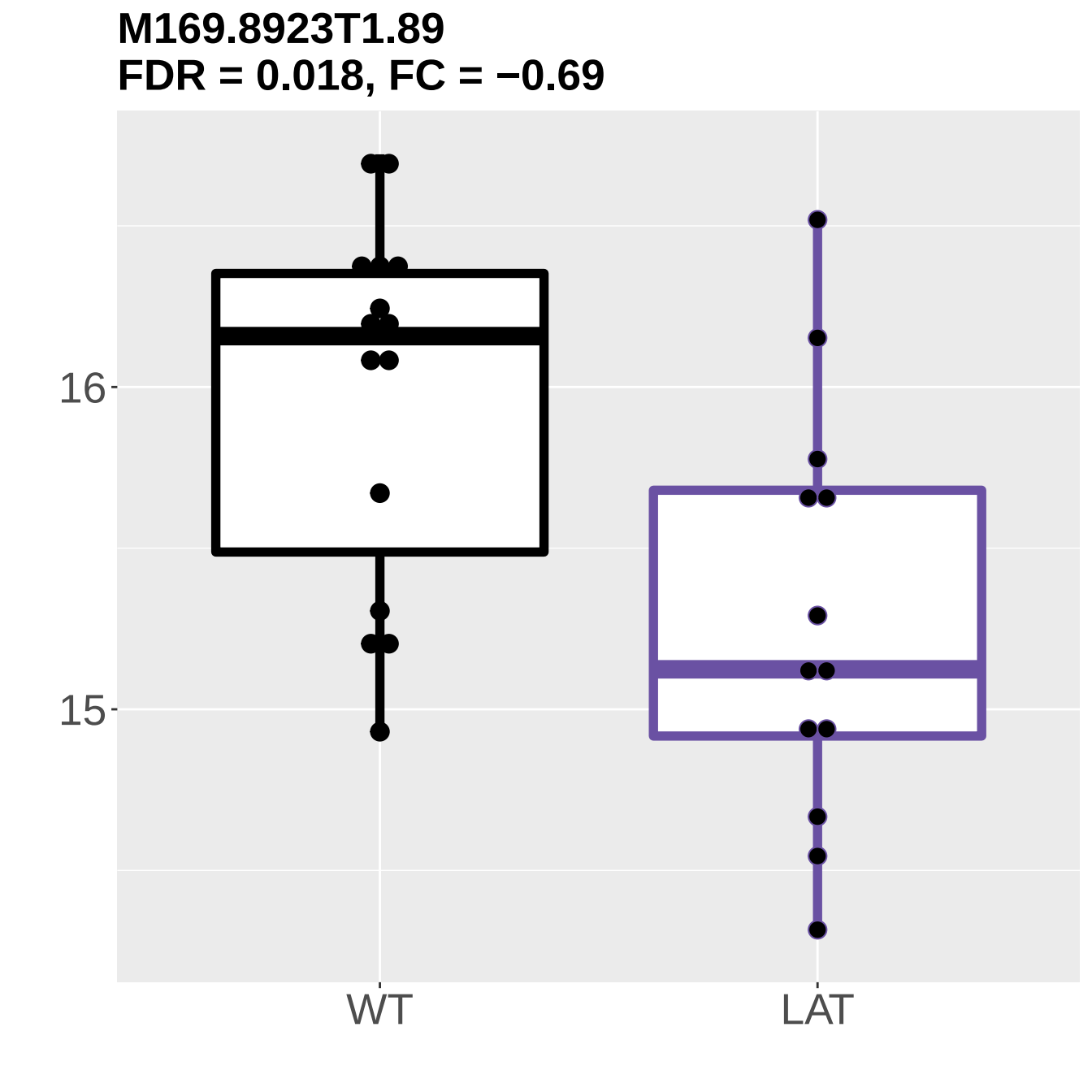
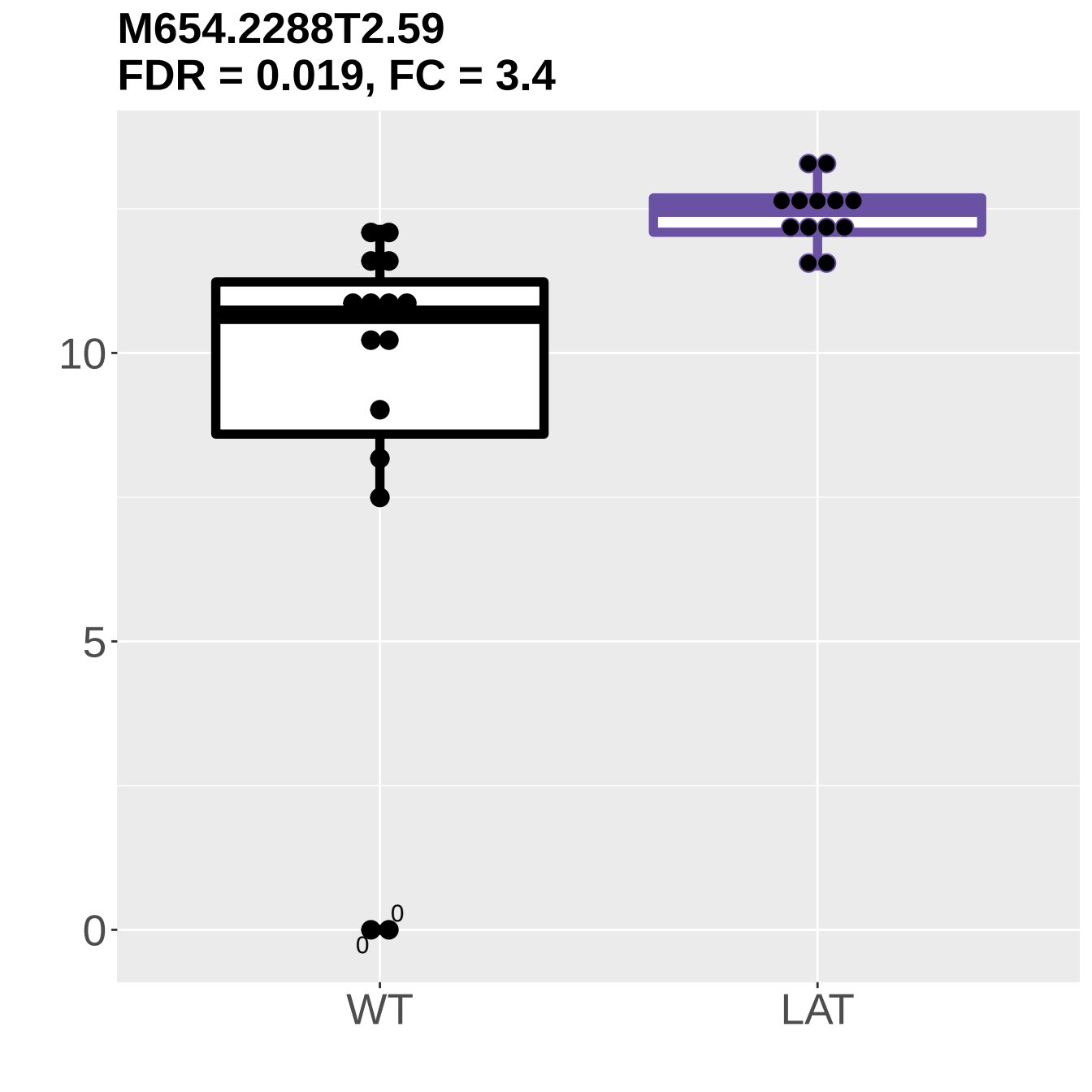
14.5
14.0
13.5
13.0
WT
LAT


M169.8923T1.89
FDR = 0.018, FC = −0.69
16
15
WT
LAT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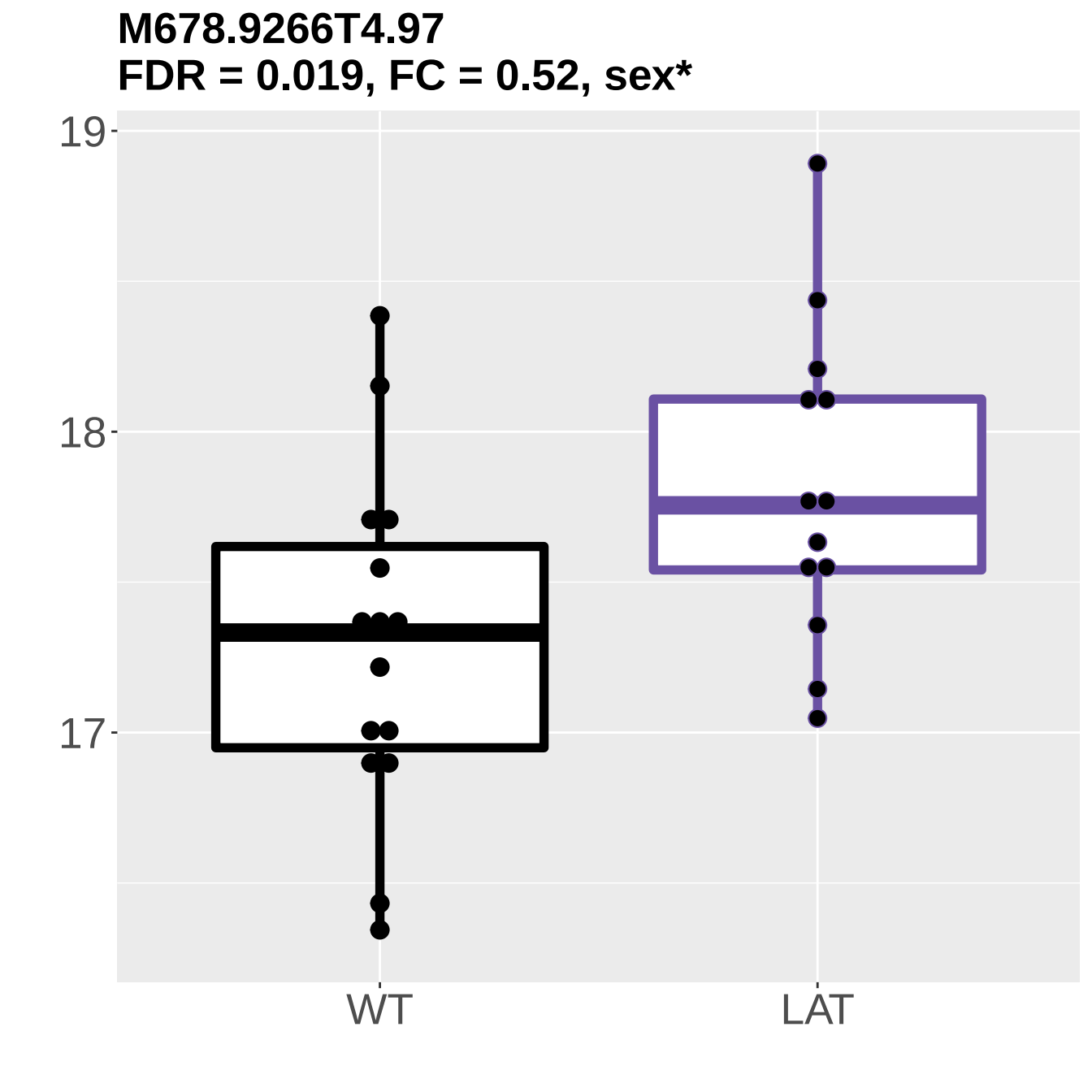
FDR = 0.019, FC = 3.4
10
5
0
0
0
WT
LAT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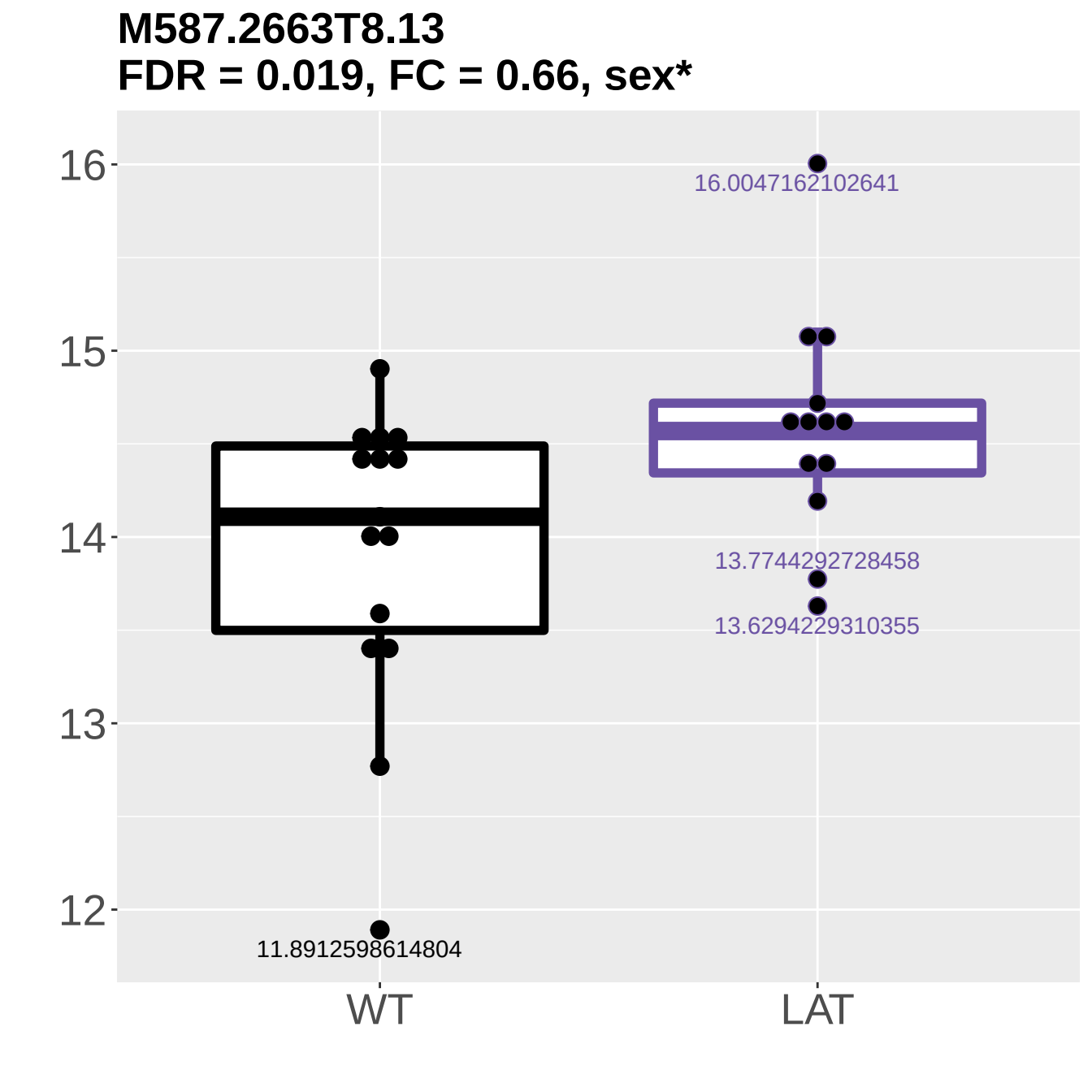
FDR = 0.019, FC = 0.52, sex*
19
18
17
WT
LAT


M587.2663T8.13
FDR = 0.019, FC = 0.66, sex*
16
15
14
13
12
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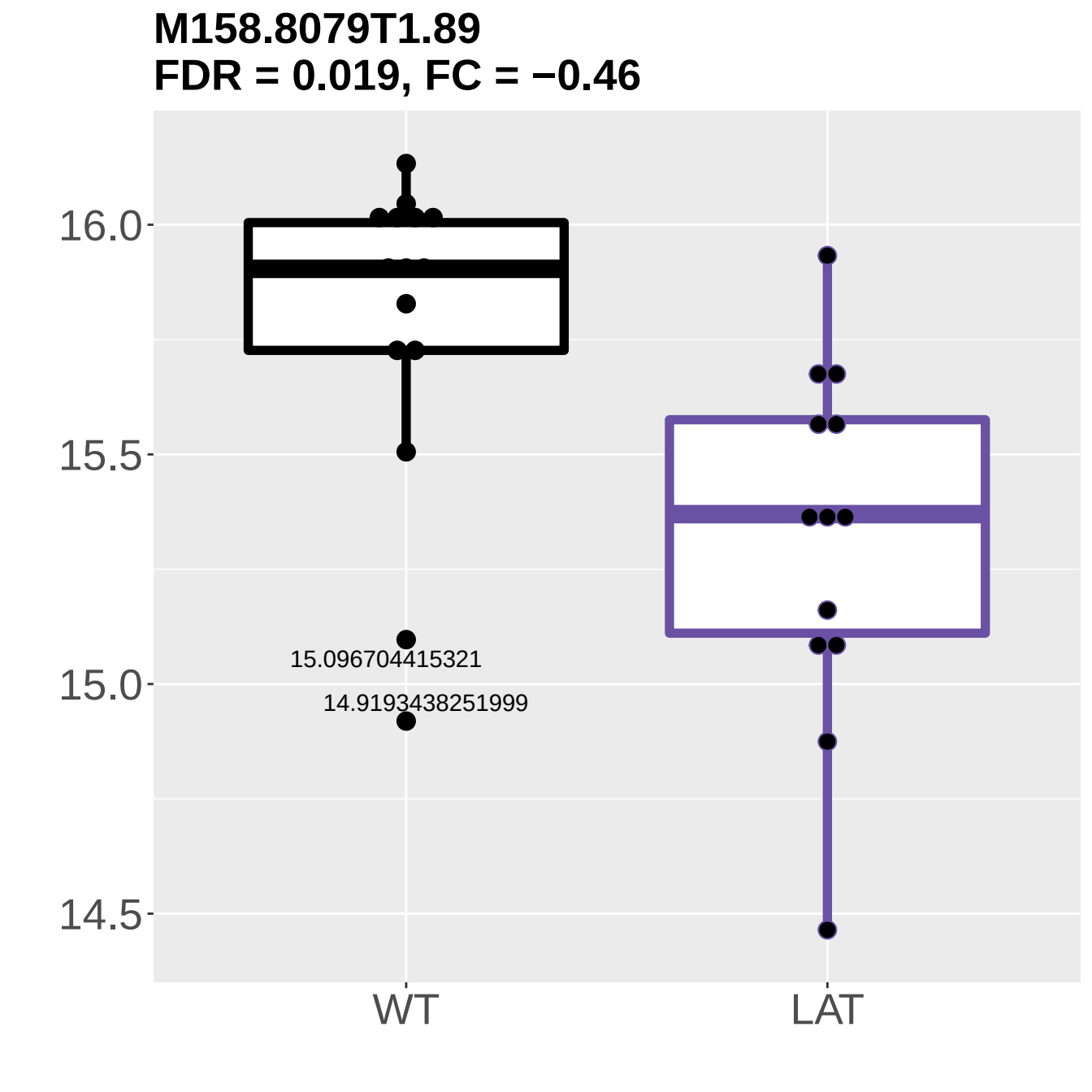
13.6294229310355
11.8912598614804
WT
LAT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15.0
14.5
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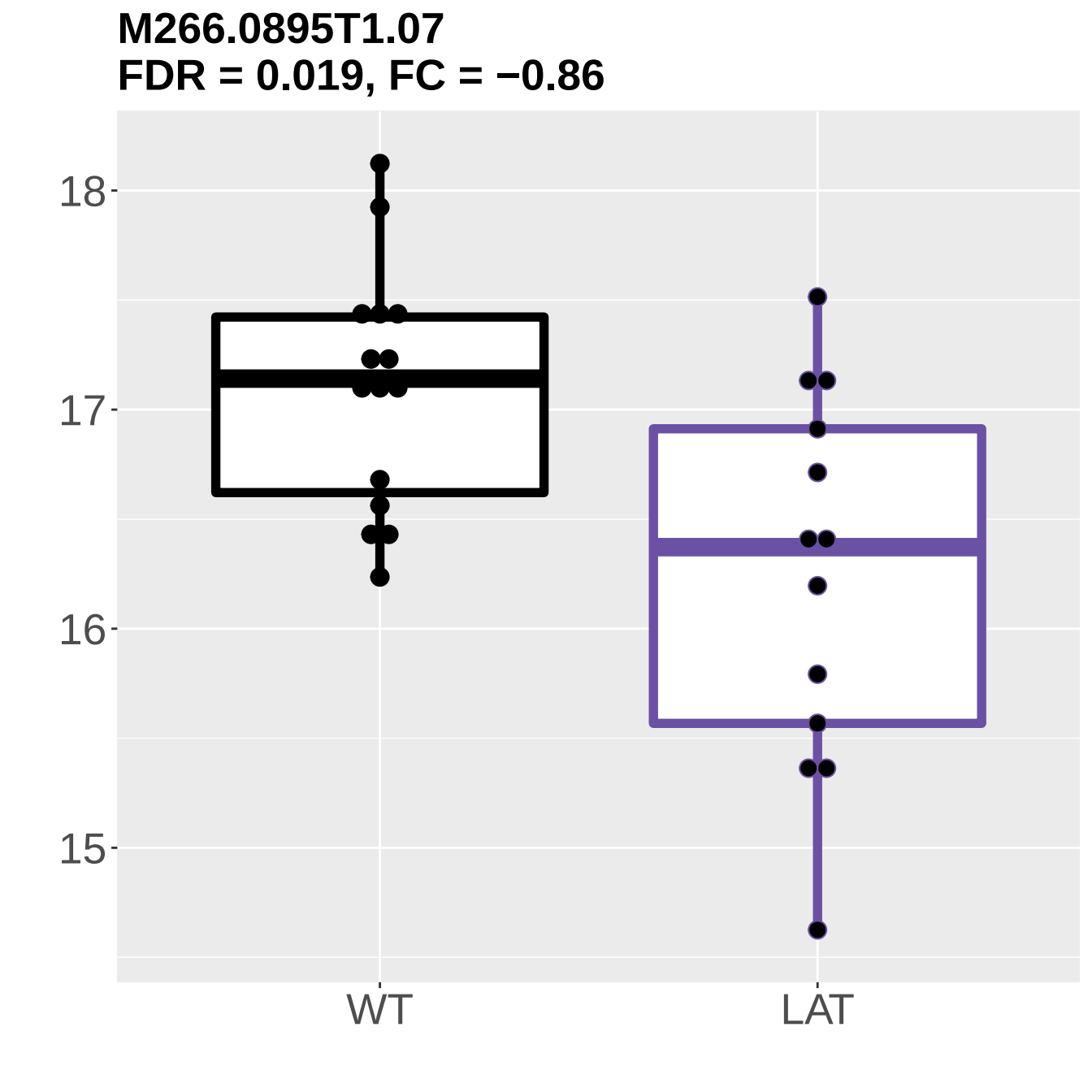
WT
LAT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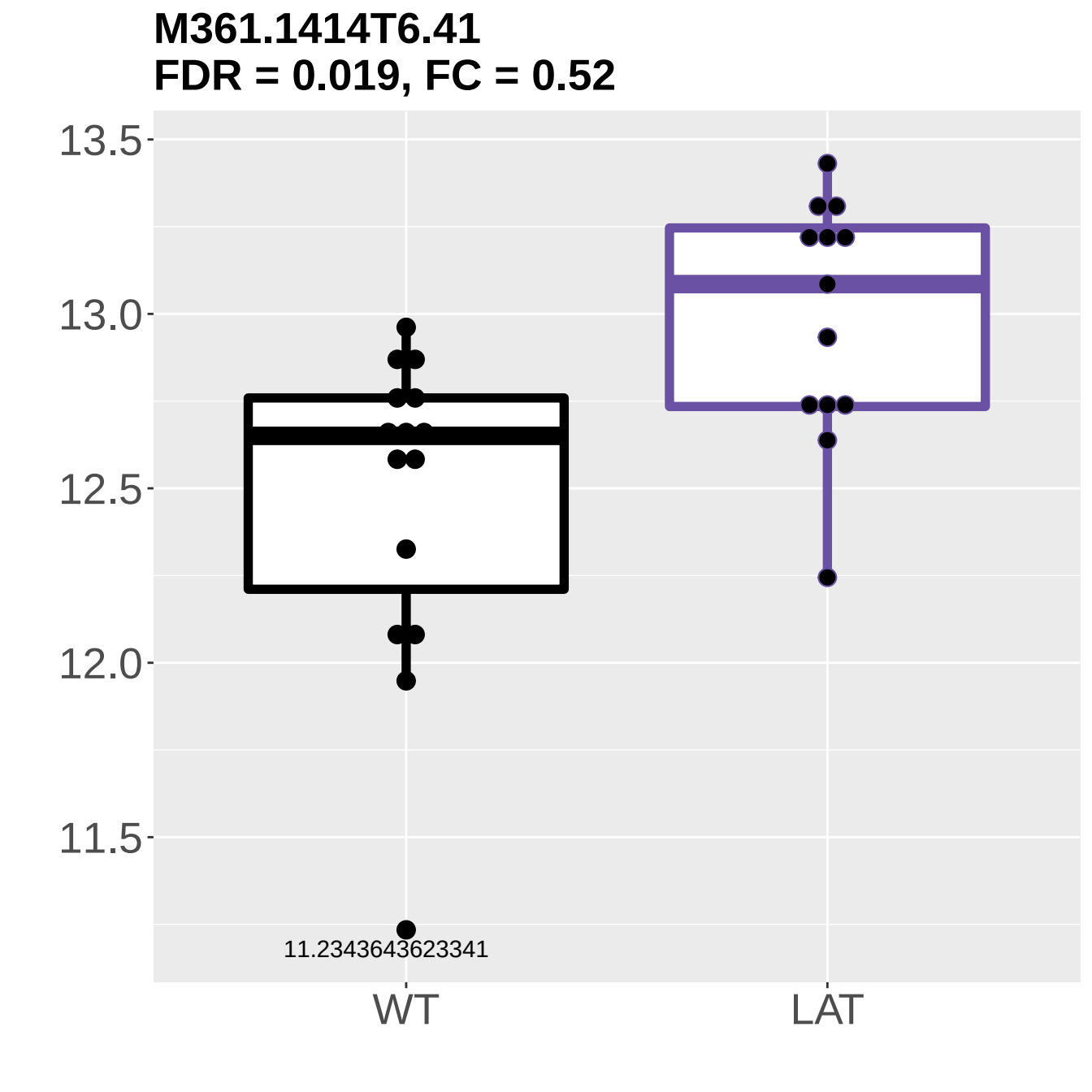
17
16
15
WT
LAT


M361.1414T6.41
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12.5
12.0
11.5
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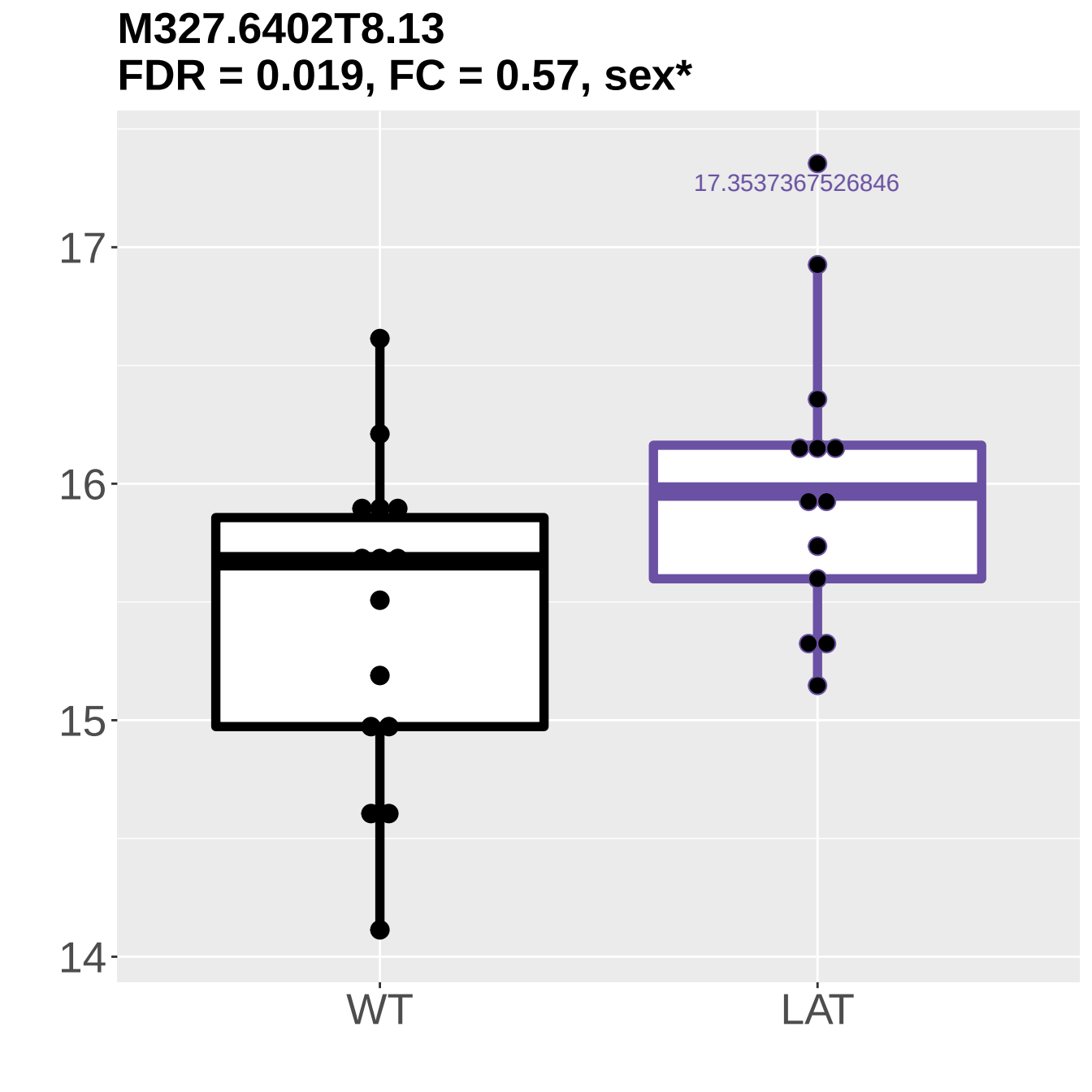
WT
LAT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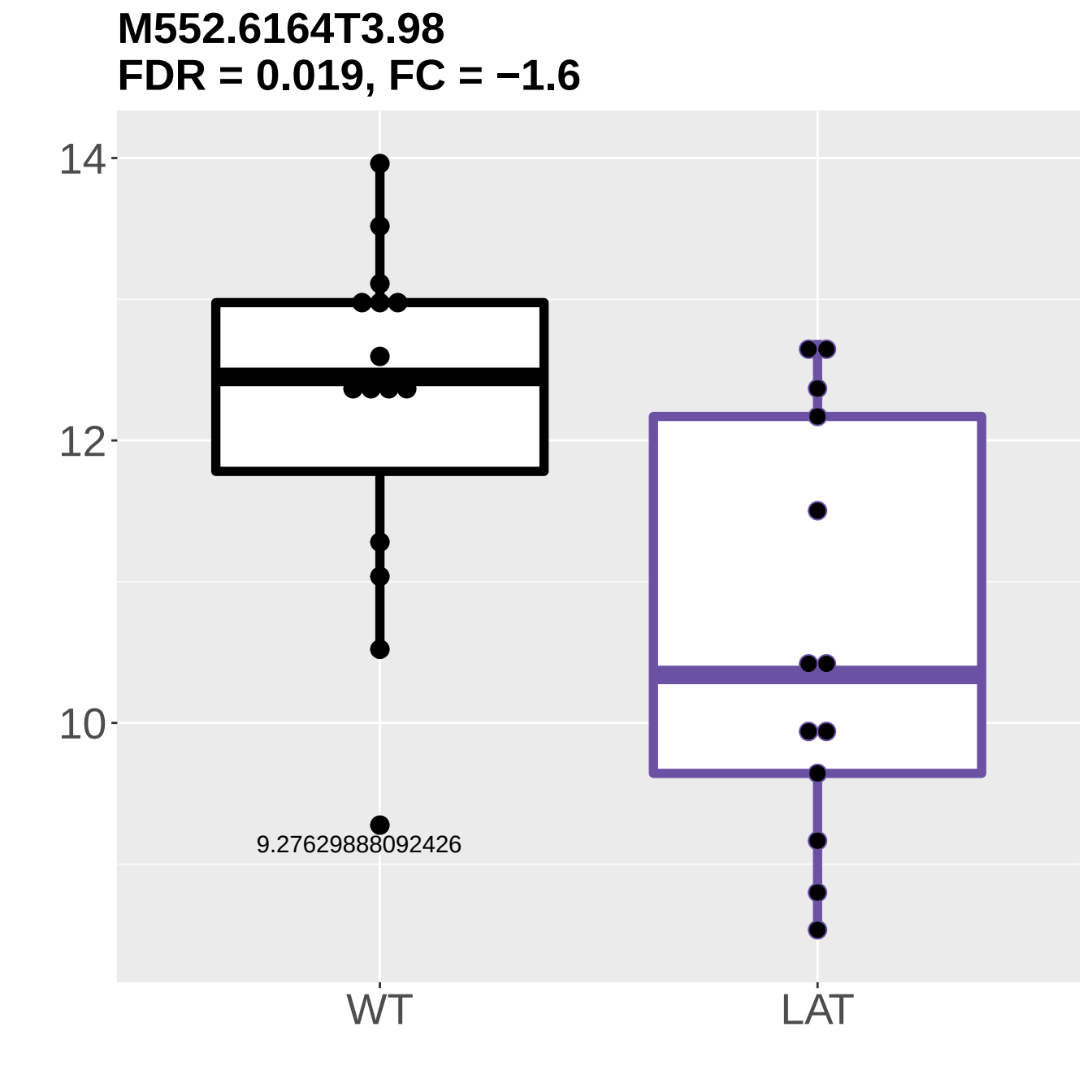
17
16
15
14
WT
LAT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14
12
10
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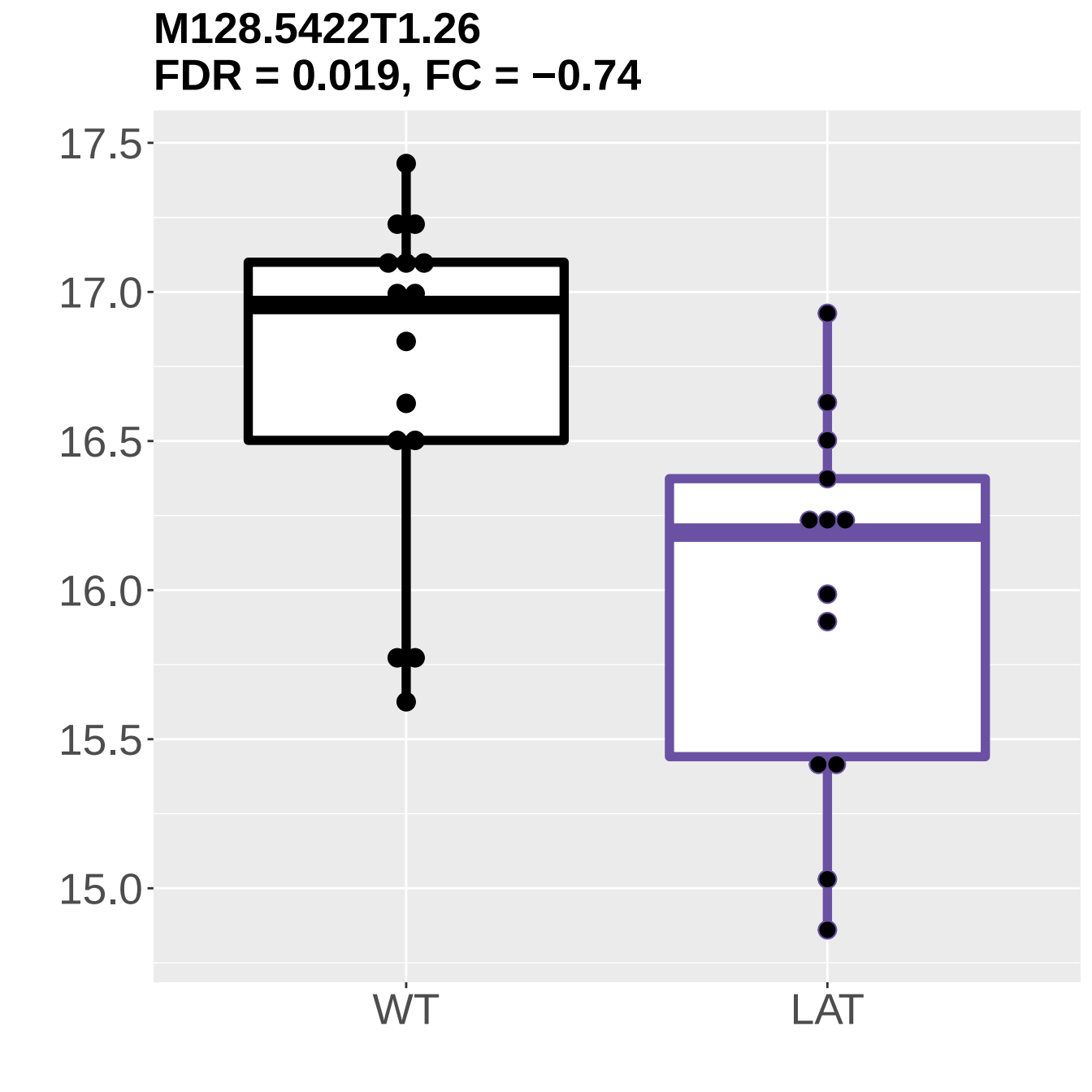
WT
LAT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FDR = 0.019, FC = −0.74
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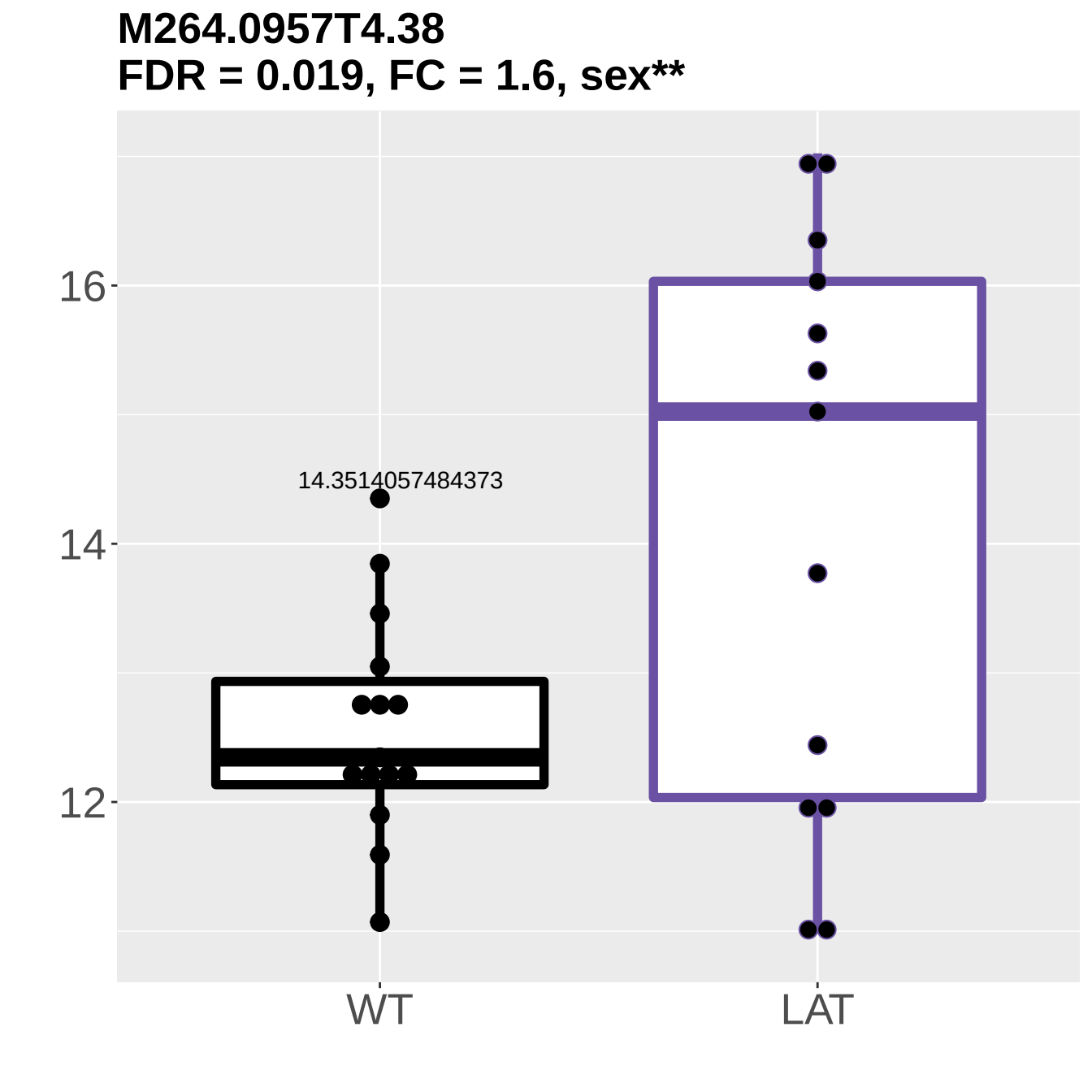
16.5
16.0
15.5
15.0
WT
LAT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FDR = 0.019, FC = 1.6, sex**
16
14
12
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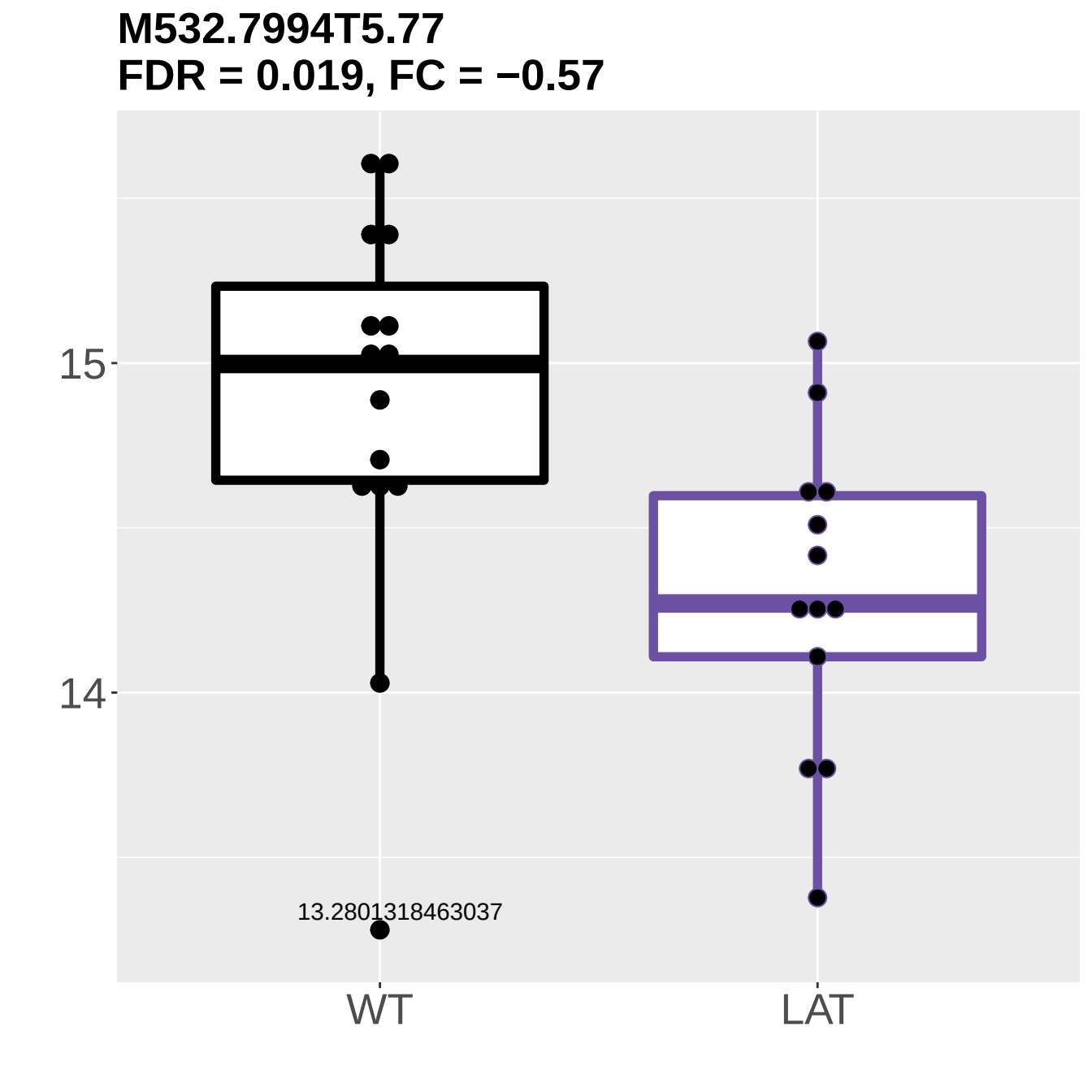
WT
LAT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FDR = 0.019, FC = −0.57
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14
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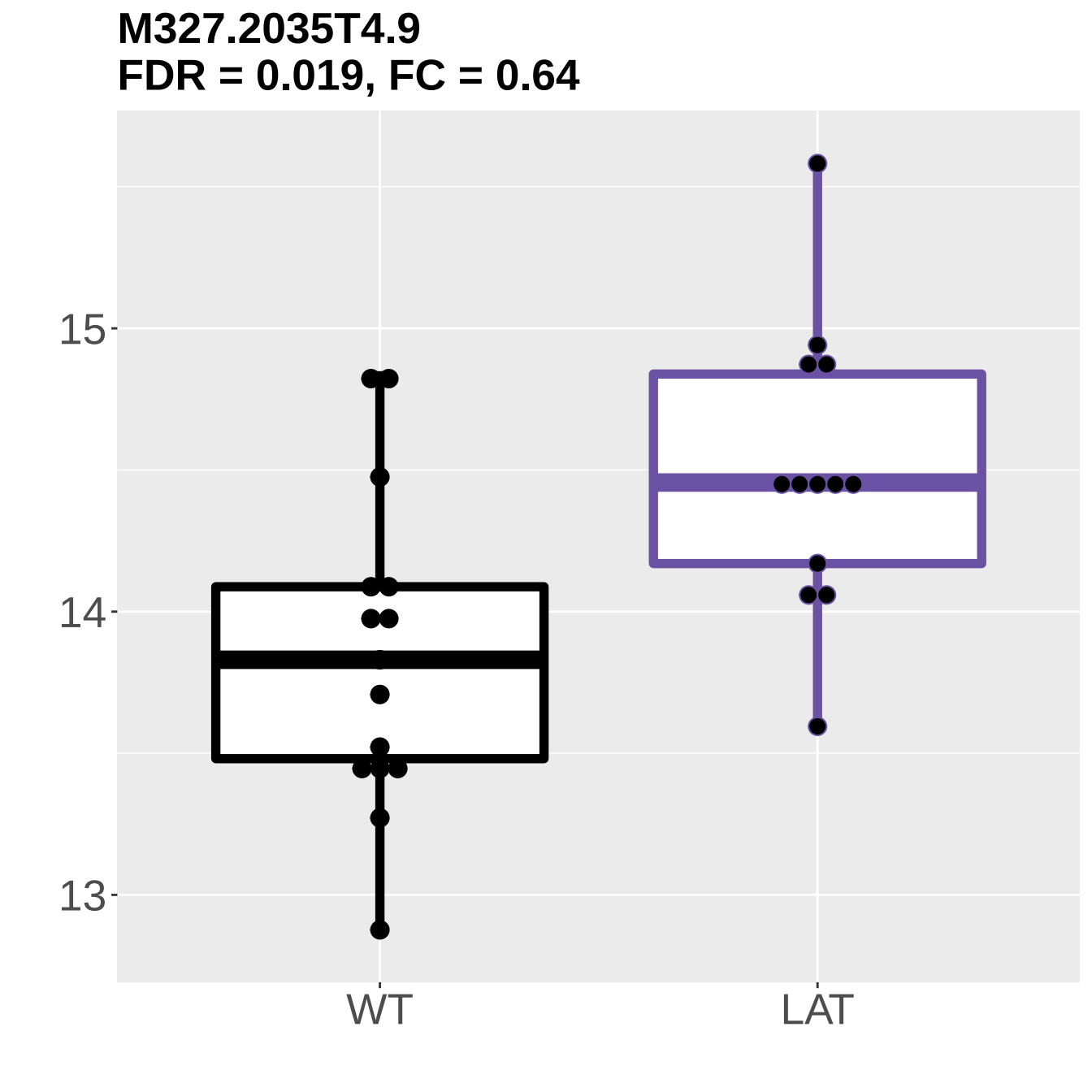
WT
LAT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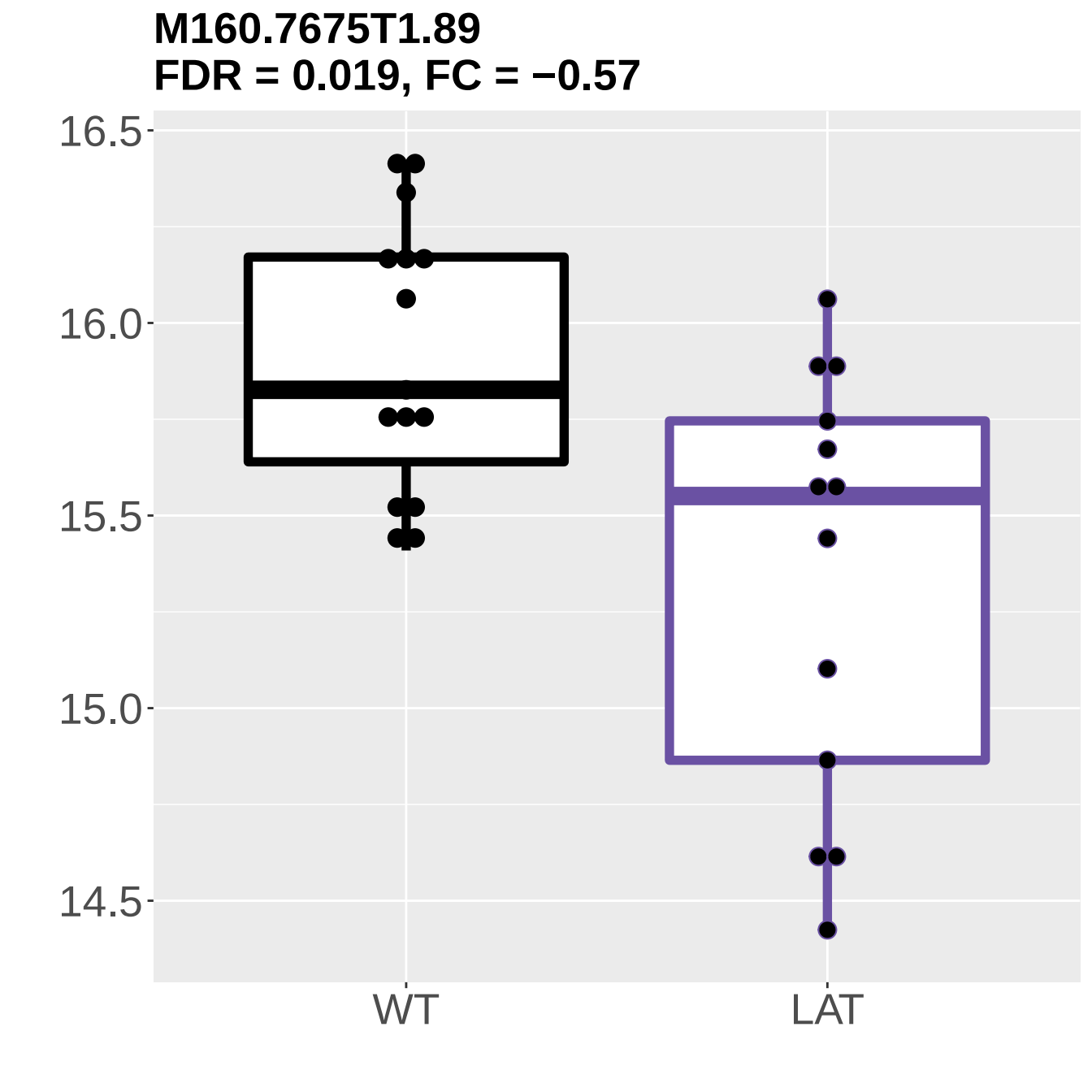
14
13
WT
LAT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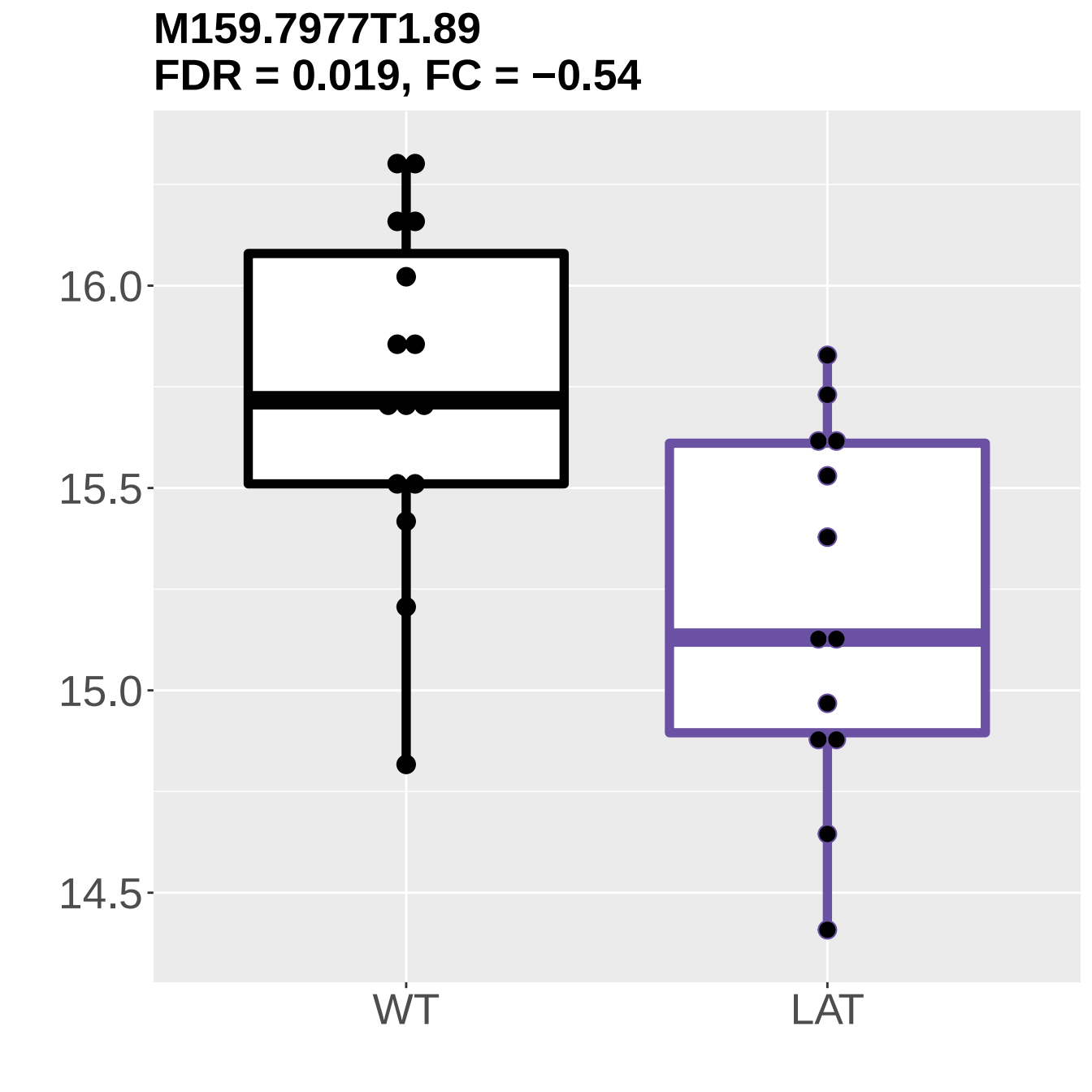
15.0
14.5
WT
LAT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15.0
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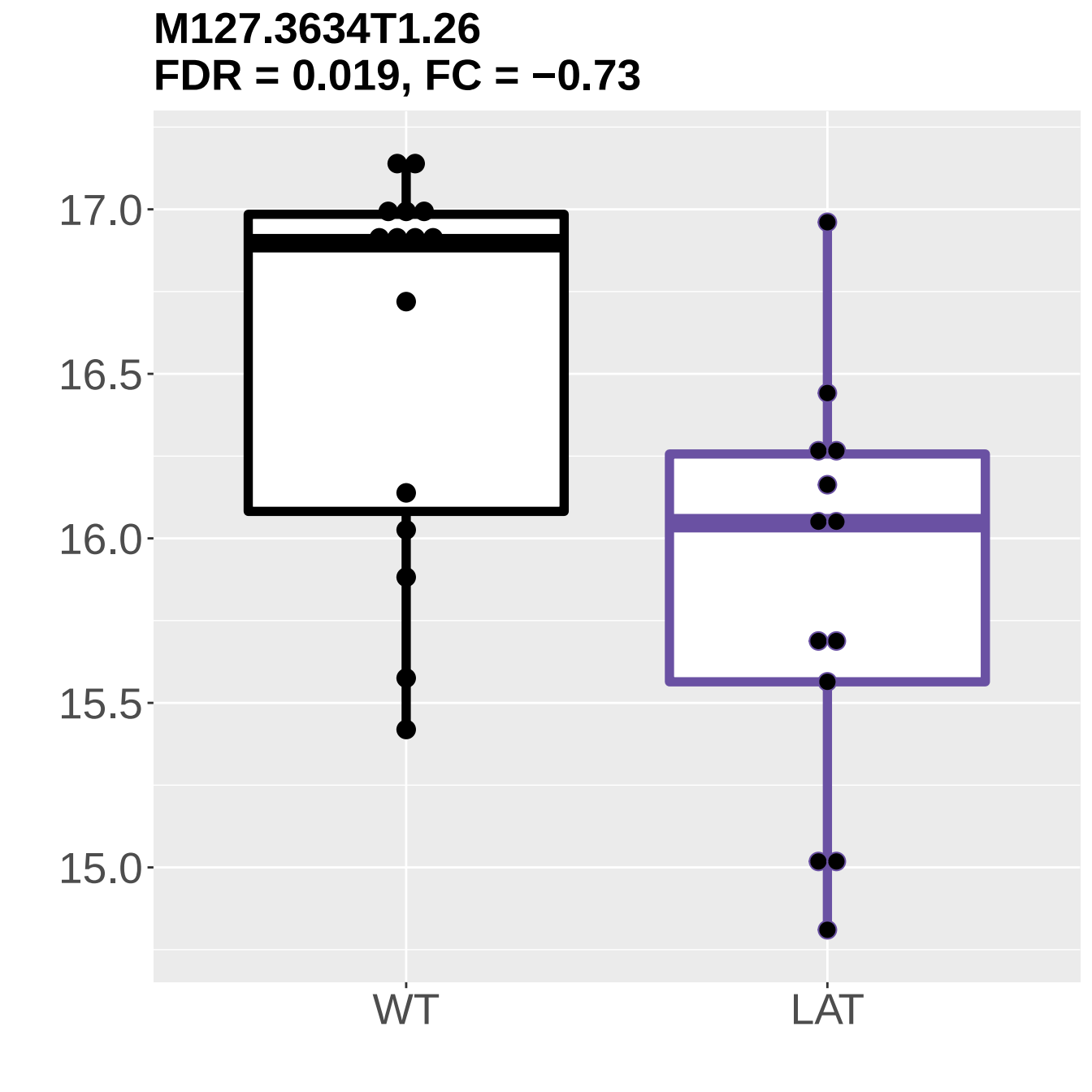
WT
LAT


M127.3634T1.26
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16.0
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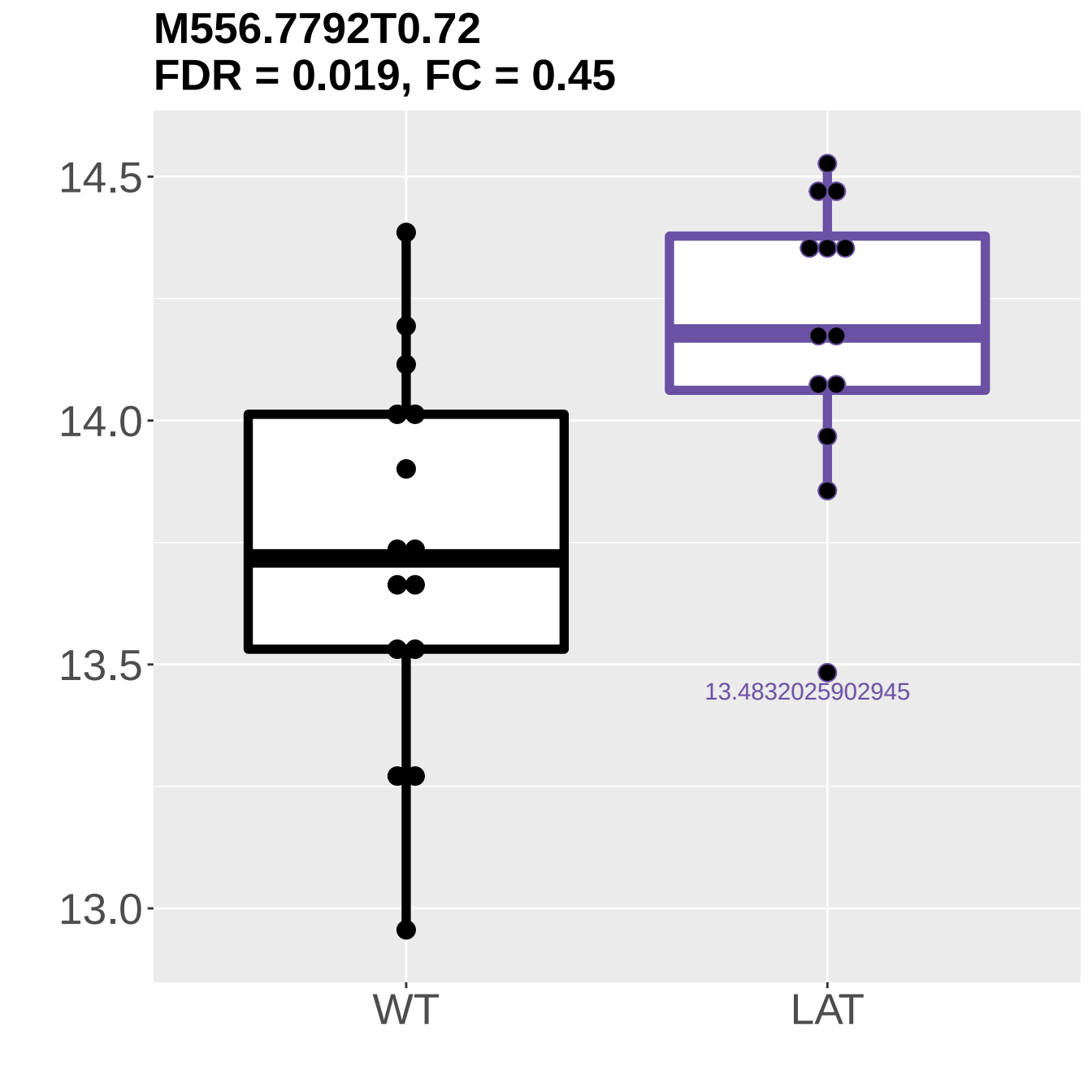
15.0
WT
LAT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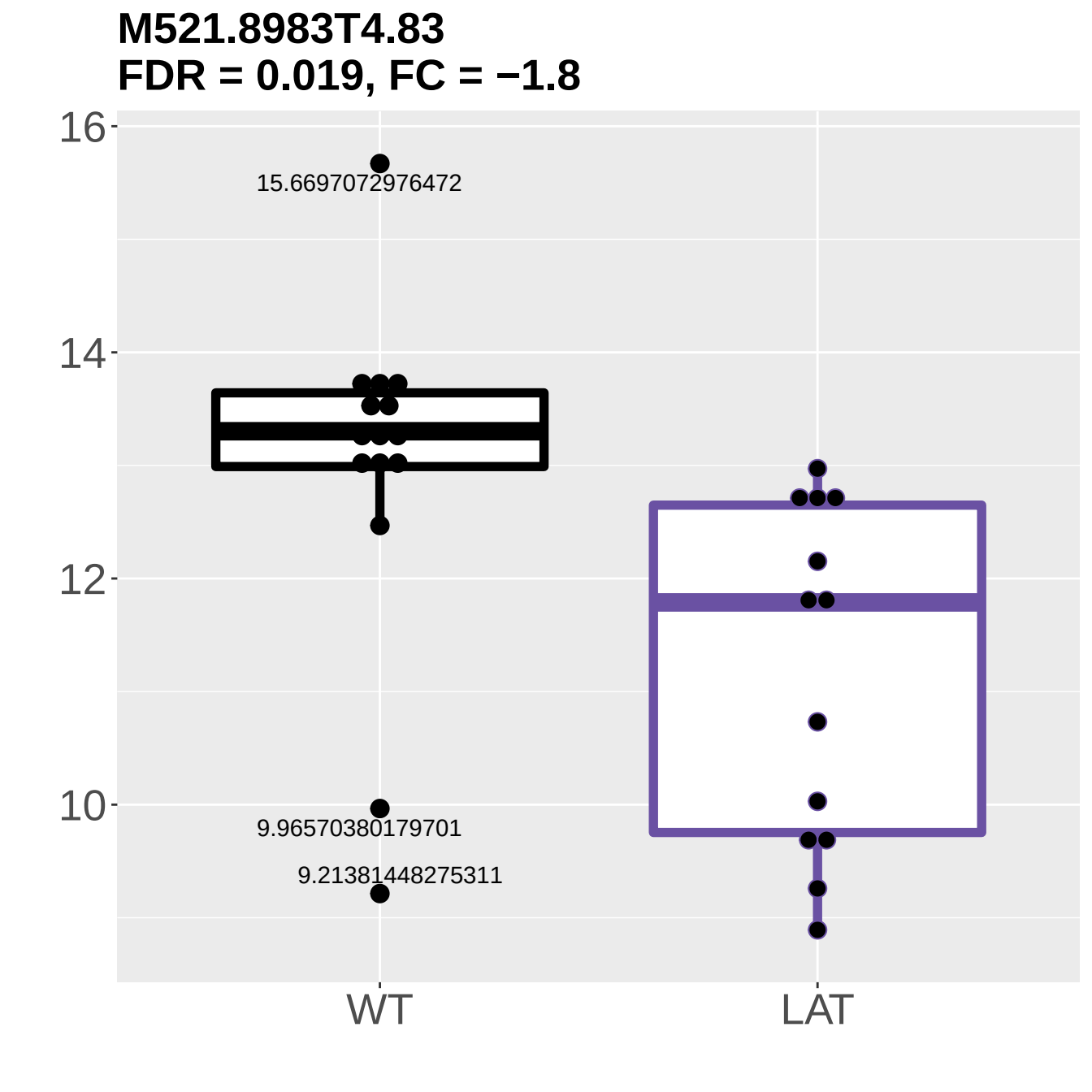
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FDR = 0.019, FC = −1.8
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14
12
10
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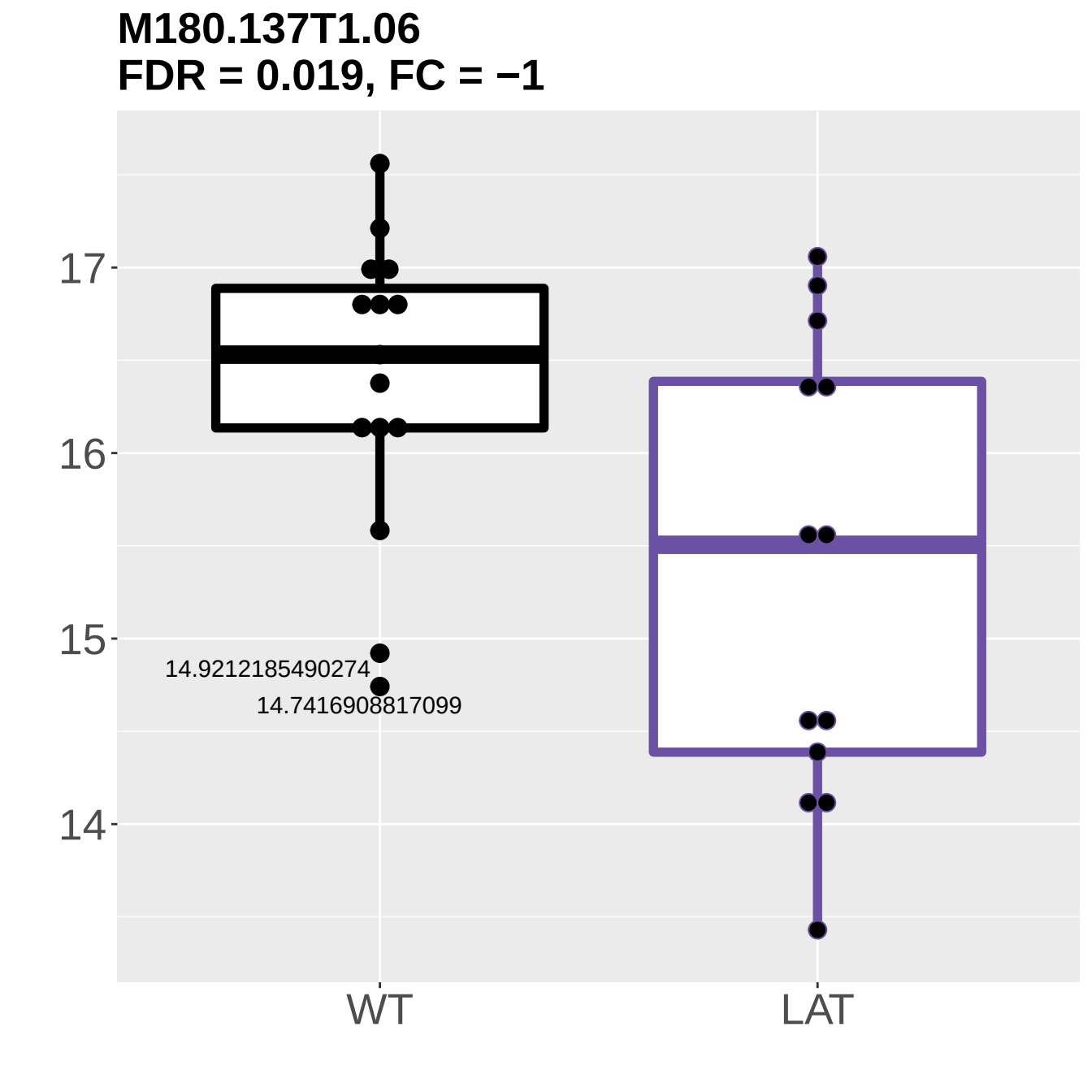
WT
LAT


M180.137T1.06
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16
15
14
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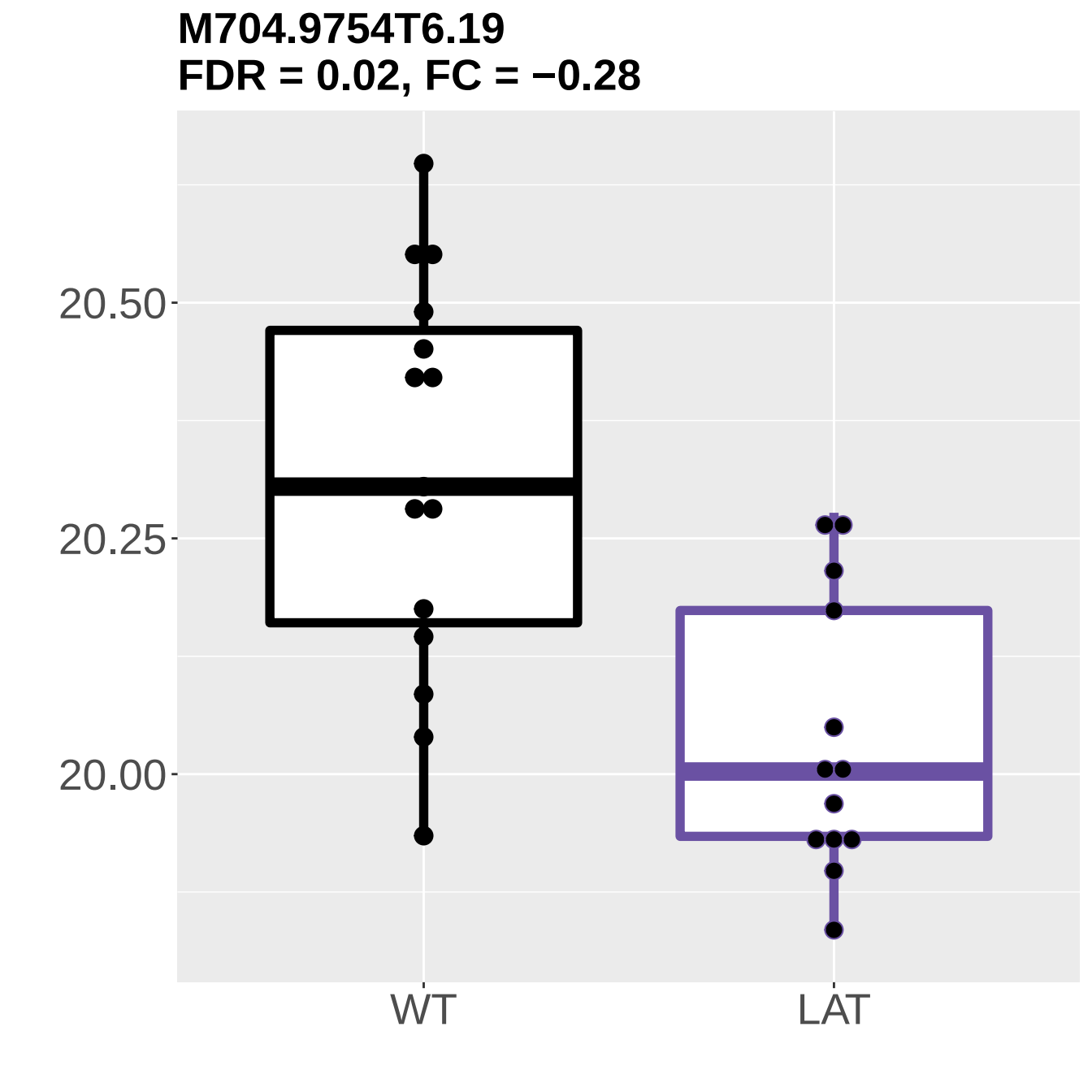
WT
LAT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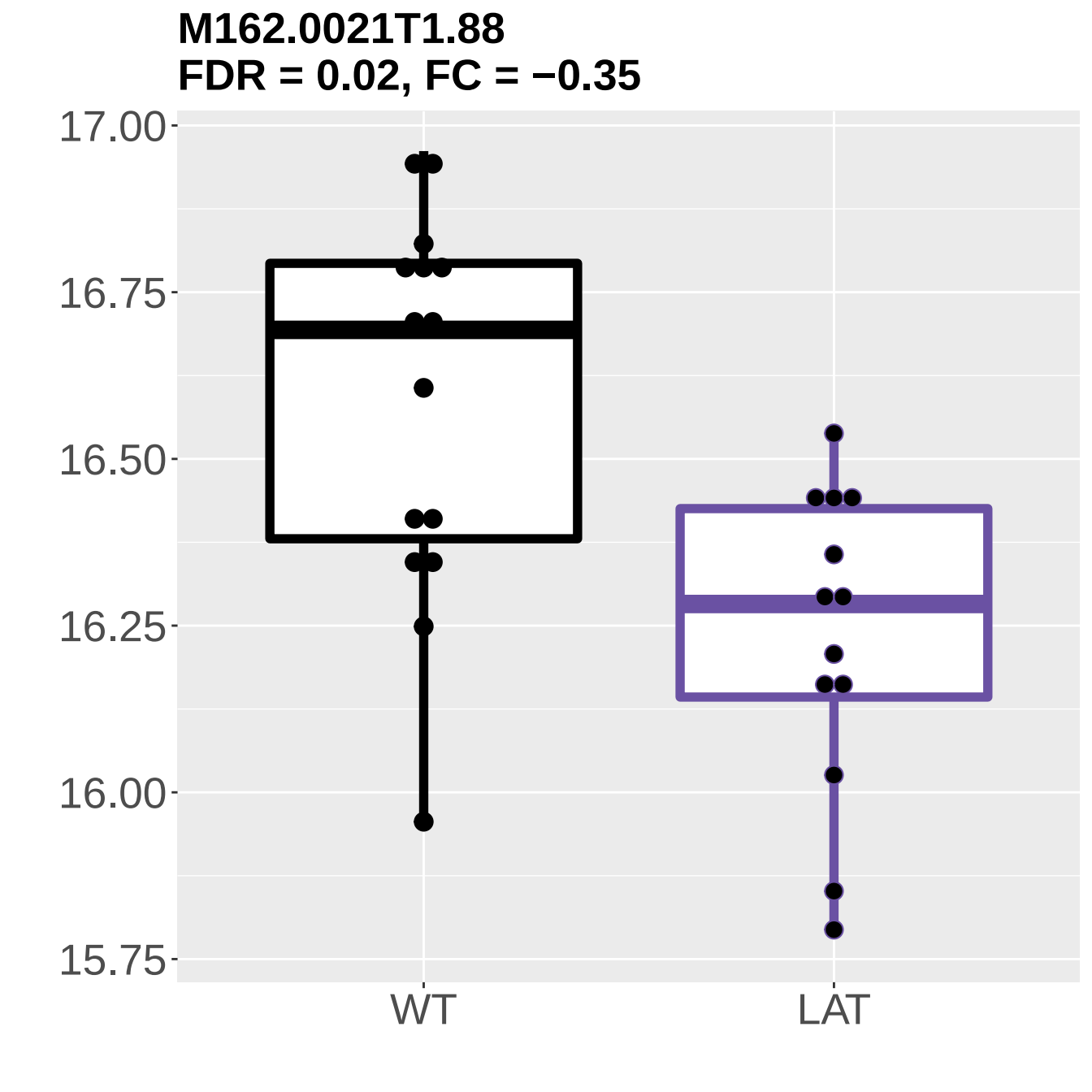
WT
LAT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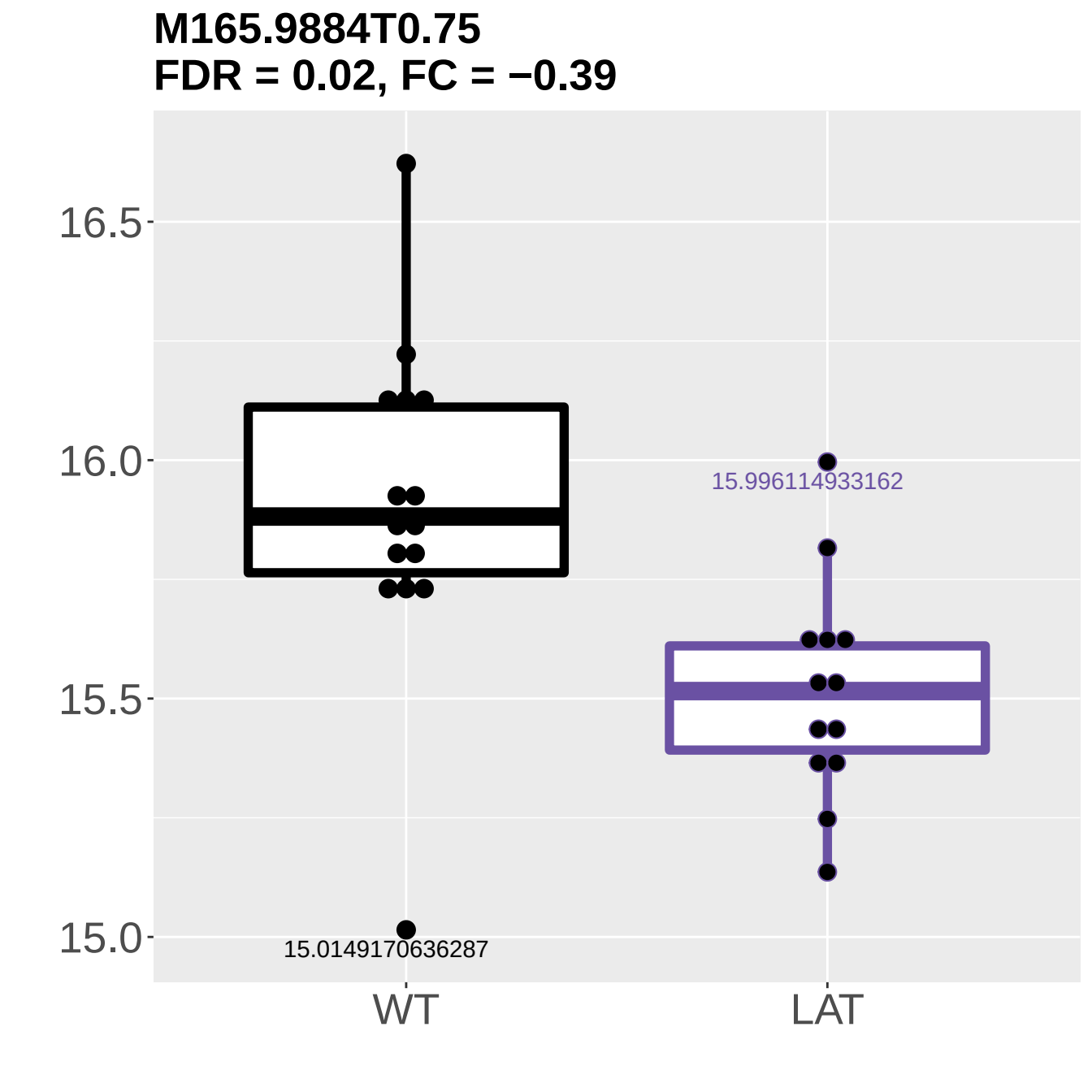
16.50
16.25
16.00
15.75
WT
LAT


M165.9884T0.75
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15.5
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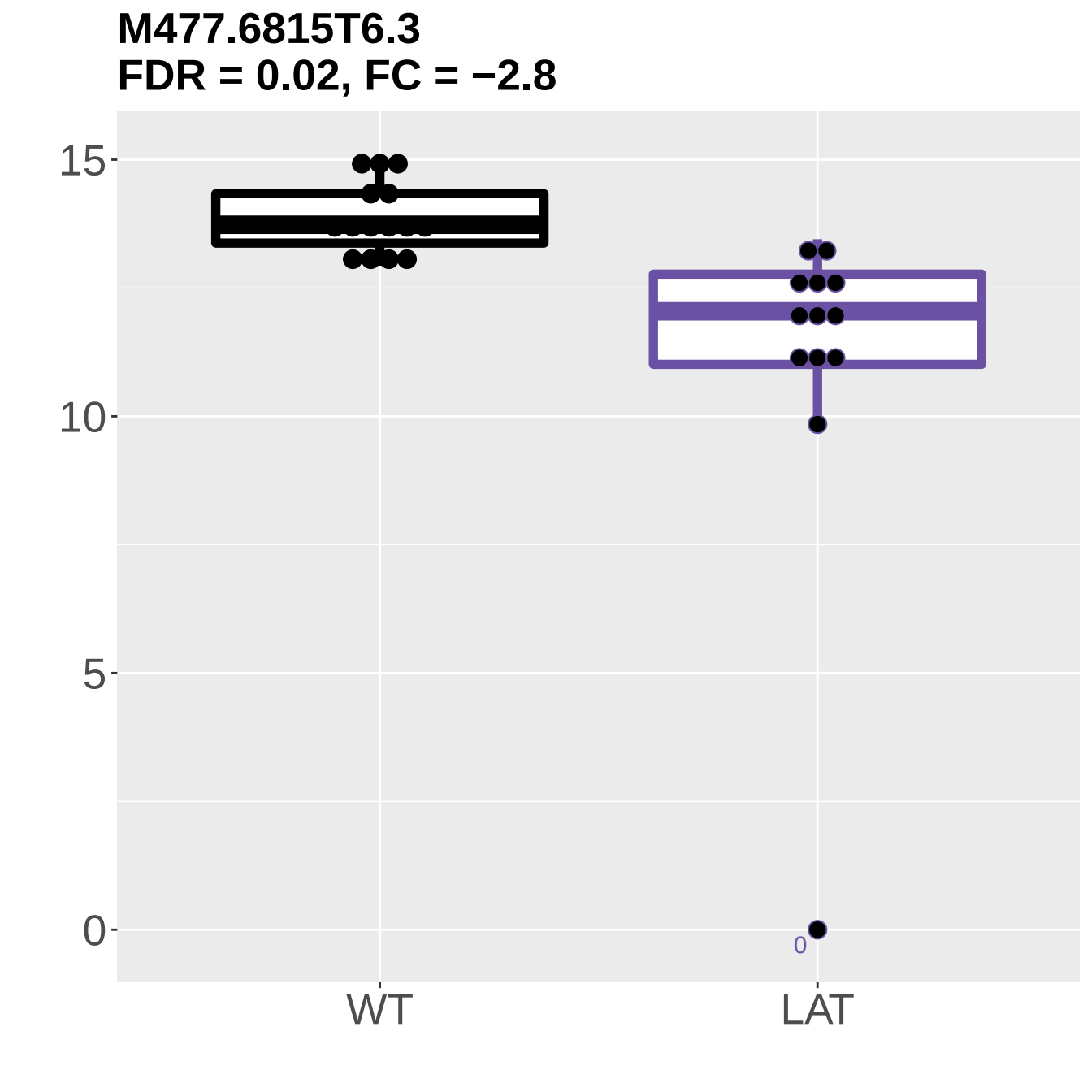
WT
LAT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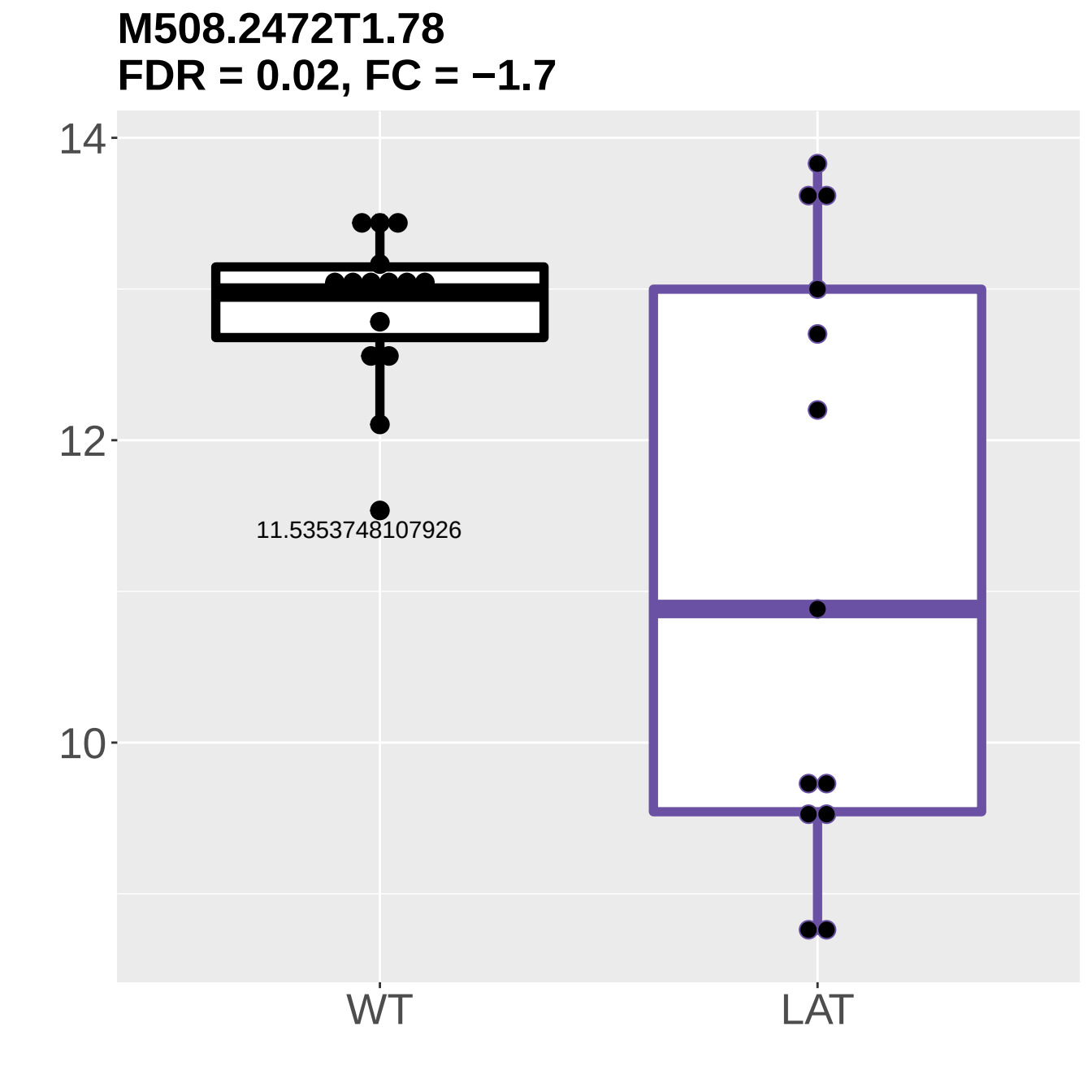
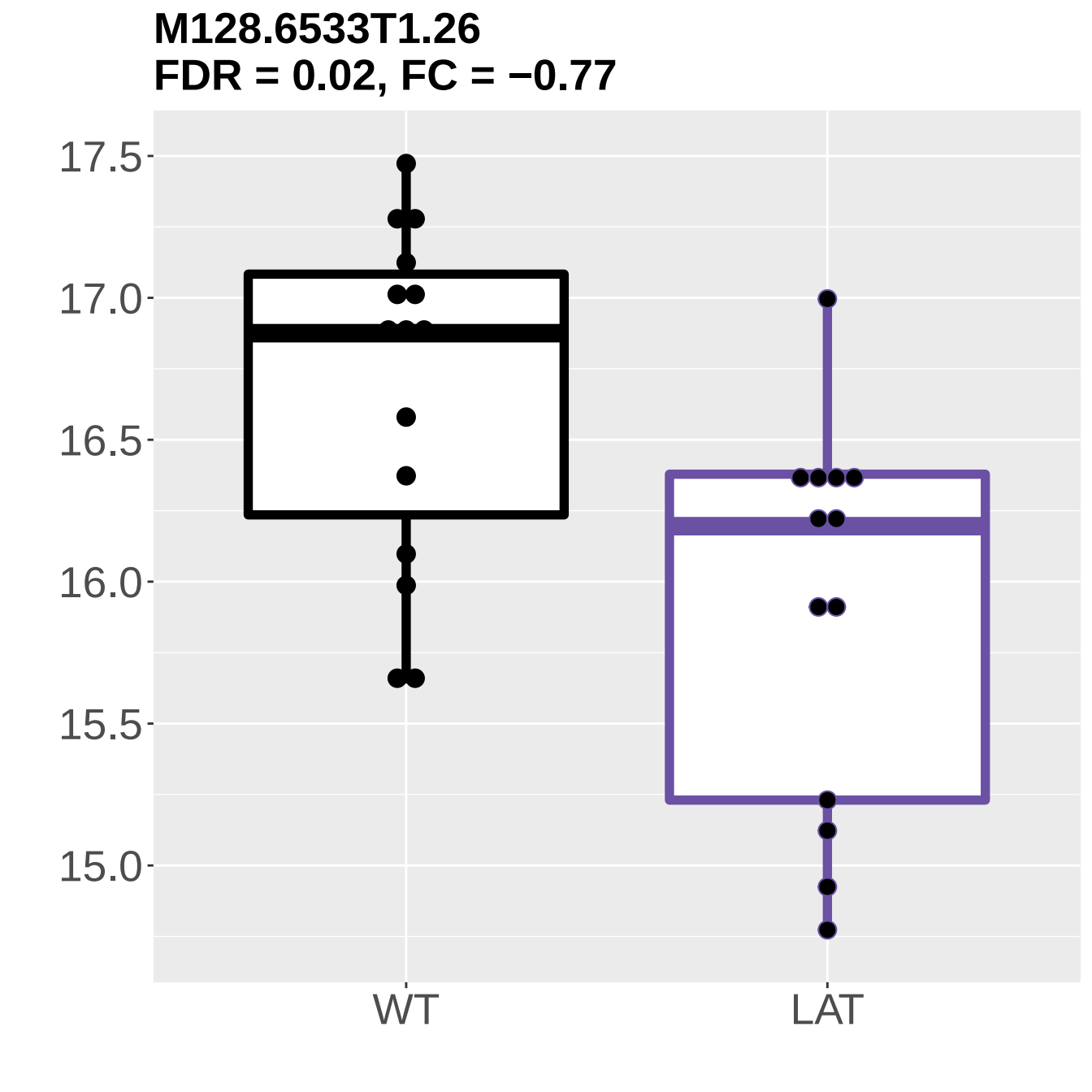
10
5
0
0
WT
LAT


M508.2472T1.78
FDR = 0.02, FC = −1.7
14
12
10
11.5353748107926
WT
LAT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16.5
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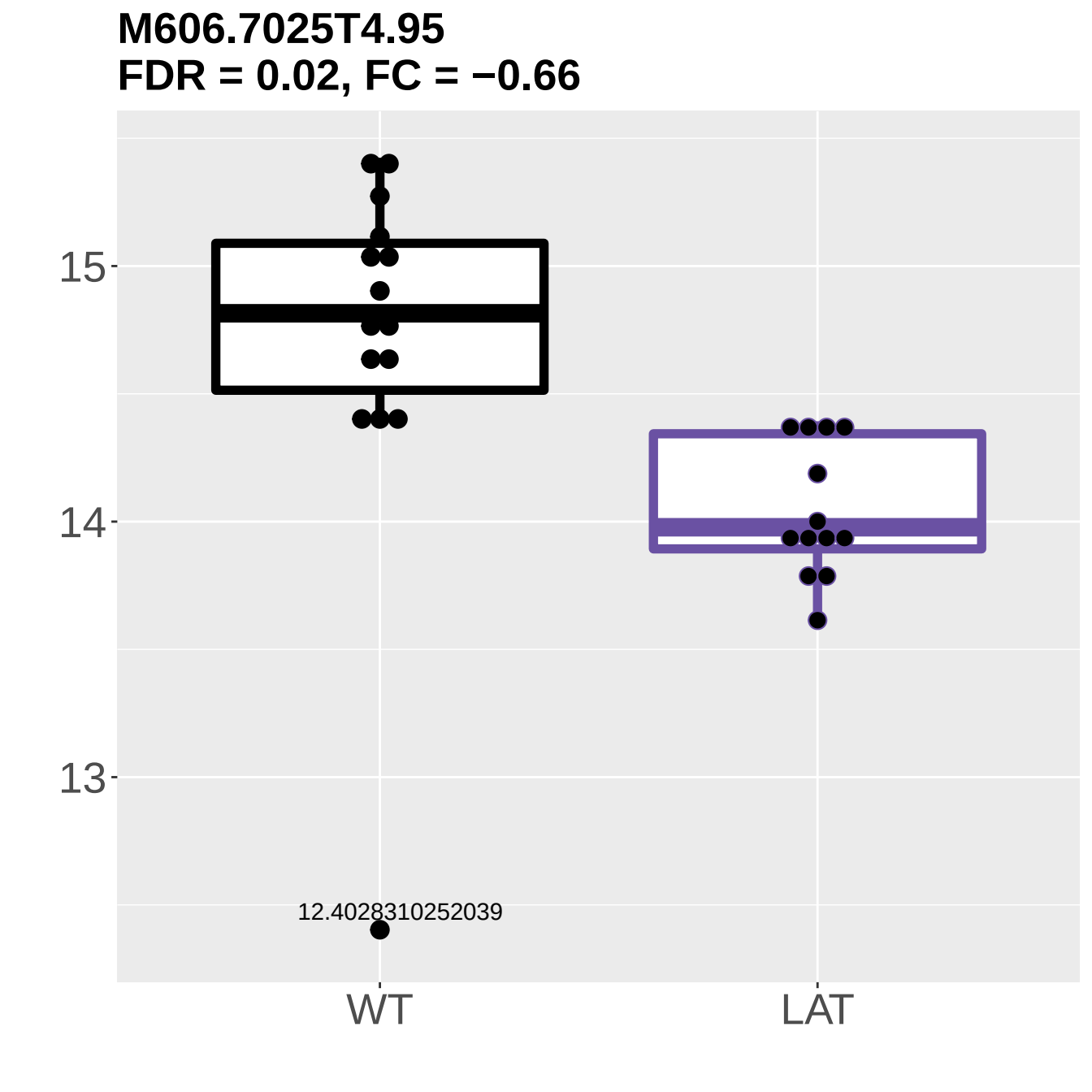
15.5
15.0
WT
LAT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14
13
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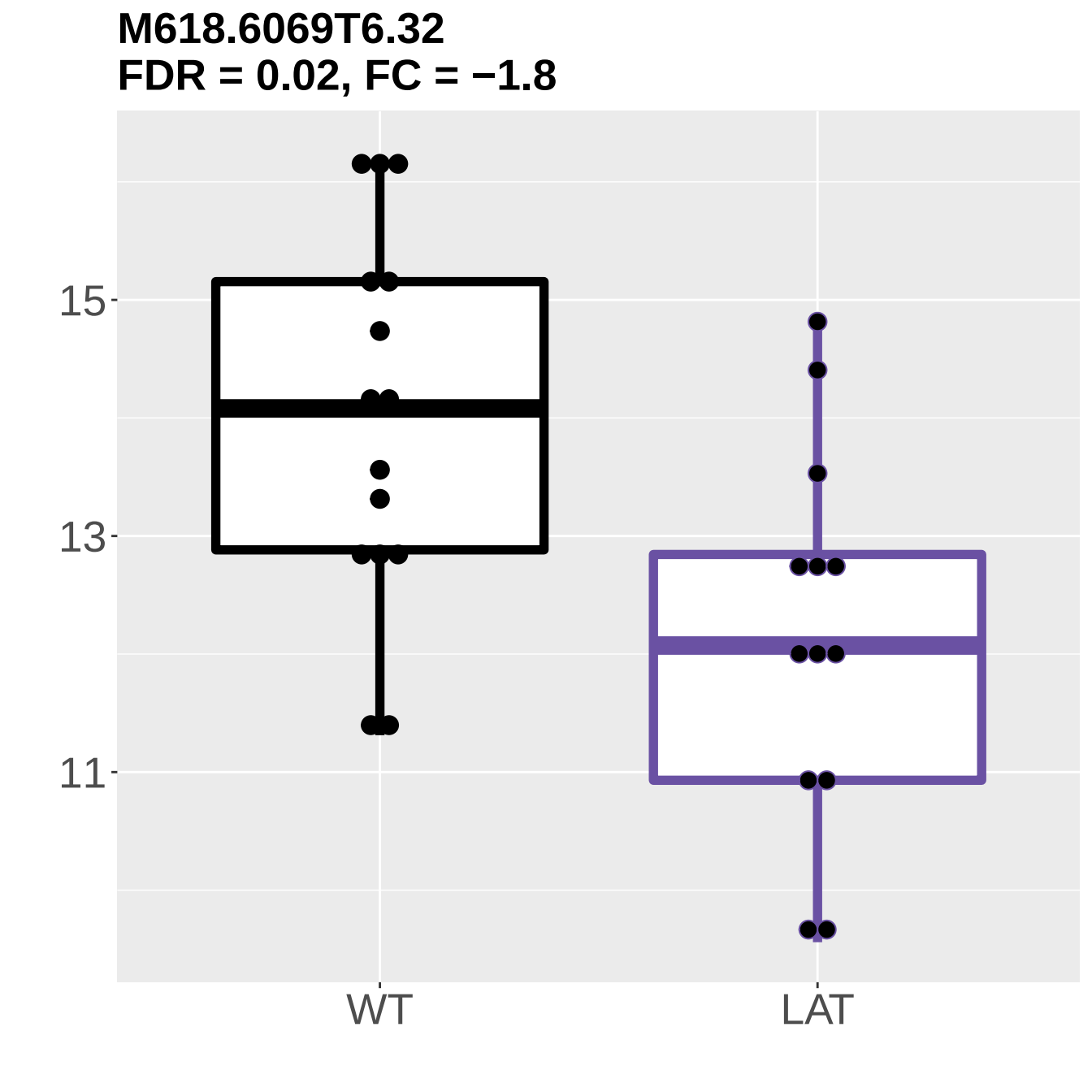
WT
LAT


M618.6069T6.32
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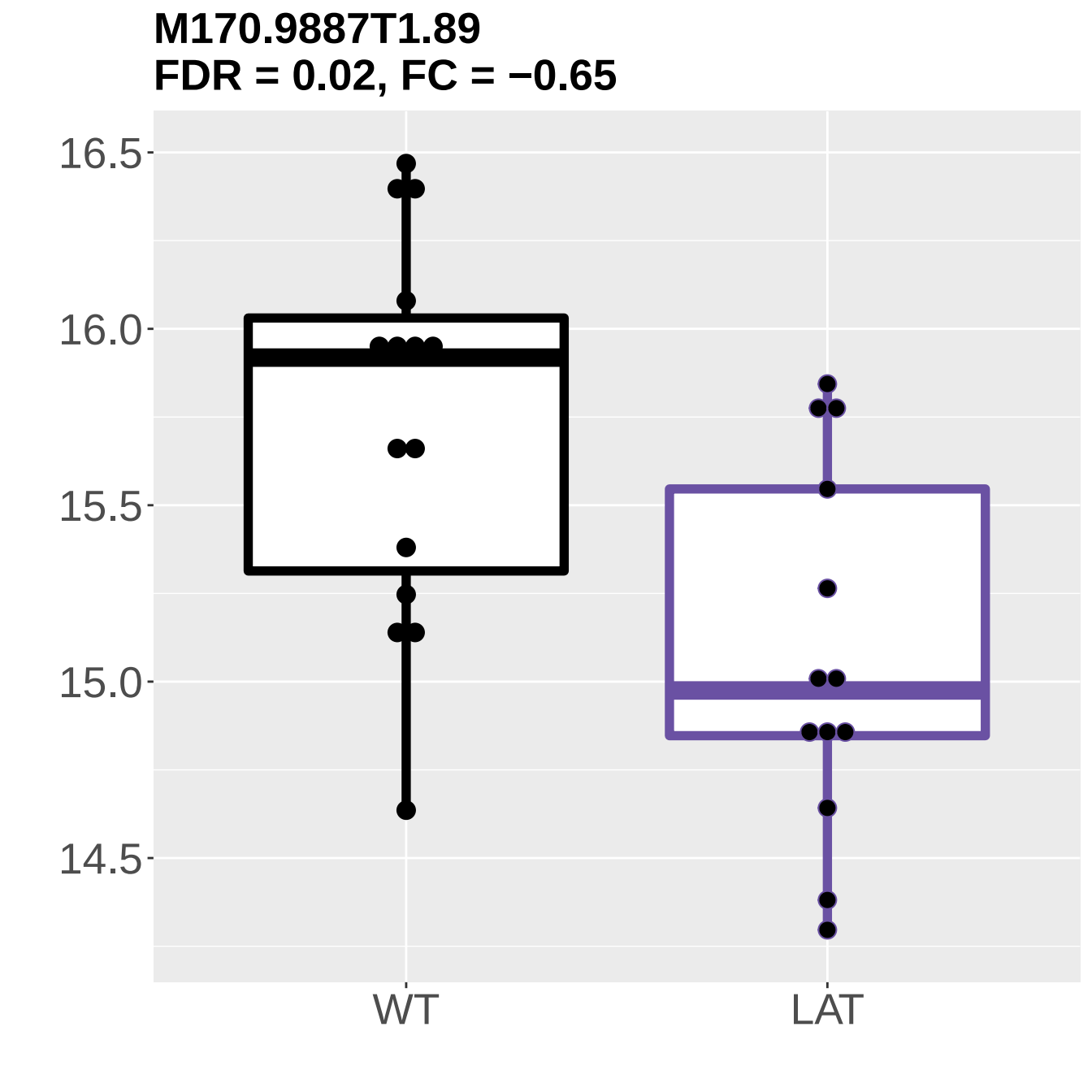
13
11
WT
LAT


M170.9887T1.89
FDR = 0.02, FC = −0.65
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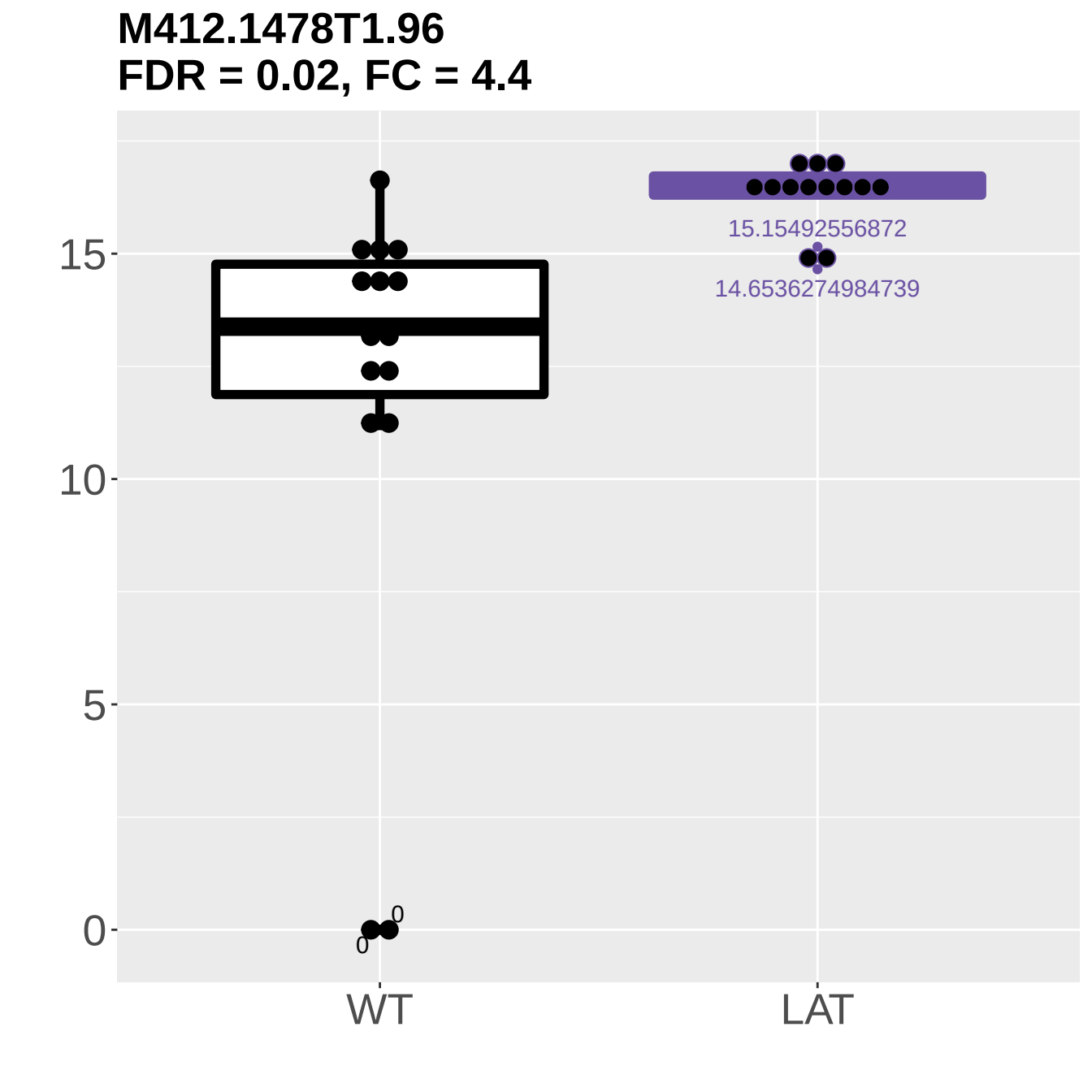
16.0
15.5
15.0
14.5
WT
LAT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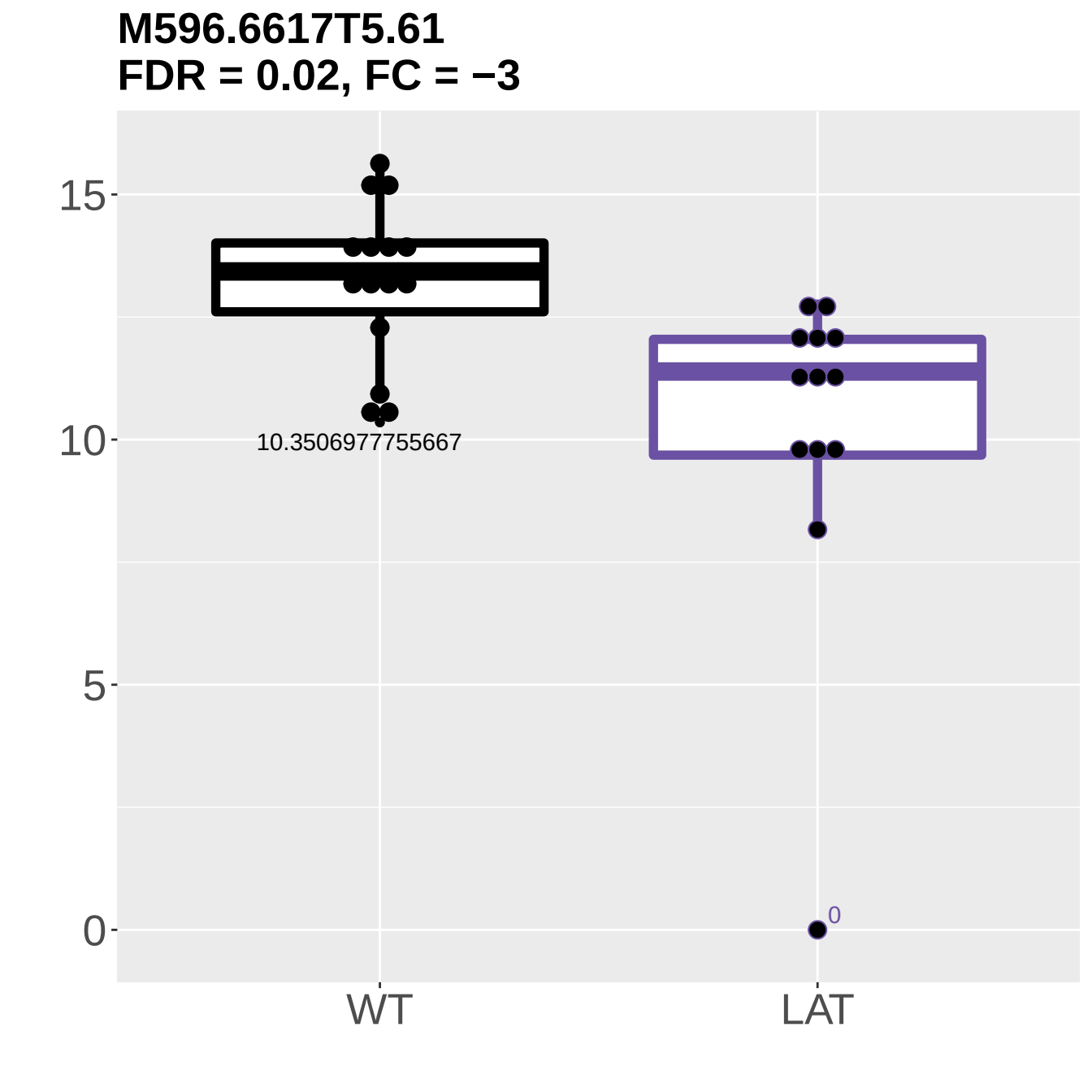
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FDR = 0.02, FC = −3
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WT
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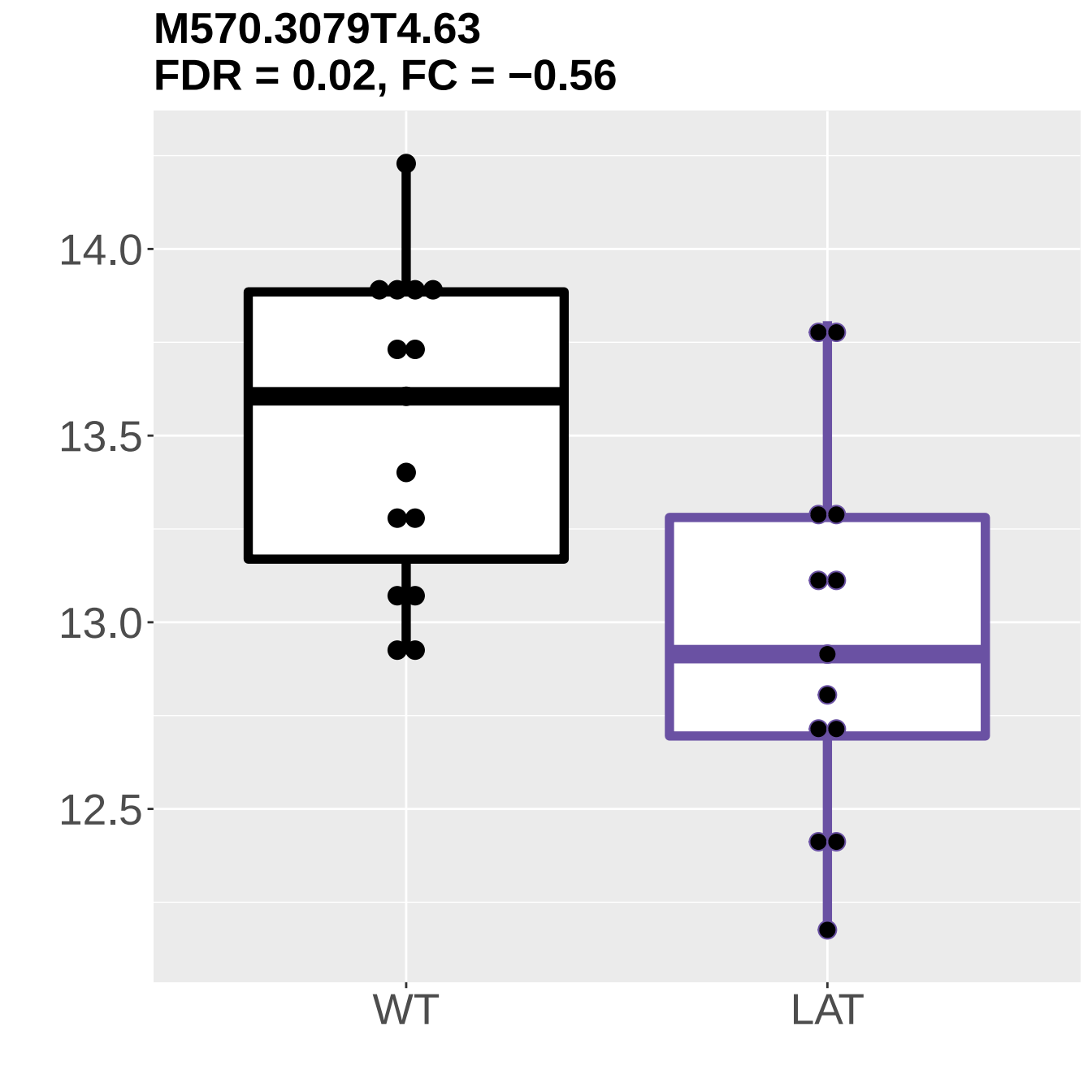
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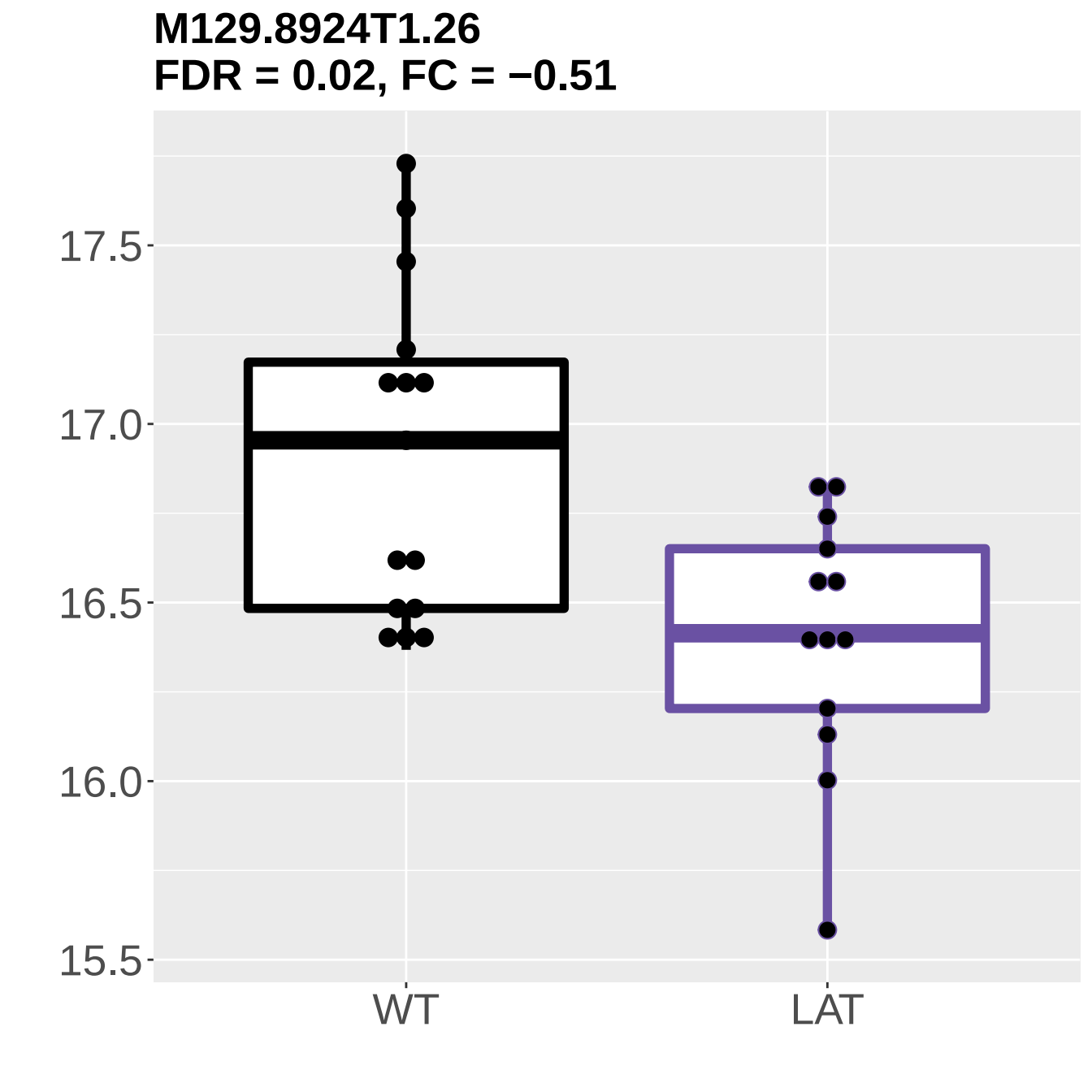
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16.0
15.5
WT
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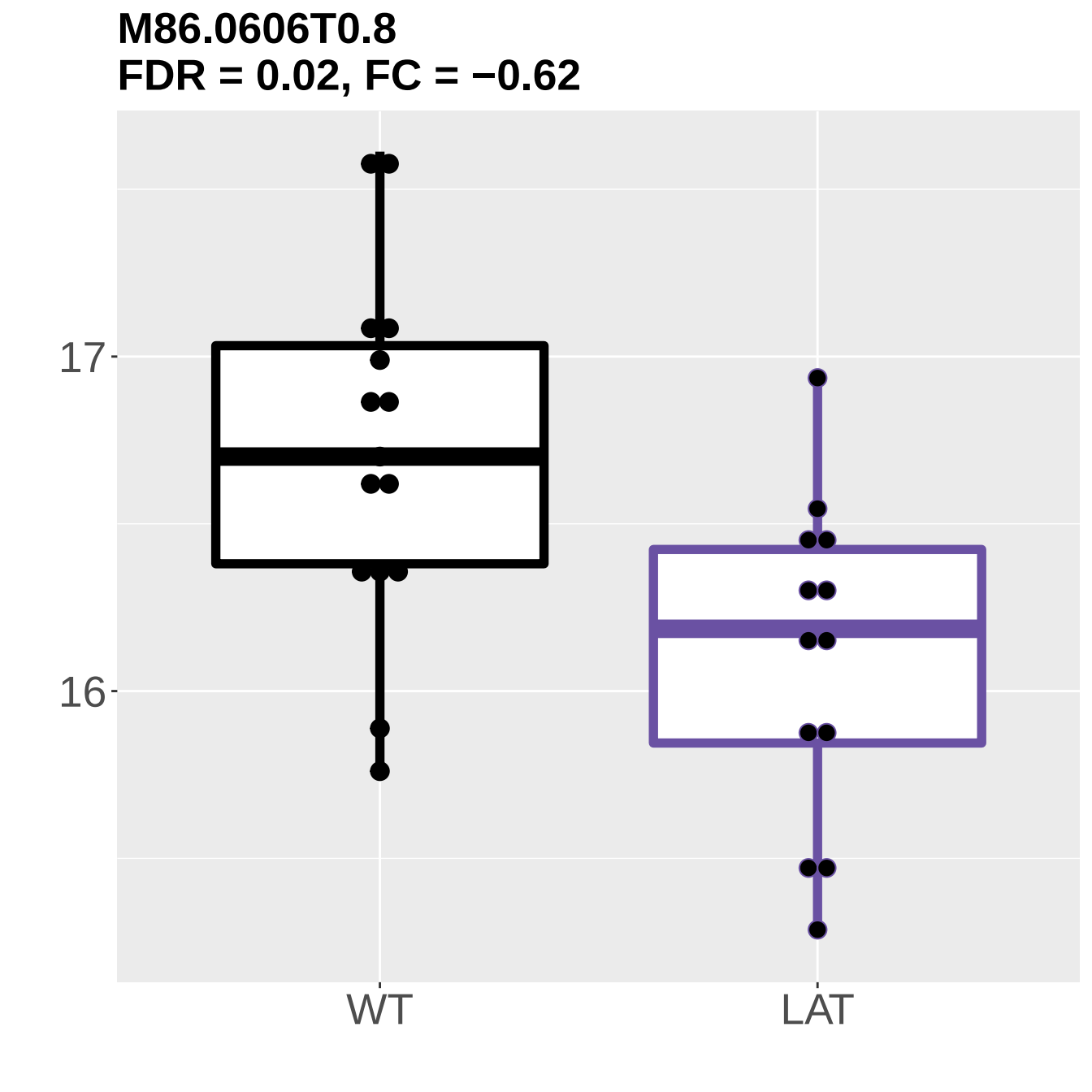
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16
WT
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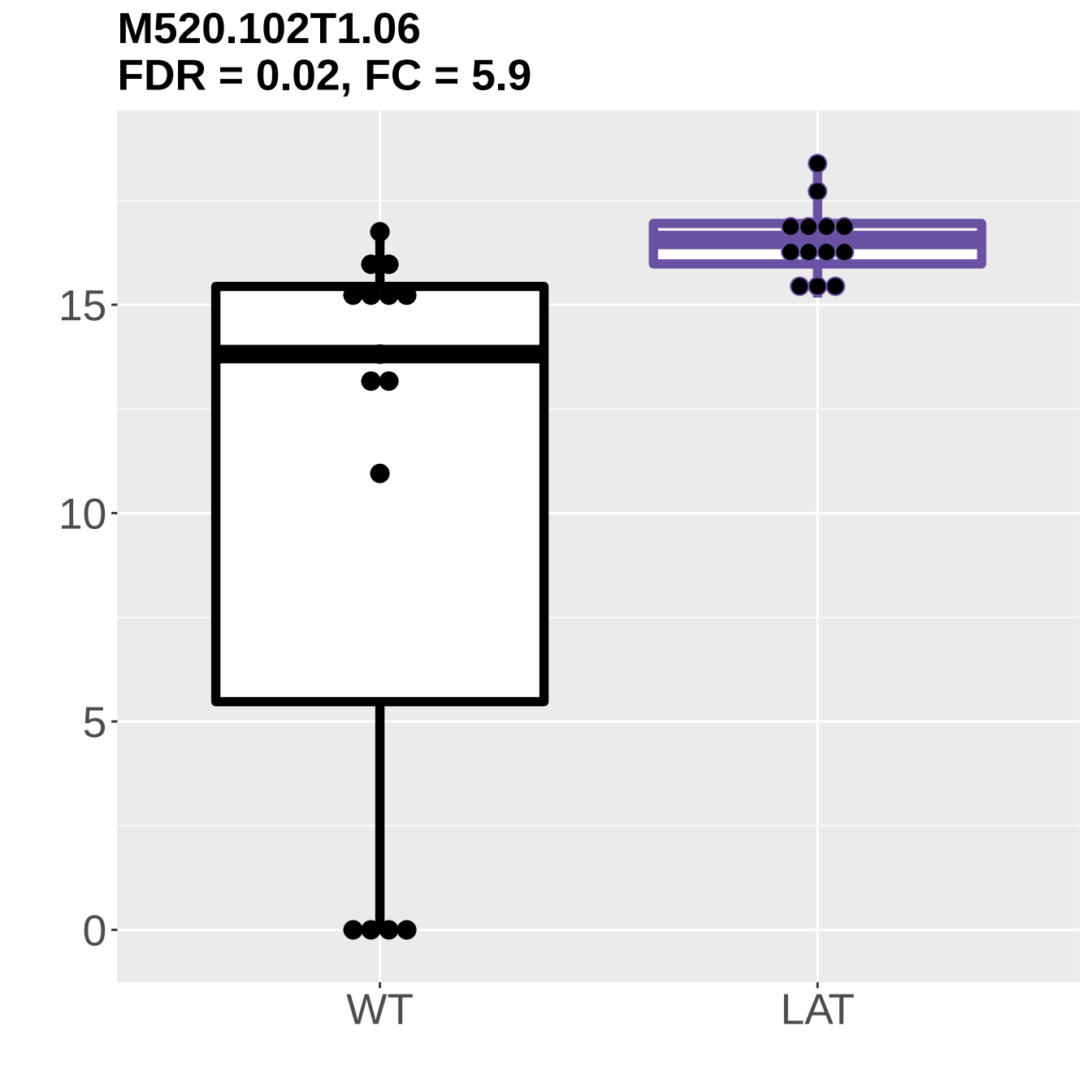
M520.102T1.06
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WT
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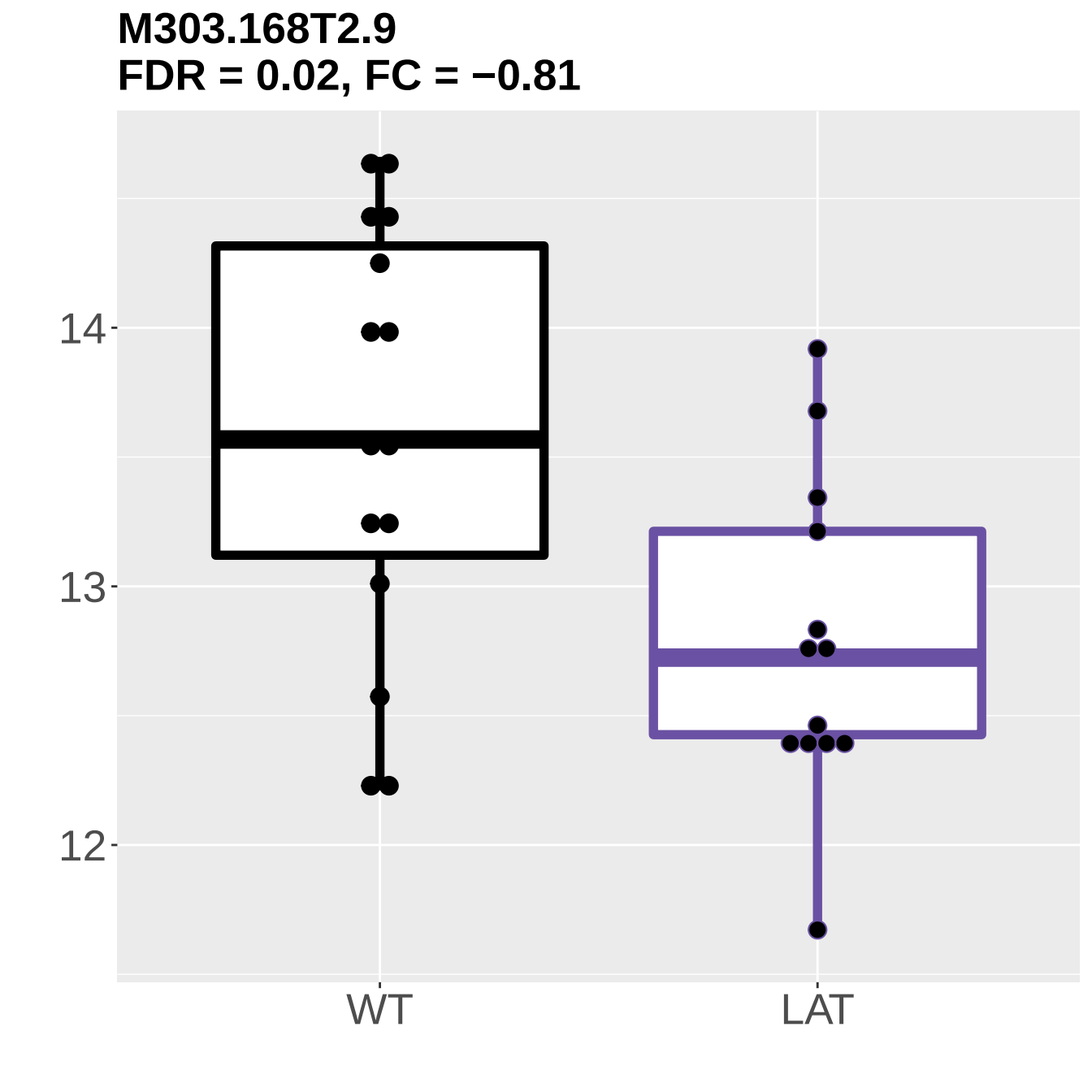
M303.168T2.9
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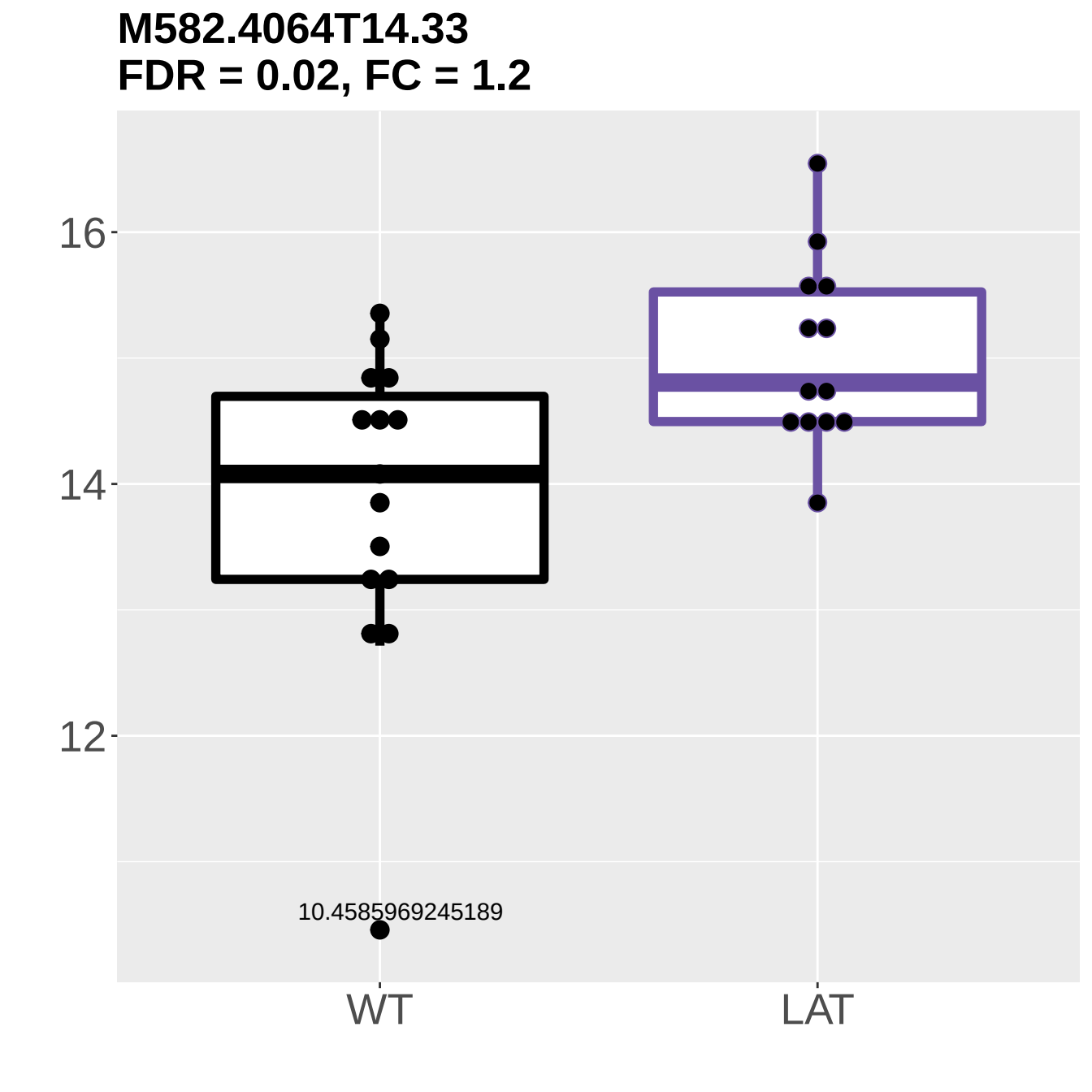
13
12
WT
LAT


M582.4064T14.33
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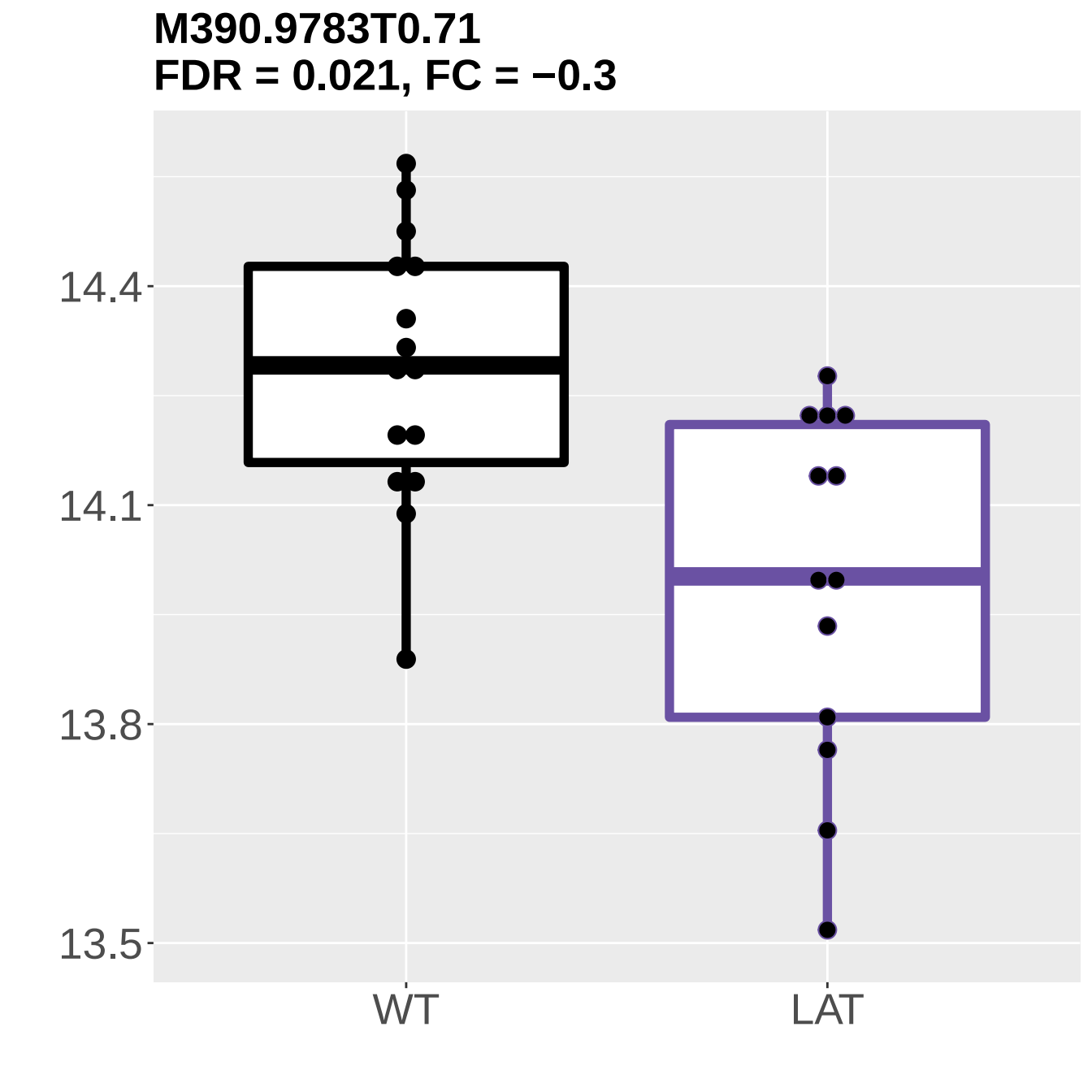
WT
LAT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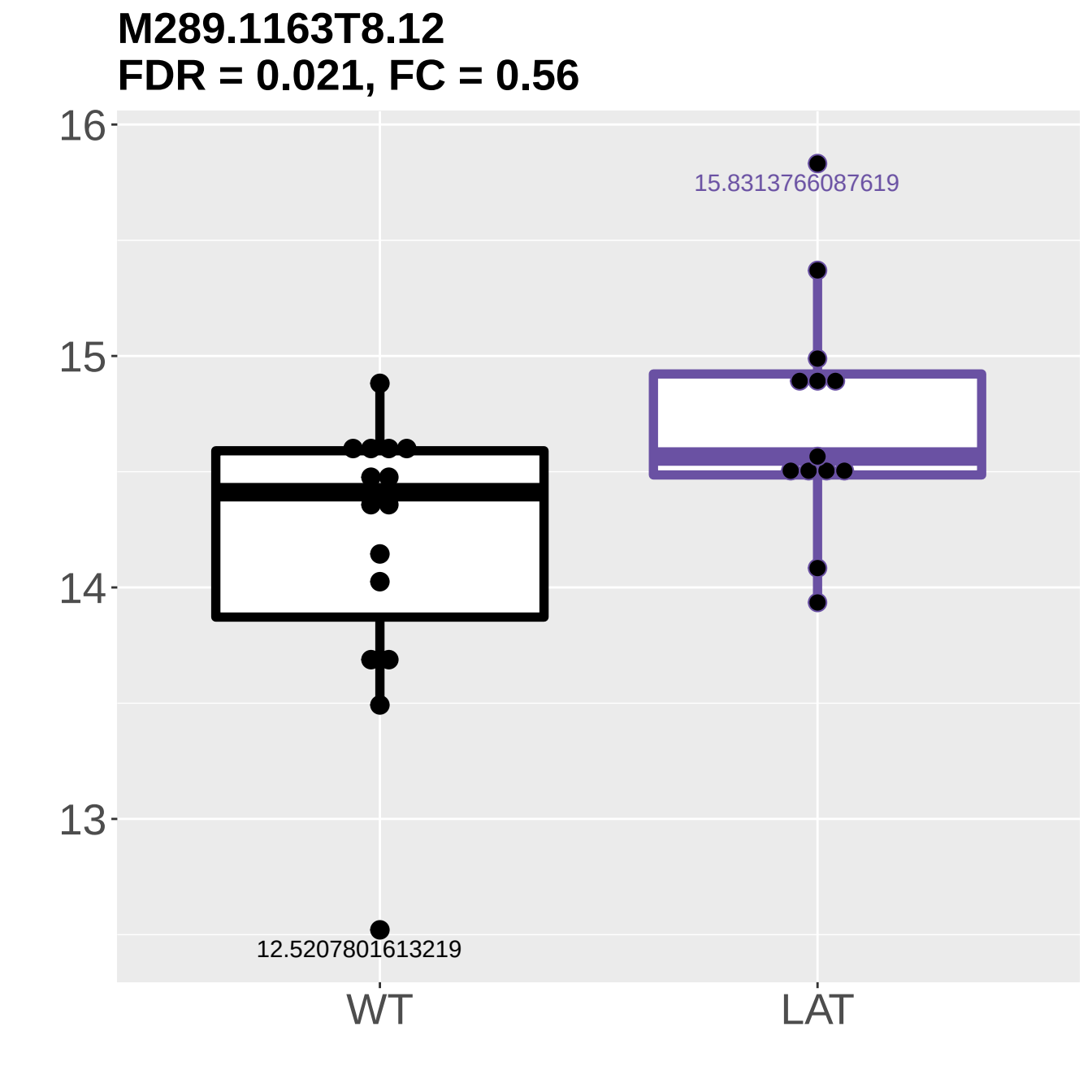
WT
LAT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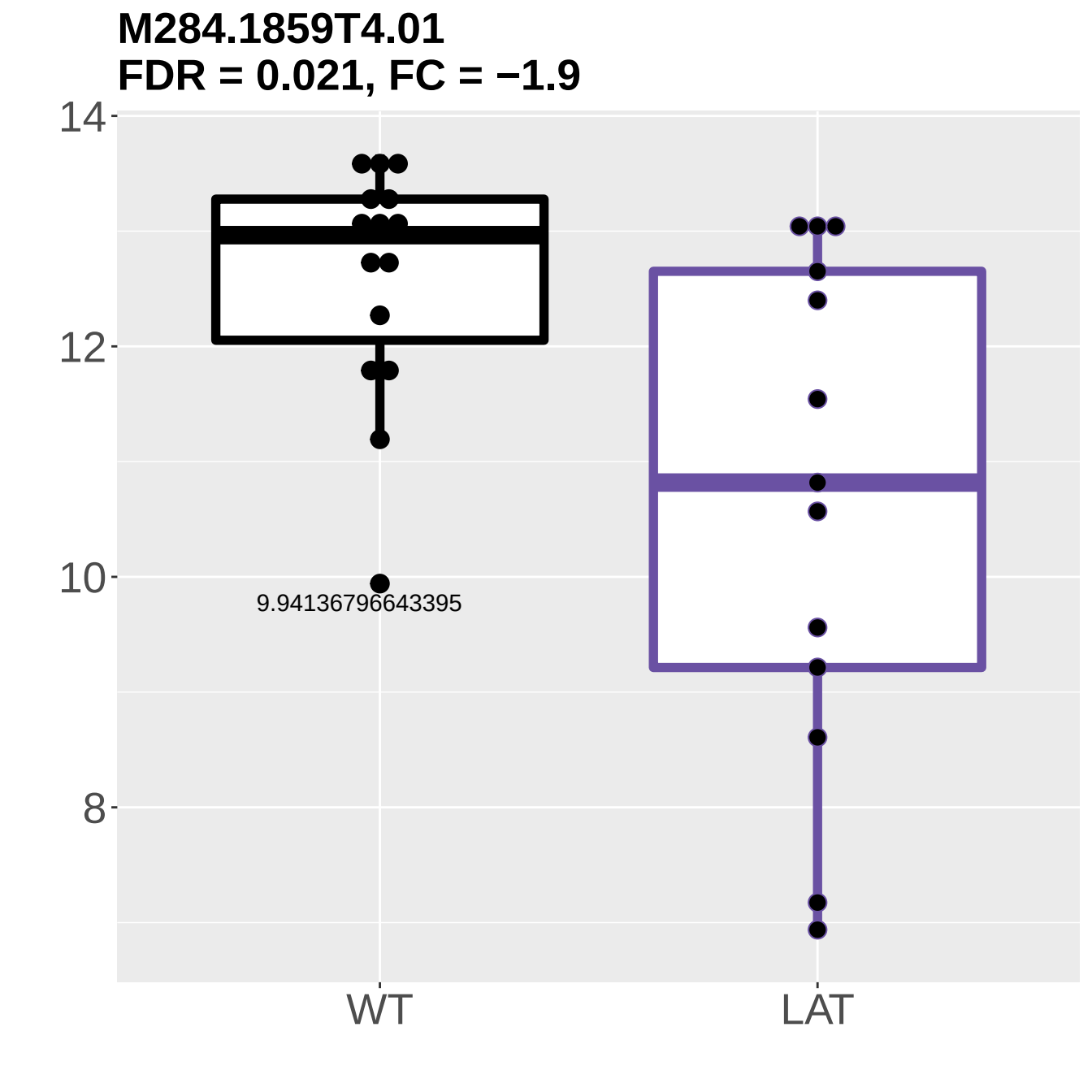
WT
LAT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10
8
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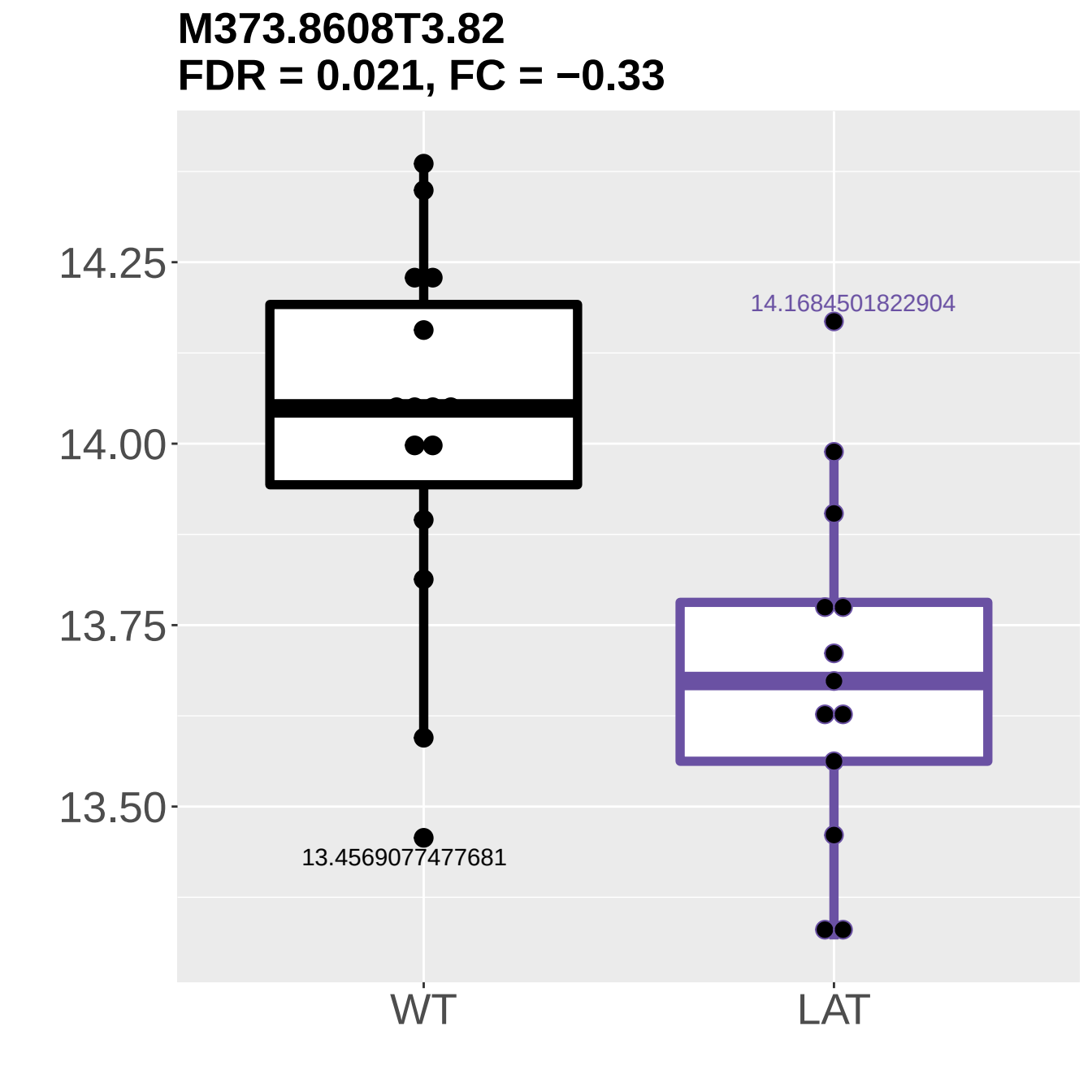
WT
LAT


M373.8608T3.82
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13.75
13.50
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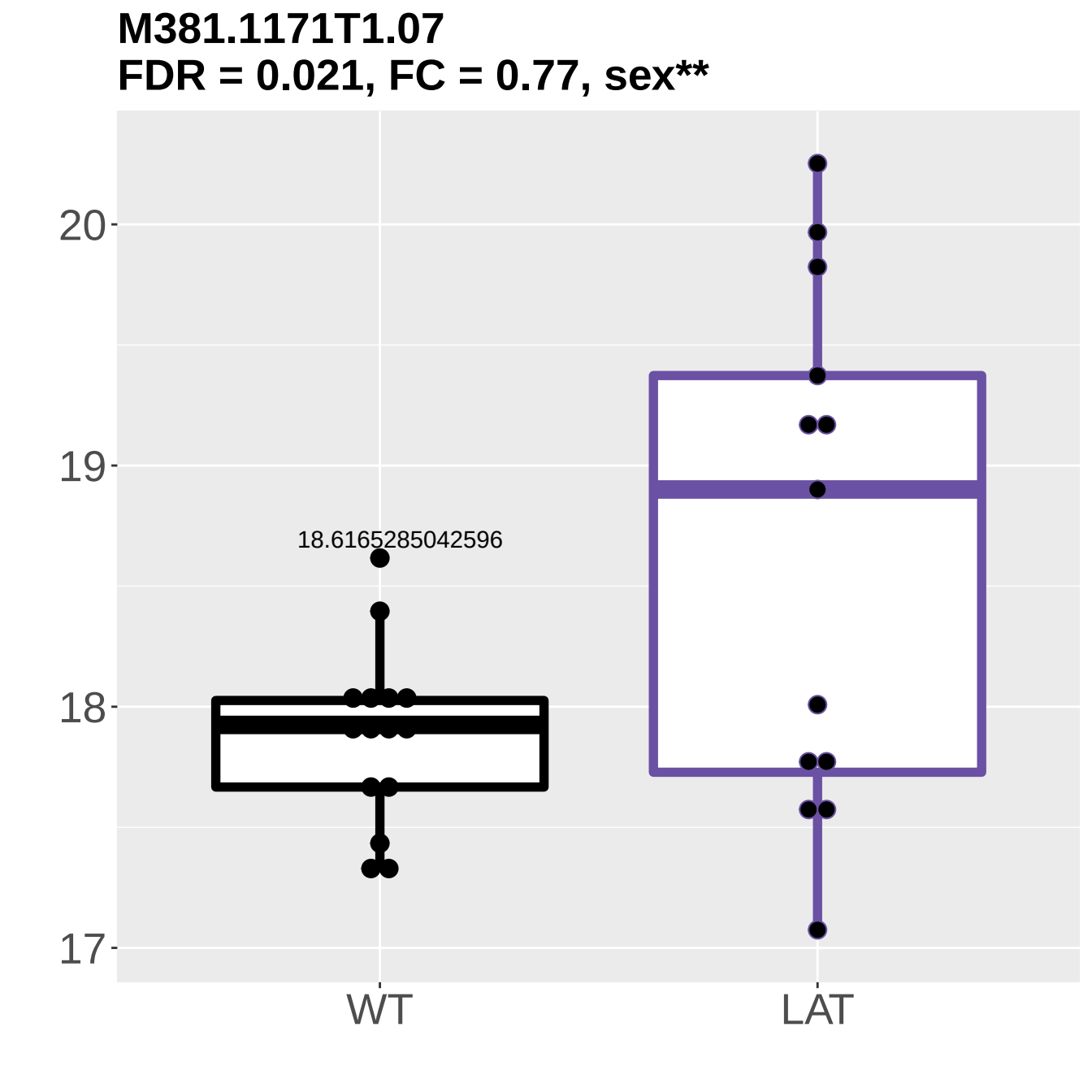
13.4569077477681
WT
LAT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19
18
17
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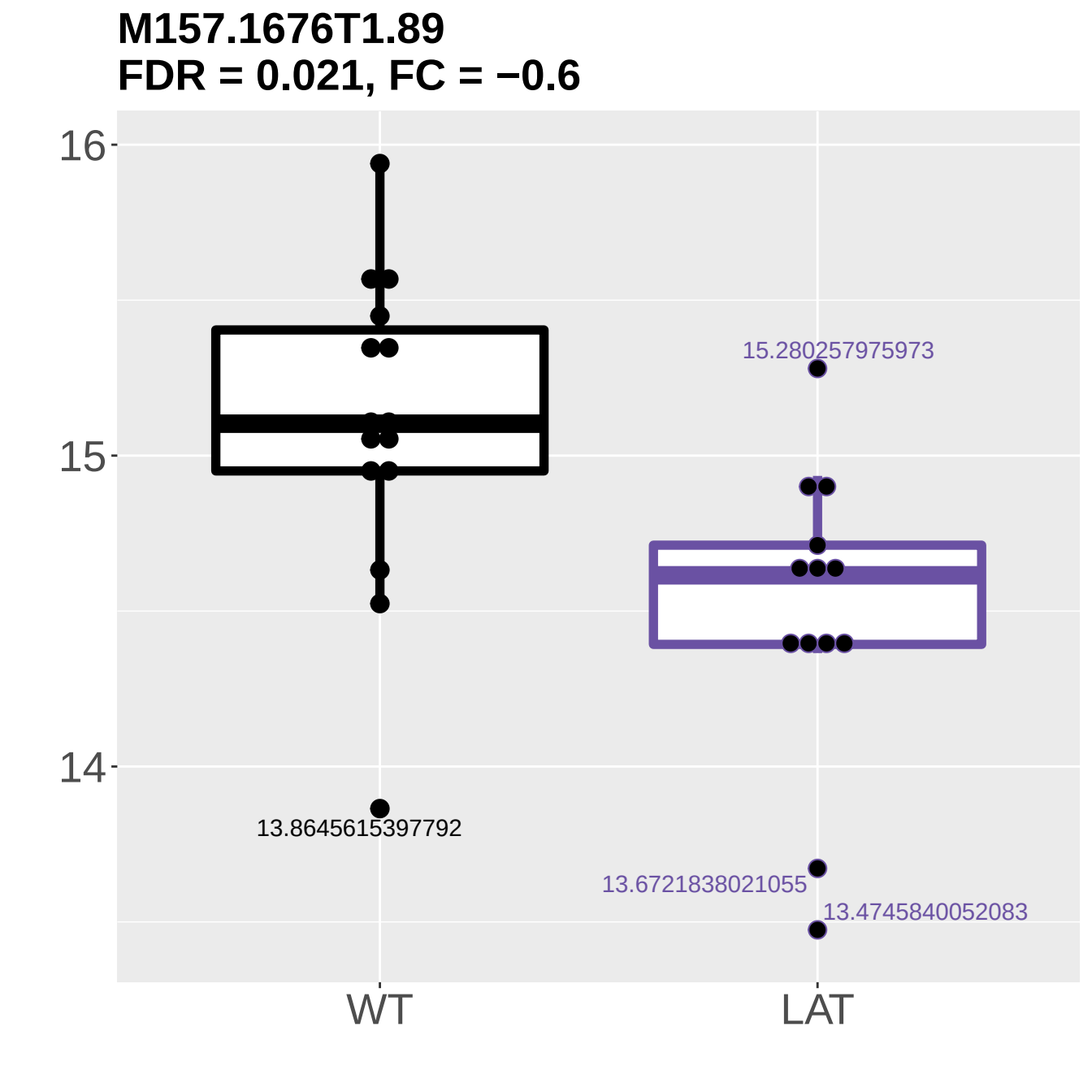
WT
LAT


M157.1676T1.89
FDR = 0.021, FC = −0.6
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15
14
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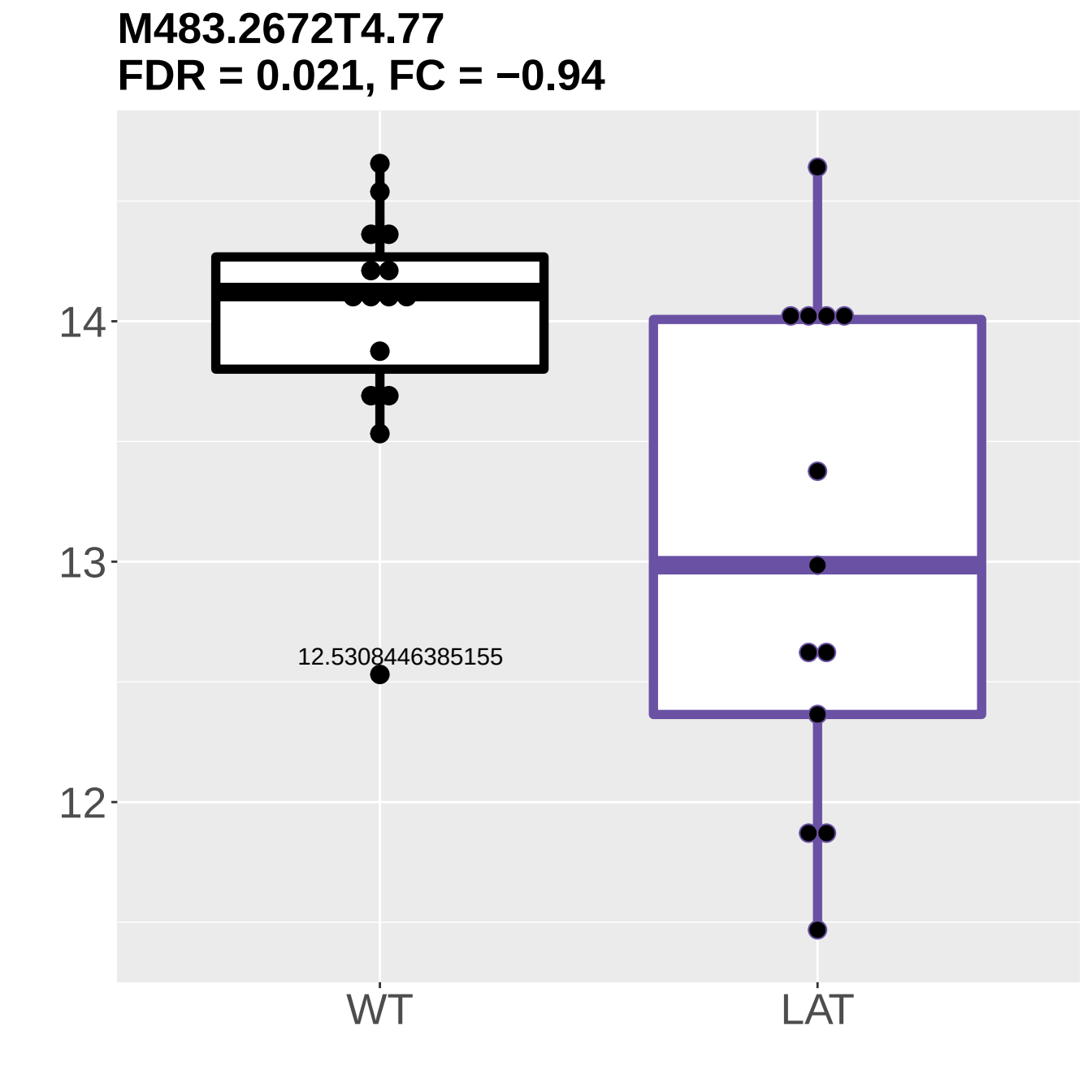
WT
LAT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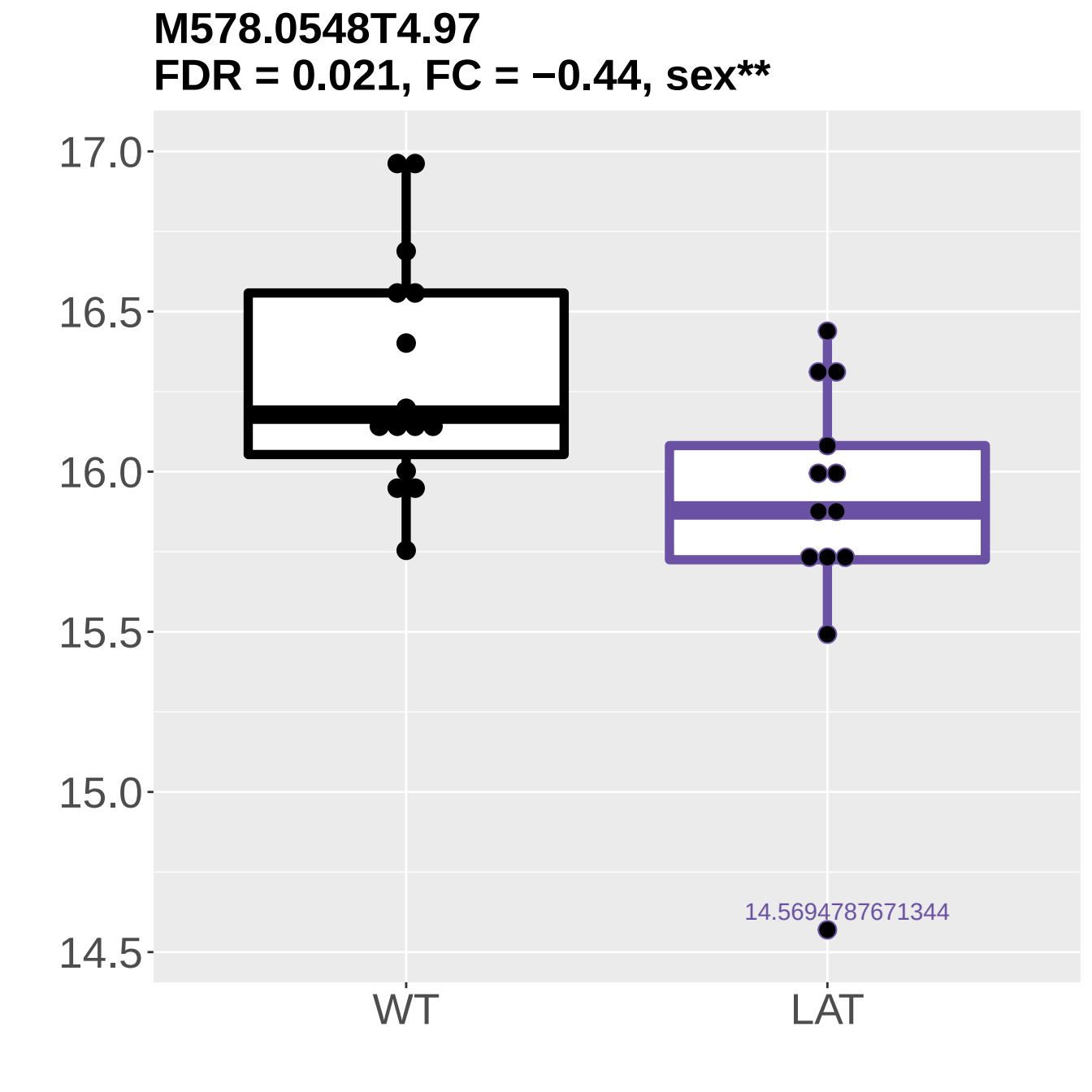
WT
LAT


M578.0548T4.97
FDR = 0.021, FC = −0.44, sex**
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16.0
15.5
15.0
14.5
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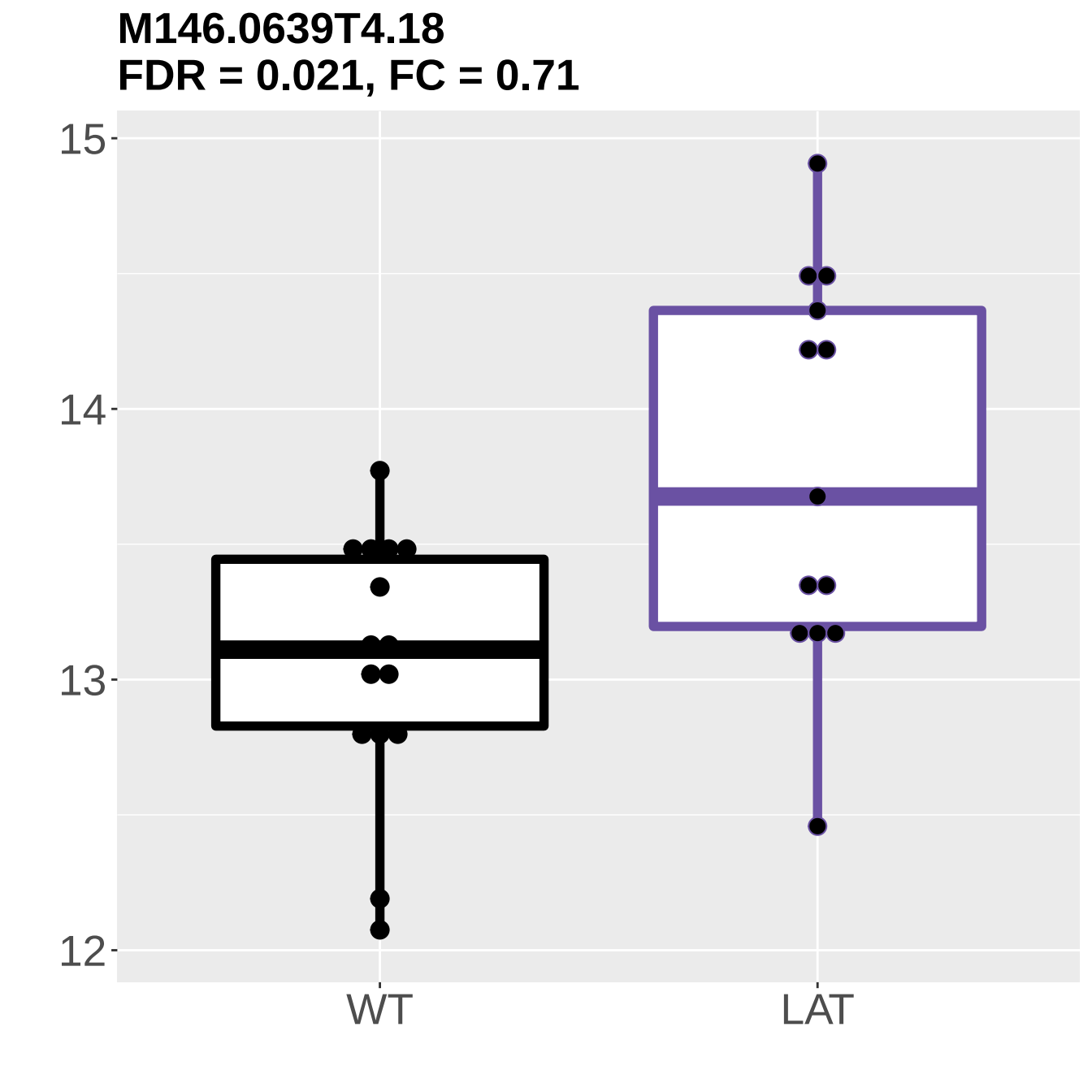
WT
LAT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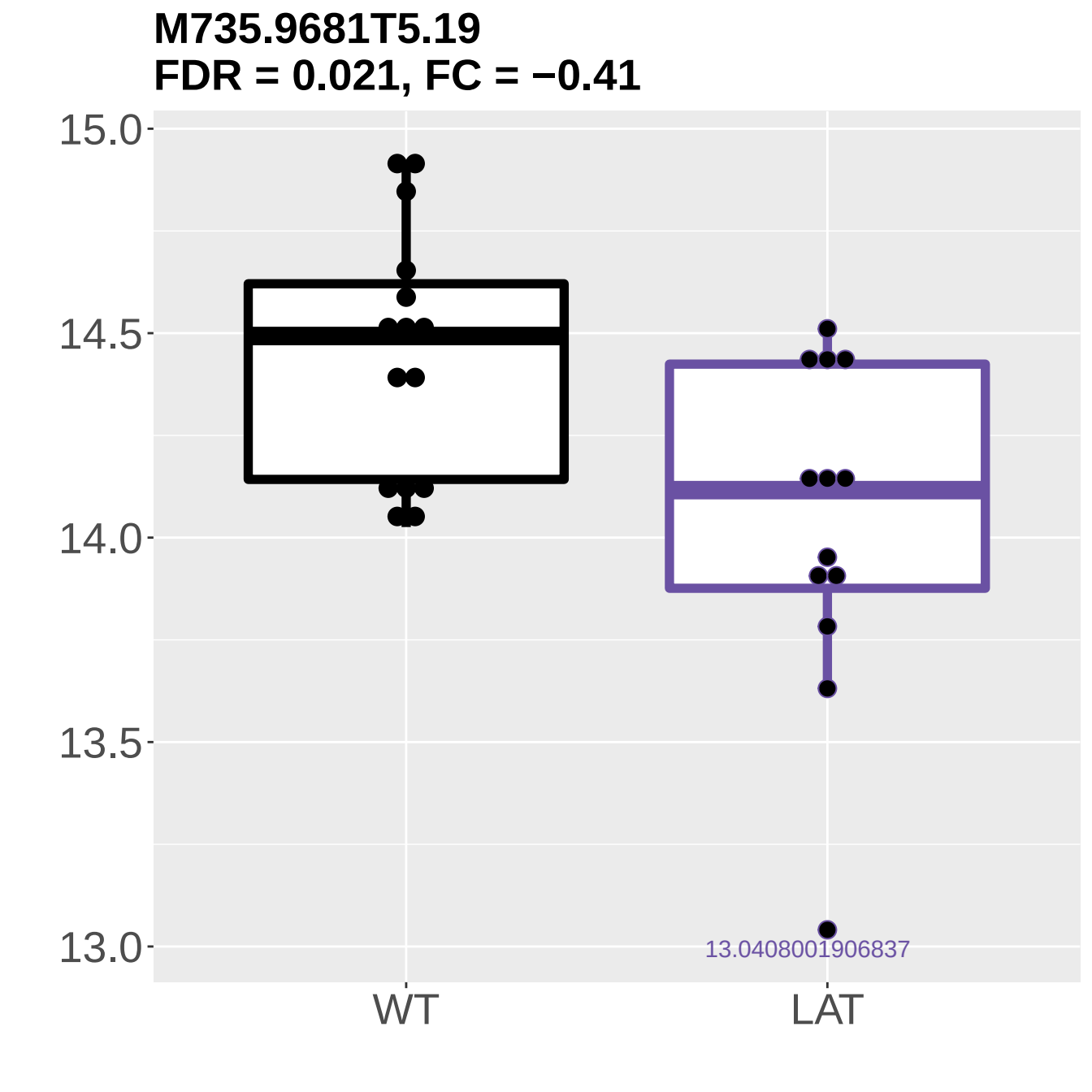
FDR = 0.021, FC = 0.71
15
14
13
12
WT
LAT


M735.9681T5.19
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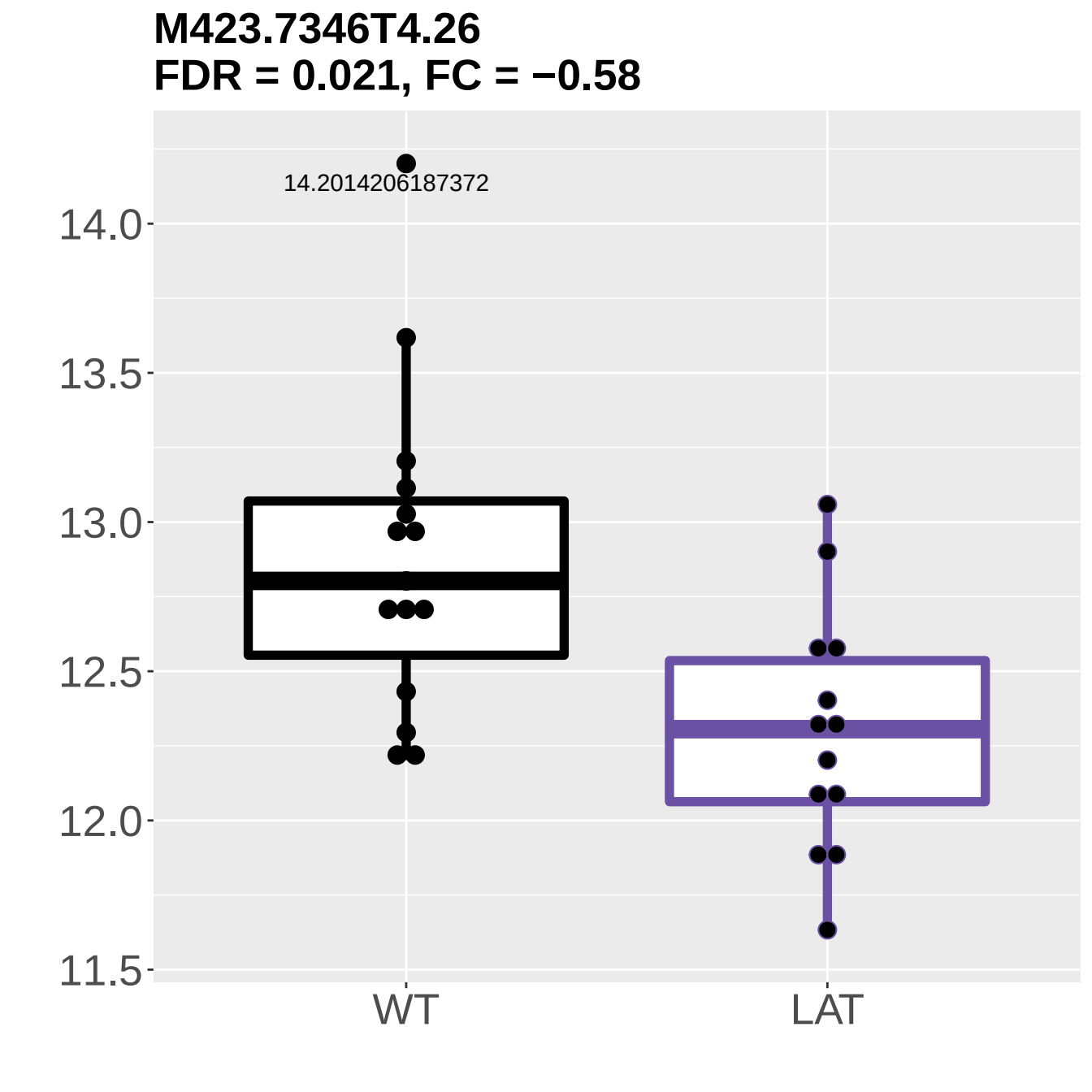
LAT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12.0
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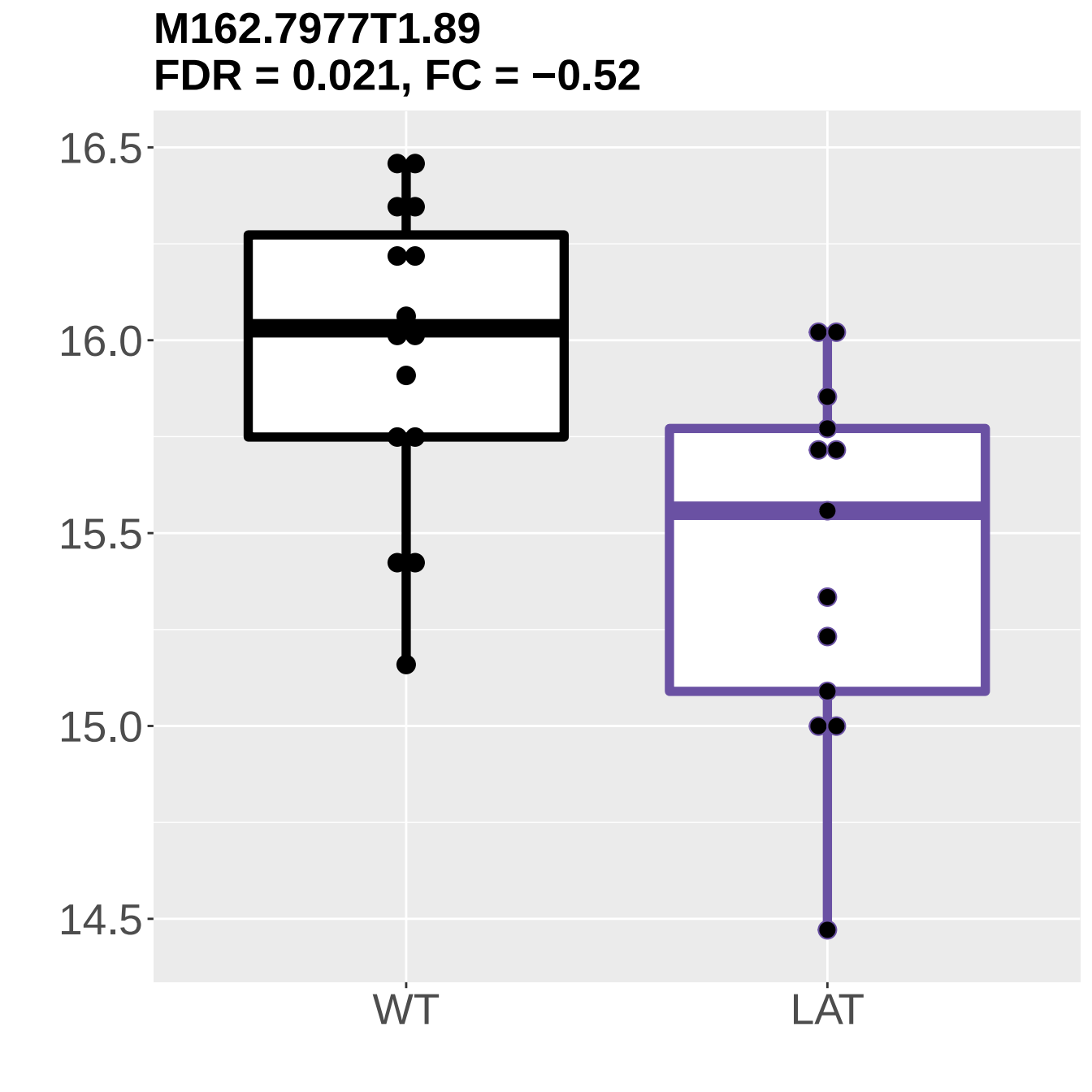
WT
LAT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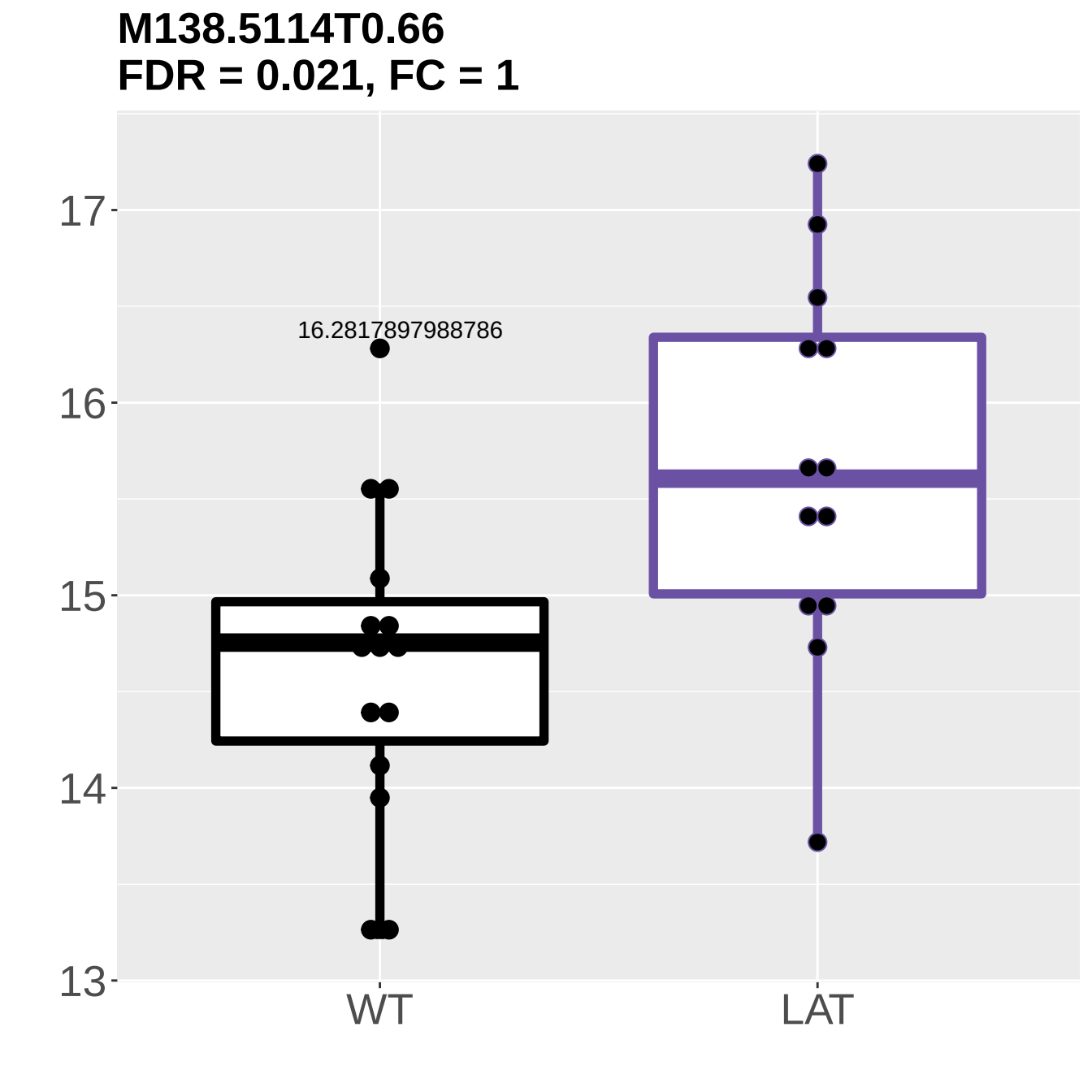
15.5
15.0
14.5
WT
LAT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16
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14
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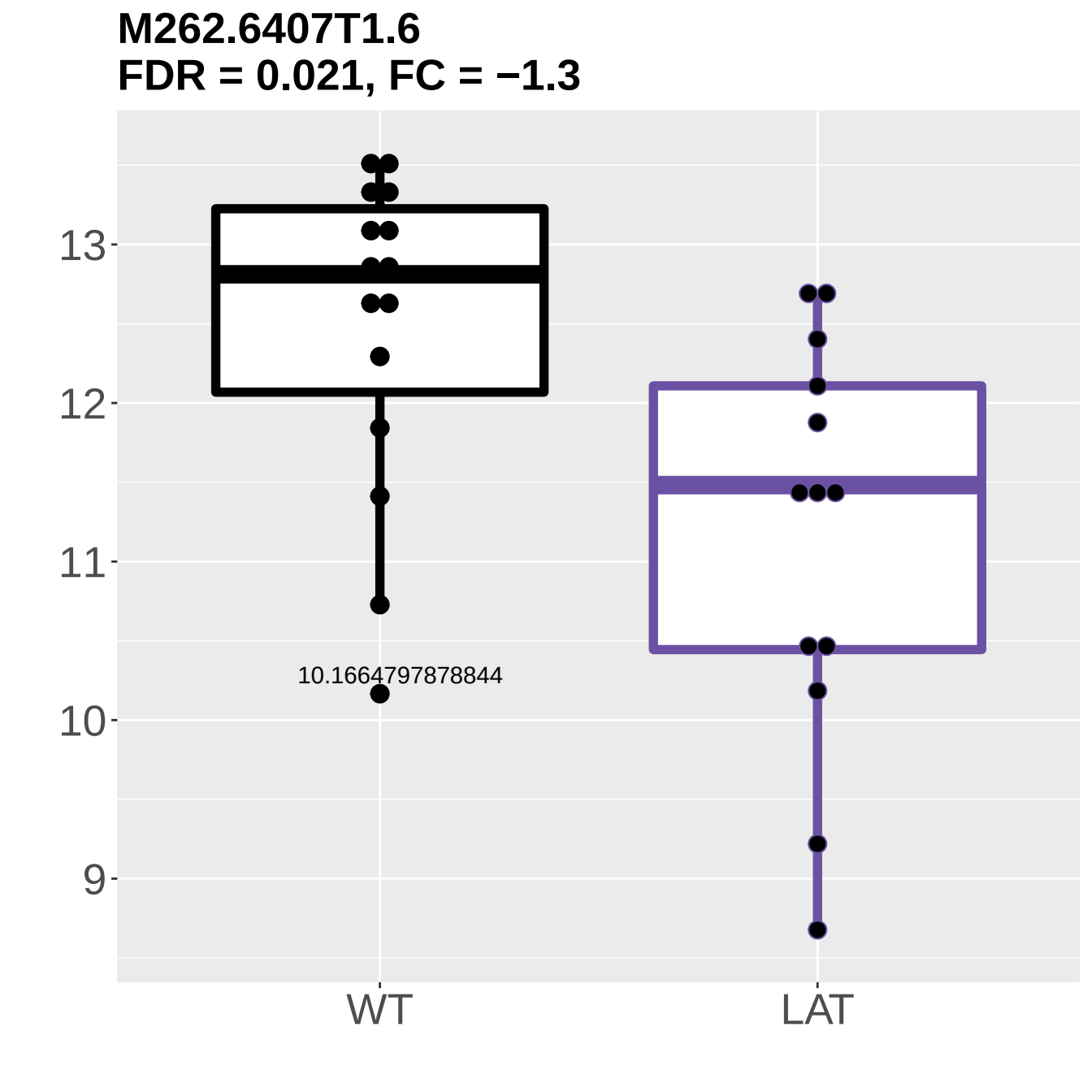
WT
LAT


M262.6407T1.6
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11
10
9
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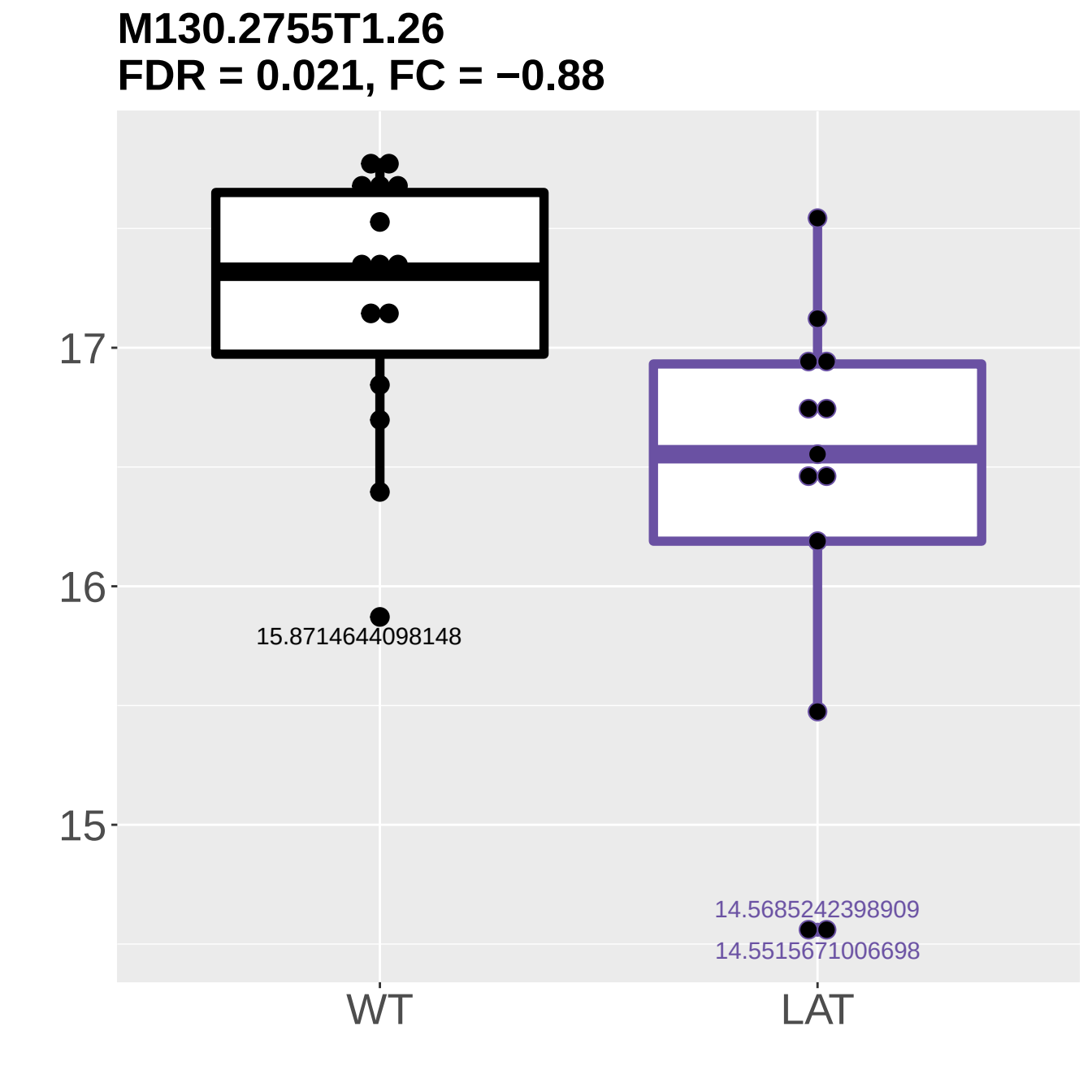
WT
LAT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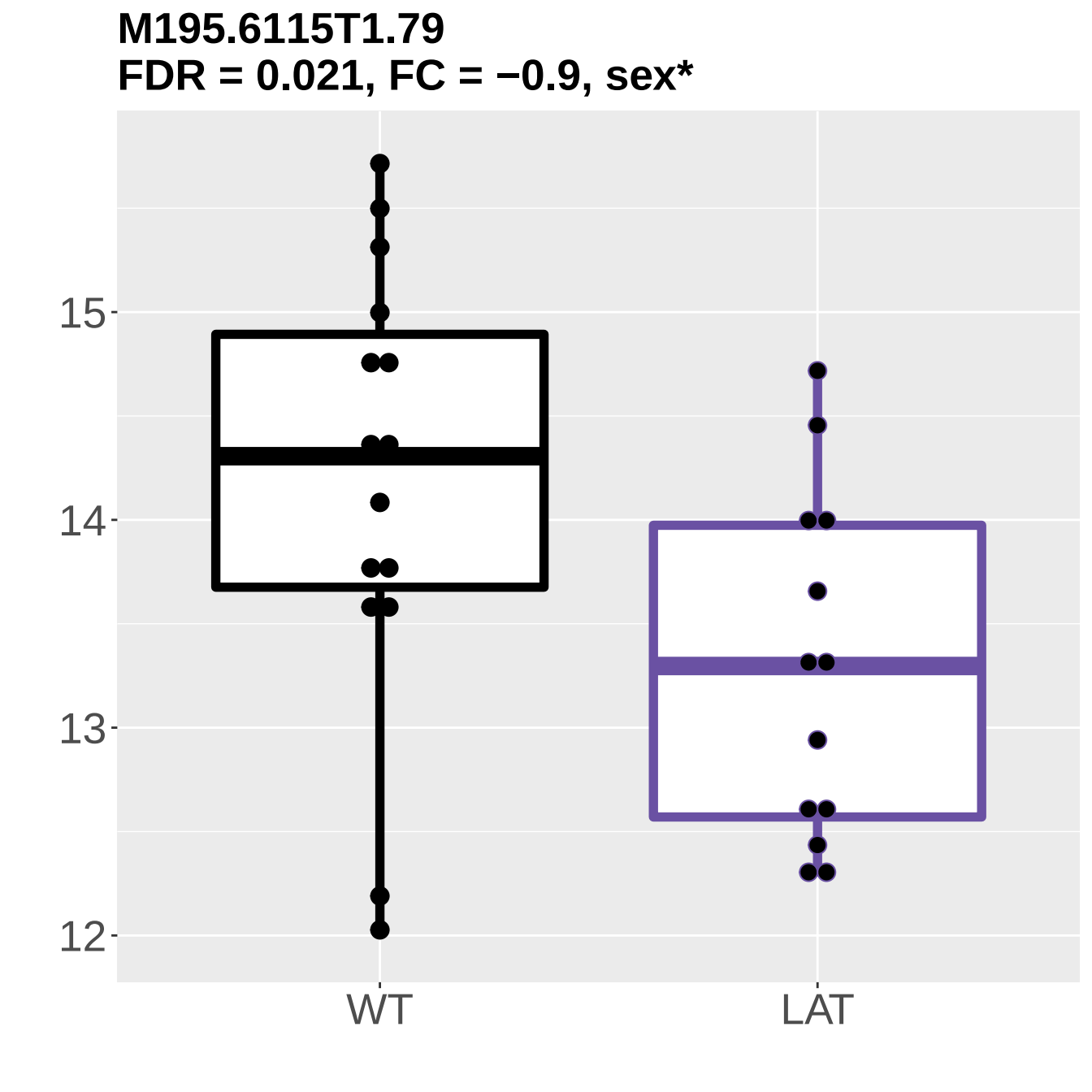
14.5515671006698
WT
LAT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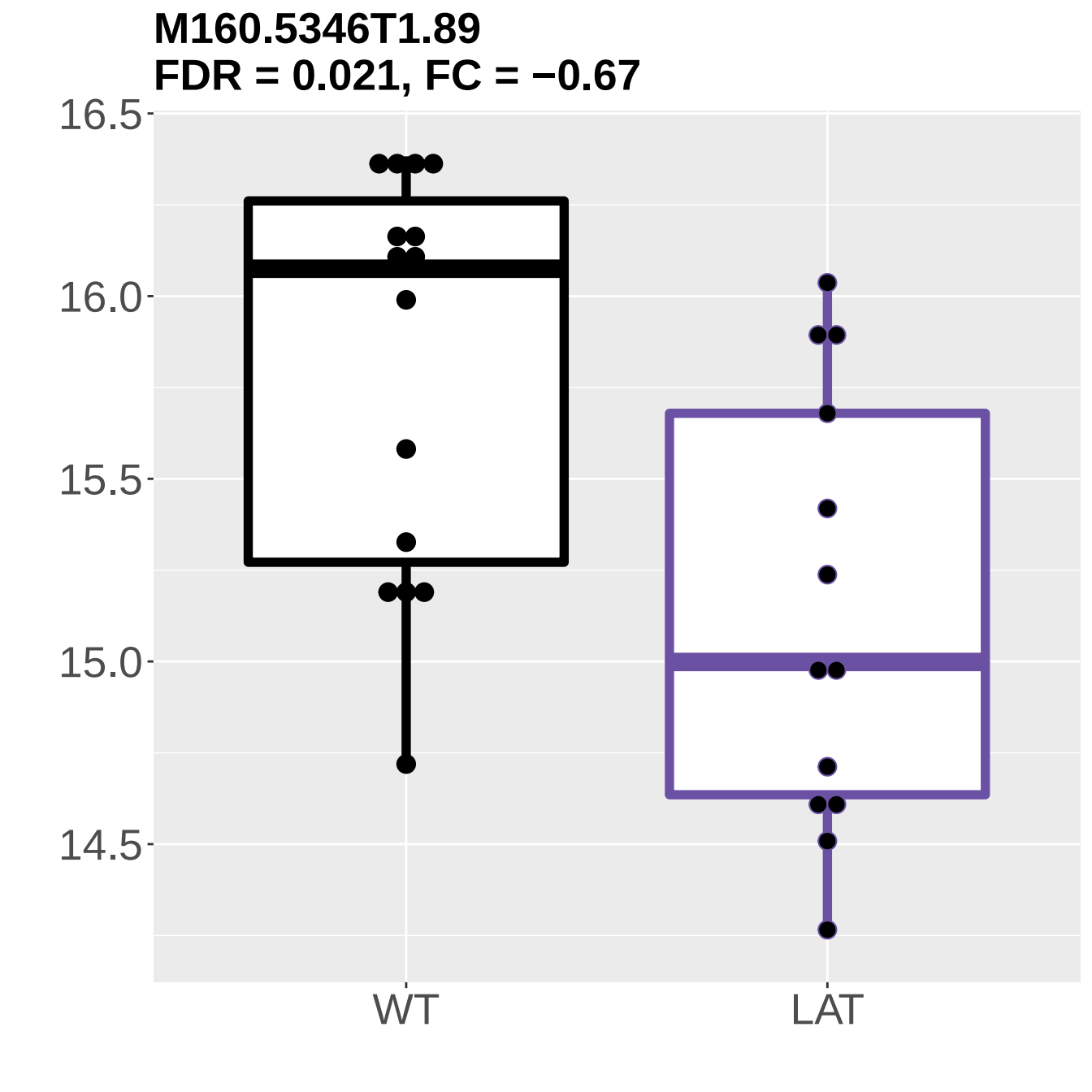
14
13
12
WT
LAT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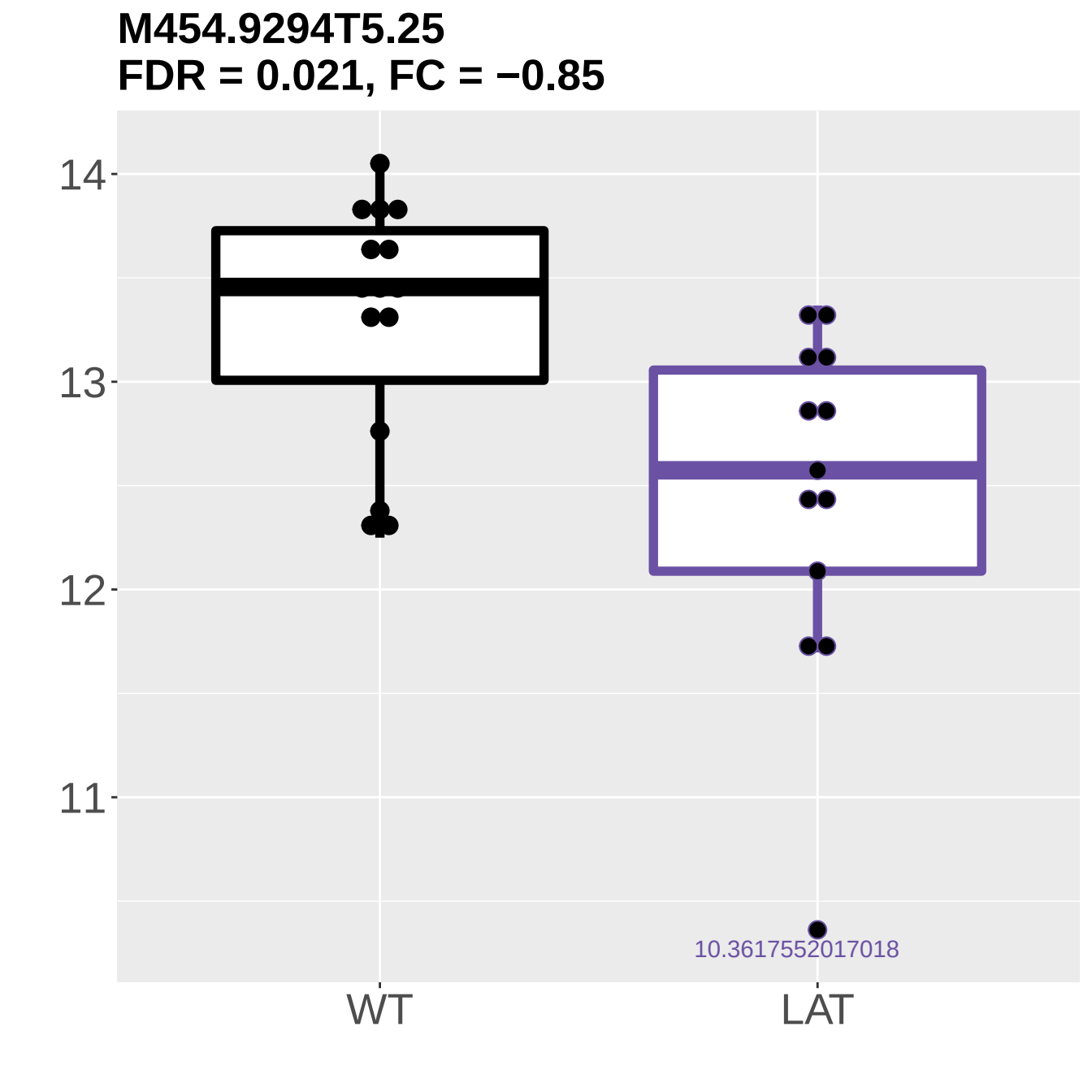
WT
LAT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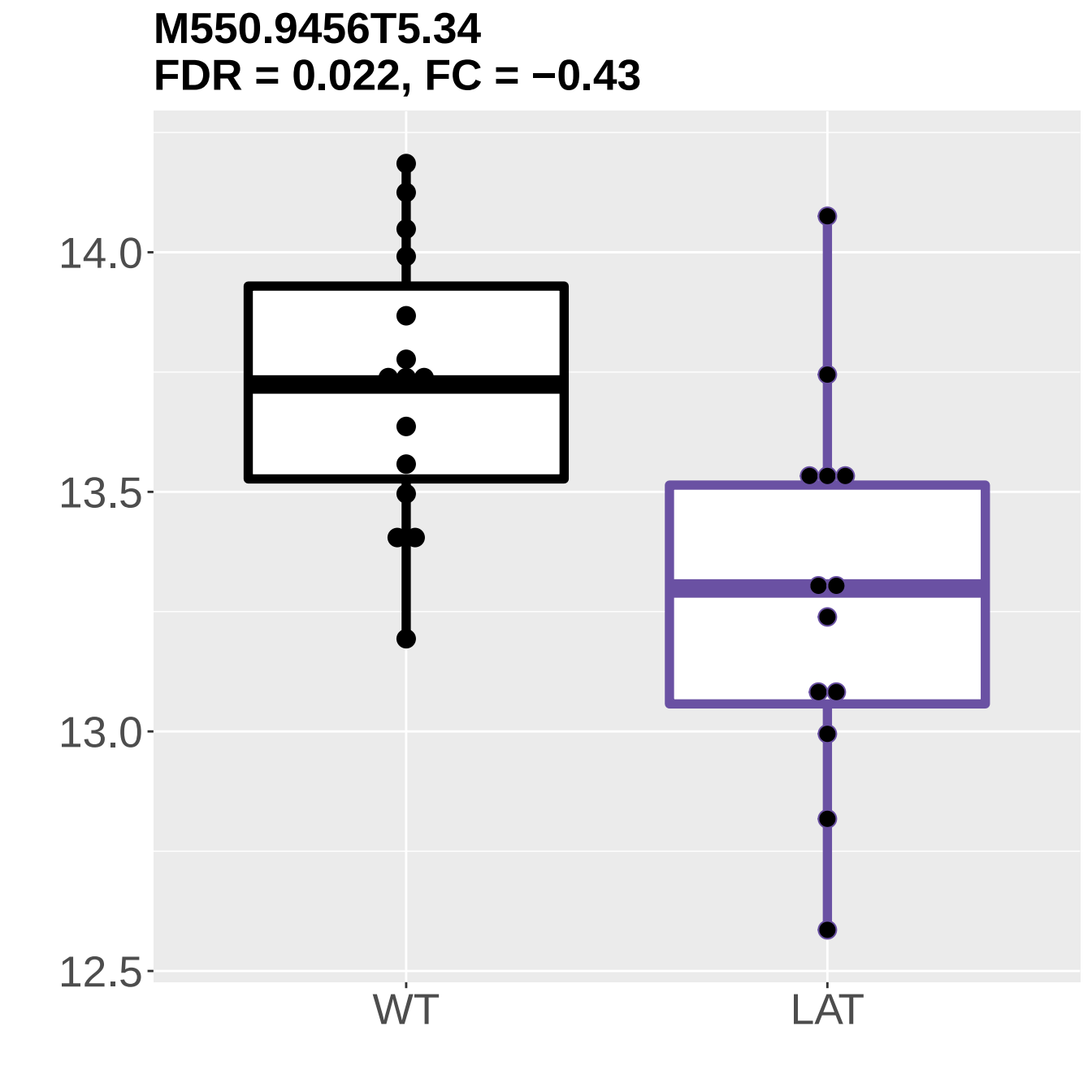
WT
LAT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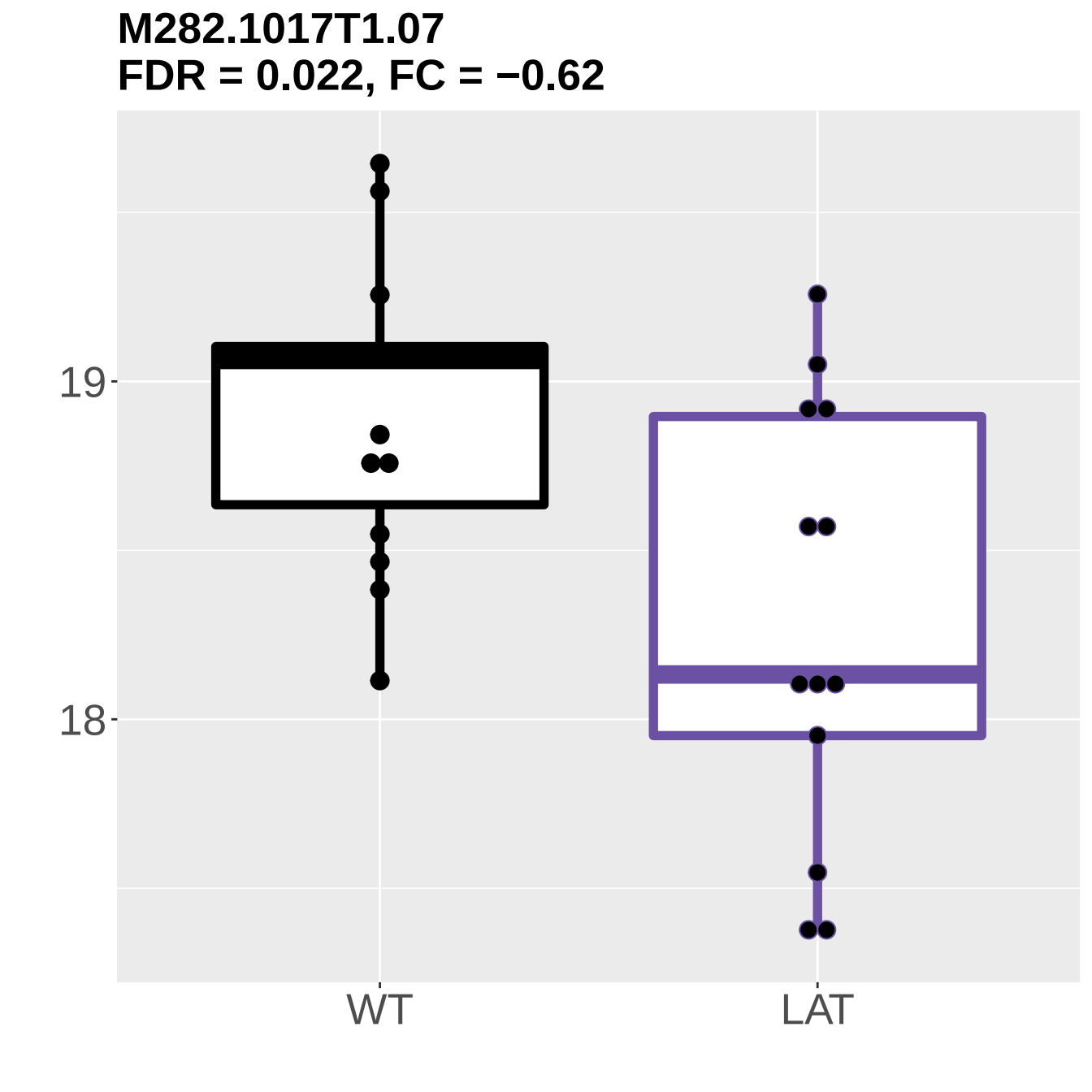
M282.1017T1.07
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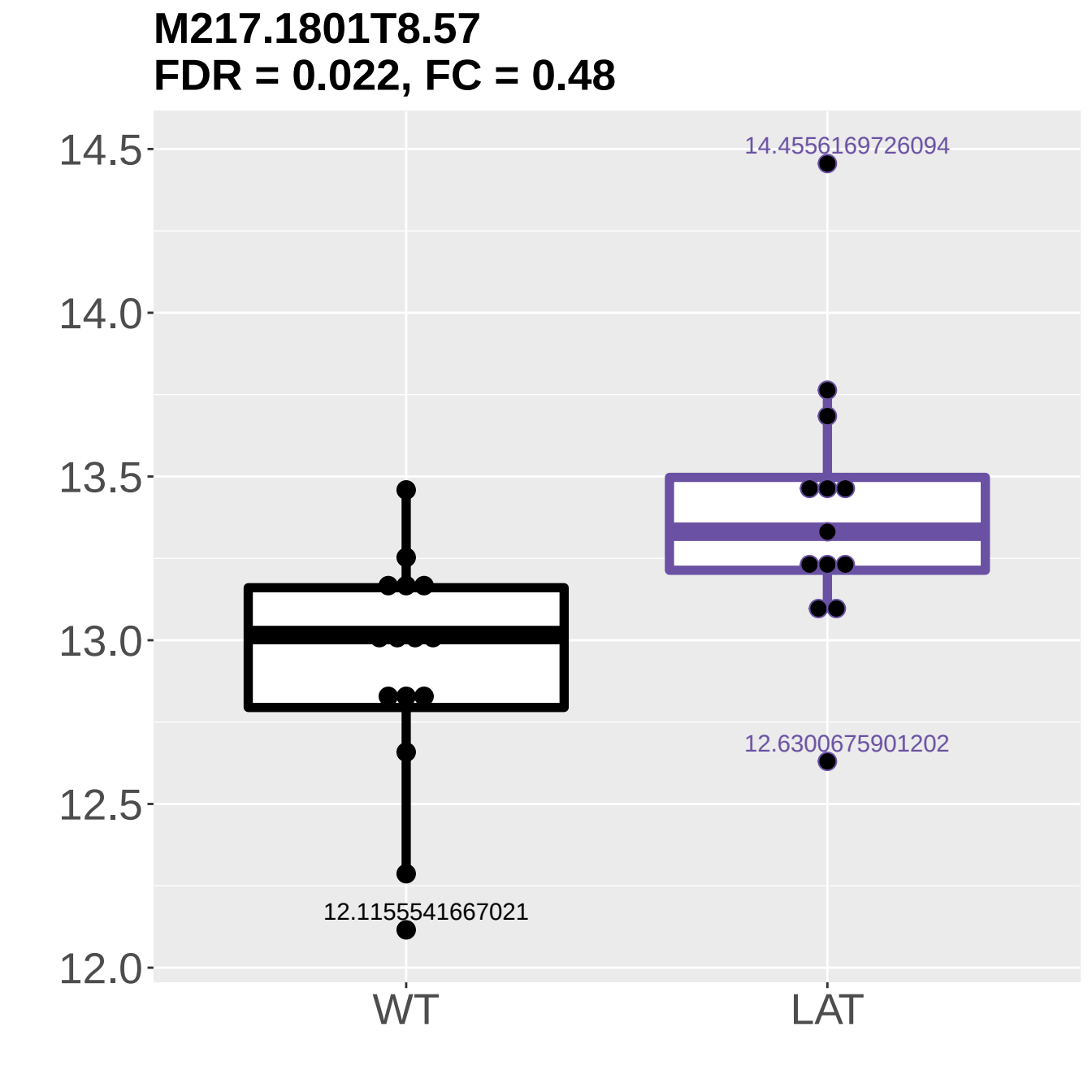
19
18
WT
LAT


M217.1801T8.57
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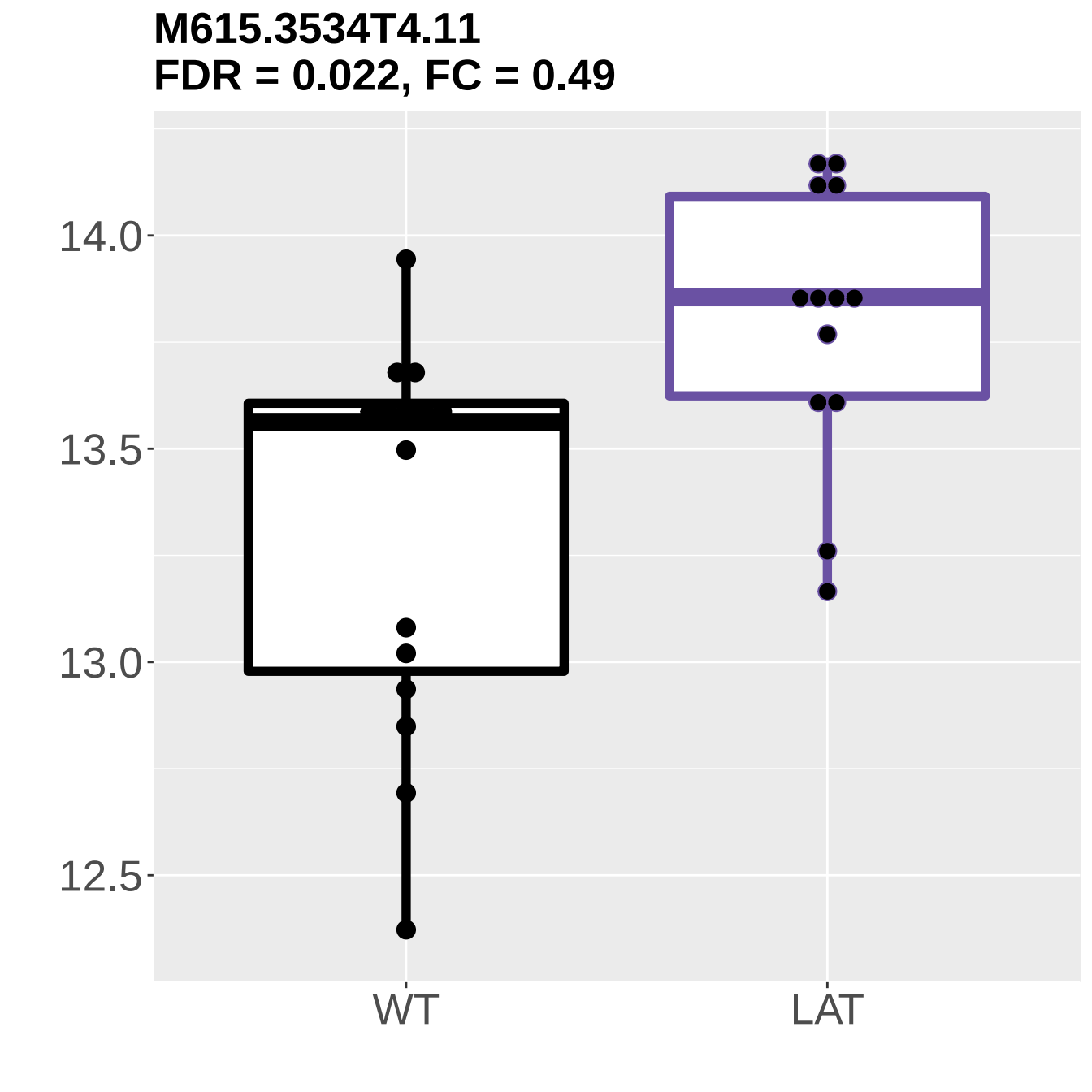
WT
LAT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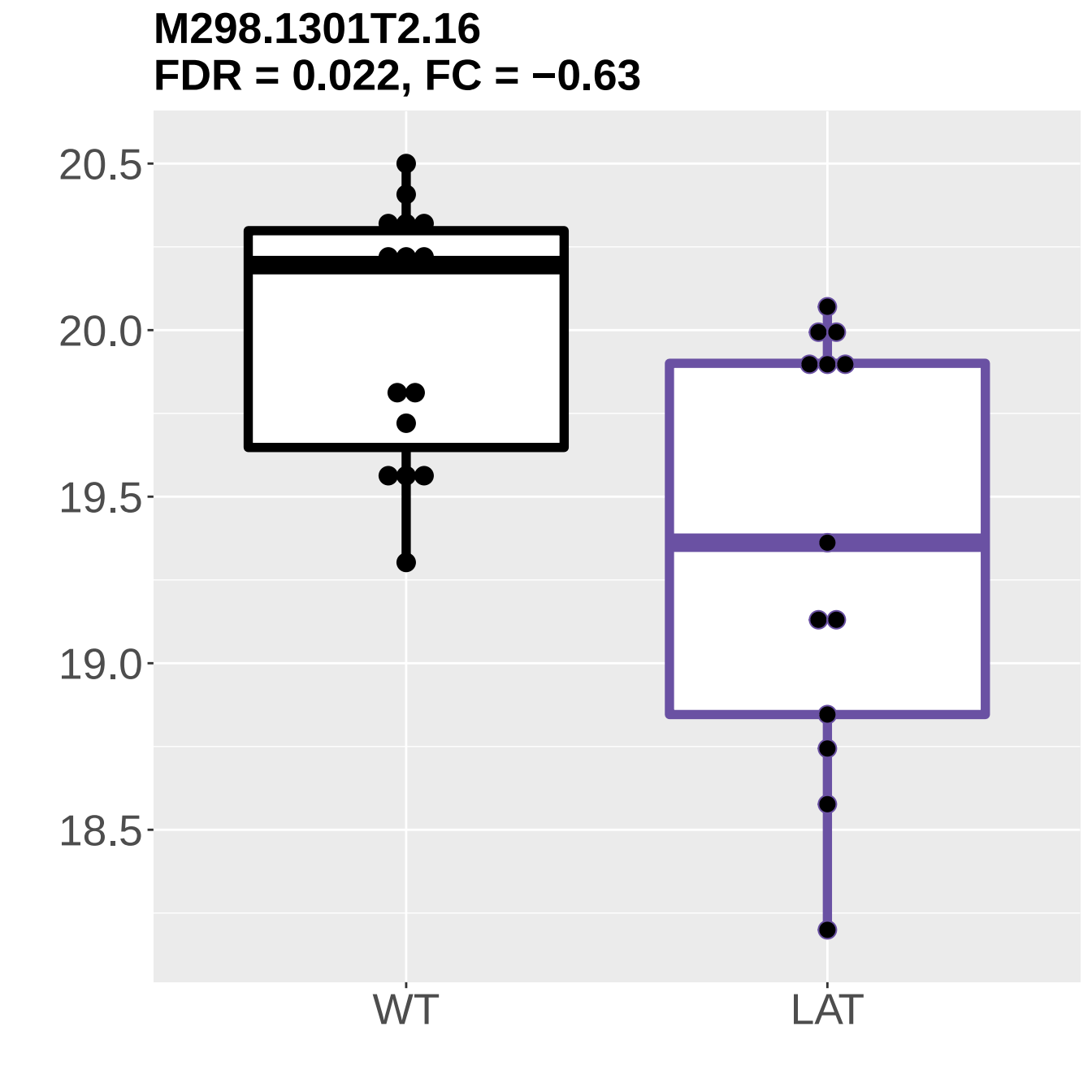
13.0
12.5
WT
LAT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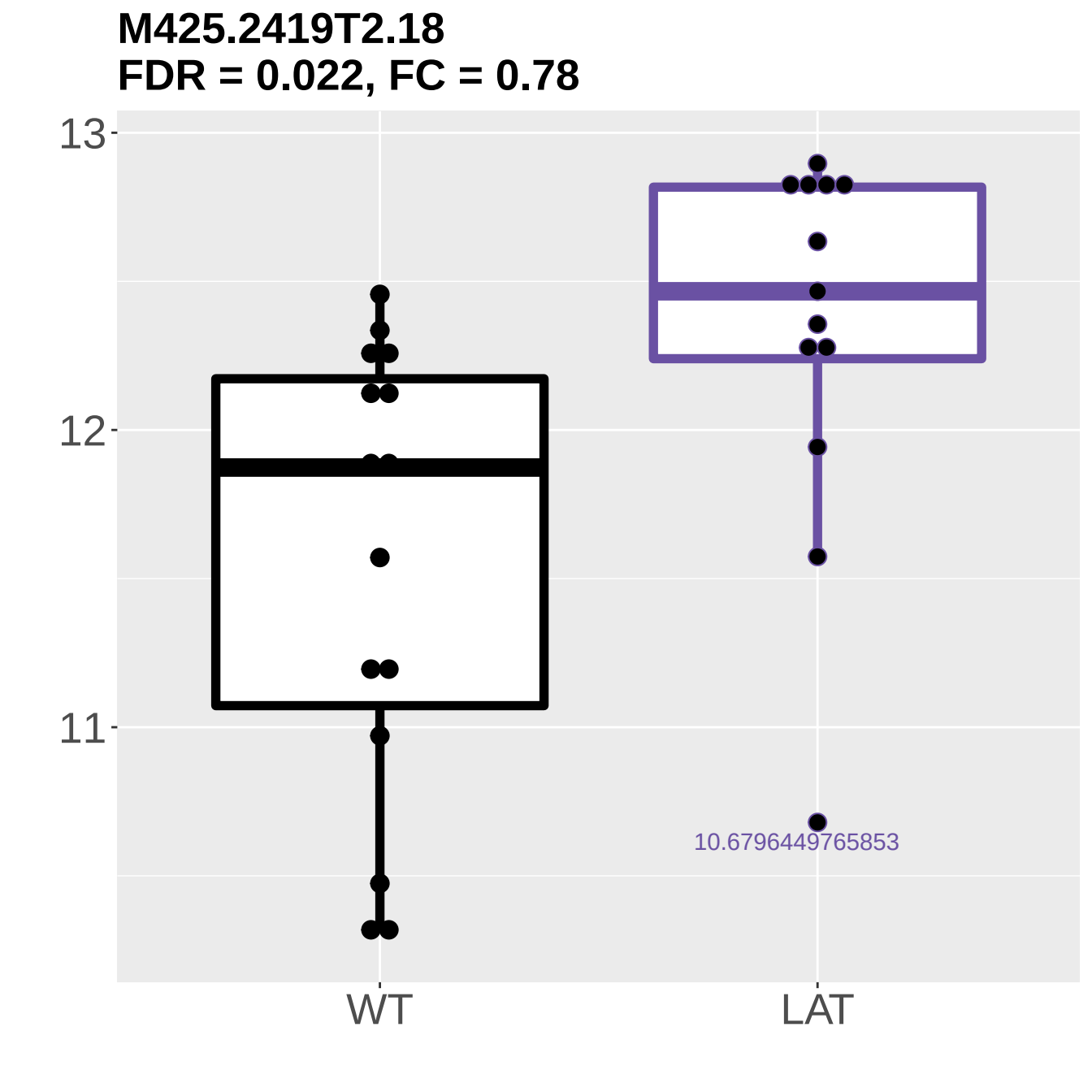
19.0
18.5
WT
LAT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12
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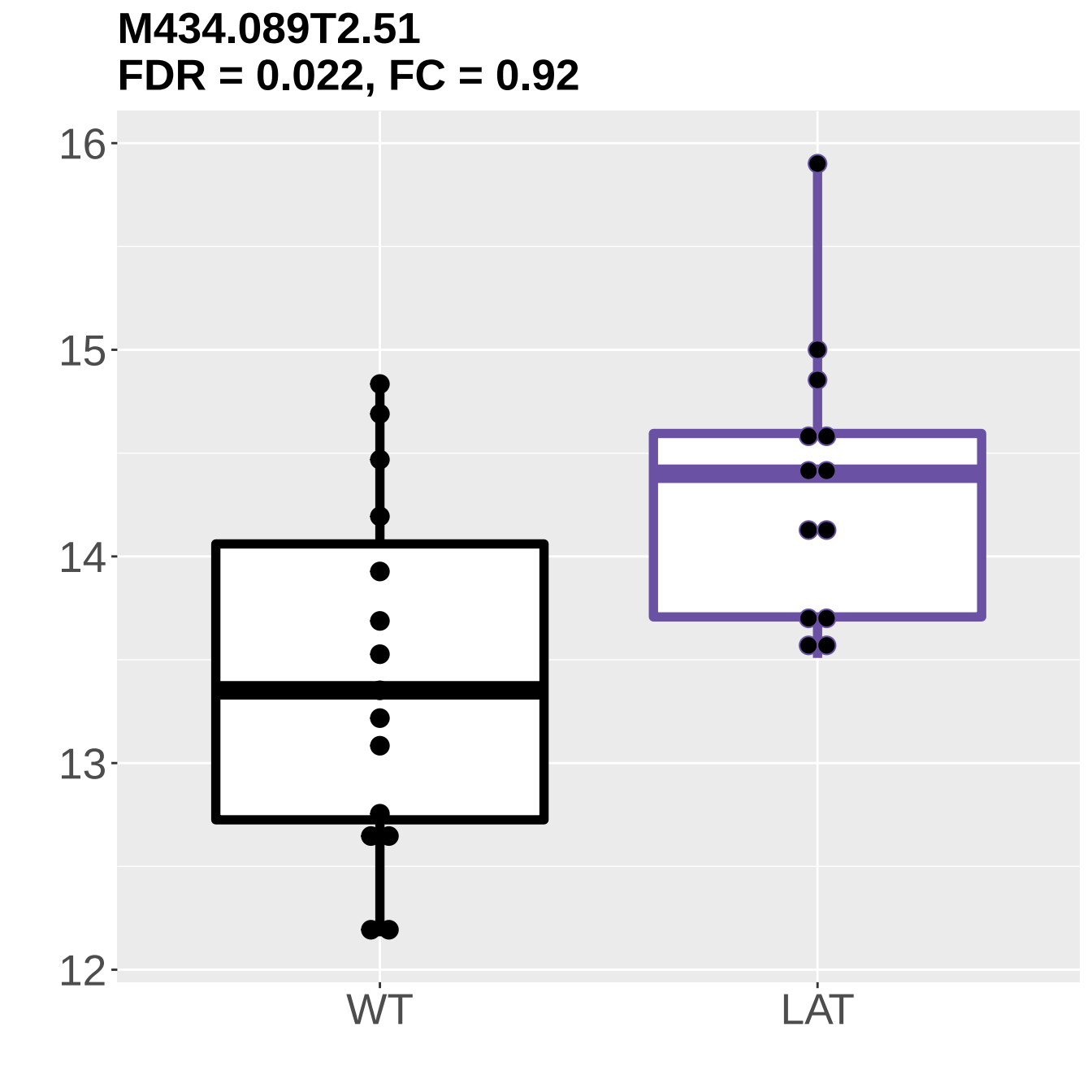
WT
LAT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FDR = 0.022, FC = 0.92
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15
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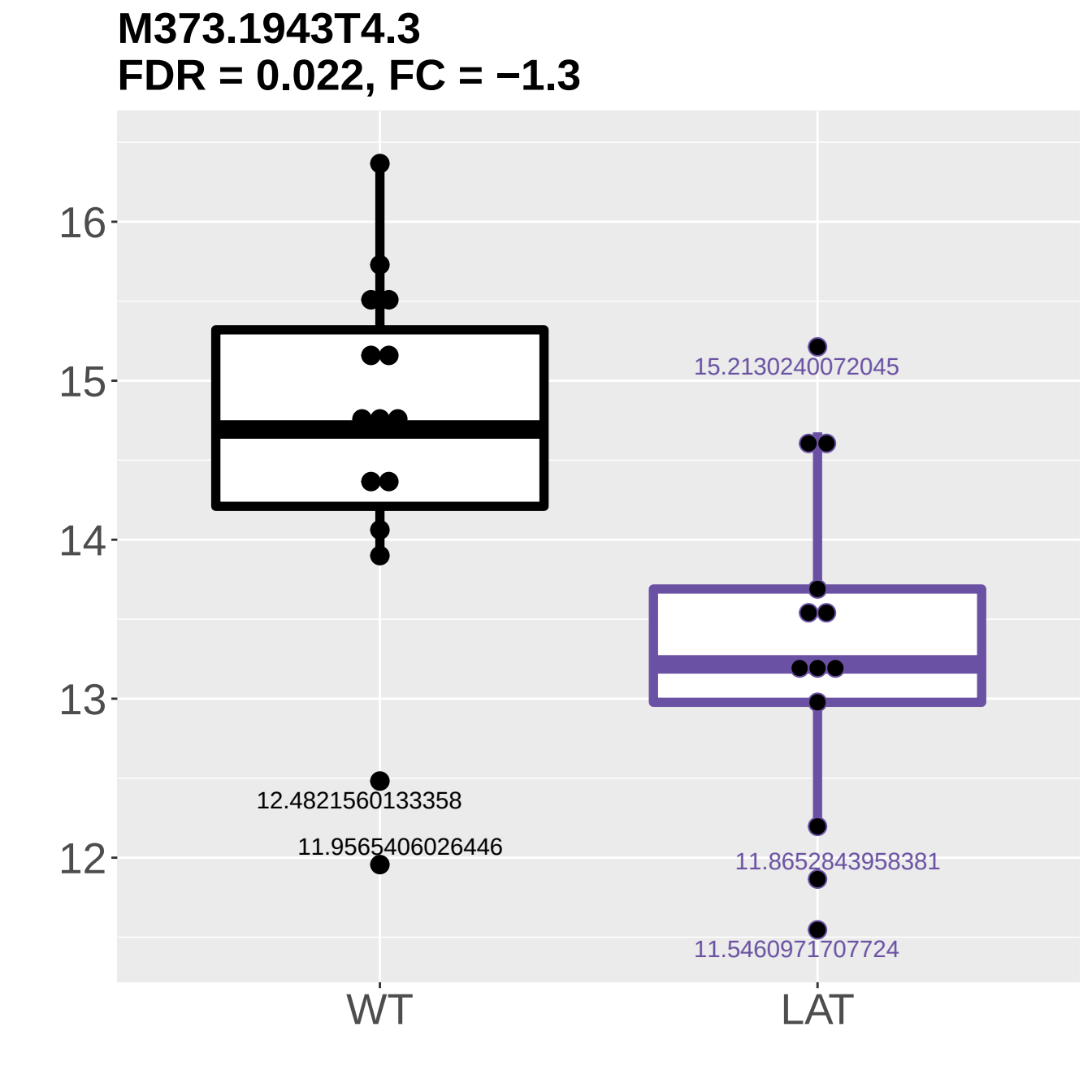
13
12
WT
LAT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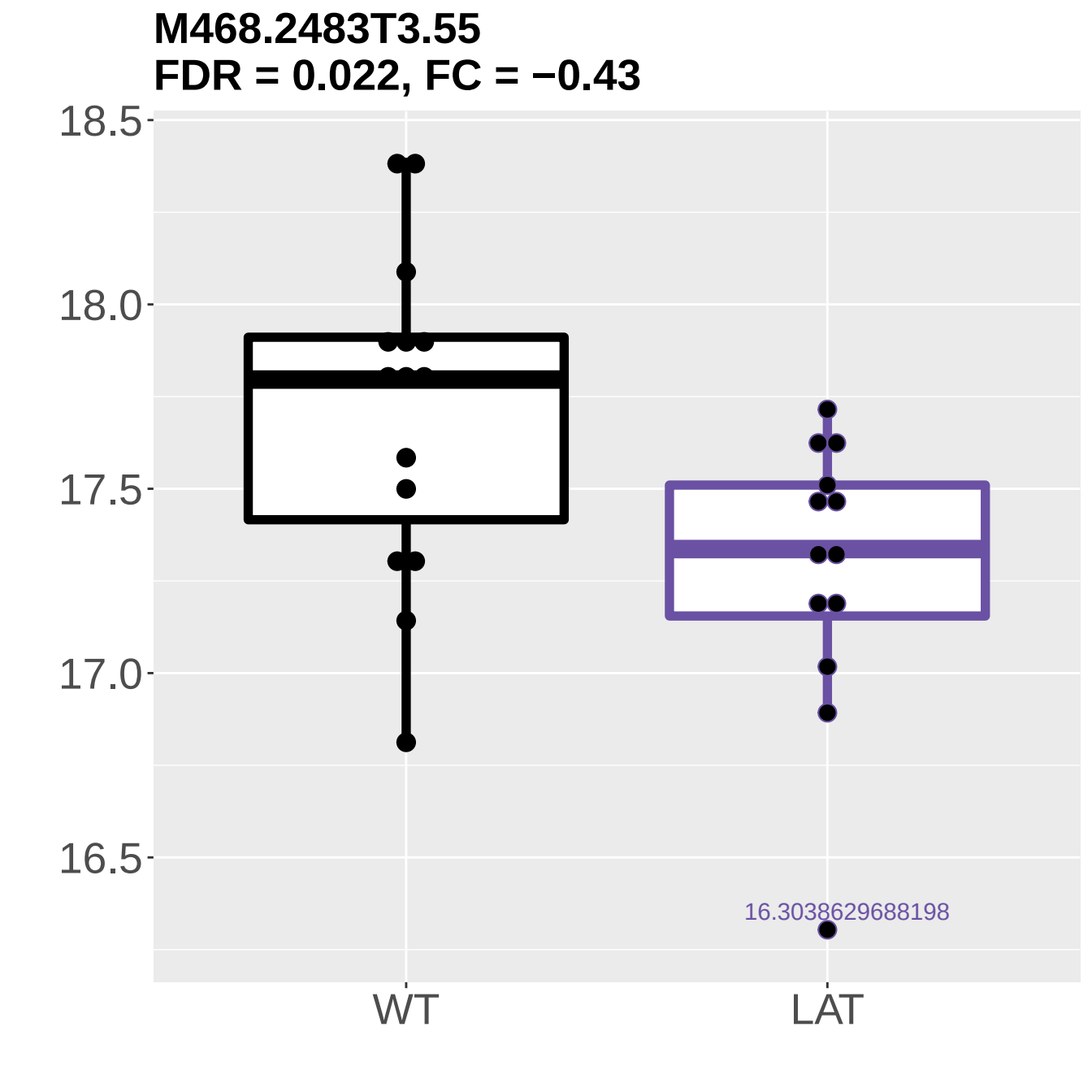
WT
LAT


M468.2483T3.55
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17.0
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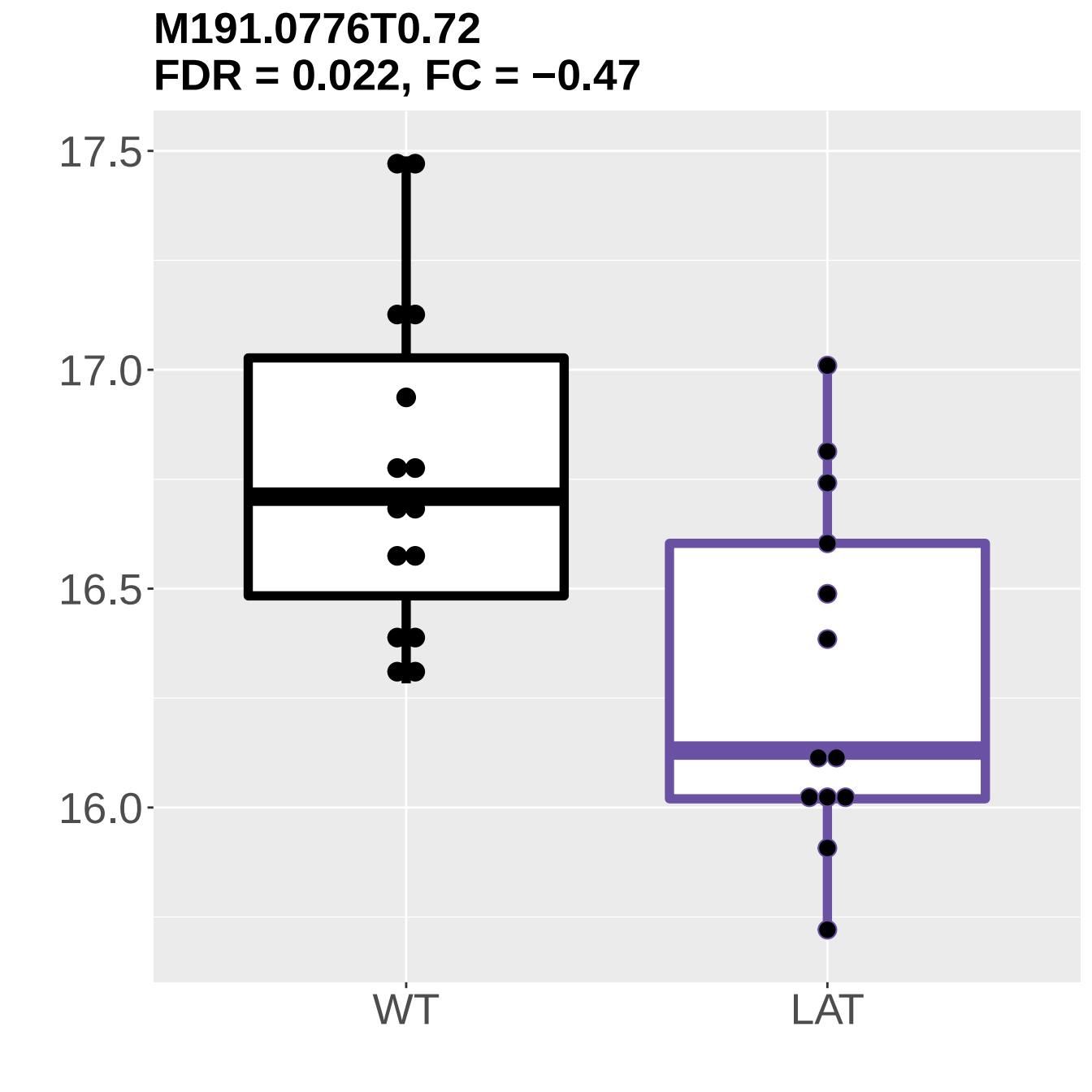
WT
LAT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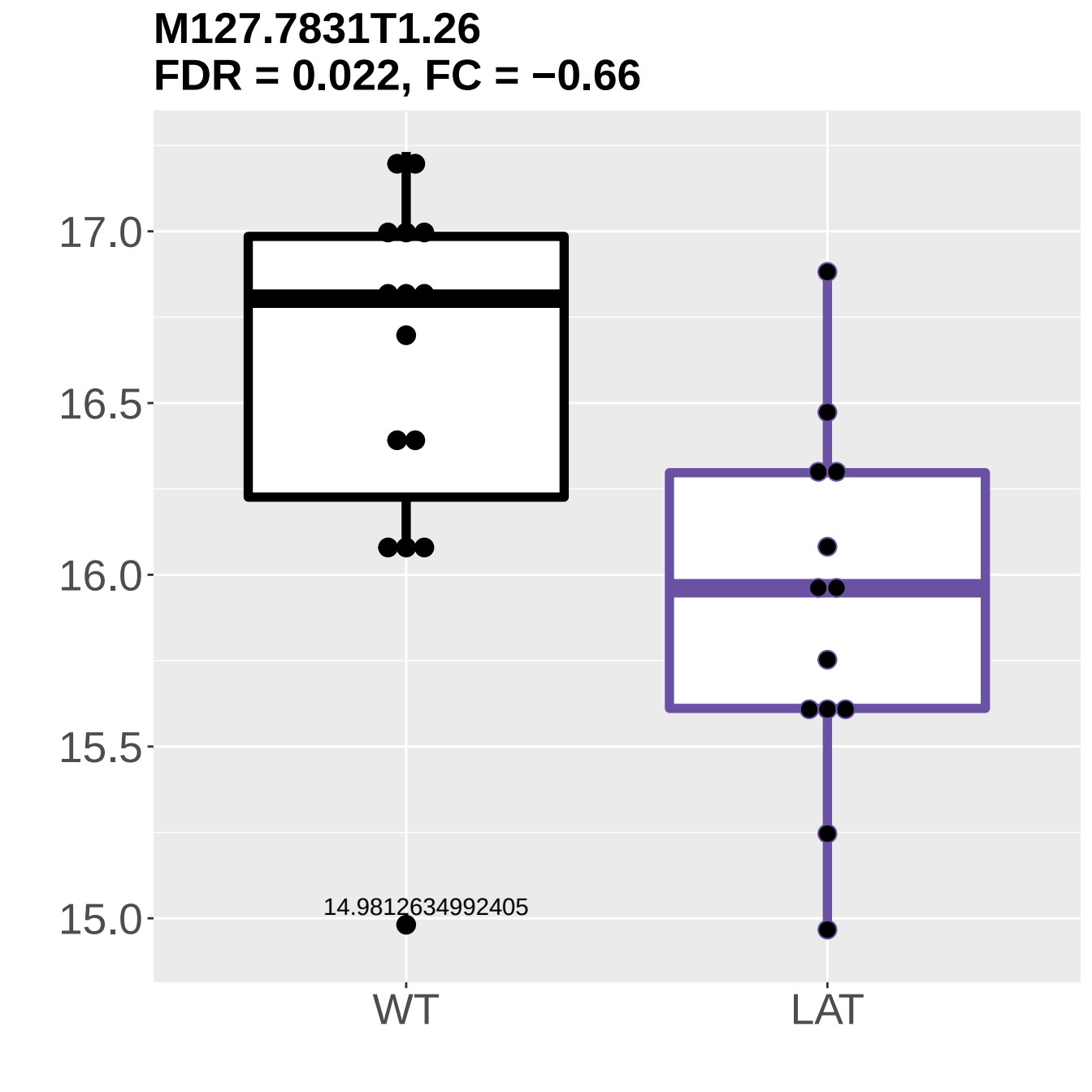
16.5
16.0
WT
LAT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15.0
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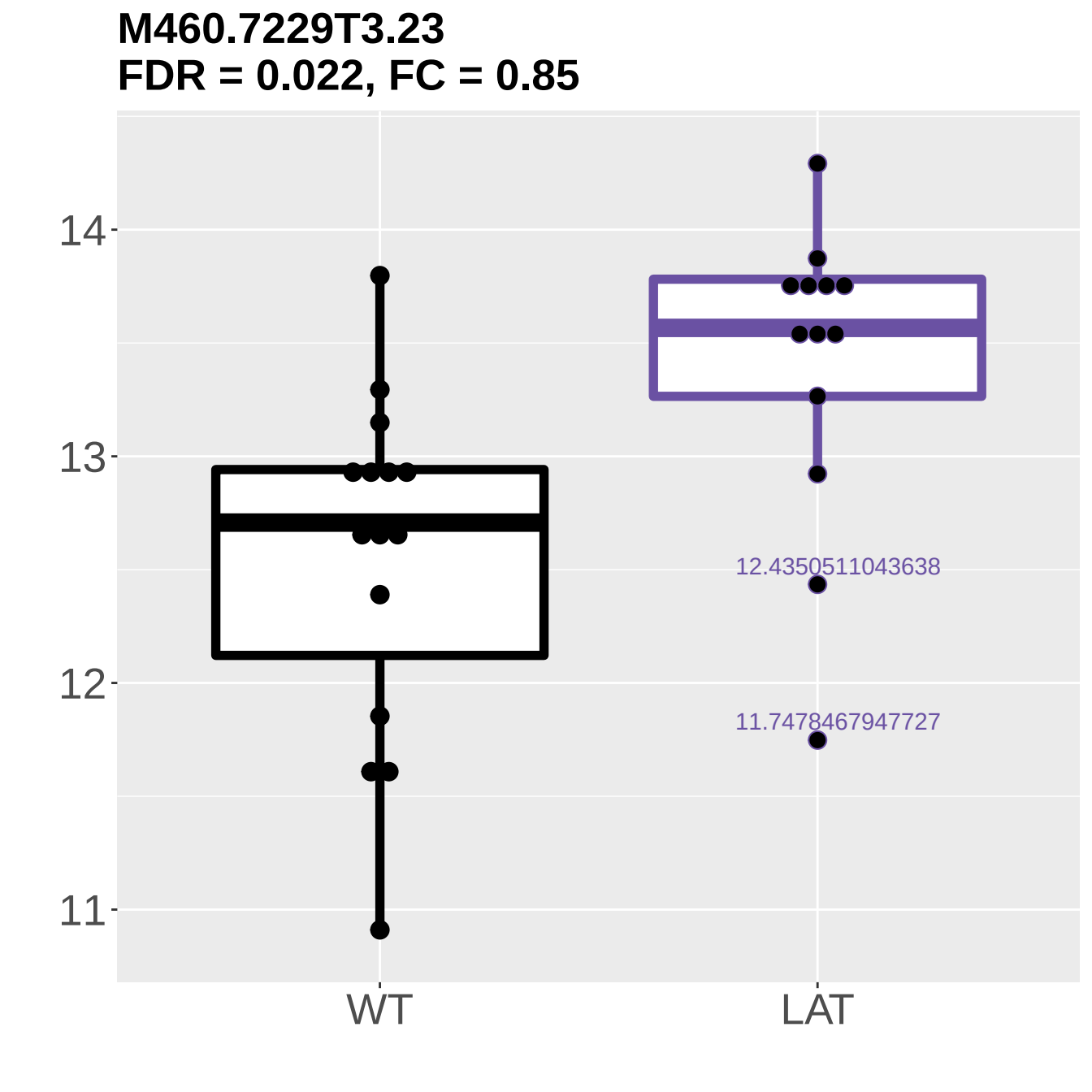
WT
LAT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11
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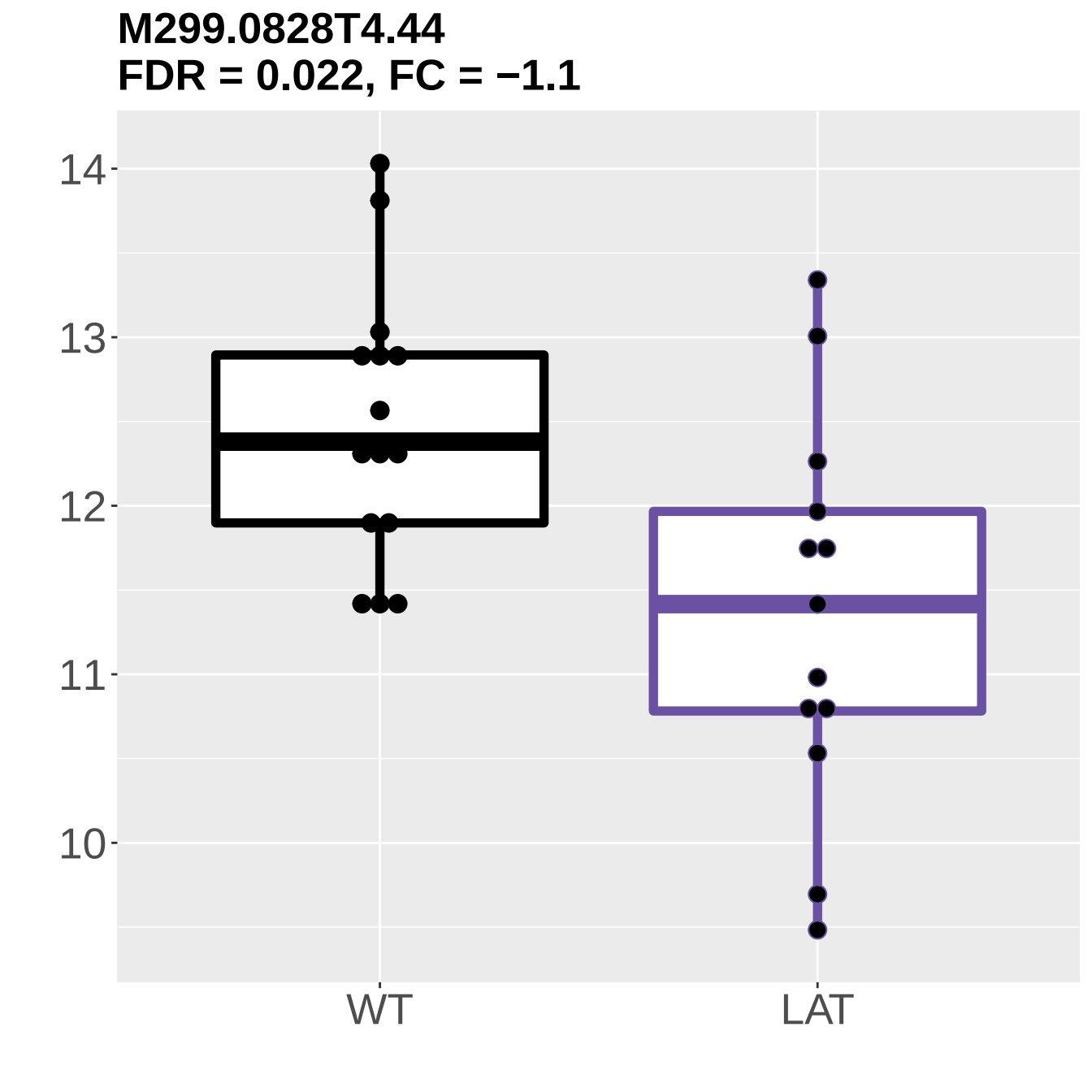
WT
LAT


M299.0828T4.44
FDR = 0.022, FC = −1.1
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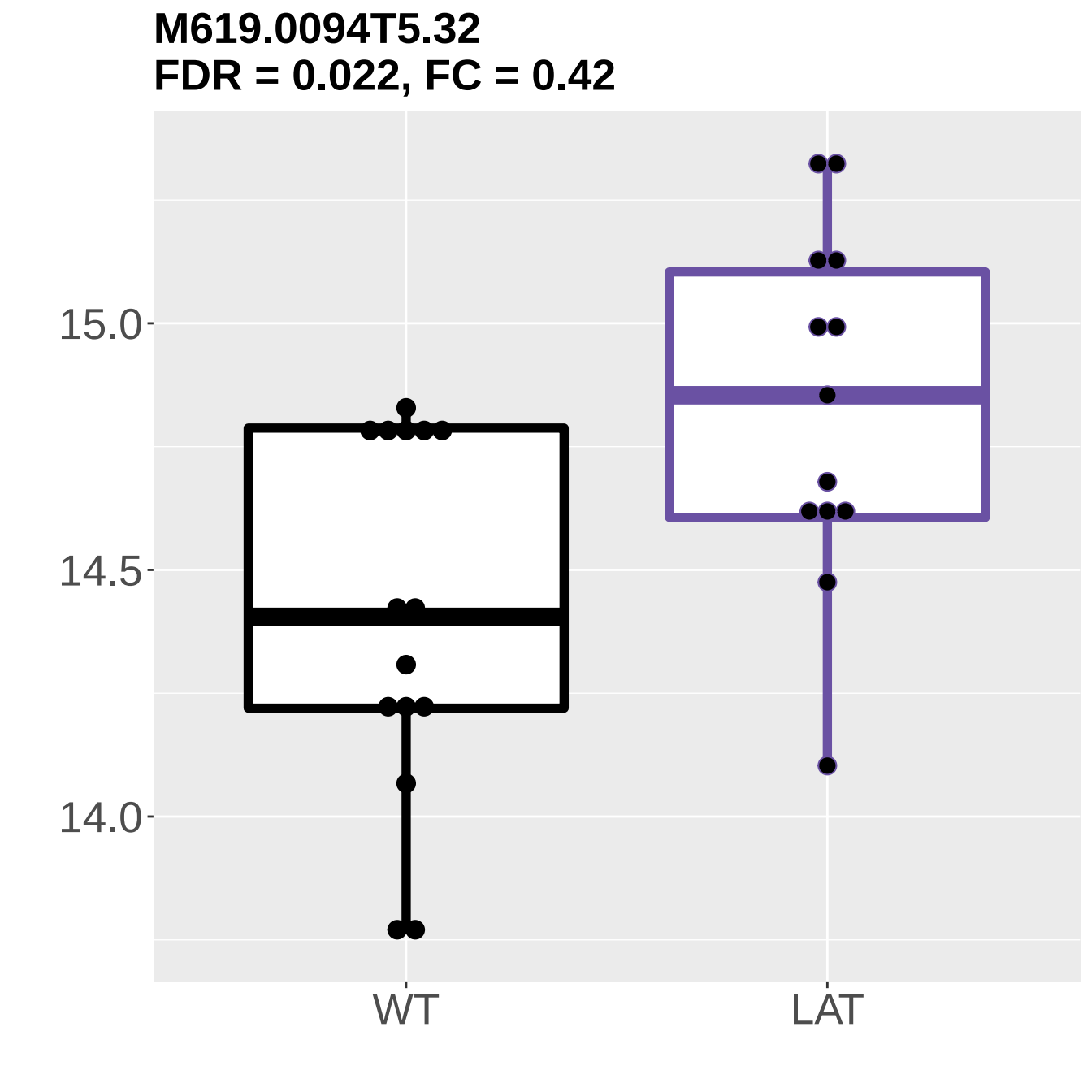
13
12
11
10
WT
LAT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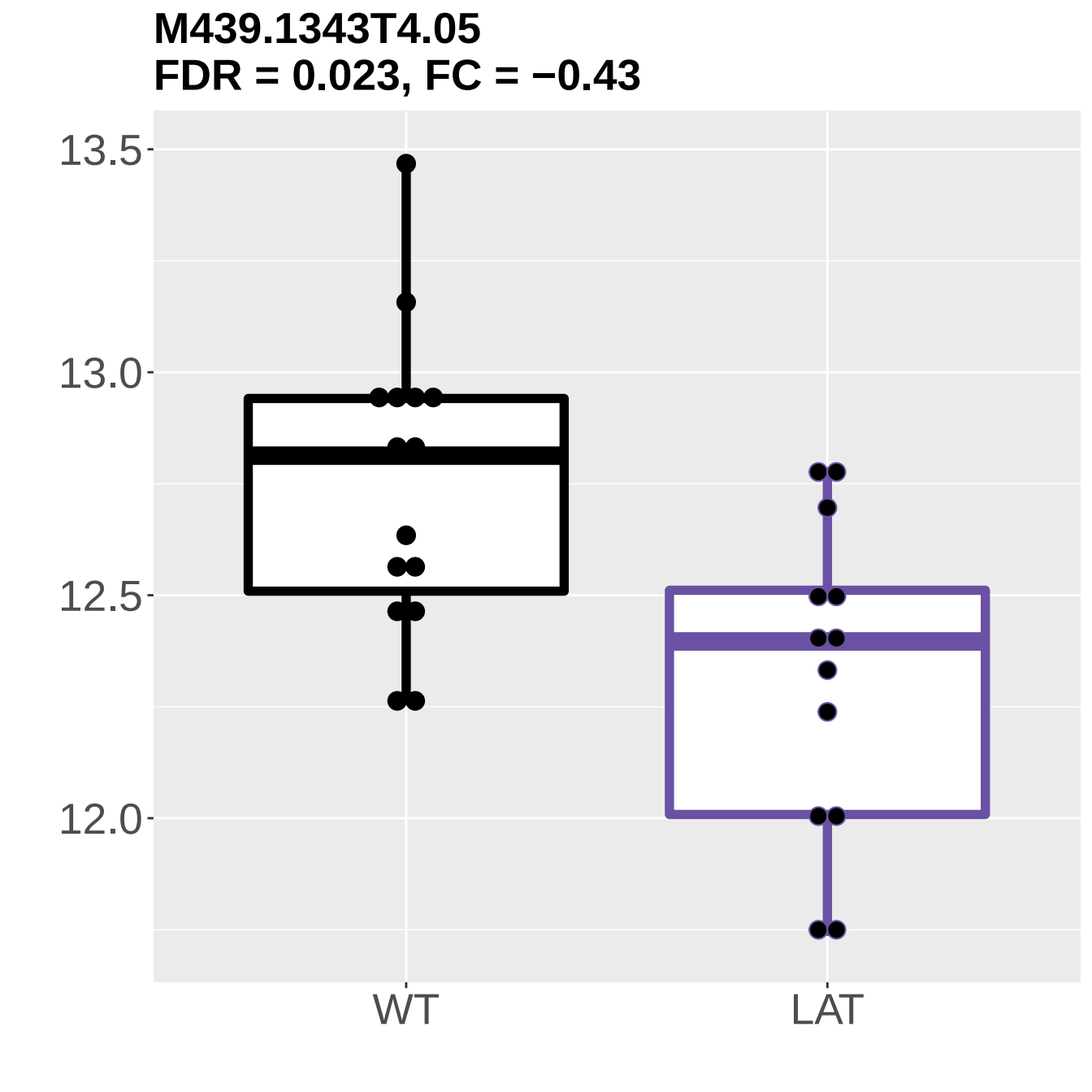
14.0
WT
LAT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FDR = 0.023, FC = −0.43
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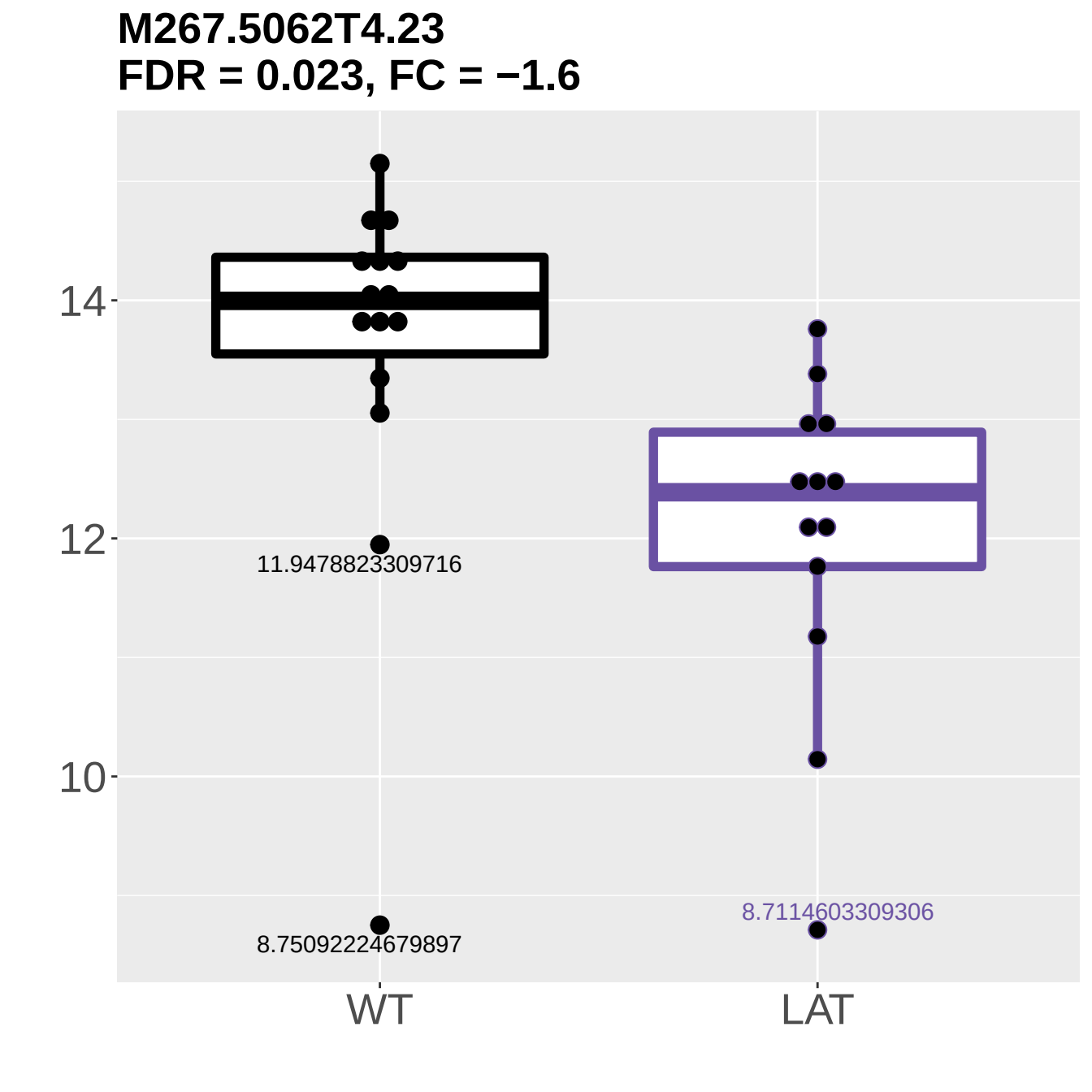
13.0
12.5
12.0
WT
LAT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WT
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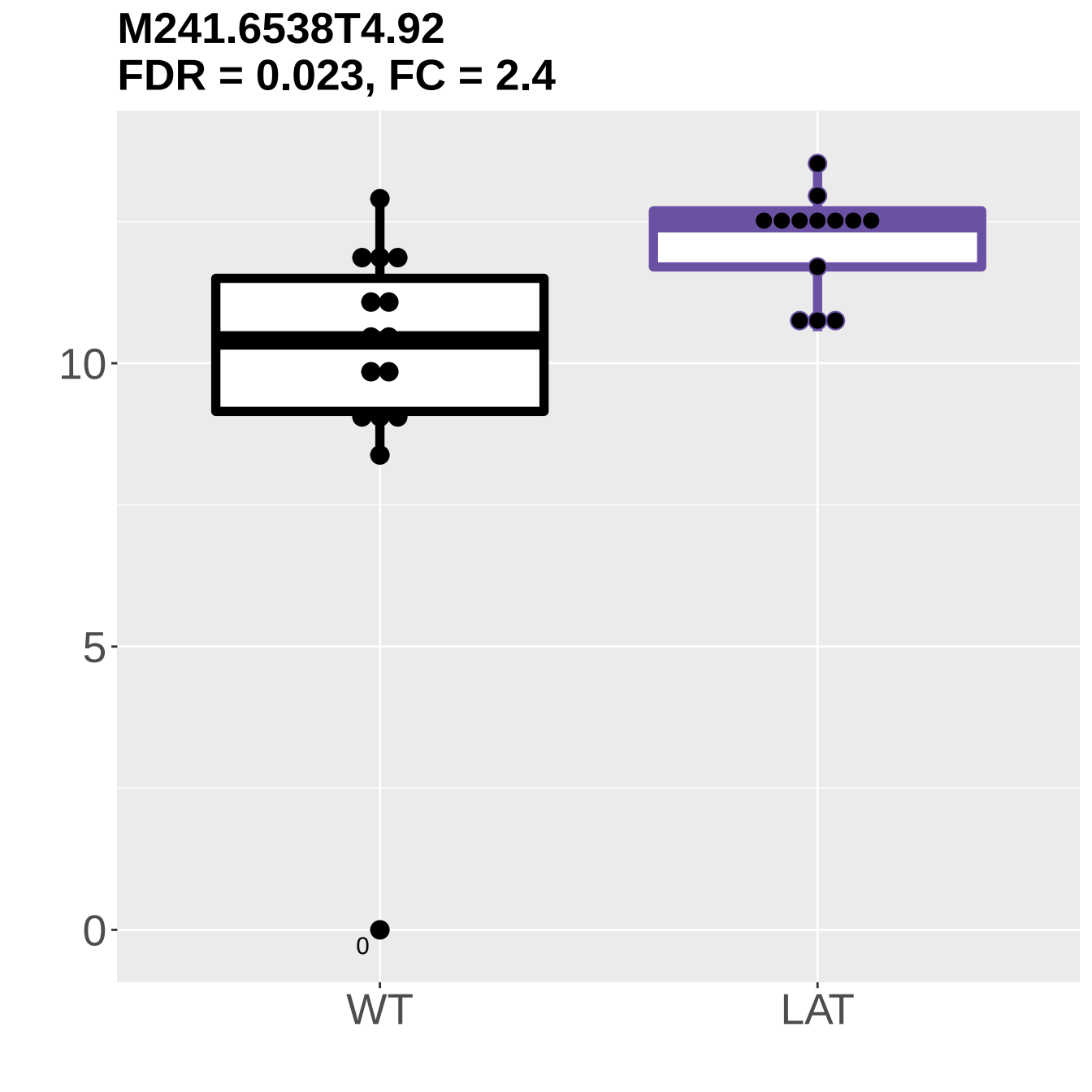
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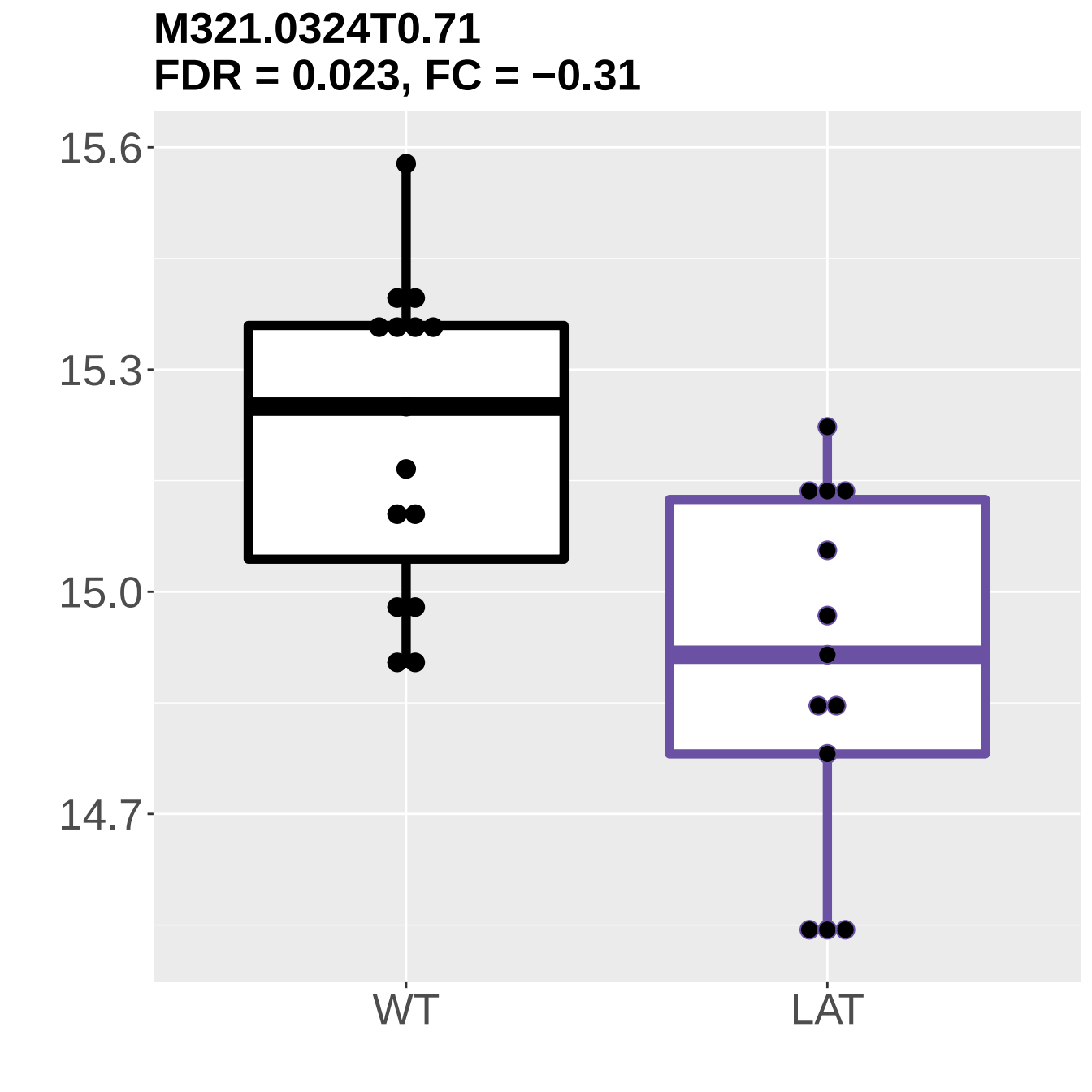
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WT
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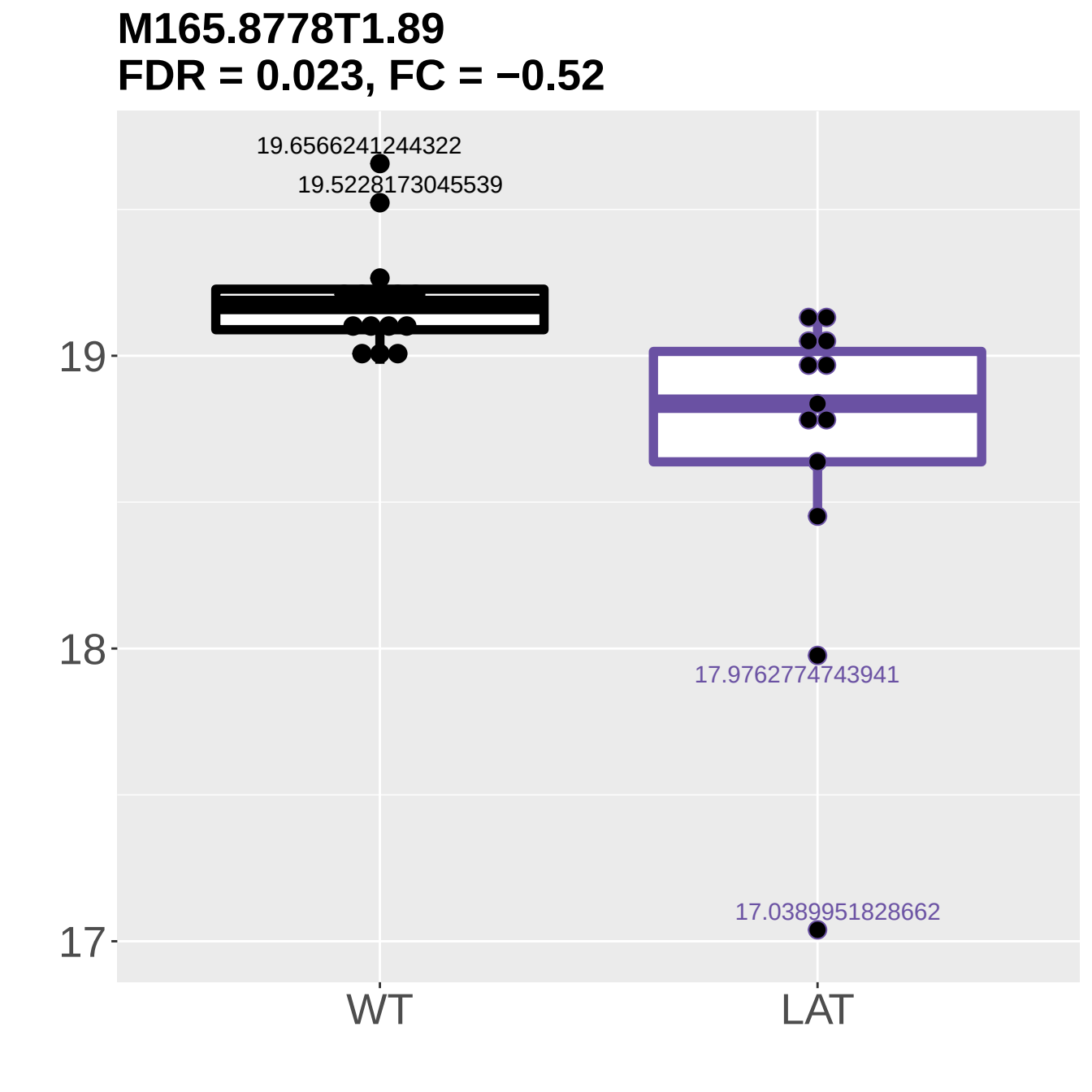
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19
18
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WT
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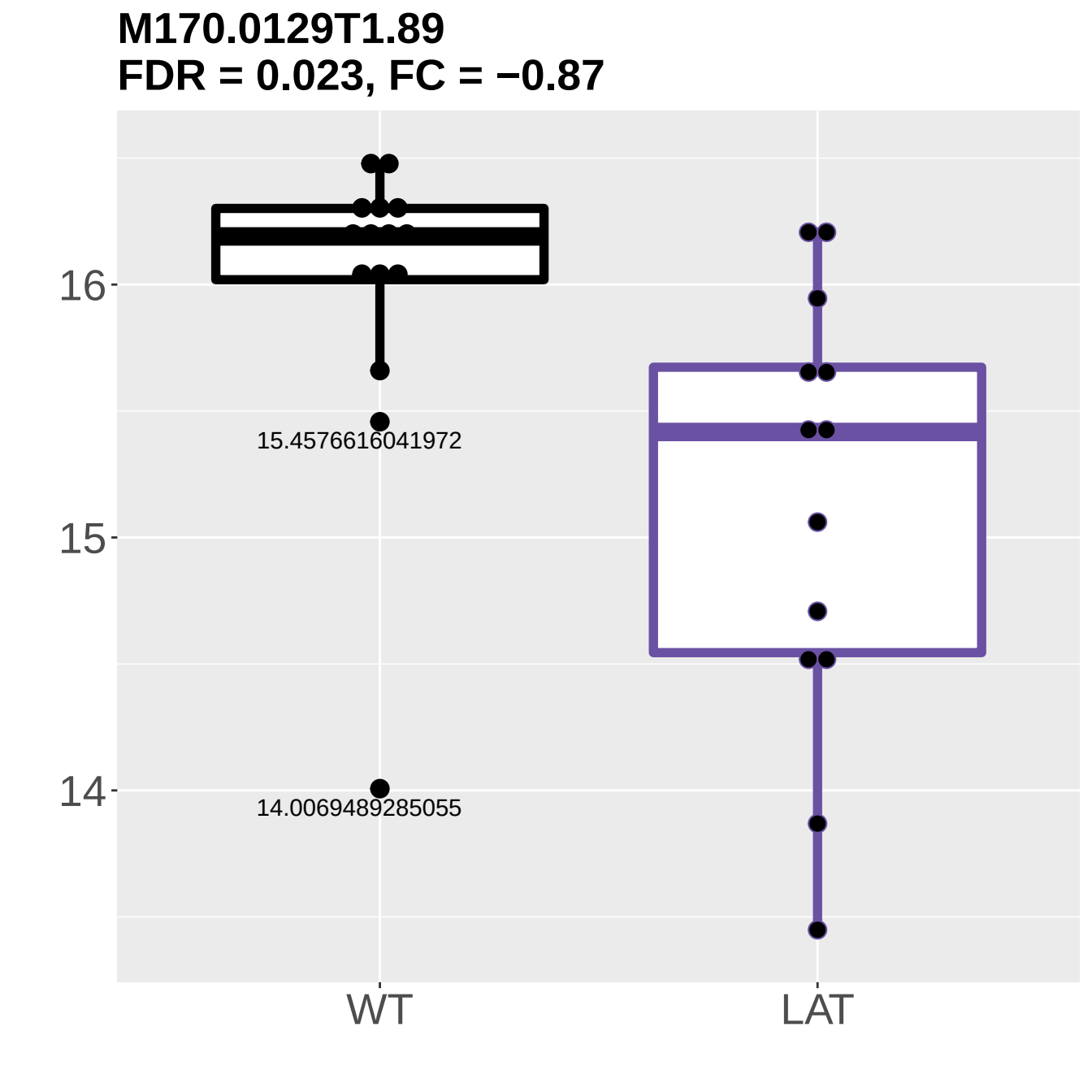
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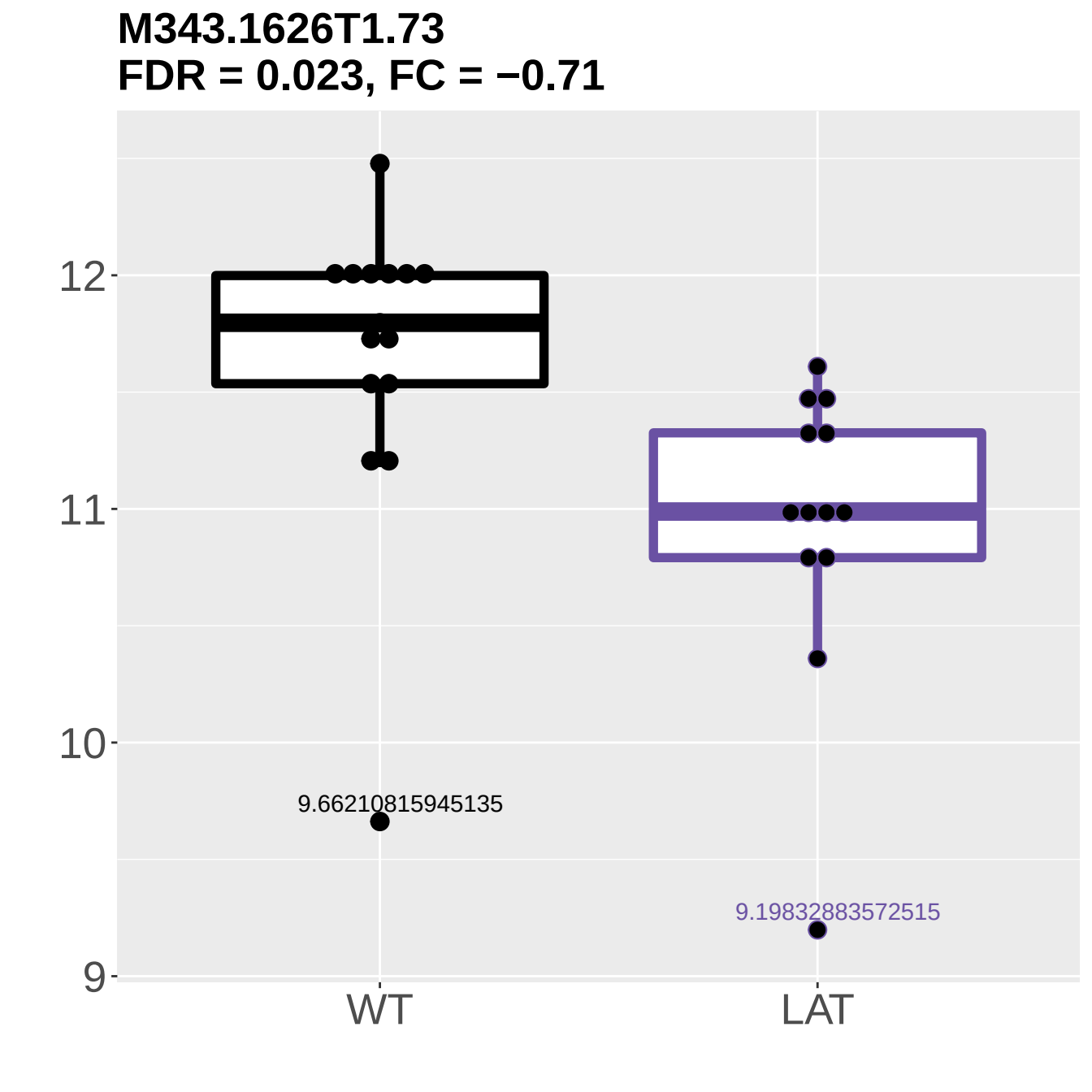
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WT
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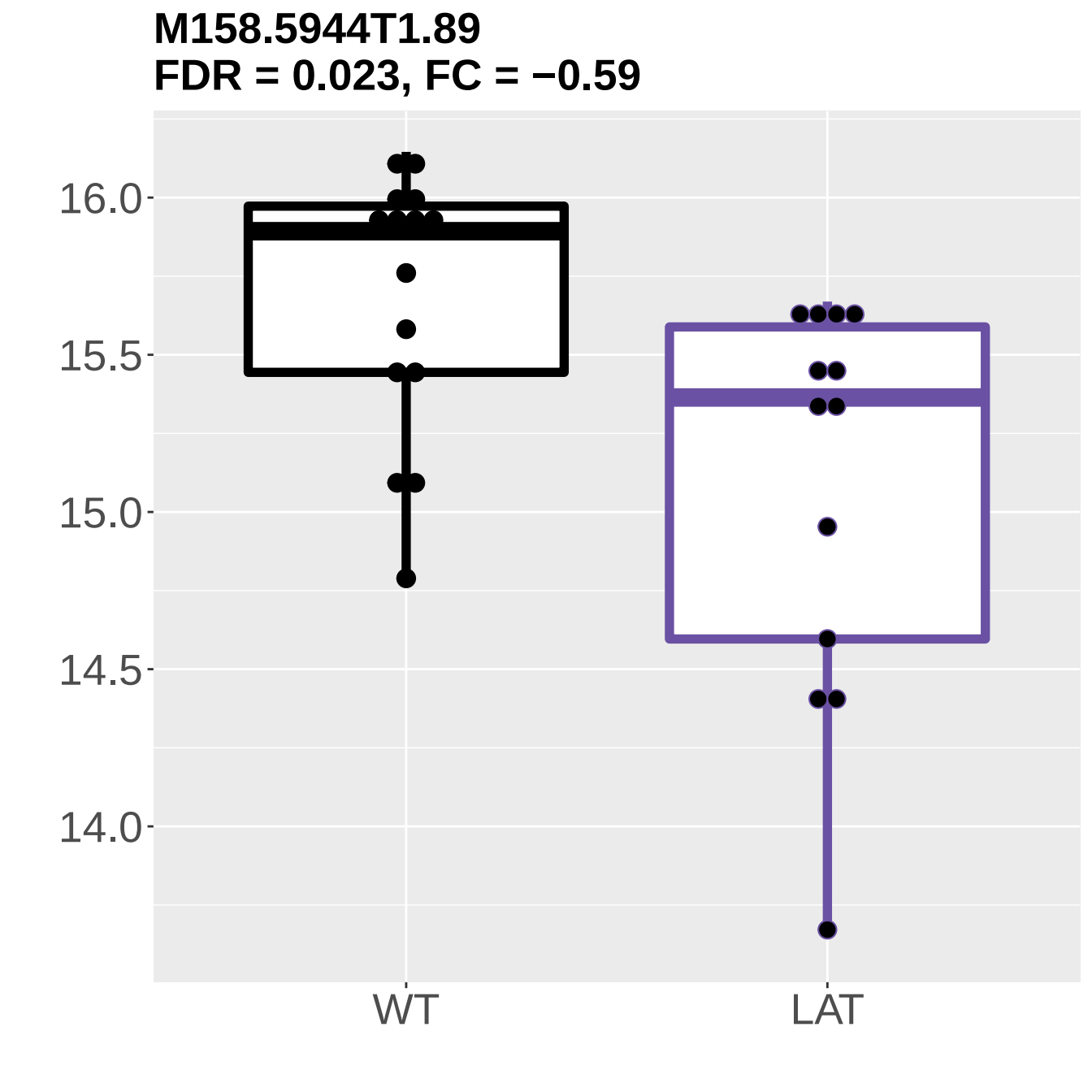
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15.0
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WT
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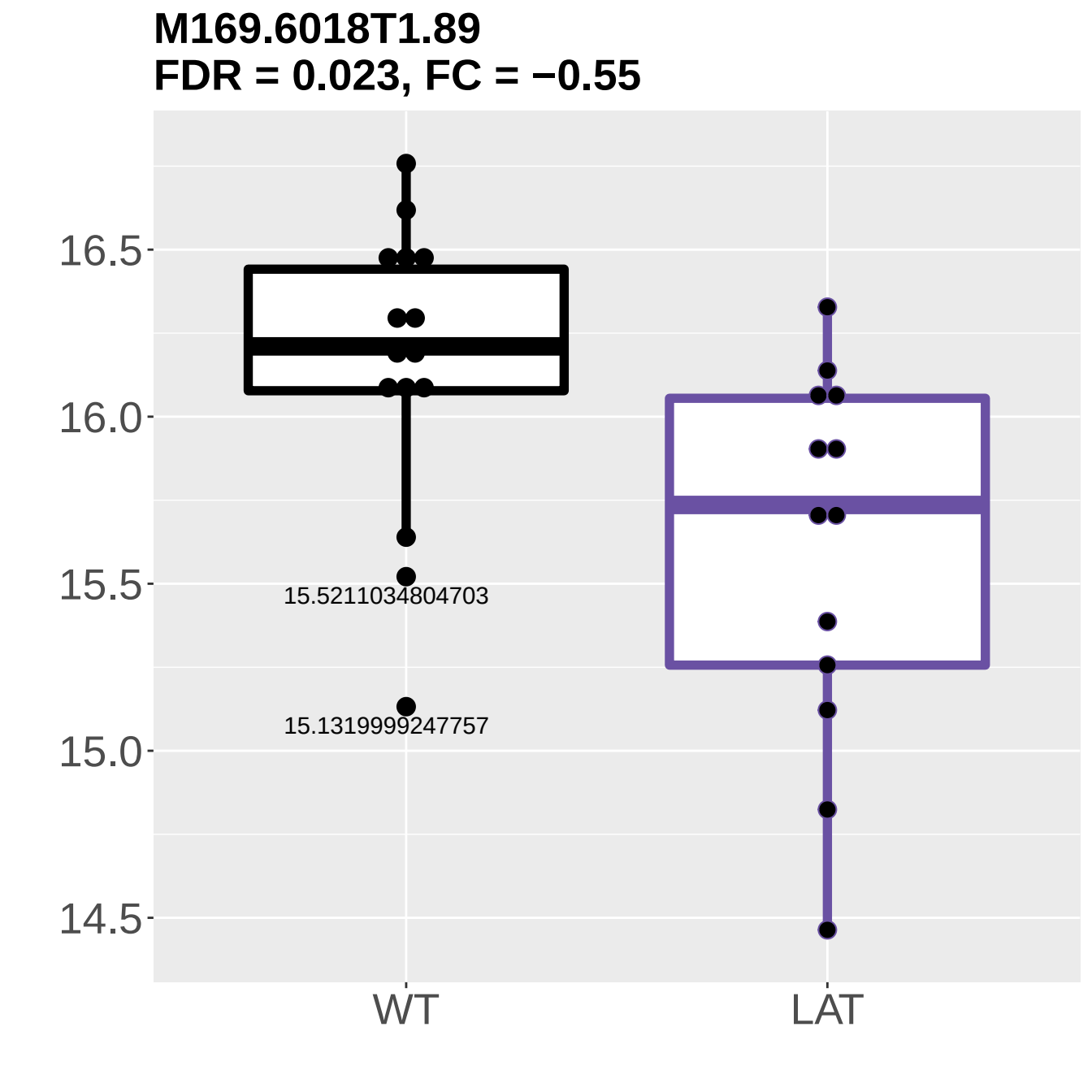
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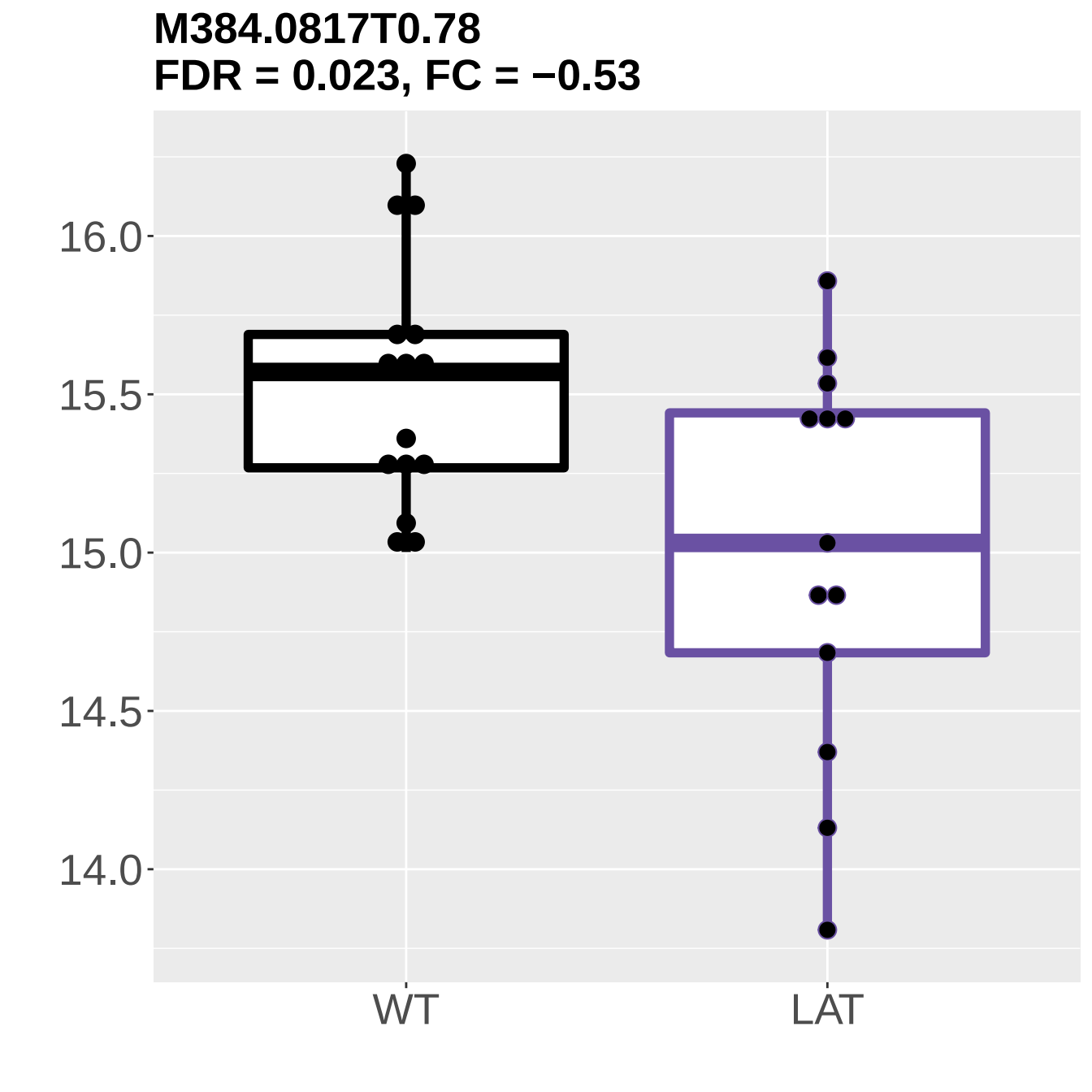
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15.0
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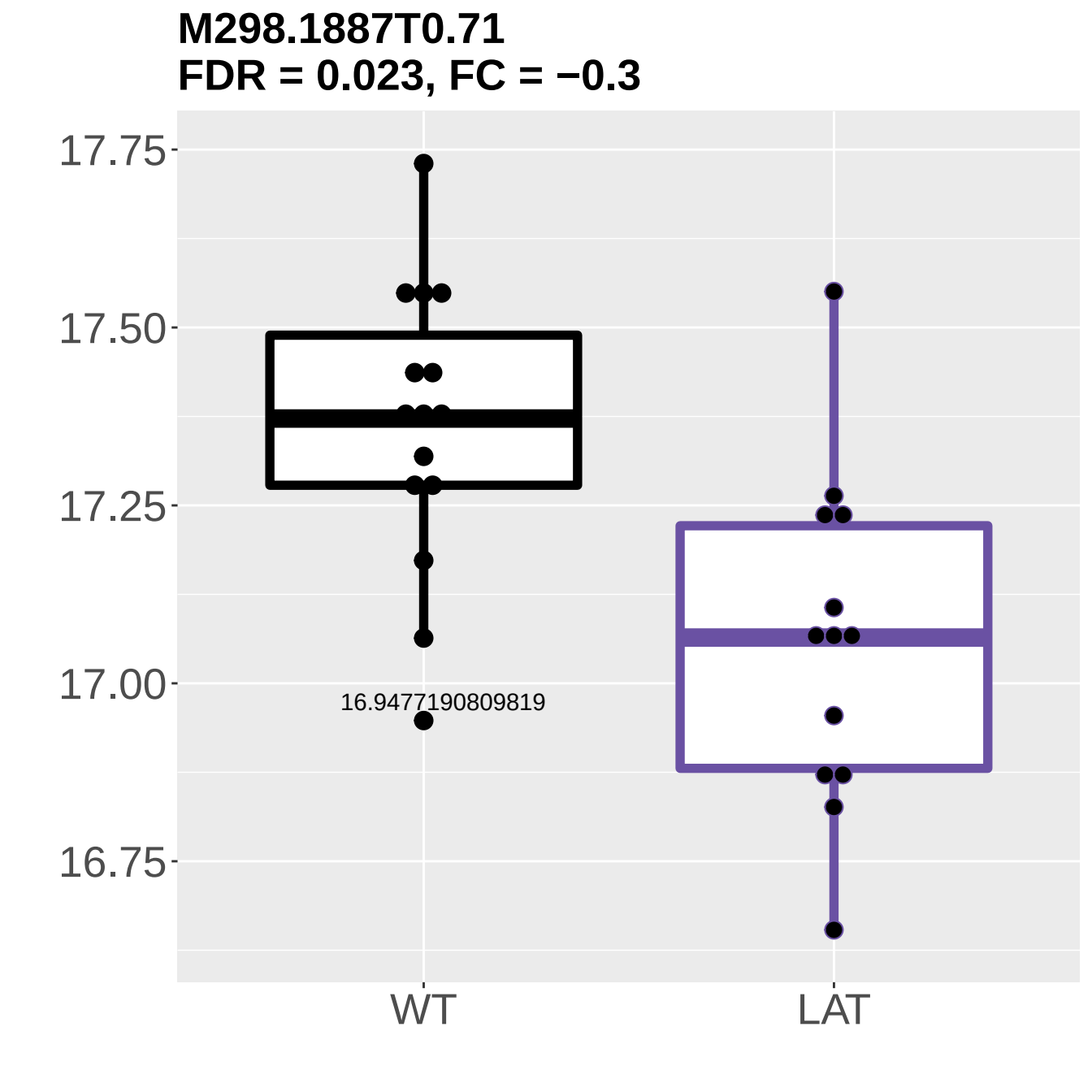
14.0
WT
LAT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17.25
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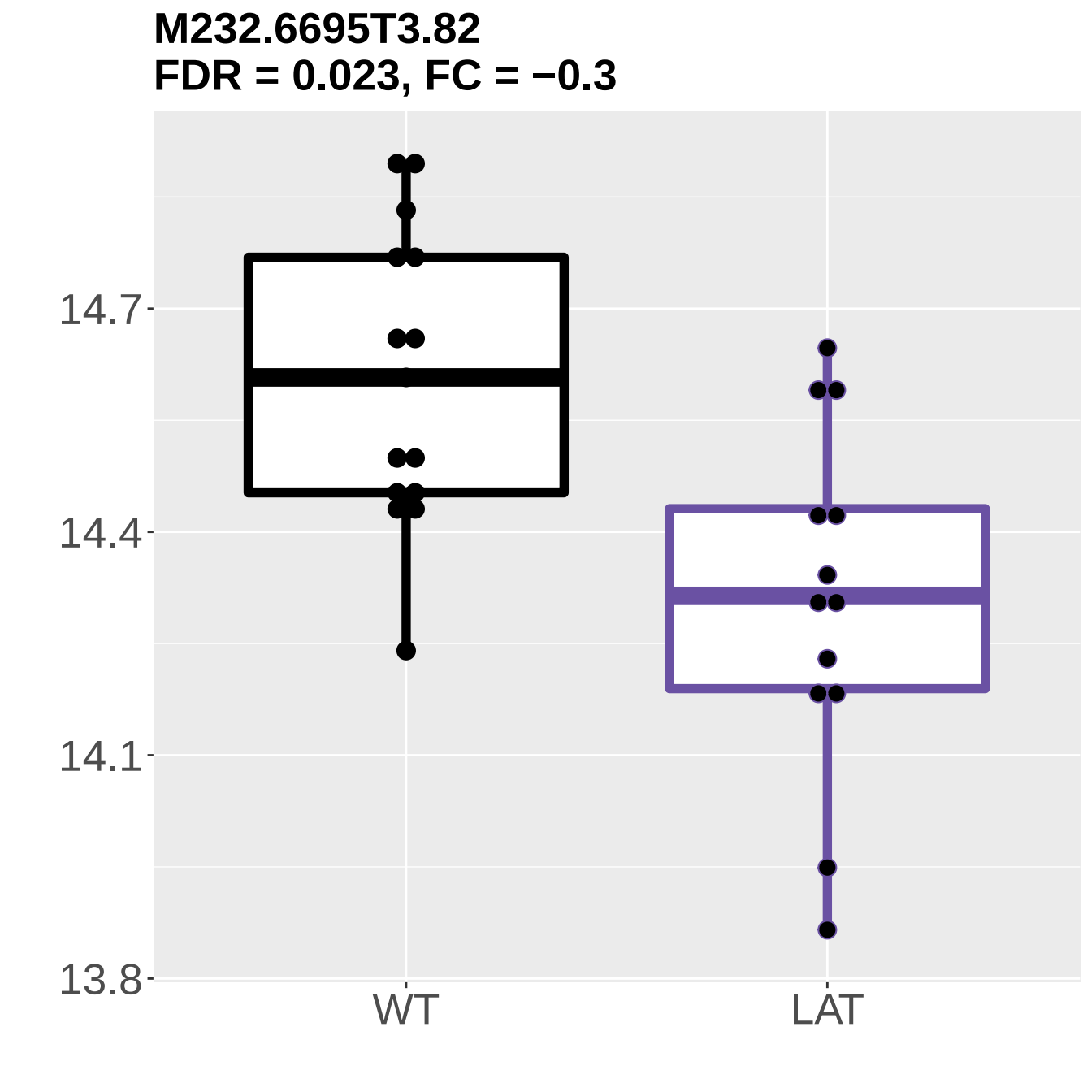
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14.4
14.1
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WT
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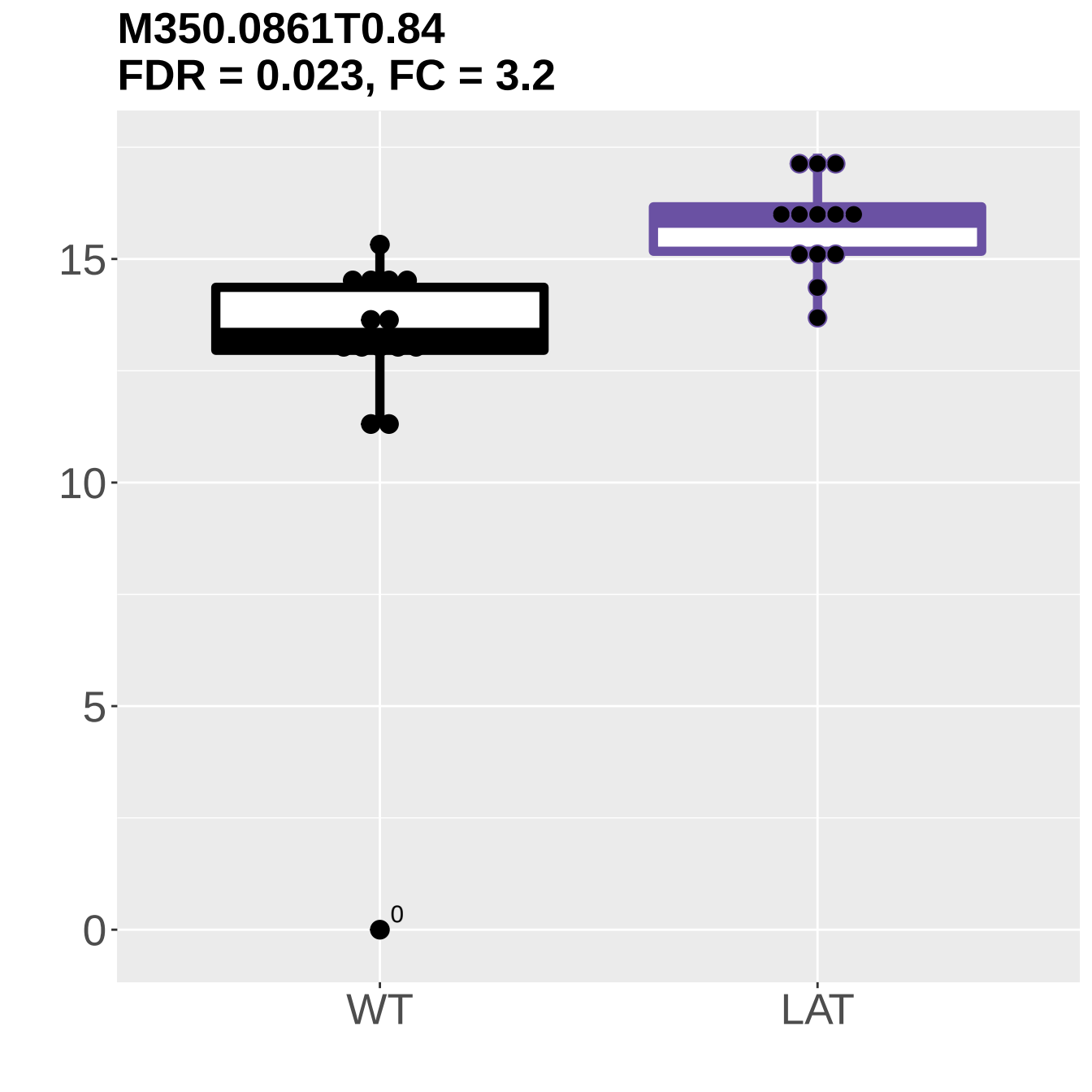
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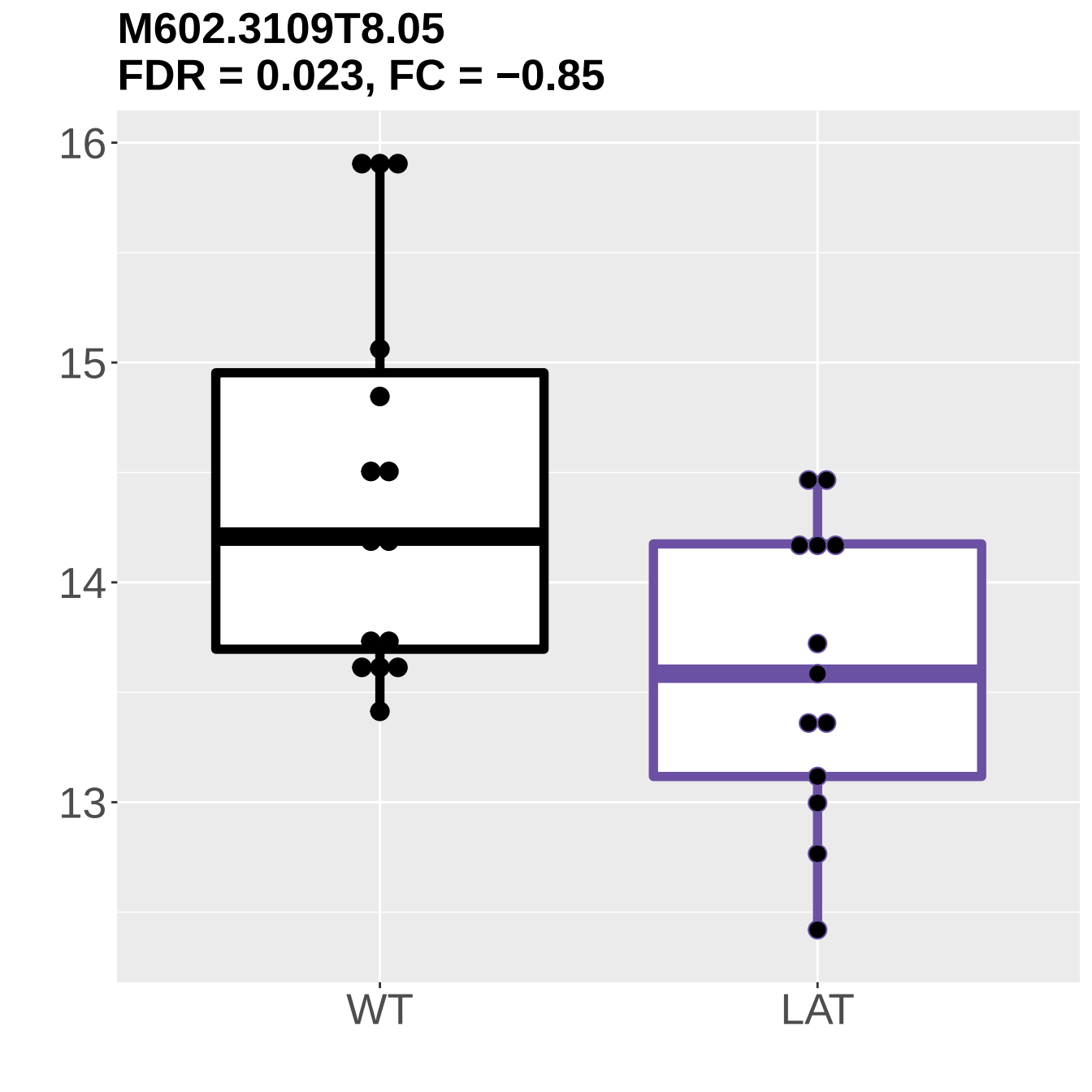
10
5
0
0
WT
LAT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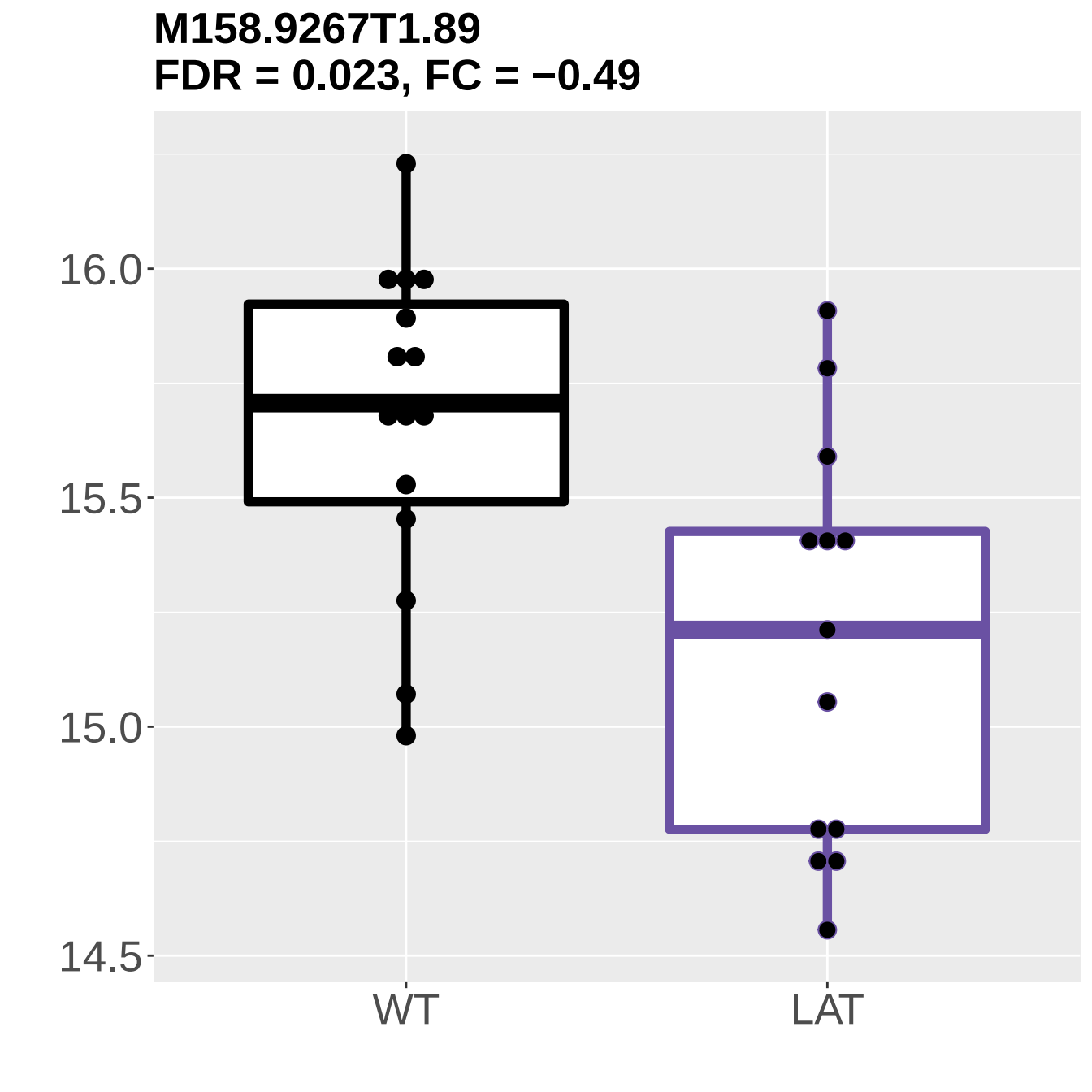
14
13
WT
LAT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WT
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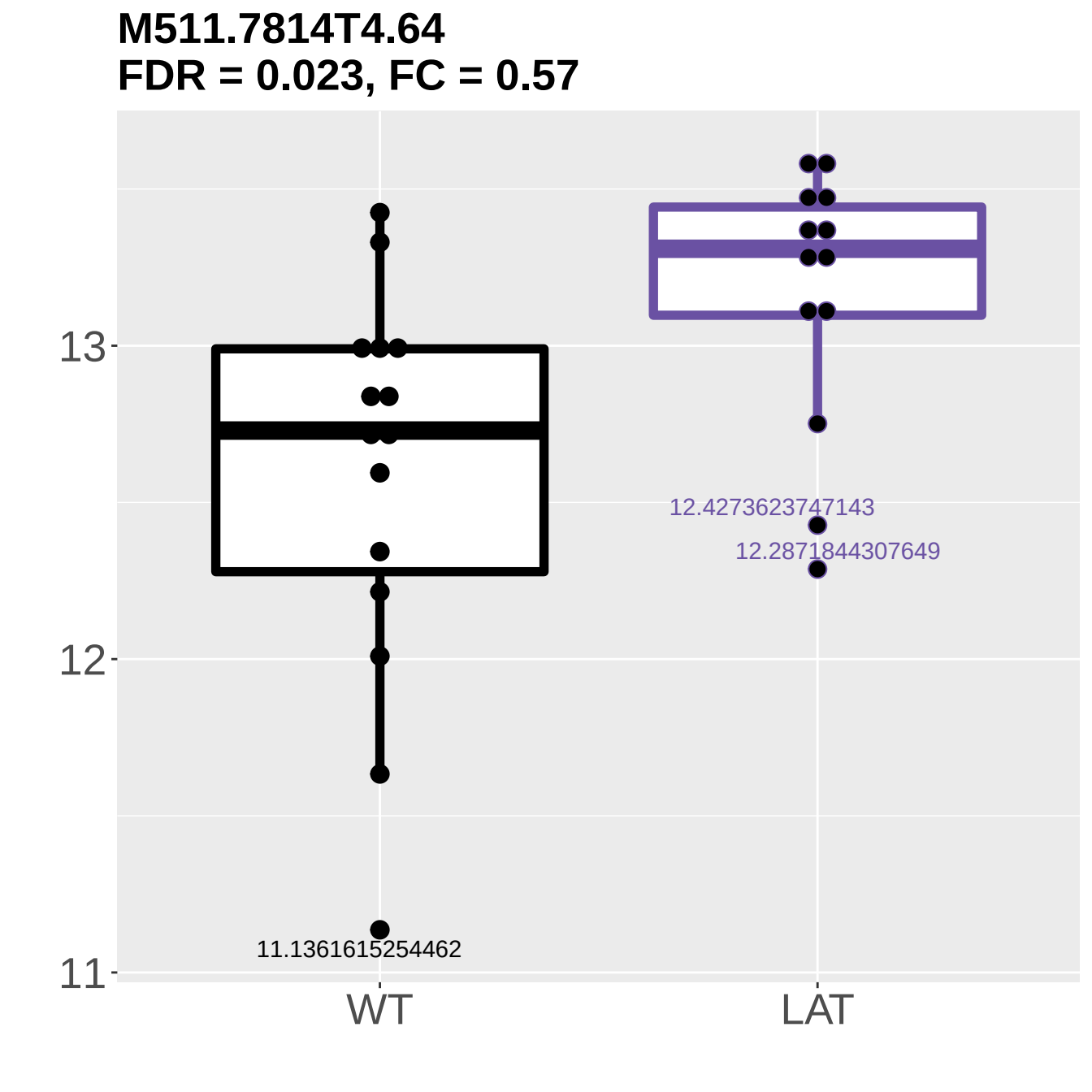
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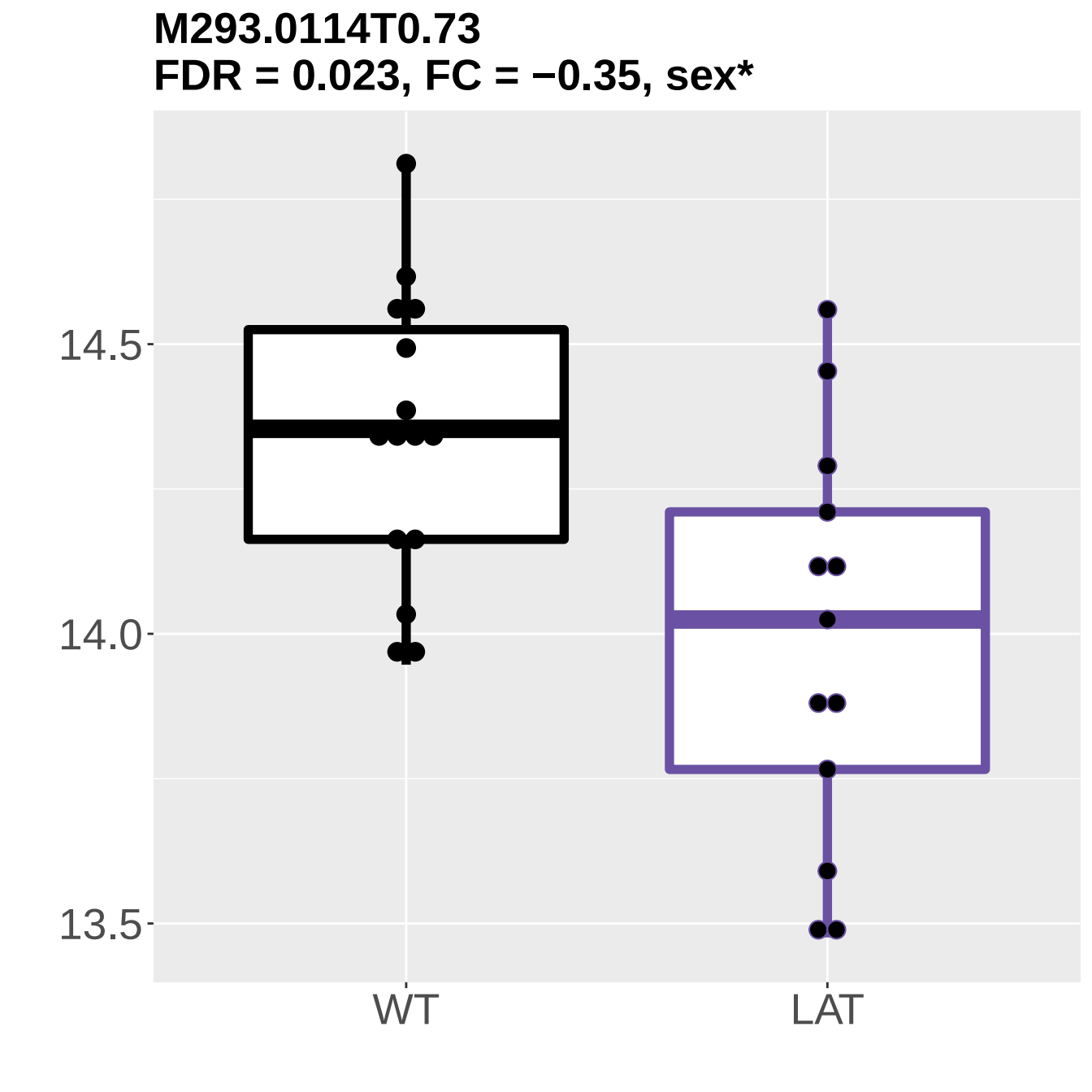
WT
LAT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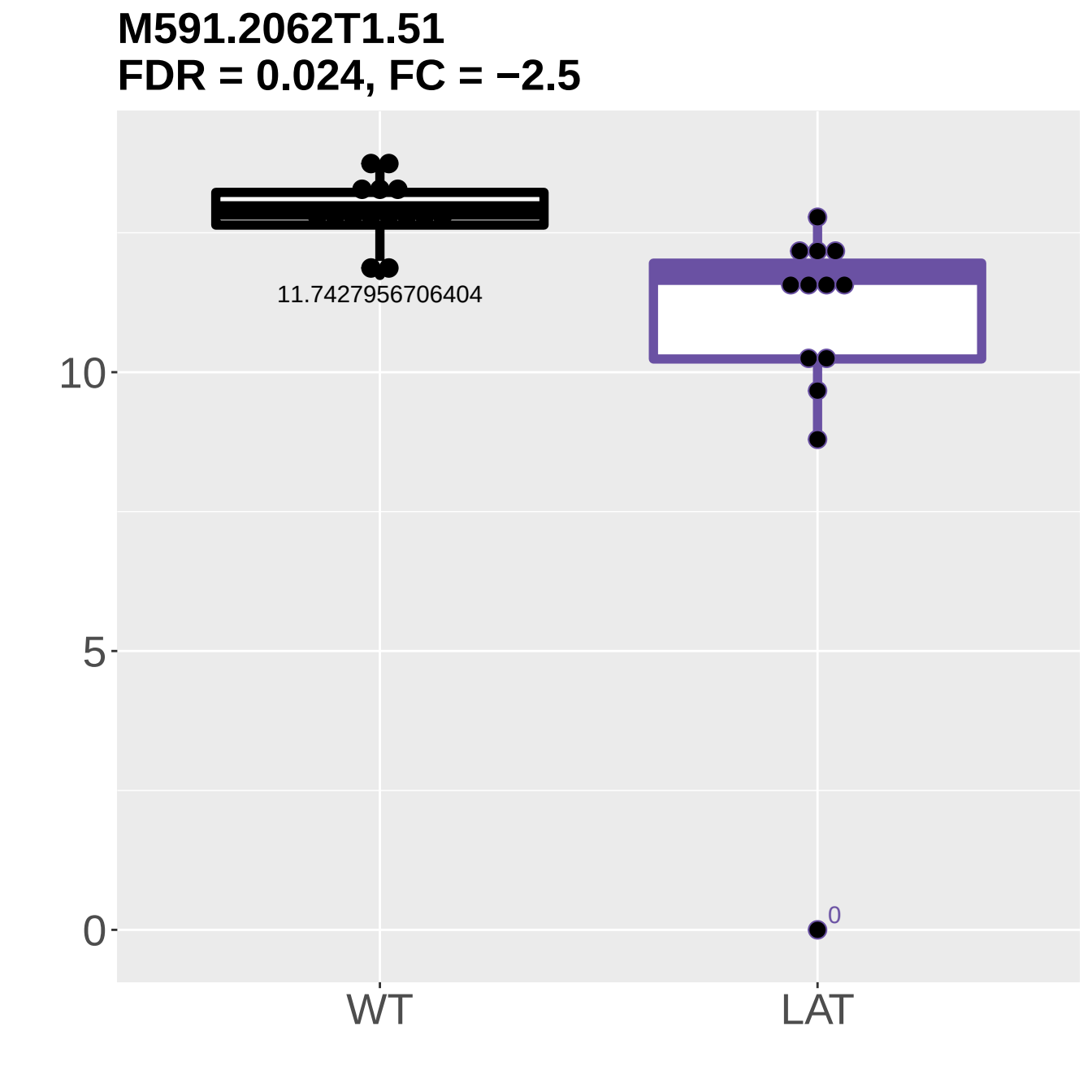
14.0
13.5
WT
LAT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5
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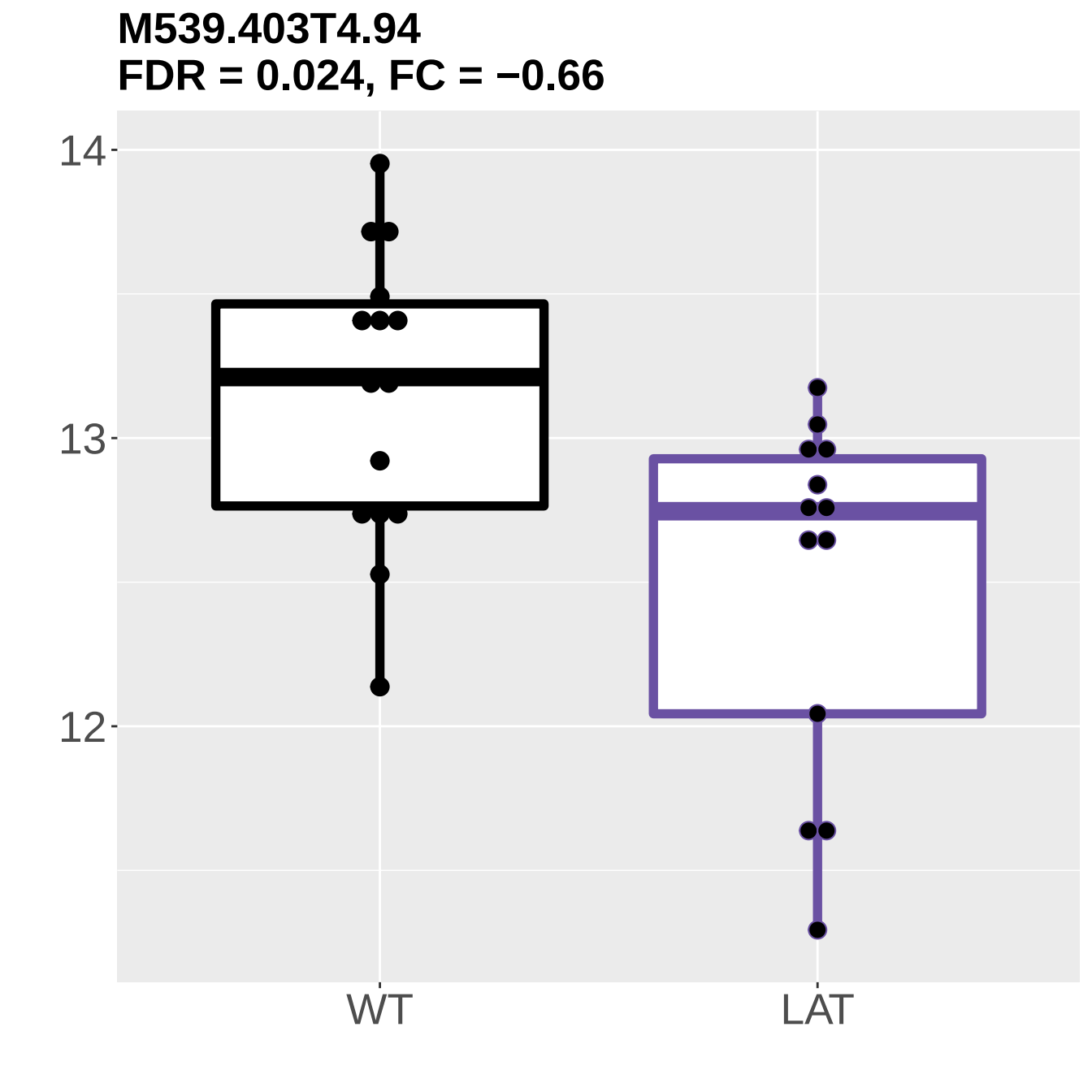
WT
LAT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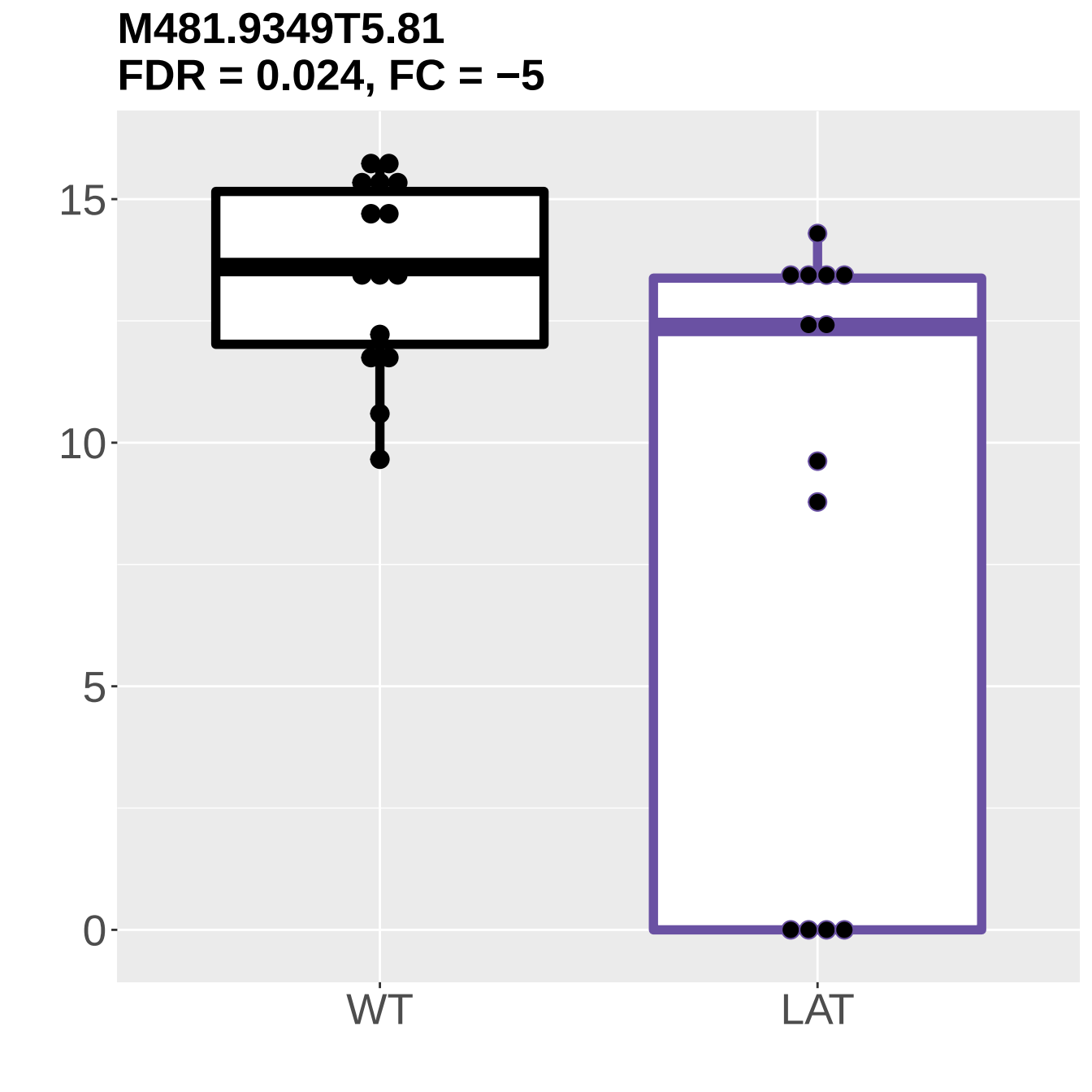
13
12
WT
LAT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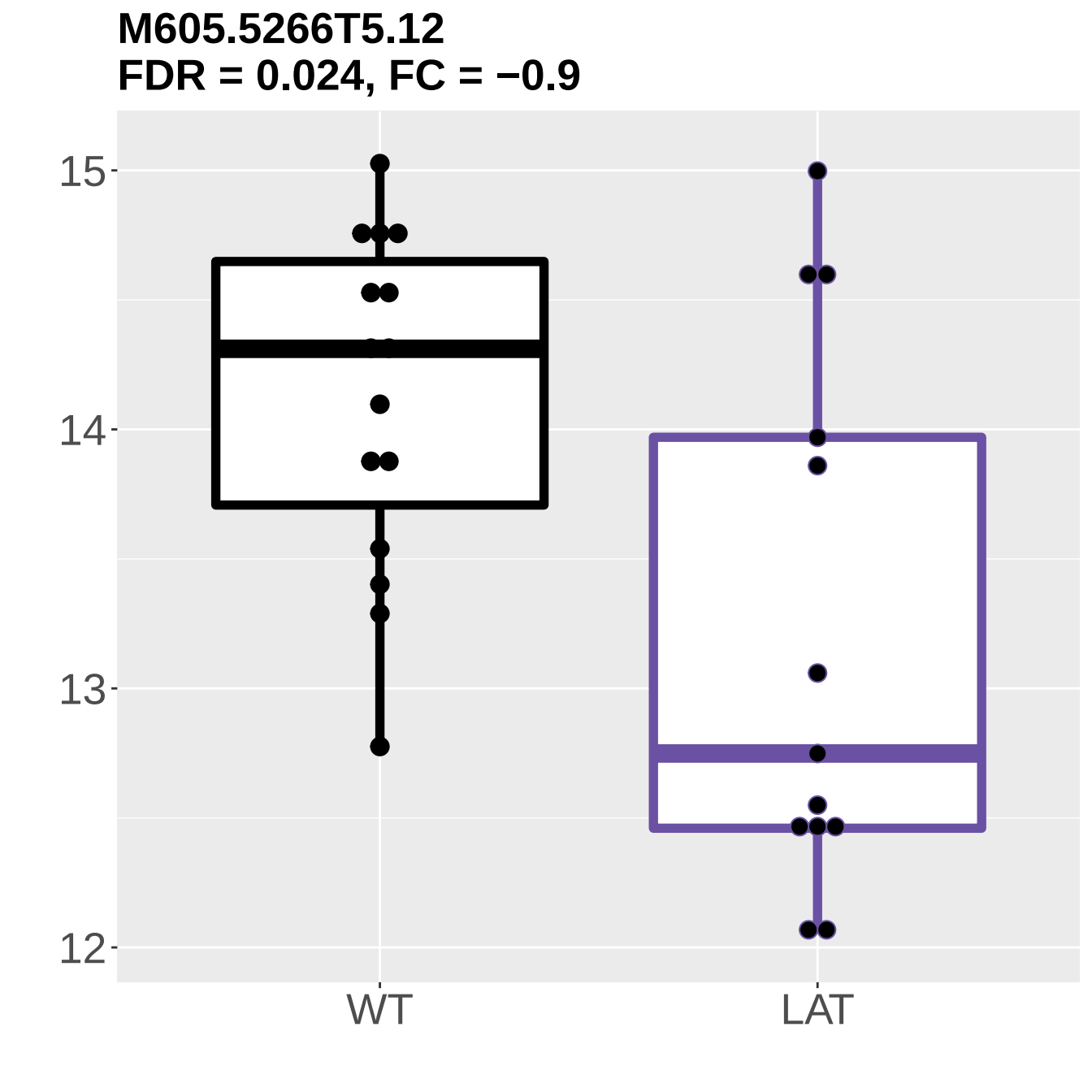
5
0
WT
LAT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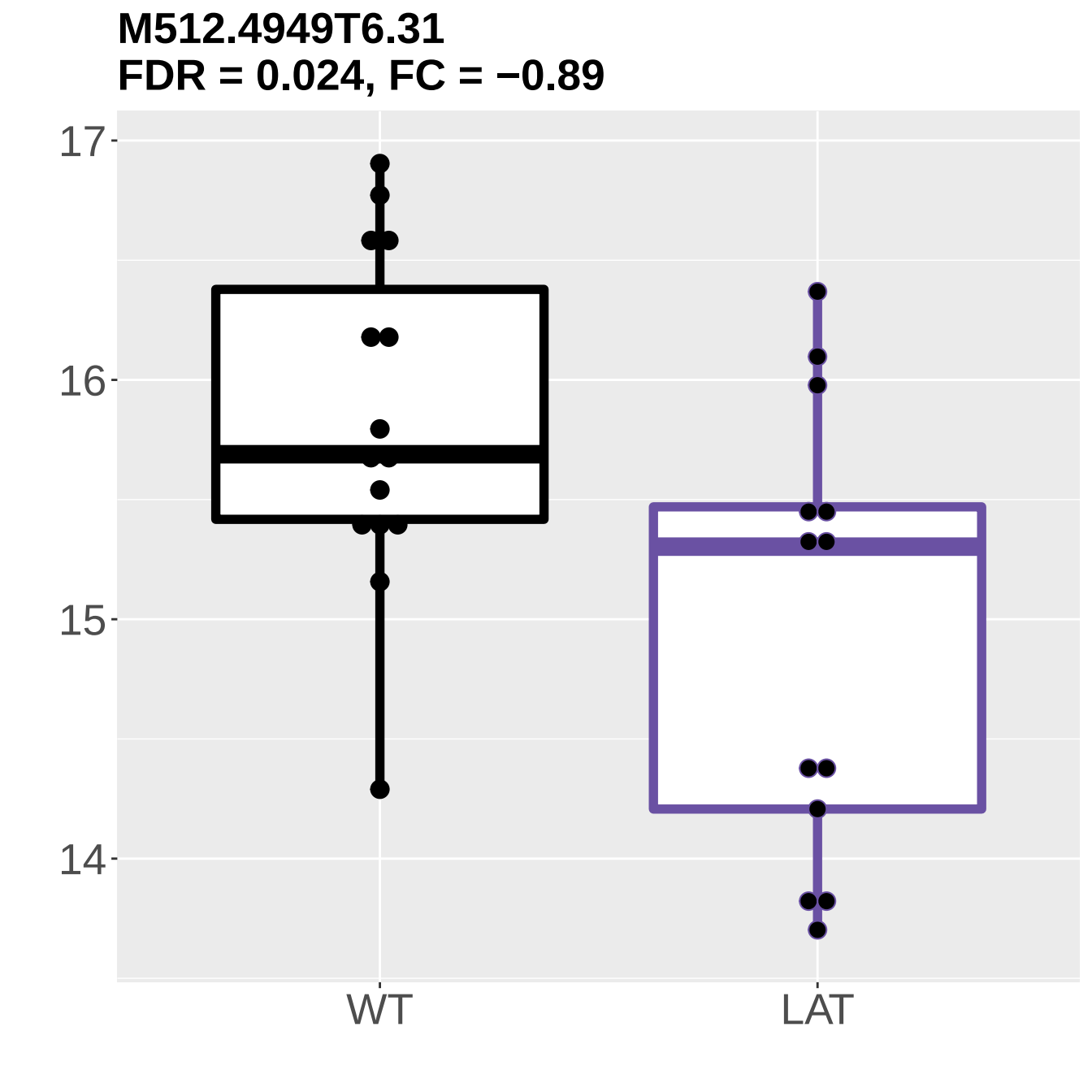
14
13
12
WT
LAT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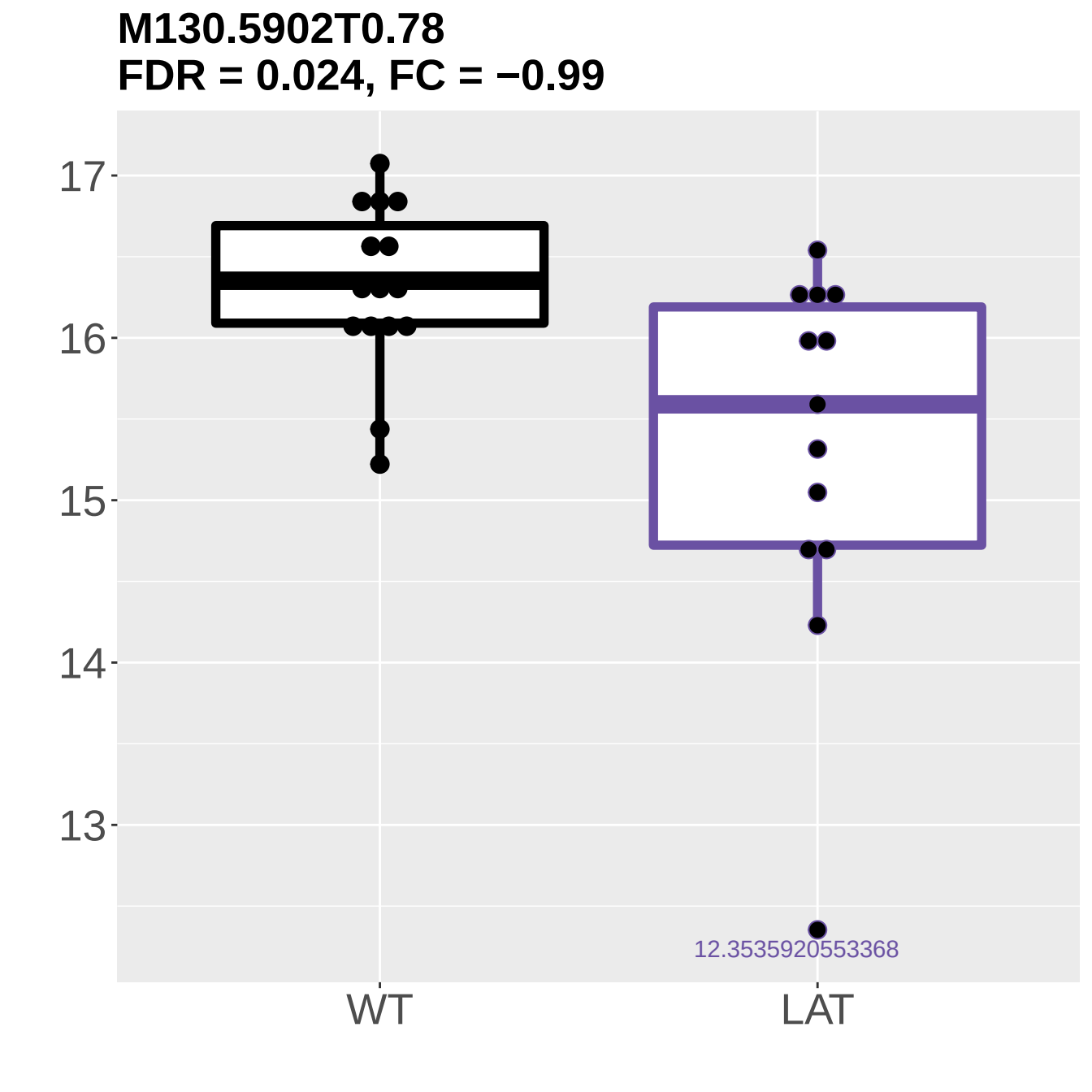
16
15
14
WT
LAT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WT
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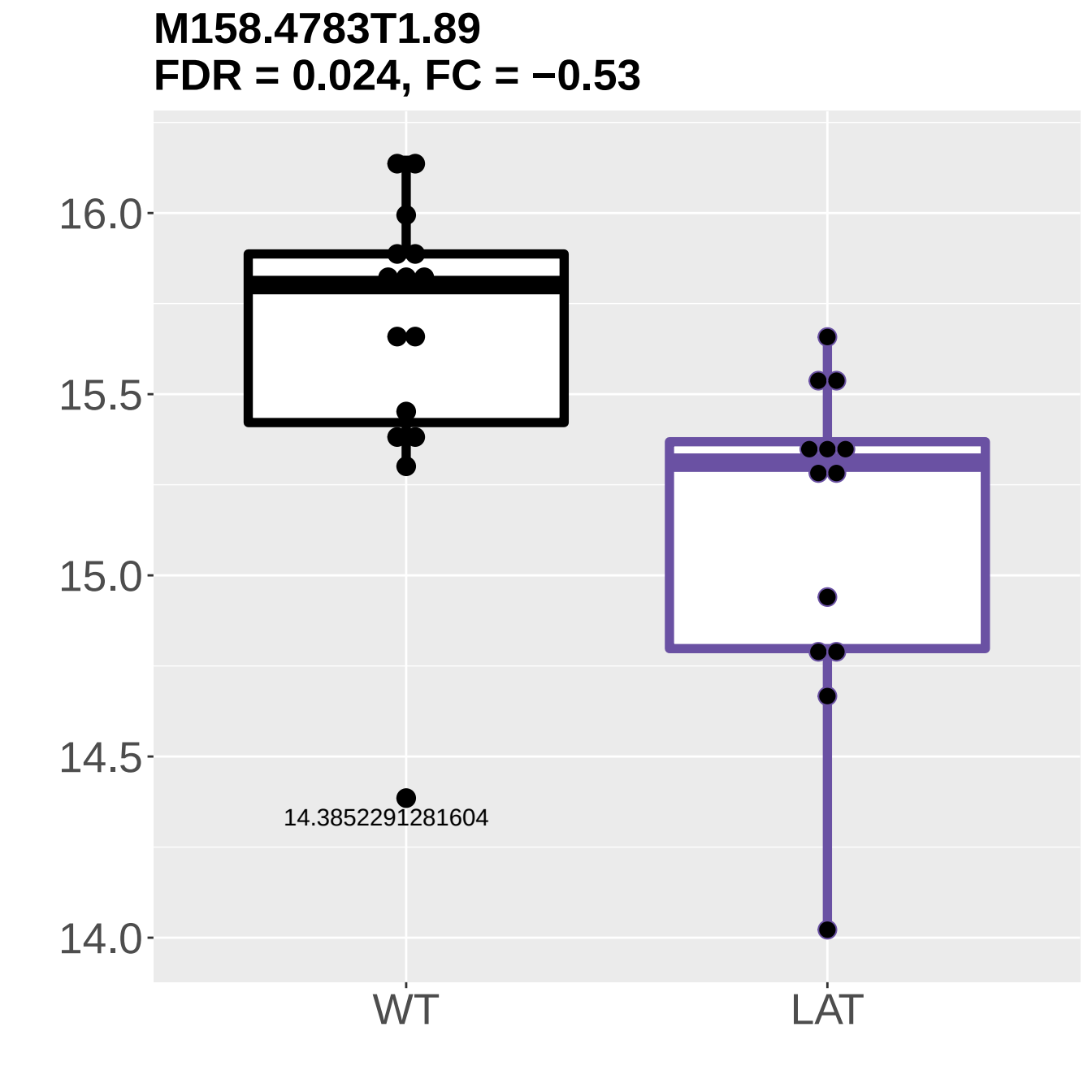
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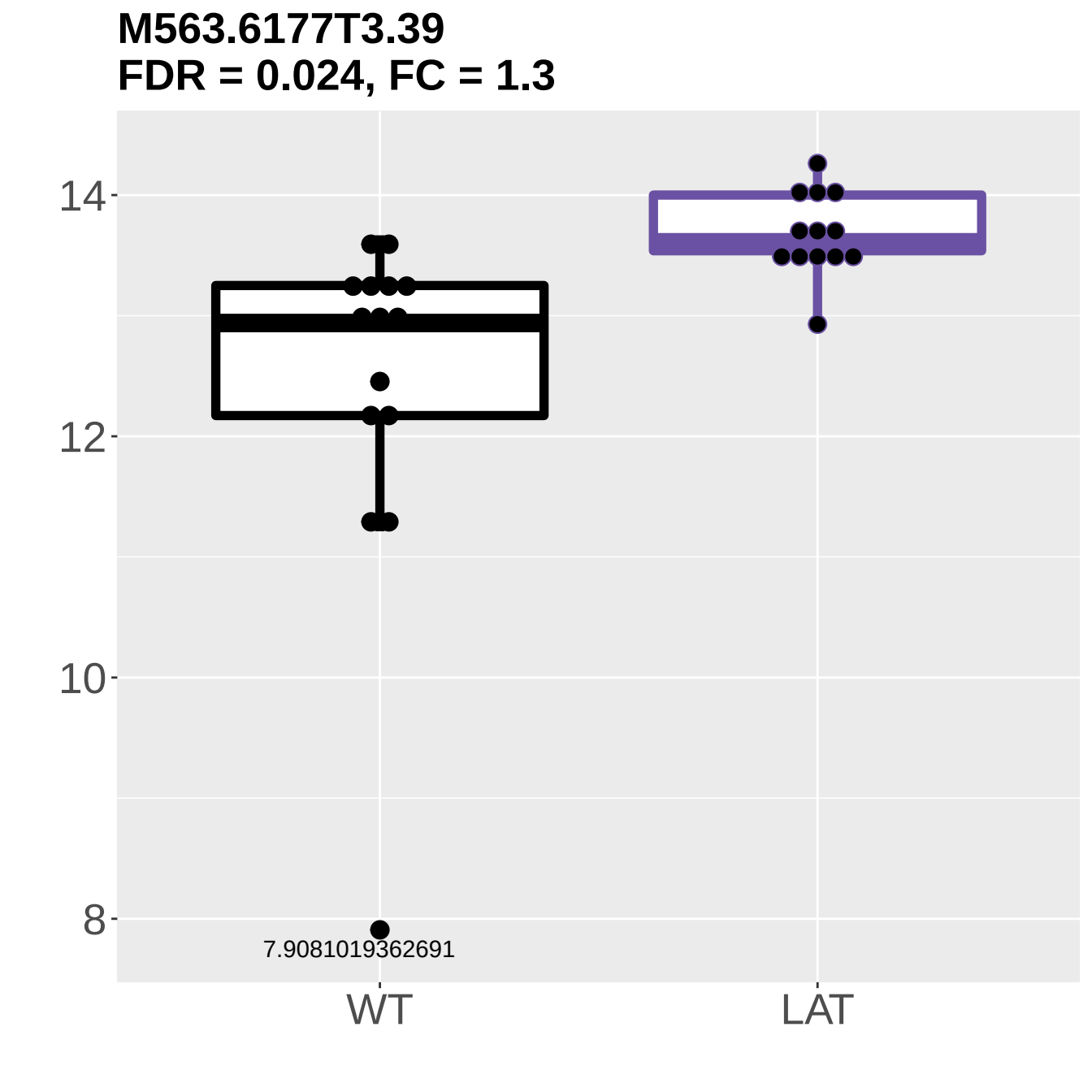
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WT
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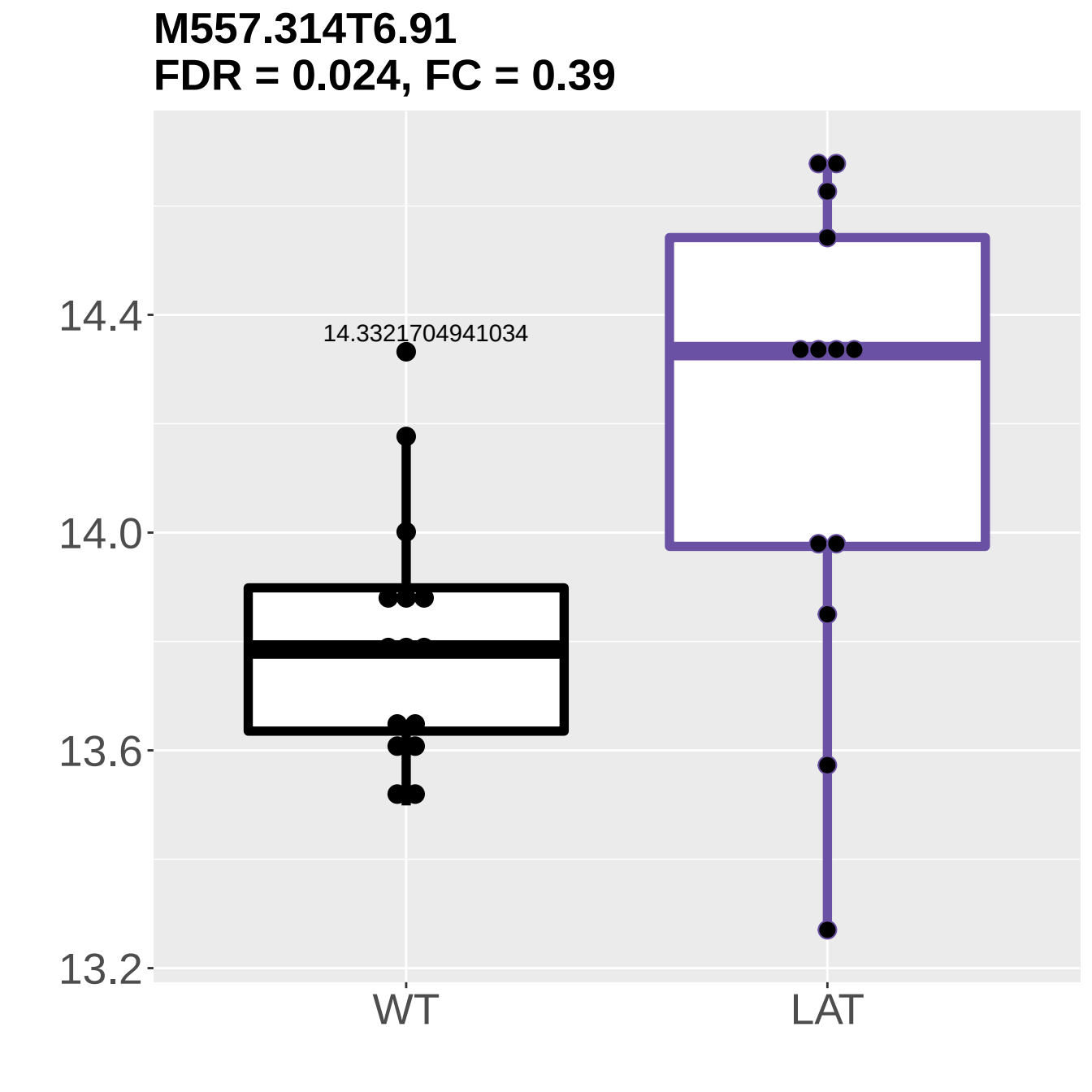
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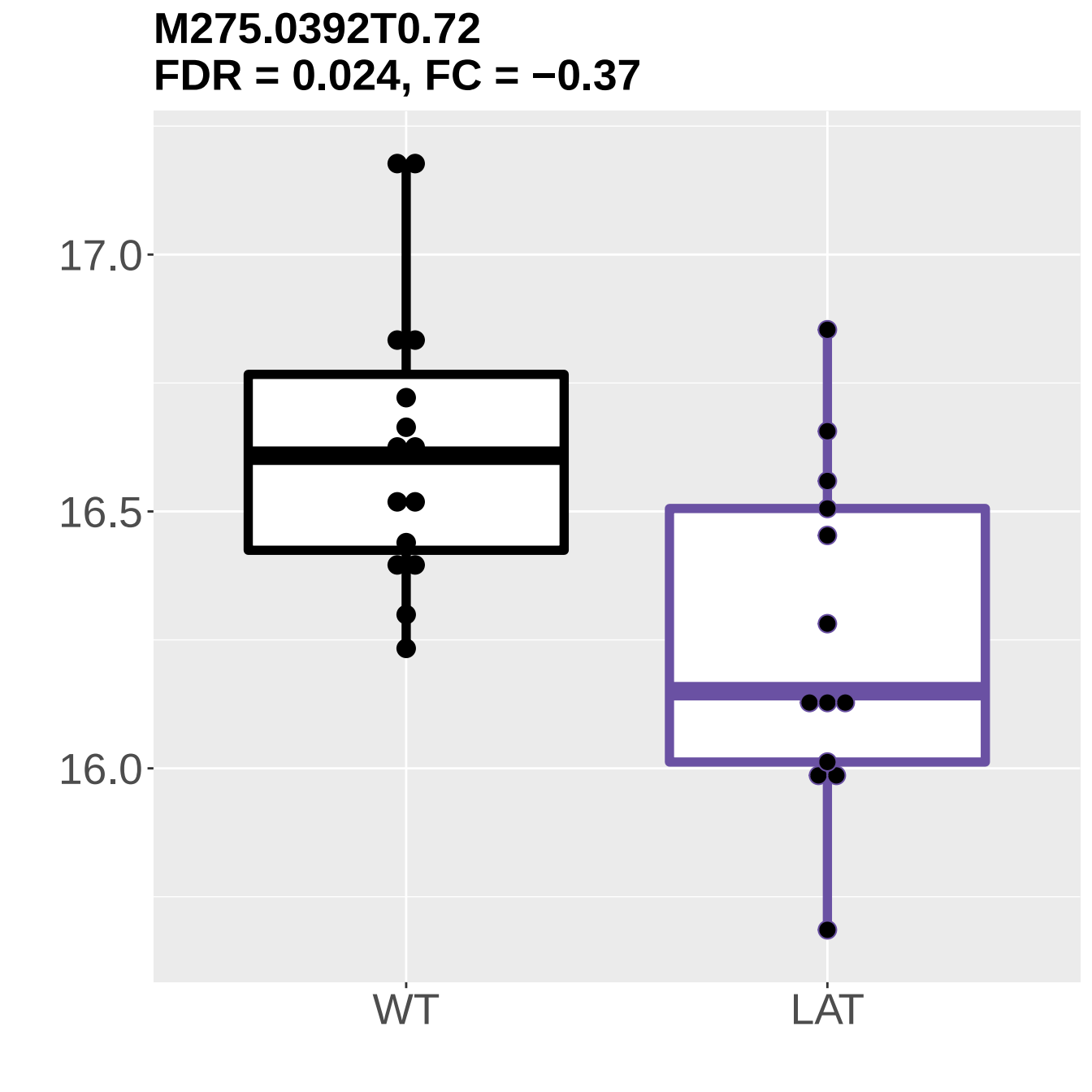
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WT
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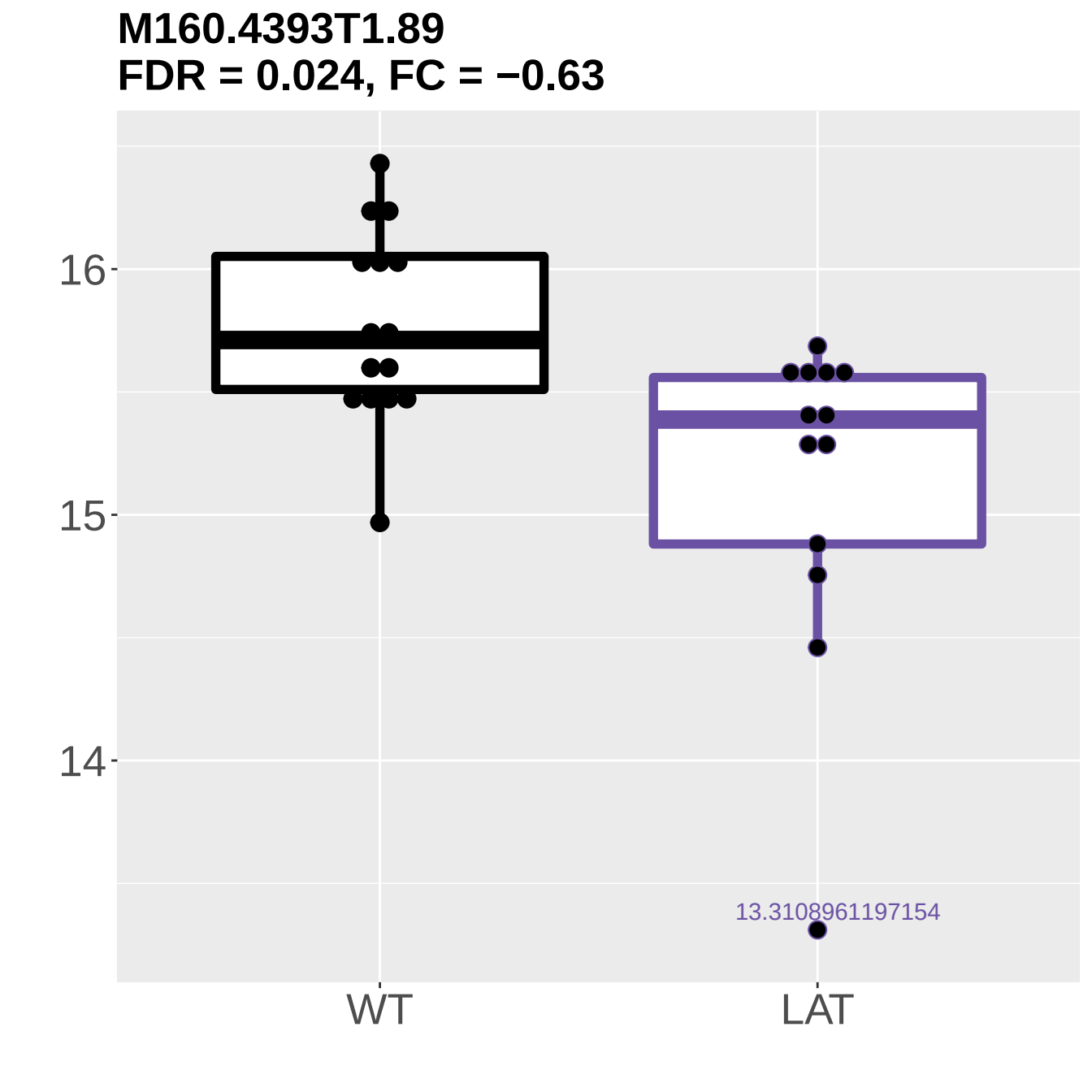
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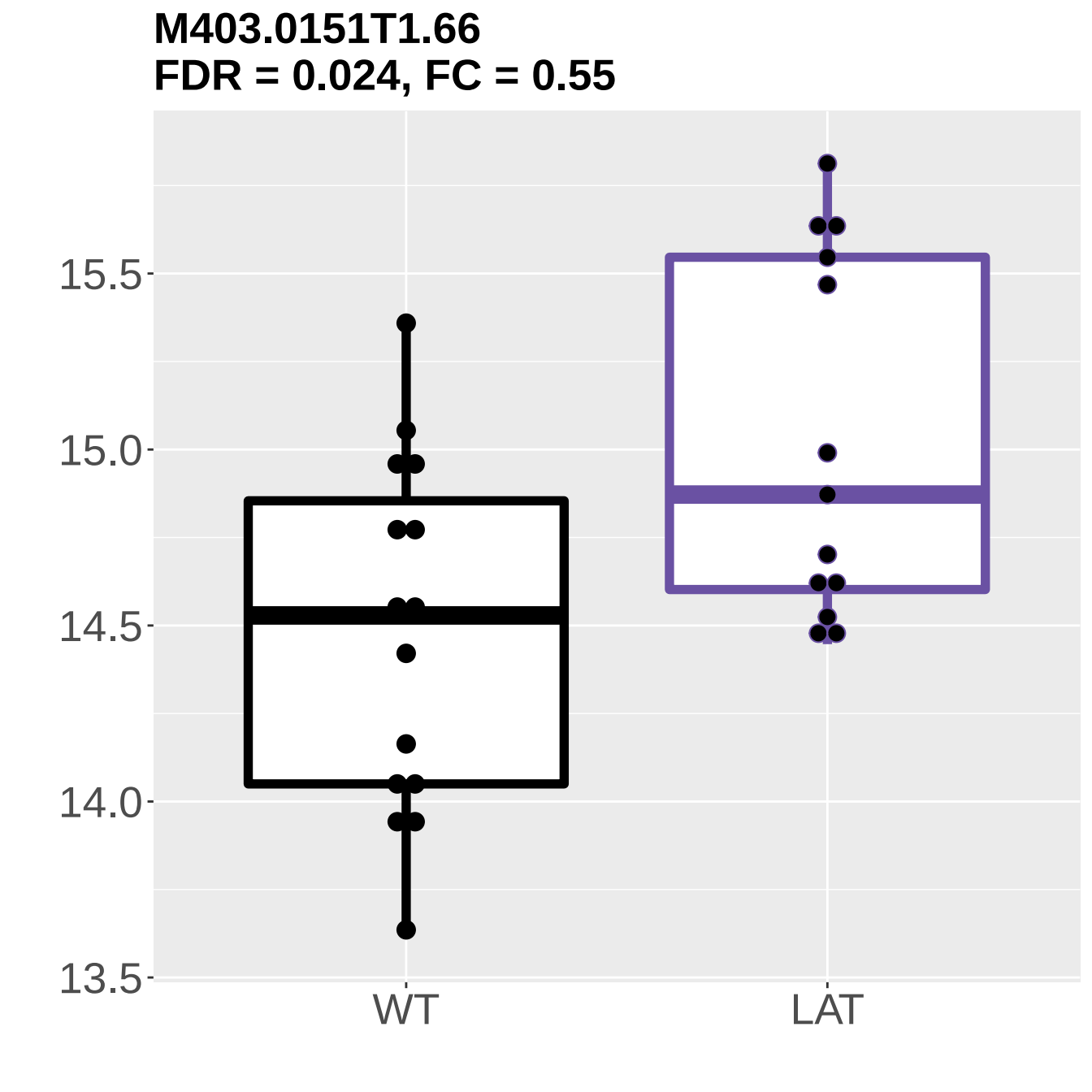
LAT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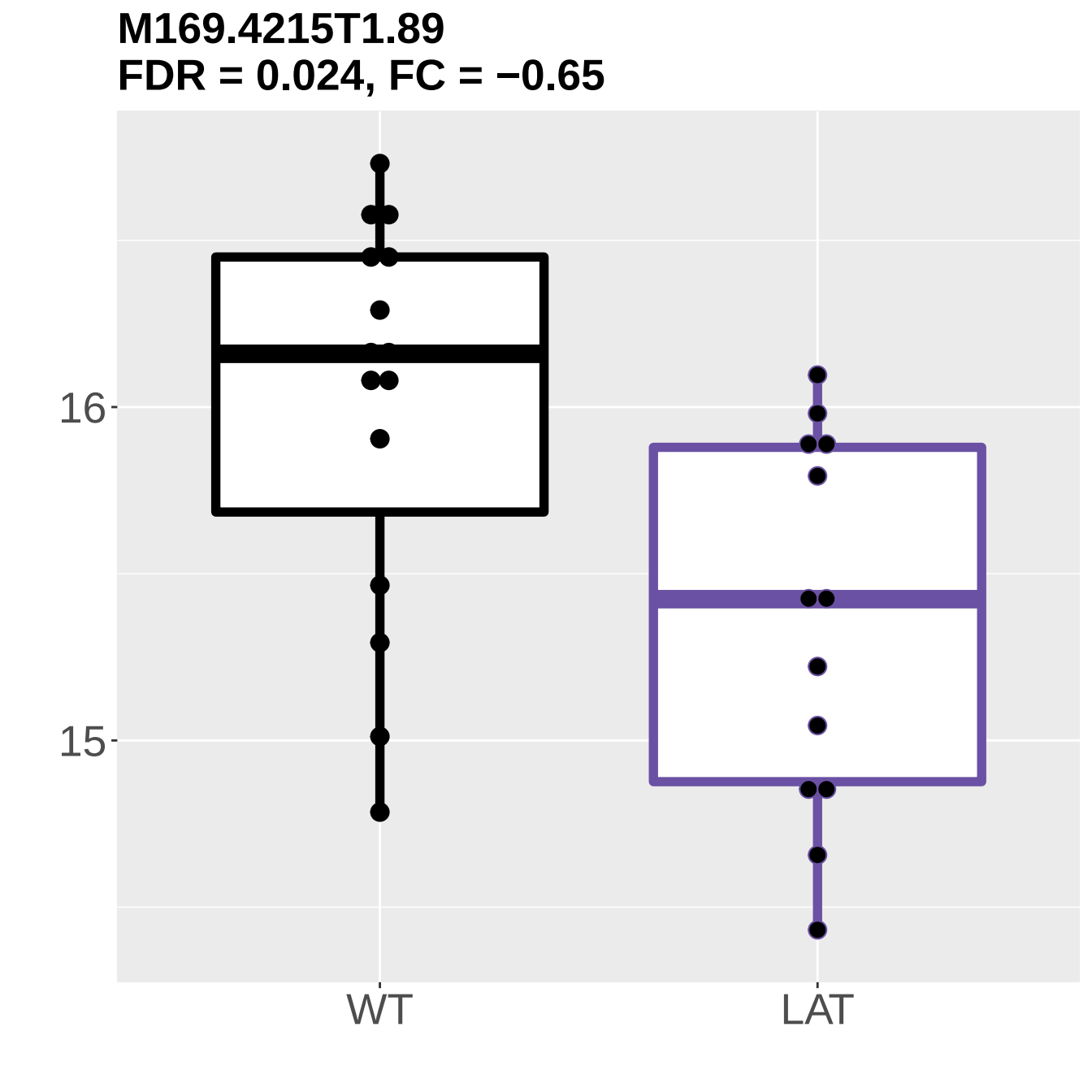
WT
LAT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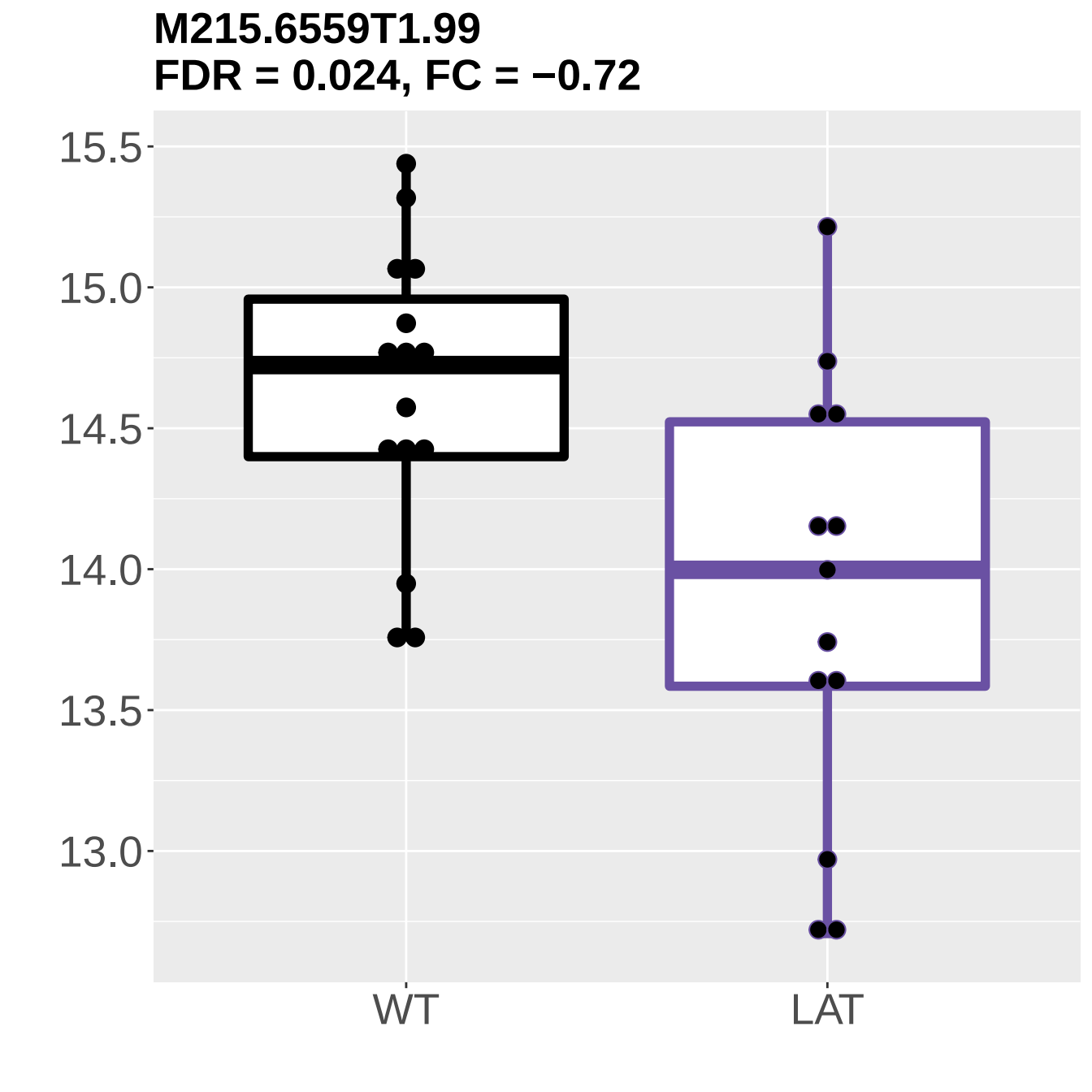
15
WT
LAT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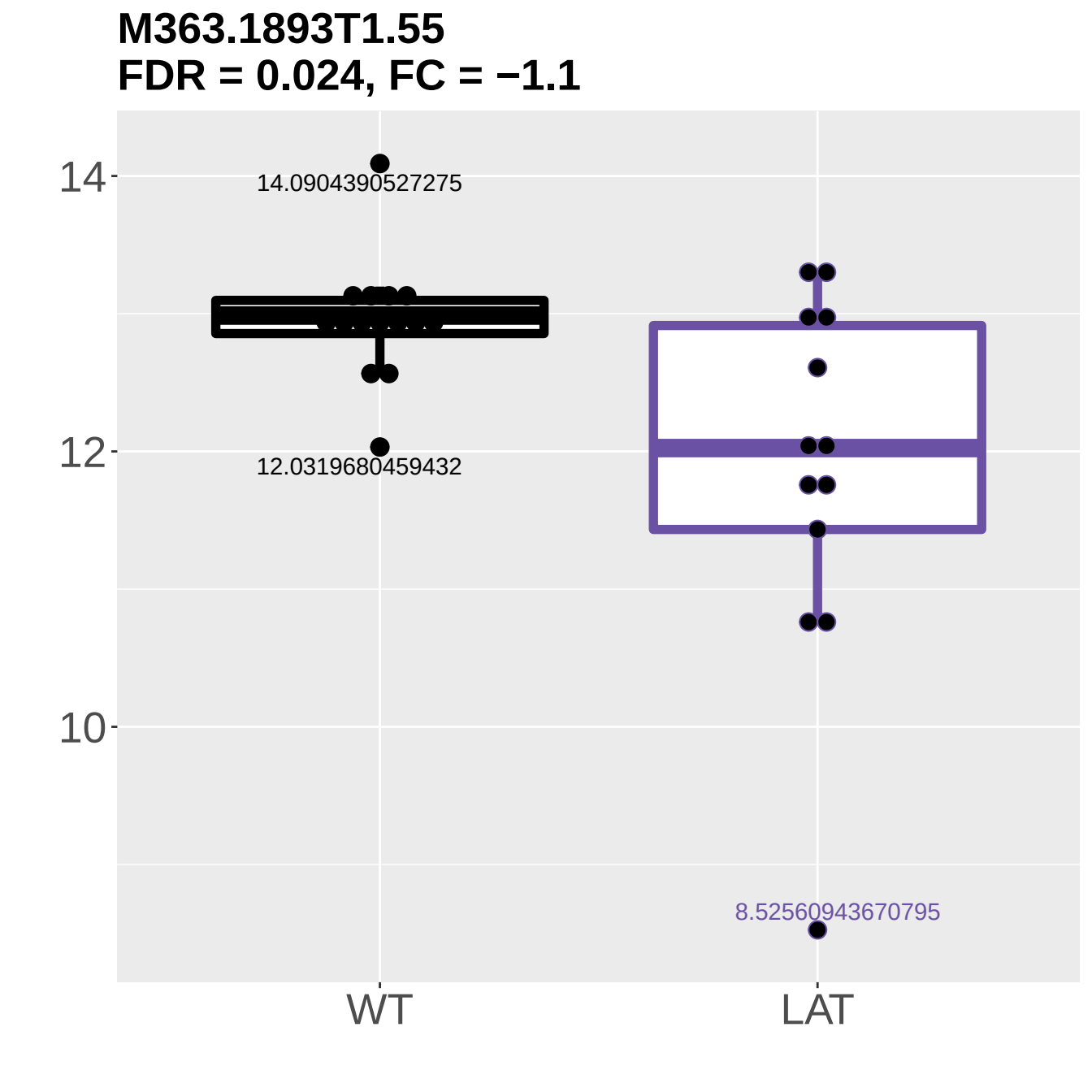
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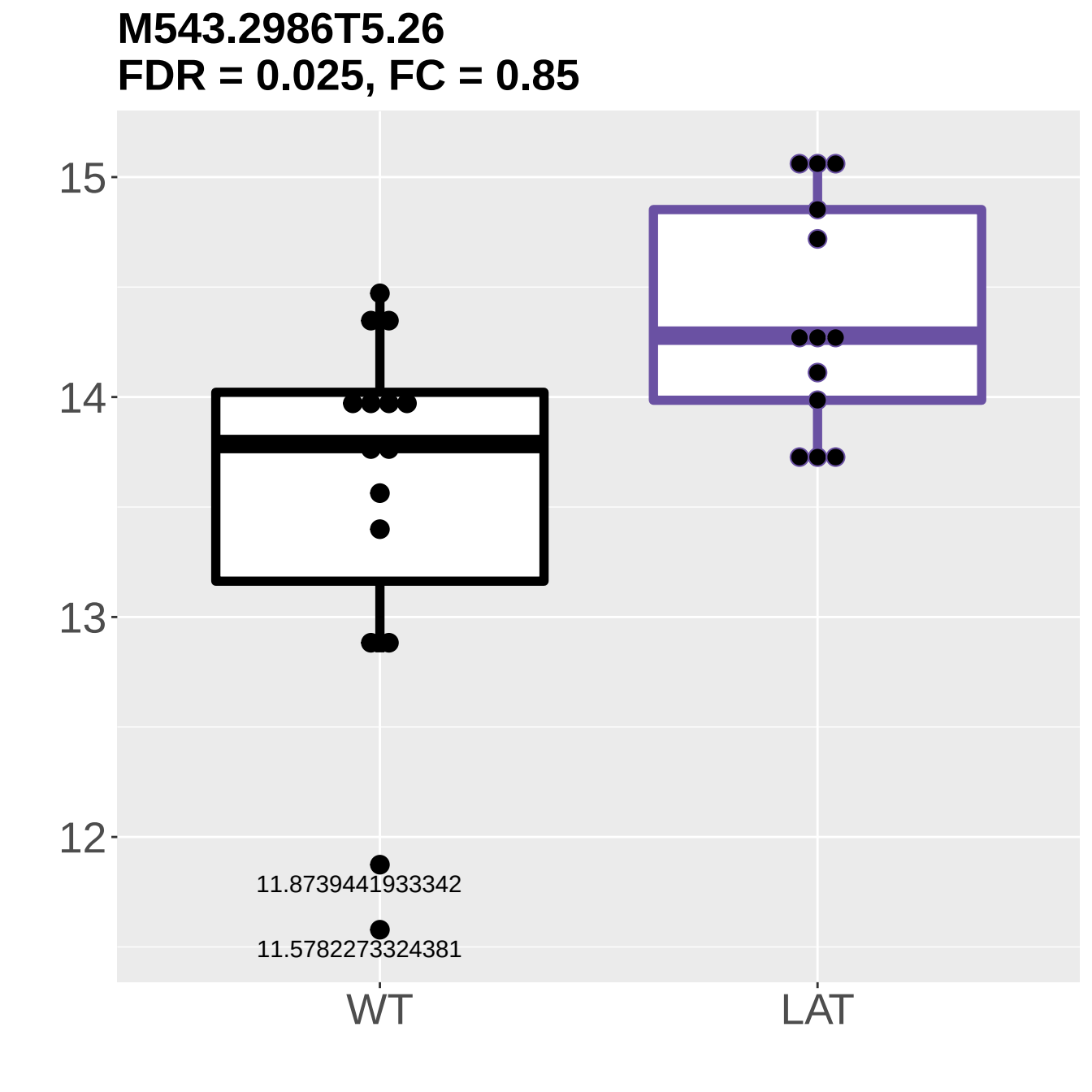
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WT
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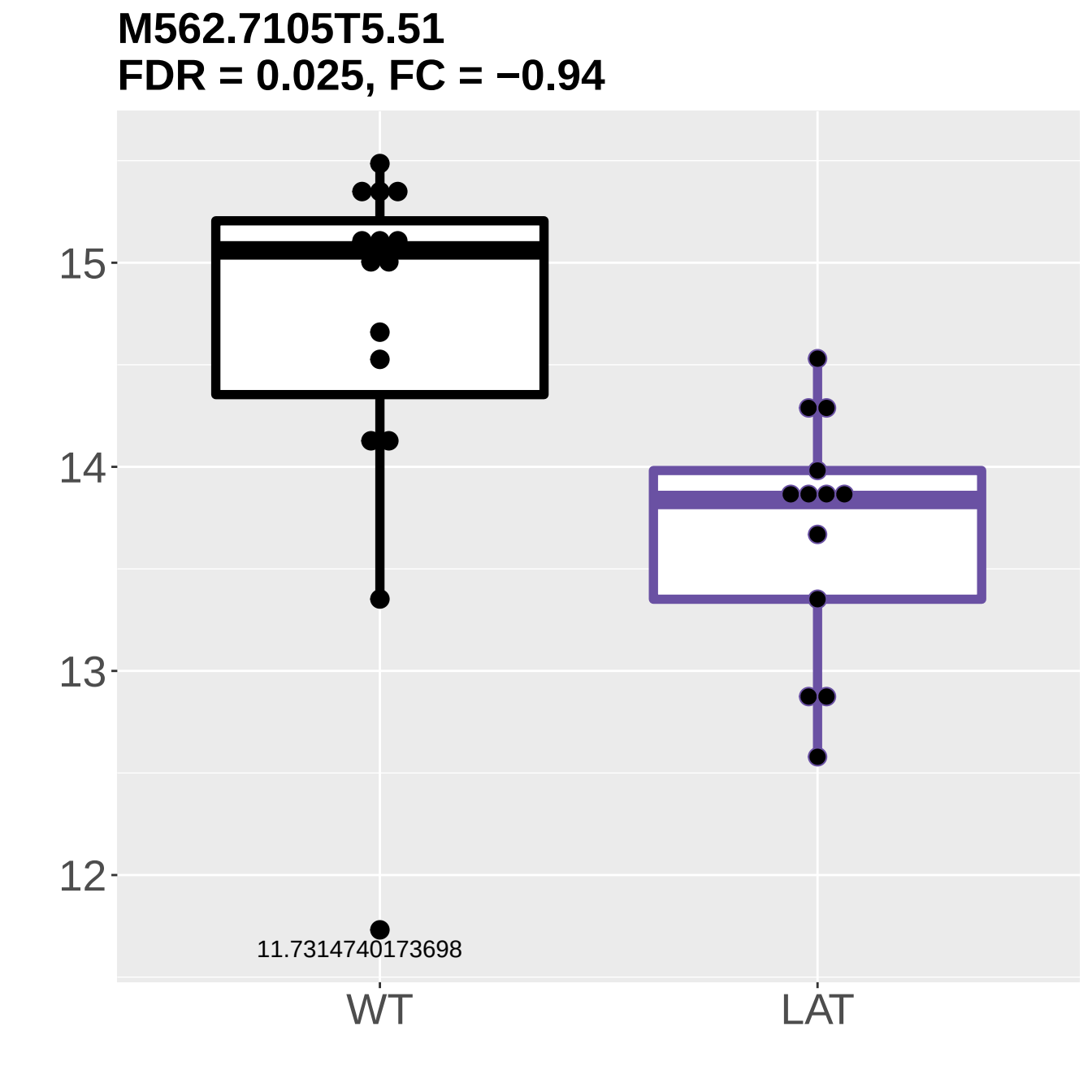
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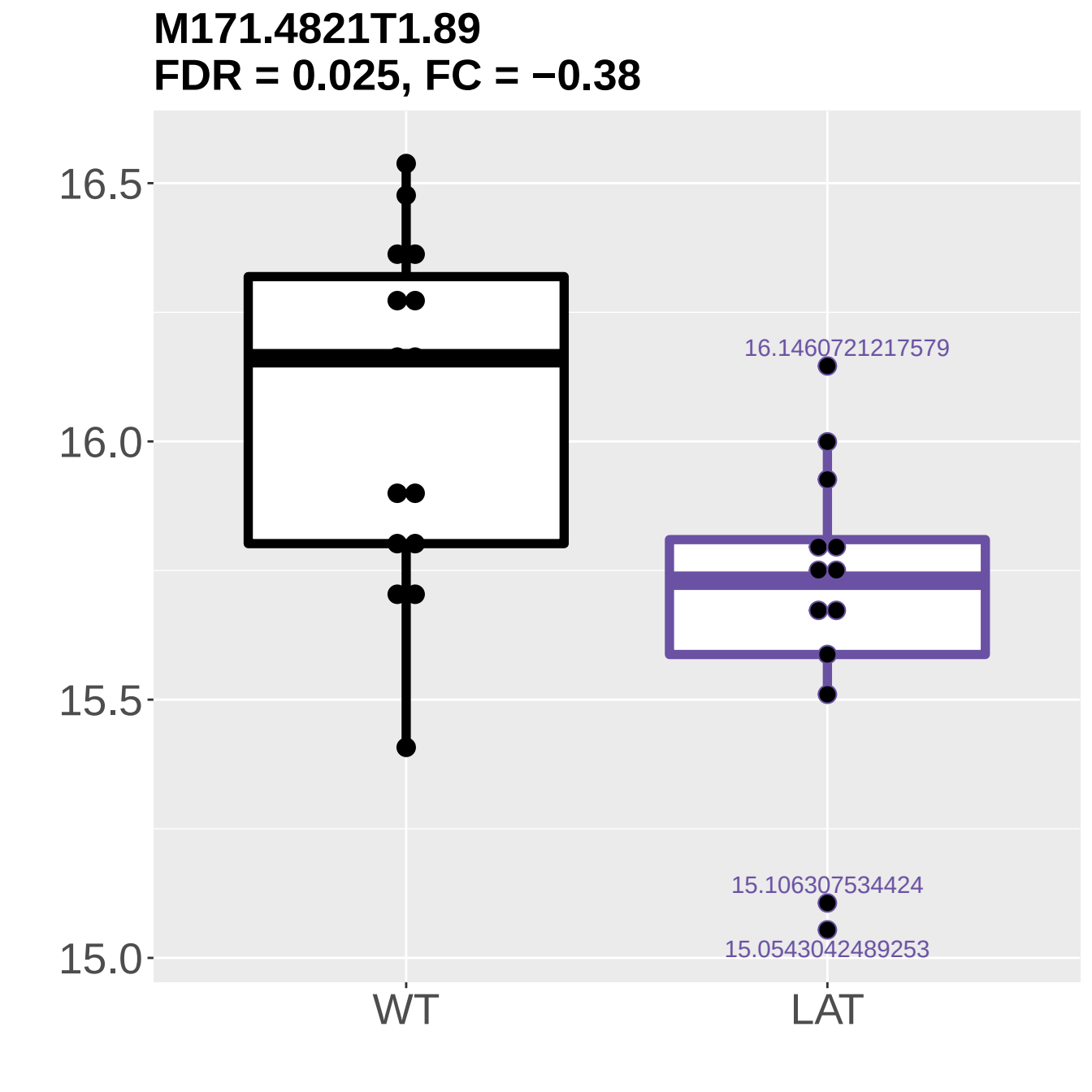
WT
LAT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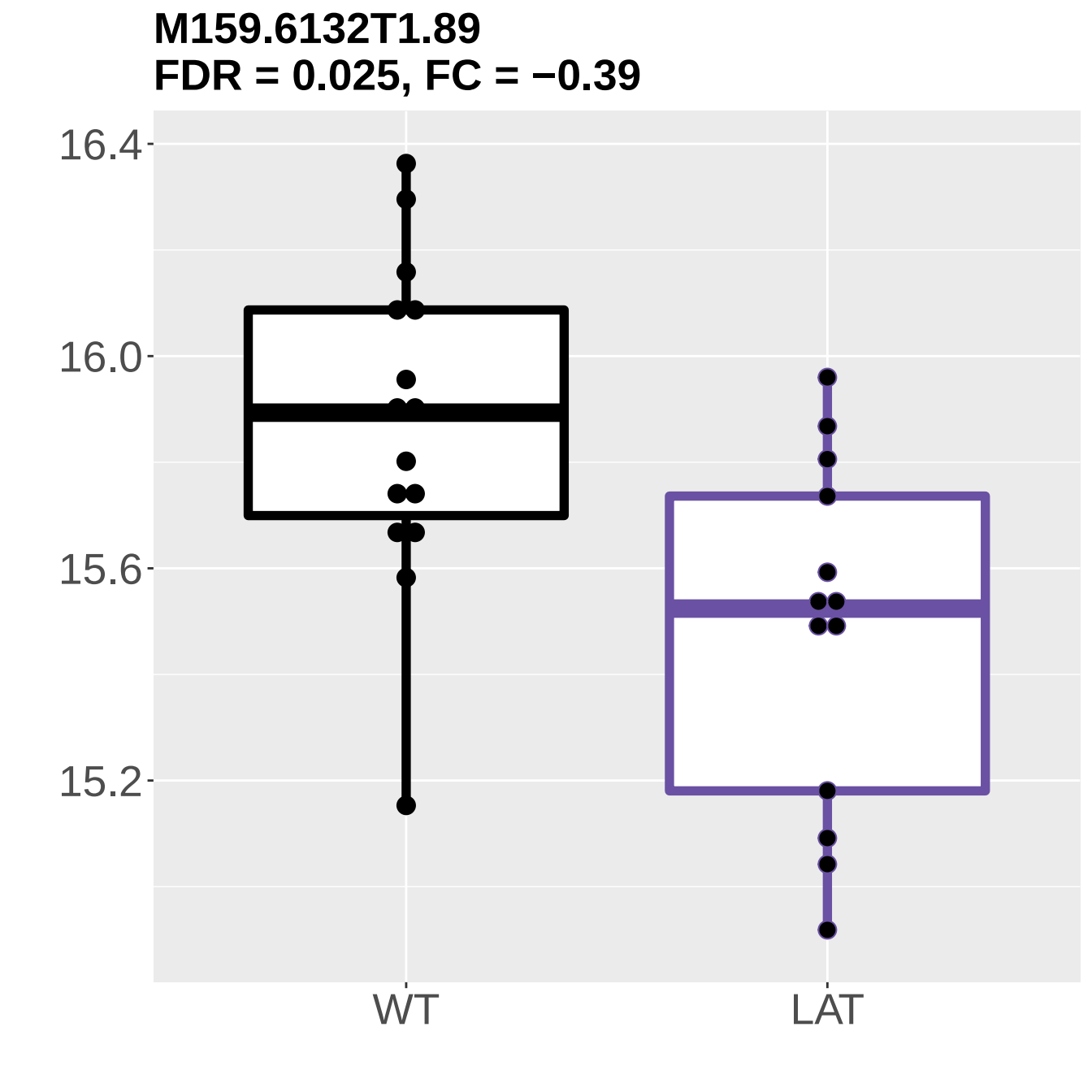
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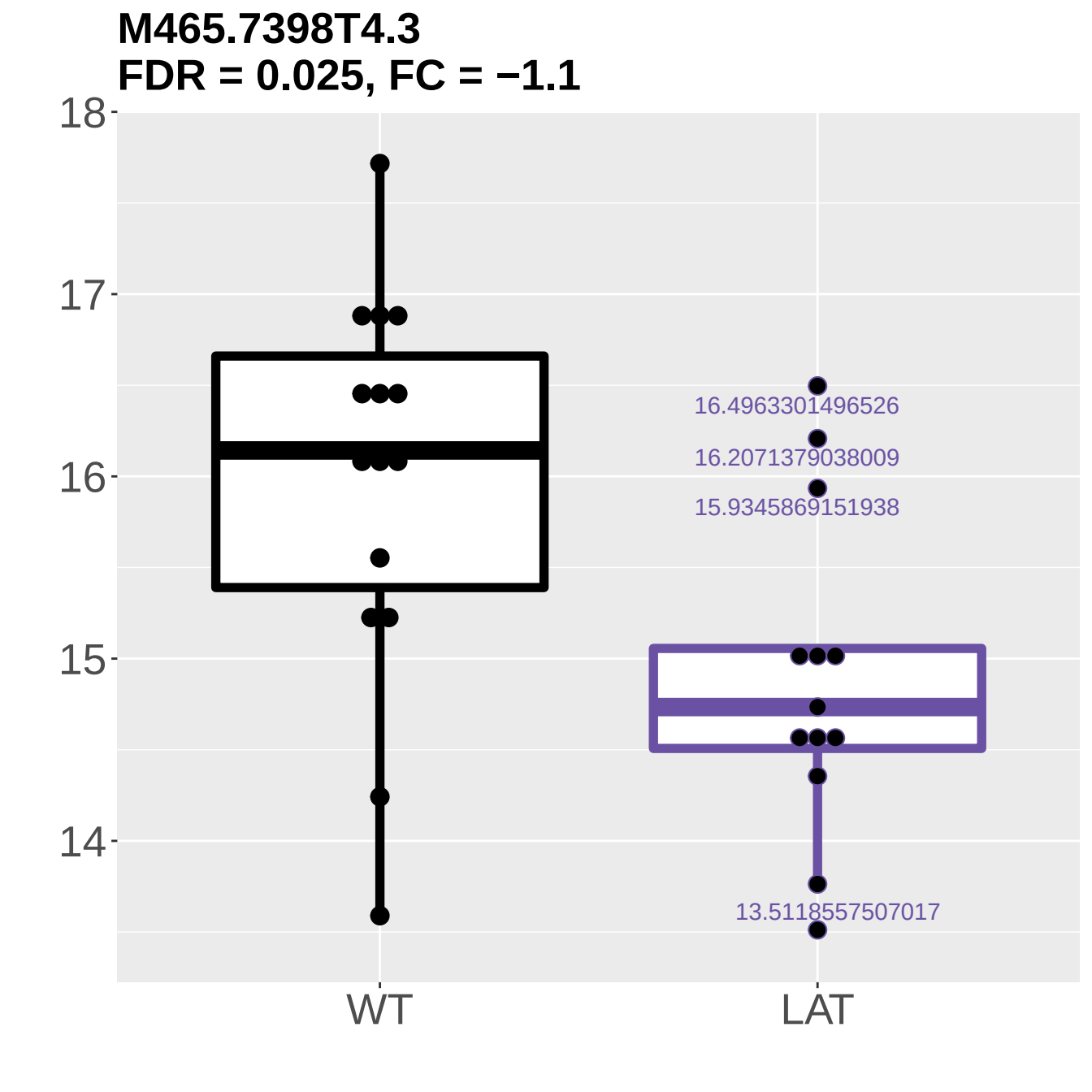
LAT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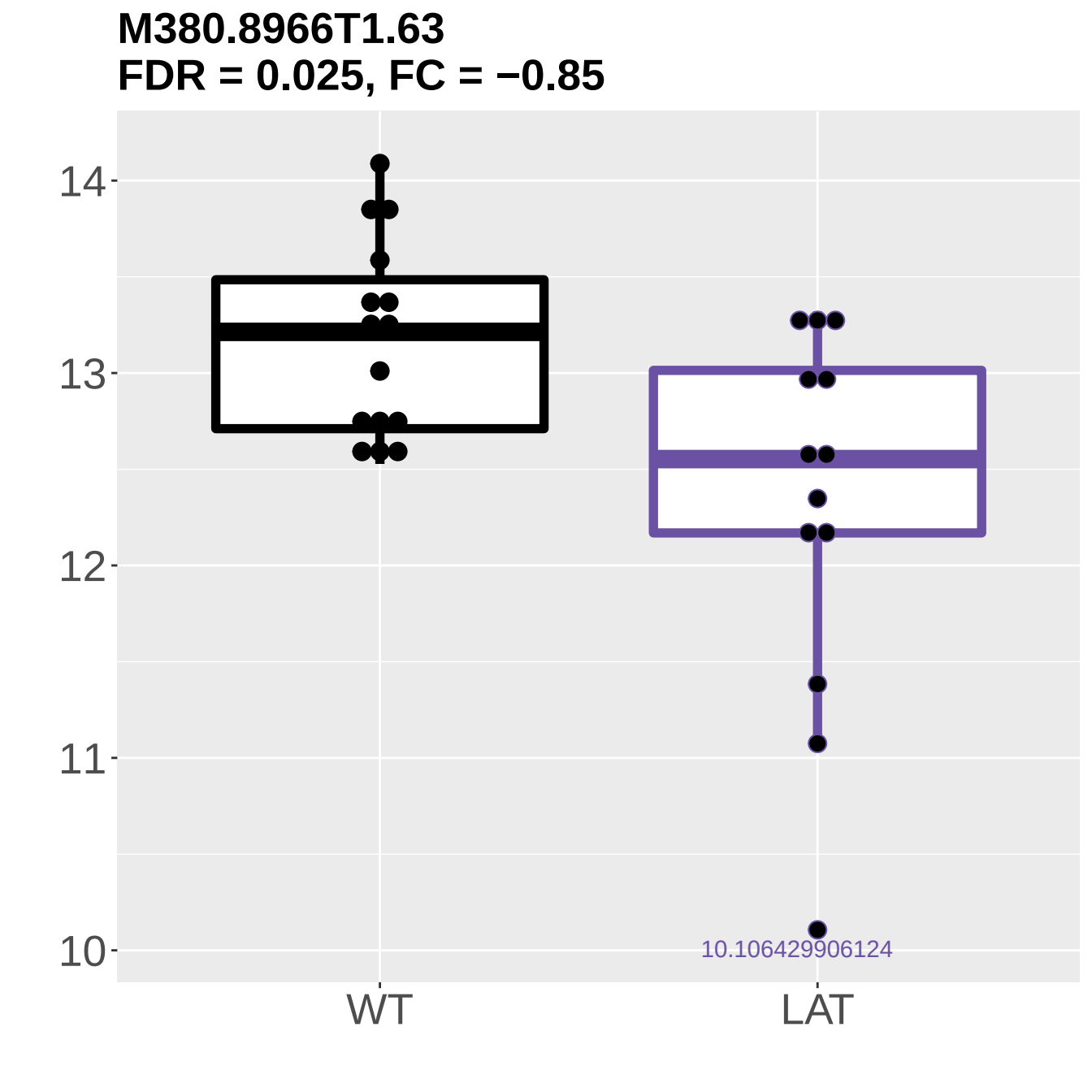
WT
LAT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11
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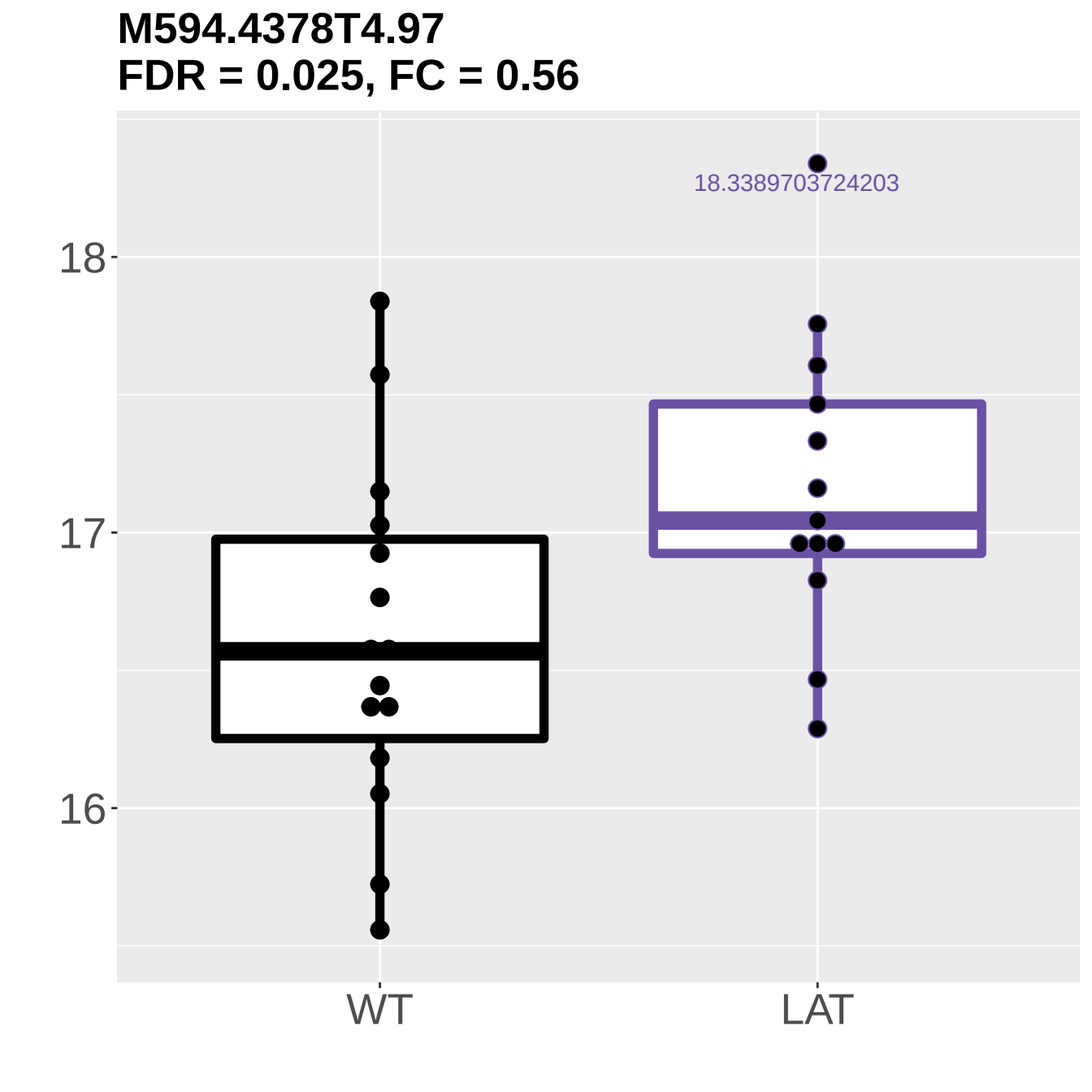
WT
LAT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17
16
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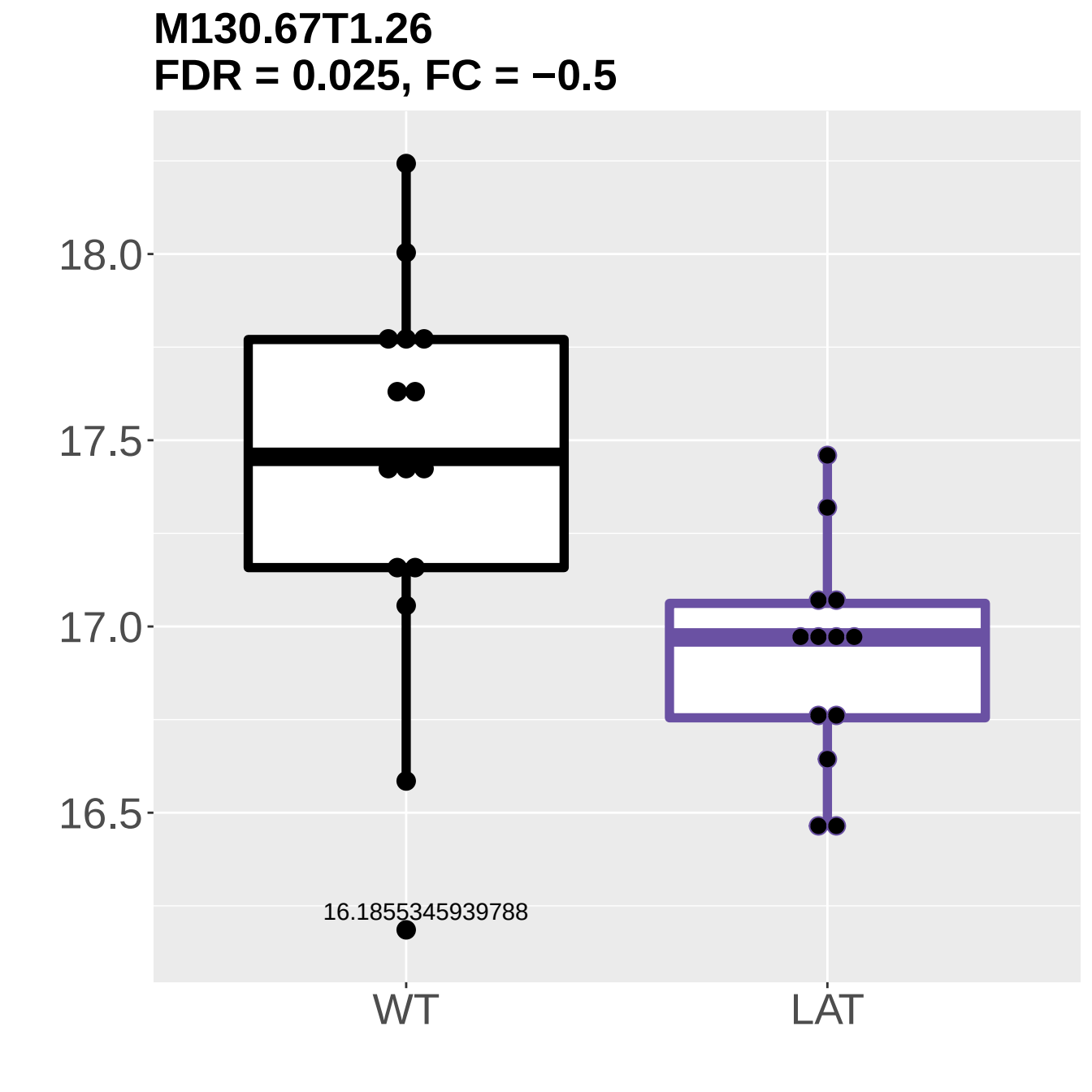
LAT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WT
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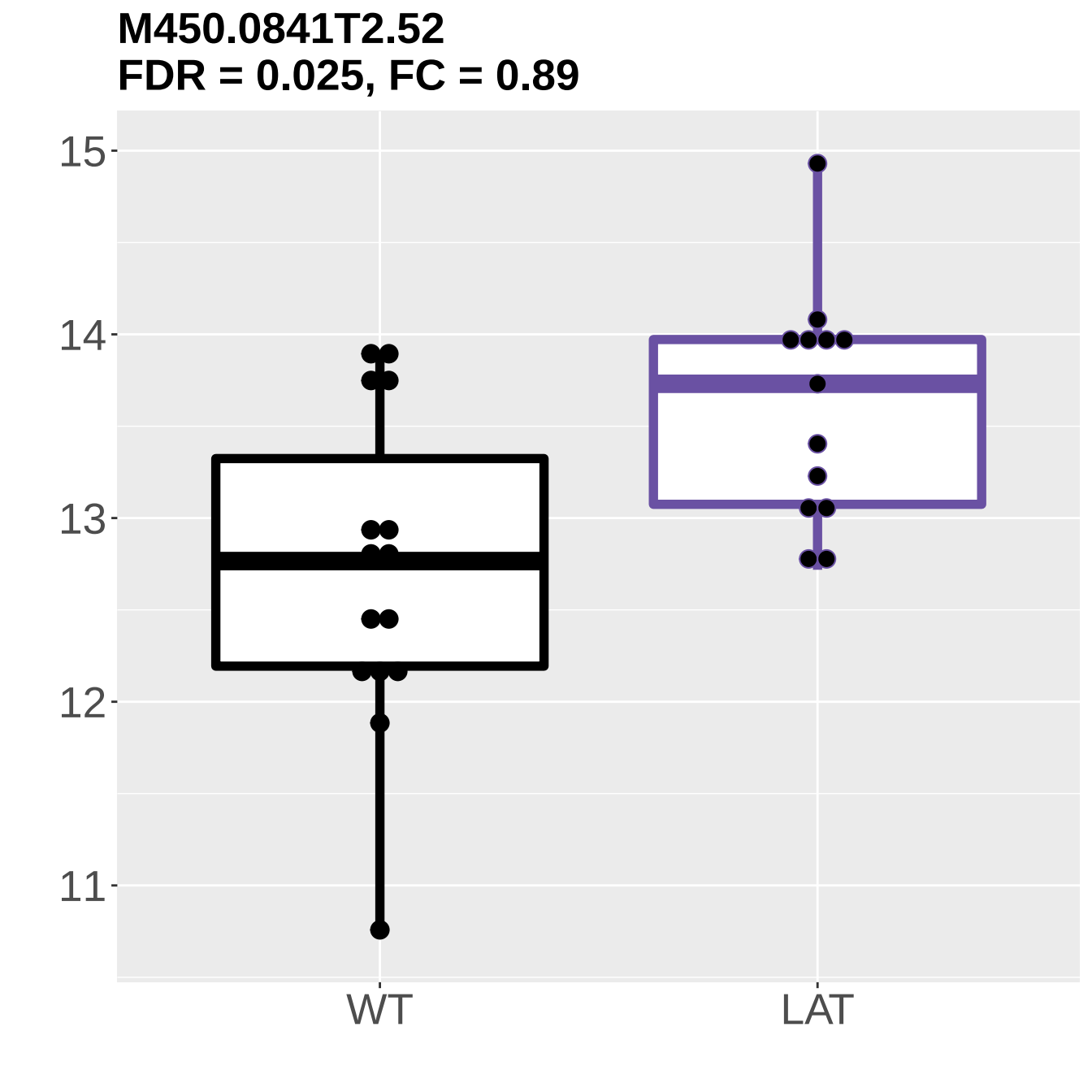
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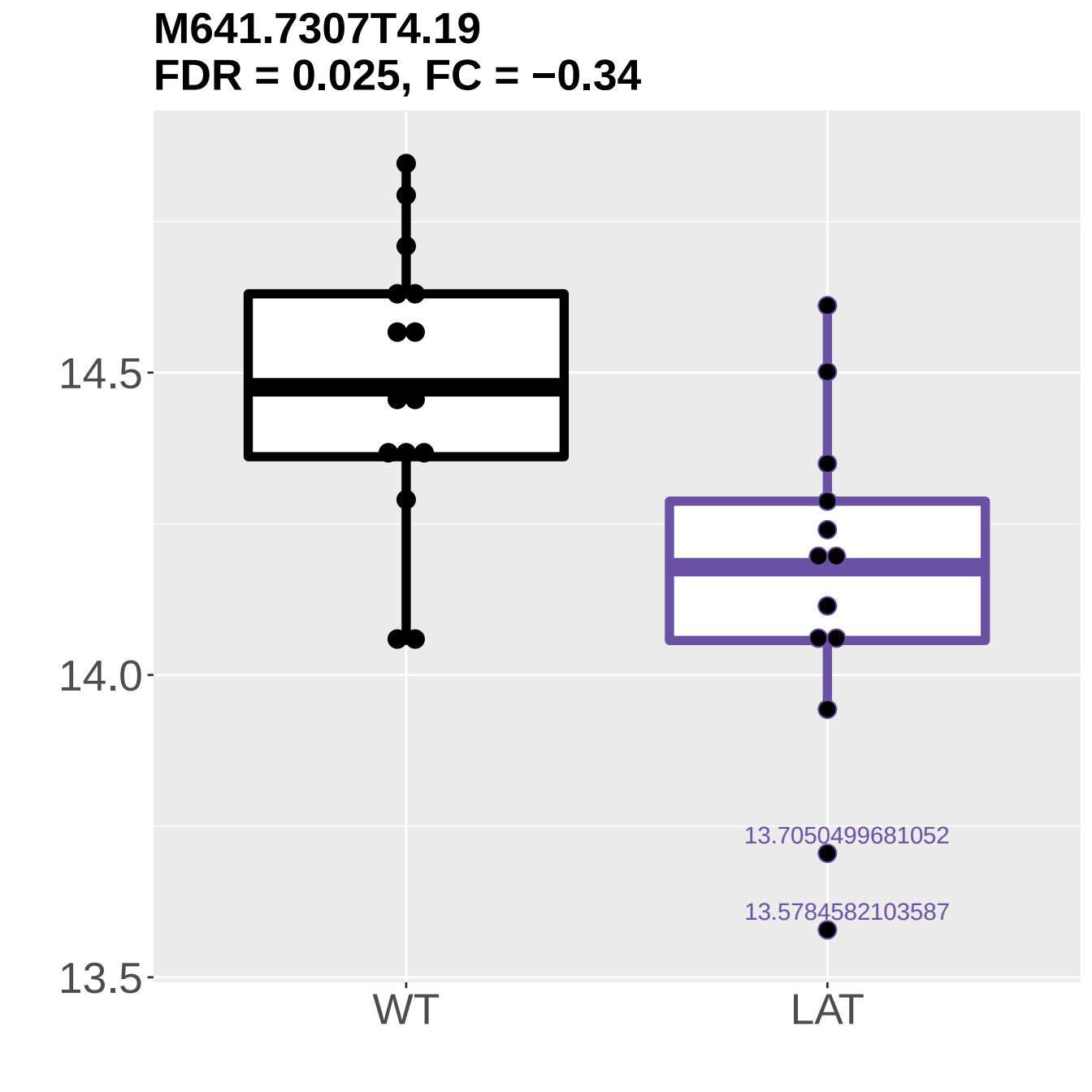
12
11
WT
LAT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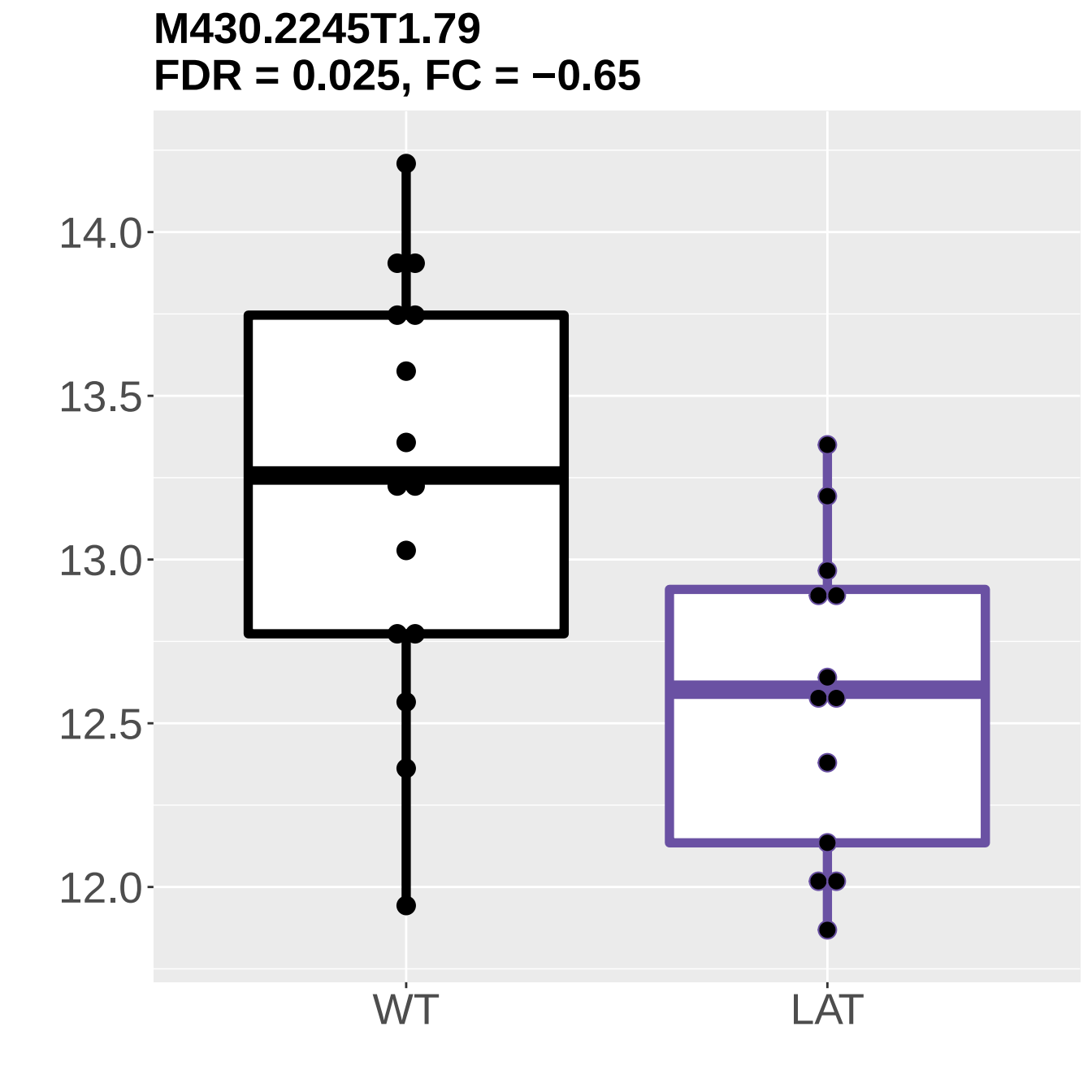
13.5784582103587
WT
LAT


M430.2245T1.79
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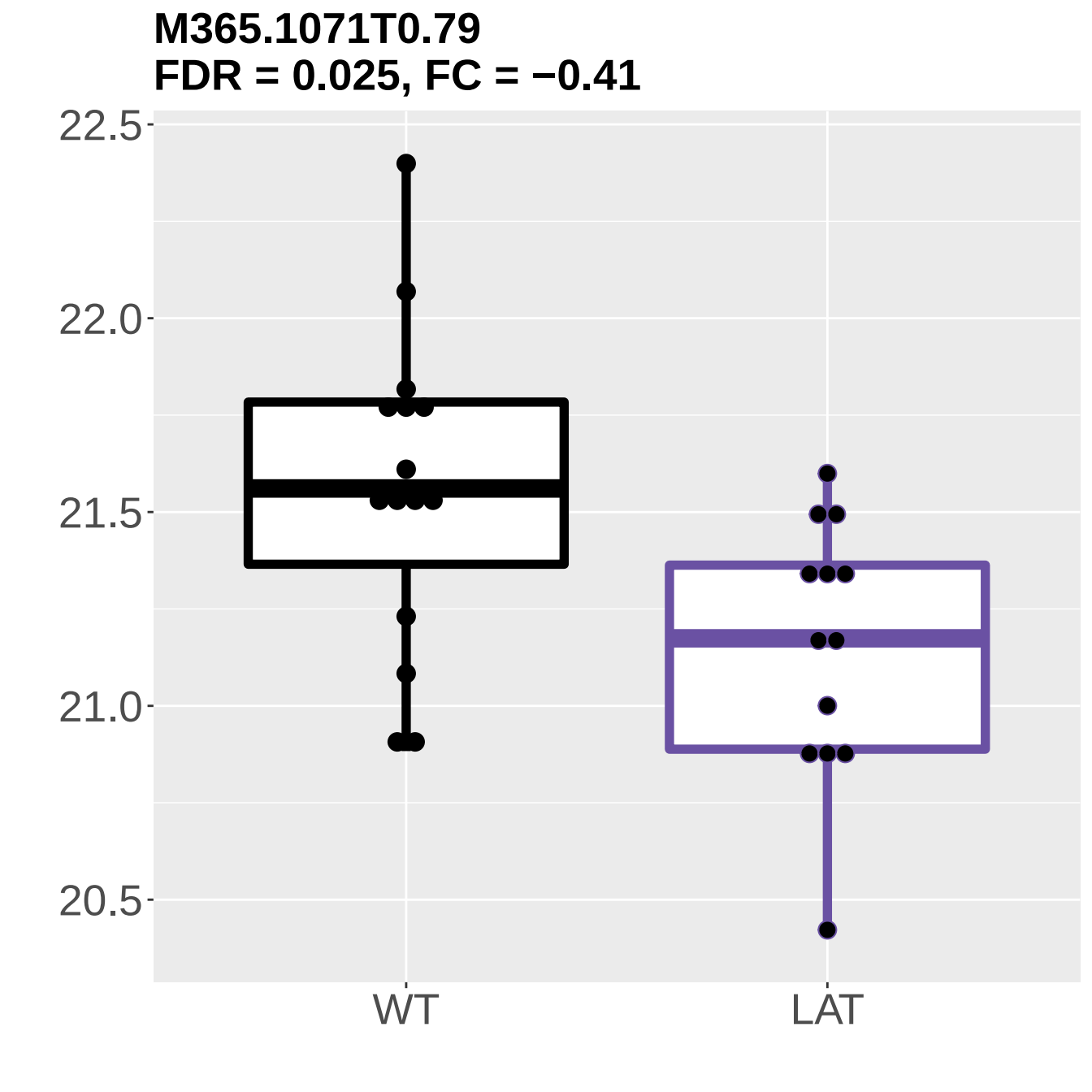
13.5
13.0
12.5
12.0
WT
LAT


M365.1071T0.79
FDR = 0.025, FC = −0.41
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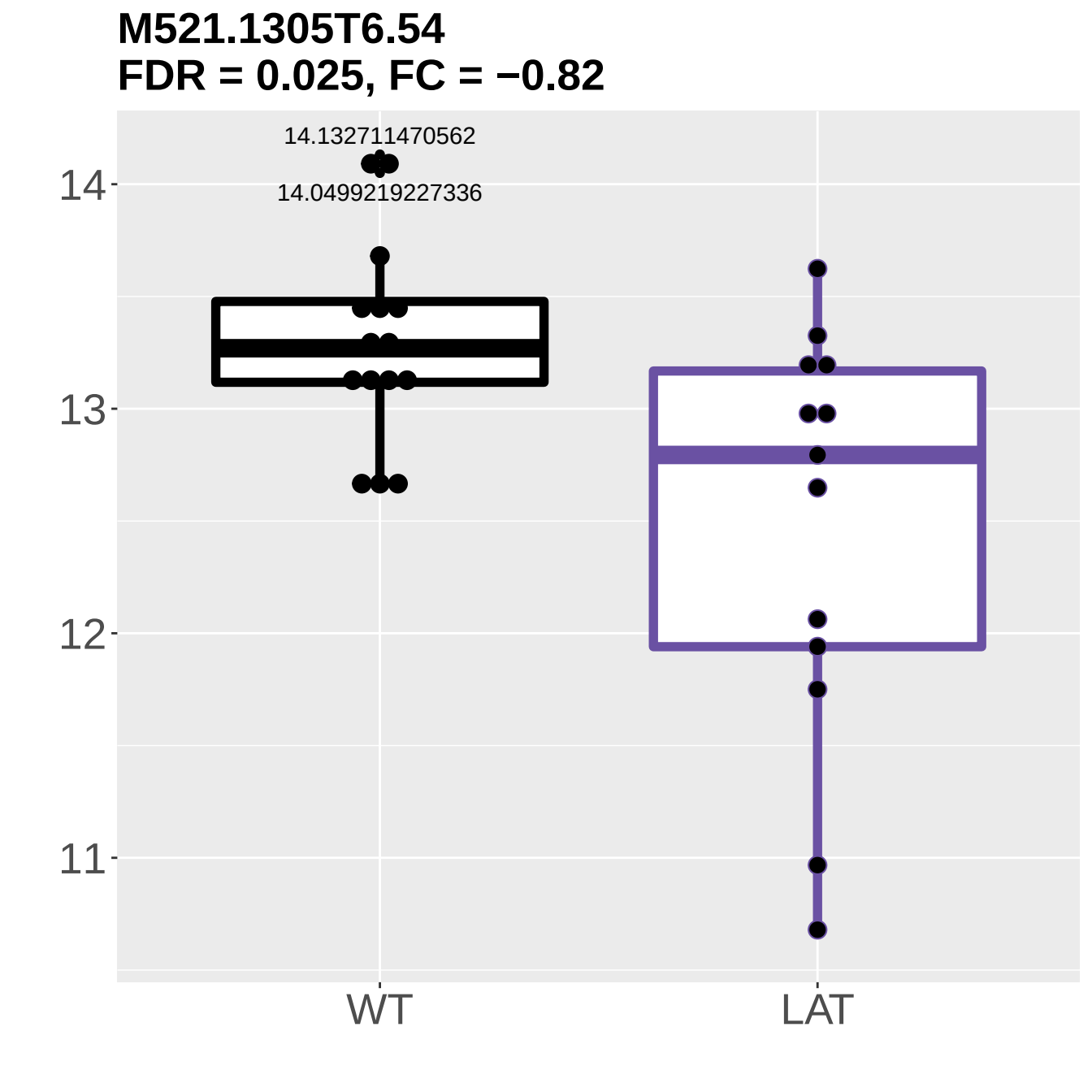
22.0
21.5
21.0
20.5
WT
LAT


M521.1305T6.54
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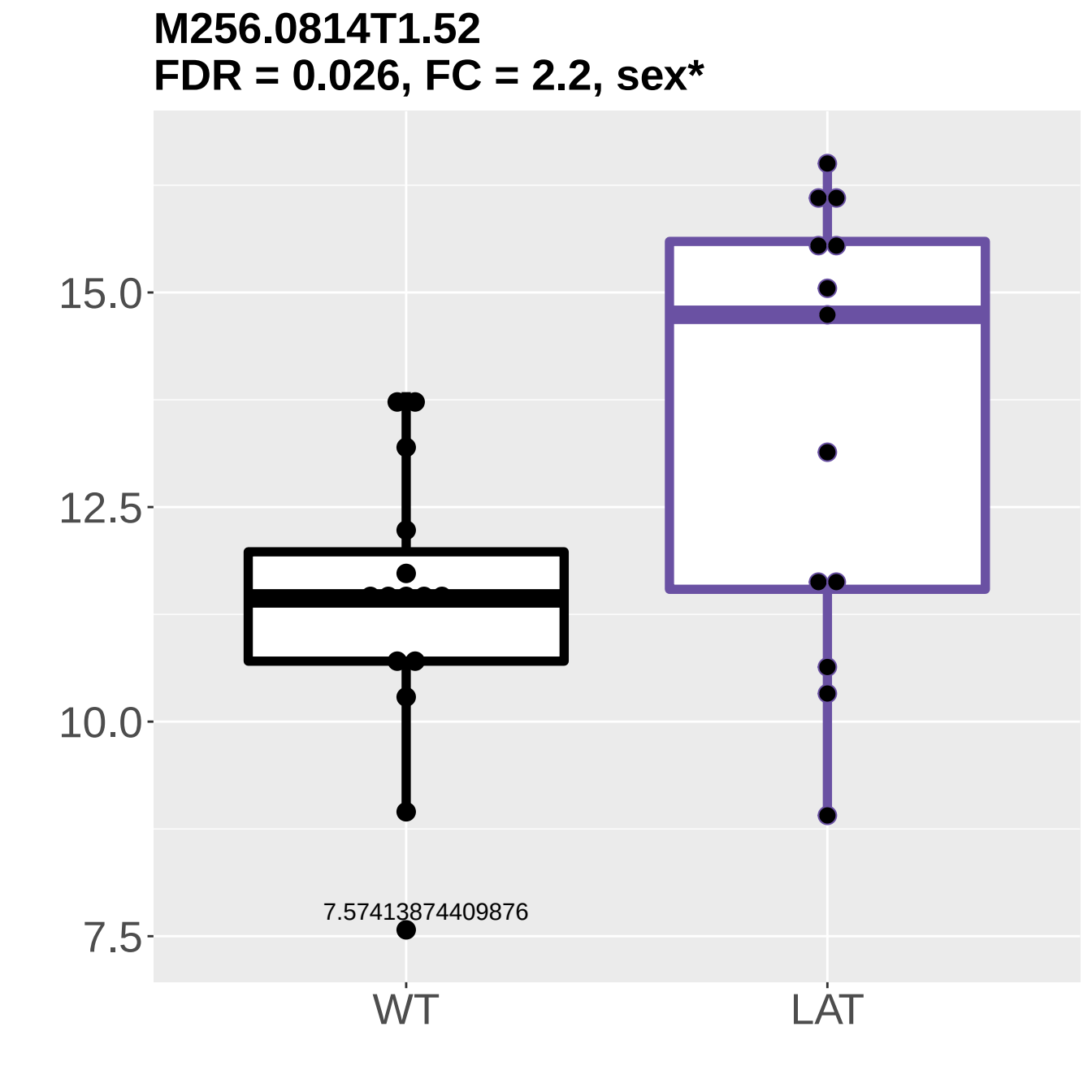
14.132711470562
14.0499219227336
14
13
12
11
WT
LAT


M256.0814T1.52
FDR = 0.026, FC = 2.2, sex*
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12.5
10.0
7.5
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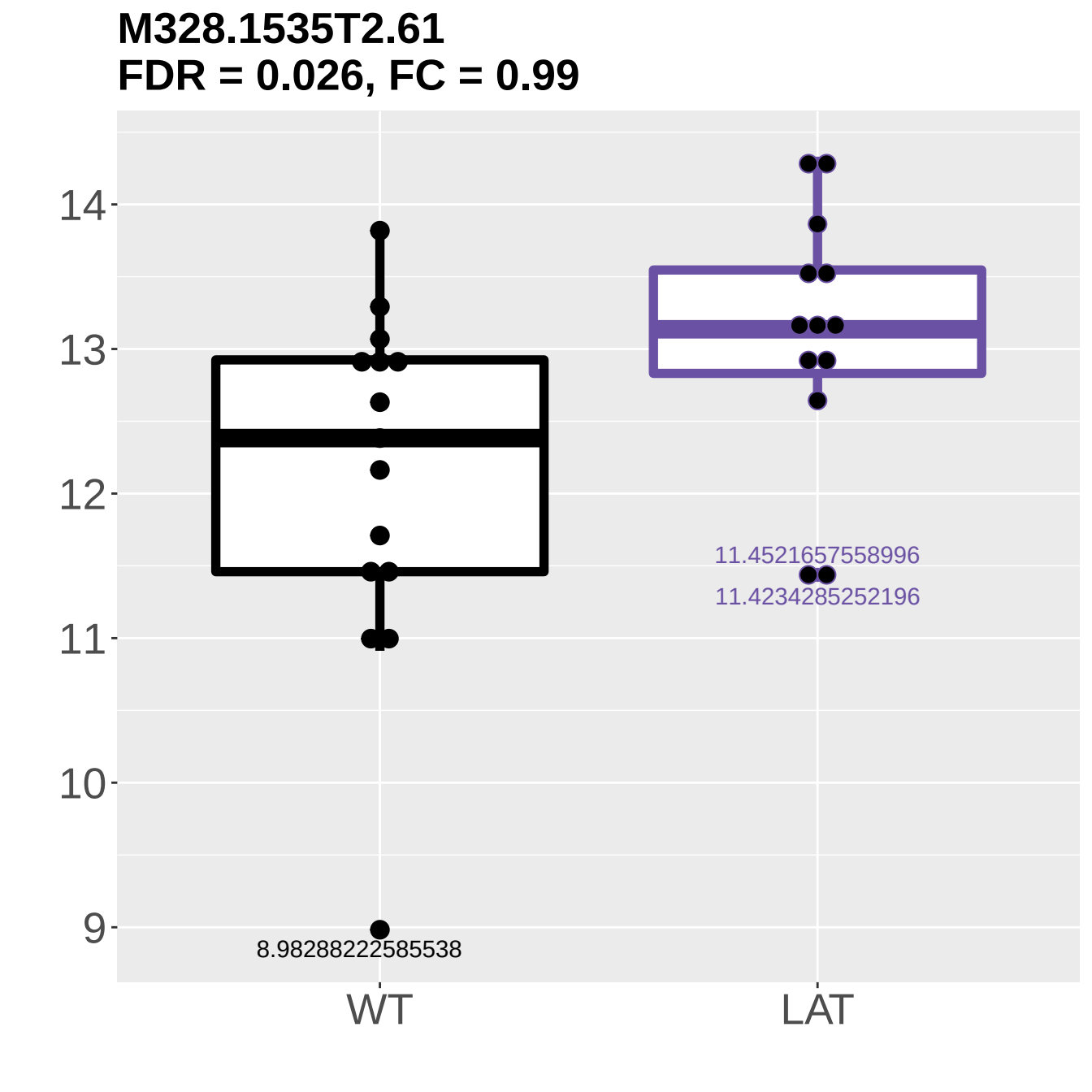
WT
LAT


M328.1535T2.61
FDR = 0.026, FC = 0.99
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13
12
11
10
9
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11.4234285252196
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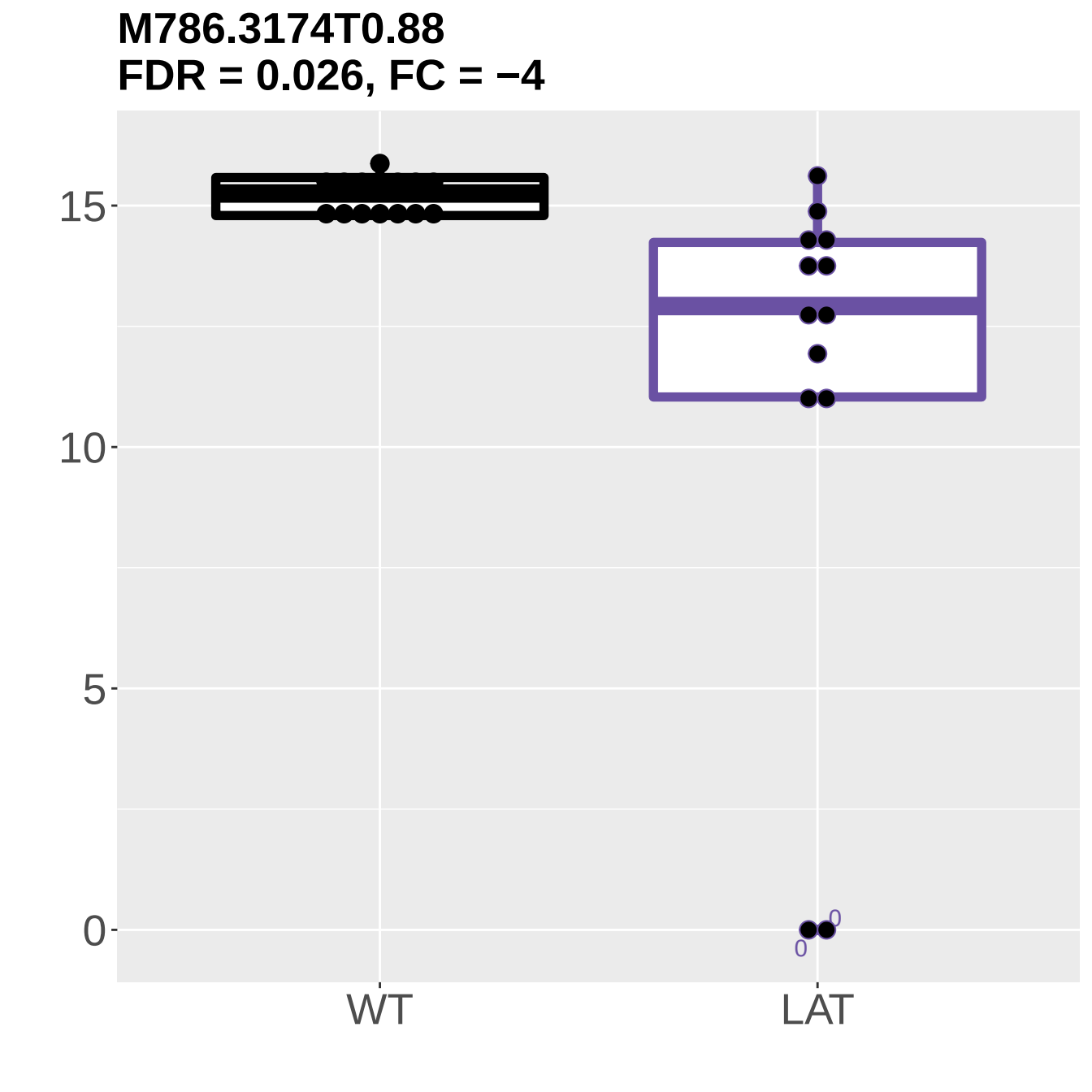
WT
LAT


M786.3174T0.88
FDR = 0.026, FC = −4
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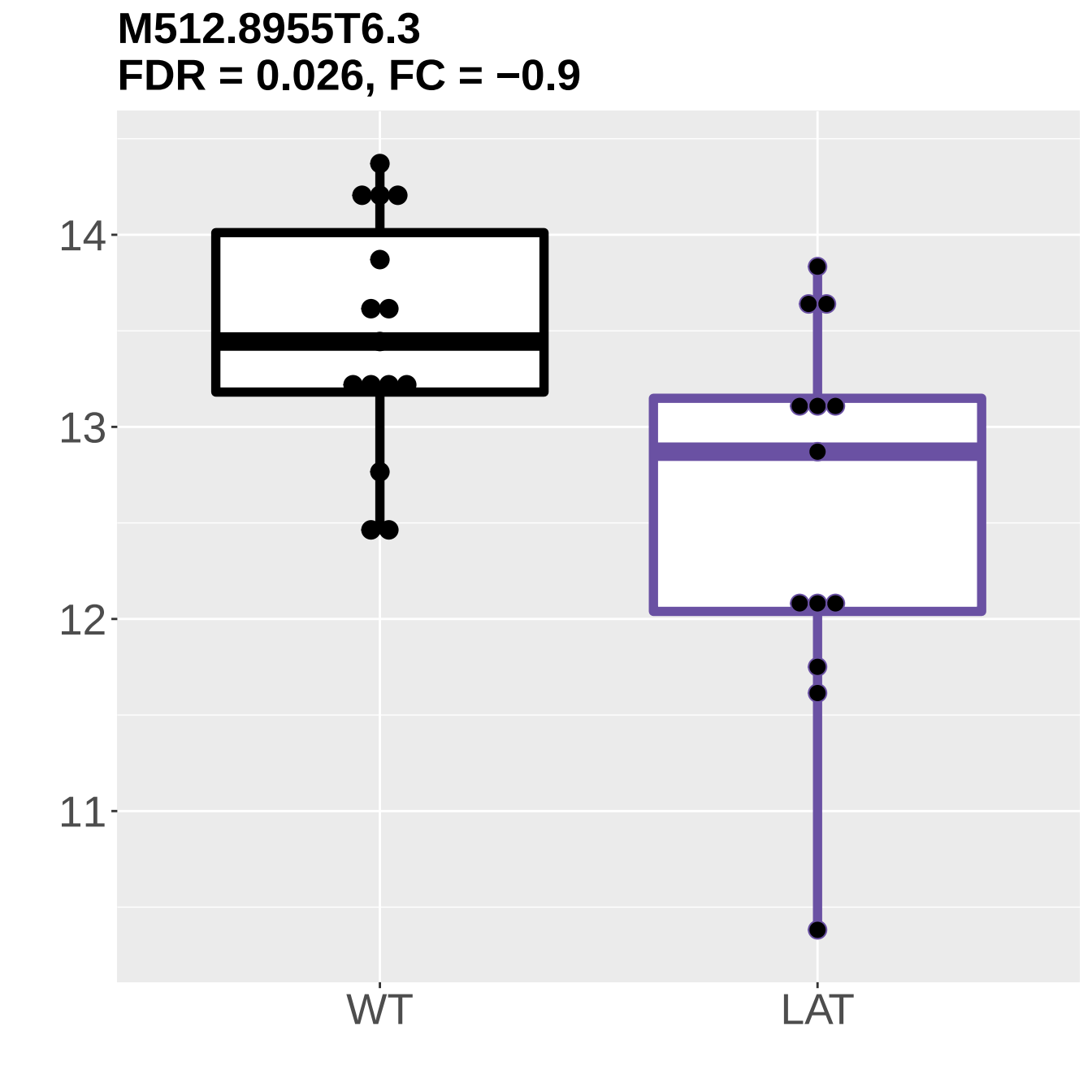
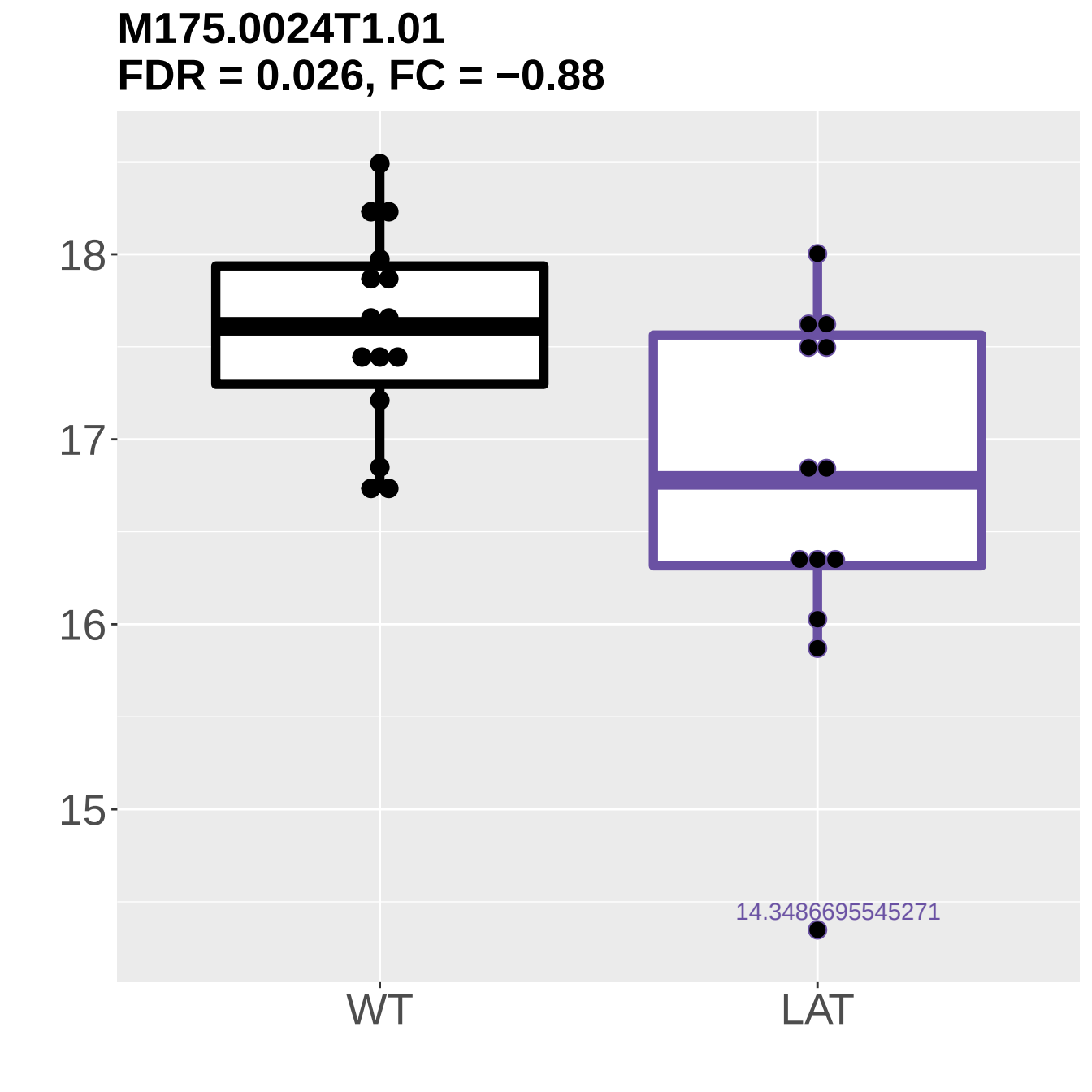
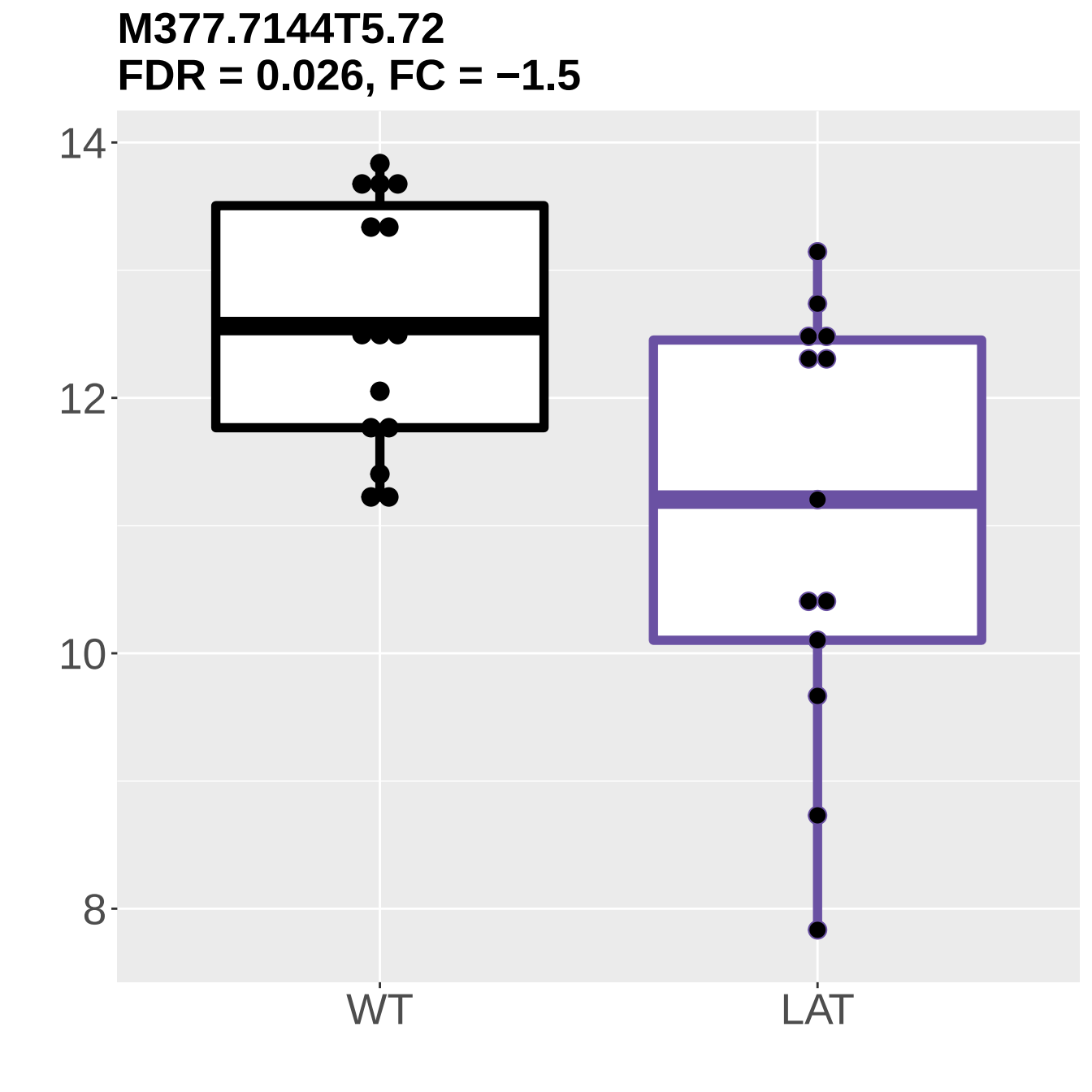
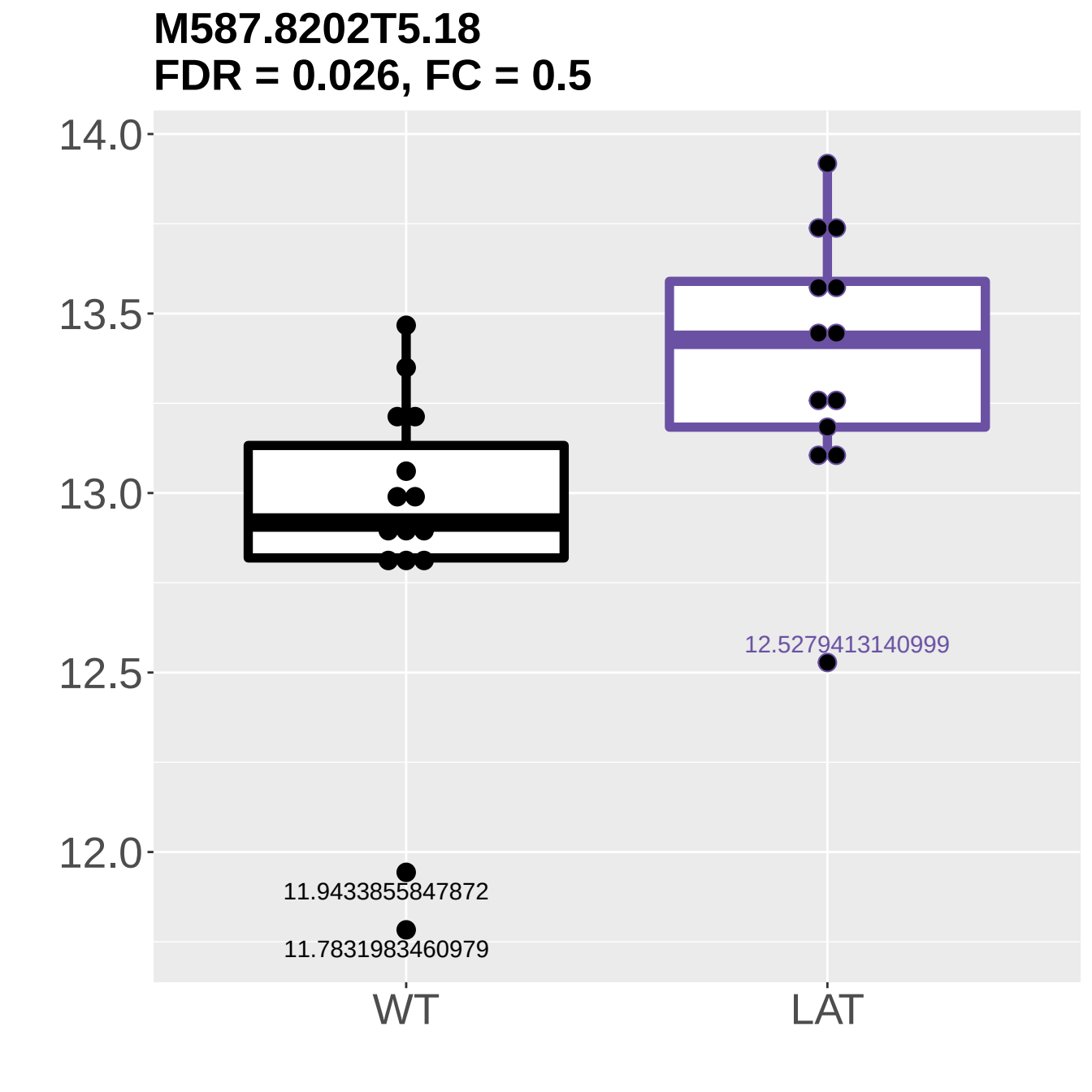
10
5
0
0
0
WT
LAT


M512.8955T6.3
FDR = 0.026, FC = −0.9
14
13
12
11
WT
LAT


M175.0024T1.01
FDR = 0.026, FC = −0.88
18
17
16
15
14.3486695545271
WT
LAT


M377.7144T5.72
FDR = 0.026, FC = −1.5
14
12
10
8
WT
LAT


M587.8202T5.18
FDR = 0.026, FC = 0.5
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13.5
13.0
12.5
12.0
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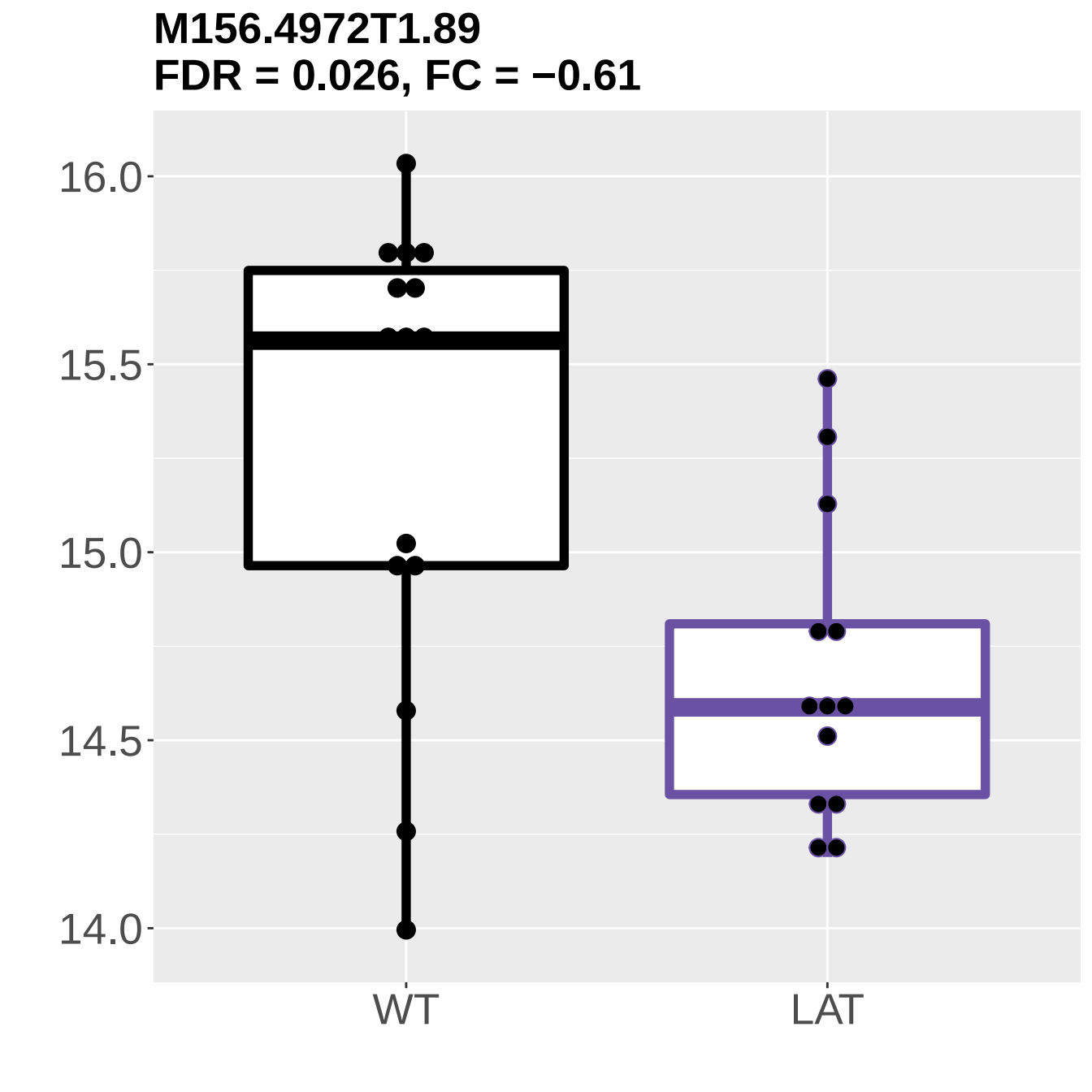
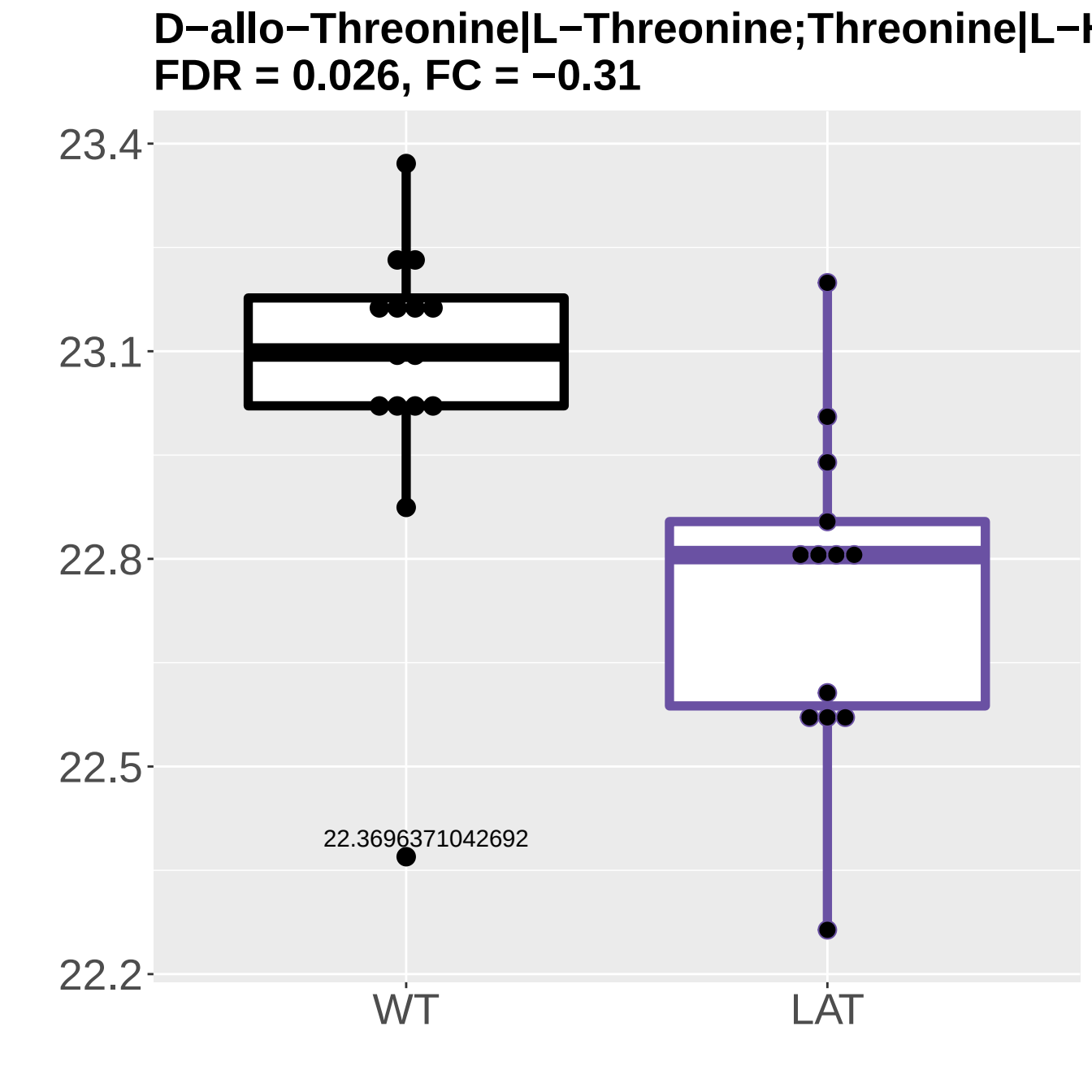
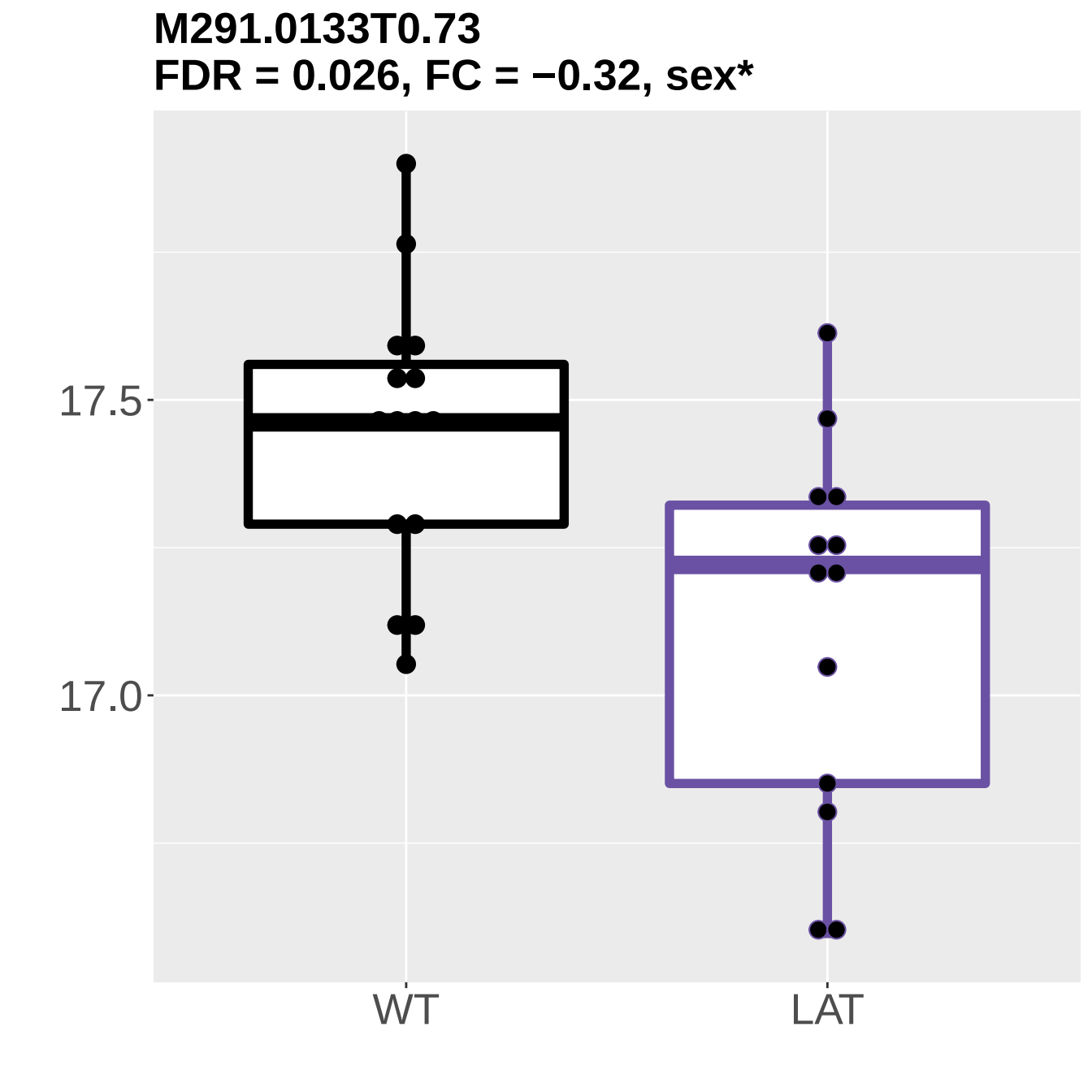
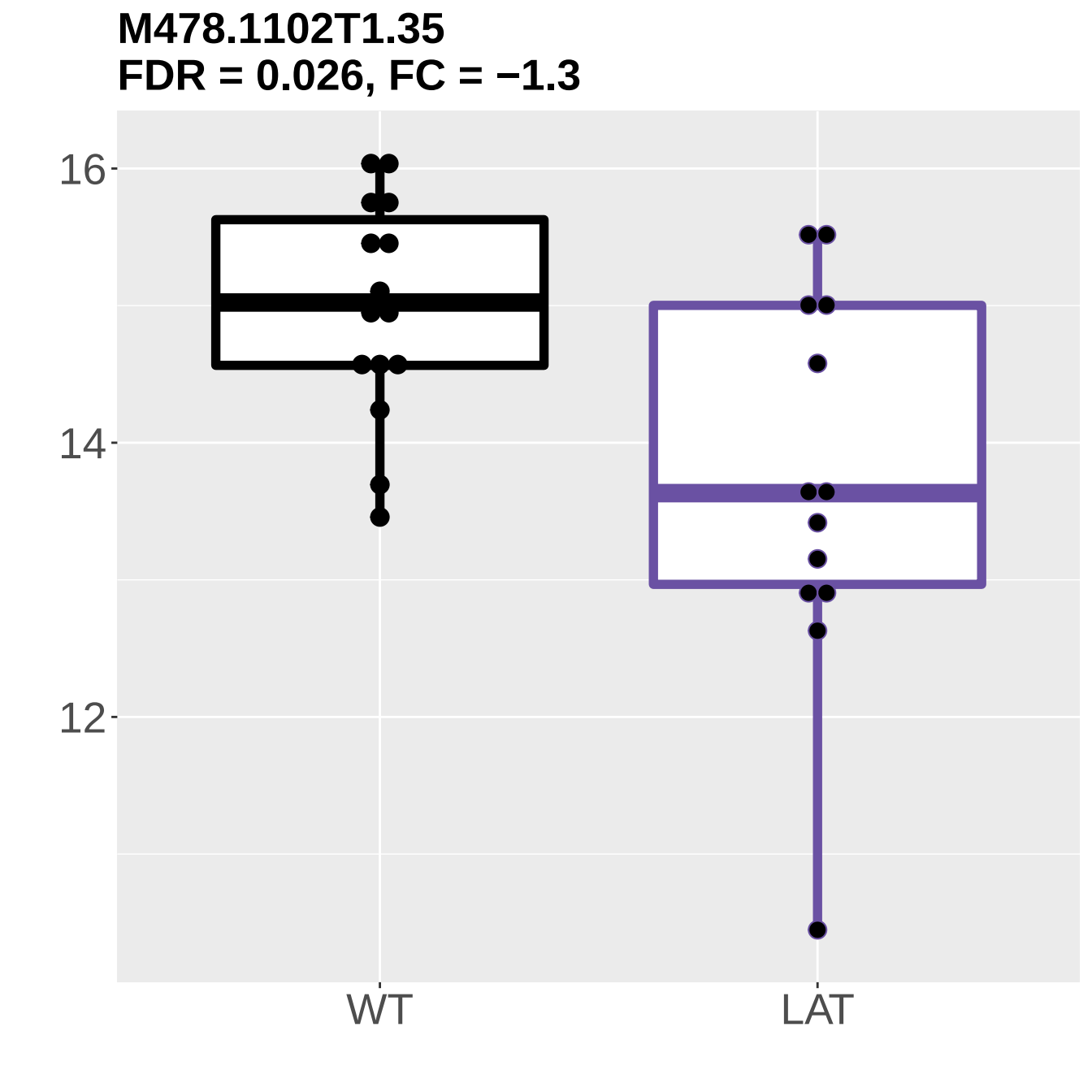
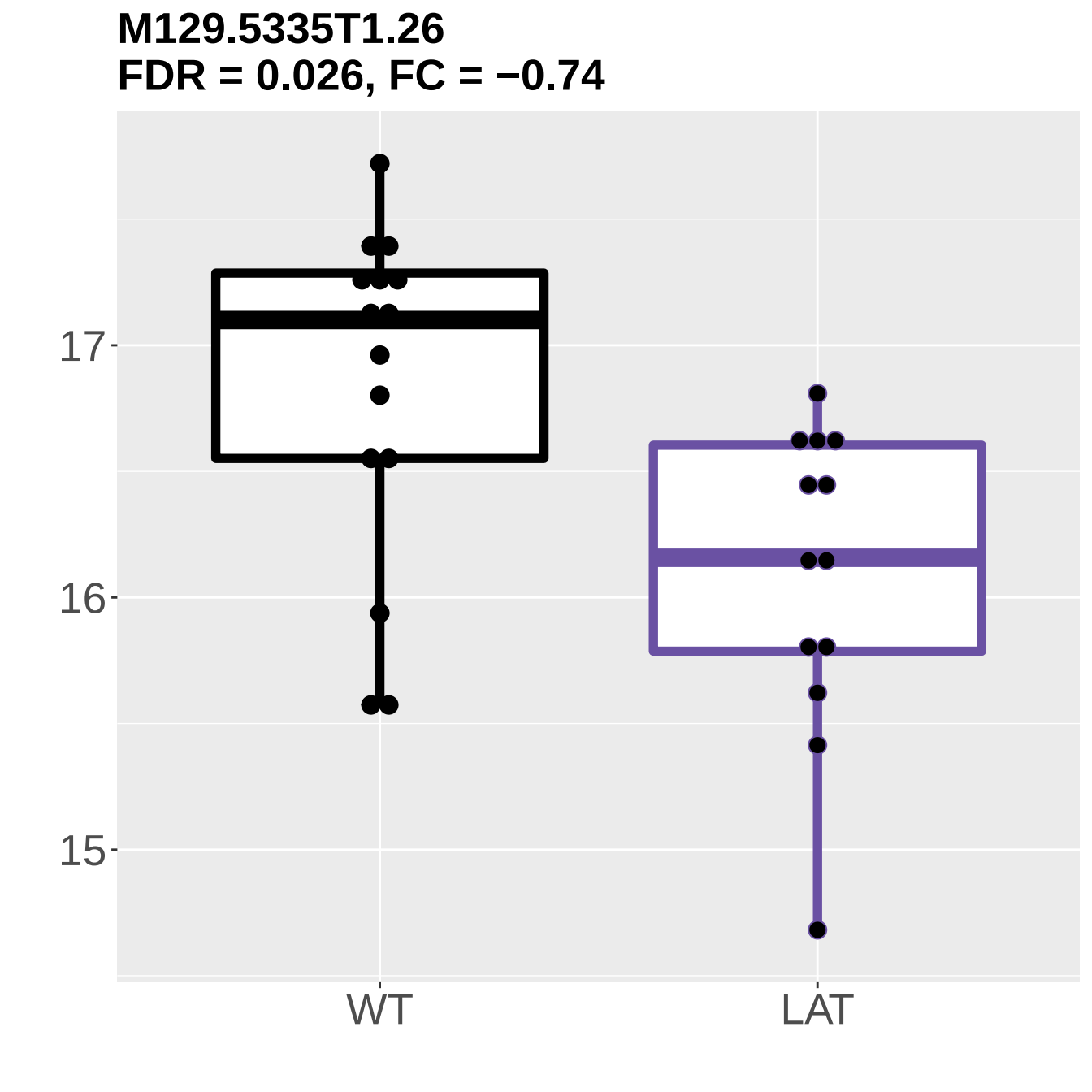
WT
LAT

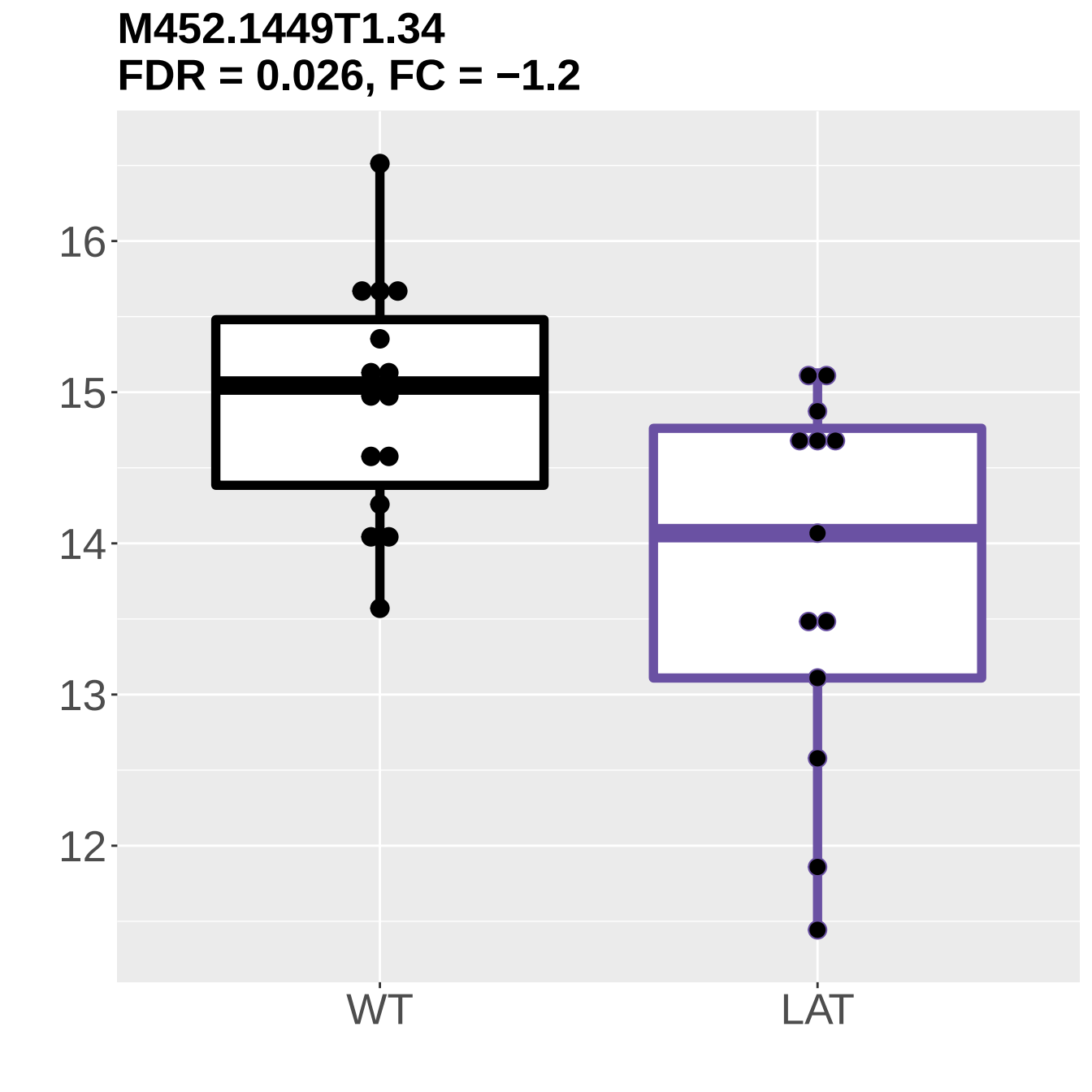

M156.4972T1.89
FDR = 0.026, FC = −0.61
16.0
15.5
15.0
14.5
14.0
WT
LAT

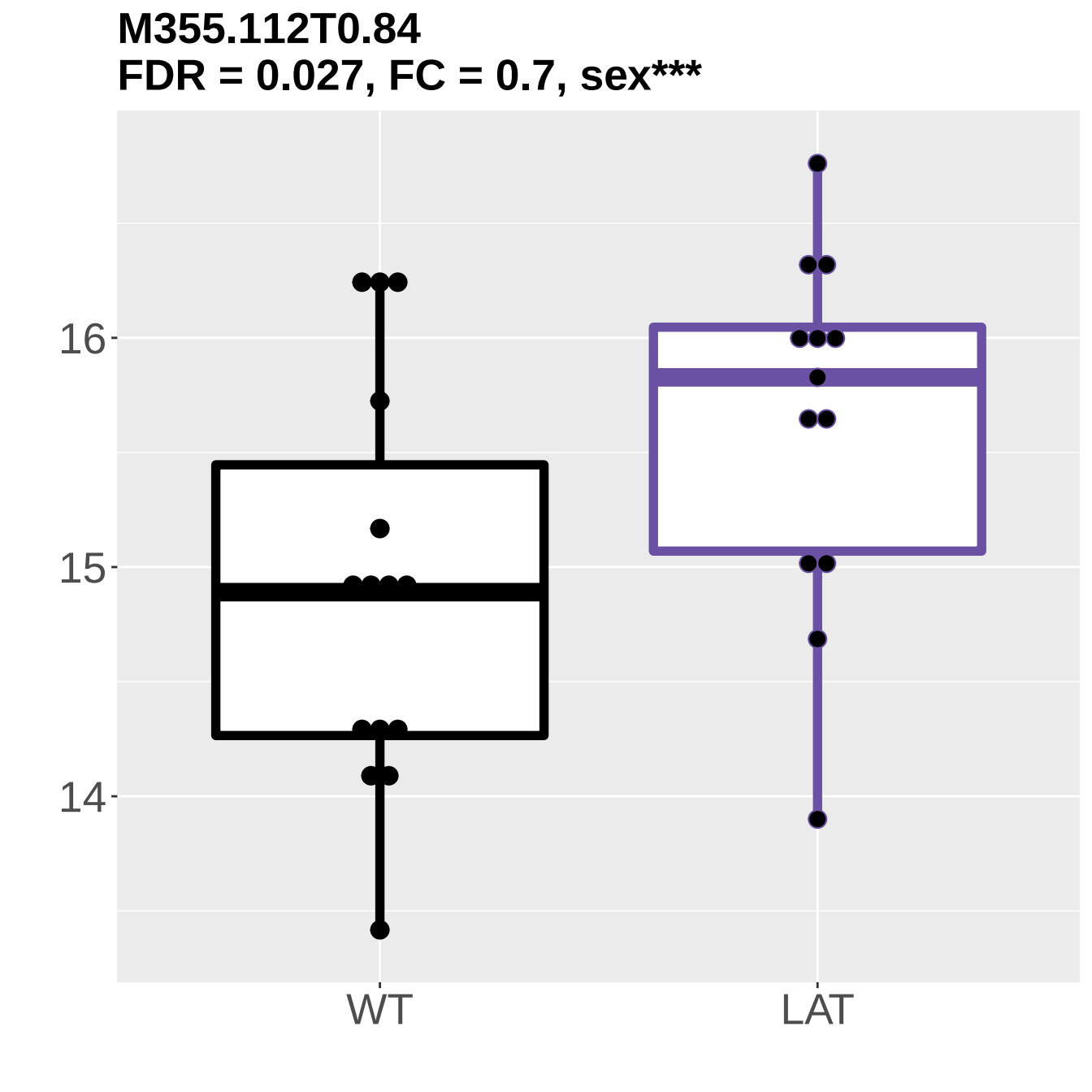

D−allo−Threonine|L−Threonine;Threonine|L−H
FDR = 0.026, FC = −0.31
23.4
23.1
22.8
22.5
22.2
22.3696371042692
WT
LAT

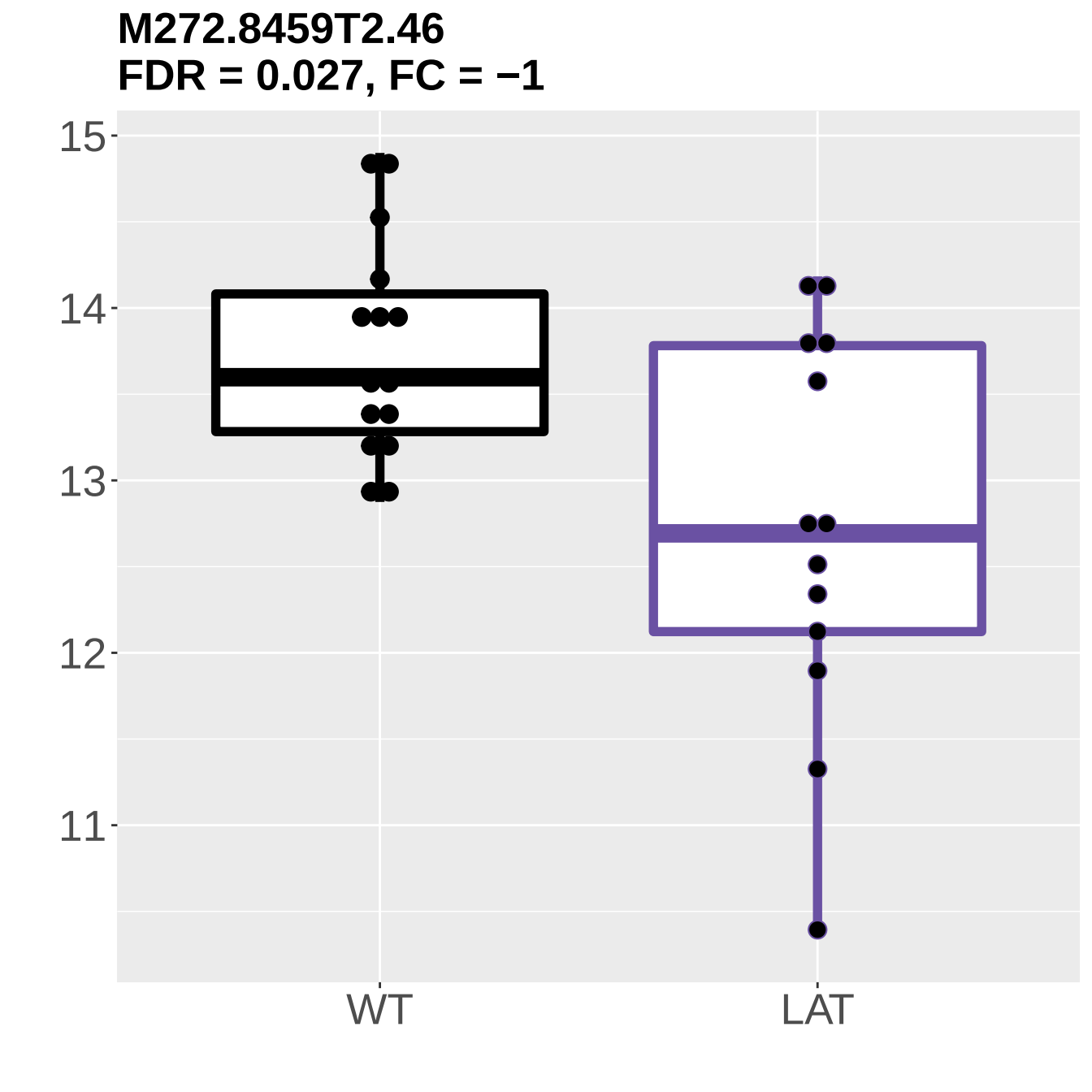

M291.0133T0.73
FDR = 0.026, FC = −0.32, sex*
17.5
17.0
WT
LAT


M478.1102T1.35
FDR = 0.026, FC = −1.3
16
14
12
WT
LAT


M129.5335T1.26
FDR = 0.026, FC = −0.74
17
16
15
WT
LAT


M452.1449T1.34
FDR = 0.026, FC = −1.2
16
15
14
13
12
WT
LAT


M355.112T0.84
FDR = 0.027, FC = 0.7, sex***
16
15
14
WT
LAT


M272.8459T2.46
FDR = 0.027, FC = −1
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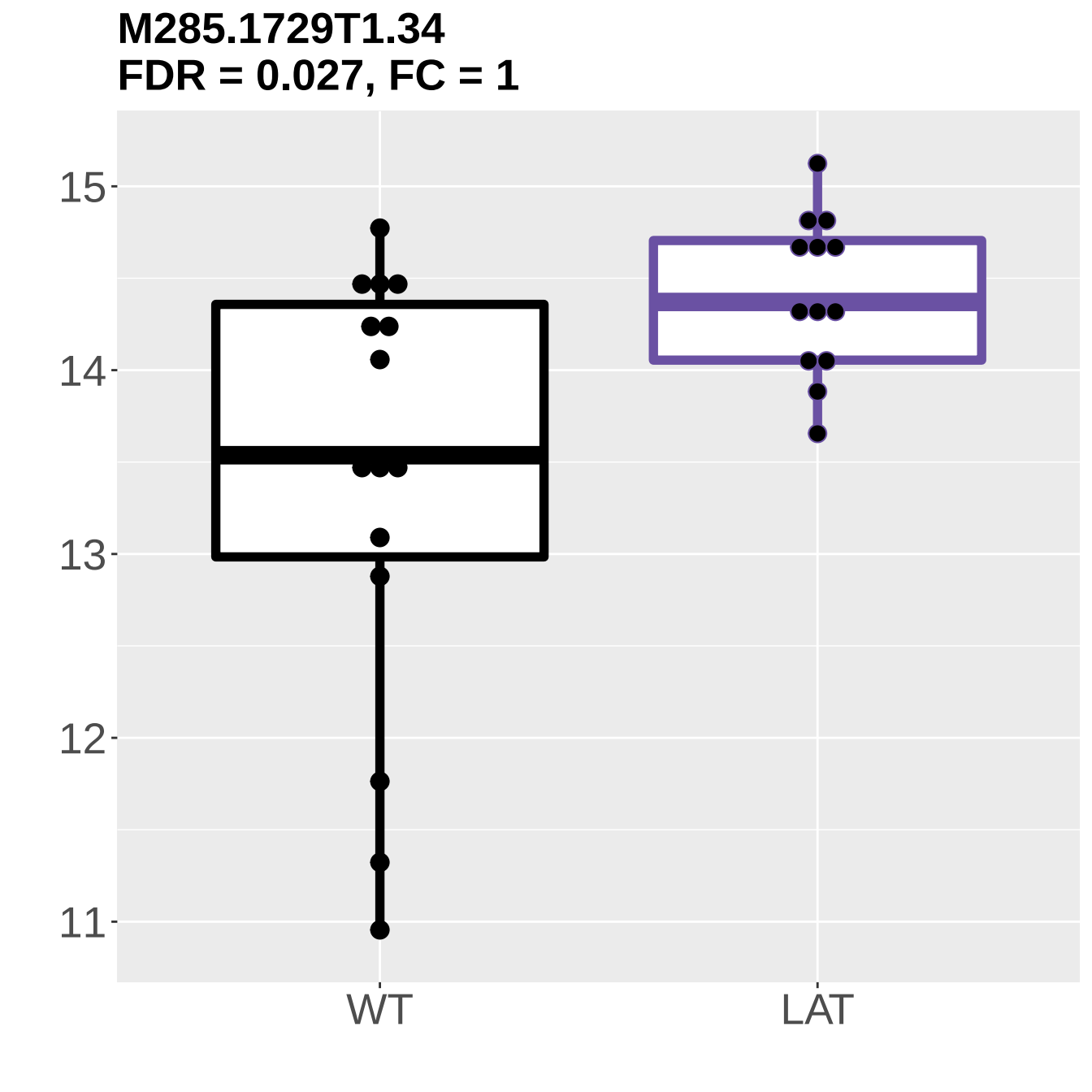
14
13
12
11
WT
LAT


M285.1729T1.34
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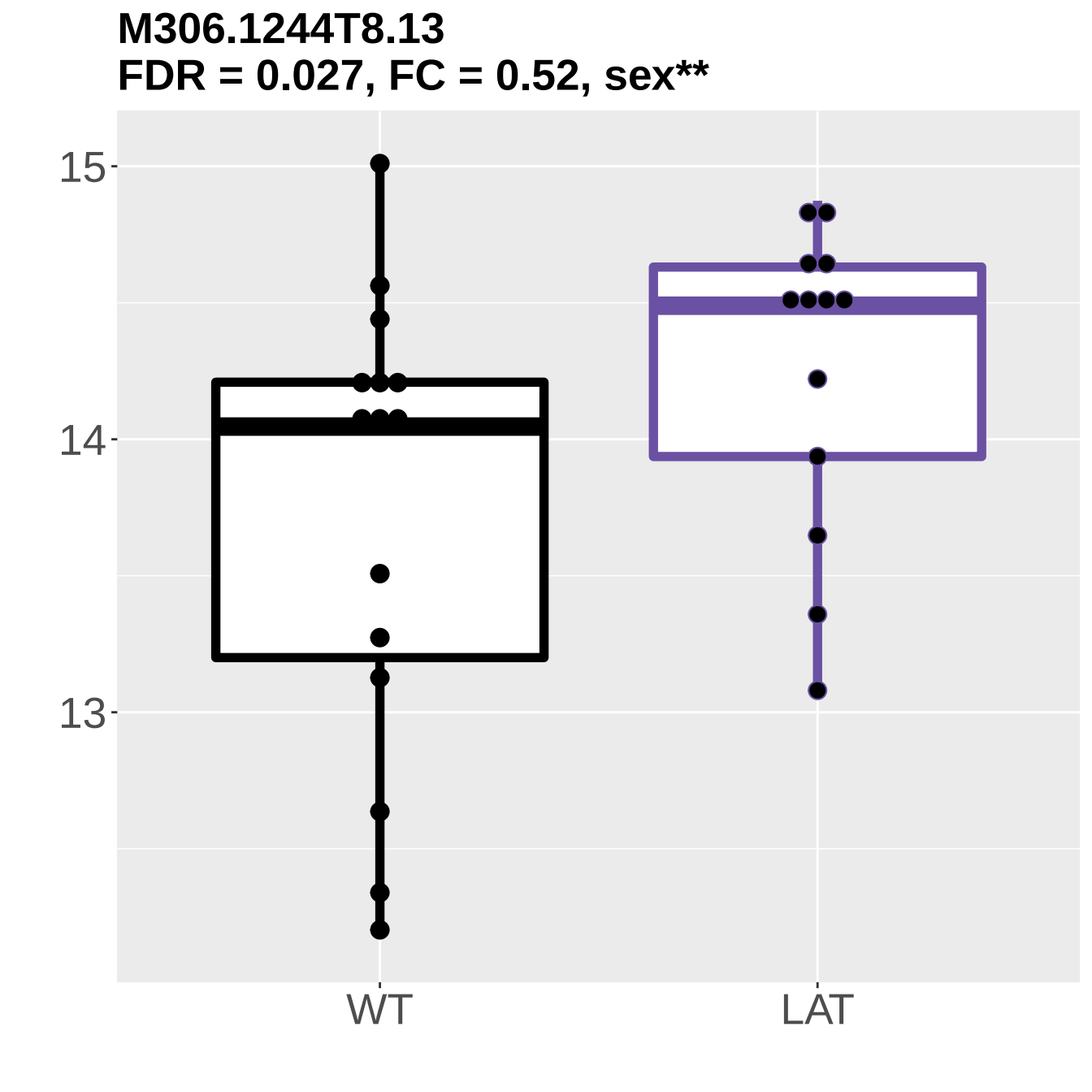
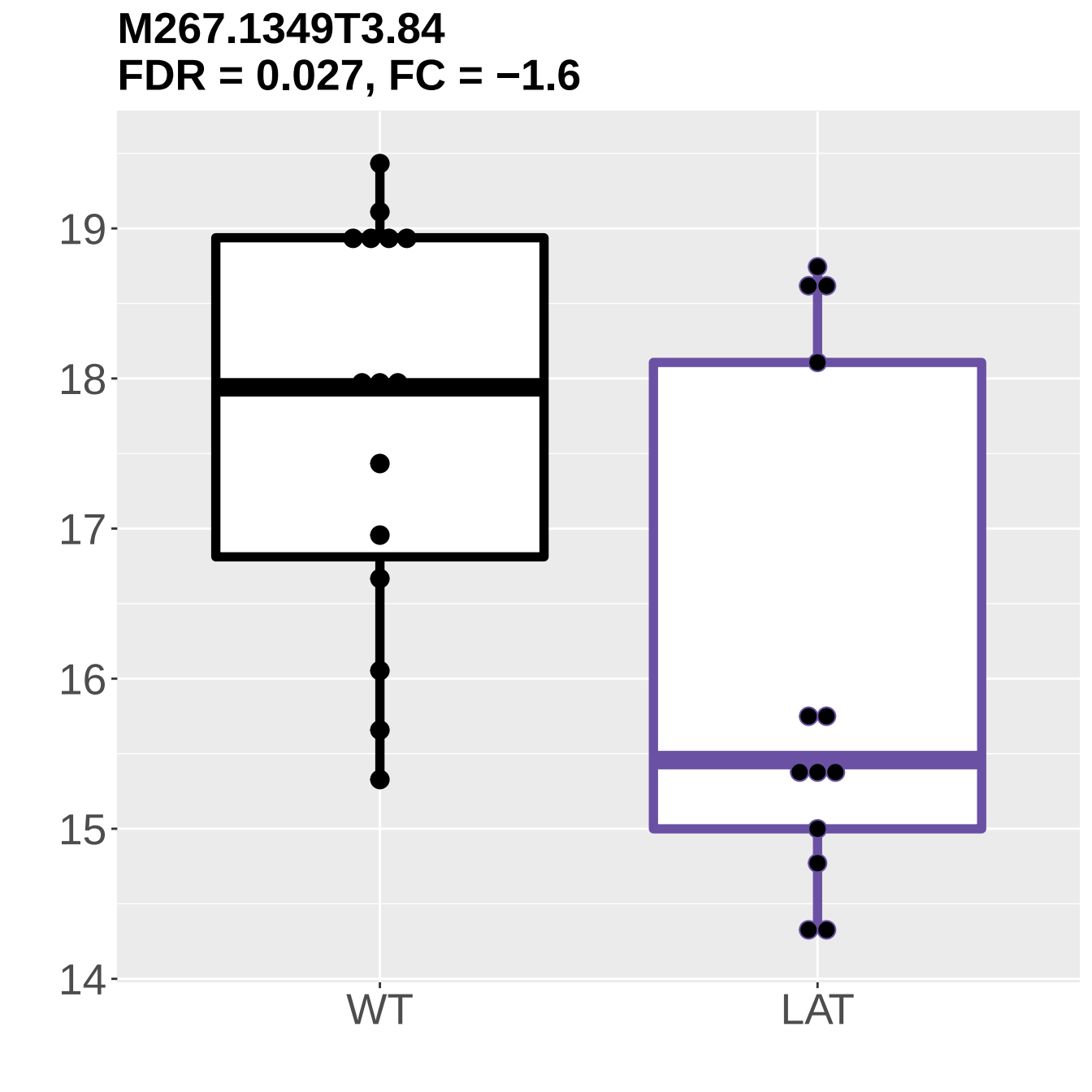
14
13
12
11
WT
LAT


M306.1244T8.13
FDR = 0.027, FC = 0.52, sex**
15
14
13
WT
LAT


M267.1349T3.84
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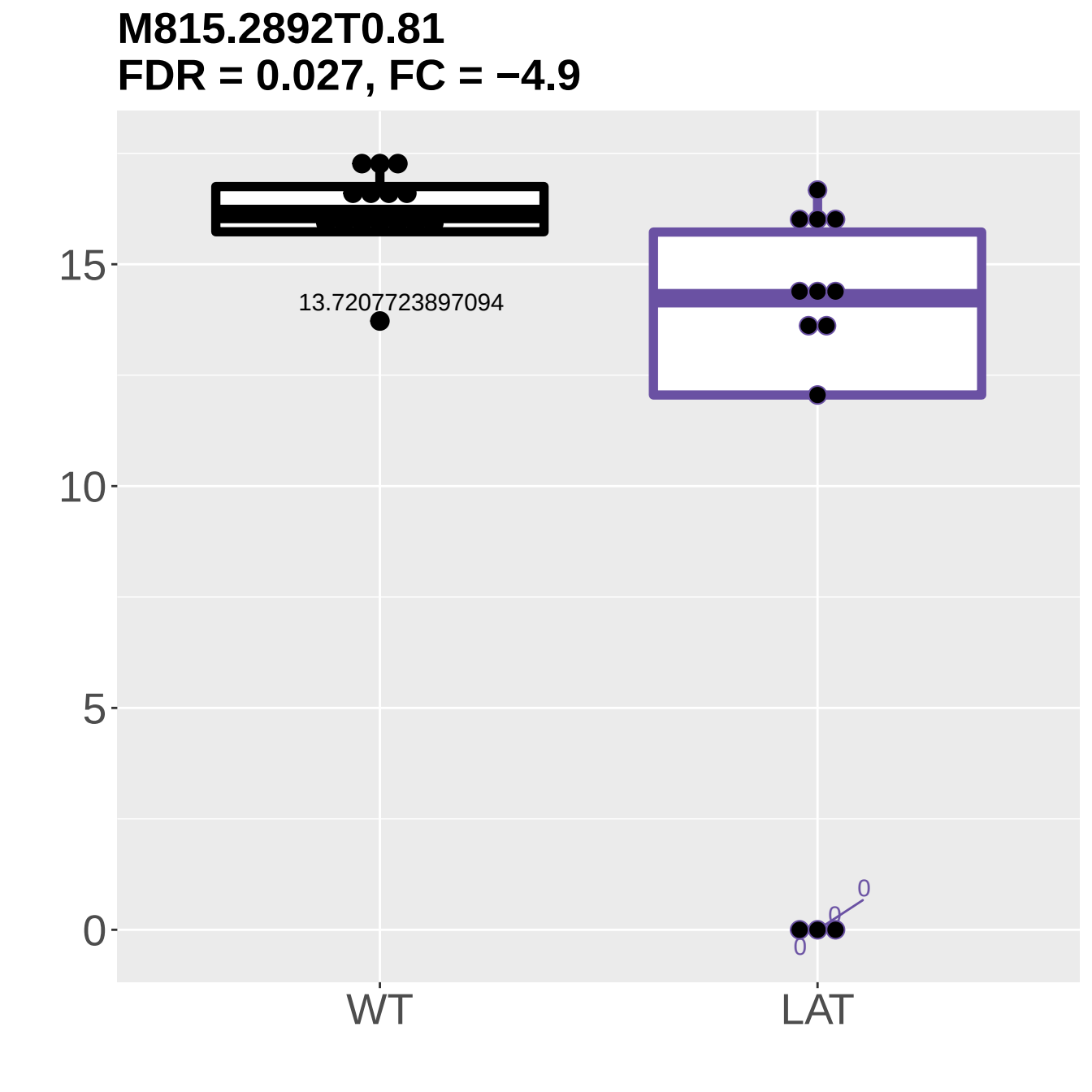
19
18
17
16
15
14
WT
LAT


M815.2892T0.81
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10
5
0
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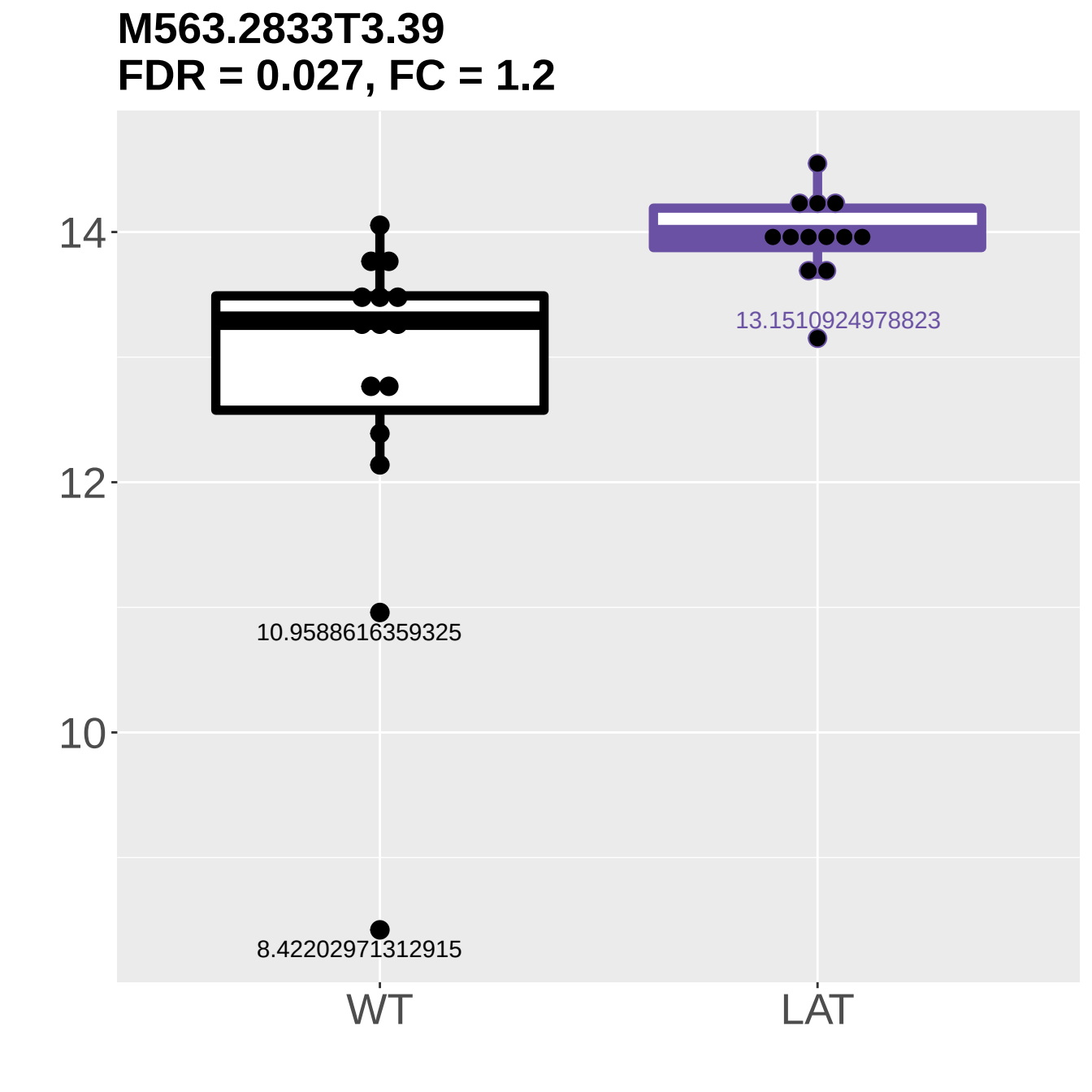
0
0
0
WT
LAT


M563.2833T3.39
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12
10
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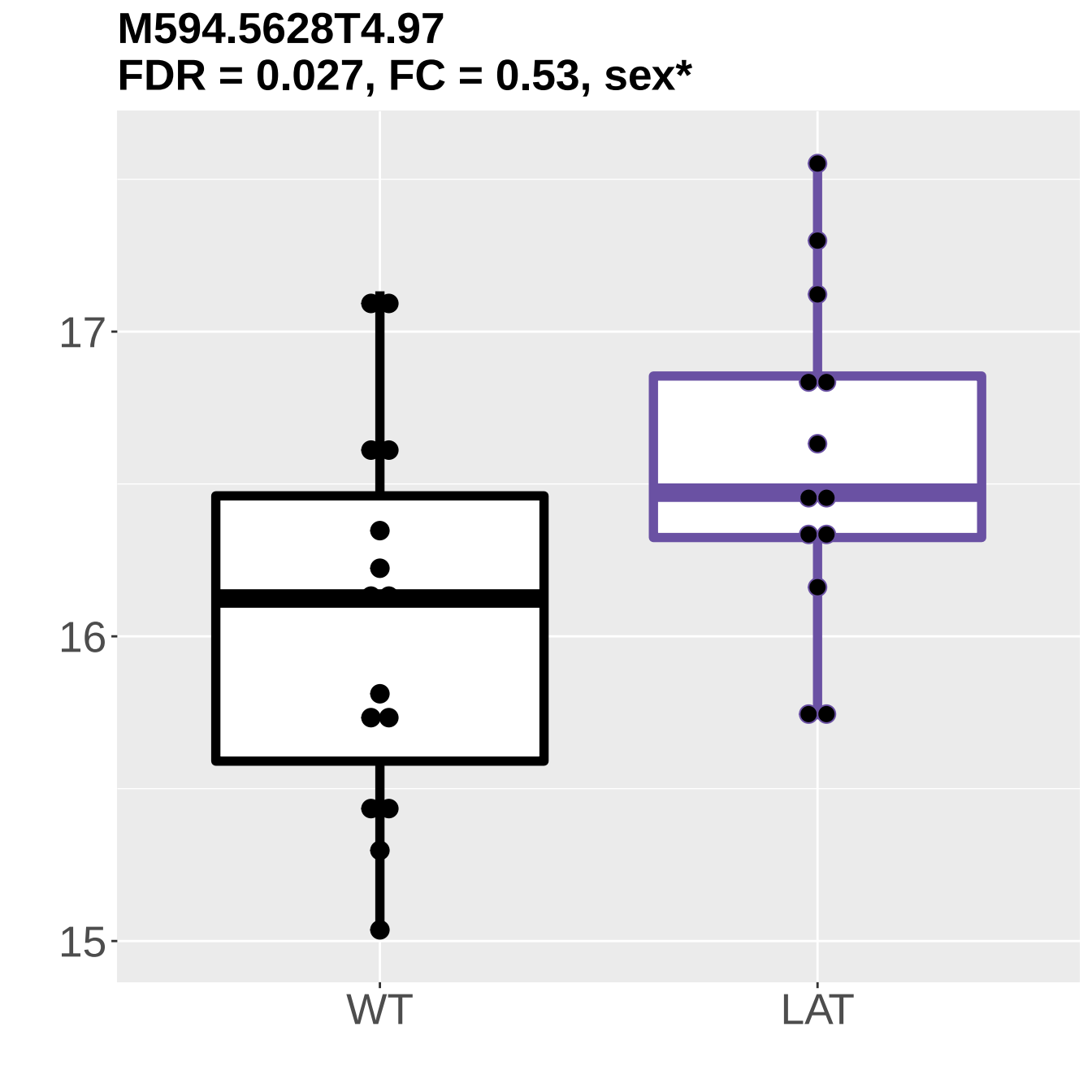
WT
LAT


M594.5628T4.97
FDR = 0.027, FC = 0.53, sex*
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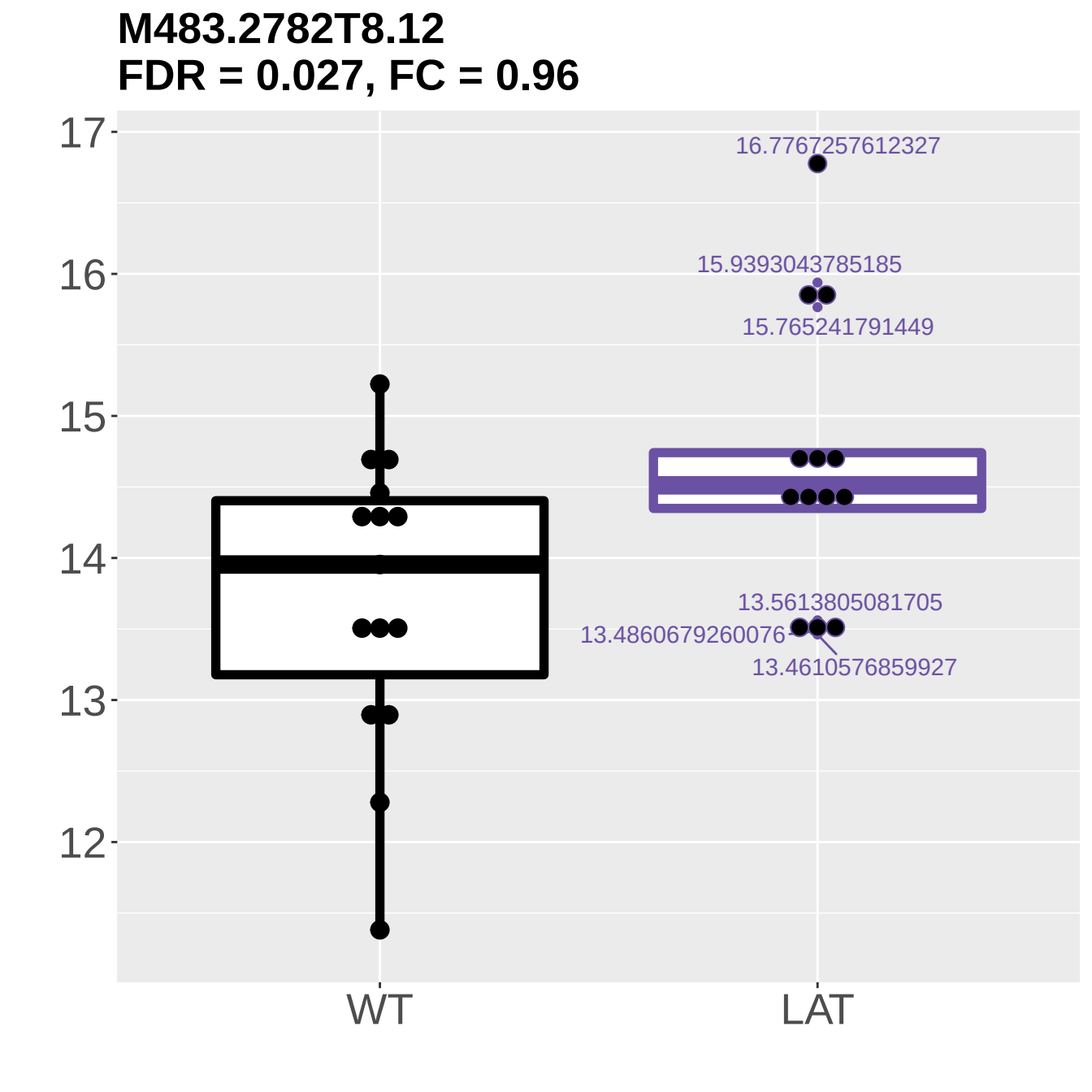
16
15
WT
LAT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FDR = 0.027, FC = 0.96
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16
15
14
13
12
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15.765241791449
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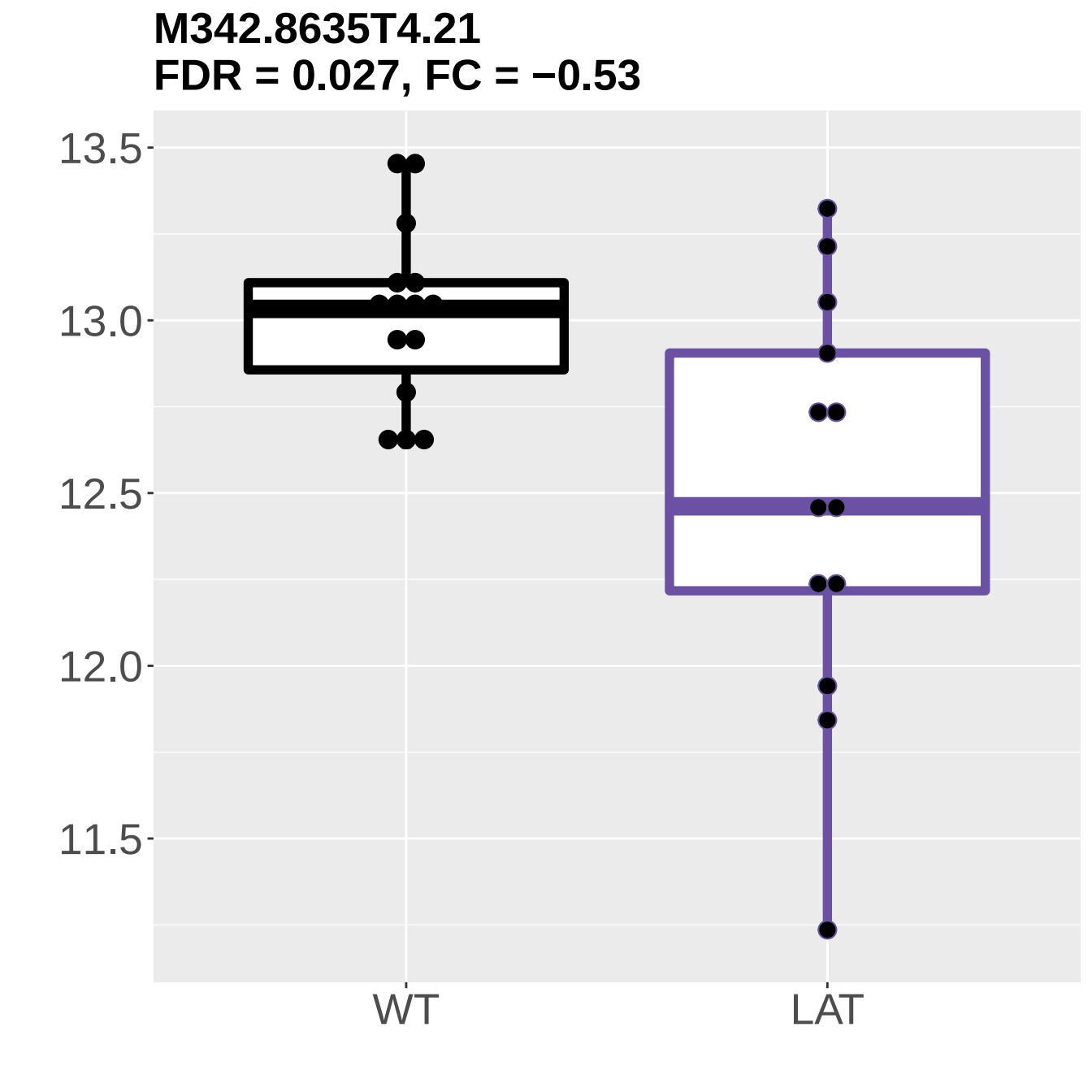
13.4610576859927
WT
LAT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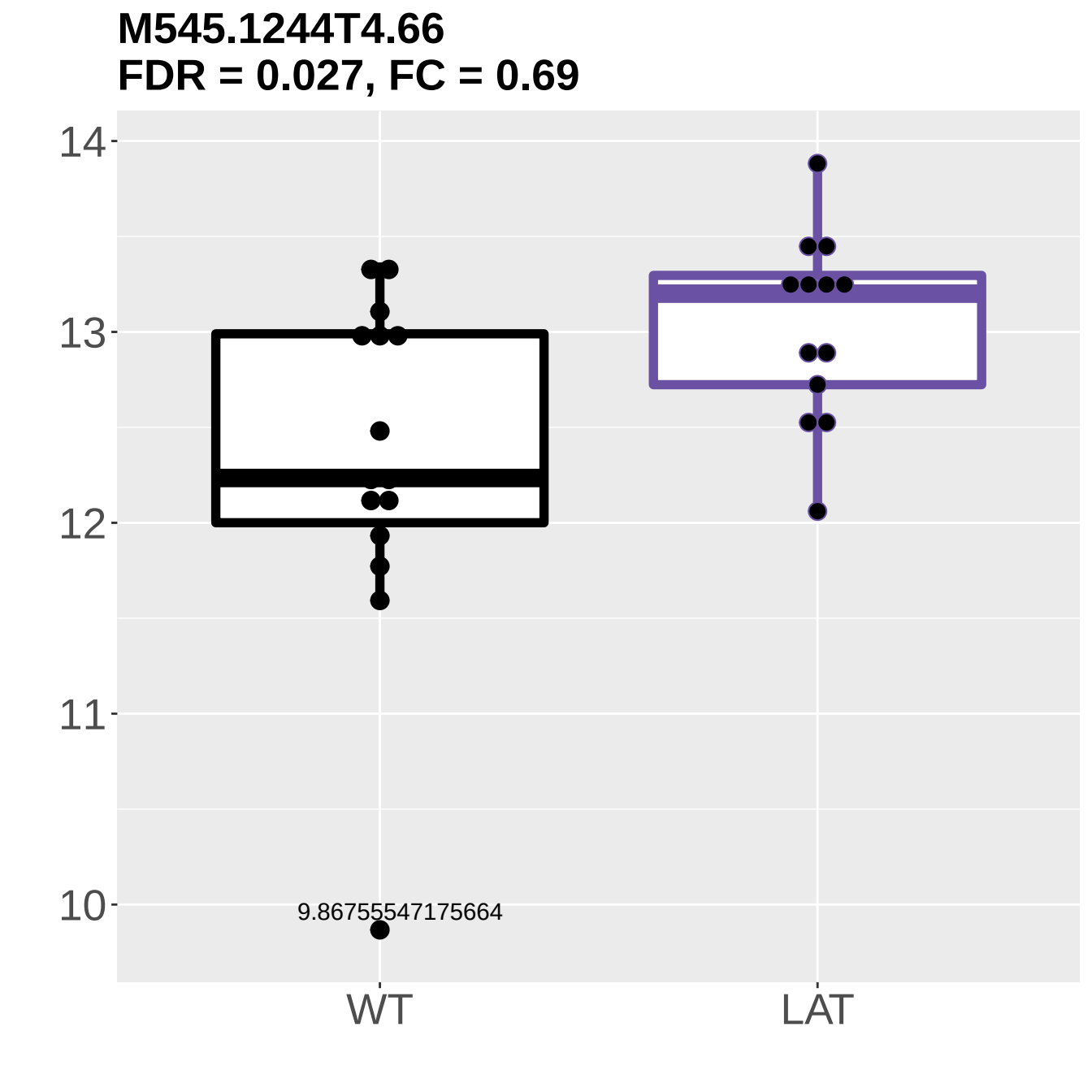
12.5
12.0
11.5
WT
LAT


M545.1244T4.66
FDR = 0.027, FC = 0.69
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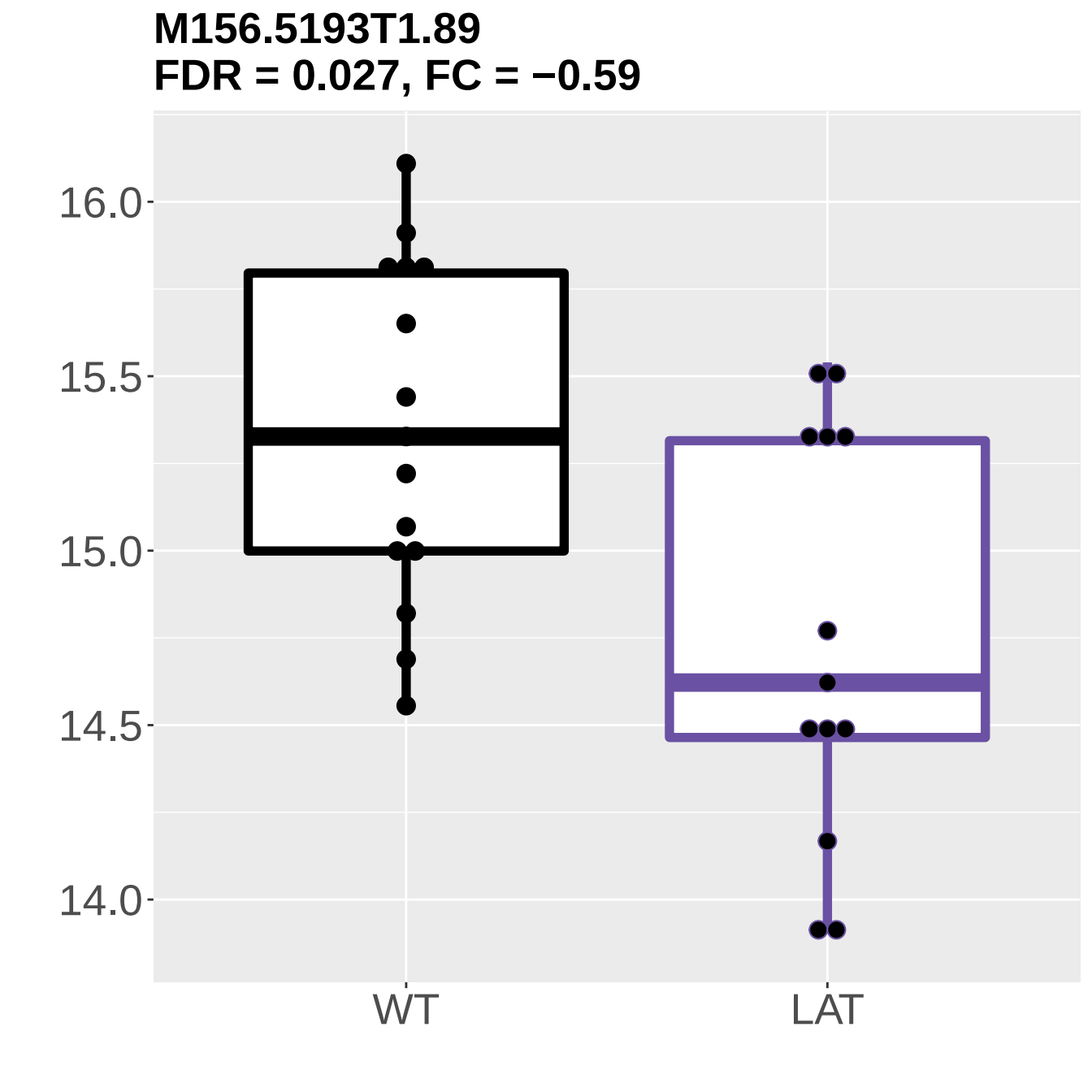
13
12
11
10
9.86755547175664
WT
LAT


M156.5193T1.89
FDR = 0.027, FC = −0.59
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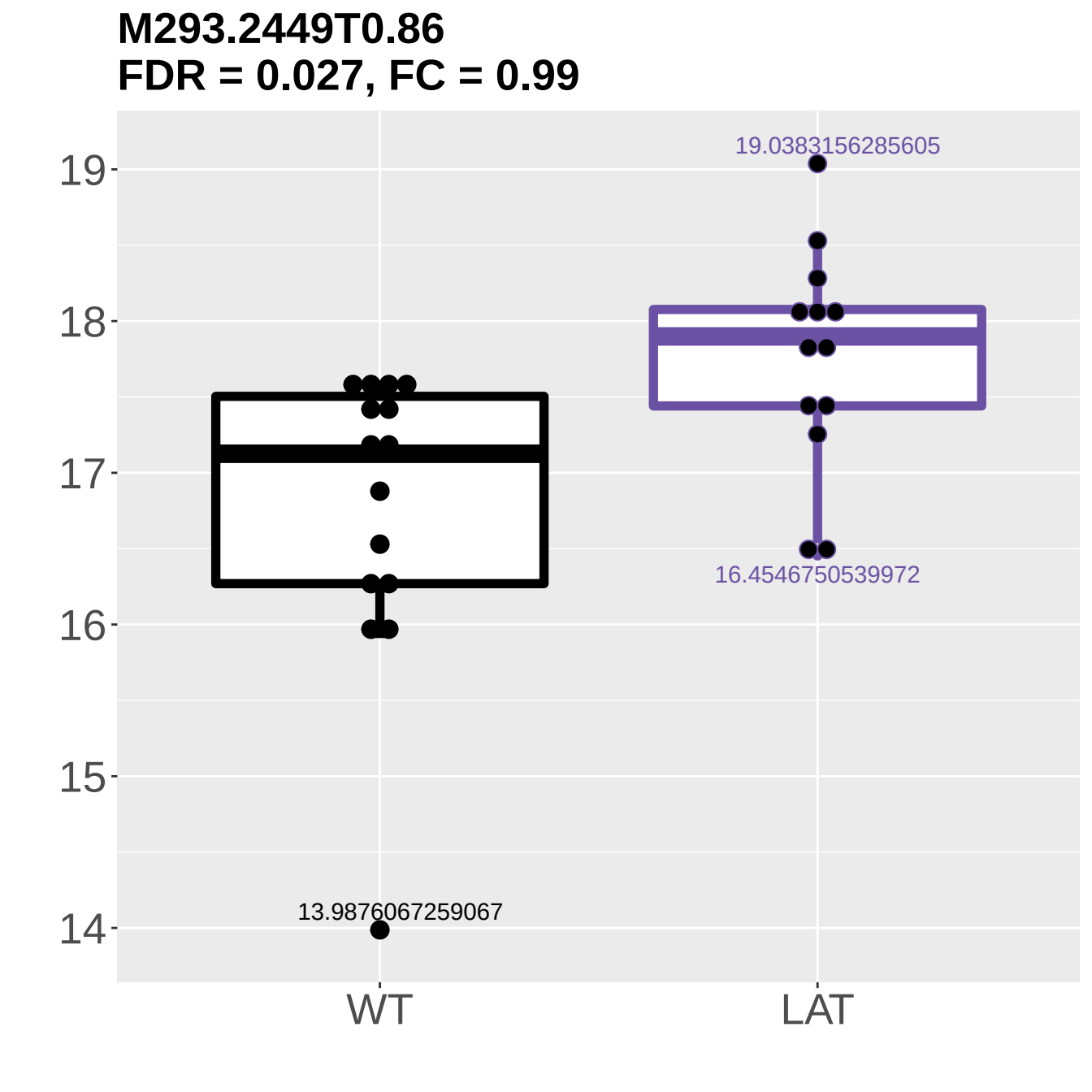
15.0
14.5
14.0
WT
LAT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18
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16
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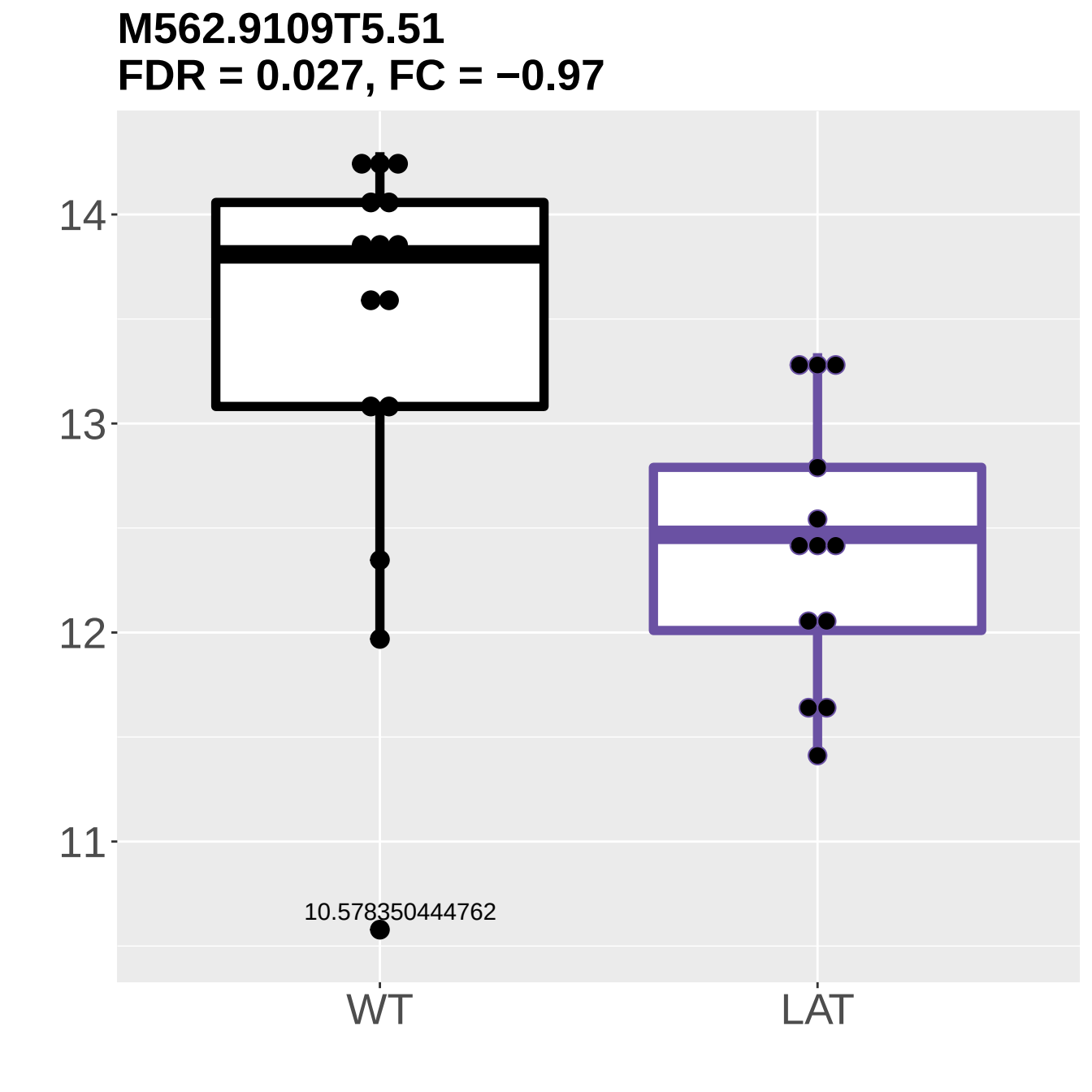
WT
LAT


M562.9109T5.51
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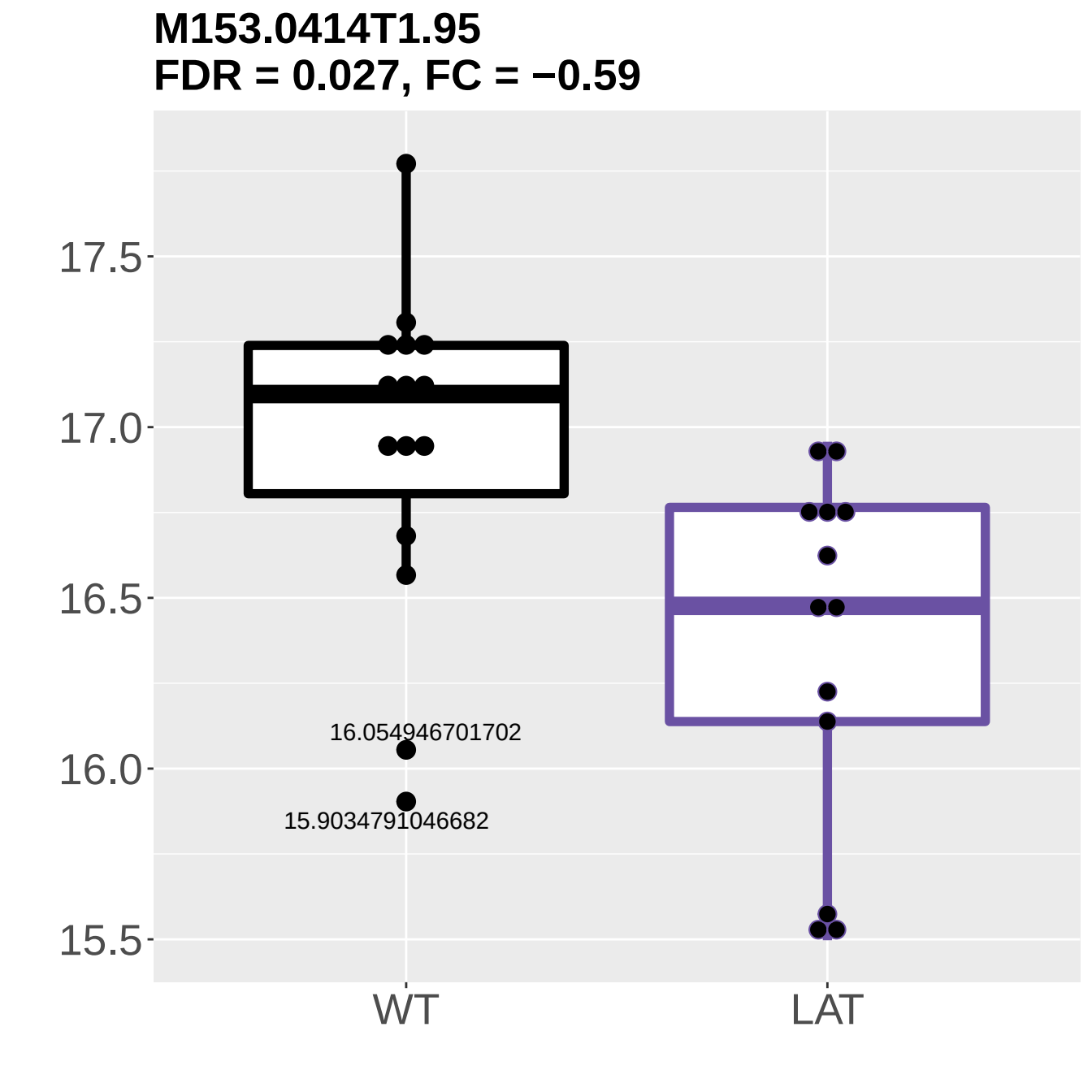
13
12
11
10.578350444762
WT
LAT


M153.0414T1.95
FDR = 0.027, FC = −0.59
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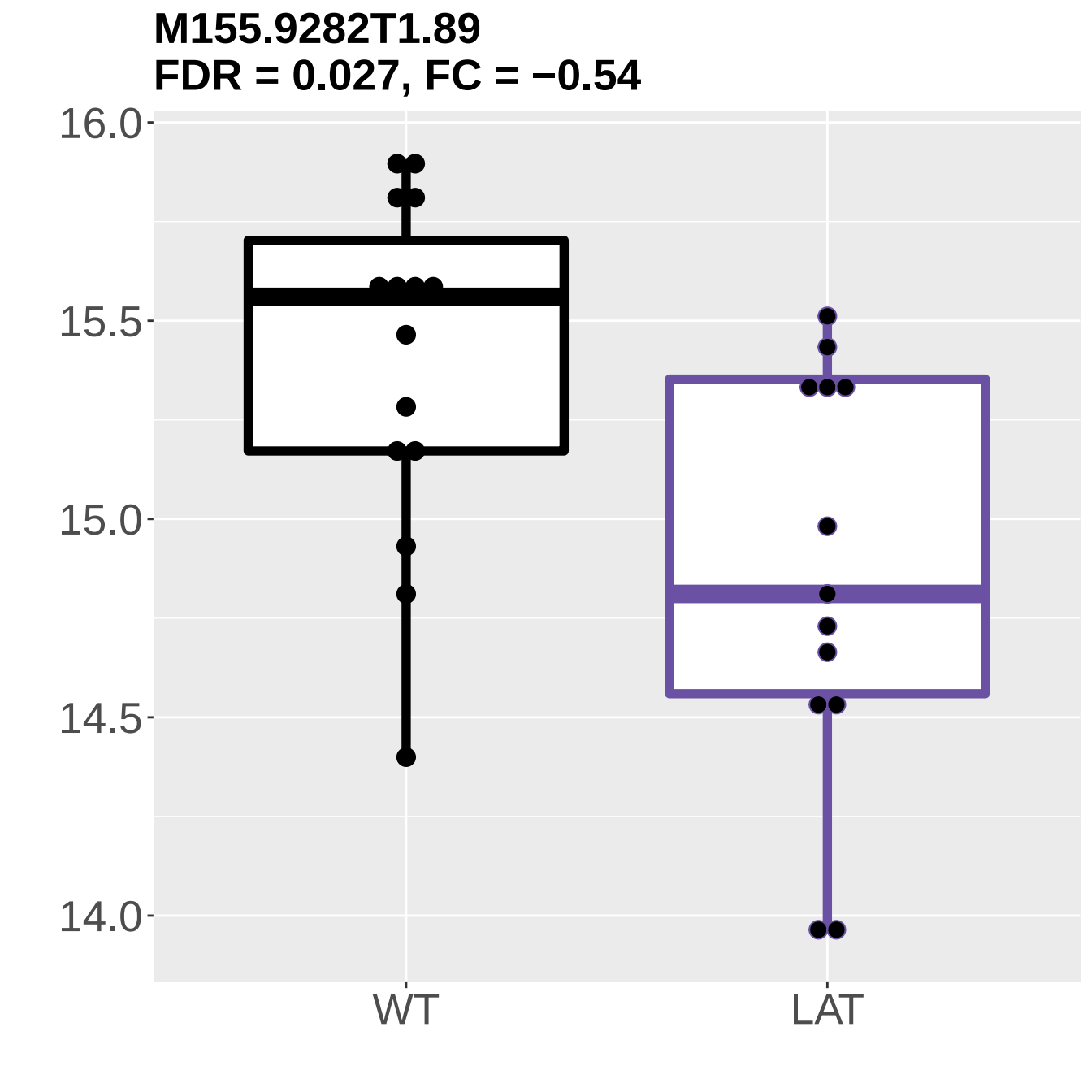
WT
LAT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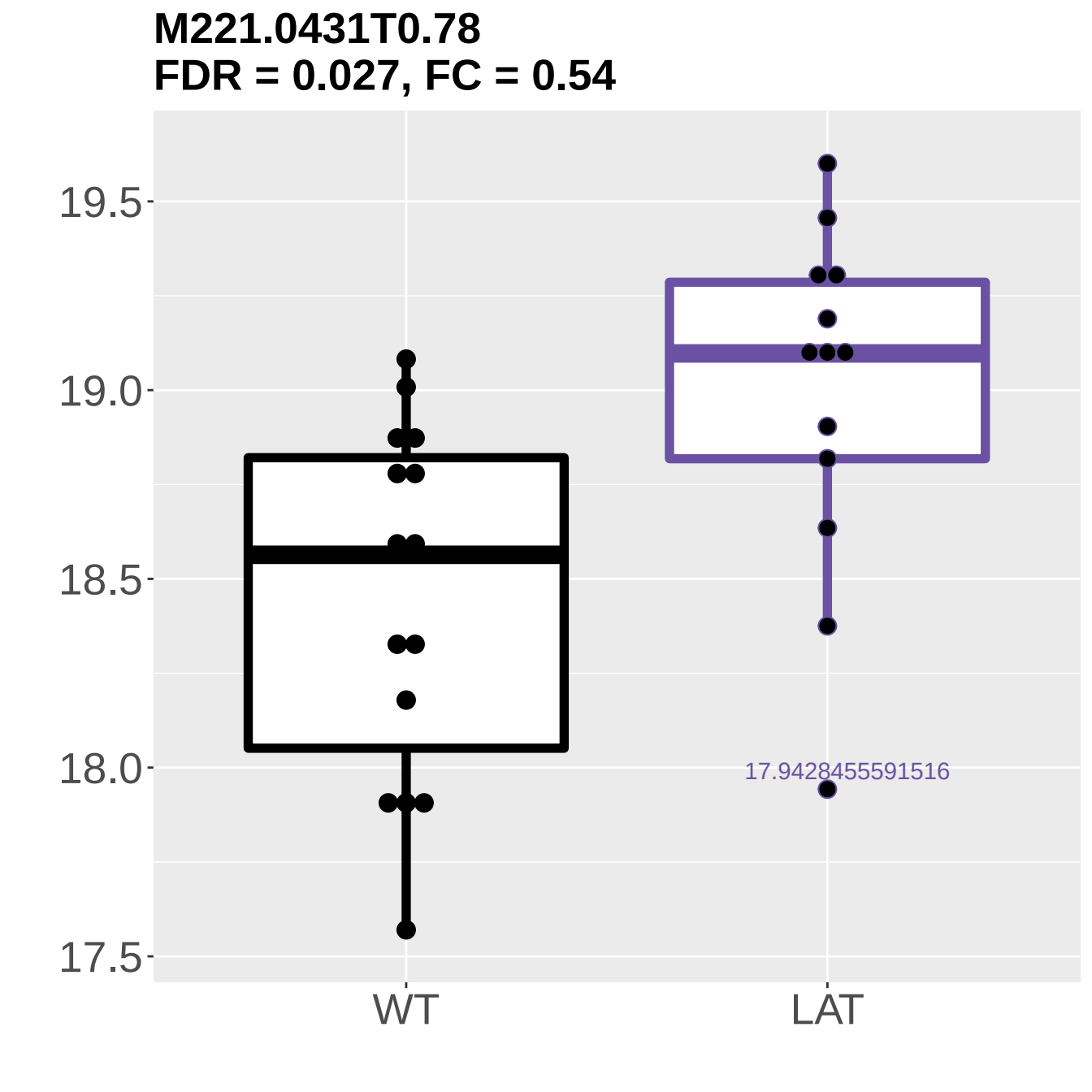
15.0
14.5
14.0
WT
LAT


M221.0431T0.78
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19.0
18.5
18.0
17.5
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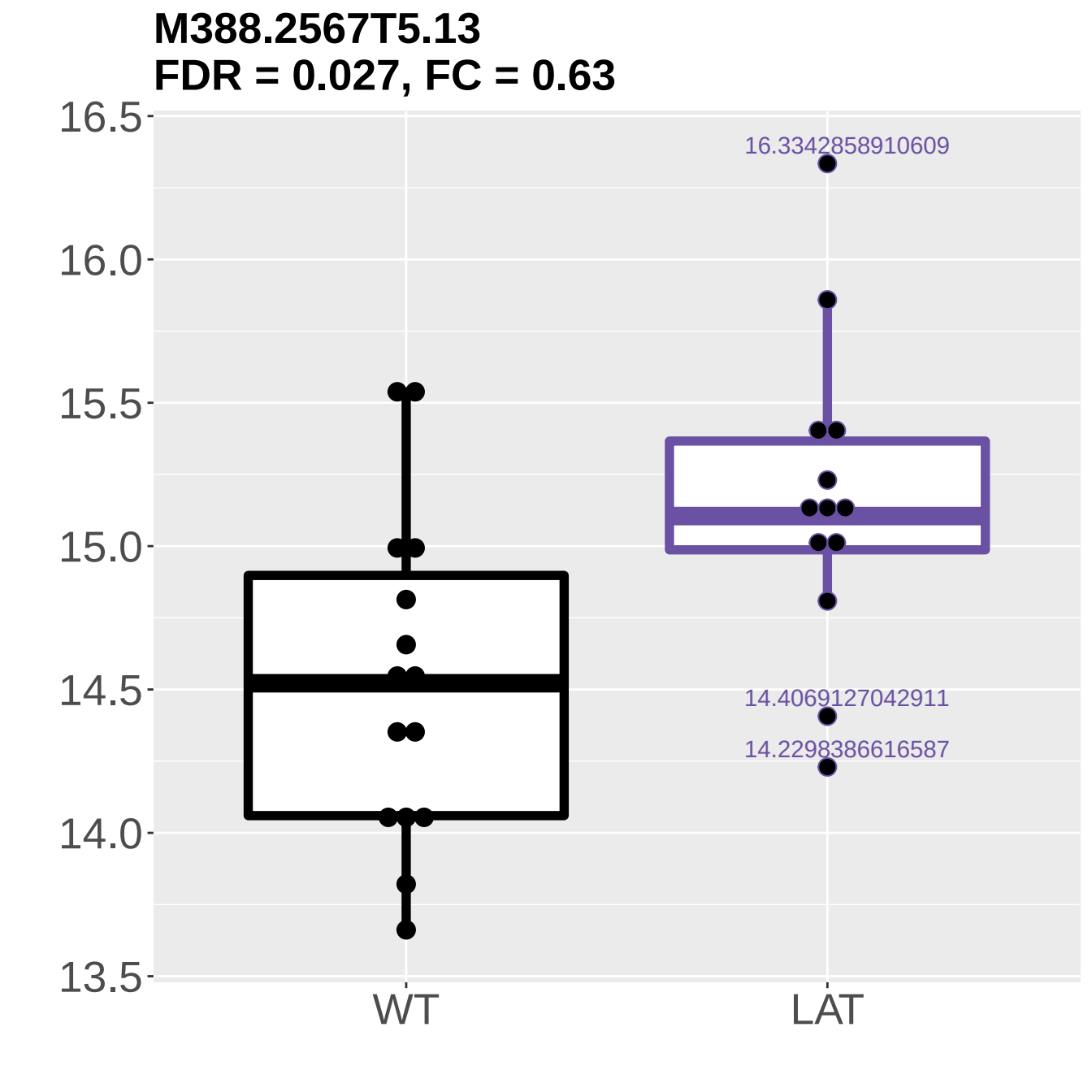
WT
LAT


M388.2567T5.13
FDR = 0.027, FC = 0.63
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15.5
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14.0
13.5
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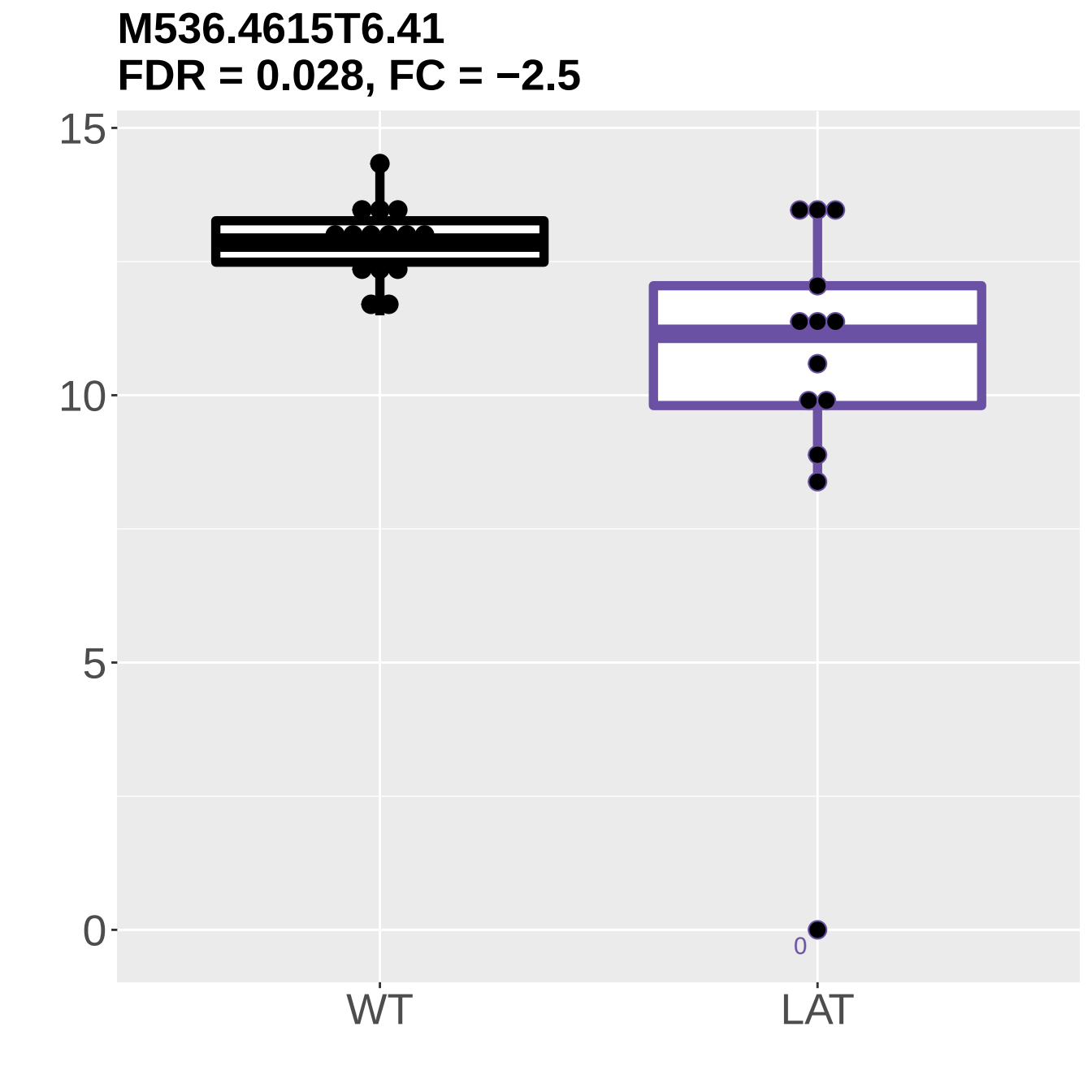
14.2298386616587
WT
LAT


M536.4615T6.41
FDR = 0.028, FC = −2.5
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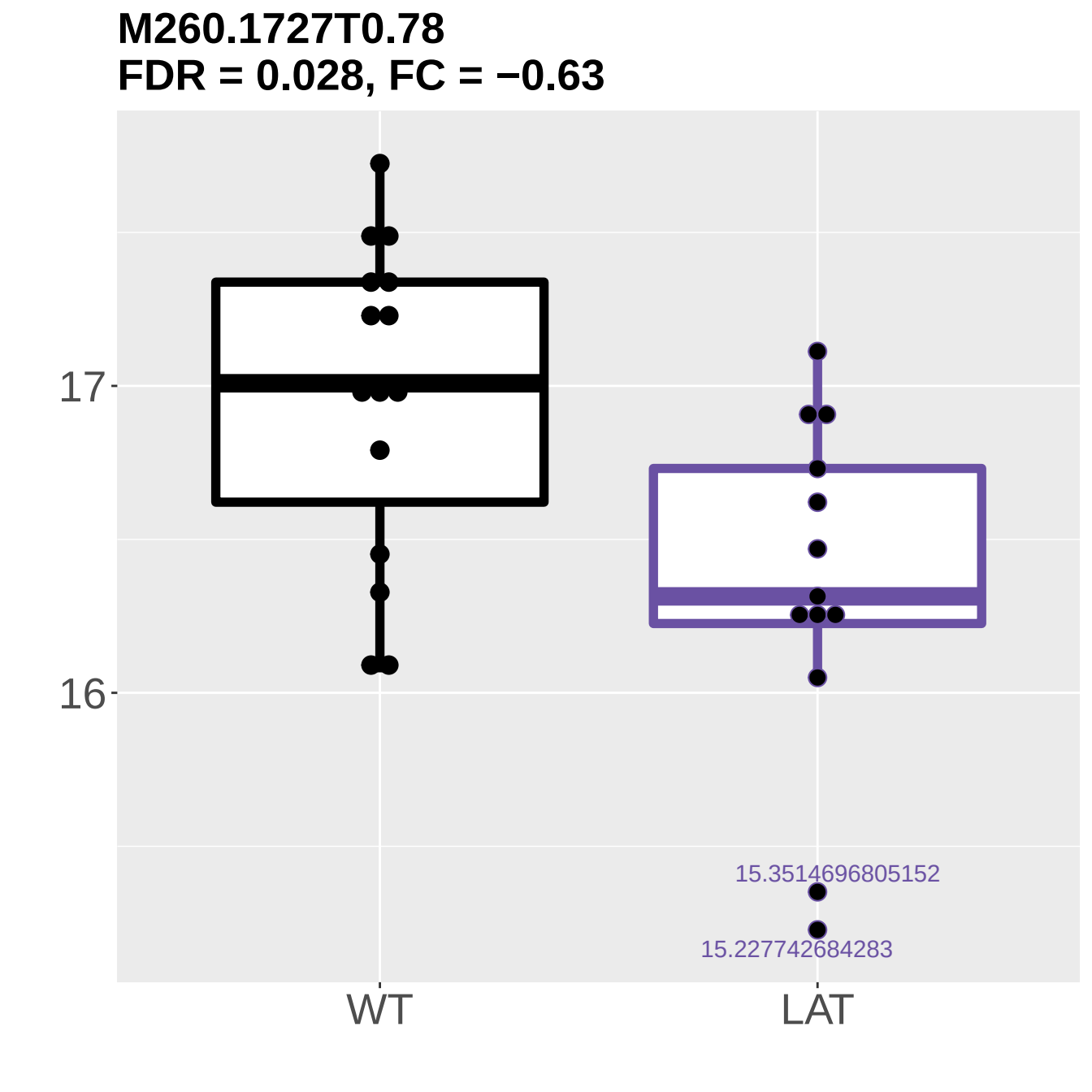
10
5
0
0
WT
LAT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FDR = 0.028, FC = −0.63
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16
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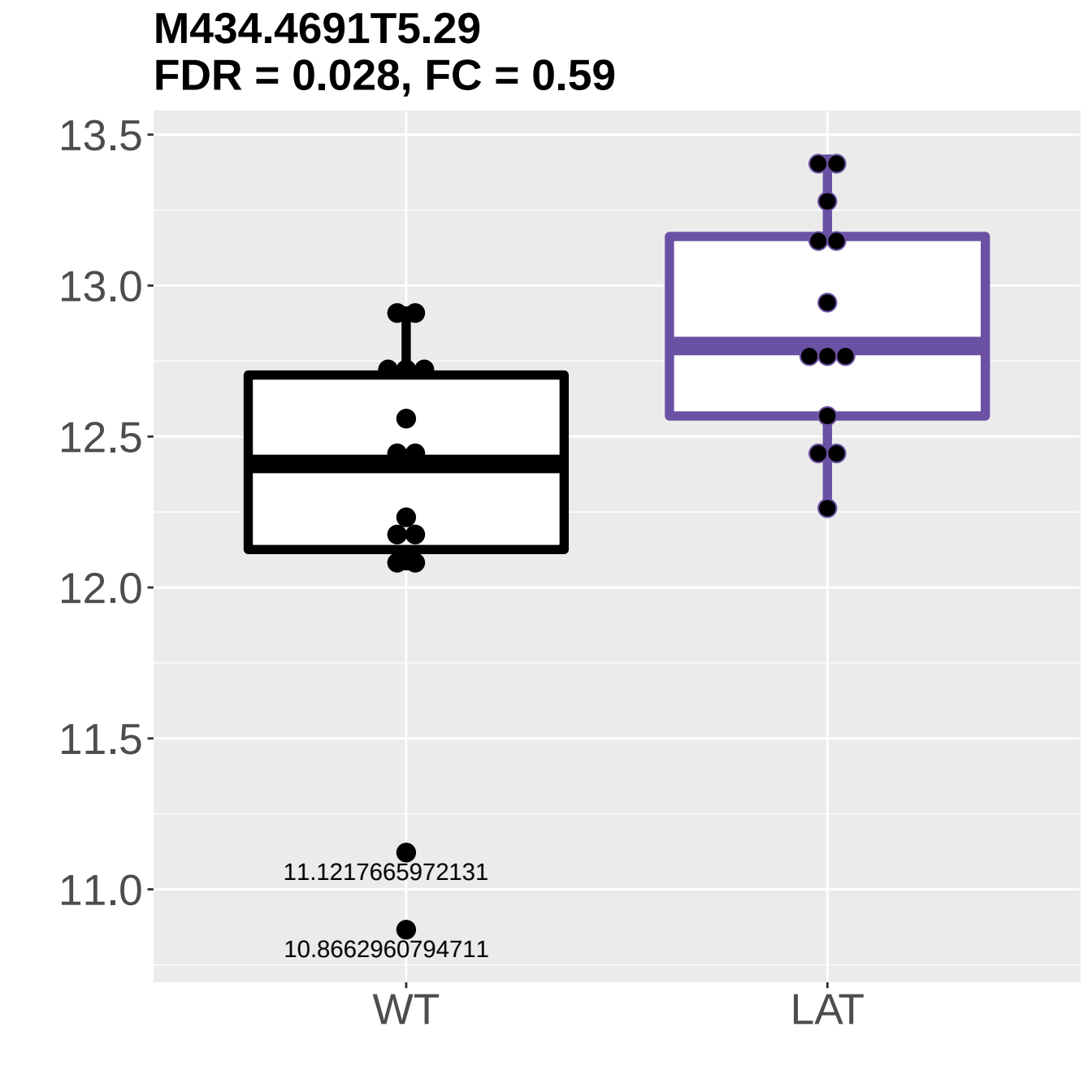
15.227742684283
WT
LAT


M434.4691T5.29
FDR = 0.028, FC = 0.59
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12.5
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11.5
11.0
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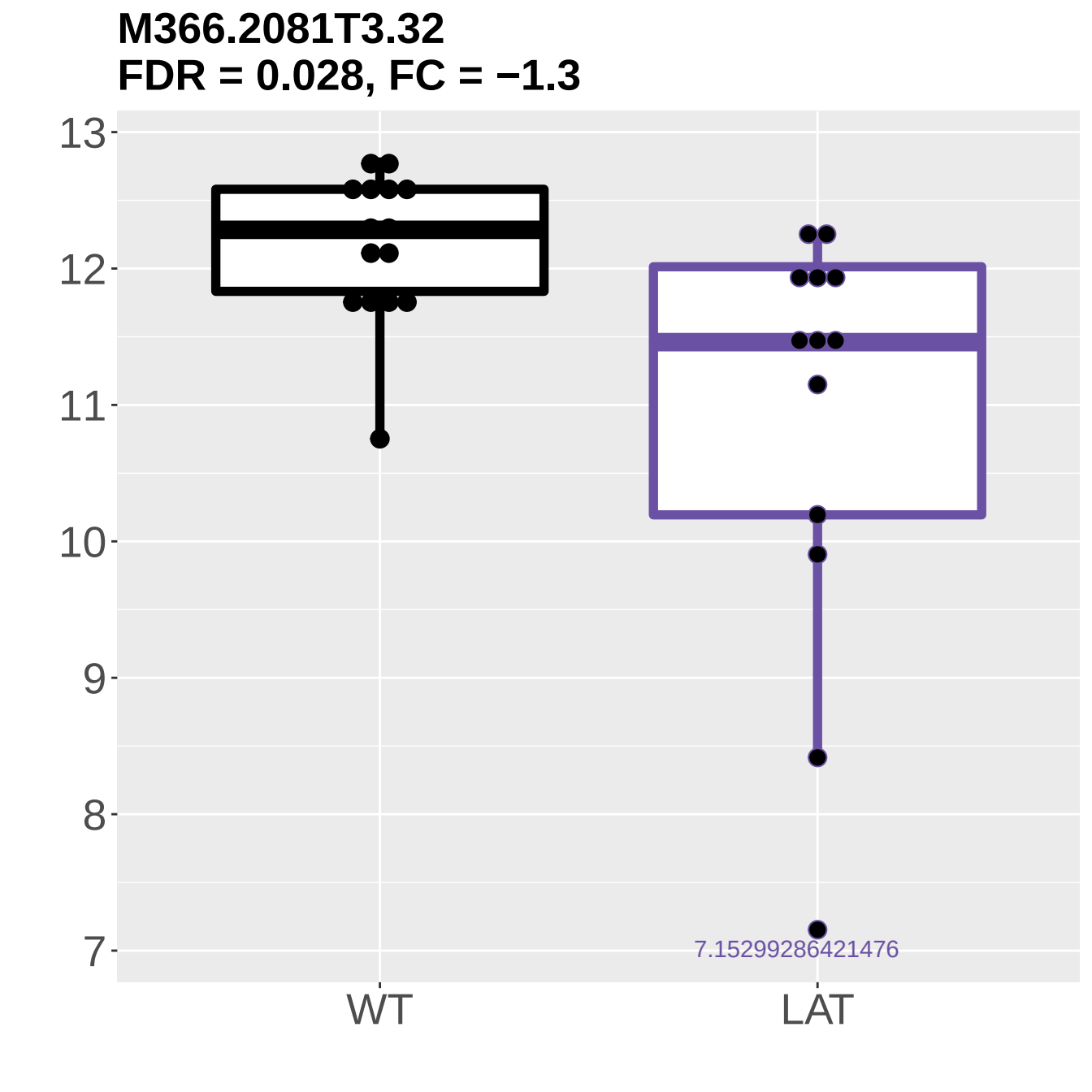
LAT


M366.2081T3.32
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13
12
11
10
9
8
7
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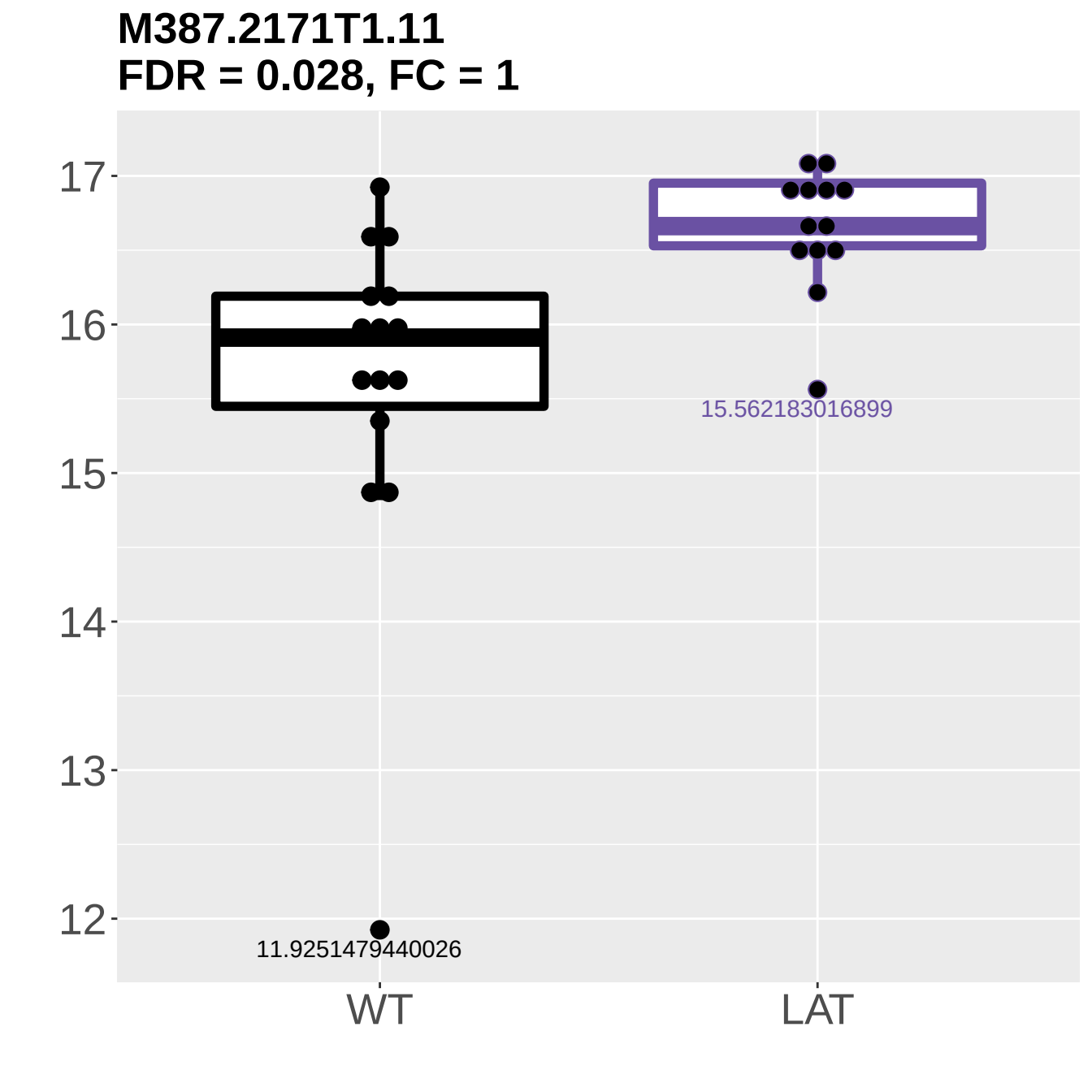
WT
LAT


M387.2171T1.11
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14
13
12
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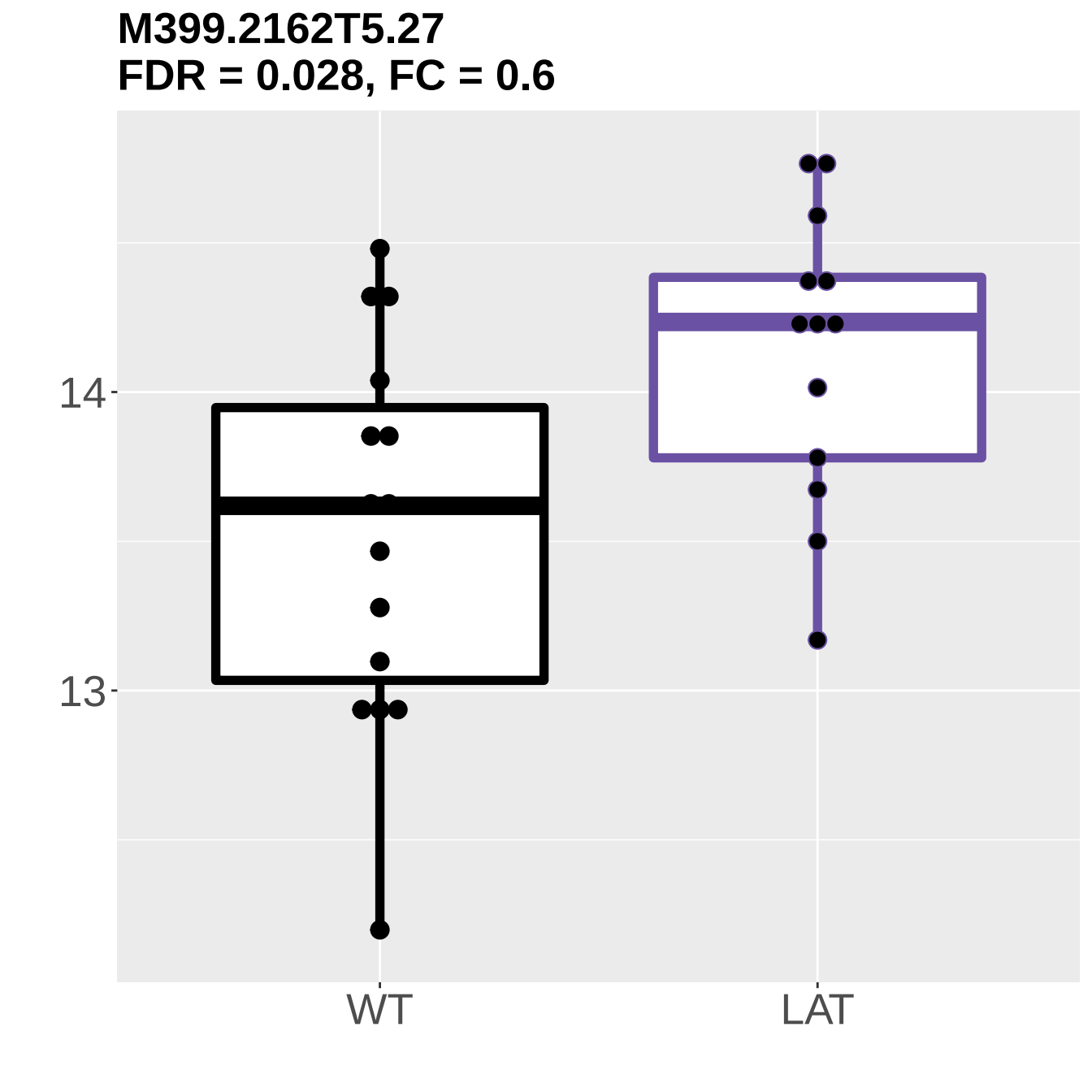
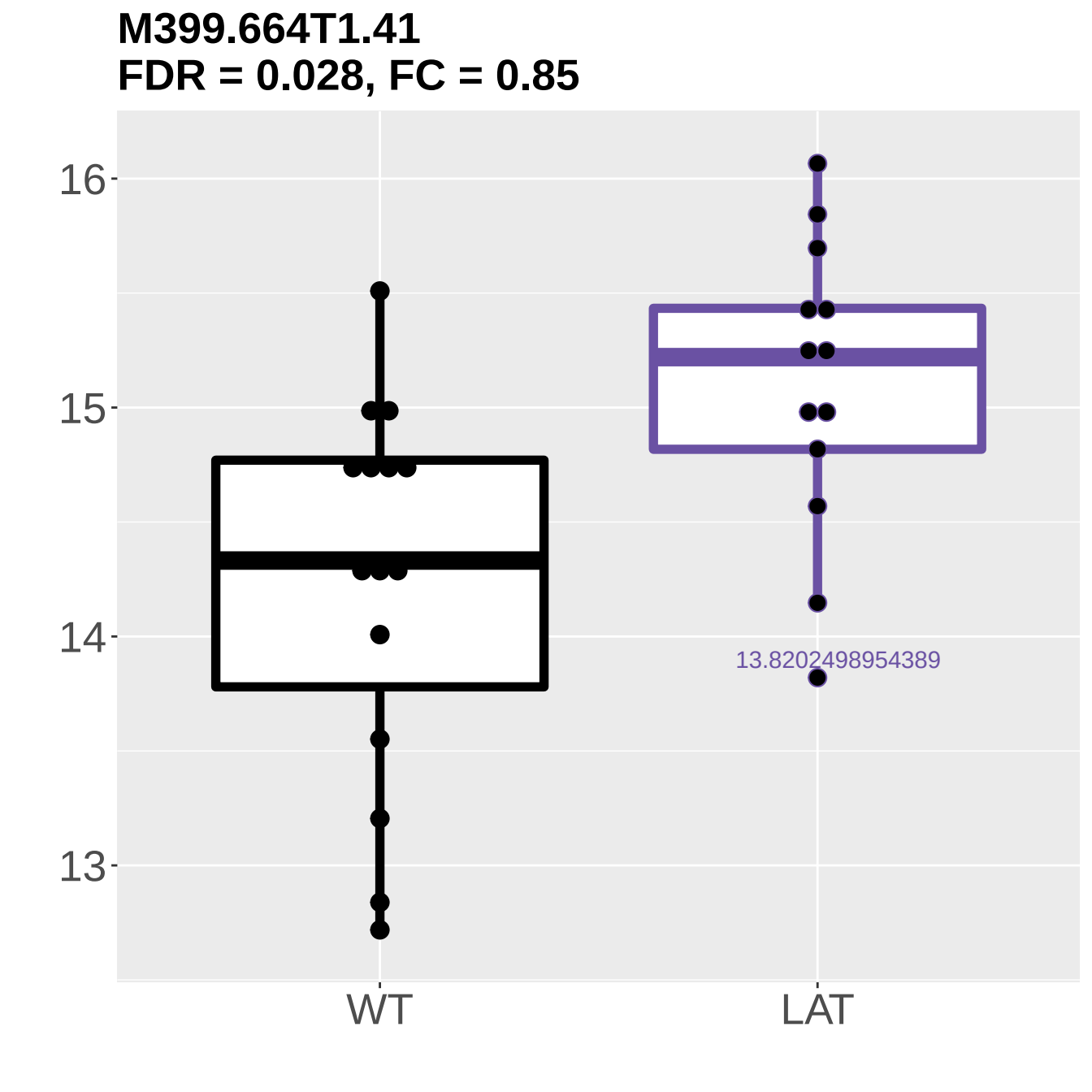
11.9251479440026
WT
LAT


M399.2162T5.27
FDR = 0.028, FC = 0.6
14
13
WT
LAT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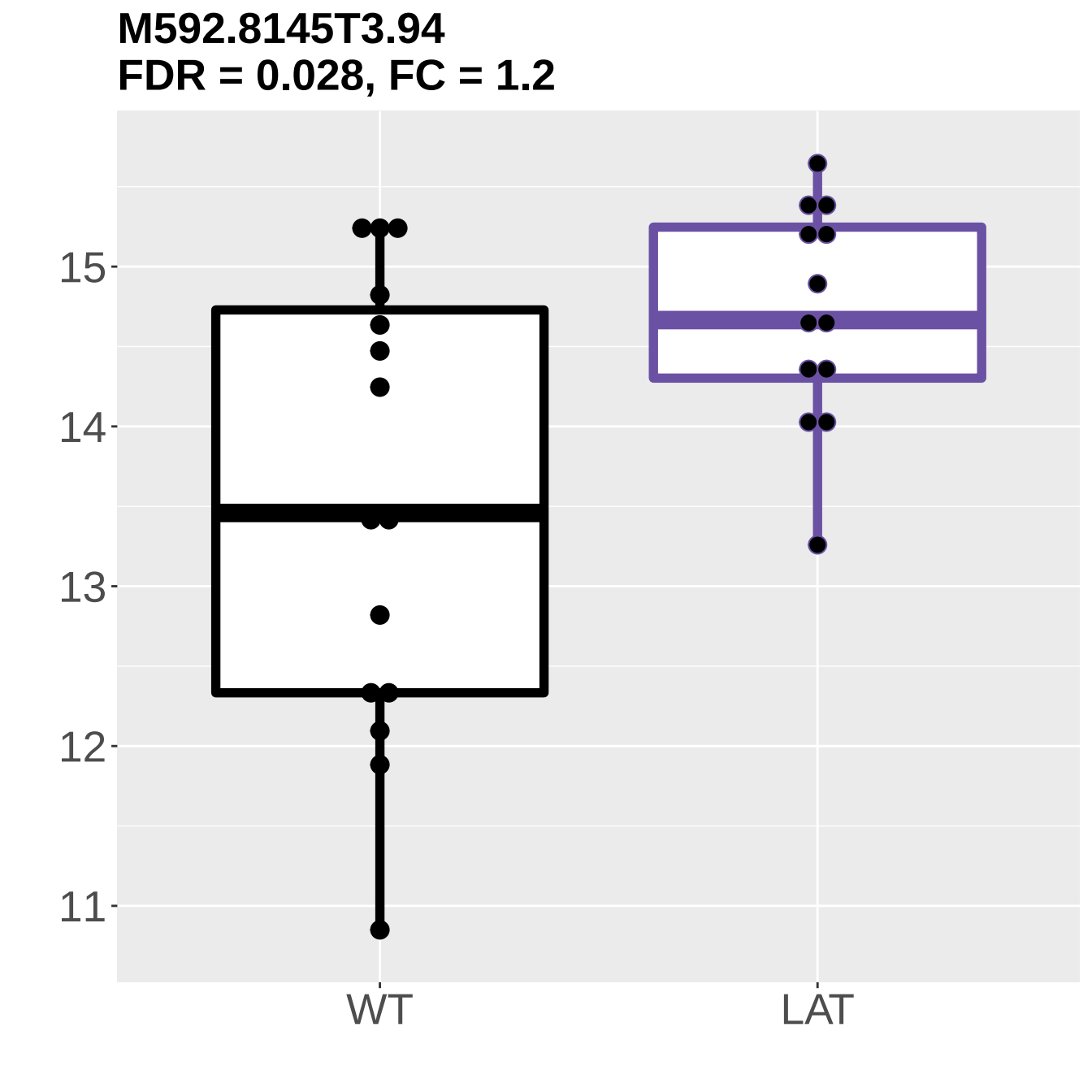
WT
LAT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FDR = 0.028, FC = 1.2
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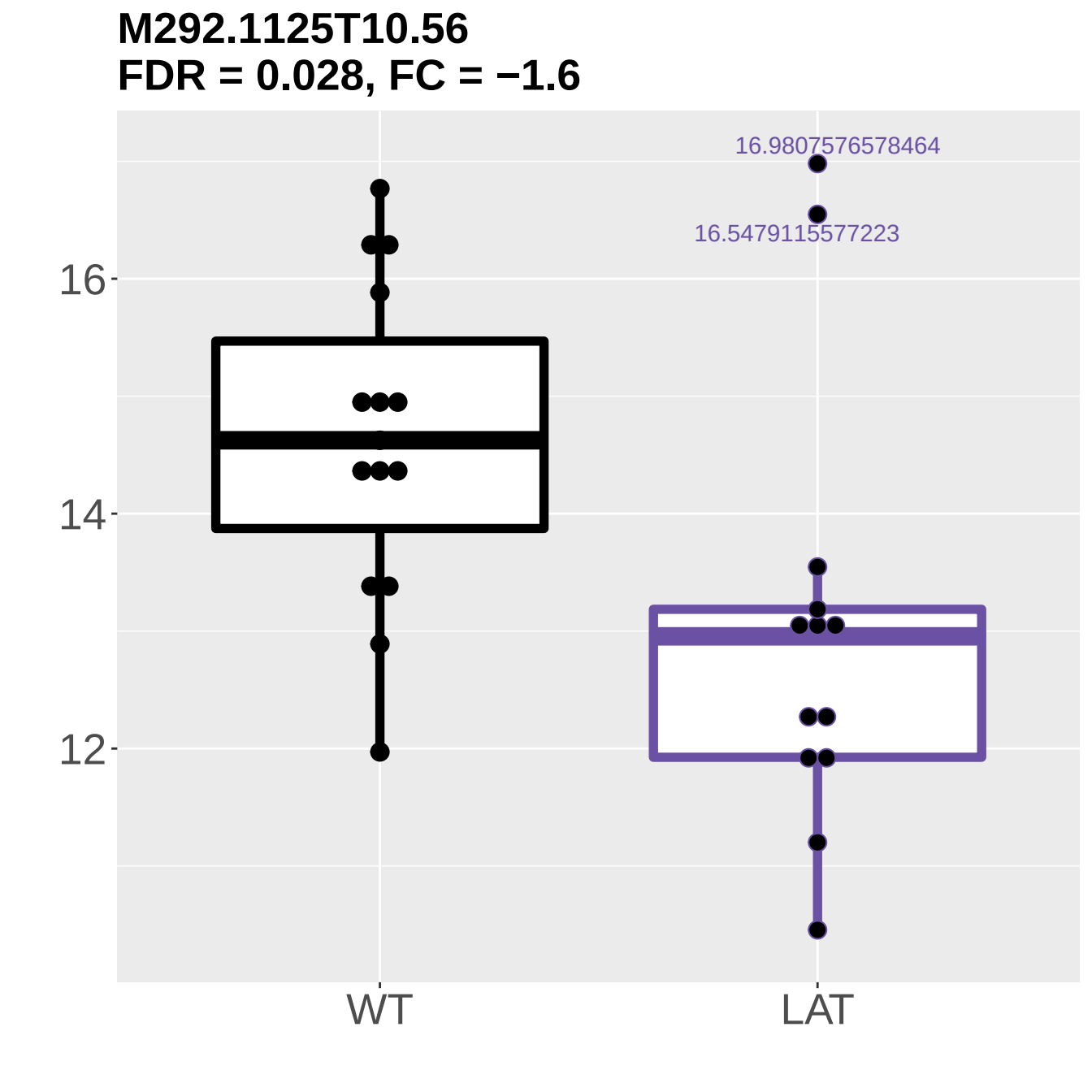
WT
LAT


M292.1125T10.56
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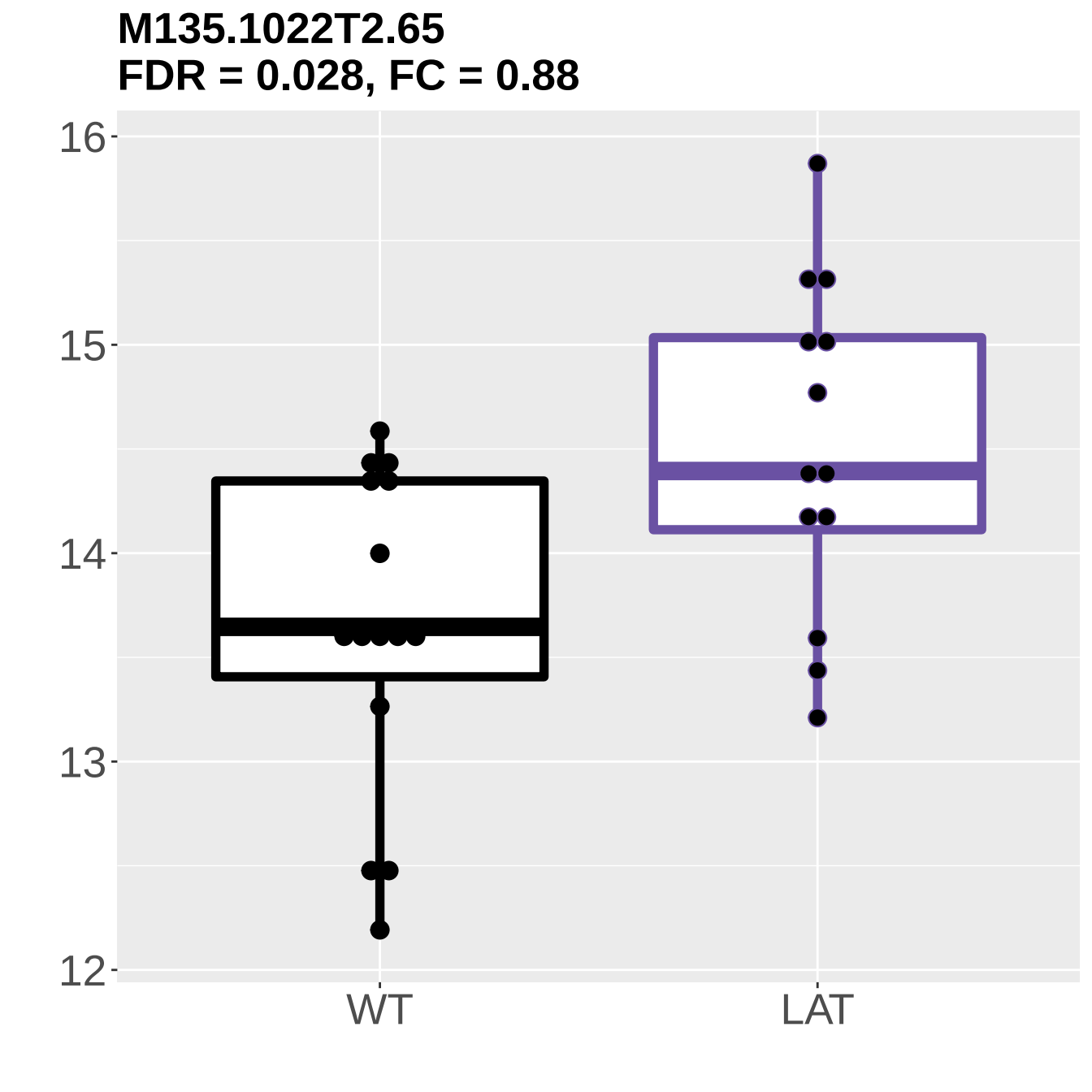
WT
LAT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FDR = 0.028, FC = 0.88
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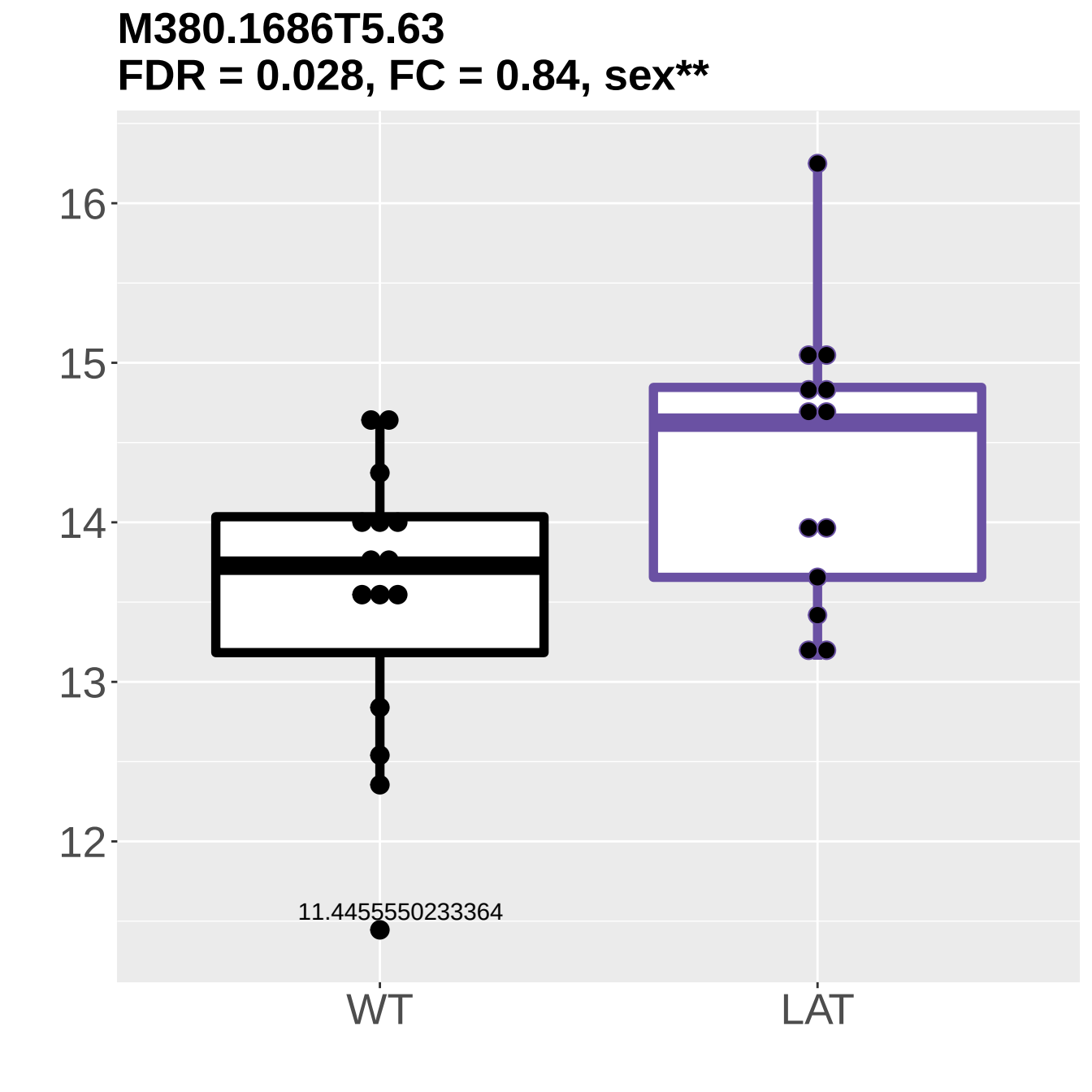
14
13
12
WT
LAT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15
14
13
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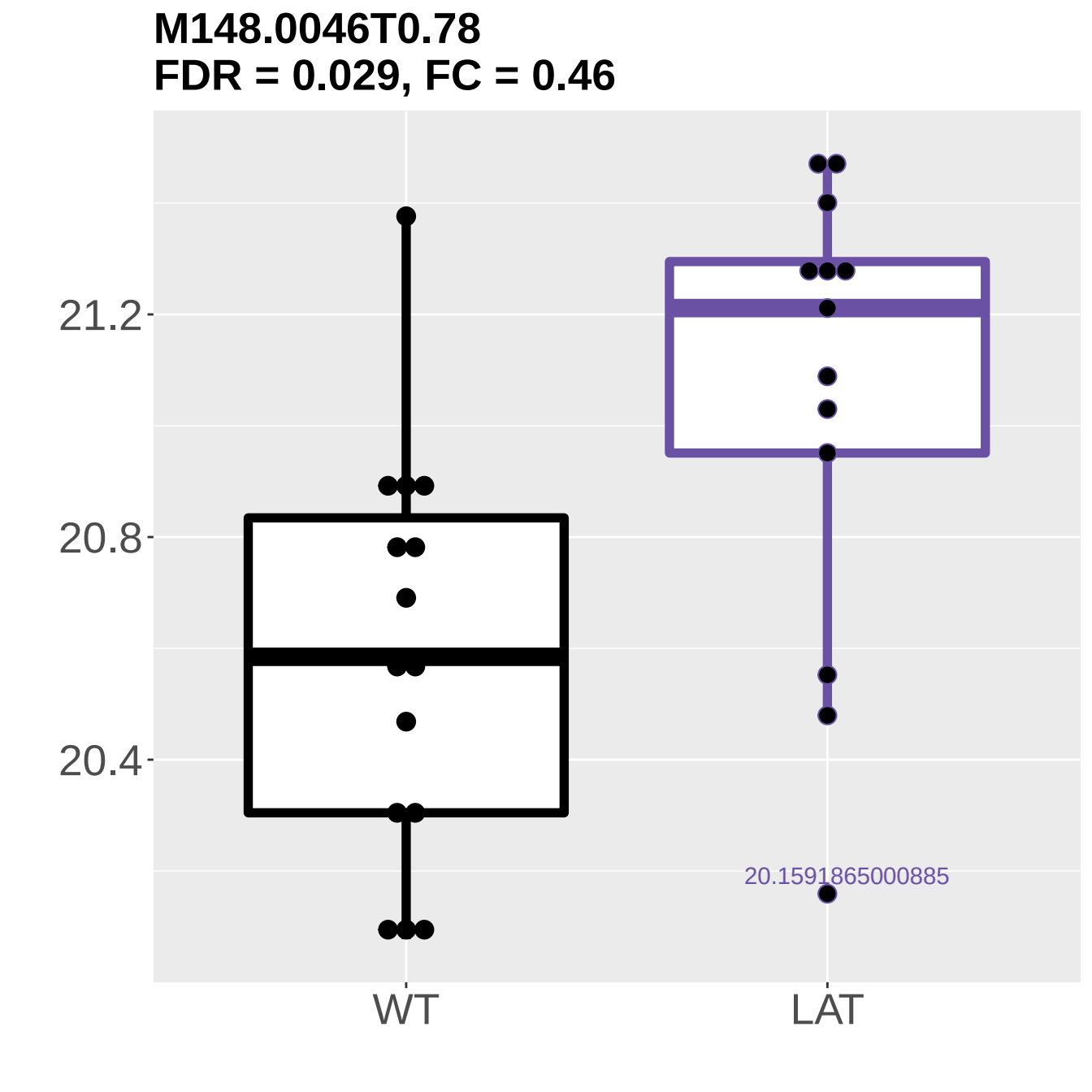
WT
LAT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WT
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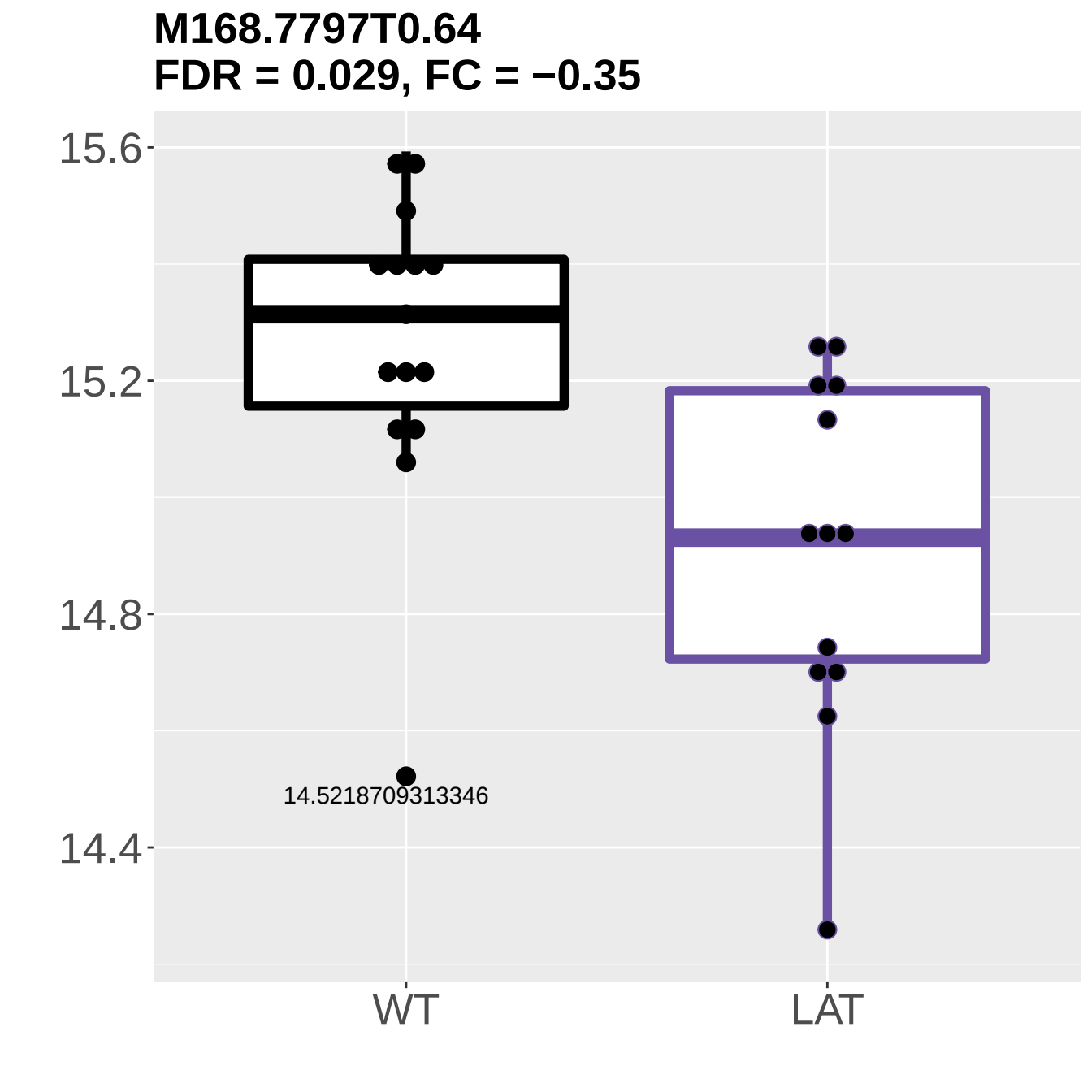
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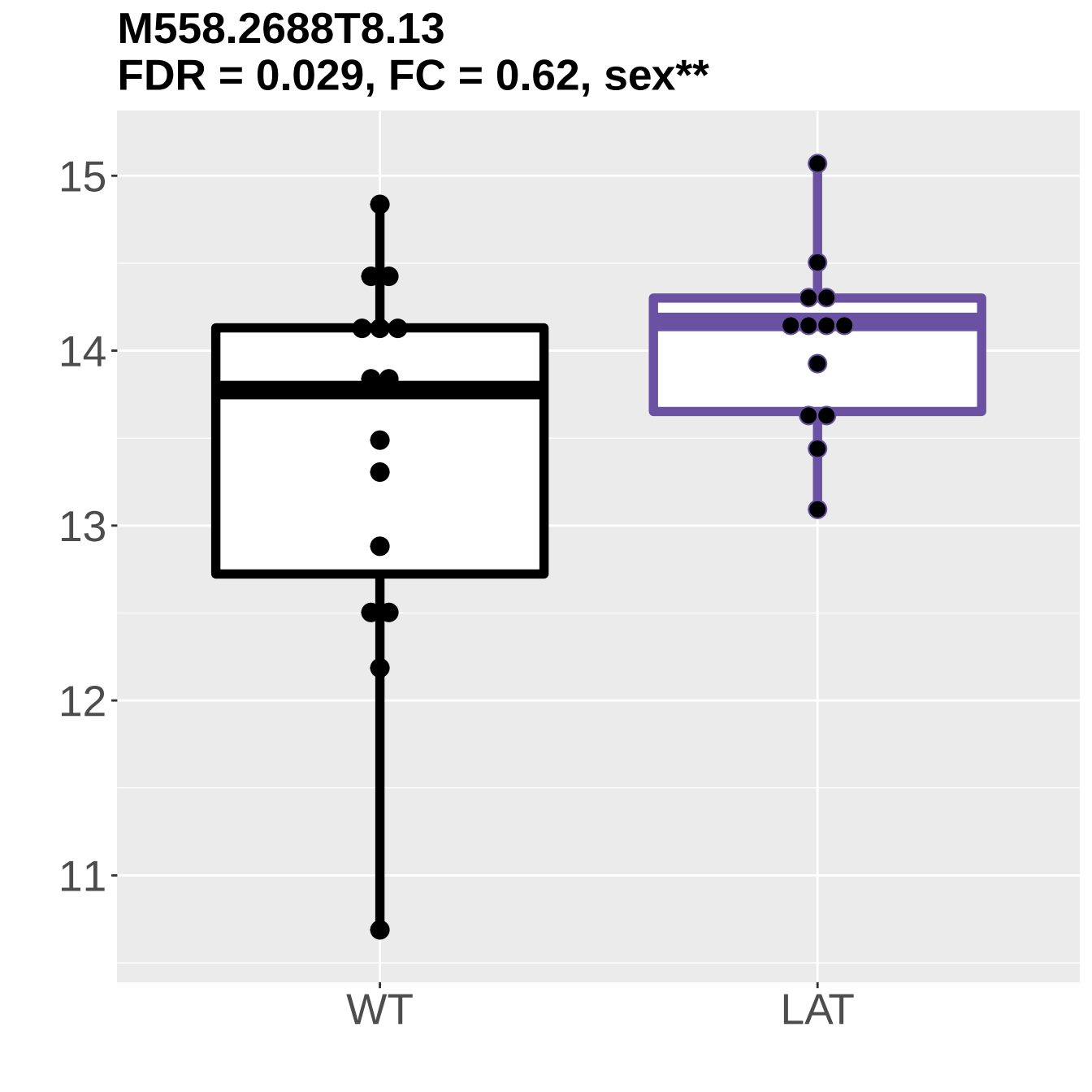
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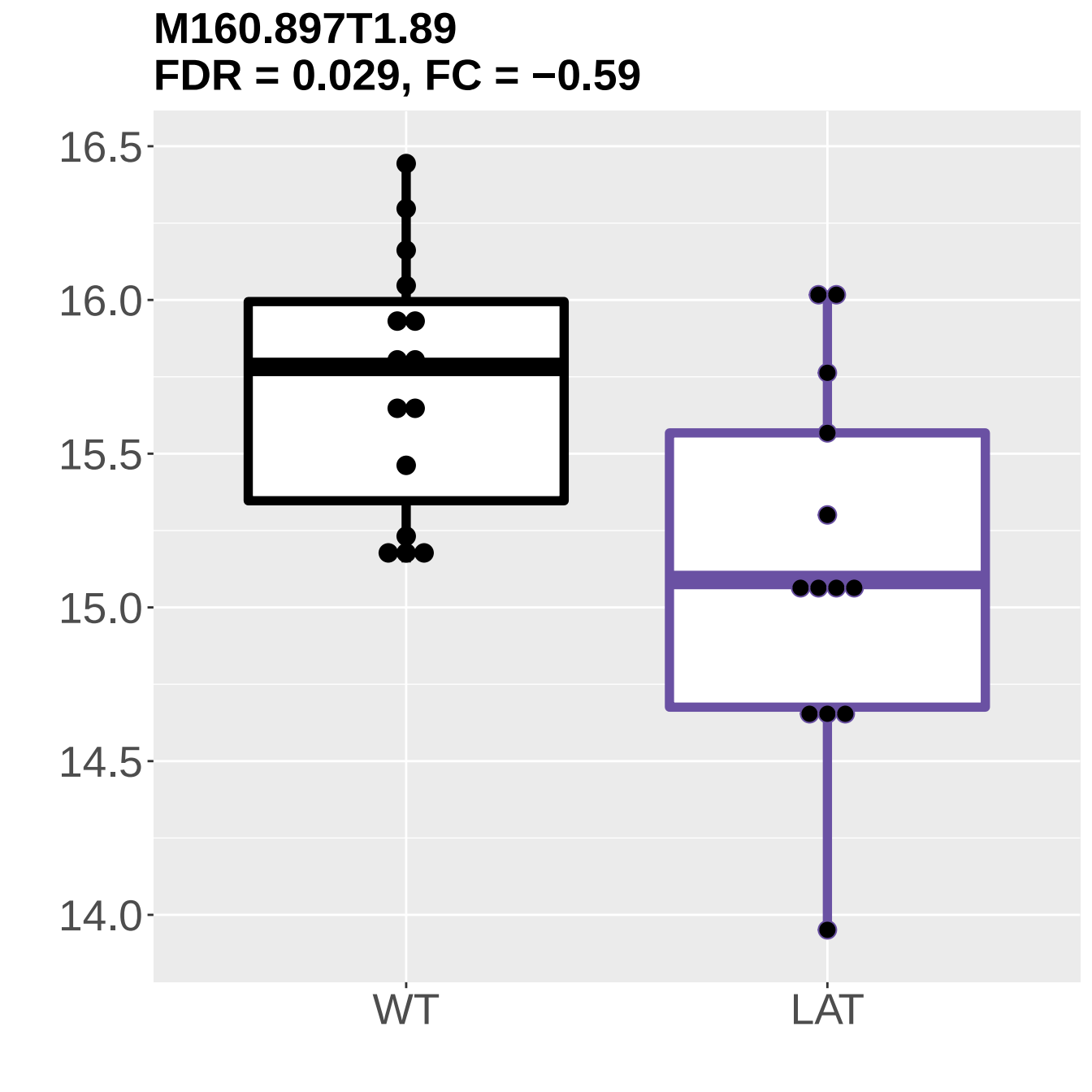
14
13
12
11
WT
LAT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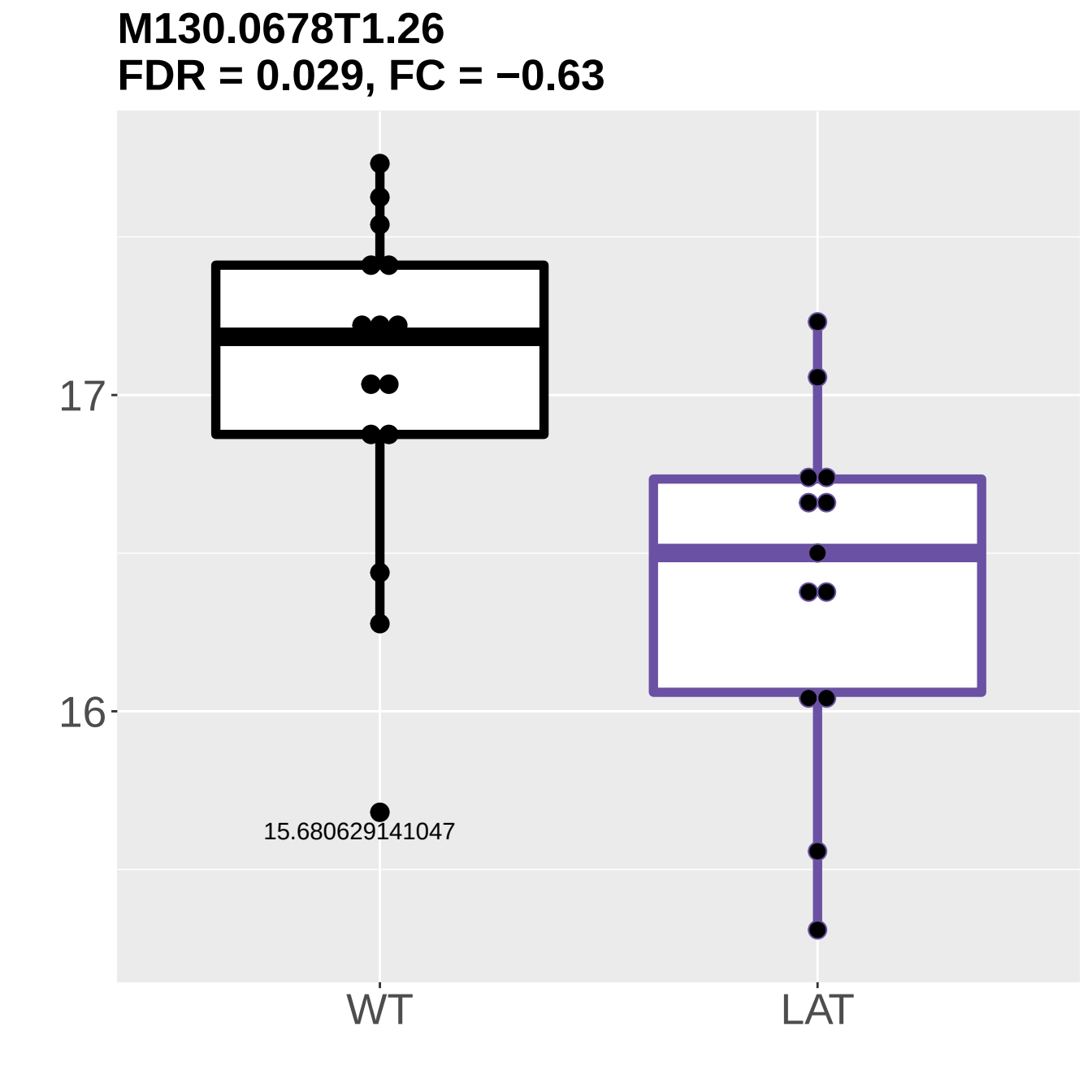
15.0
14.5
14.0
WT
LAT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16
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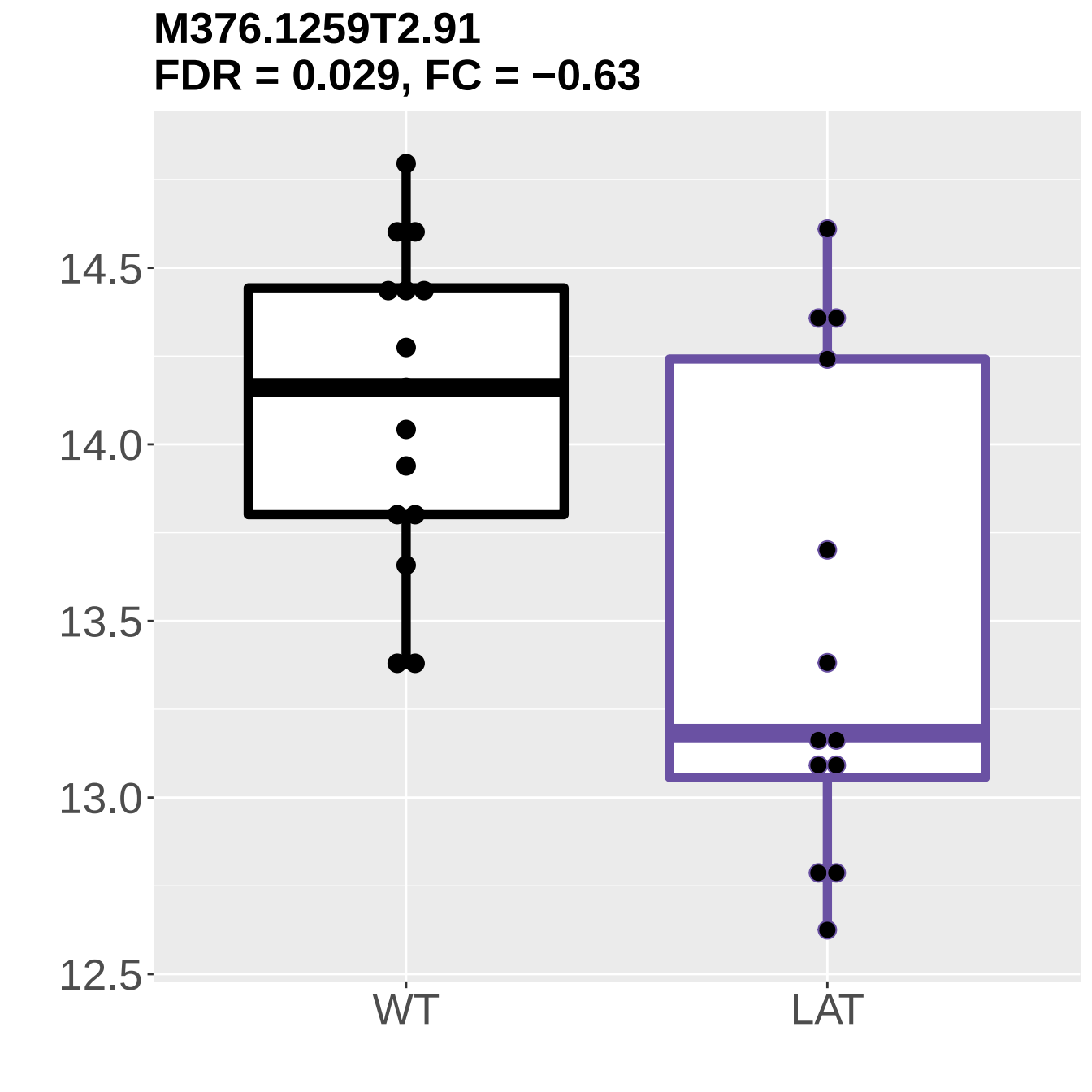
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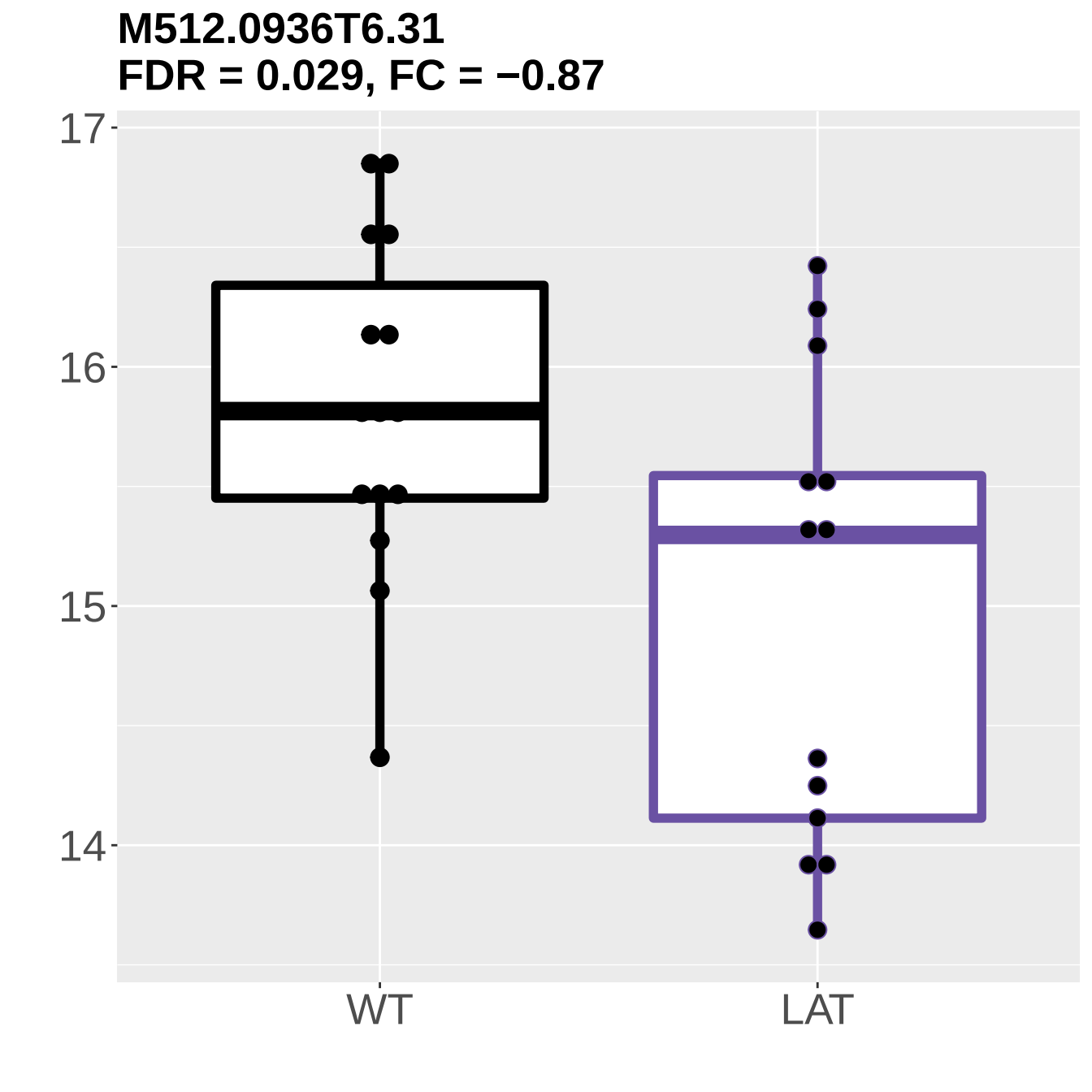
13.0
12.5
WT
LAT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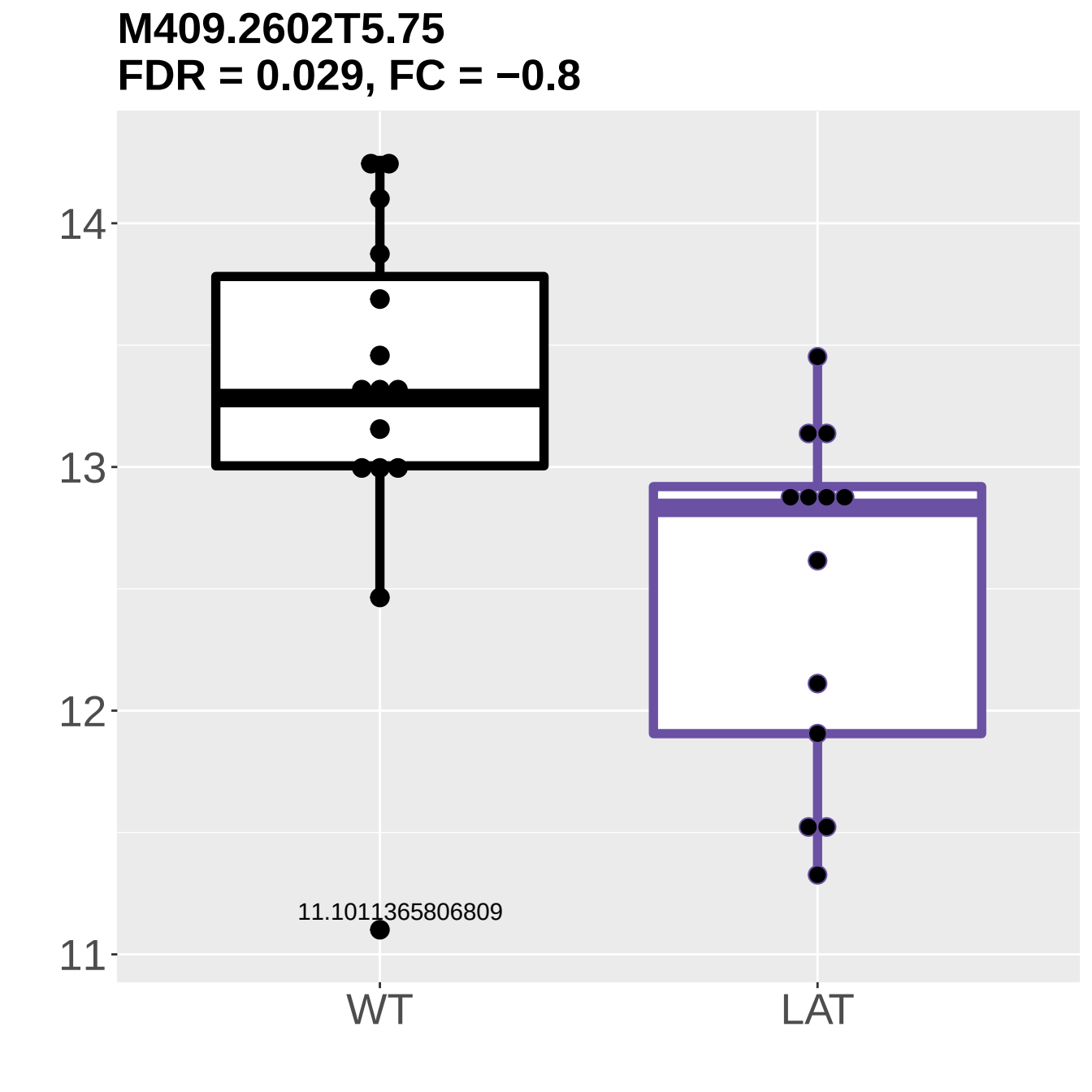
16
15
14
WT
LAT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13
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11
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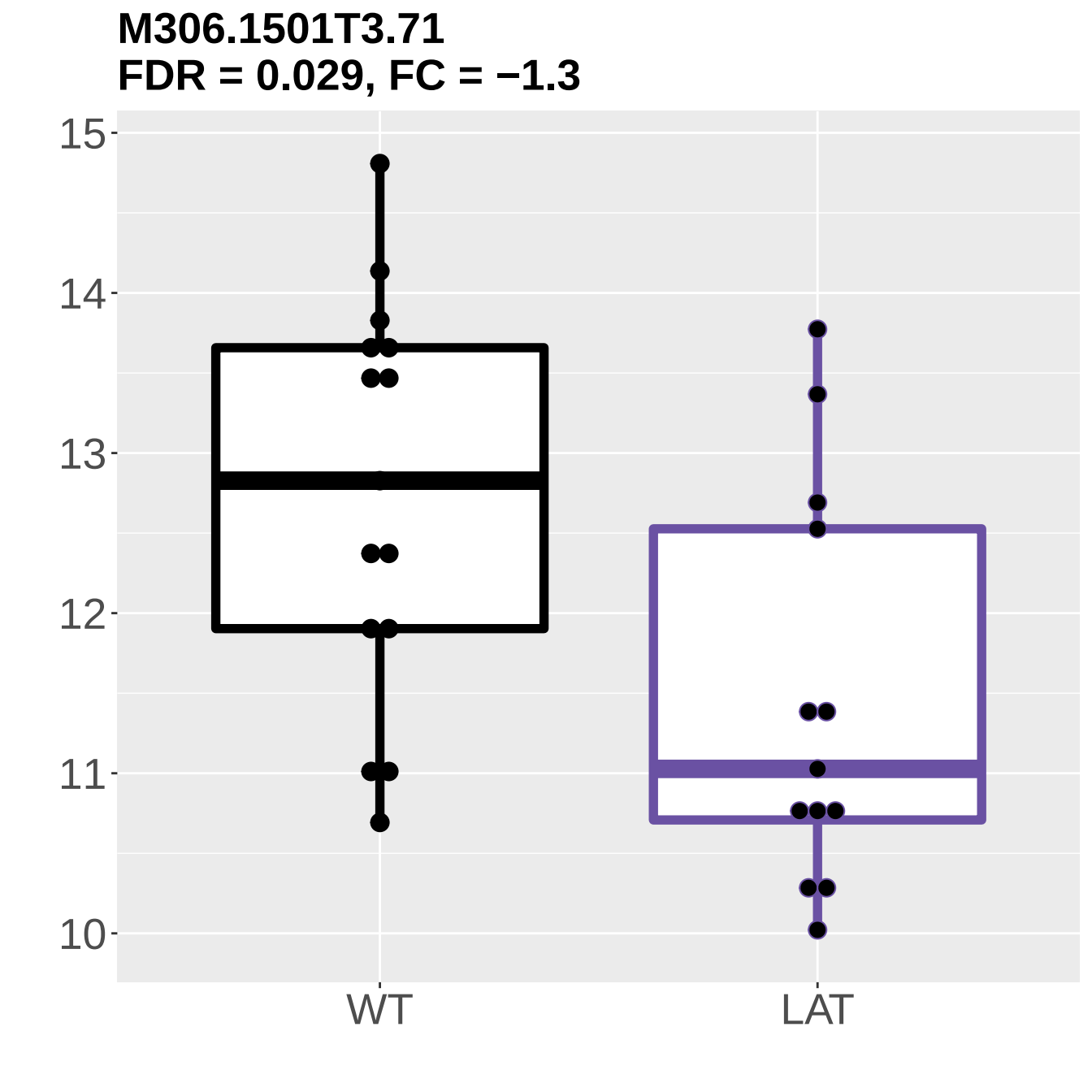
WT
LAT


M306.1501T3.71
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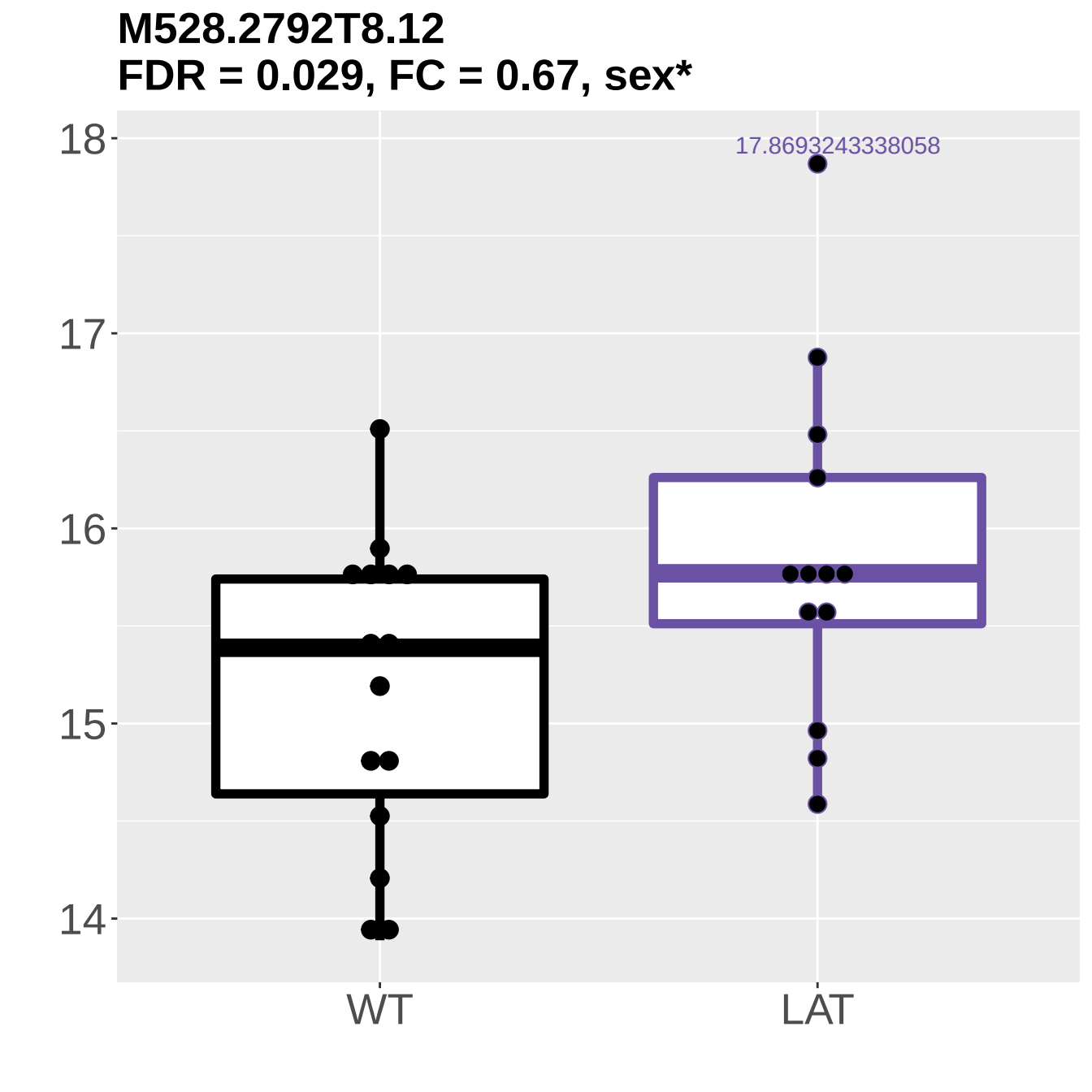
14
13
12
11
10
WT
LAT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16
15
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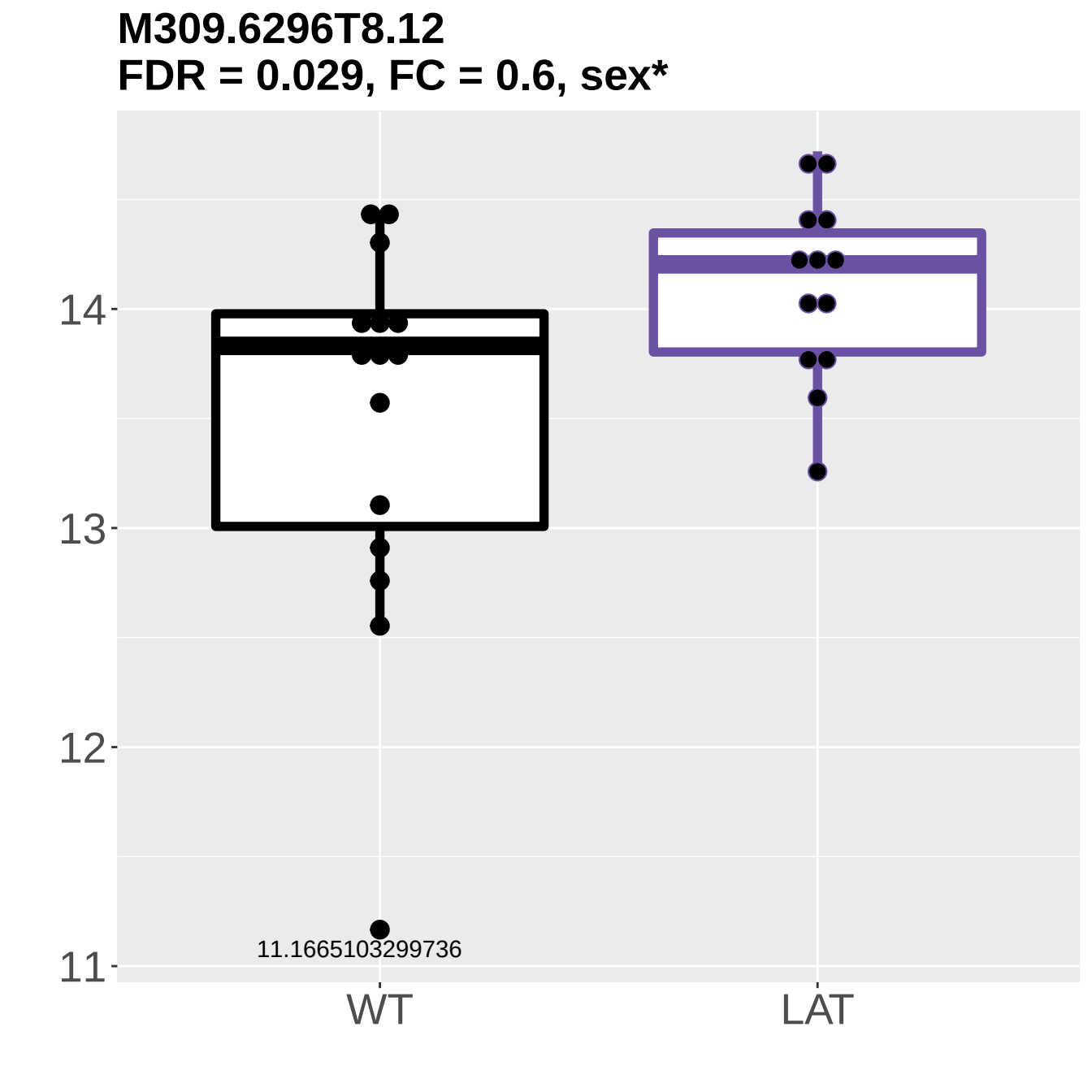
WT
LAT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13
12
11
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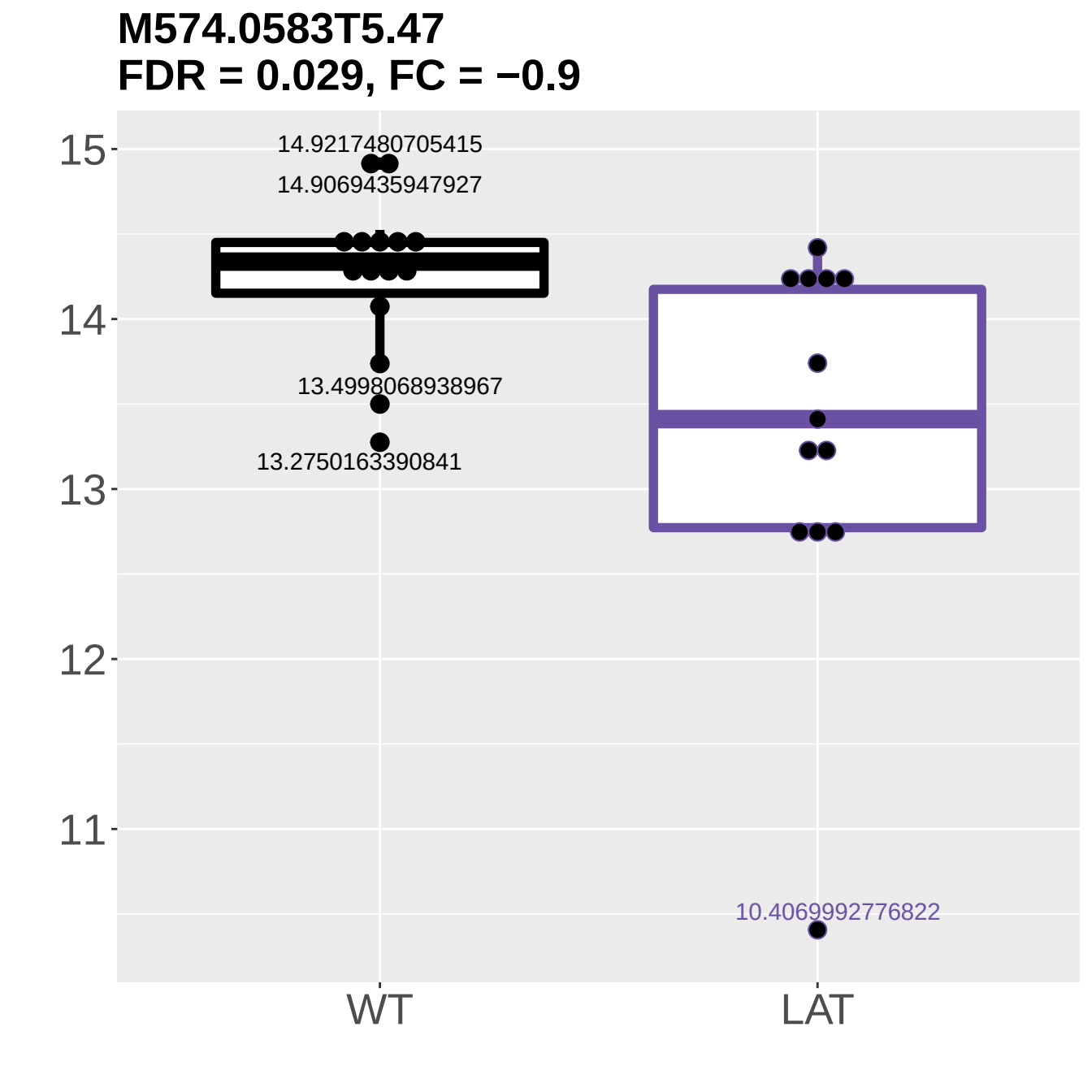
WT
LAT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14
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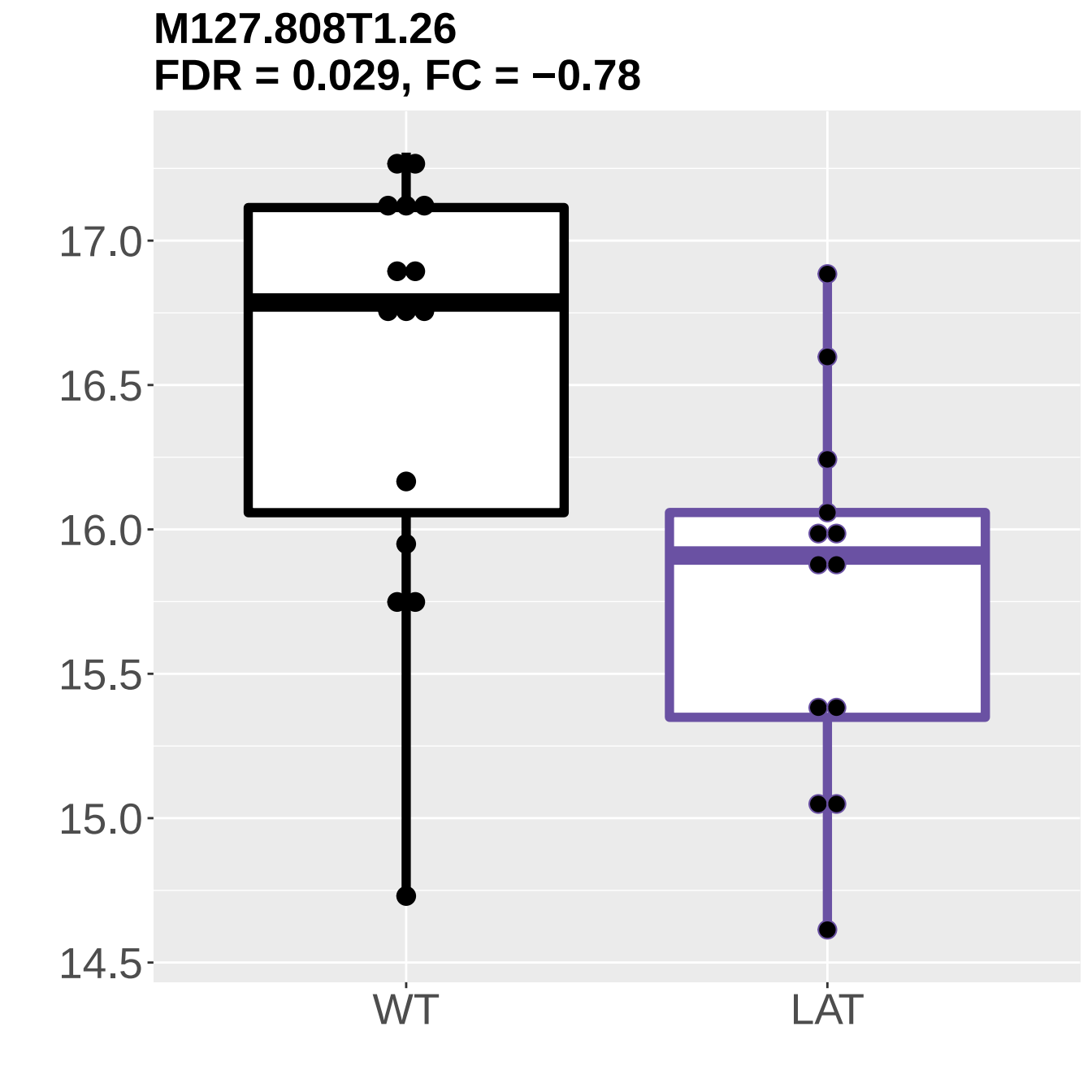
WT
LAT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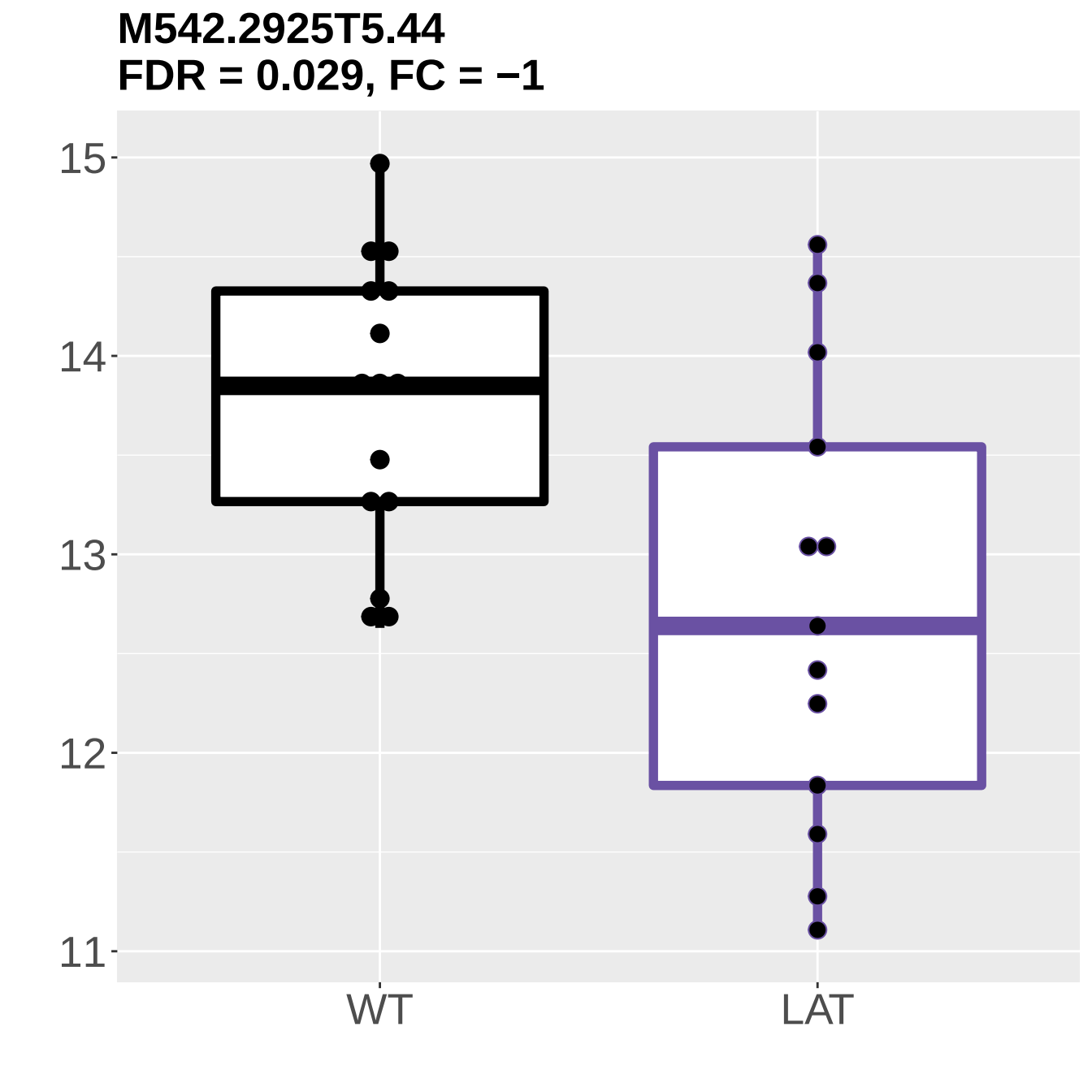
15.0
14.5
WT
LAT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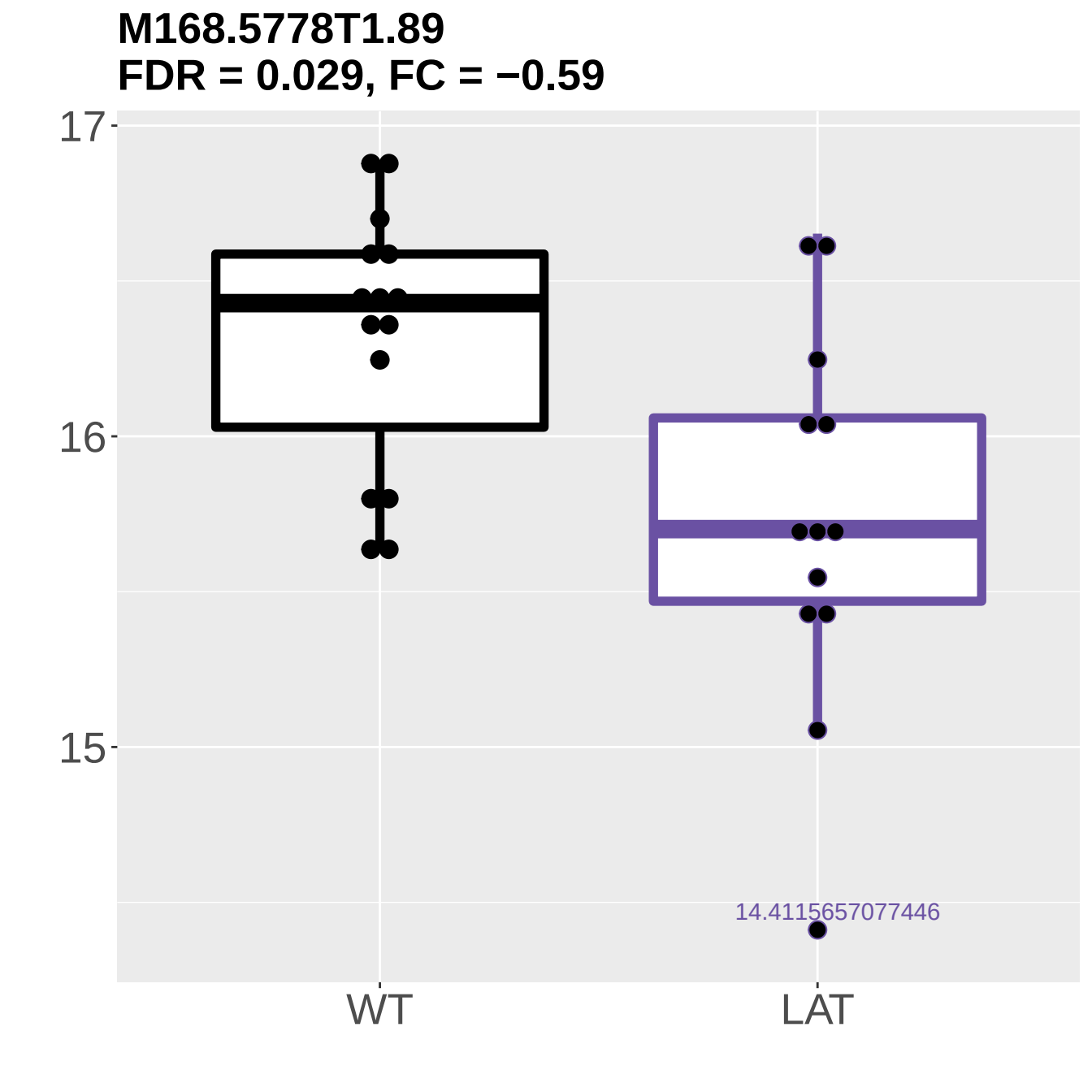
12
11
WT
LAT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16
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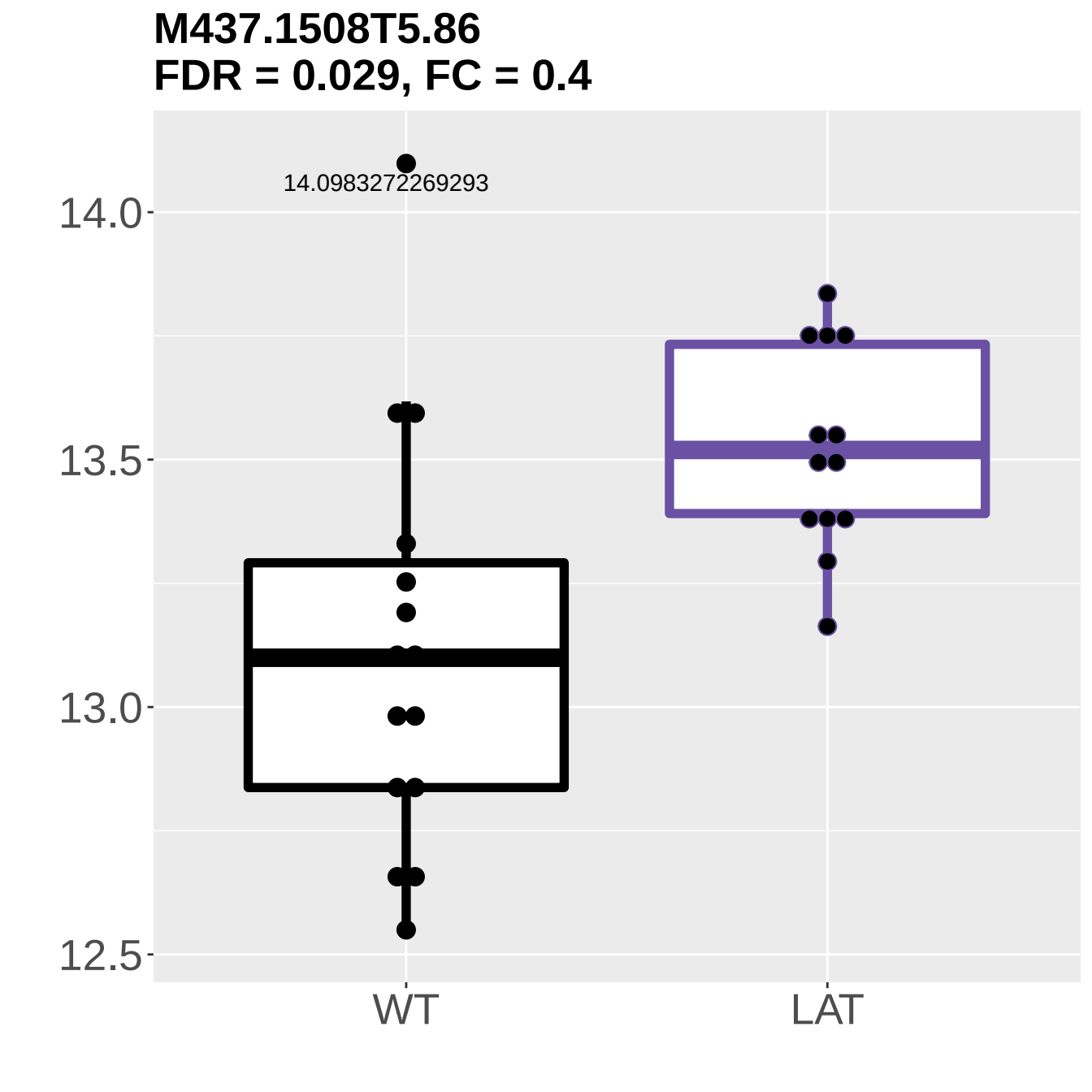
WT
LAT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13.0
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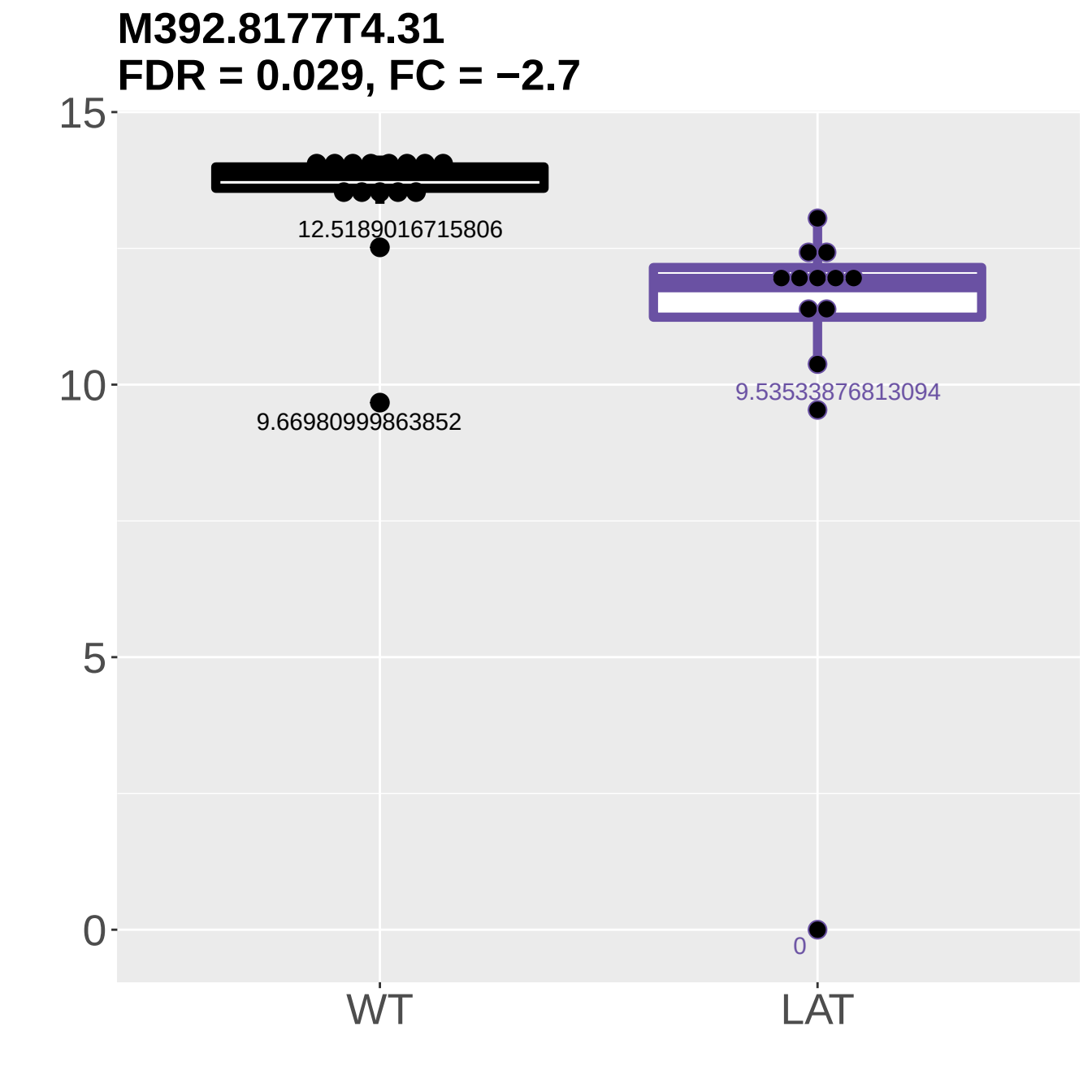
WT
LAT


M392.8177T4.31
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10
5
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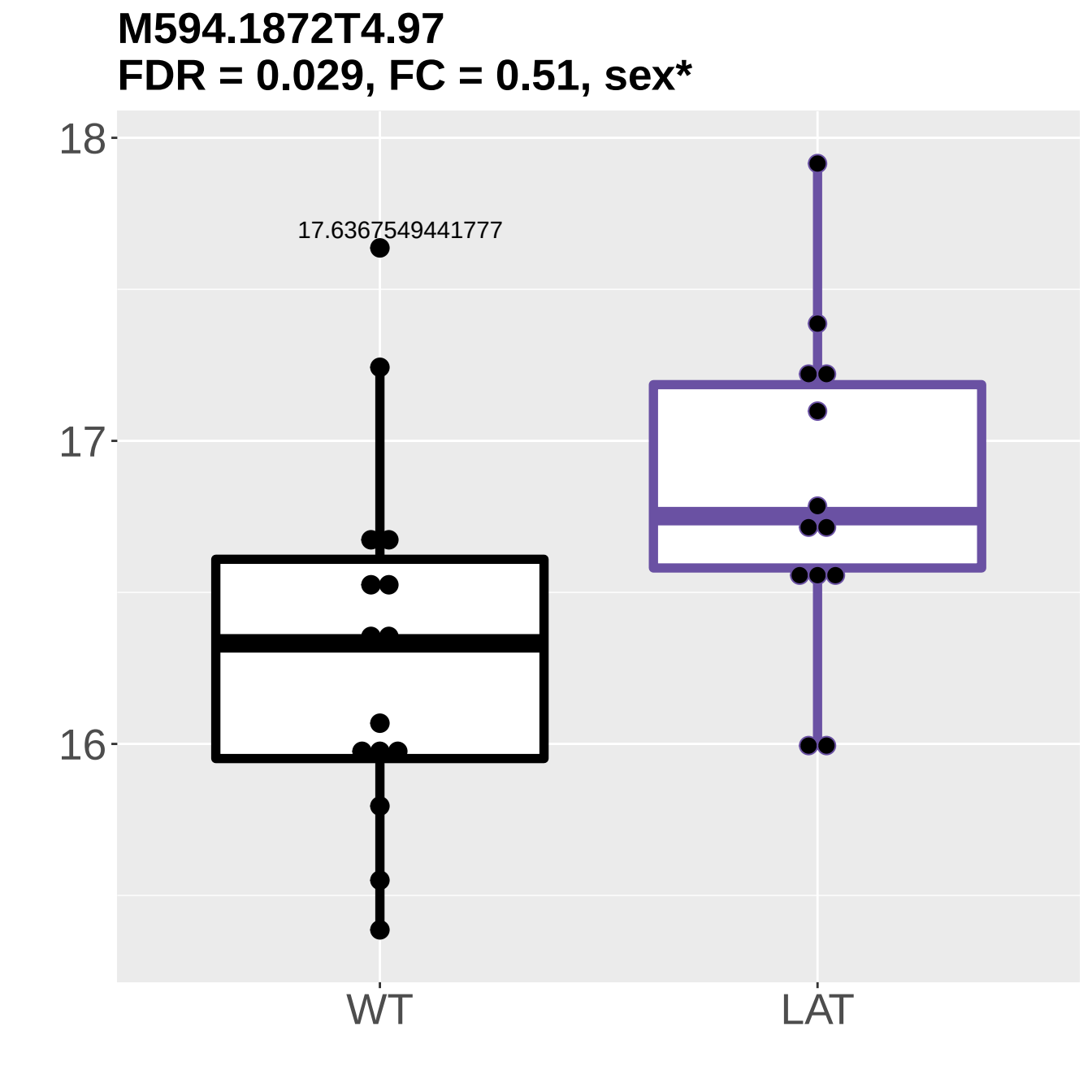
0
WT
LAT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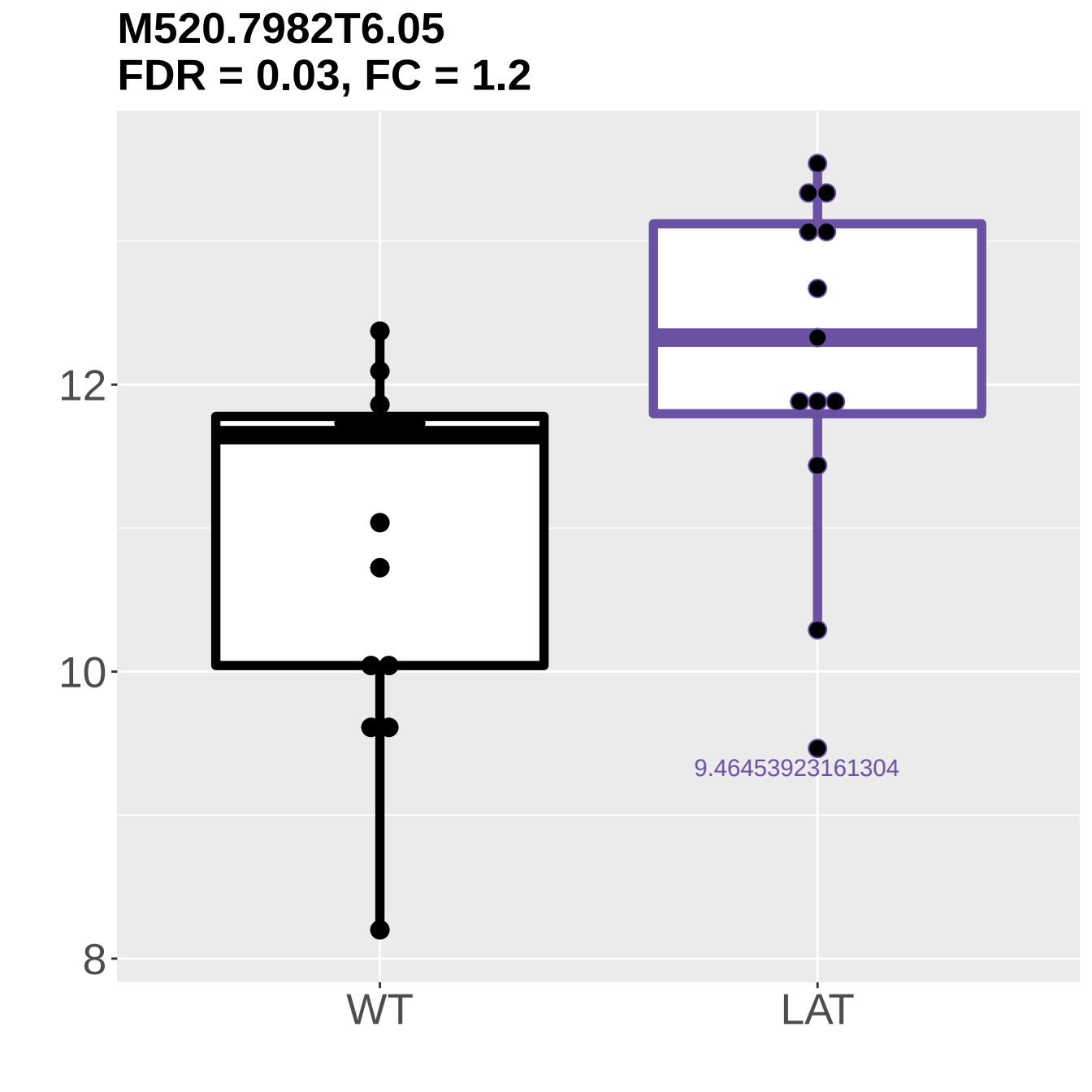
WT
LAT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10
8
WT
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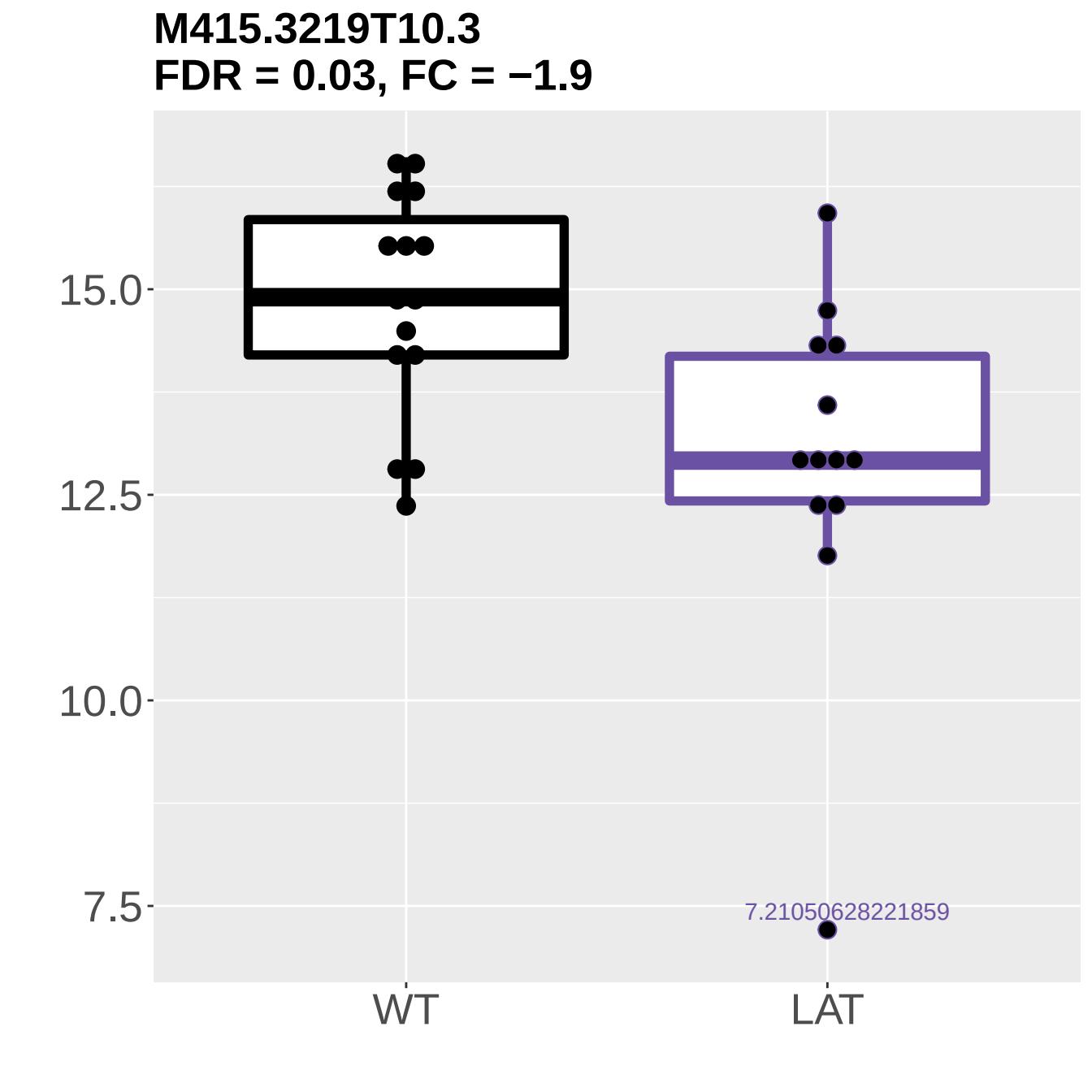
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7.5
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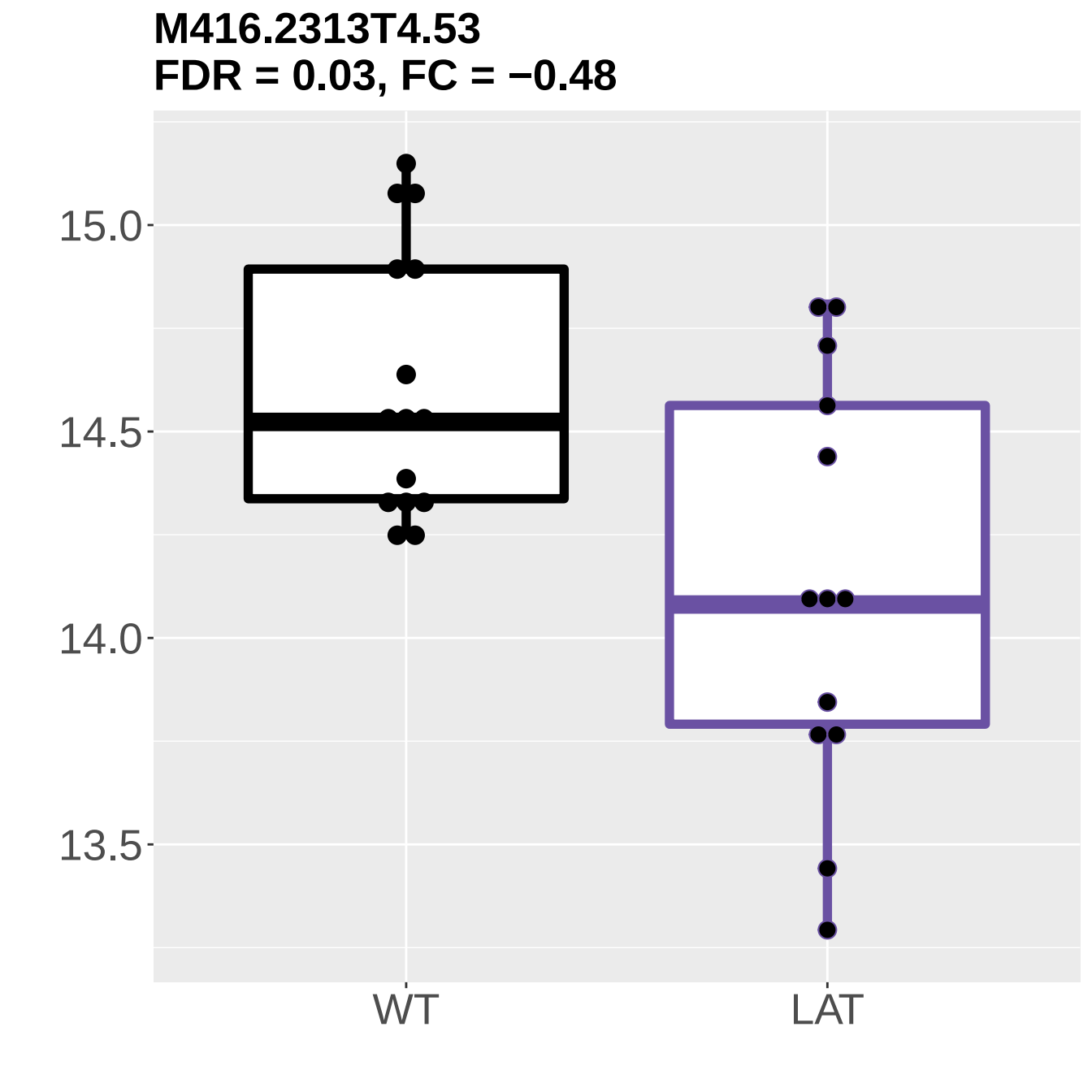
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FDR = 0.03, FC = −0.48
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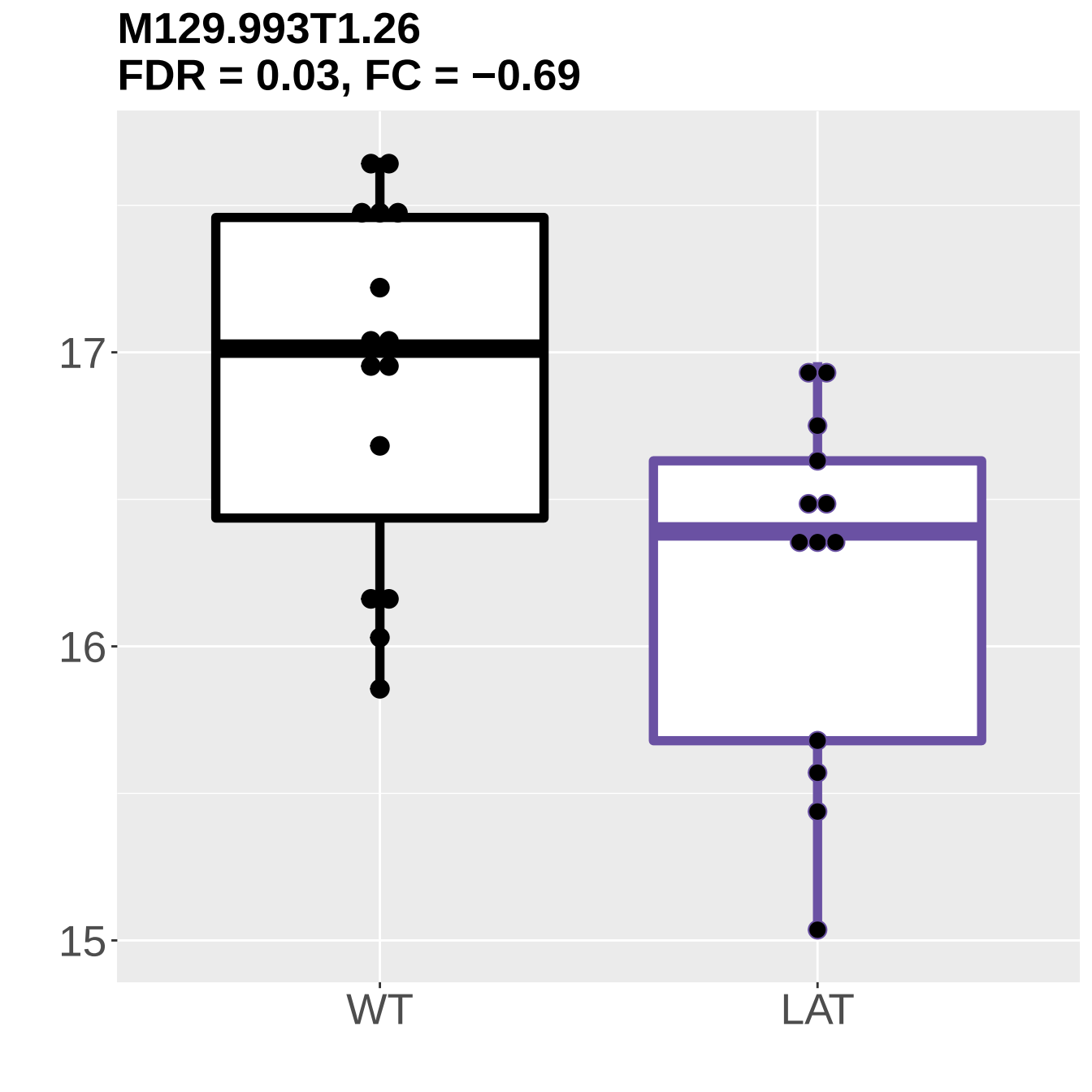
WT
LAT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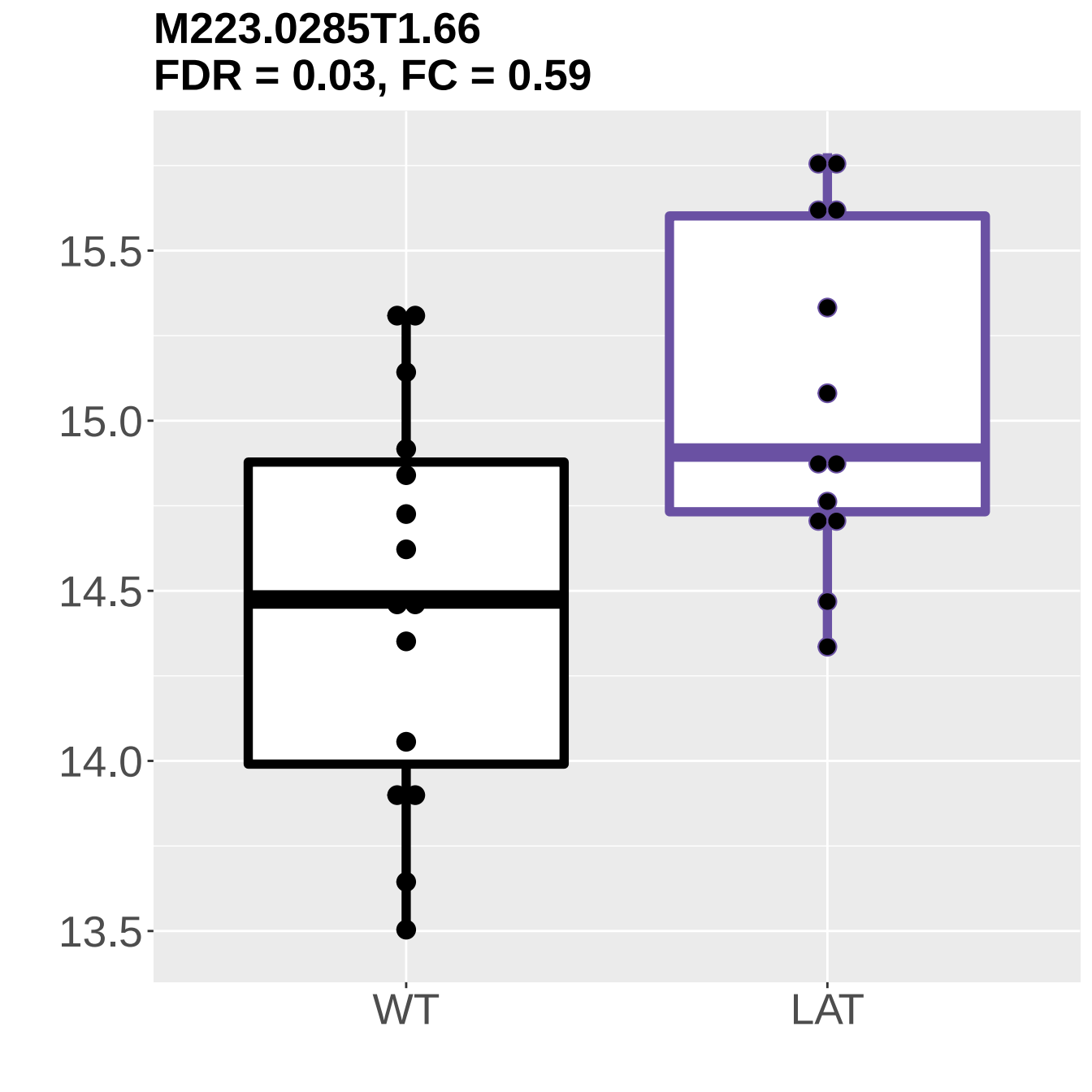
15
WT
LAT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14.0
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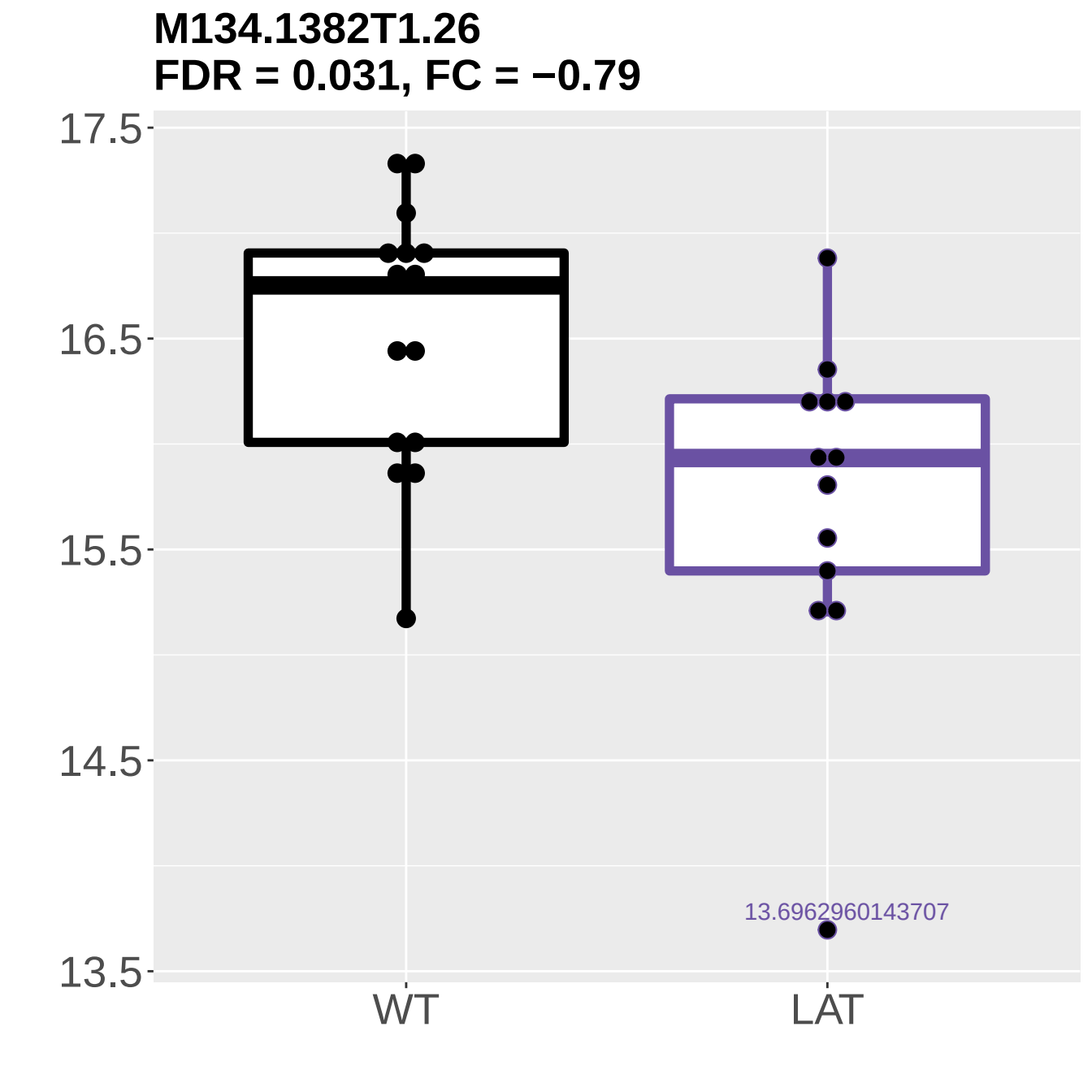
WT
LAT


M134.1382T1.26
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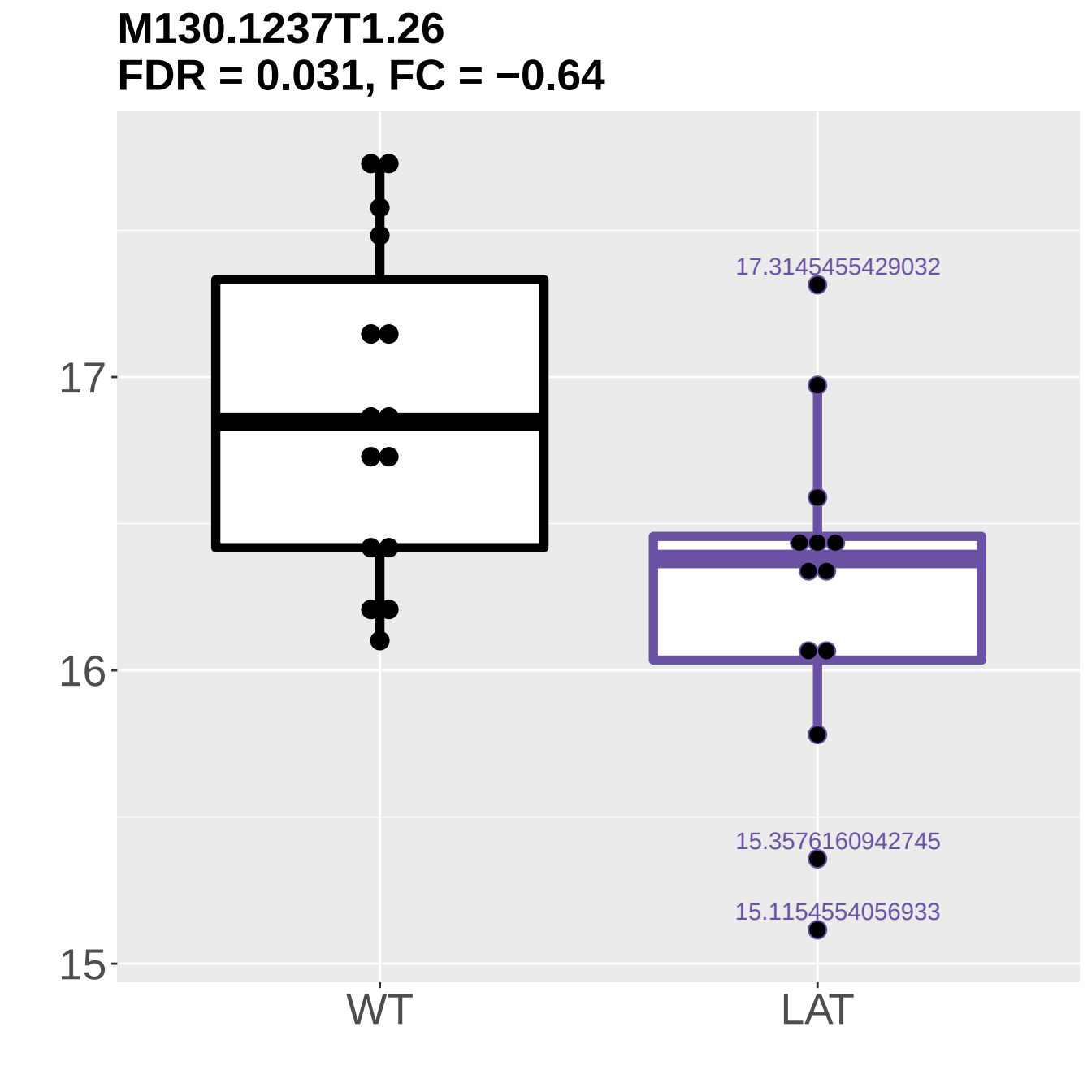
LAT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16
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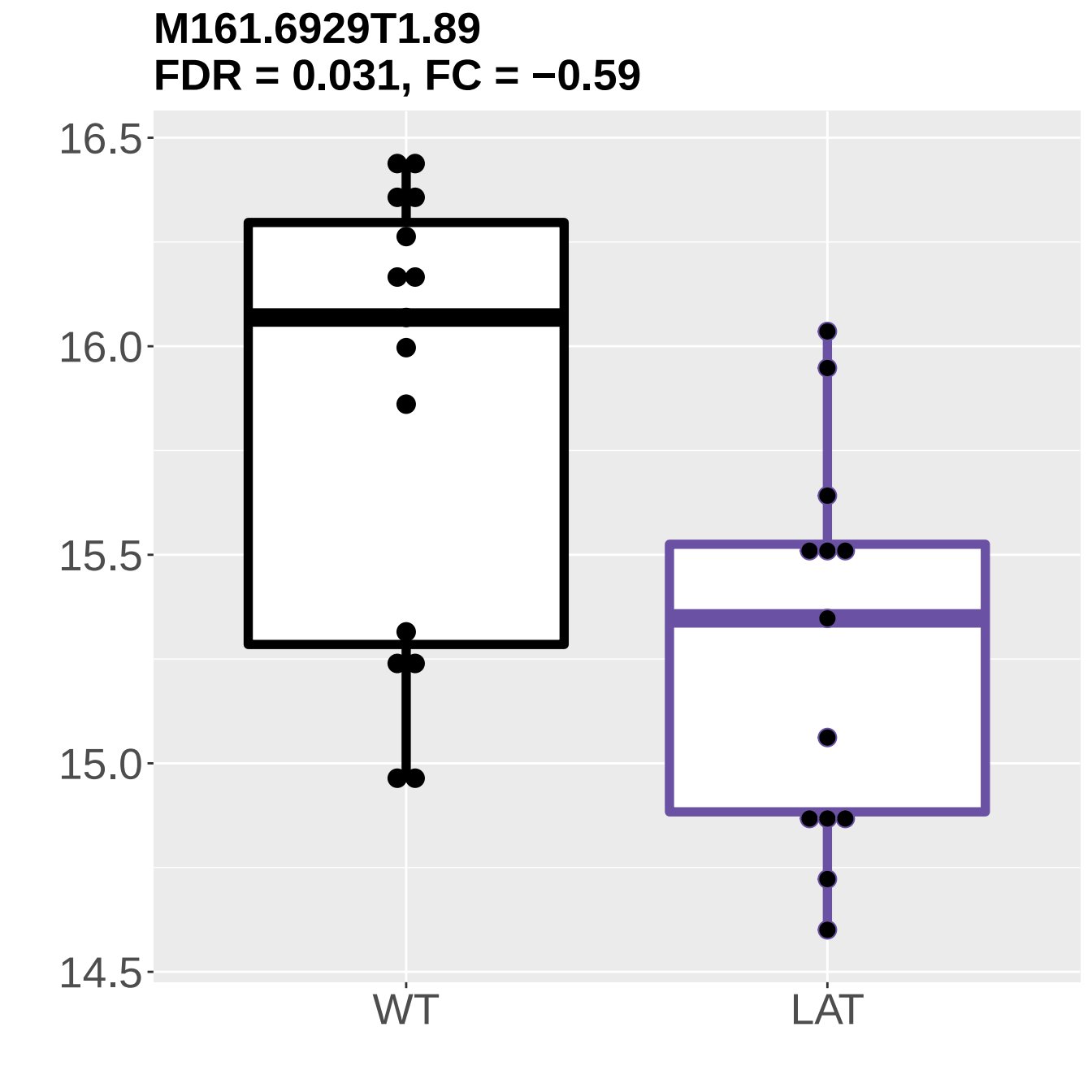
WT
LAT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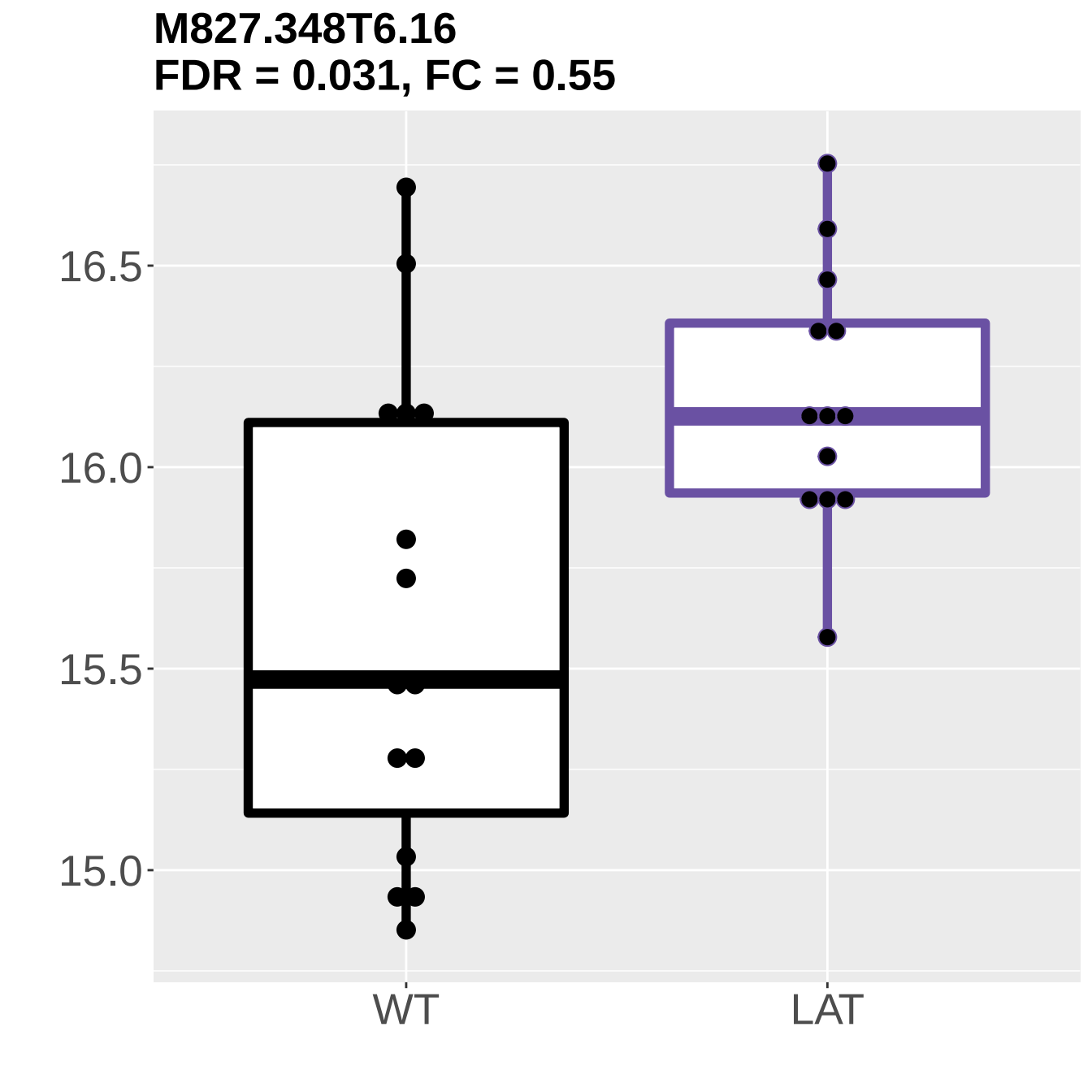
WT
LAT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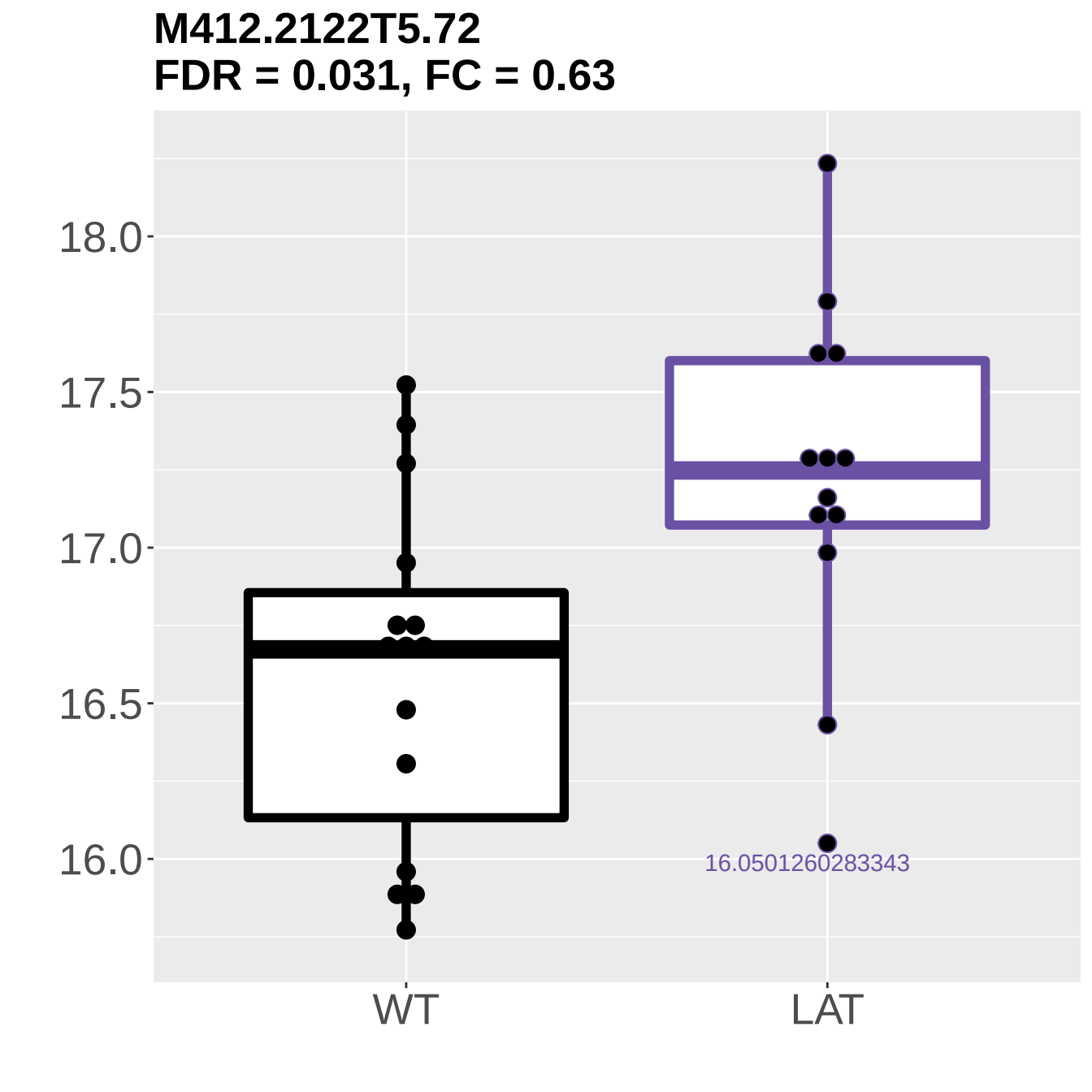
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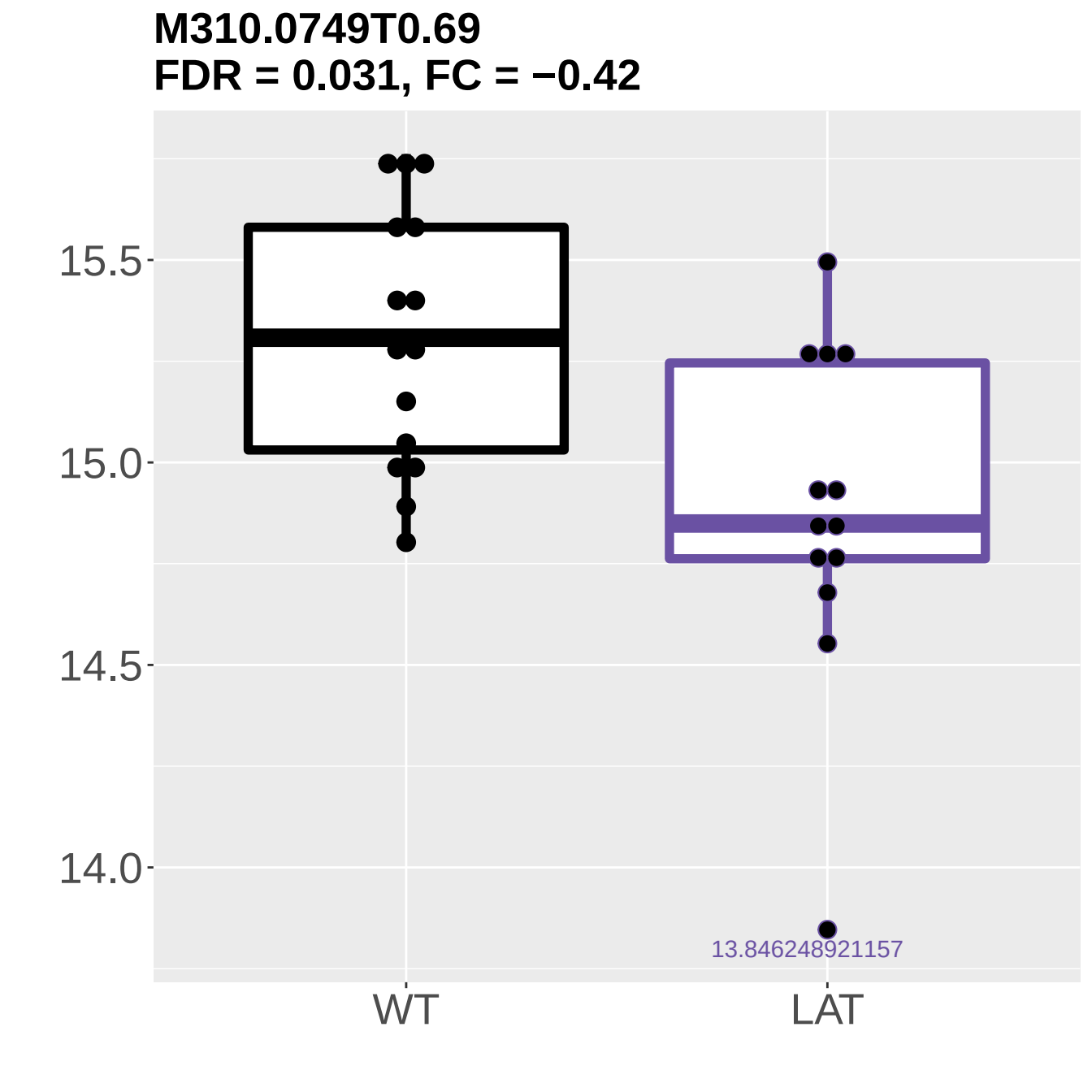
WT
LAT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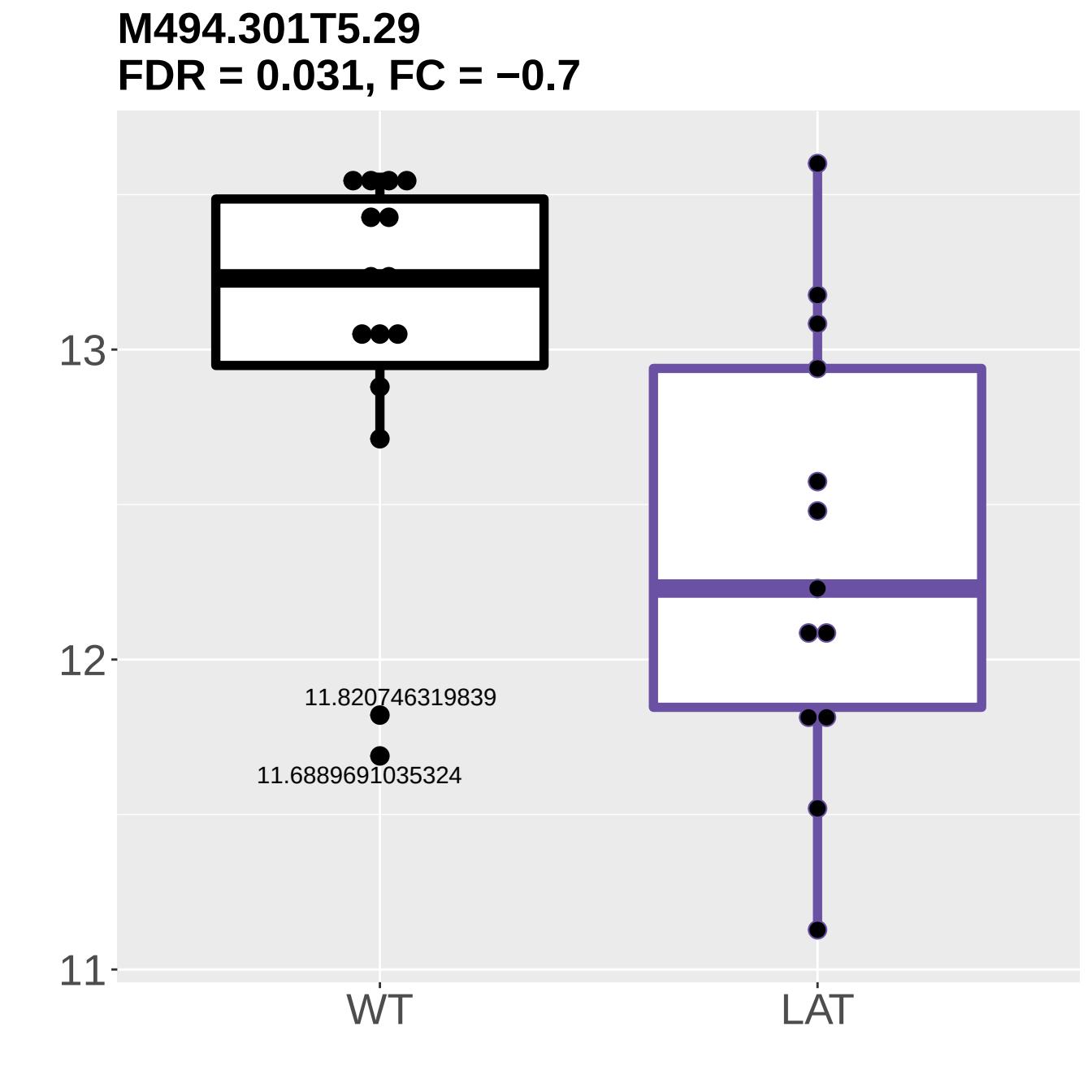
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12
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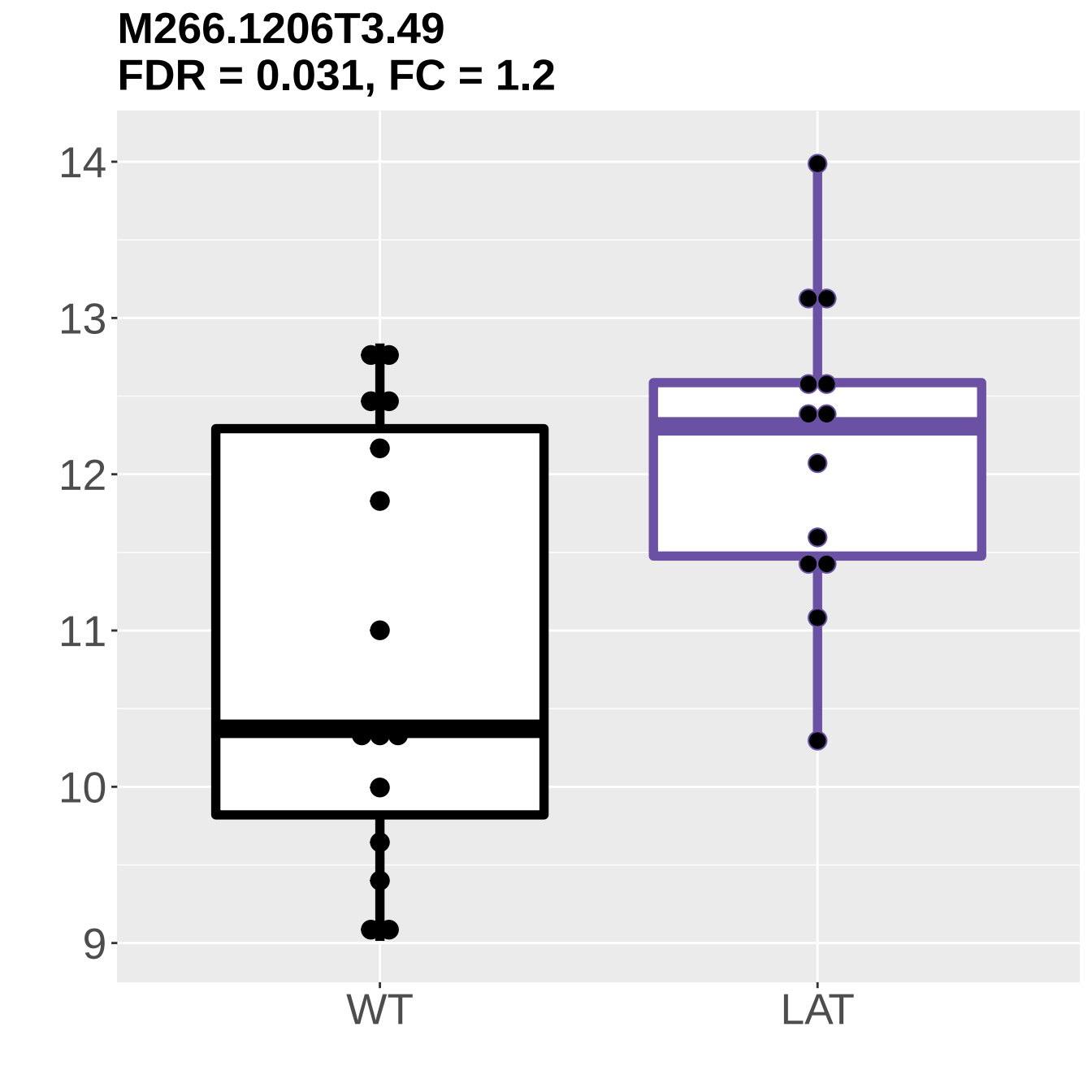
WT
LAT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FDR = 0.031, FC = 1.2
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13
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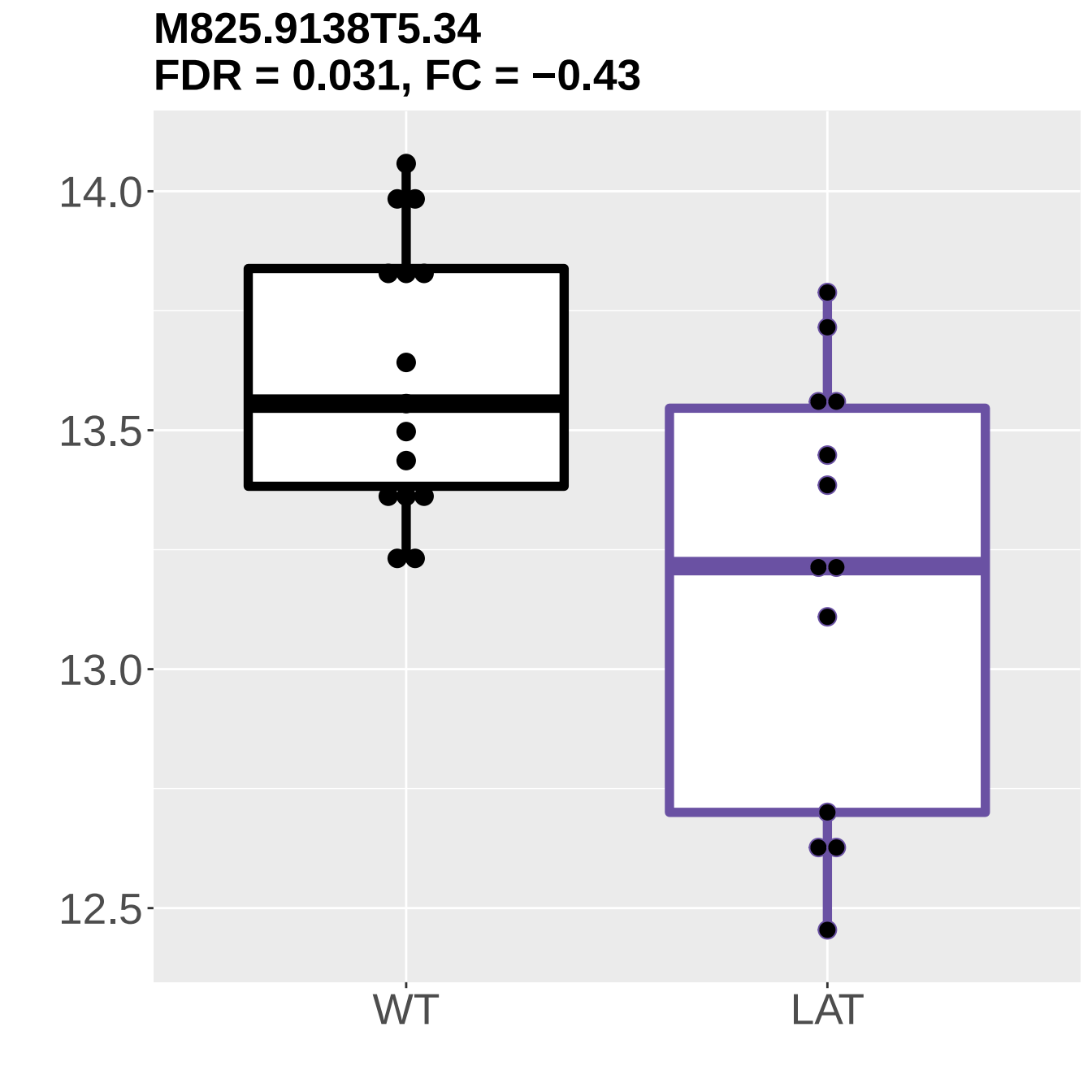
11
10
9
WT
LAT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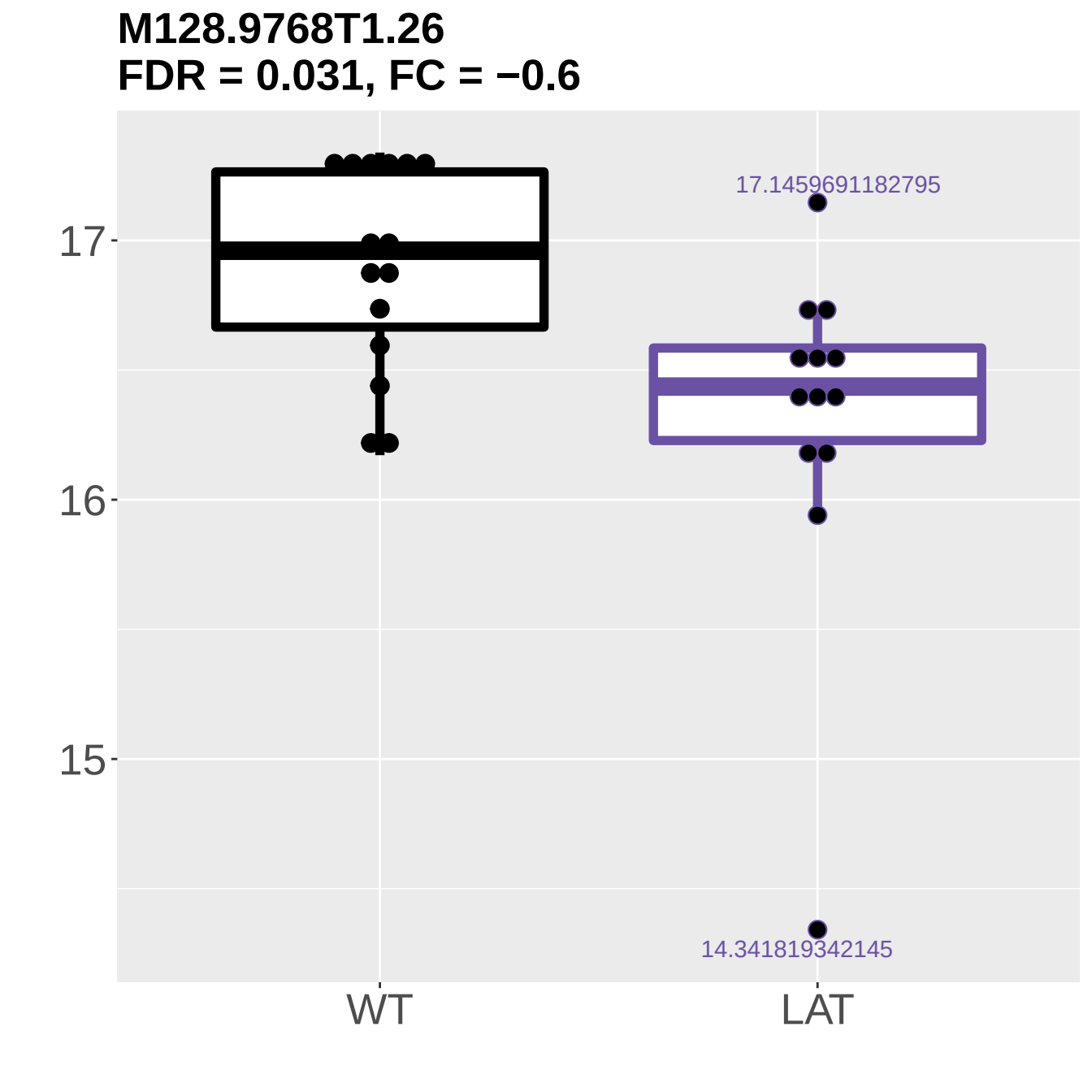
13.0
12.5
WT
LAT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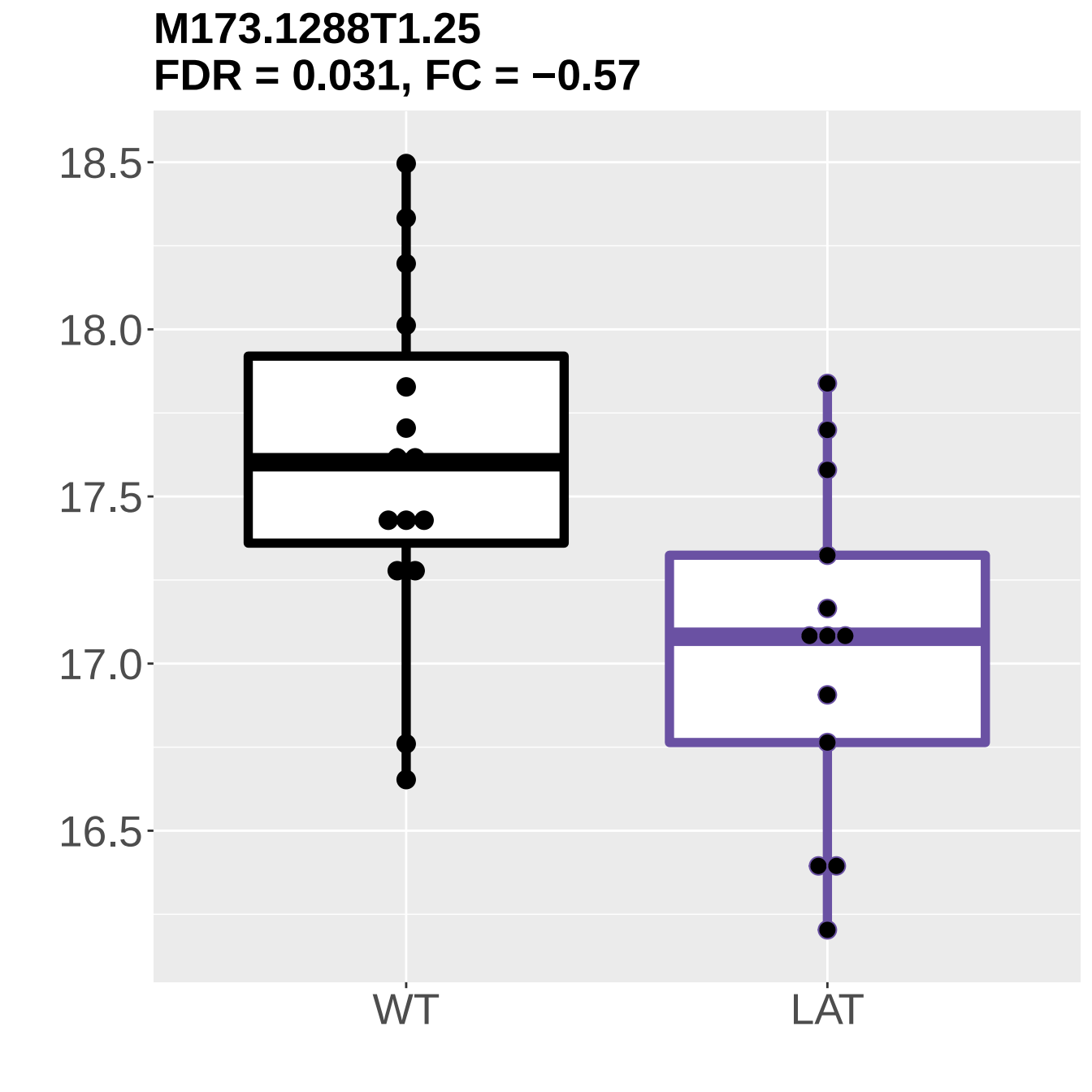
LAT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17.0
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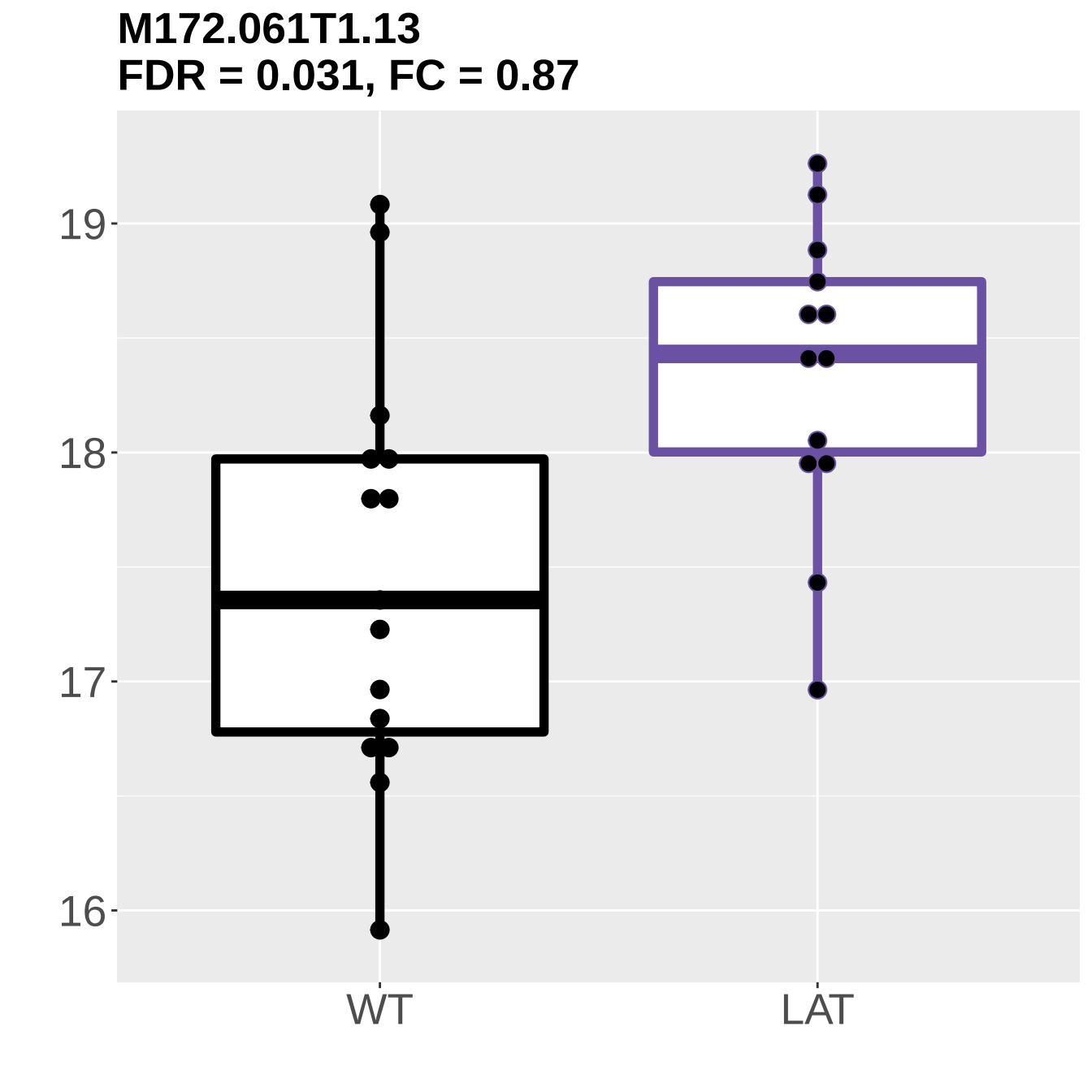
LAT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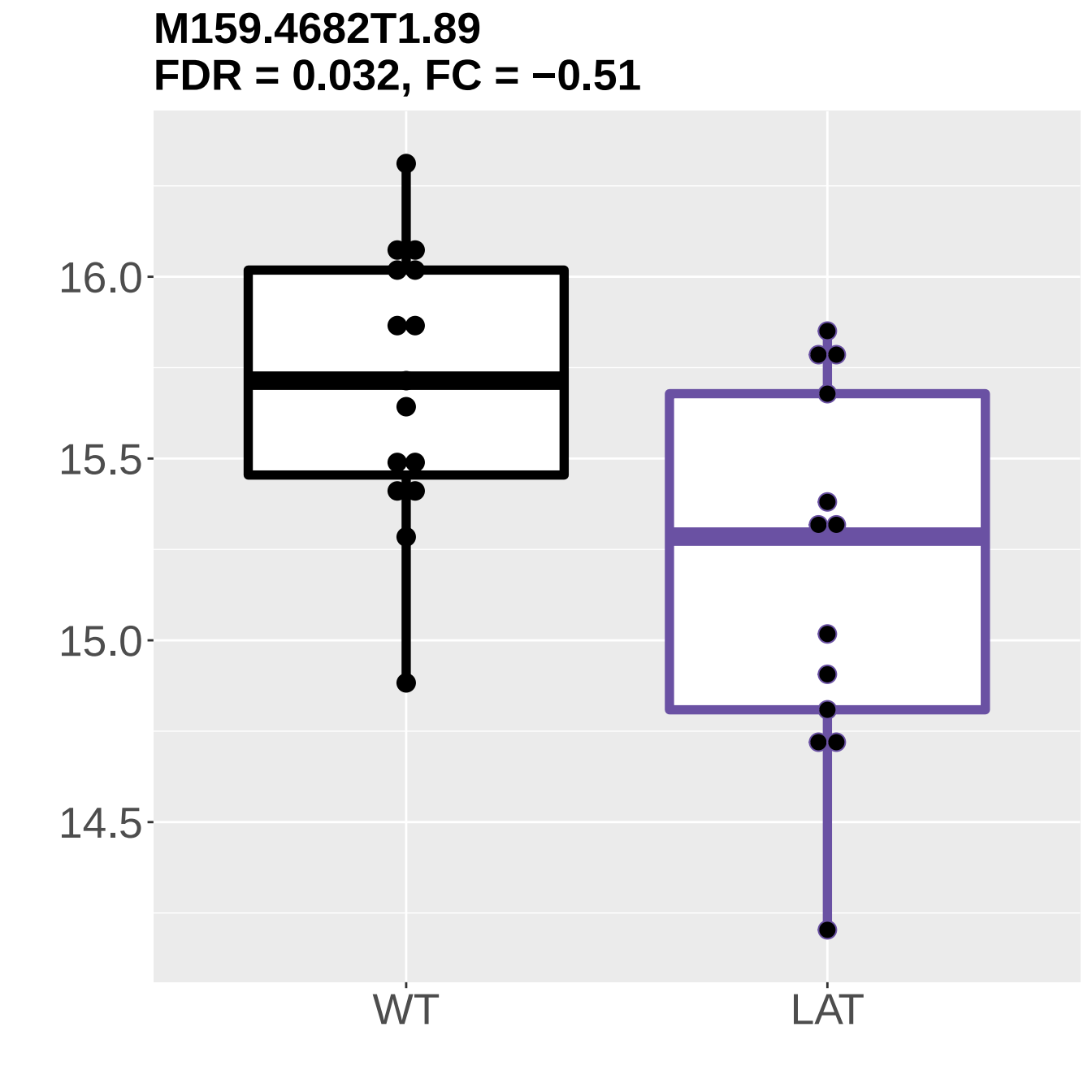
18
17
16
WT
LAT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15.5
15.0
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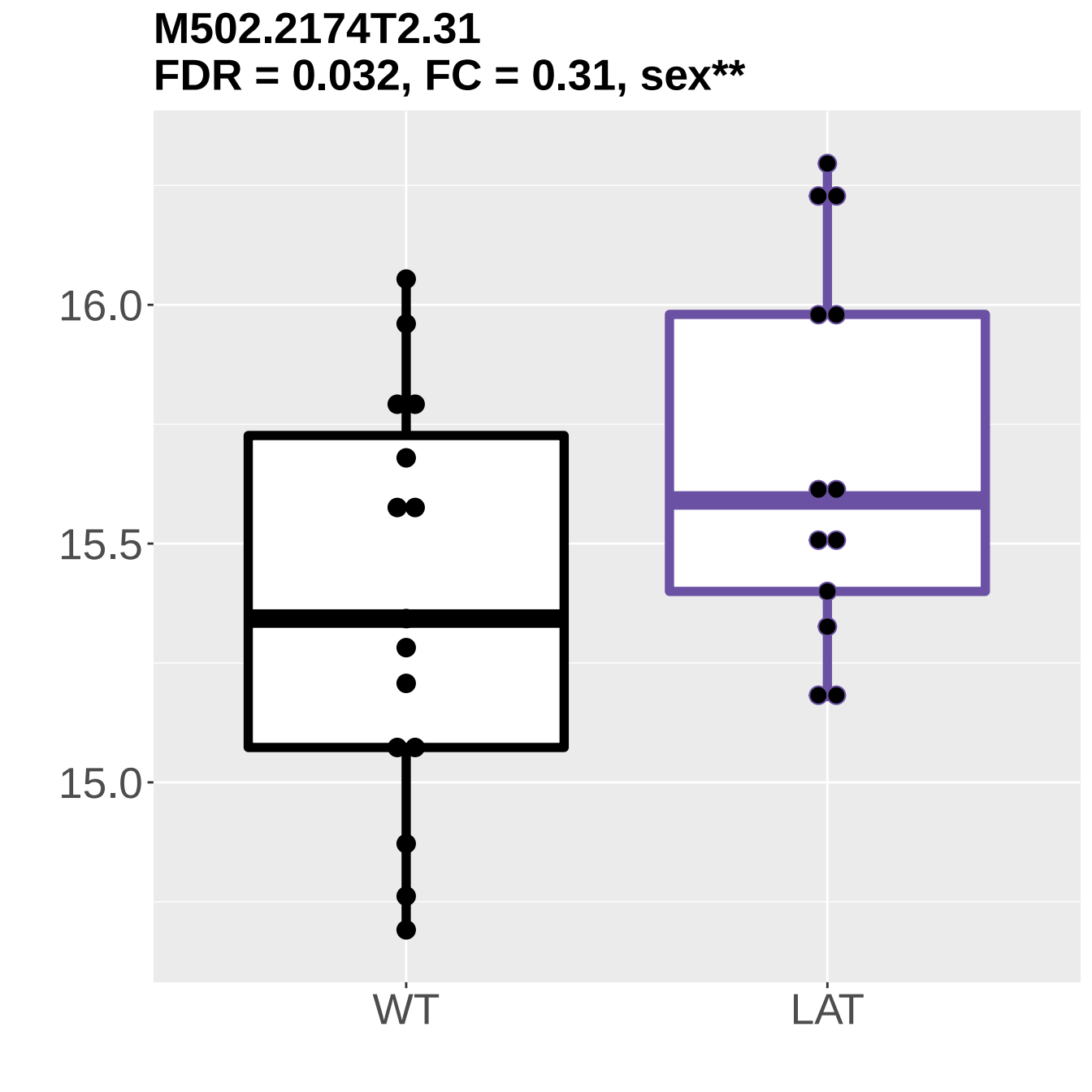
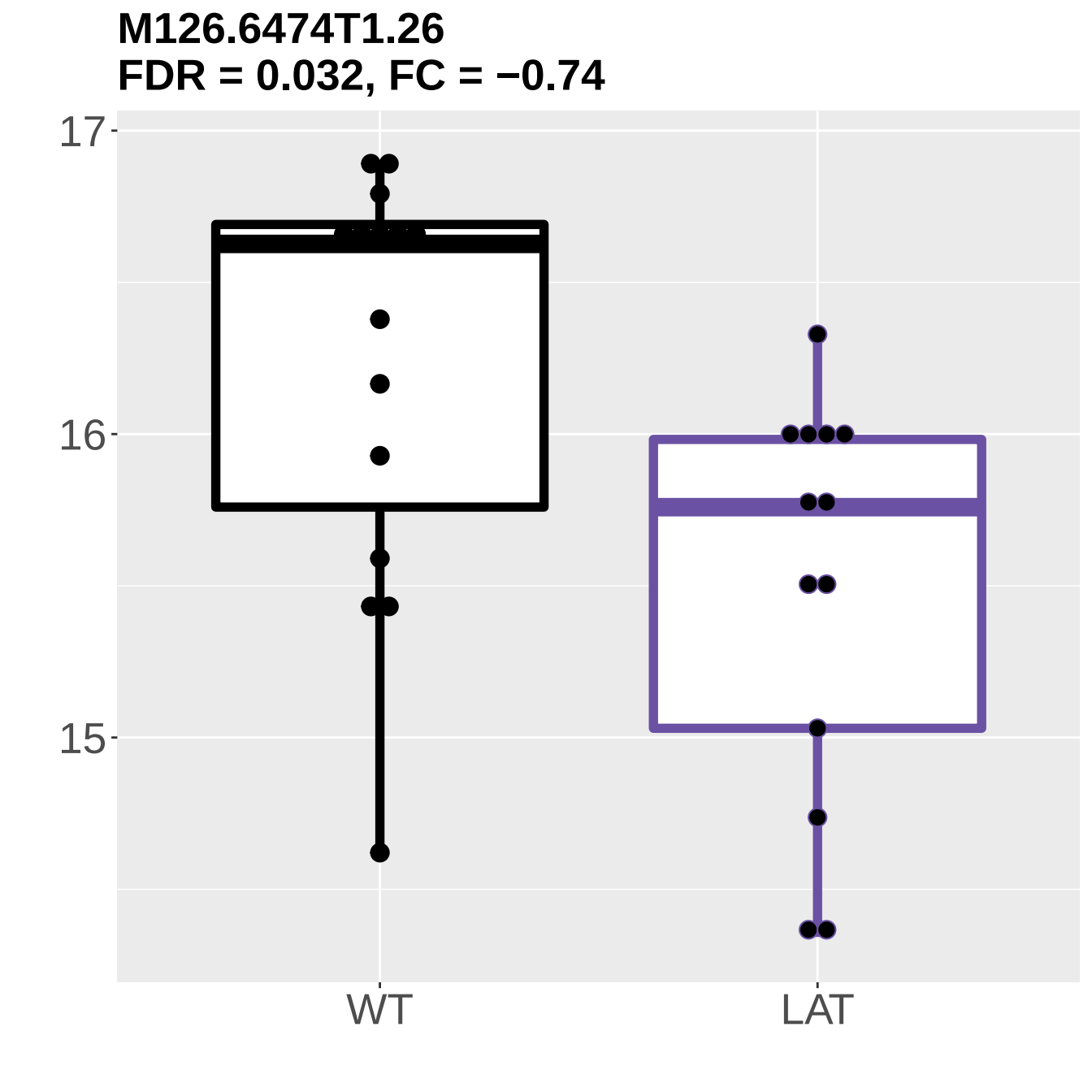
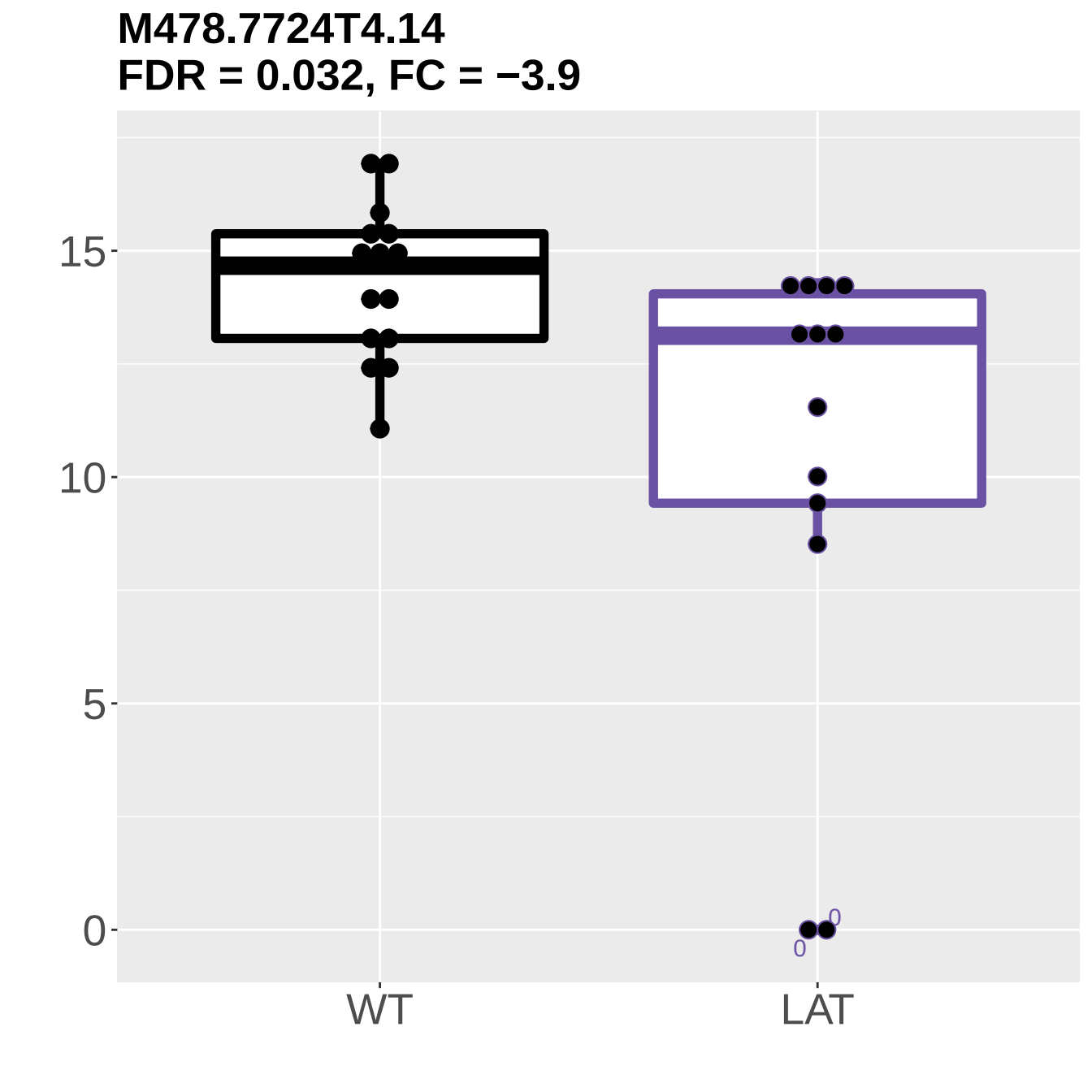
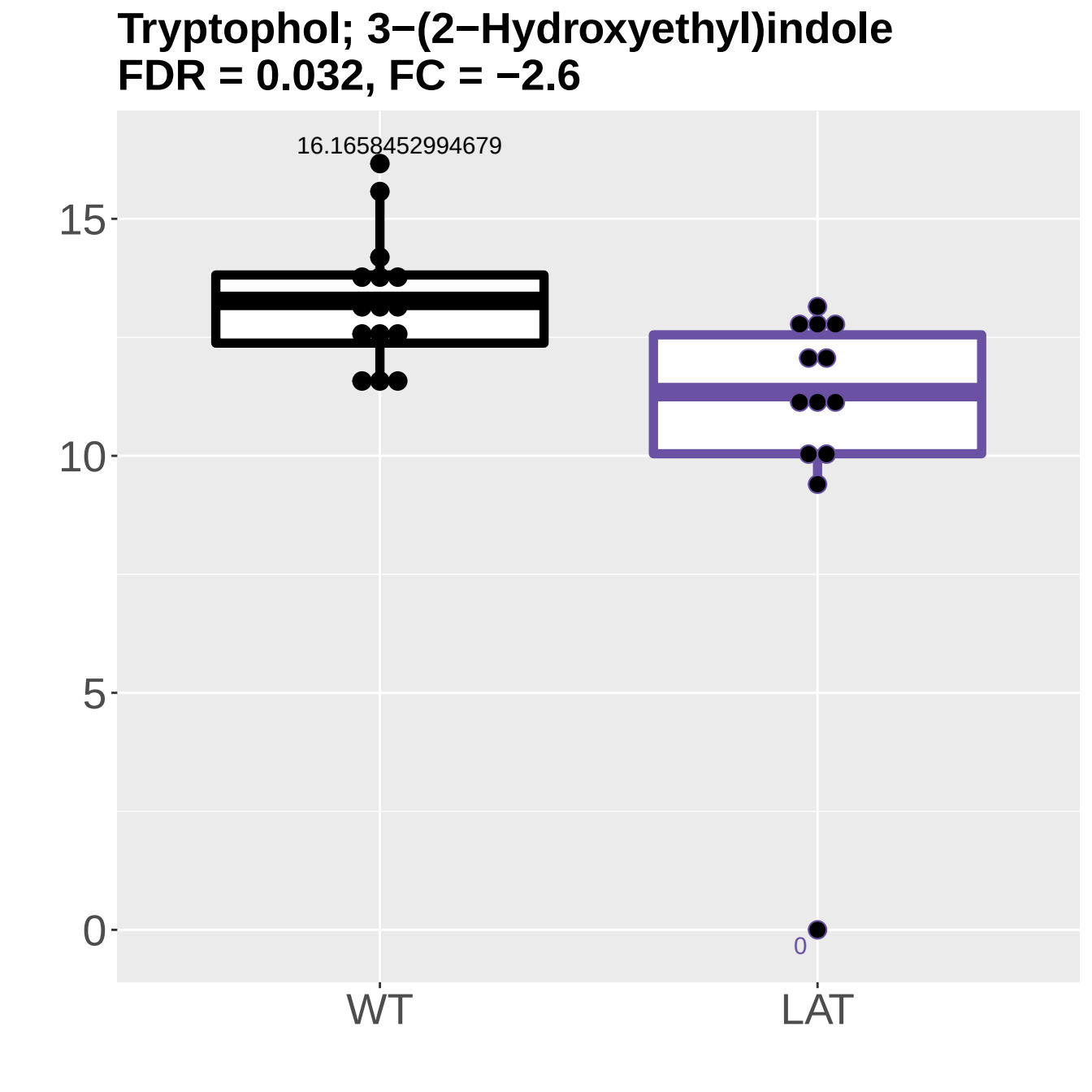
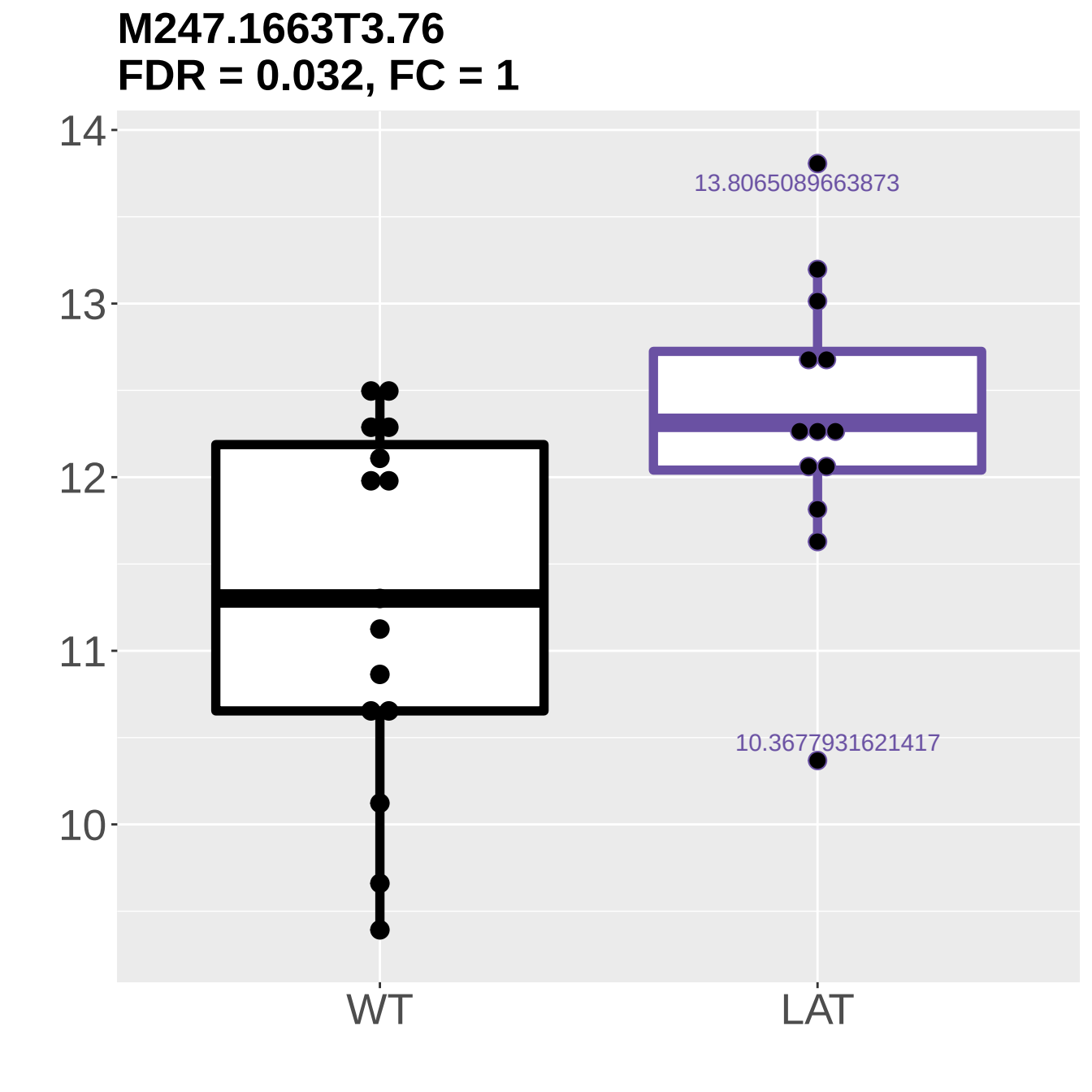
WT
LAT


M502.2174T2.31
FDR = 0.032, FC = 0.31, sex**
16.0
15.5
15.0
WT
LAT


M126.6474T1.26
FDR = 0.032, FC = −0.74
17
16
15
WT
LAT


M478.7724T4.14
FDR = 0.032, FC = −3.9
15
10
5
0
0
0
WT
LAT


Tryptophol; 3−(2−Hydroxyethyl)indole
FDR = 0.032, FC = −2.6
16.1658452994679
15
10
5
0
0
WT
LAT


M247.1663T3.76
FDR = 0.032, FC = 1
14
13
12
11
10
13.8065089663873
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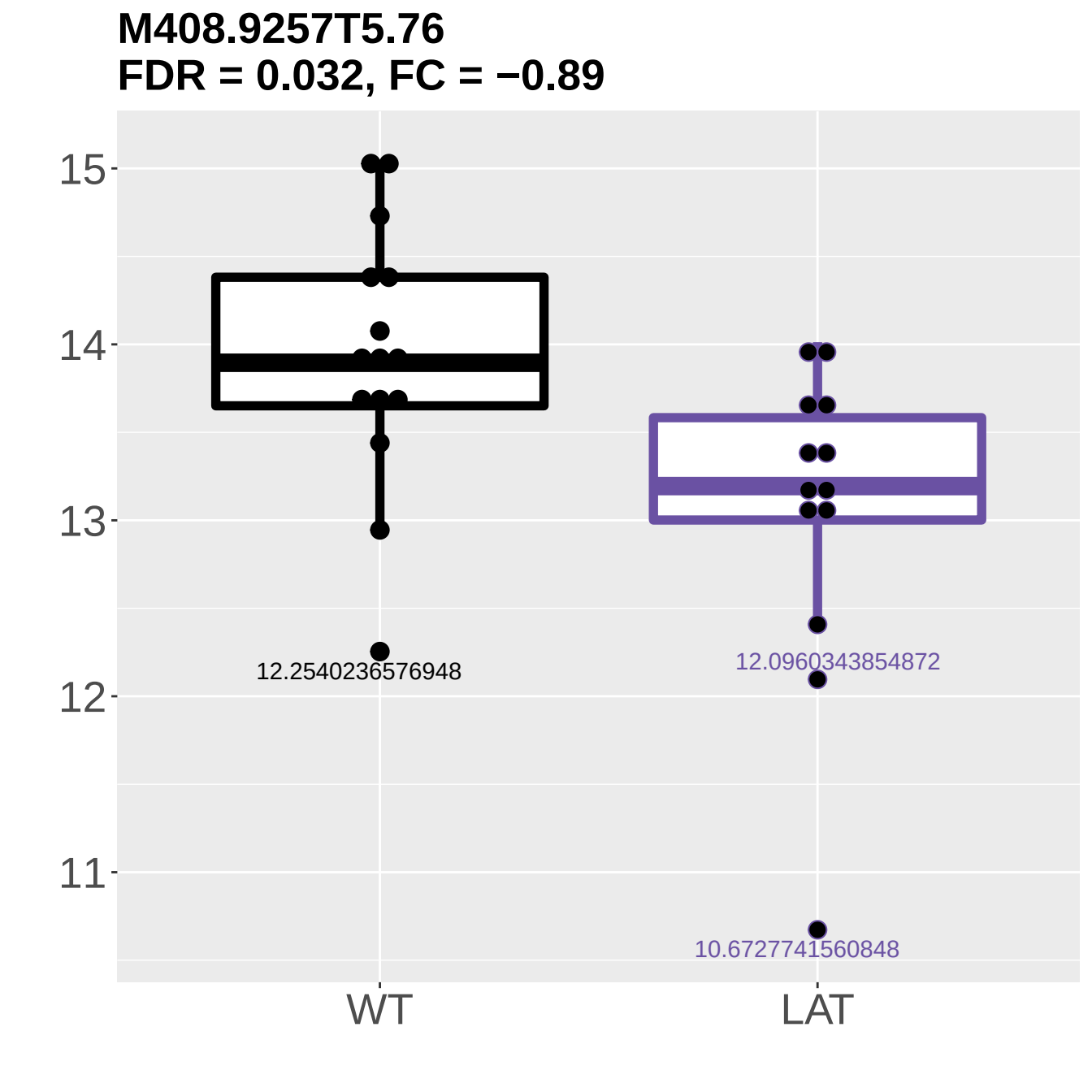
WT
LAT


M408.9257T5.76
FDR = 0.032, FC = −0.89
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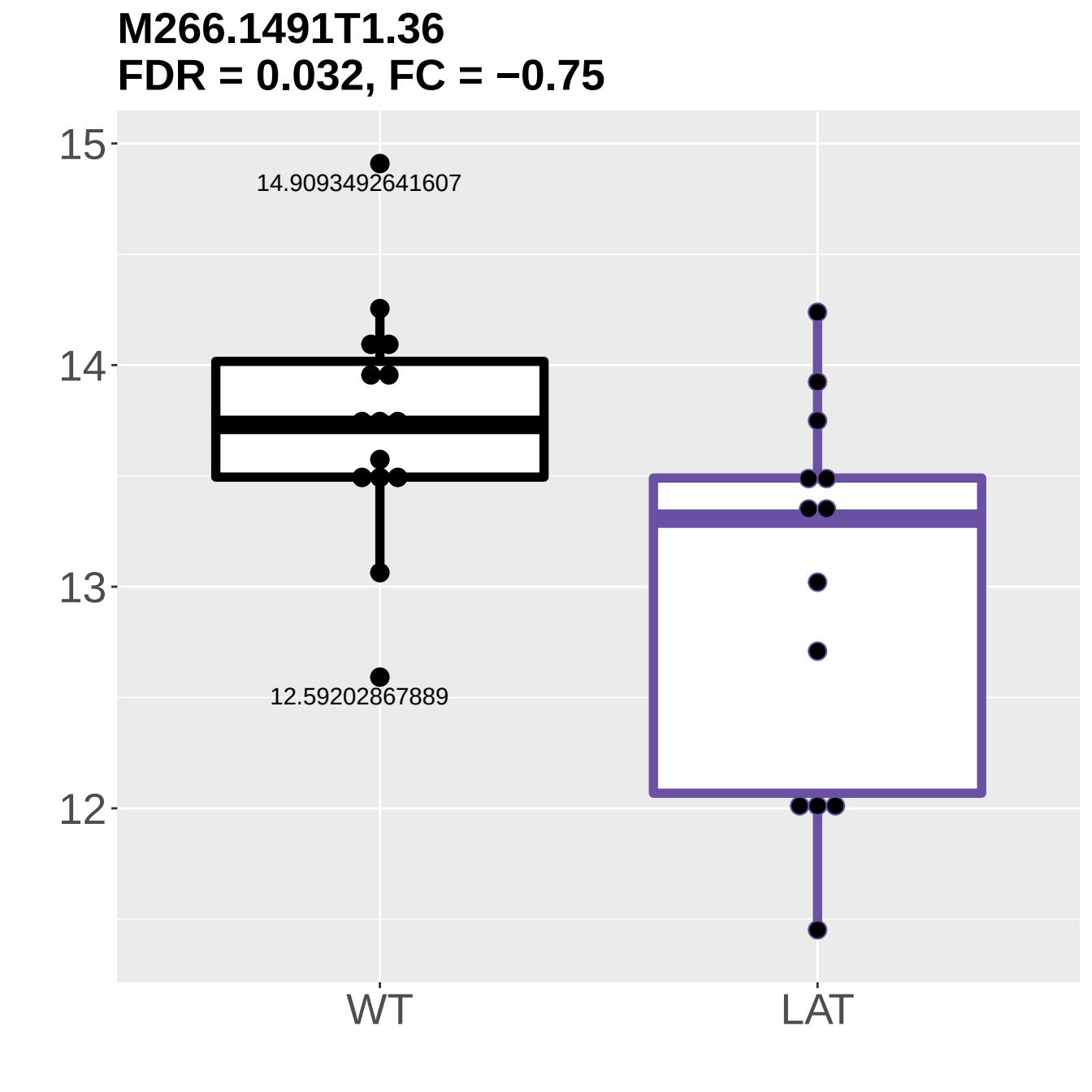
14
13
12
11
12.2540236576948
12.0960343854872
10.6727741560848
WT
LAT


M266.1491T1.36
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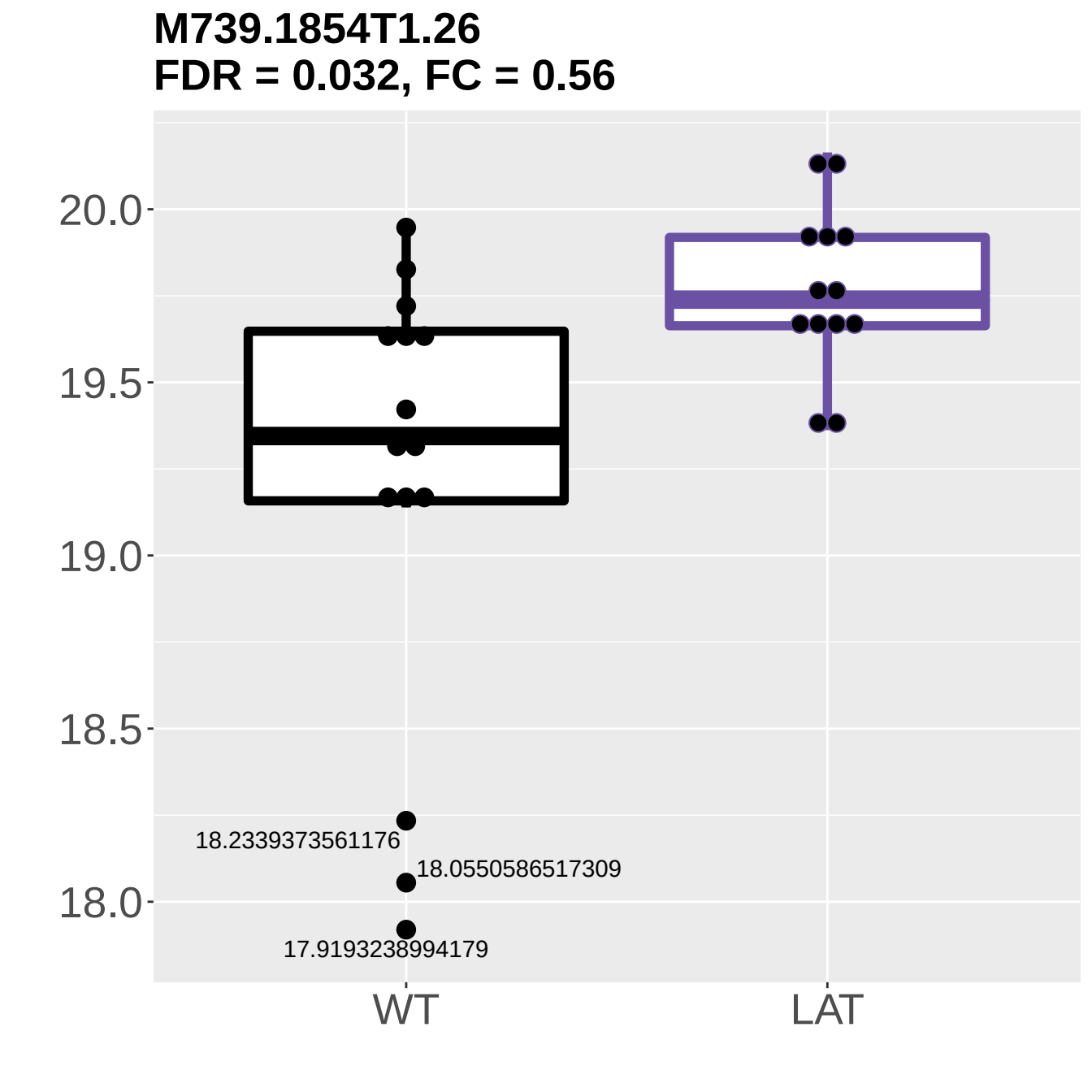
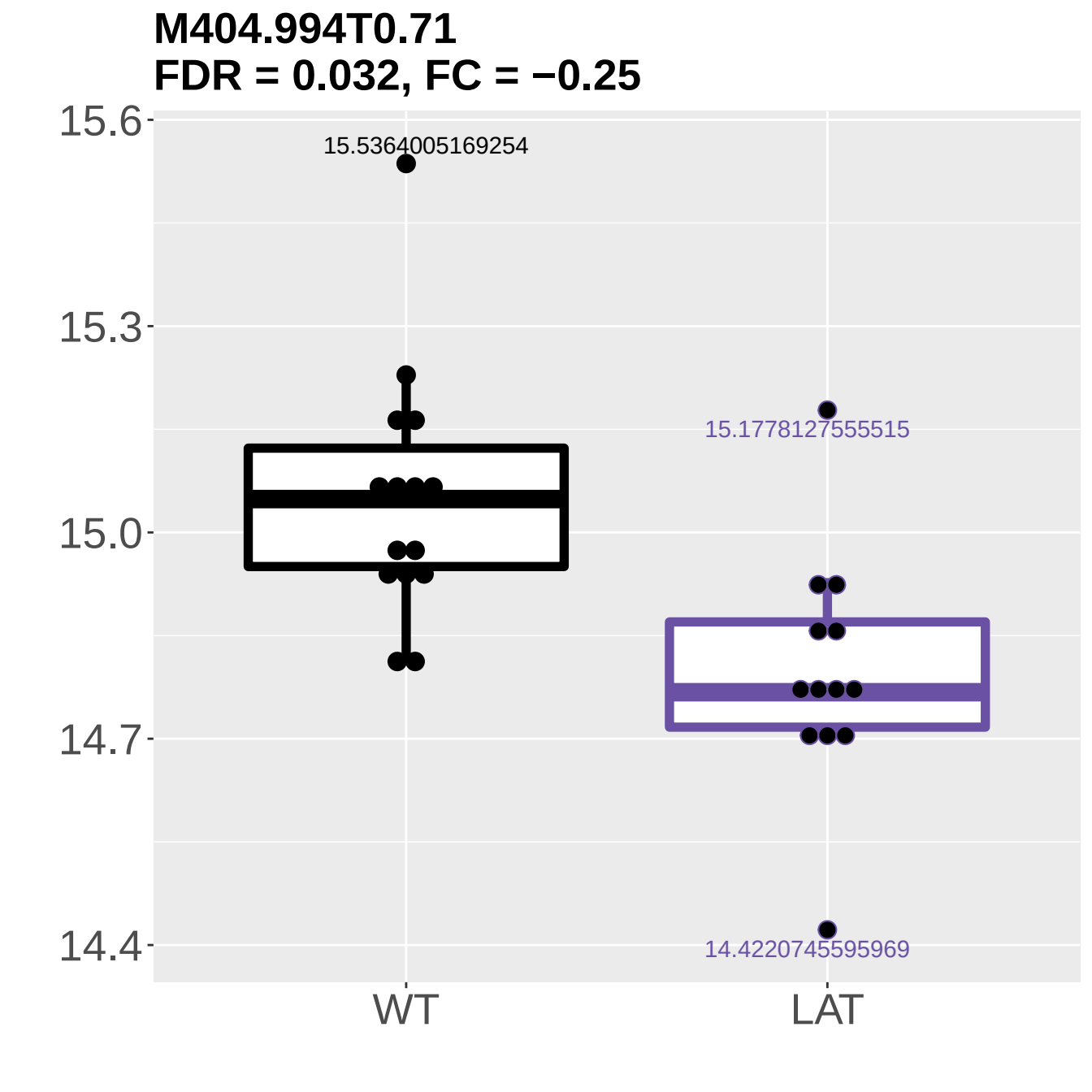
15
14
13
12
14.9093492641607
12.59202867889
WT
LAT


M739.1854T1.26
FDR = 0.032, FC = 0.56
20.0
19.5
19.0
18.5
18.0
18.2339373561176
18.0550586517309
17.9193238994179
WT
LAT


M404.994T0.71
FDR = 0.032, FC = −0.25
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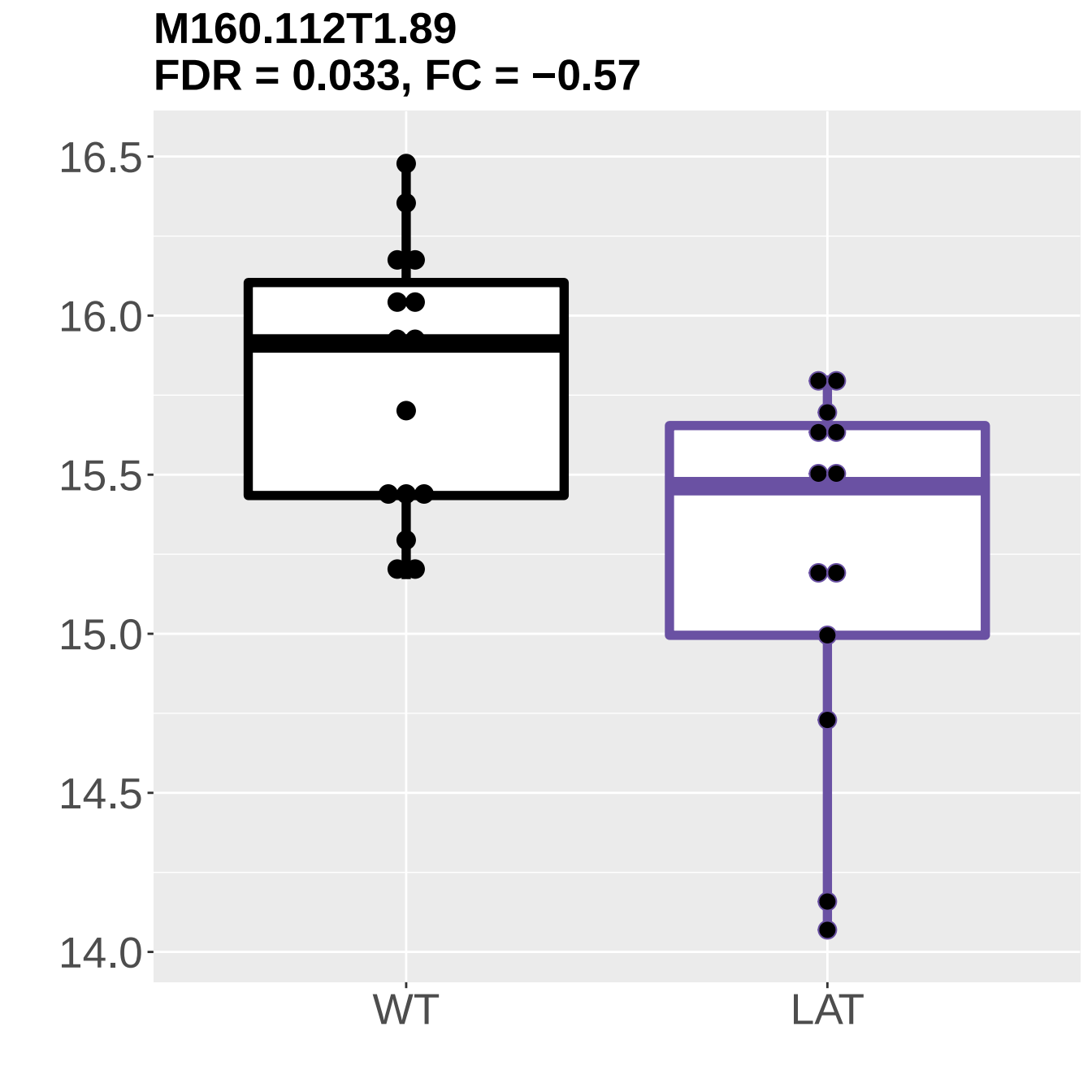
15.3
15.0
14.7
14.4
15.5364005169254
15.1778127555515
14.4220745595969
WT
LAT


M160.112T1.89
FDR = 0.033, FC = −0.57
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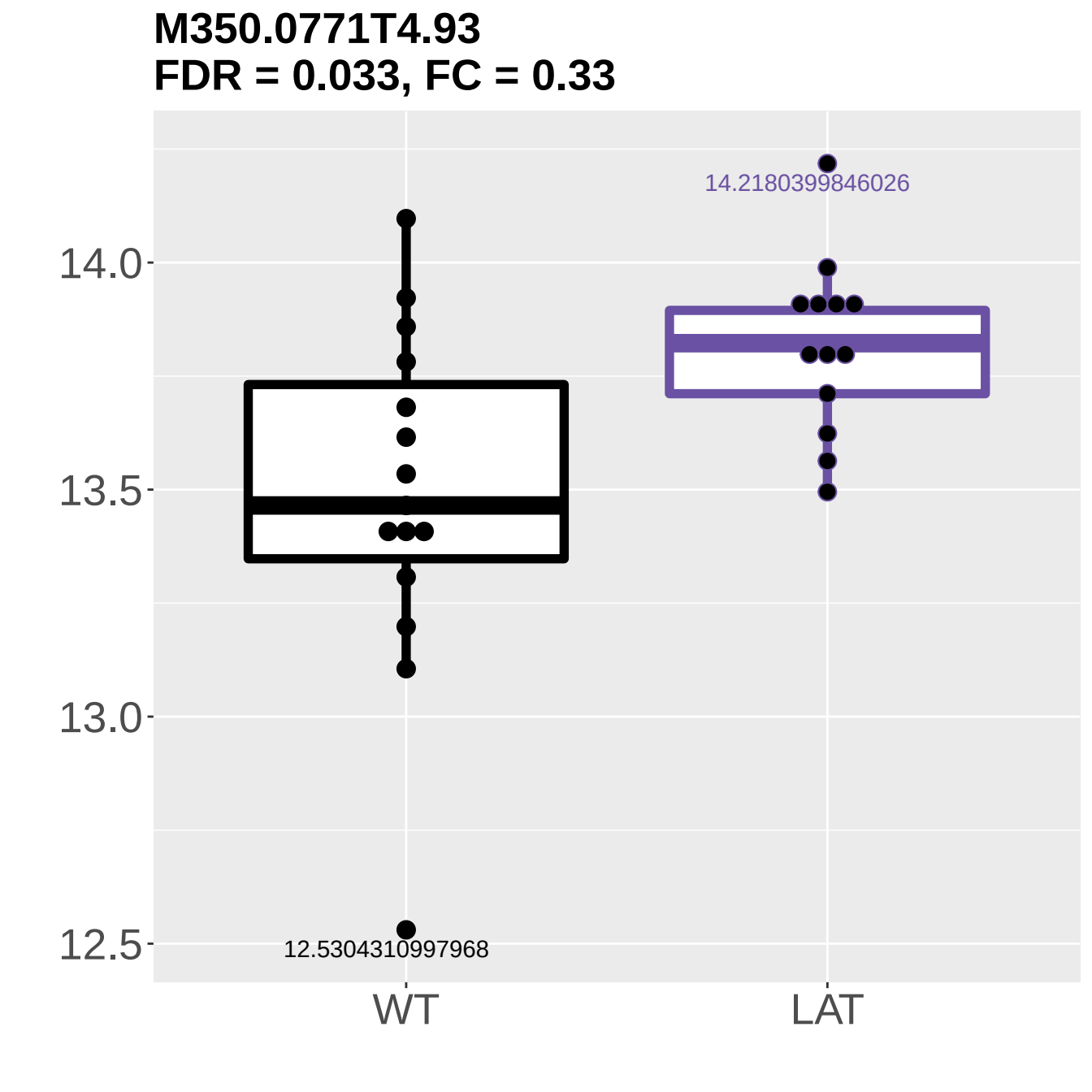
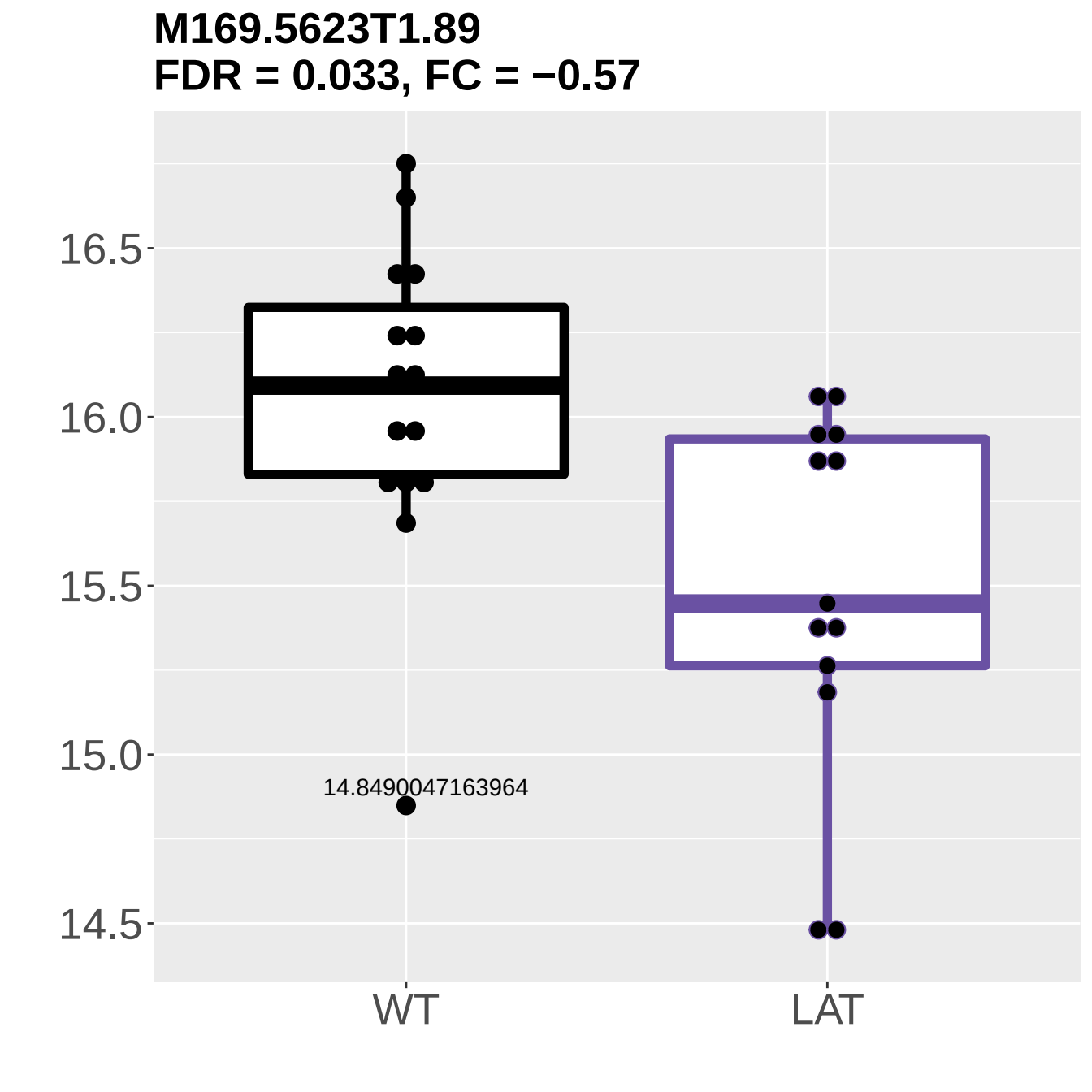
16.0
15.5
15.0
14.5
14.0
WT
LAT


M350.0771T4.93
FDR = 0.033, FC = 0.33
14.2180399846026
14.0
13.5
13.0
12.5
12.5304310997968
WT
LAT


M169.5623T1.89
FDR = 0.033, FC = −0.57
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16.0
15.5
15.0
14.5
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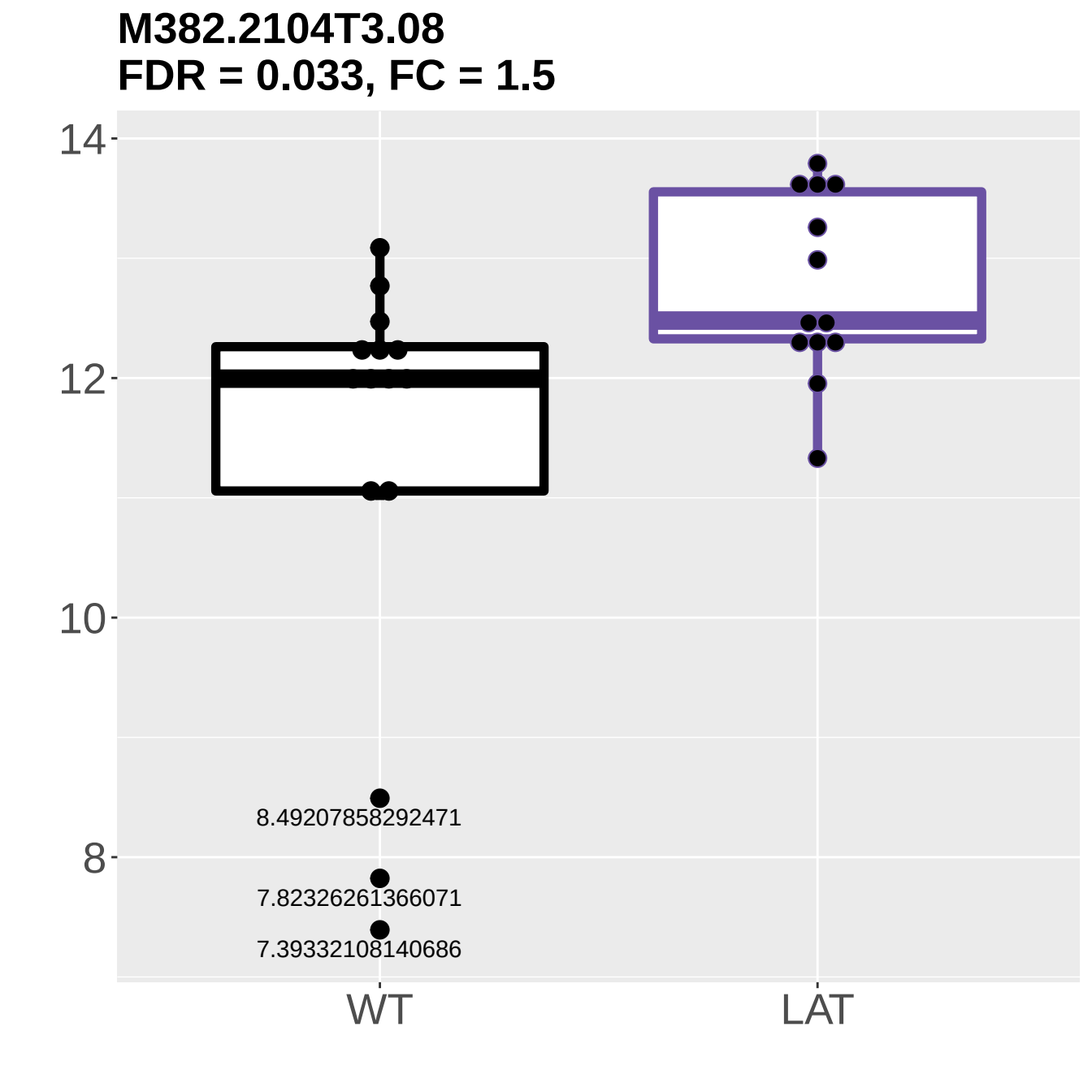
WT
LAT


M382.2104T3.08
FDR = 0.033, FC = 1.5
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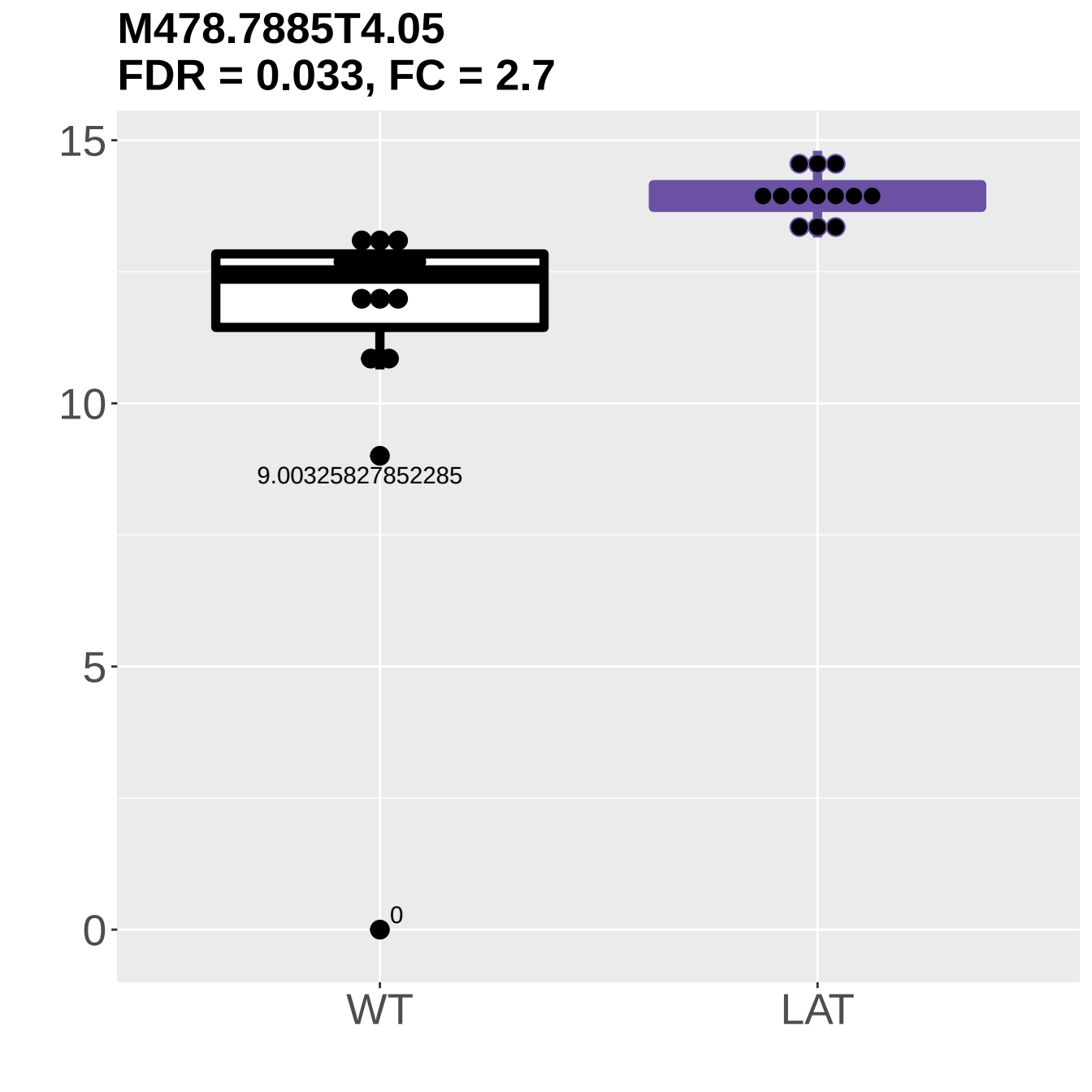
12
10
8
8.49207858292471
7.82326261366071
7.39332108140686
WT
LAT


M478.7885T4.05
FDR = 0.033, FC = 2.7
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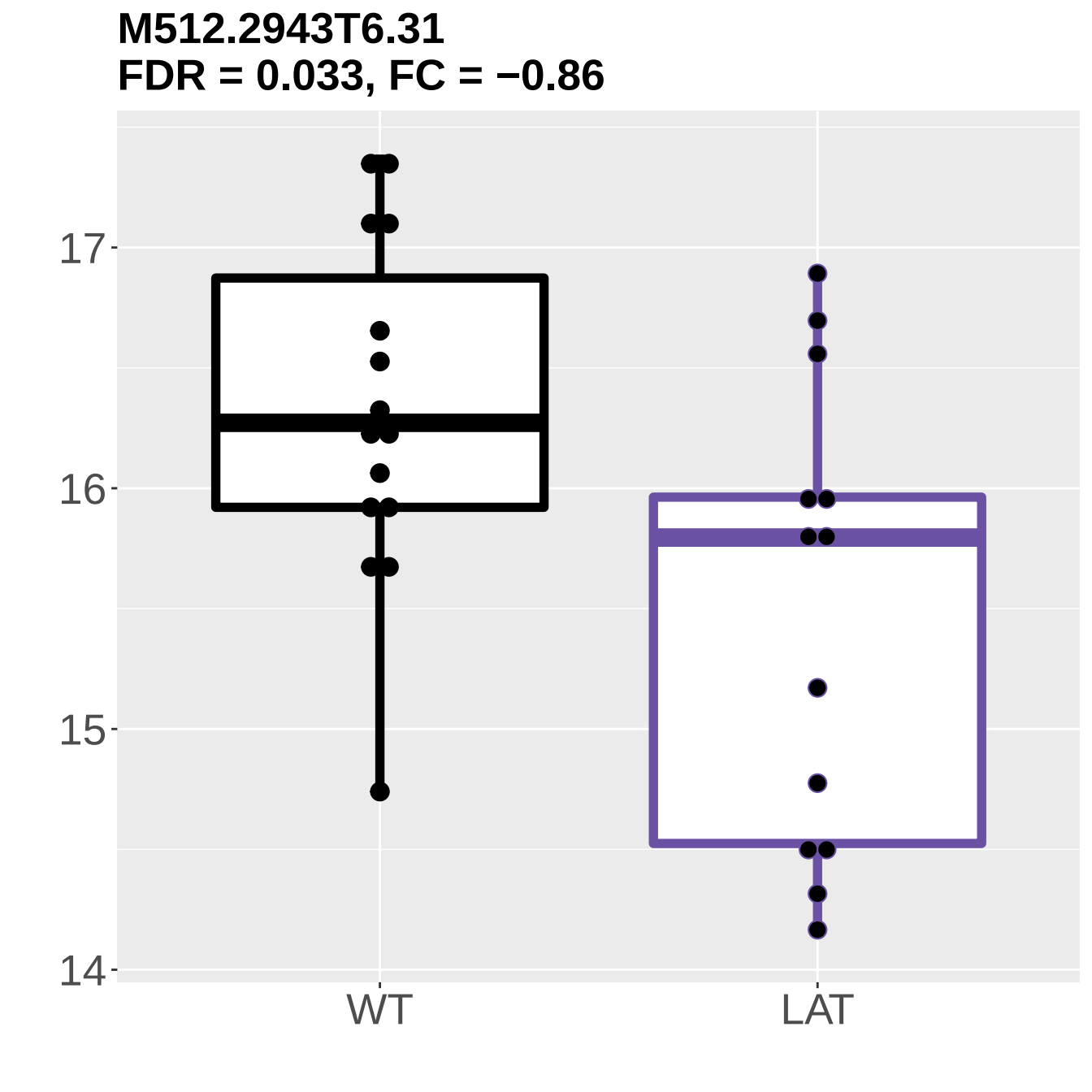
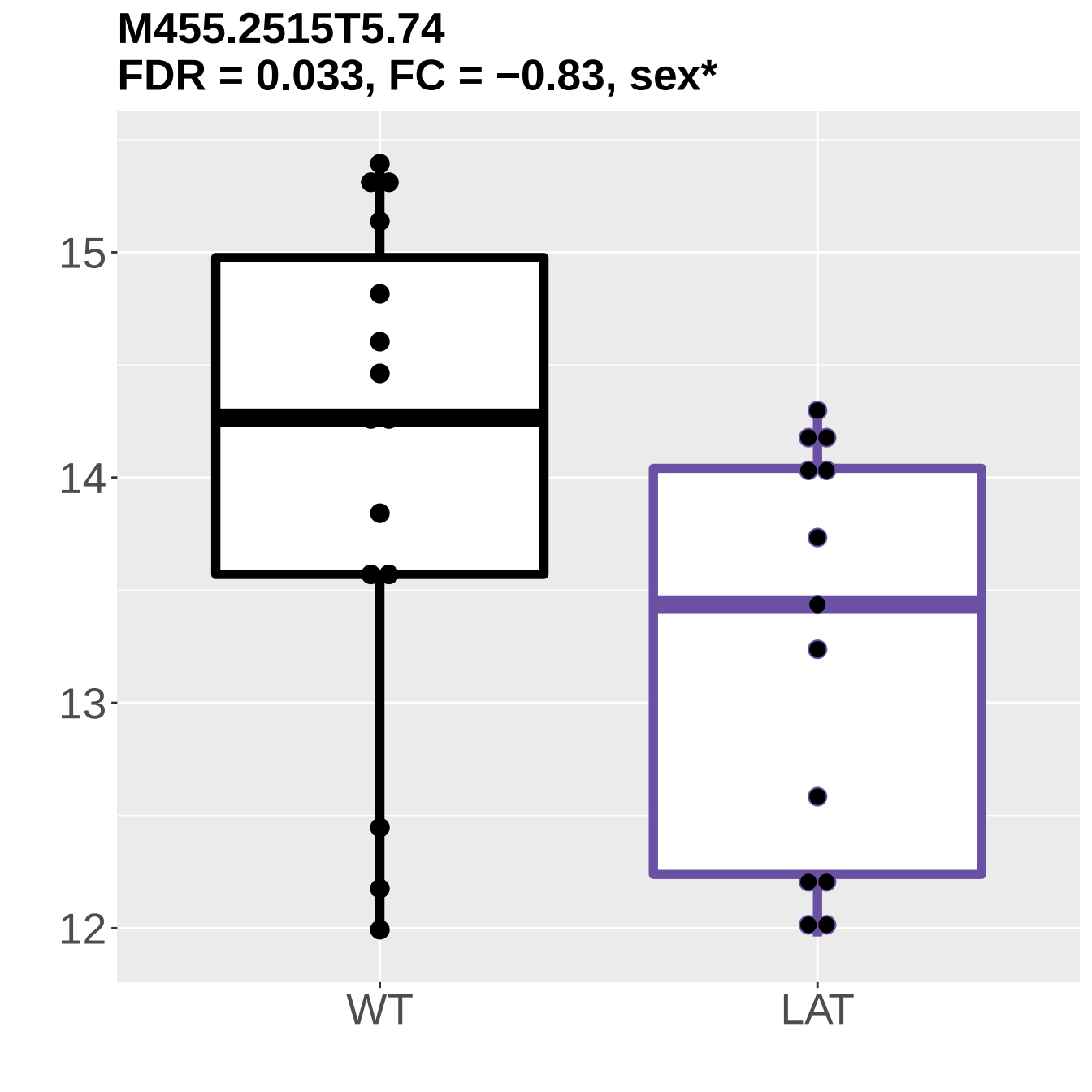
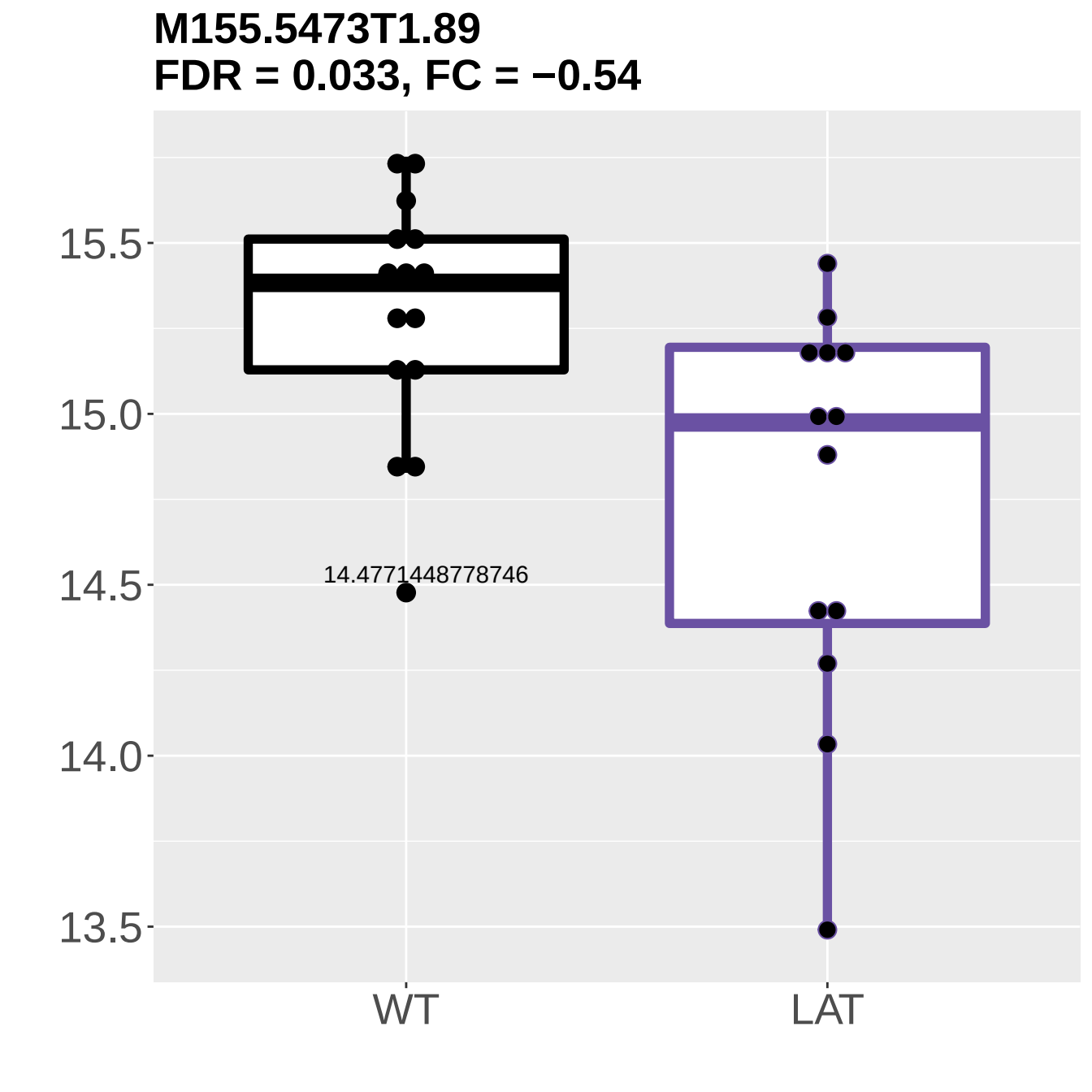
10
5
0
9.00325827852285
0
WT
LAT


M512.2943T6.31
FDR = 0.033, FC = −0.86
17
16
15
14
WT
LAT


M455.2515T5.74
FDR = 0.033, FC = −0.83, sex*
15
14
13
12
WT
LAT


M155.5473T1.89
FDR = 0.033, FC = −0.54
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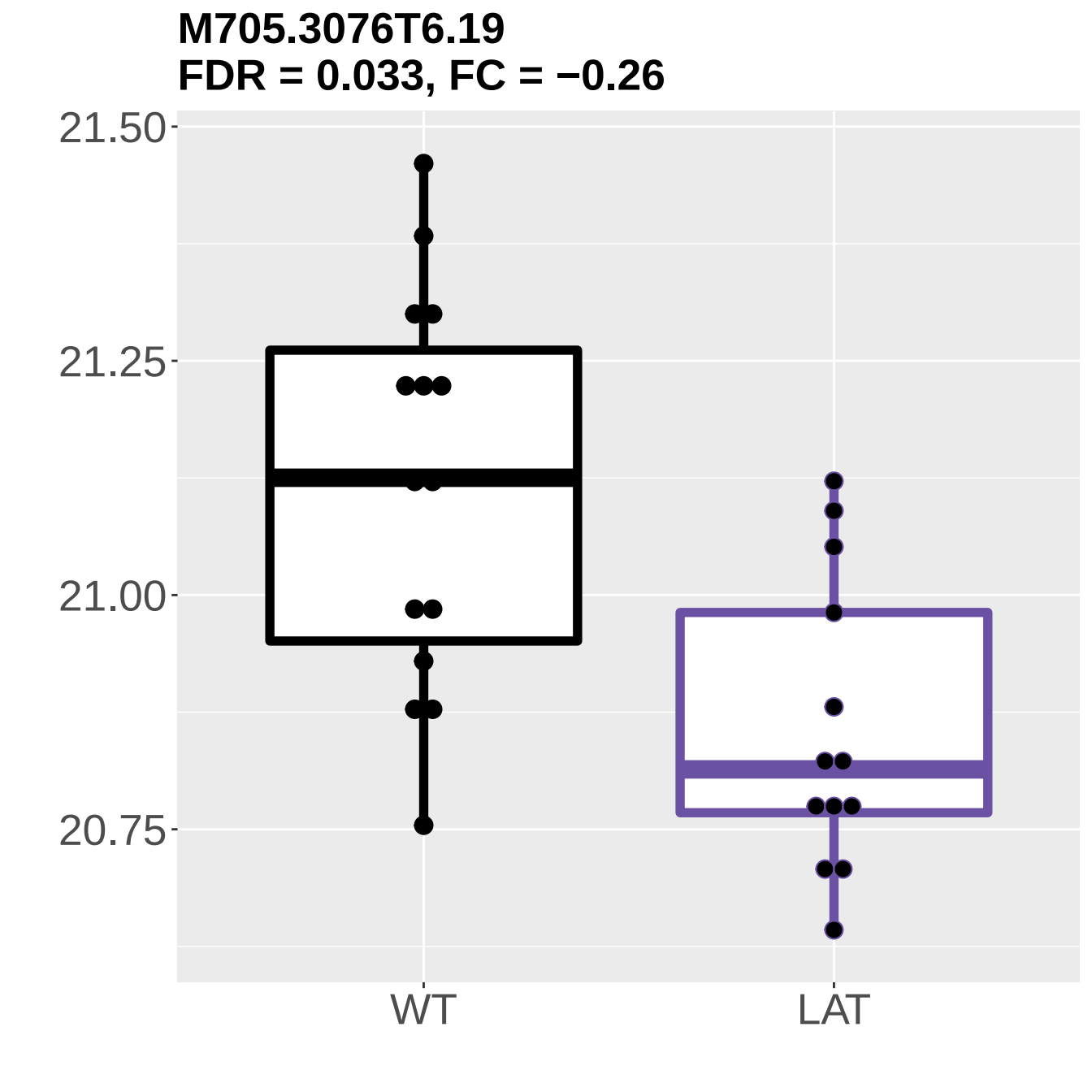
15.0
14.5
14.0
13.5
14.4771448778746
WT
LAT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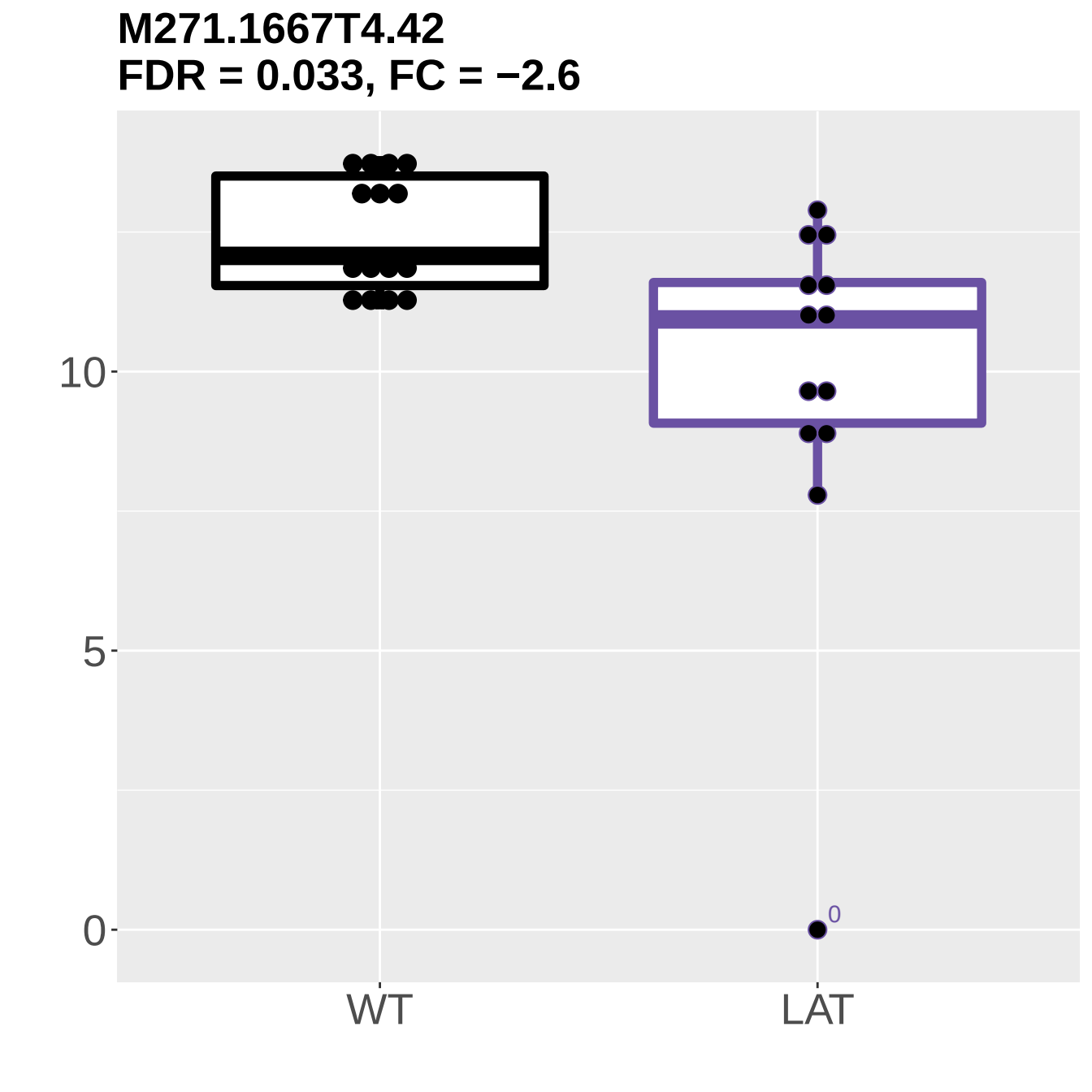
21.25
21.00
20.75
WT
LAT


M271.1667T4.42
FDR = 0.033, FC = −2.6
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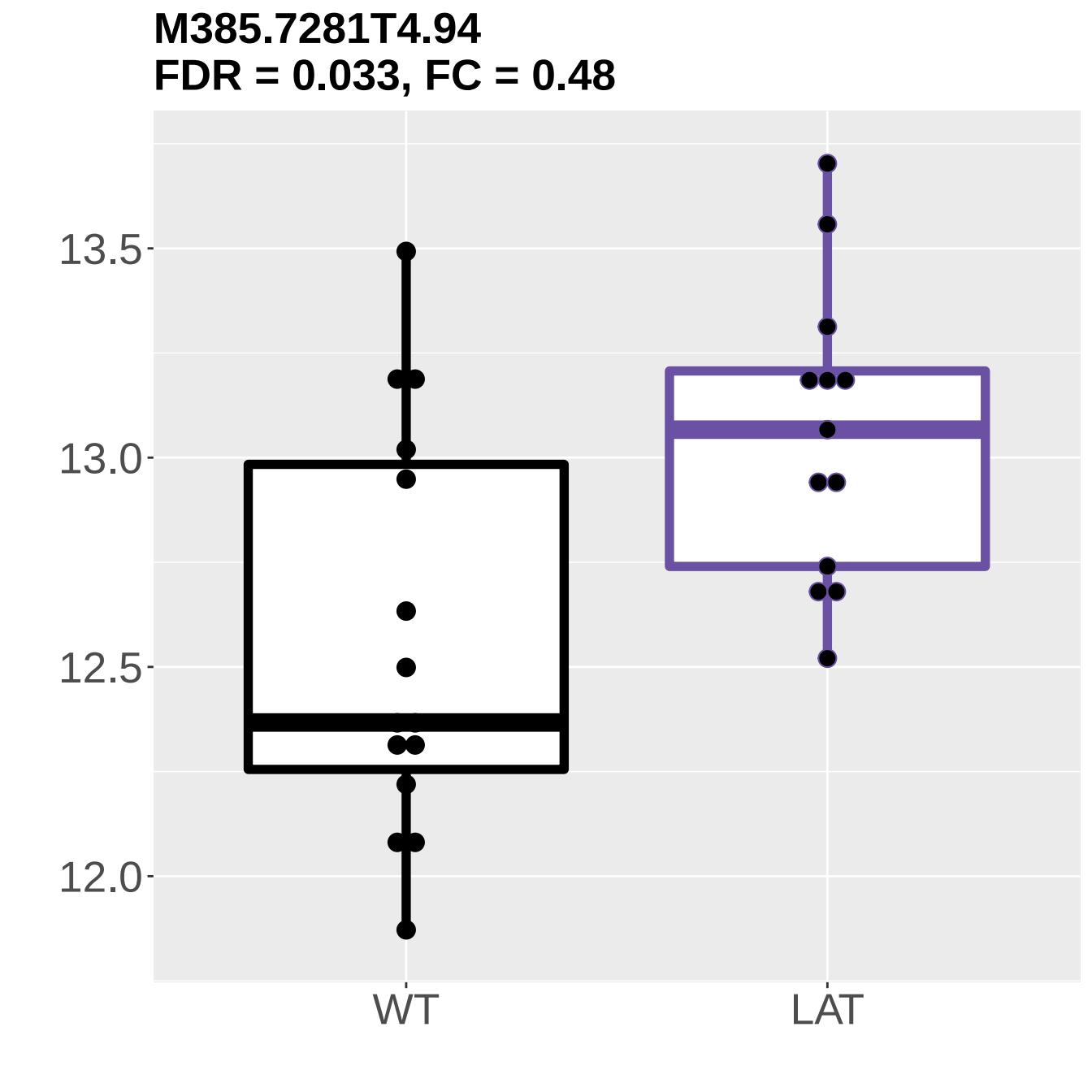
5
0
0
WT
LAT


M385.7281T4.94
FDR = 0.033, FC = 0.48
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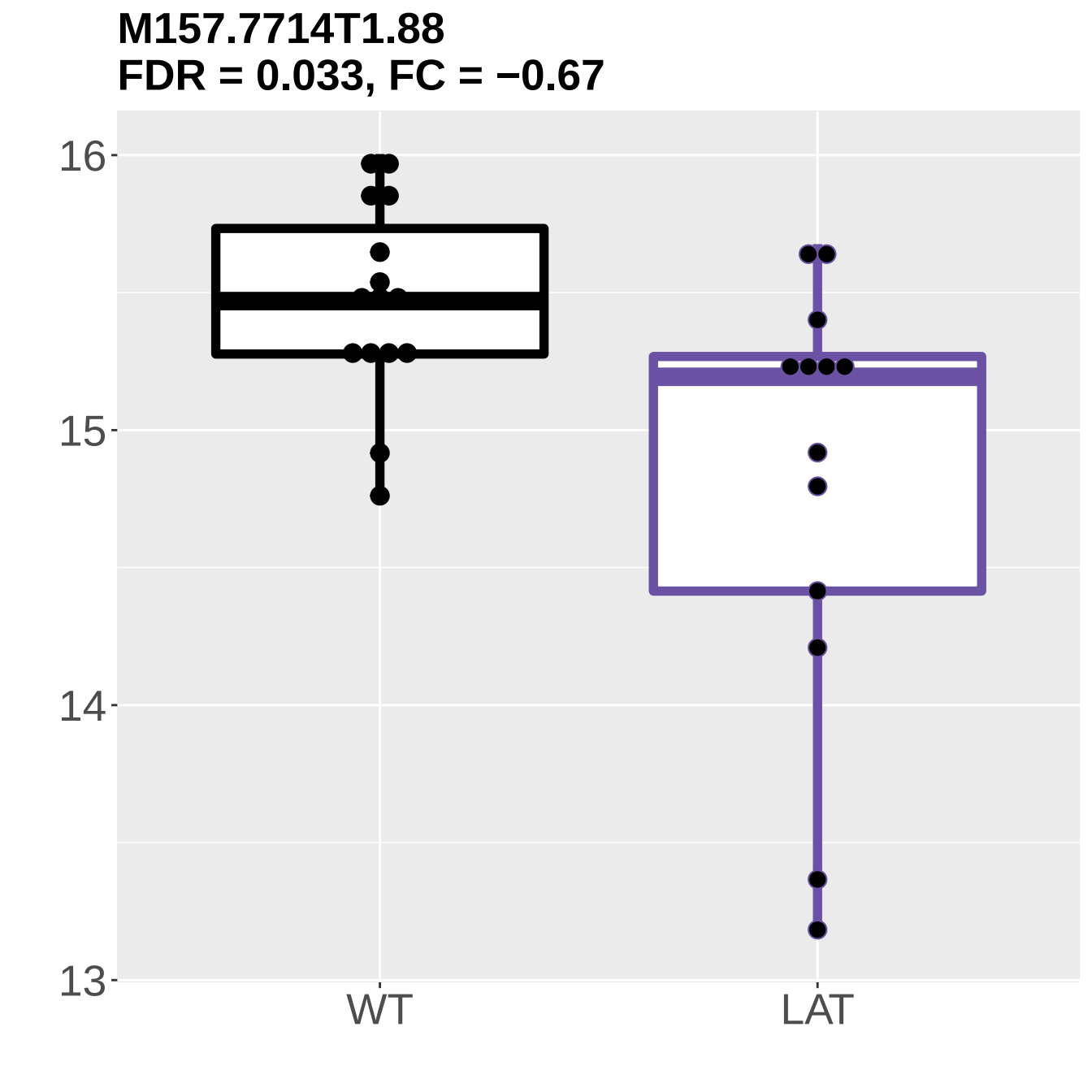
13.0
12.5
12.0
WT
LAT


M157.7714T1.88
FDR = 0.033, FC = −0.67
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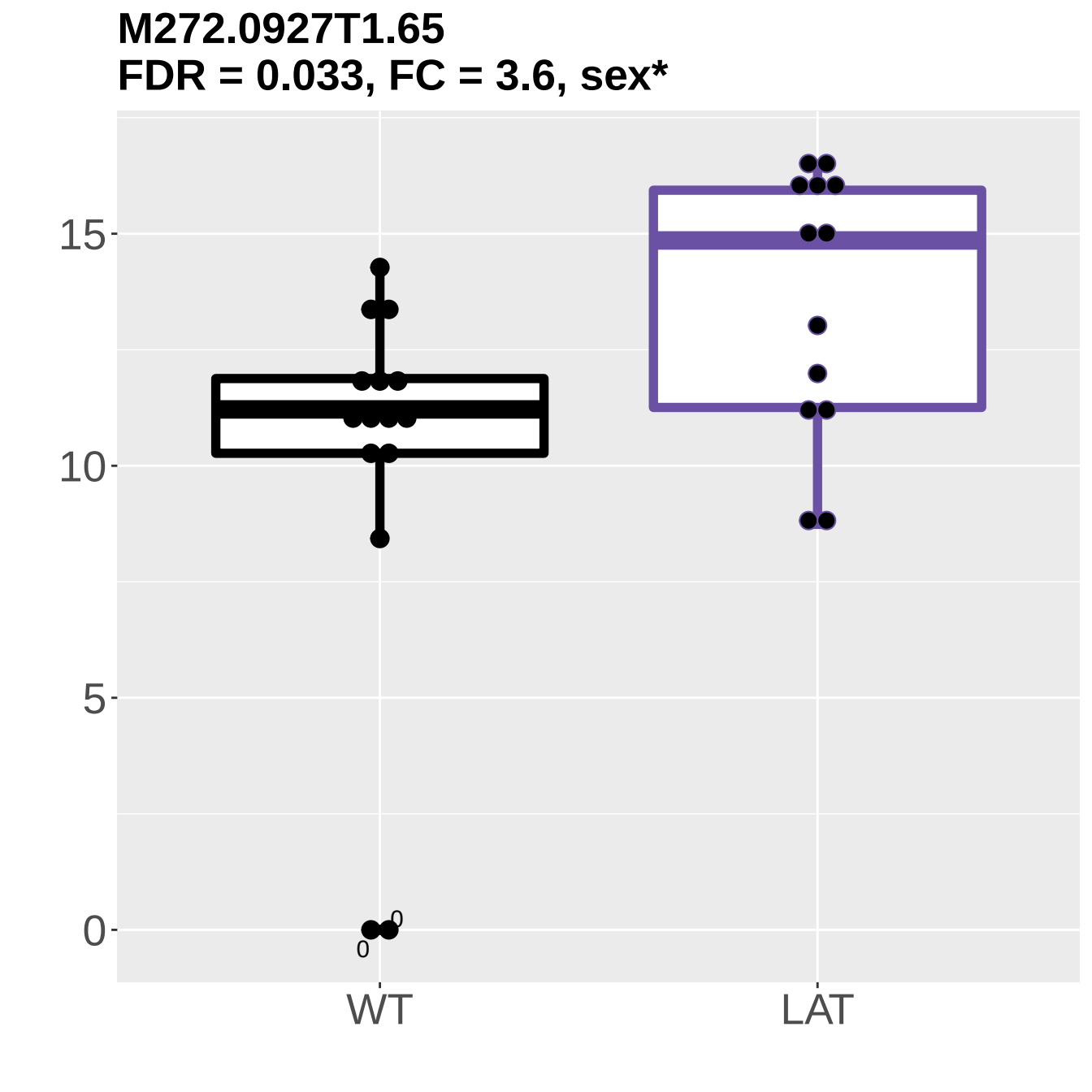
15
14
13
WT
LAT


M272.0927T1.65
FDR = 0.033, FC = 3.6, sex*
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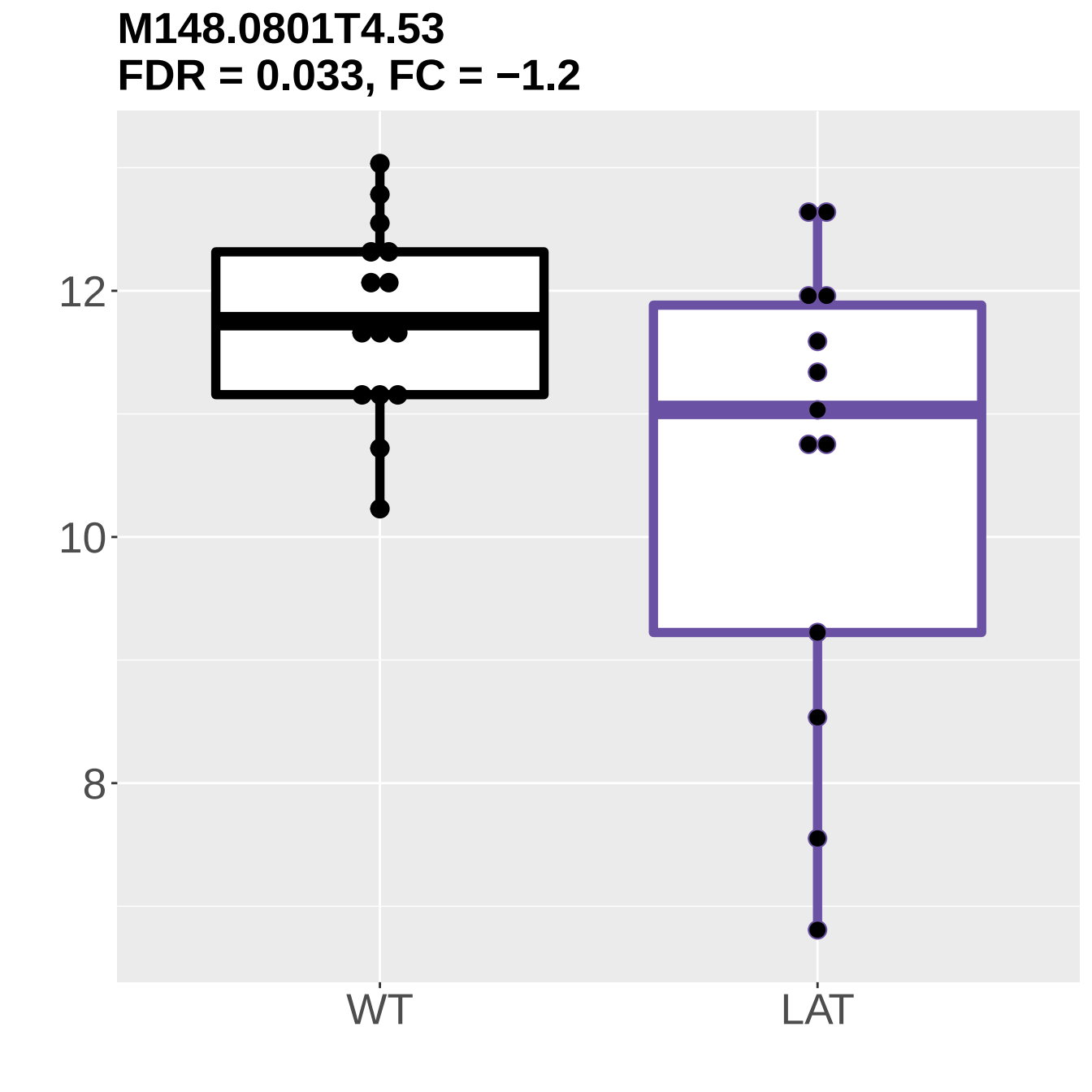
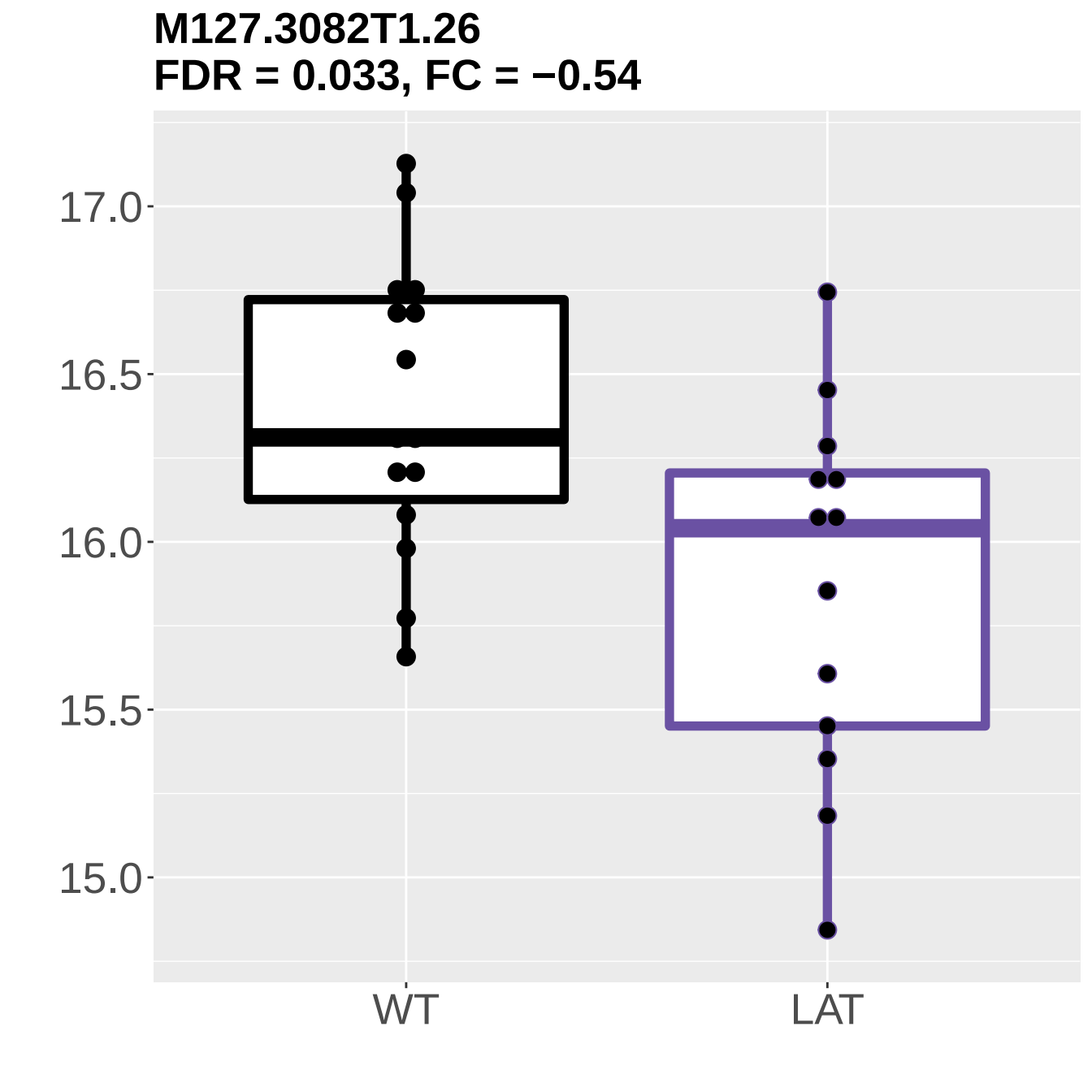
10
5
0
0
0
WT
LAT


M148.0801T4.53
FDR = 0.033, FC = −1.2
12
10
8
WT
LAT


M127.3082T1.26
FDR = 0.033, FC = −0.54
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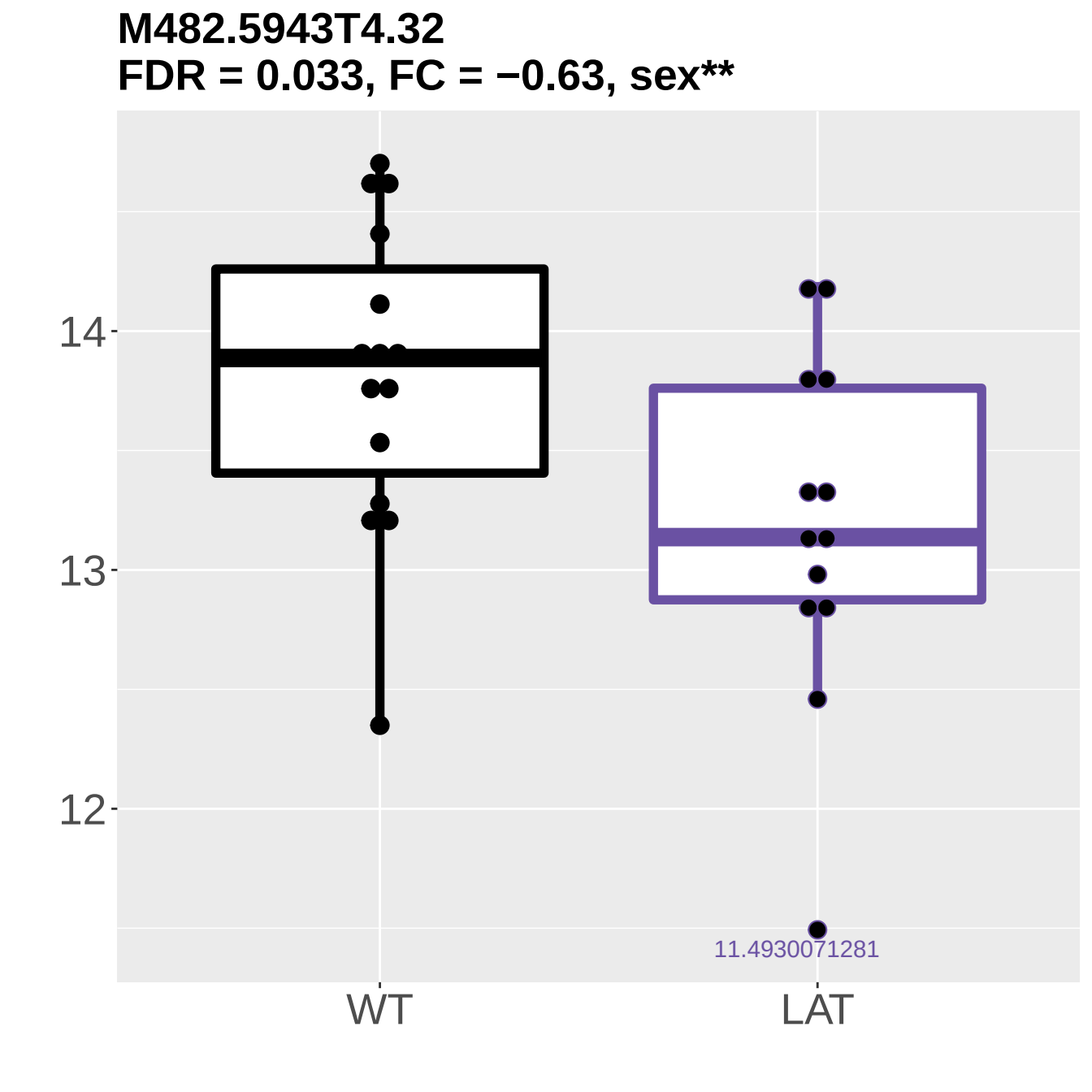
16.5
16.0
15.5
15.0
WT
LAT


M482.5943T4.32
FDR = 0.033, FC = −0.63, sex**
14
13
12
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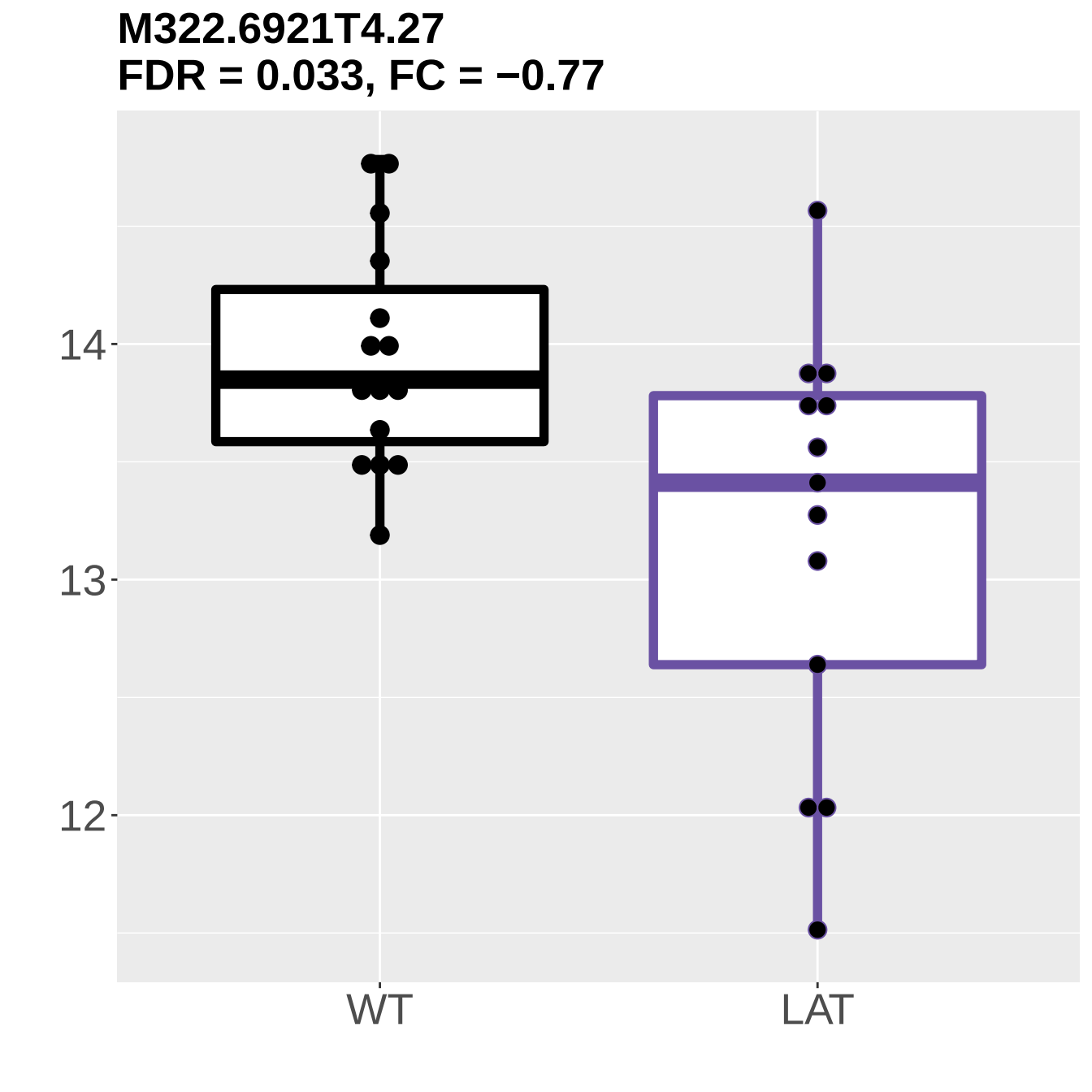
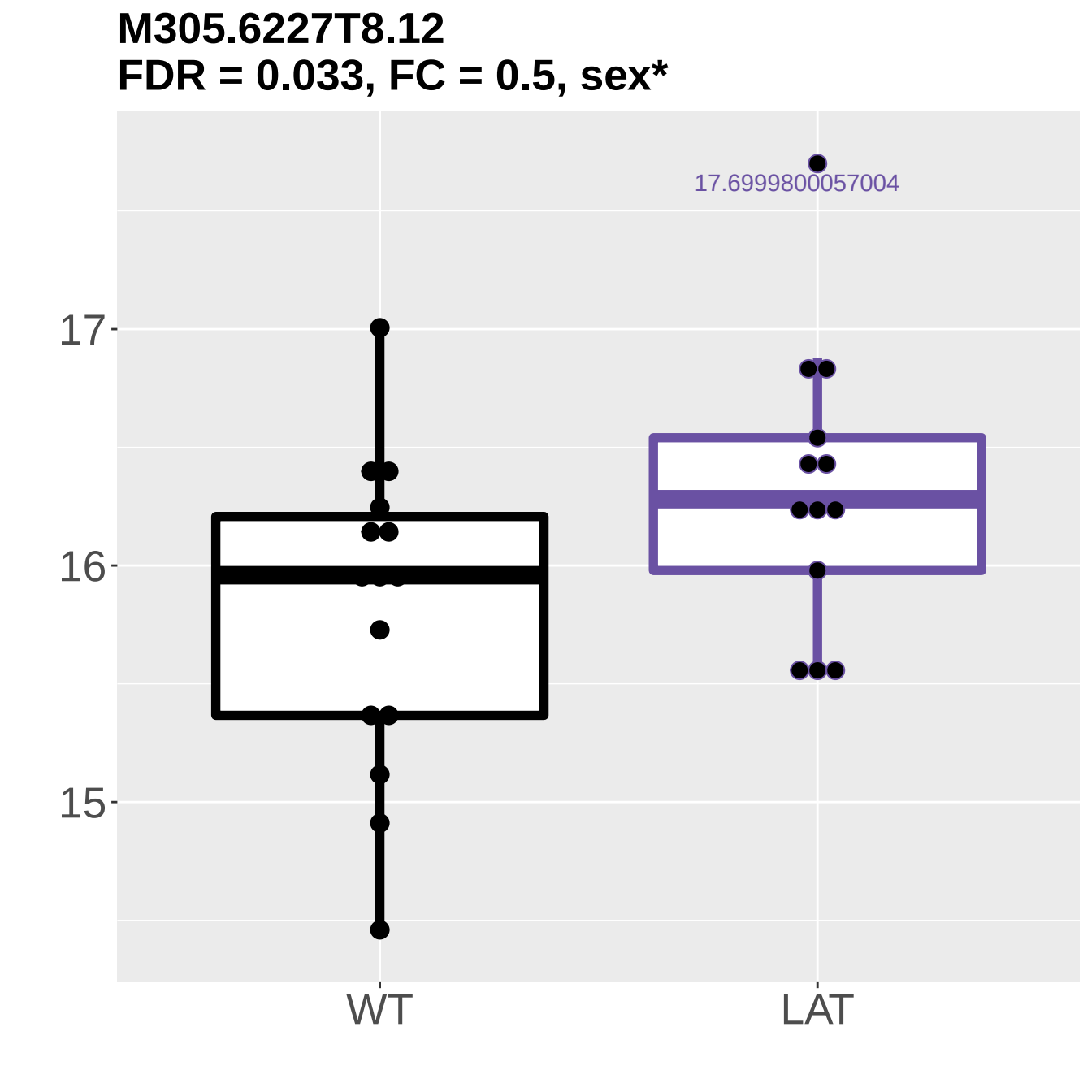
WT
LAT


M322.6921T4.27
FDR = 0.033, FC = −0.77
14
13
12
WT
LAT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FDR = 0.033, FC = 0.5, sex*
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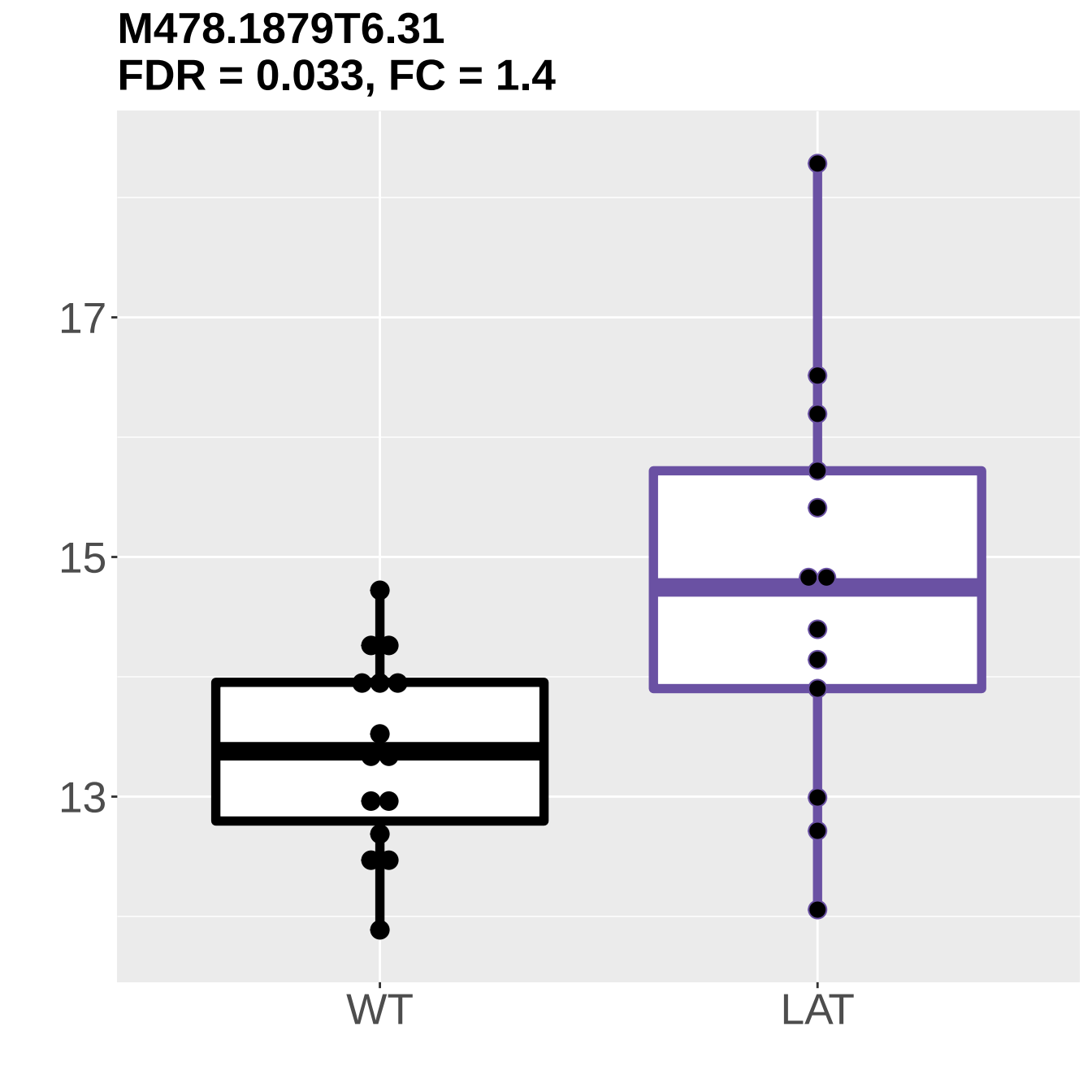
17
16
15
WT
LAT


M478.1879T6.31
FDR = 0.033, FC = 1.4
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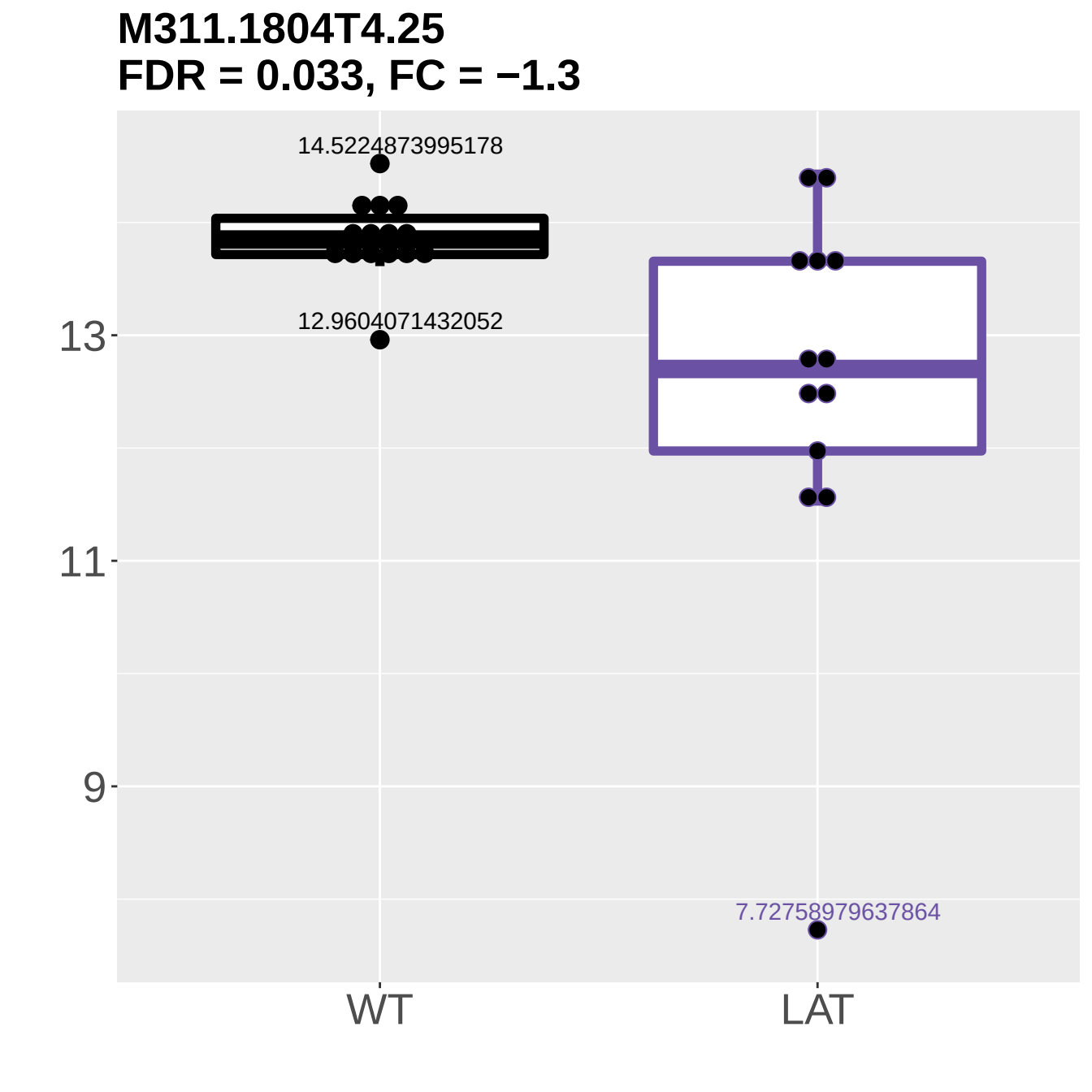
15
13
WT
LAT


M311.1804T4.25
FDR = 0.033, FC = −1.3
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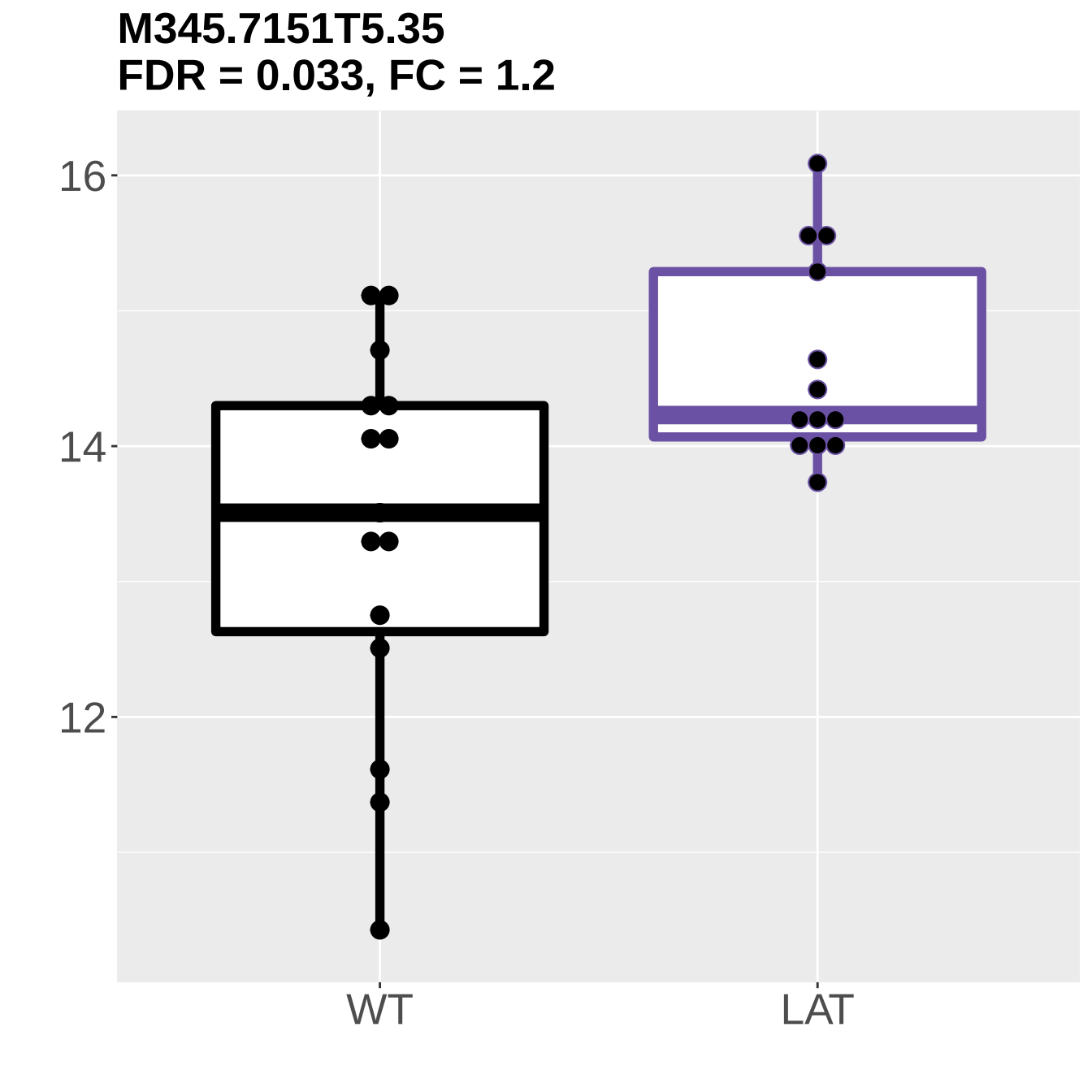
12.9604071432052
7.72758979637864
13
11
9
WT
LAT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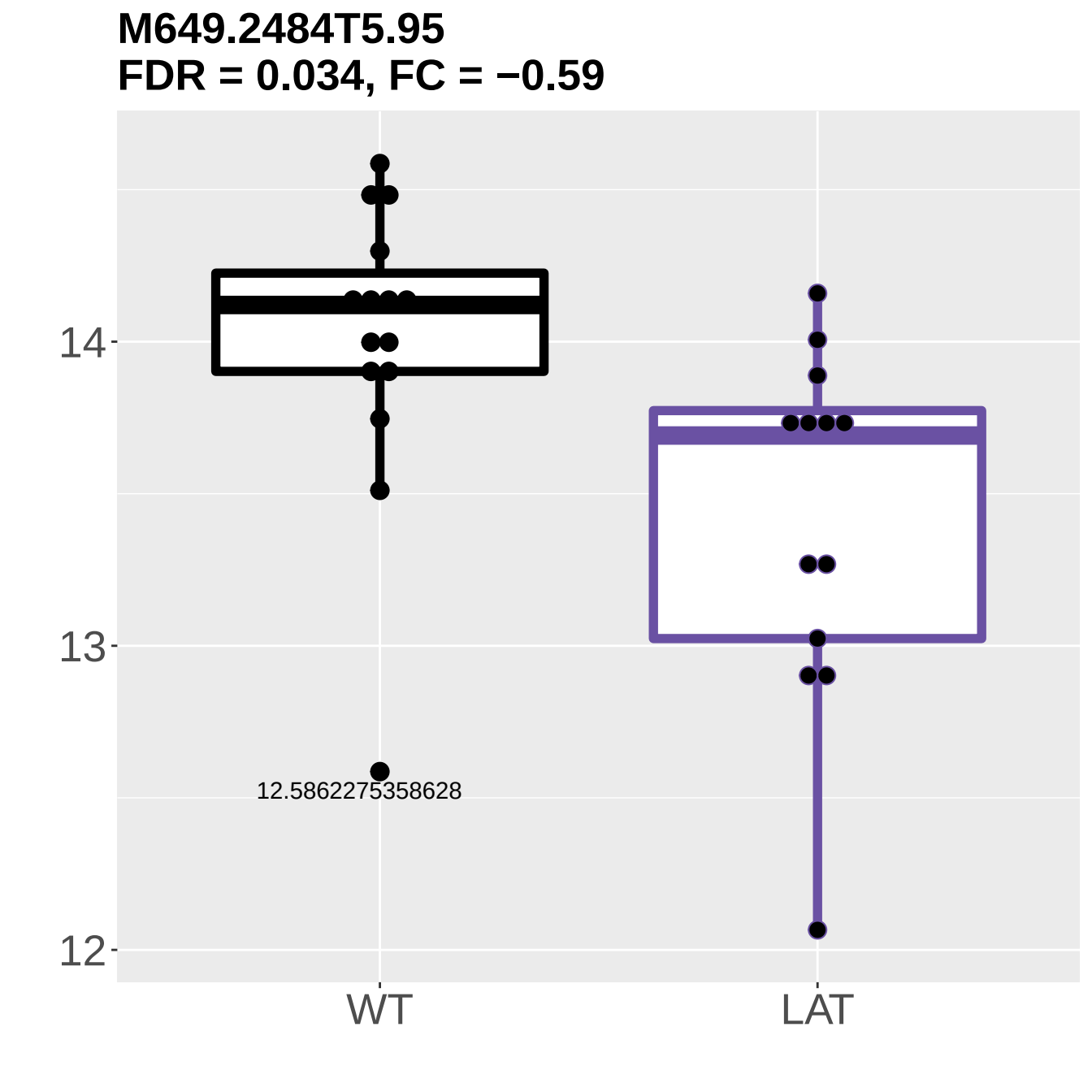
FDR = 0.033, FC = 1.2
16
14
12
WT
LAT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FDR = 0.034, FC = −0.59
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13
12
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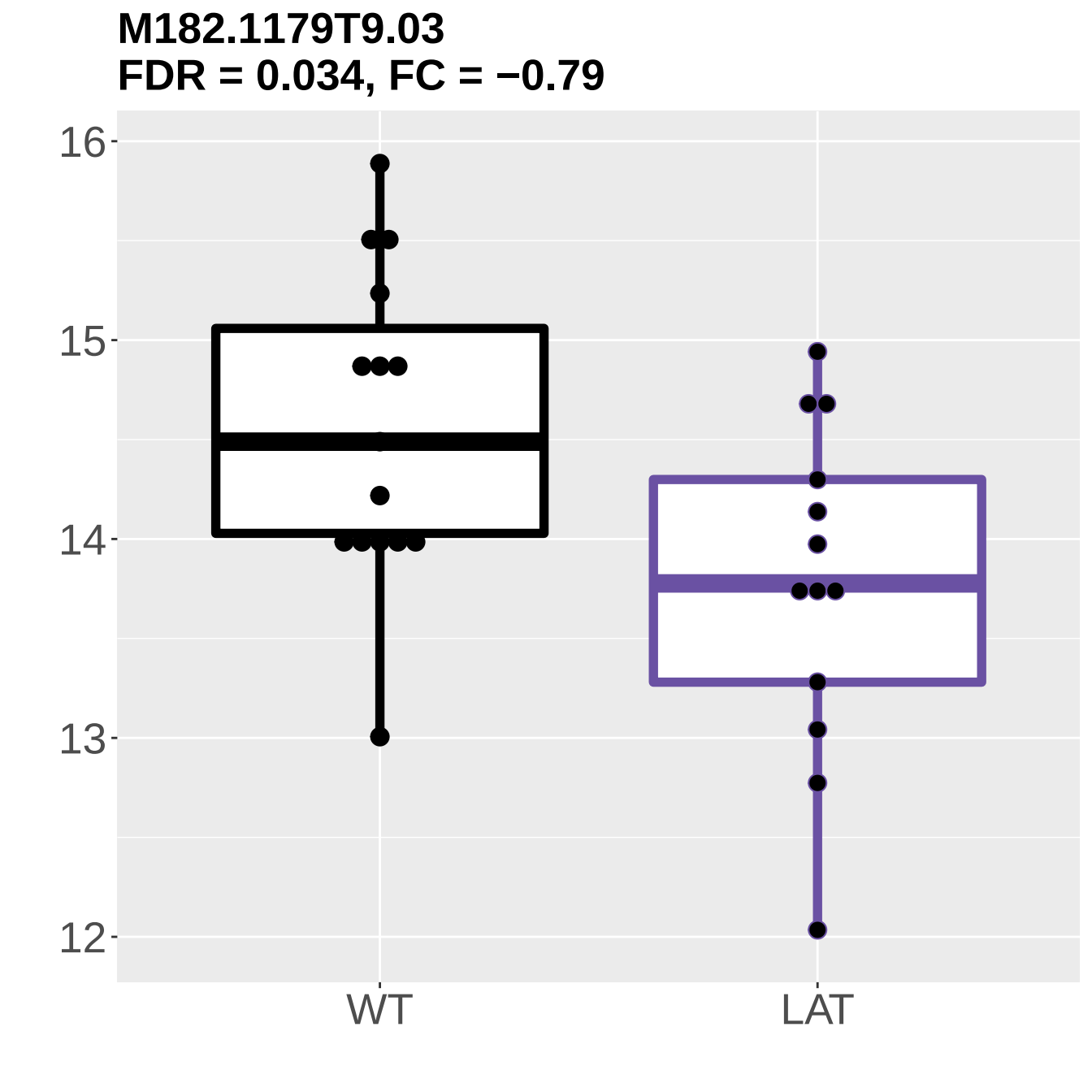
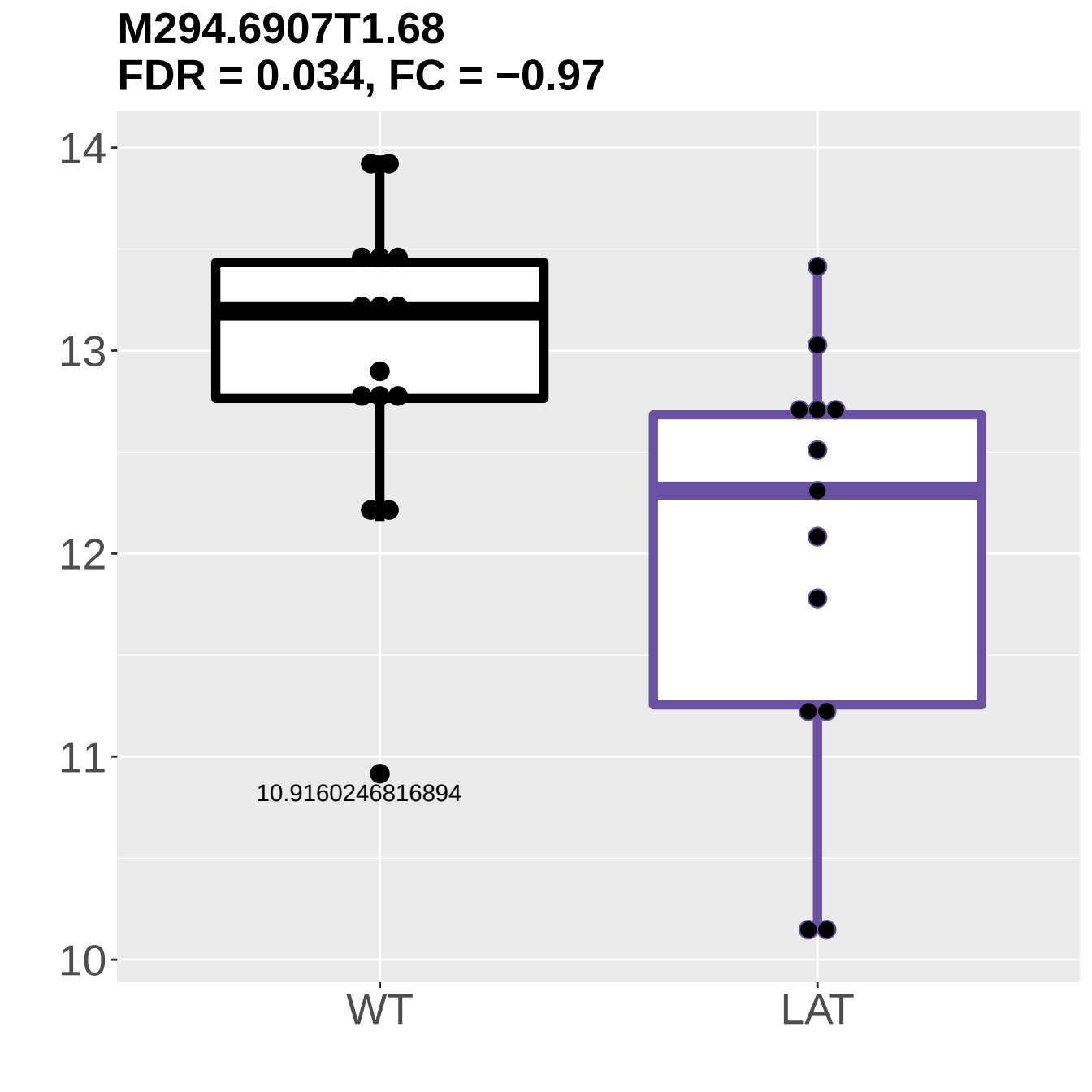
WT
LAT


M182.1179T9.03
FDR = 0.034, FC = −0.79
16
15
14
13
12
WT
LAT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14
13
12
11
10
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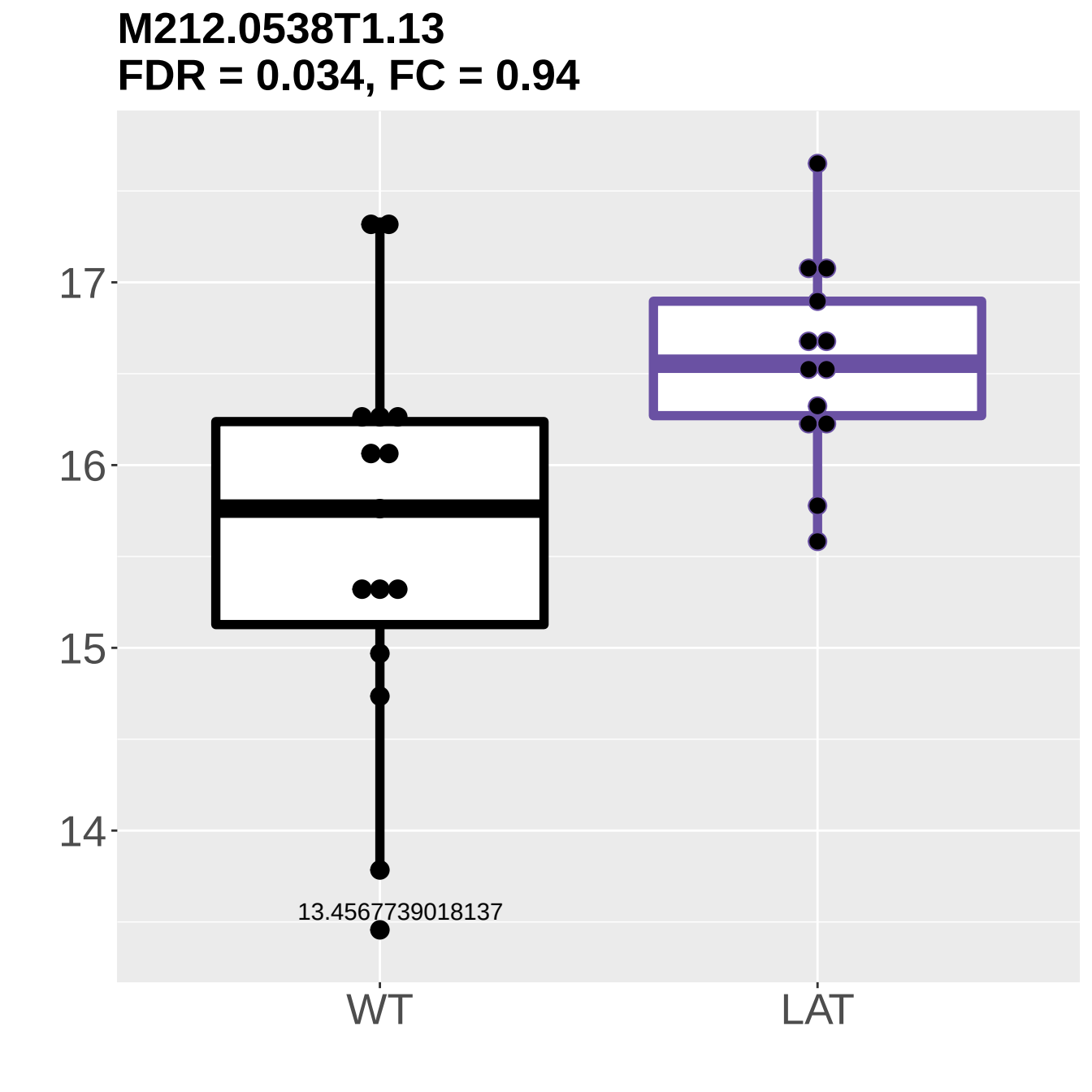
WT
LAT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FDR = 0.034, FC = 0.94
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16
15
14
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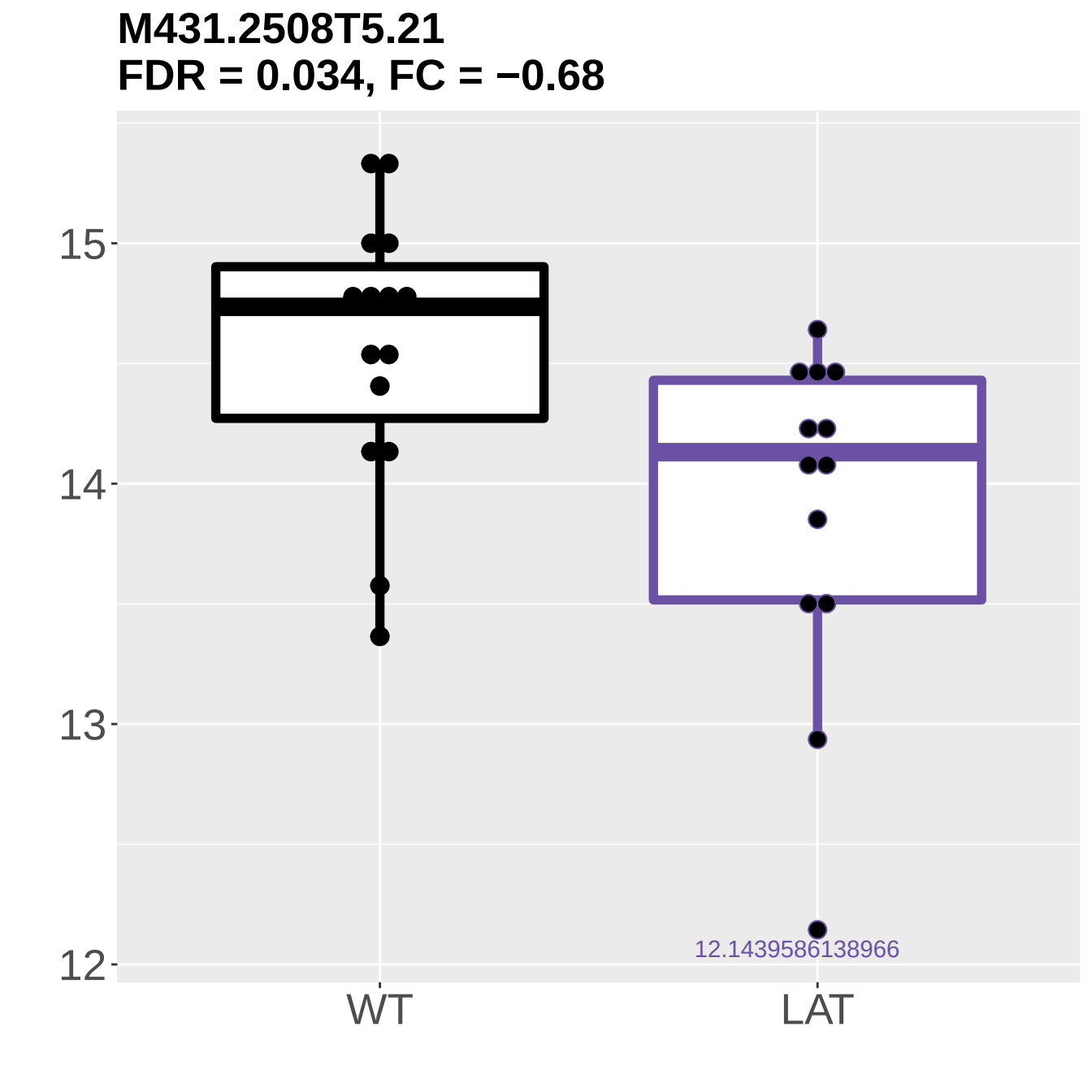
WT
LAT


M431.2508T5.21
FDR = 0.034, FC = −0.68
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14
13
12
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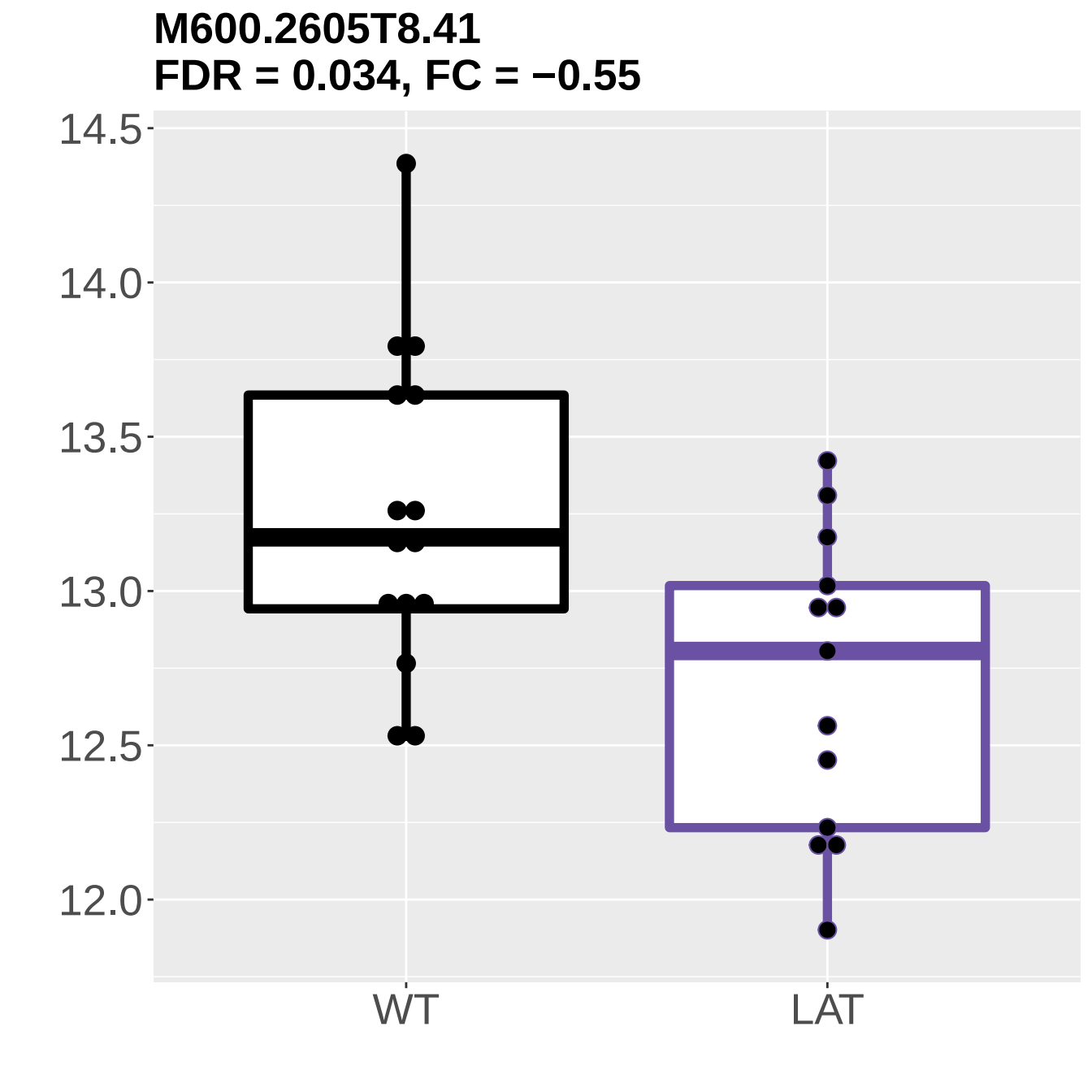
WT
LAT


M600.2605T8.41
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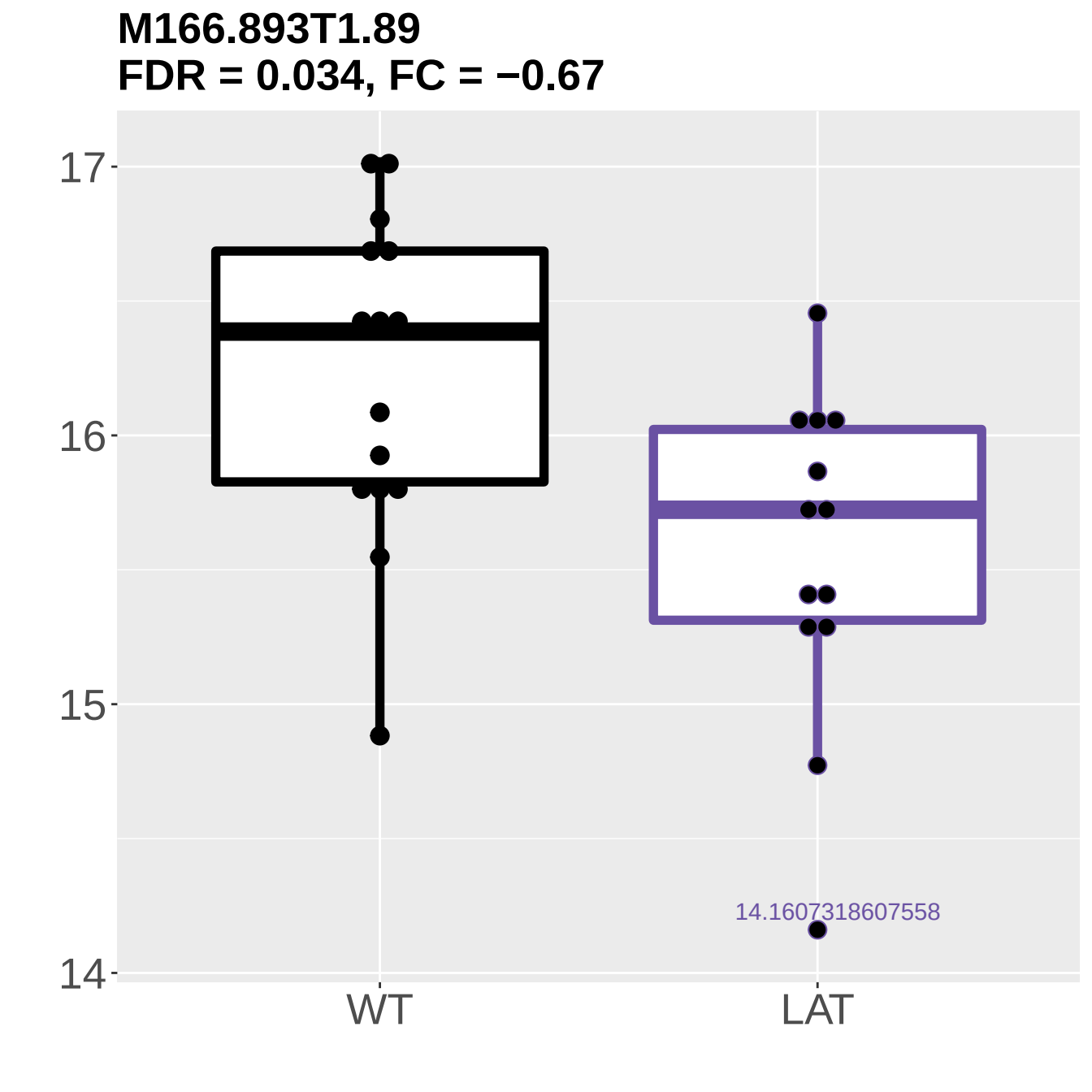
13.5
13.0
12.5
12.0
WT
LAT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FDR = 0.034, FC = −0.67
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16
15
14
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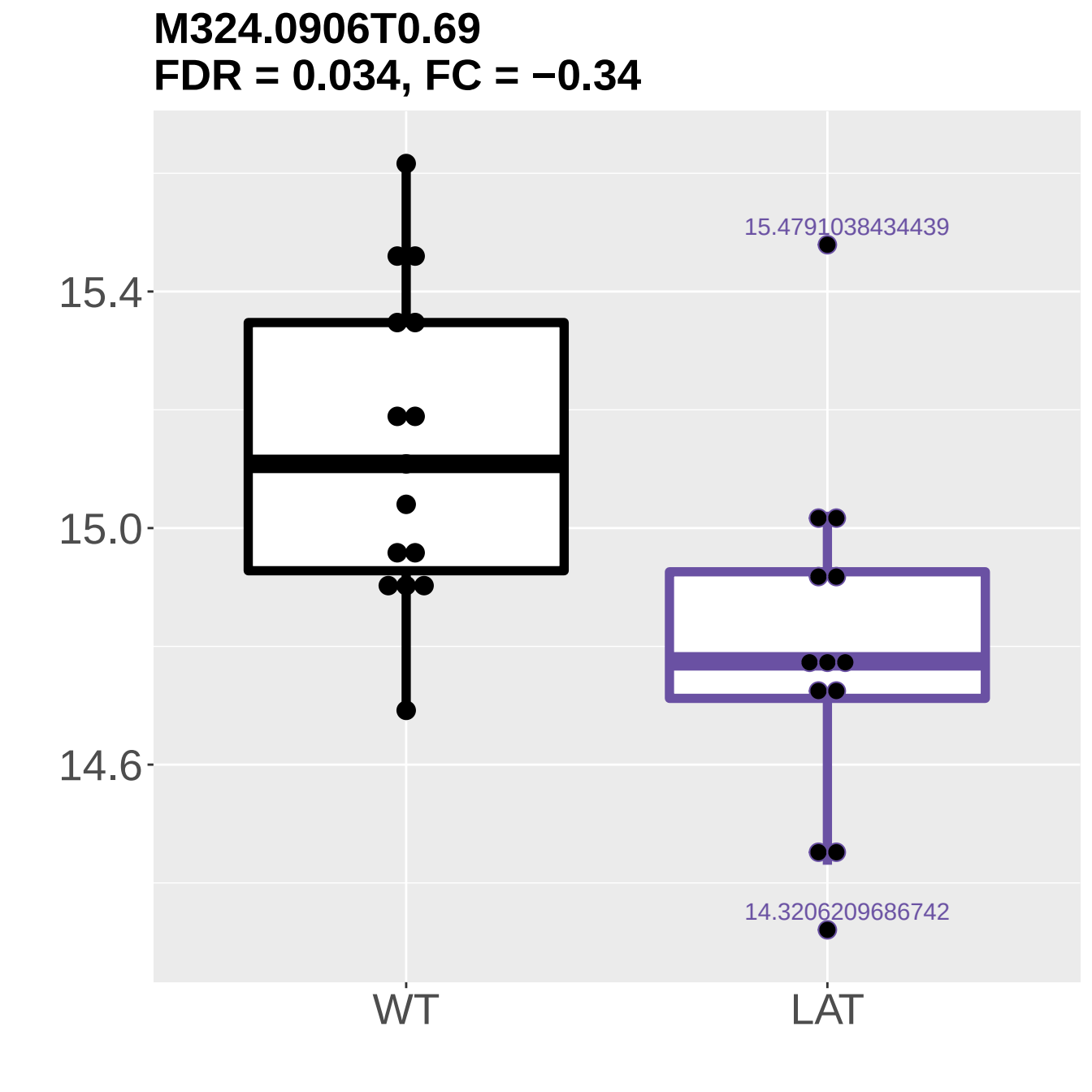
WT
LAT


M324.0906T0.69
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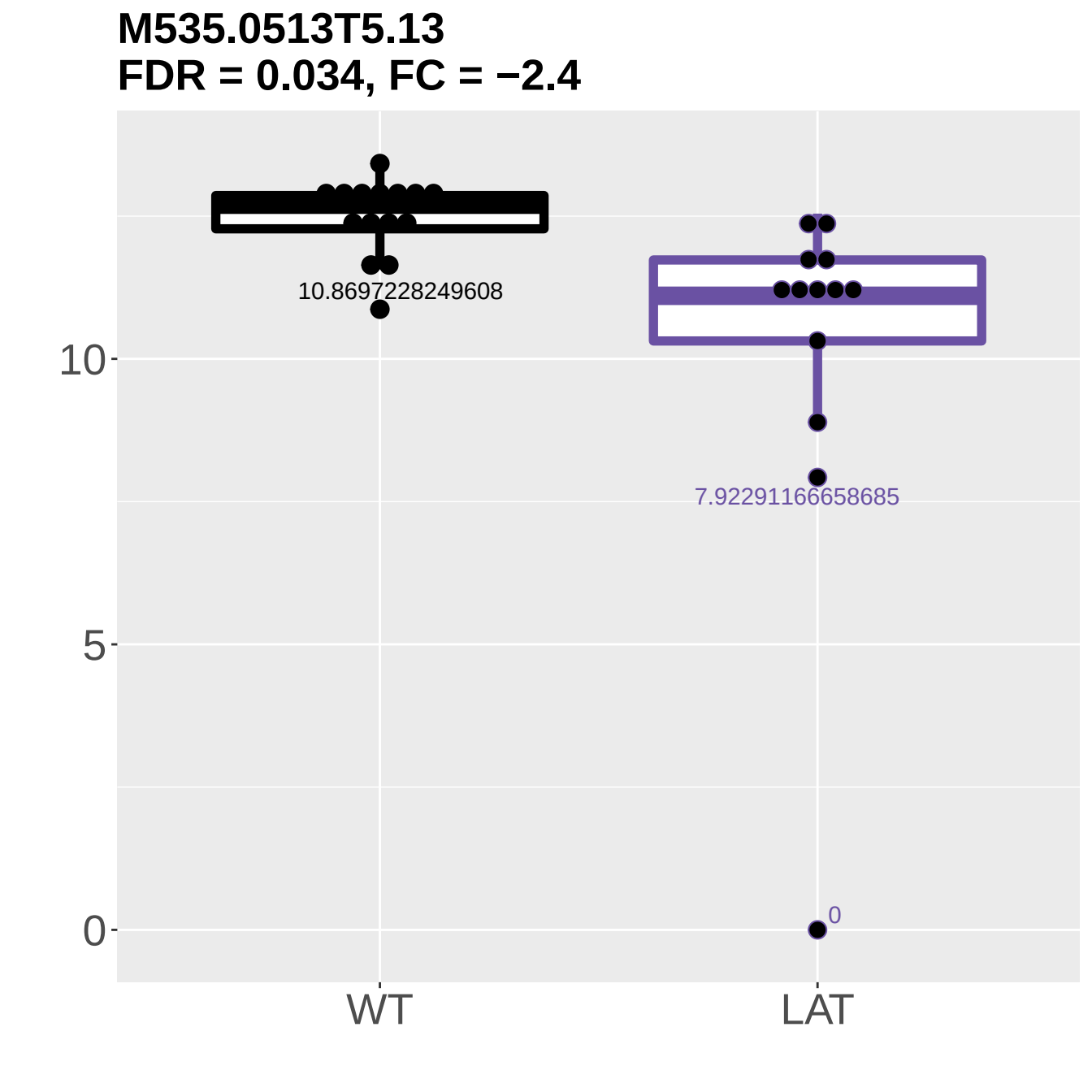
15.0
14.6
15.4791038434439
14.3206209686742
WT
LAT


M535.0513T5.13
FDR = 0.034, FC = −2.4
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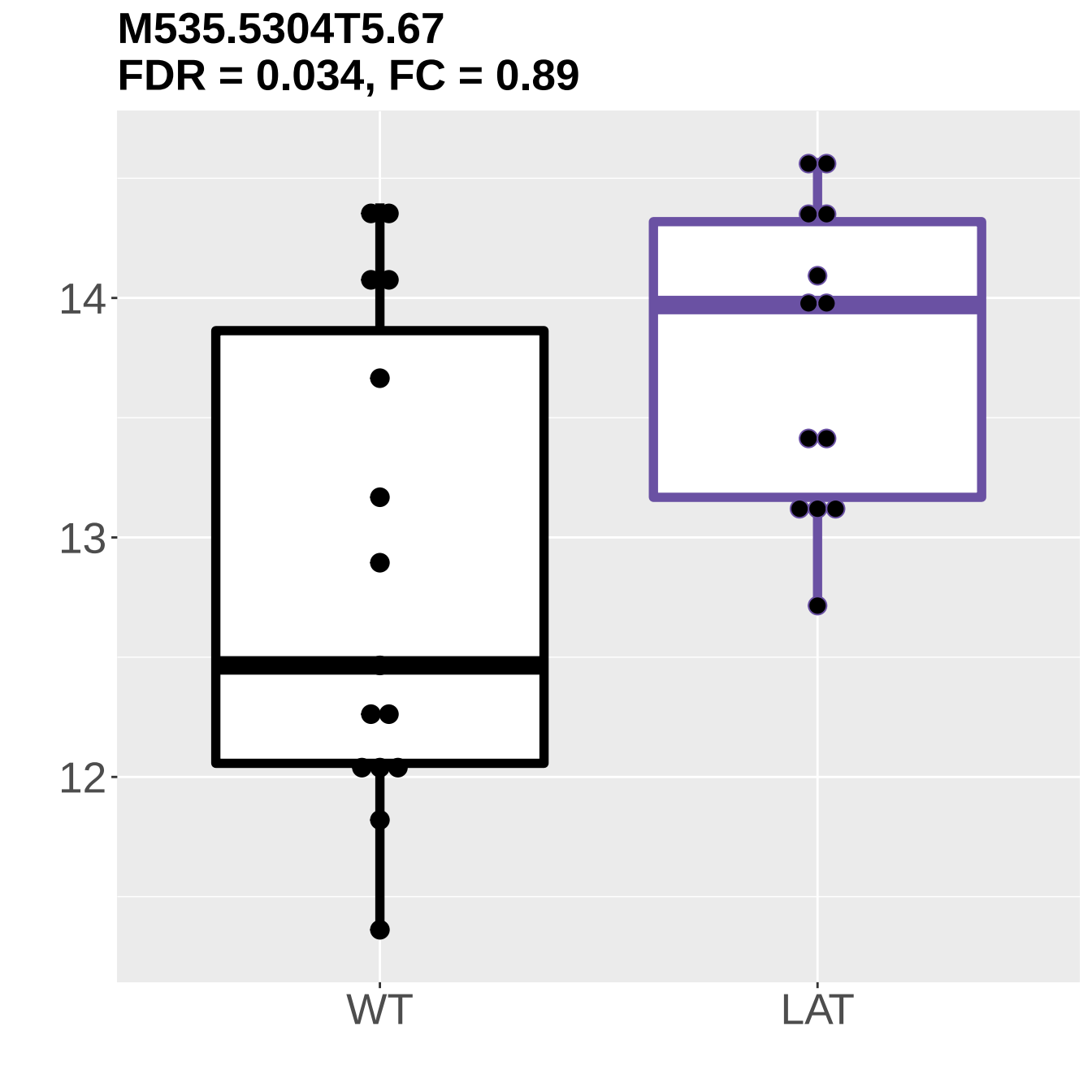
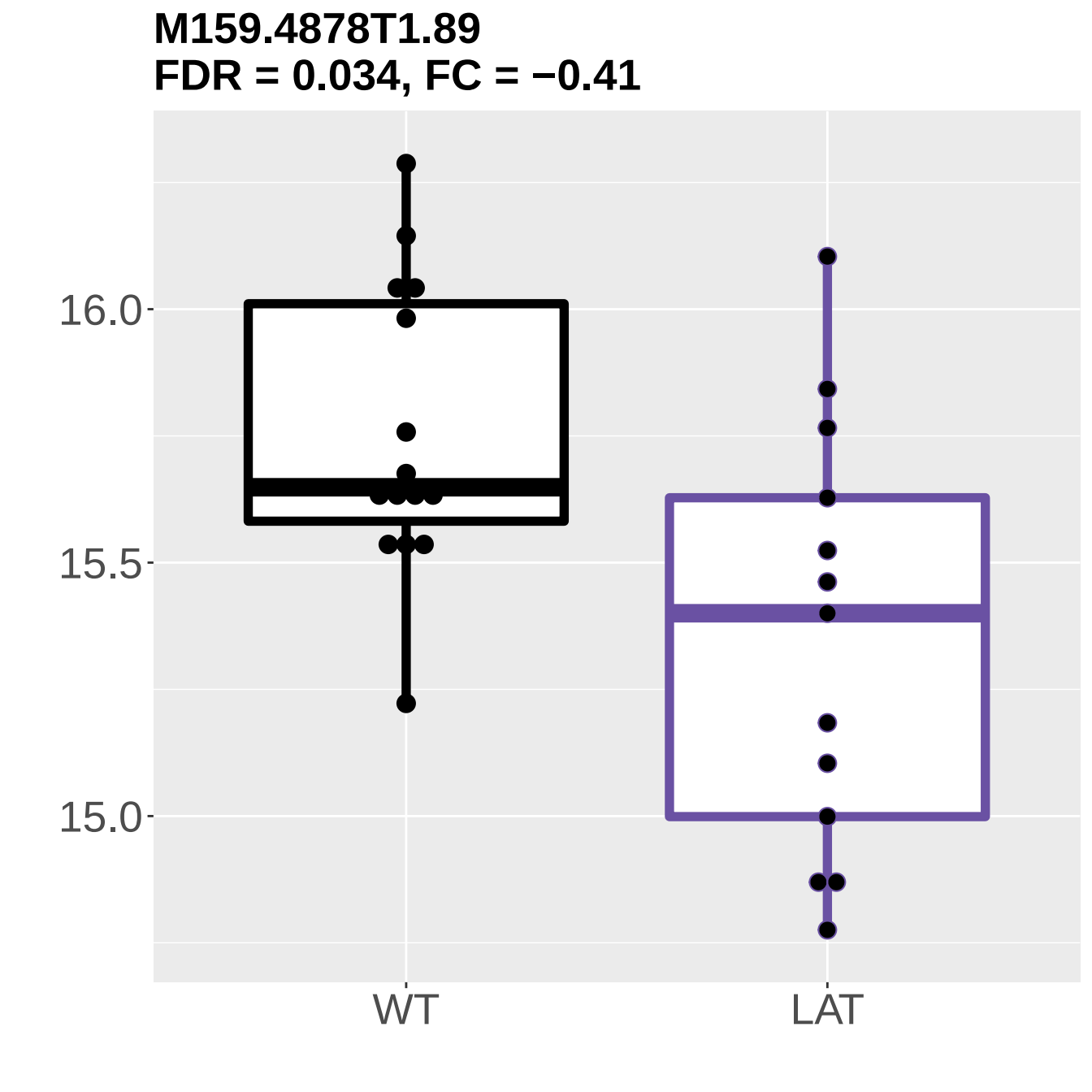
7.92291166658685
0
10
5
0
WT
LAT


M535.5304T5.67
FDR = 0.034, FC = 0.89
14
13
12
WT
LAT


M159.4878T1.89
FDR = 0.034, FC = −0.41
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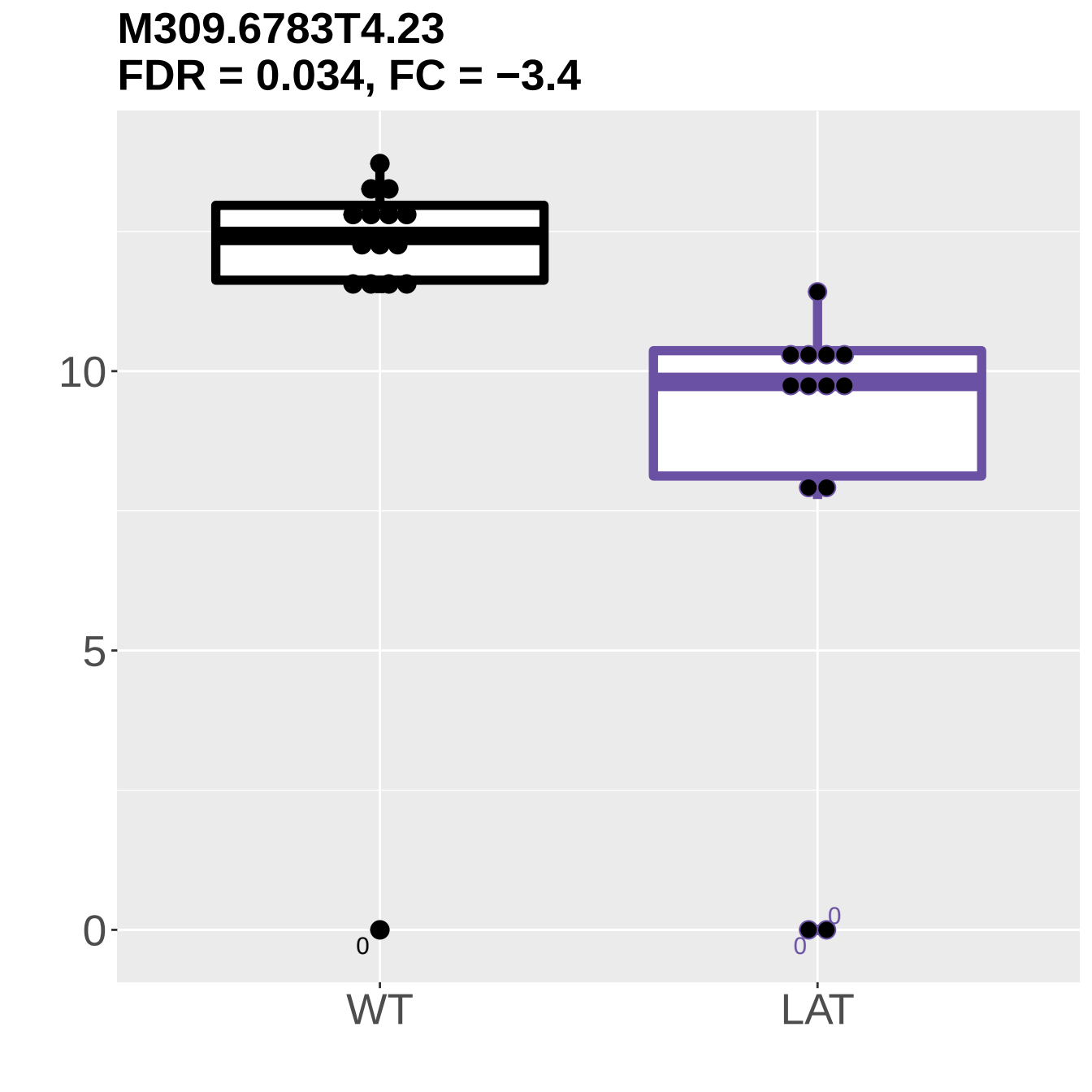
15.5
15.0
WT
LAT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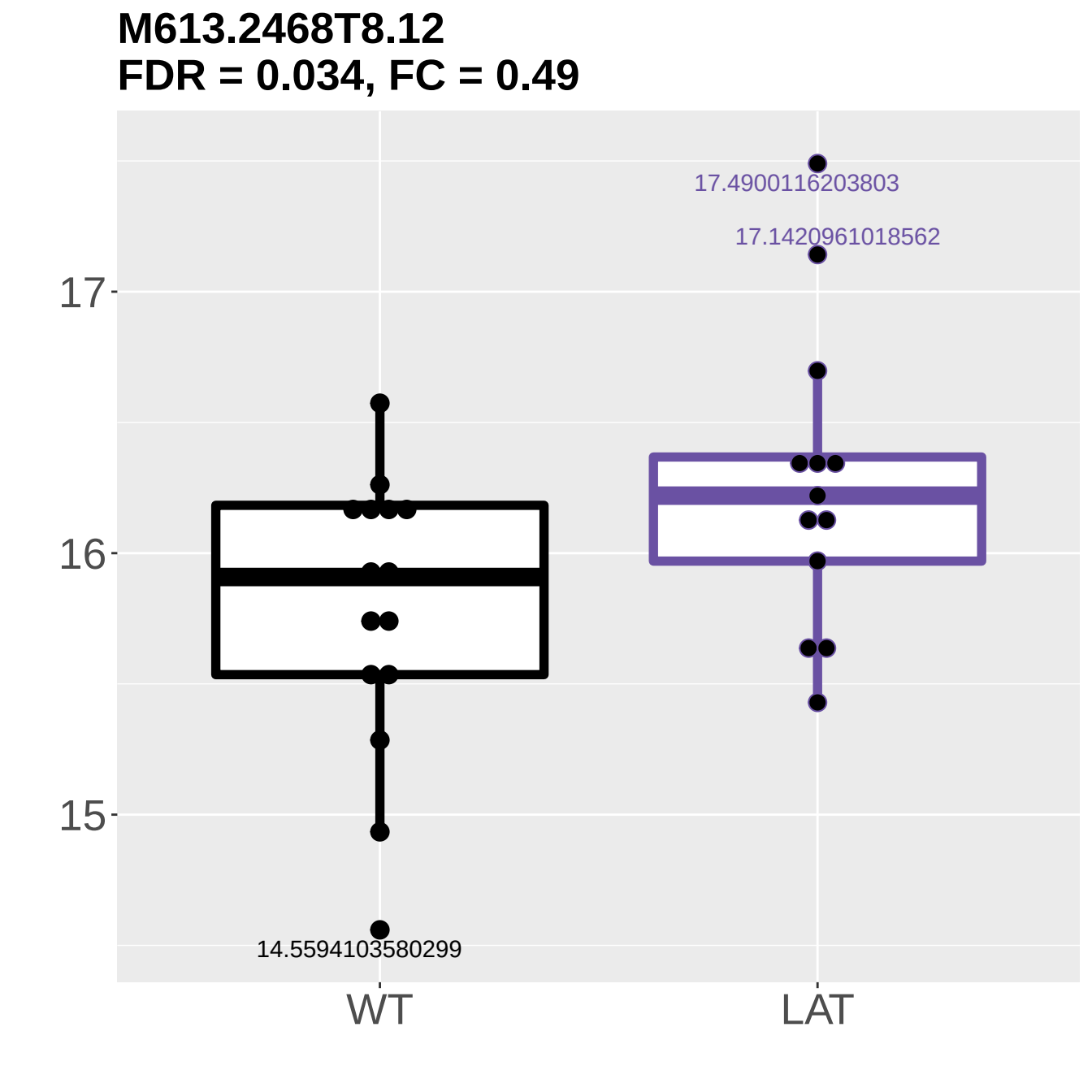
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16
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WT
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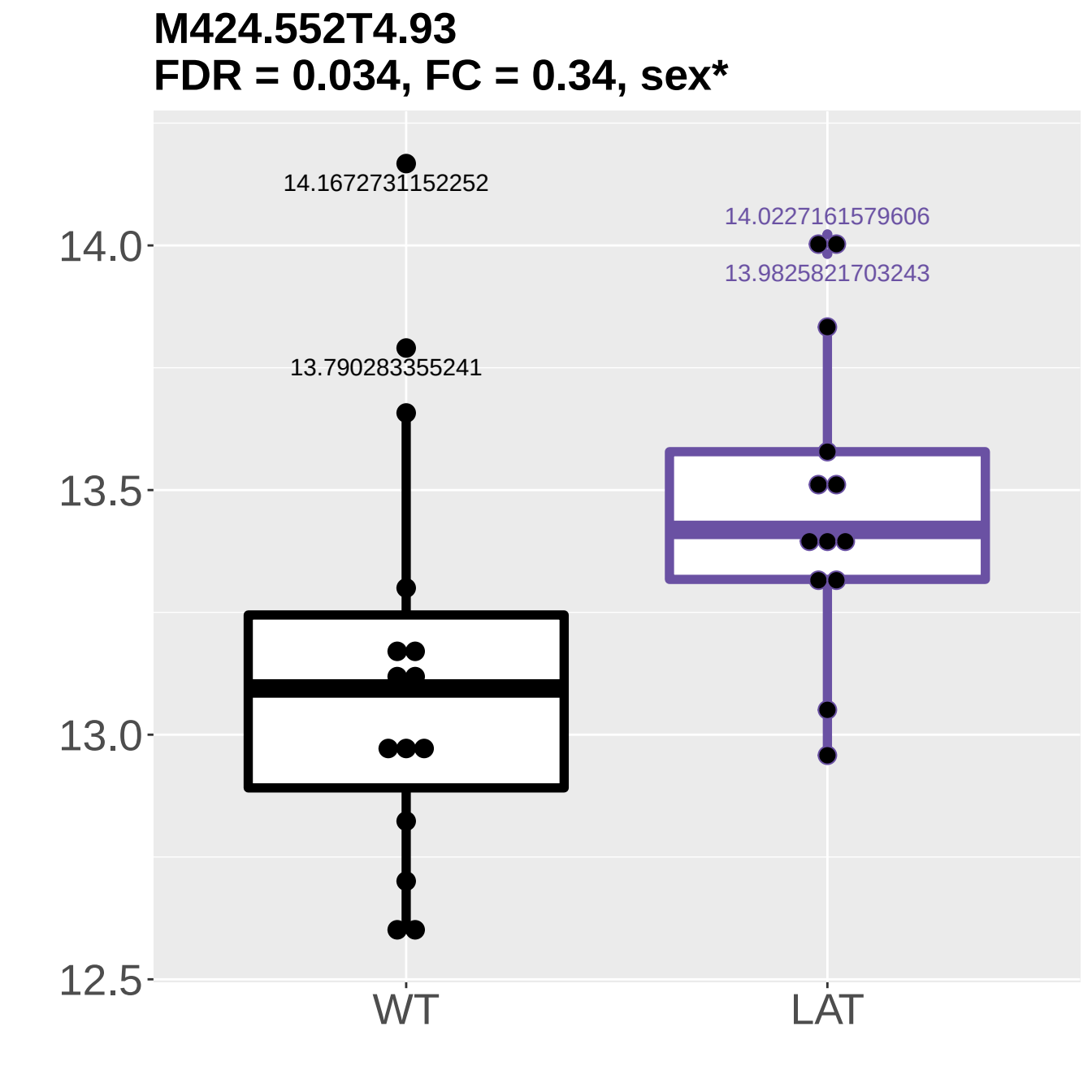
M424.552T4.93
FDR = 0.034, FC = 0.34, sex*
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WT
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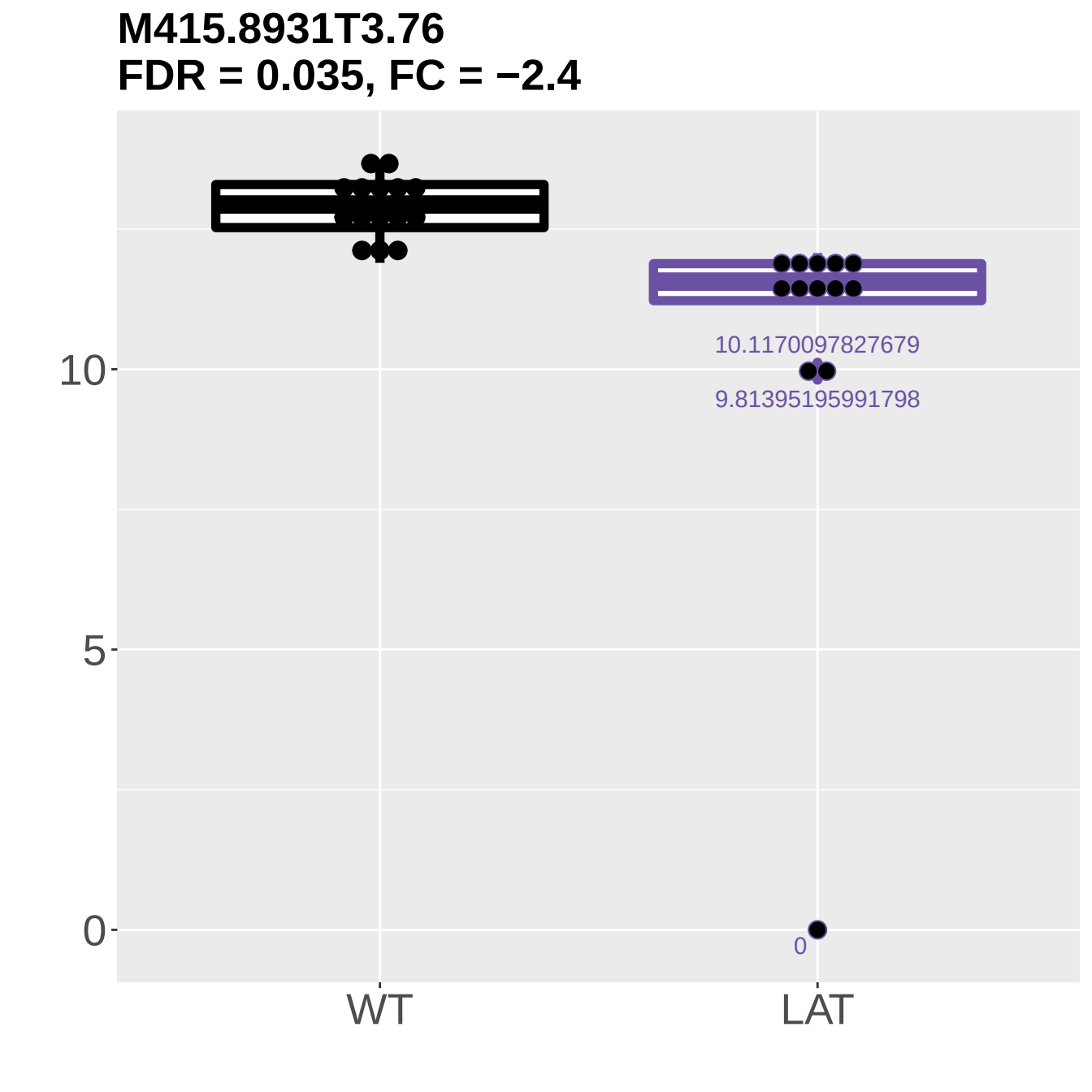
M415.8931T3.76
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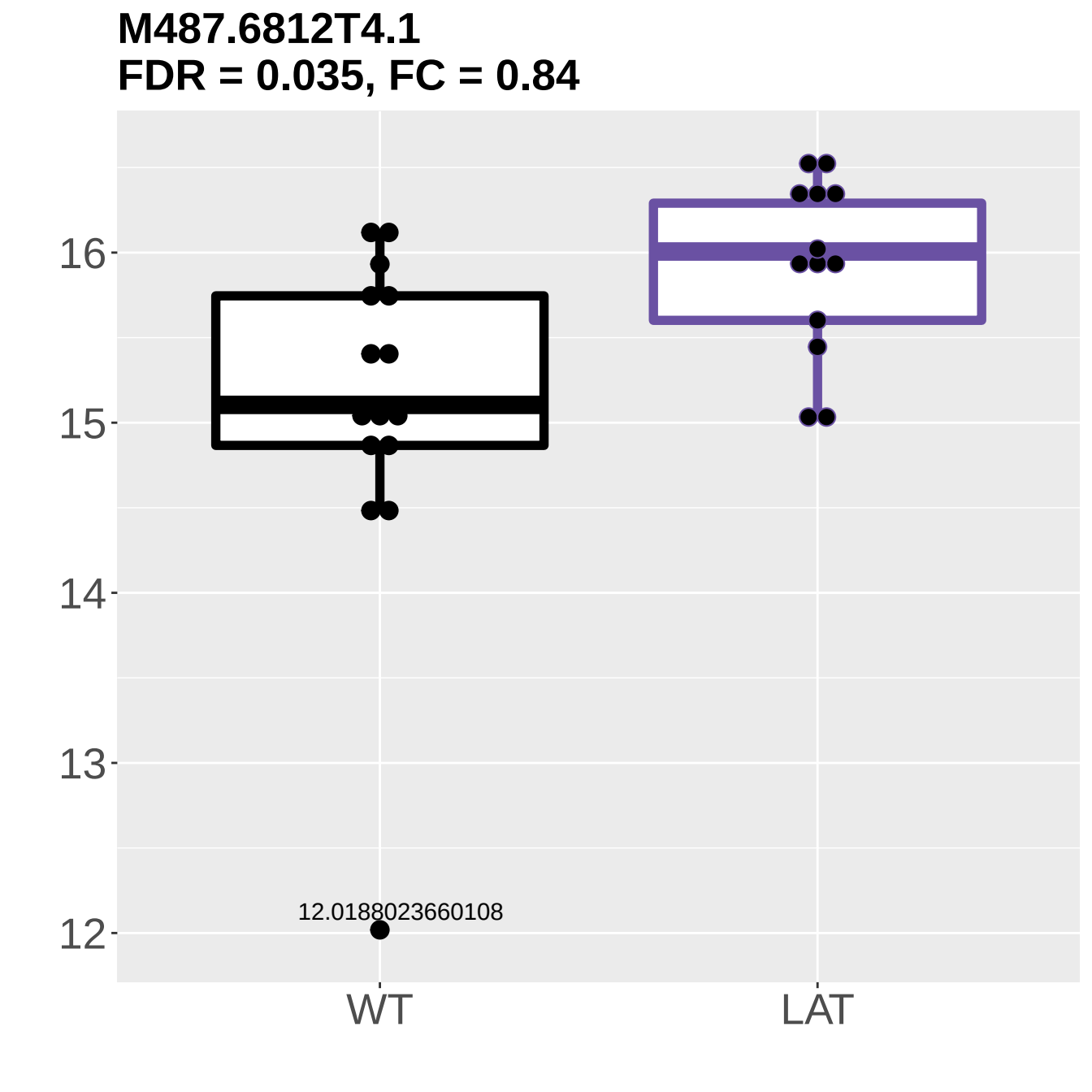
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WT
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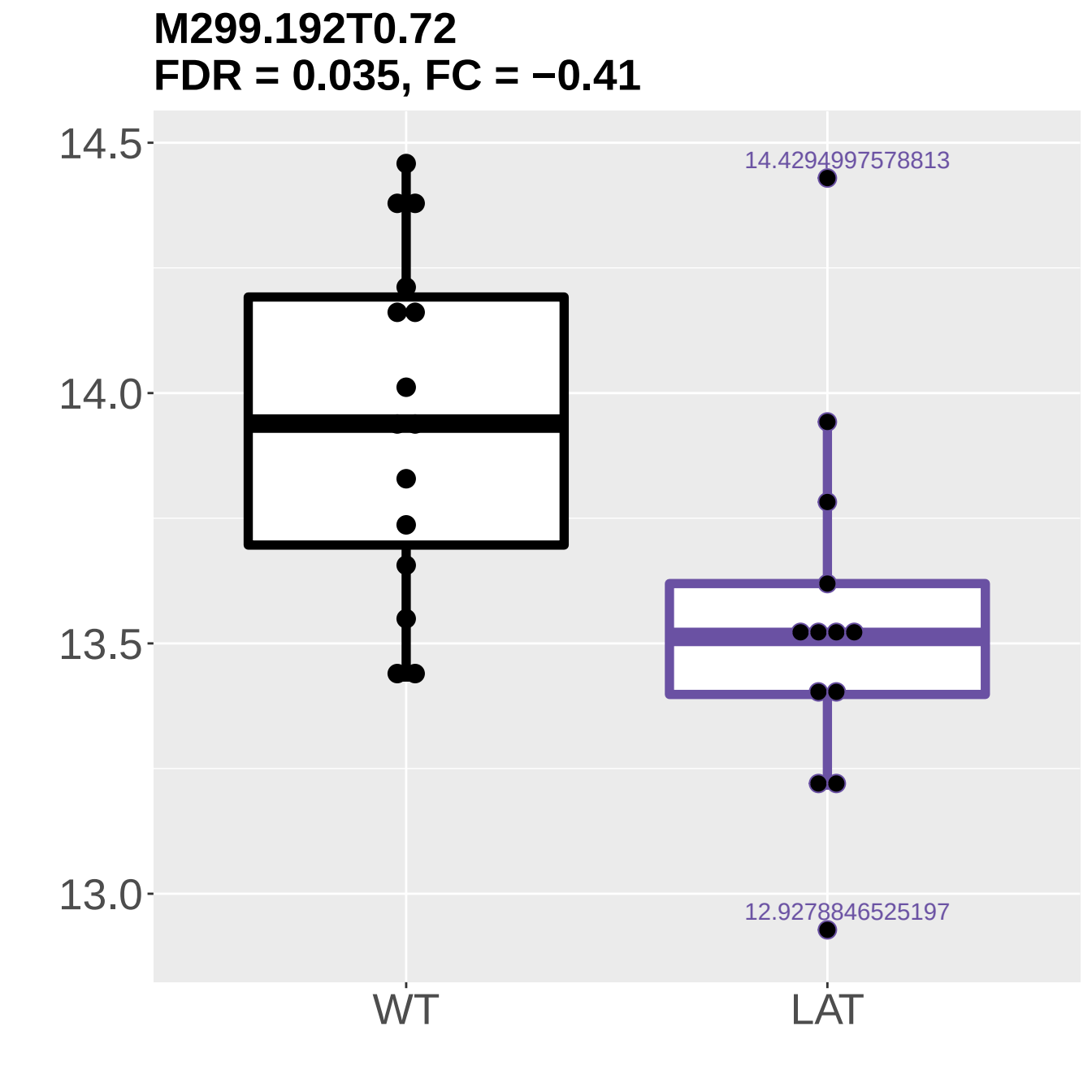
M299.192T0.72
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WT
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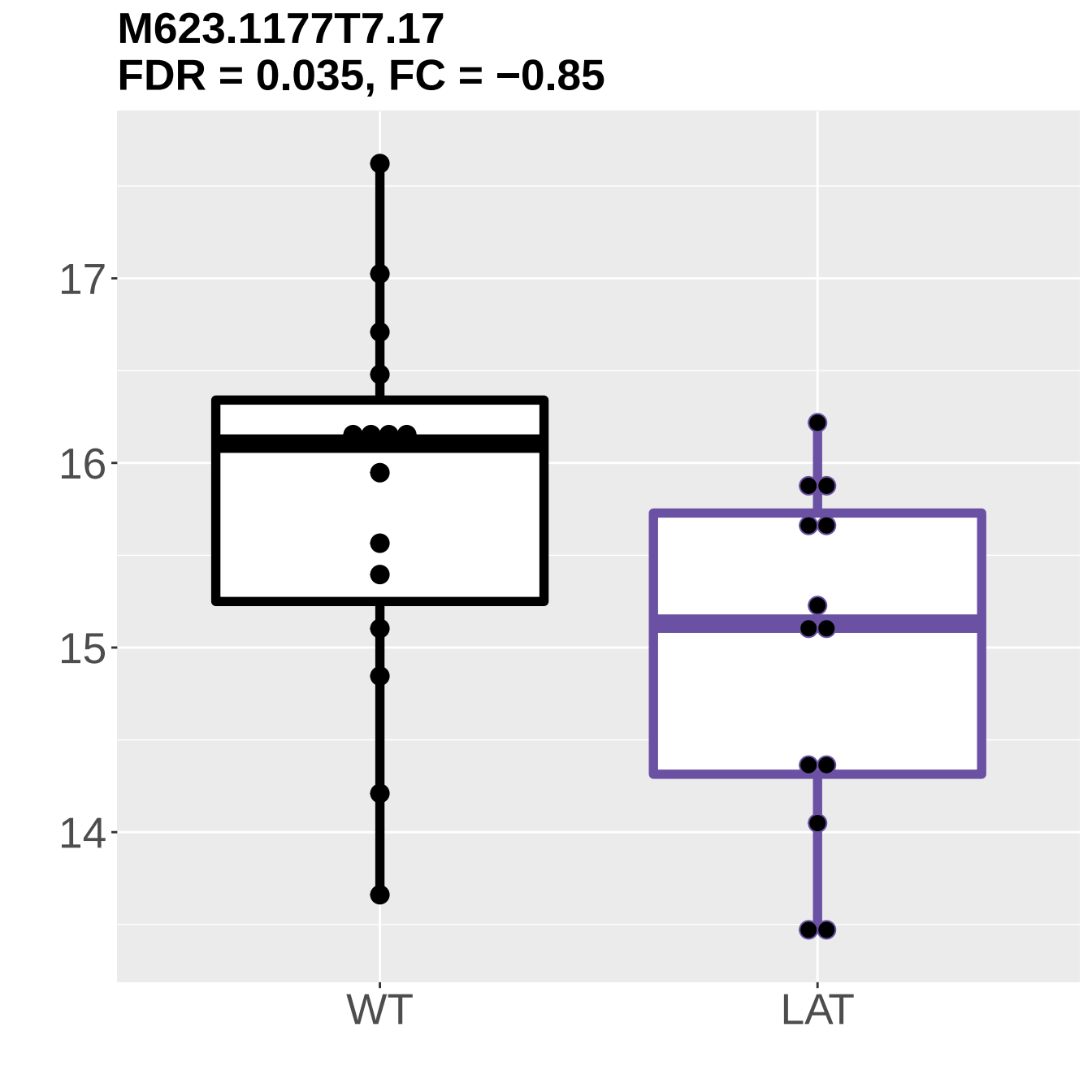
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14
WT
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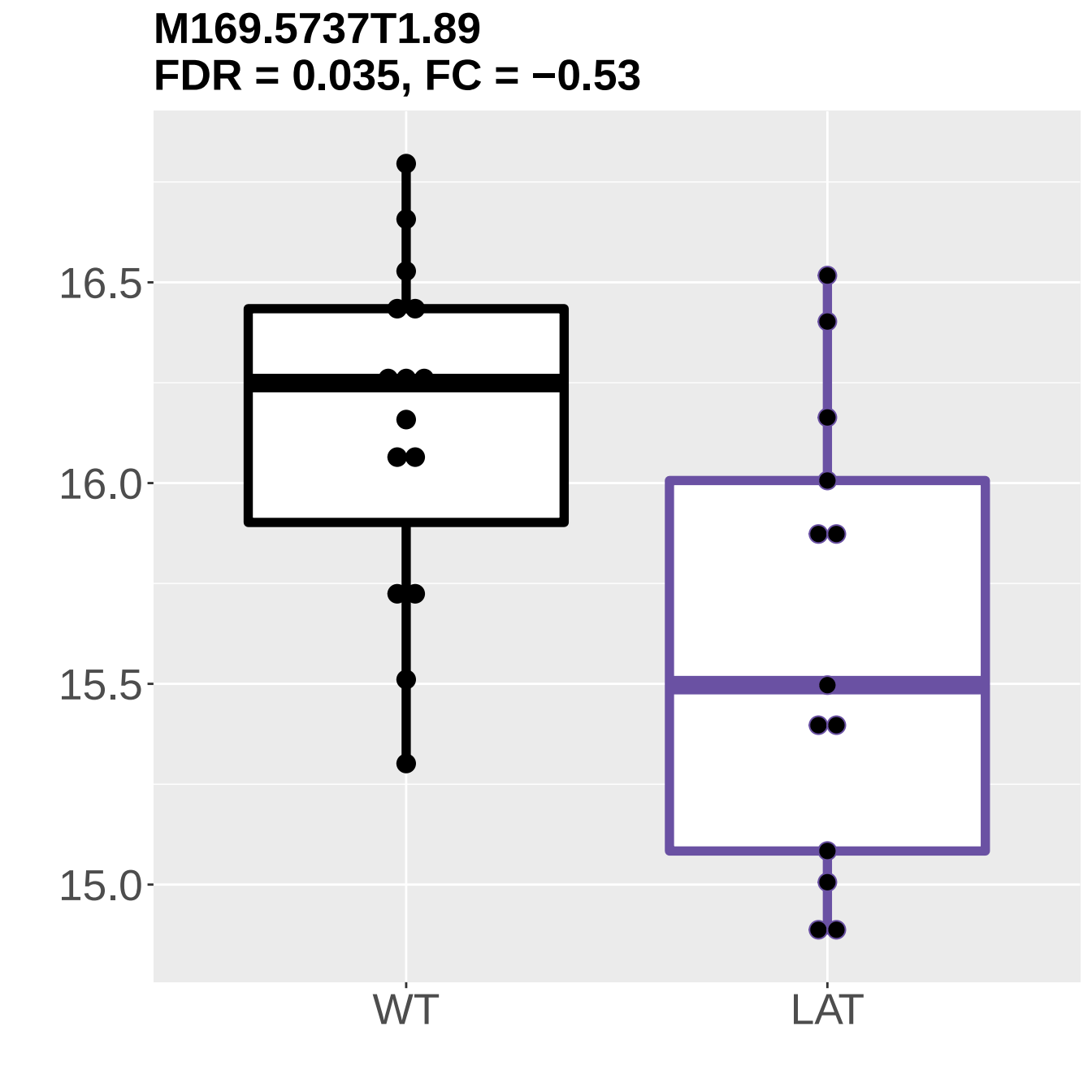
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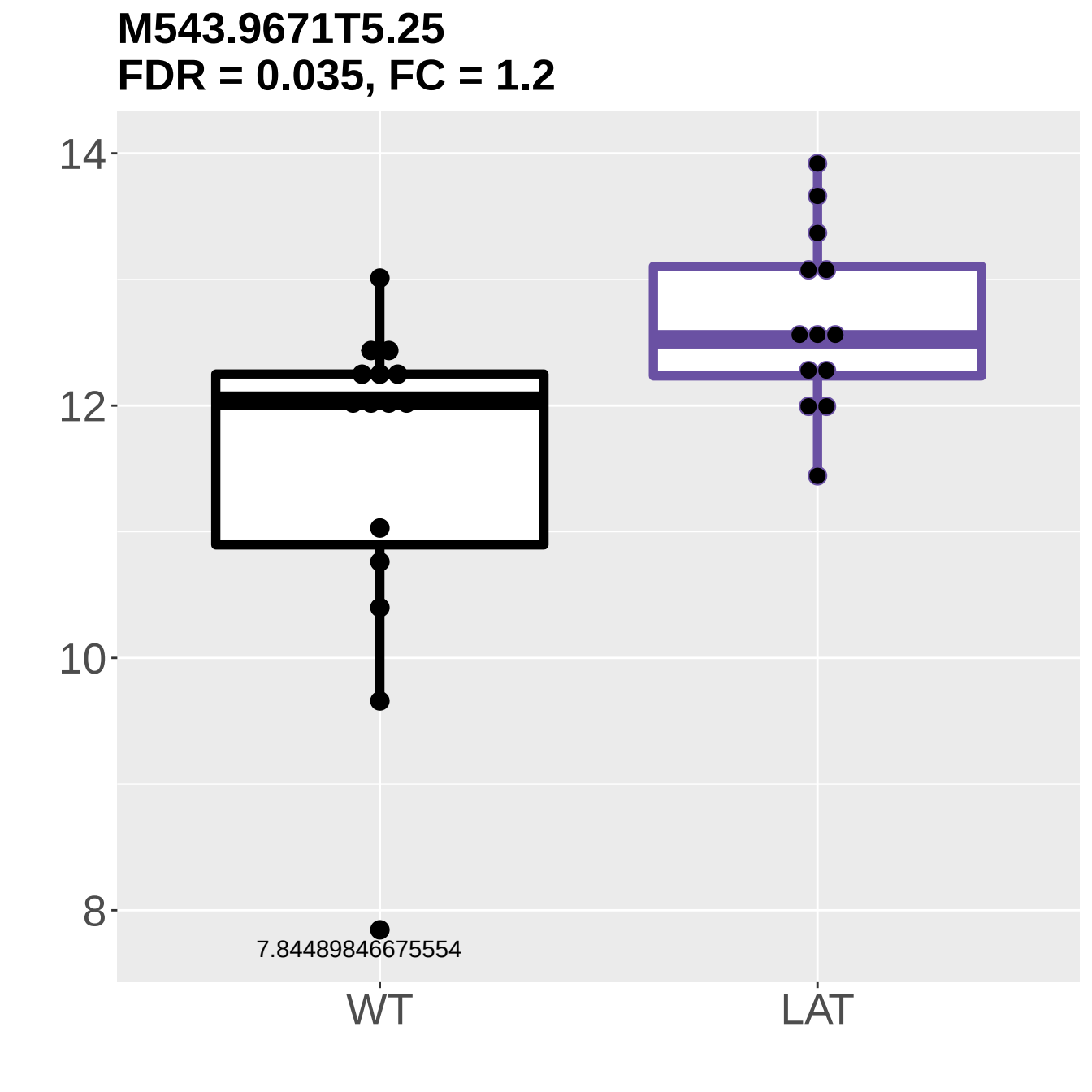
WT
LAT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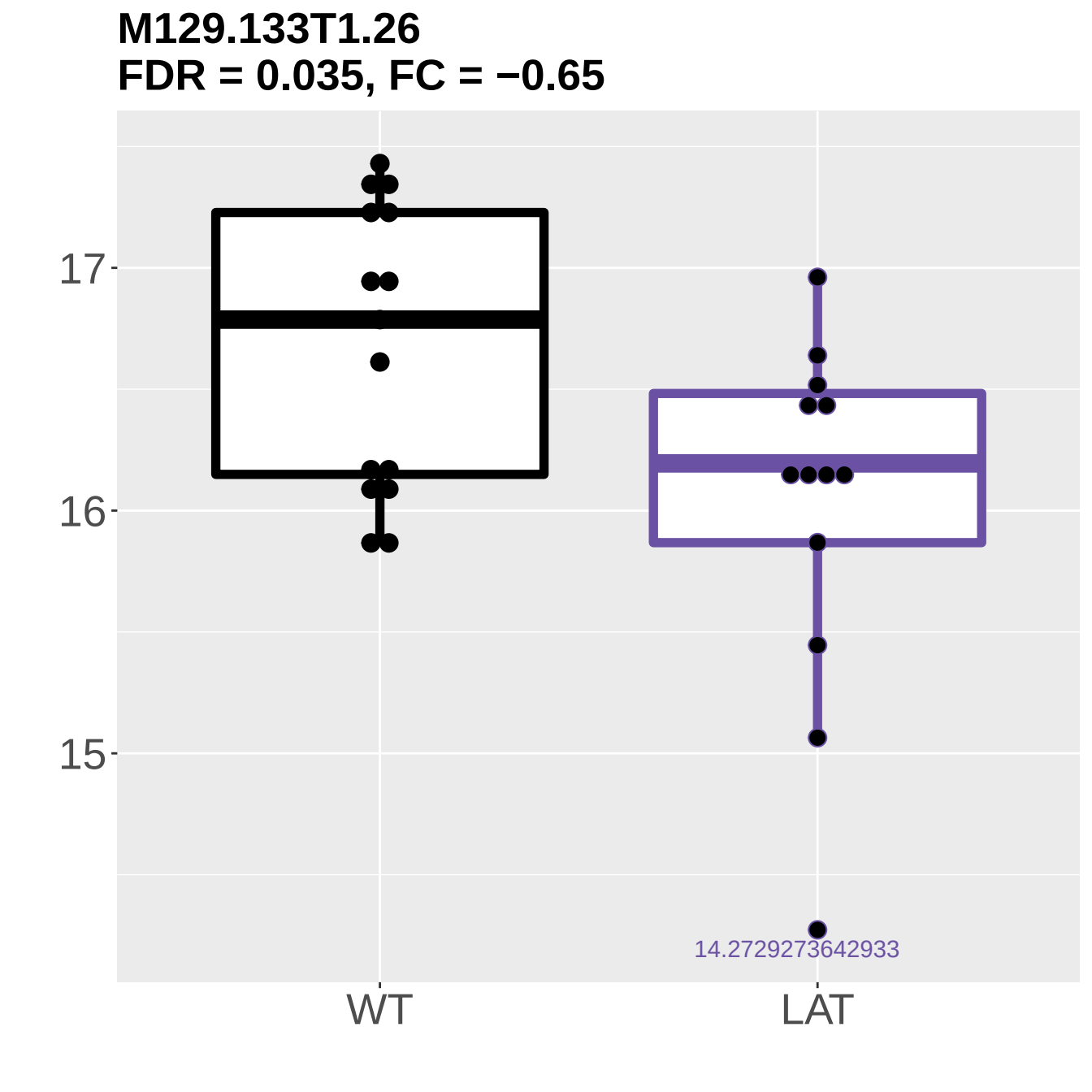
WT
LAT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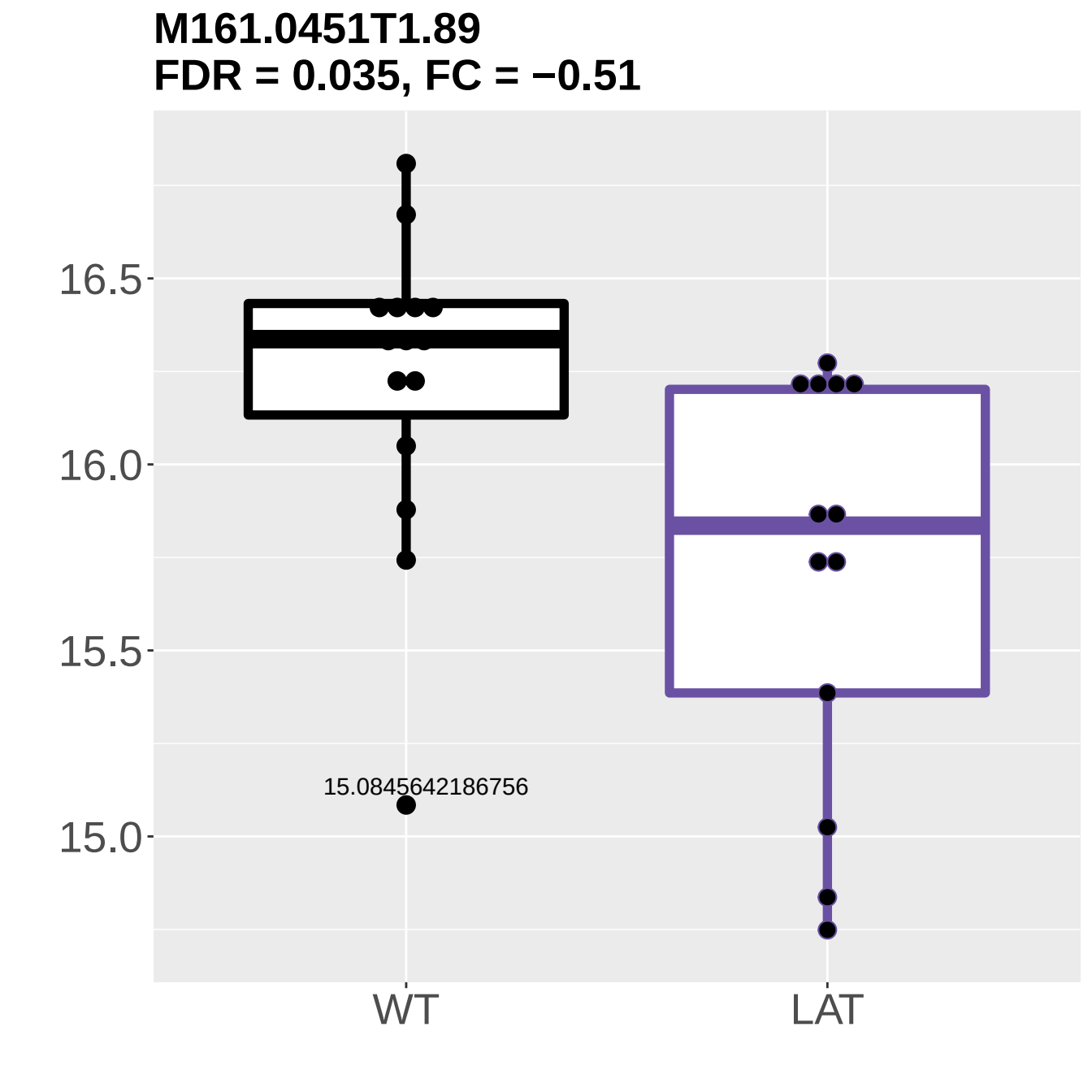
WT
LAT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WT
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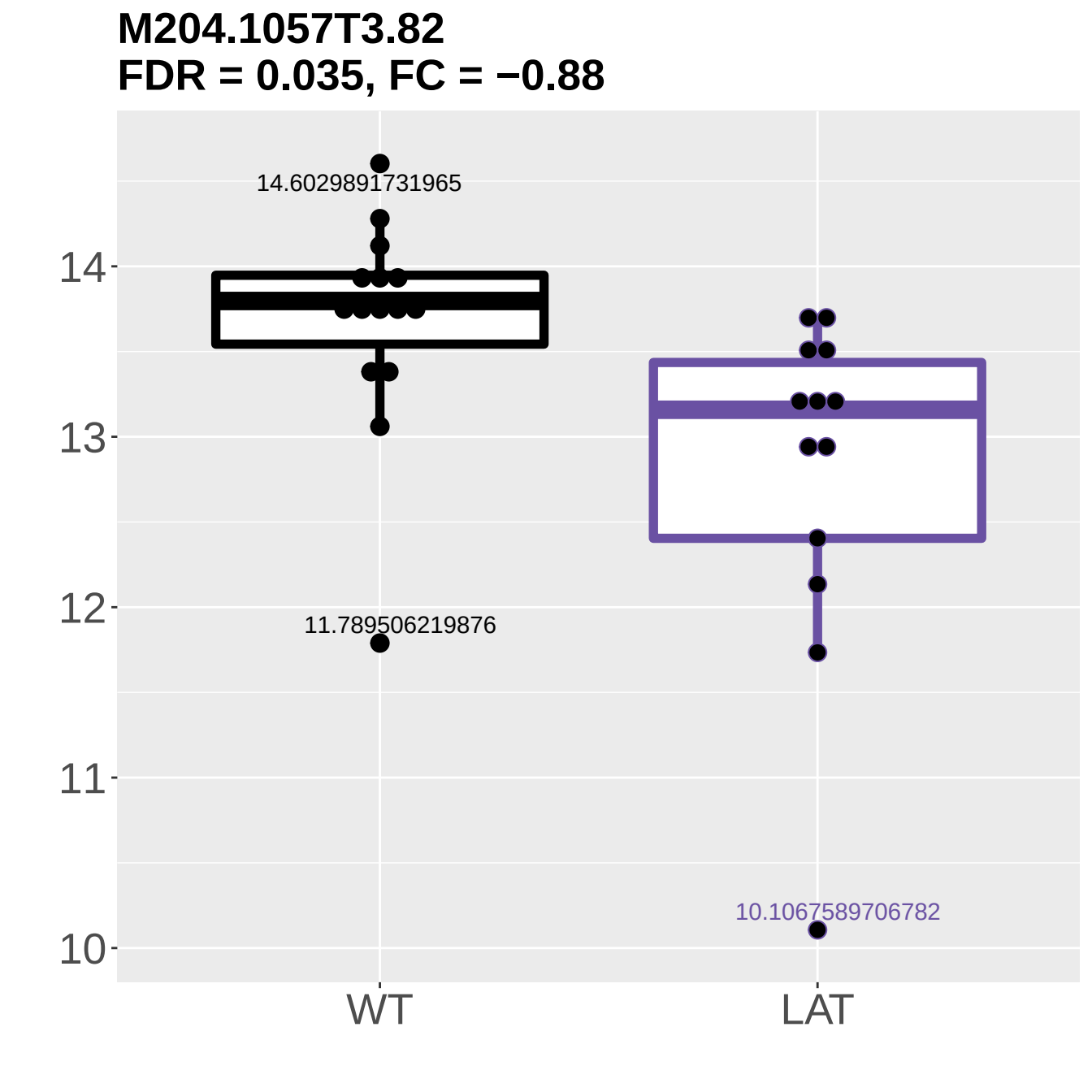
M204.1057T3.82
FDR = 0.035, FC = −0.88
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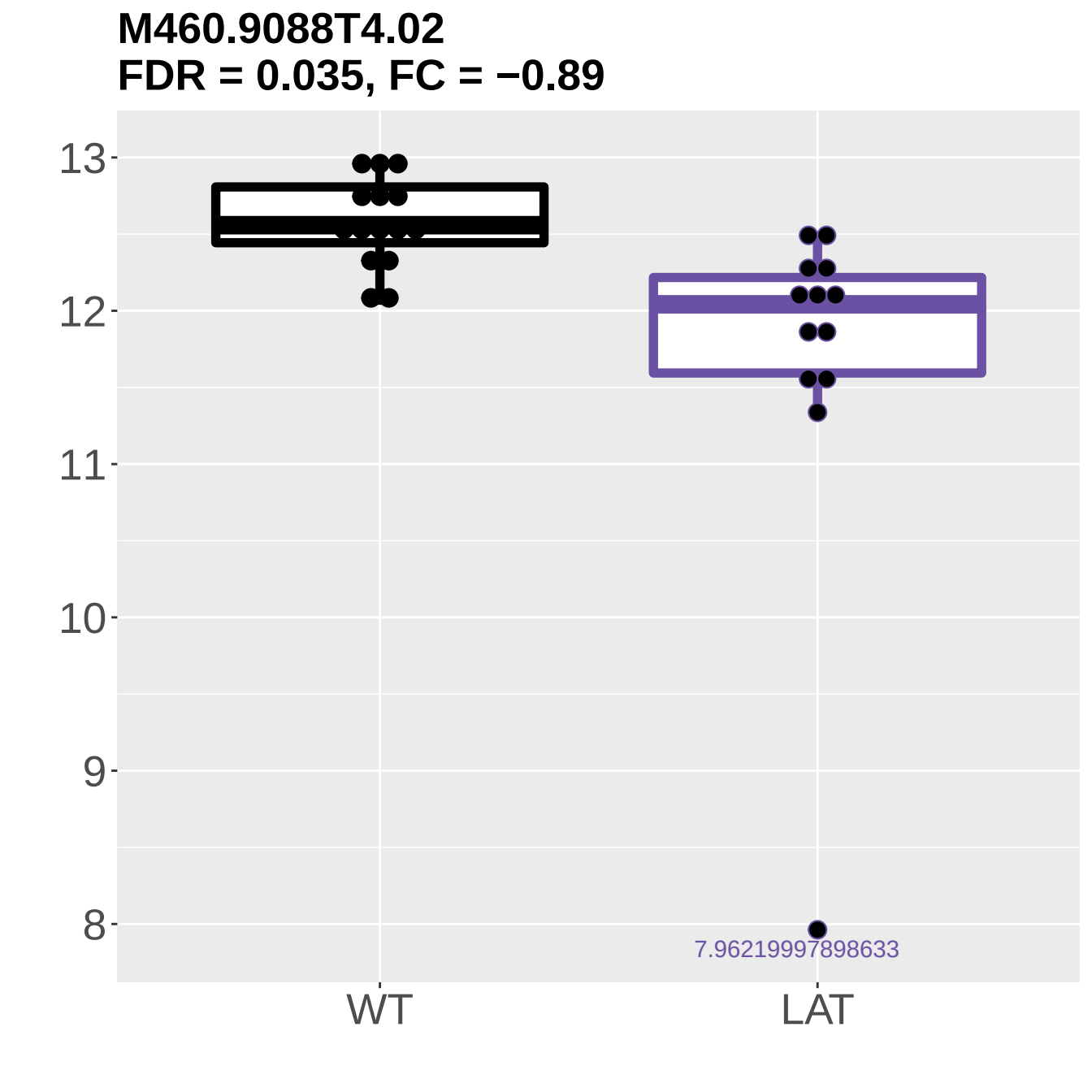
13
12
11
10
WT
LAT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WT
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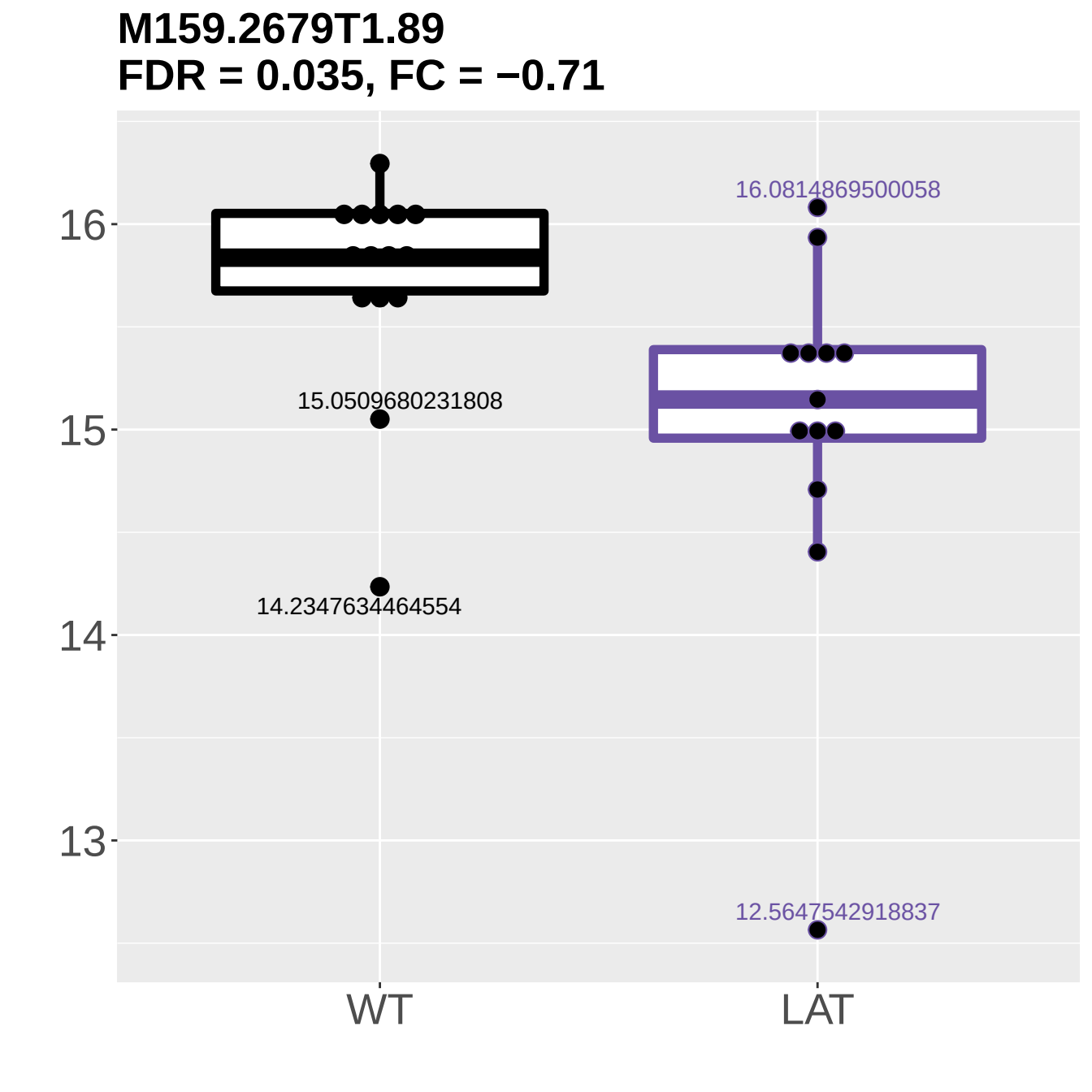
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WT
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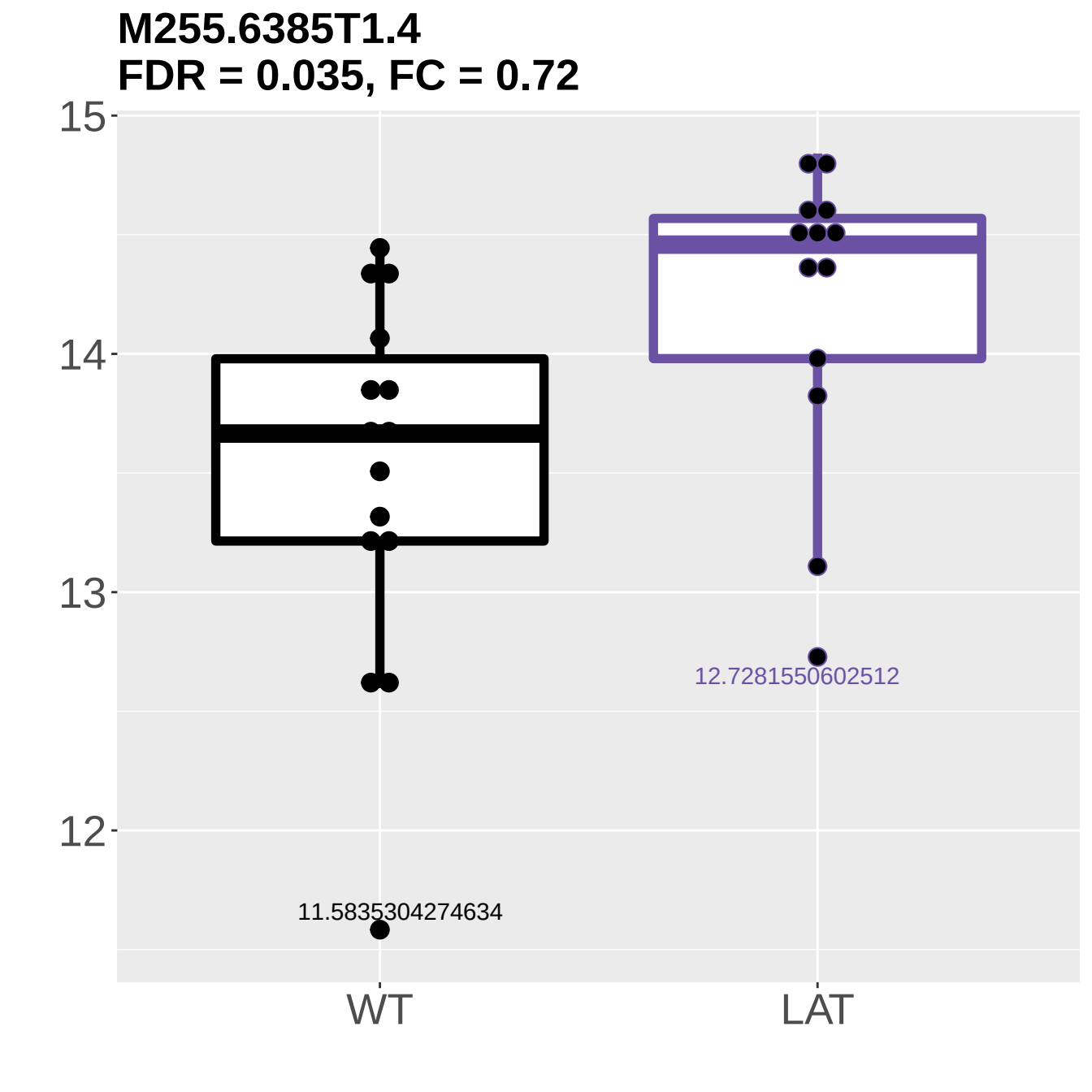
M255.6385T1.4
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14
13
12
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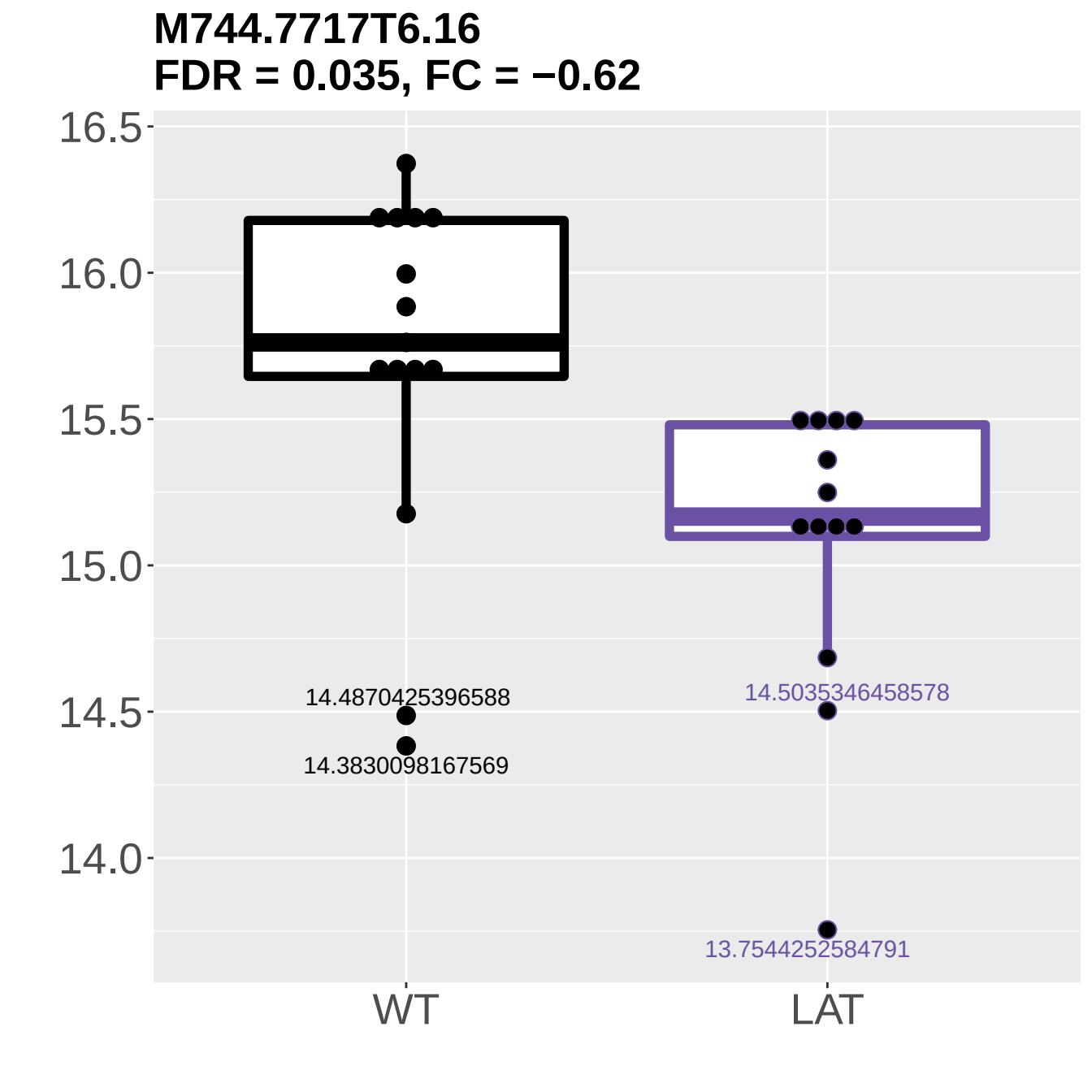
WT
LAT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FDR = 0.035, FC = −0.62
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15.5
15.0
14.5
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WT
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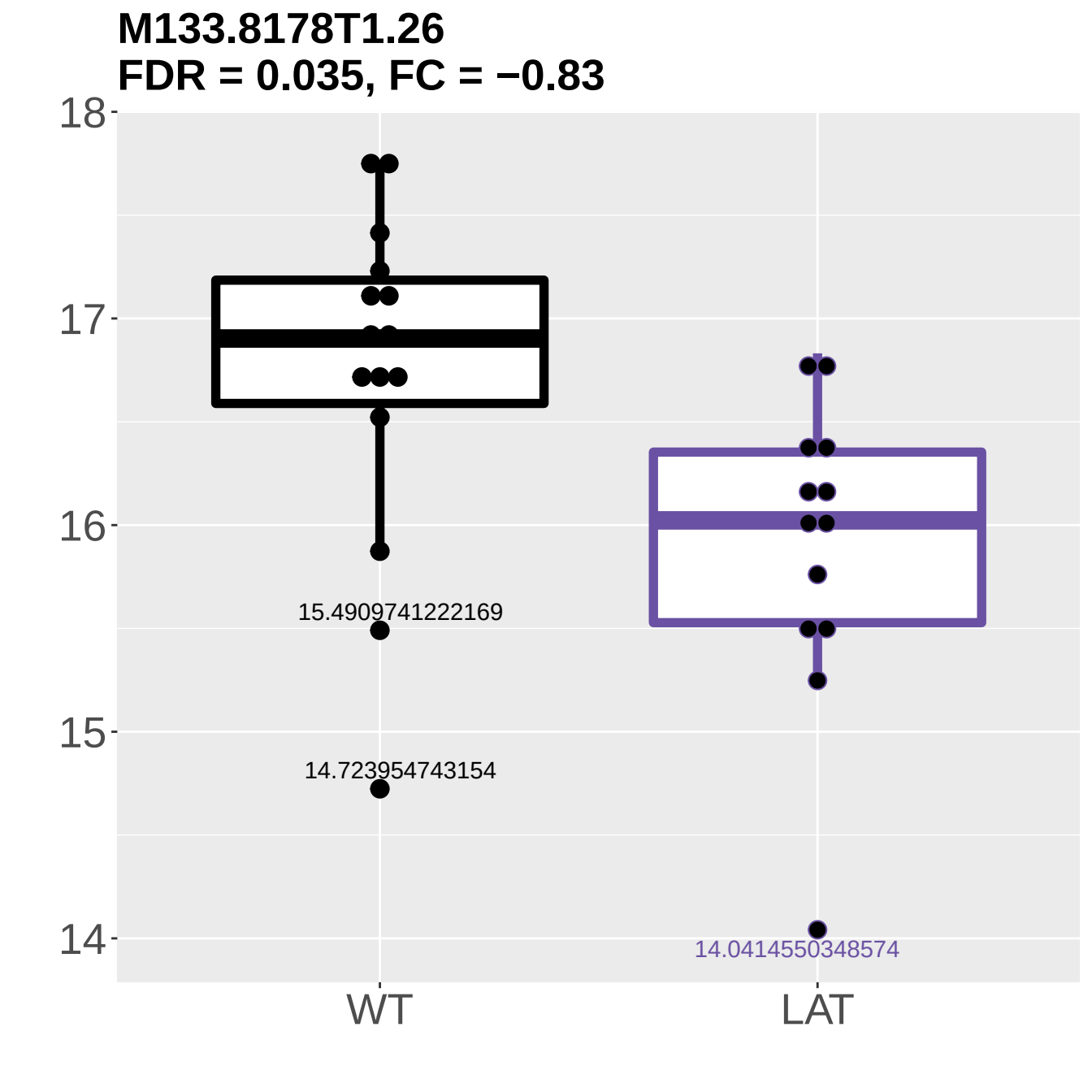
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15
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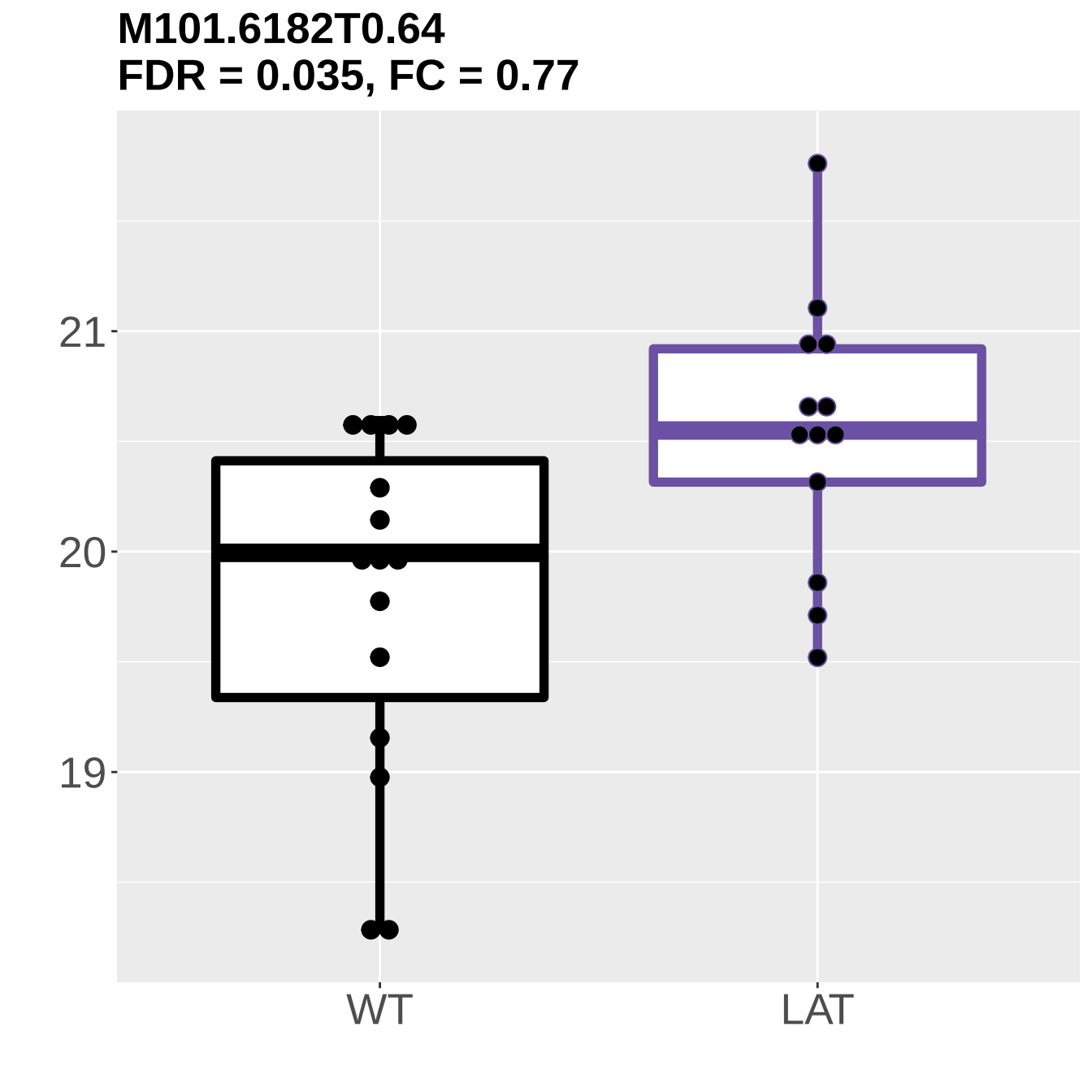
WT
LAT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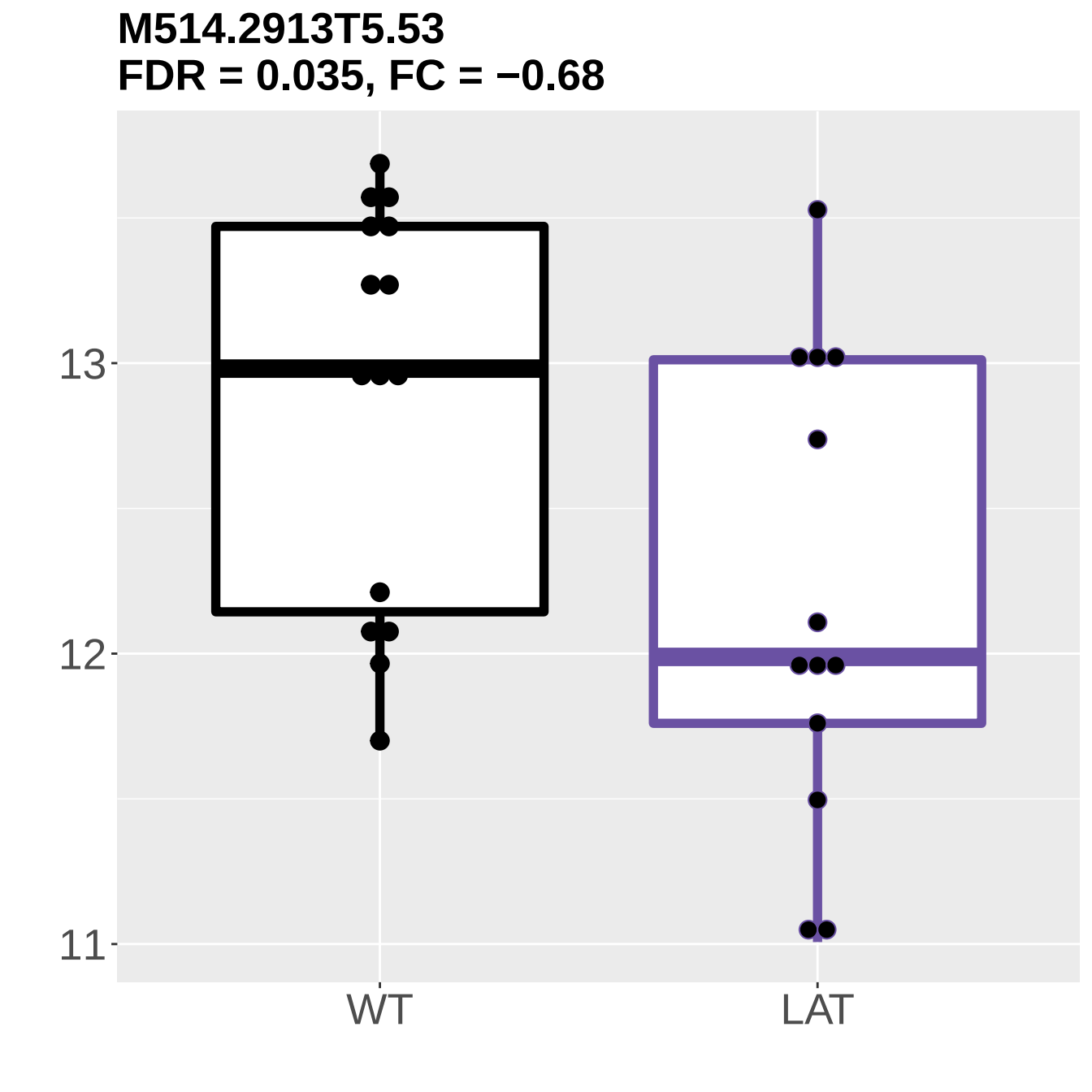
20
19
WT
LAT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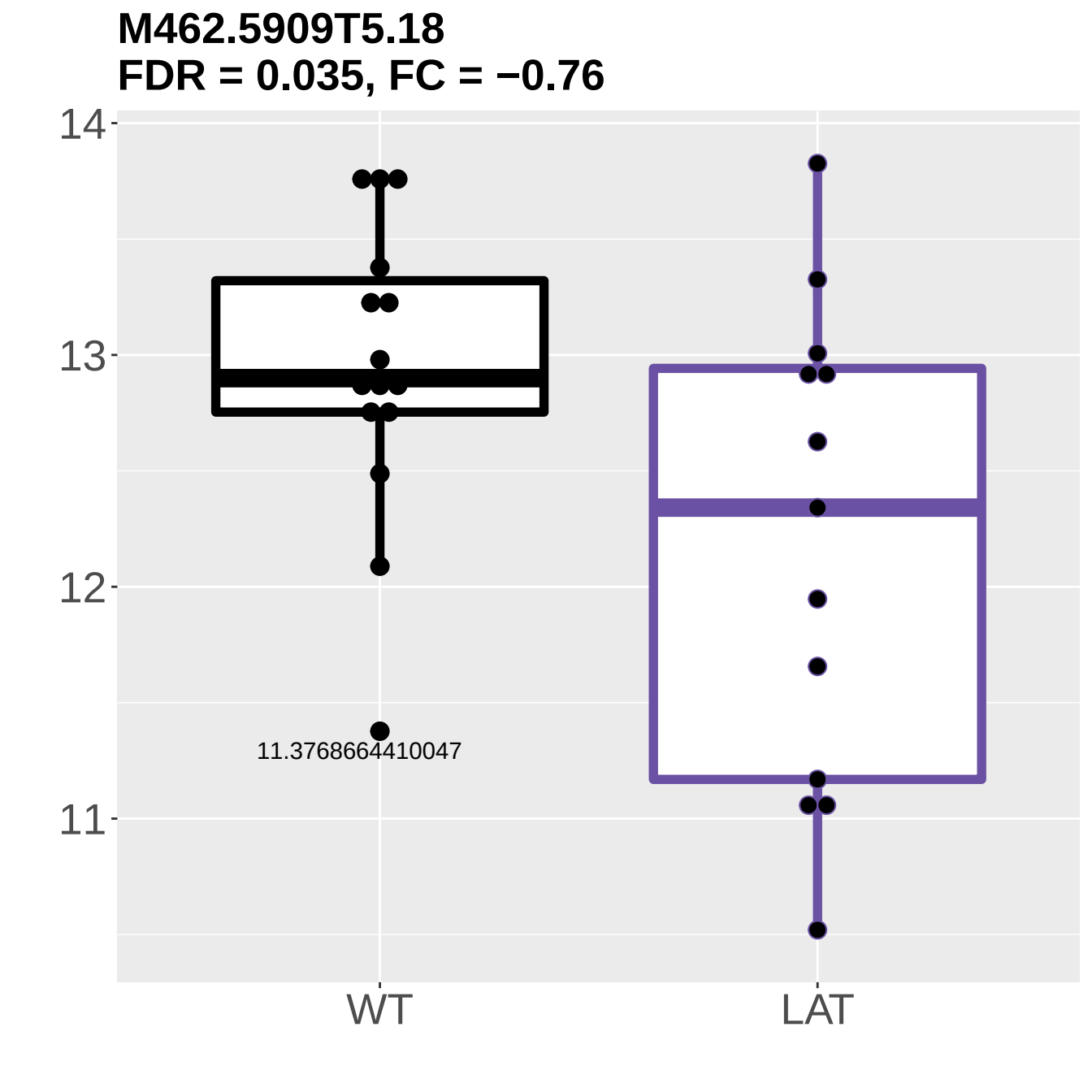
12
11
WT
LAT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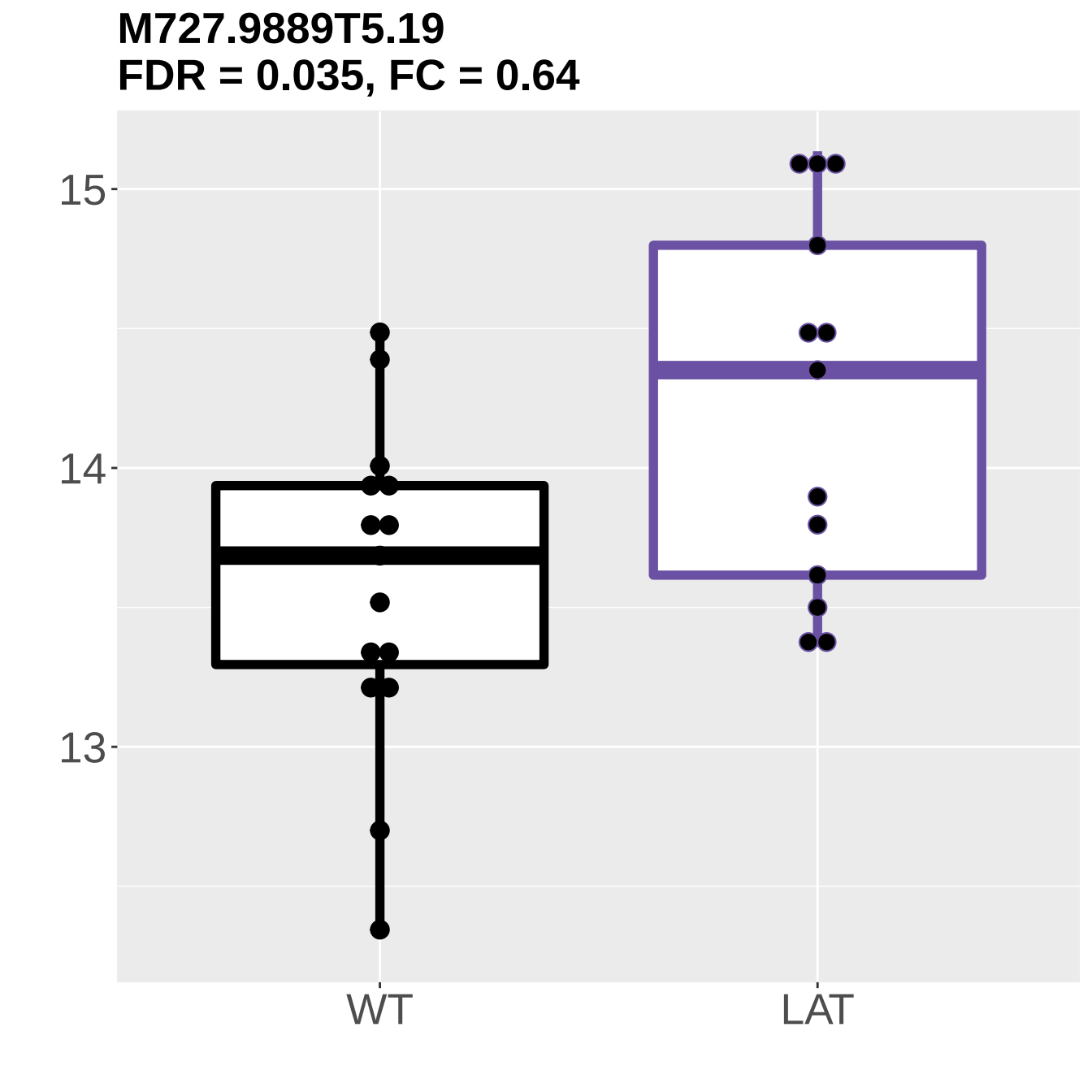
WT
LAT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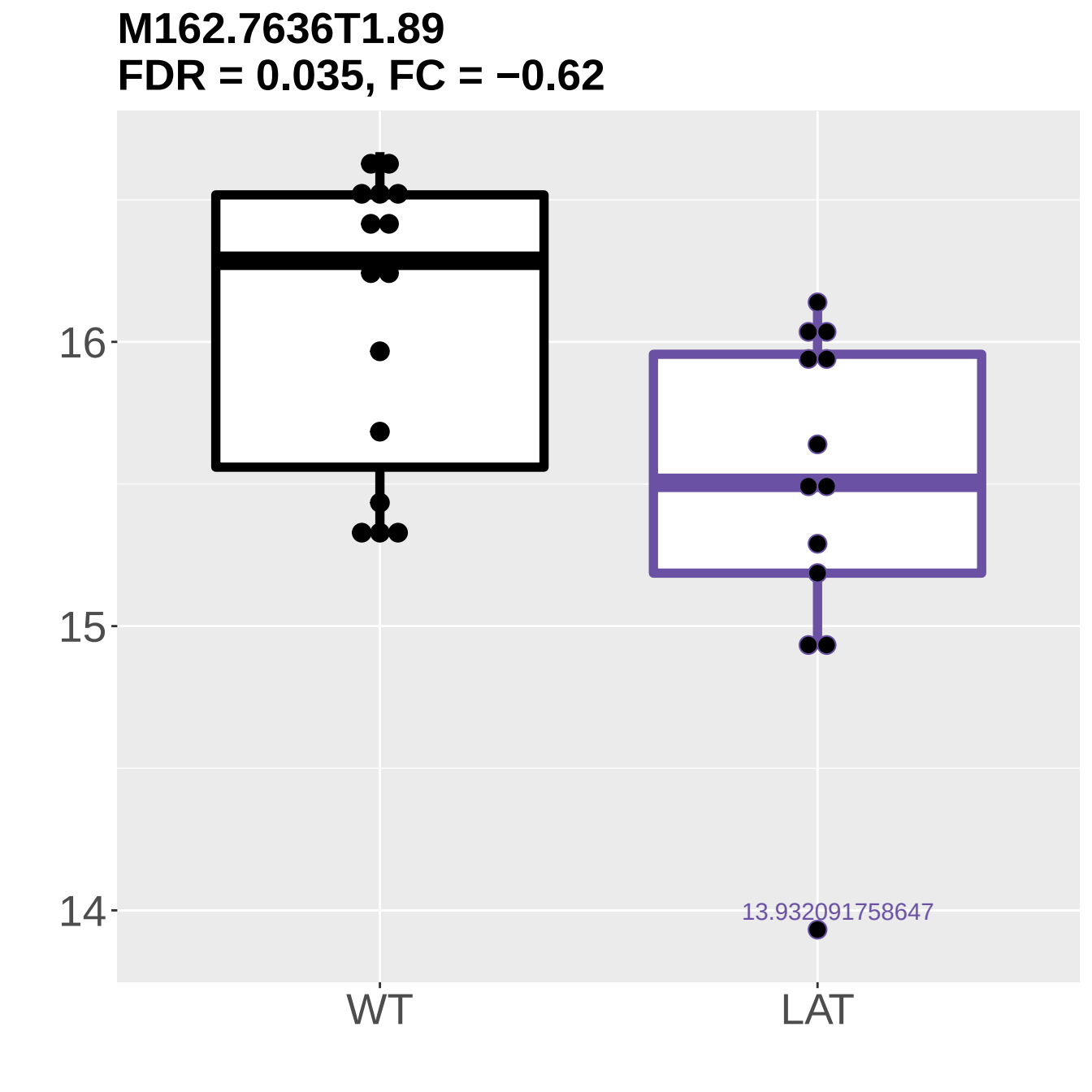
13
WT
LAT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WT
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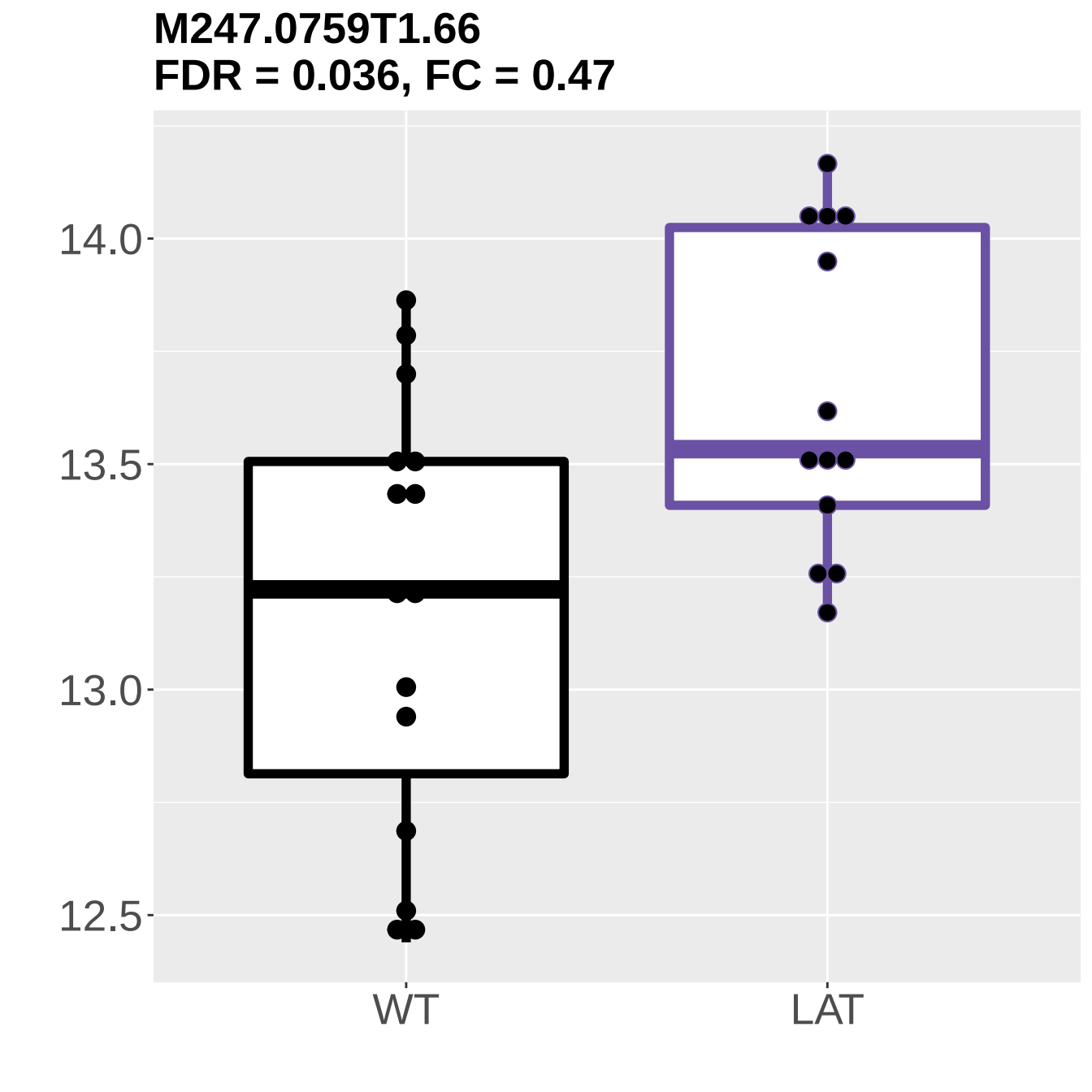
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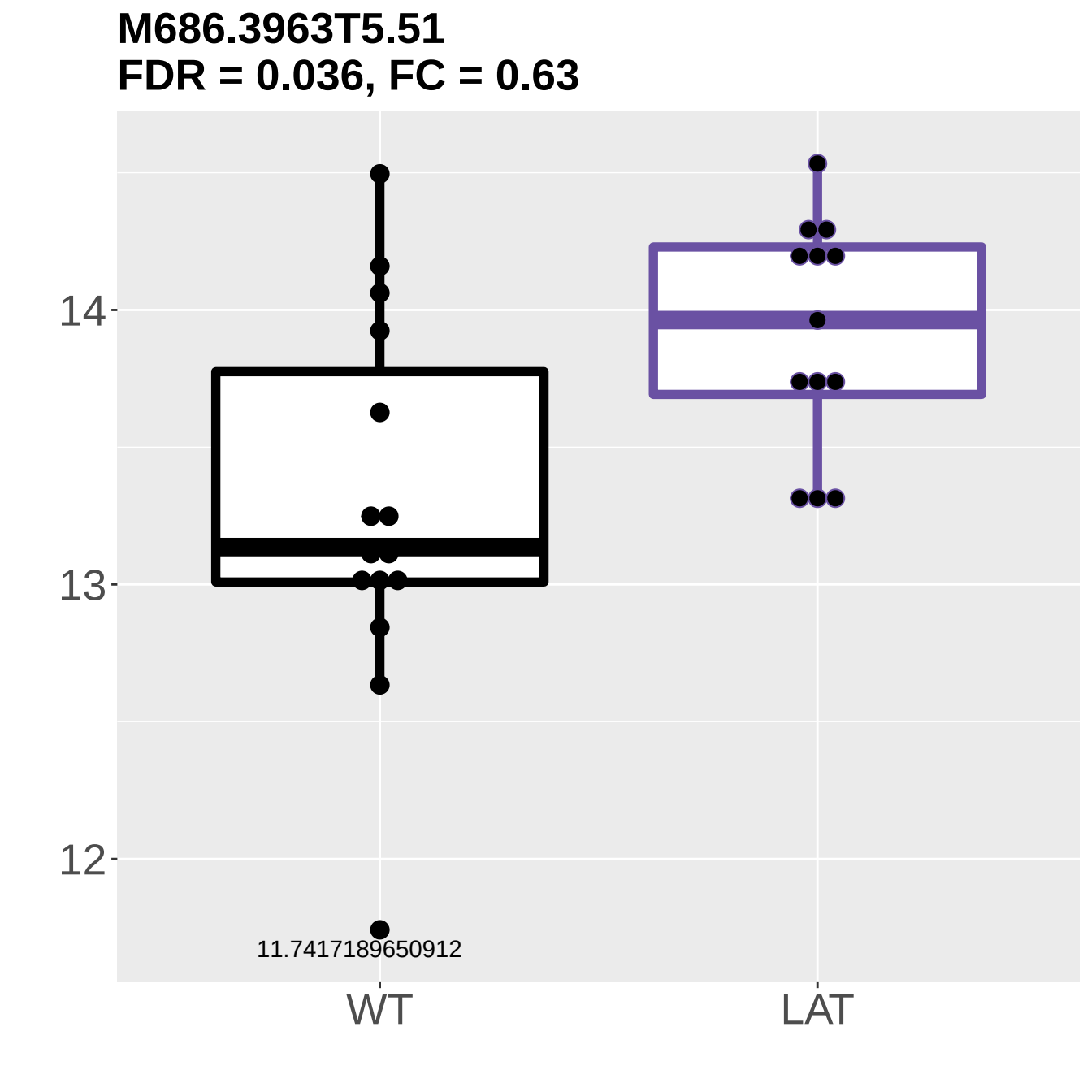
WT
LAT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WT
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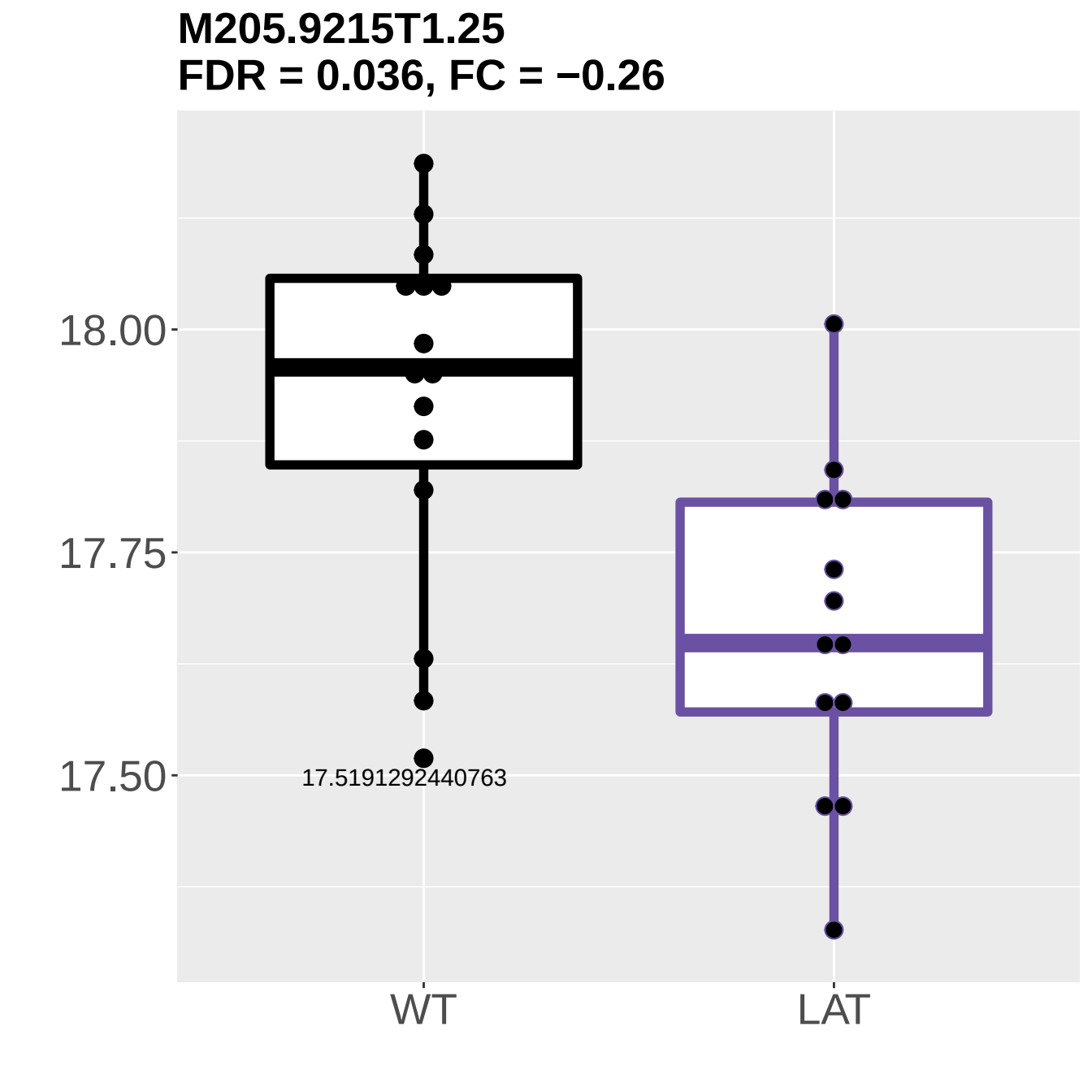
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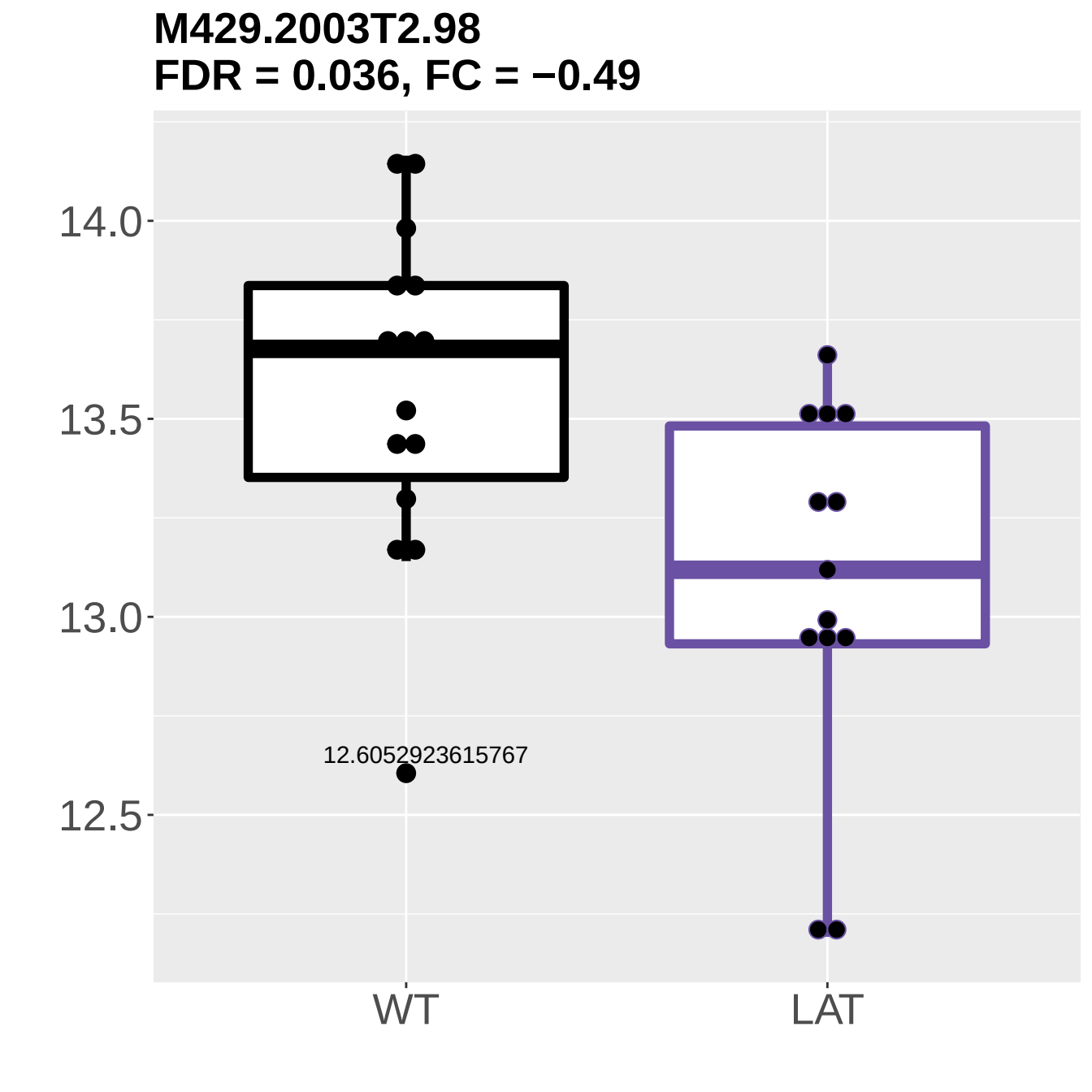
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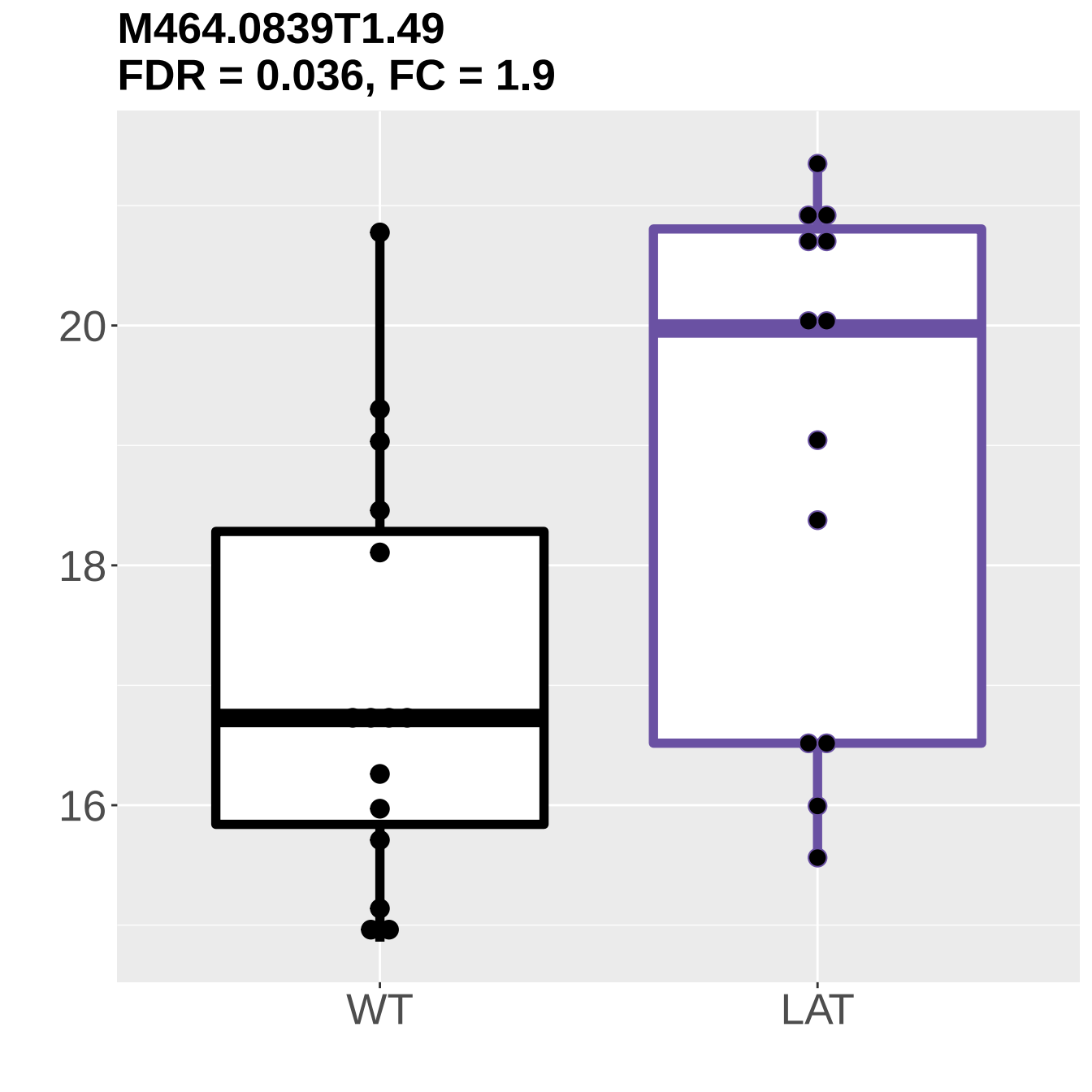
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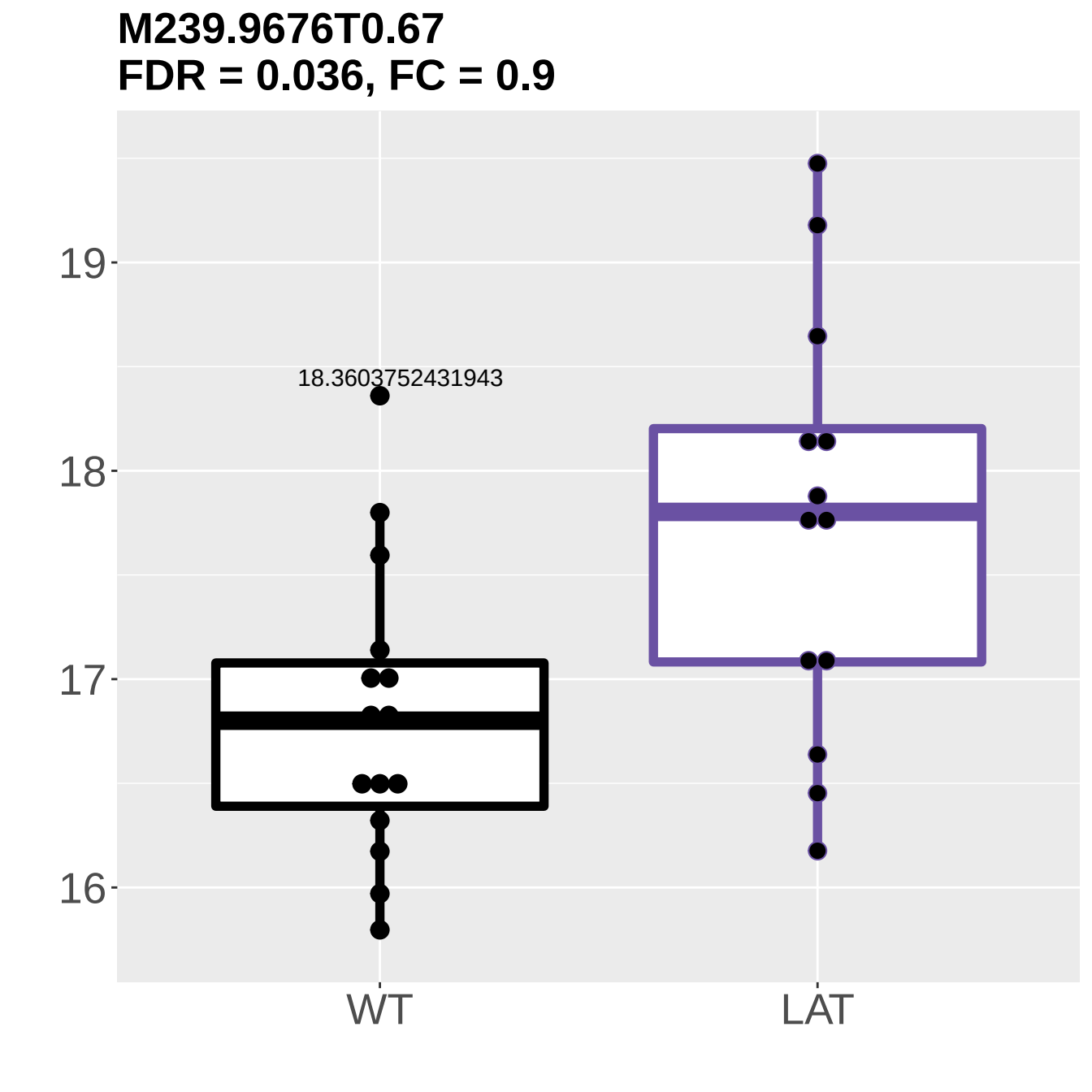
16
WT
LAT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18
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16
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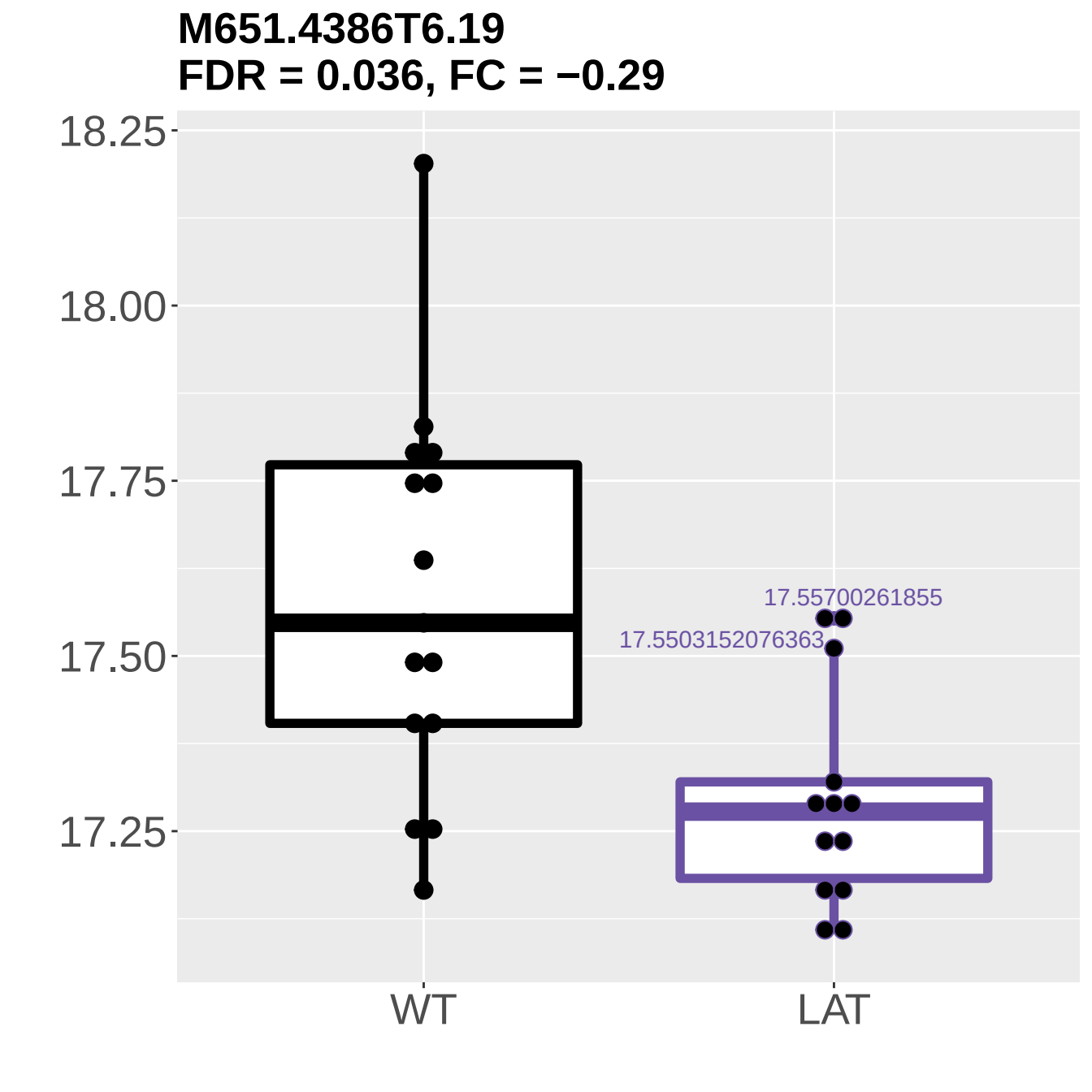
WT
LAT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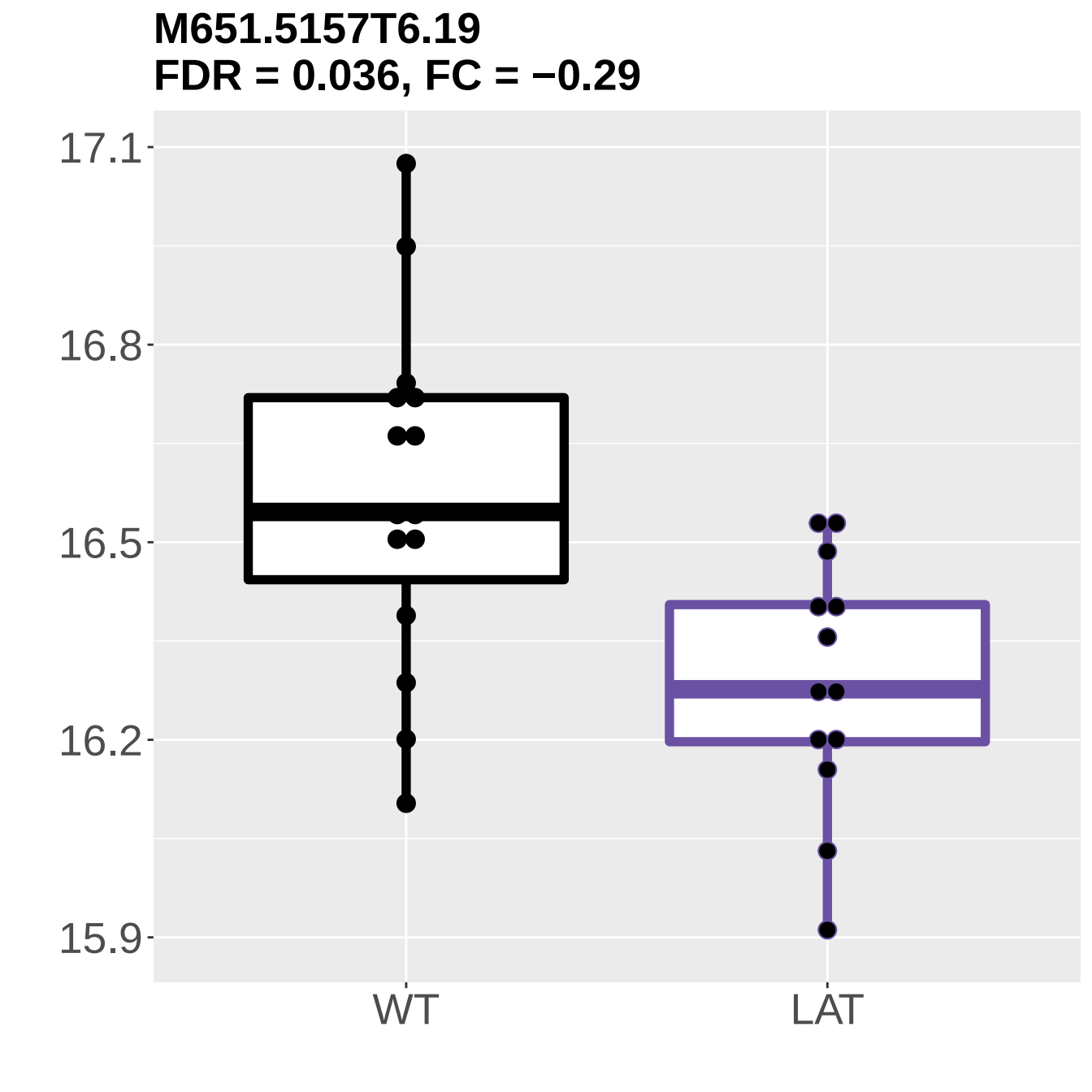
WT
LAT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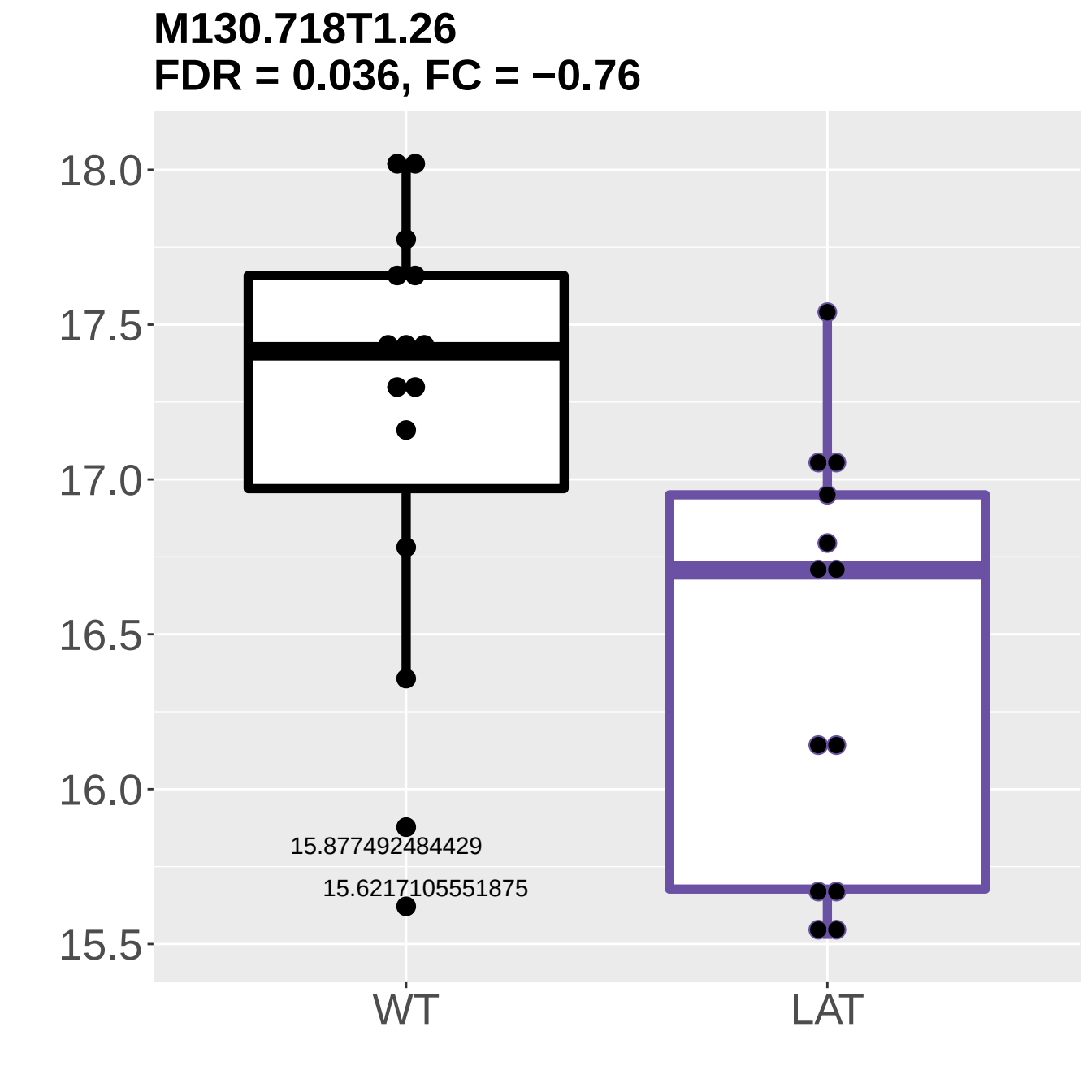
WT
LAT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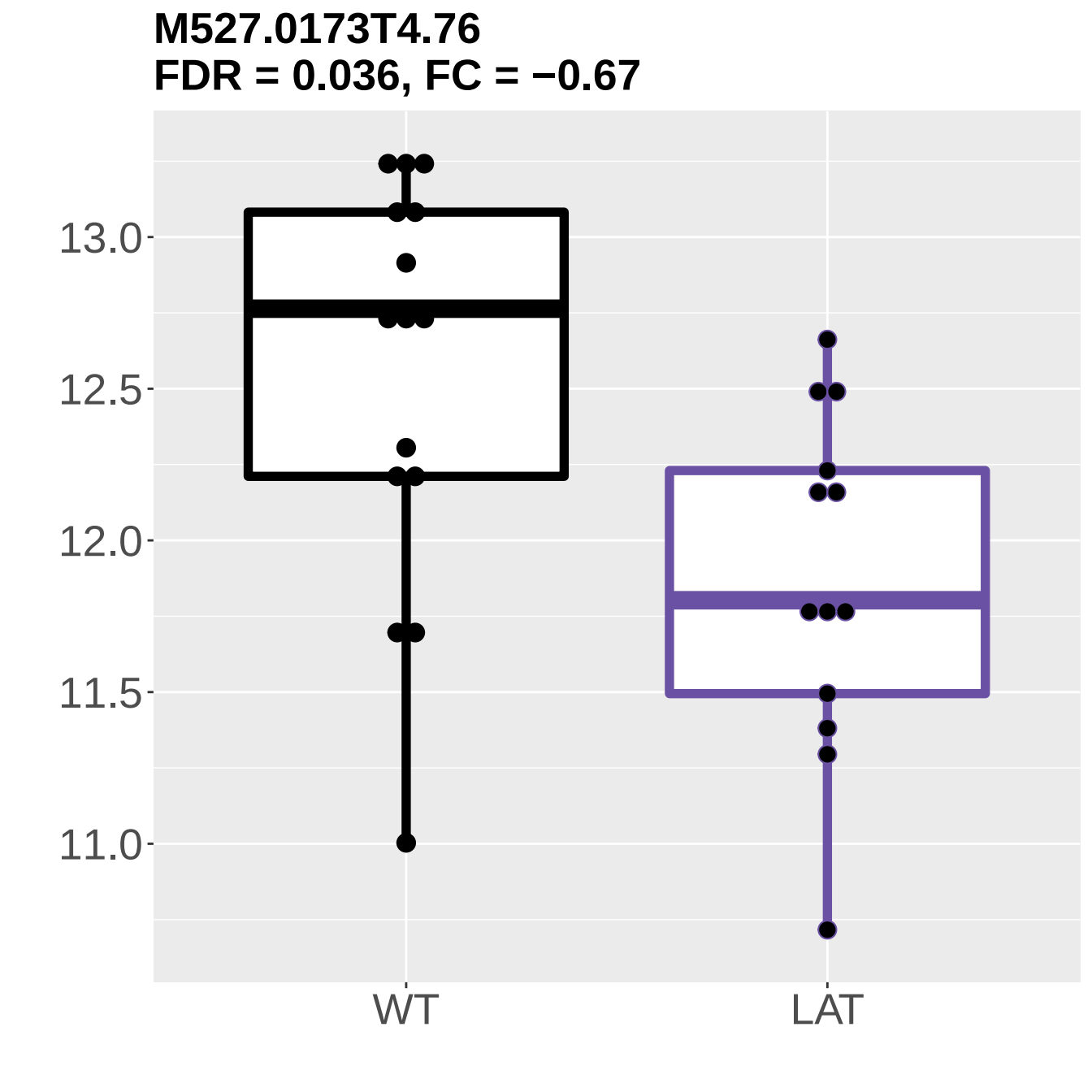
WT
LAT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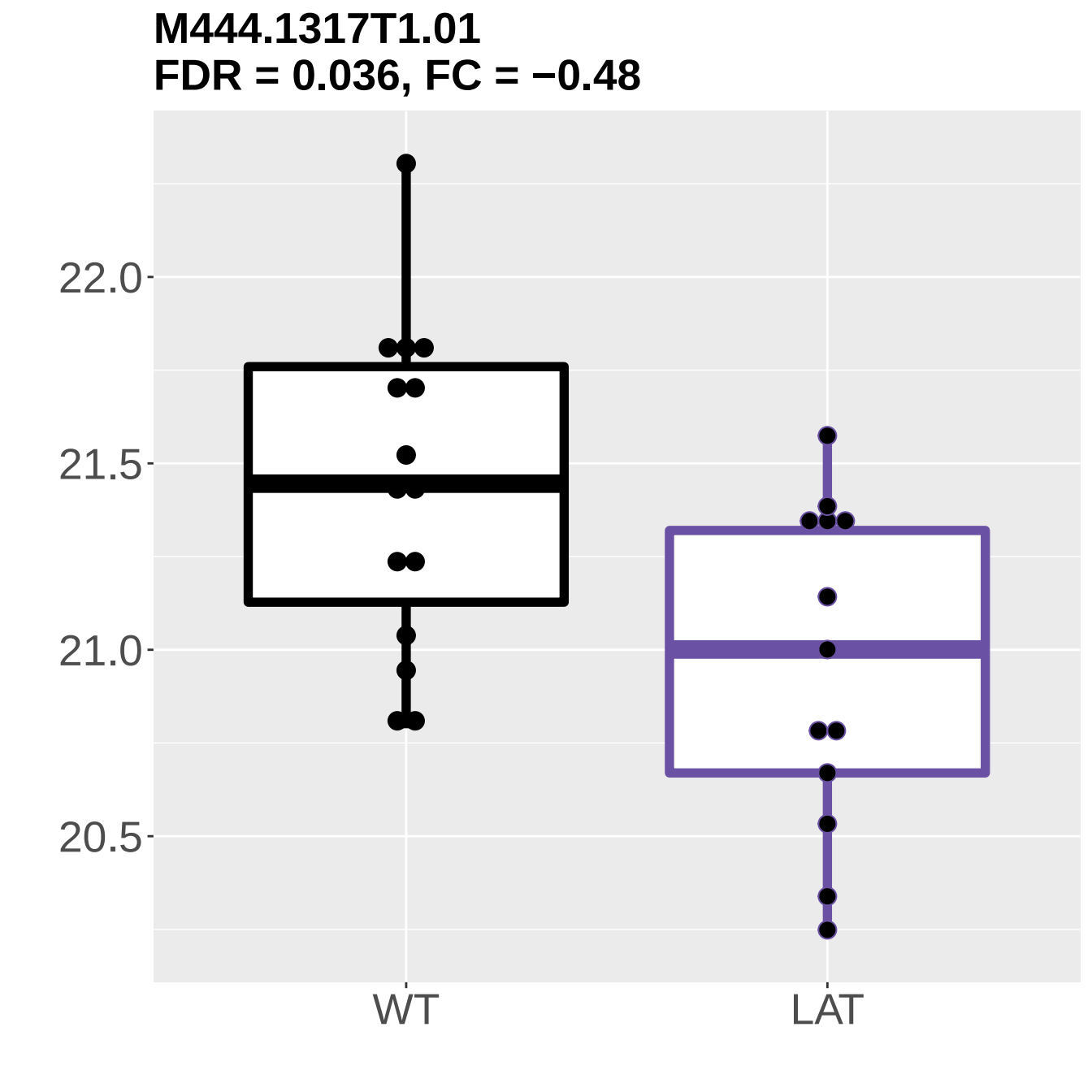
WT
LAT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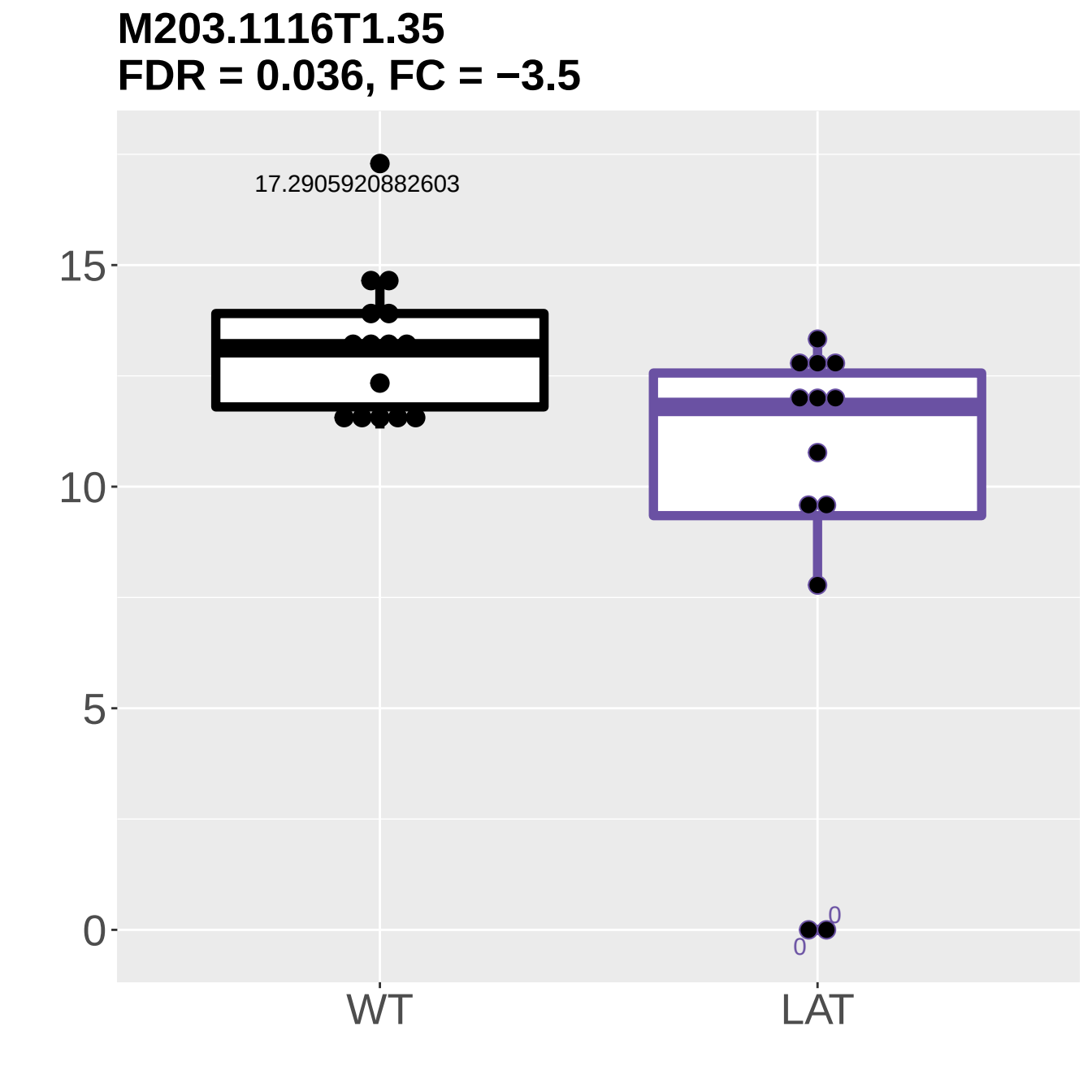
WT
LAT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WT
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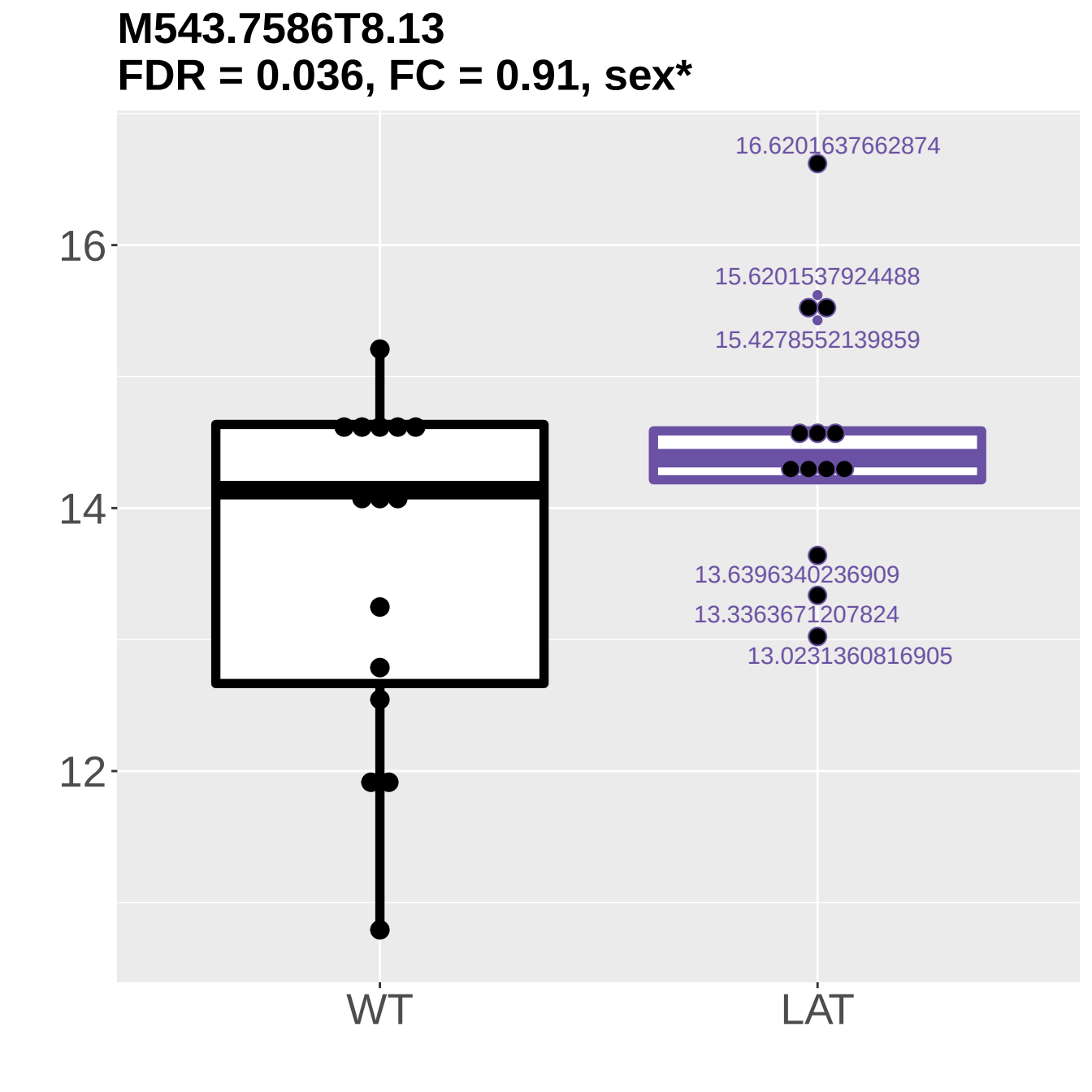
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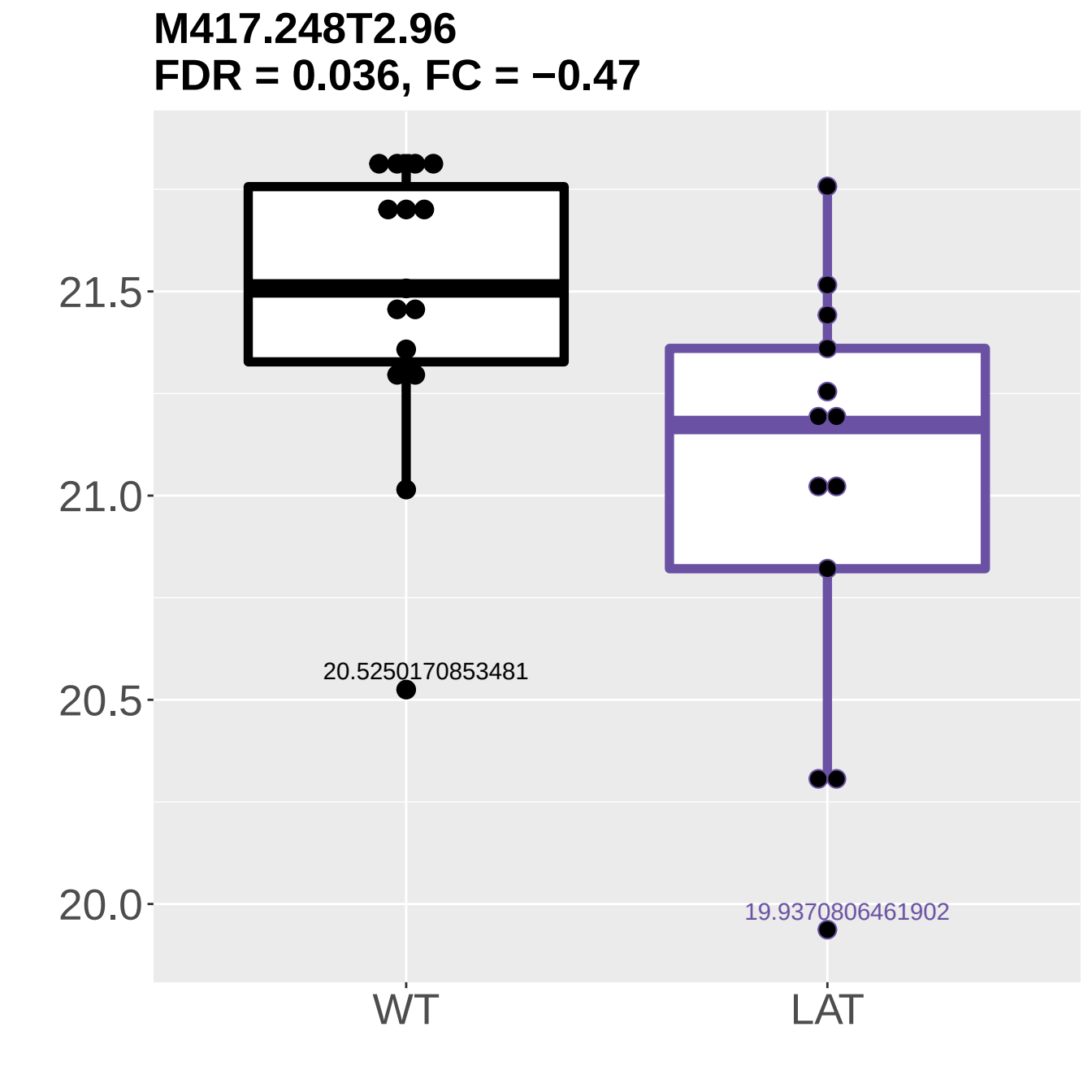
14
12
WT
LAT


M417.248T2.96
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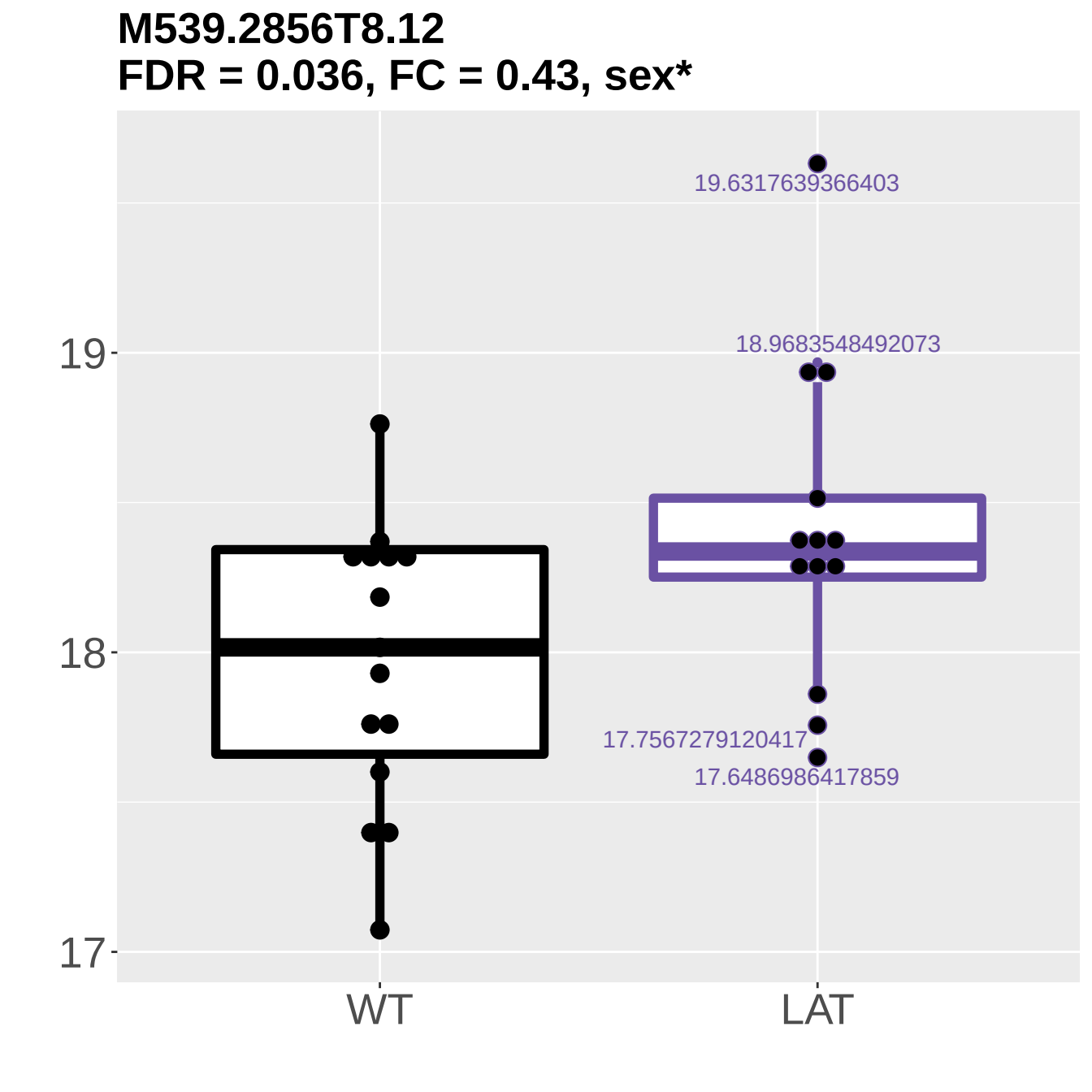
WT
LAT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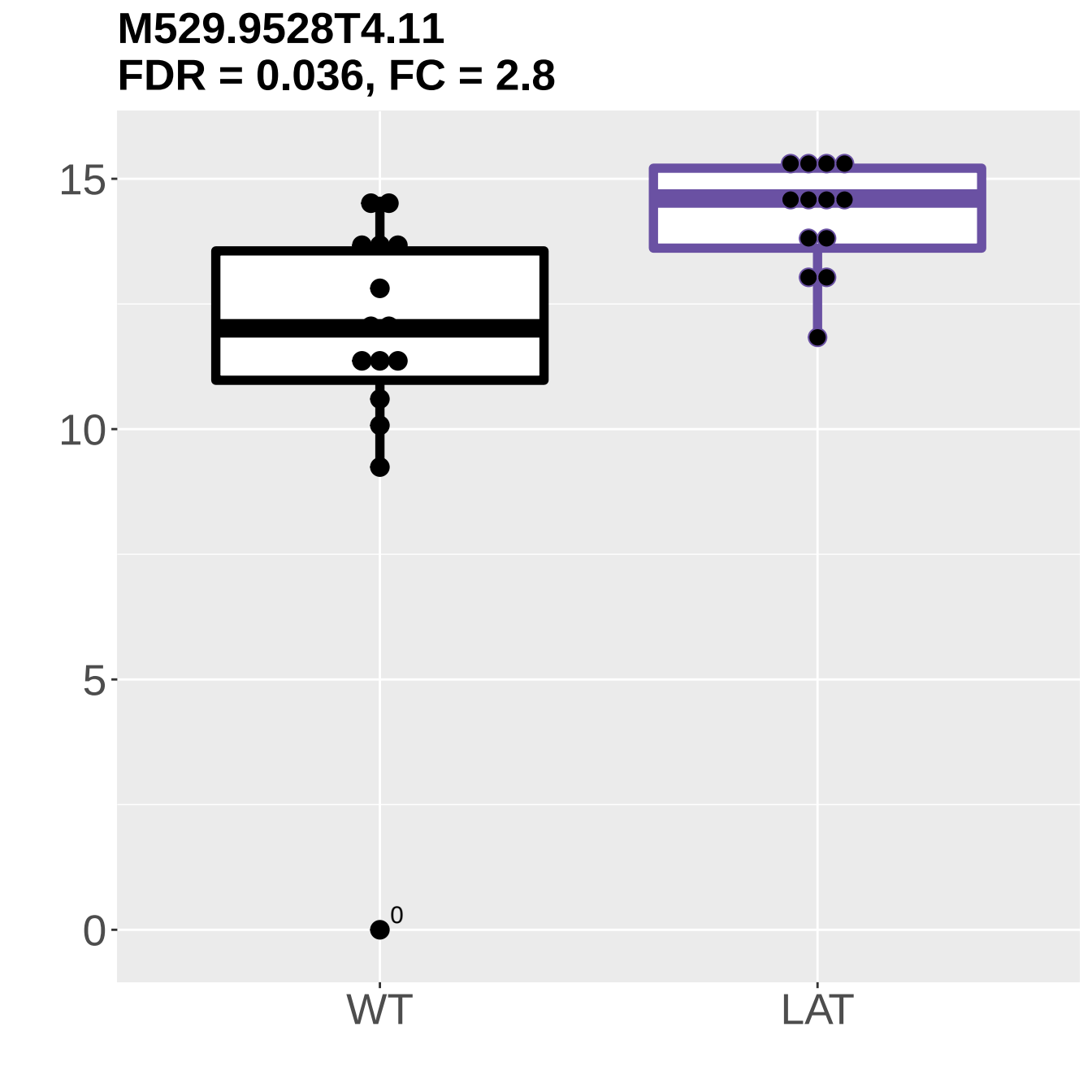
18
17
WT
LAT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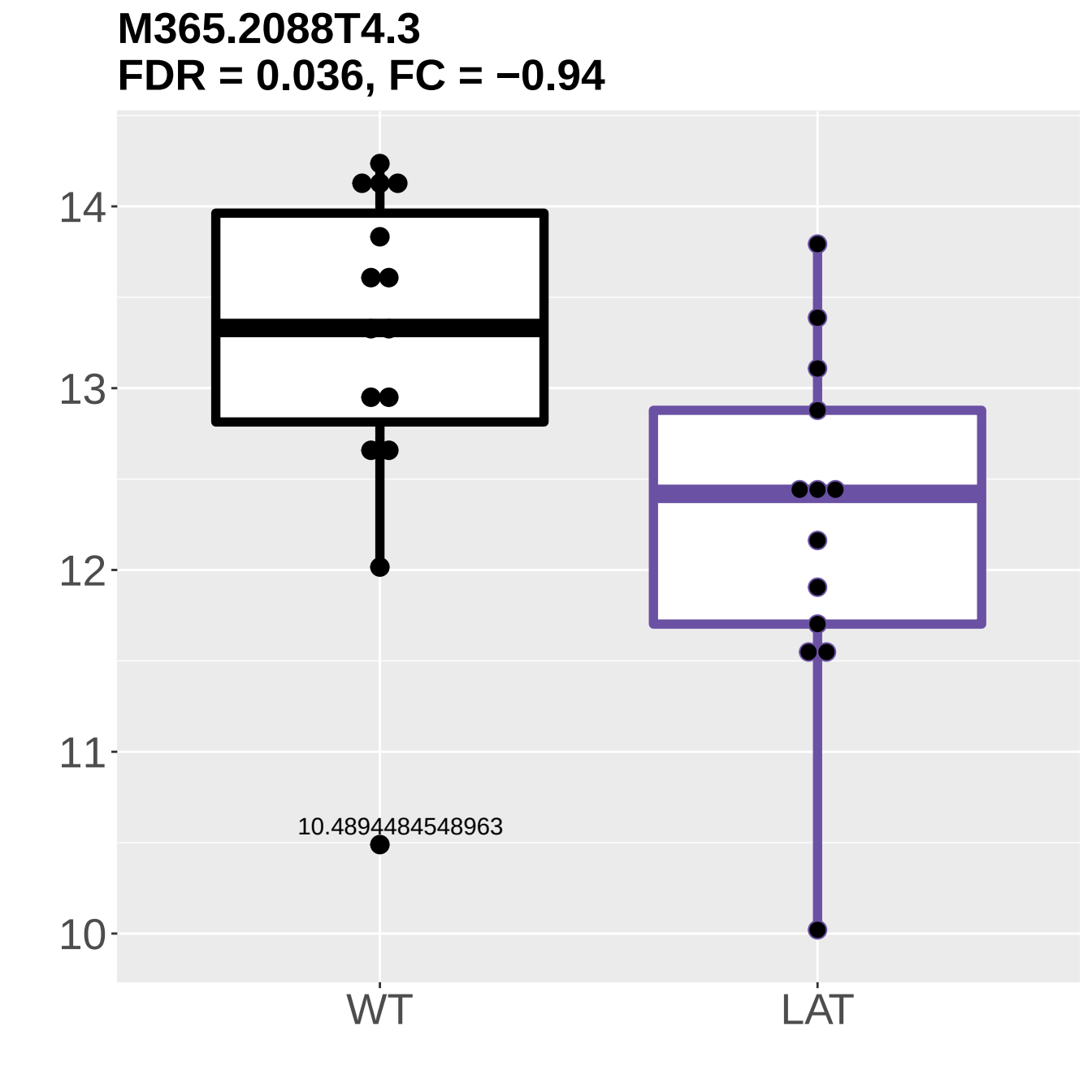
LAT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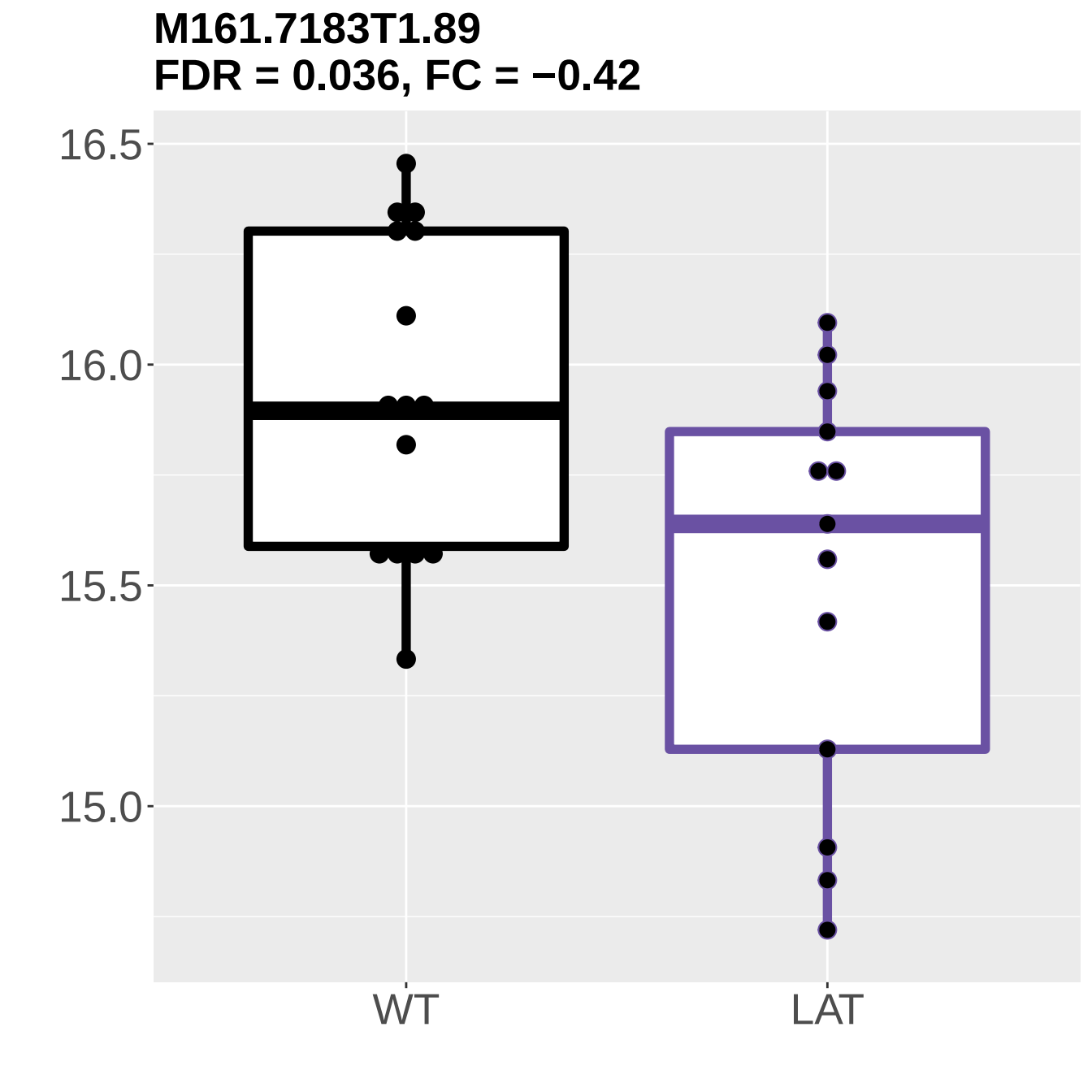
LAT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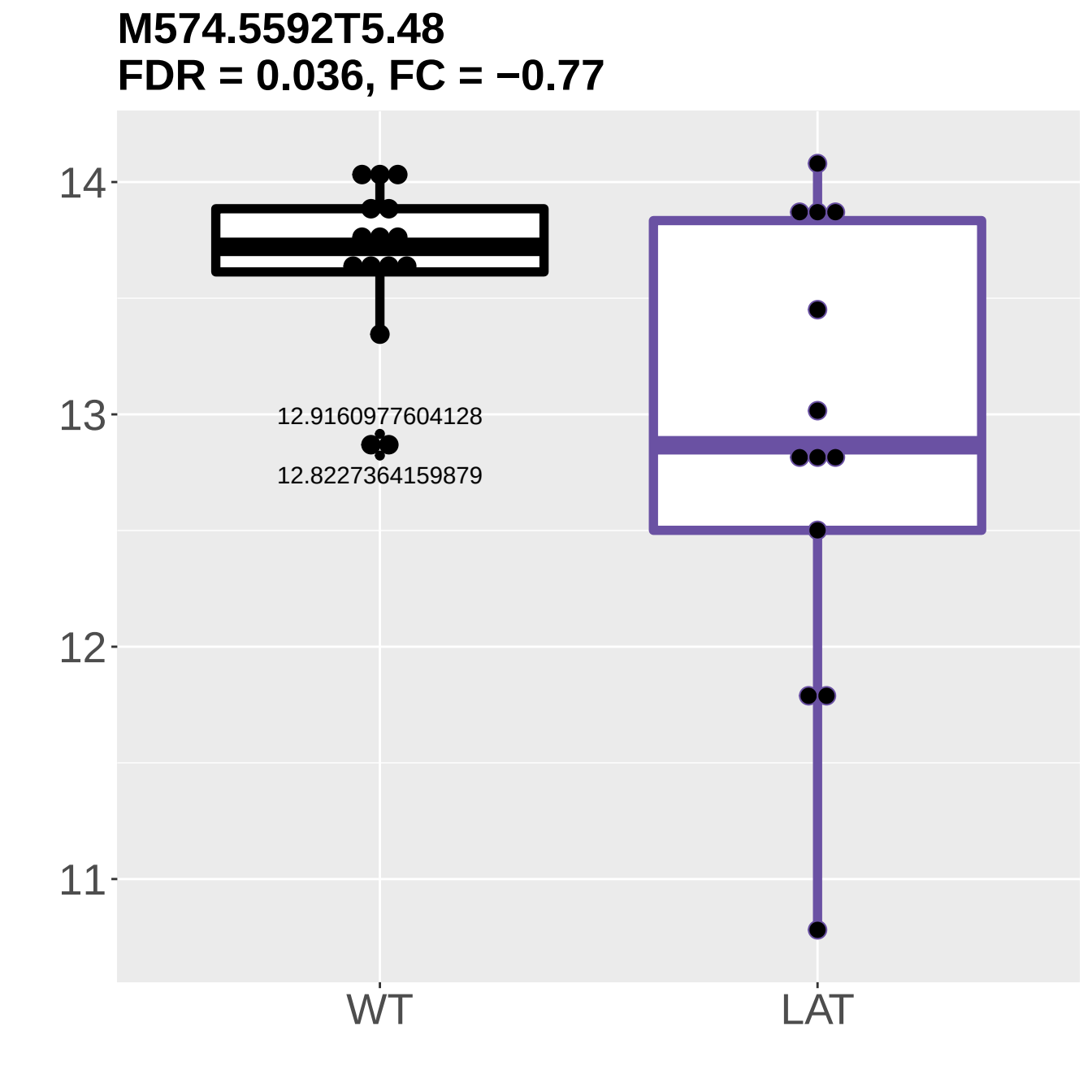
15.5
15.0
WT
LAT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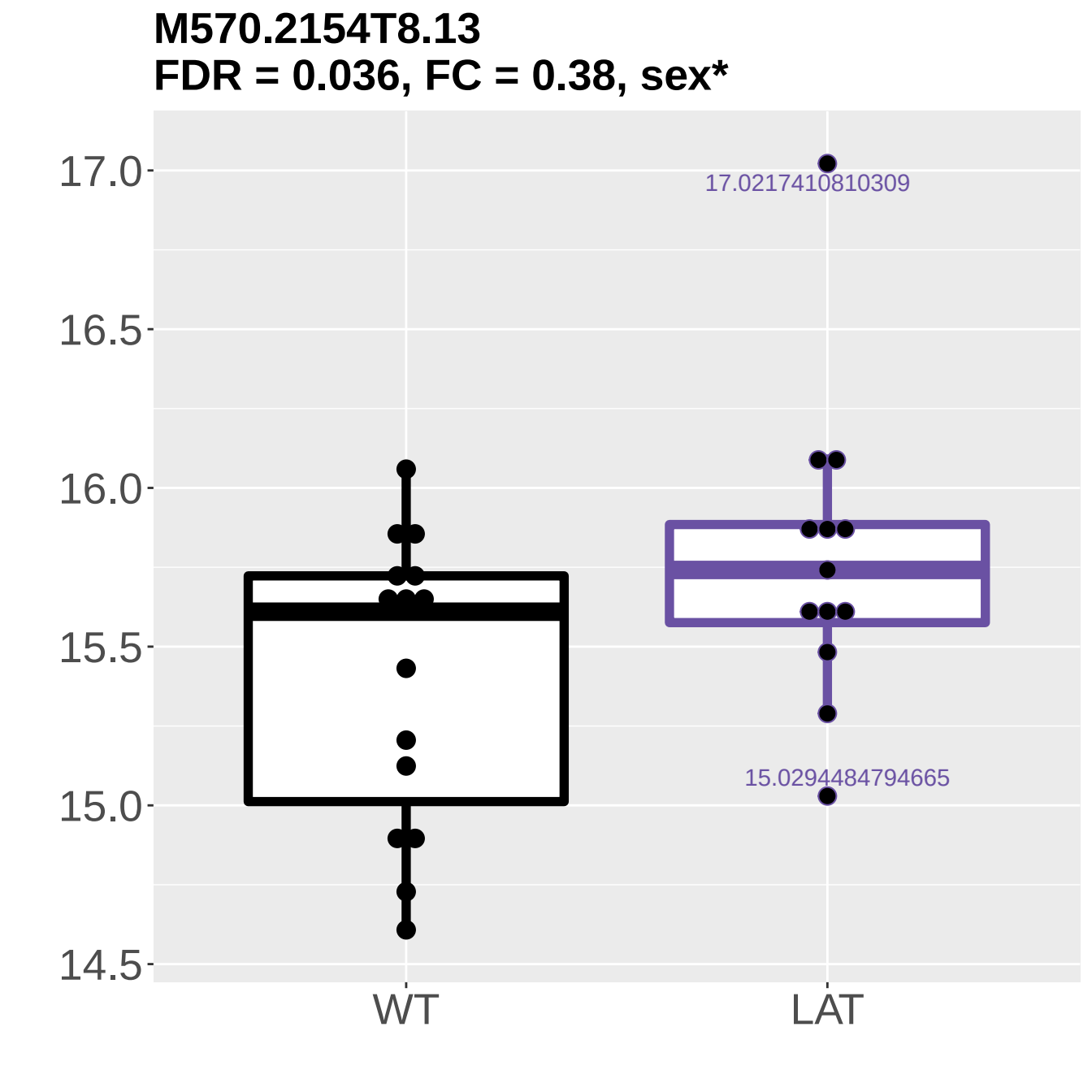
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WT
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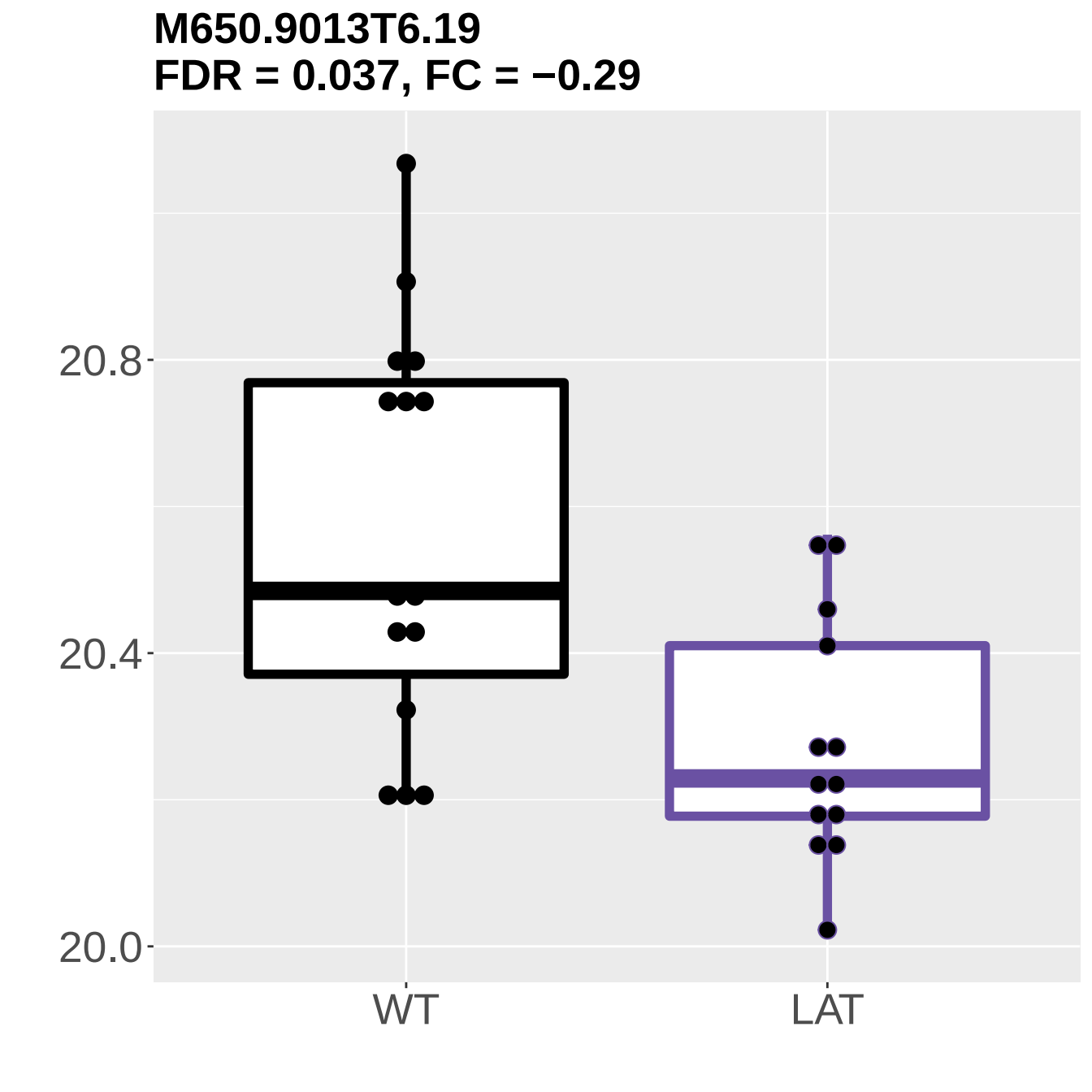
M650.9013T6.19
FDR = 0.037, FC = −0.29
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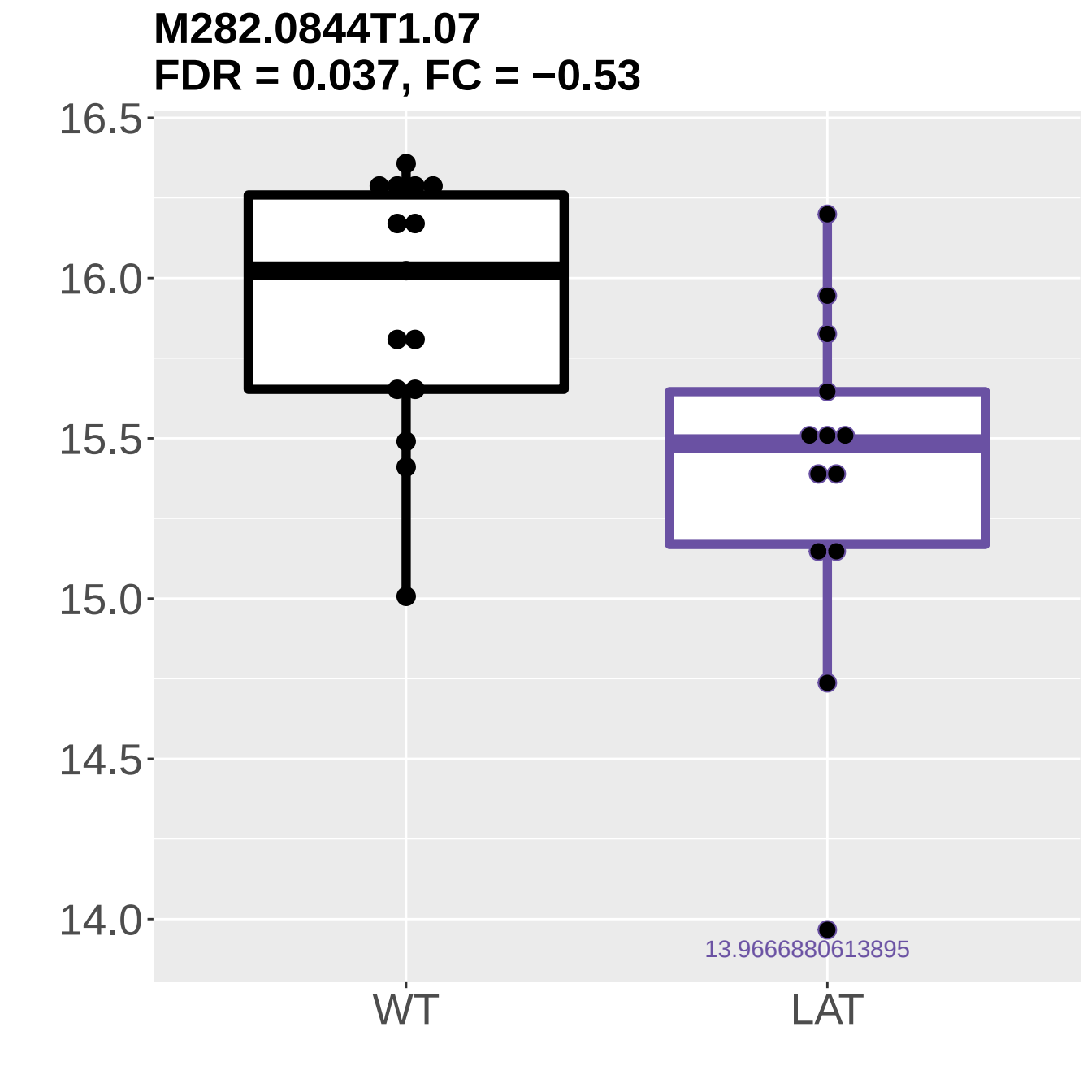
M282.0844T1.07
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WT
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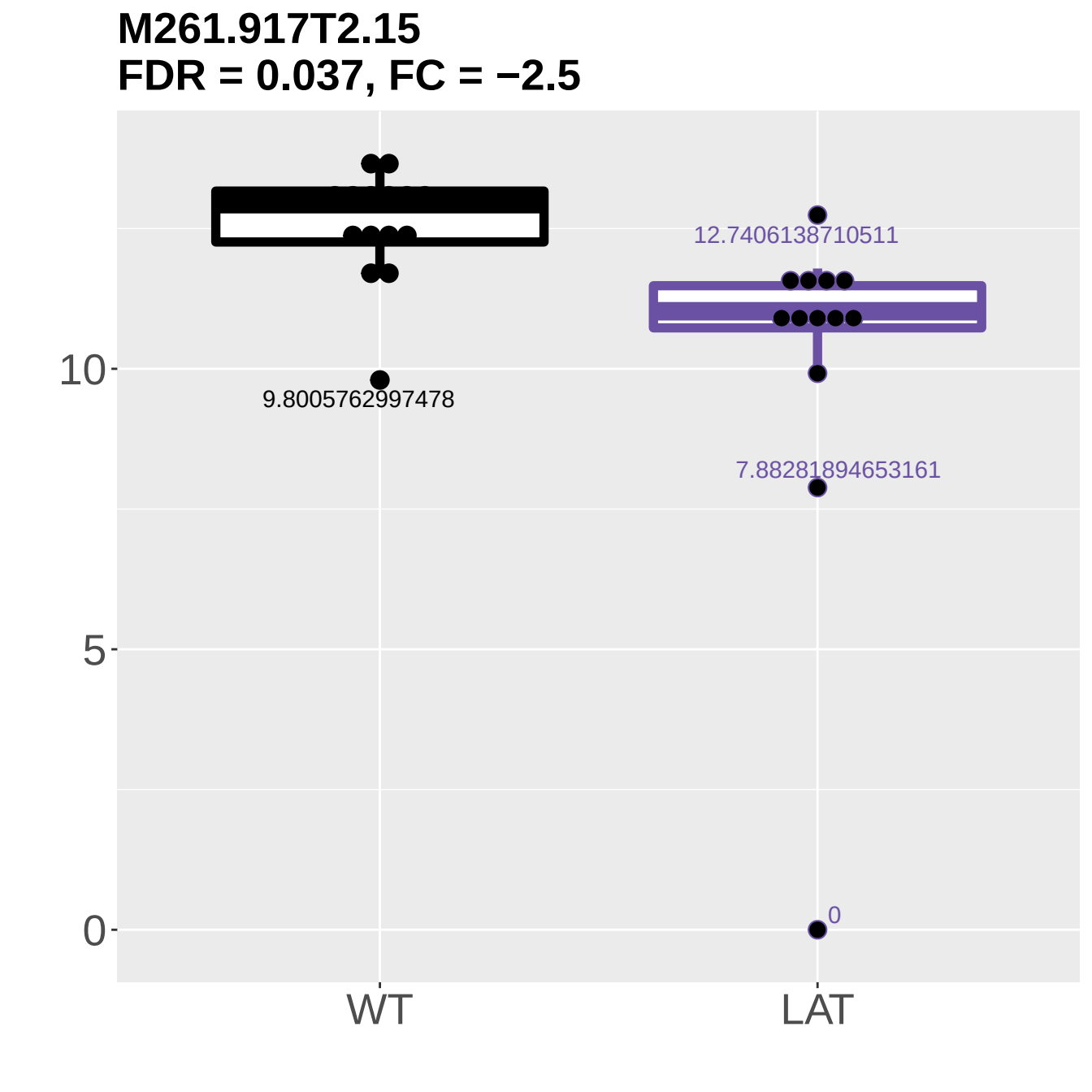
M261.917T2.15
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5
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WT
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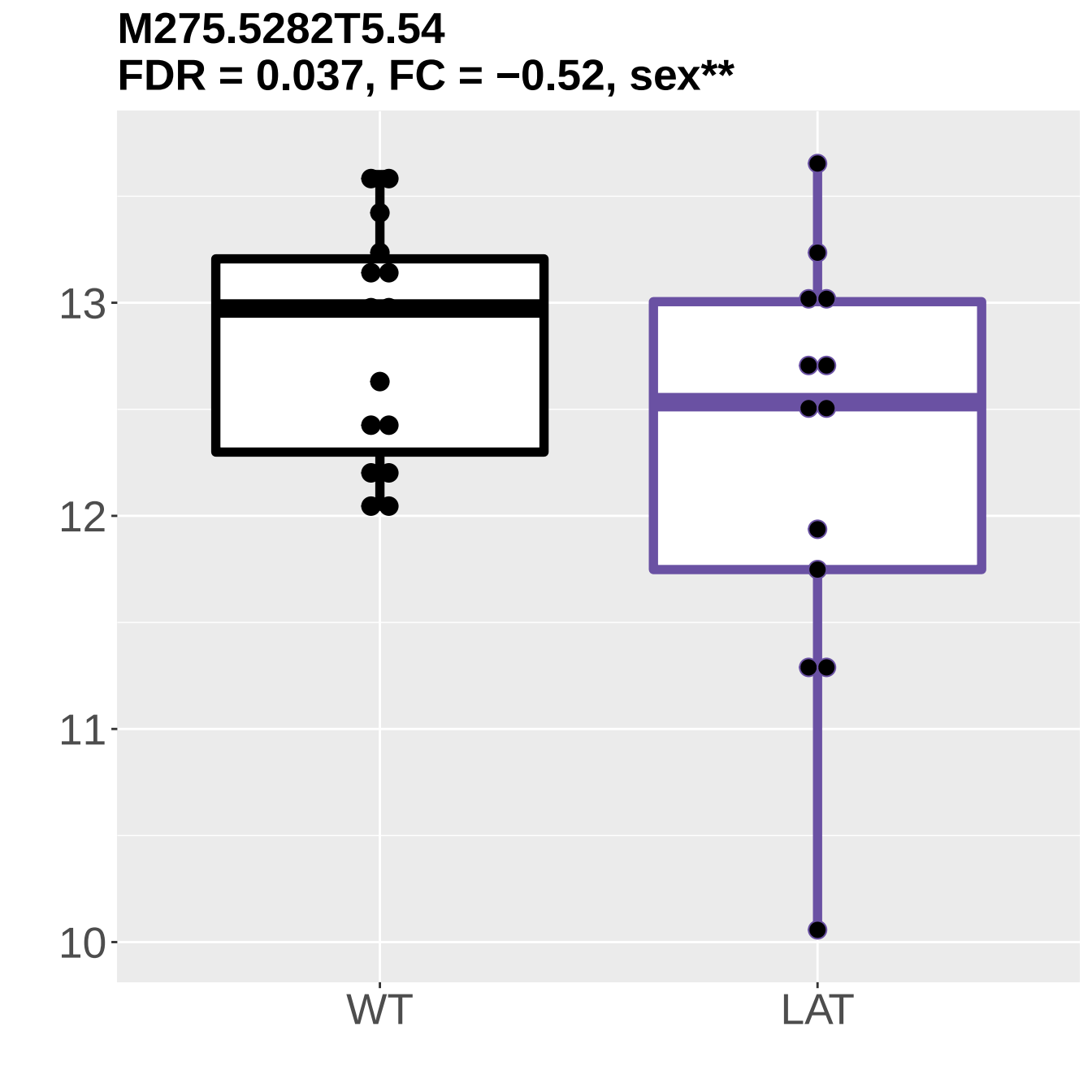
M275.5282T5.54
FDR = 0.037, FC = −0.52, sex**
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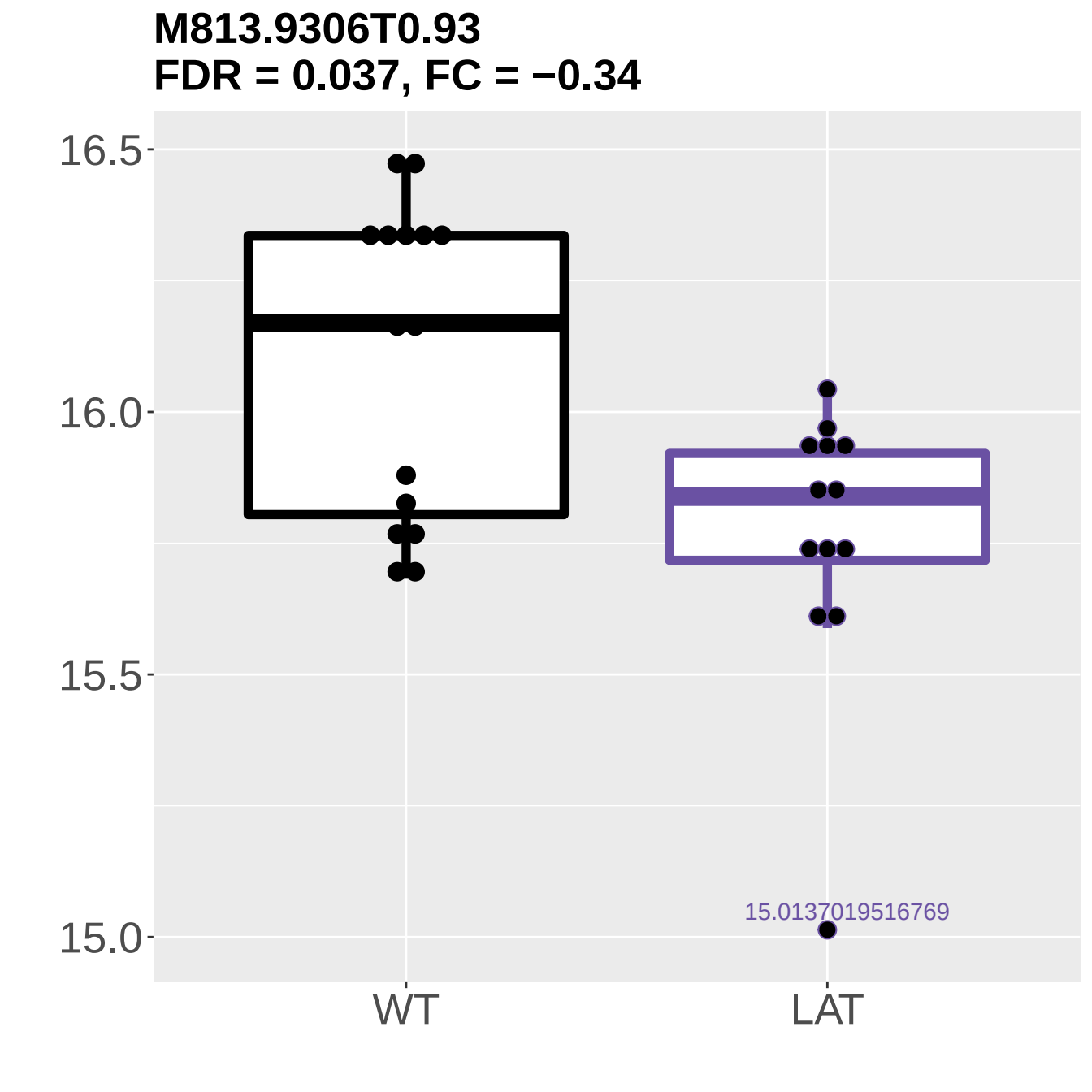
12
11
10
WT
LAT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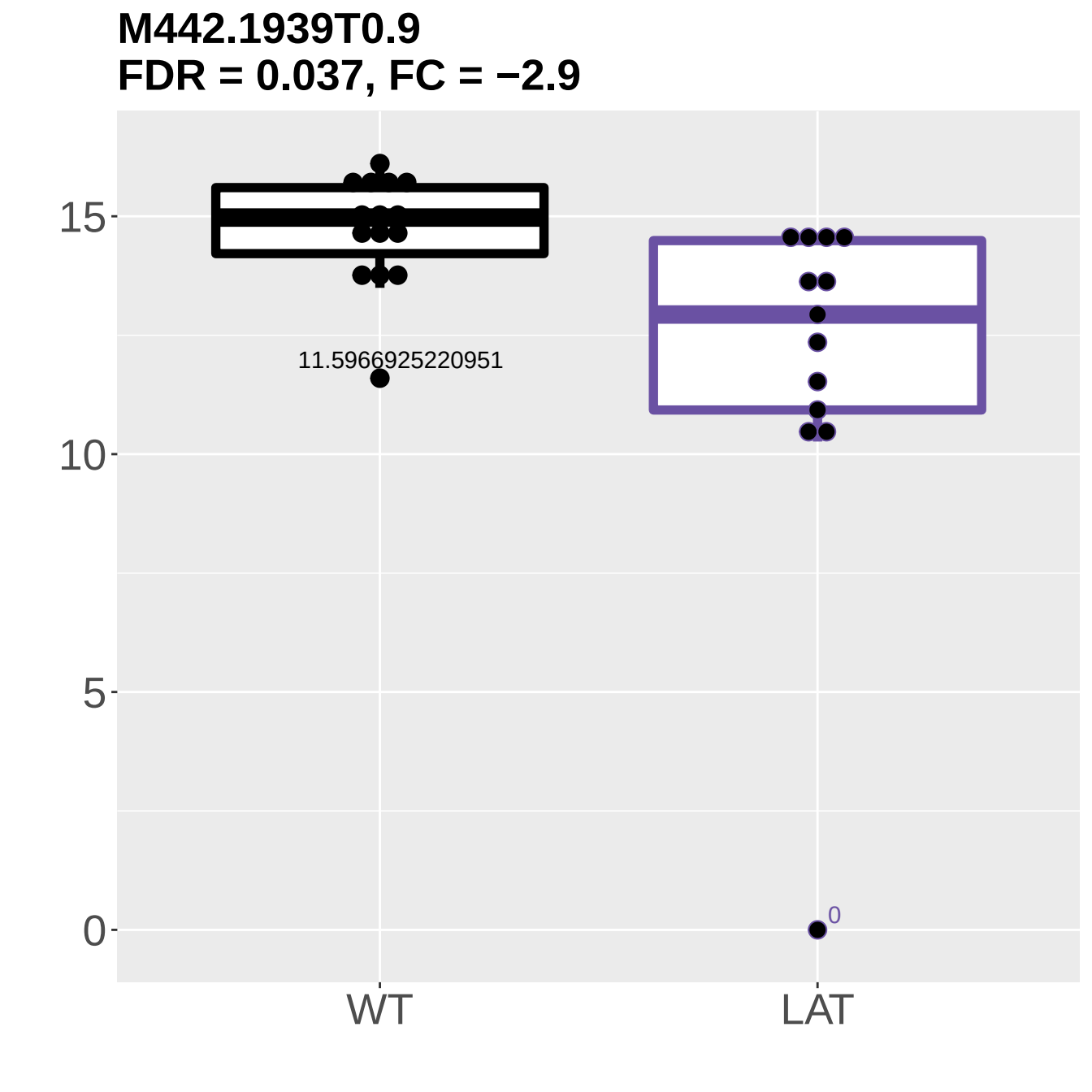
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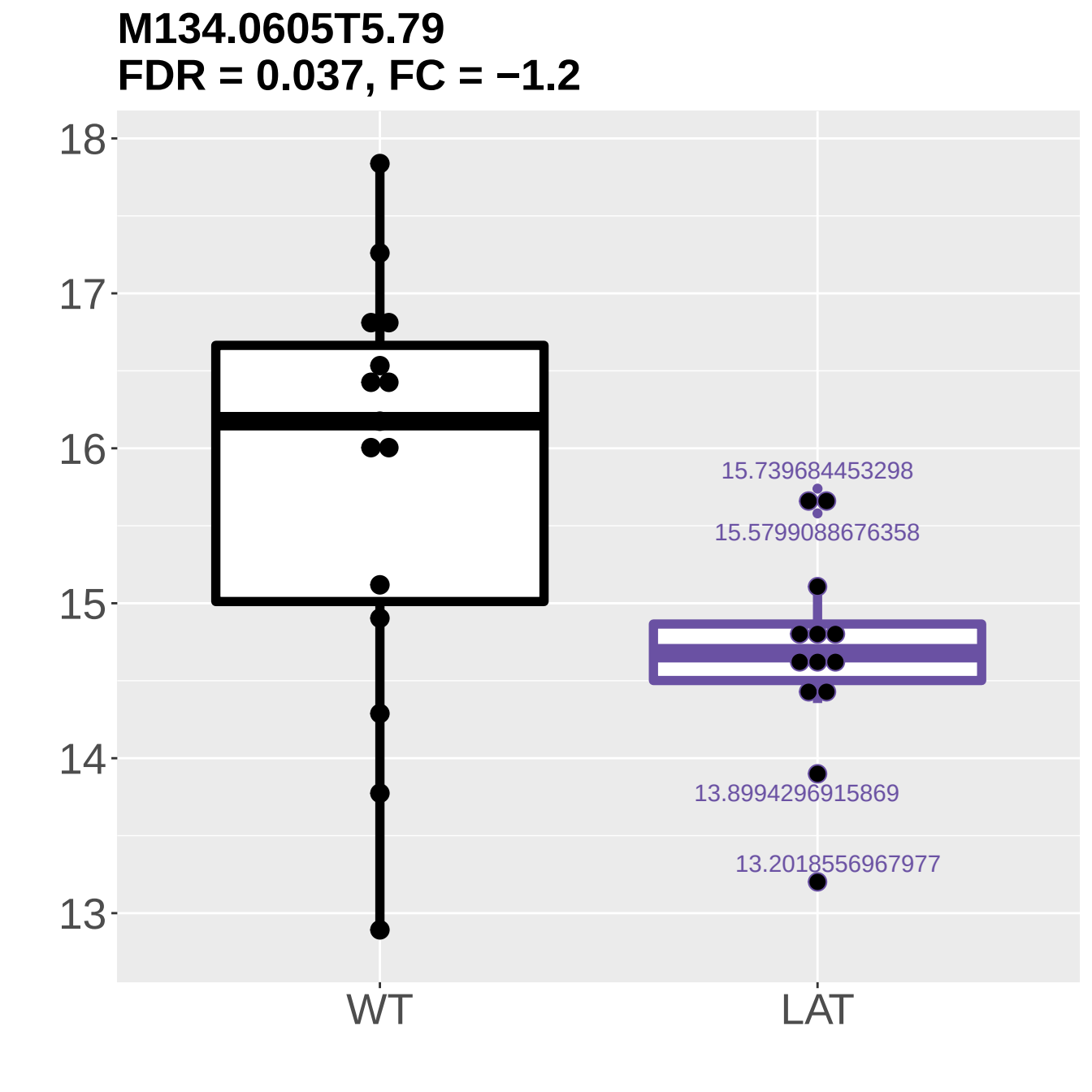
M134.0605T5.79
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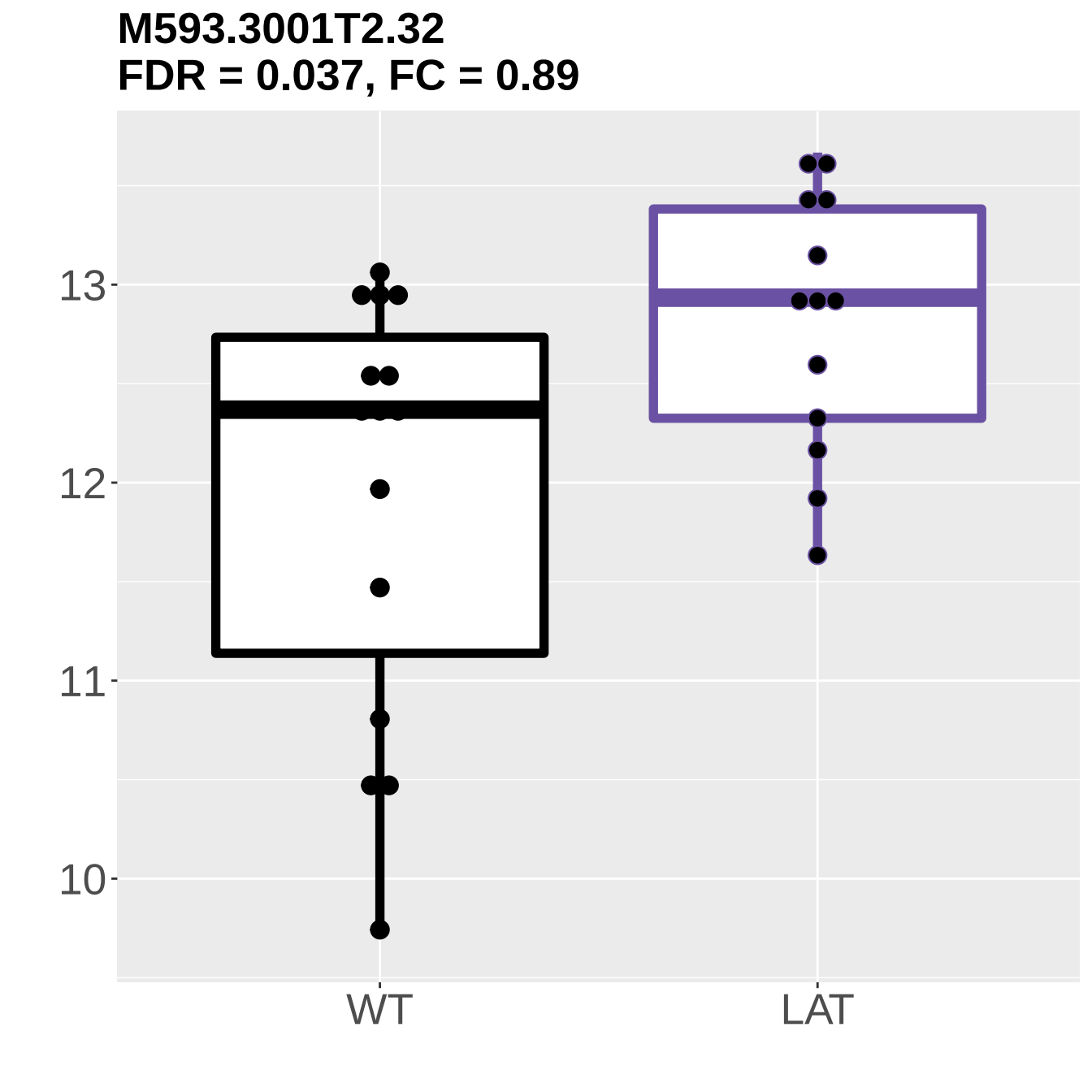
WT
LAT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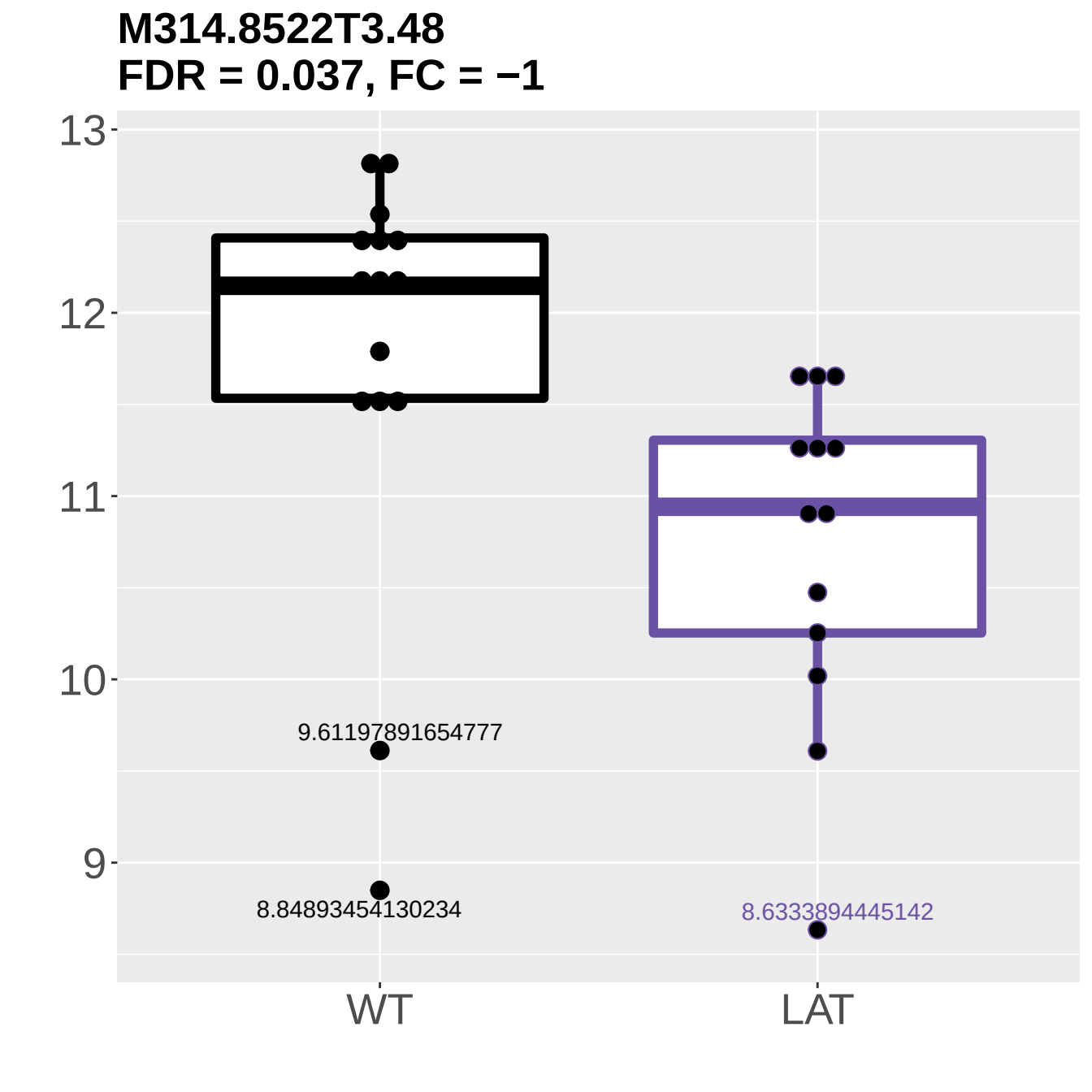
12
11
10
WT
LAT


M314.8522T3.48
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11
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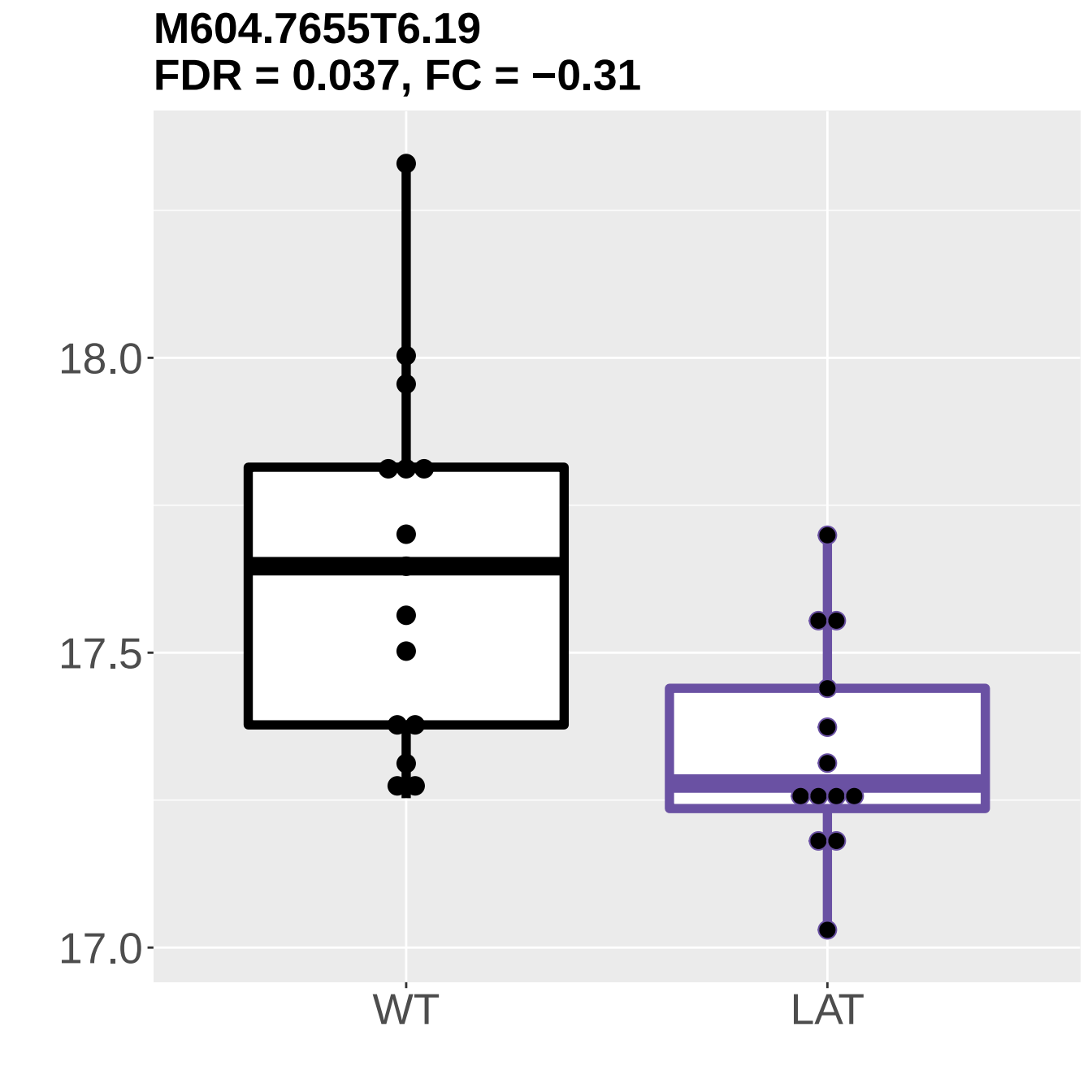
WT
LAT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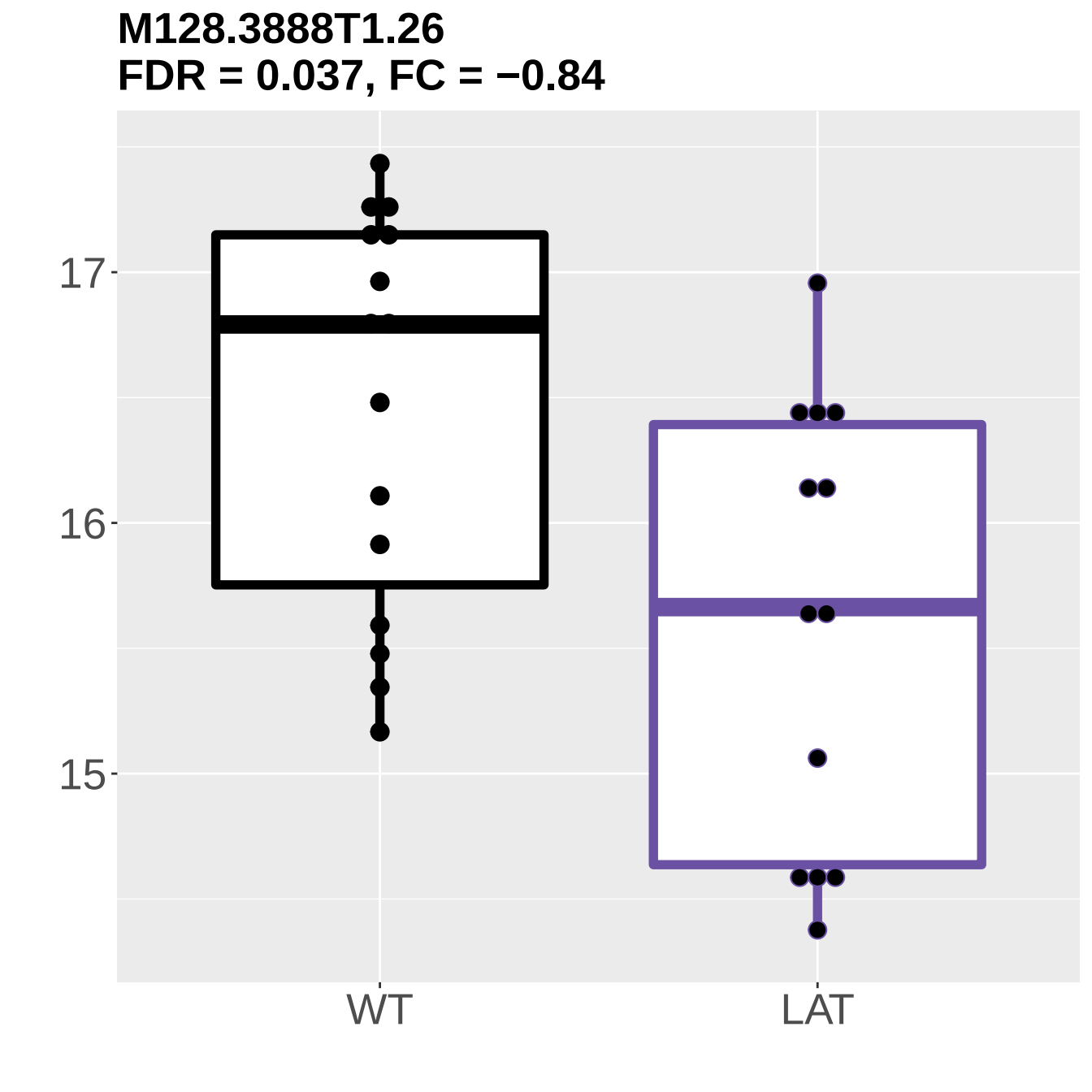
WT
LAT


M128.3888T1.26
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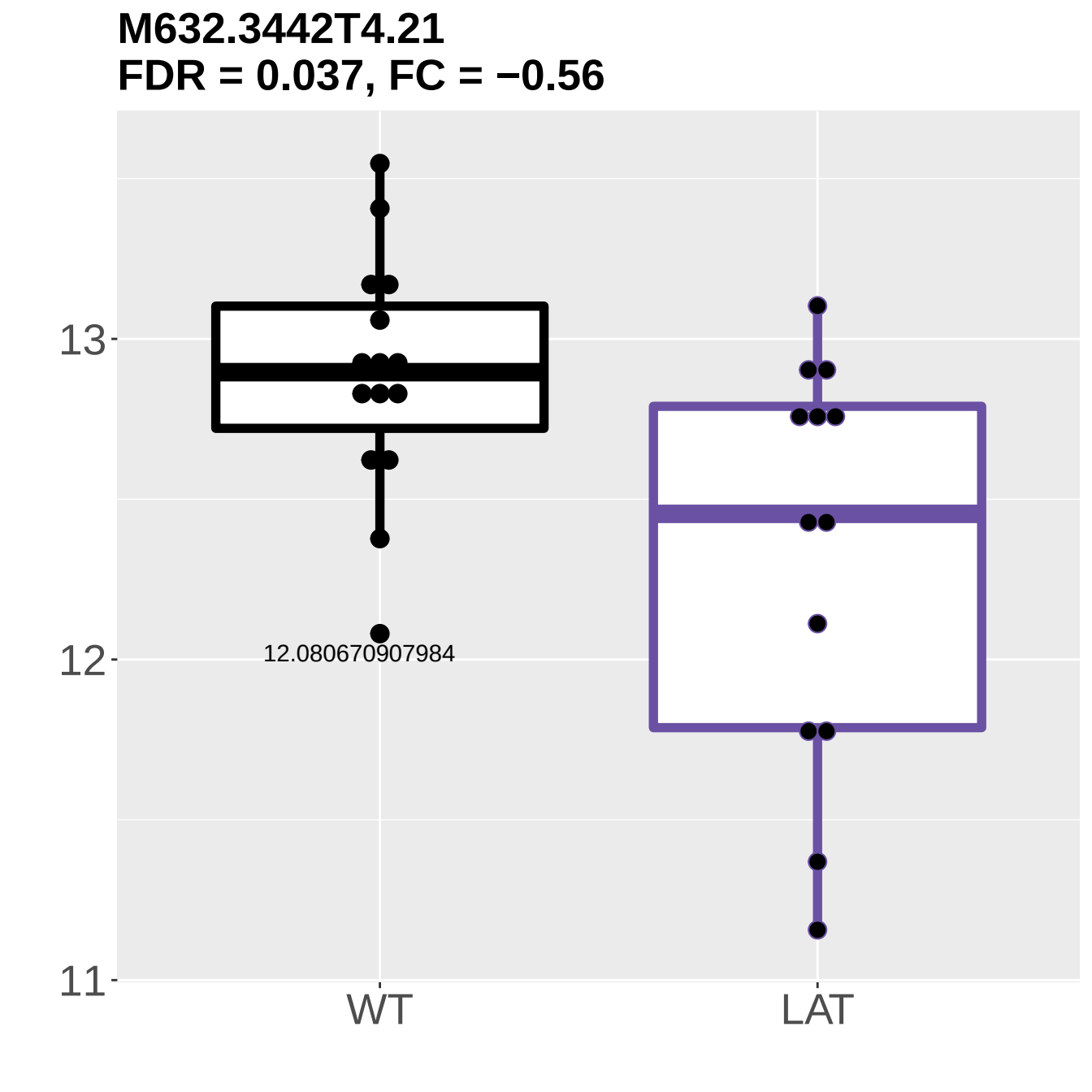
16
15
WT
LAT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12
11
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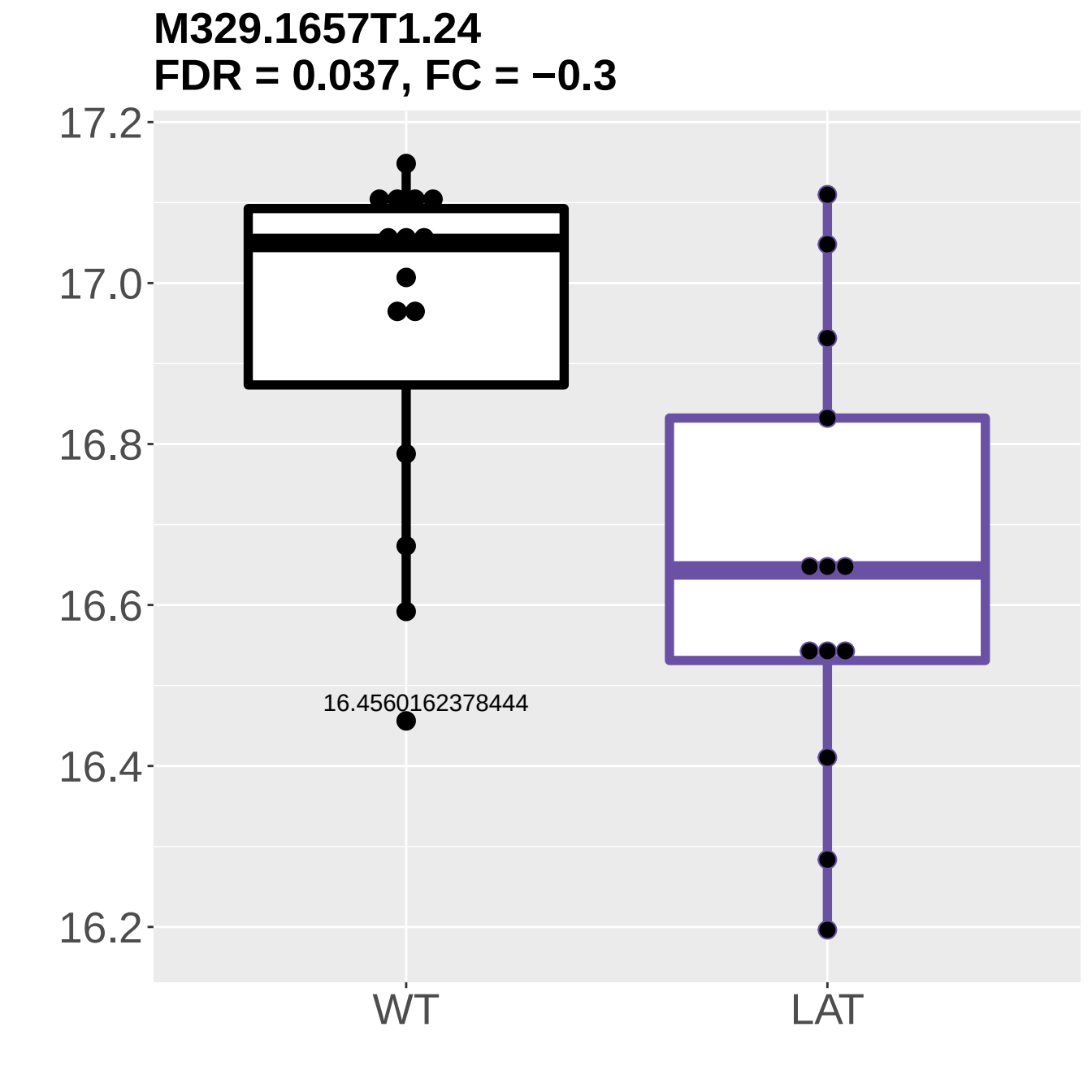
WT
LAT


M329.1657T1.24
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16.6
16.4
16.2
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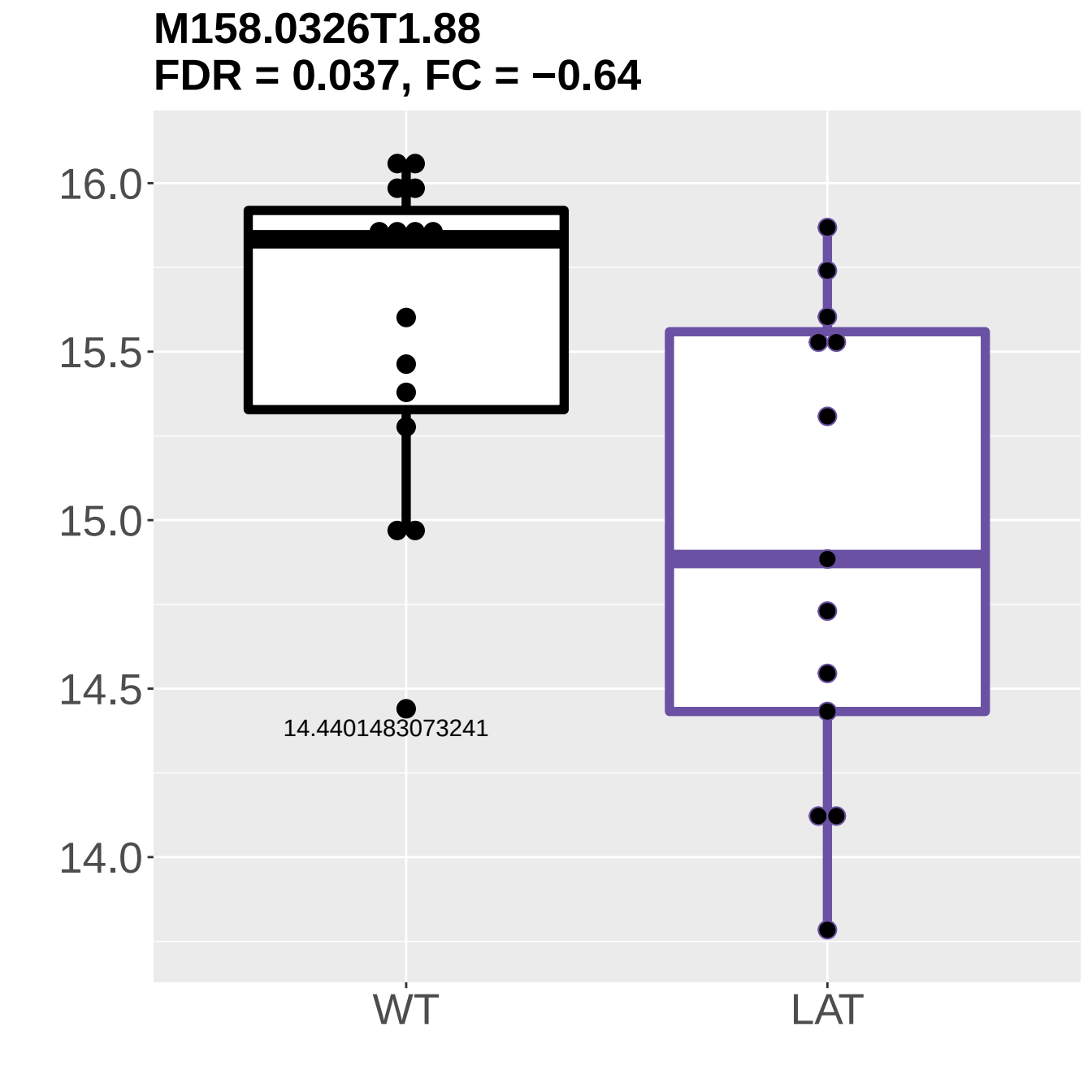
WT
LAT


M158.0326T1.88
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WT
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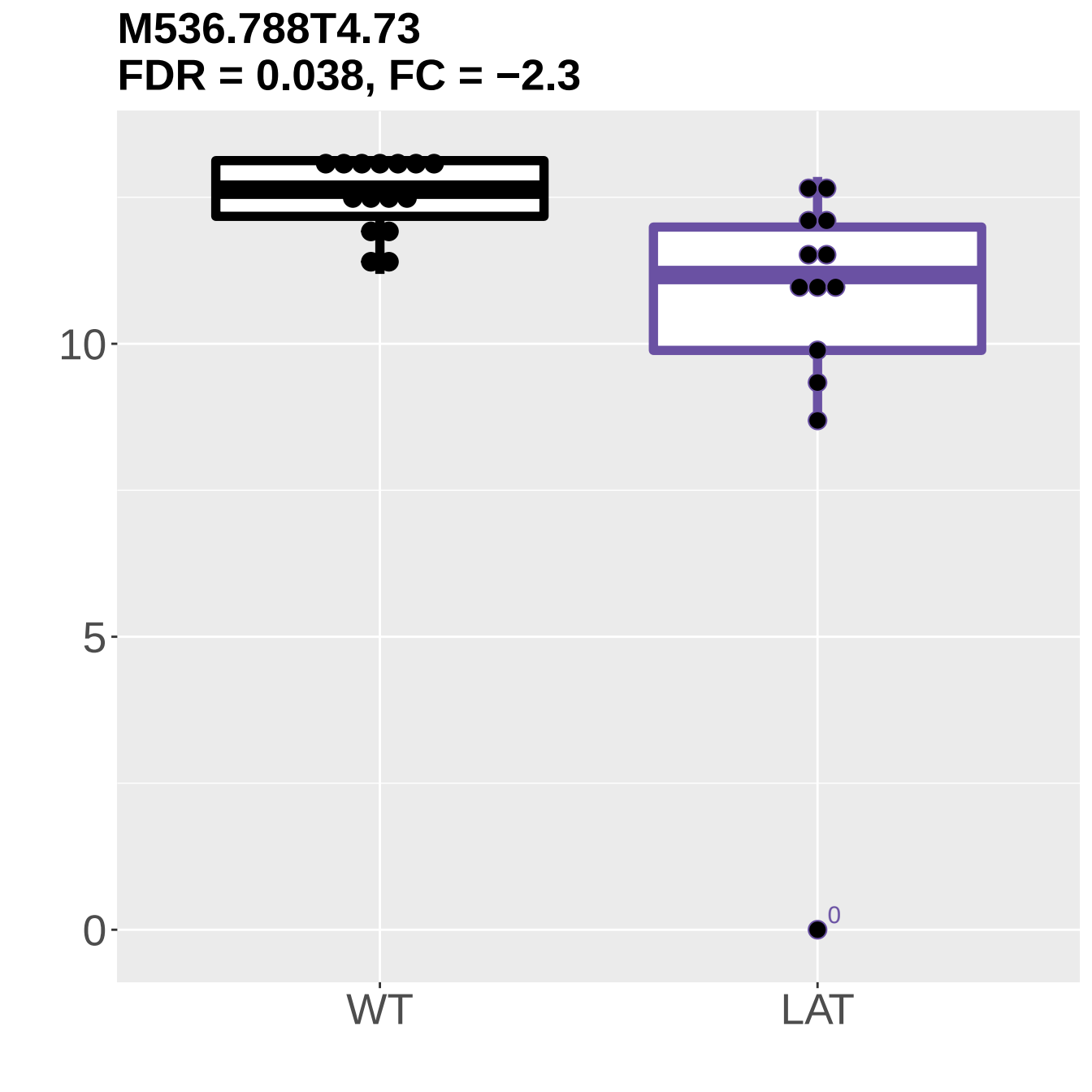
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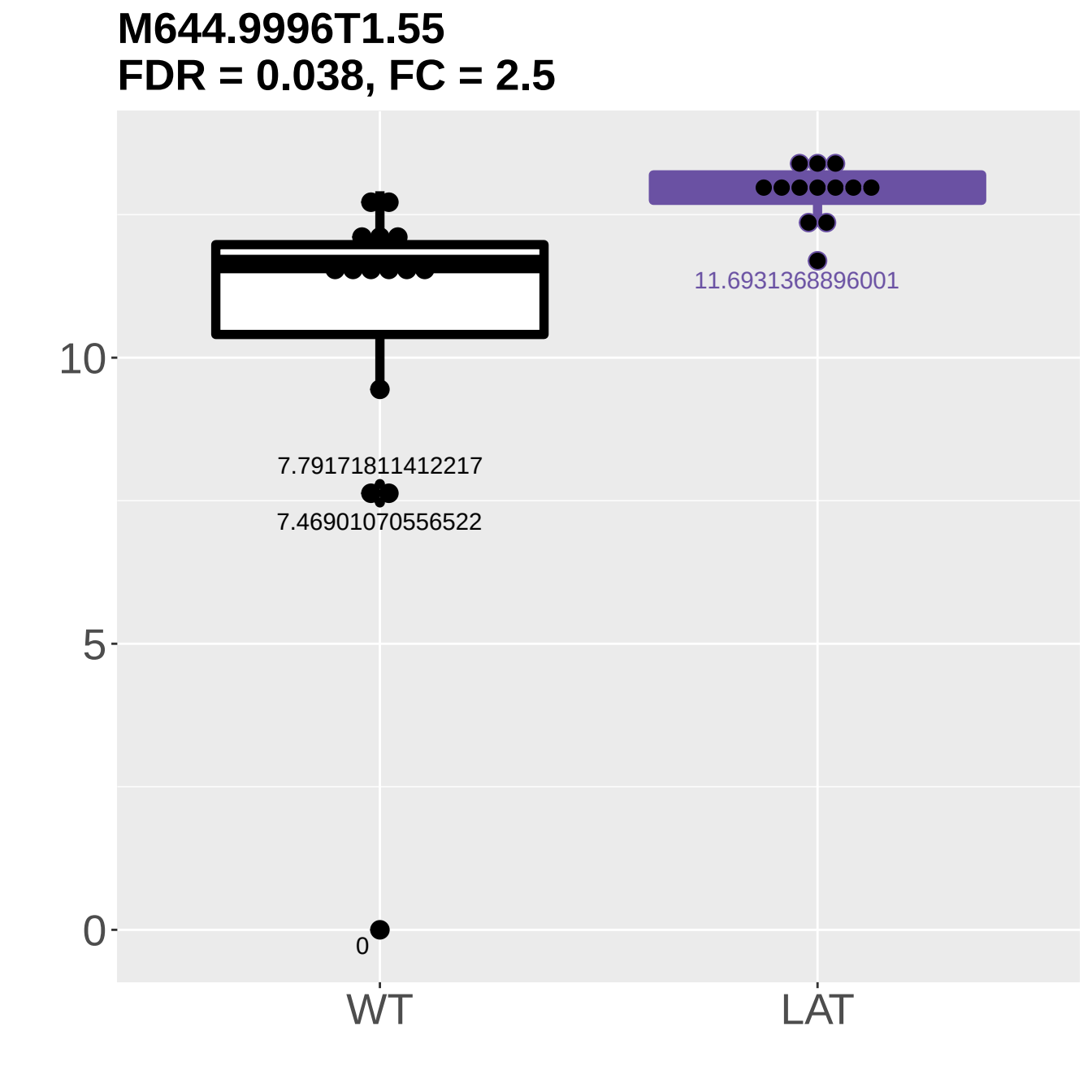
WT
LAT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WT
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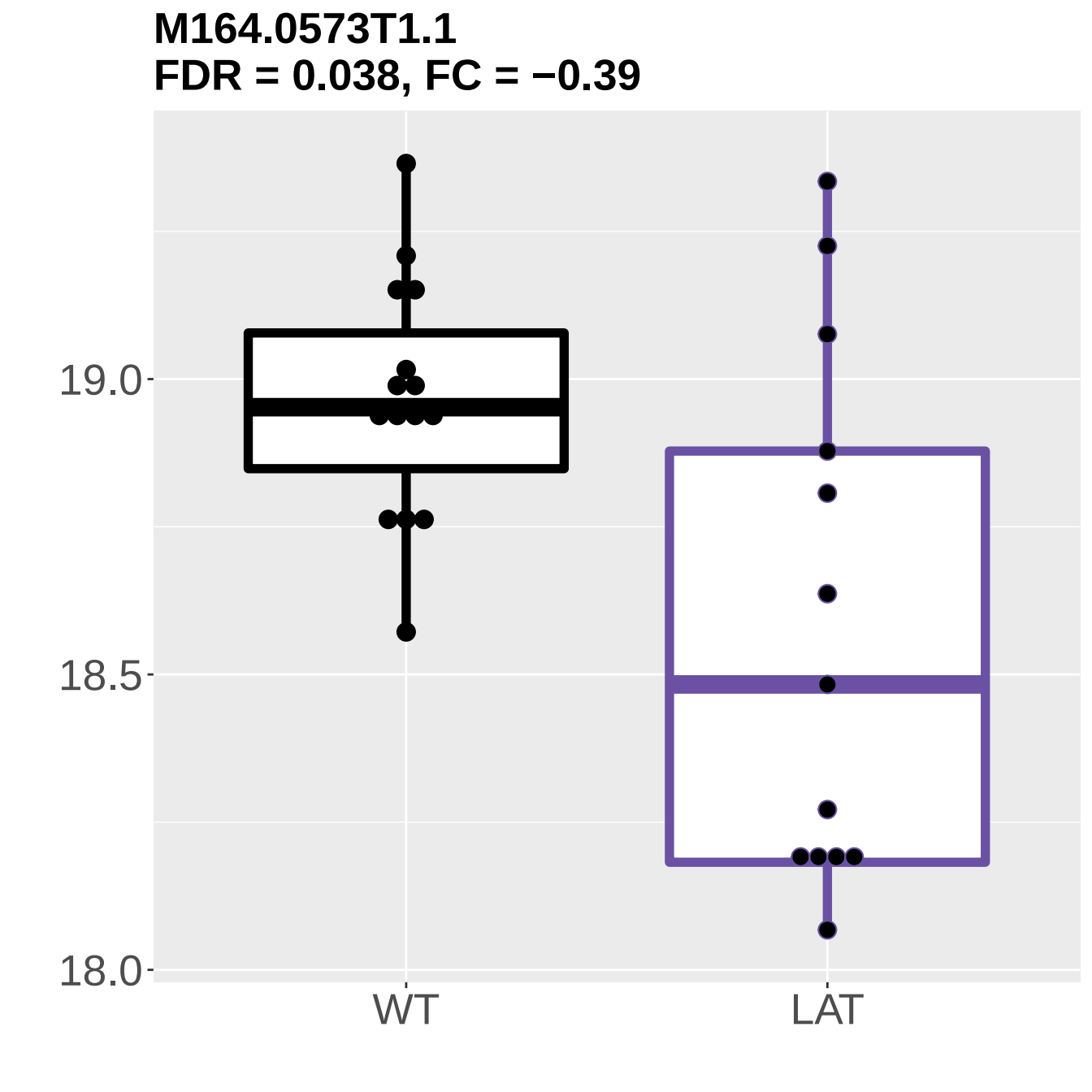
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18.0
WT
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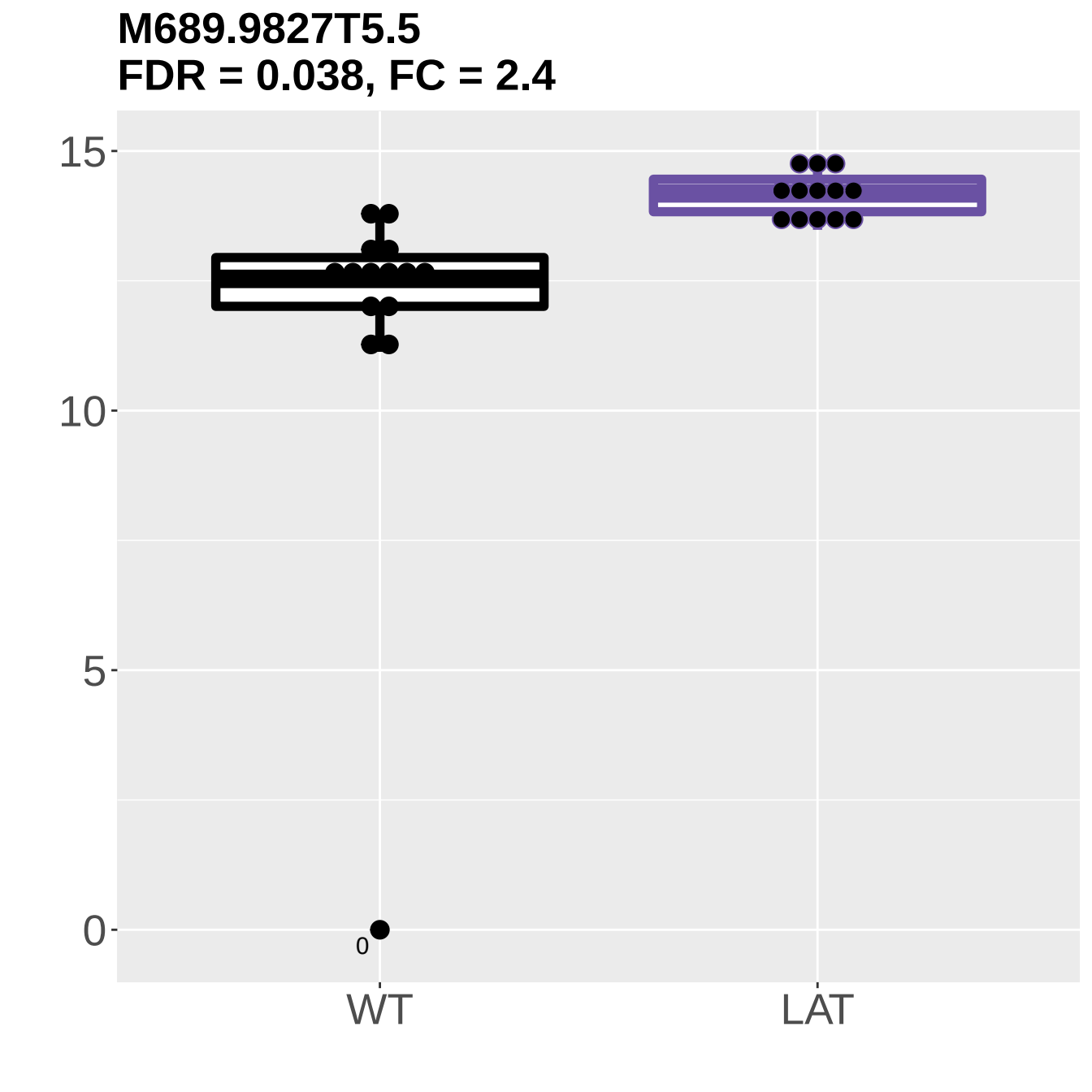
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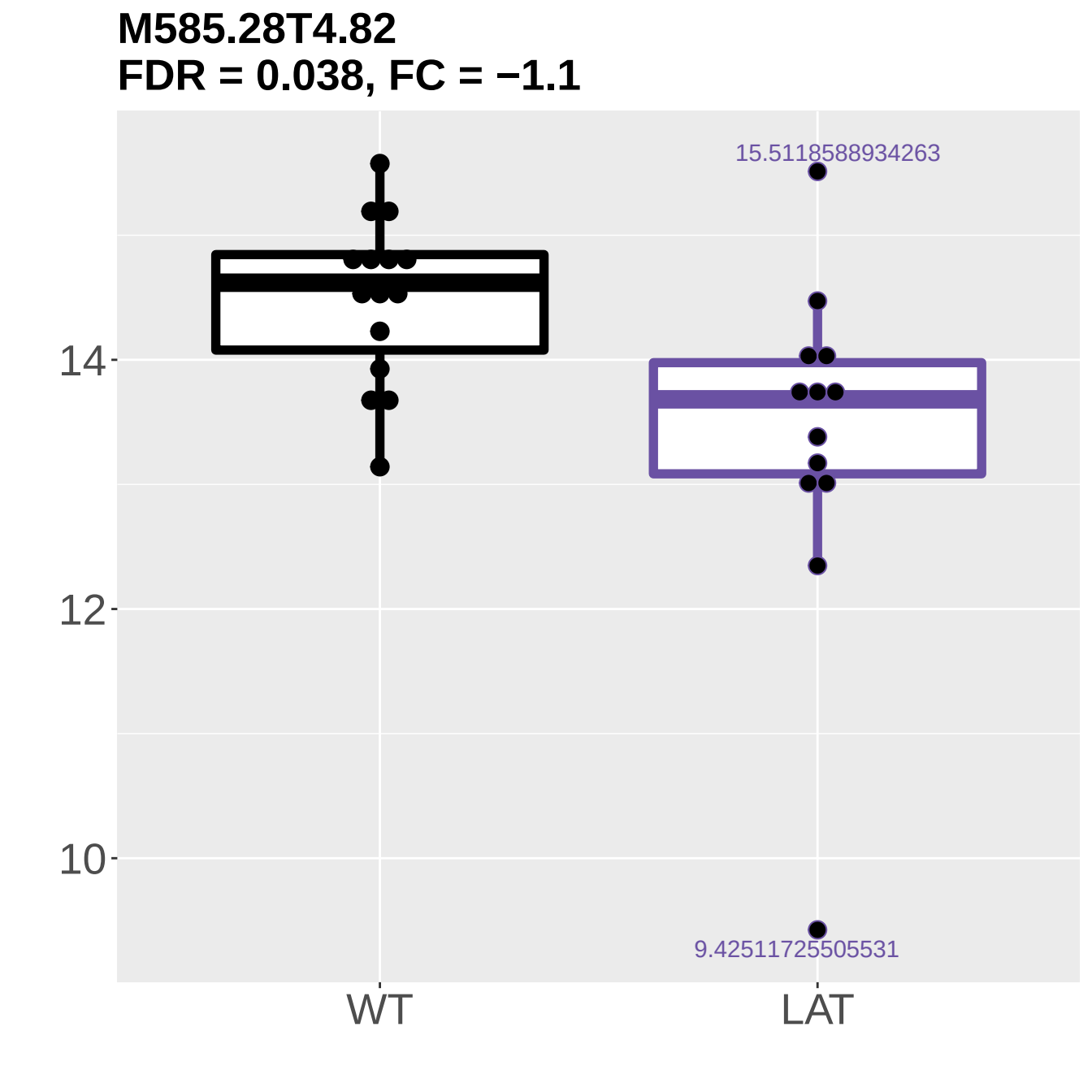
10
5
0
0
WT
LAT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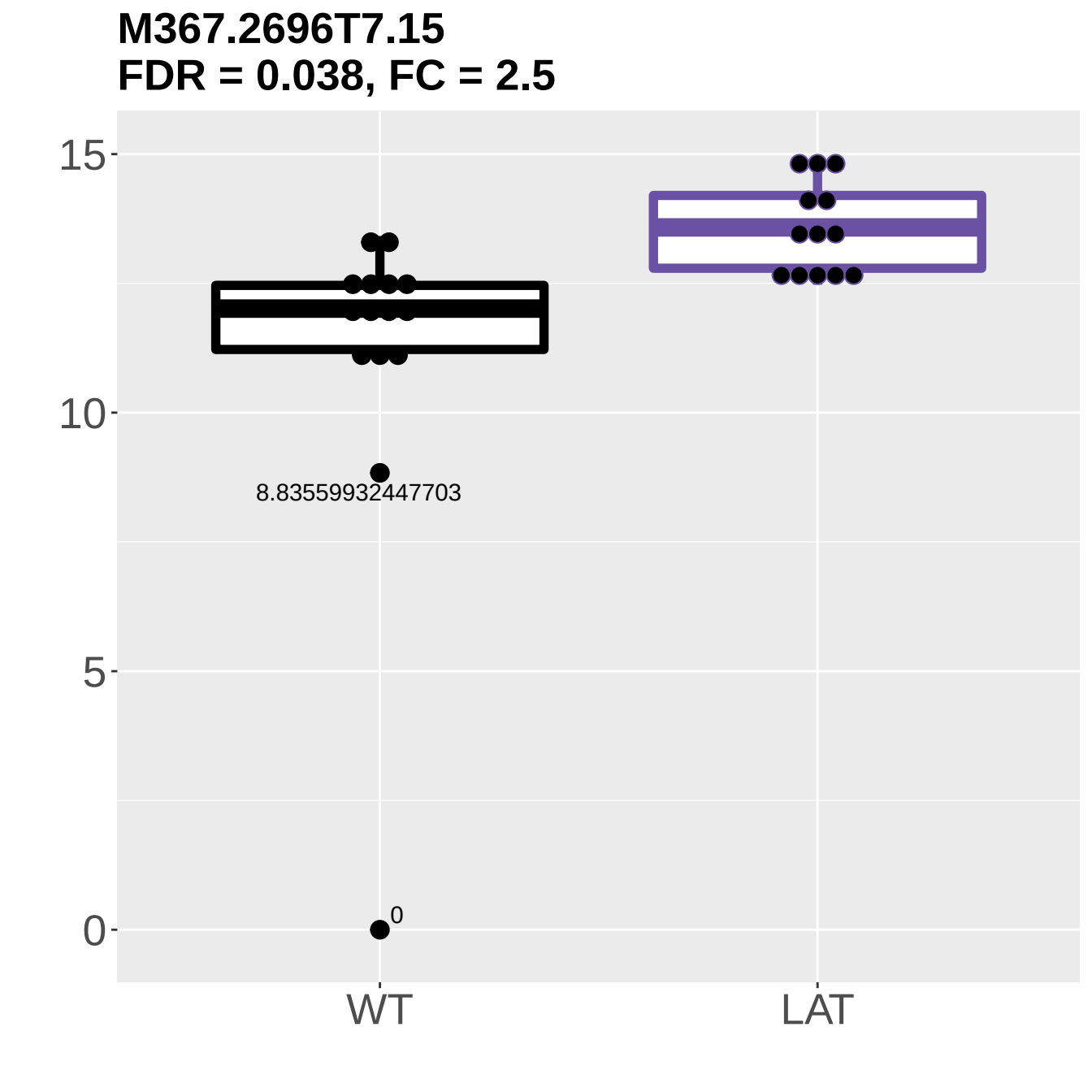
14
12
10
WT
LAT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10
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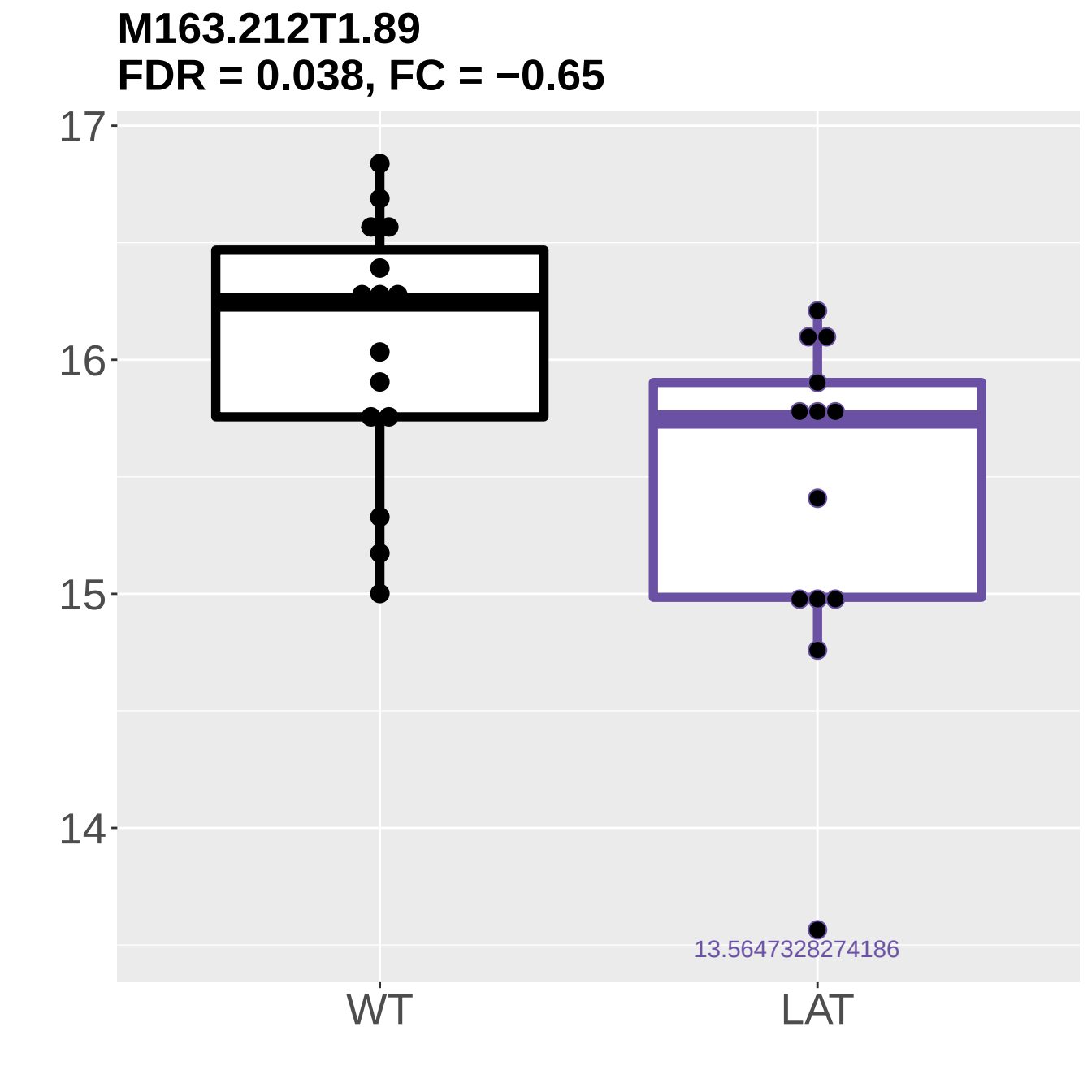
WT
LAT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16
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WT
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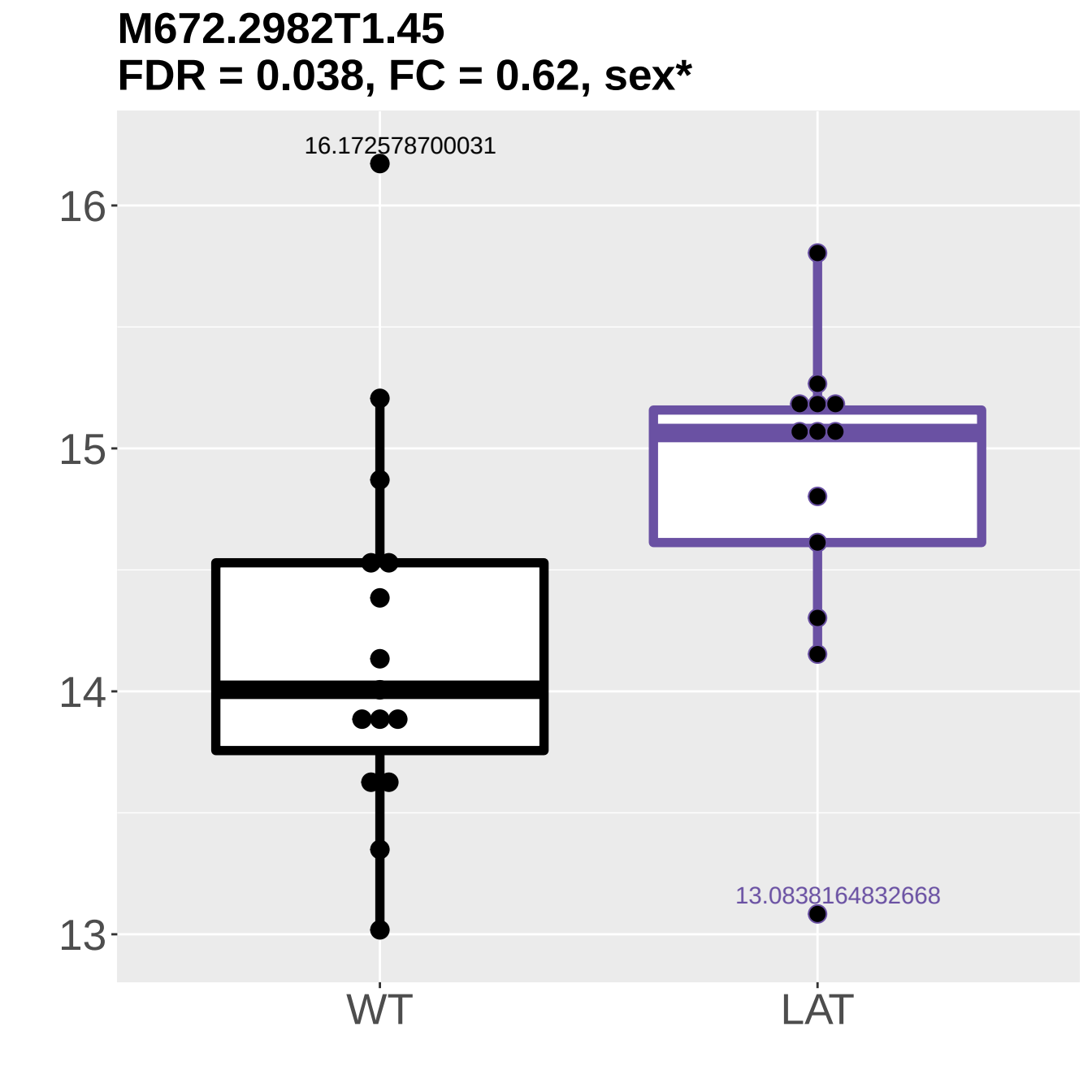
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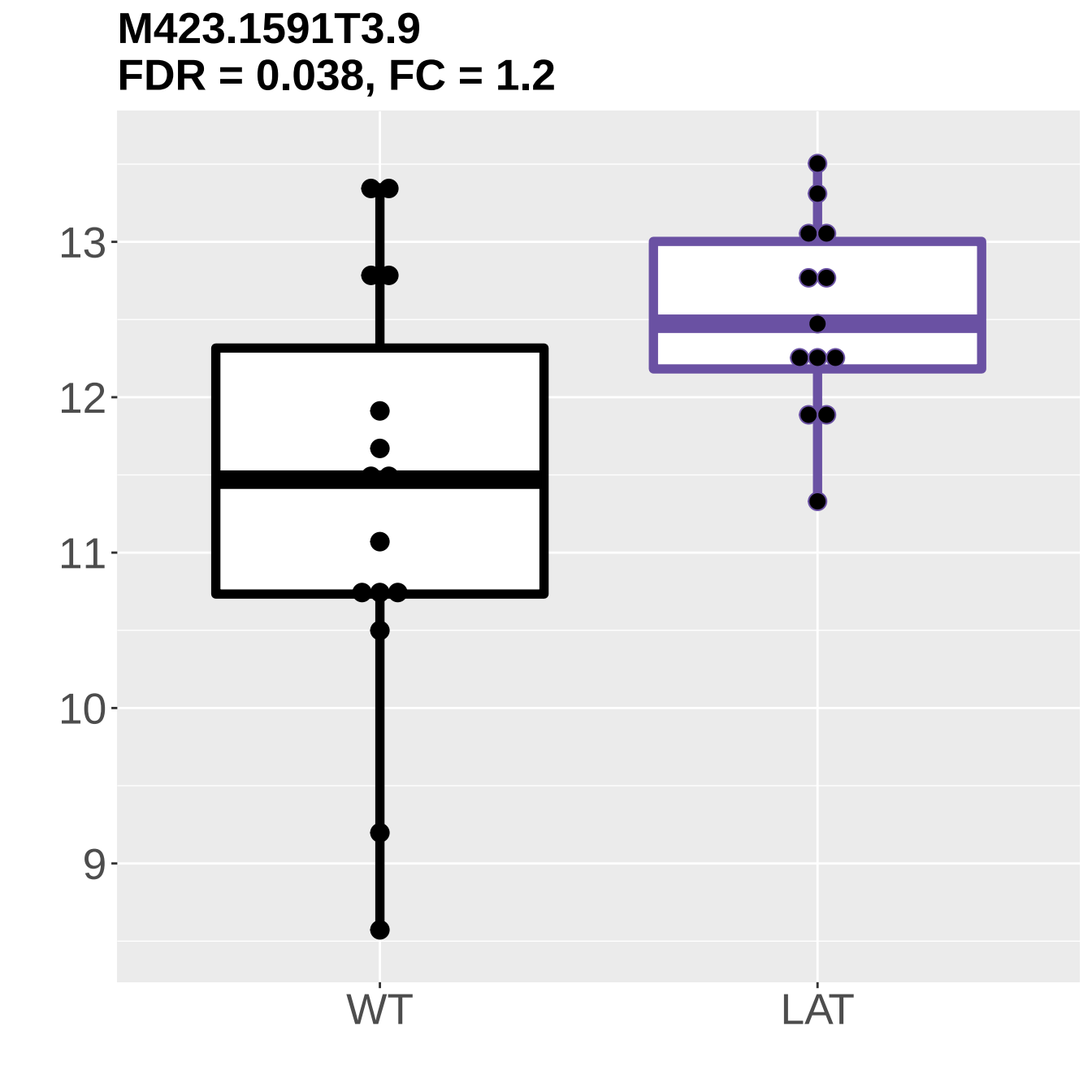
16
15
14
13
WT
LAT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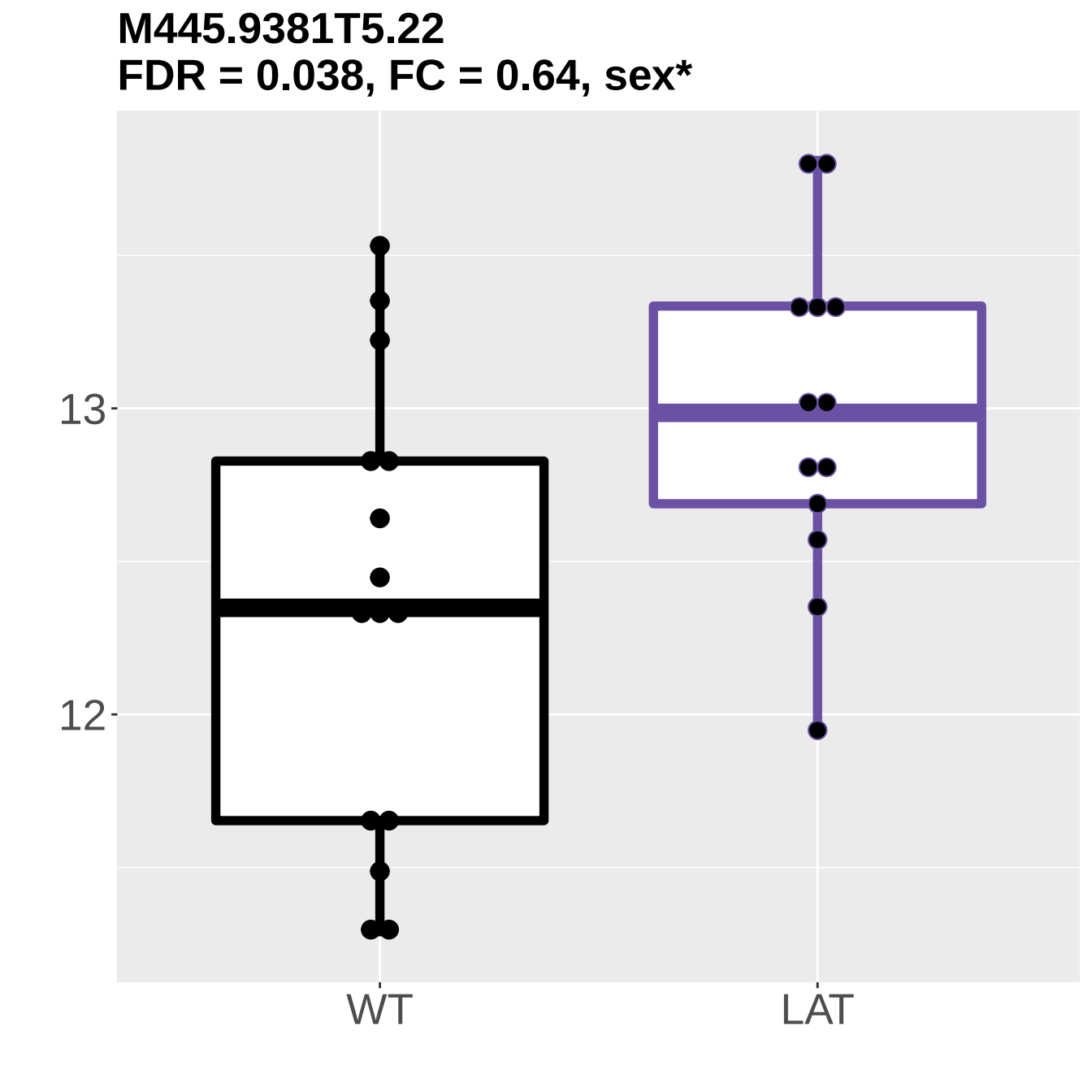
12
11
10
9
WT
LAT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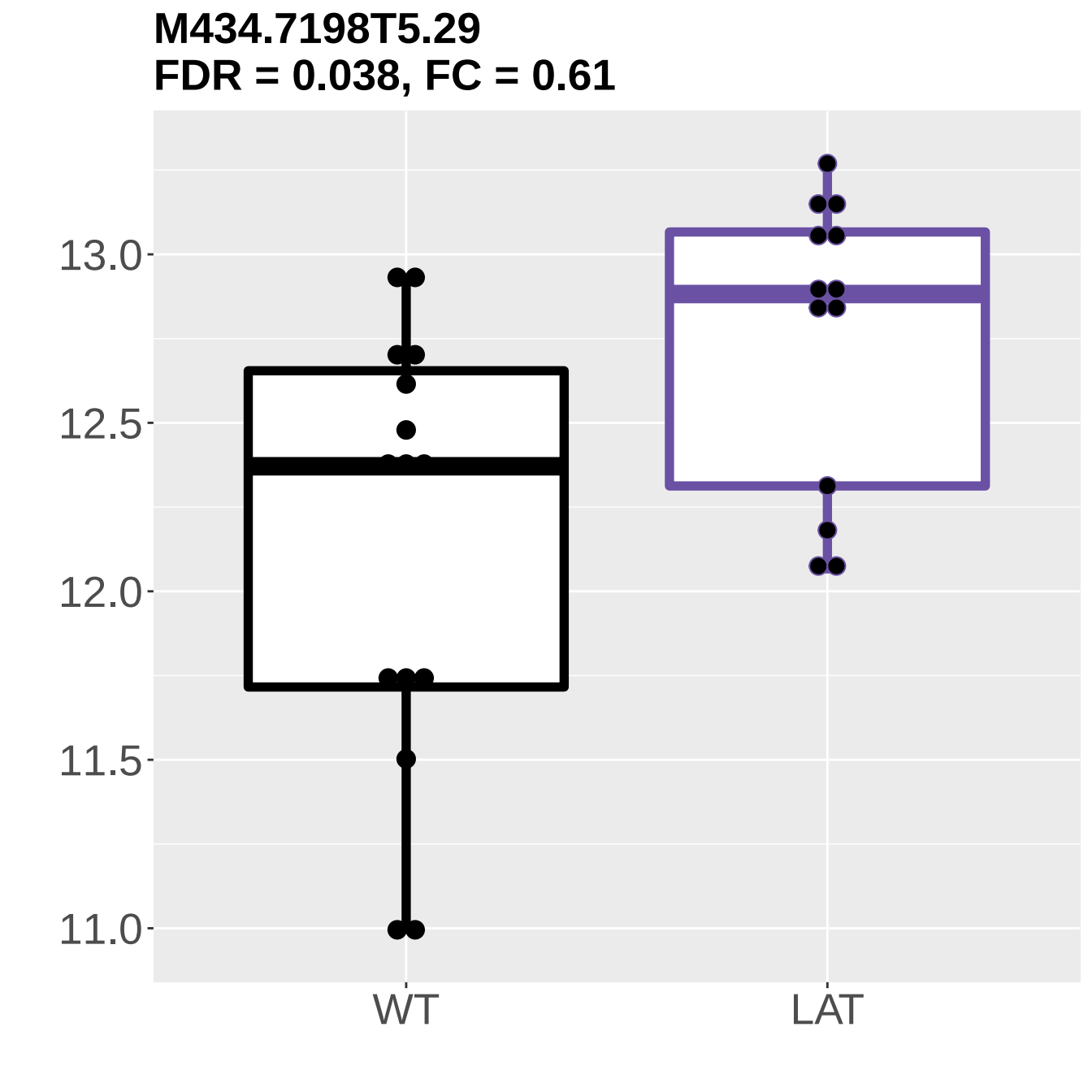
12
WT
LAT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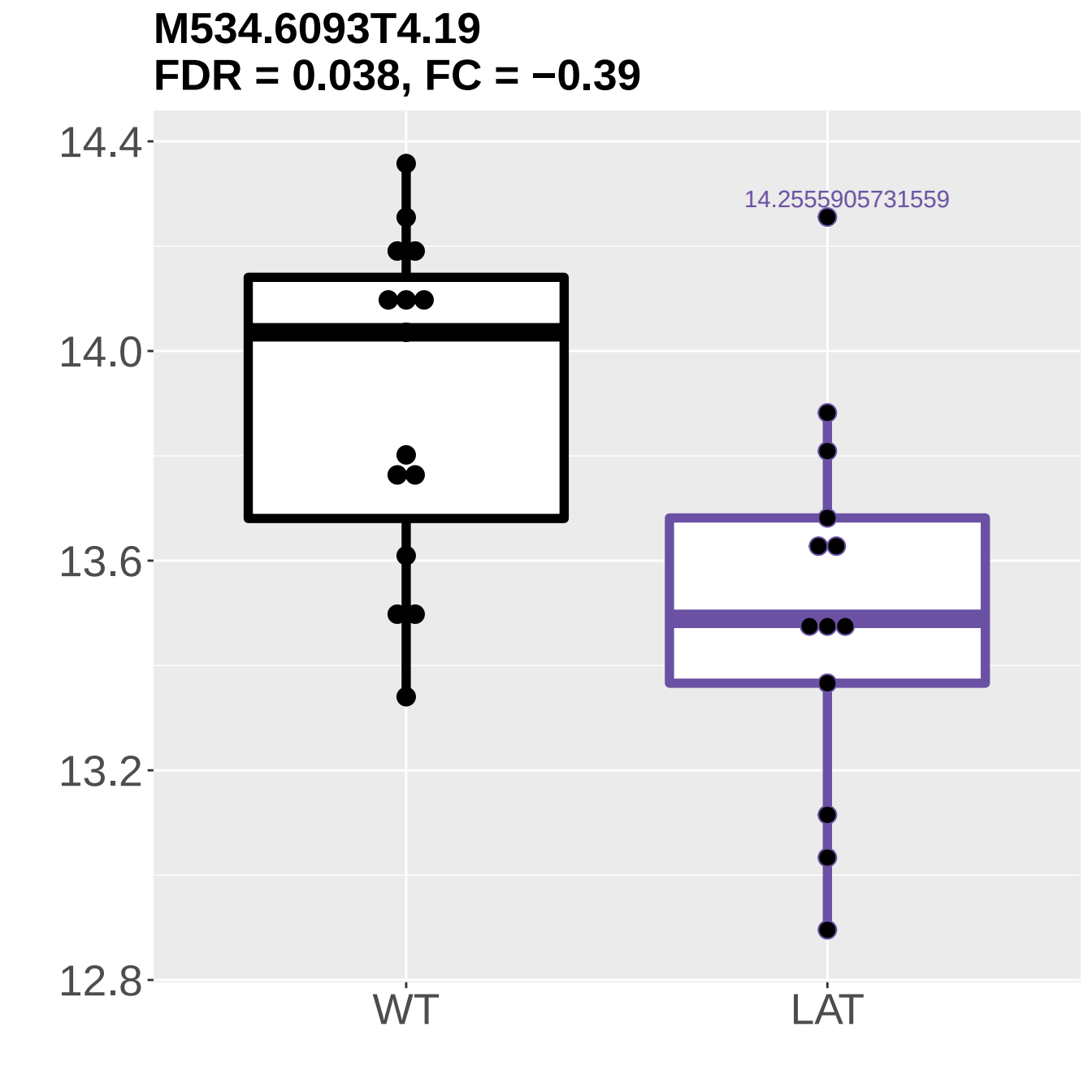
11.5
11.0
WT
LAT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13.6
13.2
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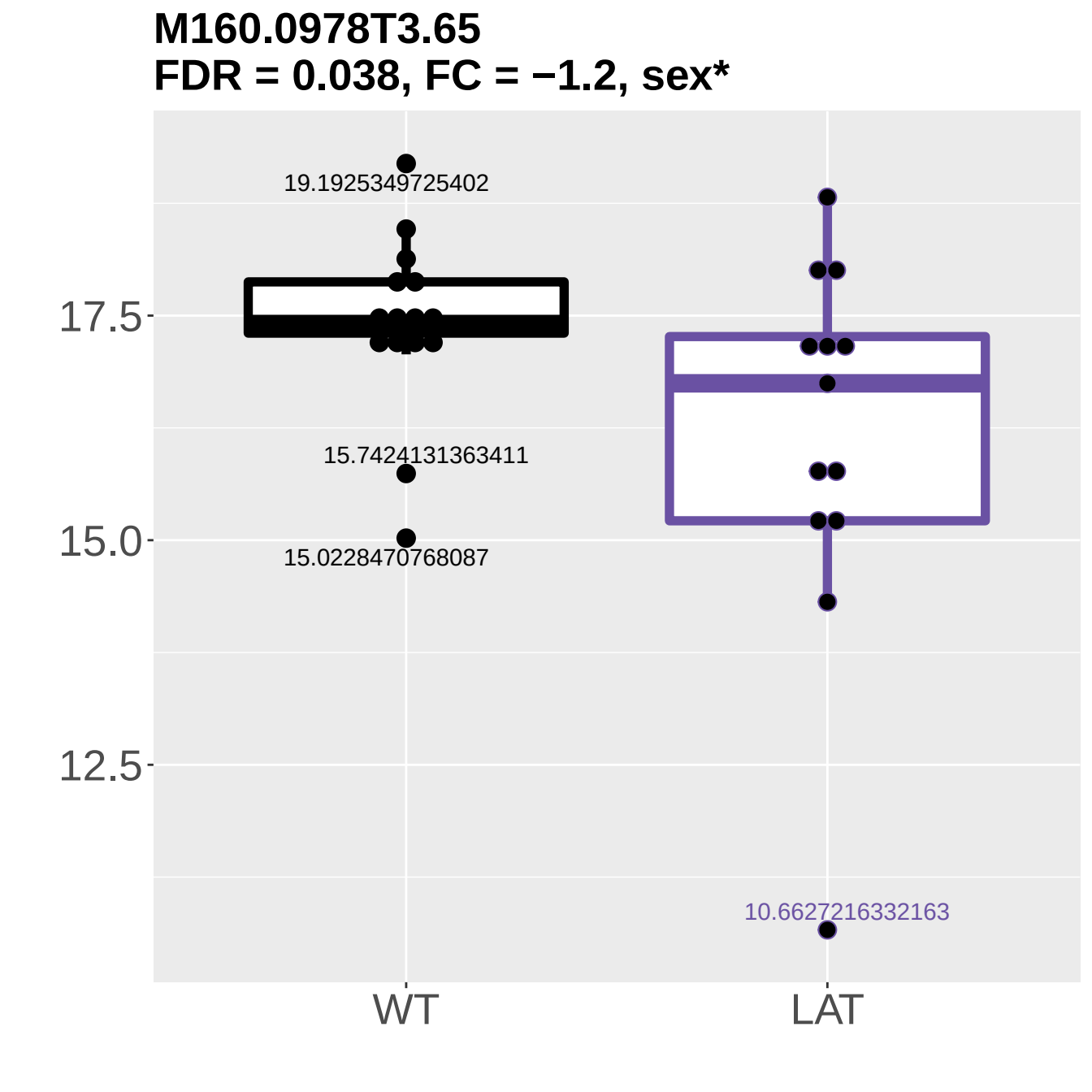
WT
LAT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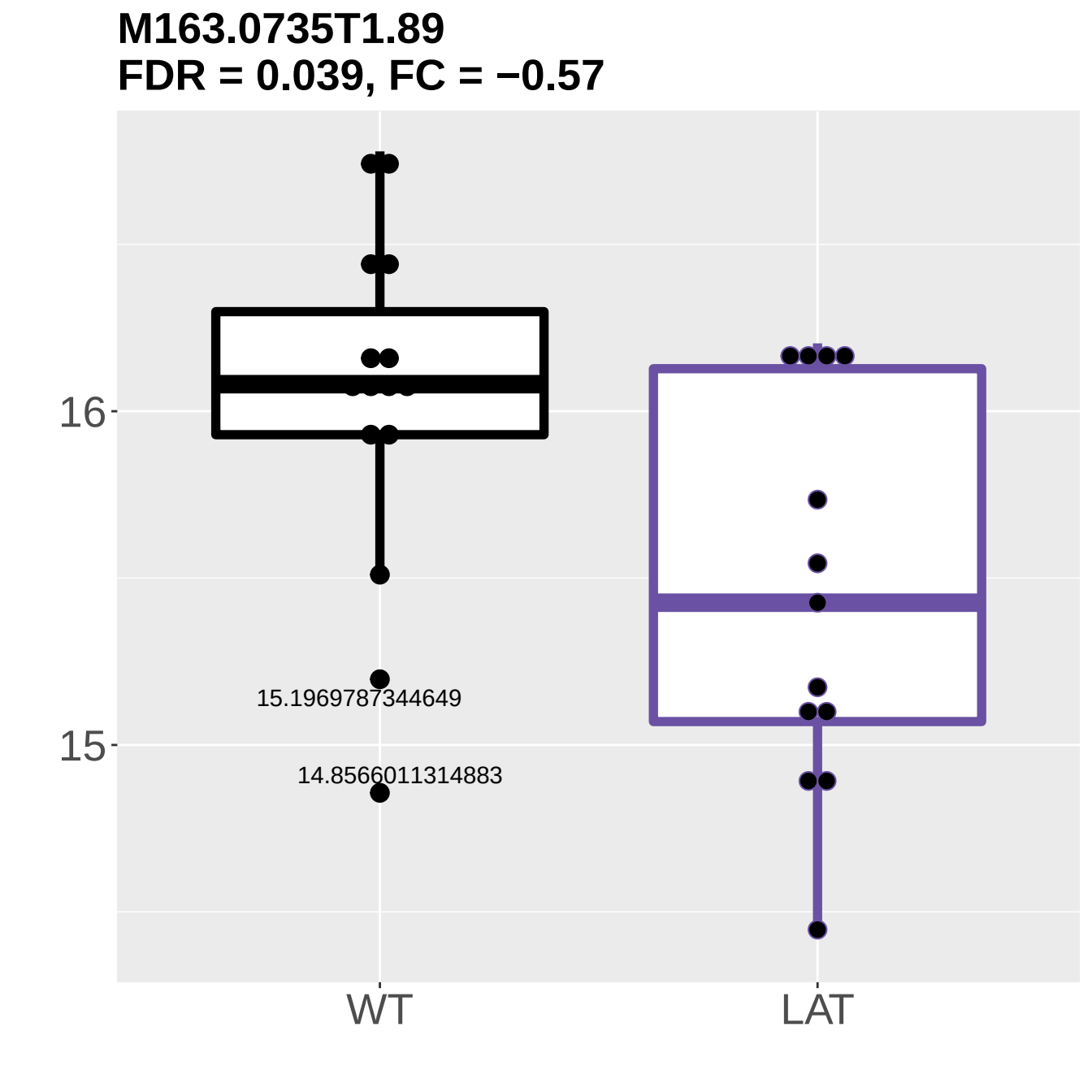
15.0
12.5
WT
LAT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15
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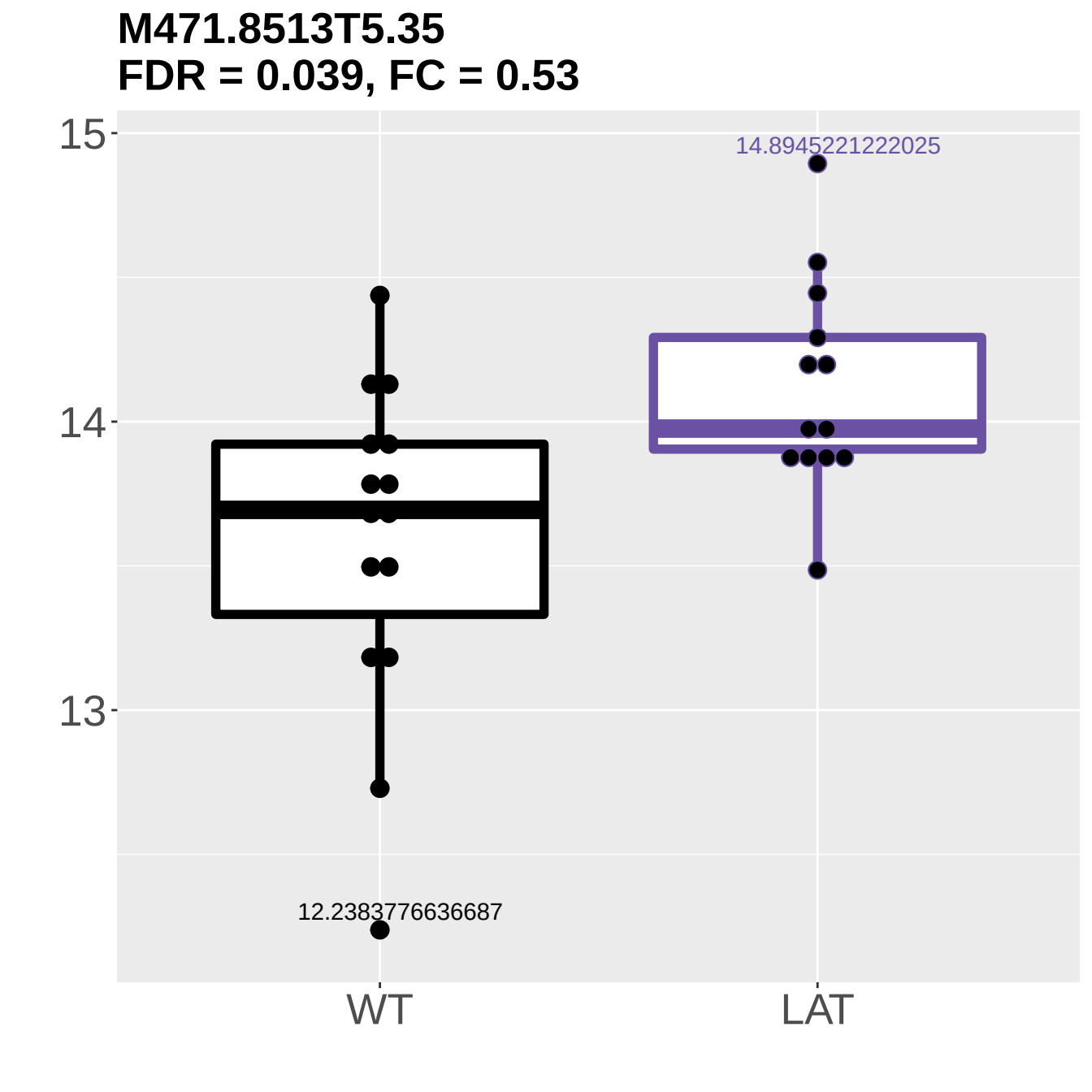
WT
LAT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14
13
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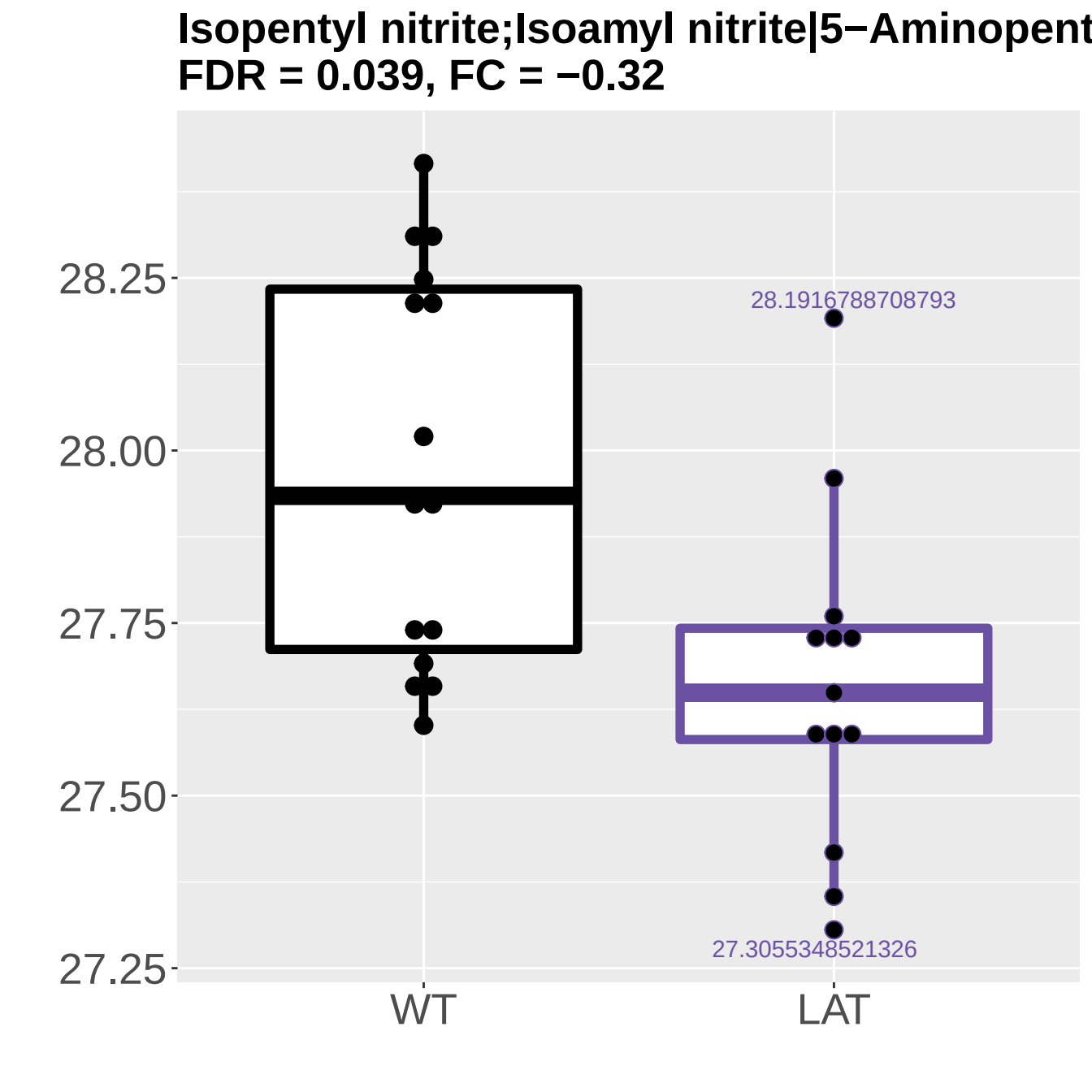
WT
LAT


Isopentyl nitrite;Isoamyl nitrite|5−Aminopent
FDR = 0.039, FC = −0.32
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27.75
27.50
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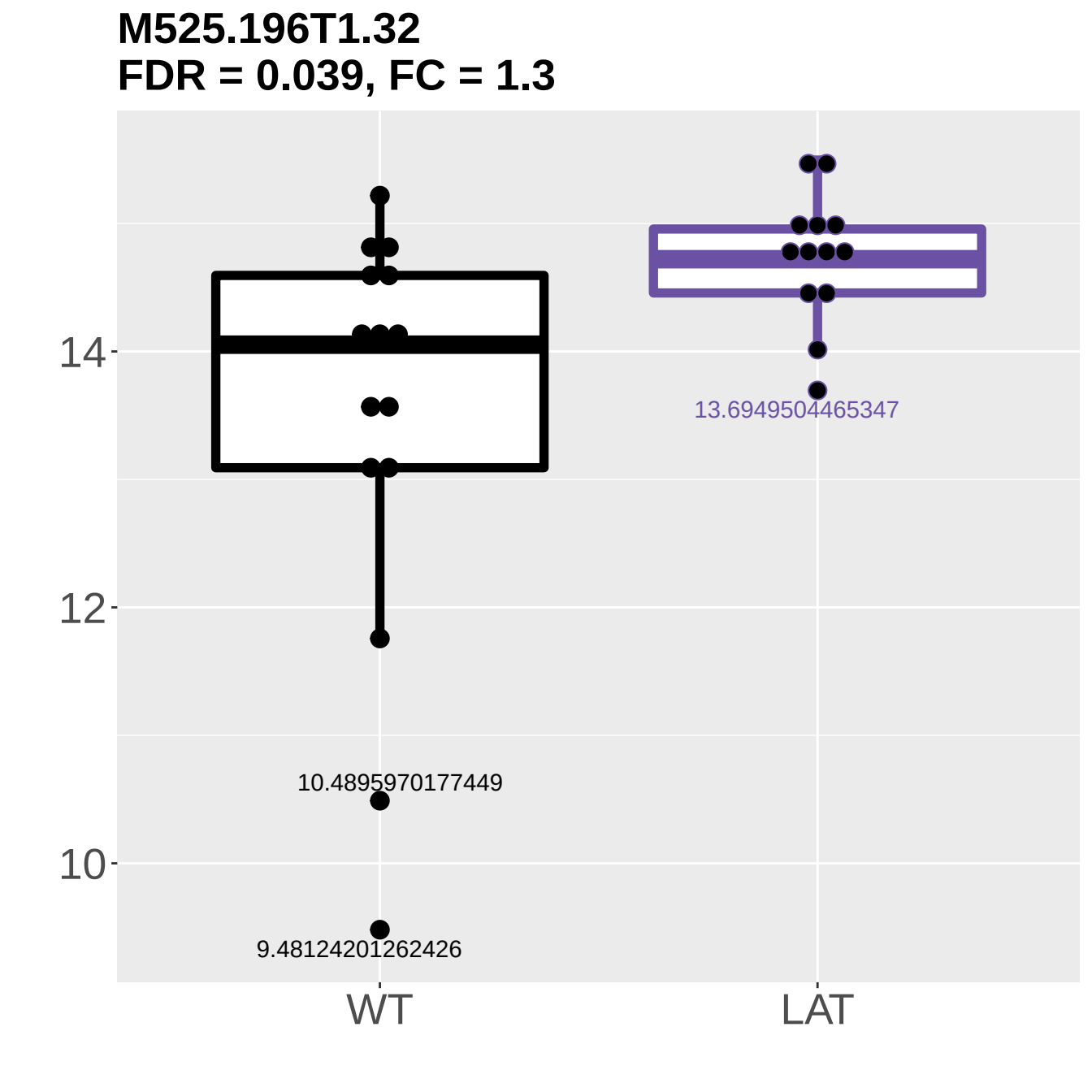
WT
LAT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12
10
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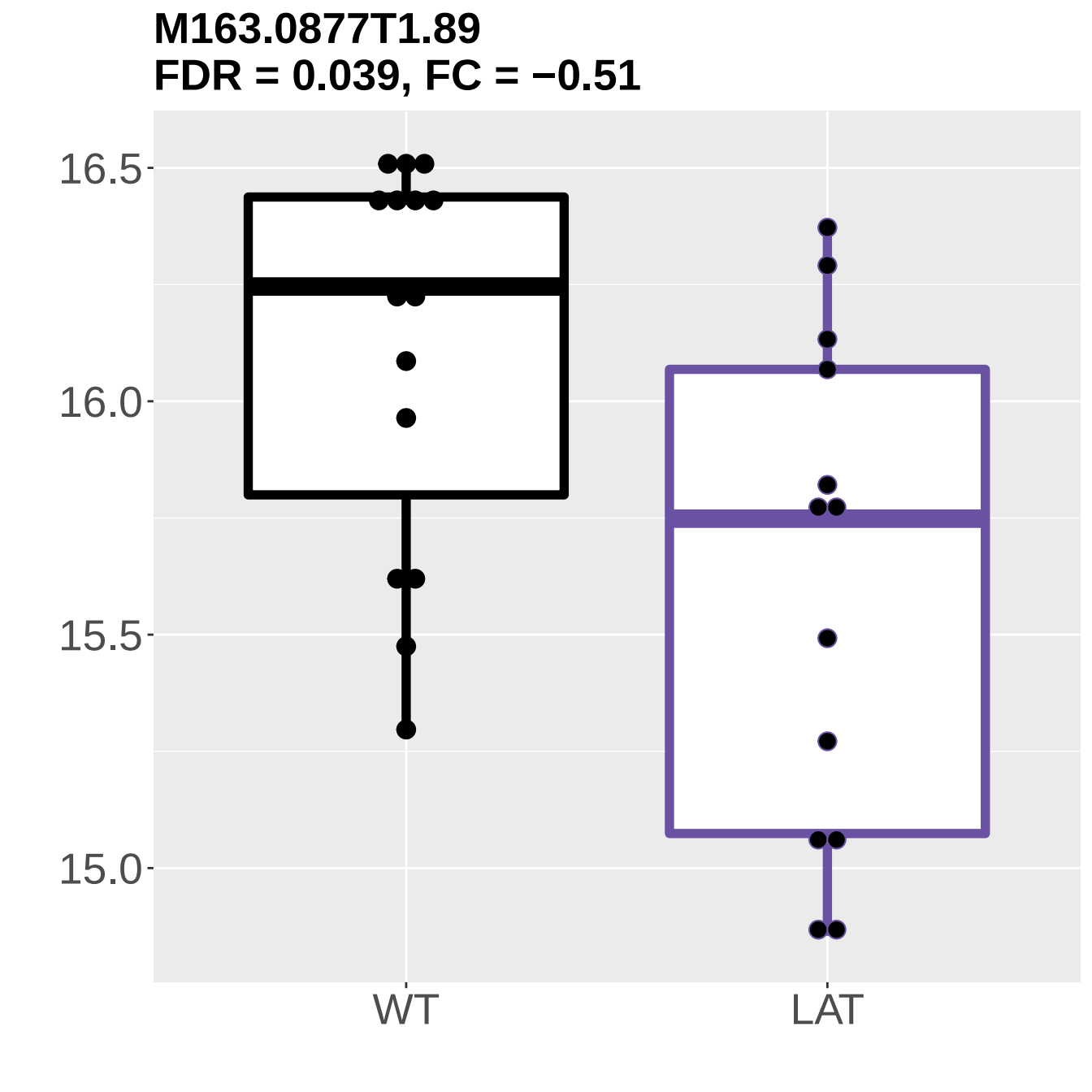
9.48124201262426
WT
LAT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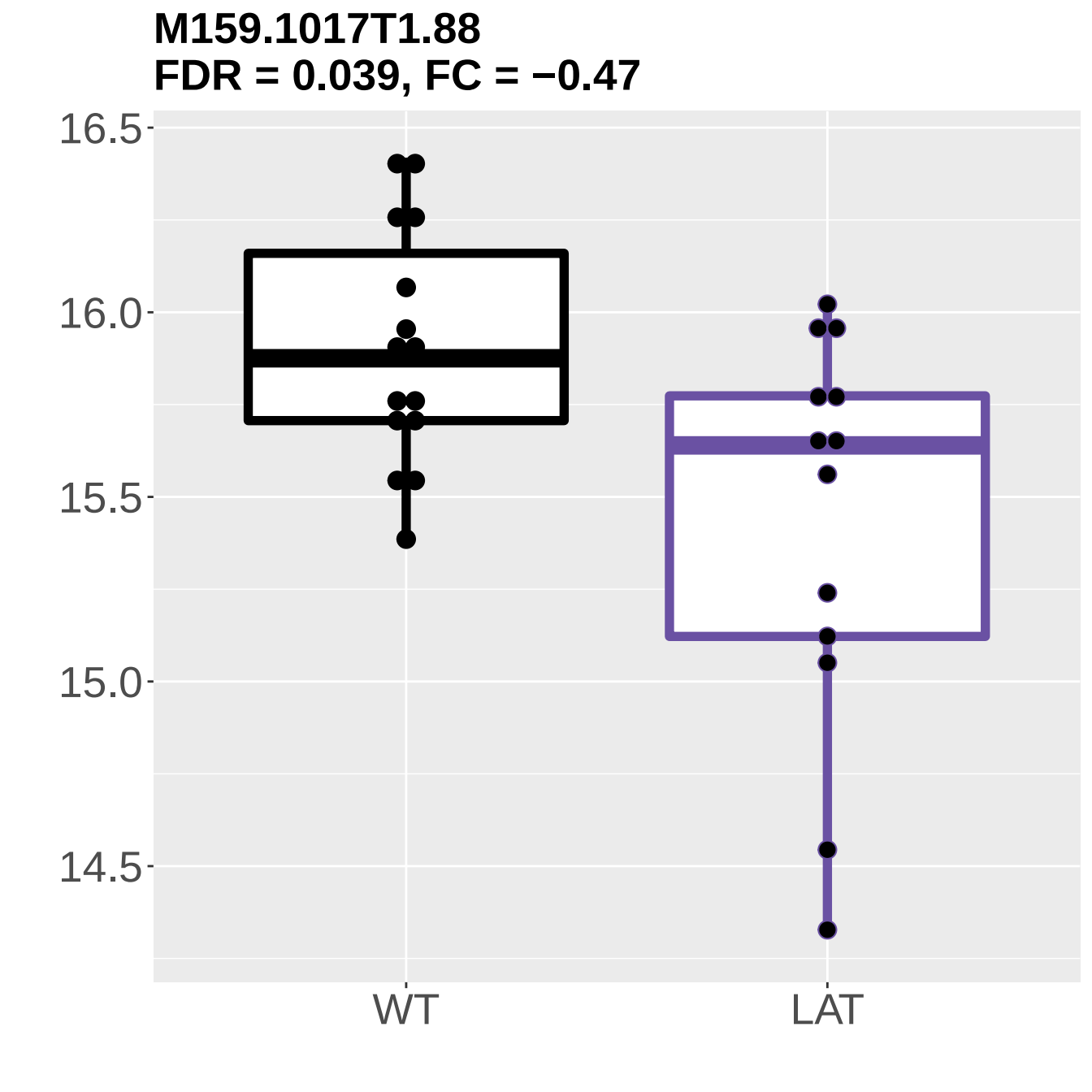
15.0
WT
LAT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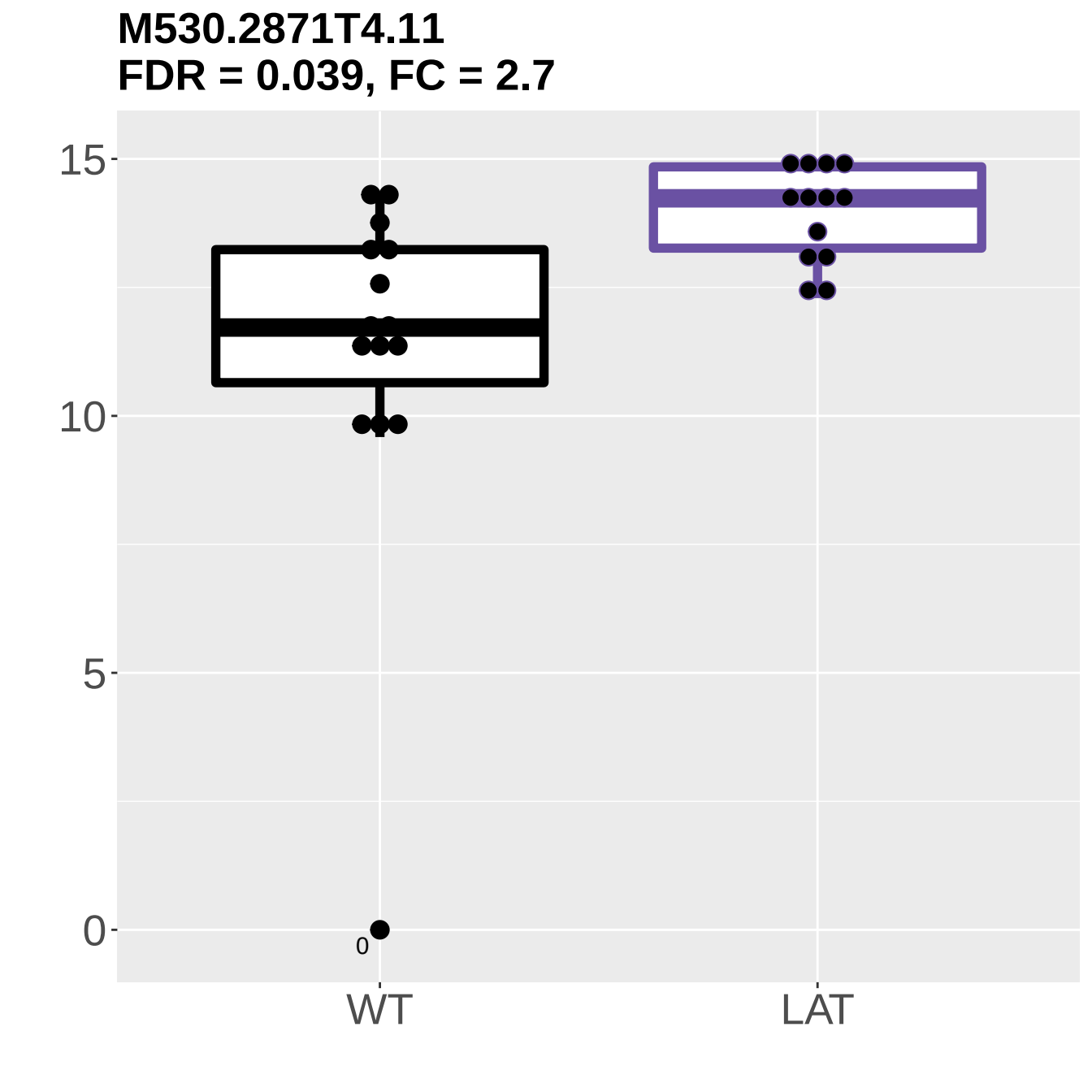
WT
LAT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FDR = 0.039, FC = 2.7
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10
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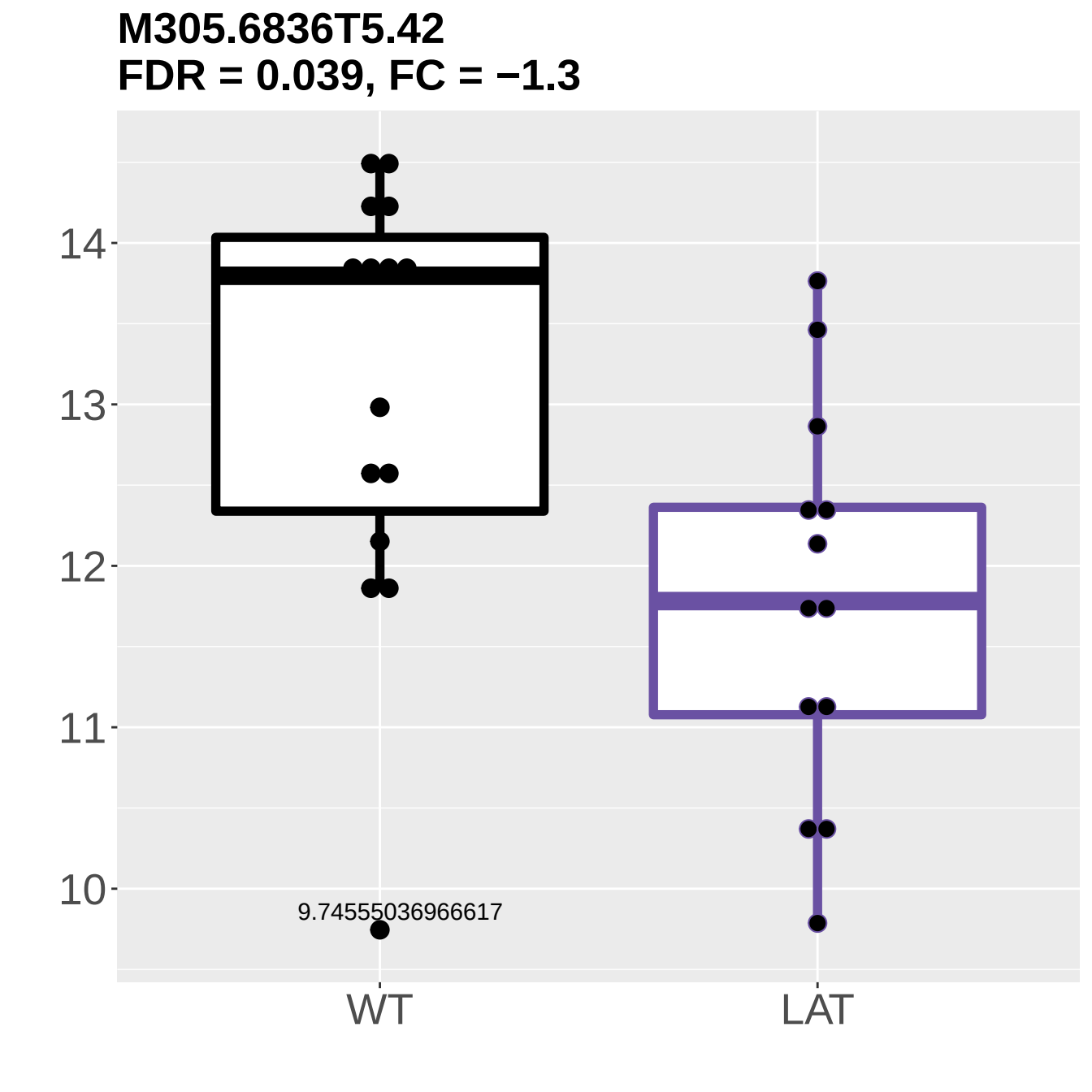
0
0
WT
LAT


M305.6836T5.42
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12
11
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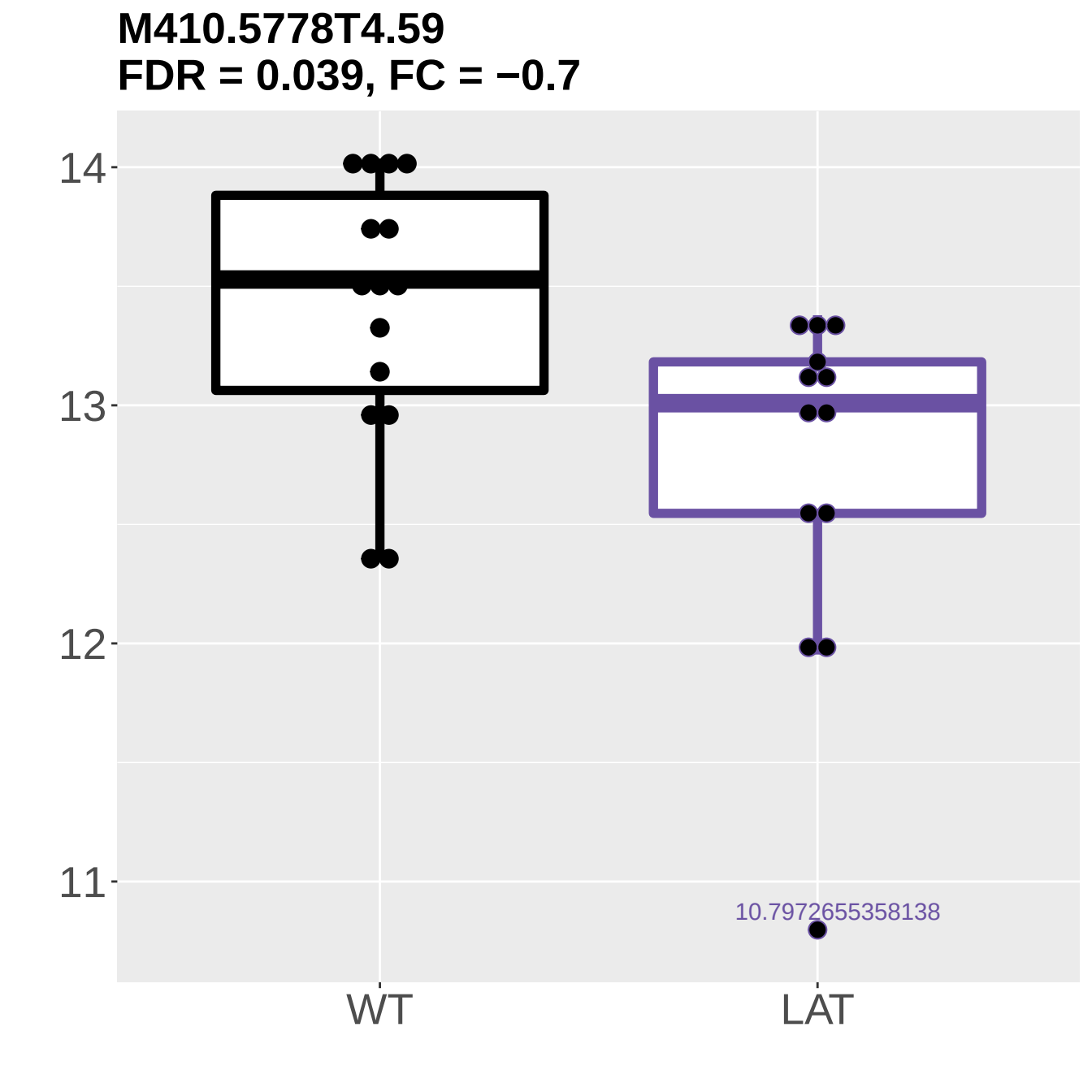
WT
LAT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12
11
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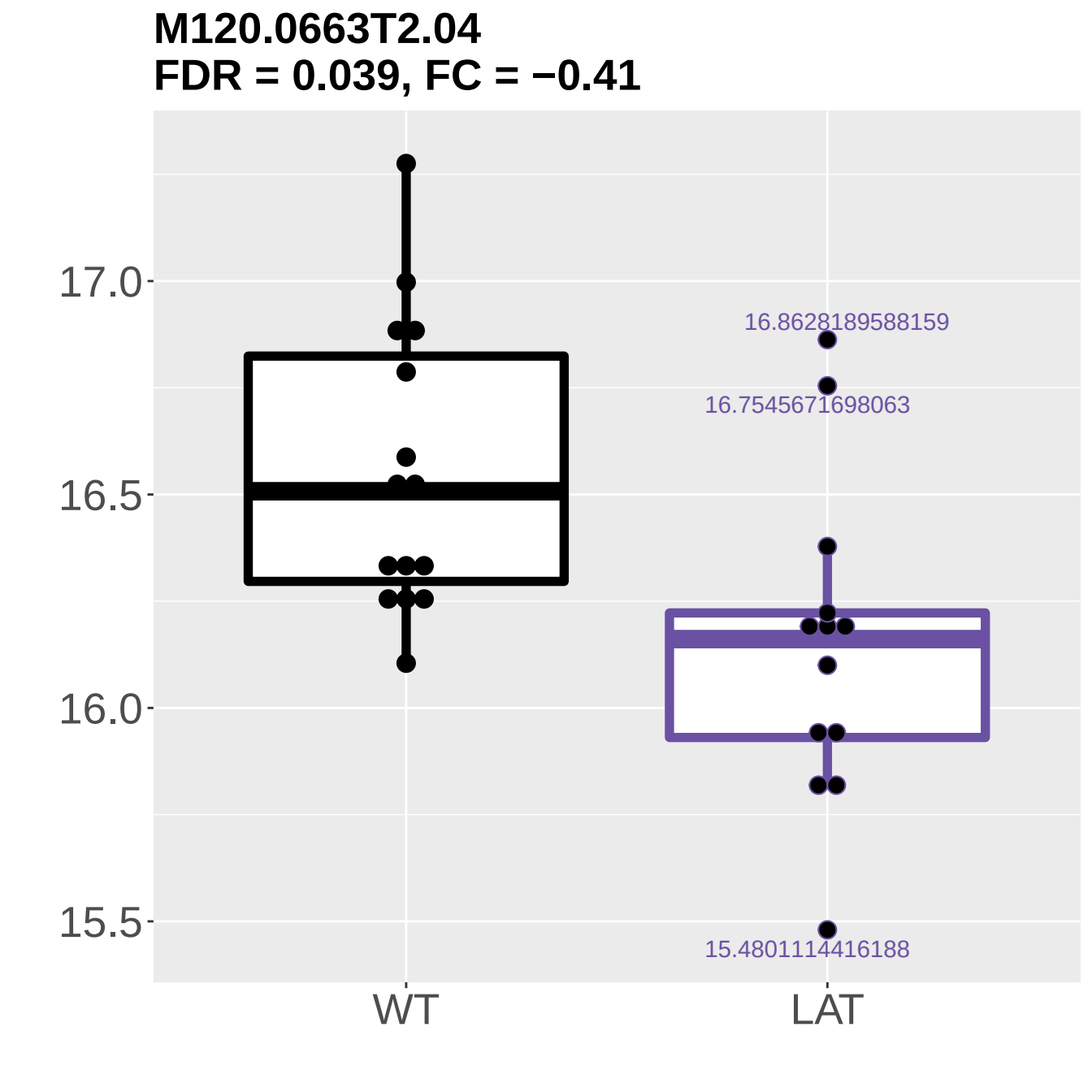
WT
LAT


M120.0663T2.04
FDR = 0.039, FC = −0.41
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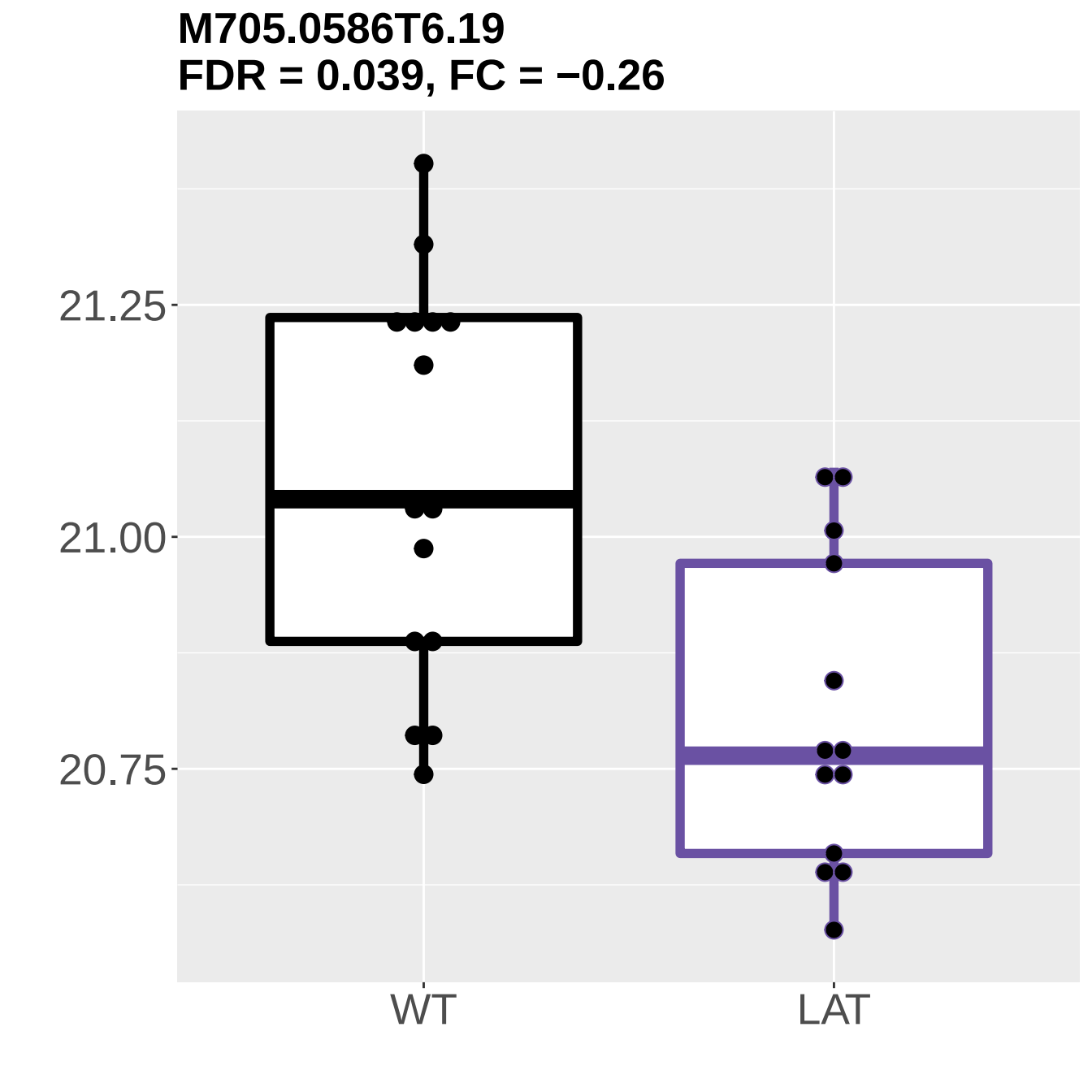
M705.0586T6.19
FDR = 0.039, FC = −0.26
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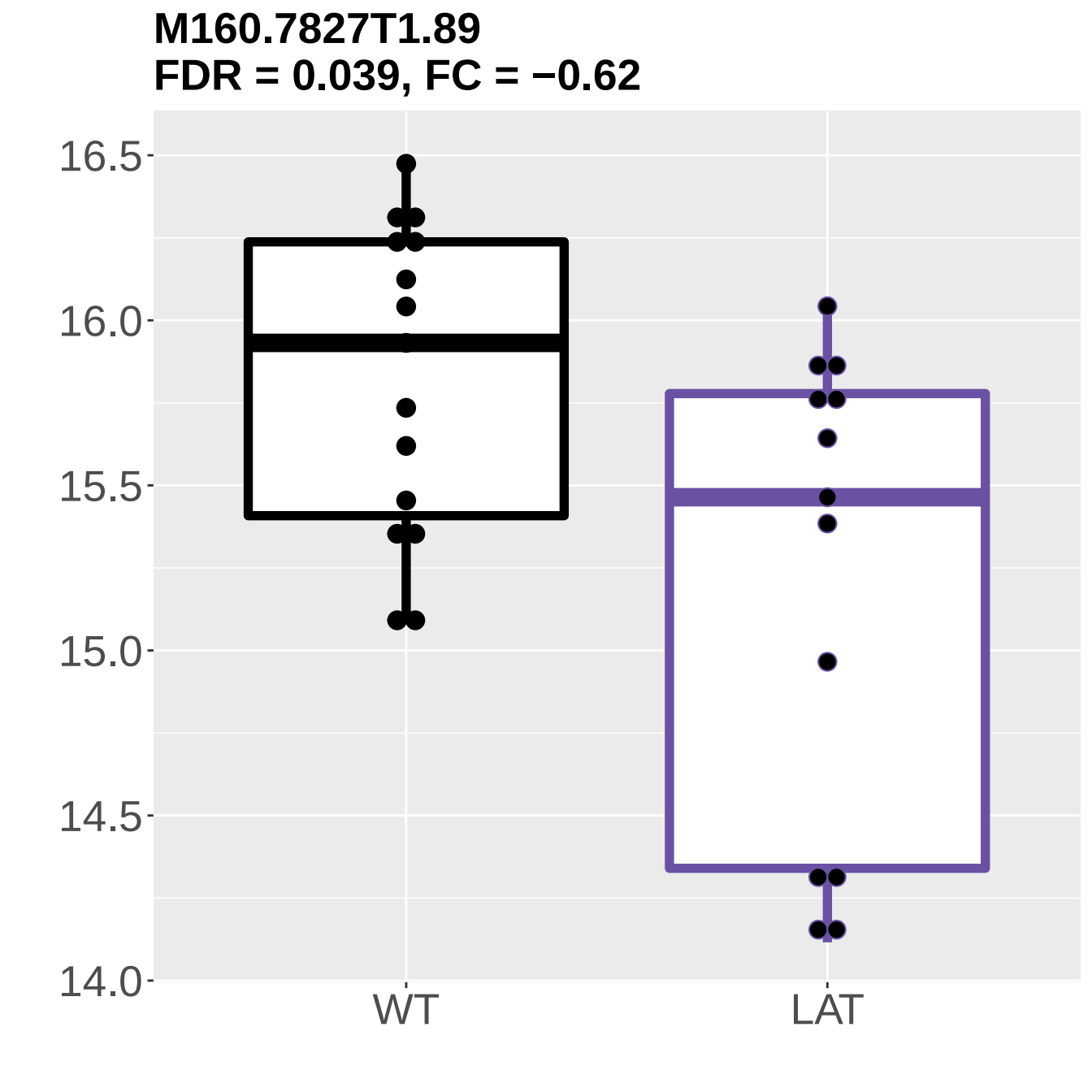
21.00
20.75
WT
LAT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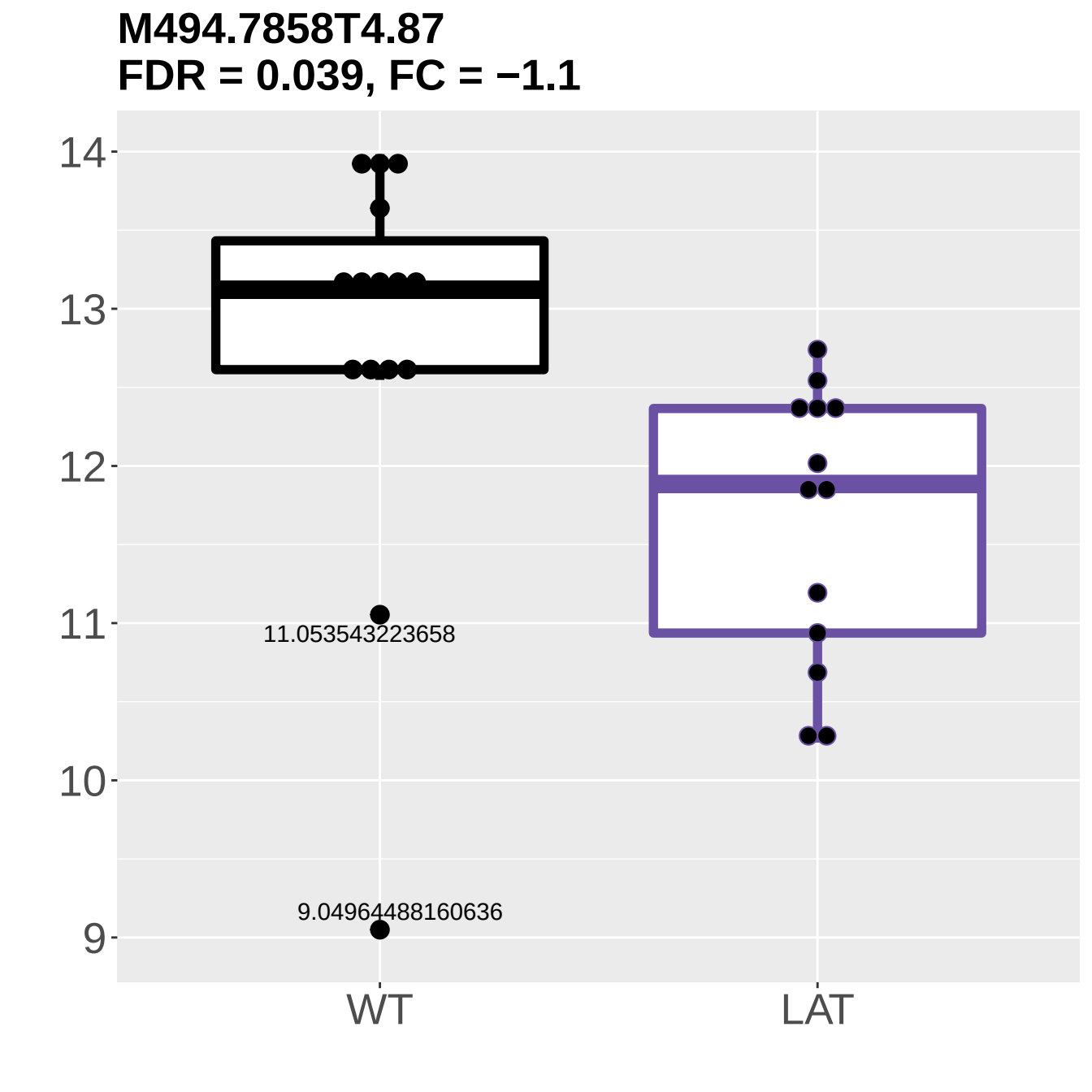
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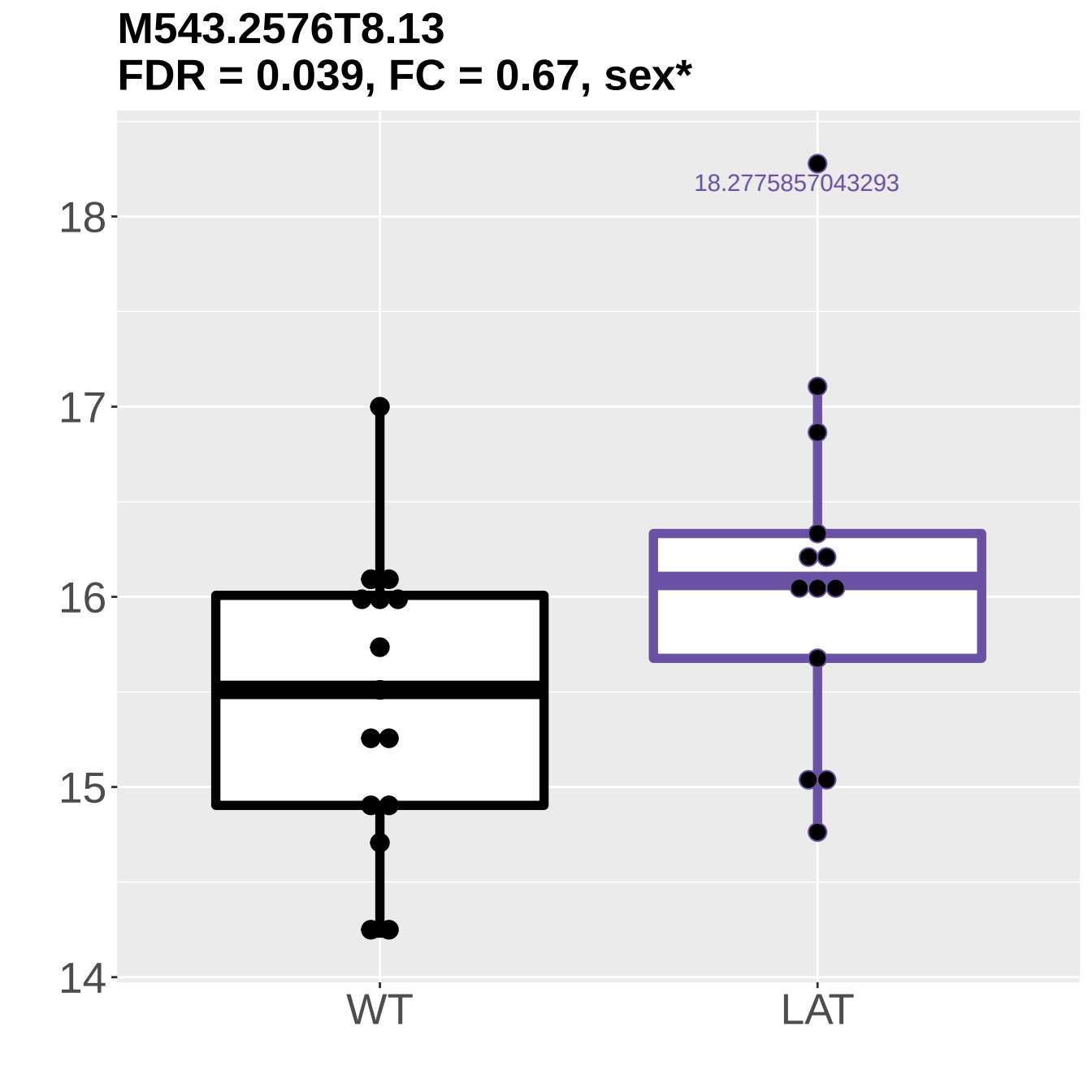
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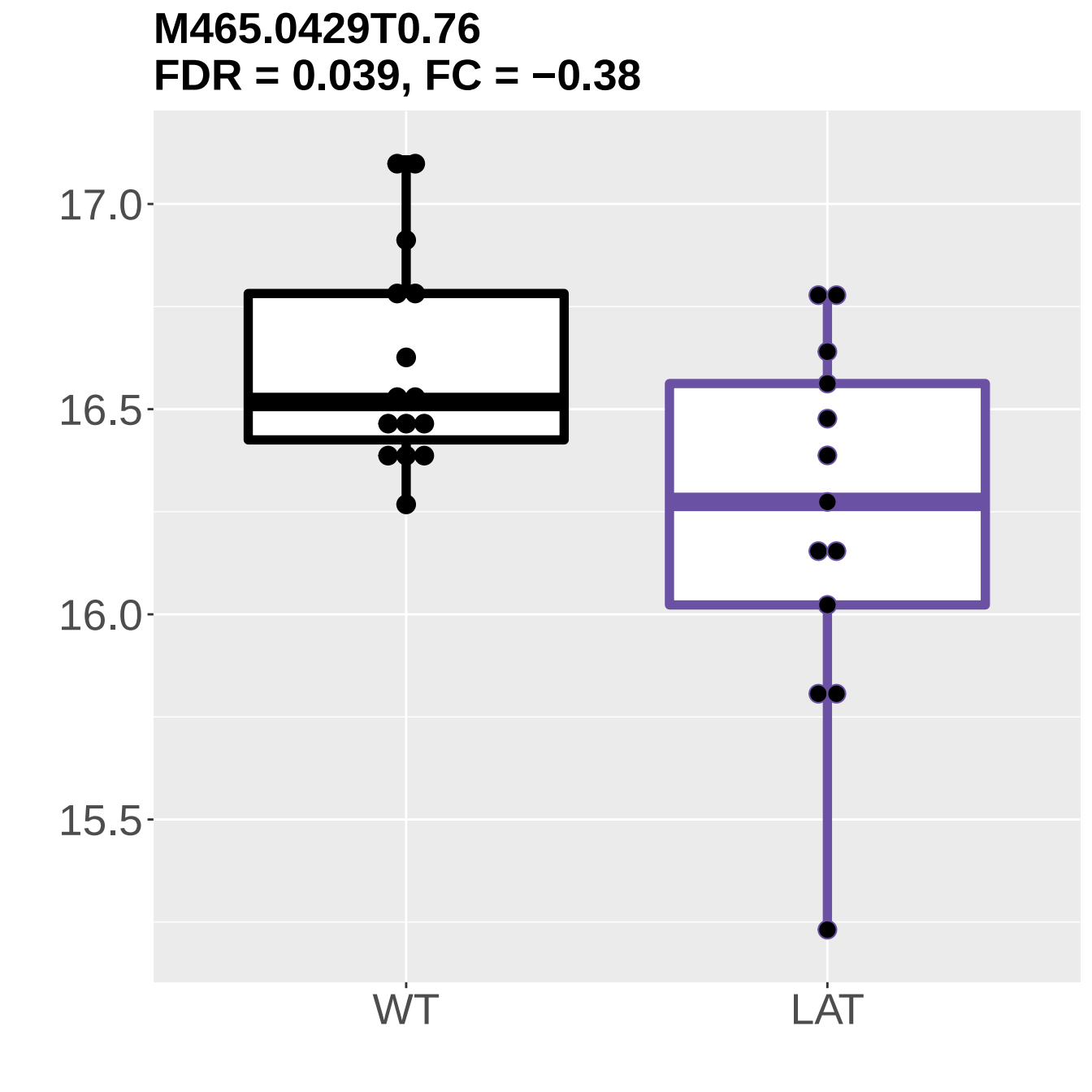
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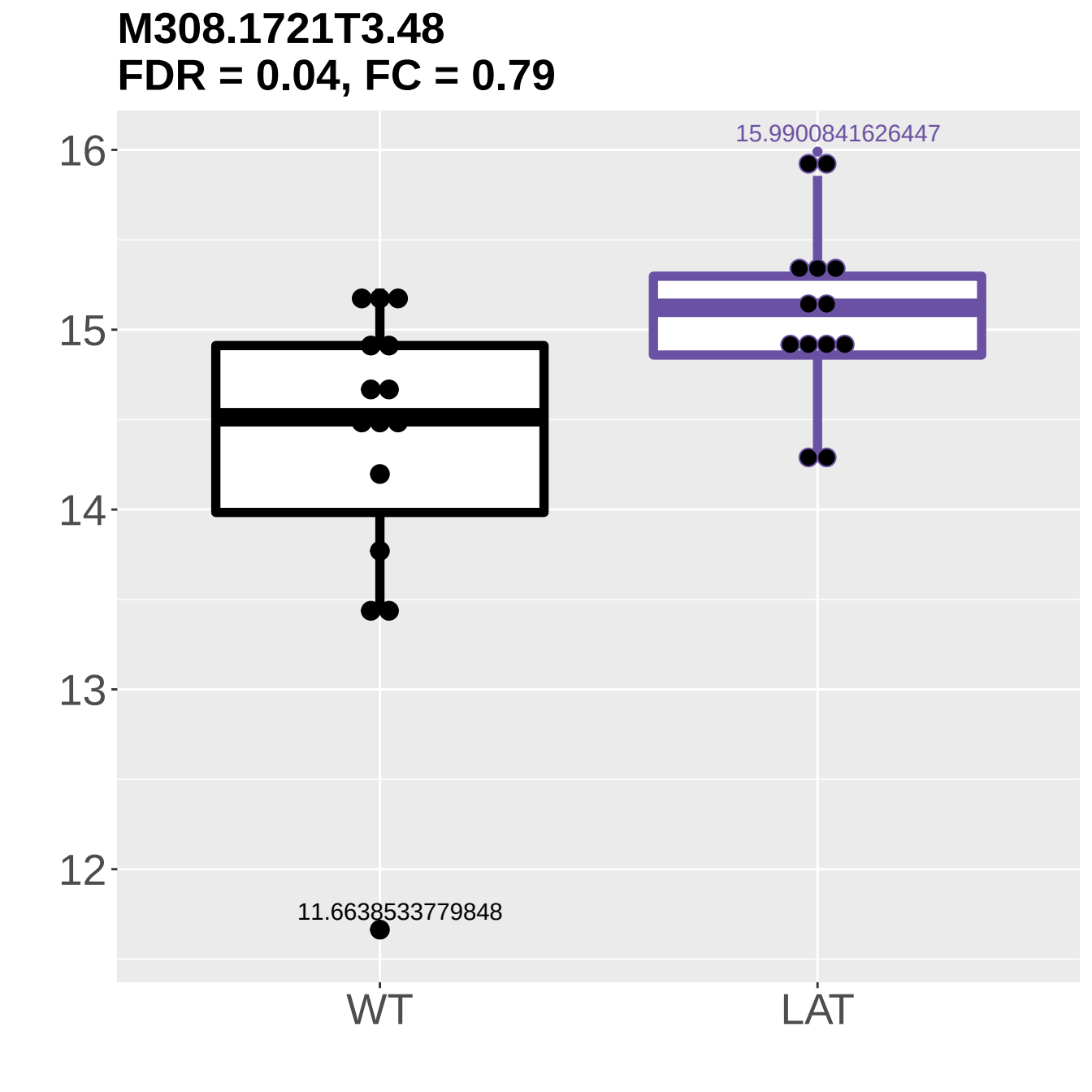
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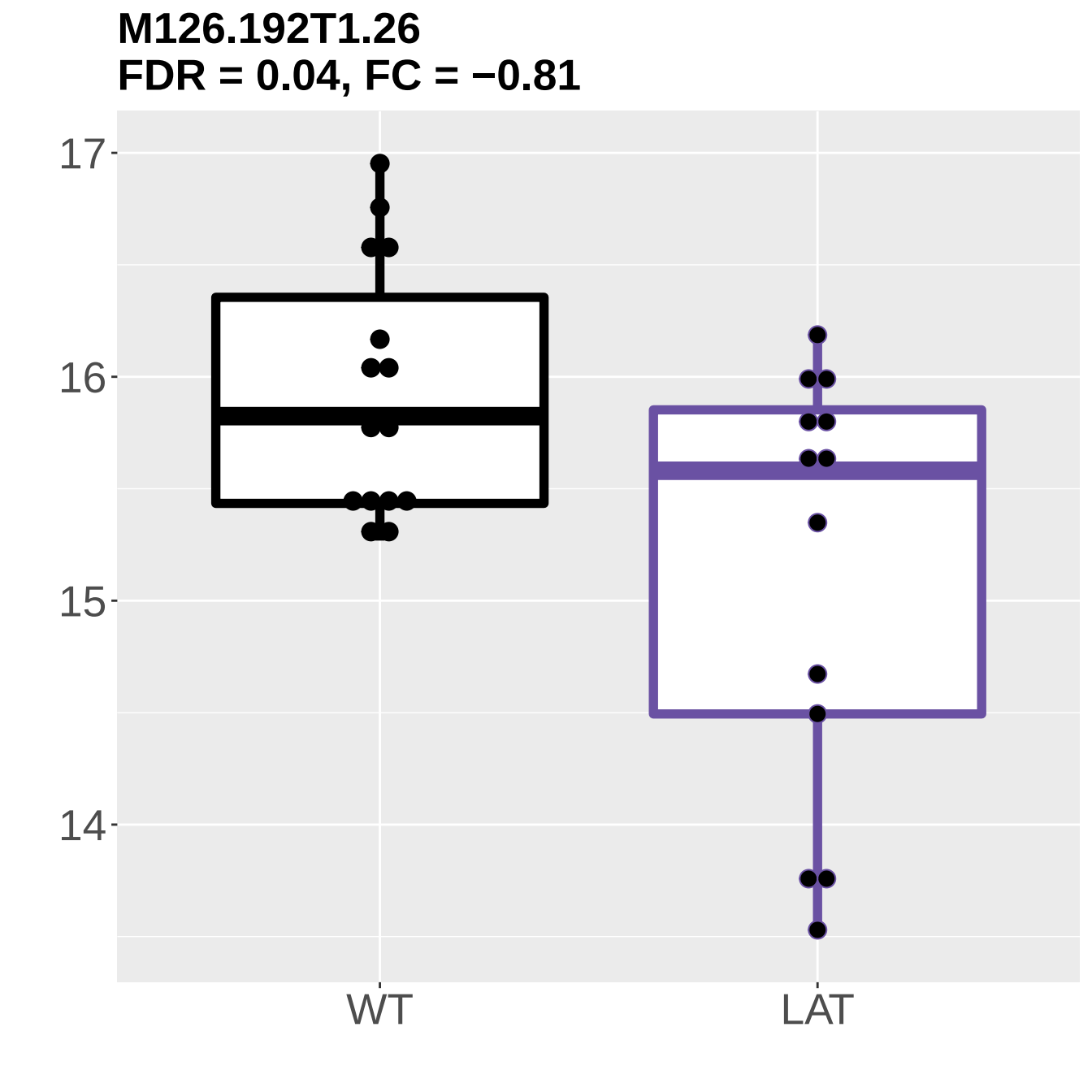
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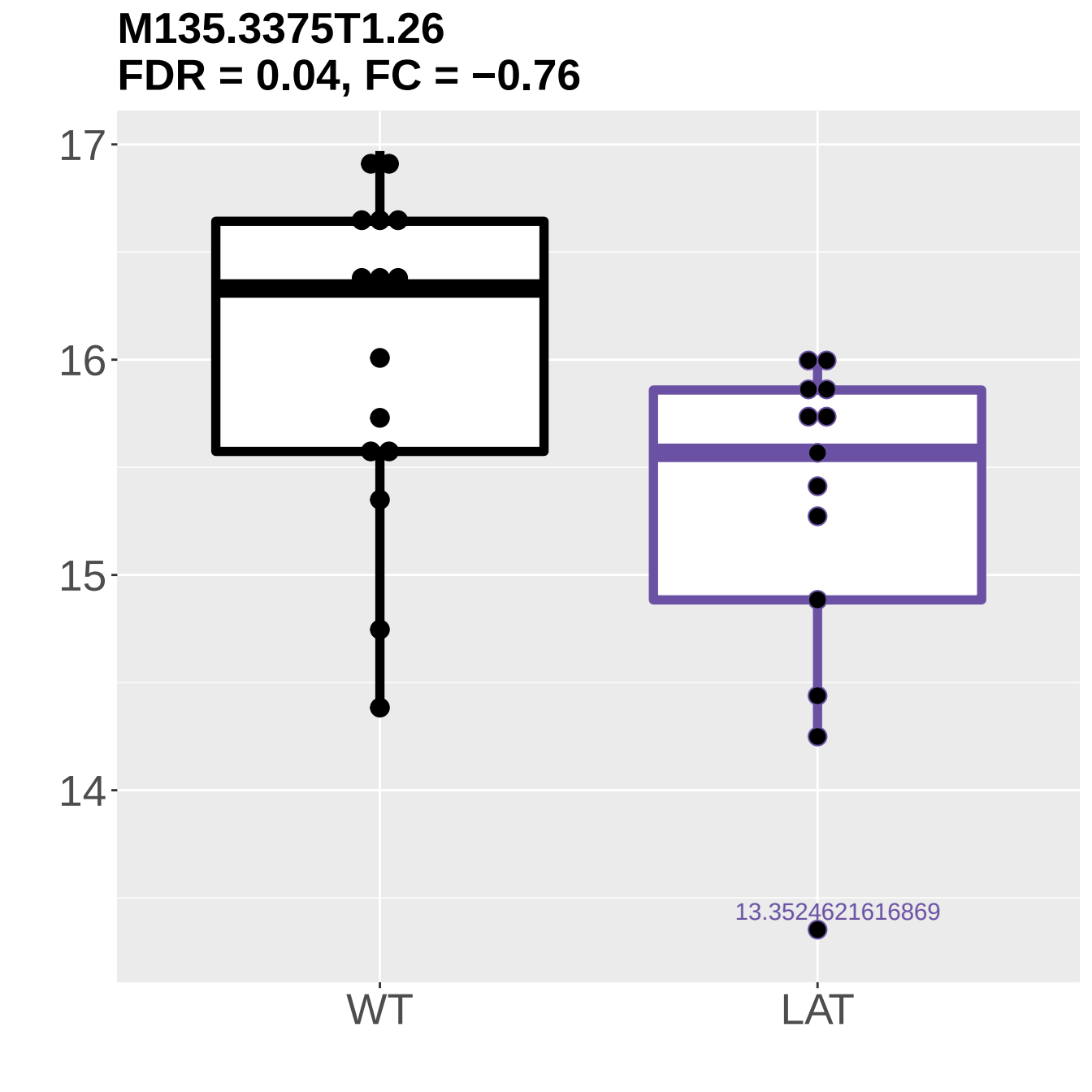
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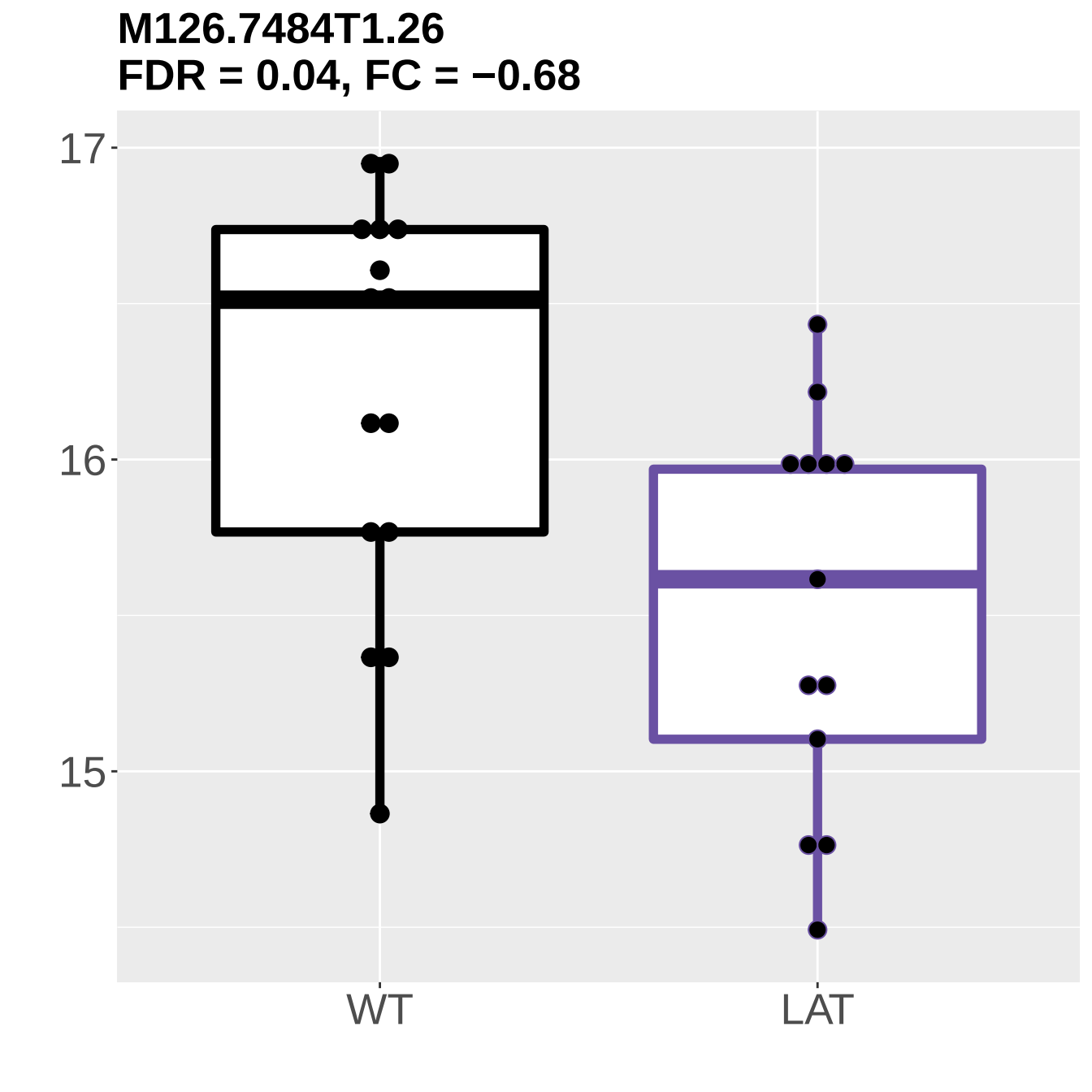
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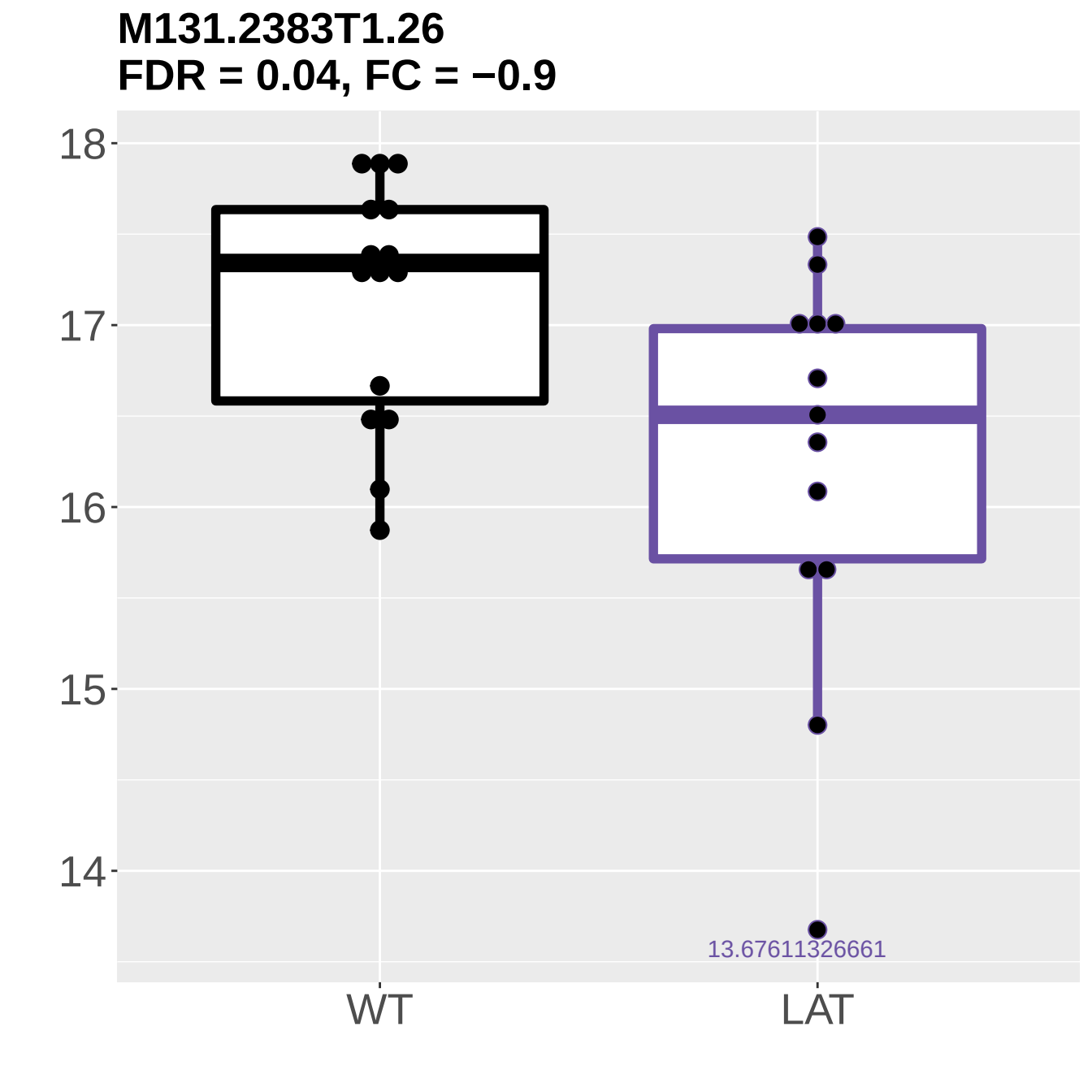
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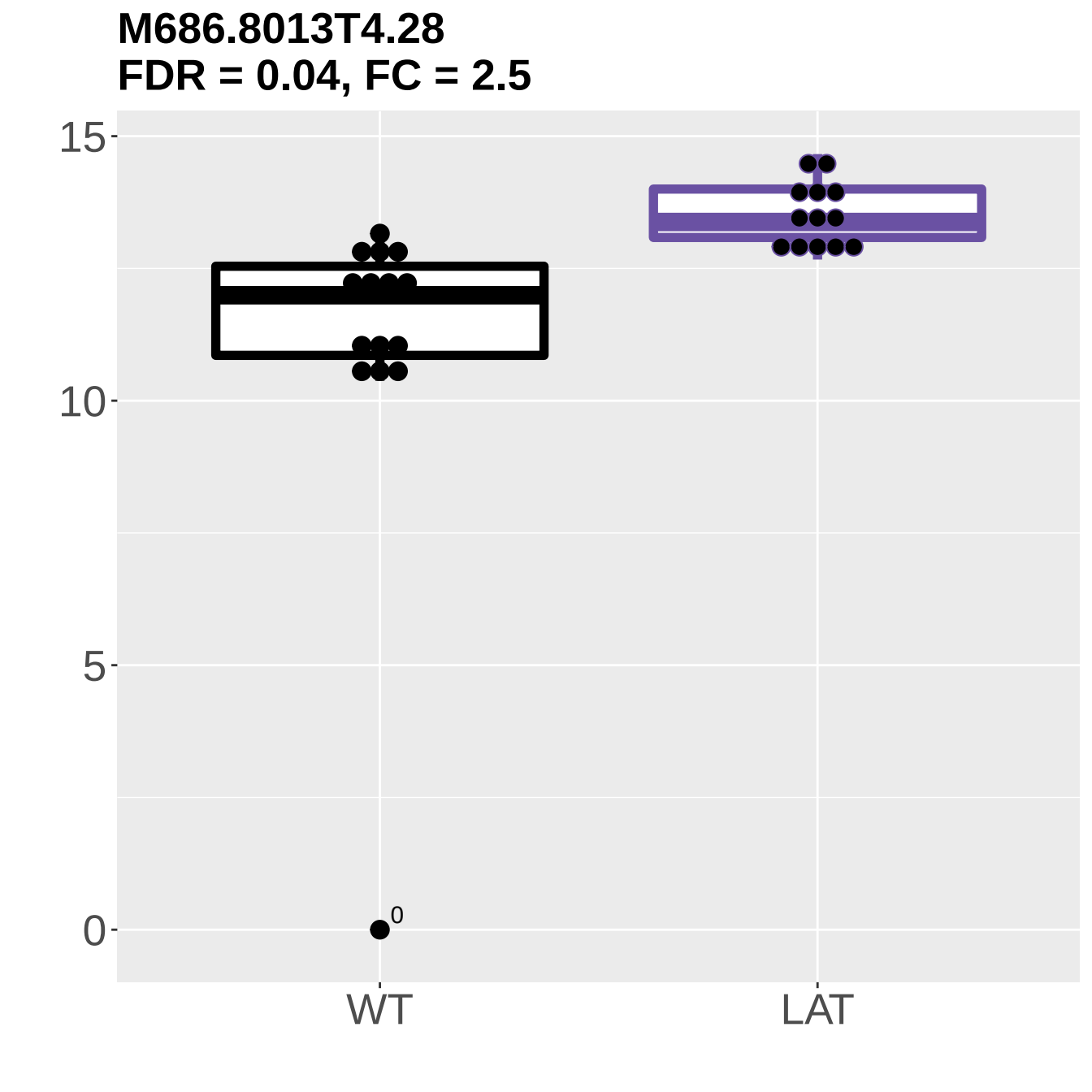
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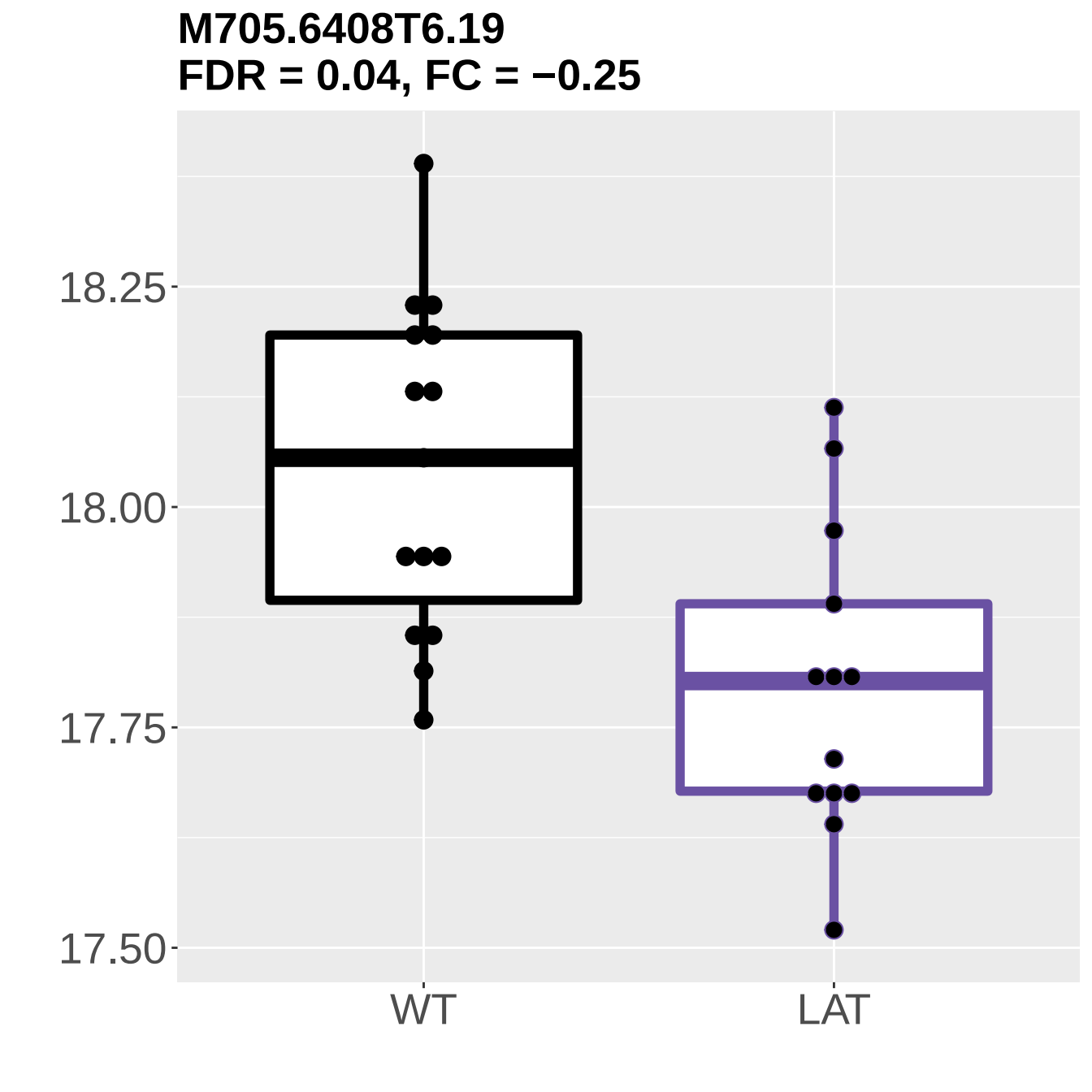
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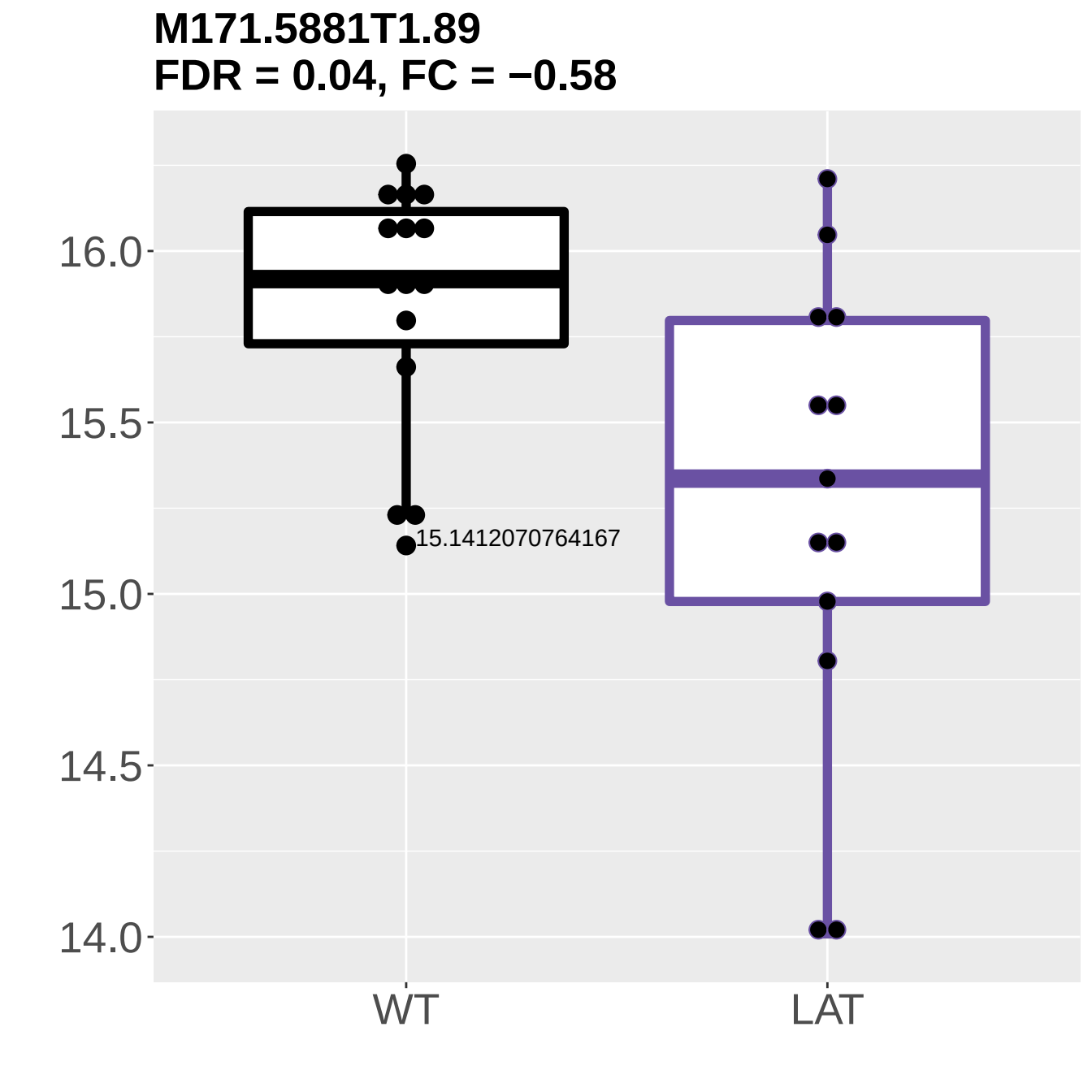
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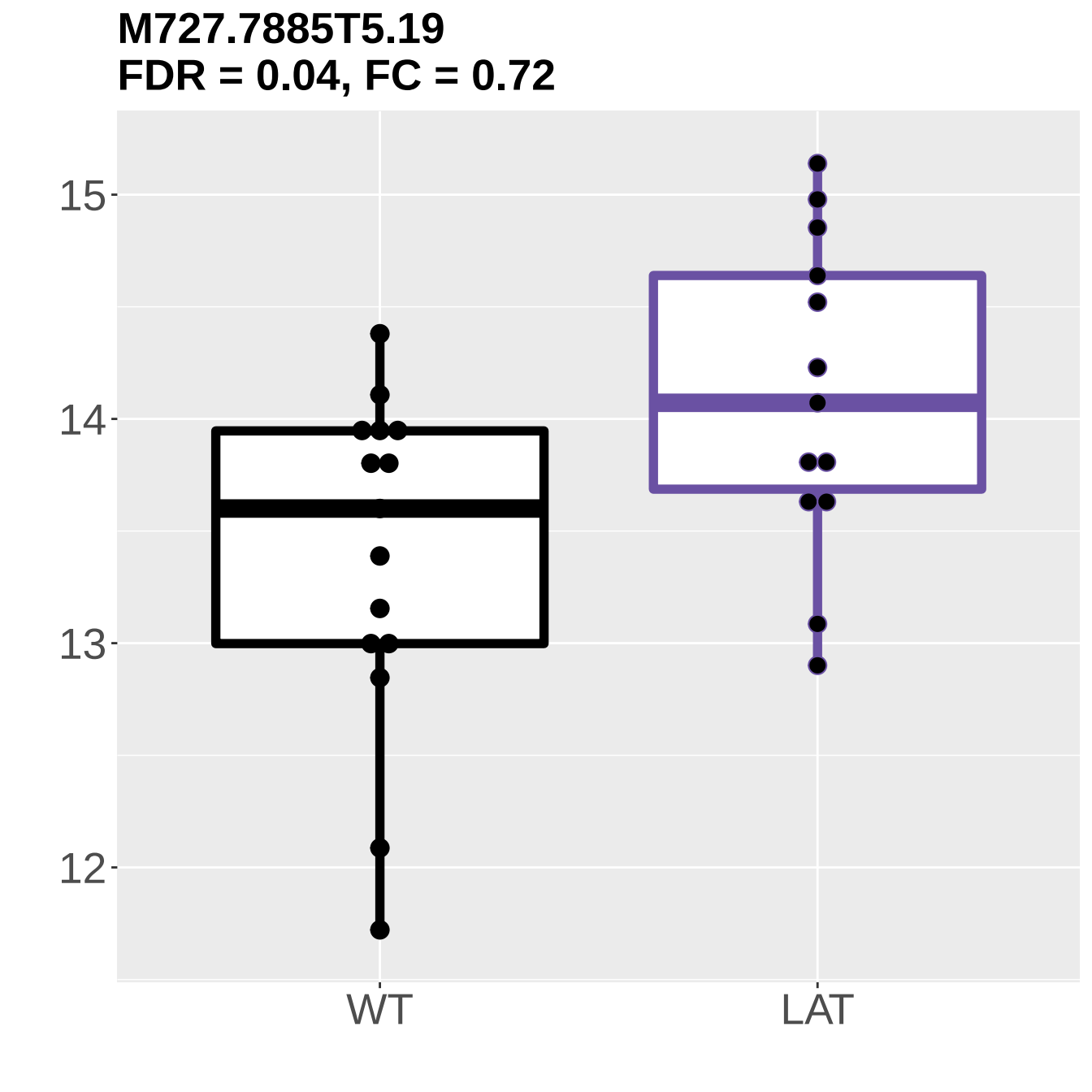
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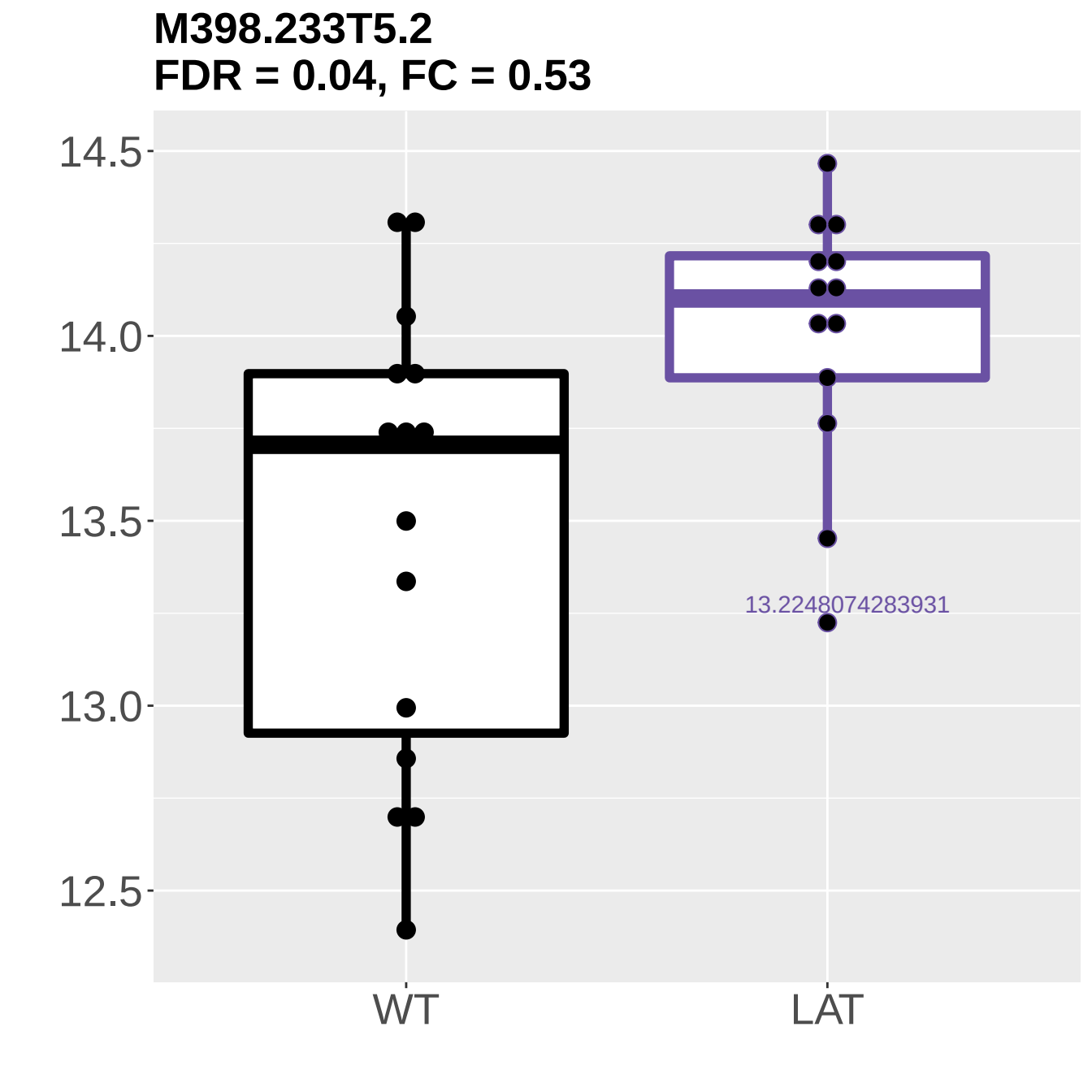
13
12
WT
LAT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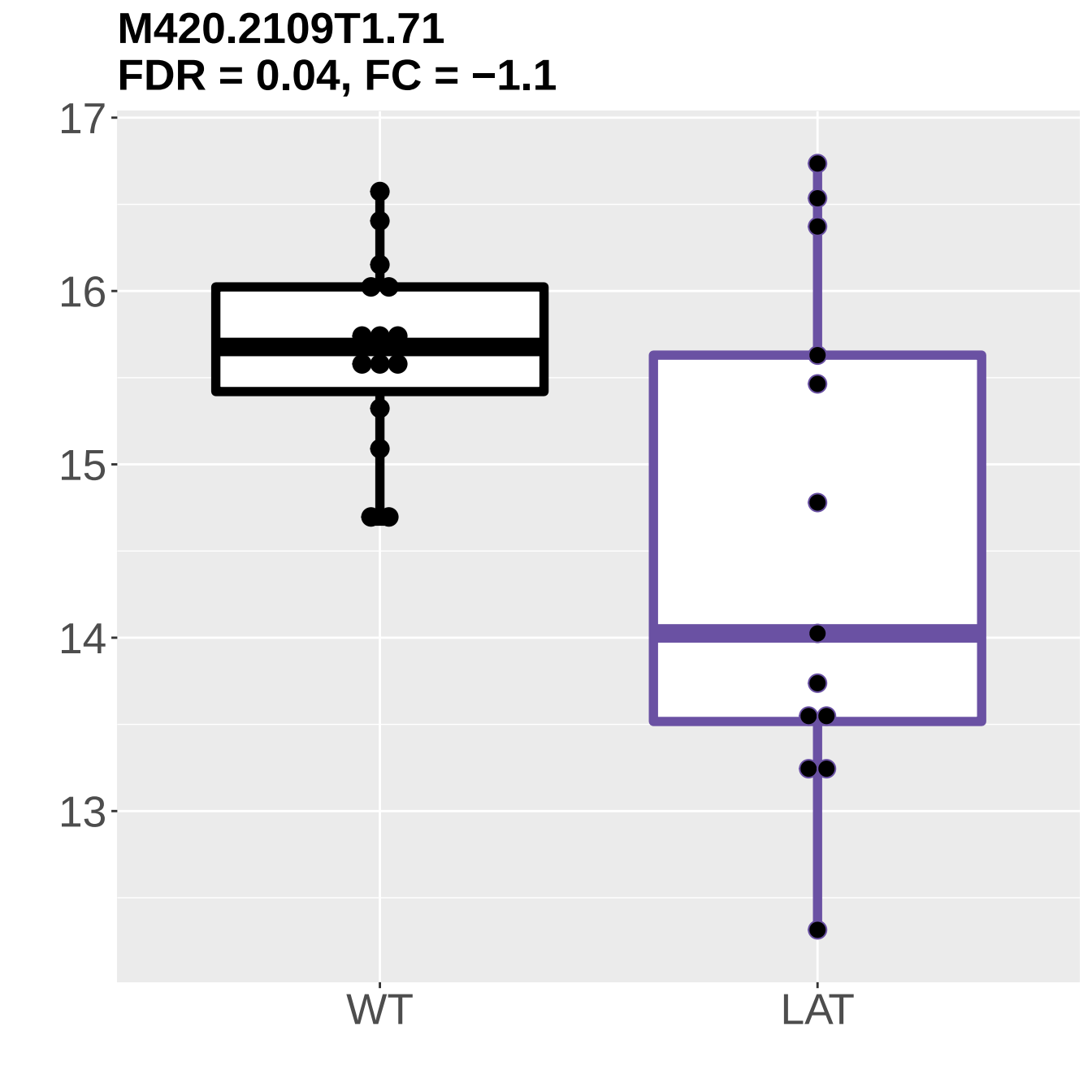
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16
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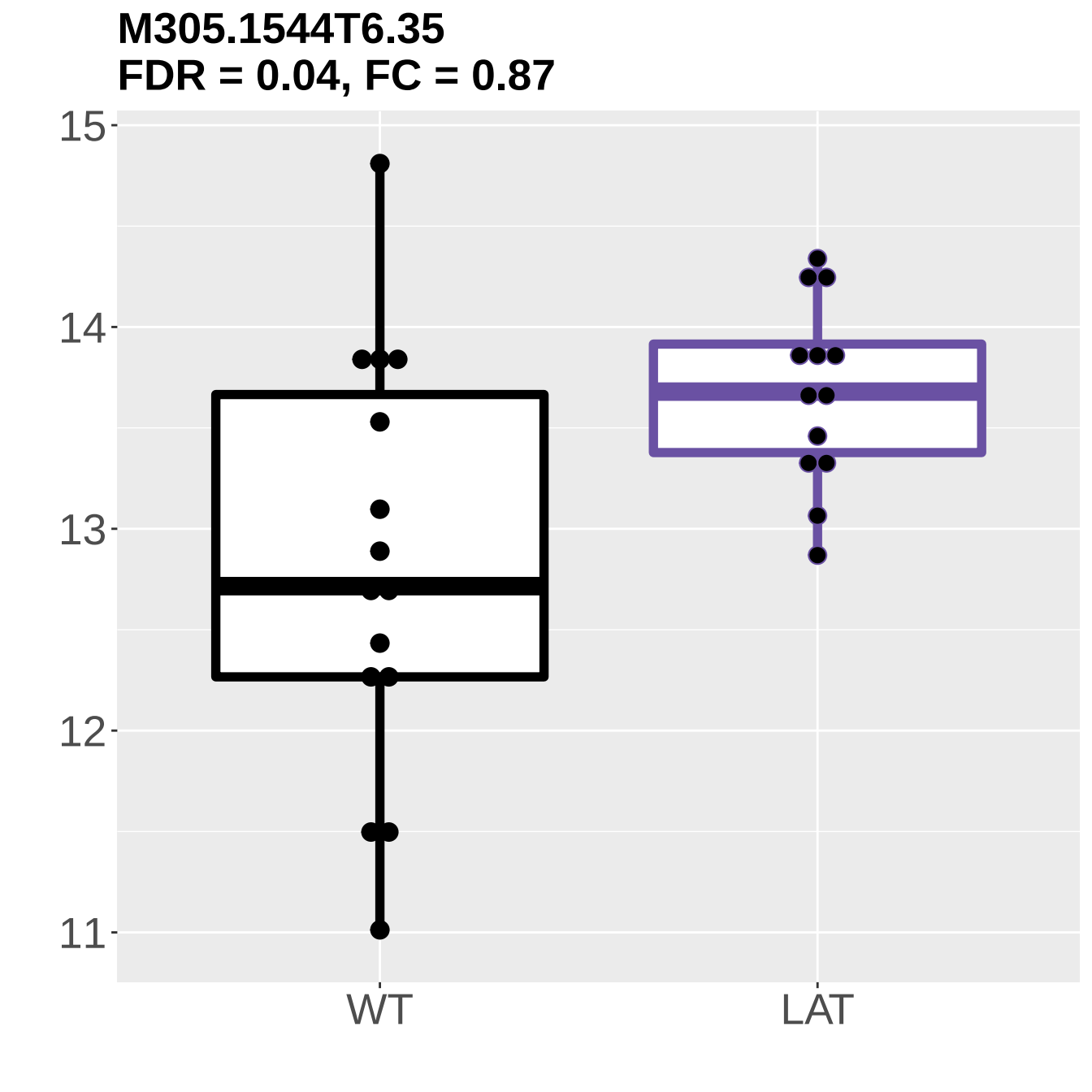
14
13
WT
LAT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14
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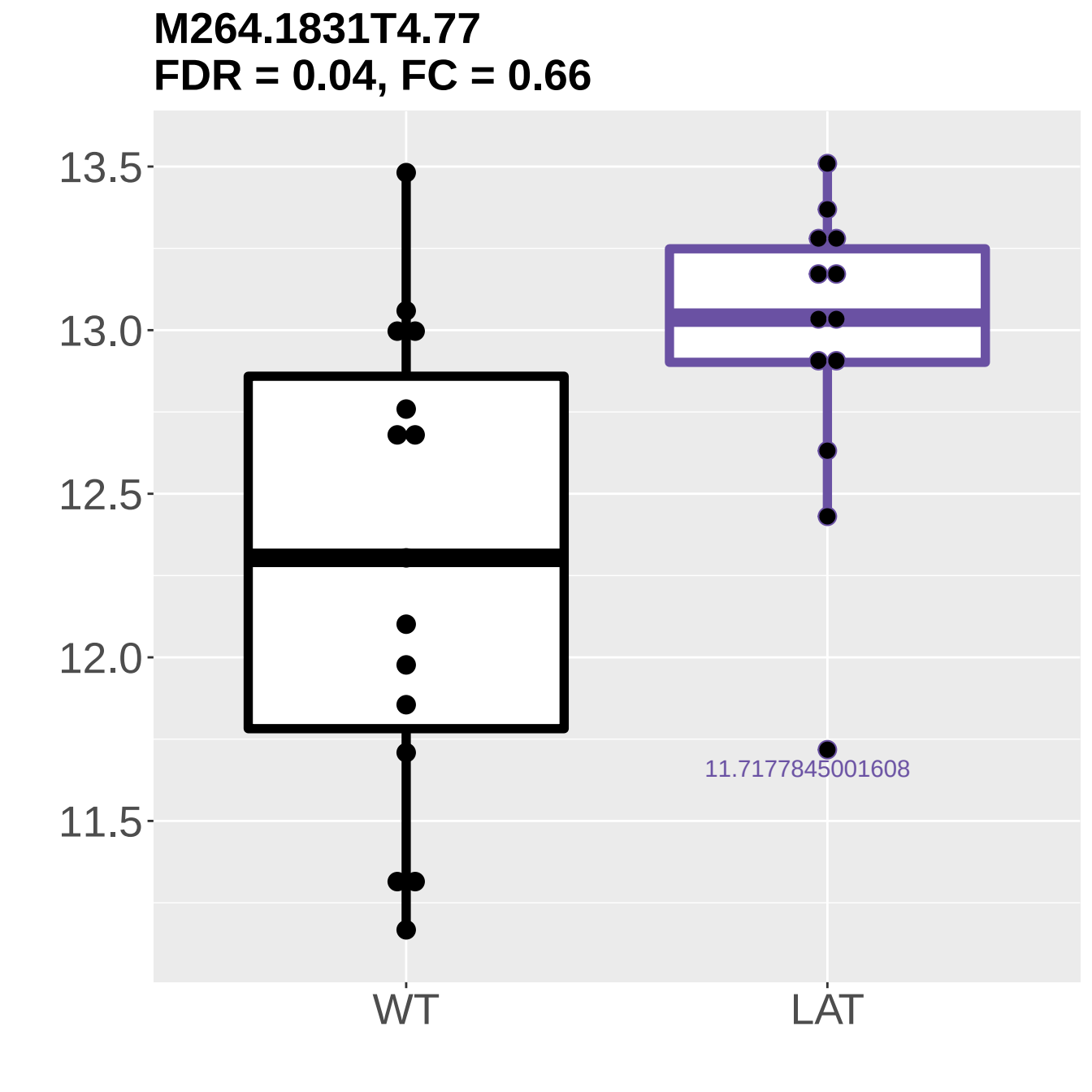
12
11
WT
LAT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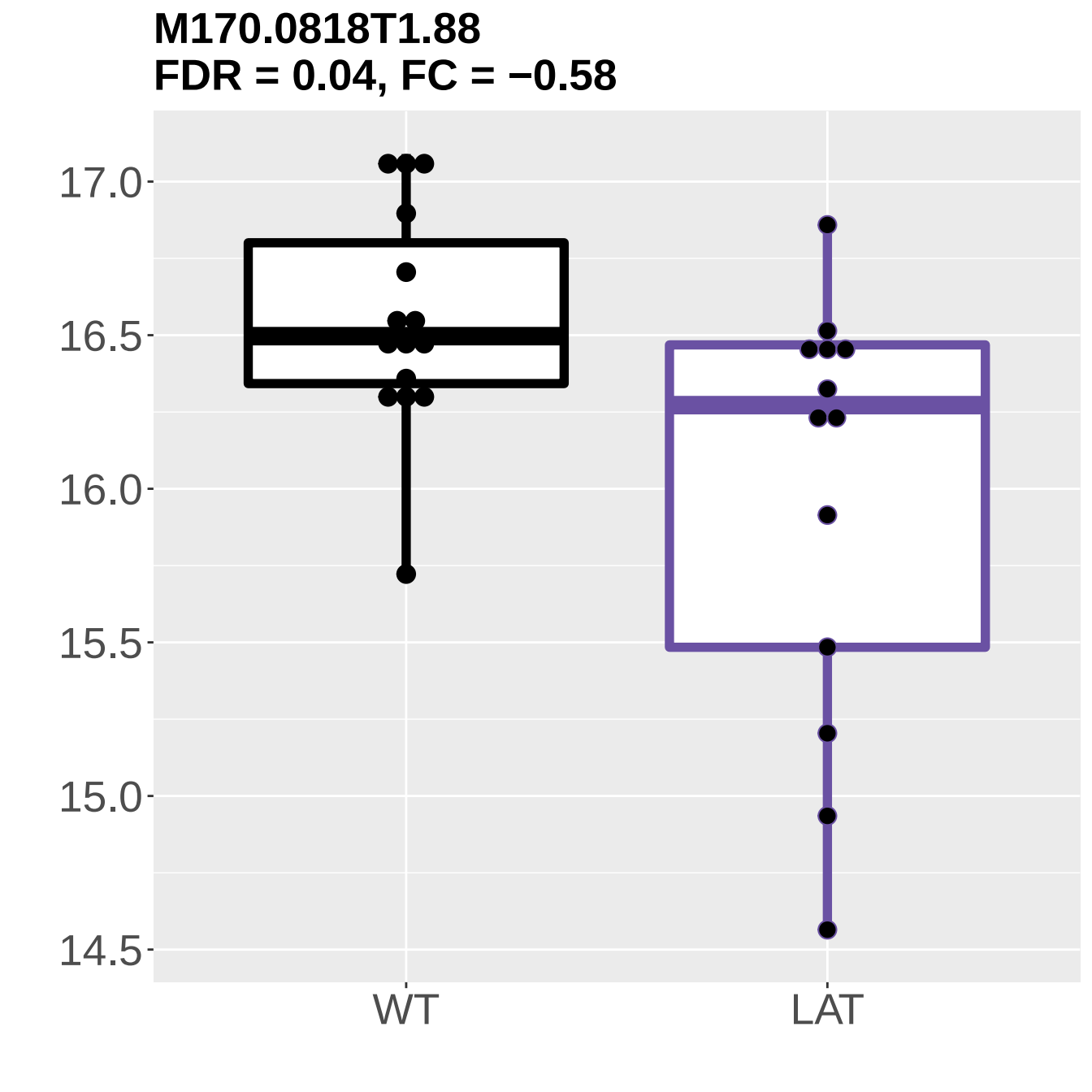
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15.0
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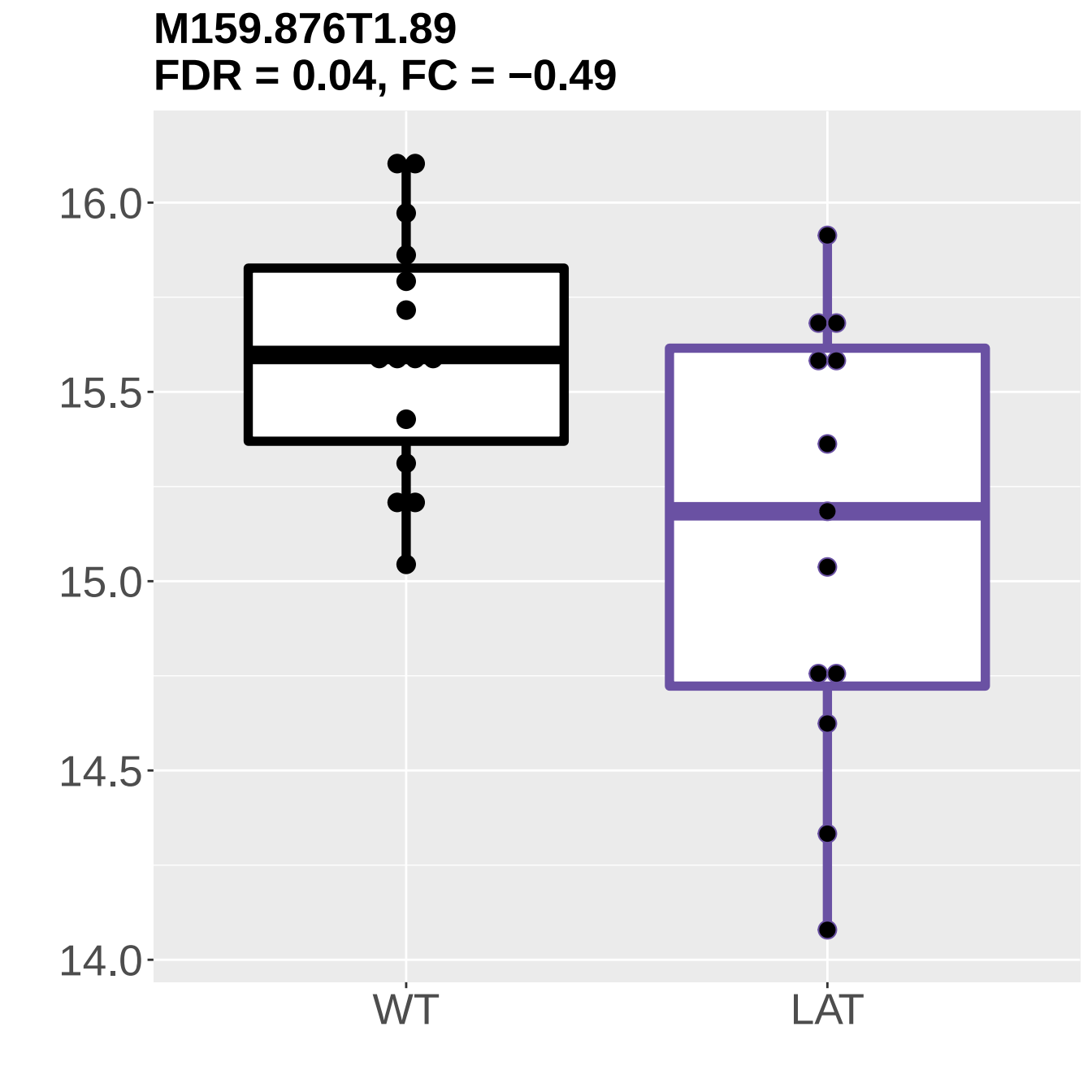
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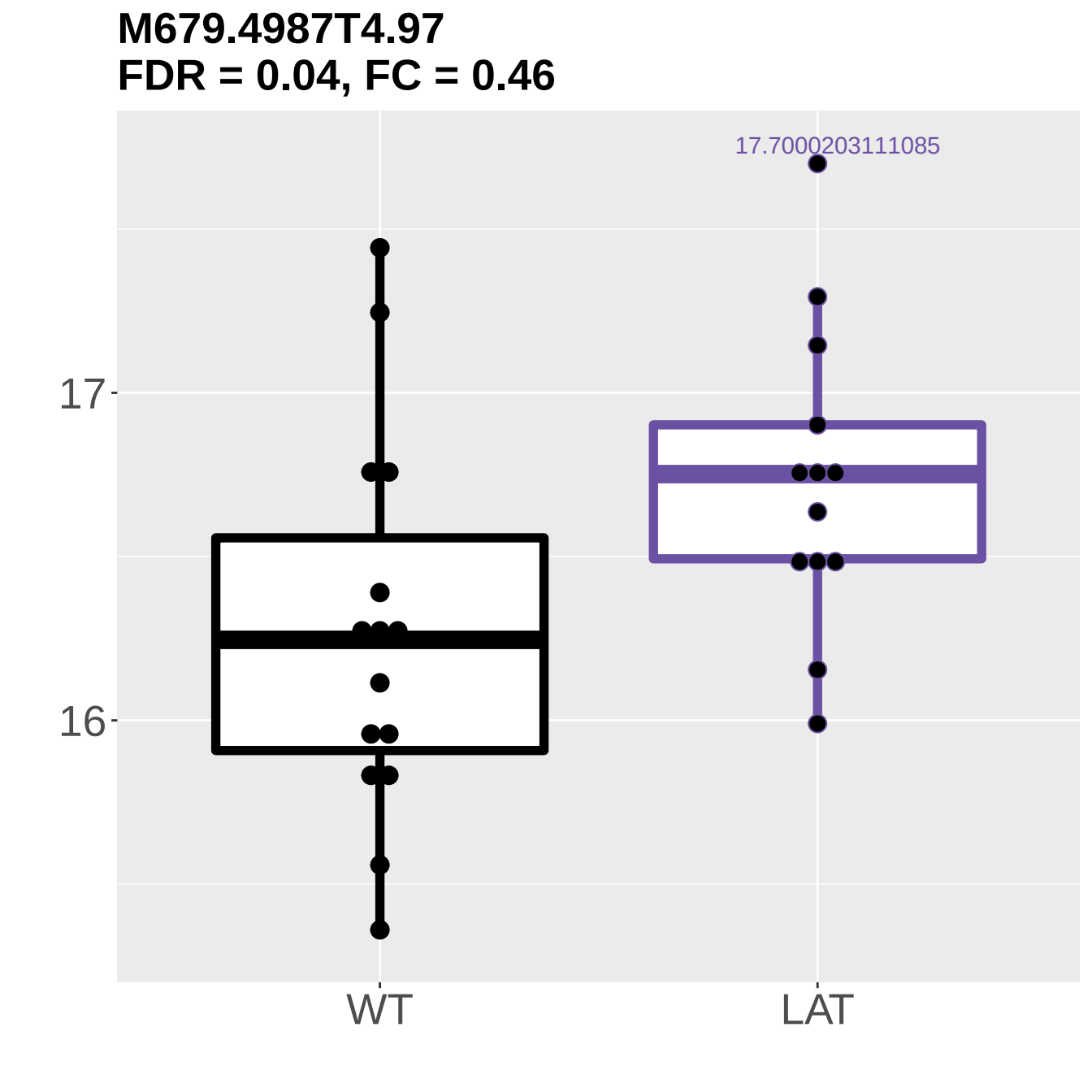
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WT
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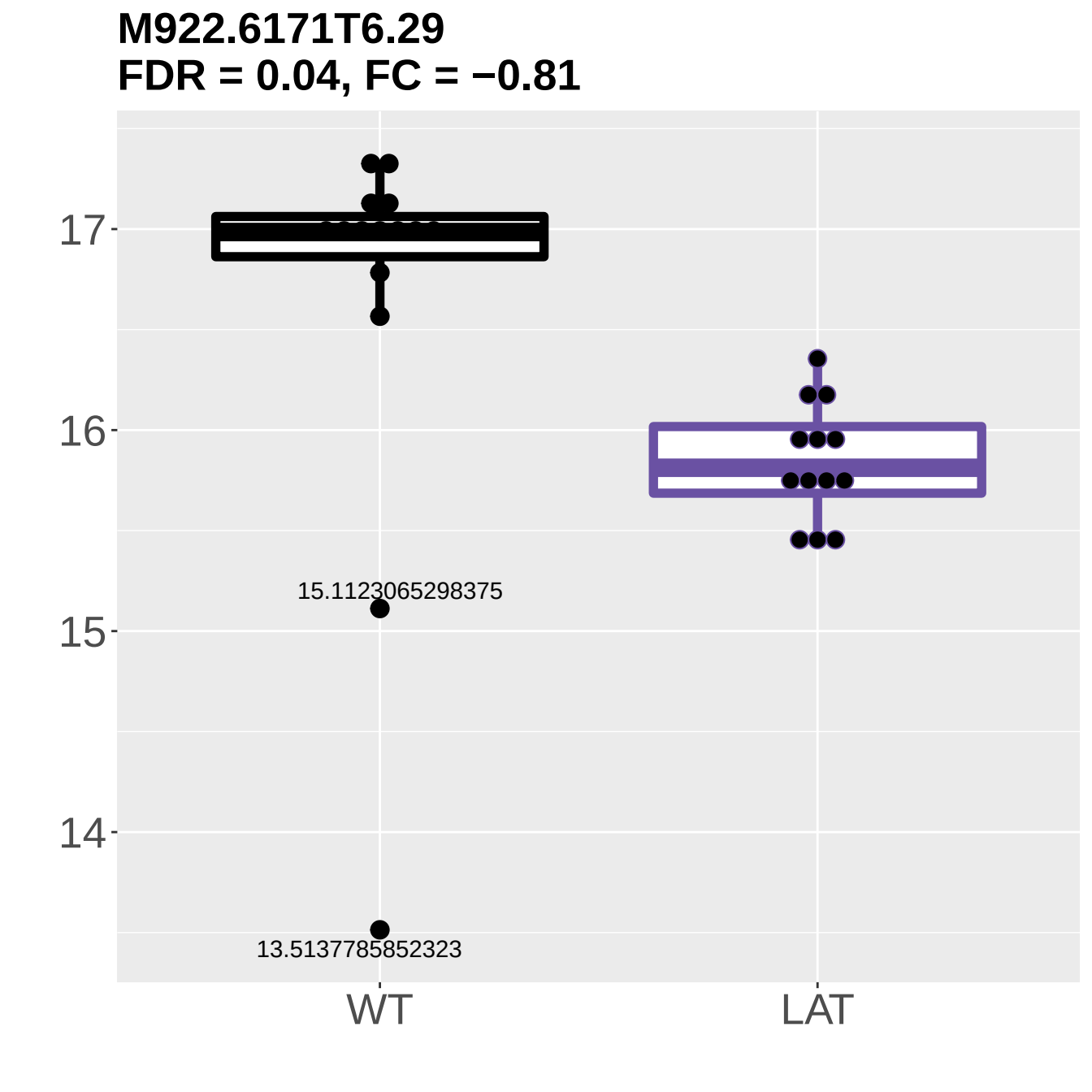
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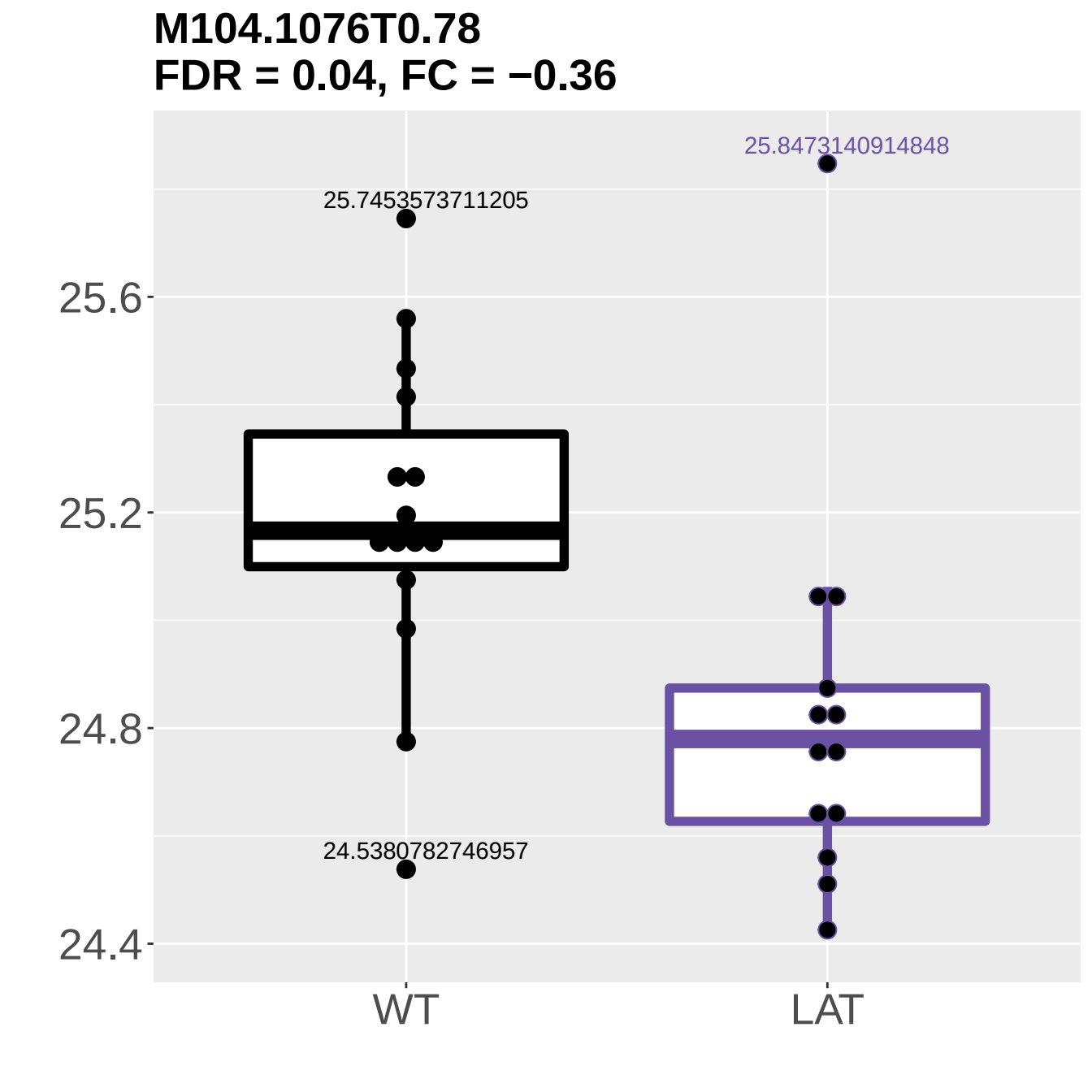
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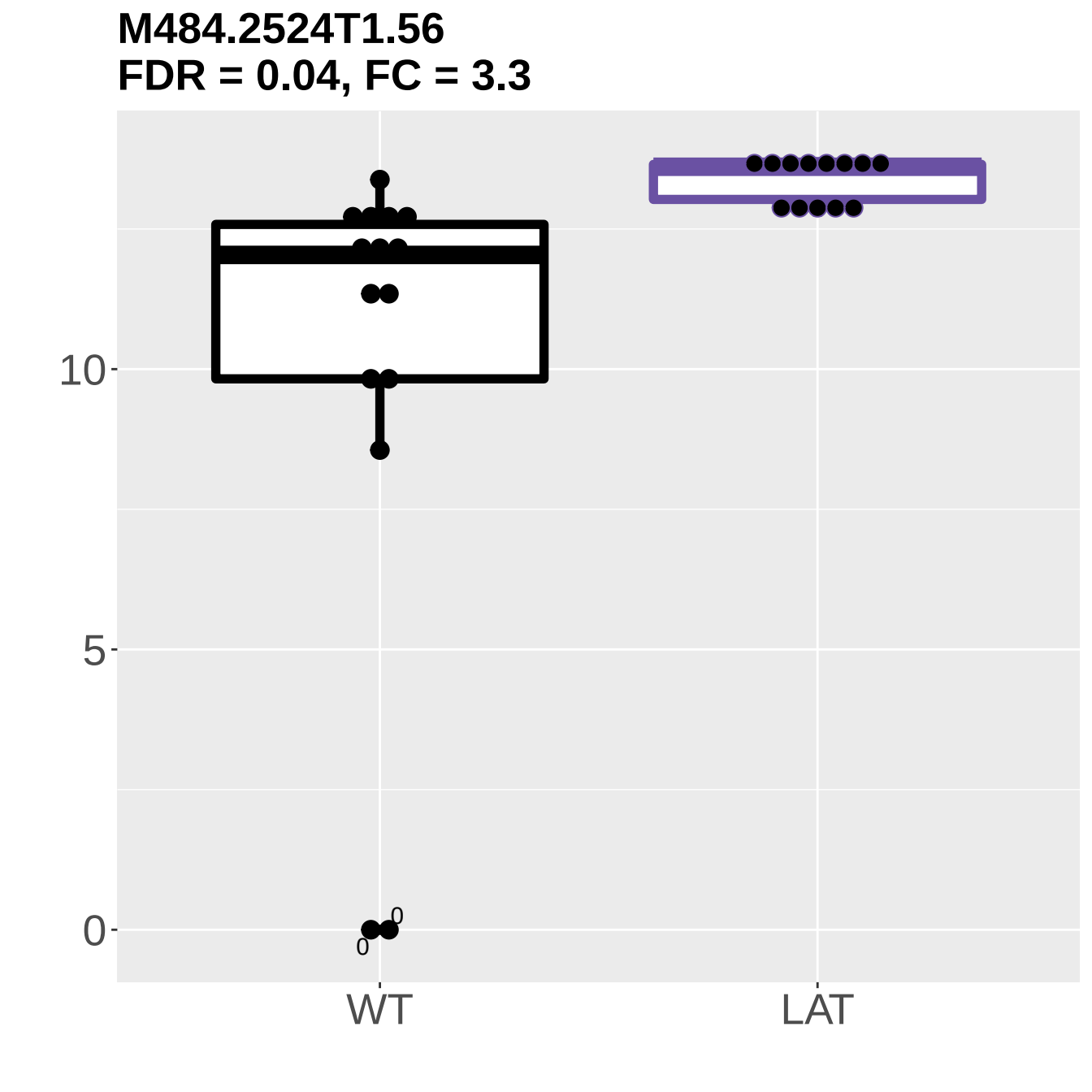
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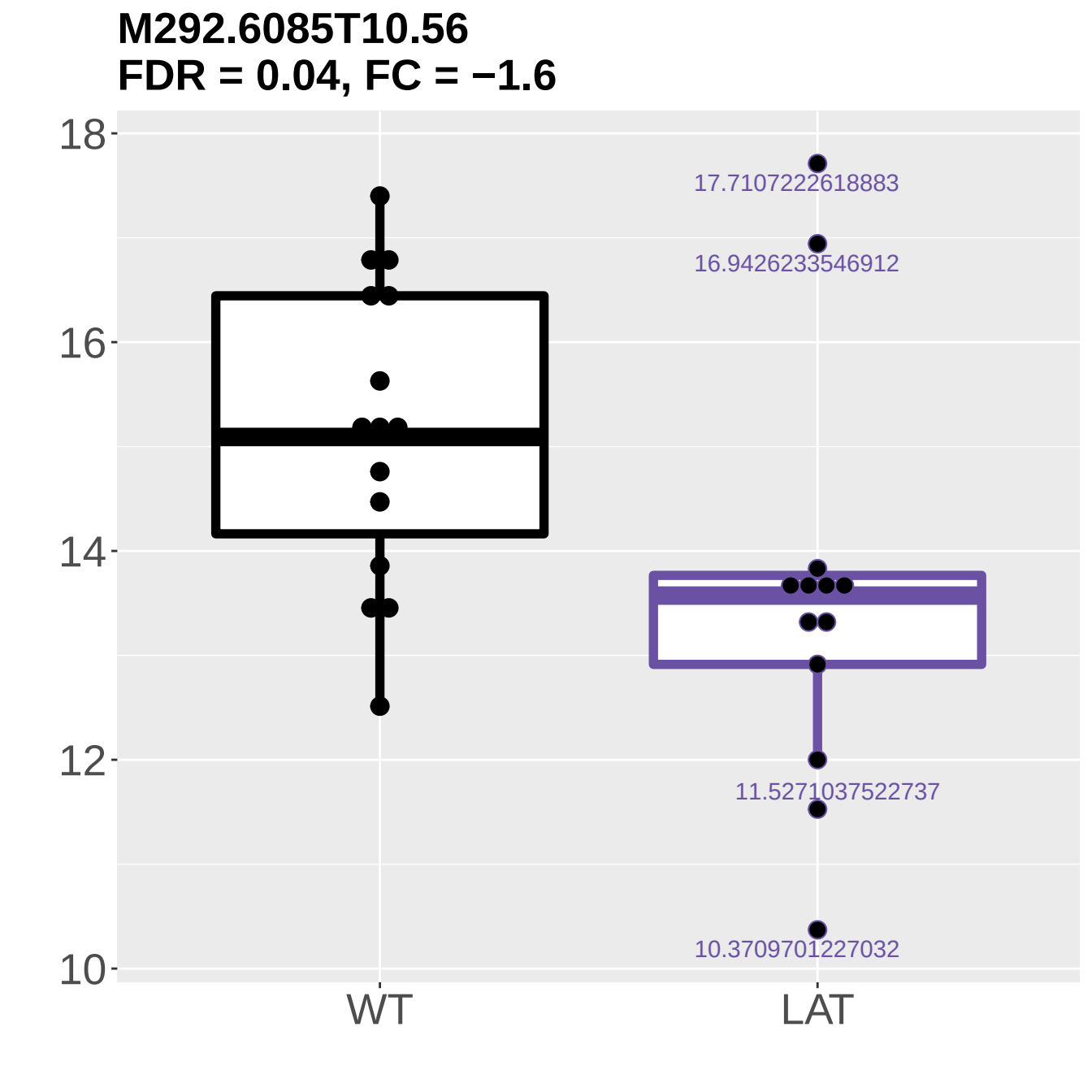
0
0
WT
LAT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WT
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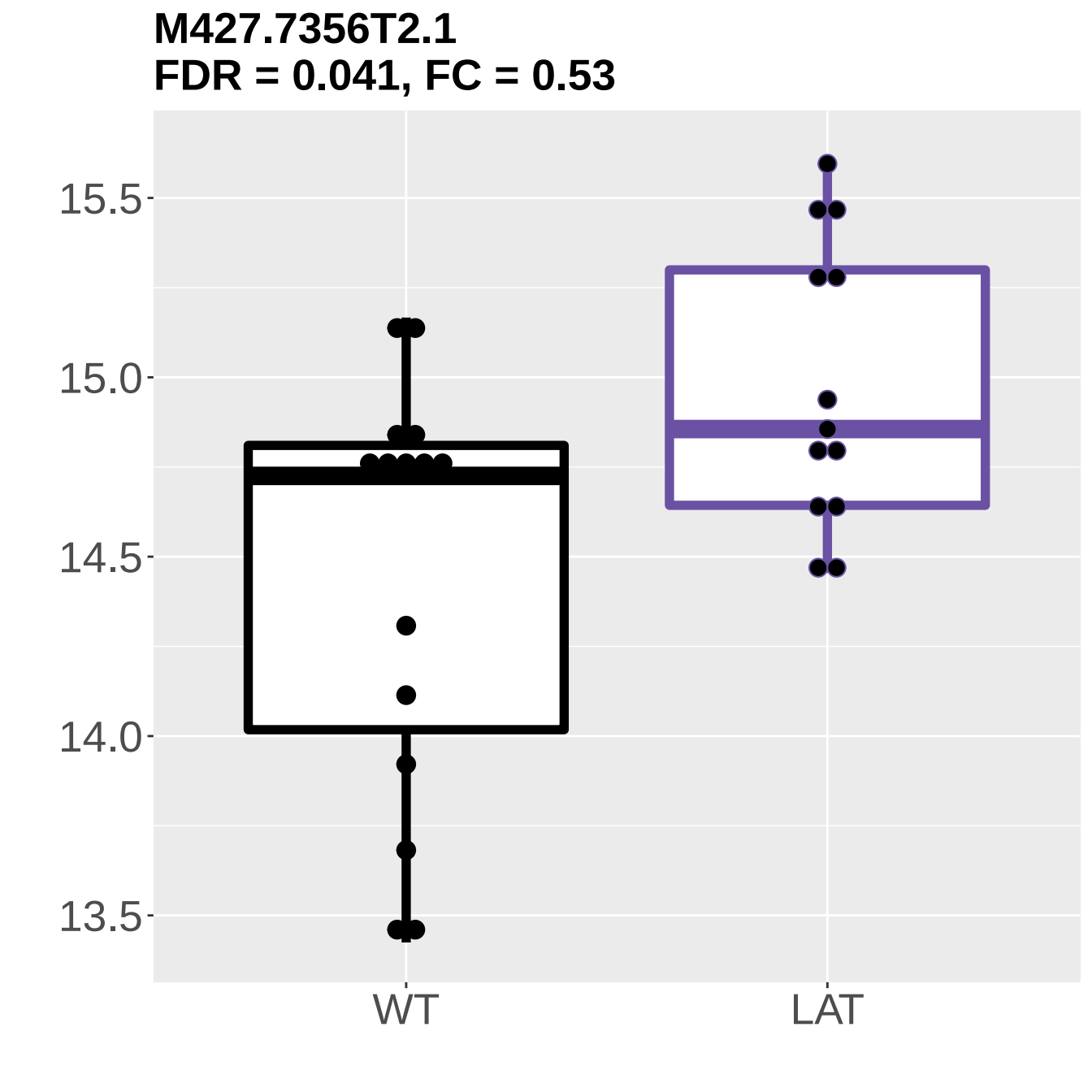
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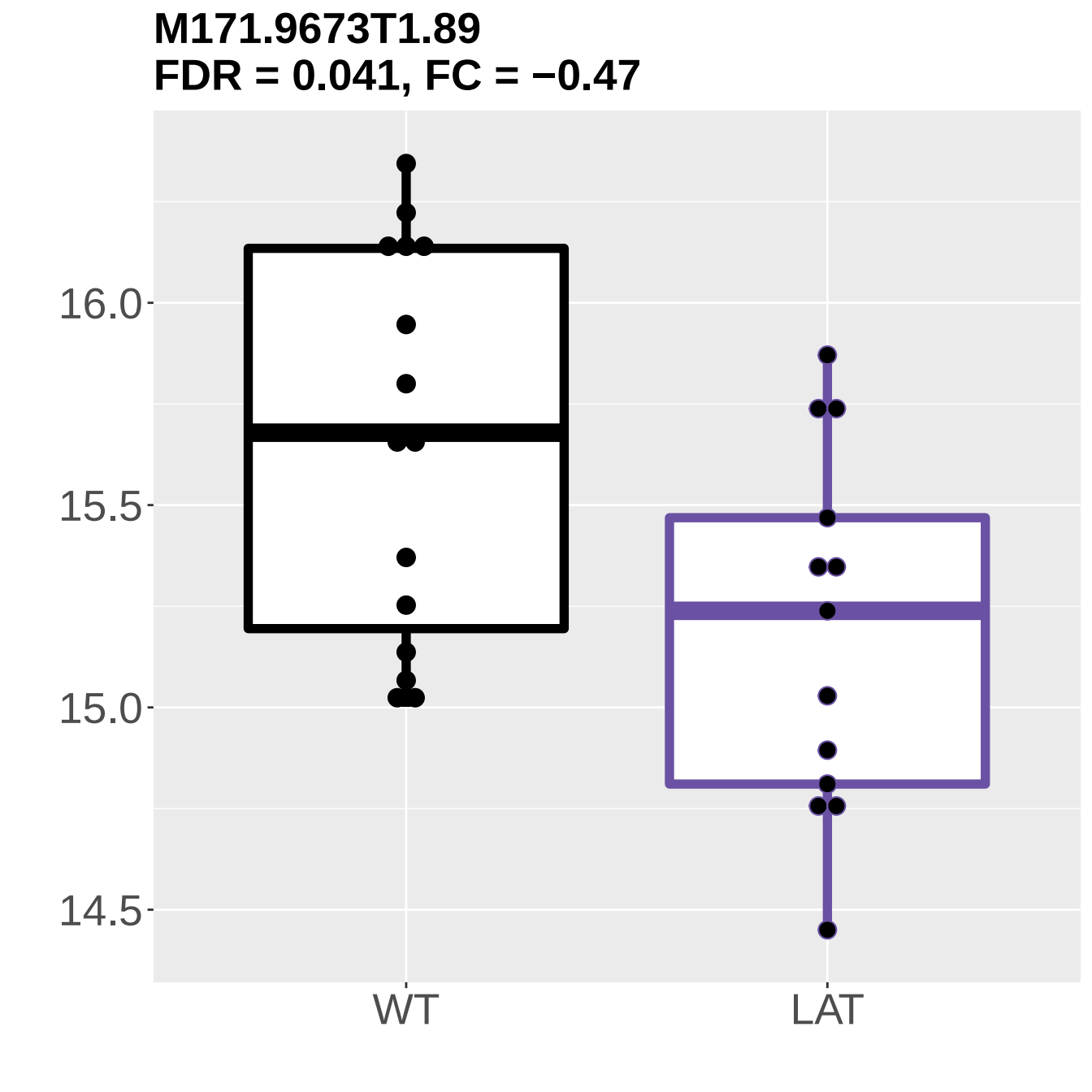
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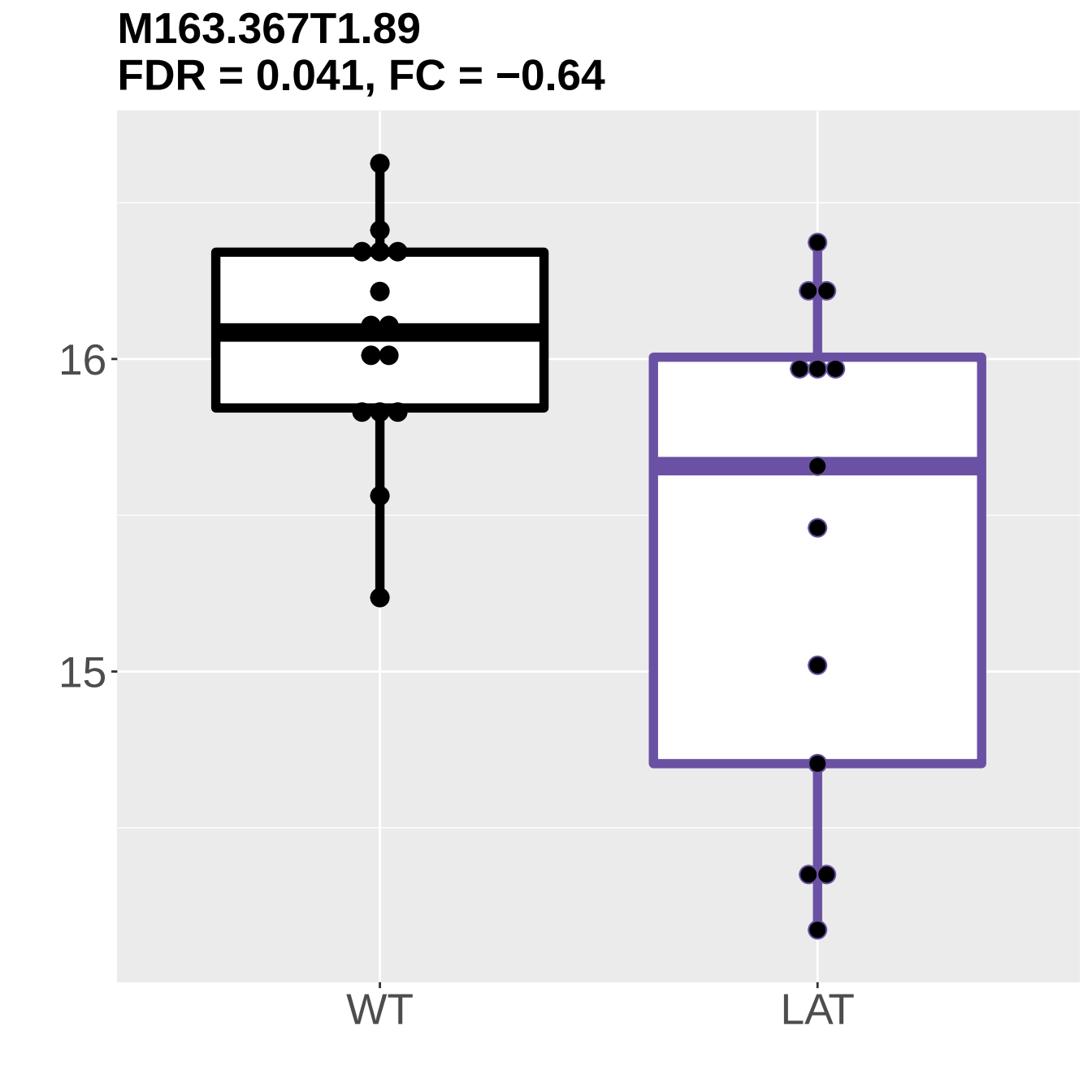
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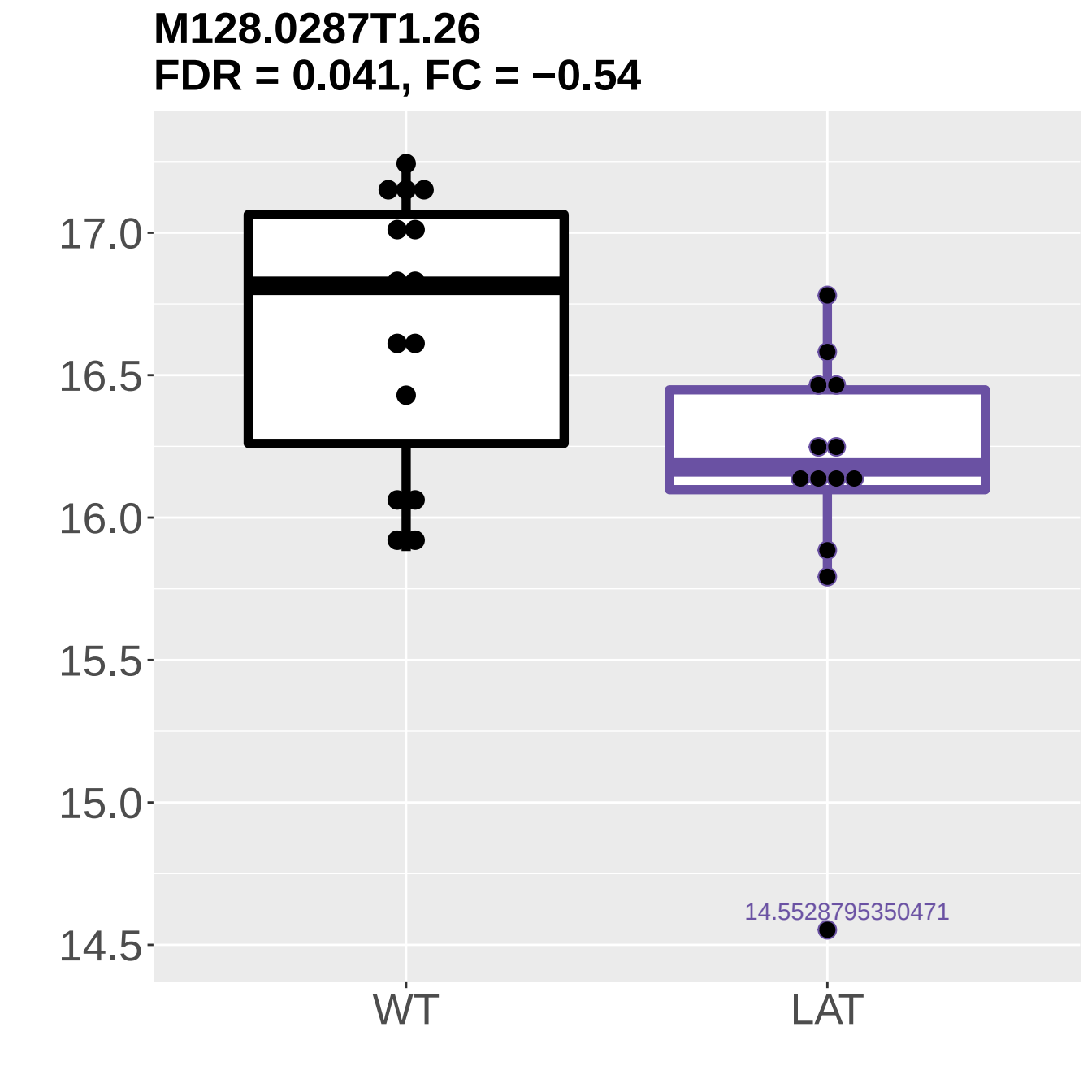
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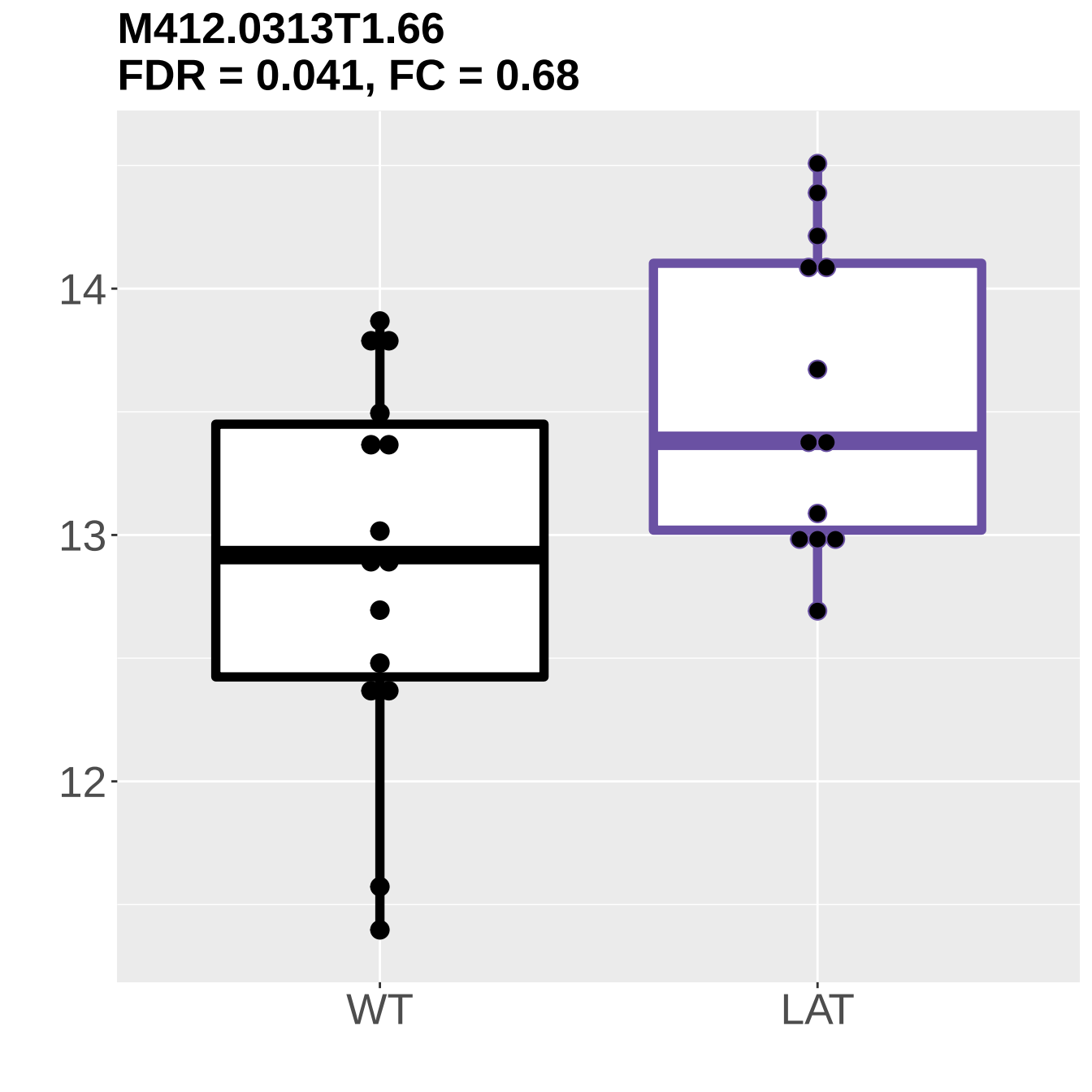
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WT
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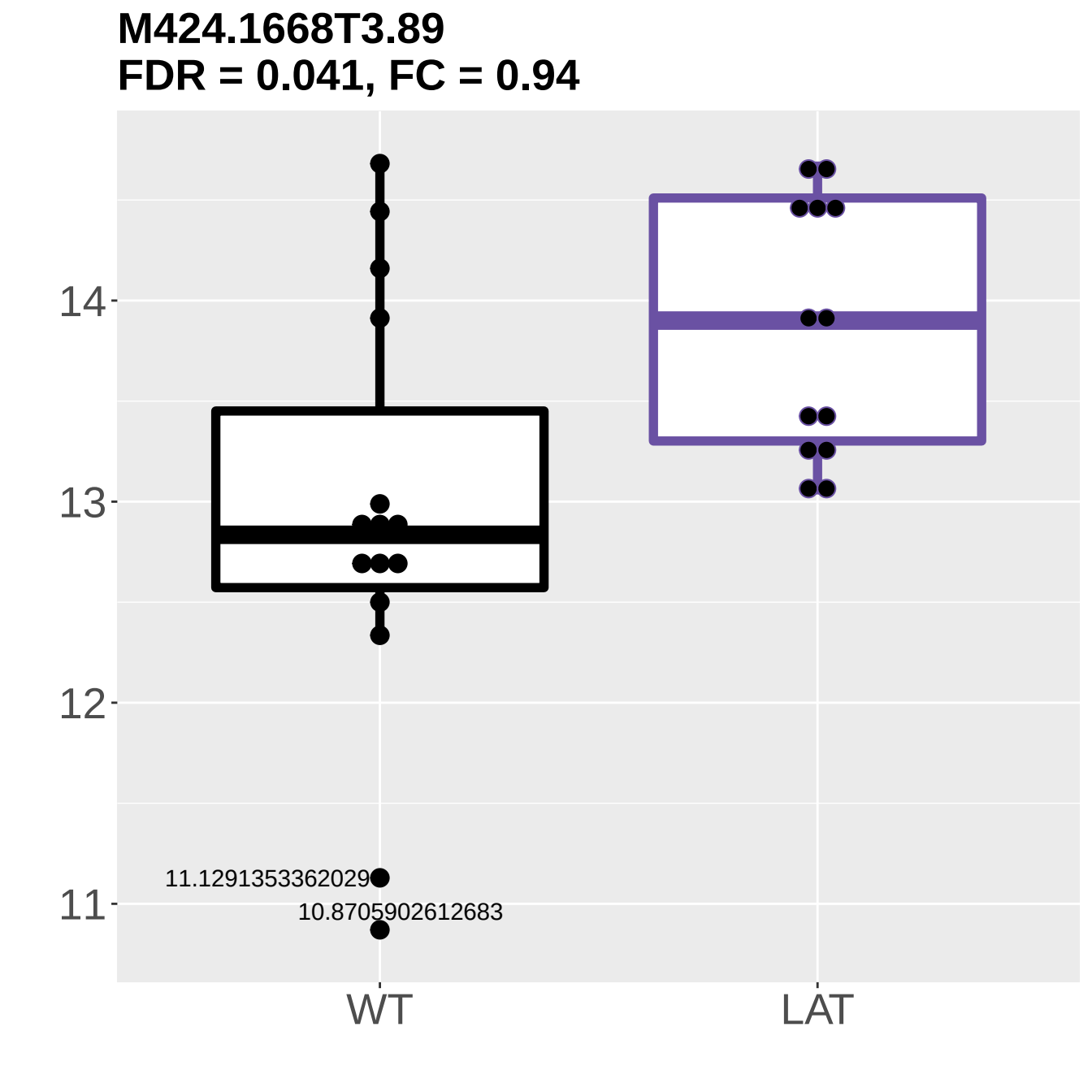
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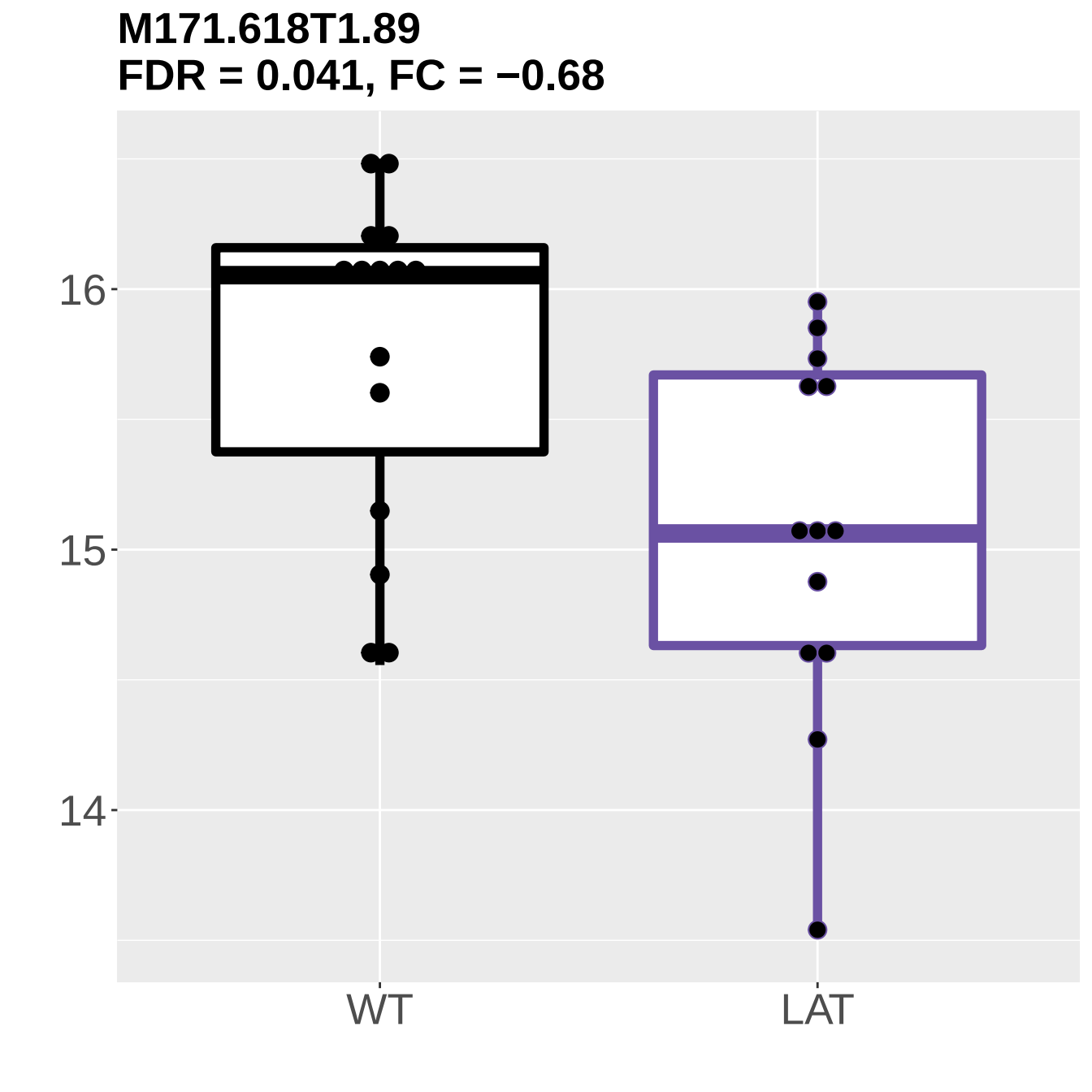
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WT
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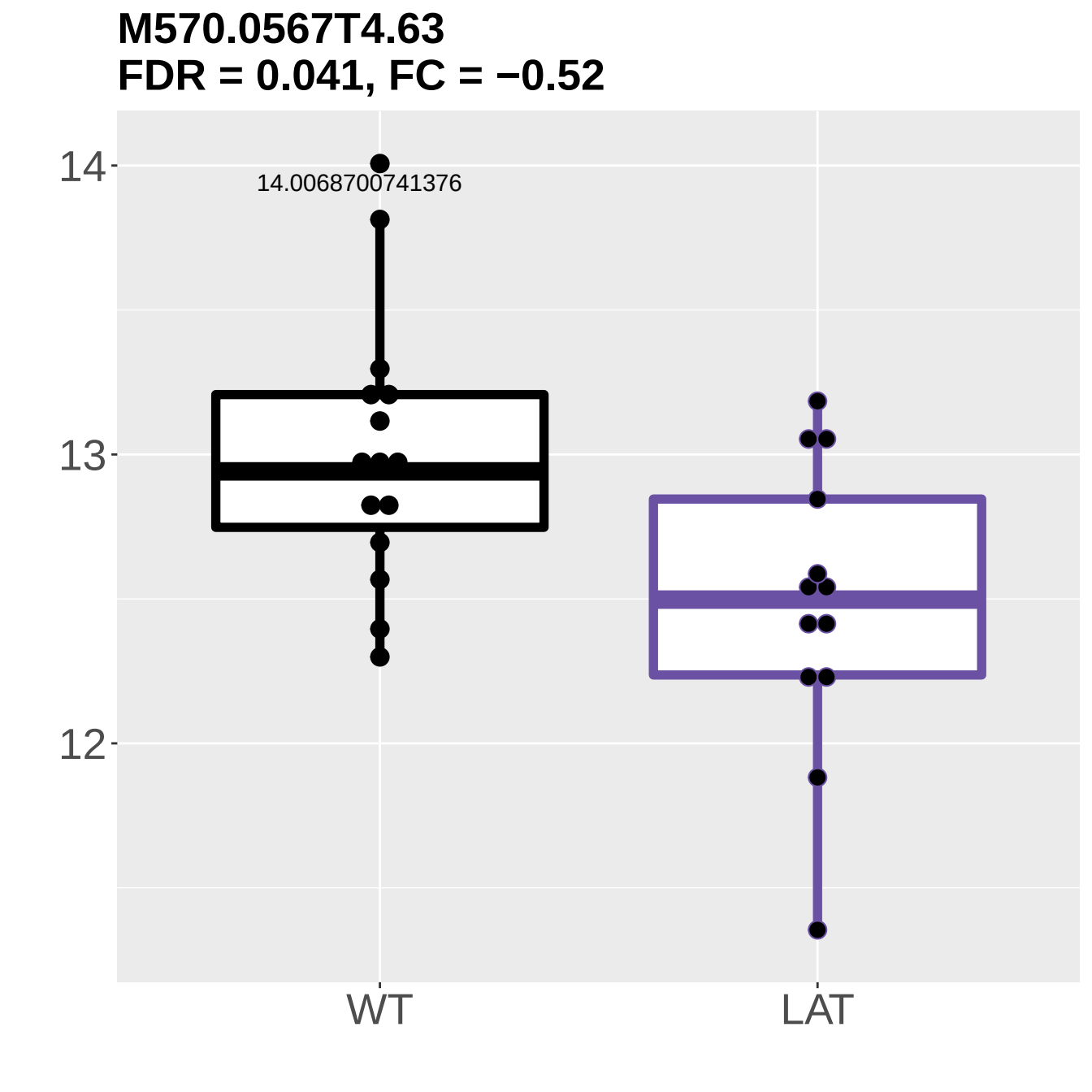
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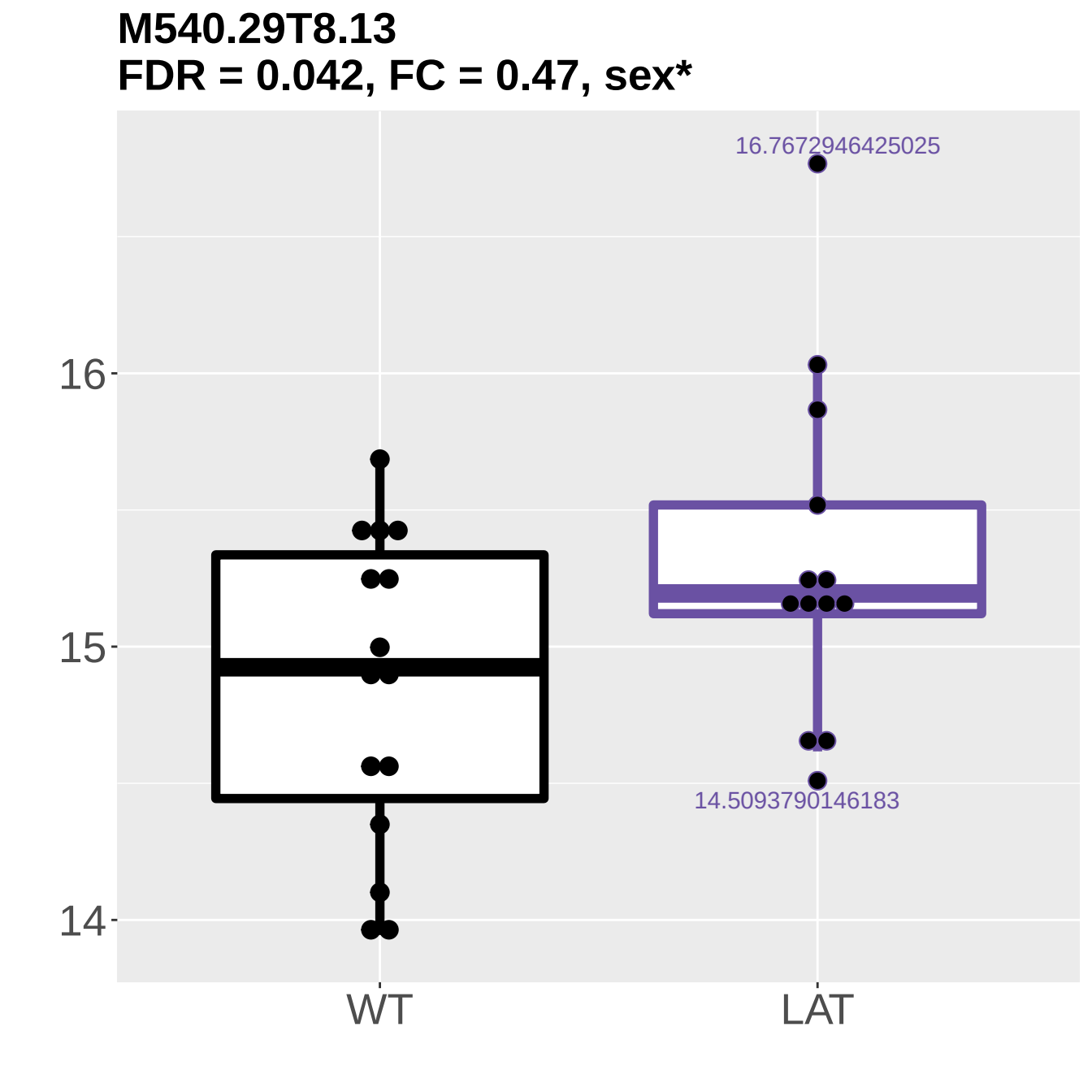
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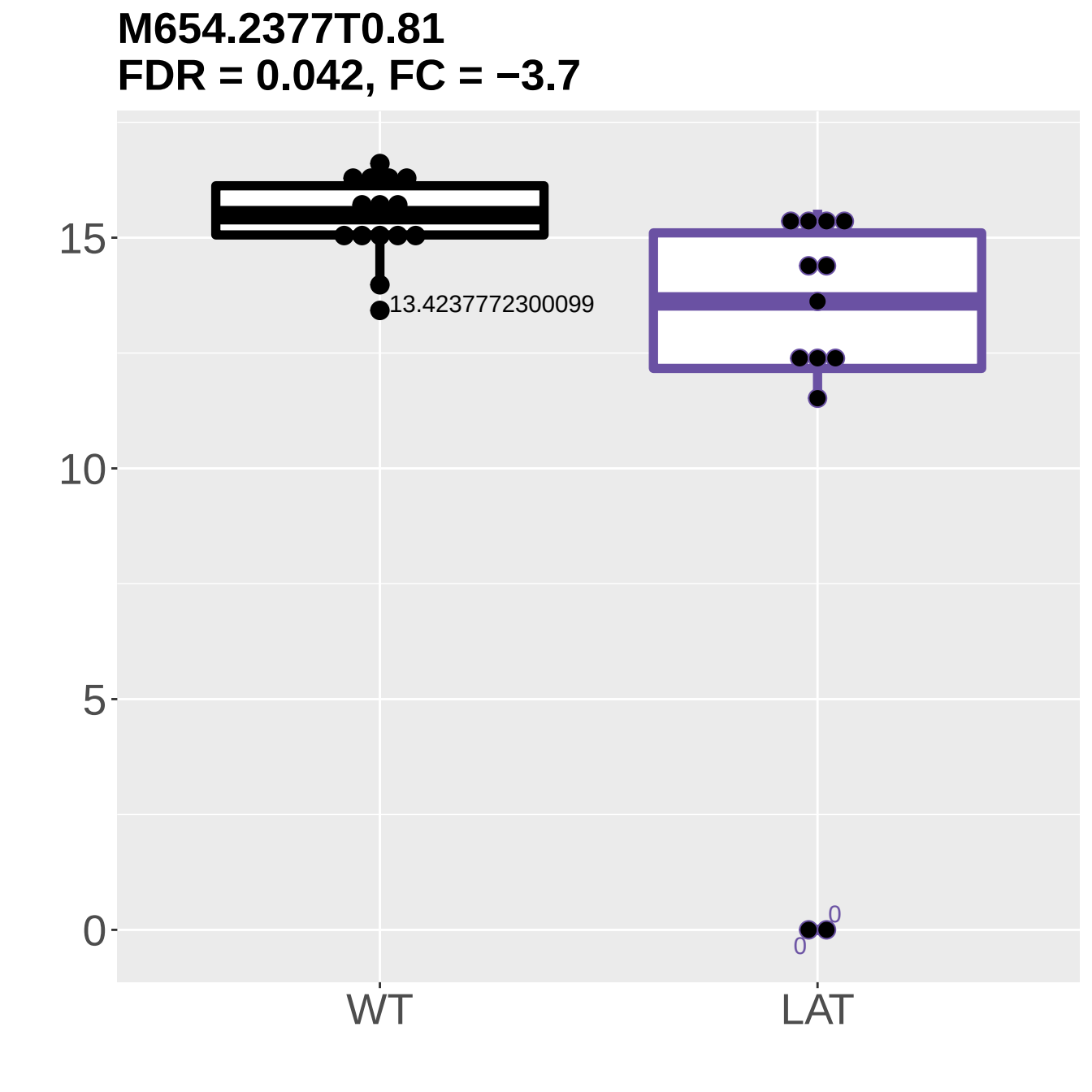
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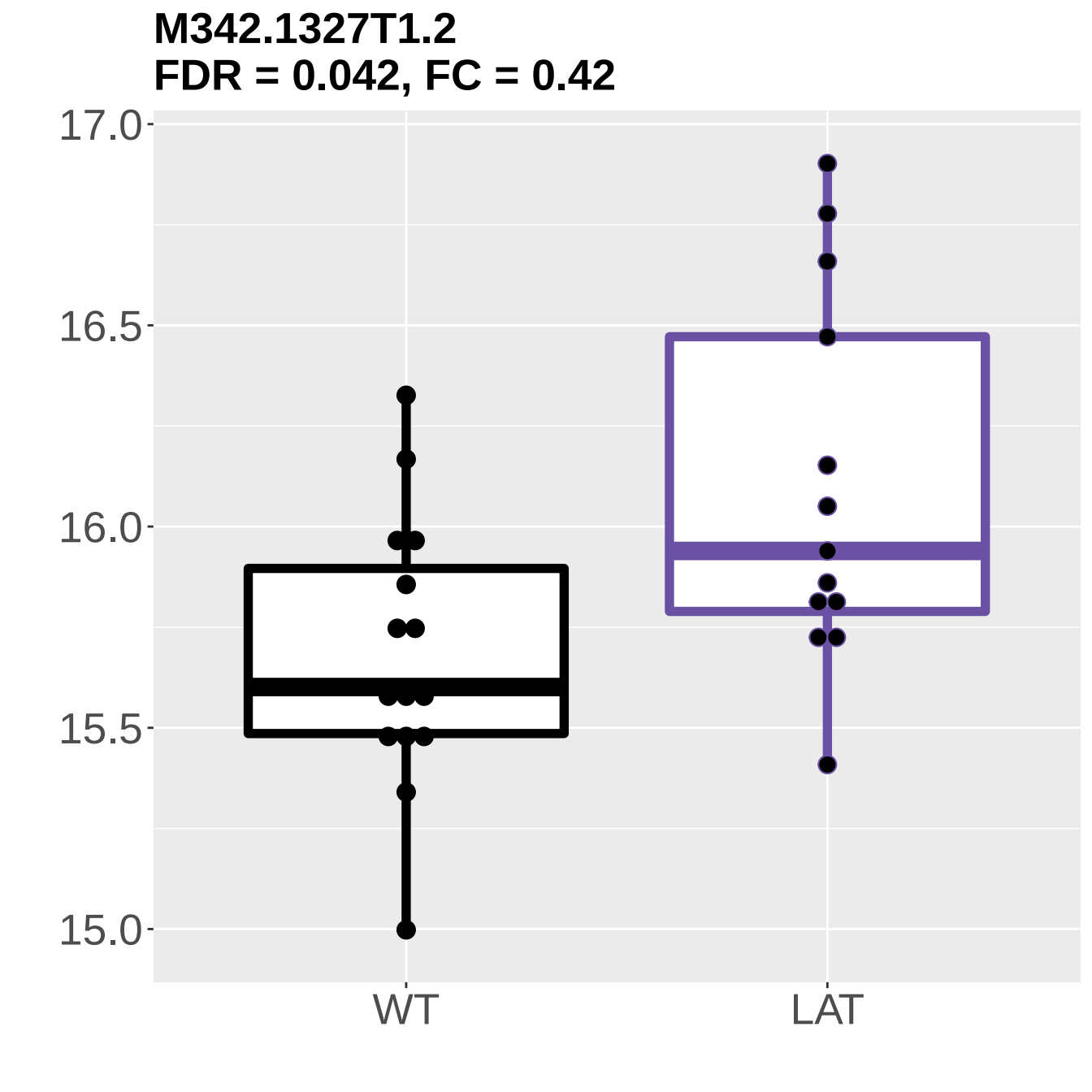
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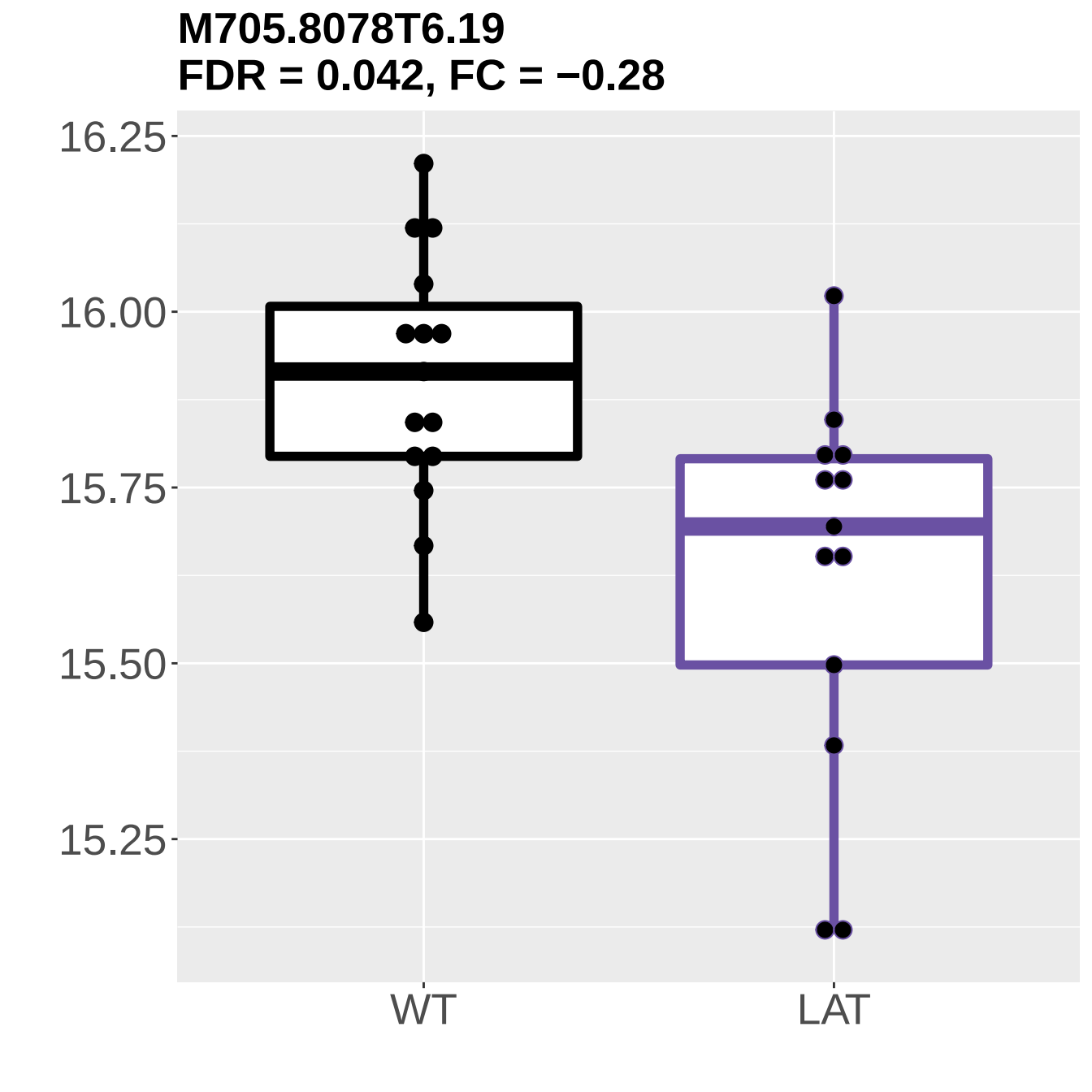
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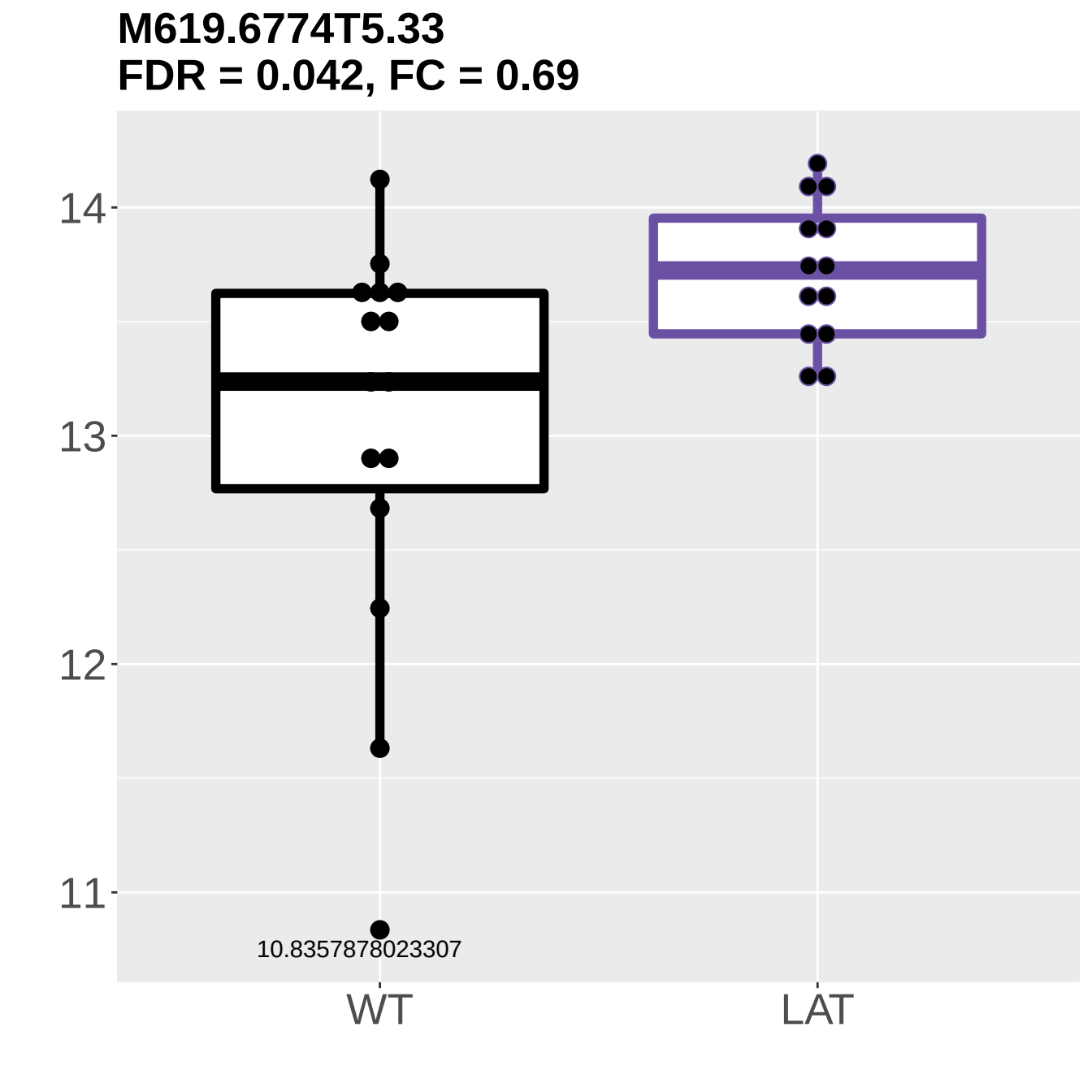
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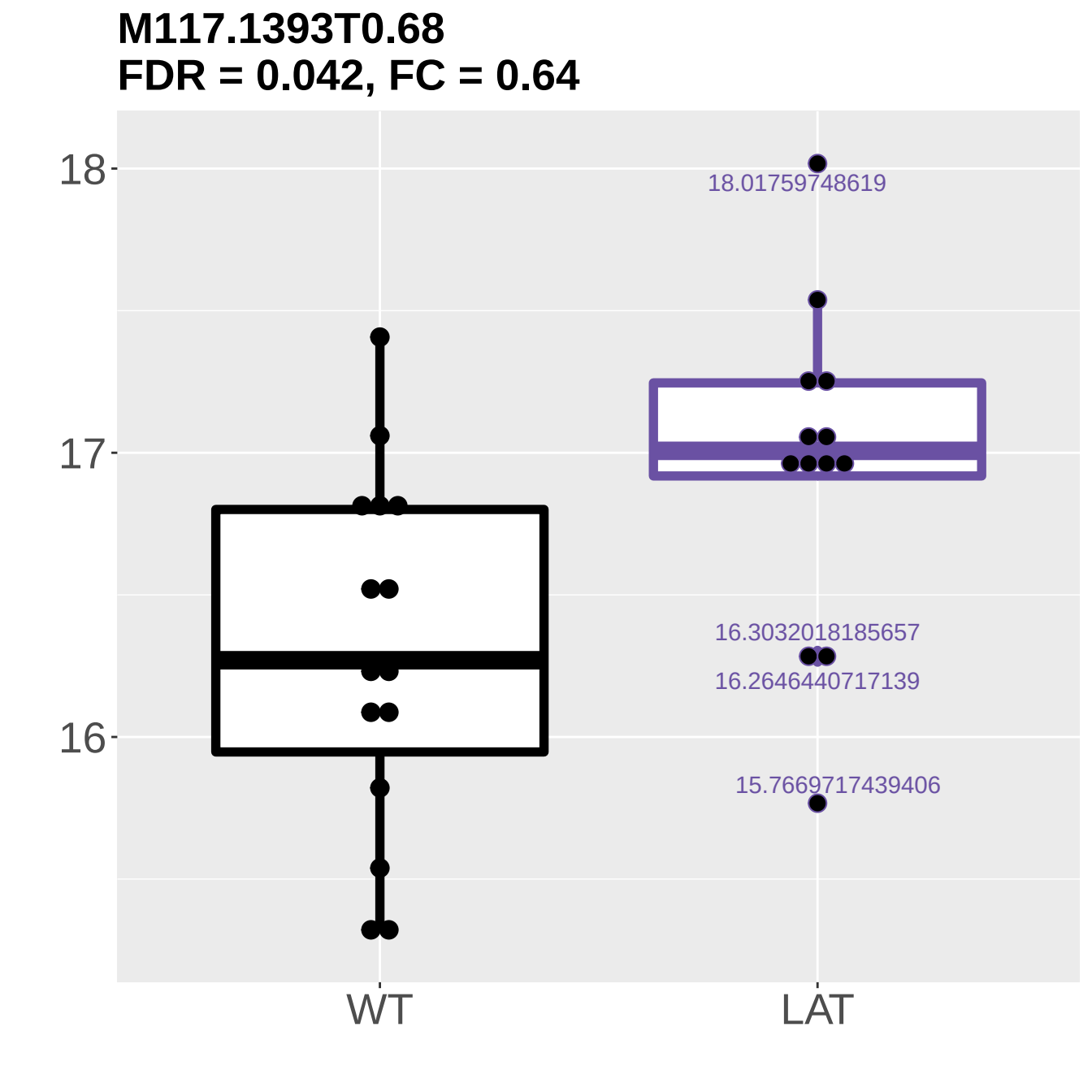
LAT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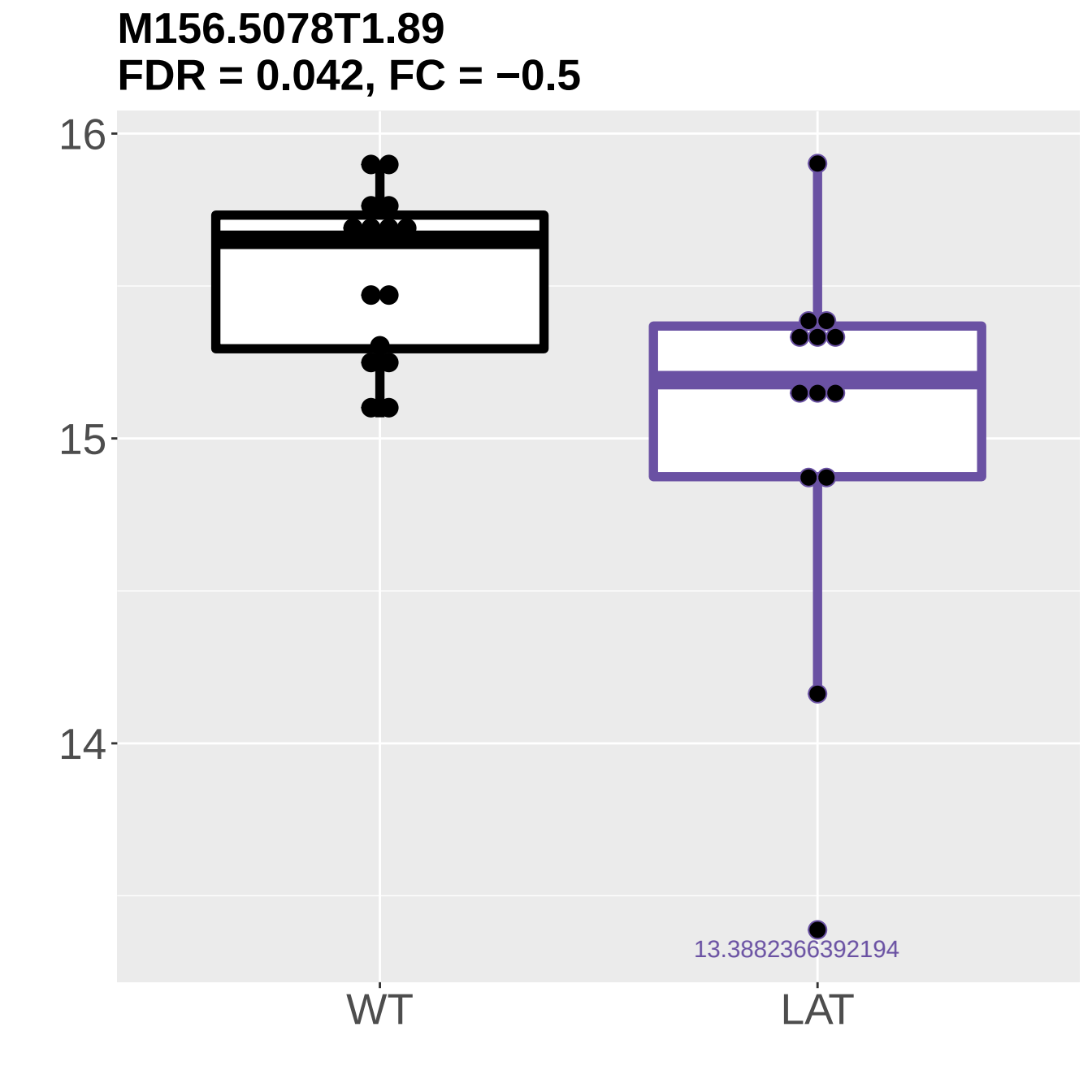
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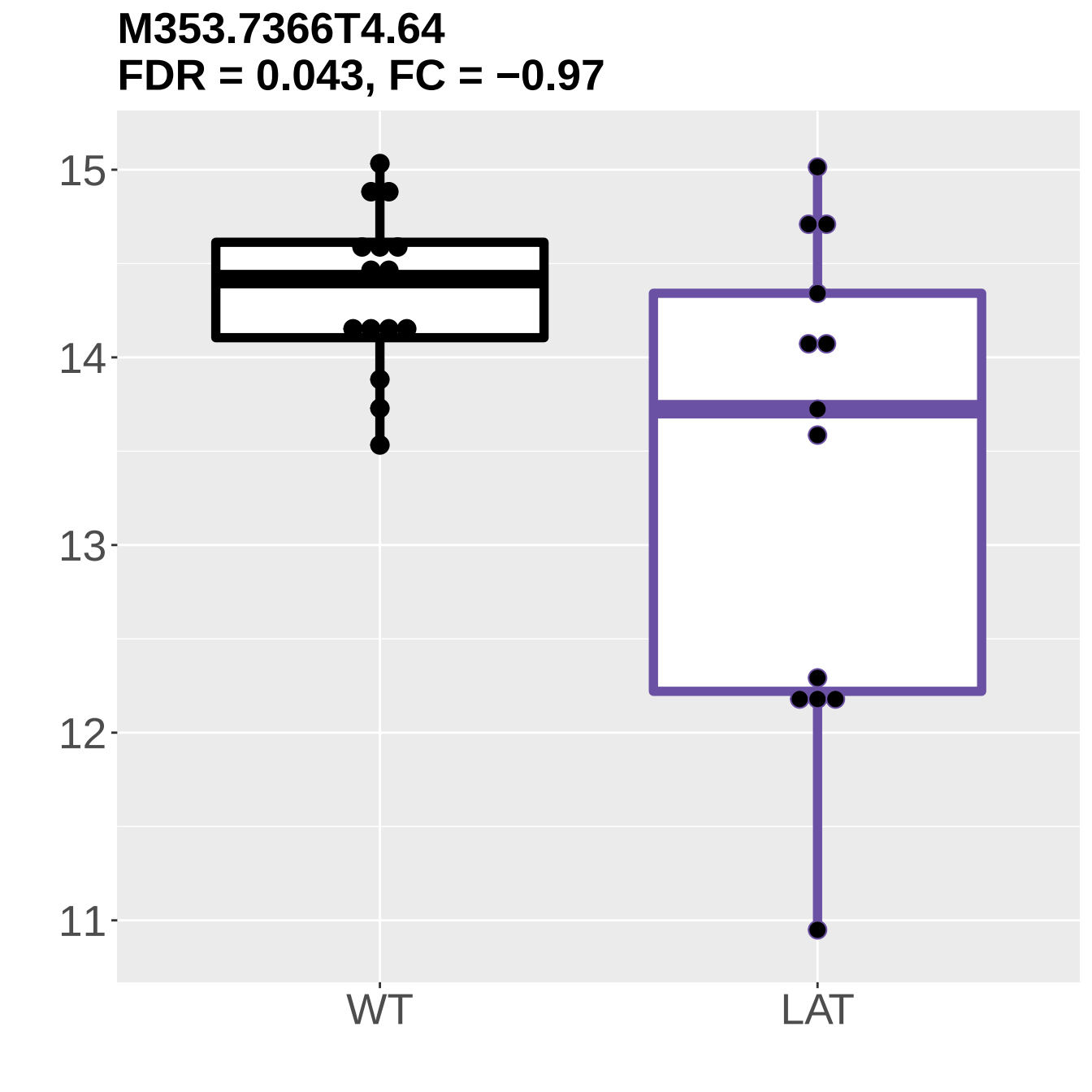
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WT
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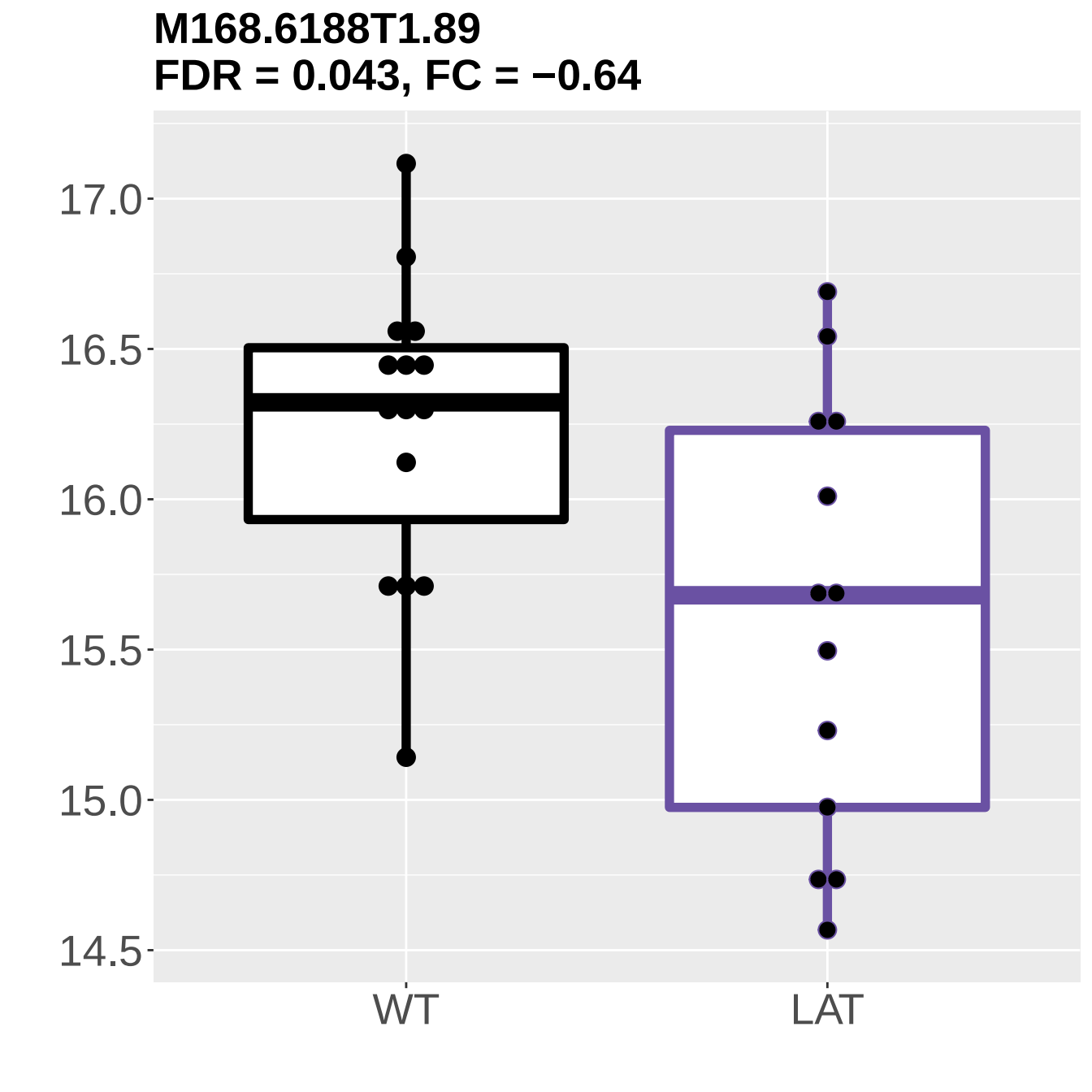
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15.0
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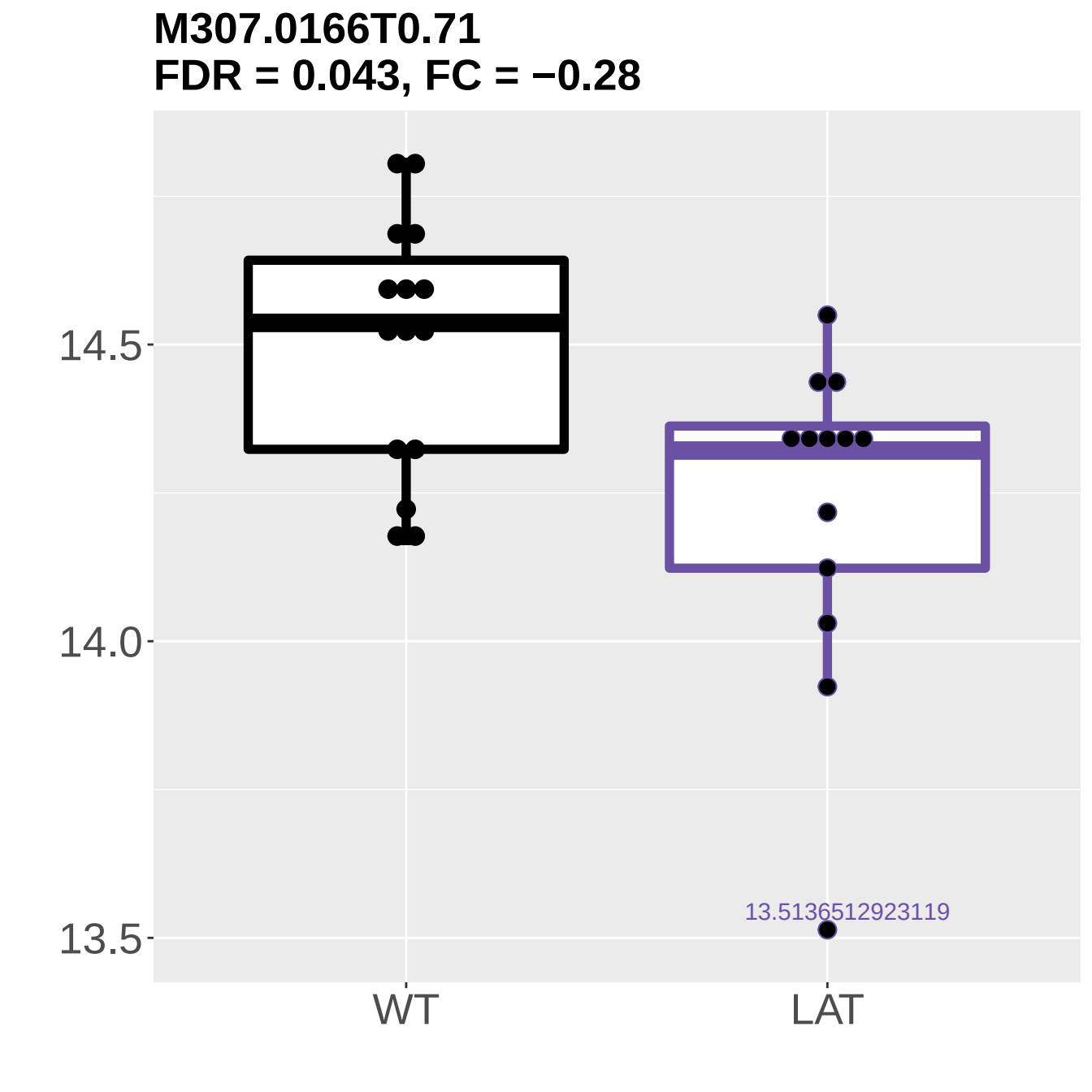
WT
LAT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WT
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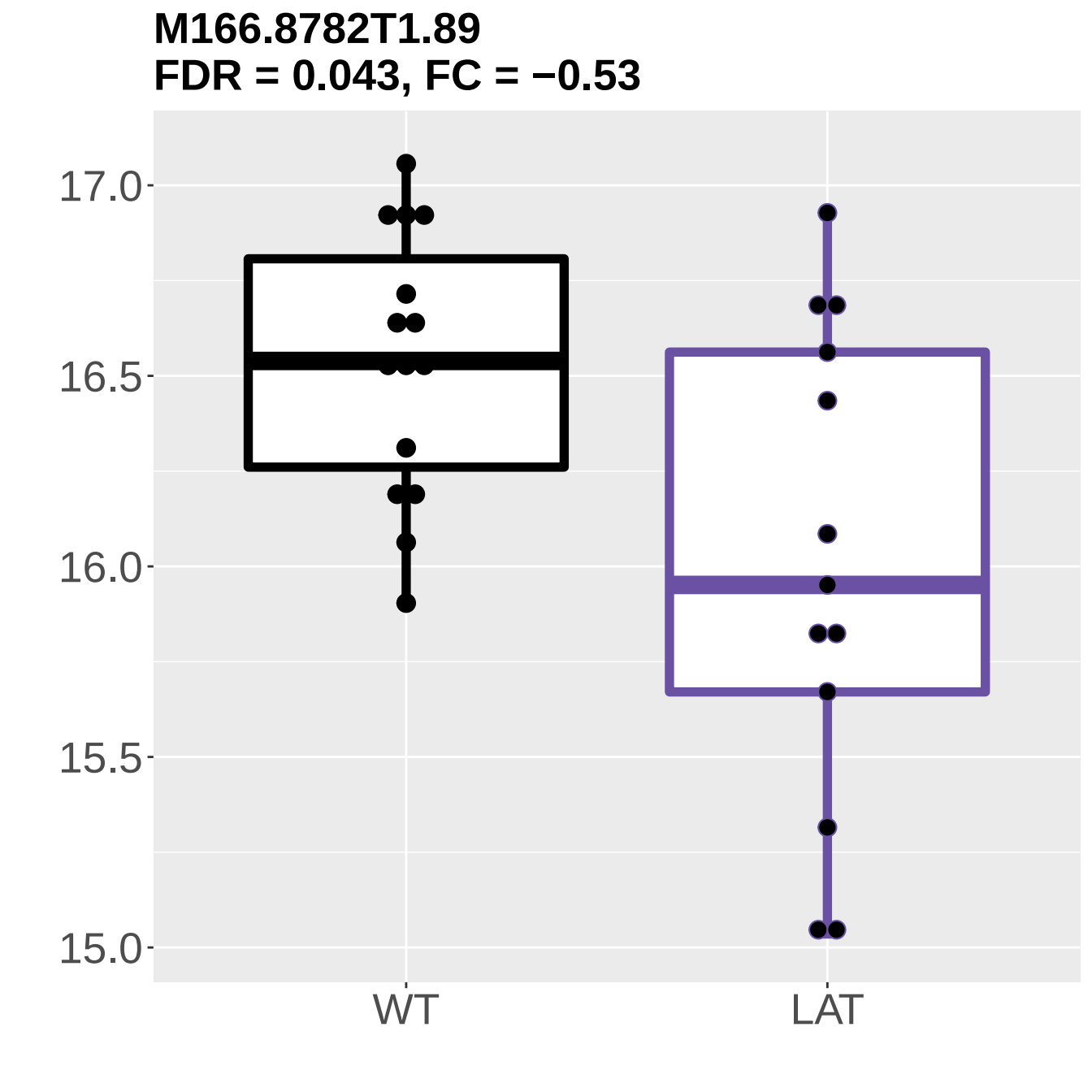
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16.0
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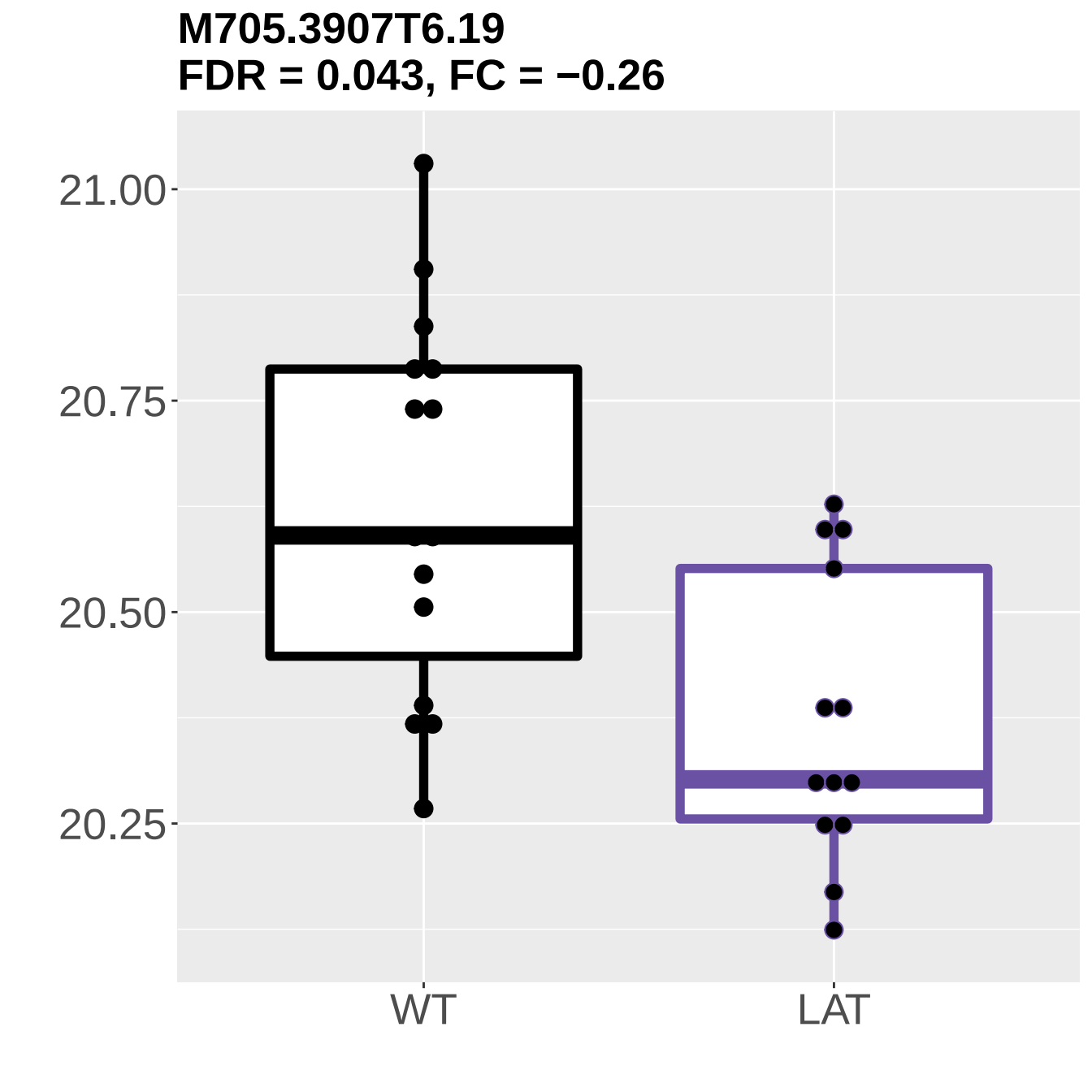
WT
LAT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20.50
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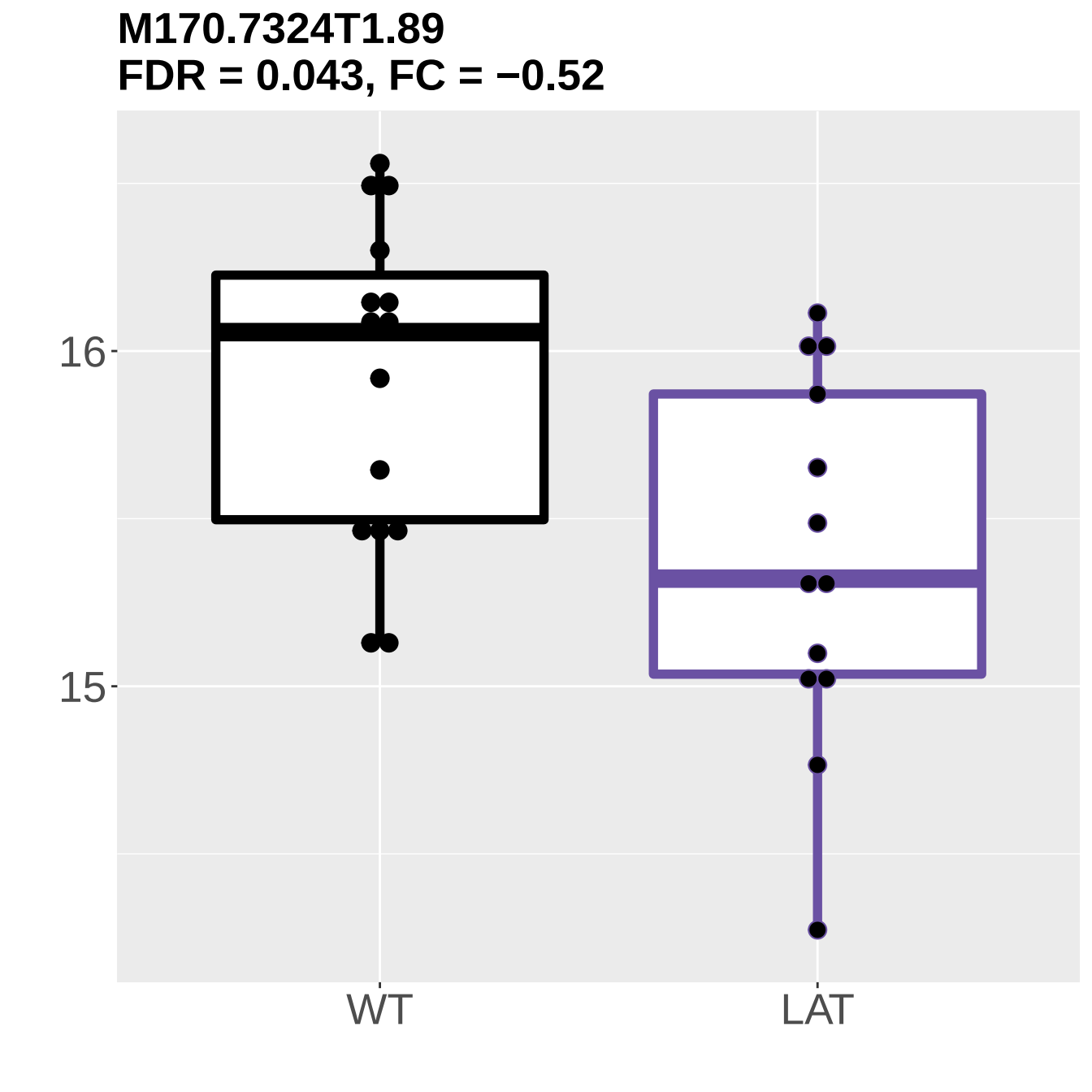
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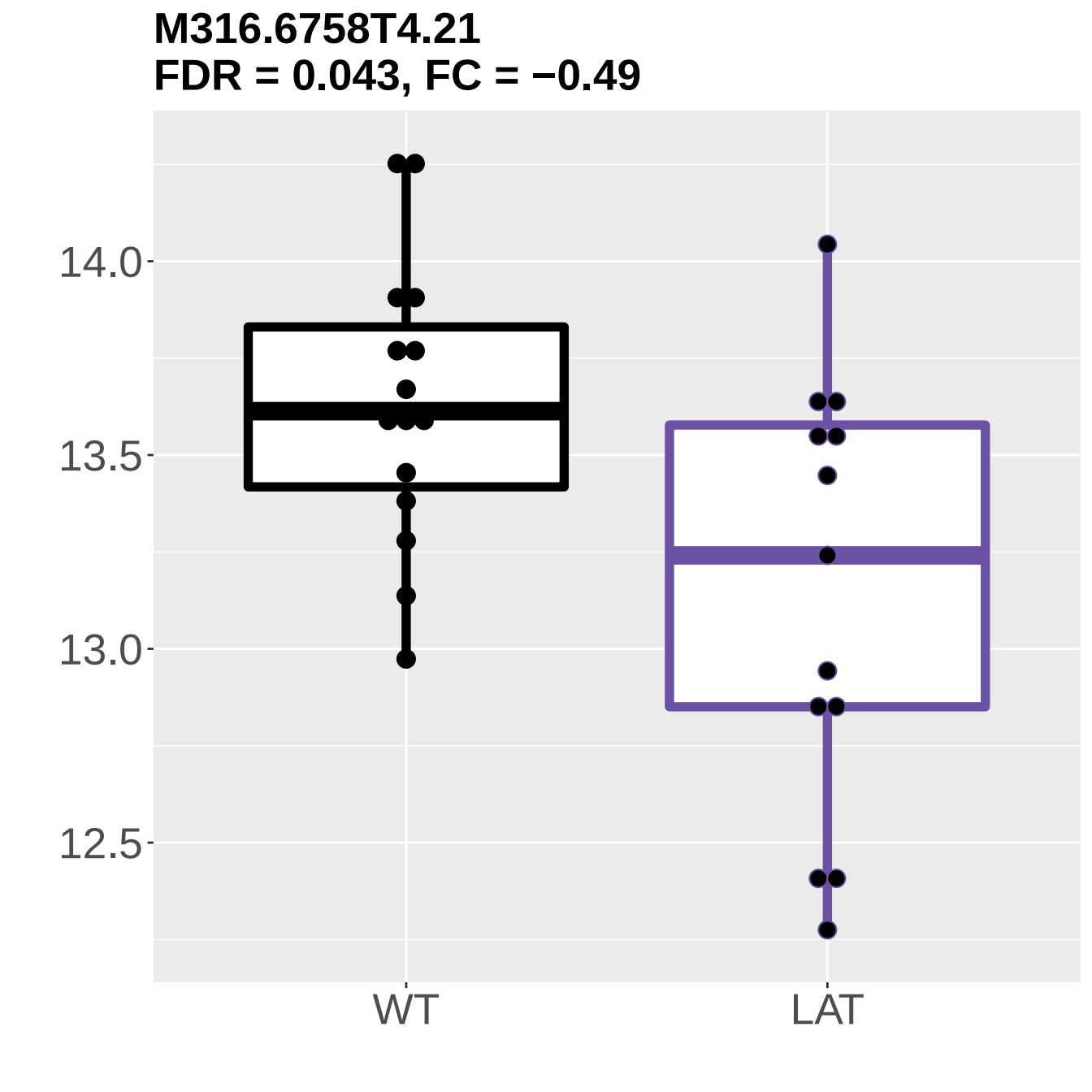
15
WT
LAT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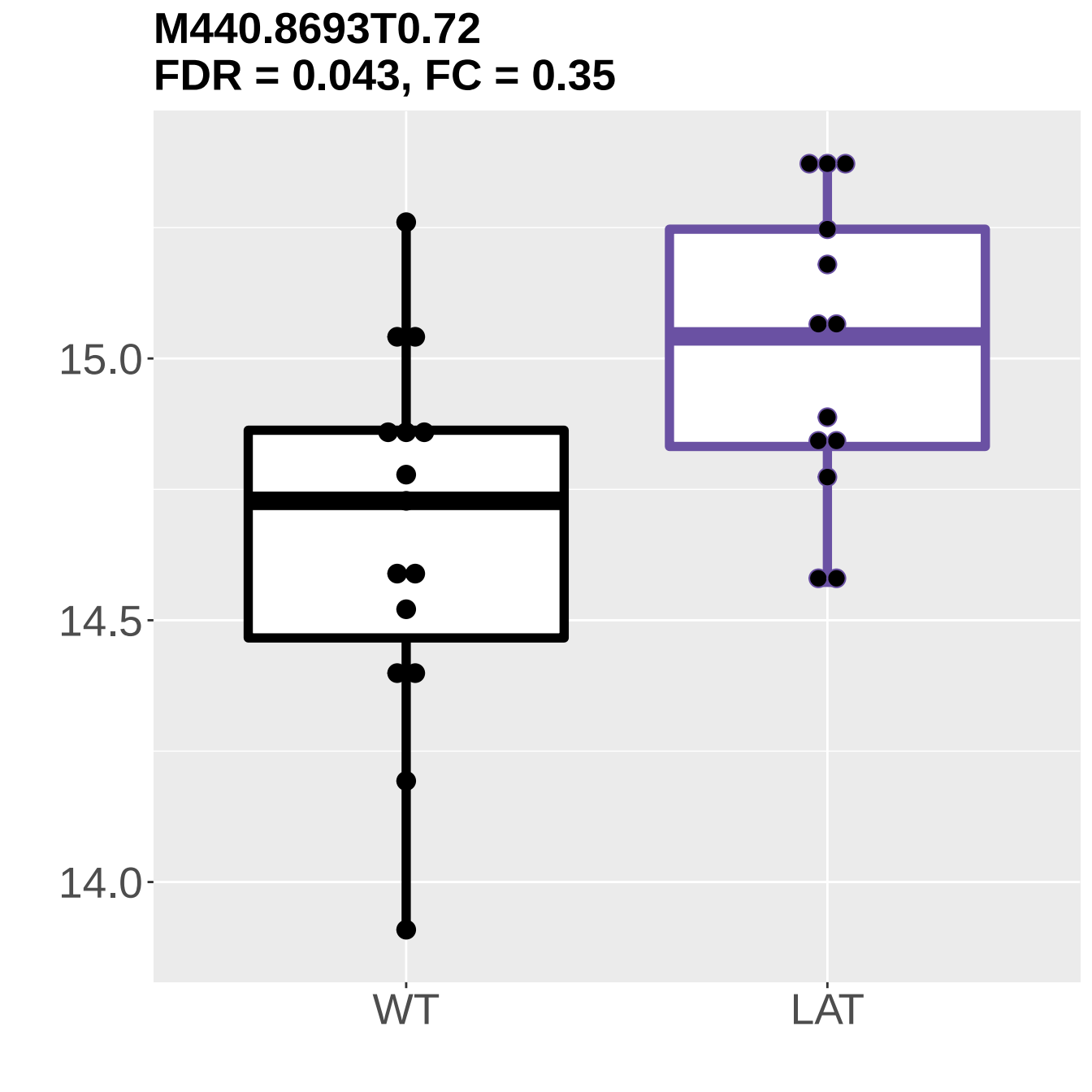
WT
LAT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14.0
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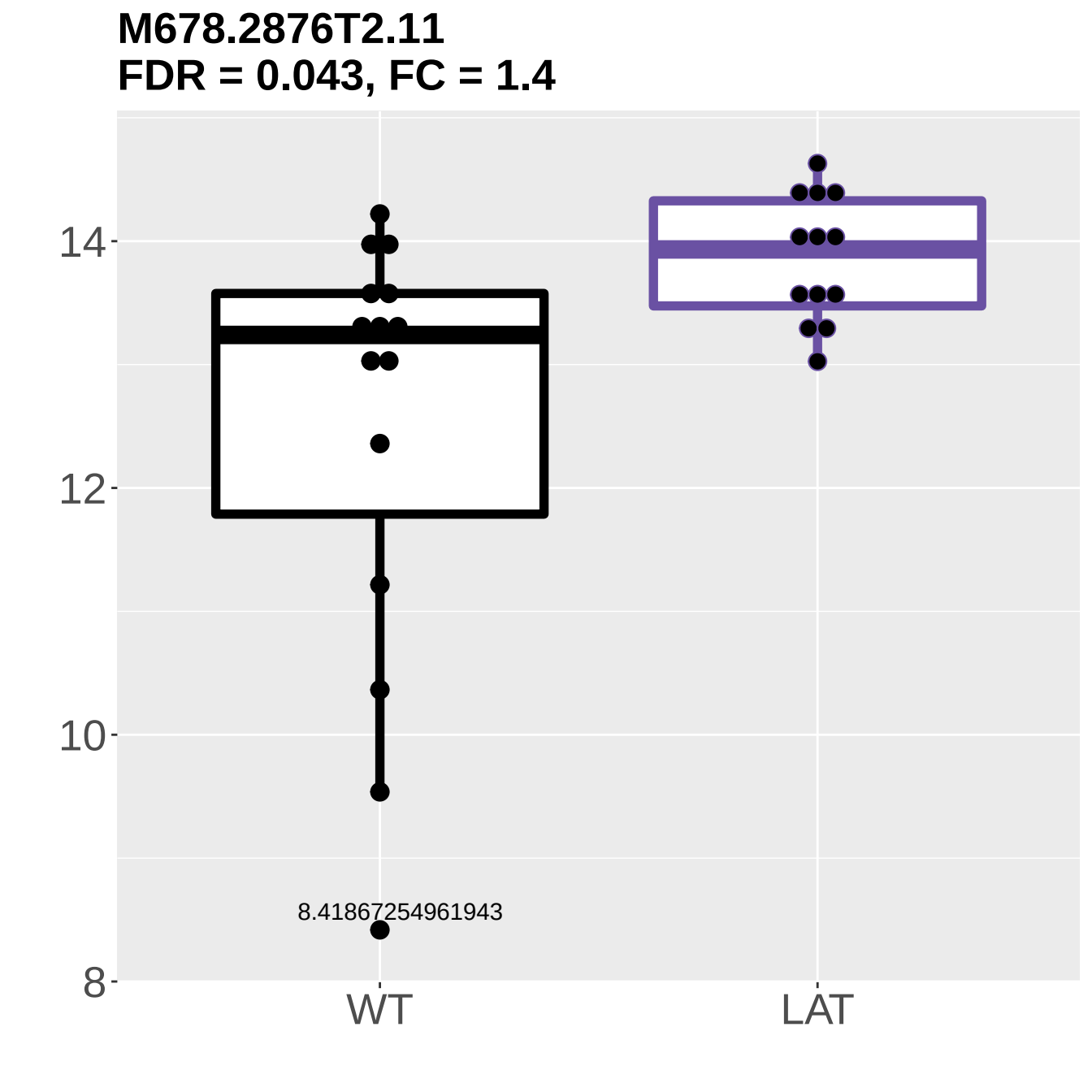
M678.2876T2.11
FDR = 0.043, FC = 1.4
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12
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WT
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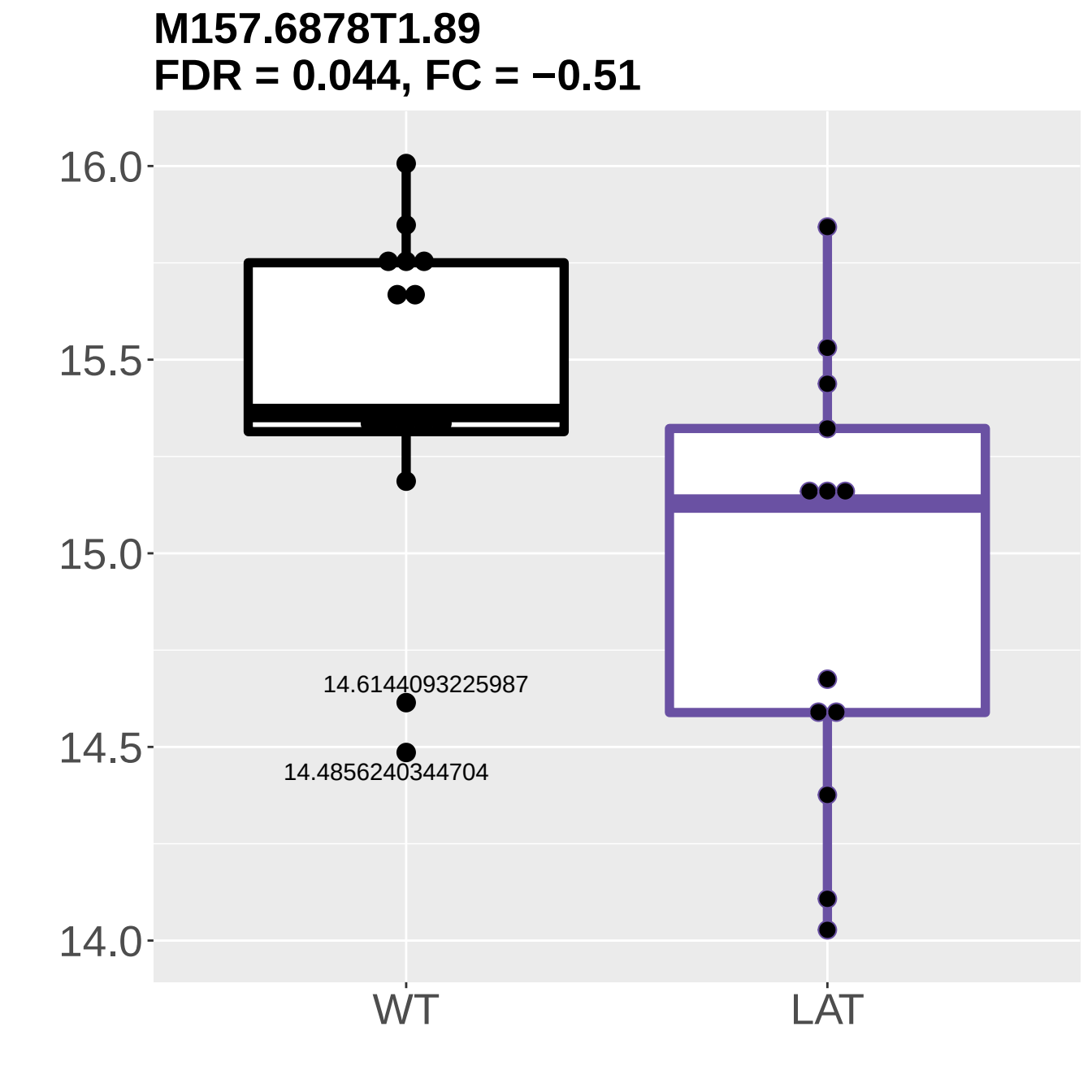
M157.6878T1.89
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14.5
14.0
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WT
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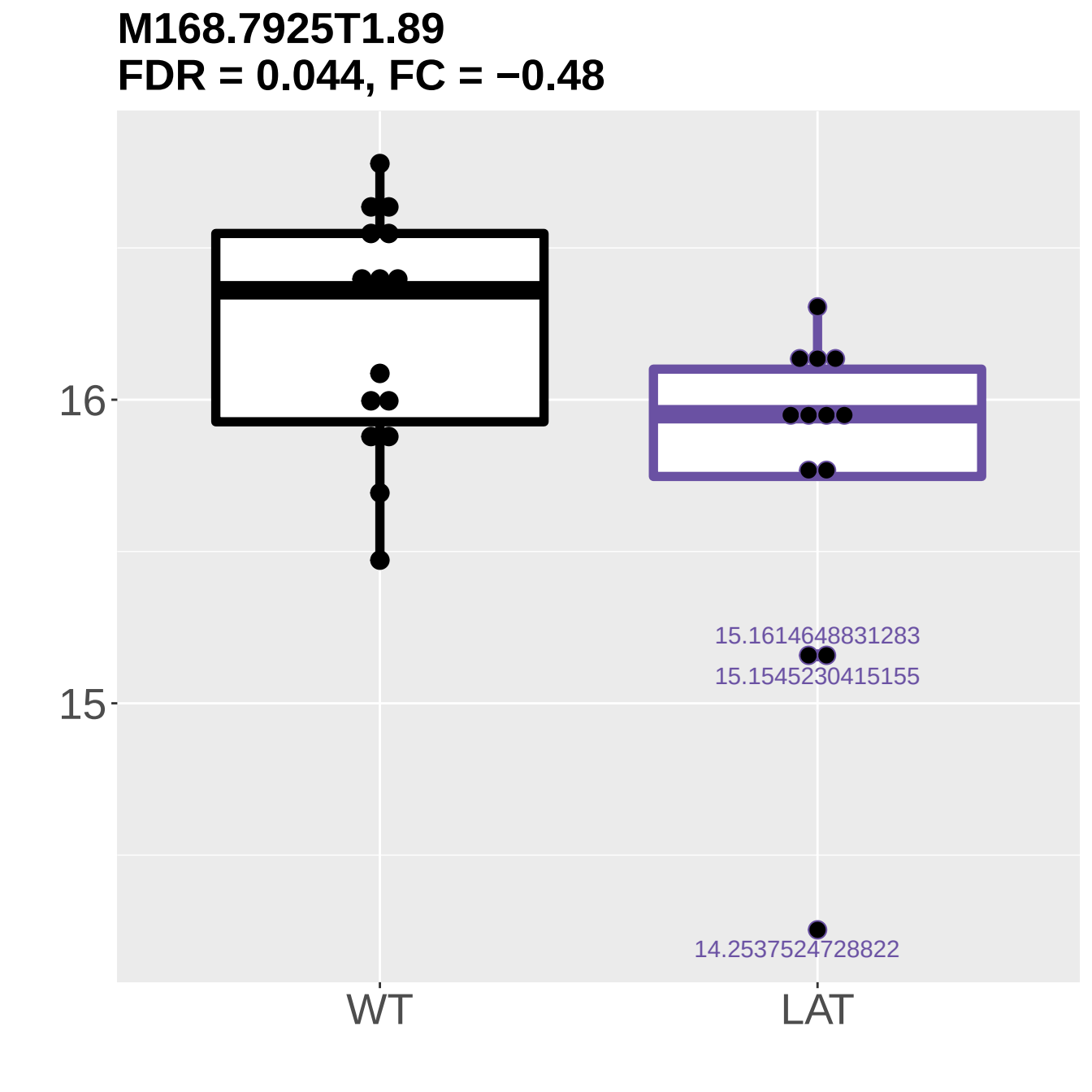
M168.7925T1.89
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15
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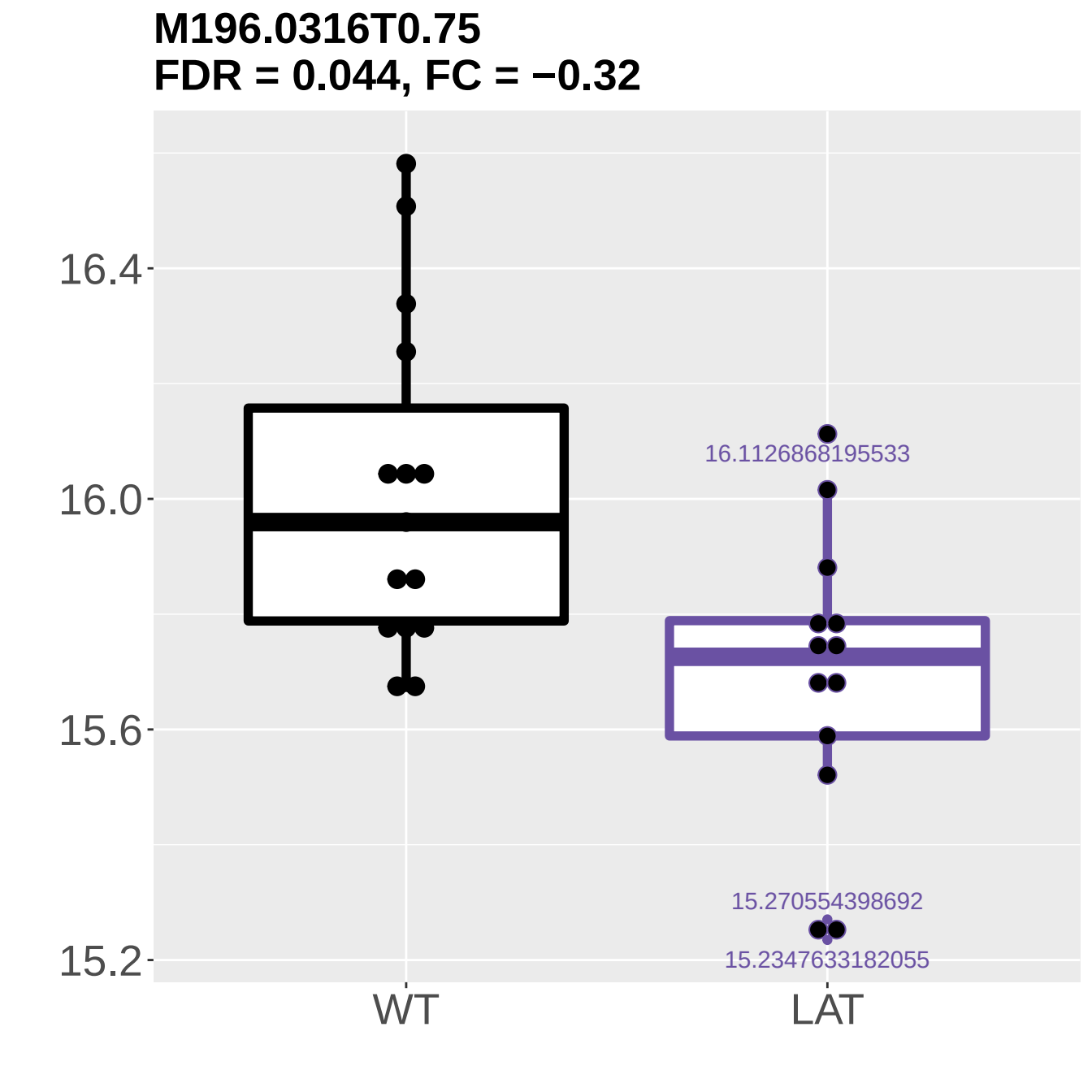
WT
LAT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FDR = 0.044, FC = −0.32
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15.6
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WT
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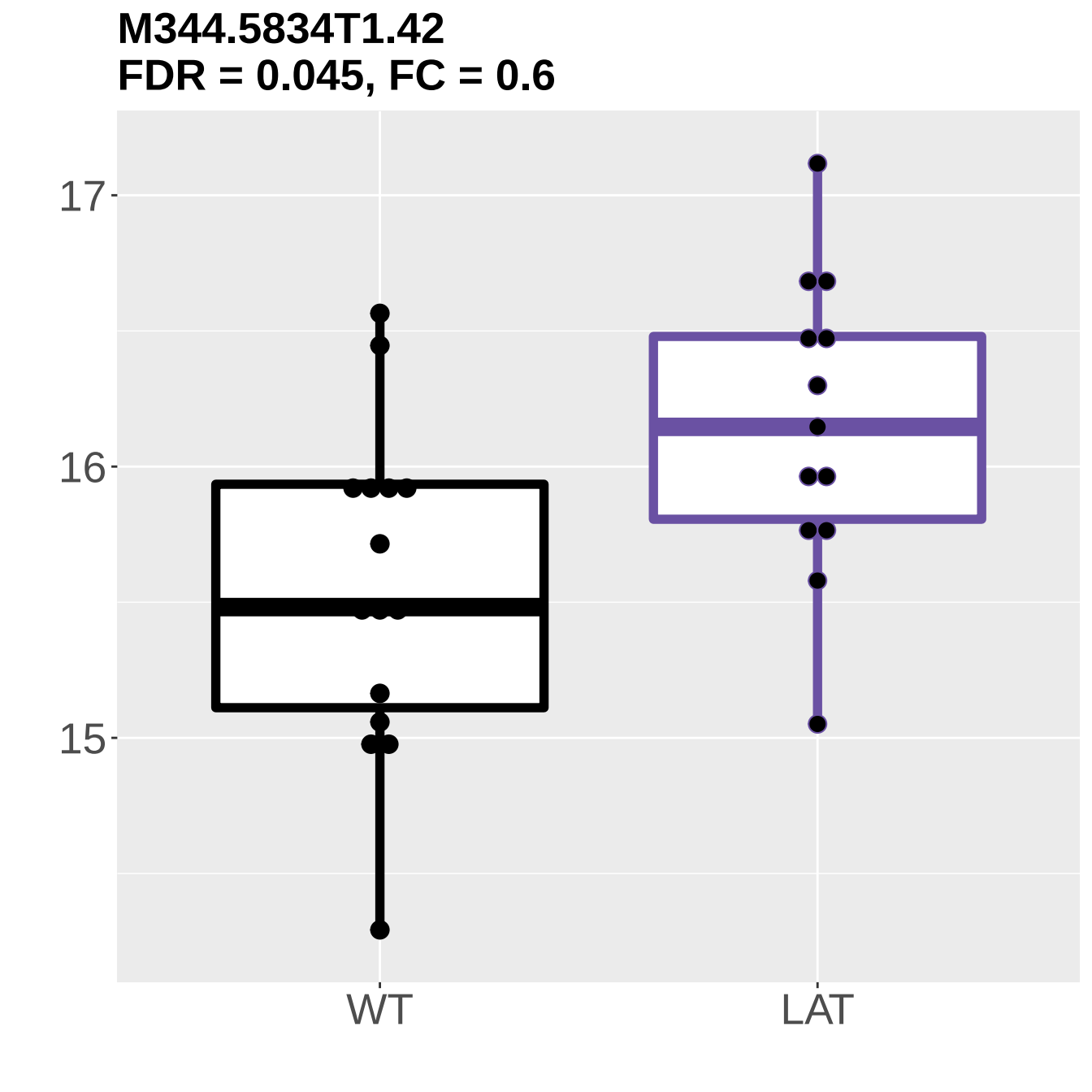
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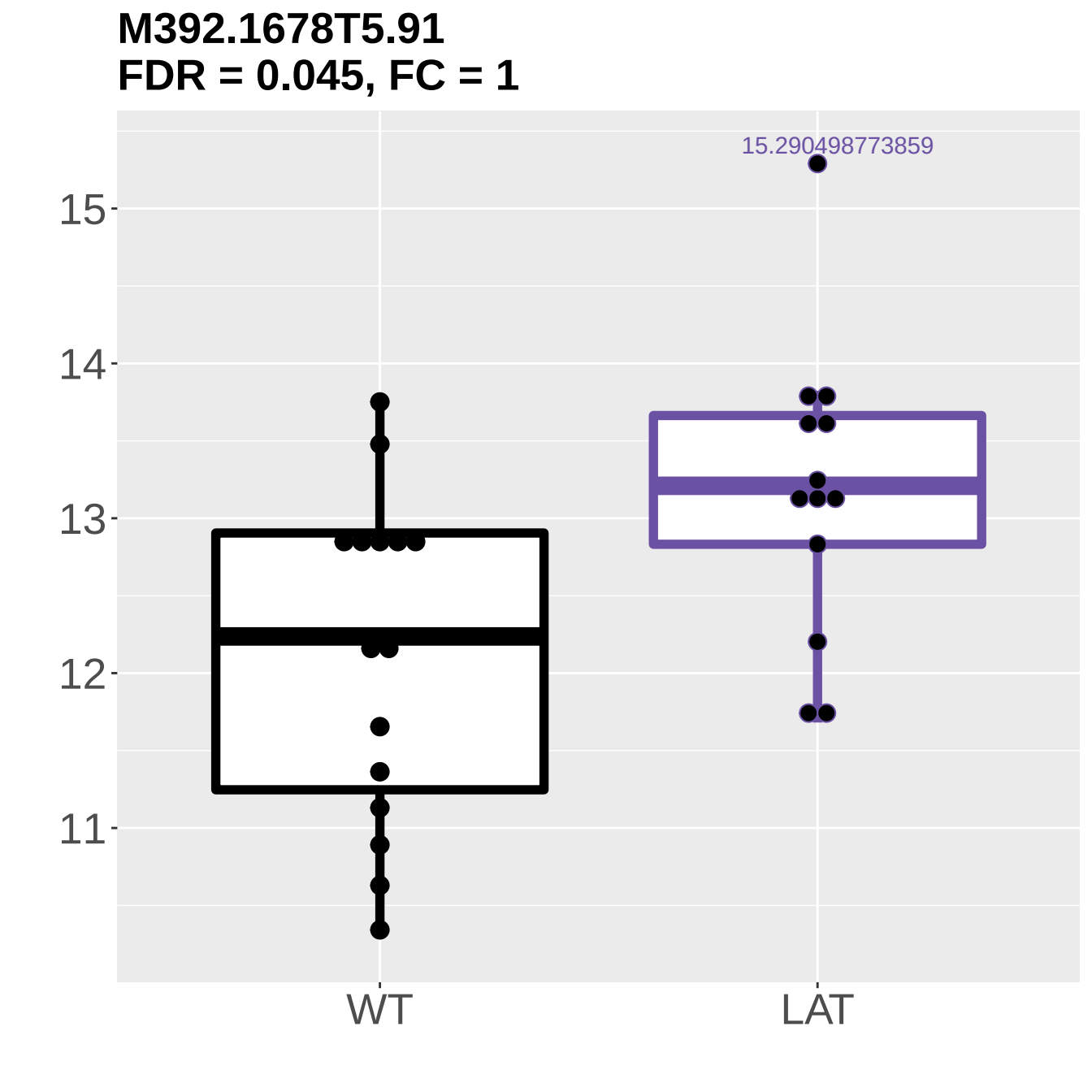
16
15
WT
LAT


M392.1678T5.91
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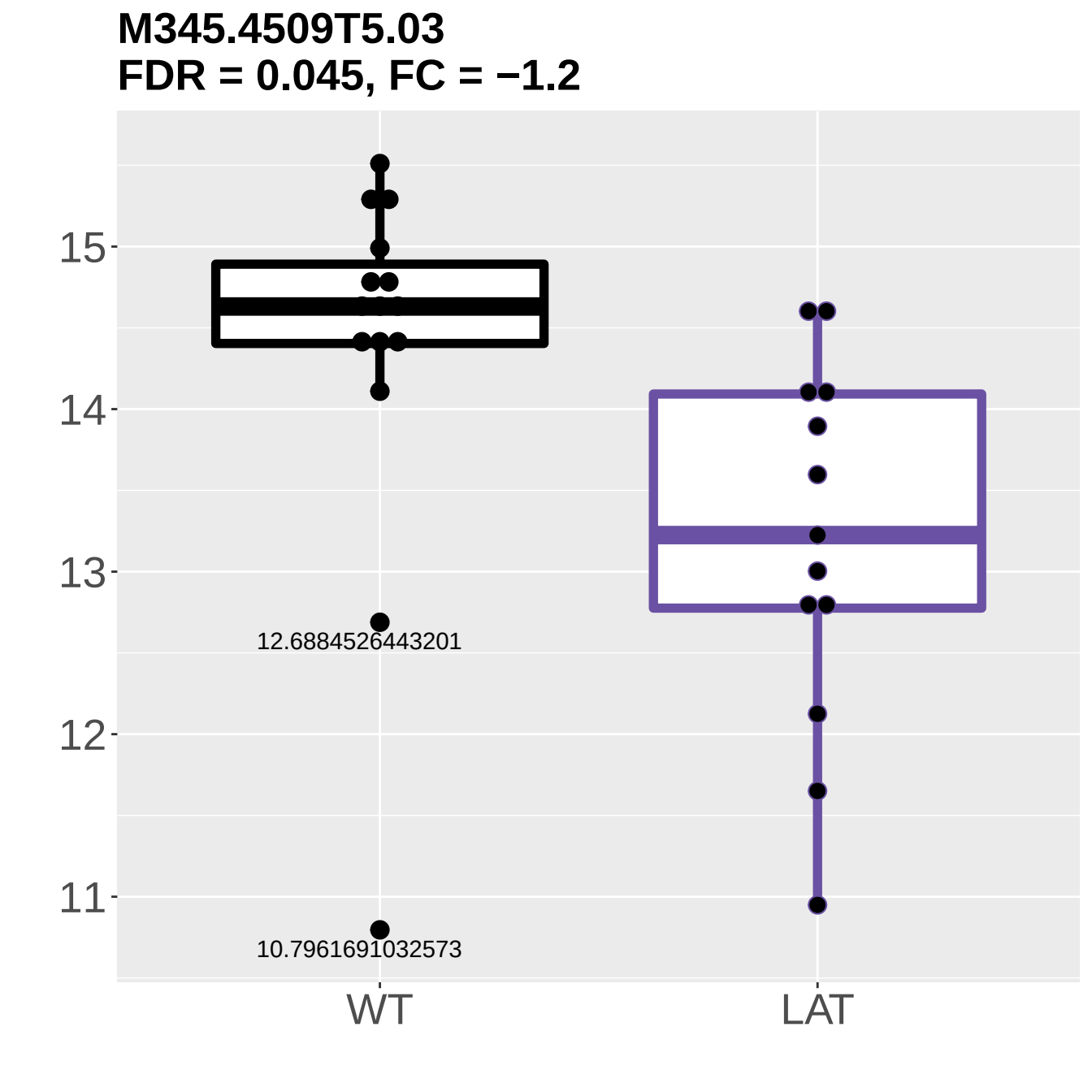
15.290498773859
15
14
13
12
11
WT
LAT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12
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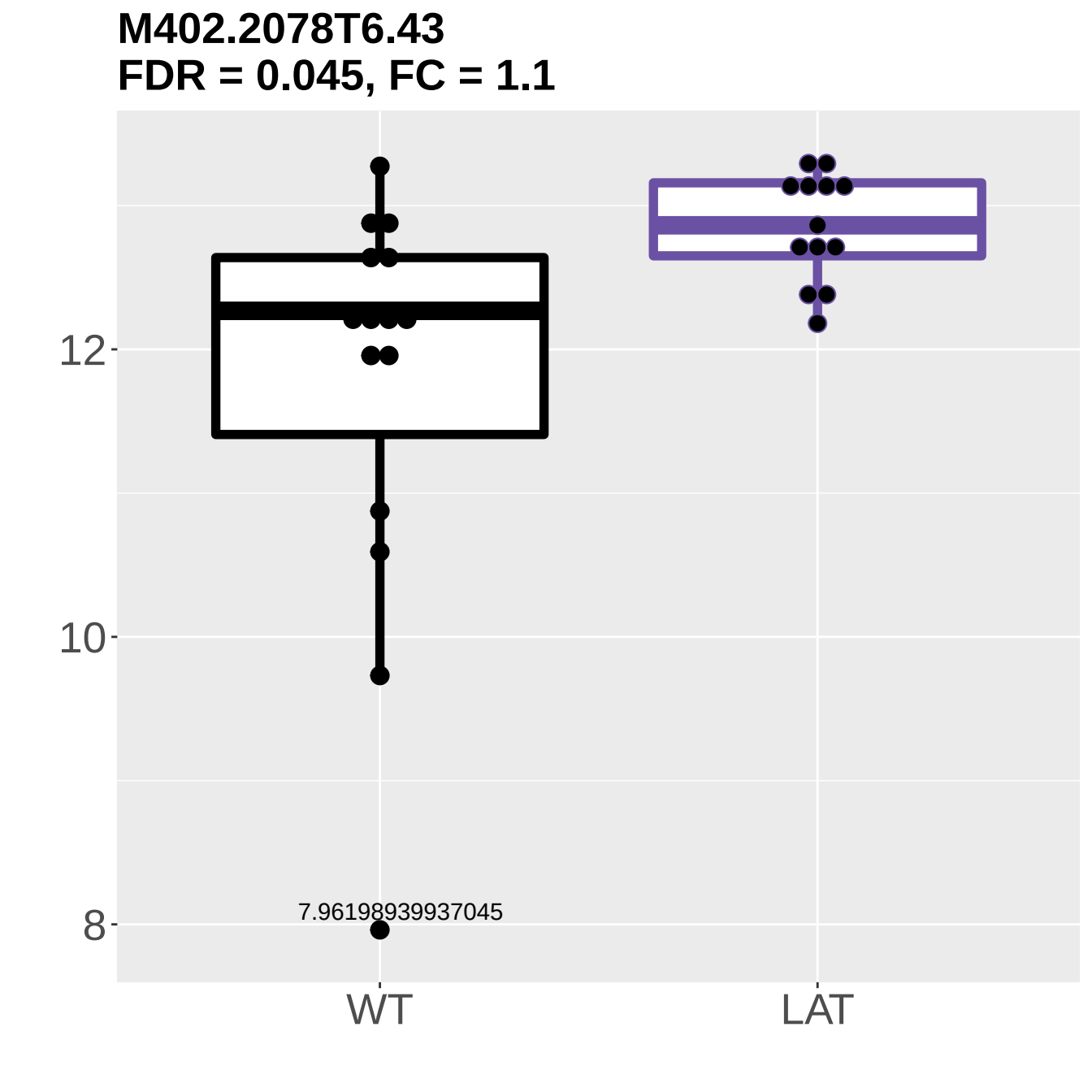
WT
LAT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10
8
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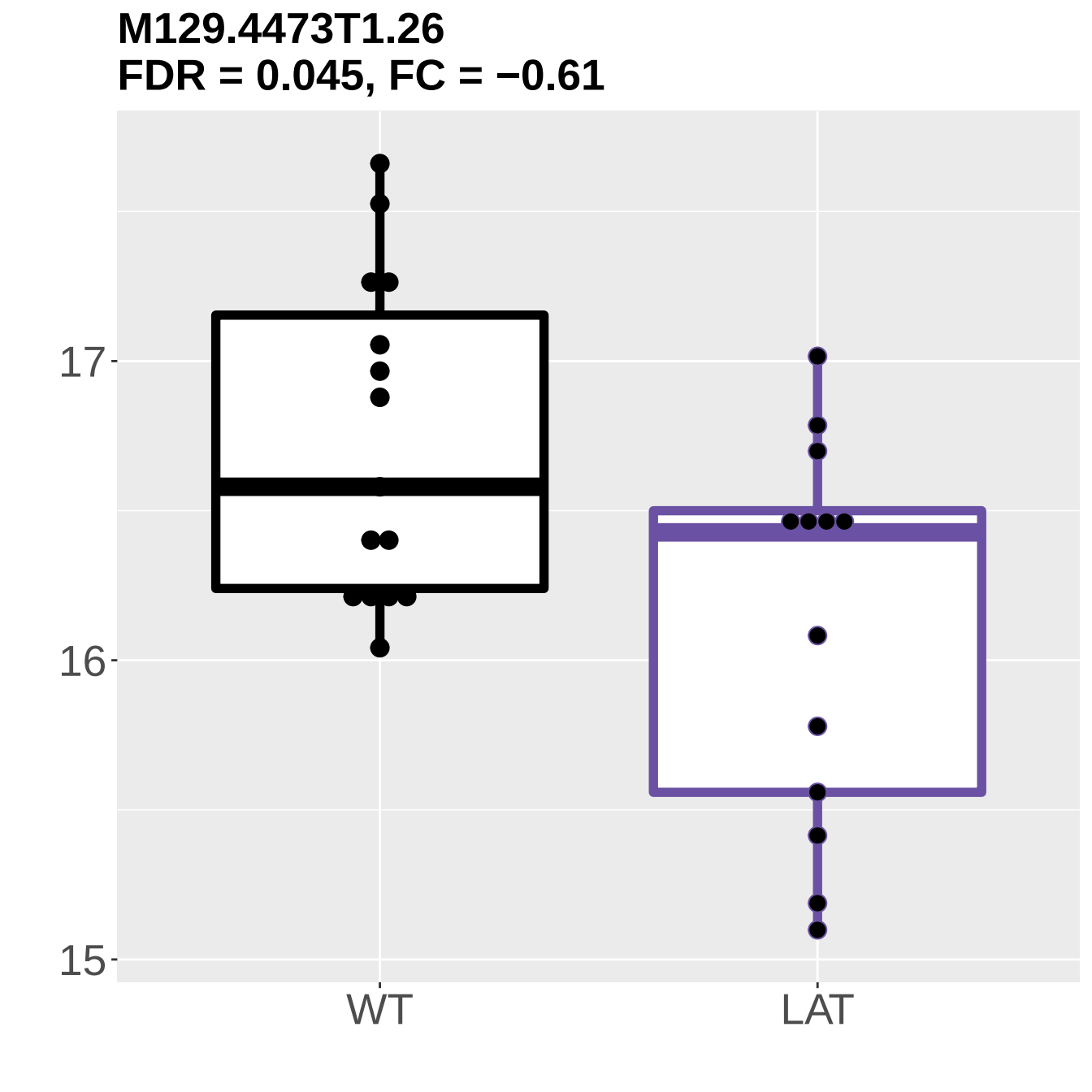
WT
LAT


M129.4473T1.26
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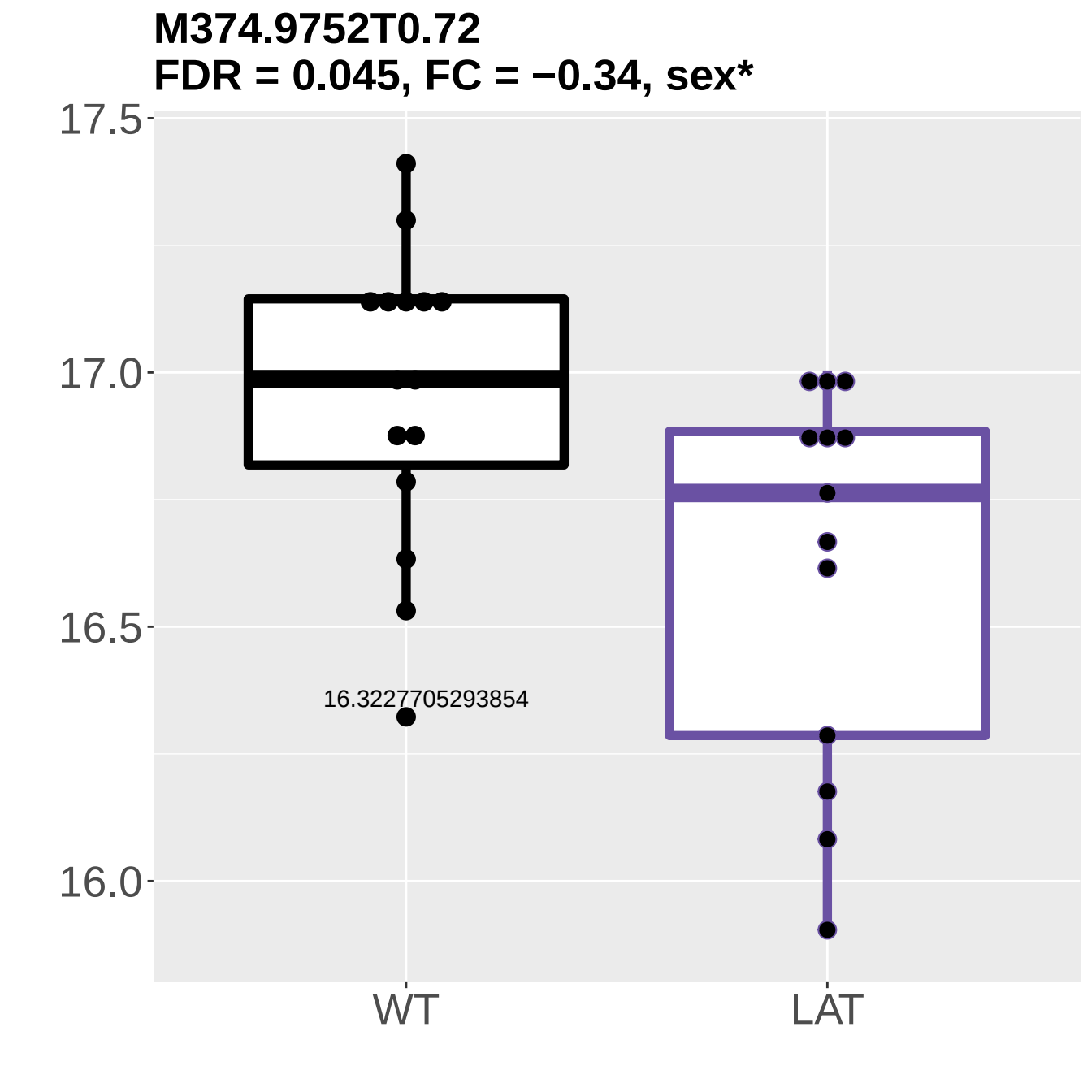
16
15
WT
LAT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16.5
16.0
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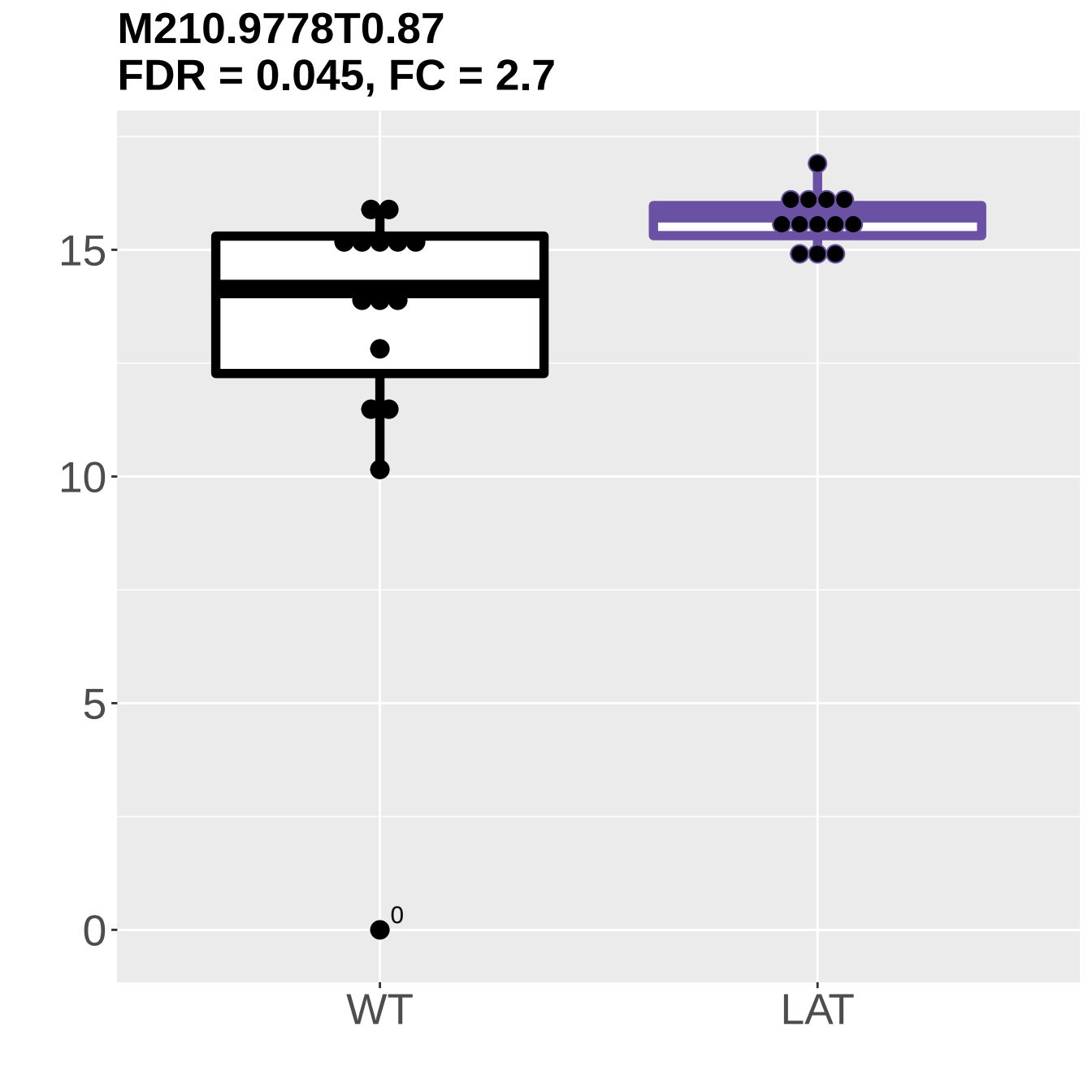
WT
LAT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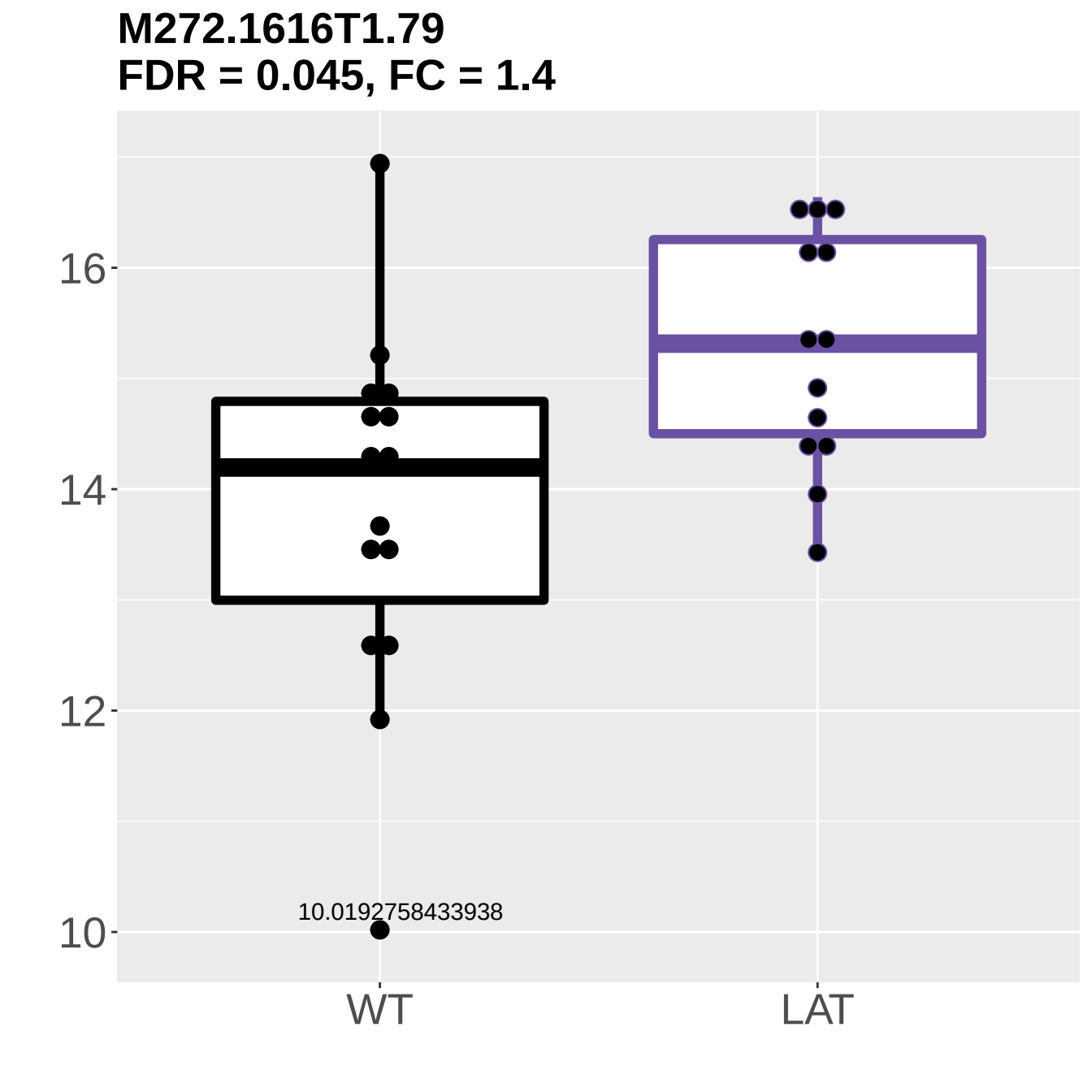
10
5
0
0
WT
LAT


M272.1616T1.79
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14
12
10
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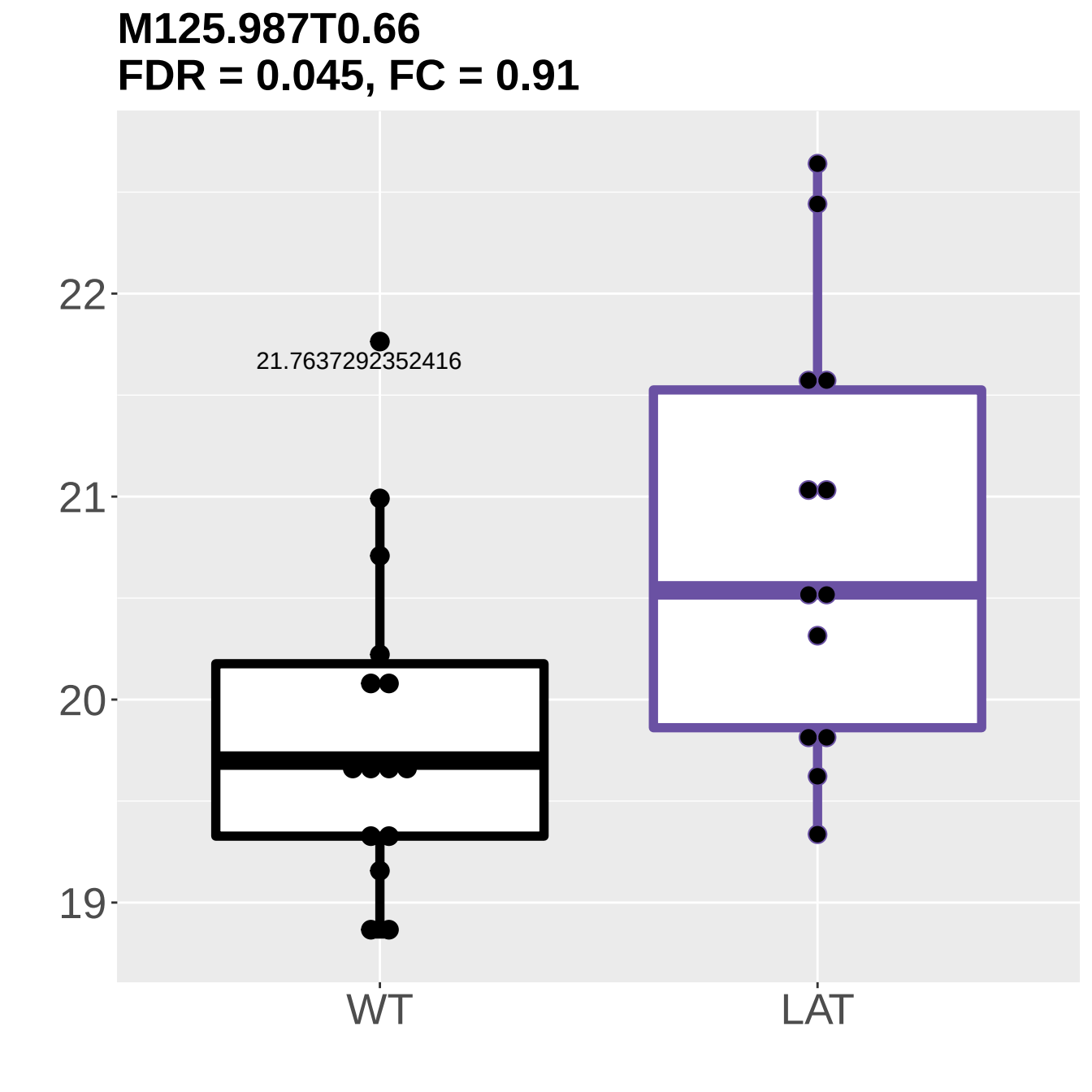
WT
LAT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22
21
20
19
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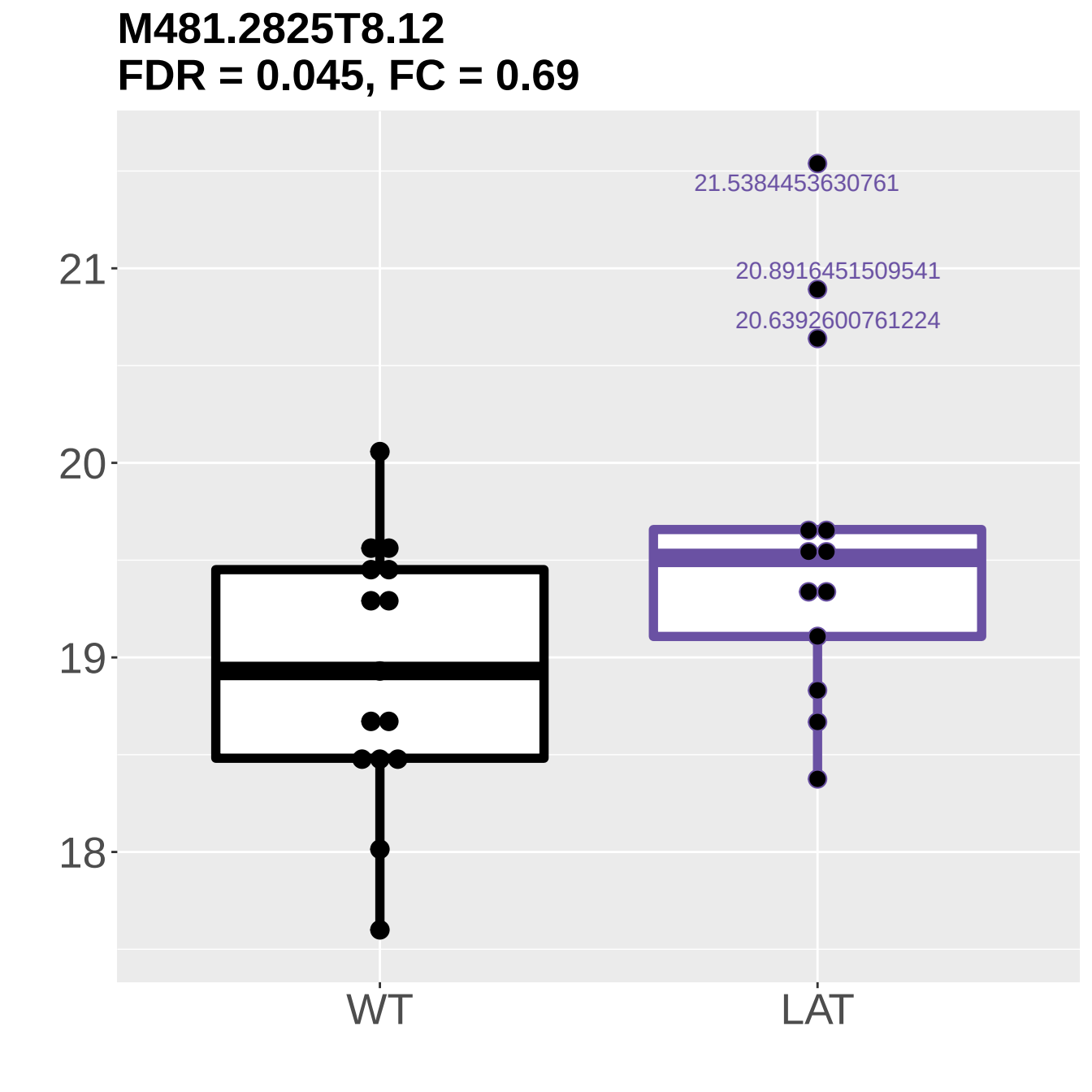
WT
LAT


M481.2825T8.12
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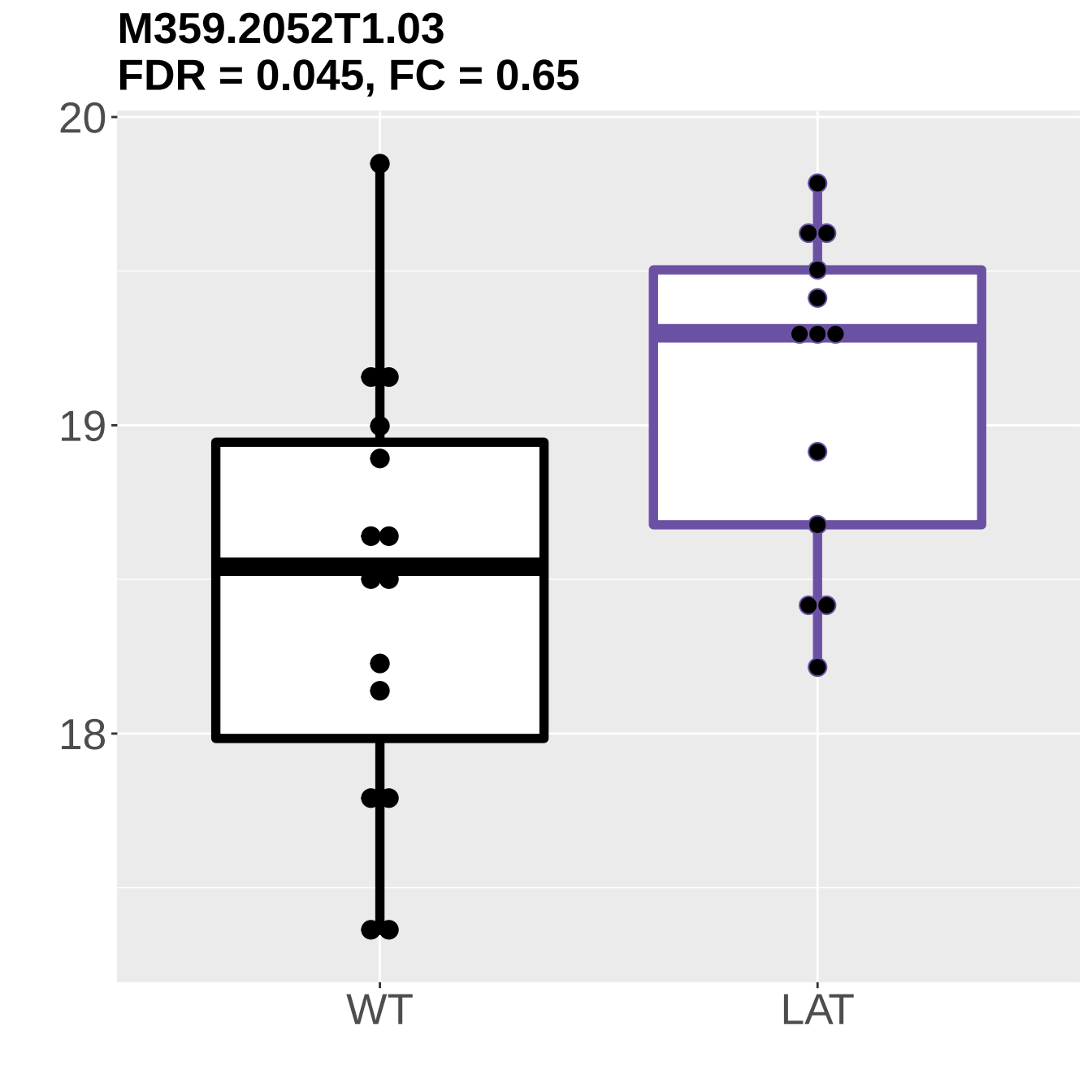
20
19
18
WT
LAT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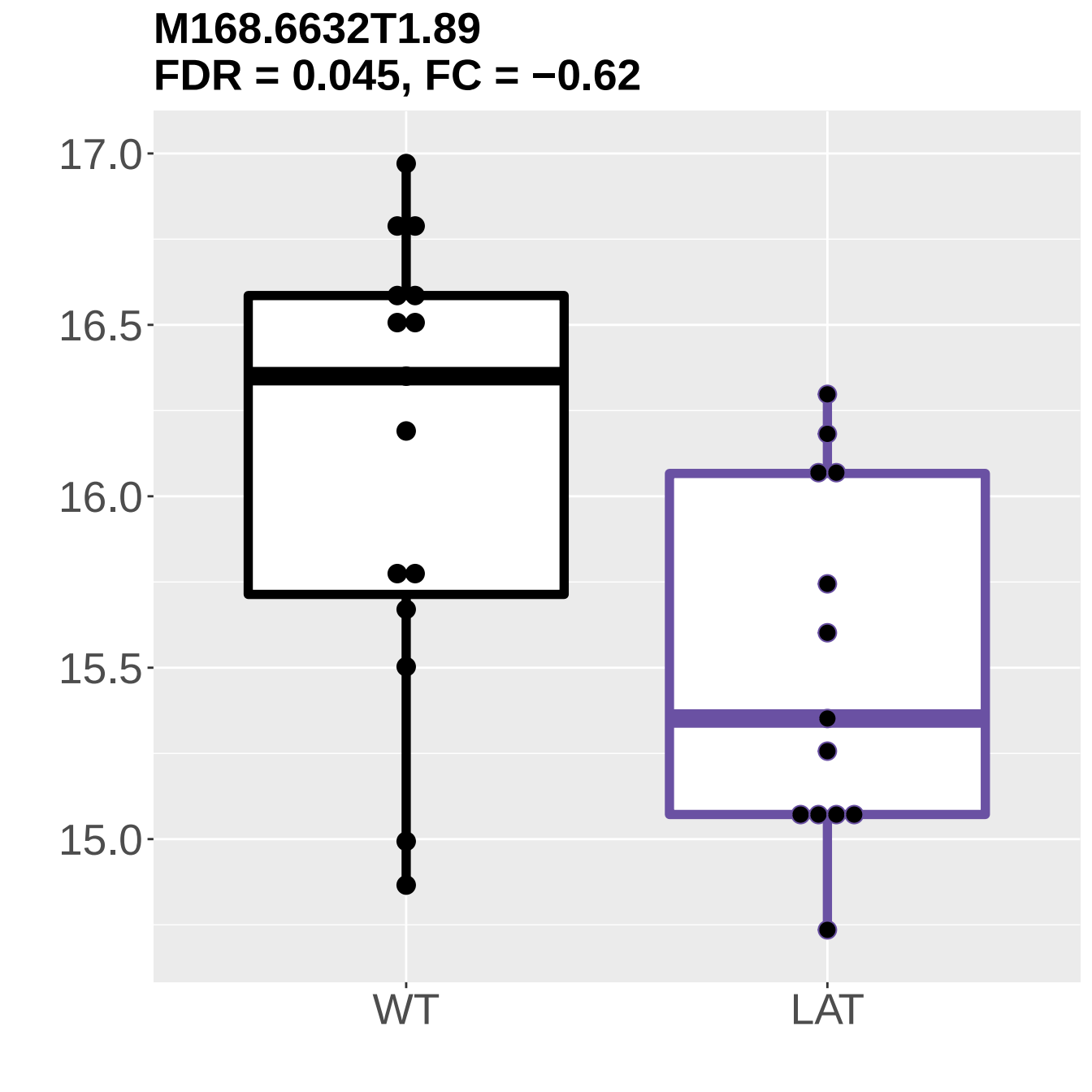
FDR = 0.045, FC = 0.65
20
19
18
WT
LAT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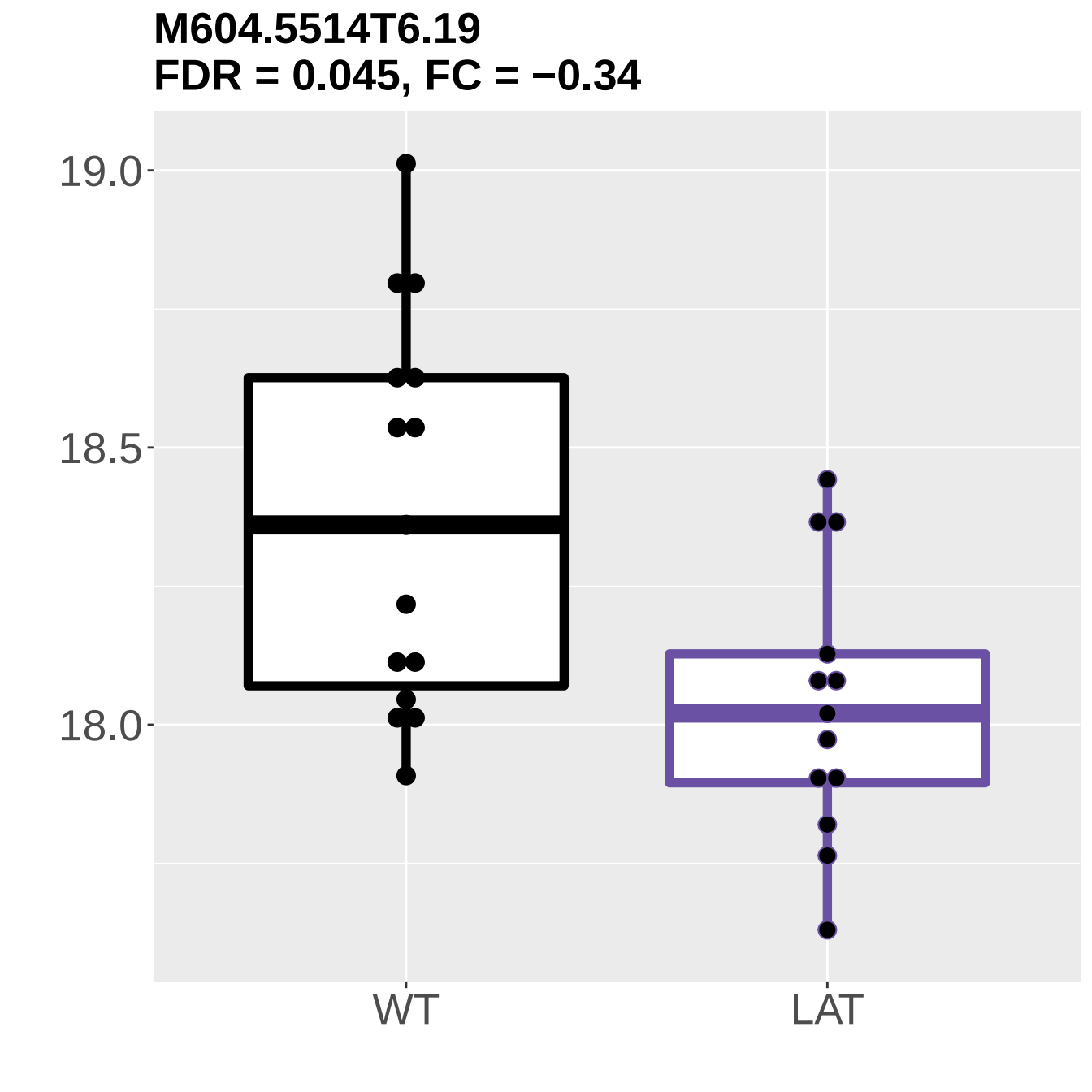
15.5
15.0
WT
LAT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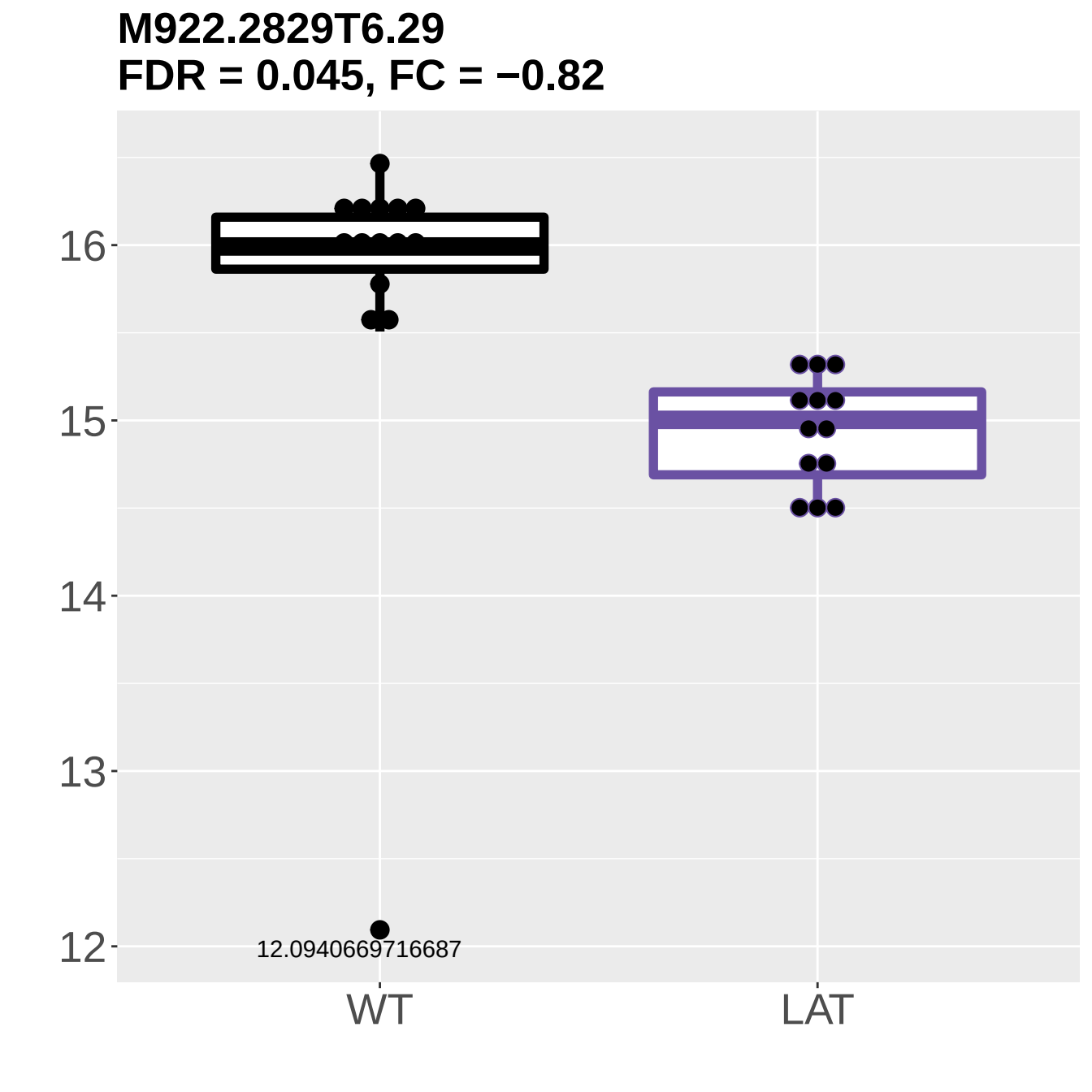
WT
LAT


M922.2829T6.29
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14
13
12
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WT
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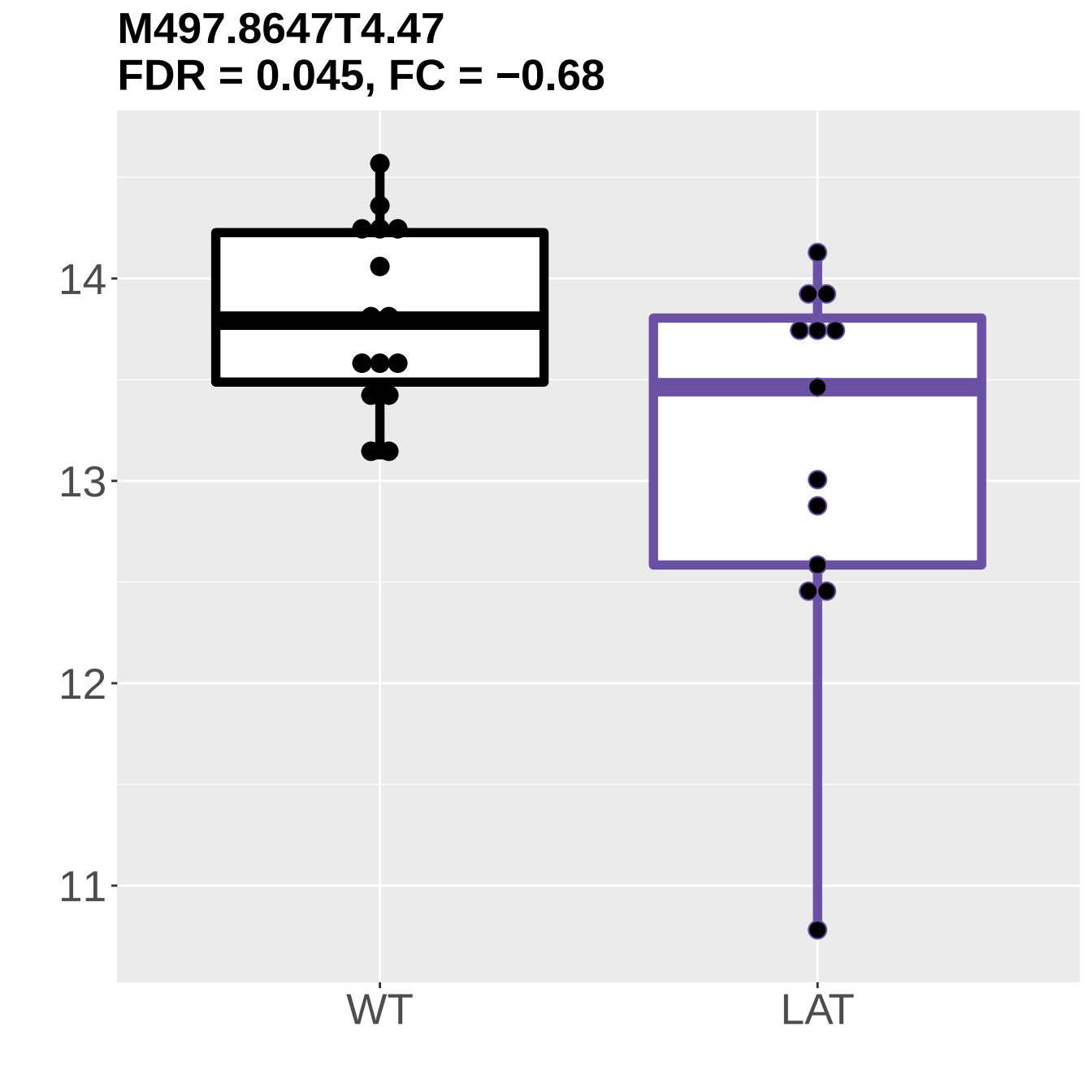
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FDR = 0.045, FC = −0.68
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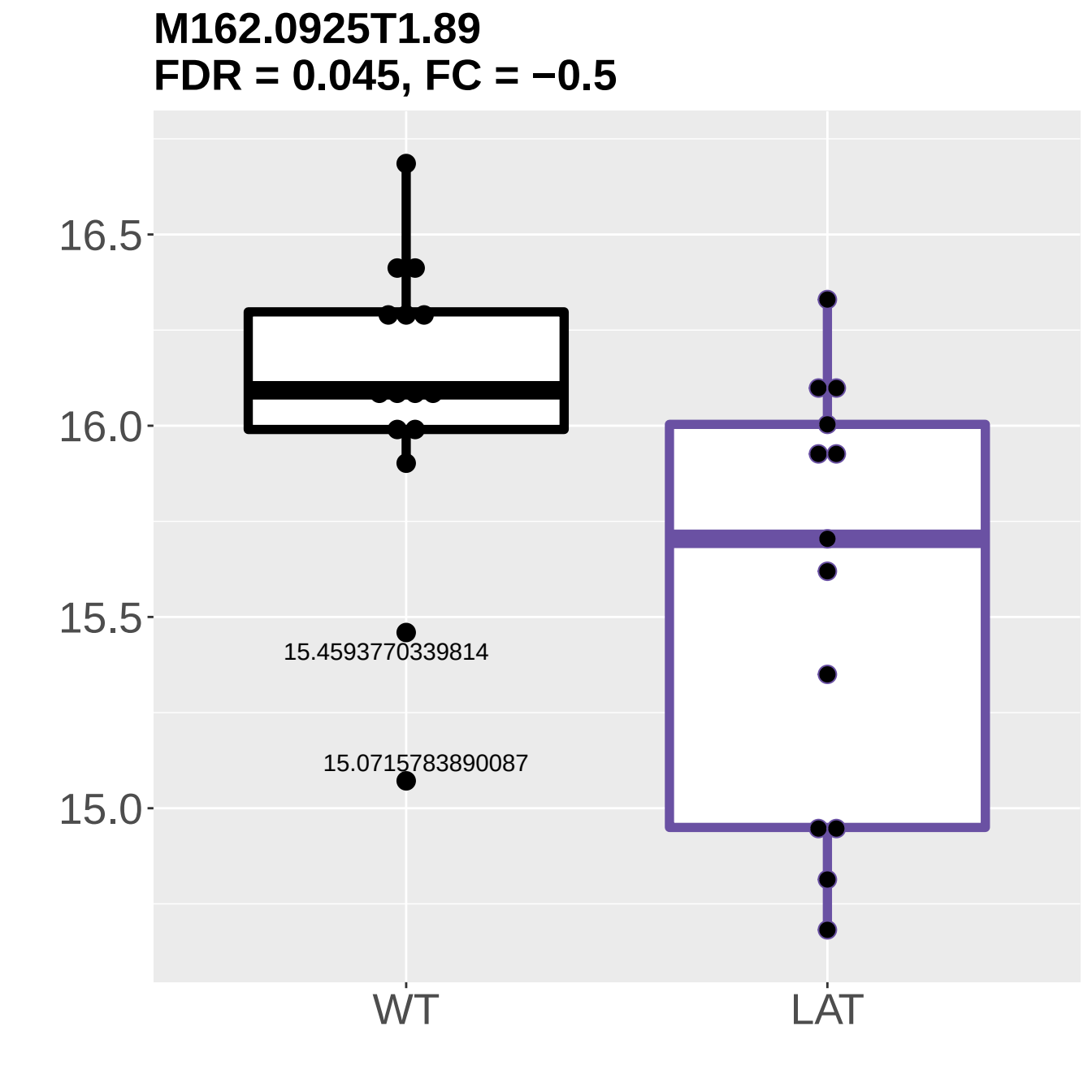
13
12
11
WT
LAT


M162.0925T1.89
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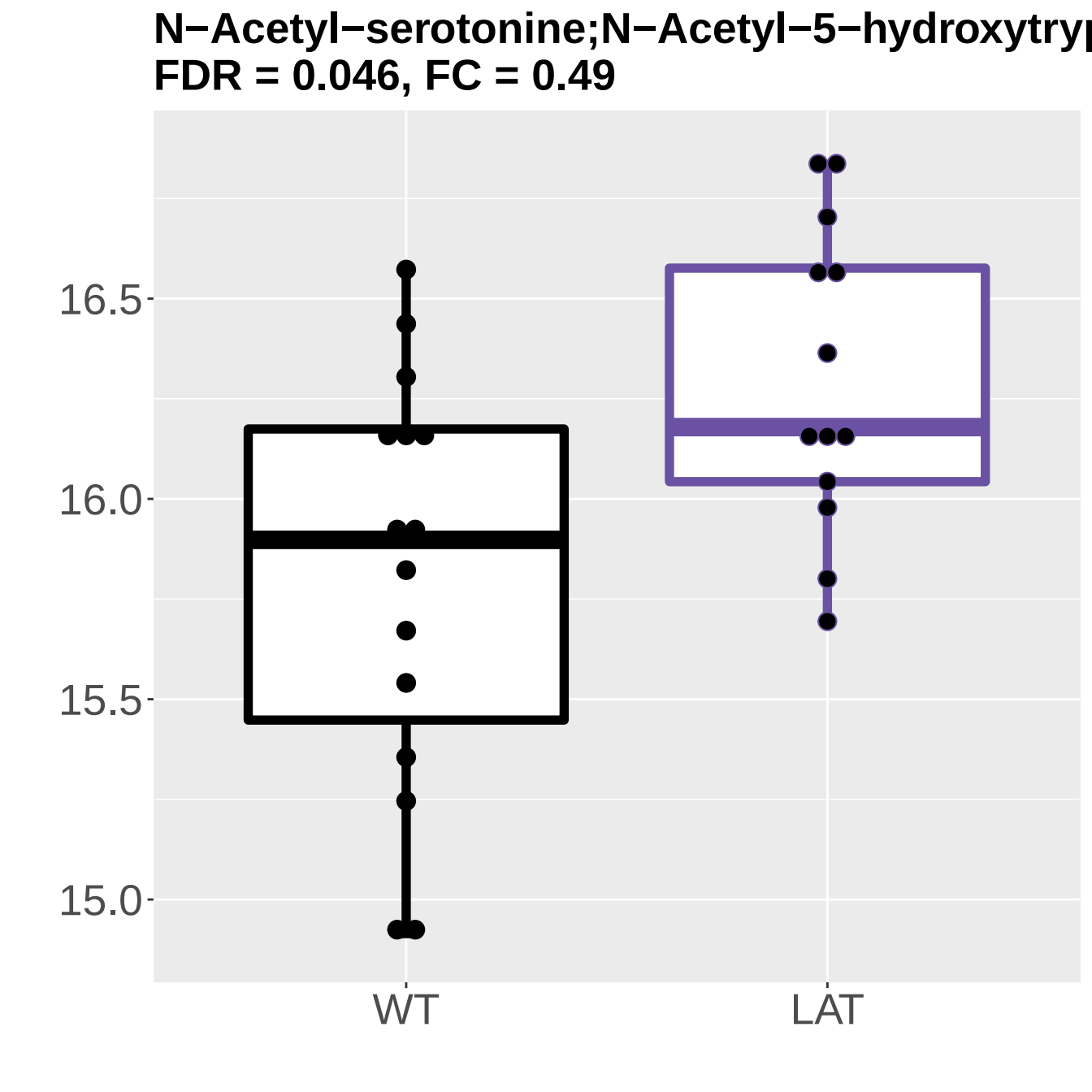
WT
LAT


N−Acetyl−serotonine;N−Acetyl−5−hydroxytryp
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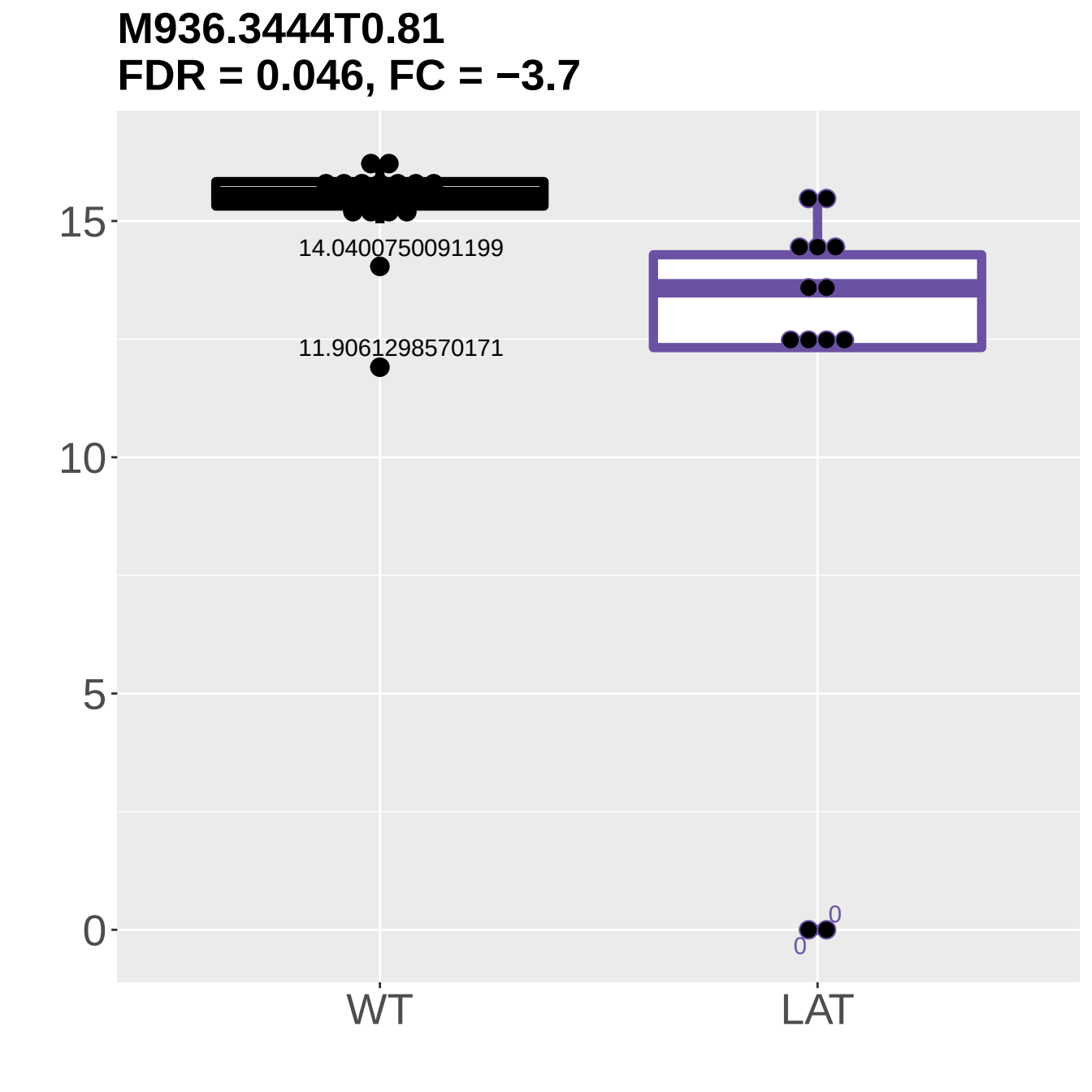
15.0
WT
LAT


M936.3444T0.81
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0
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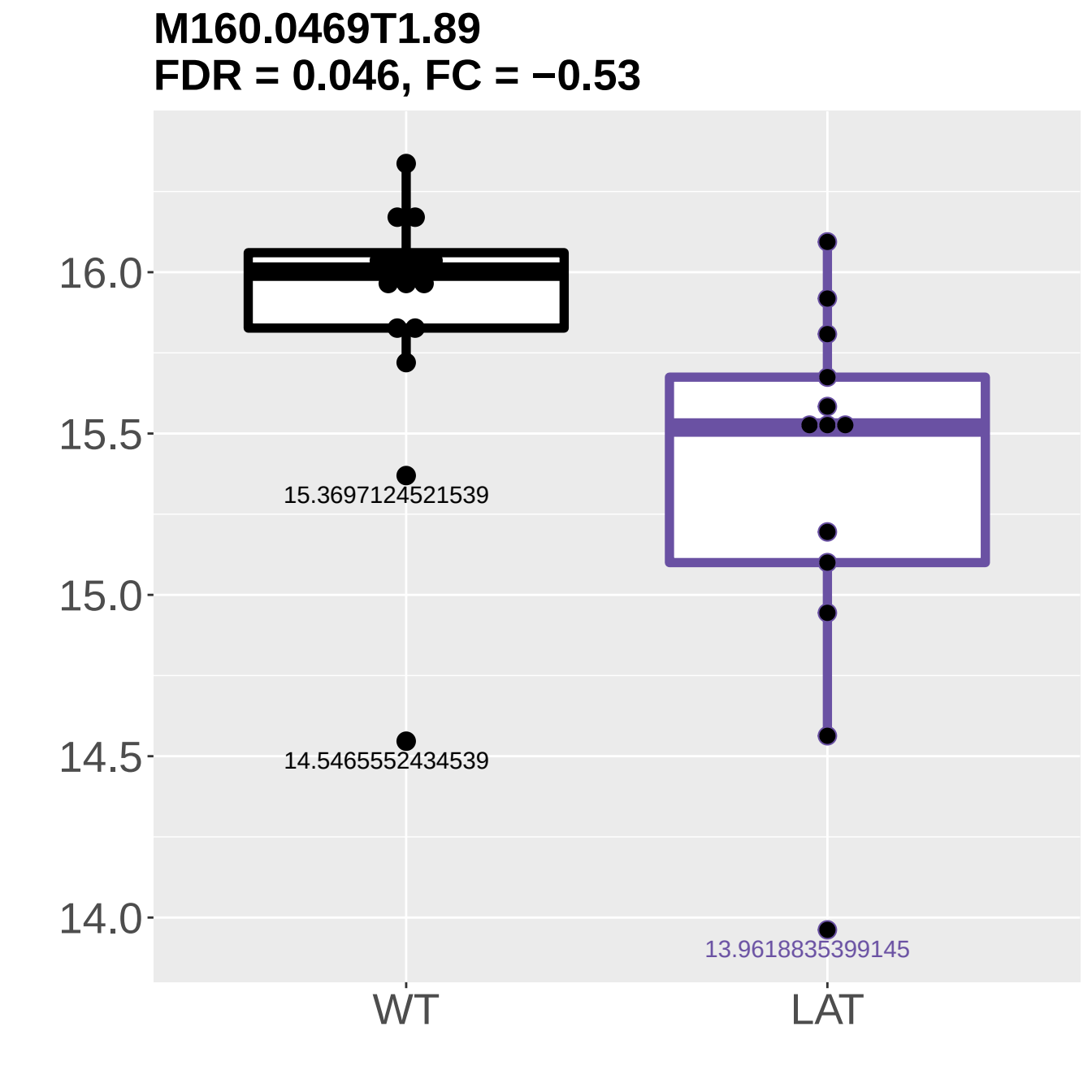
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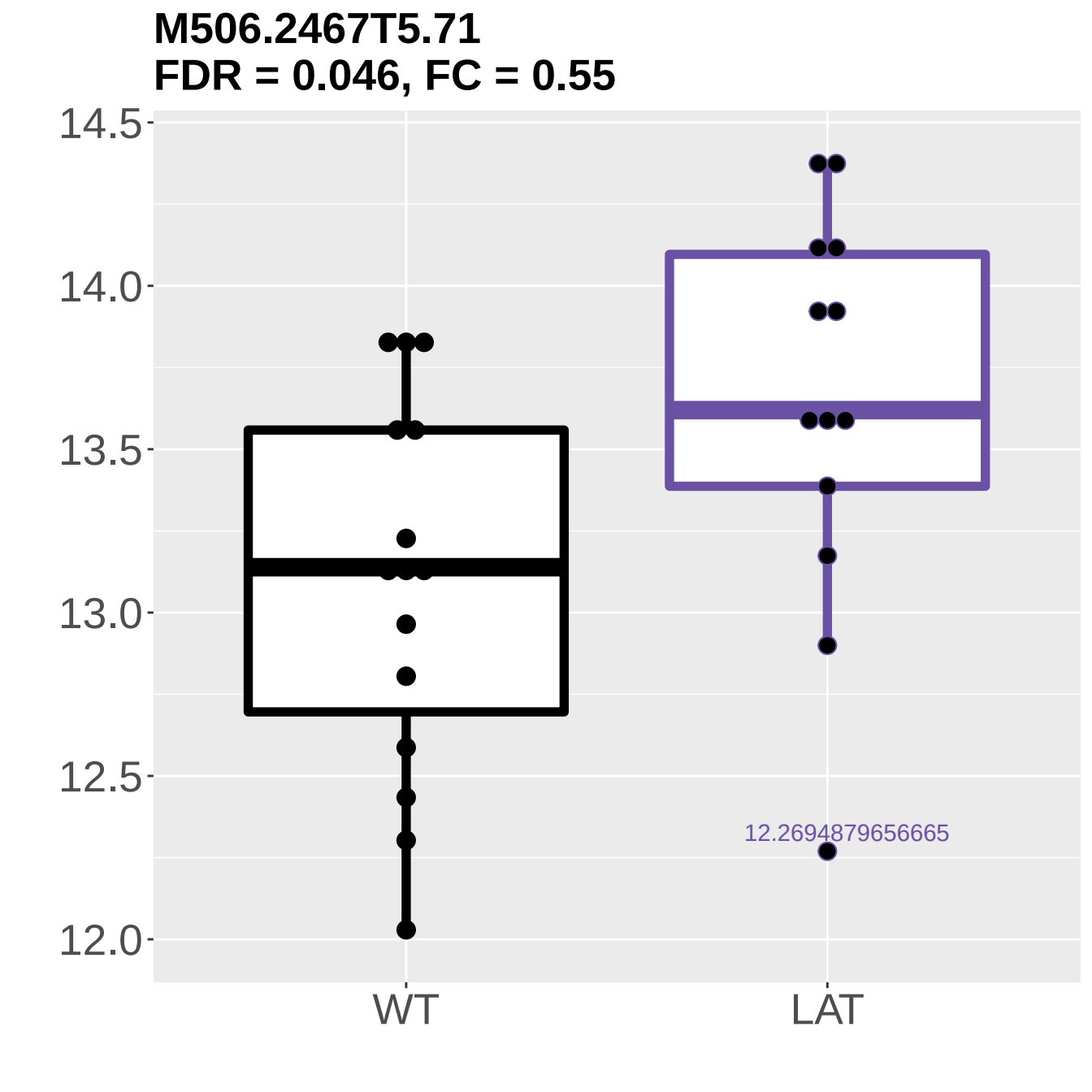
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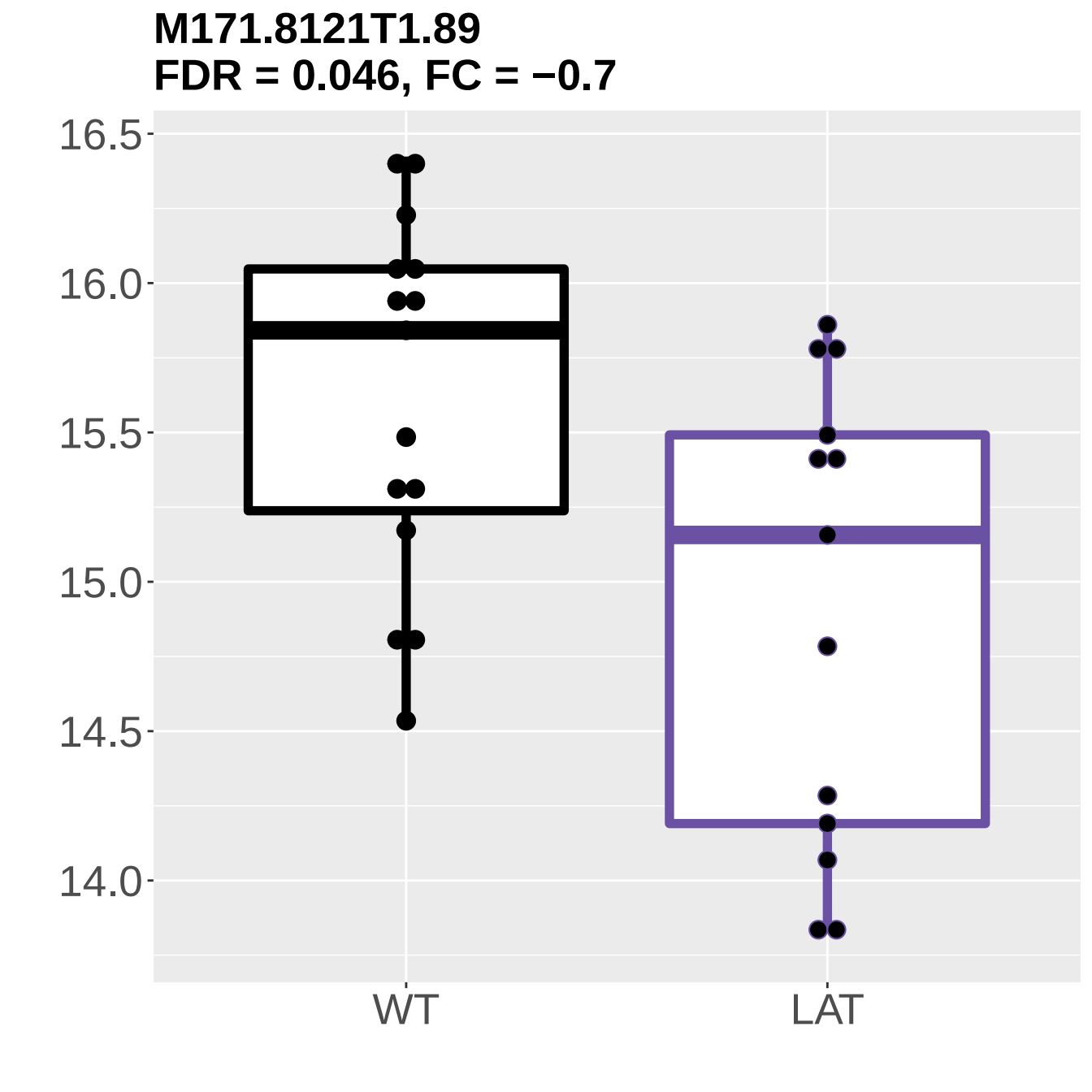
WT
LAT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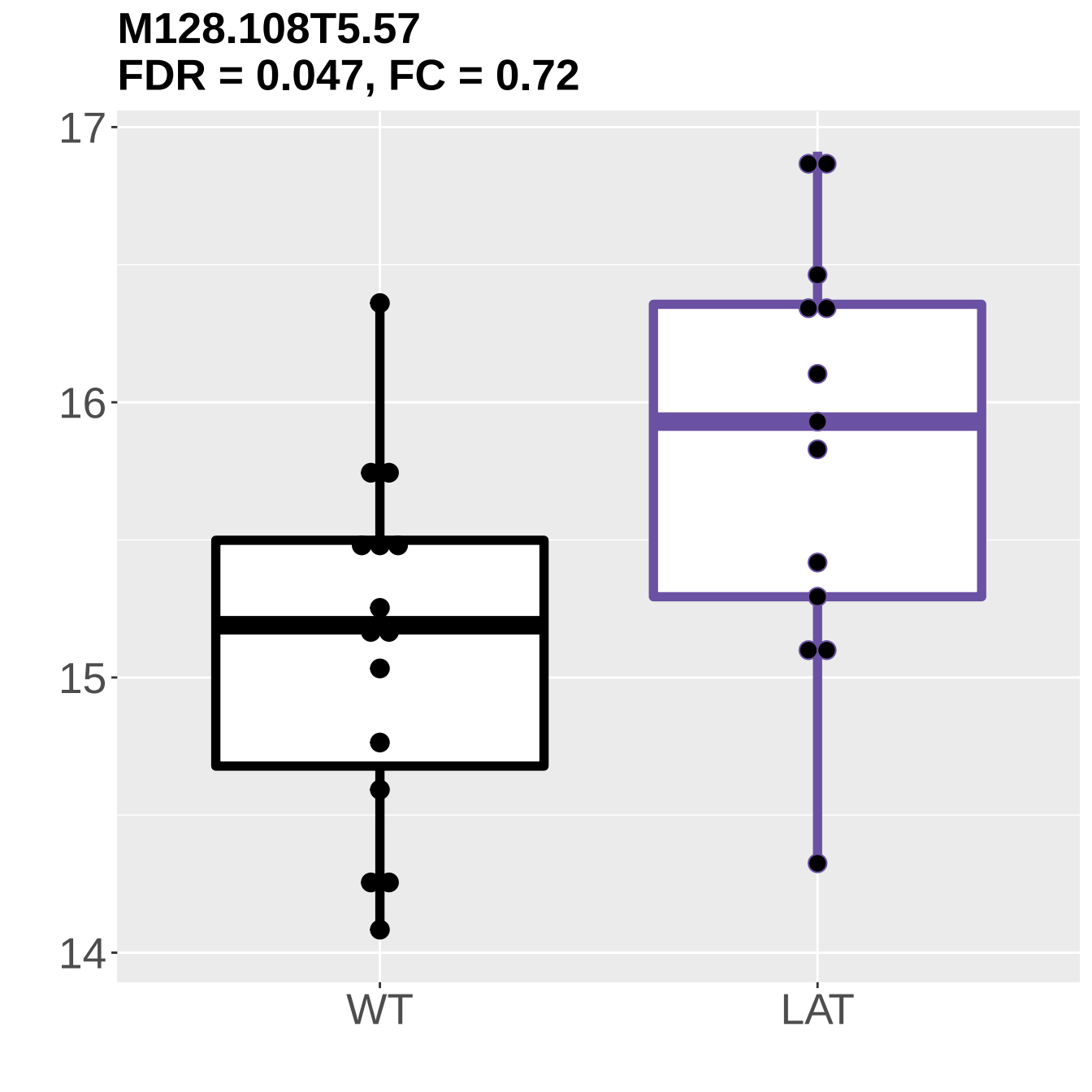
14.0
WT
LAT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16
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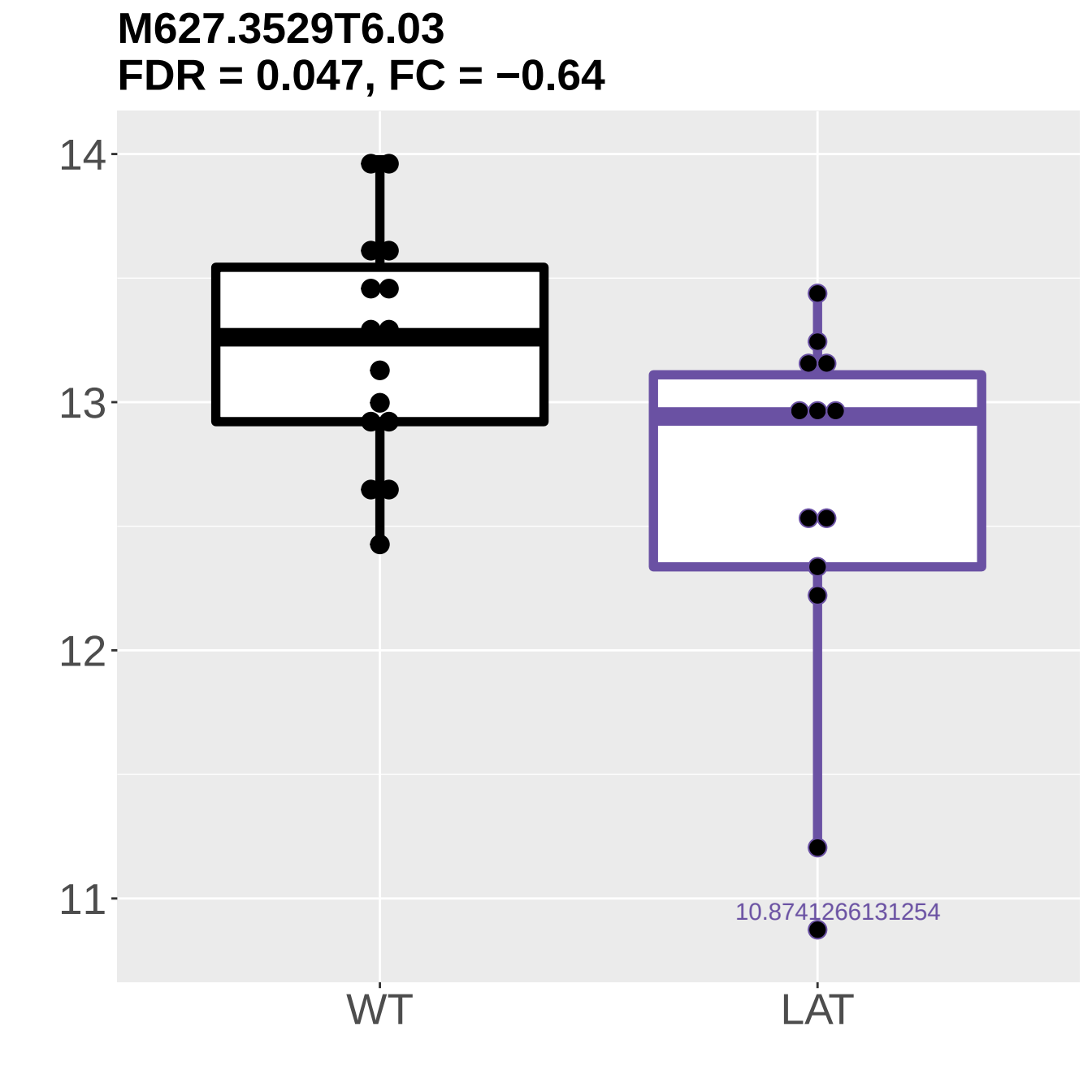
14
WT
LAT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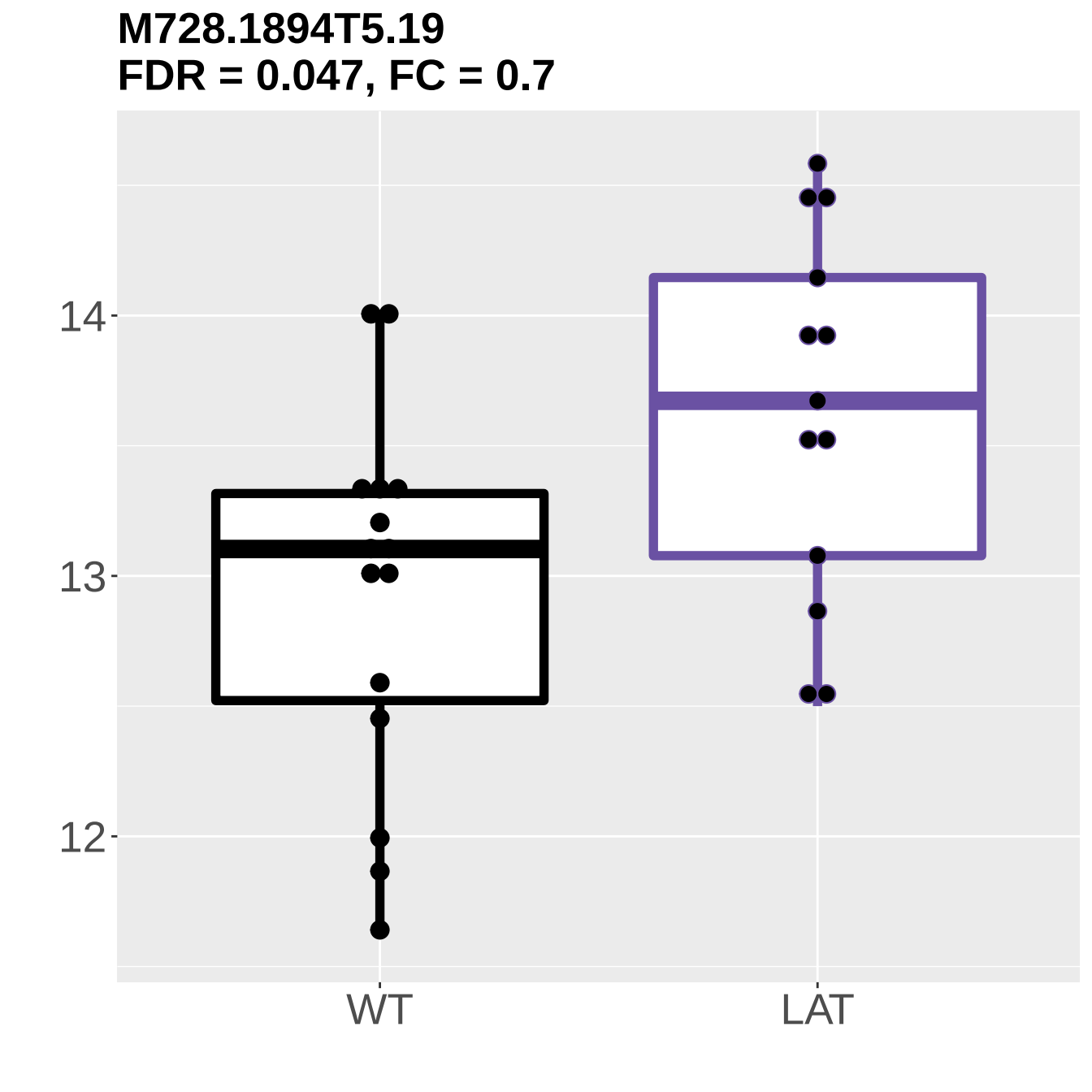
WT
LAT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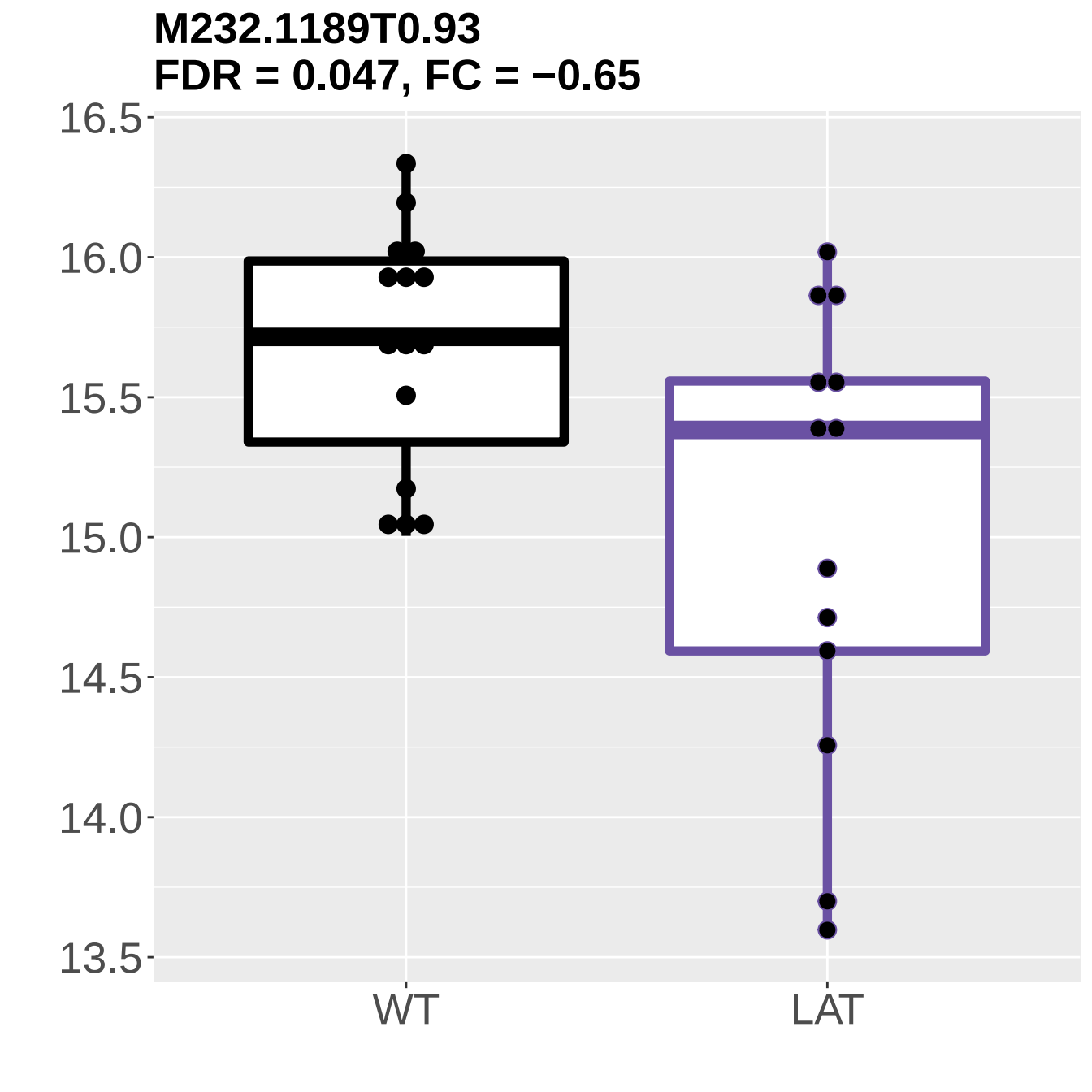
14
13
12
WT
LAT


M232.1189T0.93
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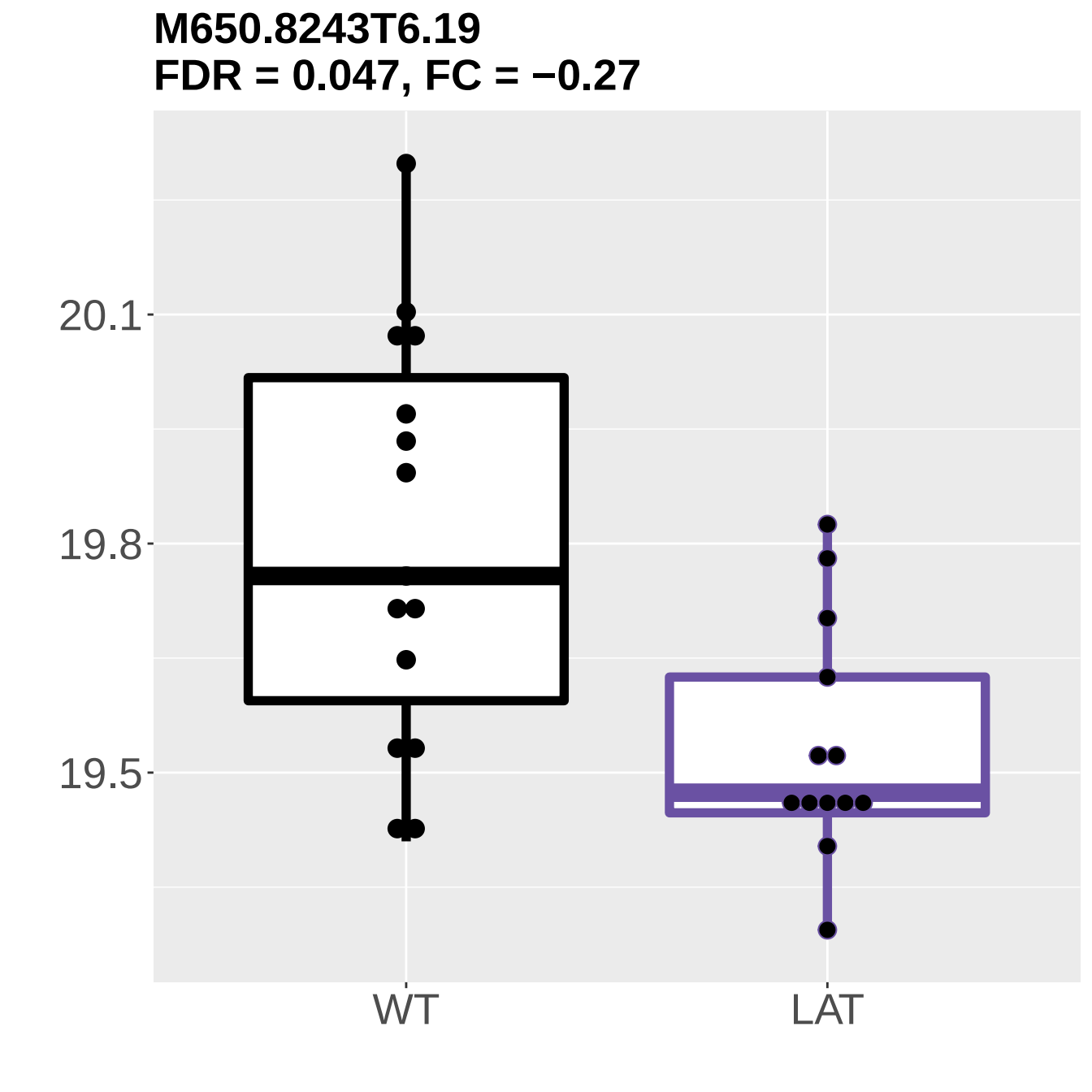
15.5
15.0
14.5
14.0
13.5
WT
LAT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19.8
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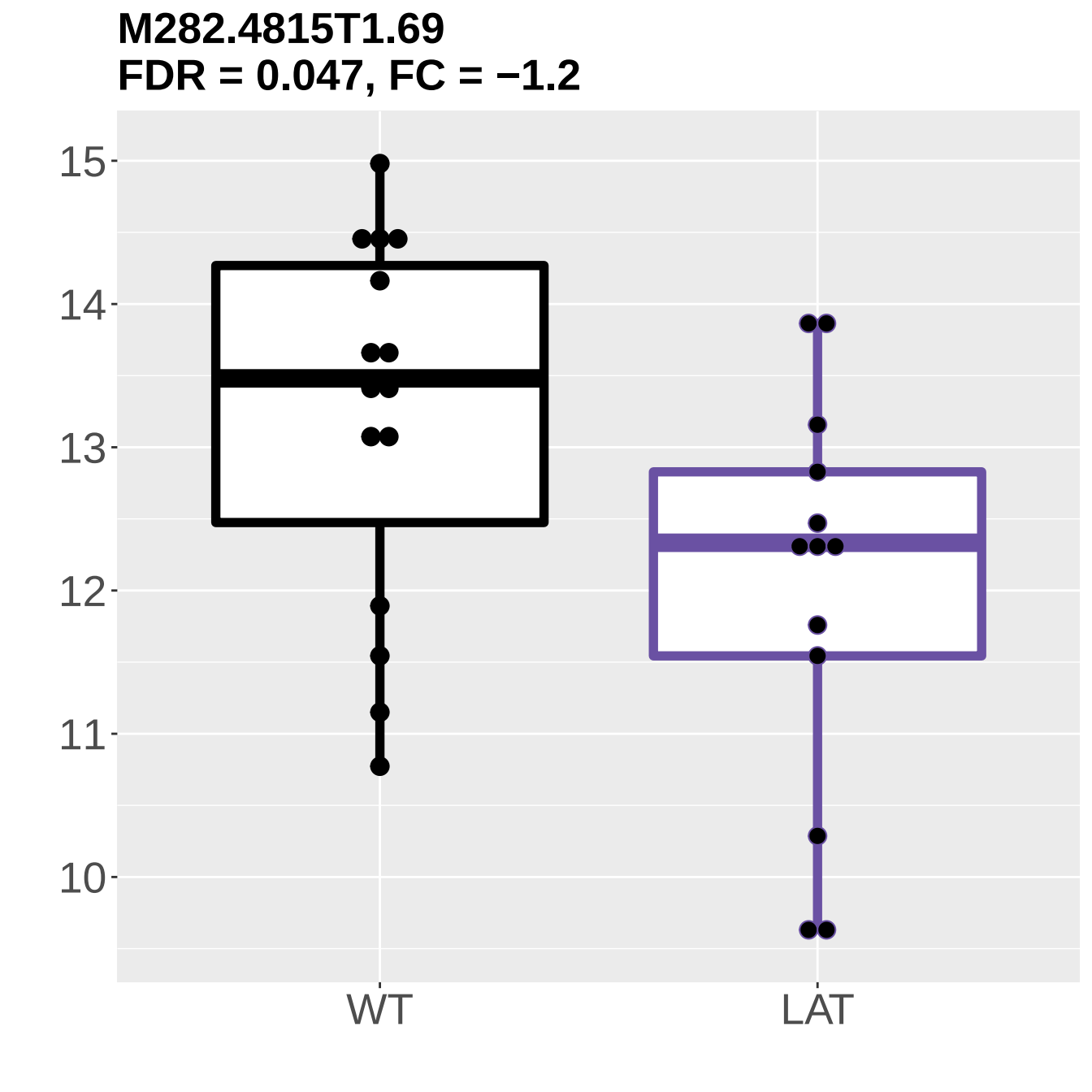
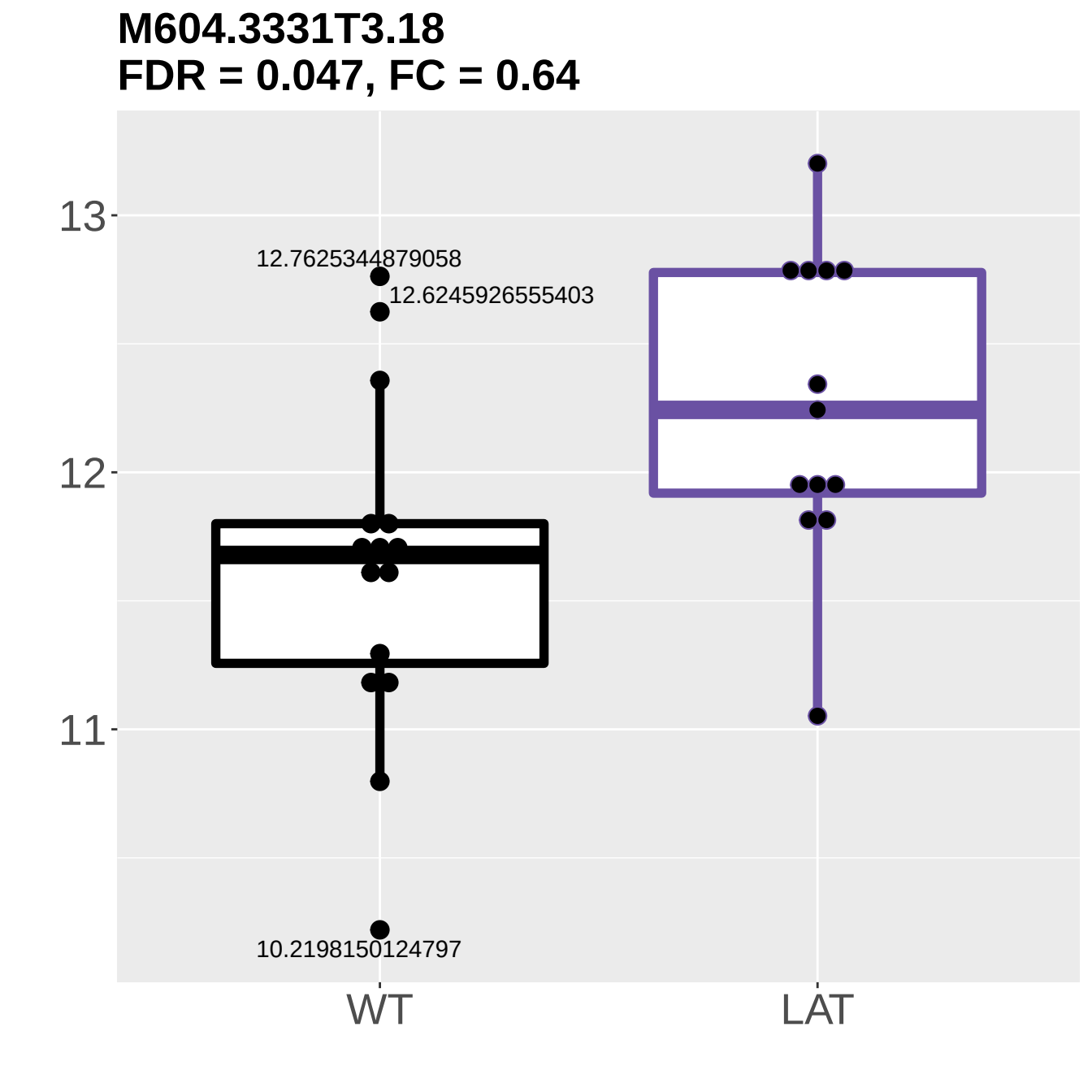
WT
LAT


M282.4815T1.69
FDR = 0.047, FC = −1.2
15
14
13
12
11
10
WT
LAT


M604.3331T3.18
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12
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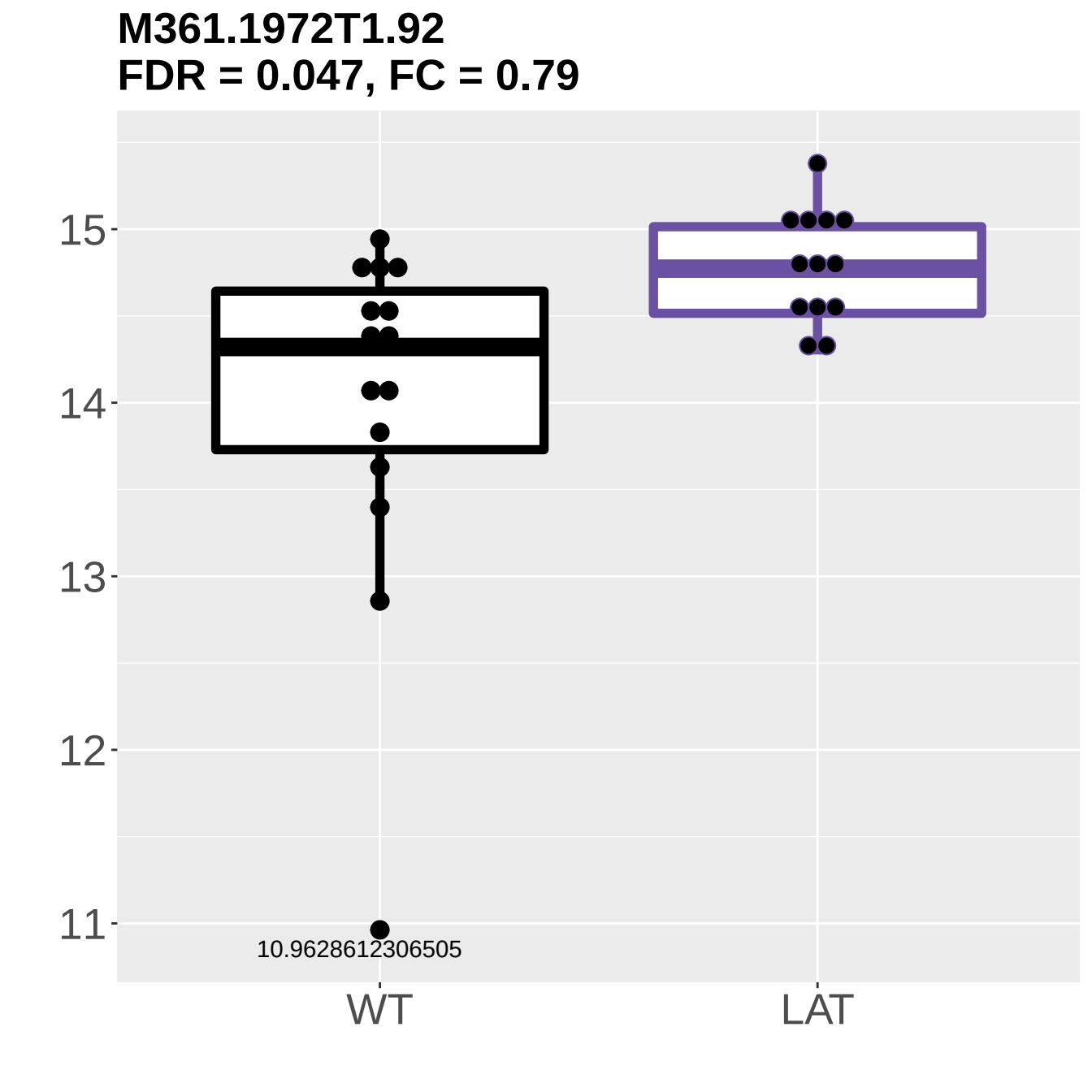
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12
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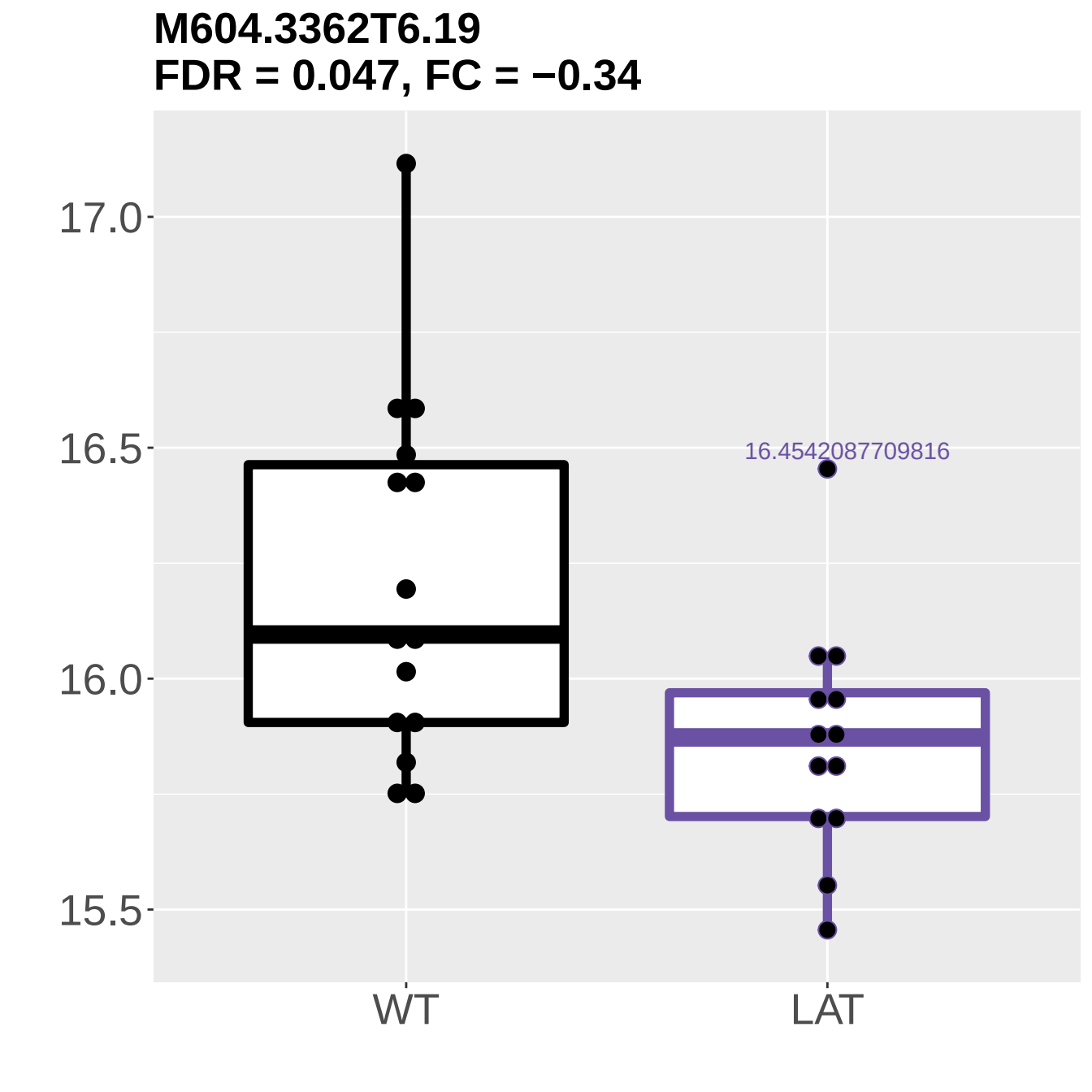
WT
LAT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16.0
15.5
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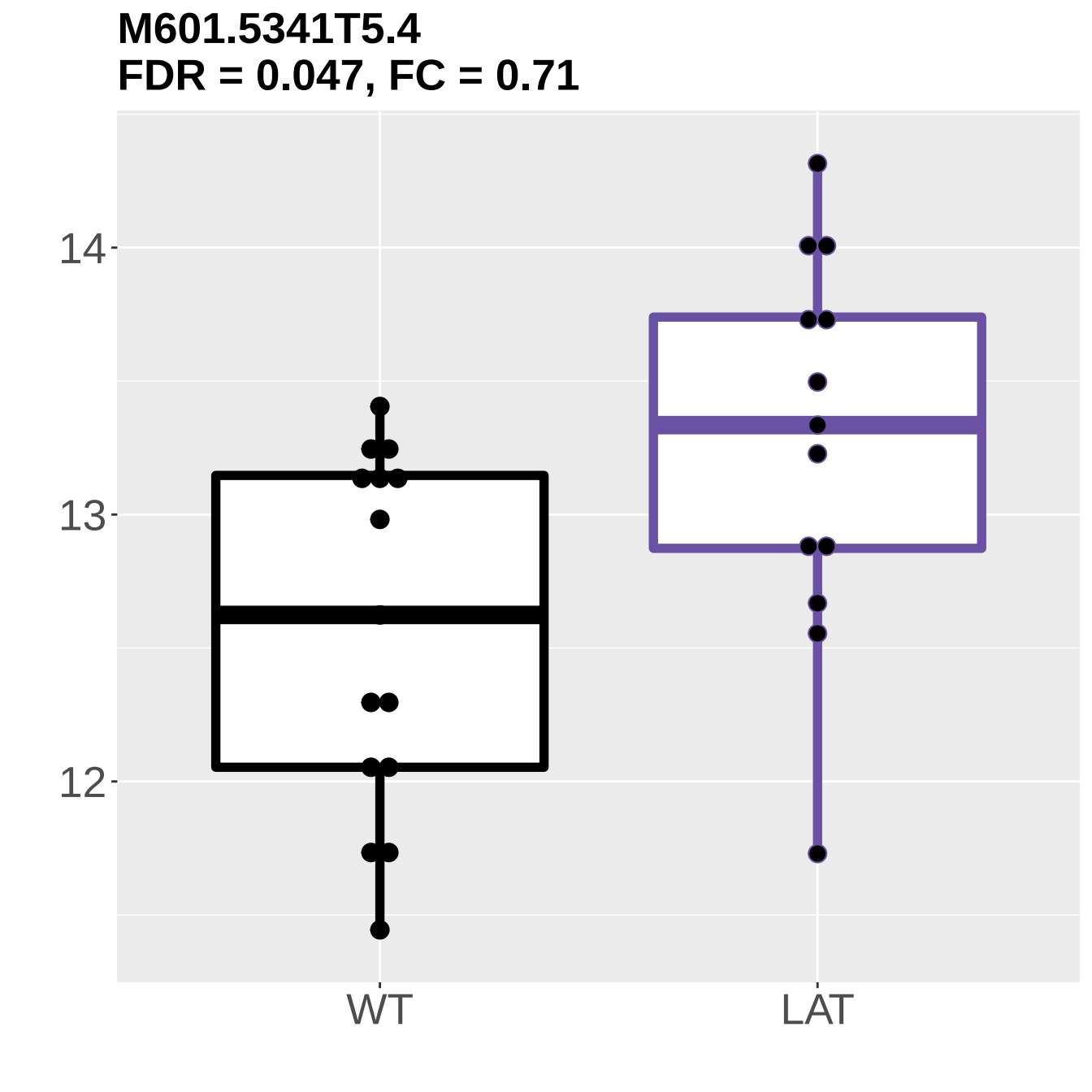
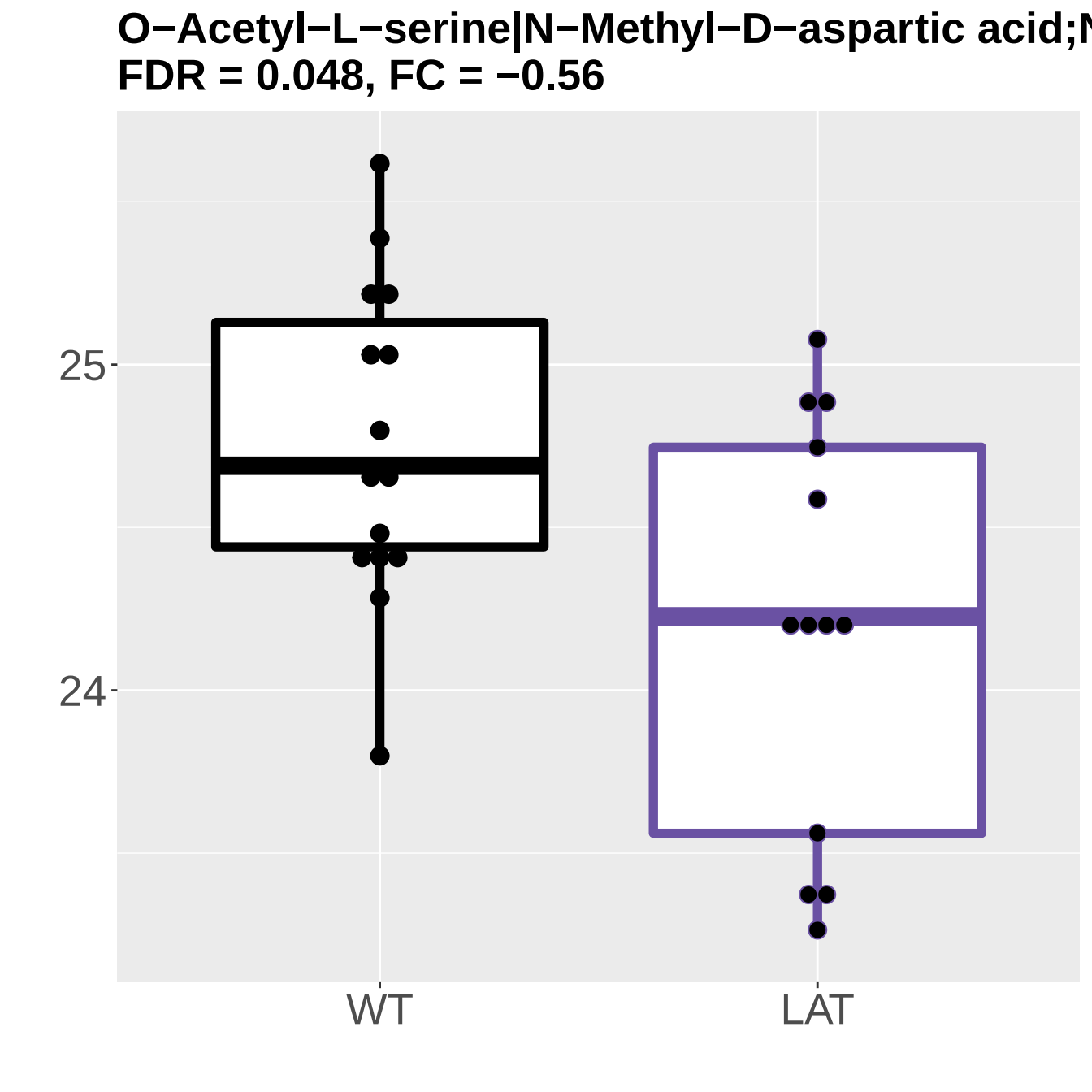
WT
LAT


M601.5341T5.4
FDR = 0.047, FC = 0.71
14
13
12
WT
LAT


O−Acetyl−L−serine|N−Methyl−D−aspartic acid;N
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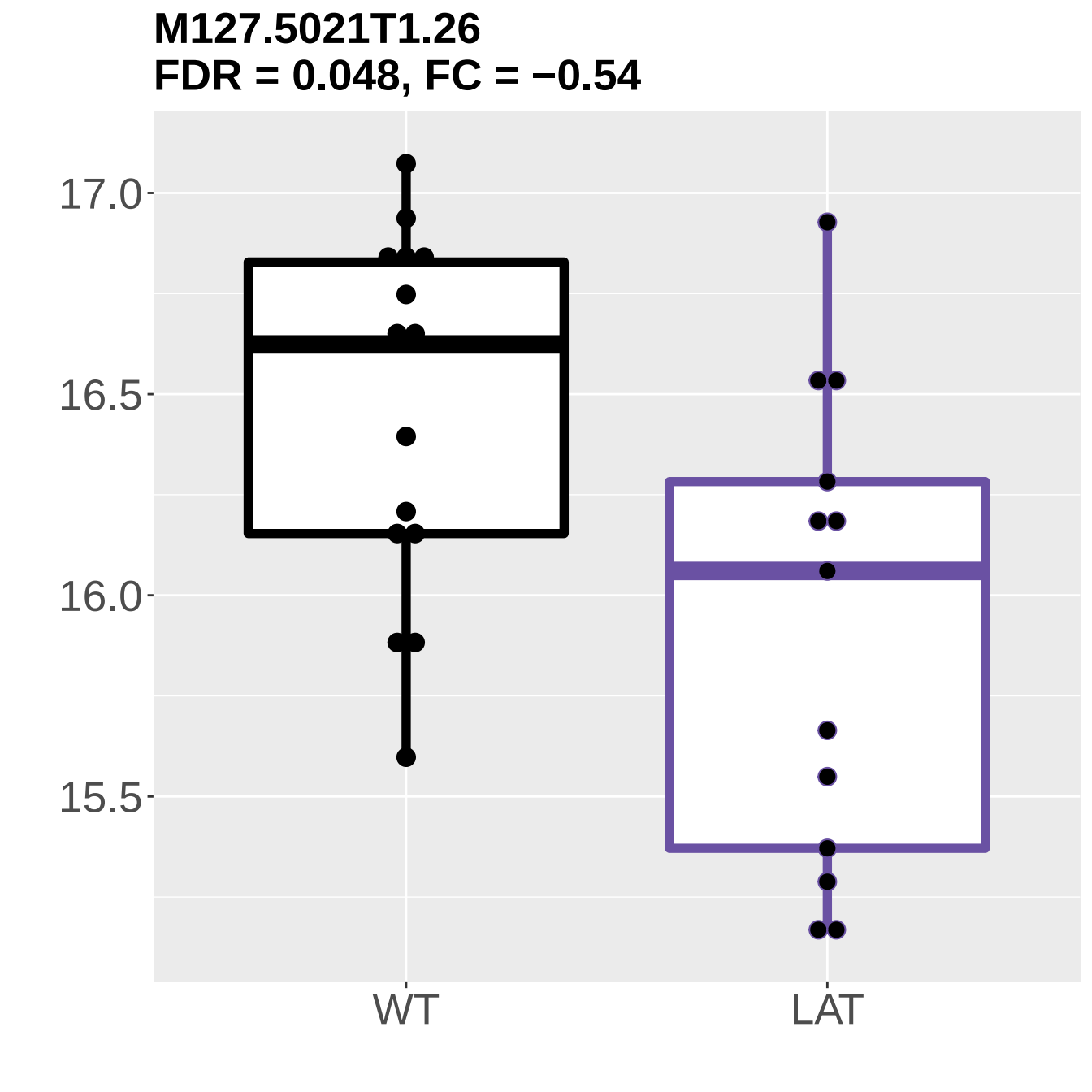
25
24
WT
LAT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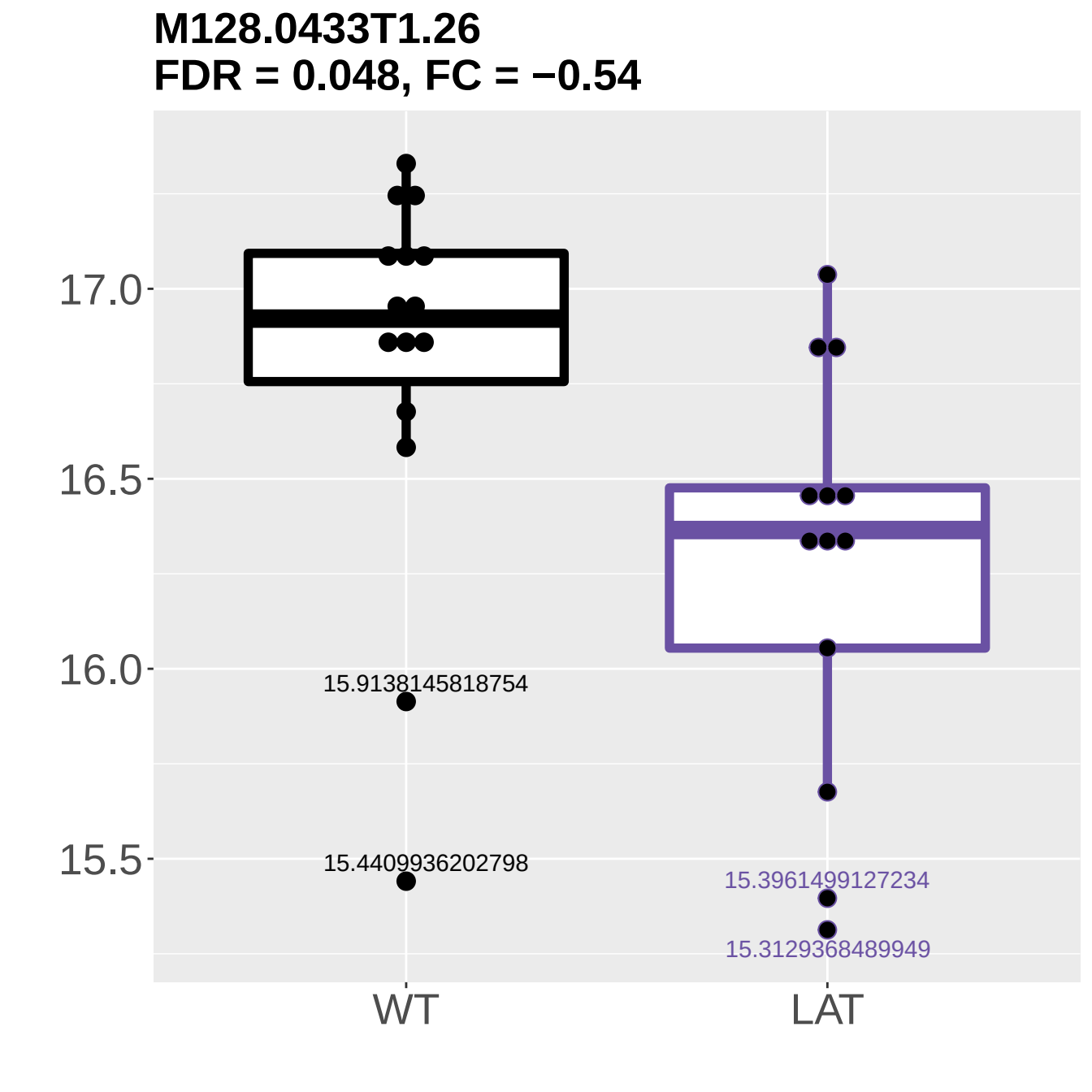
16.5
16.0
15.5
WT
LAT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16.5
16.0
15.5
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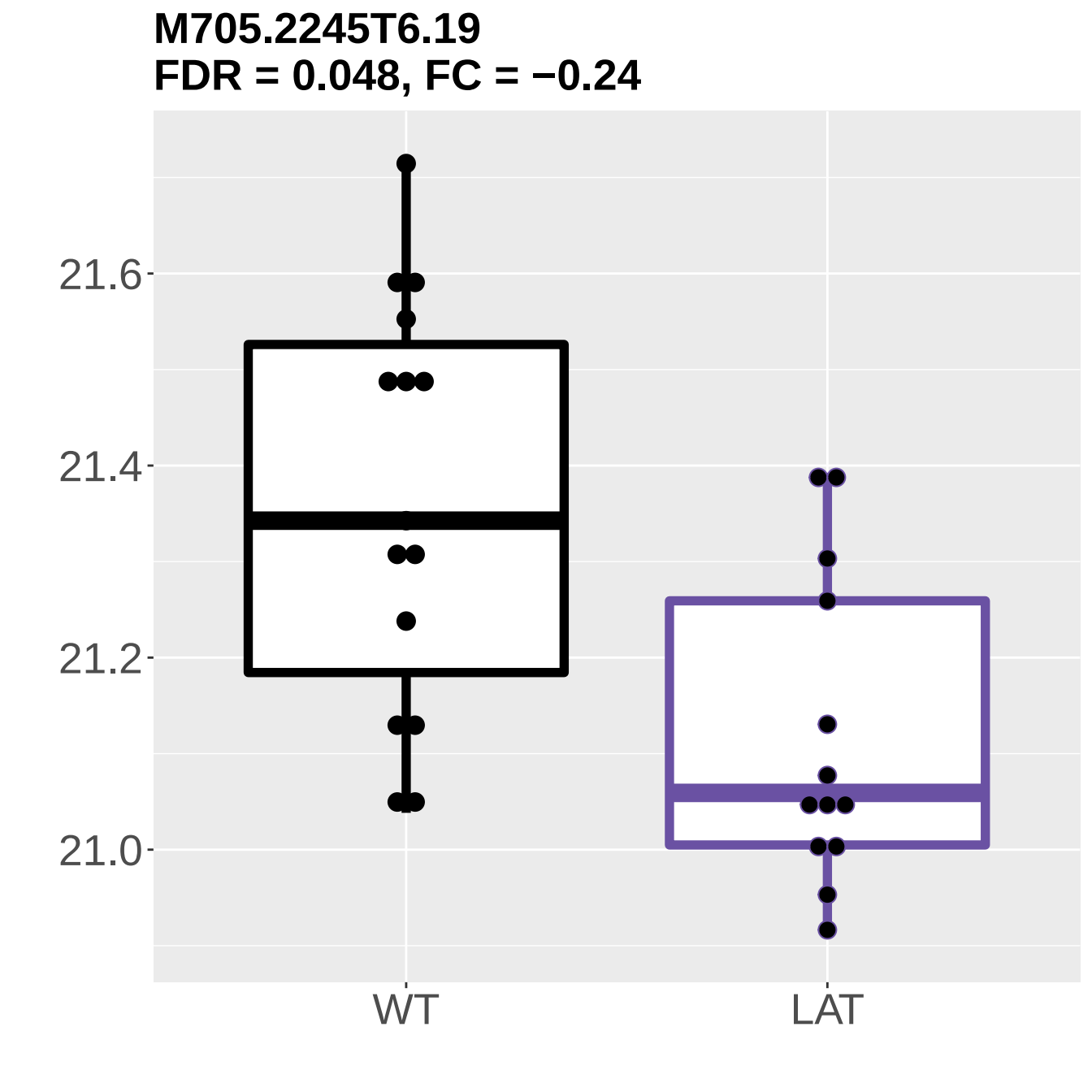
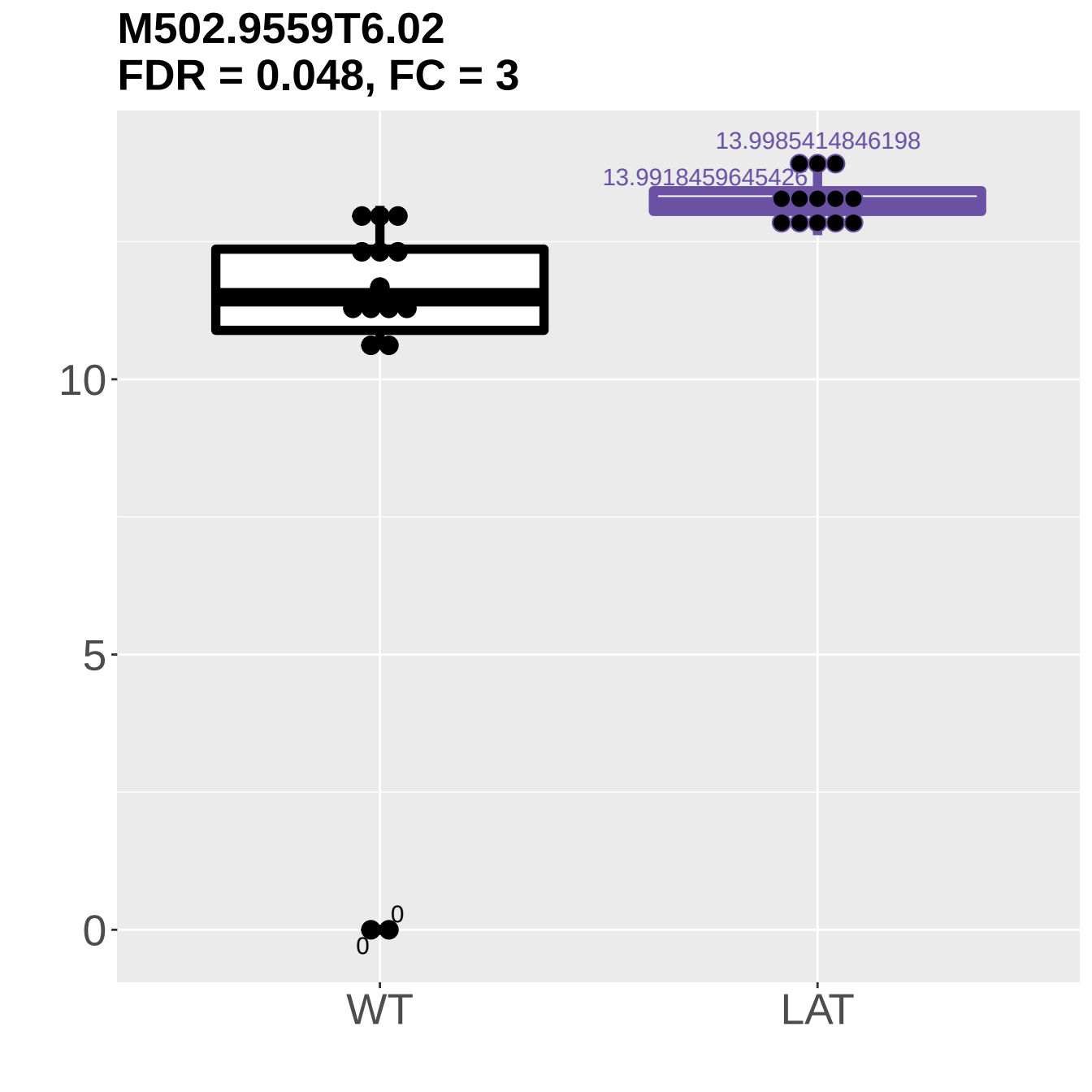
WT
LAT


M705.2245T6.19
FDR = 0.048, FC = −0.24
21.6
21.4
21.2
21.0
WT
LAT


M502.9559T6.02
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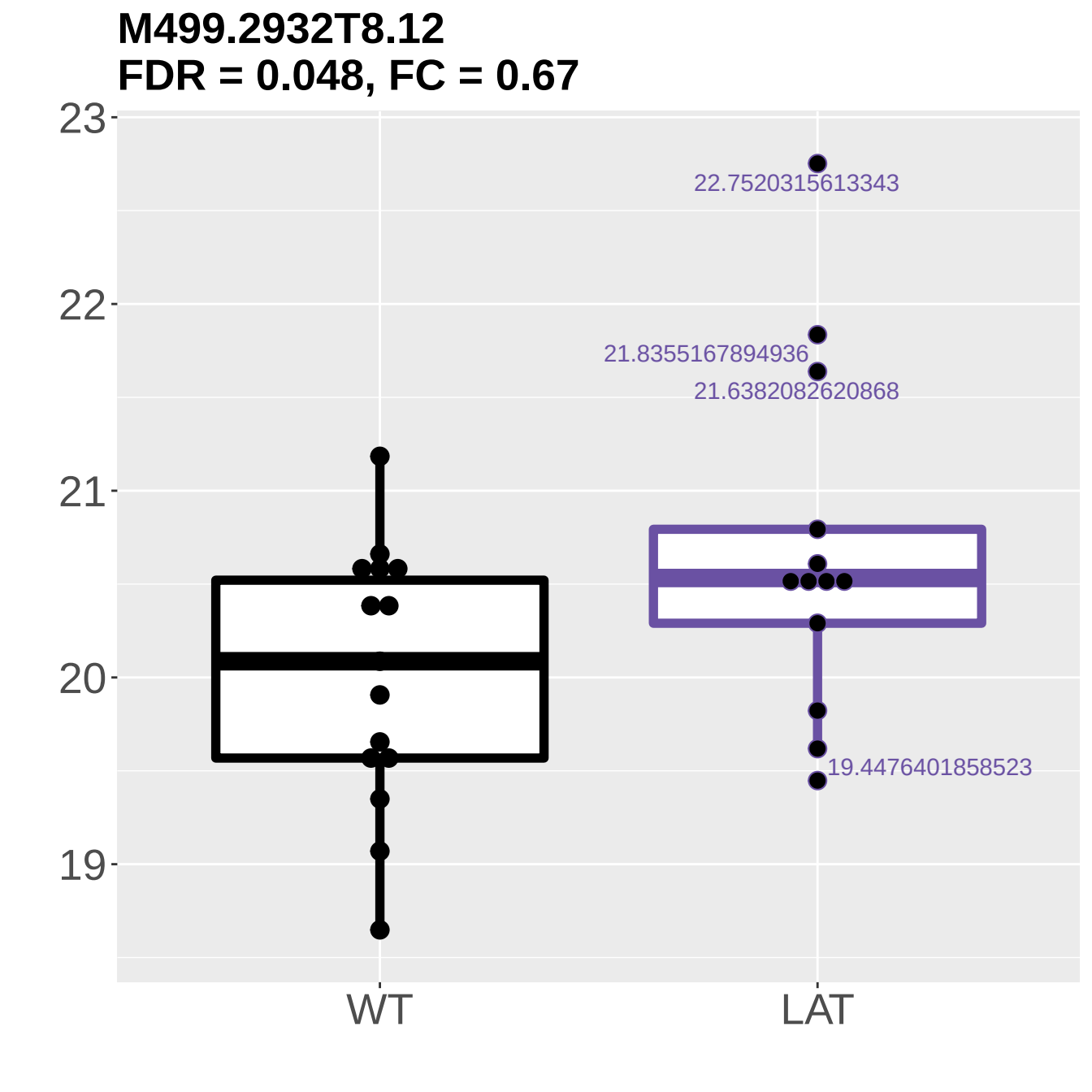
13.9918459645426
10
5
0
0
0
WT
LAT


M499.2932T8.12
FDR = 0.048, FC = 0.67
23
22
21
20
19
22.7520315613343
21.8355167894936
21.6382082620868
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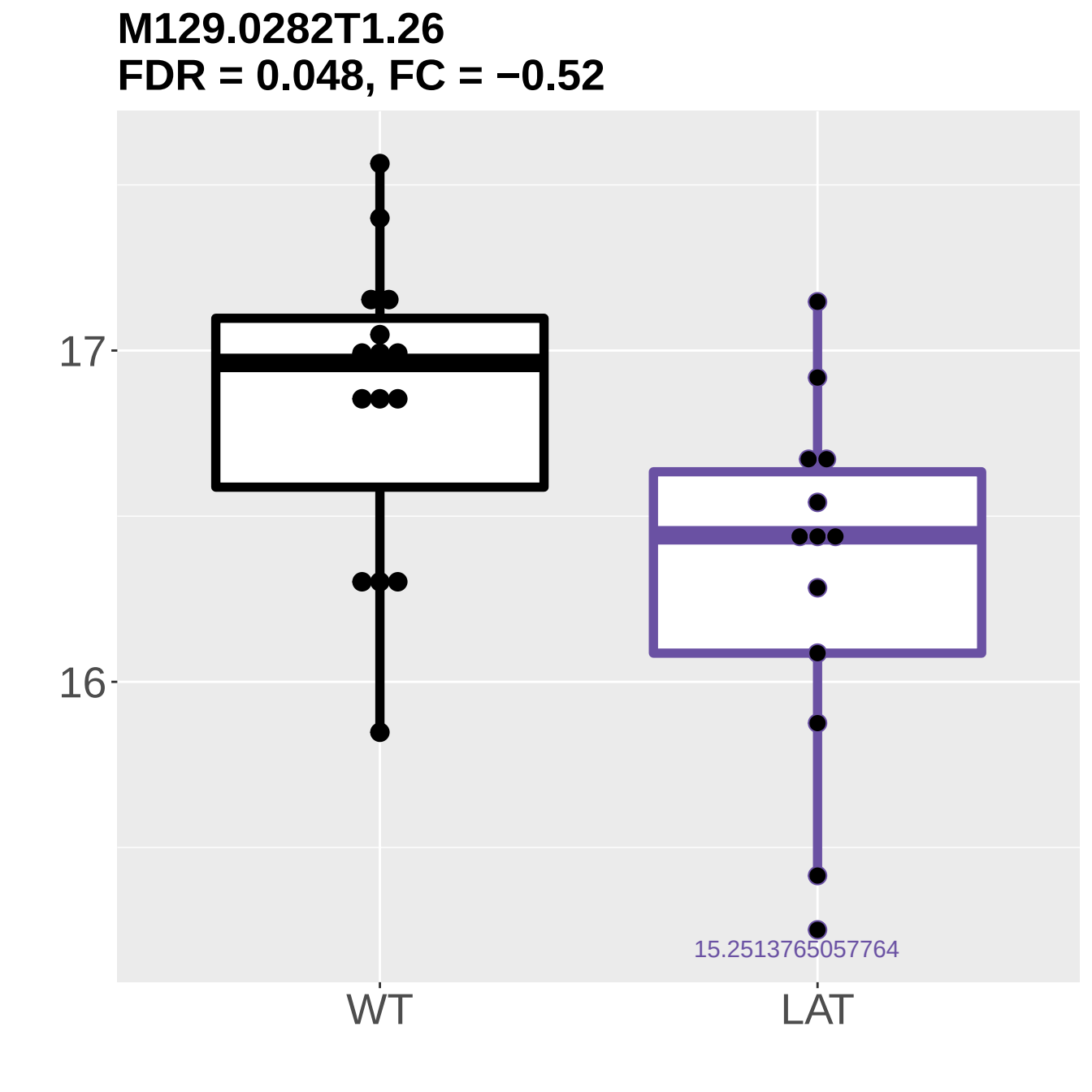
WT
LAT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16
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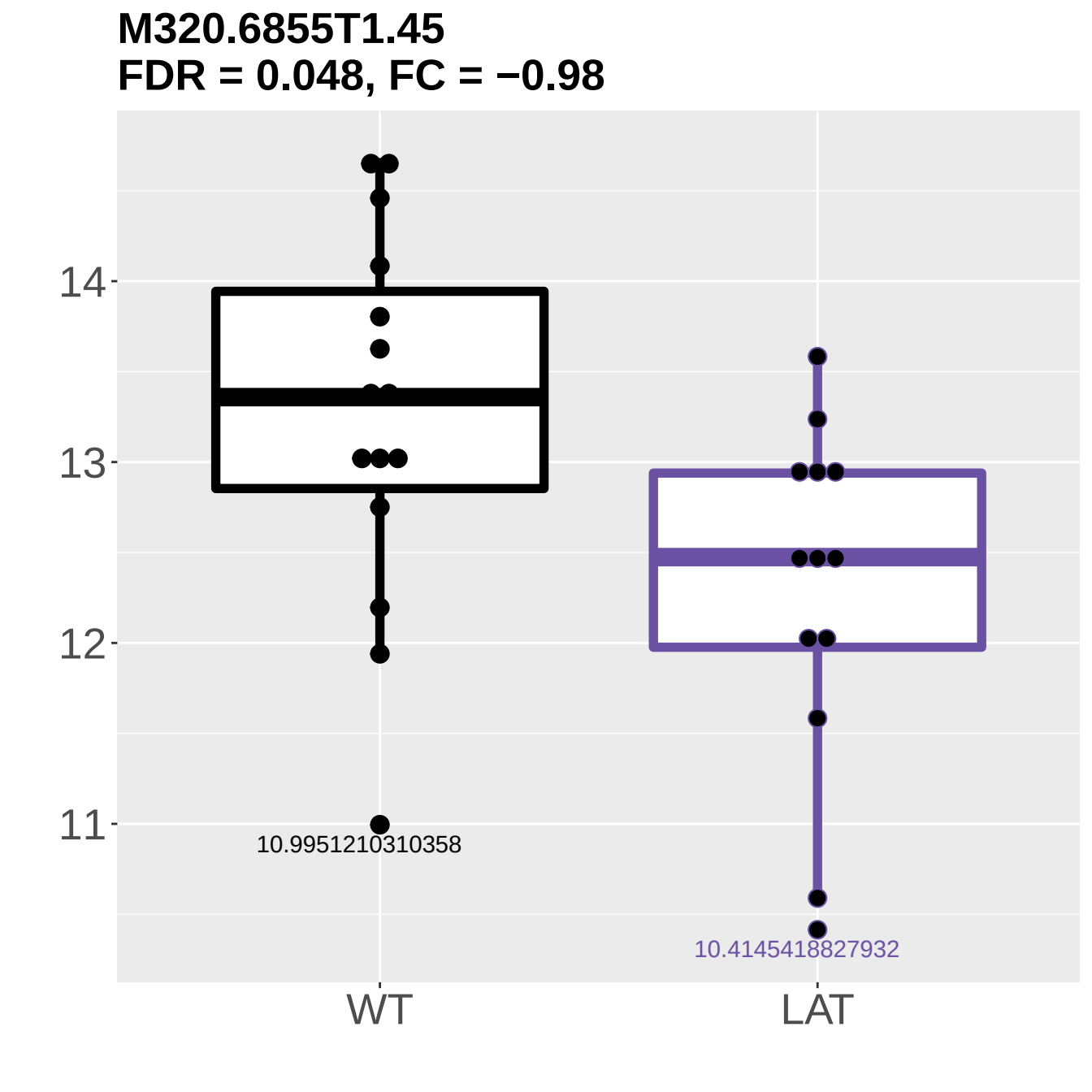
WT
LAT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13
12
11
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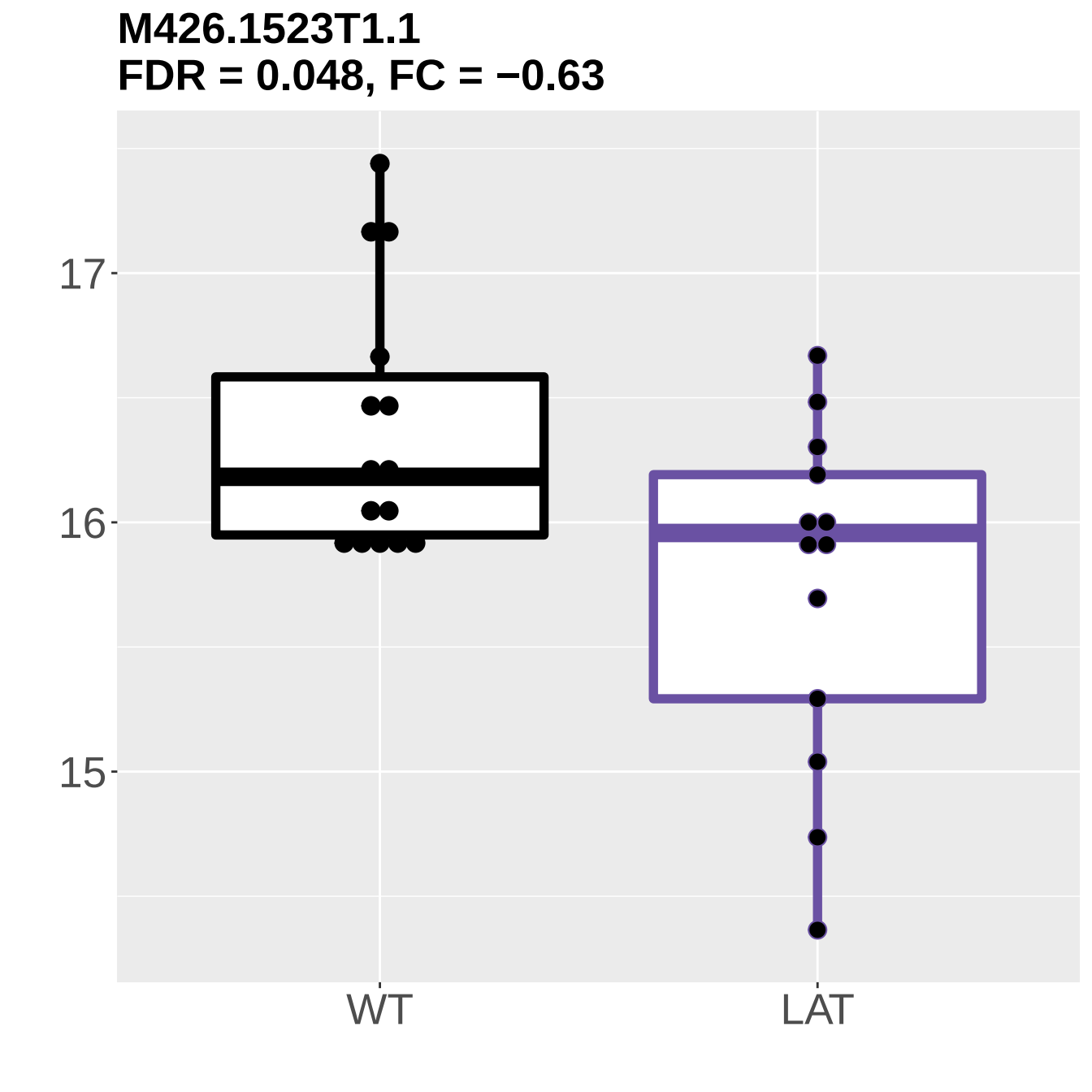
10.4145418827932
WT
LAT


M426.1523T1.1
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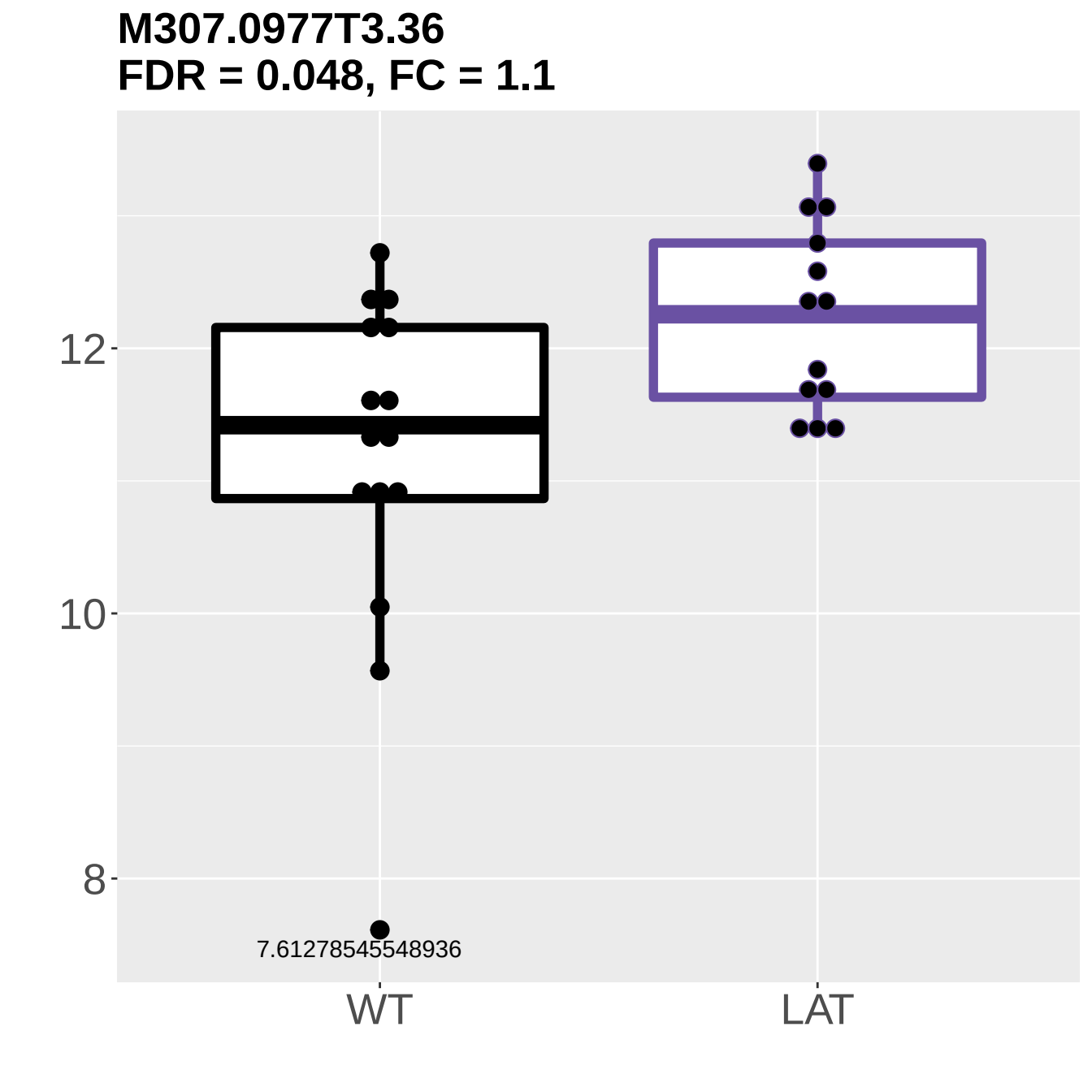
17
16
15
WT
LAT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10
8
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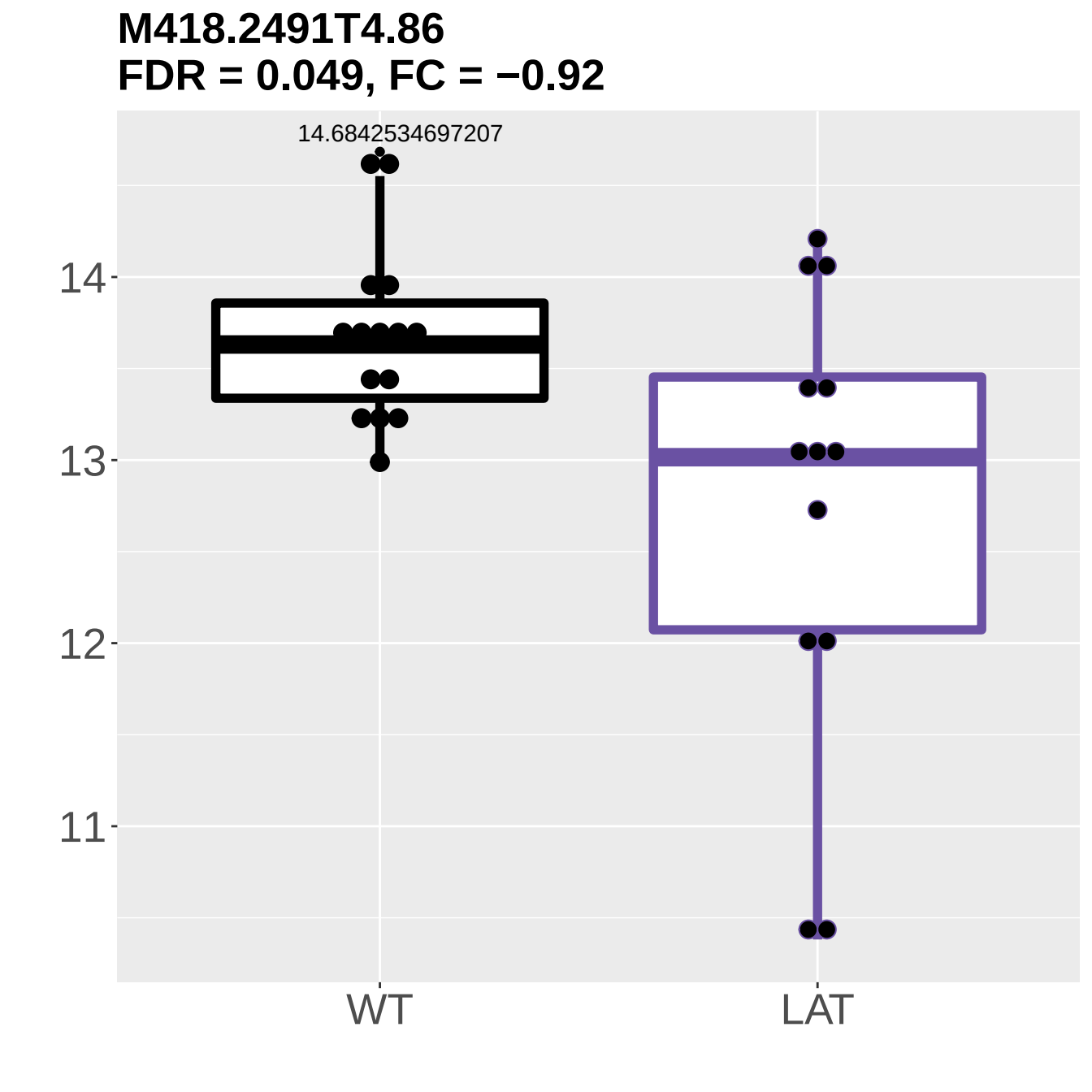
WT
LAT


M418.2491T4.86
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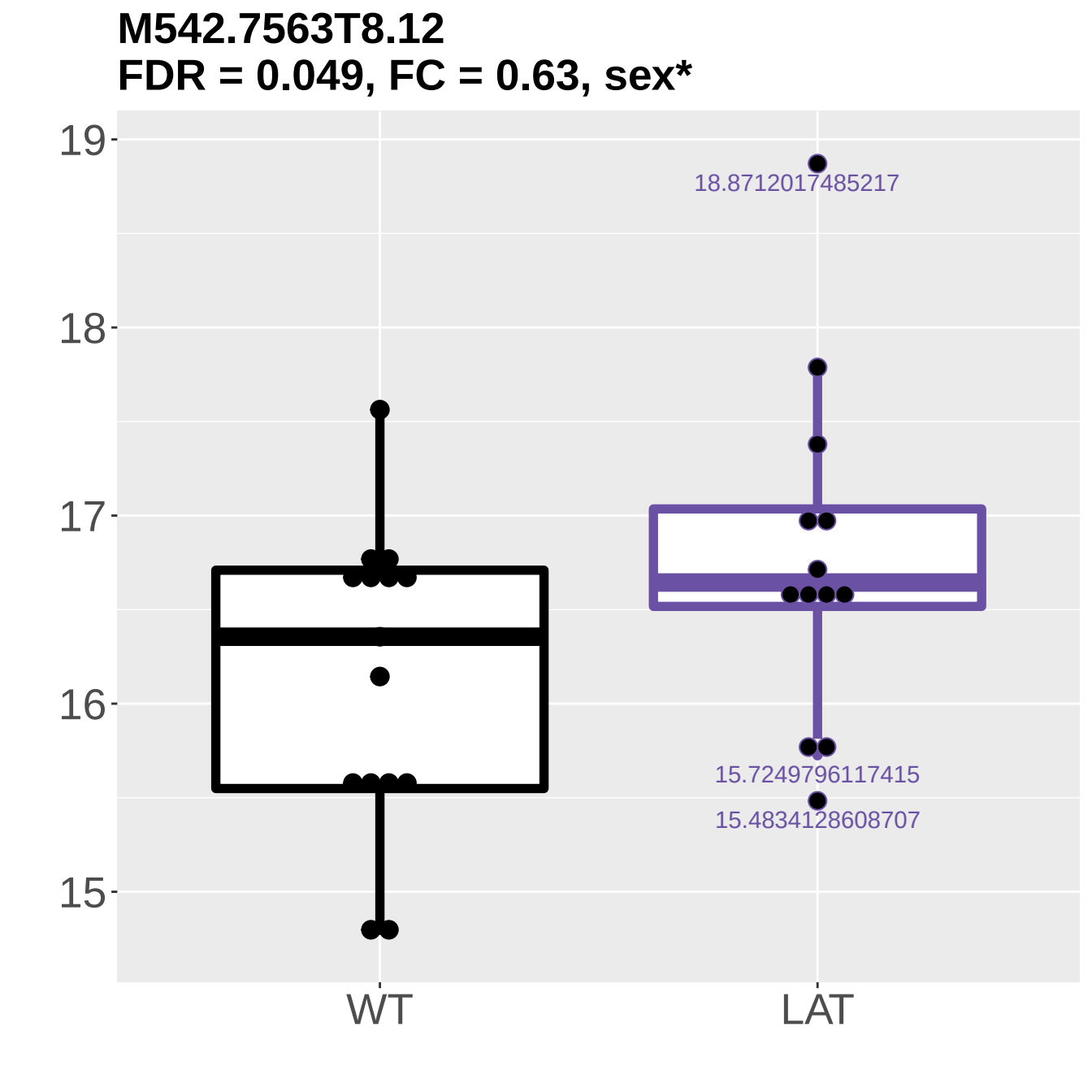
14
13
12
11
WT
LAT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FDR = 0.049, FC = 0.63, sex*
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18
17
16
15
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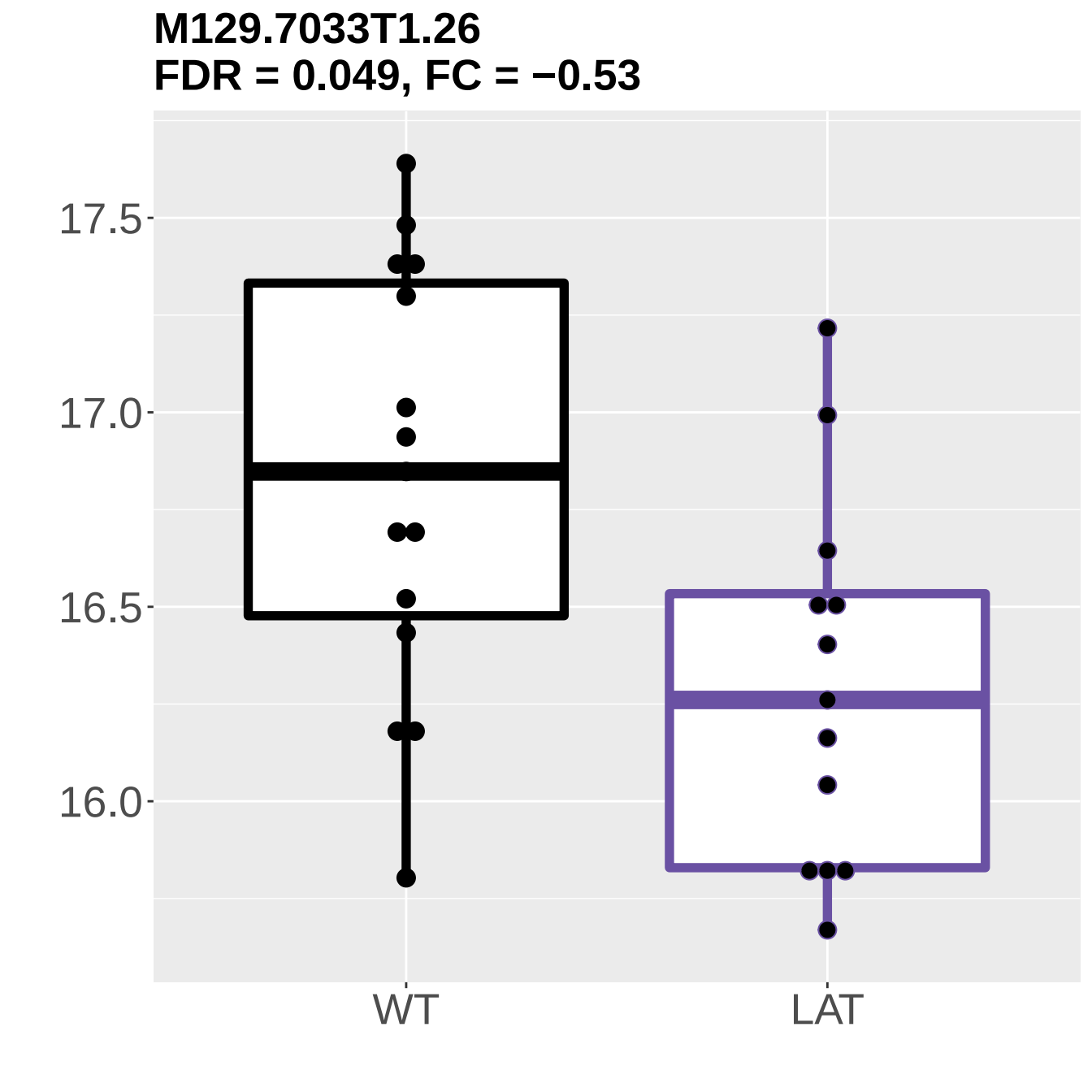
WT
LAT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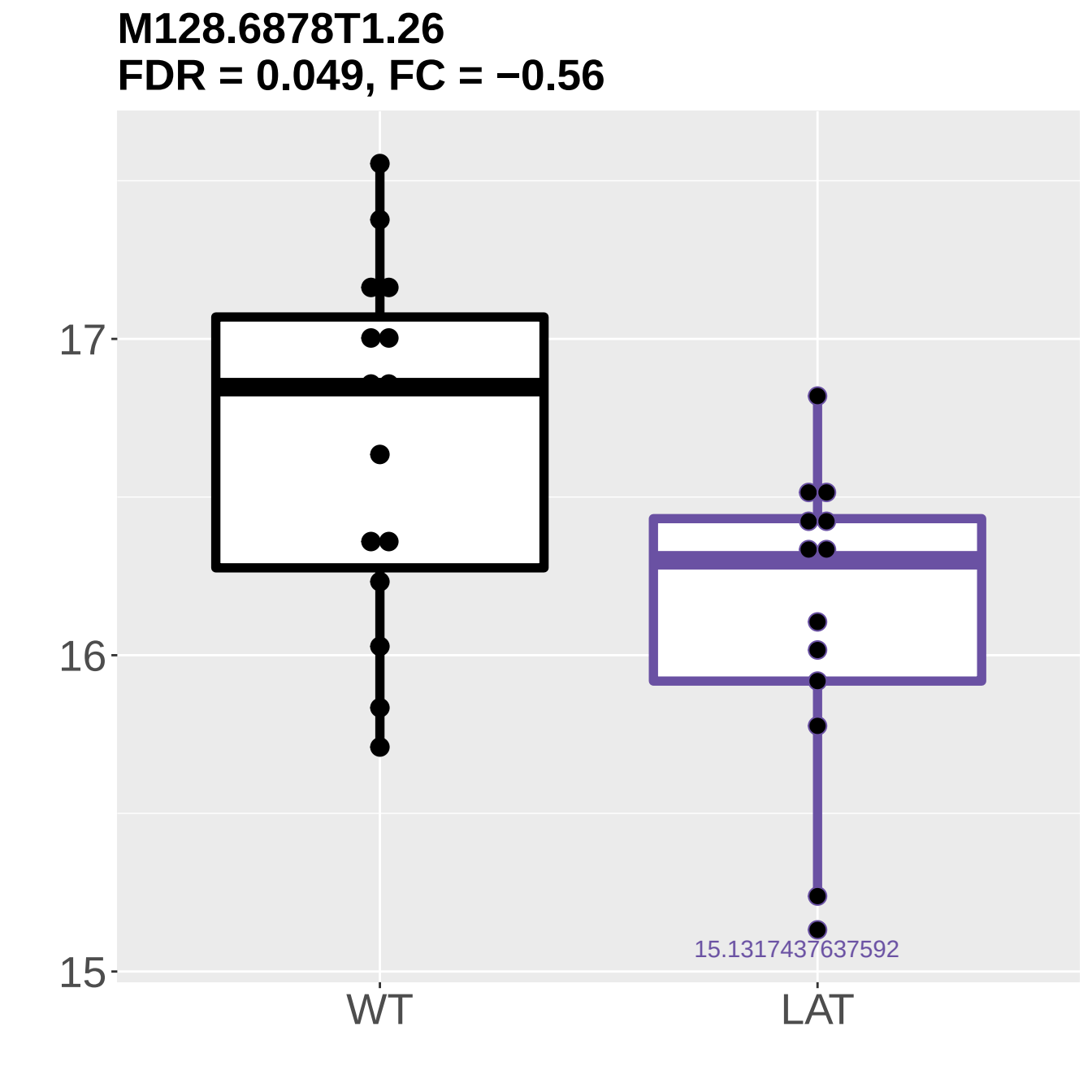
16.5
16.0
WT
LAT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16
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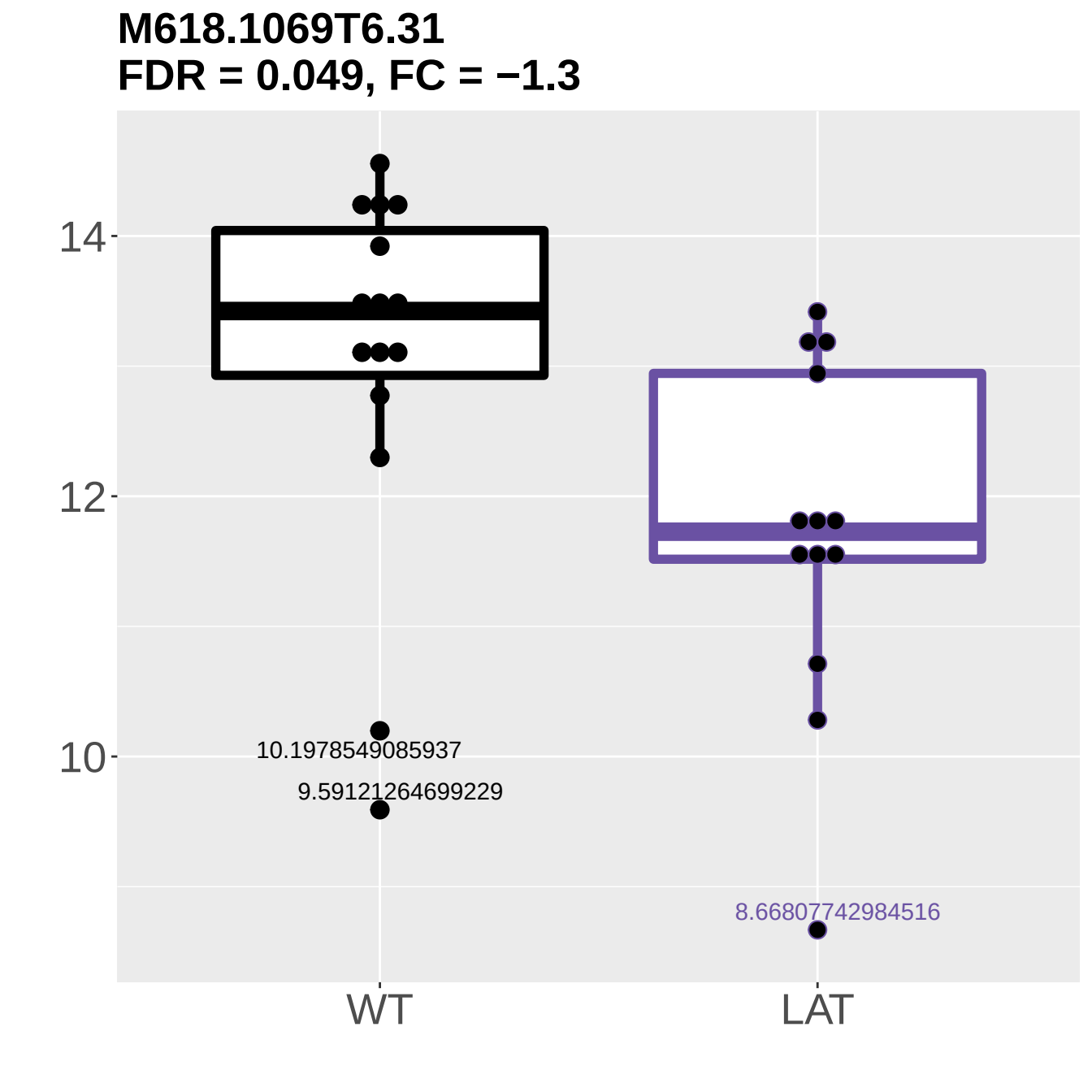
WT
LAT


M618.1069T6.31
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12
10
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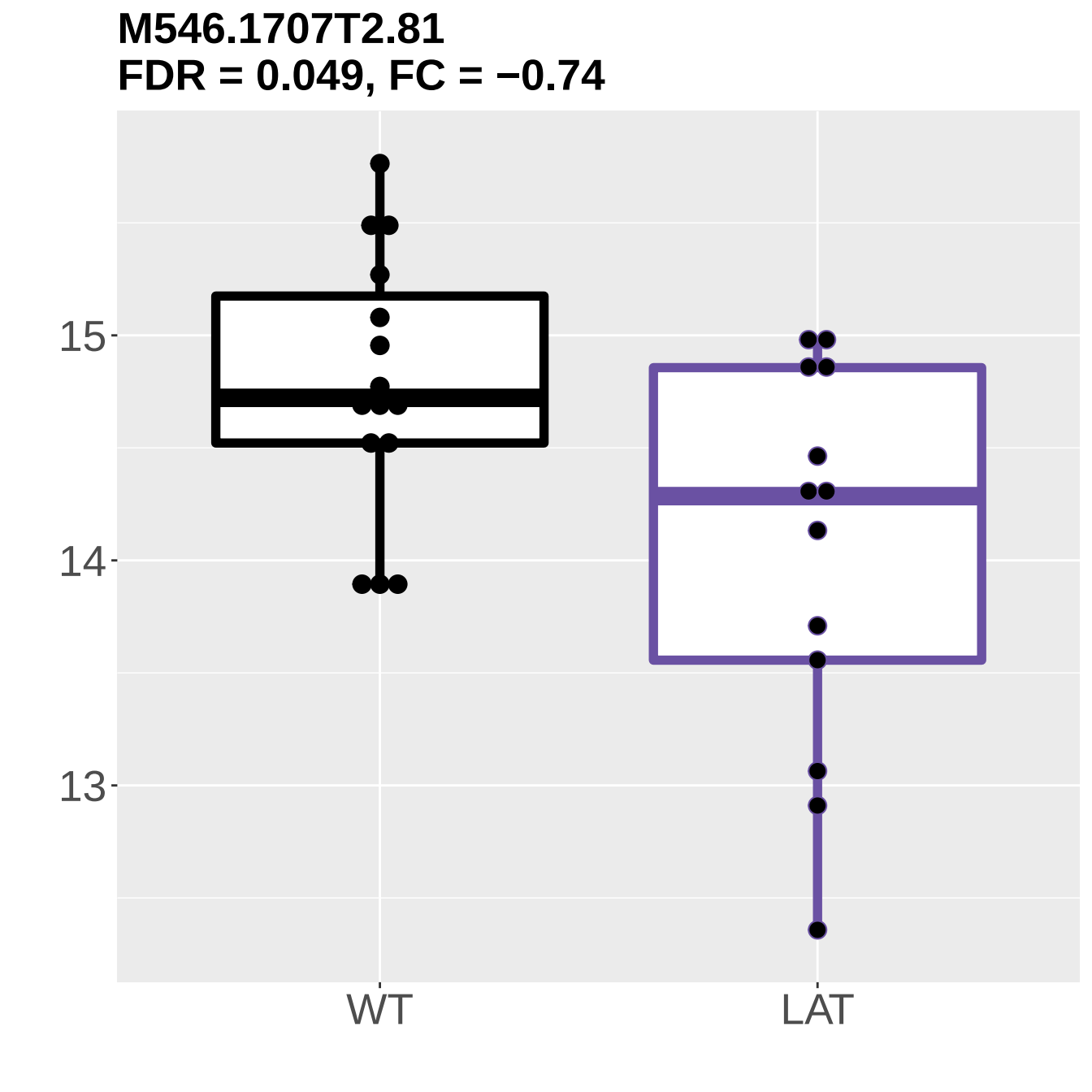
WT
LAT


M546.1707T2.81
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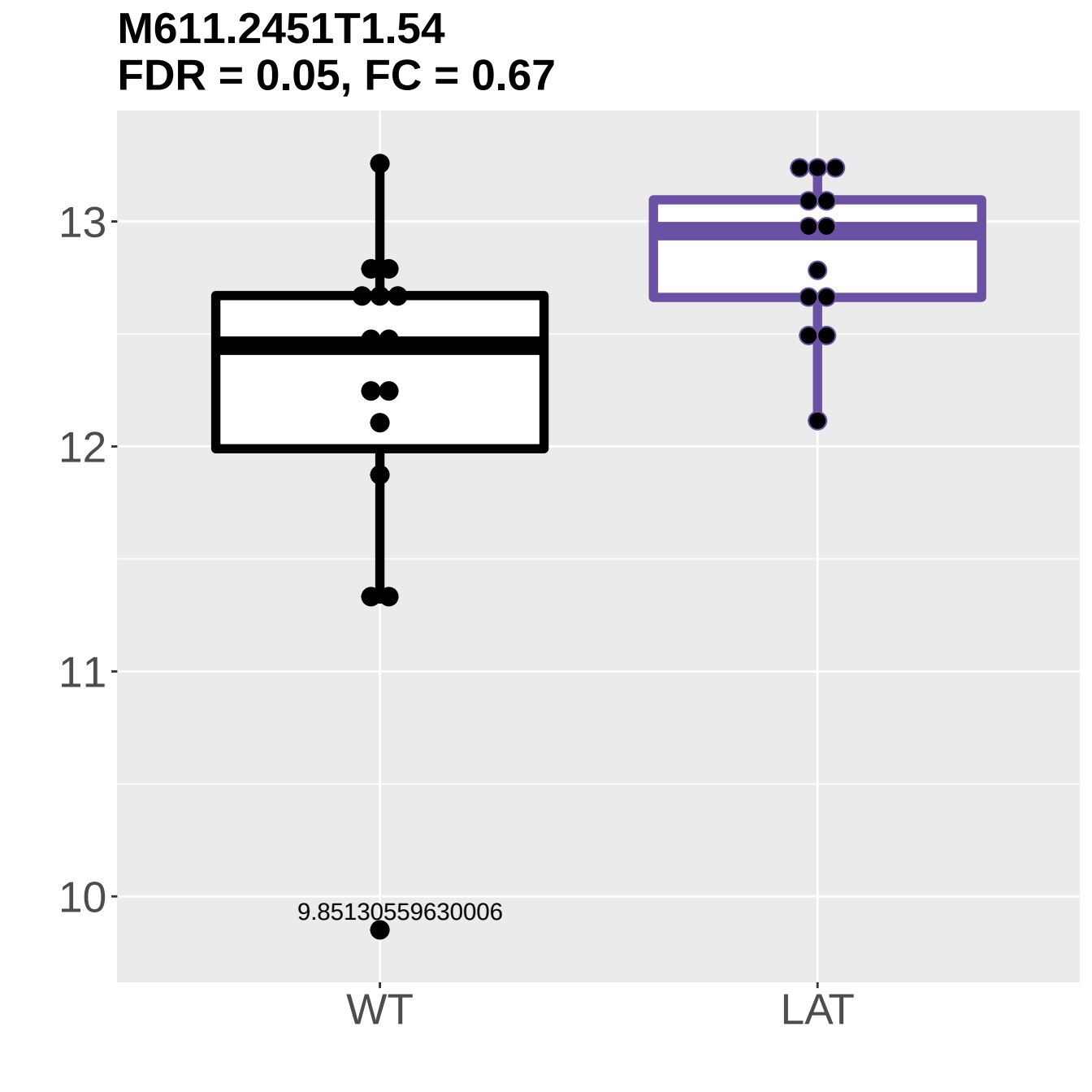
15
14
13
WT
LAT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12
11
10
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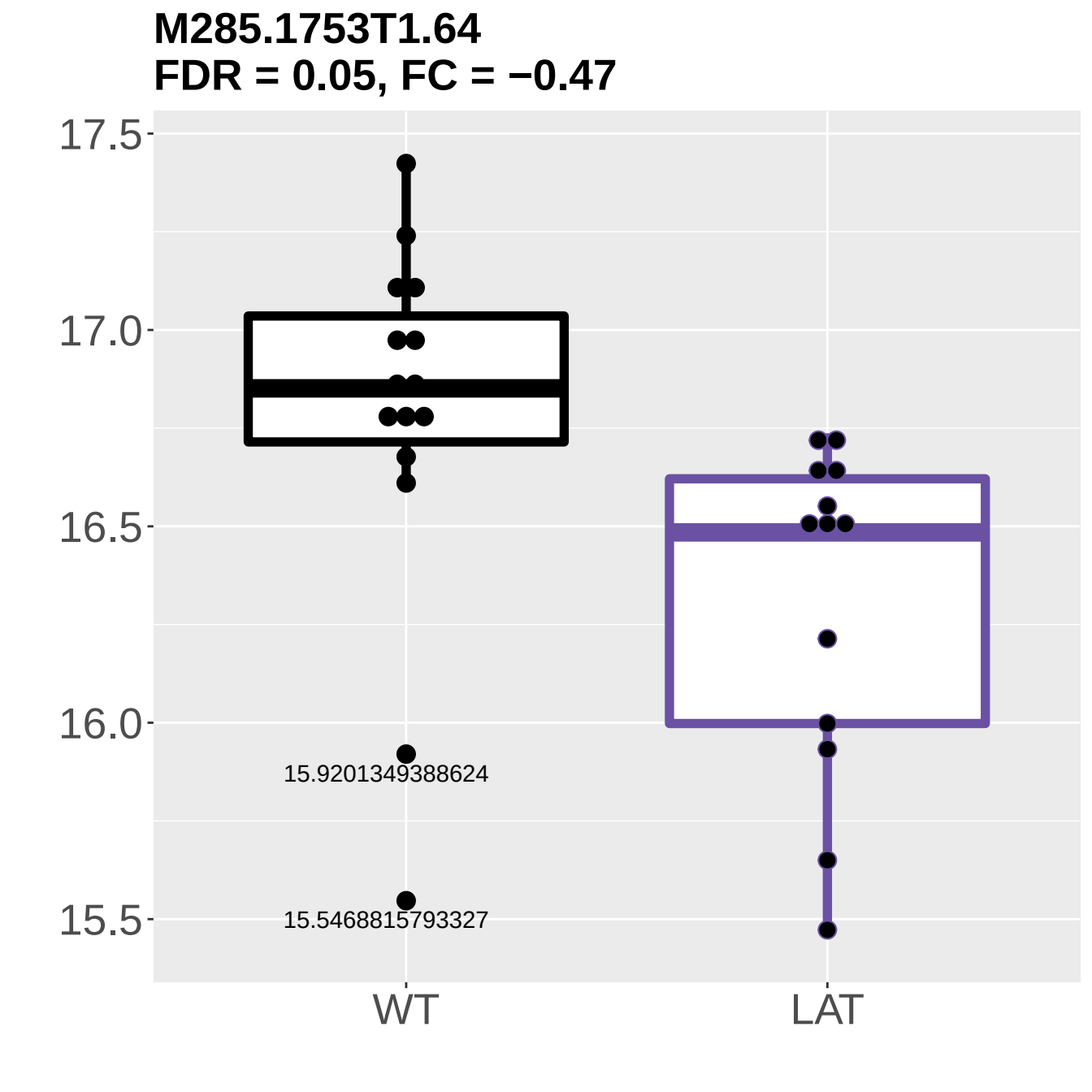
WT
LAT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16.0
15.5
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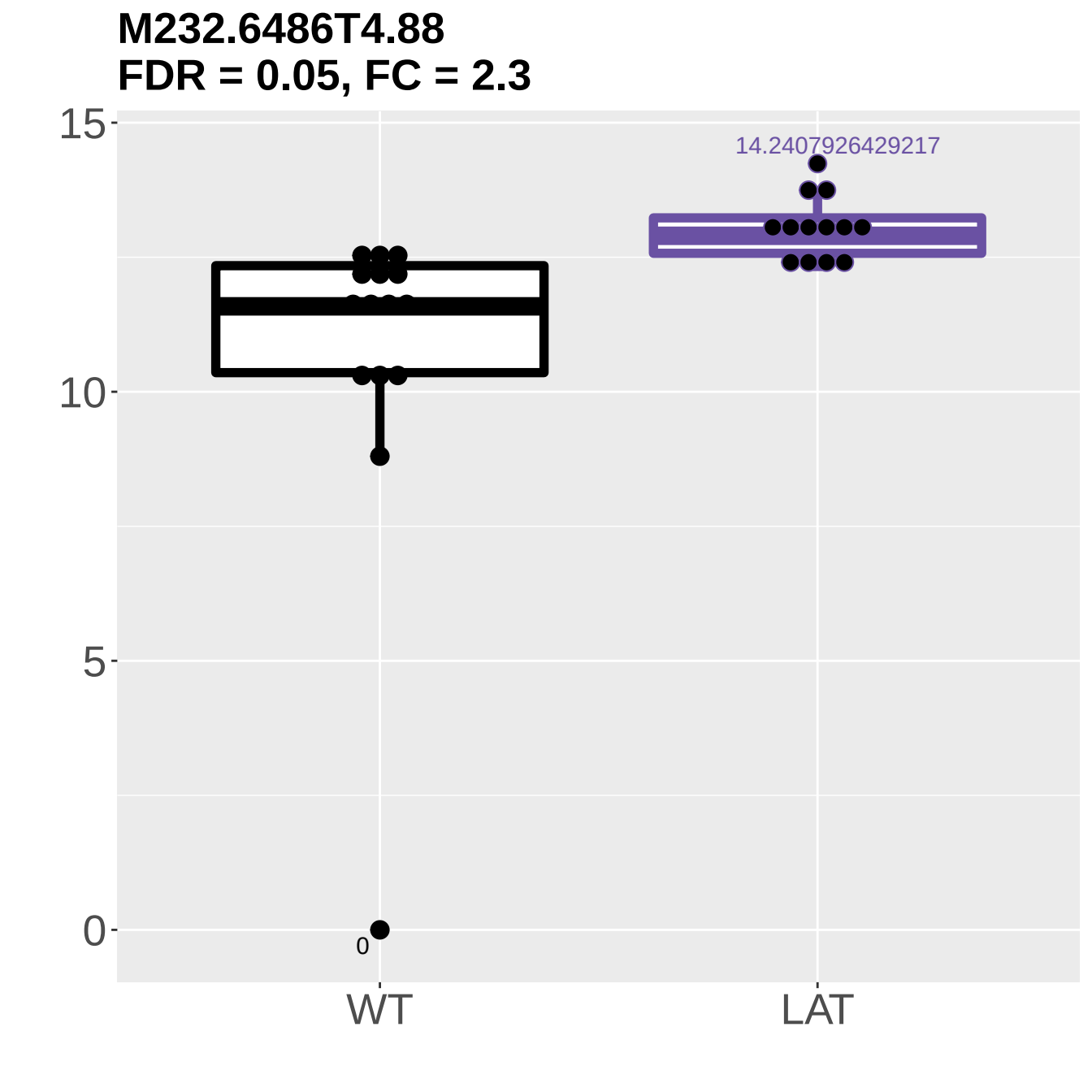
WT
LAT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10
5
0
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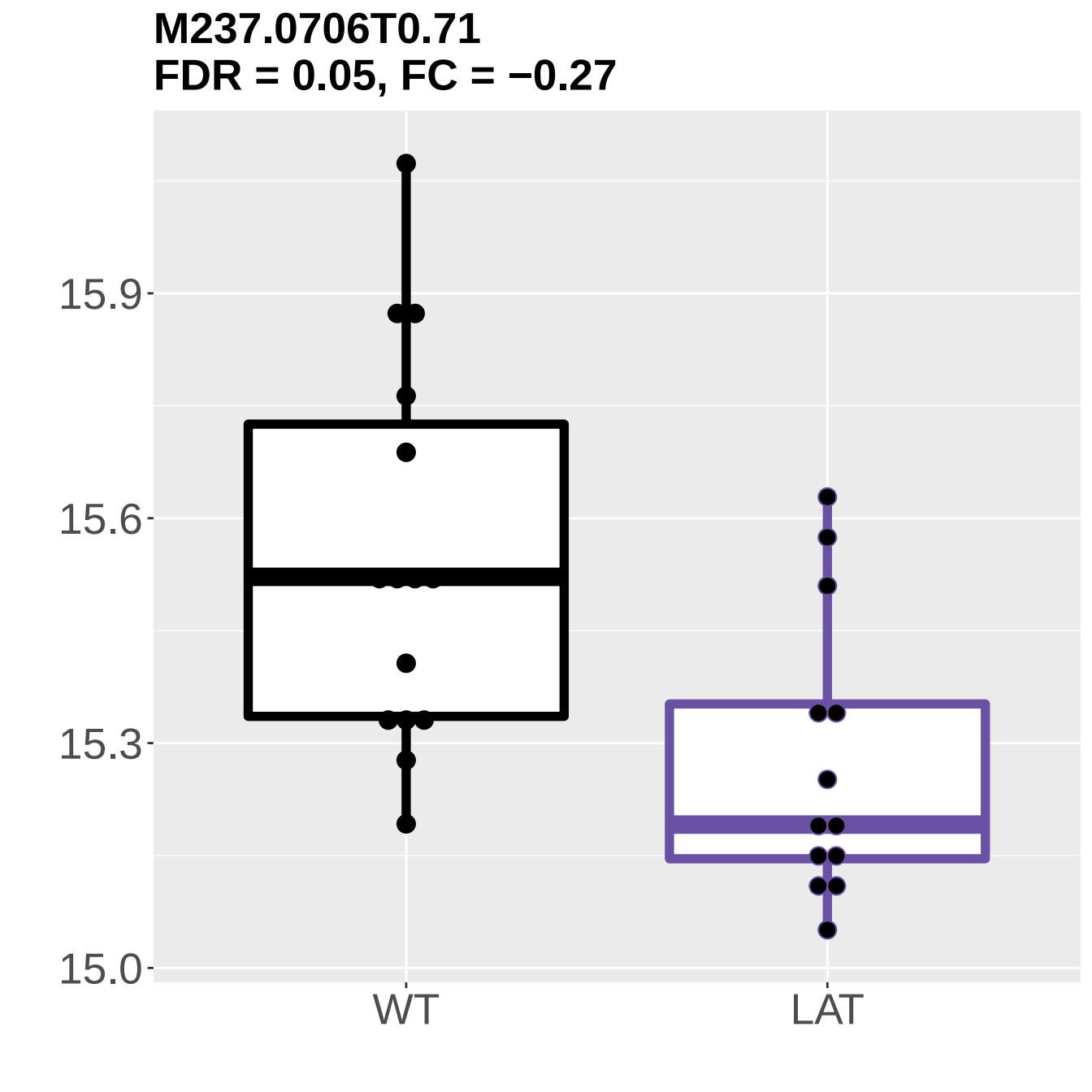
0
WT
LAT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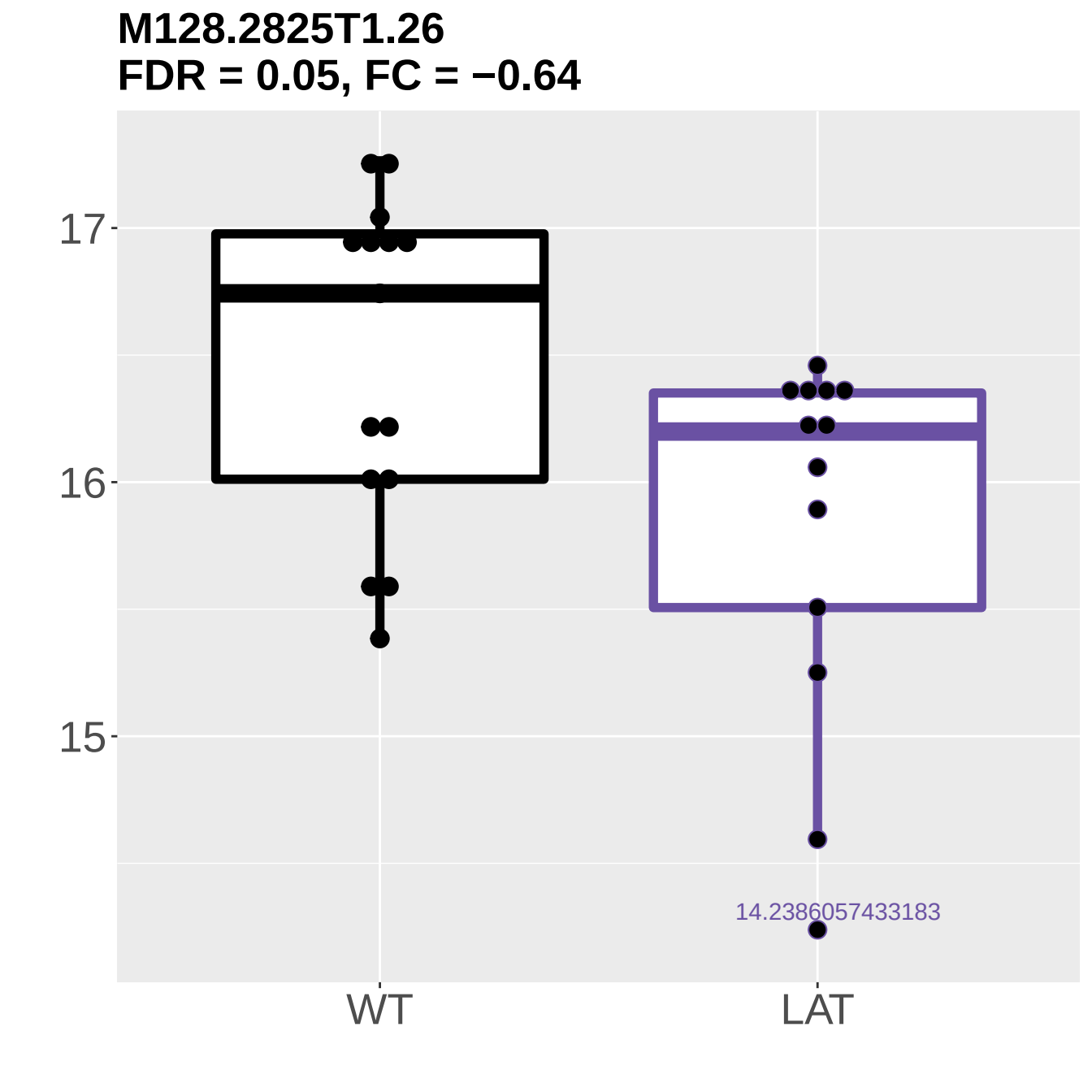
15.6
15.3
15.0
WT
LAT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16
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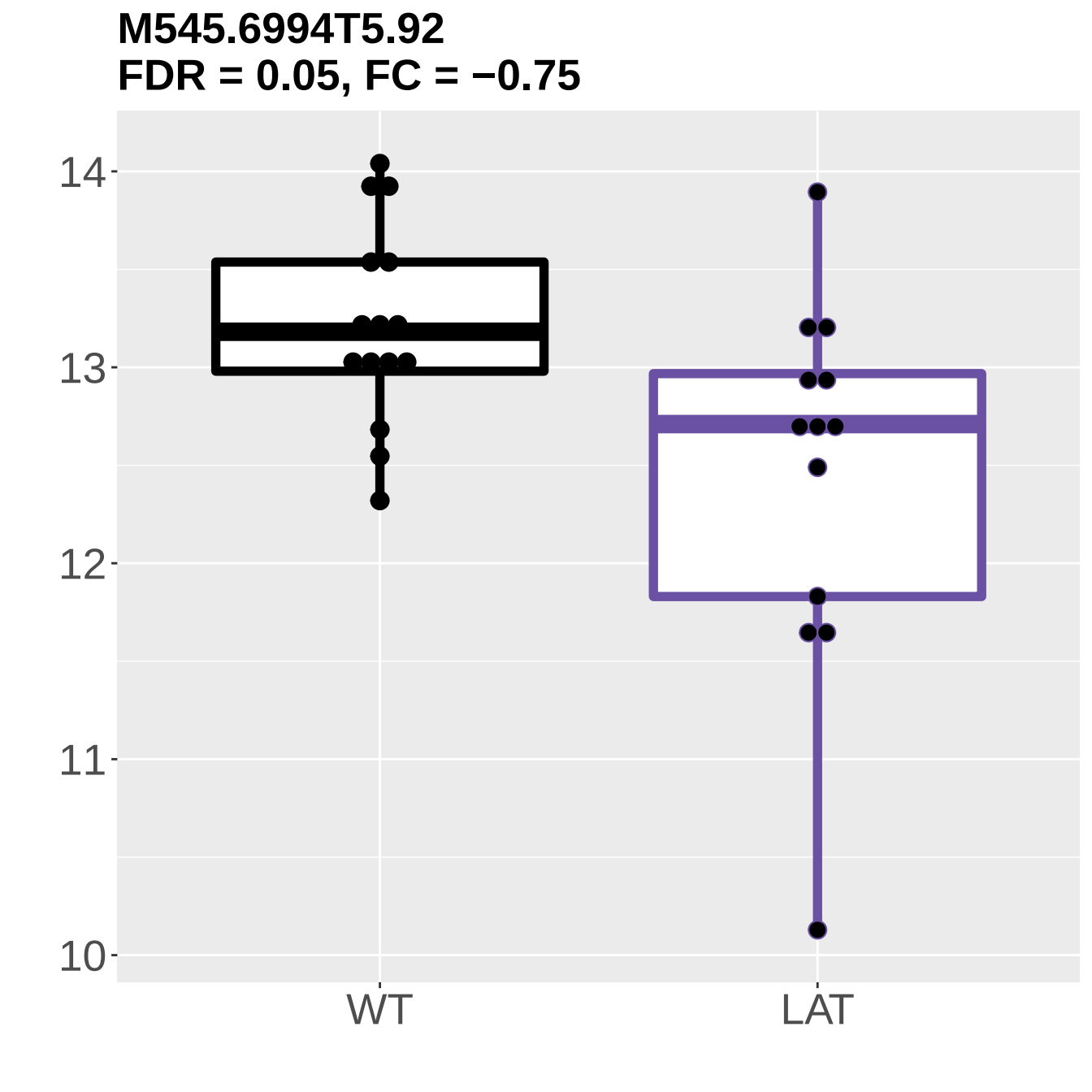
WT
LAT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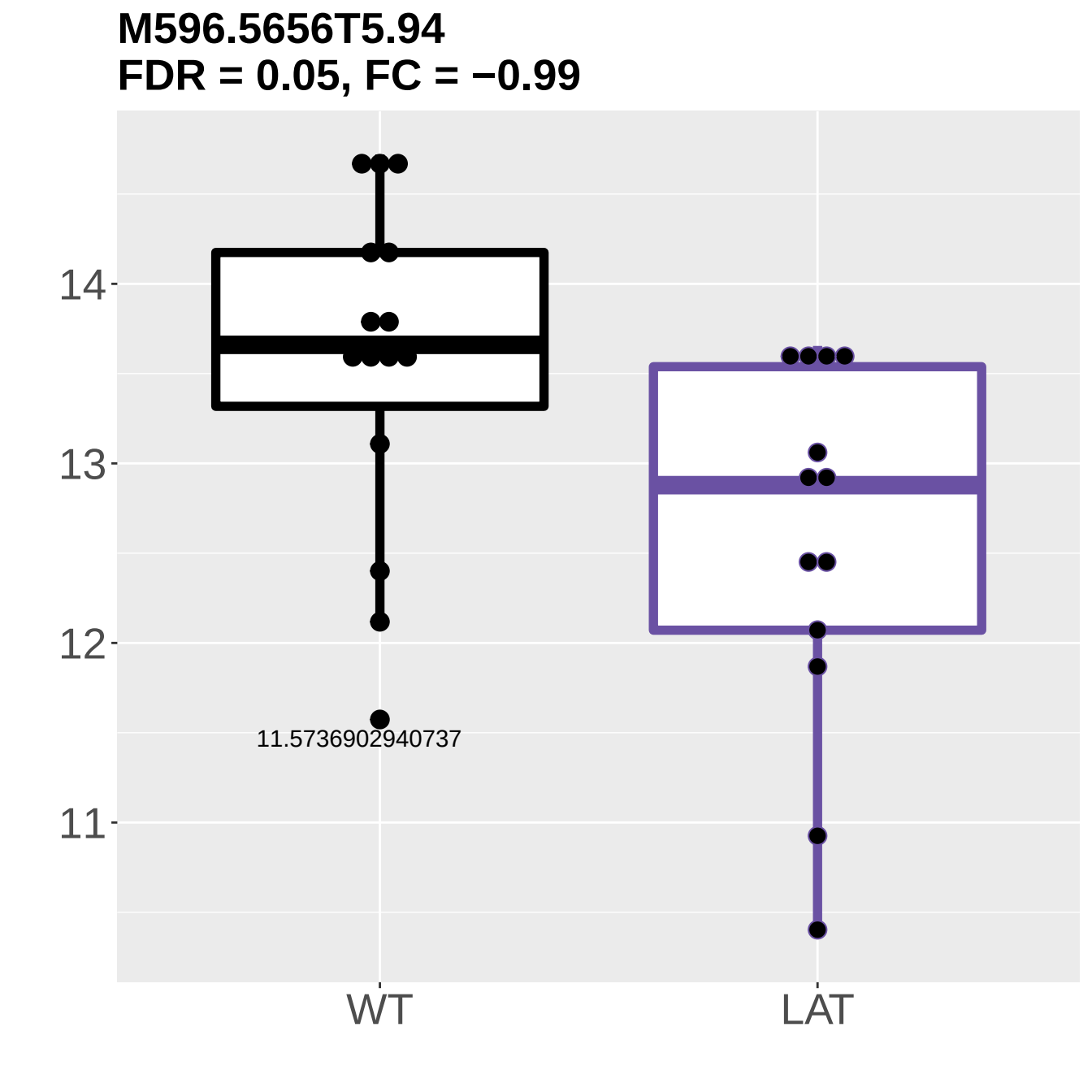
13
12
11
10
WT
LAT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FDR = 0.05, FC = −0.99
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13
12
11
11.5736902940737
WT
LAT