

## Benchmark 60% – 40%

Parameters:

- 60% – 40% pairwise patterns
- 20 samples for each combination
- 5% uniform noise

Each row corresponds to a particular signature (27 in total)

For each signature, there are 4 boxplots showing the contribution of that signature:

1. when it forms 60% of the simulated pattern, w.r.t. the signature that forms 40% of the pattern
2. when it forms 40% of the simulated pattern, w.r.t. the signature that forms 60% of the pattern
3. when it is not in the simulated pattern, w.r.t. the signature that forms 60% of the pattern
4. when it is not in the simulated pattern, w.r.t. the signature that forms 40% of the pattern

The most challenging cases correspond to the presence of sig.1B or sig.5, especially when combined with sig.13.  
Nearly all other cases behave as expected.

Sample	% Signature.1A
A	100
B	60
2	58
3	59
4	59
5	59
6	58
7	58
8	59
9	59
10	59
11	58
12	58
13	59
14	59
15	59
16	59
17	59
18	59
19	59
20	59
21	59
R1	58
R2	59
R3	59
U1	58
U2	59

+ 40% of this signature

A scatter plot showing the percentage of correct answers for 24 items. The y-axis represents the percentage of correct answers, ranging from 0 to 100. The x-axis lists the items: A, B, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, R1, R2, R3, U1, U2. Item A is at 100%. Item B is at approximately 42%. Items 2 through 24 are clustered around 40%.

Item	Percentage of Correct Answers
A	100
B	42
2	40
3	40
4	40
5	40
6	40
7	40
8	40
9	40
10	40
11	40
12	40
13	40
14	40
15	40
16	40
17	40
18	40
19	40
20	40
21	40
R1	40
R2	40
R3	40
U1	40
U2	40

+ 60% of this signature

Year	Number of Publications
1991	0
1992	0
1993	0
1994	0
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0
2008	0
2009	0
2010	0
2011	0
2012	1
2013	14
2014	14
2015	0
2016	0
2017	0
2018	0
2019	0
2020	0
2021	0
2022	1

60% of this signature

Letter	Occurrences
A	0
B	10
C	0
D	0
E	0
F	0
G	0
H	0
I	0
J	0
K	0
L	0
M	0
N	0
O	0
P	0
Q	0
R	0
S	0
T	0
U	0
V	0
W	0
X	0
Y	0
Z	0

40% of this signature

Scatter plot showing % Signature.1B for various samples. The y-axis ranges from 0 to 100. The x-axis lists samples: A, B, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, R1, R2, R3, U1, U2. Most samples are clustered around 55-60%, with sample B being an outlier near 100%.

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Scatter plot showing the number of publications (Y-axis, 0 to 100) versus the author rank (X-axis, A1 to U2). The data points are blue dots. Most authors have 0 or 1 publication, with a few outliers having 2 or 3 publications.

Author Rank	Number of Publications
A1	1
A2	0
A3	0
A4	0
A5	0
A6	0
A7	0
A8	0
A9	0
A10	0
A11	0
A12	0
A13	0
A14	2
A15	0
A16	0
A17	0
A18	0
A19	0
A20	0
A21	0
A22	0
A23	0
A24	0
A25	0
A26	0
A27	0
A28	0
A29	0
A30	0
A31	0
A32	0
A33	0
A34	0
A35	0
A36	0
A37	0
A38	0
A39	0
A40	0
A41	0
A42	0
A43	0
A44	0
A45	0
A46	0
A47	0
A48	0
A49	0
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A107	0
A108	0
A109	0
A110	0
A111	0
A112	0
A113	0
A114	0
A115	0
A116	0
A117	0
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A194	0
A195	0
A196	0
A197	0
A198	0
A199	0
A200	0
A201	0
A202	0
A203	0
A204	0
A205	0
A206	0
A207	0
A208	0
A209	0
A210	0
A211	0
A212	

60% of this signature

N	n
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	29
30	30
31	31
32	32
33	33

40% of this signature

Box plot showing the percentage of Signature.2 across 22 samples. The y-axis ranges from 0 to 100. A dotted line is at 40%. Sample A is at 100%, B is at ~98%, and samples 2-22 are clustered between 50% and 65%.

Sample	Median % Signature.2	Q1 % Signature.2	Q3 % Signature.2	Min % Signature.2	Max % Signature.2
A	100	100	100	100	100
B	98	95	100	90	100
2	58	55	60	50	65
3	58	55	60	50	65
4	58	55	60	50	65
5	58	55	60	50	65
6	58	55	60	50	65
7	58	55	60	50	65
8	58	55	60	50	65
9	58	55	60	50	65
10	58	55	60	50	65
11	58	55	60	50	65
12	58	55	60	50	65
13	58	55	60	50	65
14	58	55	60	50	65
15	58	55	60	50	65
16	58	55	60	50	65
17	58	55	60	50	65
18	58	55	60	50	65
19	58	55	60	50	65
20	58	55	60	50	65
21	58	55	60	50	65
R1	58	55	60	50	65
R2	58	55	60	50	65
R3	58	55	60	50	65
U1	58	55	60	50	65
U2	58	55	60	50	65

+ 40% of this signature

Box plot showing the number of iterations for the proposed algorithm across different datasets. The y-axis represents the number of iterations (0 to 100). The x-axis lists the datasets: A, B, C, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, R1, R2, R3, U1, U2. The plot shows that for most datasets, the number of iterations is relatively low (around 40), with a significant outlier for dataset B (around 95 iterations).

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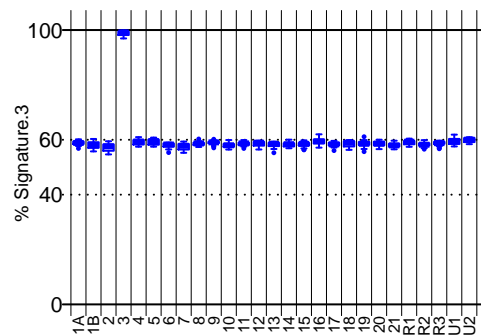
Author Rank	Number of Publications
1	1
2	1
3	1
4	1
5	1
6	1
7	1
8	1
9	1
10	1
11	1
12	1
13	5
14	1
15	1
16	1
17	1
18	1
19	1
20	1
21	1
22	1
23	1
24	1
25	1

60% of this signature

Matrix Size	Number of Non-zero Entries
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	5
21	0
22	0
23	0
24	0
25	0

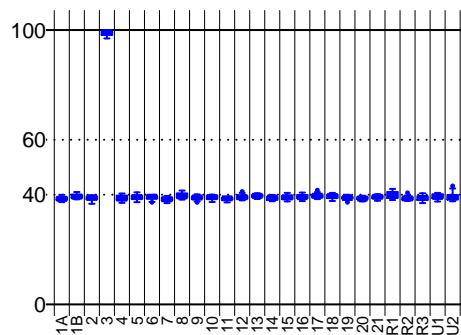
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60% of Signature.3



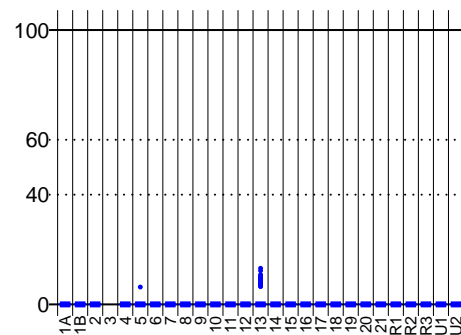
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40% of Signature.3



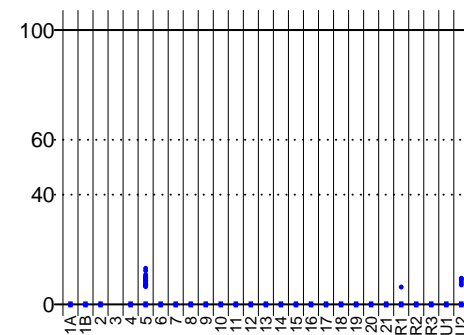
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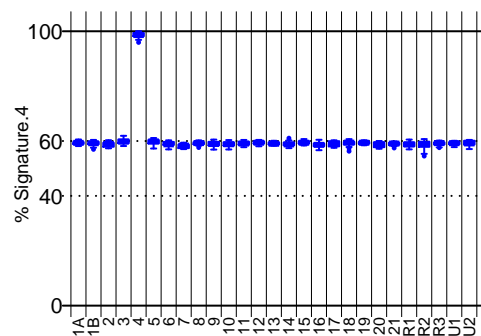
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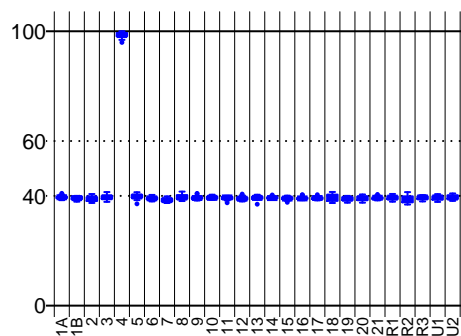
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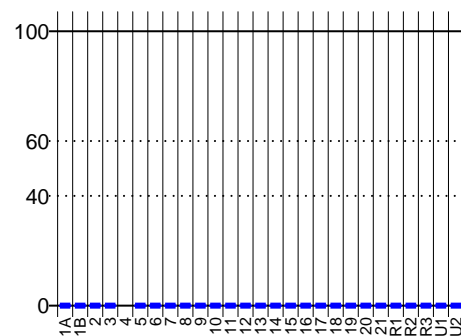
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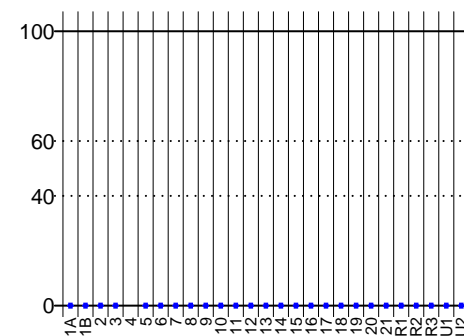
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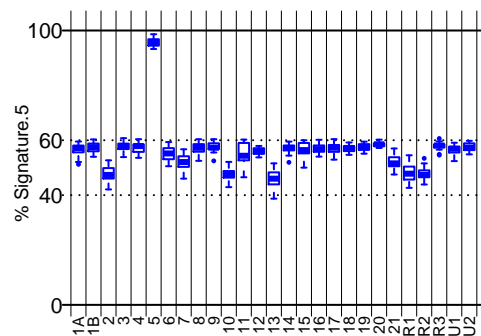
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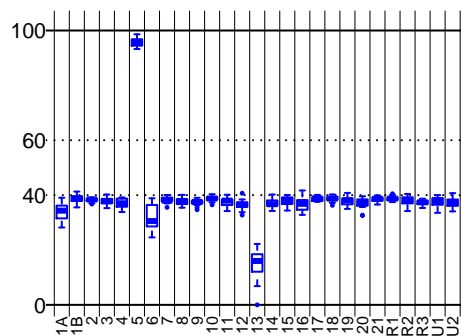
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60% of Signature.5



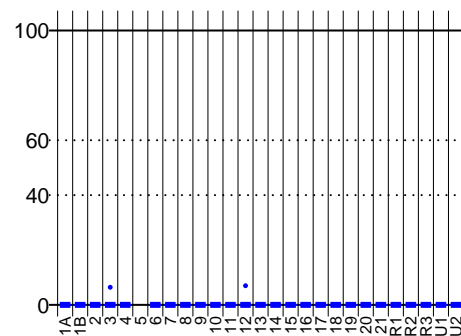
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40% of Signature.5



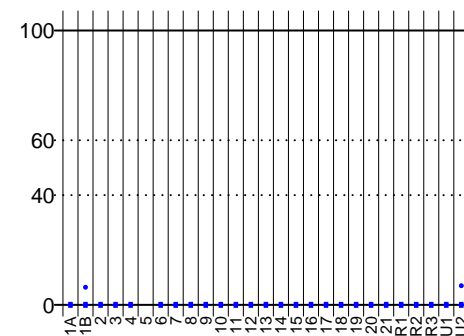
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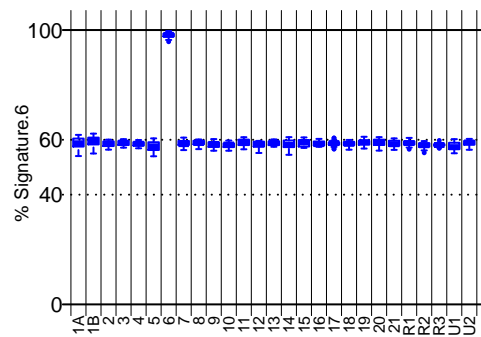
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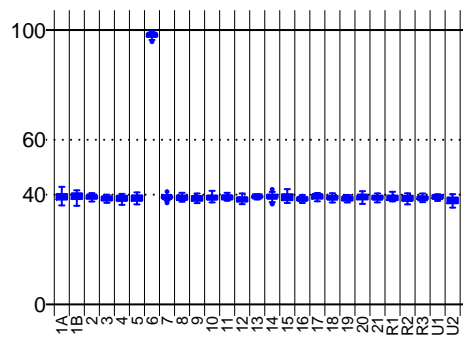
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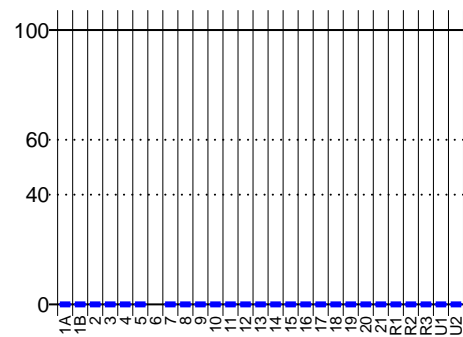
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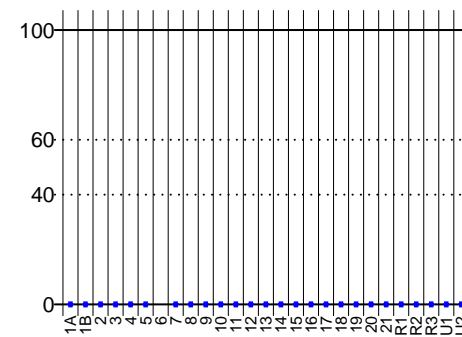
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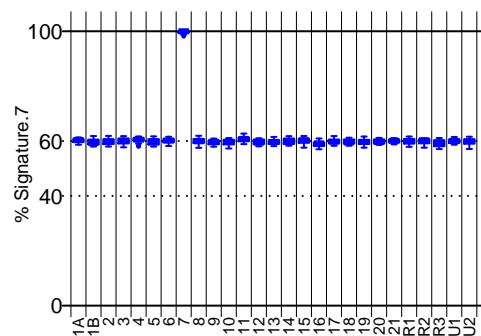
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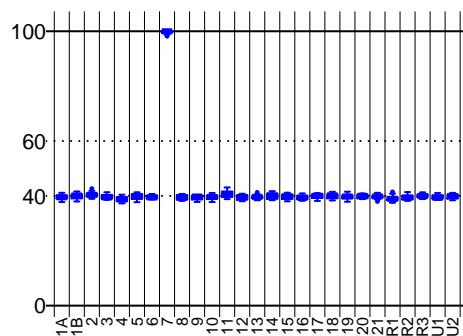
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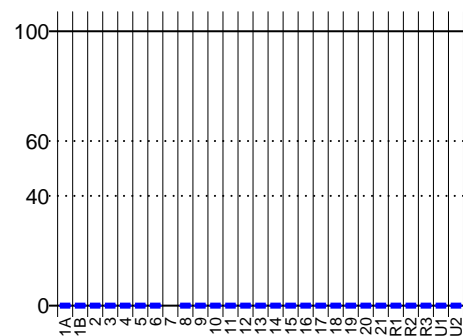
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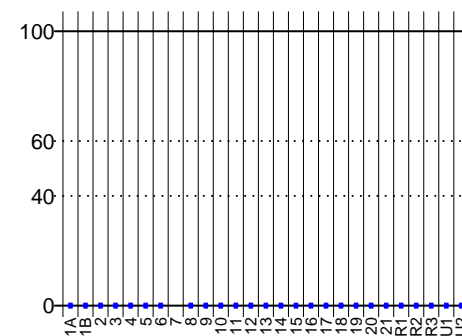
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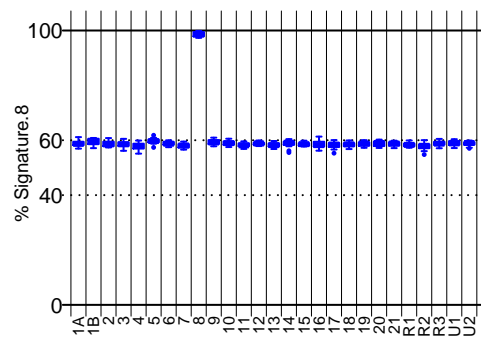
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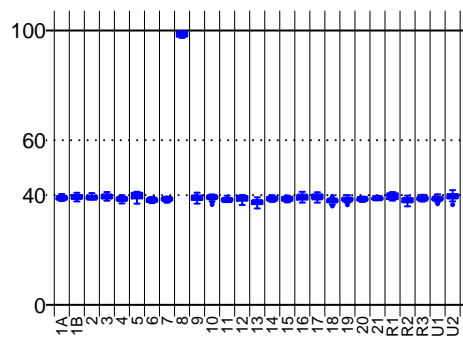
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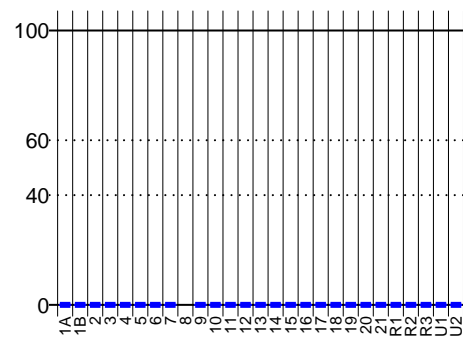
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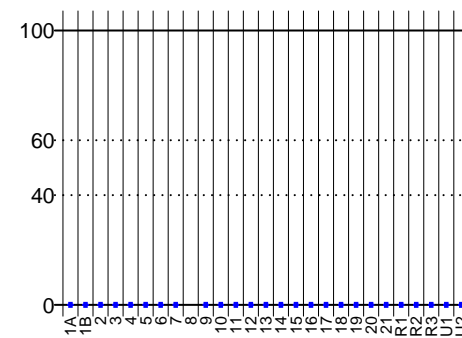
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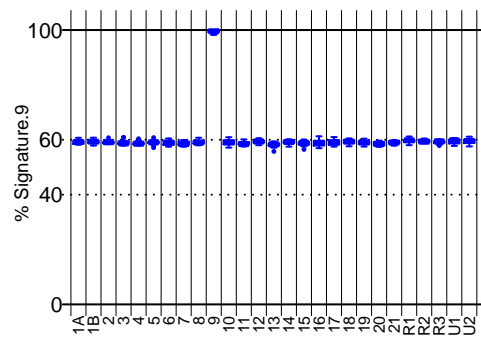
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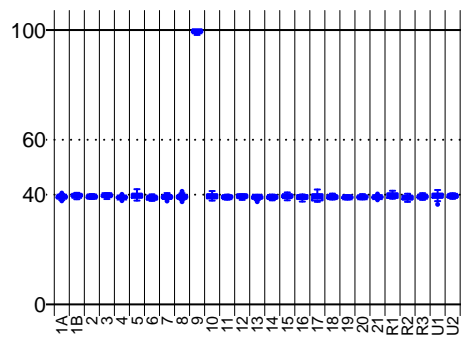
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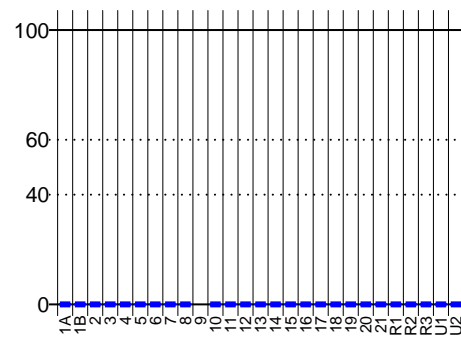
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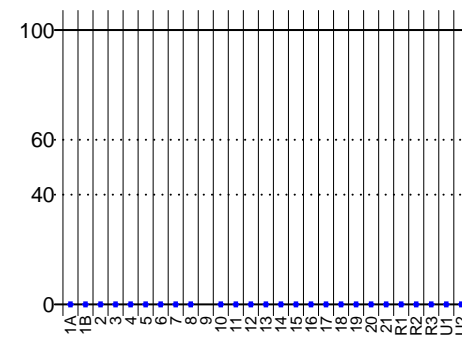
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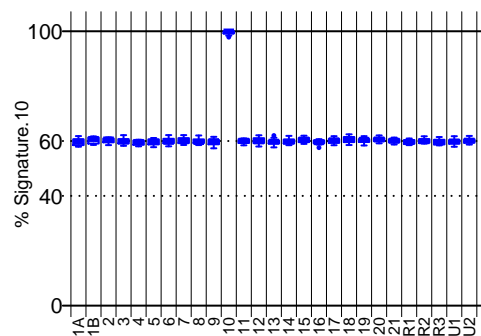
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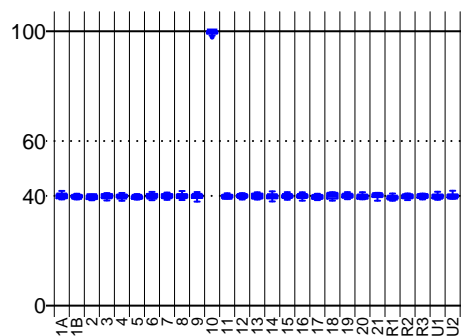
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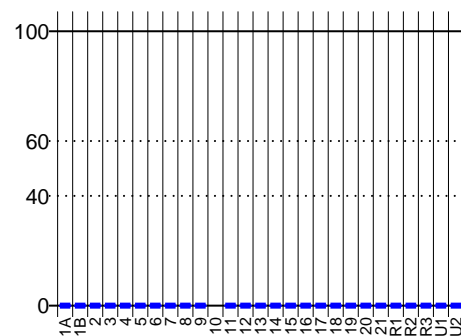
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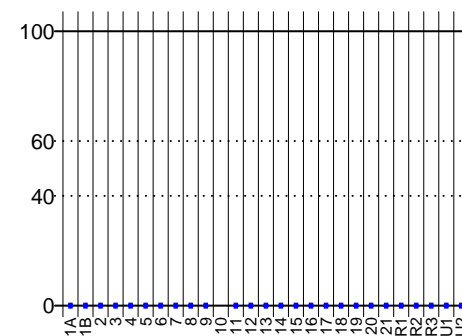
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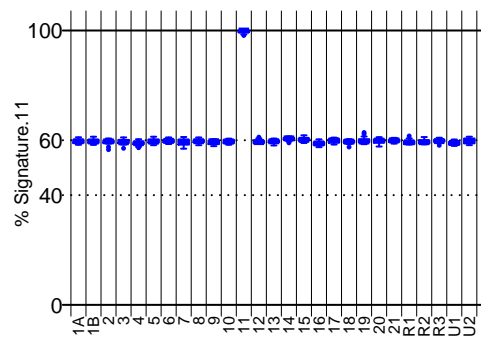
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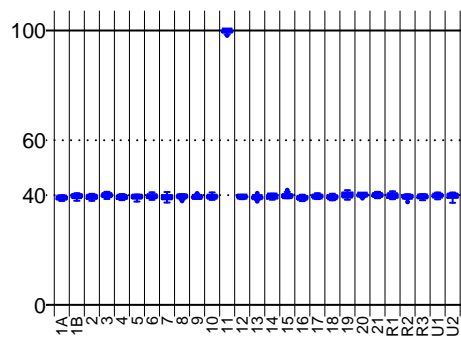
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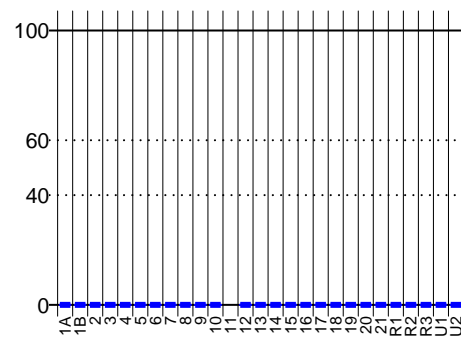
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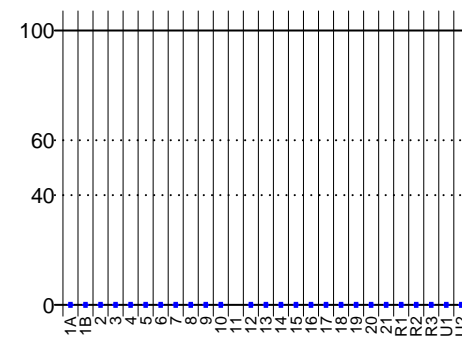
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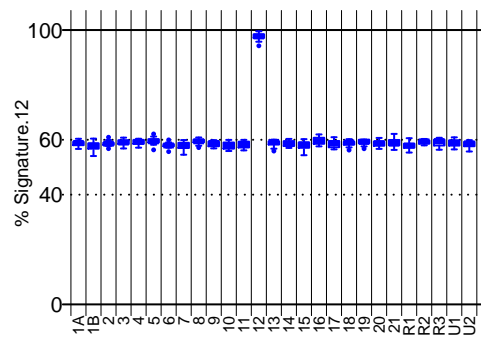
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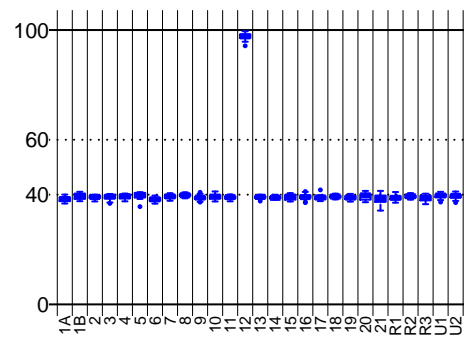
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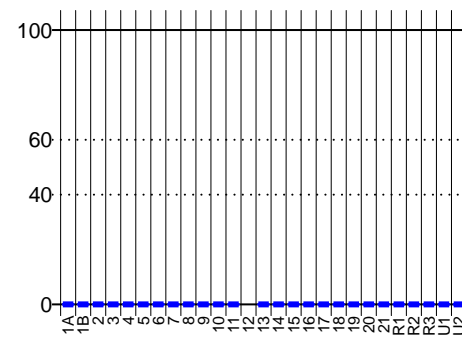
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**40% of Signature.12**



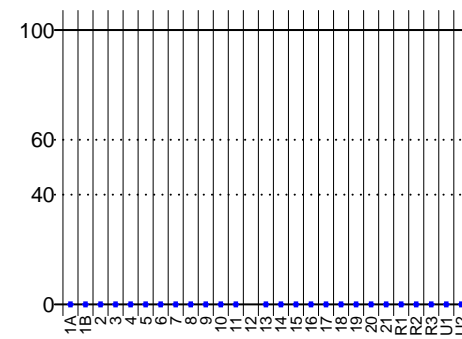
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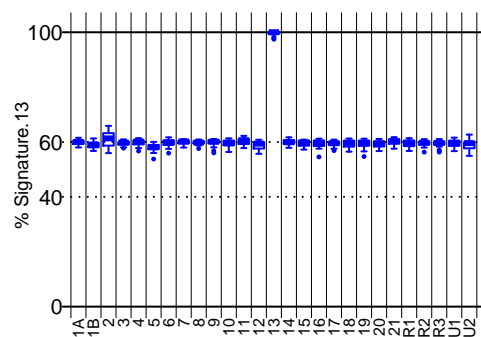
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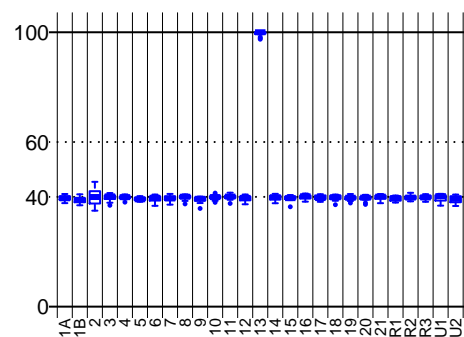
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**60% of Signature.13**



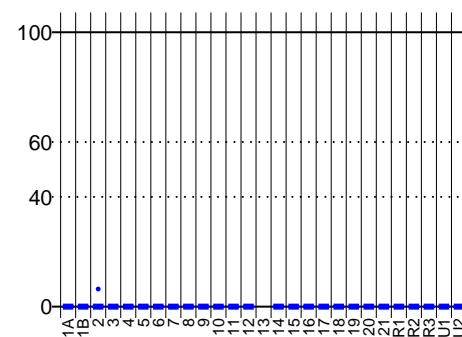
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**40% of Signature.13**



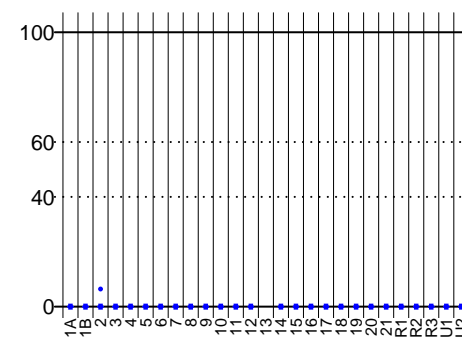
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No Signature.13



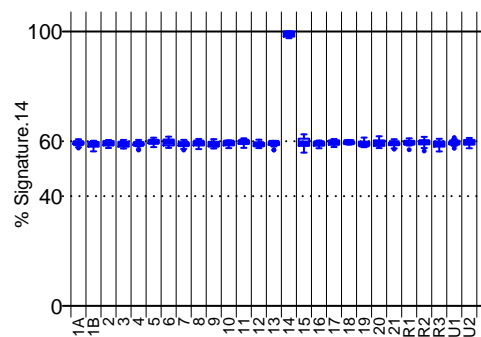
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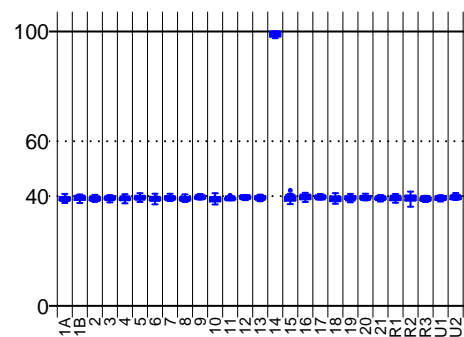
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**60% of Signature.14**



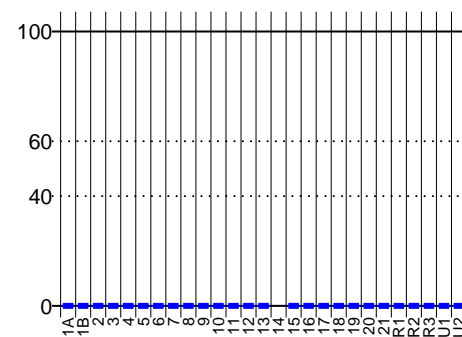
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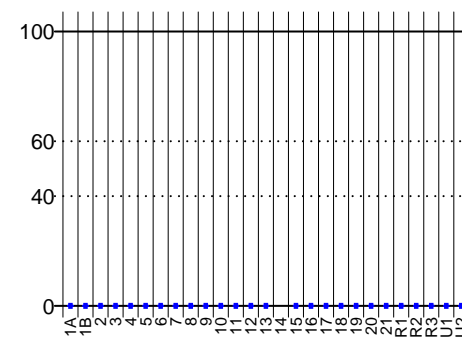
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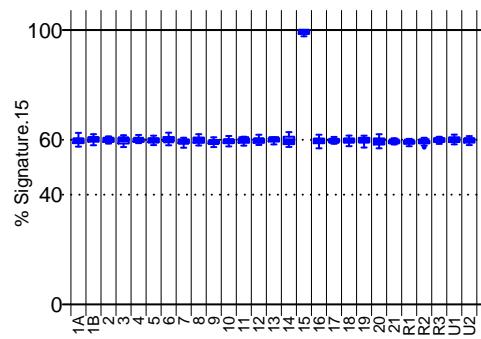
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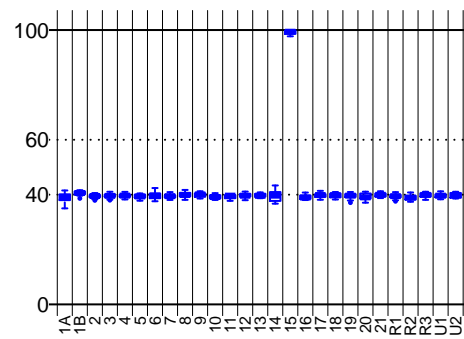
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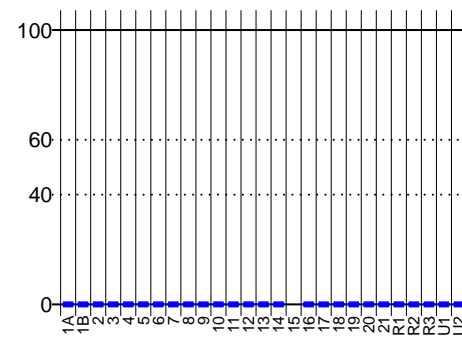
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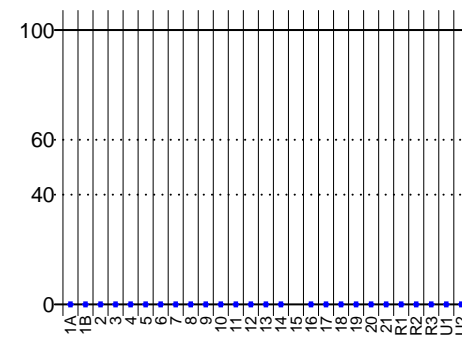
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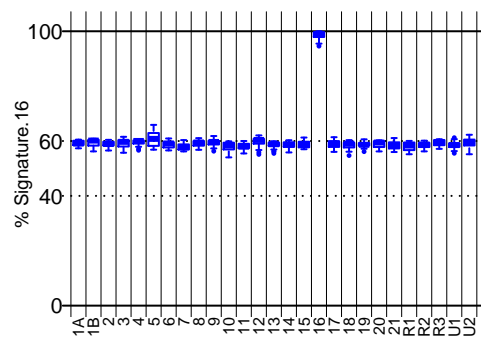
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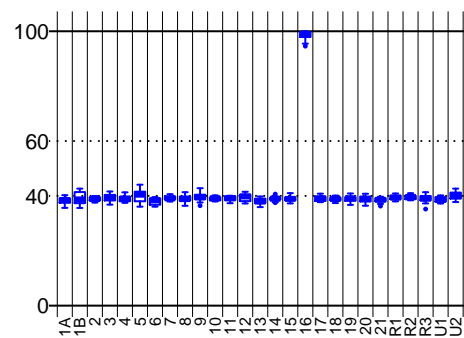
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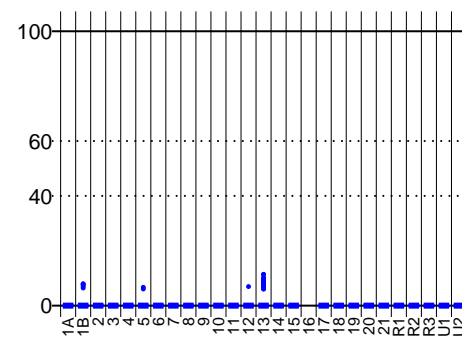
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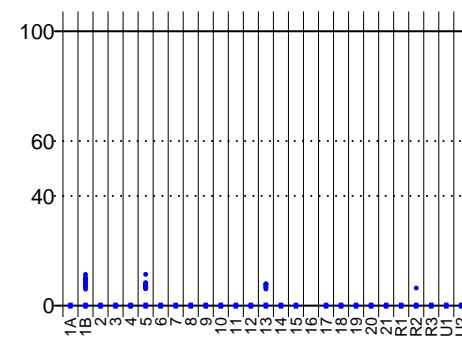
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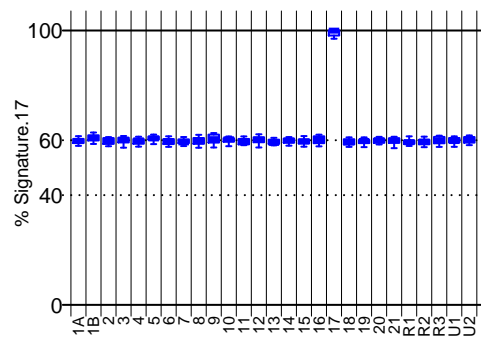
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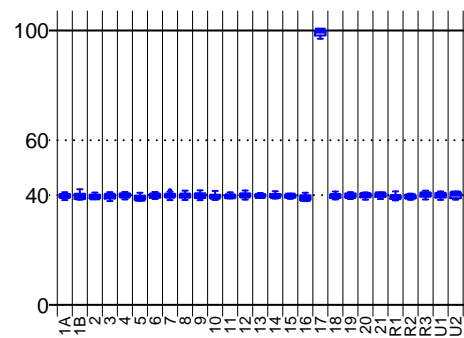
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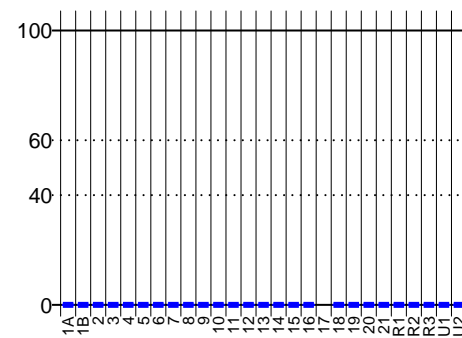
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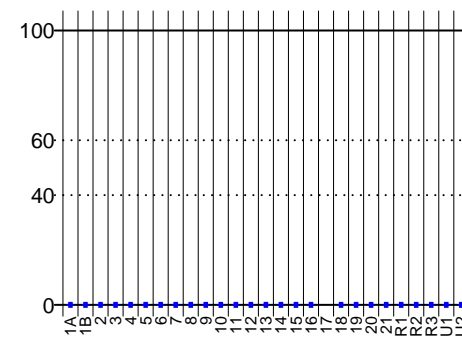
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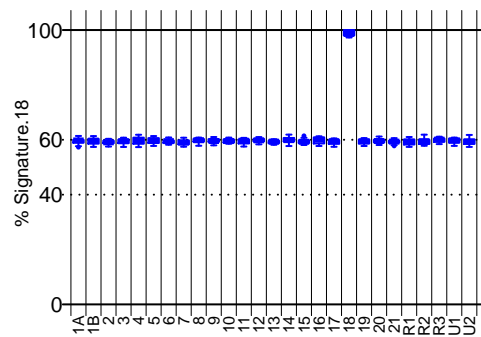
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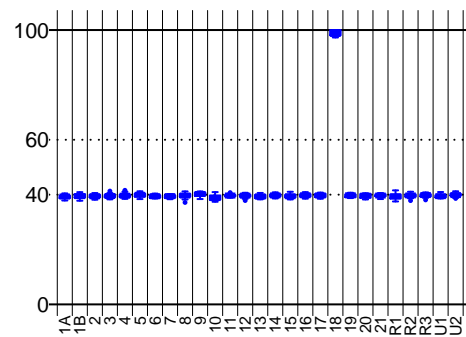
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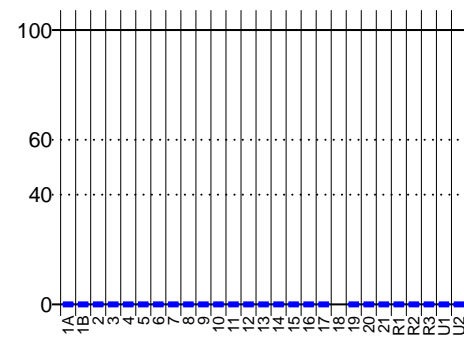
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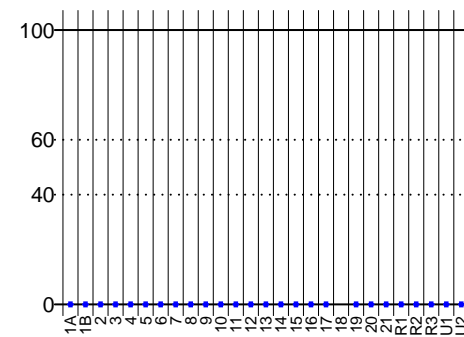
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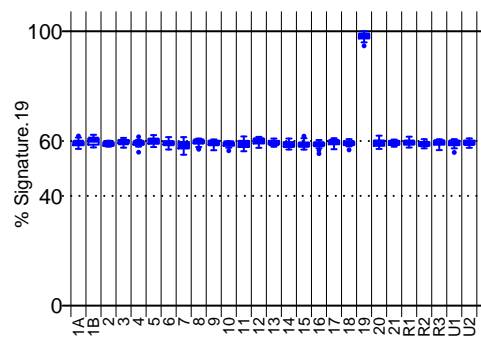
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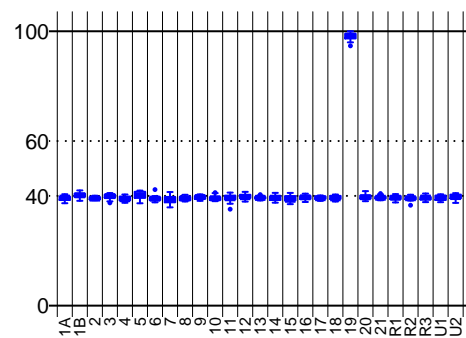
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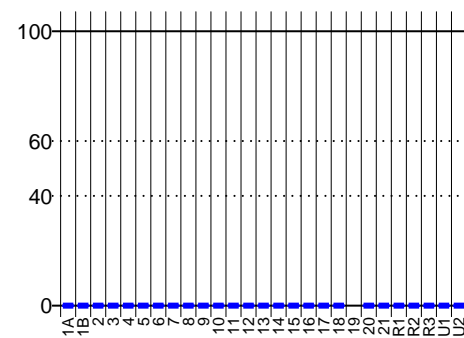
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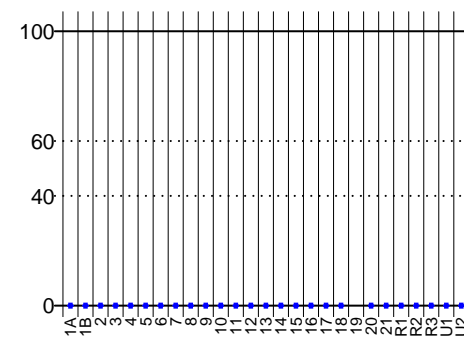
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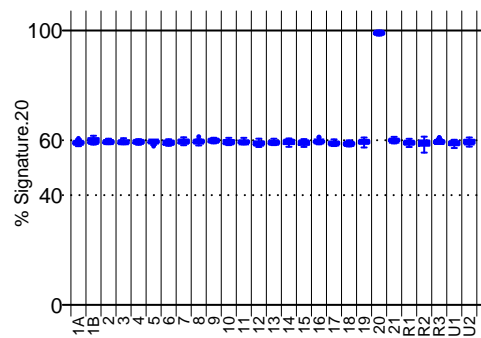
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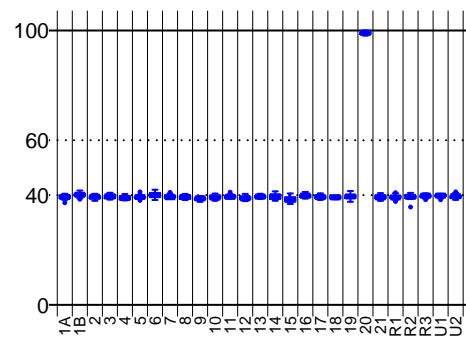
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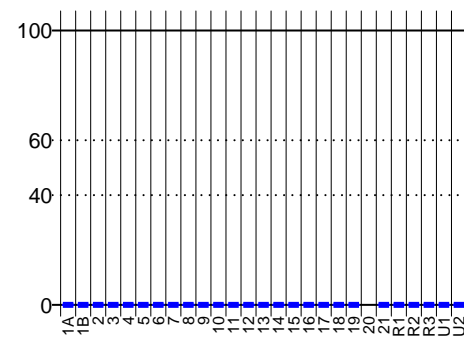
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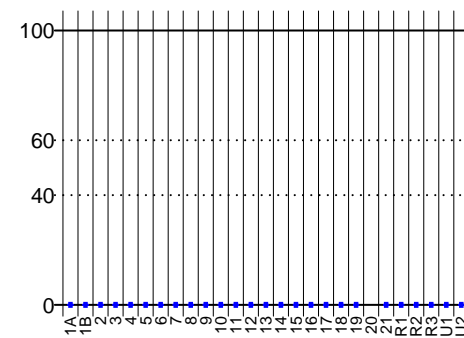
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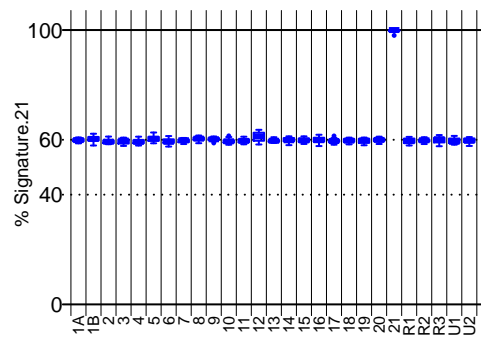
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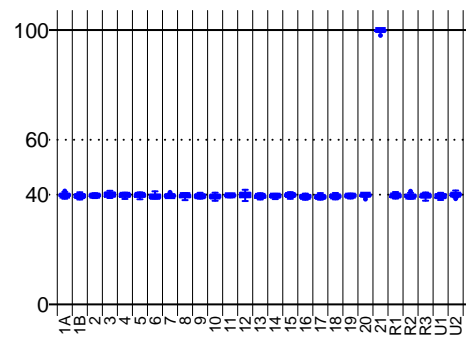


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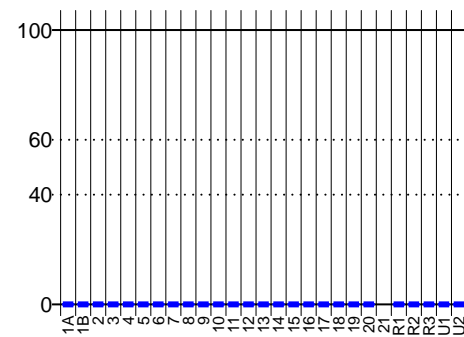
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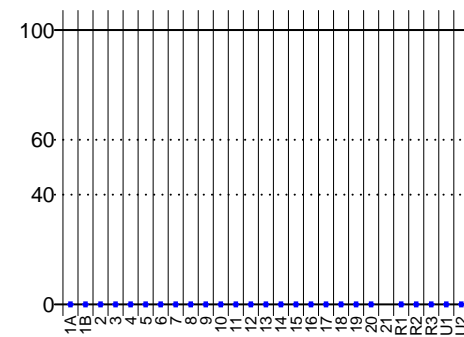
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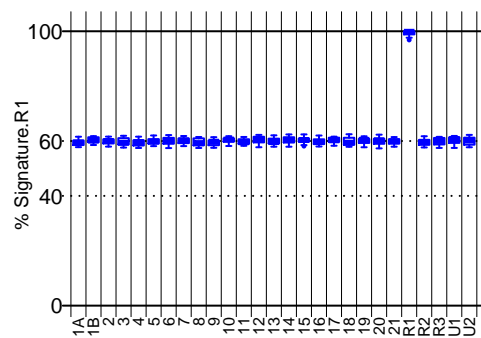
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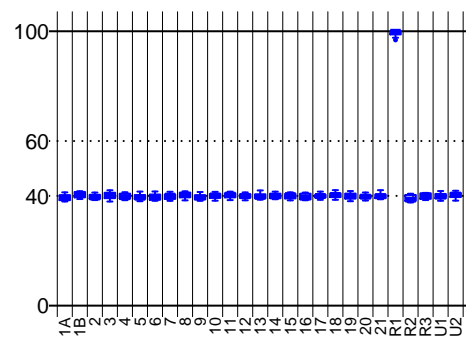
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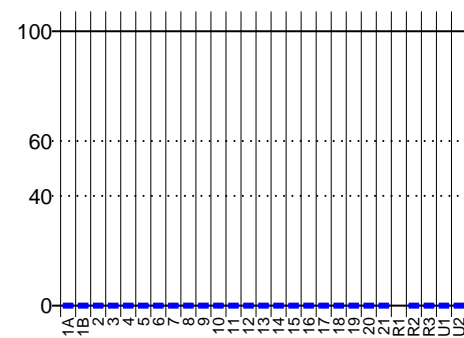
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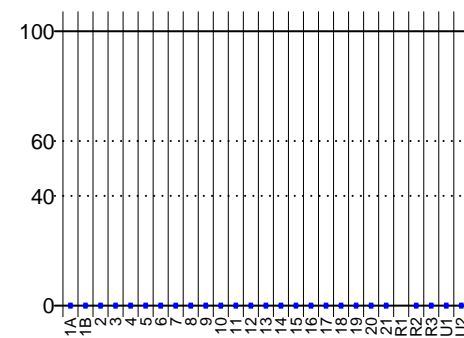
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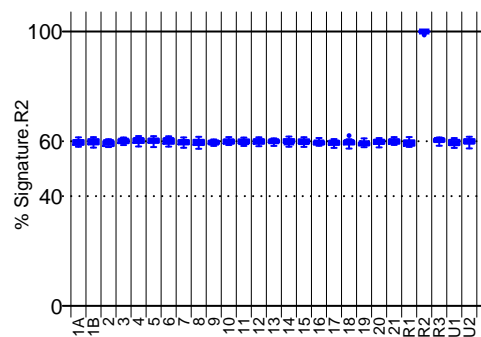
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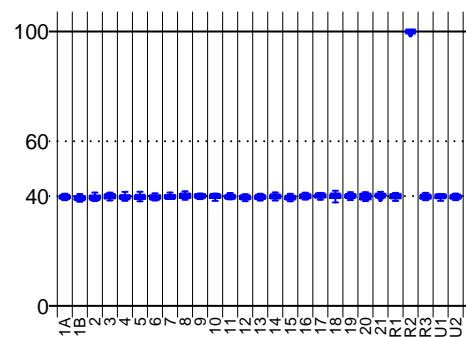
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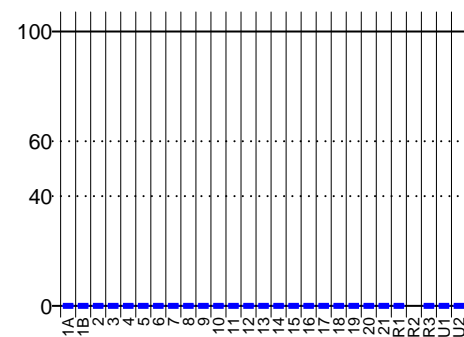
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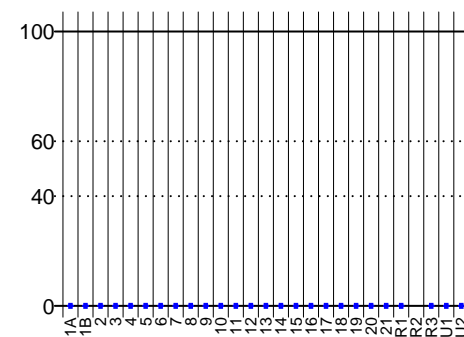
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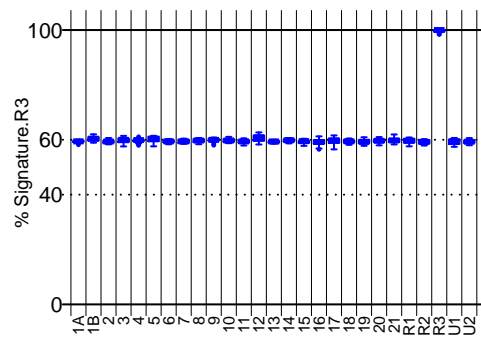
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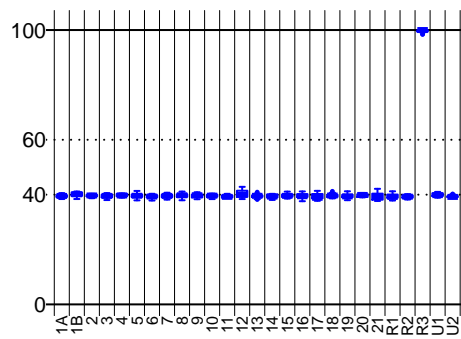
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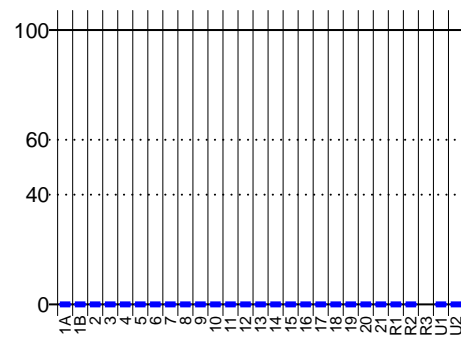
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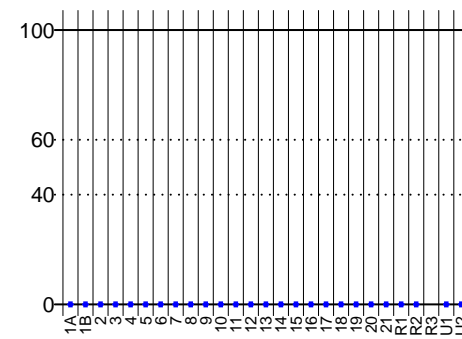
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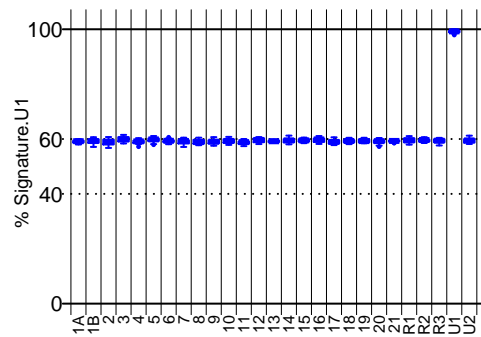
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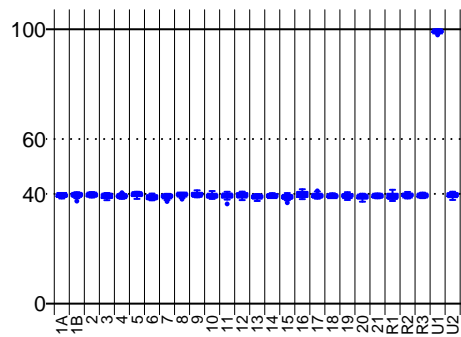
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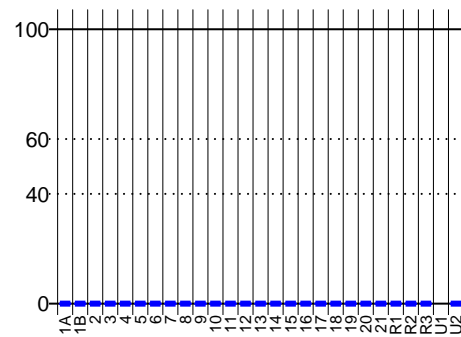
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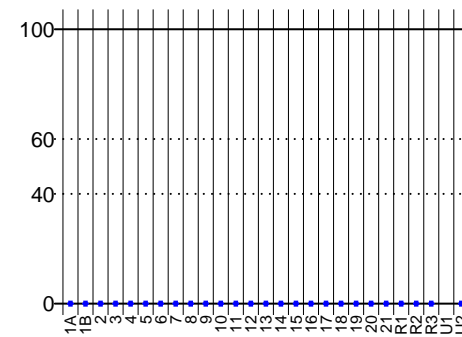
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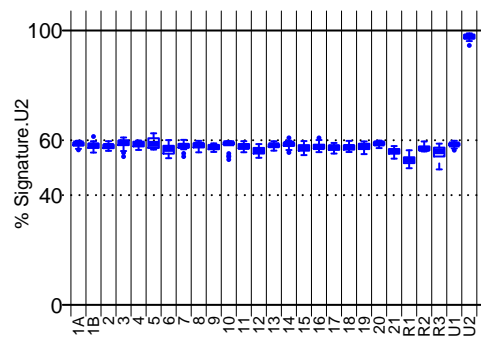
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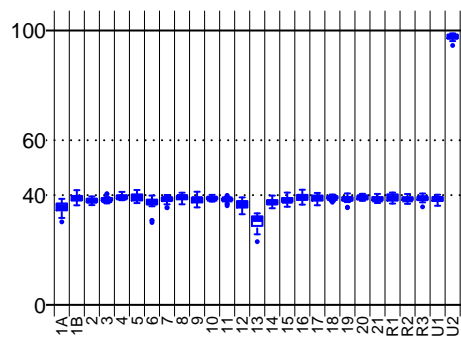
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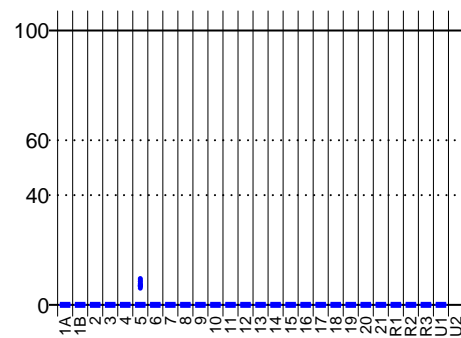
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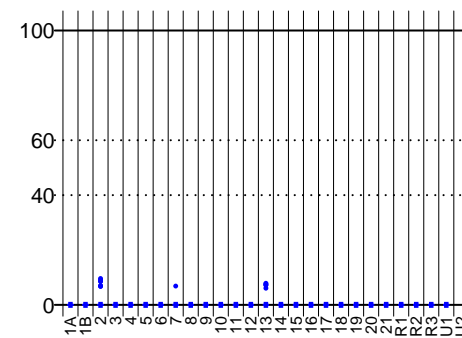
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