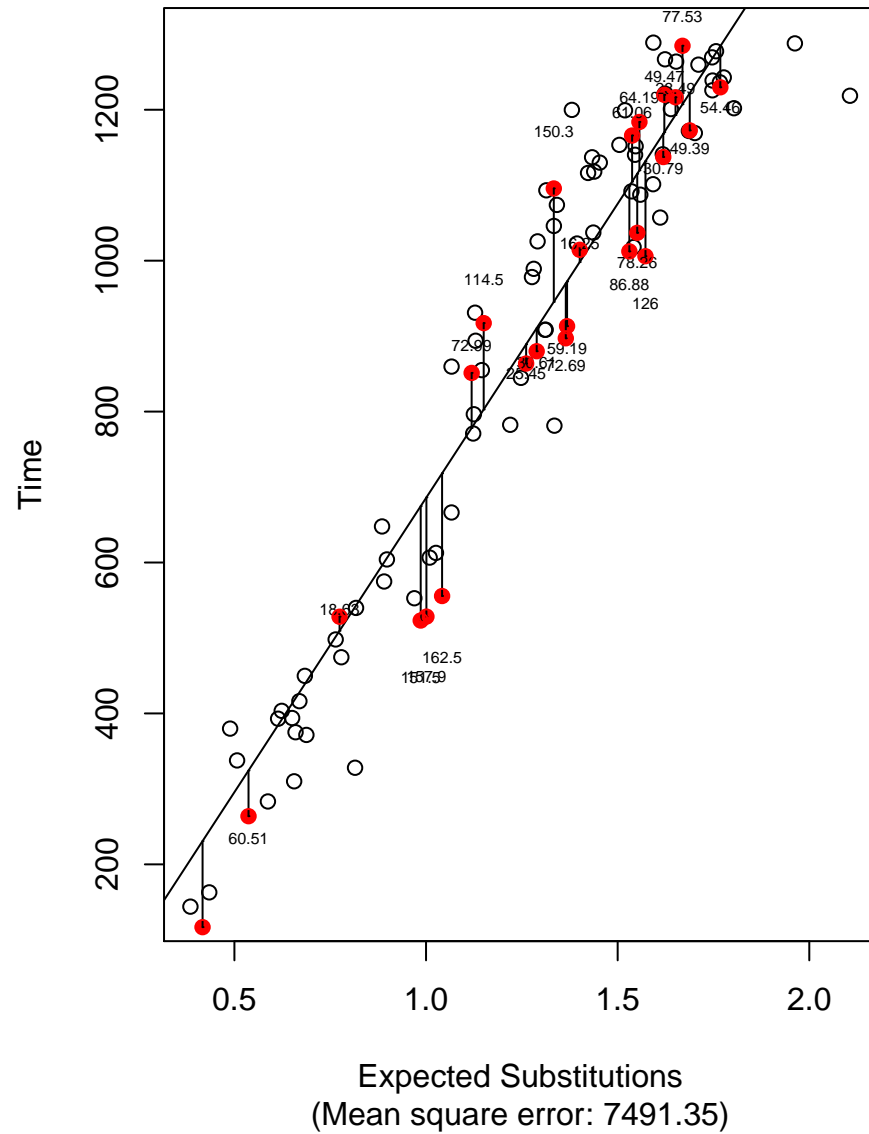


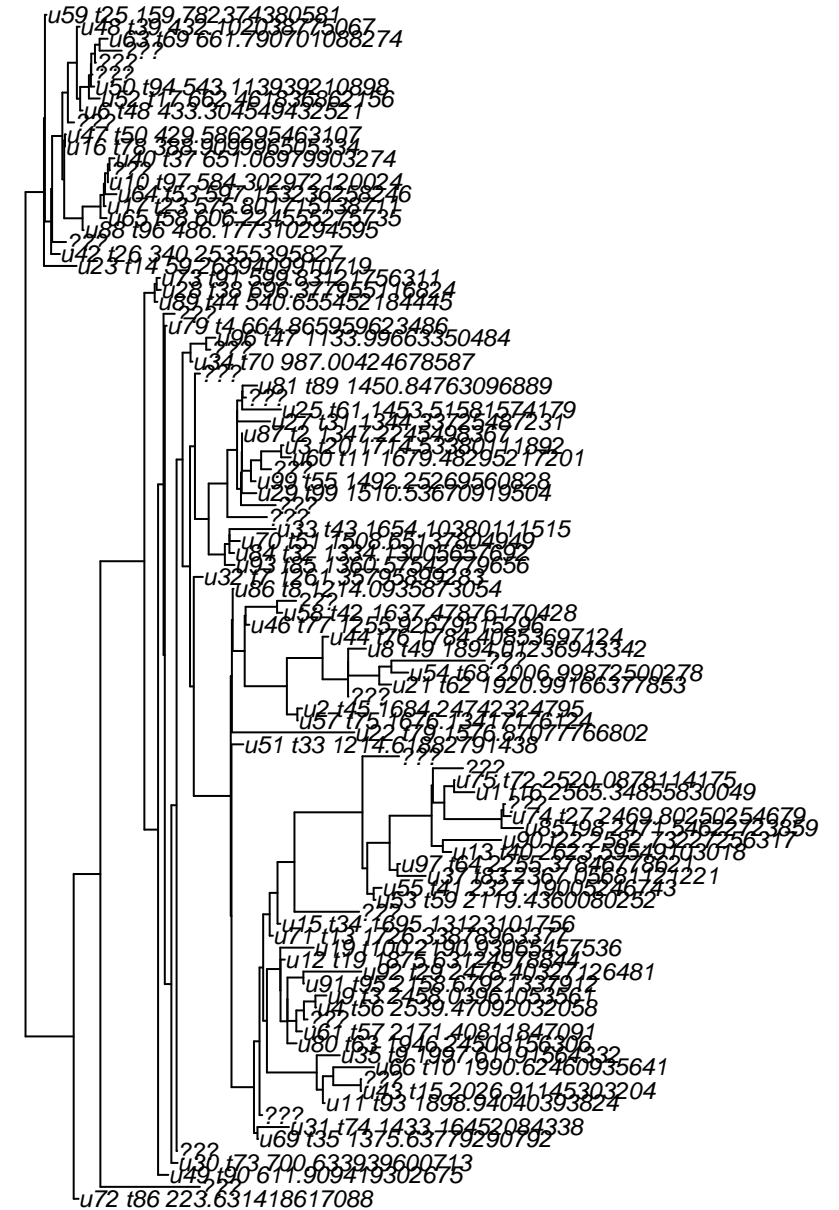
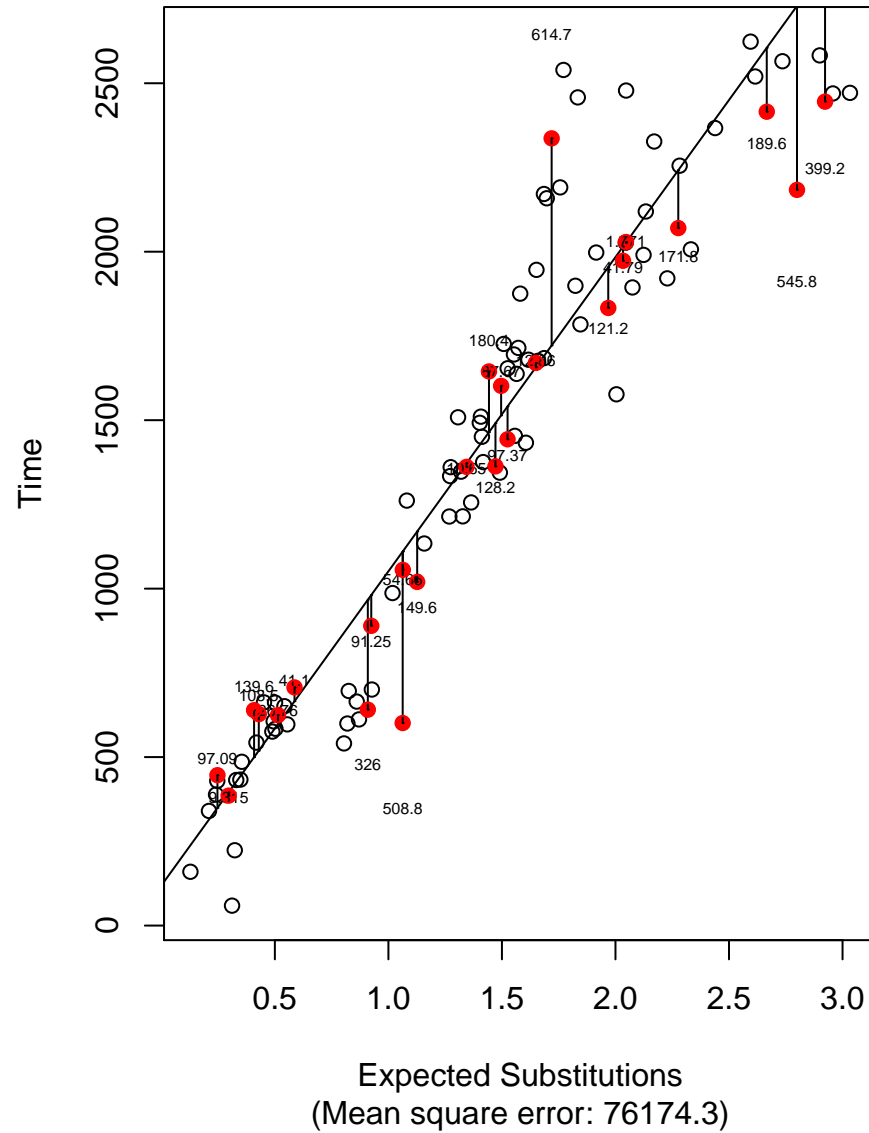
# HIV RNA: Simulated-no.1 (Remove 25)

## Time vs Distance

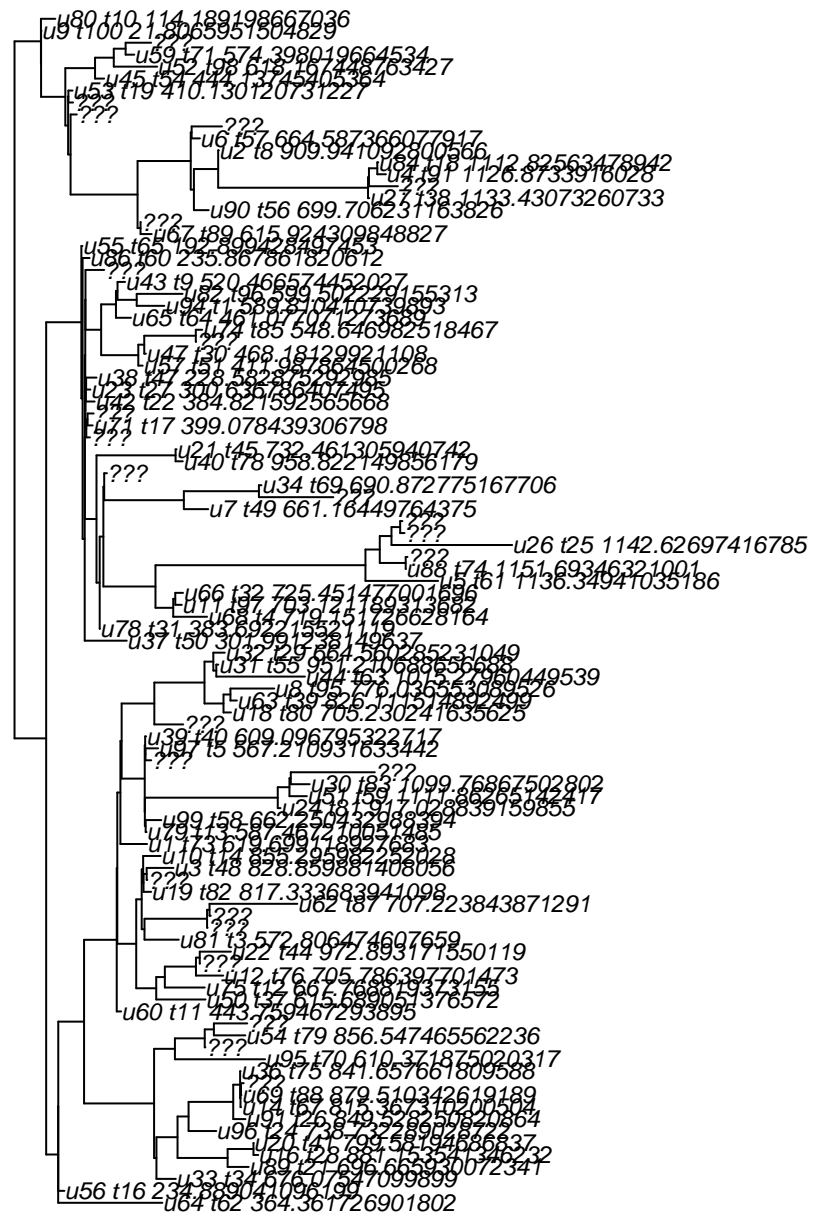


# HIV RNA: Simulated-no.2 (Remove 25)

## Time vs Distance

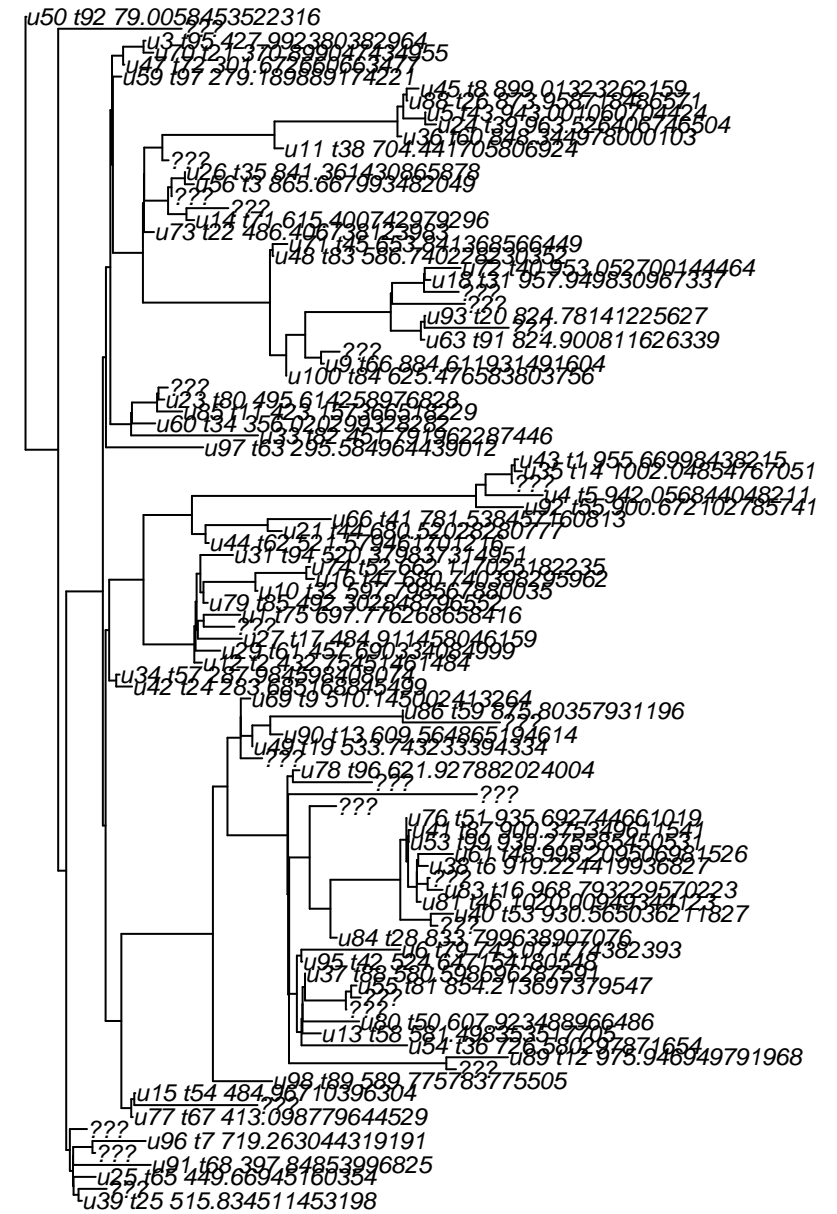
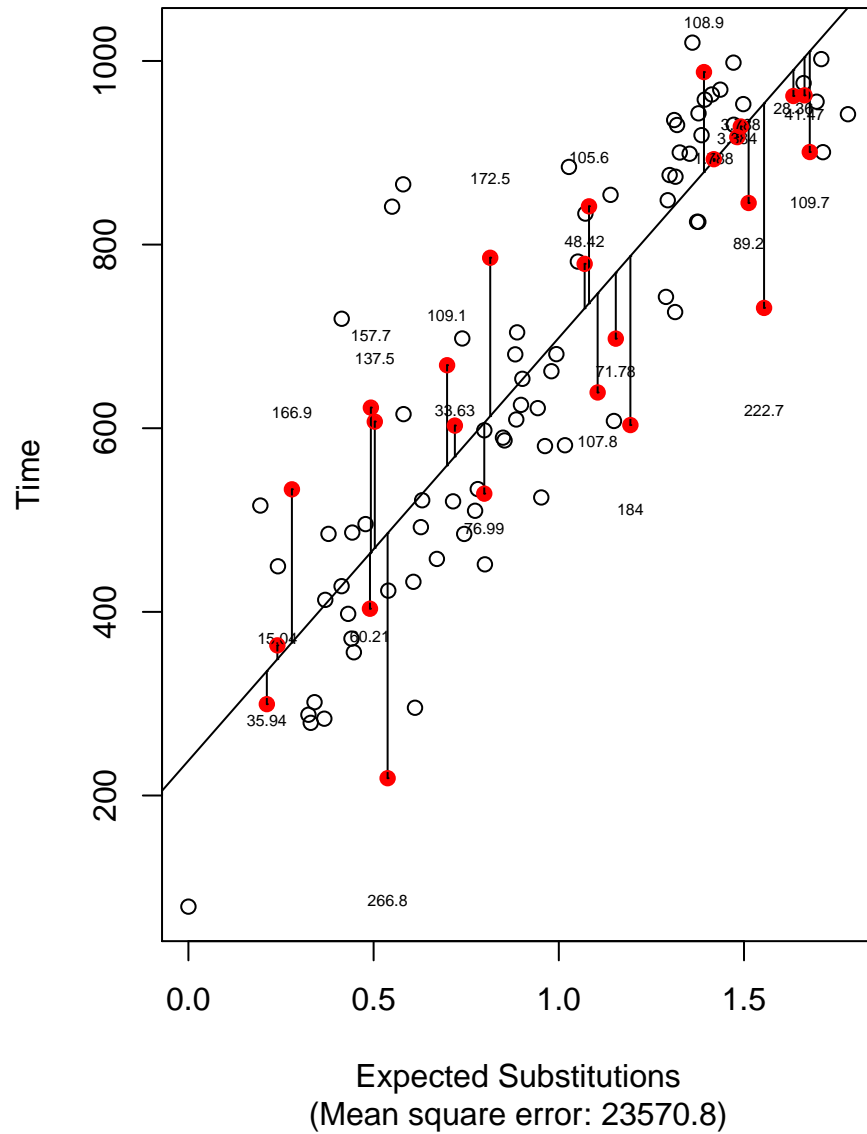


680 110 114 181 189 673 703 36  
 100 21 30 655 150 4829  
 u59 t71 574 398019664534  
 u45 t52 448 612 159 146 63427  
 u53 t19 410 130 1207312274  
 ???  
 ???  
 u6 t57 664 587366077917  
 u2 t8 909 941098900566  
 u4 t9 t 1126.8733916028  
 u2 t5 t38 1133.43073260733  
 u90 t56 699.706231163626  
 u55 t67 t89 615 924309848827  
 u86 t60 235.867861820612  
 u43 t9 520 466574452027  
 u81 t1 989 99150150738893  
 u65 t64 t6 589 2102410738893  
 u74 t85 548.646982518467  
 u47 t30 468 18129921108  
 u38 t27 278 58287519205  
 u42 t22 384.821592565668  
 u71 t17 399.078439306798  
 u21 t45 732 461305940742  
 u40 t78 958.822149856179  
 ???  
 u34 t69 690.872775167706  
 u7 t49 661.16449764375  
 ???  
 u26 t25 1142.62697416785  
 u88 t74 1151.69346321001  
 u66 t32 725 451477001899  
 u78 t31 38 6684719 451726628164  
 u37 t50 303 66 133614837  
 u37 t55 951 210688535668  
 u44 t6 3 035530580449539  
 u63 t8 852 676 03553028926  
 u18 t80 705 230241635629  
 u39 t40 609 096795322717  
 u38 t15 567.210931633442  
 ???  
 u30 t89 1099 768675502802  
 u24 t81 917 028839139855  
 u99 t58 662 659432989394  
 u79 t53 78 609 1160956835  
 u10 t12 858 29582263228  
 u24 t3 148 828.859881408056  
 u19 t82 817.333683941098  
 u62 t87 707.223843871291  
 ???  
 u81 t3 572 806474607659  
 u22 t44 972 893171550119  
 ???  
 u12 t76 705 786397701473  
 u5 t12 607 7689519371543  
 u50 t37 915 689051376572  
 u60 t11 443 759467293895  
 ???  
 u54 t79 856 547465562236  
 u95 t70 610 371875020317  
 u36 t75 841.657661809588  
 u69 t88 878 519342619189  
 u9 t1 26 810 366210702384  
 u96 t24 26 810 366210702384  
 u20 t3 179 58 194686837  
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 u56 t16 234 88904906190  
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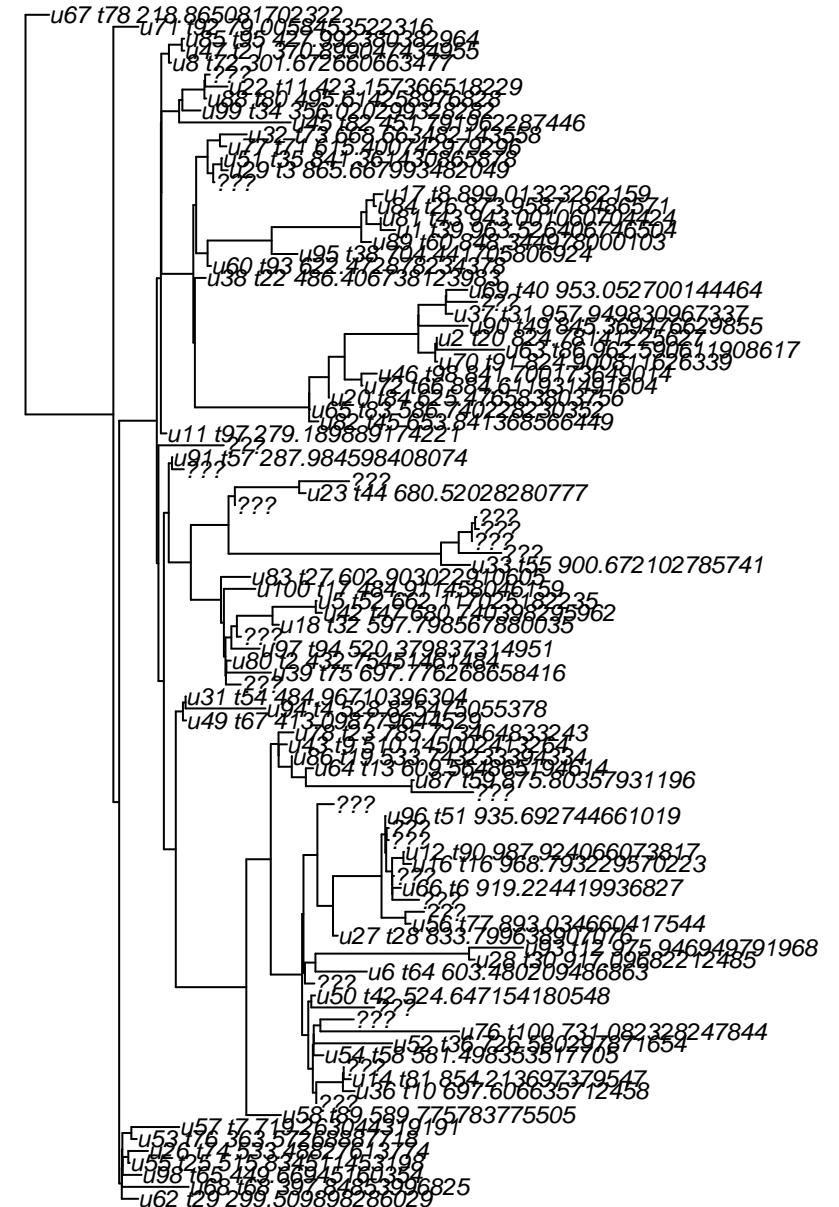
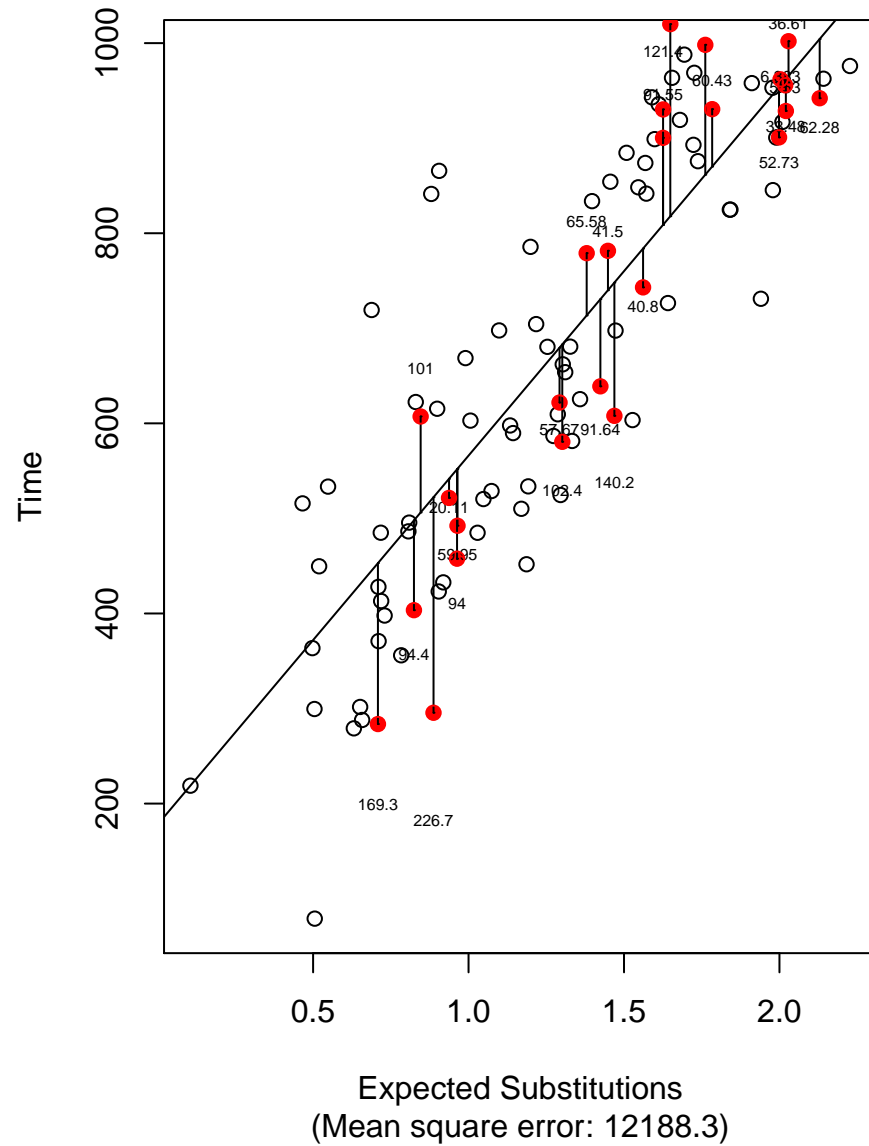
### HIV RNA: Simulated-no.4 (Remove 25)

## Time vs Distance



# HIV RNA: Simulated-no.5 (Remove 25)

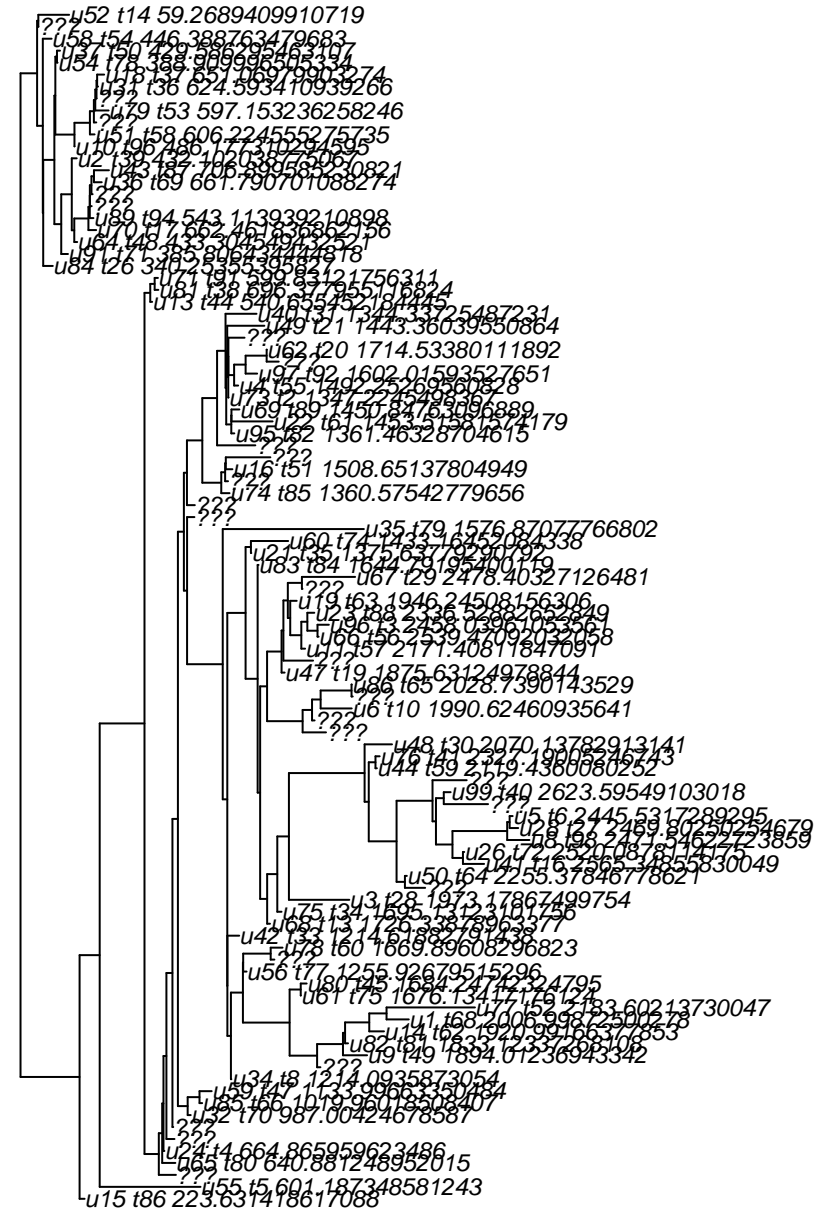
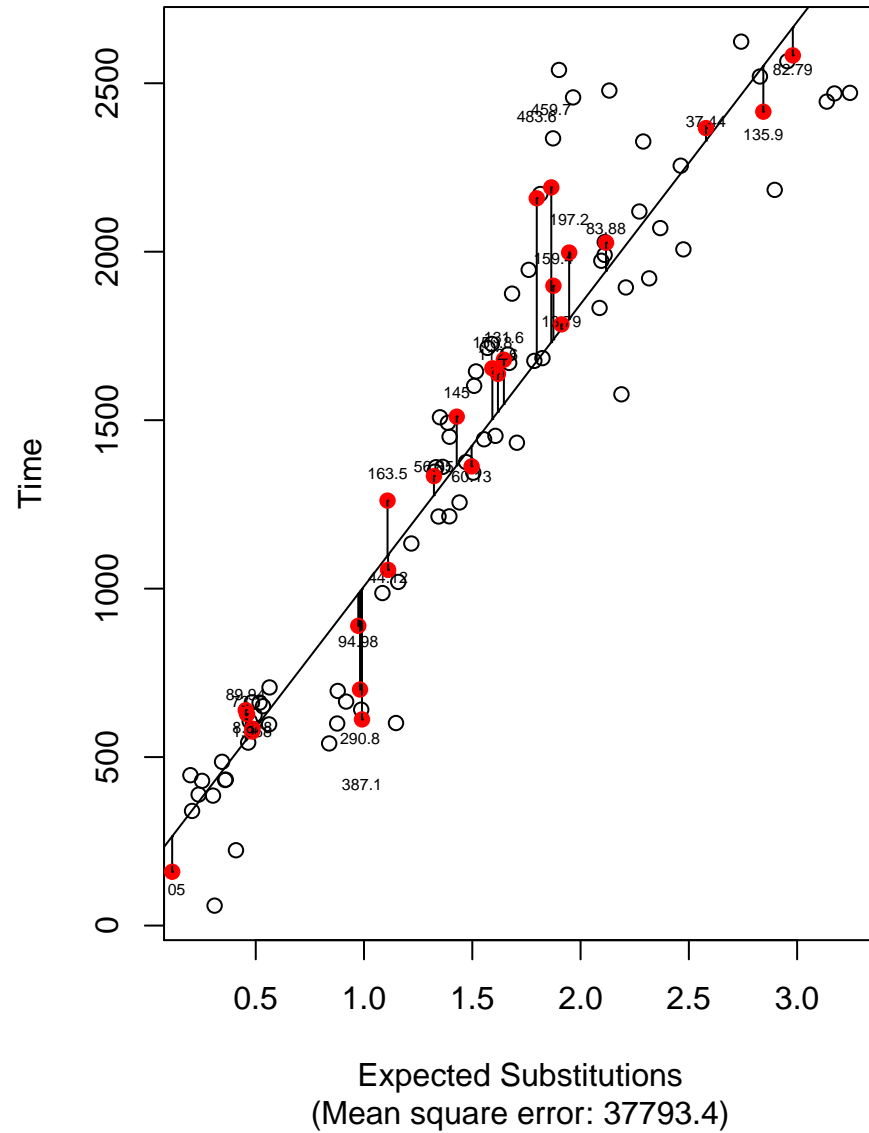
## Time vs Distance





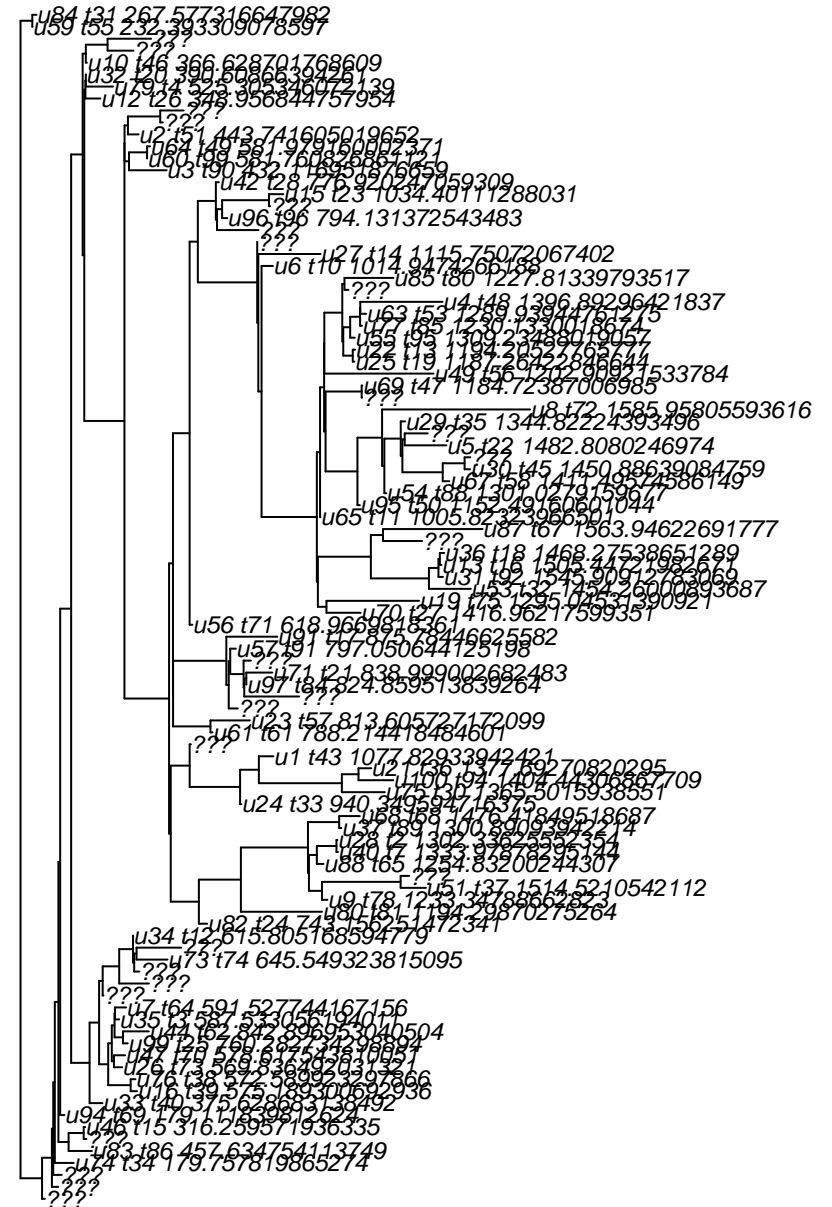
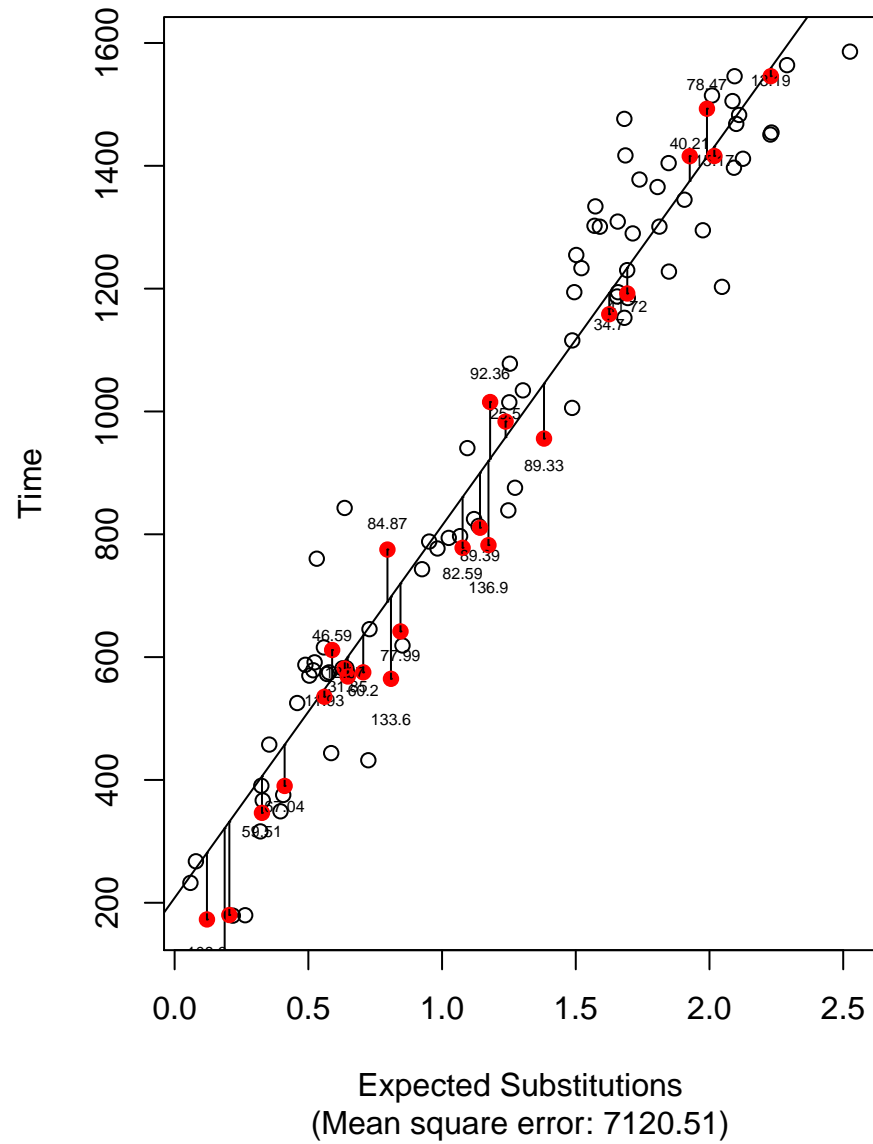
# HIV RNA: Simulated-no.6 (Remove 25)

## Time vs Distance



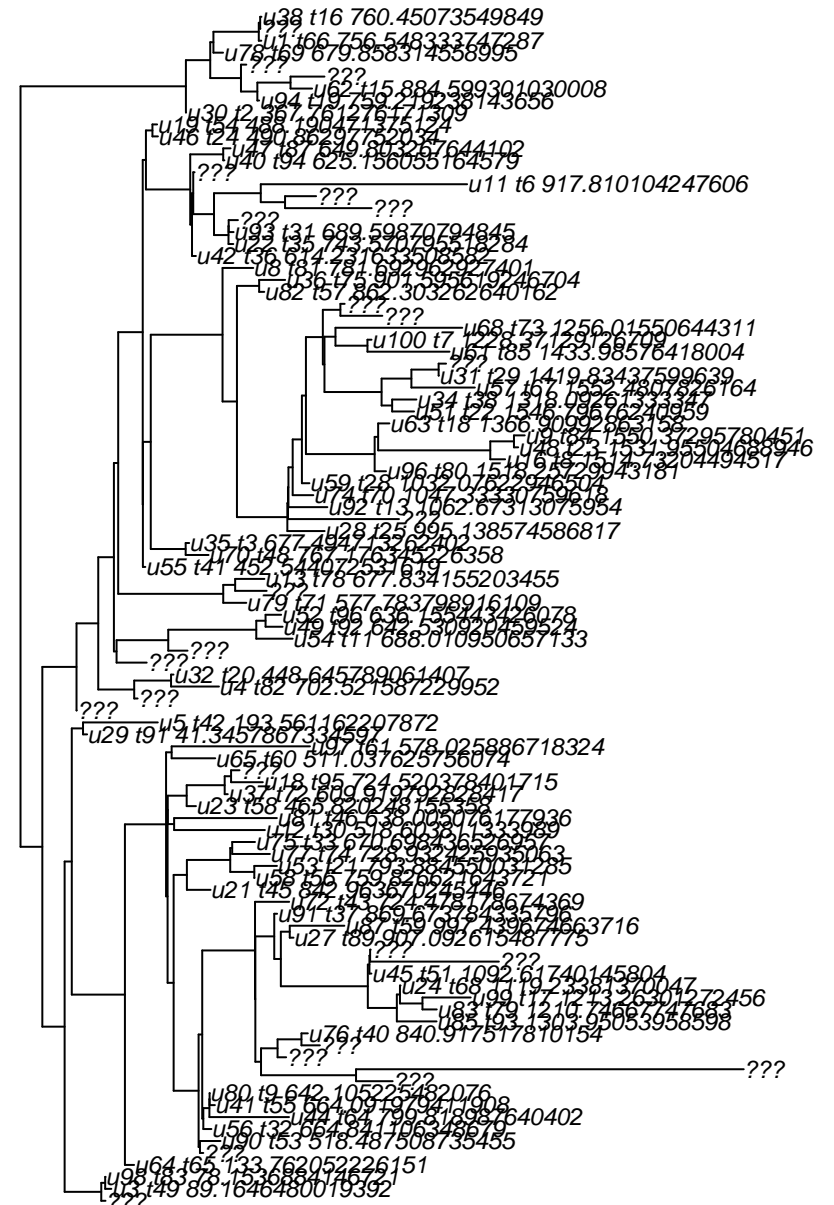
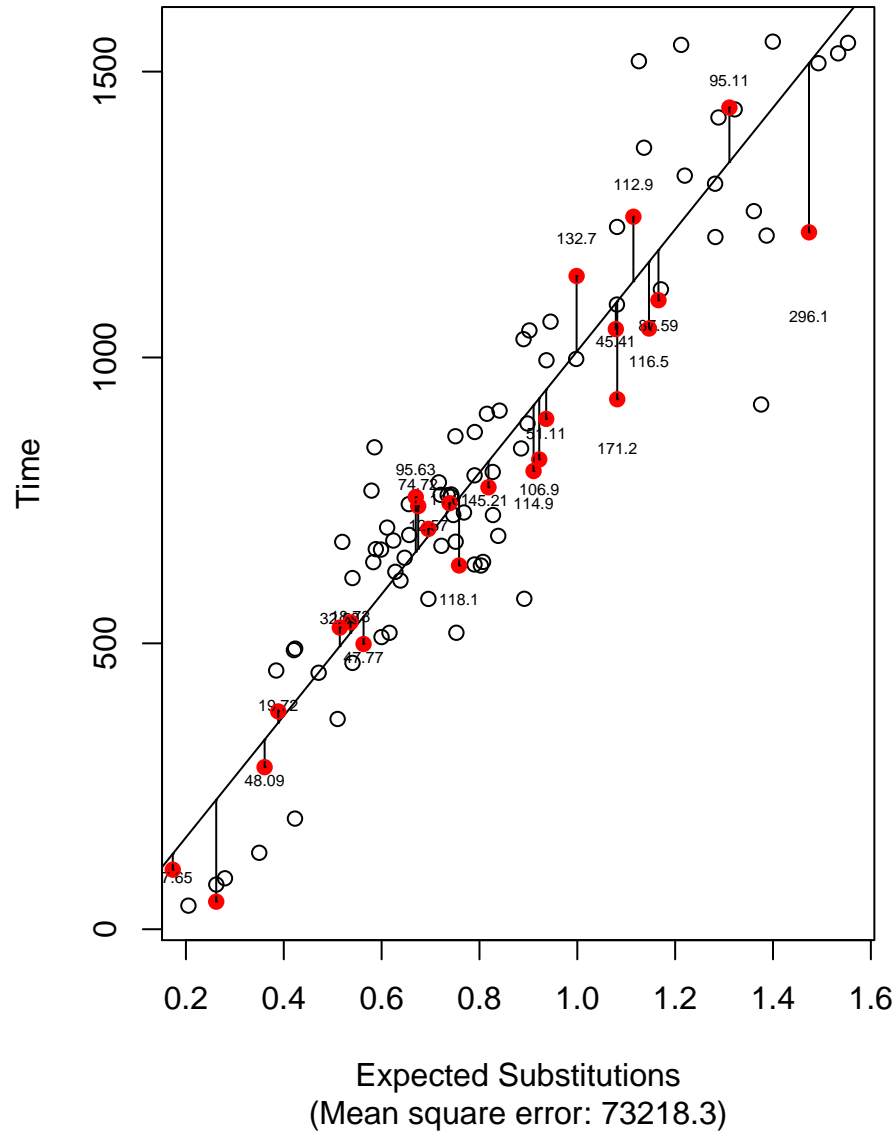
### HIV RNA: Simulated-no.7 (Remove 25)

## Time vs Distance



# HIV RNA: Simulated-no.8 (Remove 25)

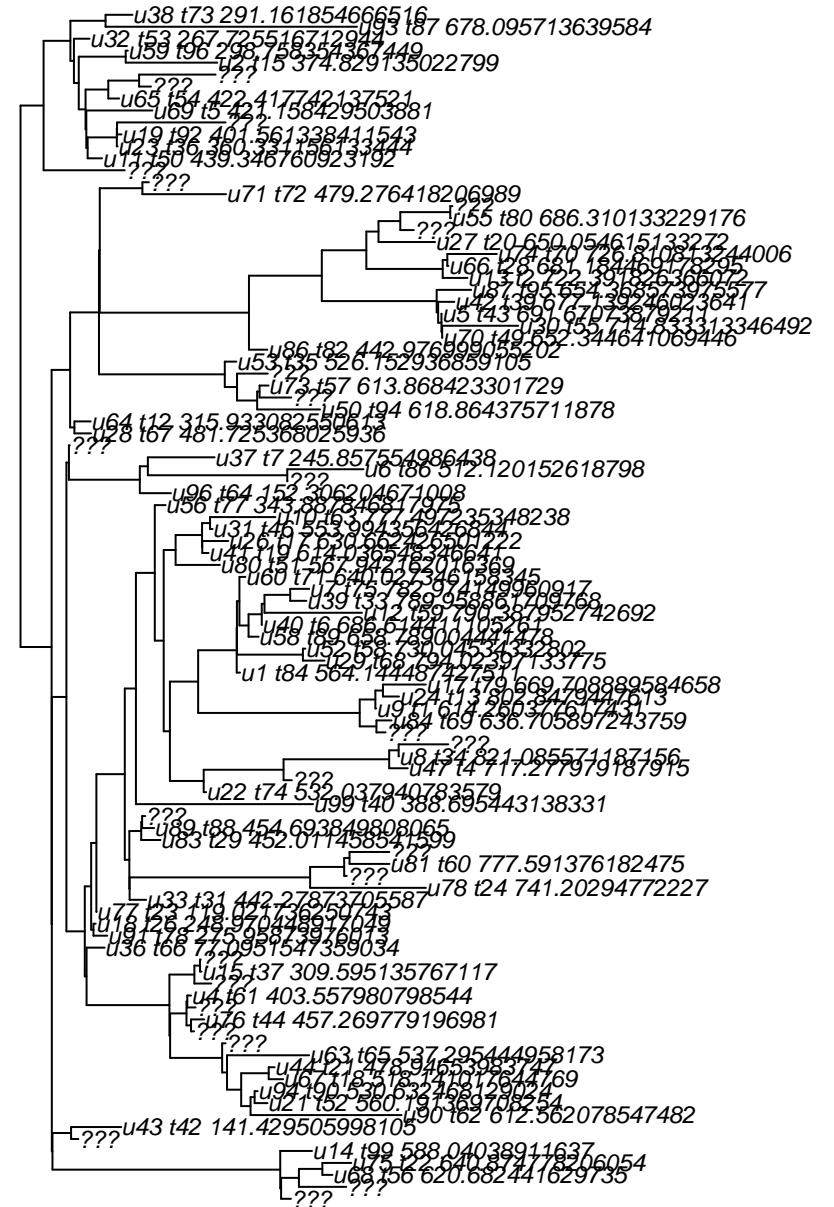
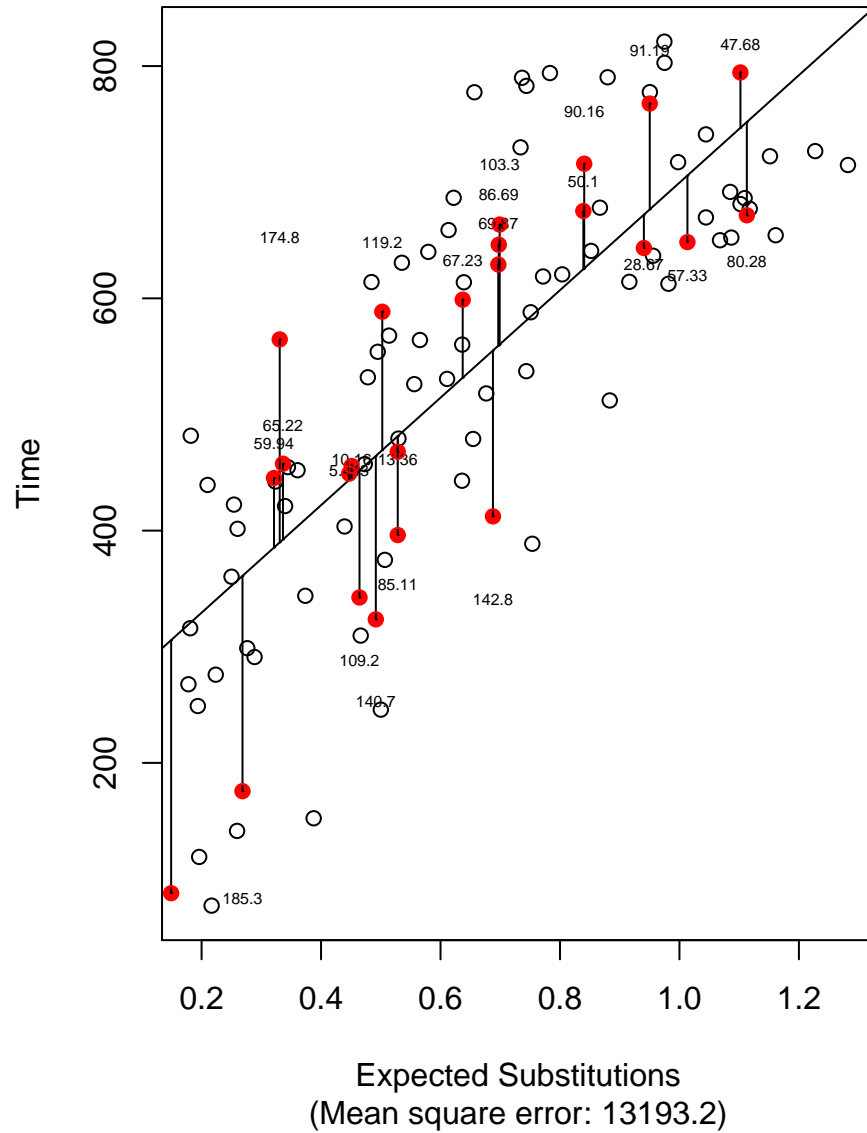
## Time vs Distance





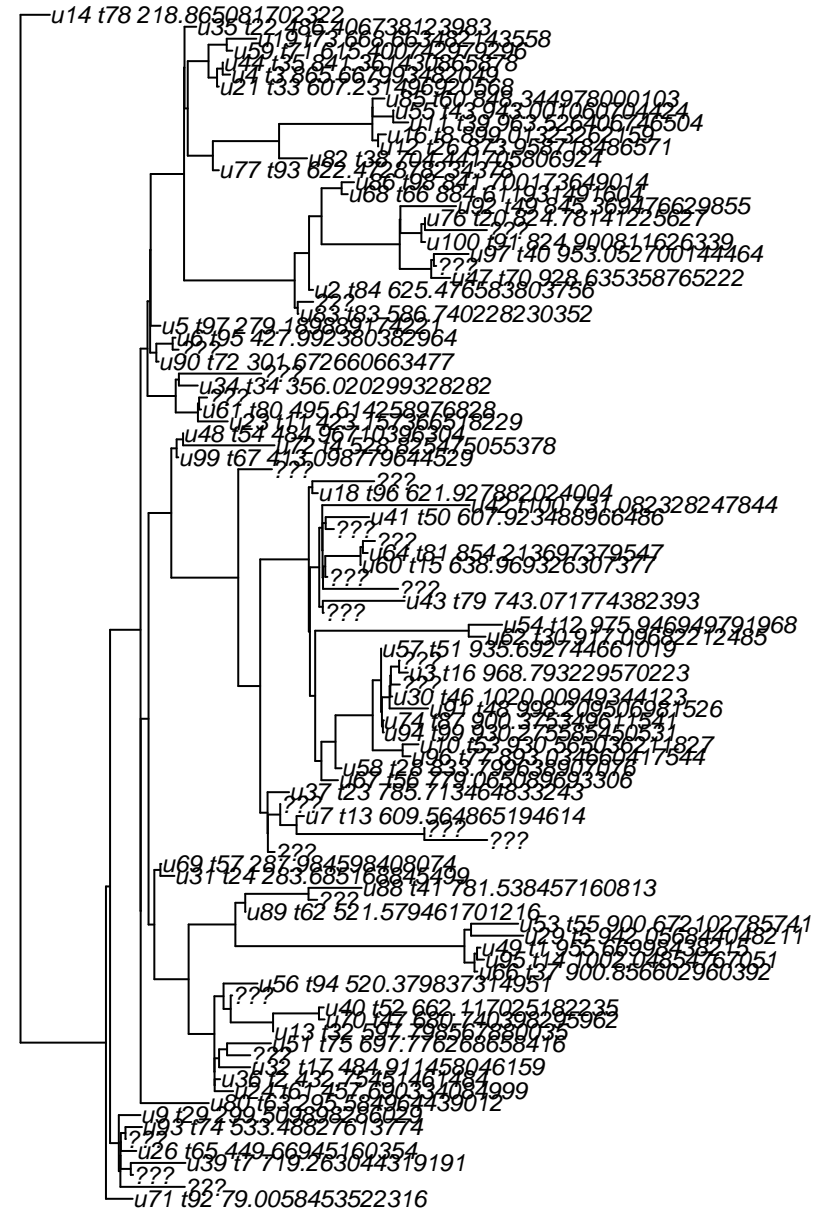
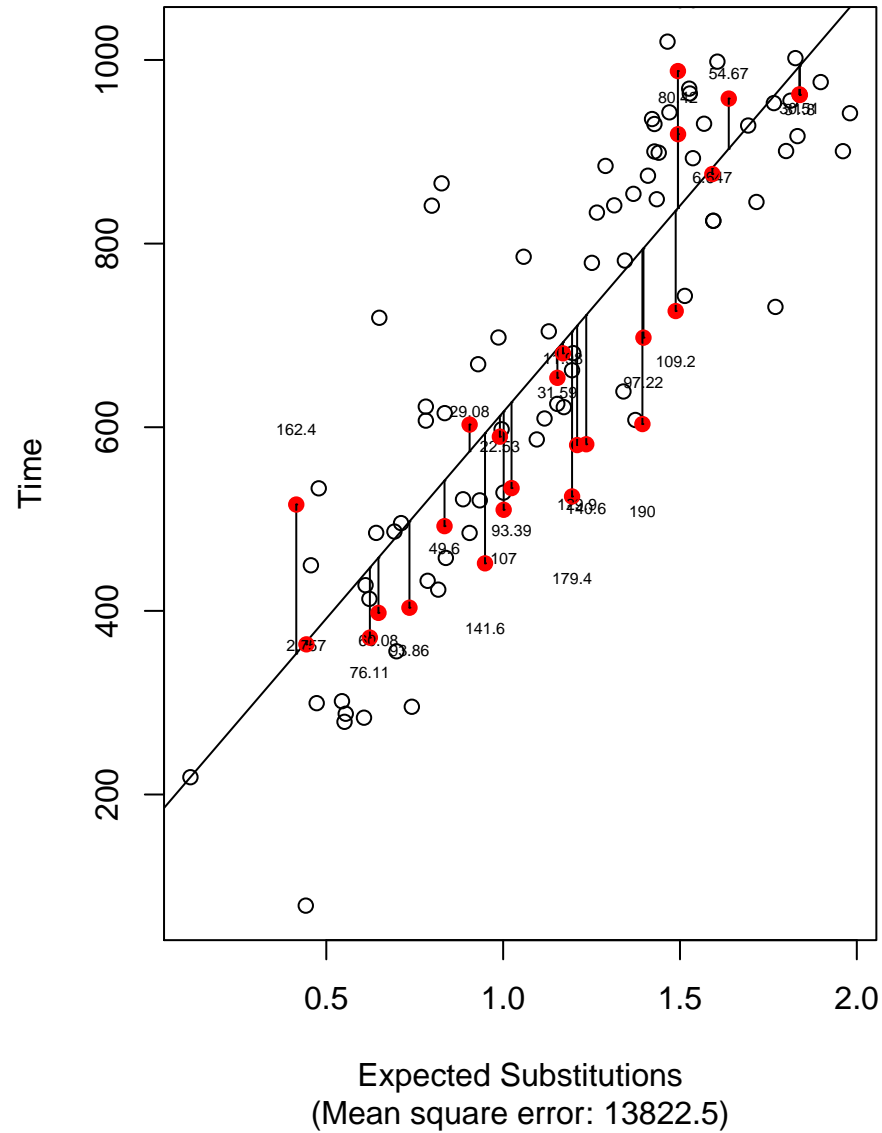
# HIV RNA: Simulated-no.9 (Remove 25)

## Time vs Distance



## HIV RNA: Simulated-no.10 (Remove 25)

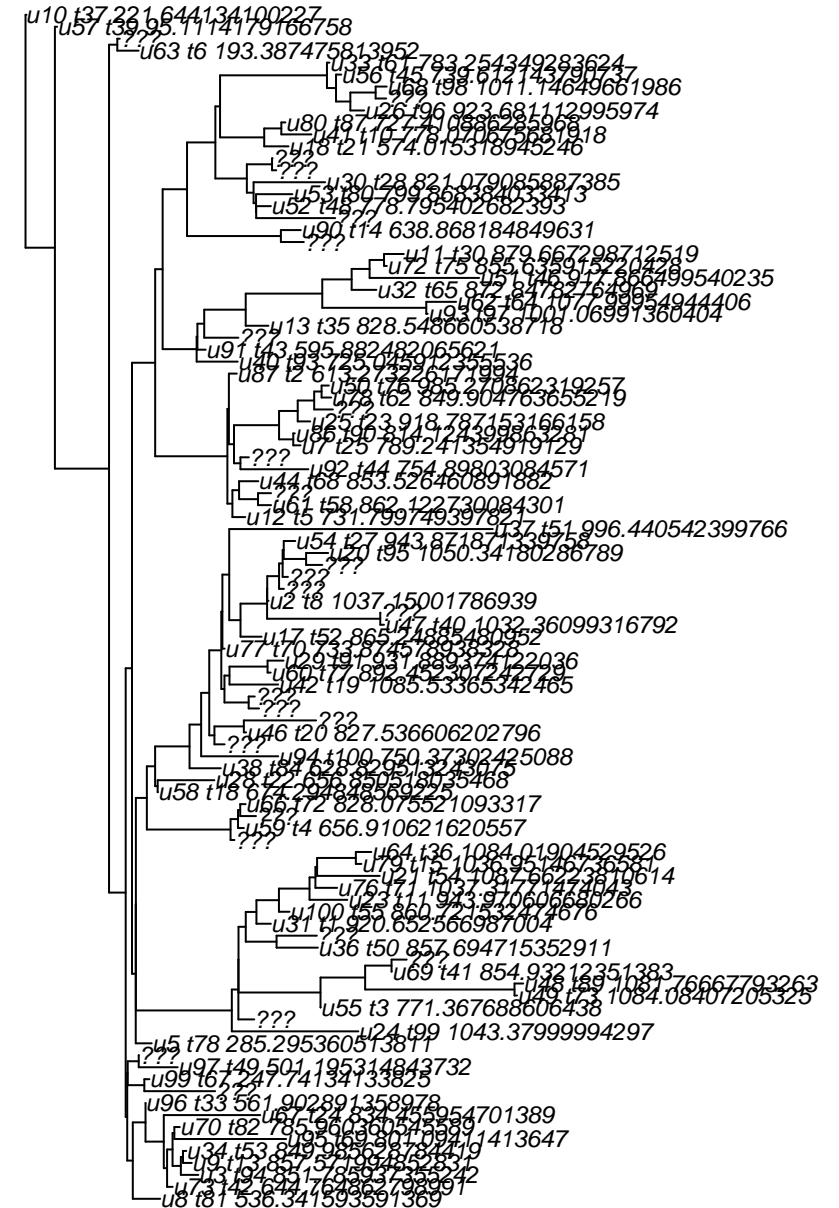
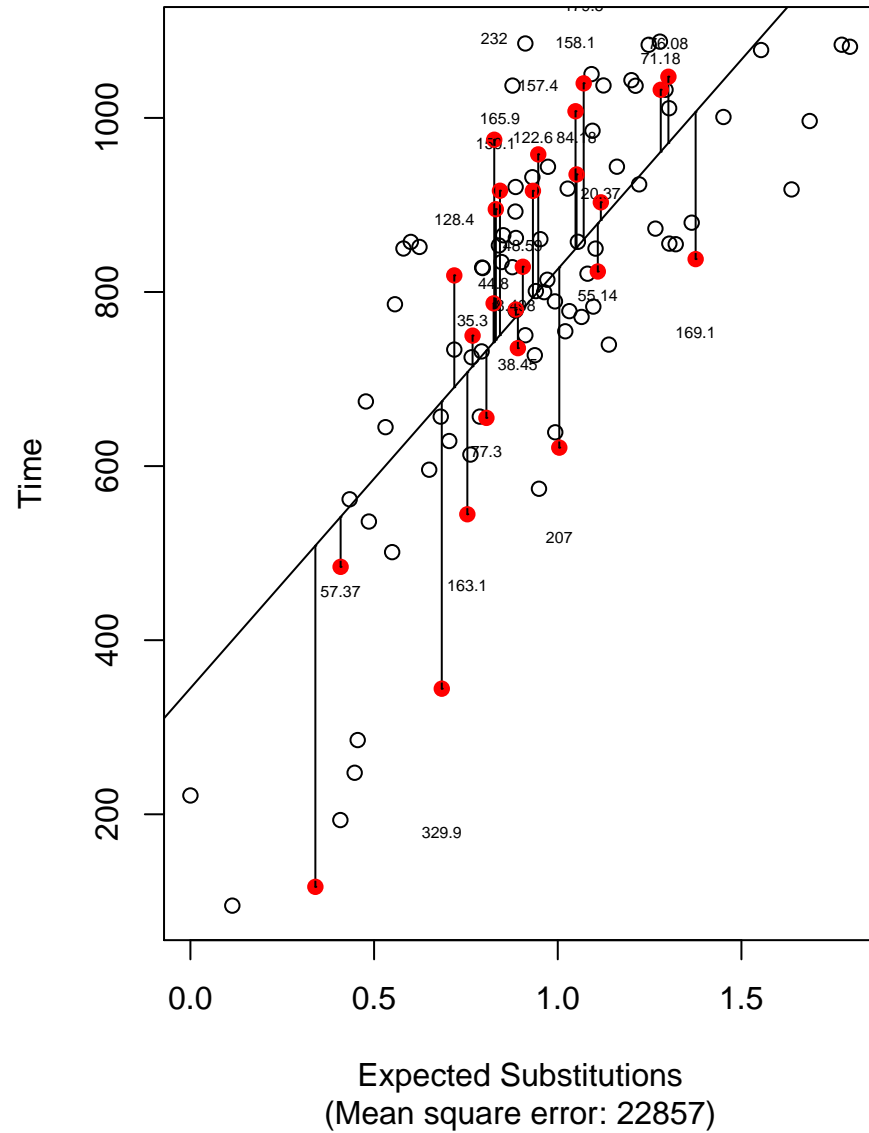
### Time vs Distance



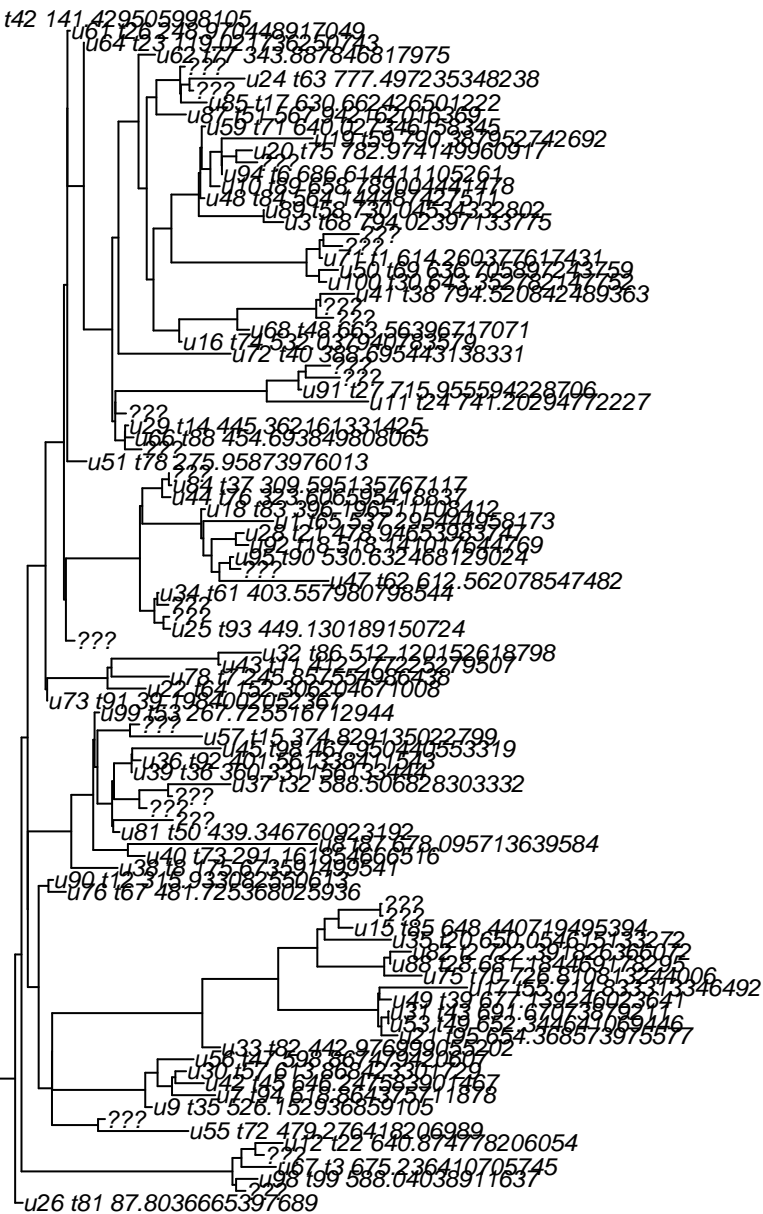


# HIV RNA: Simulated-no.12 (Remove 25)

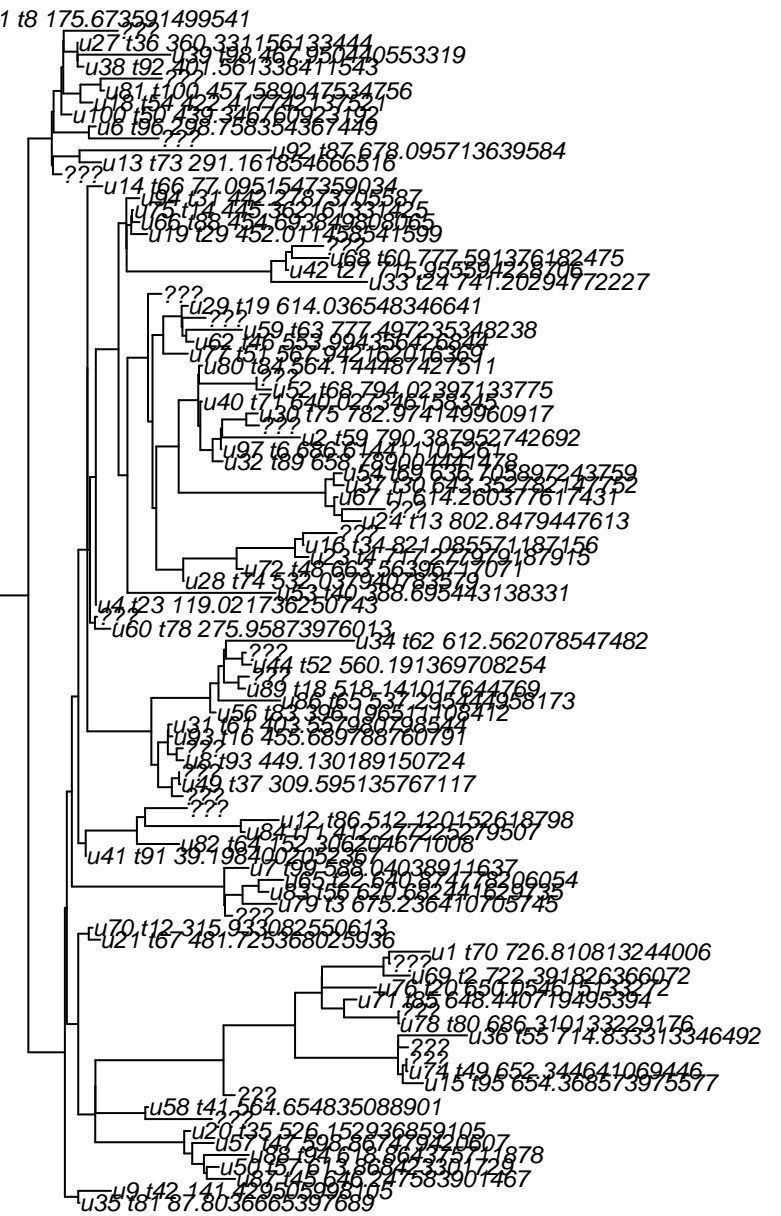
## Time vs Distance



142 141 42950598105  
u01 t26 348 9.031448917049  
u04 t2 348 9.031448917049  
u62 t57 343.887846817975  
u24 t63 777.497235348238  
u85 t17 630.662426501222  
u59 t71 640.425471538945  
u20 t75 782.974149960917  
u94 t6 686.6144411105261  
u10 t89 658.789004414178  
u48 t84 6948.4401453232802  
u3 t68 734.02397133775  
u1 t50 t69 636.705697213759  
u100 t30 636.705697213759  
u41 t38 794.320842489363  
u68 t48 663.56396717071  
u72 t40 388.693443138331  
u91 t27 715.955594228706  
u29 t14 445.362161331425  
u66 t88 454.693849808065  
u51 t78 275.95873976013  
u94 t37 309.598135767117  
u44 t6 333.3068.196541808412  
u18 t83 1265.537295441958173  
u25 t18 478.940170834769  
u95 t90 530.632468129024  
u34 t61 403.557980798544  
u25 t93 449.130189150724  
u42 t86 512.120152618798  
u43 t4 122.257225279507  
u78 t7 245.857257086438  
u73 t91 39.198400205674671008  
u99 t53 267.72538712944  
u57 t15 374.829135022799  
u36 t92 401.38138141553319  
u39 t36 389.332138415244  
u37 t32 588.506828303332  
u81 t50 439.346760923192  
u40 t73 291.461854666516  
u90 t14 3518.913062301499541  
u76 t67 481.725368025936  
u15 t95 648.440719495394  
u82 t2 650.052675131272  
u88 t25 687.1844631292406  
u75 t117 689.910813244006  
u49 t39 677.3392246923641  
u53 t49 682.344623069416  
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u56 t33 82.442.9769990155202  
u50 t57 608.868473921680  
u30 t47 634.66847553907467  
u7 t84 618.861352711878  
u9 t35 526.152936859105  
u55 t72 479.276418206989  
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u98 t99 588.04038917637  
u26 t81 87.8036665397689

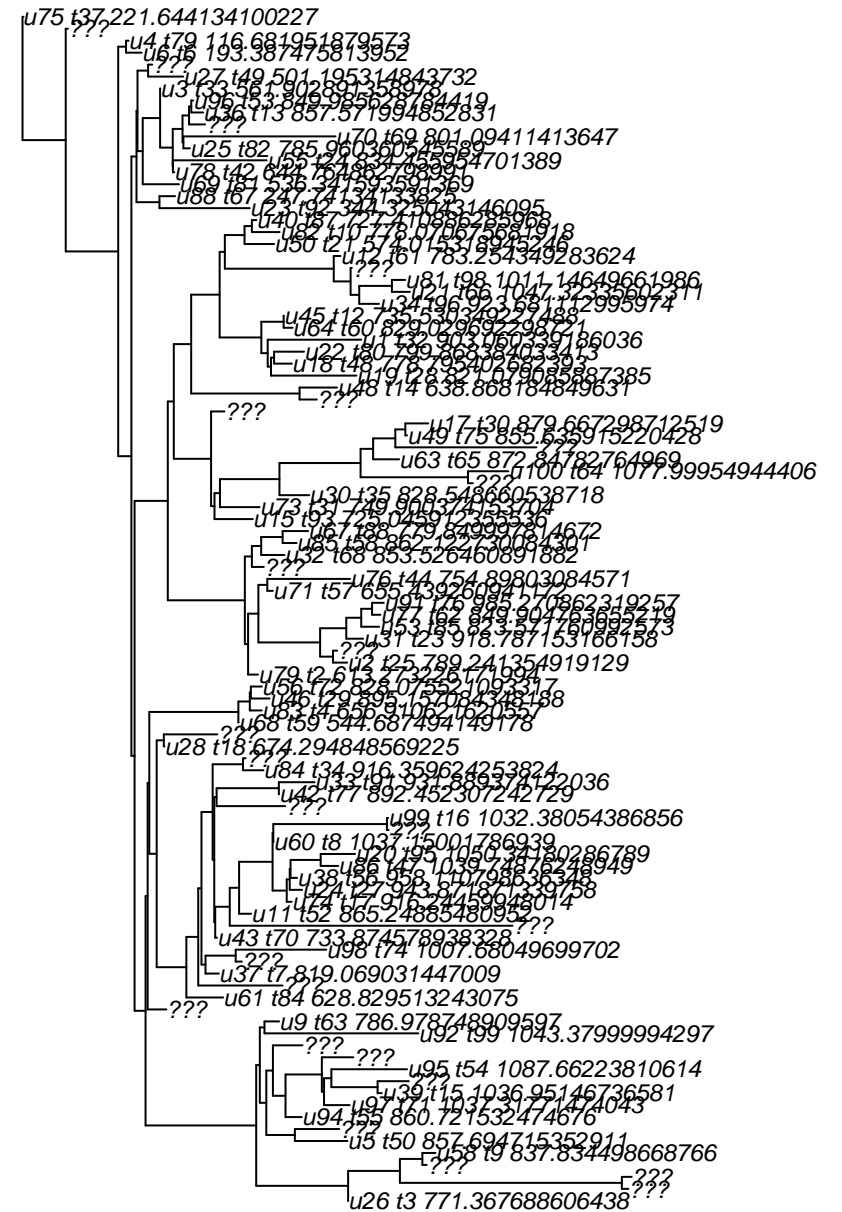
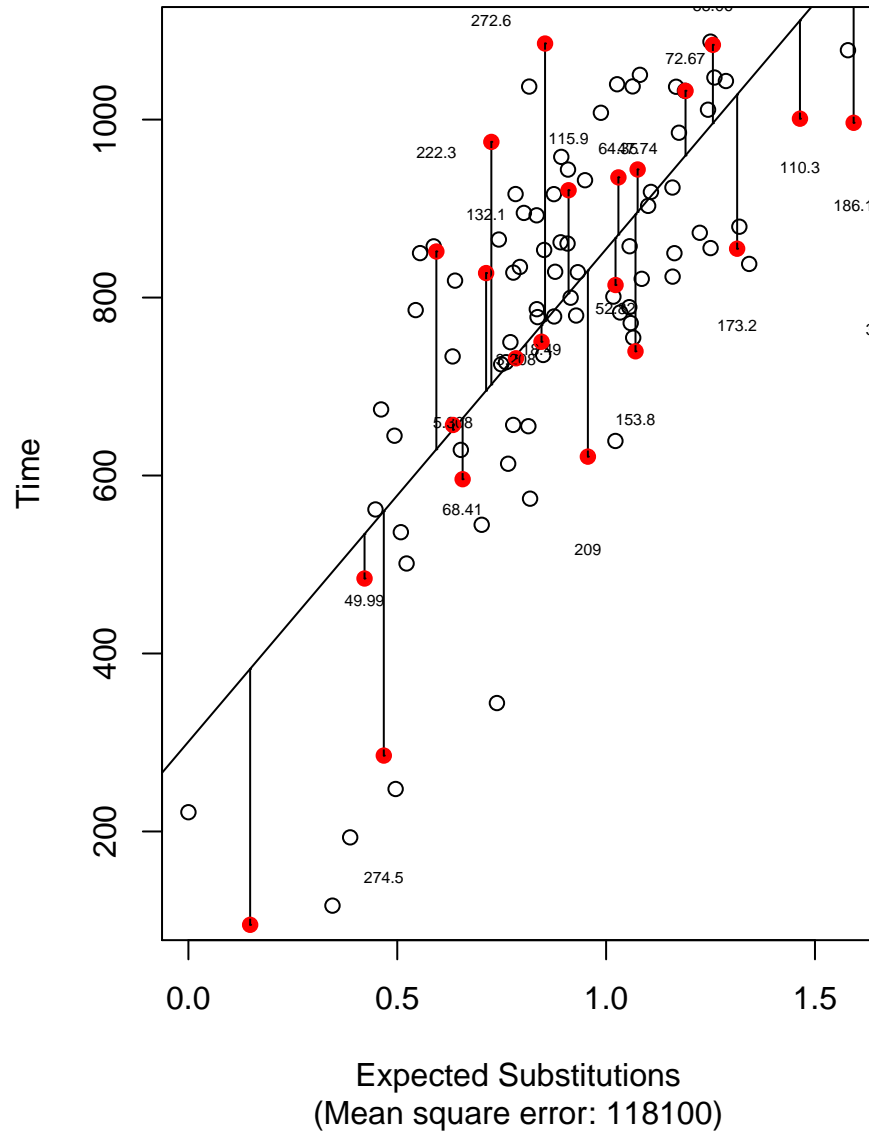




[illegible]

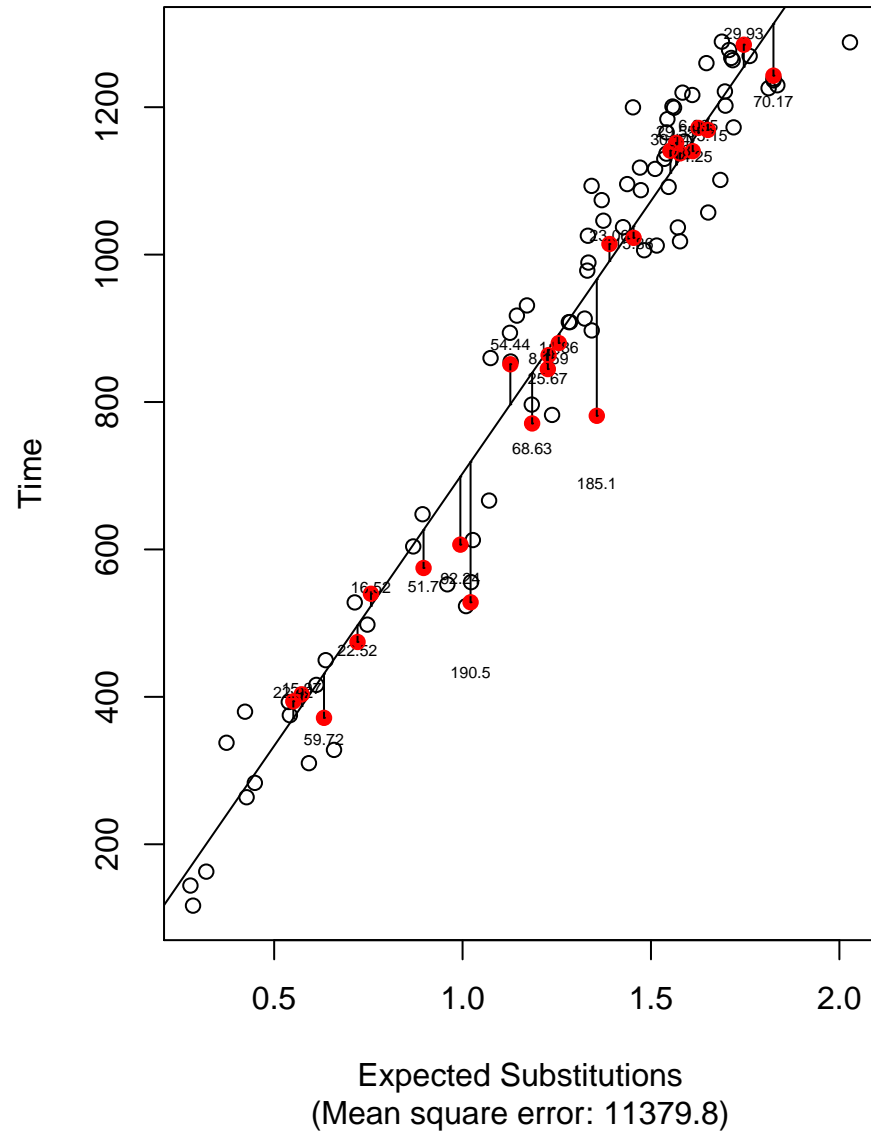
# HIV RNA: Simulated-no.15 (Remove 25)

## Time vs Distance



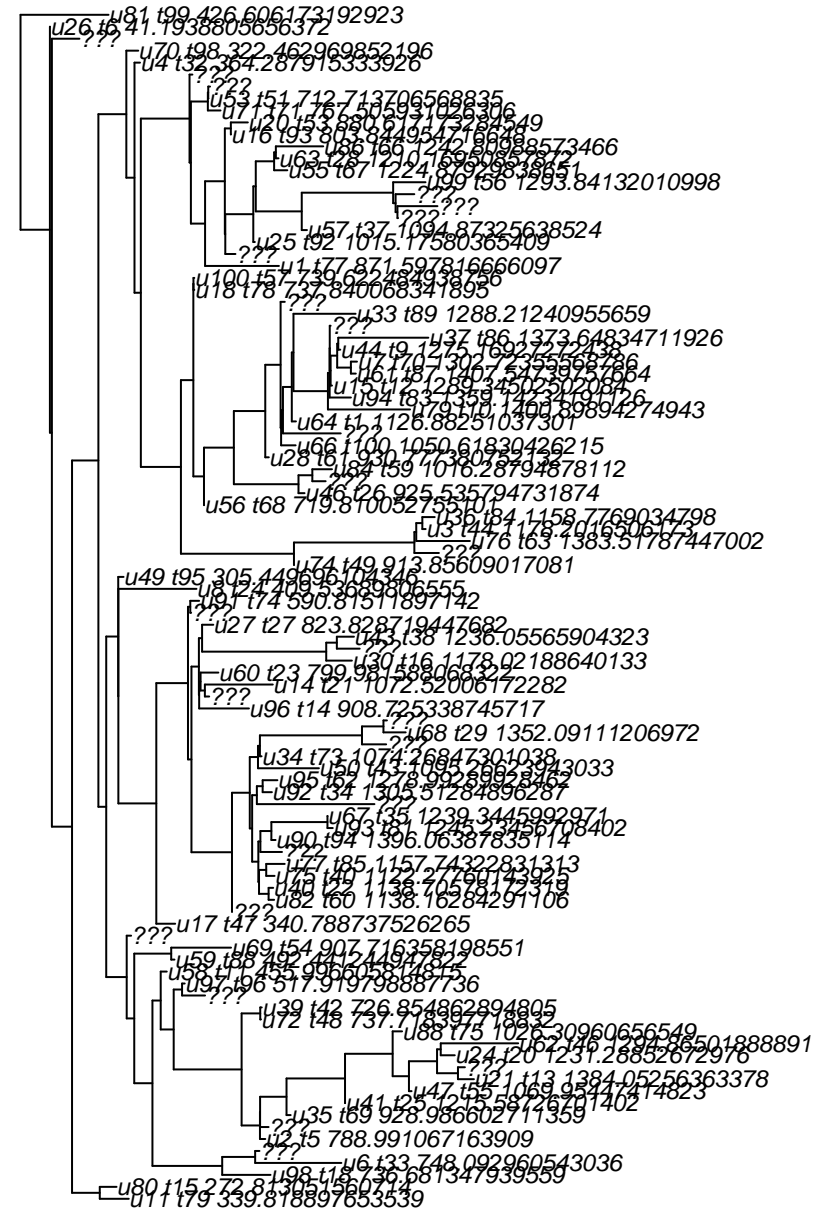
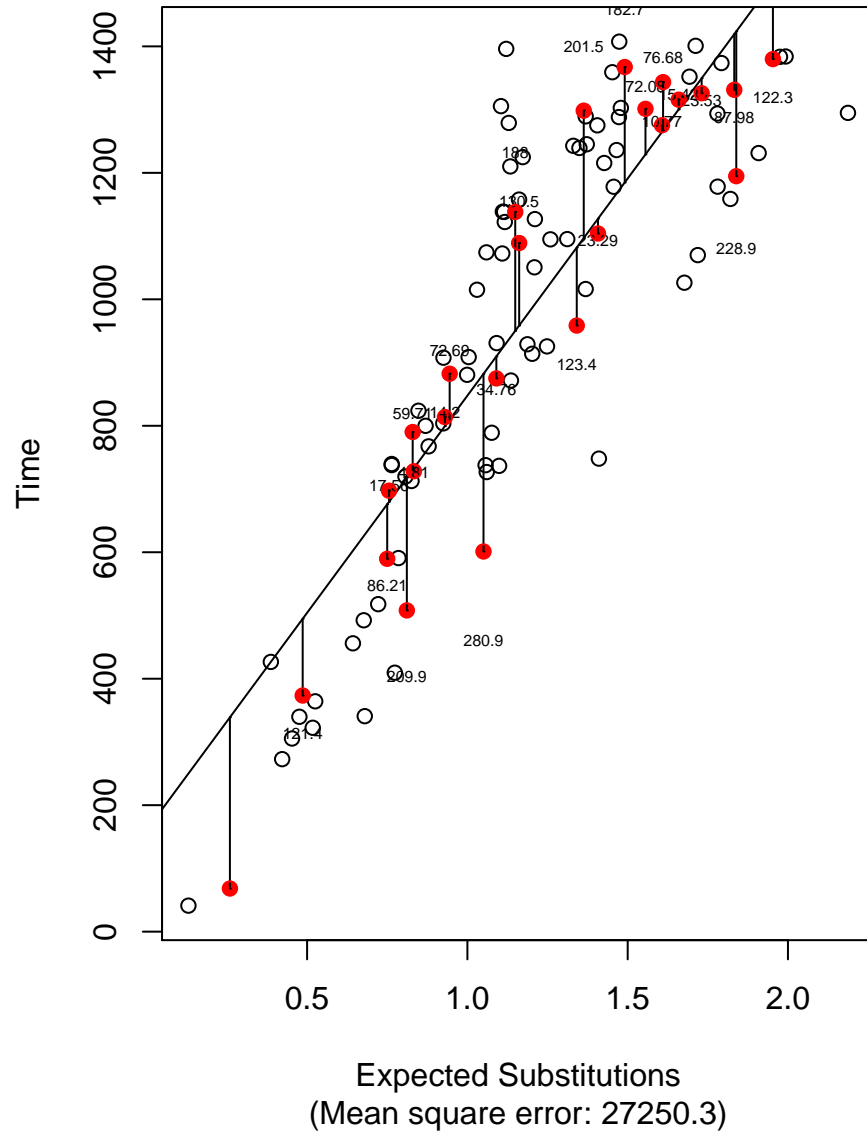
# HIV RNA: Simulated-no.16 (Remove 25)

## Time vs Distance



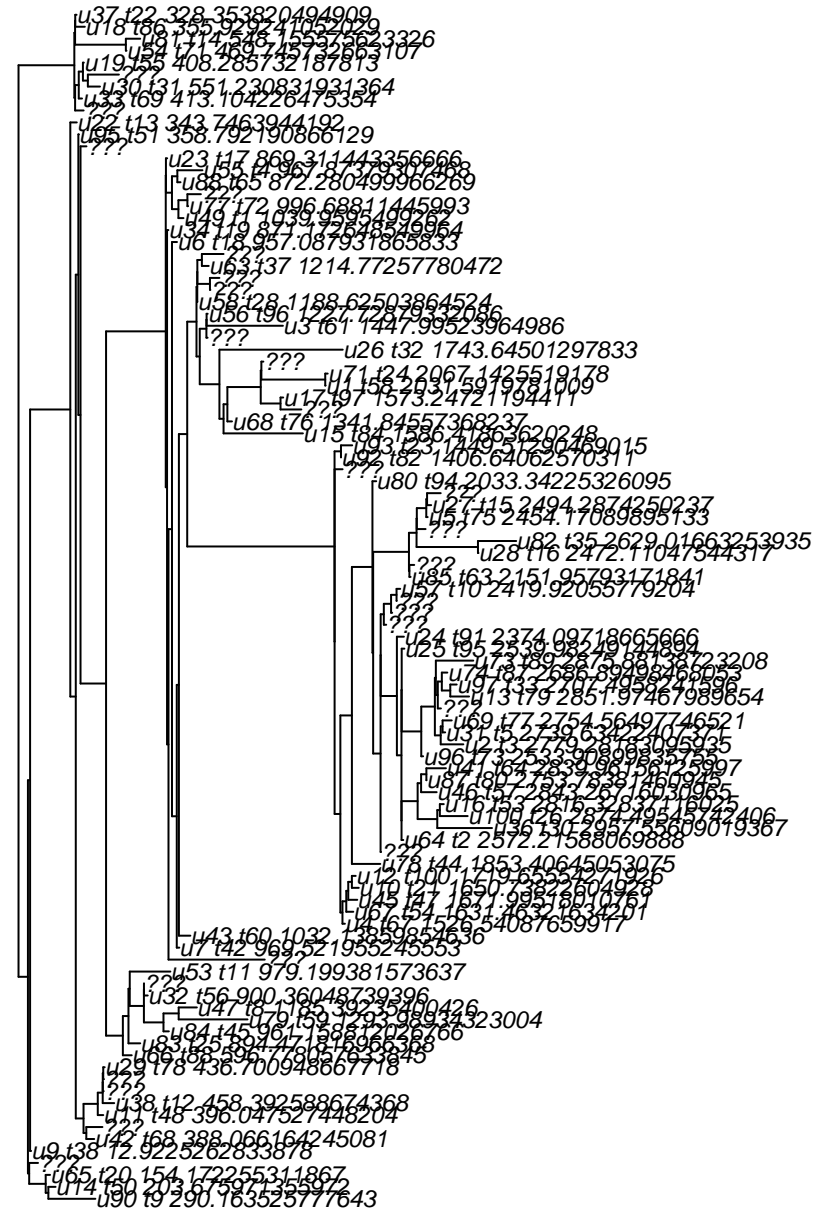
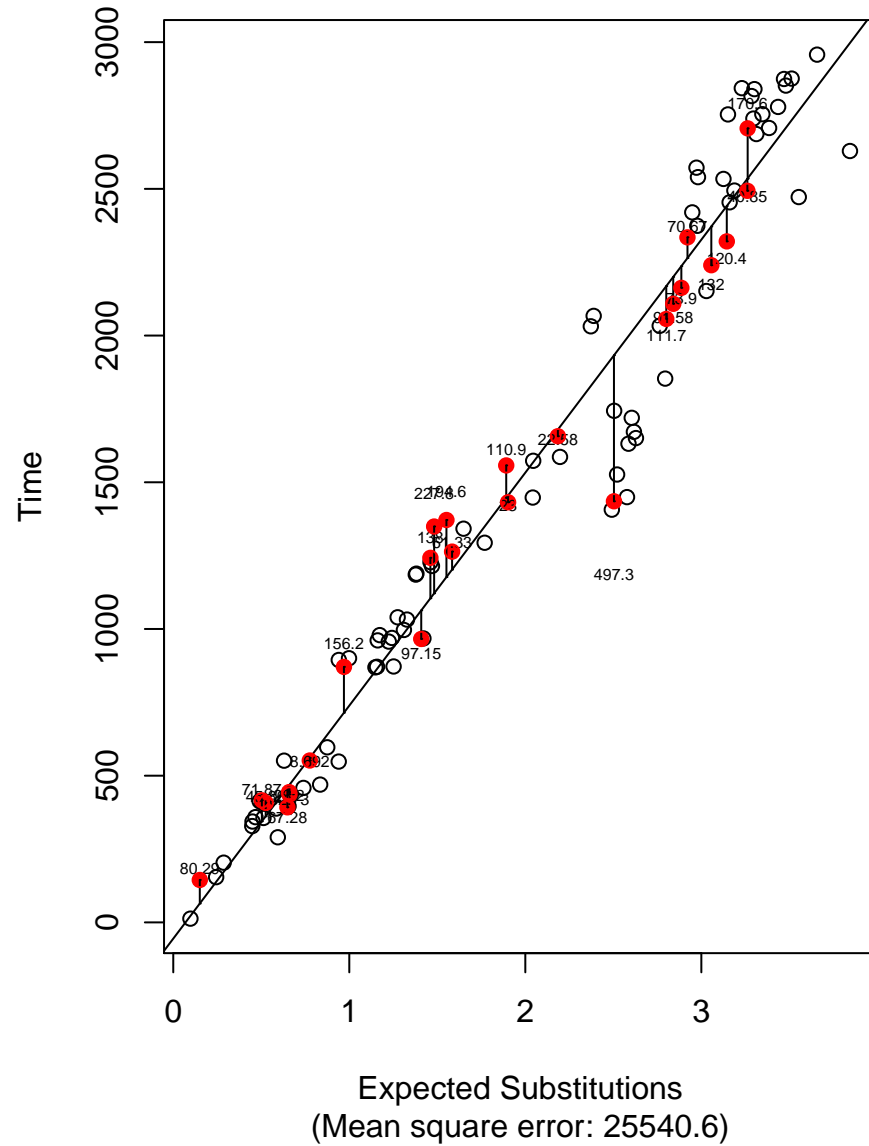
# HIV RNA: Simulated-no.17 (Remove 25)

## Time vs Distance



# HIV RNA: Simulated-no.18 (Remove 25)

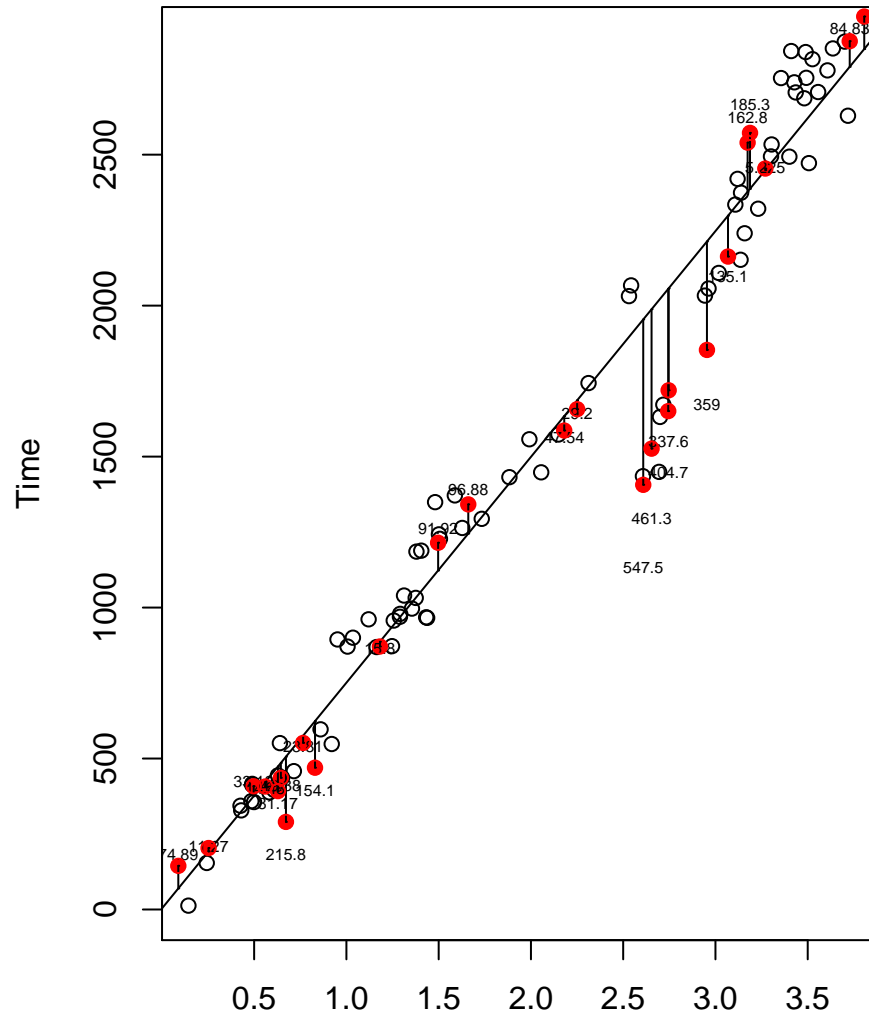
## Time vs Distance





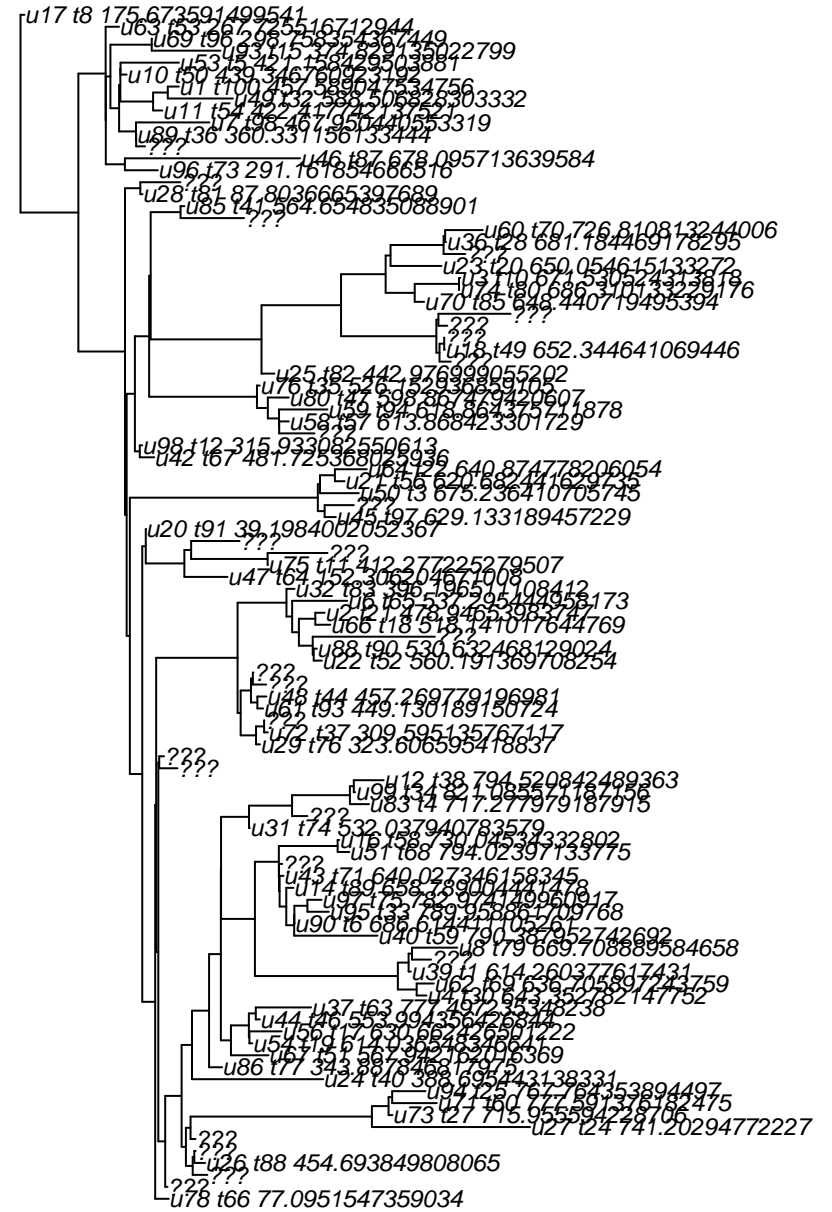
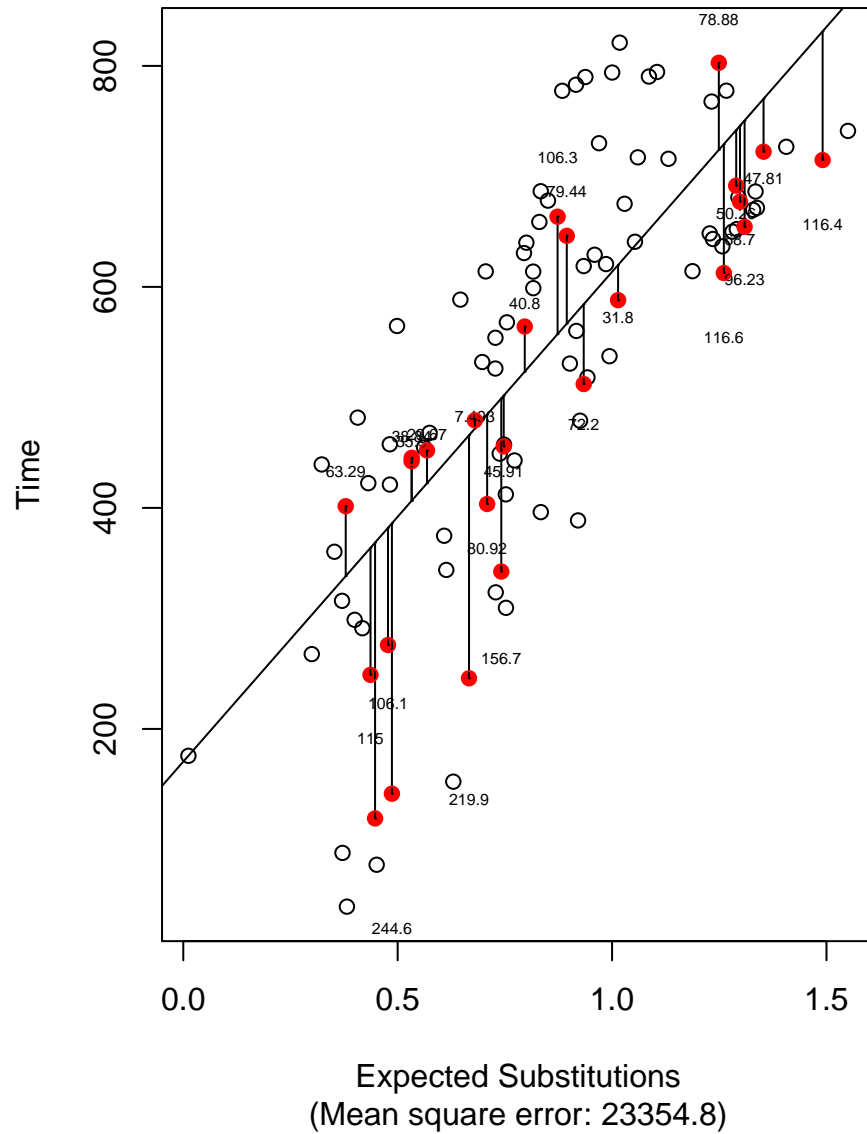
[illegible]

Expected Substitutions  
(Mean square error: 46837.8)

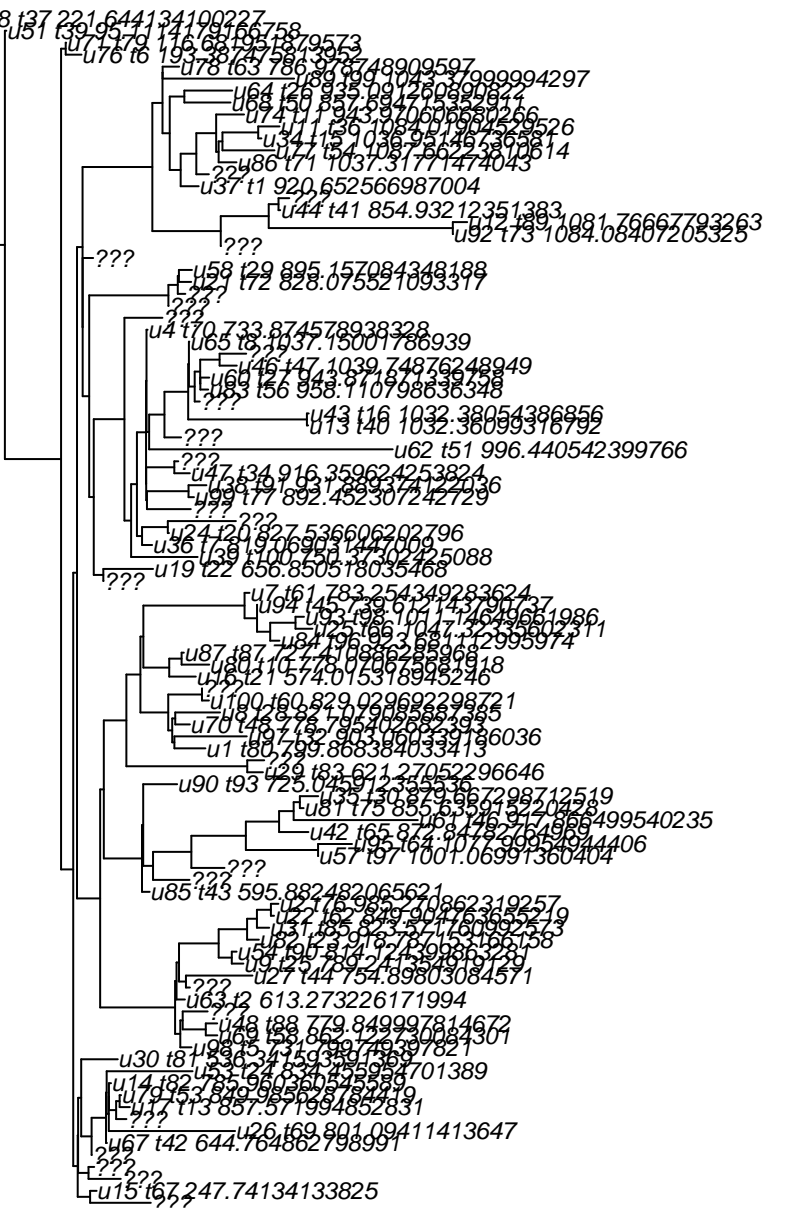


**HIV RNA: Simulated-no.20 (Remove 25)**

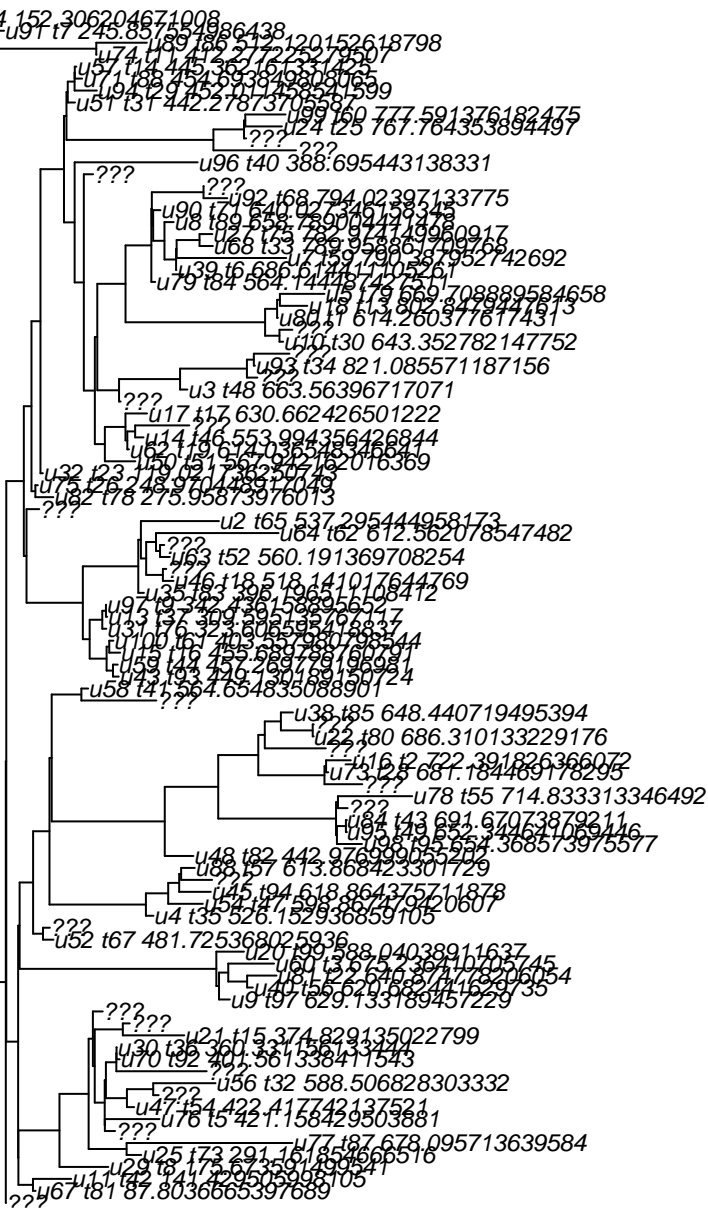
## Time vs Distance



3.127 221.6441.34190227  
u57 130.937.9 146.6816981879573  
u76 16 193.88174781372748909597  
u78 163 786.837648909597  
u64 126 835.091260899824  
u69 150 834.5947151558944  
u74 111 843.08000665656526  
u34 115 913.62514573638526  
u48 171 1037.3177474043  
u37 11 920.652566987004  
u44 141 854.93212351383  
u92 173 1084.06407205325  
u59 129 895.157084348188  
u72 828.075521093317  
u4 170 733.874578938328  
u65 18 1937.15001786939  
u46 147 1039.74876248949  
u68 156 958.110798636348  
u43 146 1032.38054386856  
u62 151 996.440542399766  
u47 134 916.359624253824  
u38 19 1893.74122036  
u99 177 892.452307242729  
u24 120 827.536606202796  
u36 139 1906904440025088  
u19 122 656.850518035468  
u76 1 783.254349283624  
u94 145 938.011476249651986  
u63 109 1047.32358072311  
u84 196 862.8896622995974  
u87 187 1077.099828869818  
u6 121 574.015318943246  
u100 180 829.029692298721  
u70 146 718.79402682393  
u1 180 759.868384033413  
u29 183 621.27052296646  
u90 193 725.045913329316  
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u86 146 917.866499540235  
u42 165 874.847820649094406  
u57 197 1001.06991360404  
u85 143 595.882482065621  
u27 182 829.904763652719  
u31 135 816.727176099253  
u58 195 810.729988128158  
u27 144 754.89803084571  
u63 12 613.273226171994  
u48 188 679.849997814672  
u56 153 669.793992301  
u30 18 836.3495938788  
u14 182 636.8304358701389  
u95 180 985628.84210  
u11 113 857.571994852831  
u26 169 801.09411413647  
u67 142 644.764862798991  
u15 167 247.74134133825



152 306204671008  
 u97 t7 245.857148986438  
 u74 t1 141.3331223105071  
 u71 t4 152.33933843801065  
 u94 t3 333.33333843801065  
 u54 t3 442.278737095874599  
 u92 t2 160 777 591376182475  
 ??? t2 125 767.764353894497  
 u96 t40 388.695443138331  
 ???  
 u90 t2 168 794.02397133775  
 u8 t9 858.789091298478  
 u68 t33 789.9586617199768  
 u39 t6 686.12911301567952742692  
 u79 t84 564.1444514115261  
 u5 t9 669.708889584658  
 u8 t1 614.2603776774313  
 u10 t30 643.352782147752  
 u93 t34 821.085571187156  
 u3 t48 663.56396717071  
 u17 t17 630.662426501222  
 u14 t46 553.994356426844  
 u50 t16 656.0251152016689  
 u32 t23 119.03158220216369  
 u73 t7 248.901443917049  
 ??? t7 8 275.95873976013  
 u2 t65 537.295444958173  
 u64 t62 612.562078547482  
 u63 t52 560.191369708254  
 u46 t18 518.141017644769  
 u97 t3 282.9561536958472  
 u93 t37 304.394536963537  
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 u43 t33 216.2621891150724  
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 u73 t25 681.184489178295  
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 u84 t43 691.670738792116  
 u9 t3 653.426410694116  
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 u88 t57 613.868423301729  
 u45 t94 618.864375711878  
 u4 t35 526.152936859105  
 u52 t67 481.725368025936  
 u2 t30 588.04038911637  
 u60 t3 625.36710705745  
 u85 t2 649.66871163206054  
 u9 t97 629.133189457229  
 u21 t15 374.829135022799  
 u30 t36 361.311582933249  
 u70 t92 401.581338411543  
 u56 t32 588.506828303332  
 u47 t54 422.417742137521  
 u76 t5 421.158429503881  
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 u28 t41 72.4513908105  
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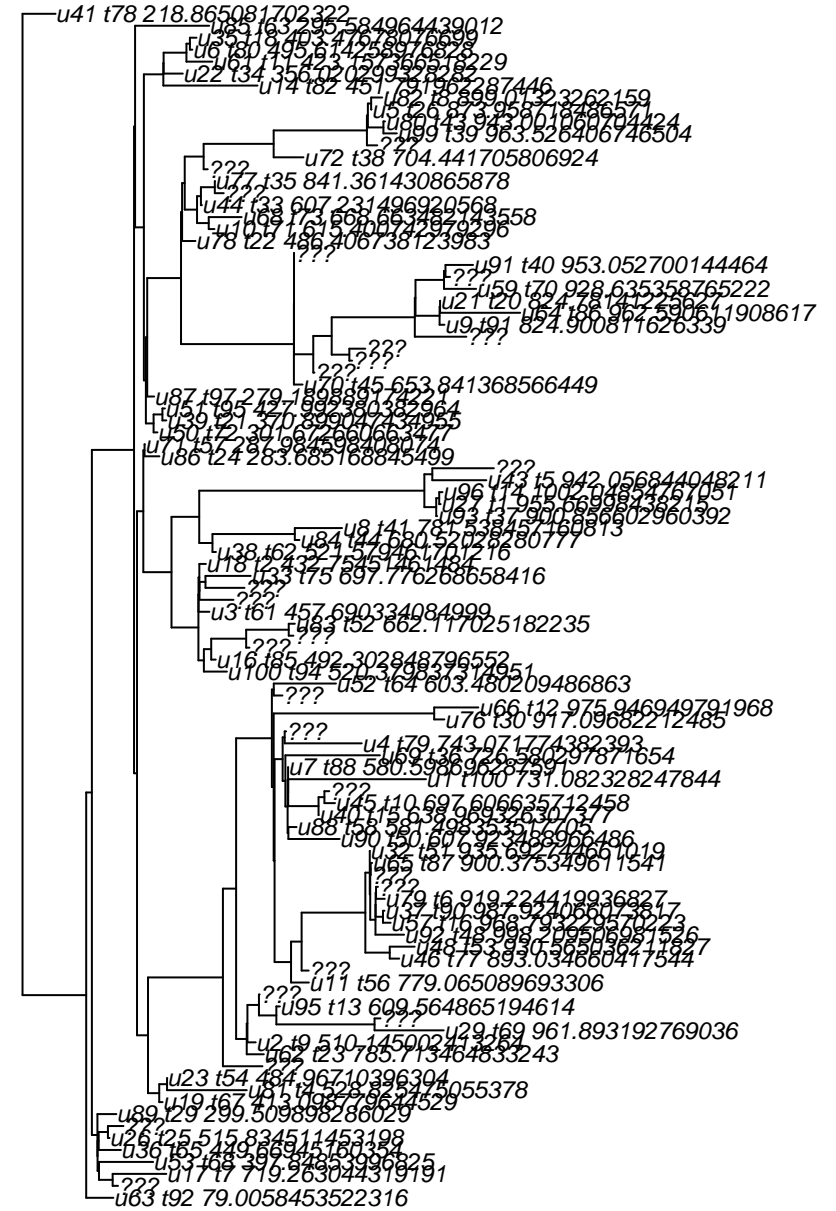
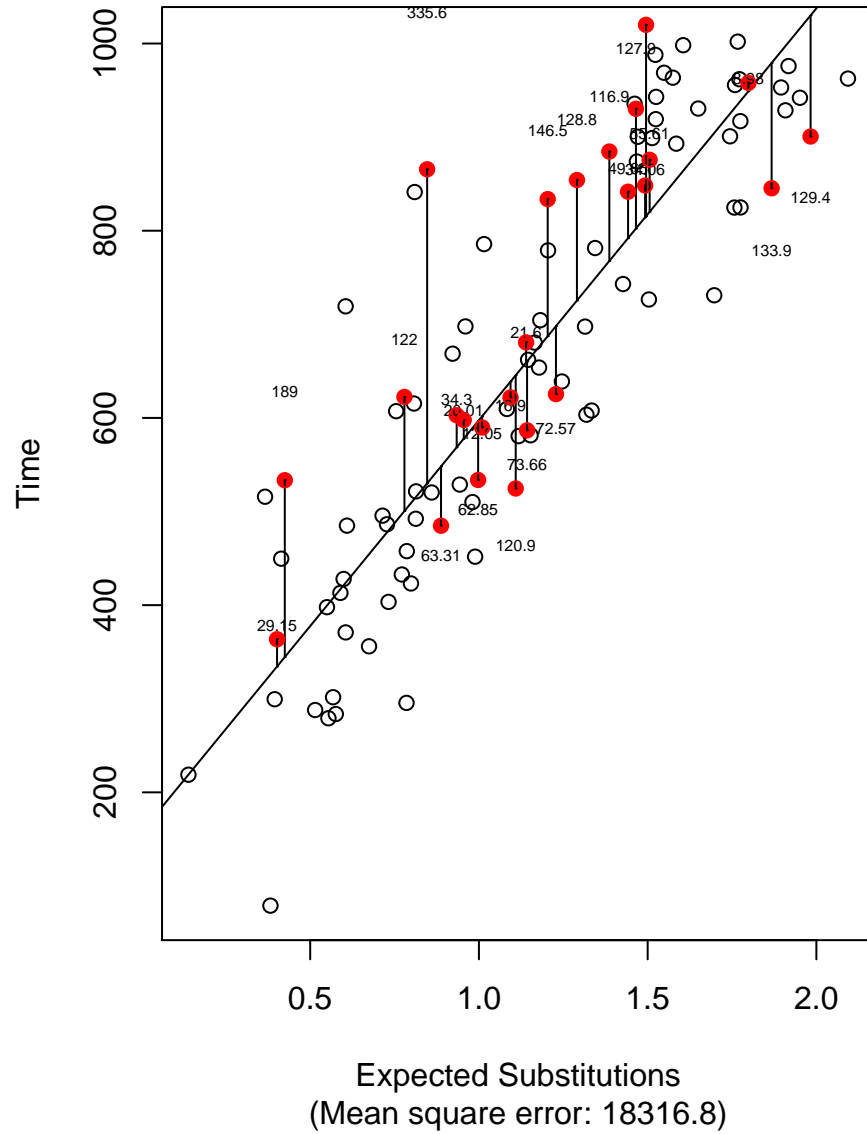






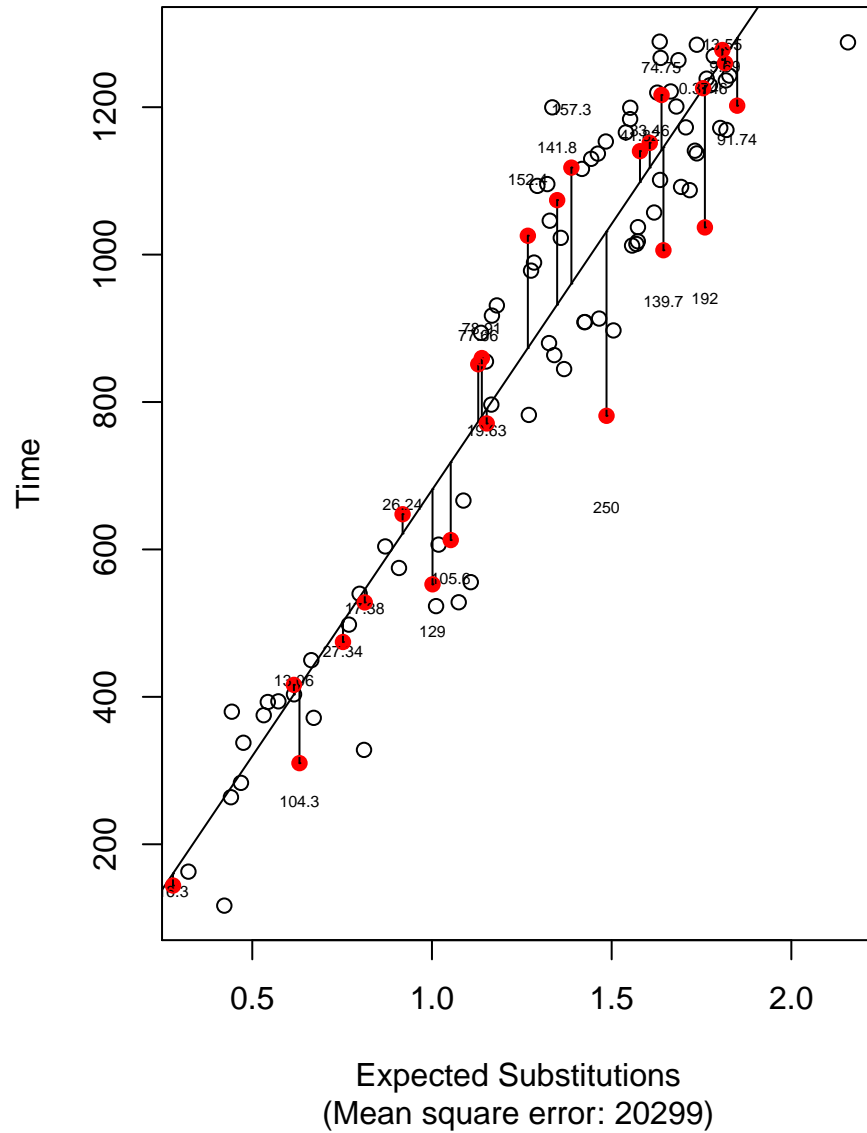
# HIV RNA: Simulated-no.24 (Remove 25)

## Time vs Distance



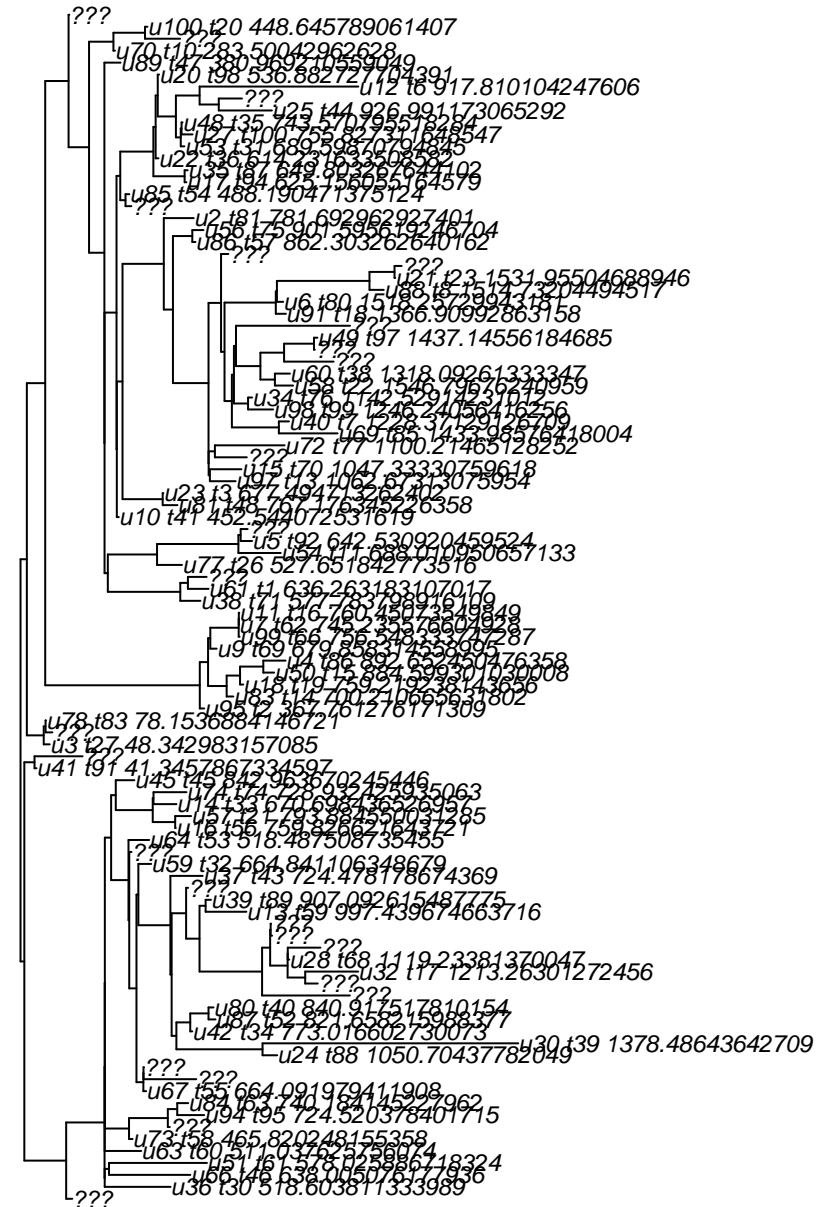
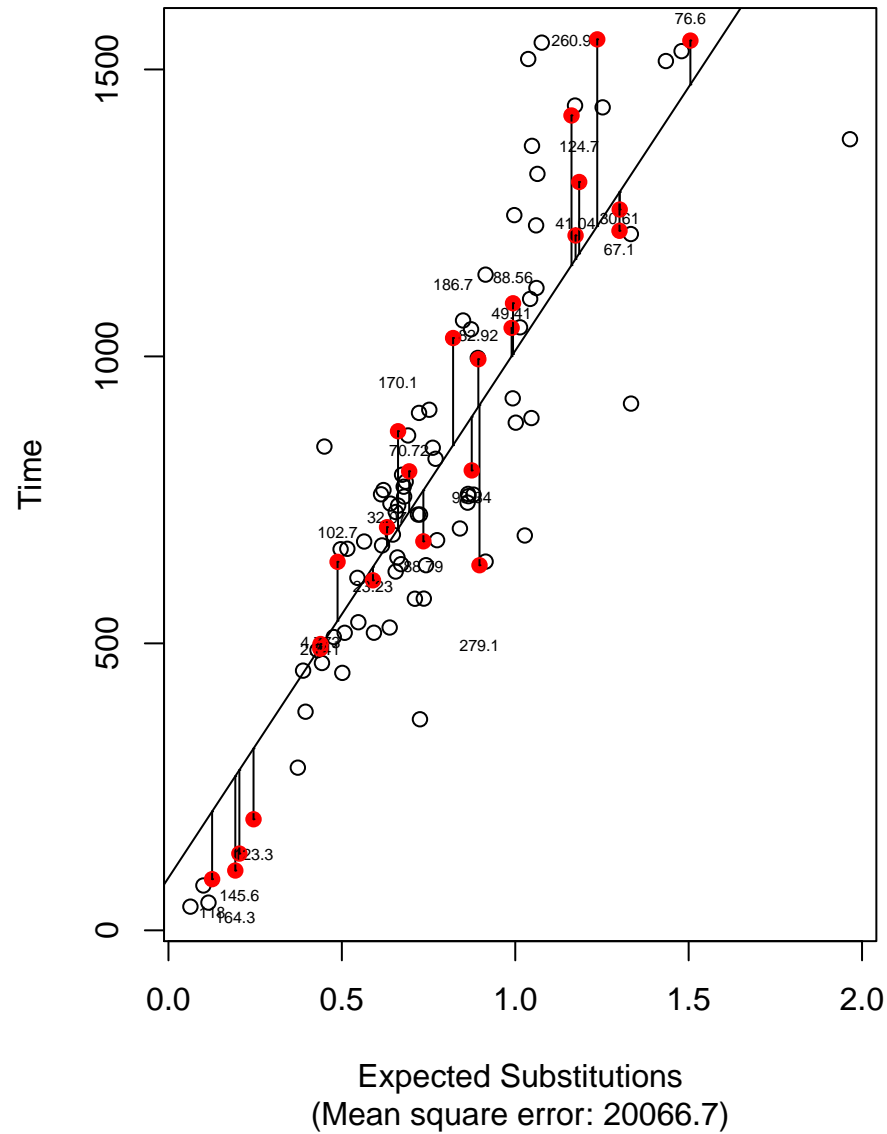
# HIV RNA: Simulated-no.25 (Remove 25)

## Time vs Distance



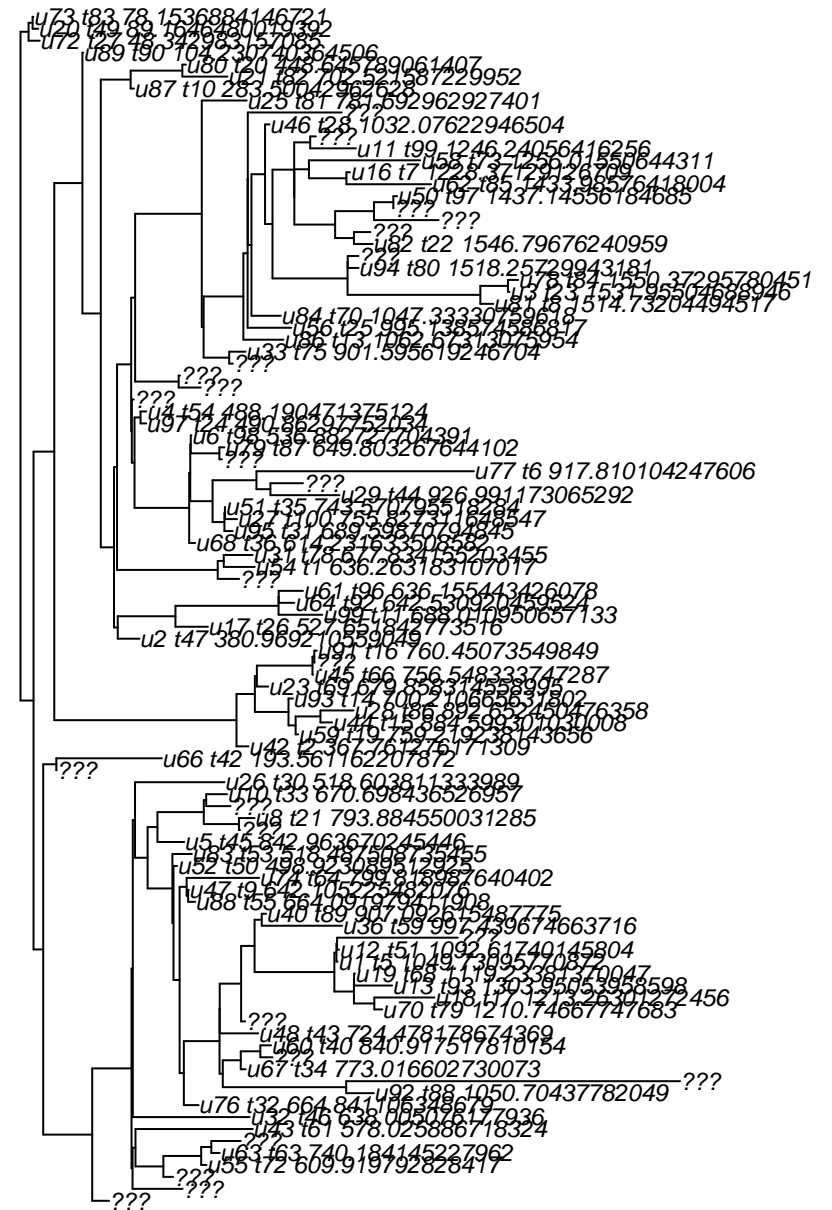
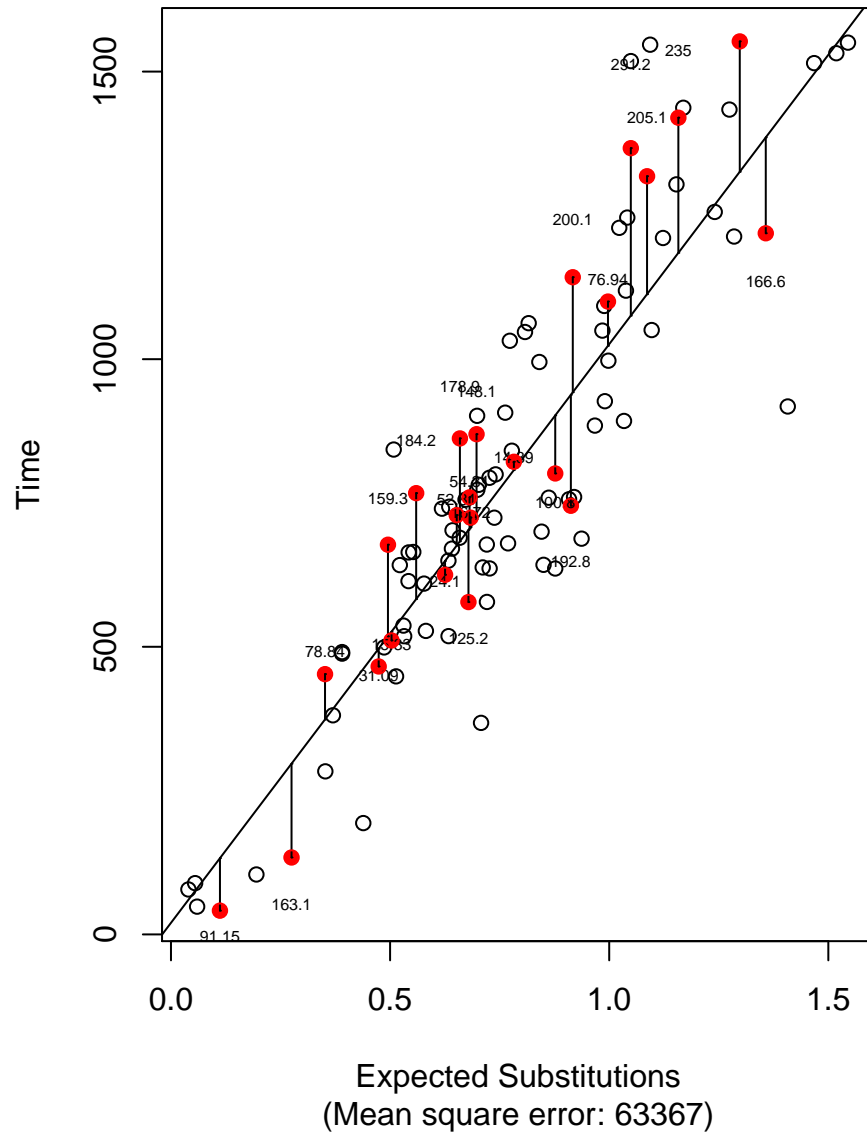
# HIV RNA: Simulated-no.26 (Remove 25)

## Time vs Distance



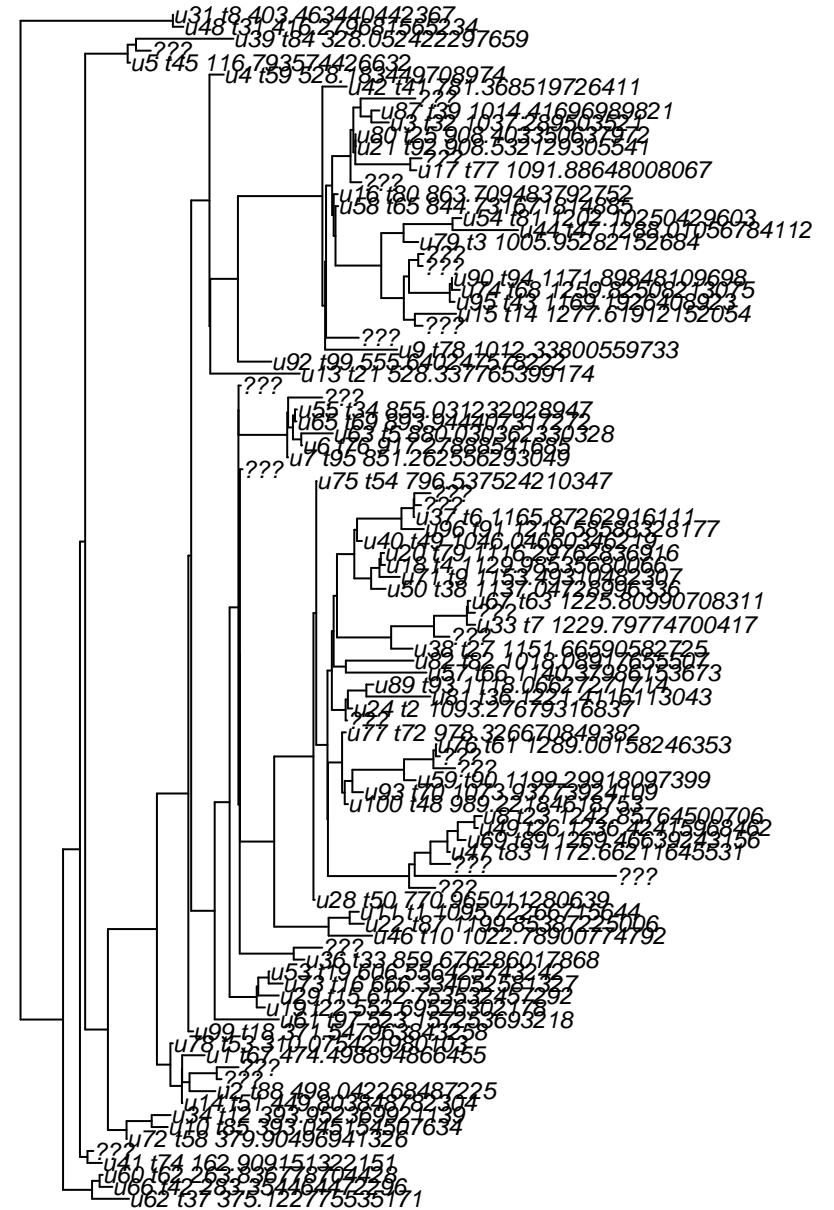
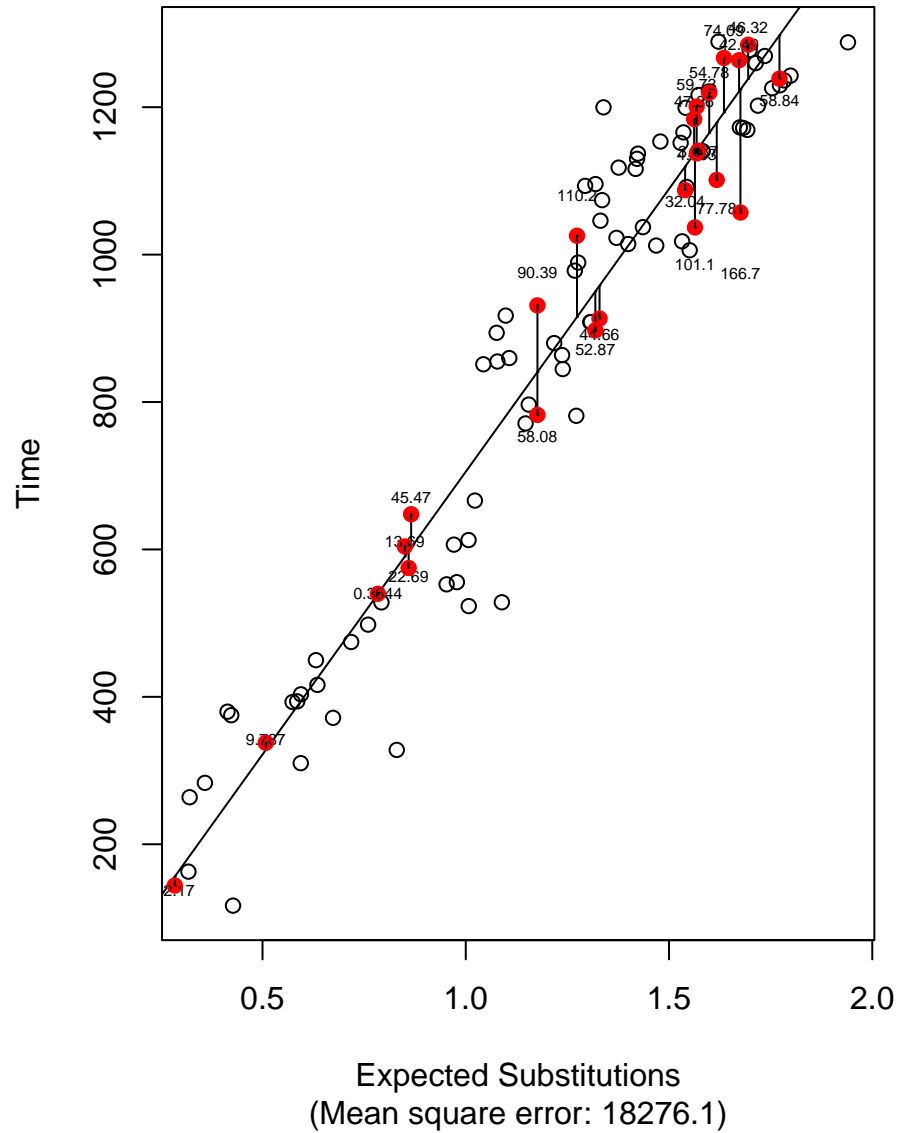
## HIV RNA: Simulated-no.27 (Remove 25)

### Time vs Distance



## HIV RNA: Simulated-no.28 (Remove 25)

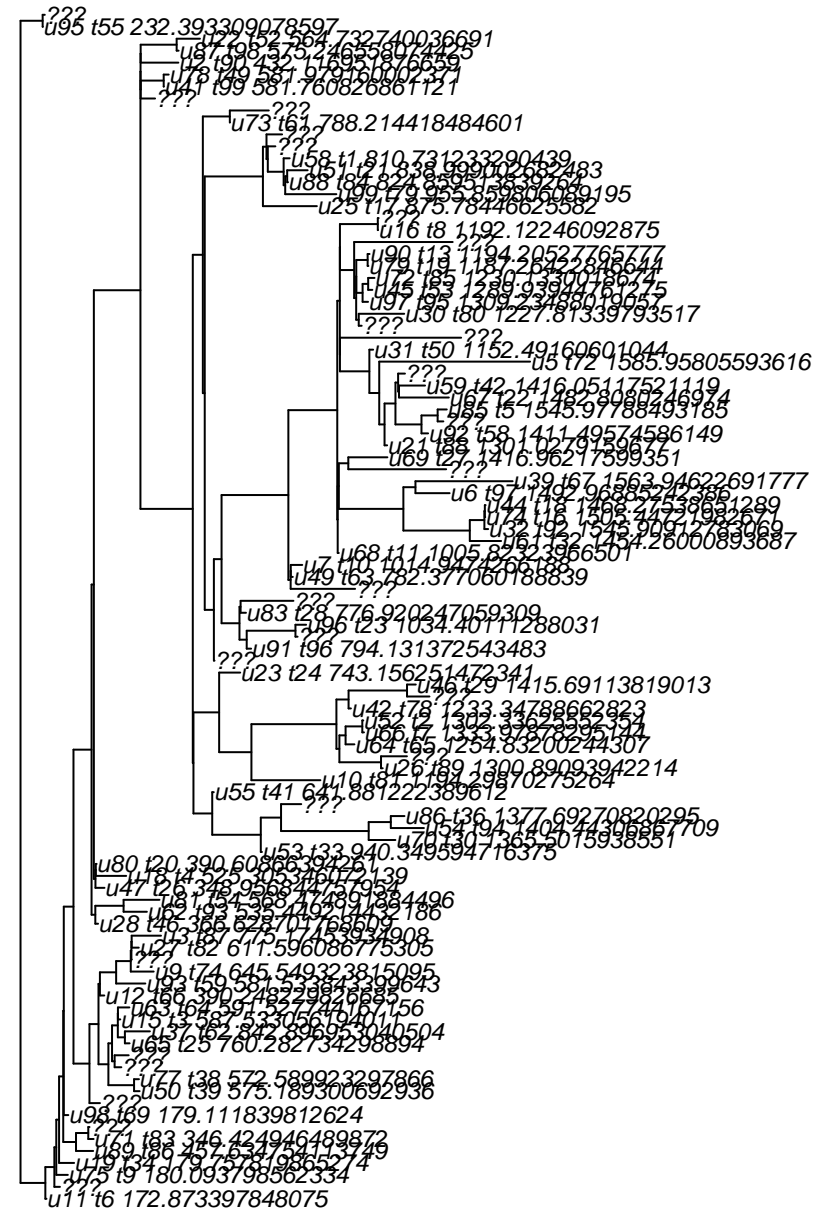
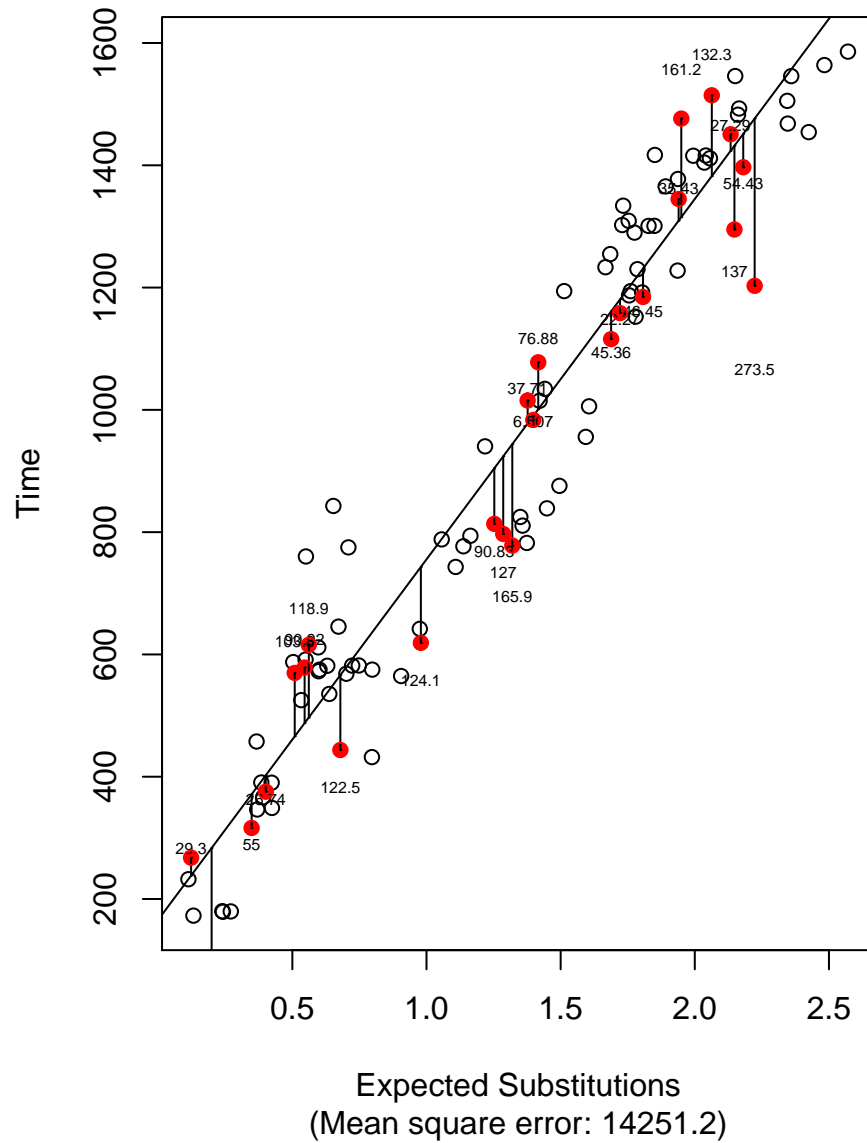
### Time vs Distance





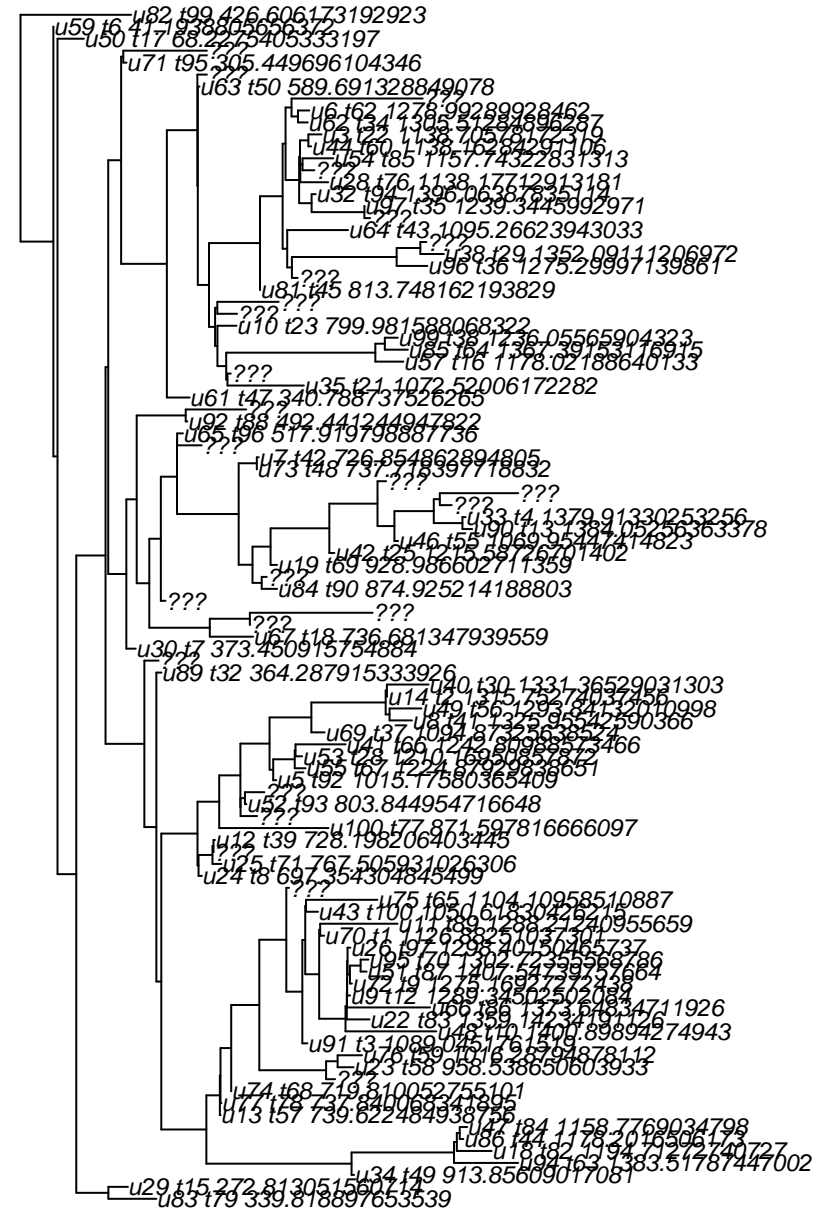
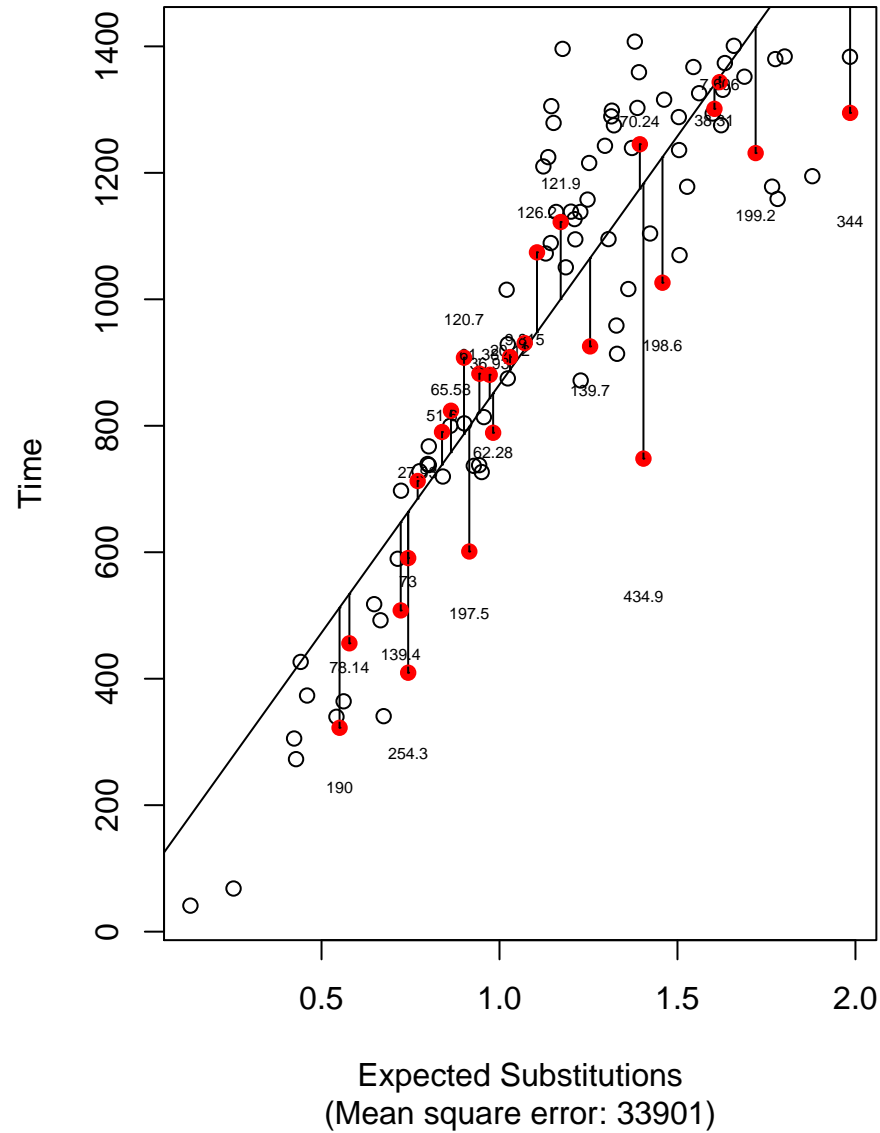
# HIV RNA: Simulated-no.29 (Remove 25)

## Time vs Distance



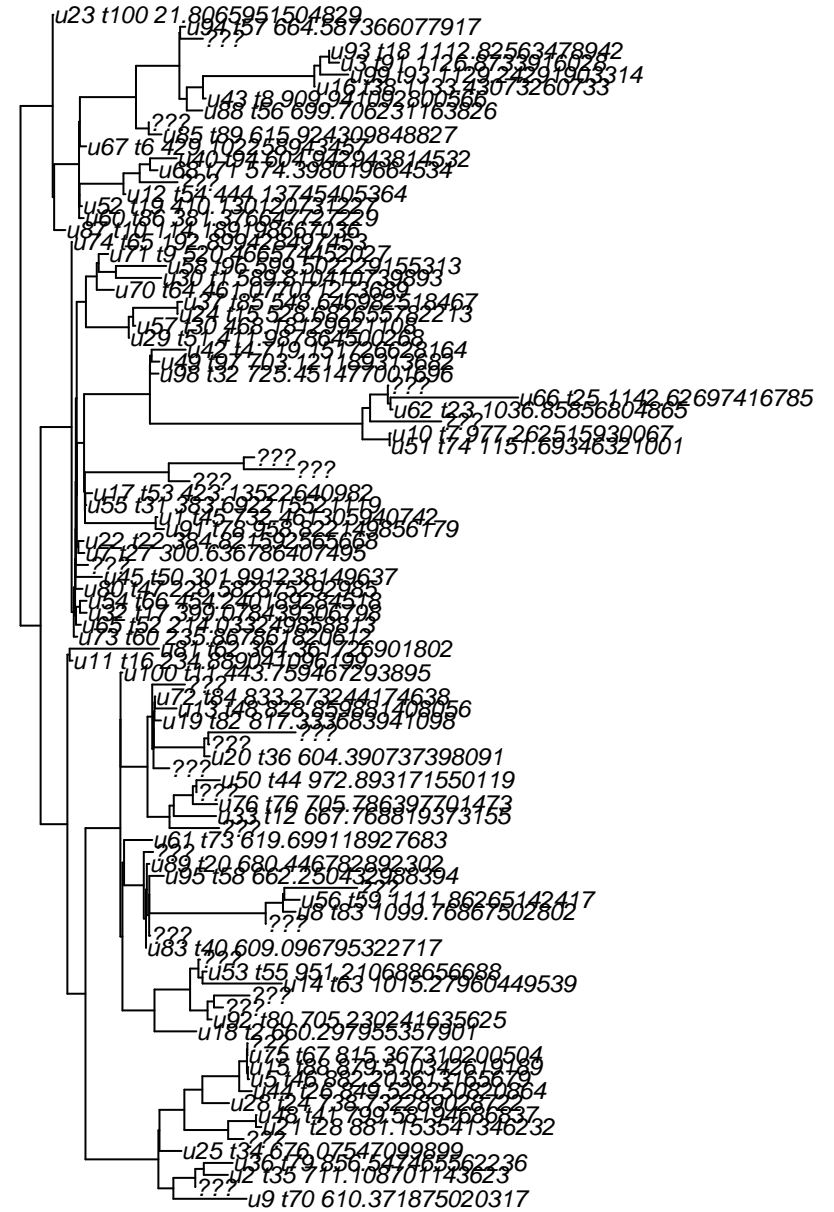
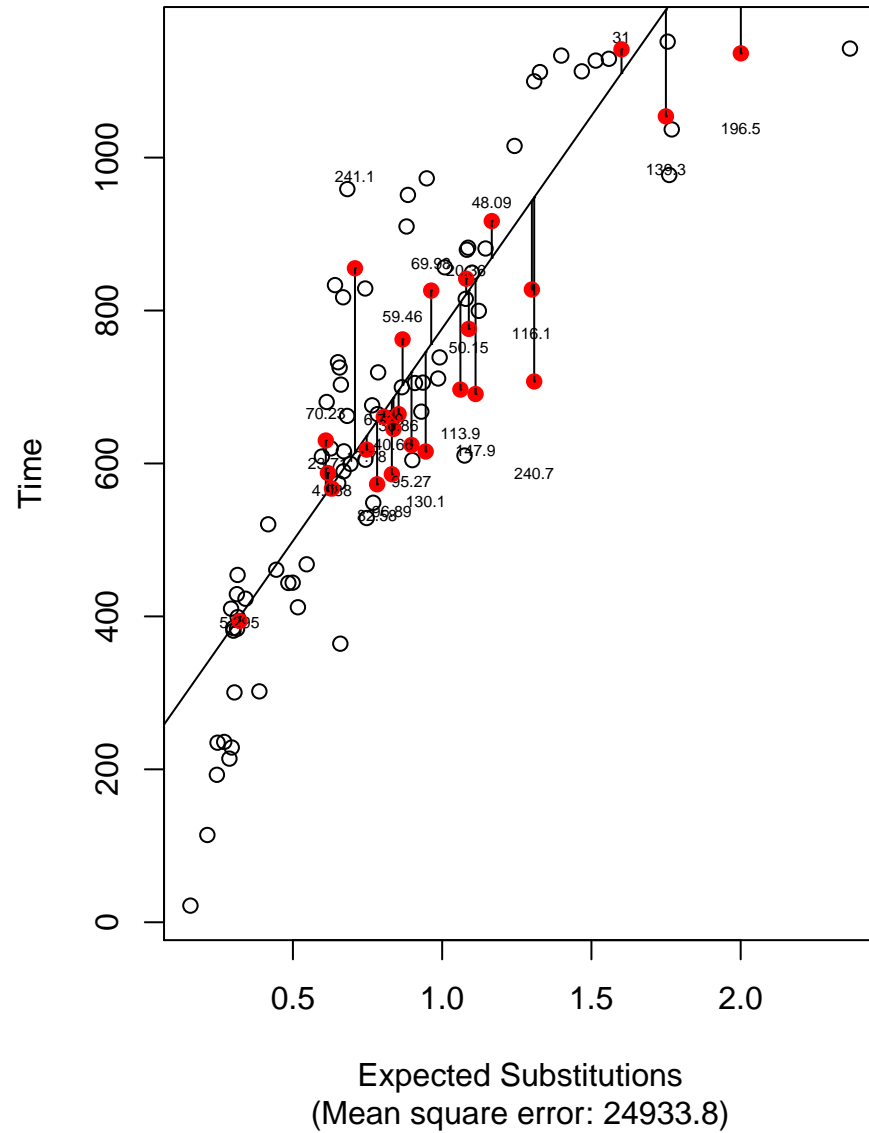
# HIV RNA: Simulated-no.30 (Remove 25)

## Time vs Distance



# HIV RNA: Simulated-no.31 (Remove 25)

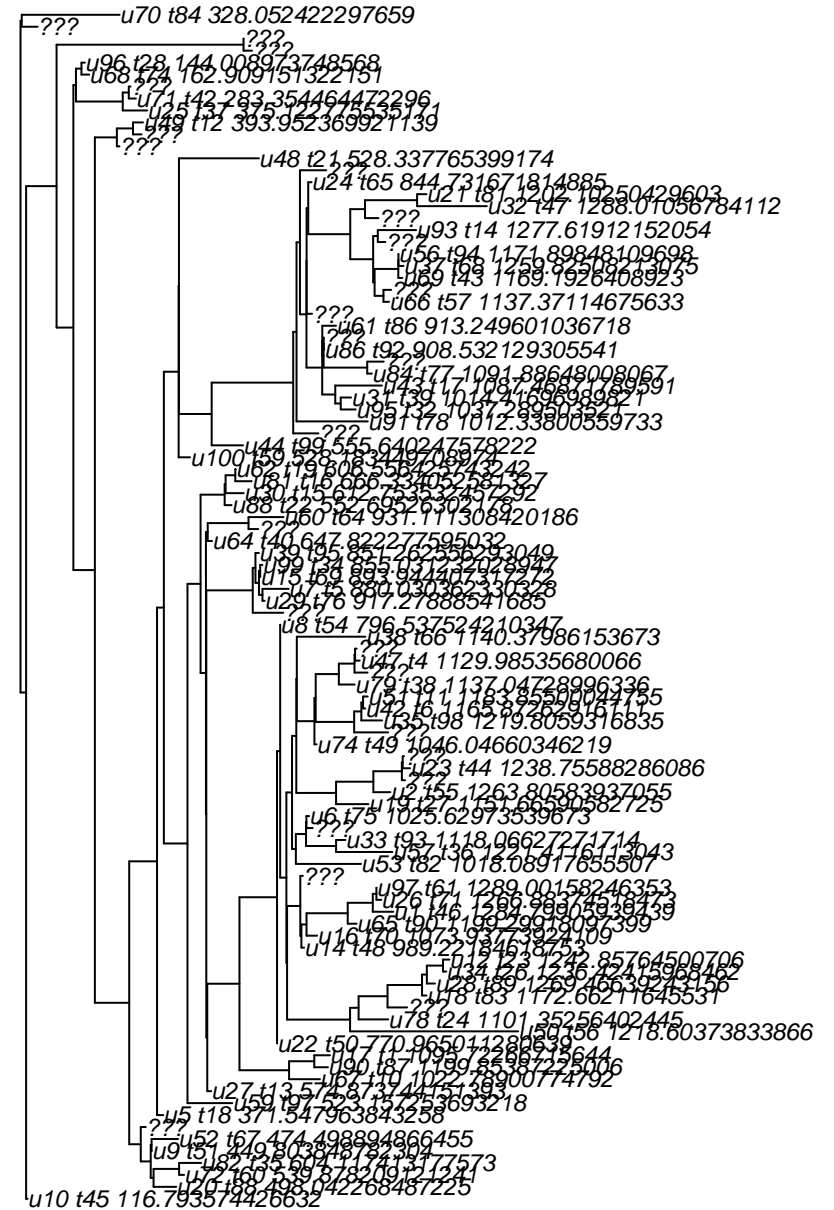
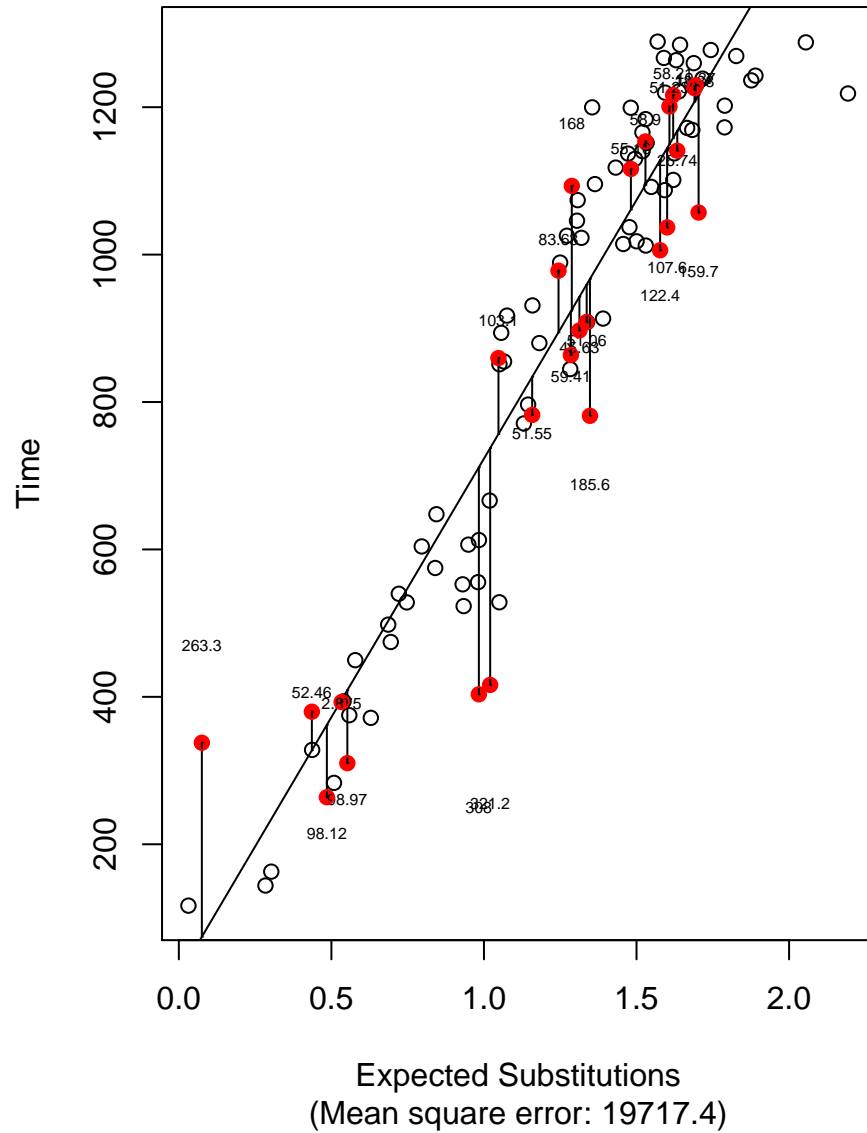
## Time vs Distance





# HIV RNA: Simulated-no.33 (Remove 25)

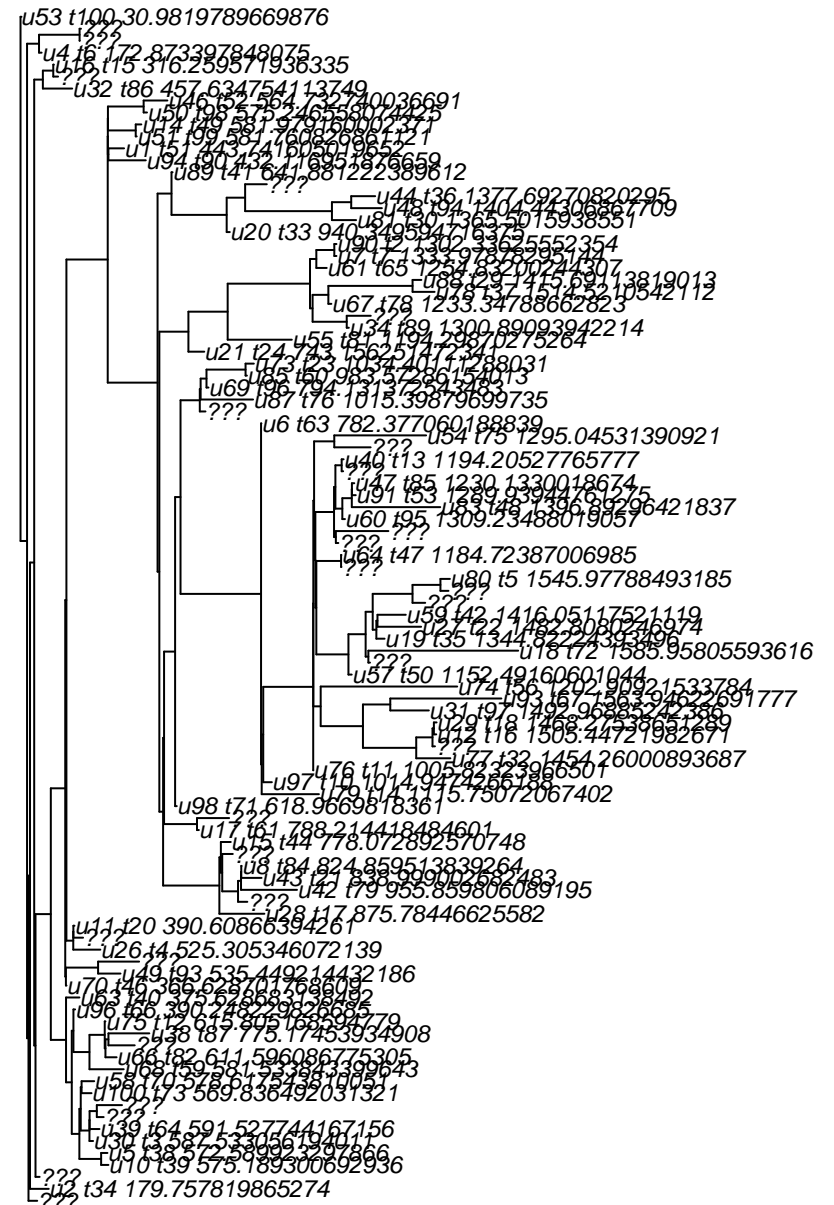
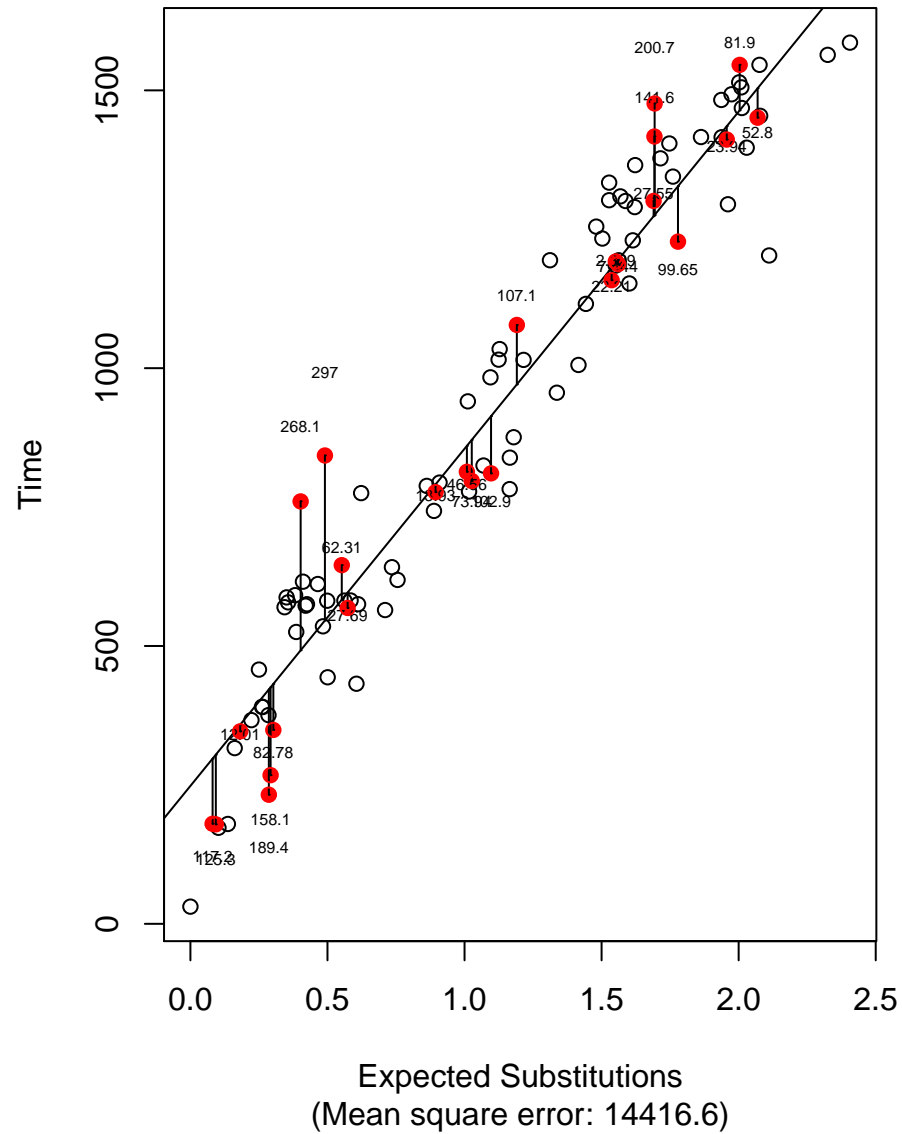
## Time vs Distance





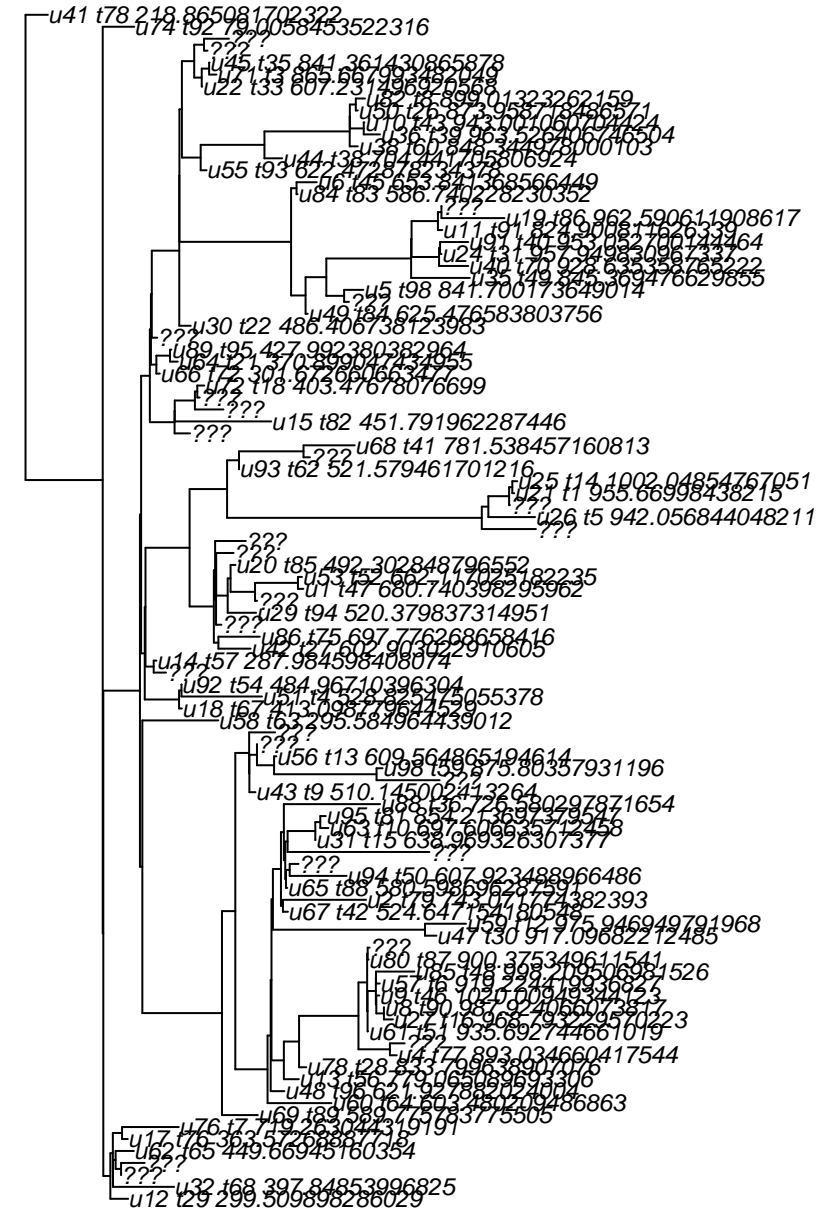
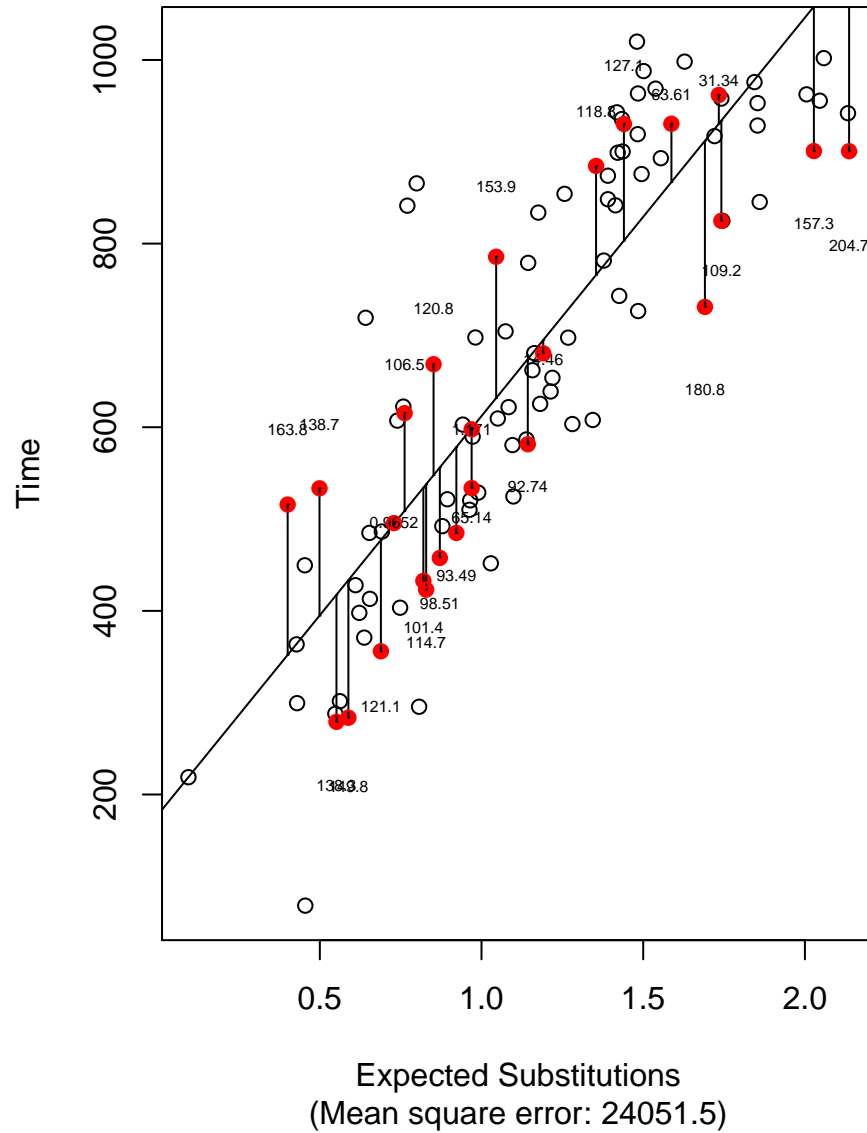
**HIV RNA: Simulated-no.34 (Remove 25)**

## Time vs Distance



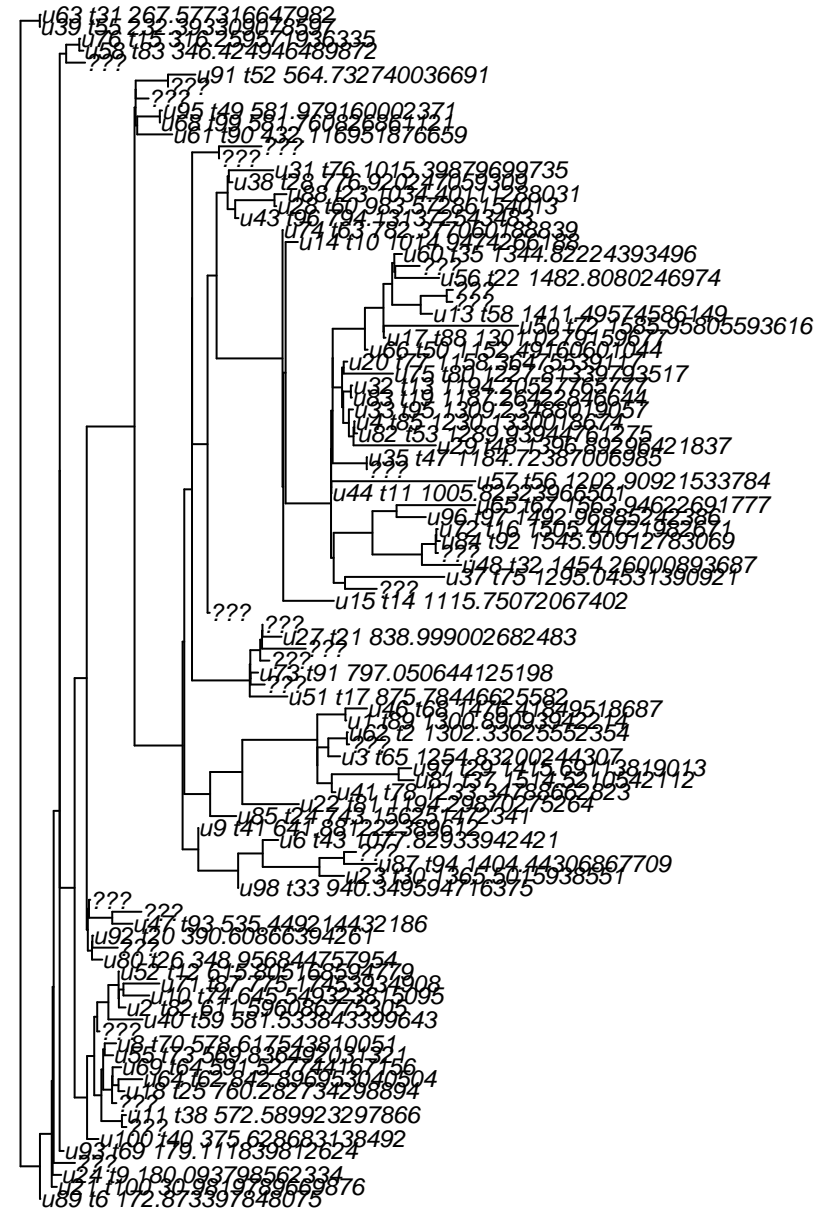
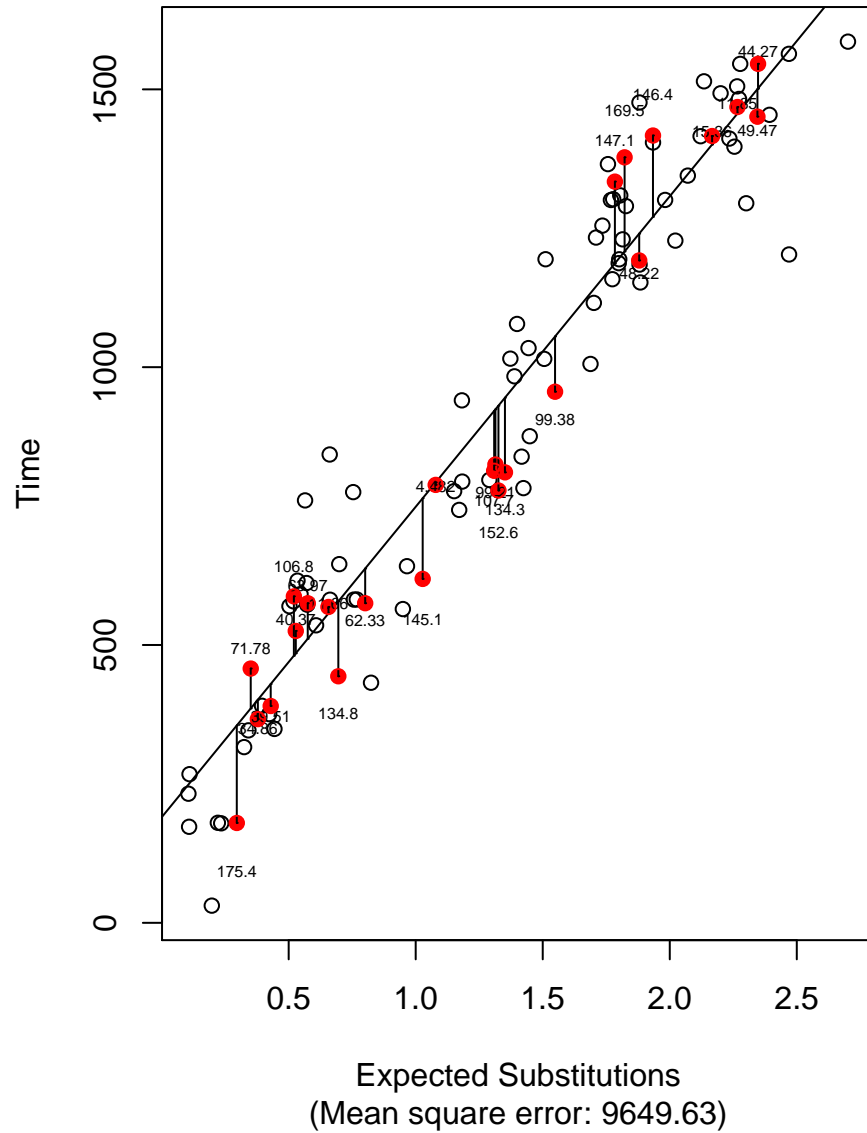
# HIV RNA: Simulated-no.35 (Remove 25)

## Time vs Distance



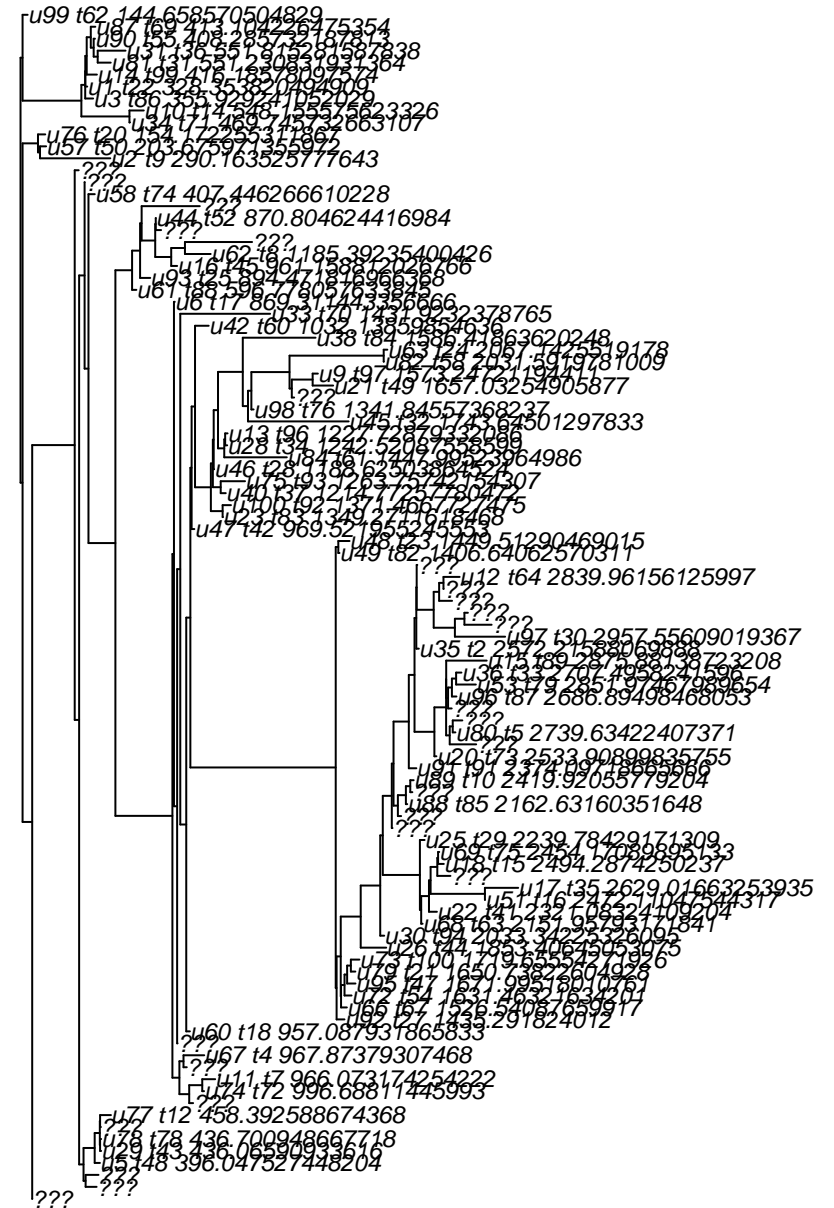
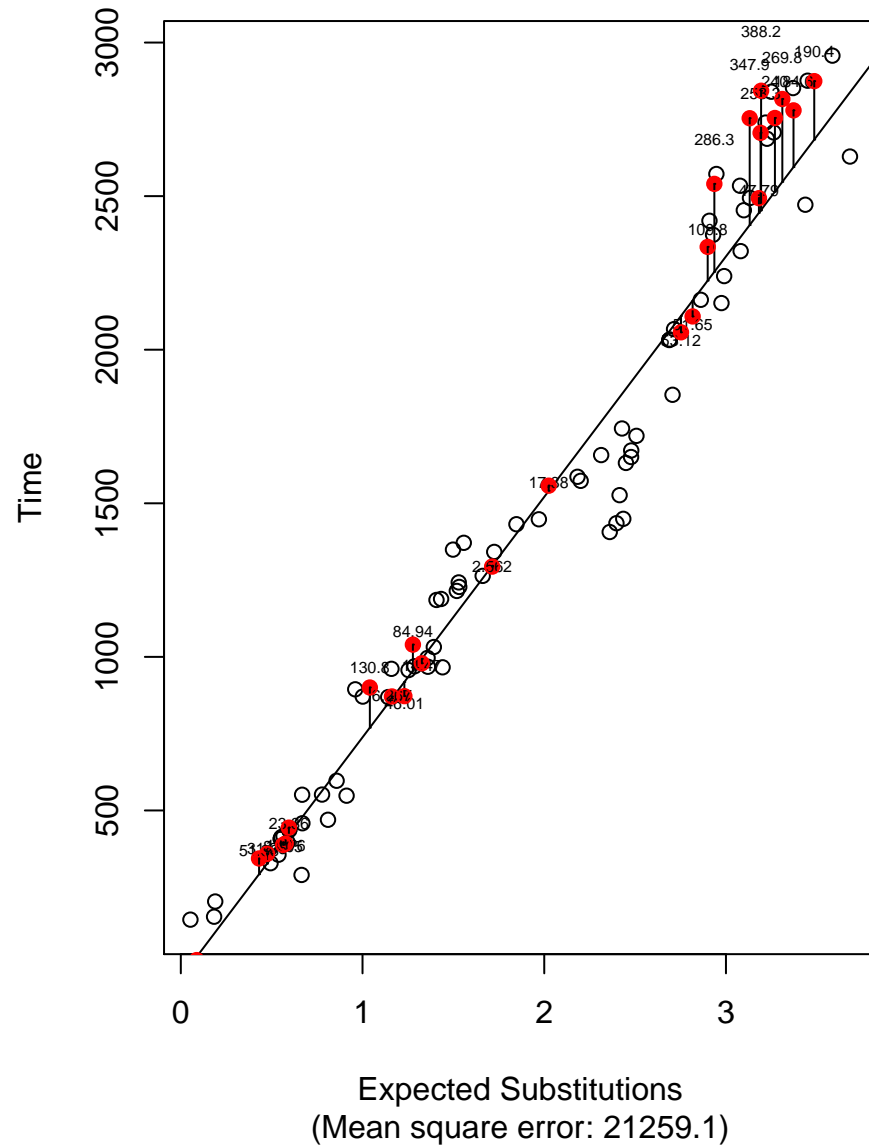
## HIV RNA: Simulated-no.36 (Remove 25)

### Time vs Distance

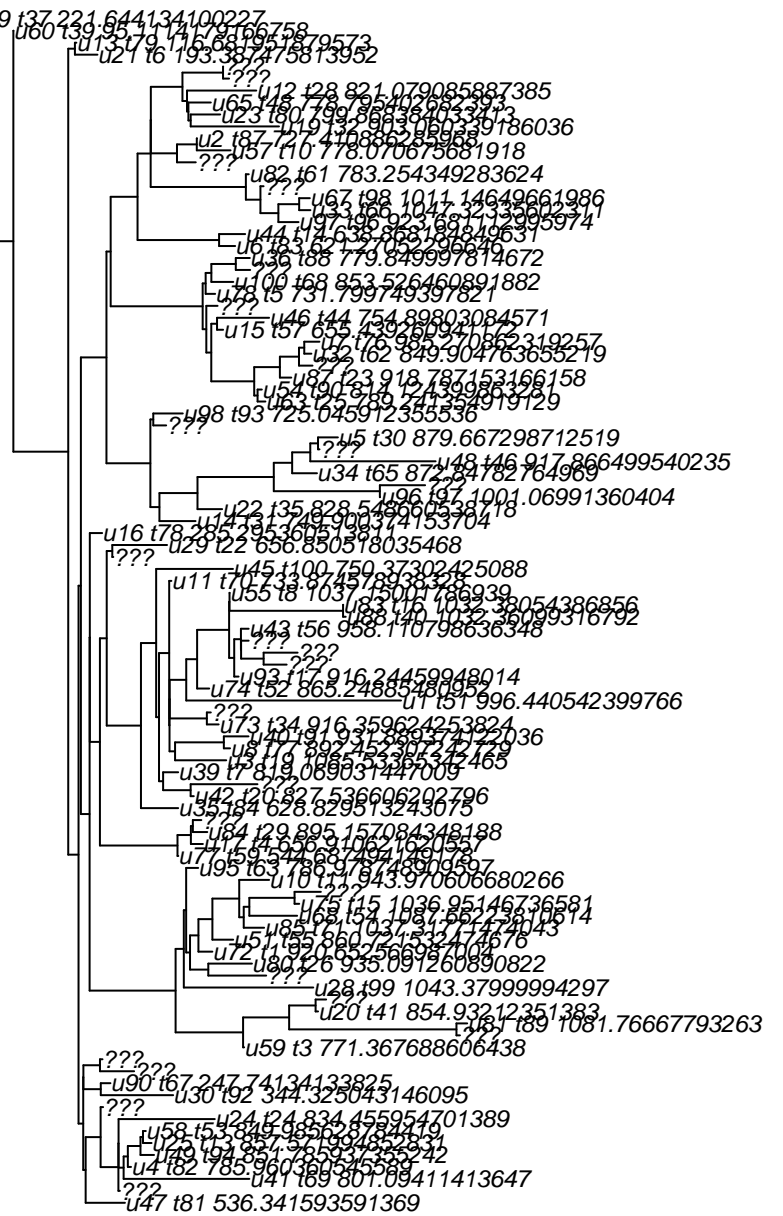


# HIV RNA: Simulated-no.37 (Remove 25)

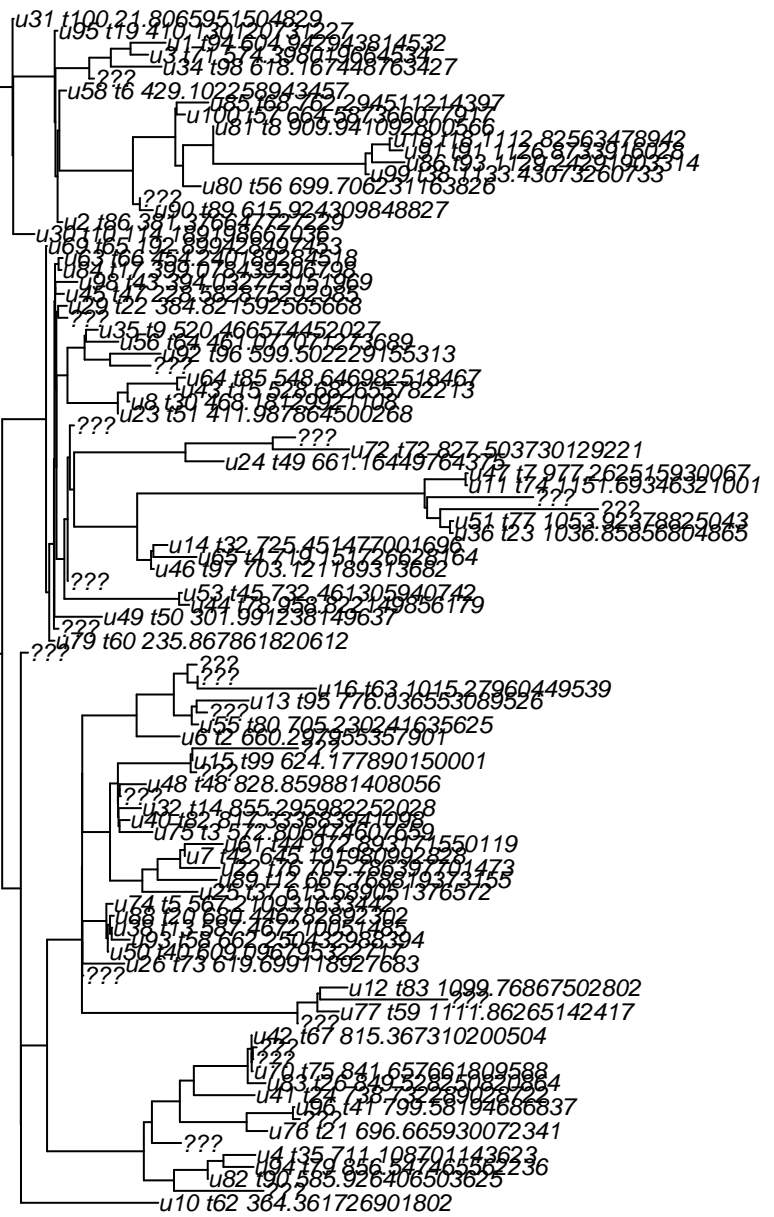
## Time vs Distance



9 127.221.64.134.100227  
u60 t39 173.179.115.68.195.178.9573  
u21 t6 193.387.47.58.13952  
u12 t28 821.079085887385  
u65 t80 769.88616.8843943  
u23 t80 769.88616.8843943  
u2 t87 727.47.08862.85289.186036  
u2 t57 110.778.070675681918  
u82 t61 783.254349283624  
u63 t98 1011.14642661986  
u97 t96 323.15611.3205974  
u44 t44 638.8631898106315974  
u36 t88 779.849997814672  
u100 t68 853.526460891882  
u73 t3 131.799749397821  
u46 t44 754.89803084571  
u15 t57 655.430.76094.1072319257  
u32 t62 849.904763655279  
u48 t23 918.787153166158  
u53 t90 616.174399863129  
u98 t93 725.045912355536  
u45 t30 879.667298712519  
u34 t65 872.81782764969  
u96 t97 1001.06991360404  
u22 t35 828.548605381018  
u16 t78 314.131.149.900374.153704  
u29 t22 656.8503818035468  
u45 t100 759.37302425088  
u55 t8 103.103.103.38054386856  
u43 t56 958.110798636348  
u93 t22 916.24459948014  
u74 t52 865.2488540151996.440542399766  
u73 t34 916.359624253827  
u8 t19 892.2553927477036  
u39 t78 13.0689031447009  
u42 t20 827.536606202796  
u35 t84 628.829513243075  
u84 t4 663.910648348188  
u71 t59 544.68749412910597  
u95 t63 186.943.970606680266  
u10 t13 943.970606680266  
u75 t15 1036.95146736581  
u8 t68 154.181.55747810514  
u51 t83 860.103.1532474676  
u72 t11 950.652566987104  
u80 t26 935.091260890822  
u28 t99 1043.37999994297  
u20 t41 854.93212351383  
u59 t3 771.367688606438  
u90 t67 247.74134133825  
u30 t92 344.325043146095  
u58 t53 849.985624559479  
u93 t94 837.761994552831  
u4 t62 785.9603603558742  
u41 t89 801.08411413647  
u47 t81 536.341593591369





[illegible]

u14 171 385.806434444818

u34 112 639.409236978283

u9 154 5662.461836862456

u33 148 433.304549432527

u81 137 651.06979903274

u68 136 664.30247929266

u52 133 647.30247929266

u29 153 576.8017131387145

u50 195 806.771203215955

u100 178 388.909906505334

u60 126 340.25355395827

u27 114 59.96894109970119

u54 189 599.8311756311

u26 128 696.8476184445

u39 144 540.655452184445

u22 14.664.865959623486

u24 170 987.00424678587

u12 12 1261.3859899282

u30 124 1055.8522037882

u33 121 1443.36039550864

u67 120 1714.53380111892

u10 192 1602.01593527651

u40 155 1492.25269560828

u70 189 1450.84763096889

u86 164 1456.448480491779

u99 131 1344.33725487231

u19 143 1654.10380111515

u5 154 1408.85437801949

u79 132 1338.12005657682

u63 185 1360.676822019656

u86 129 174 1433.96452084338

u4 184 1644.79195400119

u89 113 144.919437782913141

u80 130 919437782913141

u12 141 2327.19005246743

u95 140 262.358549103078

u23 172 2520.08781148318

u49 136 2595.4855930049

u69 198 2471.54822723859

u12 124 2469.802590754679

u35 164 2465.2484678680943

u96 123 1973.17867499754

u38 124 1961.231973.17867499754

u78 196 897.5719156232

u75 165 2028.67145333204

u73 110 1990.62460935641

u36 1100 2190.93065457536

u25 195 2158.67921337912

u26 157 2171.40811847091

u45 119 1875.63124973844

u62 148 1858.157282079766802

u16 175 1676.13471539123

u74 168 2006.99872500278

u57 181 1833.12337268108

u18 176 1784.40853696124

u47 160 1669.89608296823

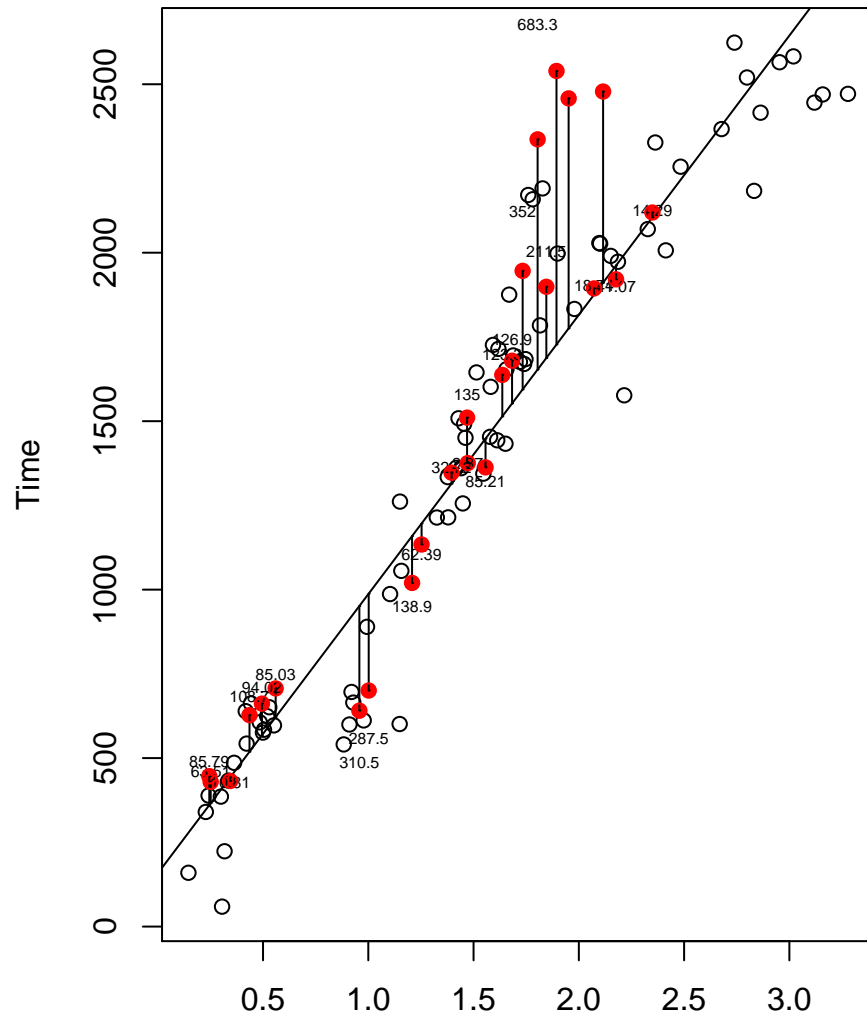
u52 173 1255.92679515296

u8 118 869.722321131891

u84 190 611.9094419302675

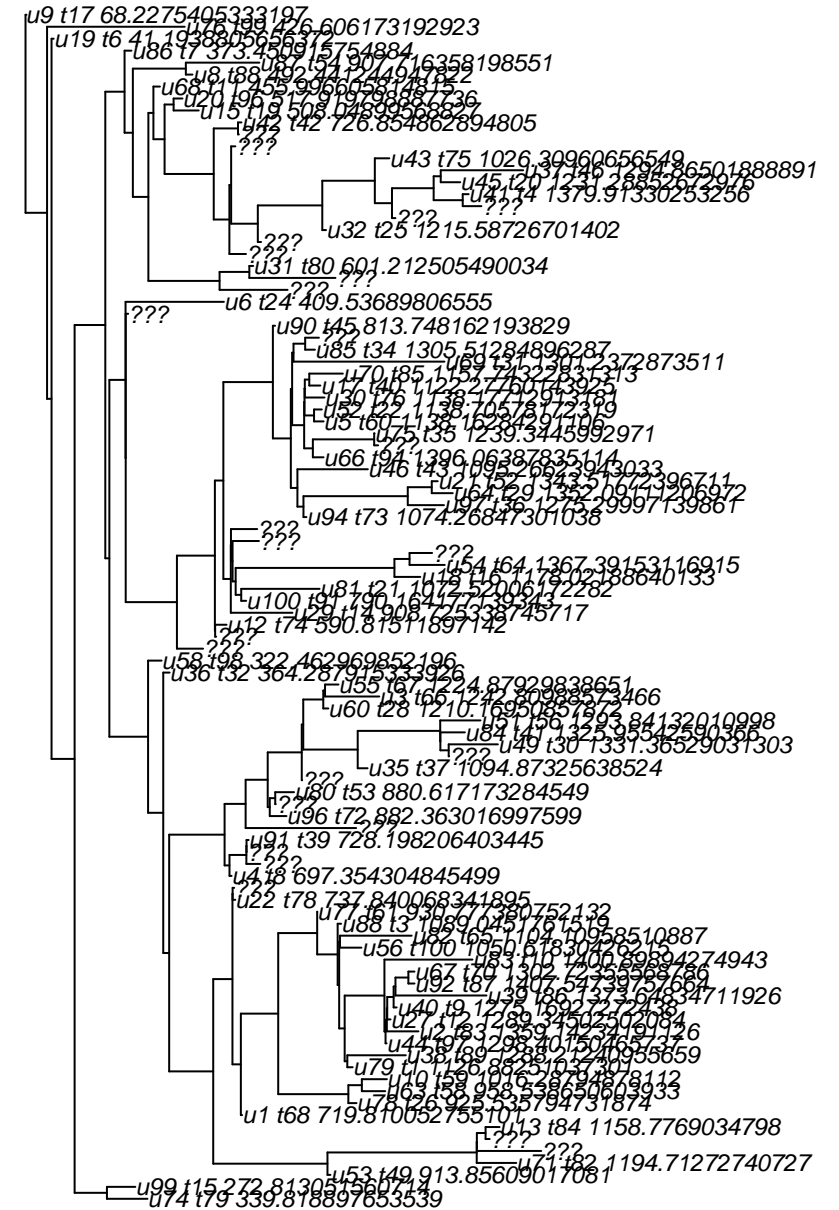
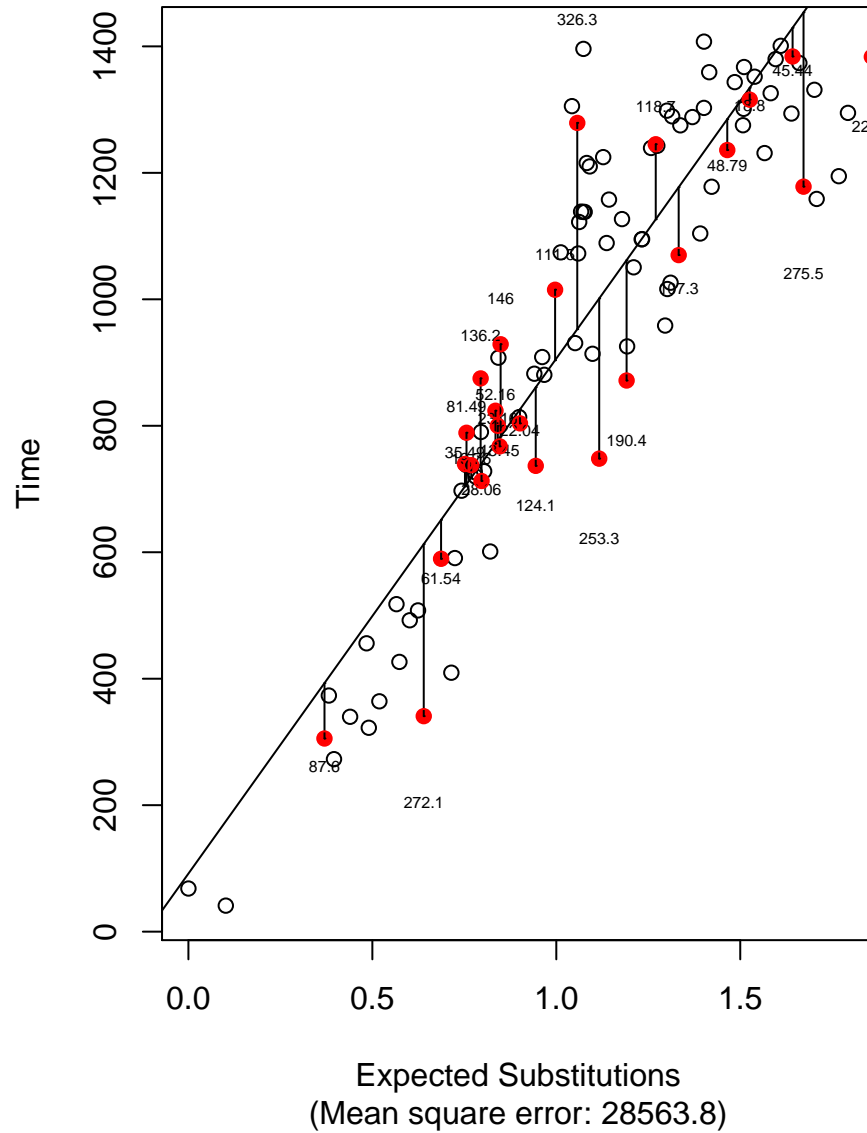
u31 186 223.631418617088

Expected Substitutions  
(Mean square error: 90457.3)



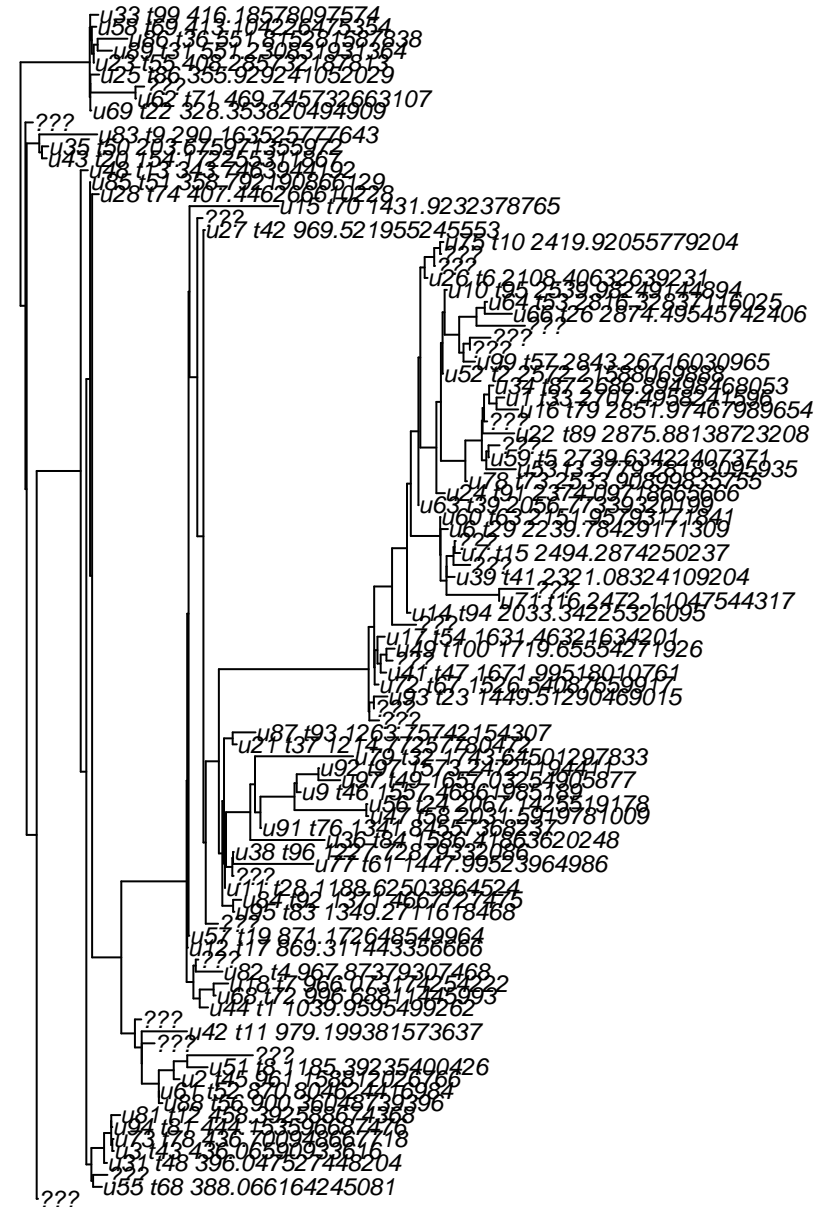
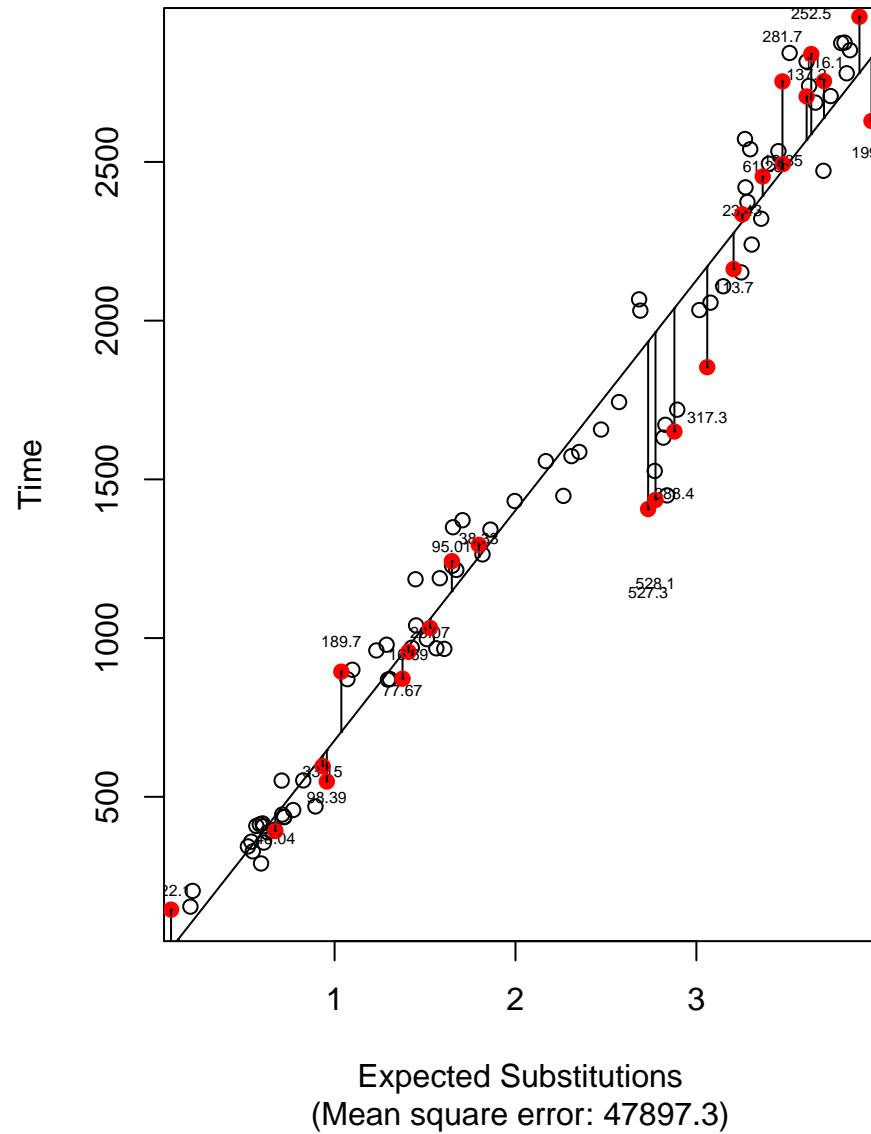
# HIV RNA: Simulated-no.41 (Remove 25)

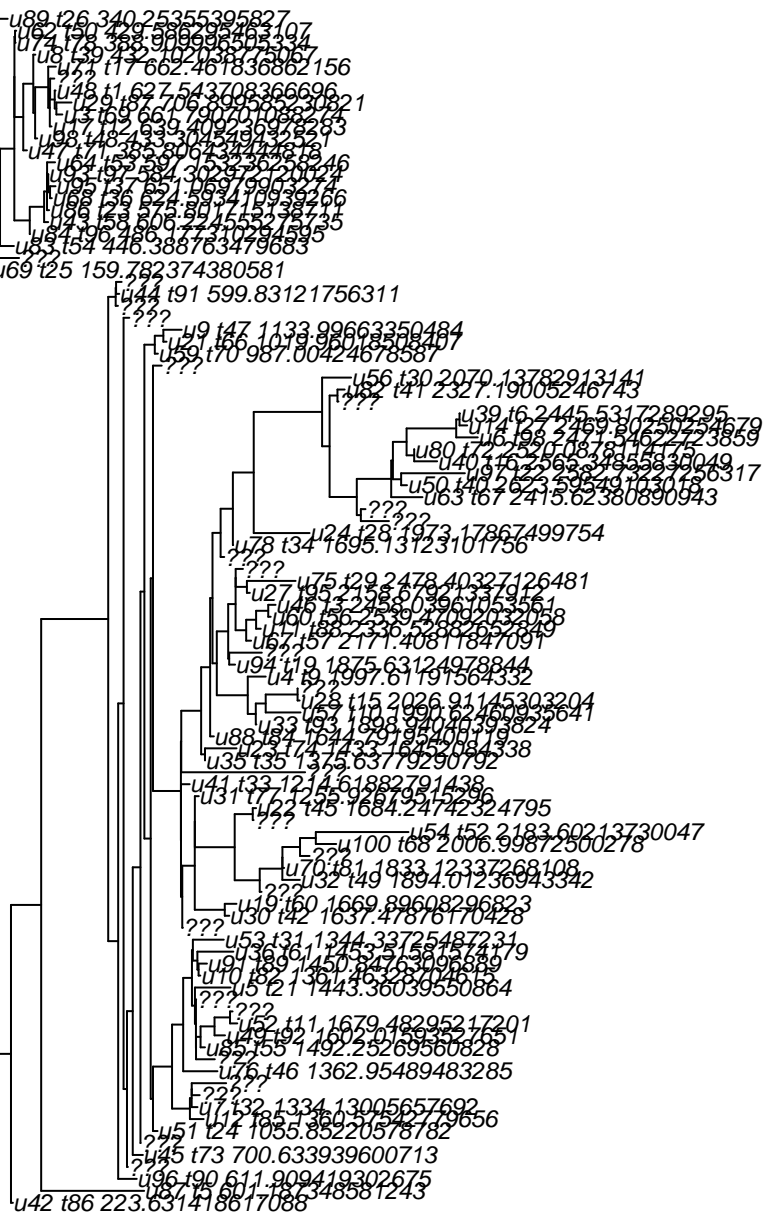
## Time vs Distance



## HIV RNA: Simulated-no.42 (Remove 25)

## Time vs Distance

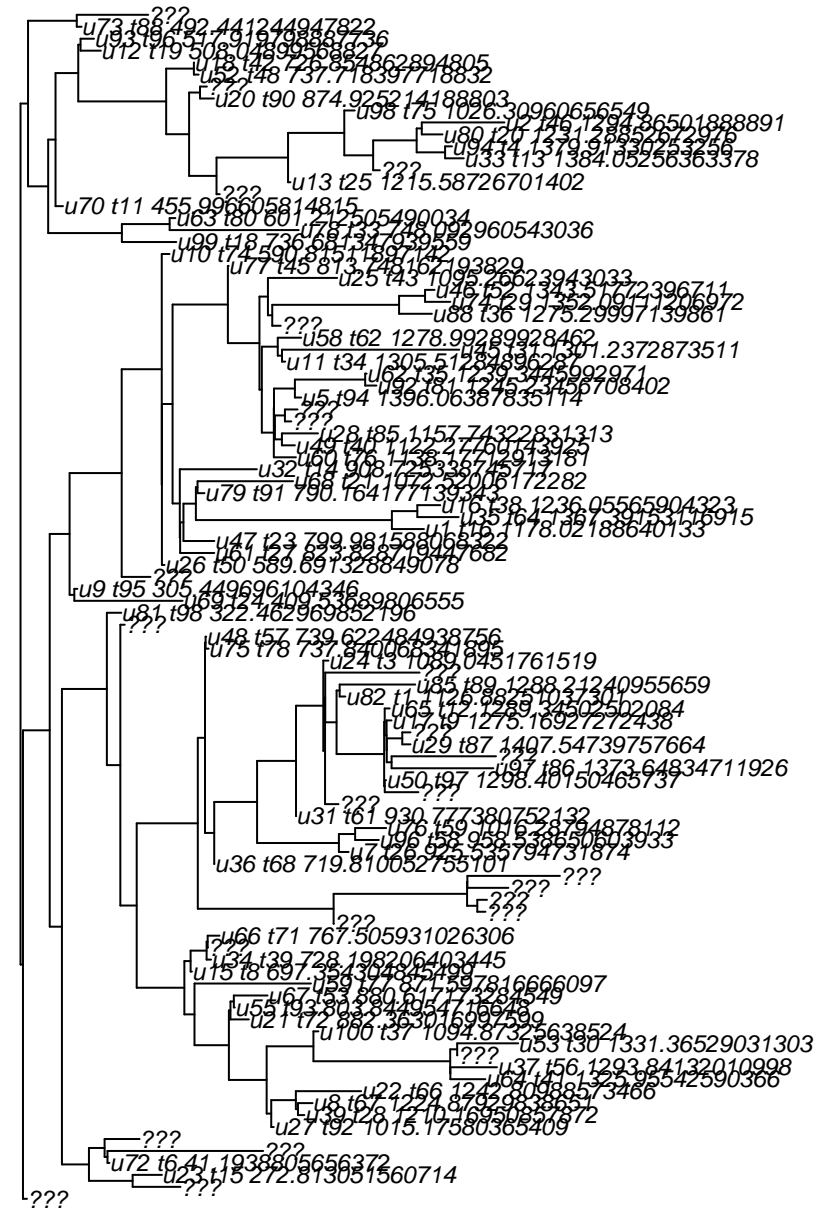
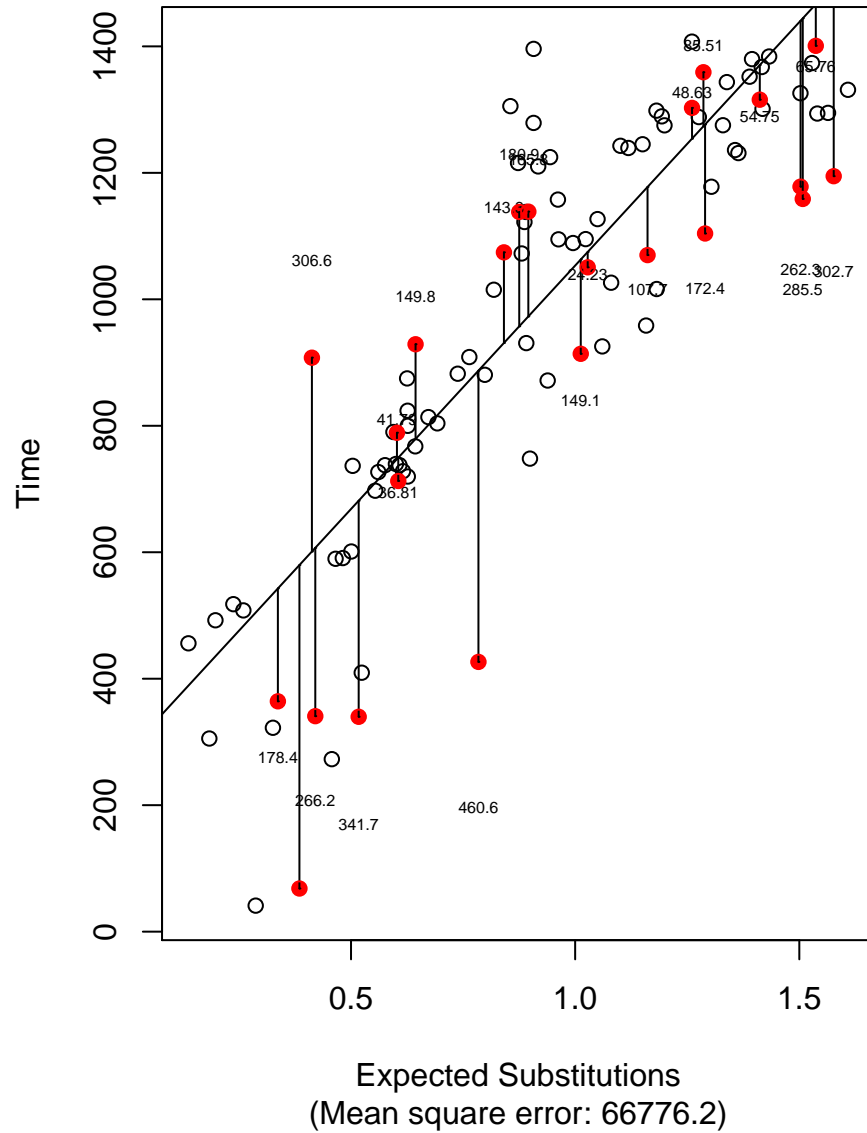






## HIV RNA: Simulated-no.44 (Remove 25)

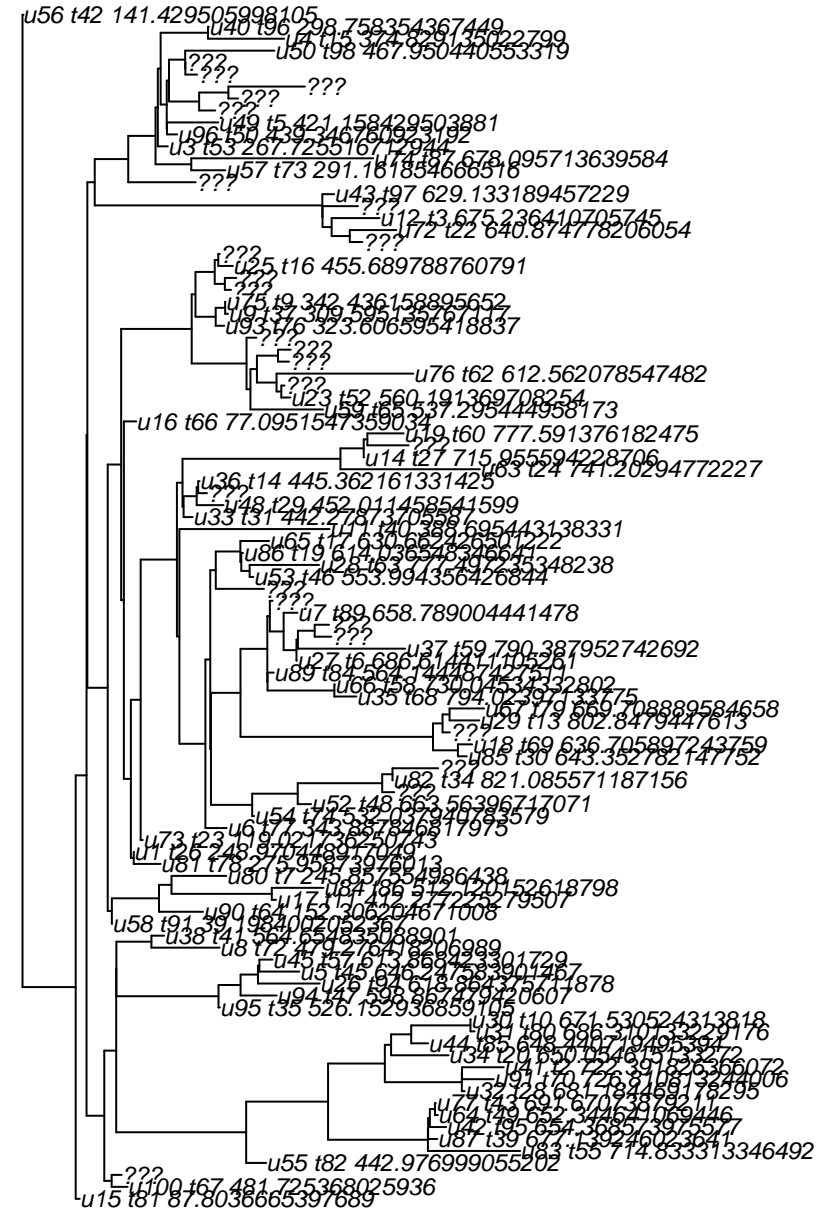
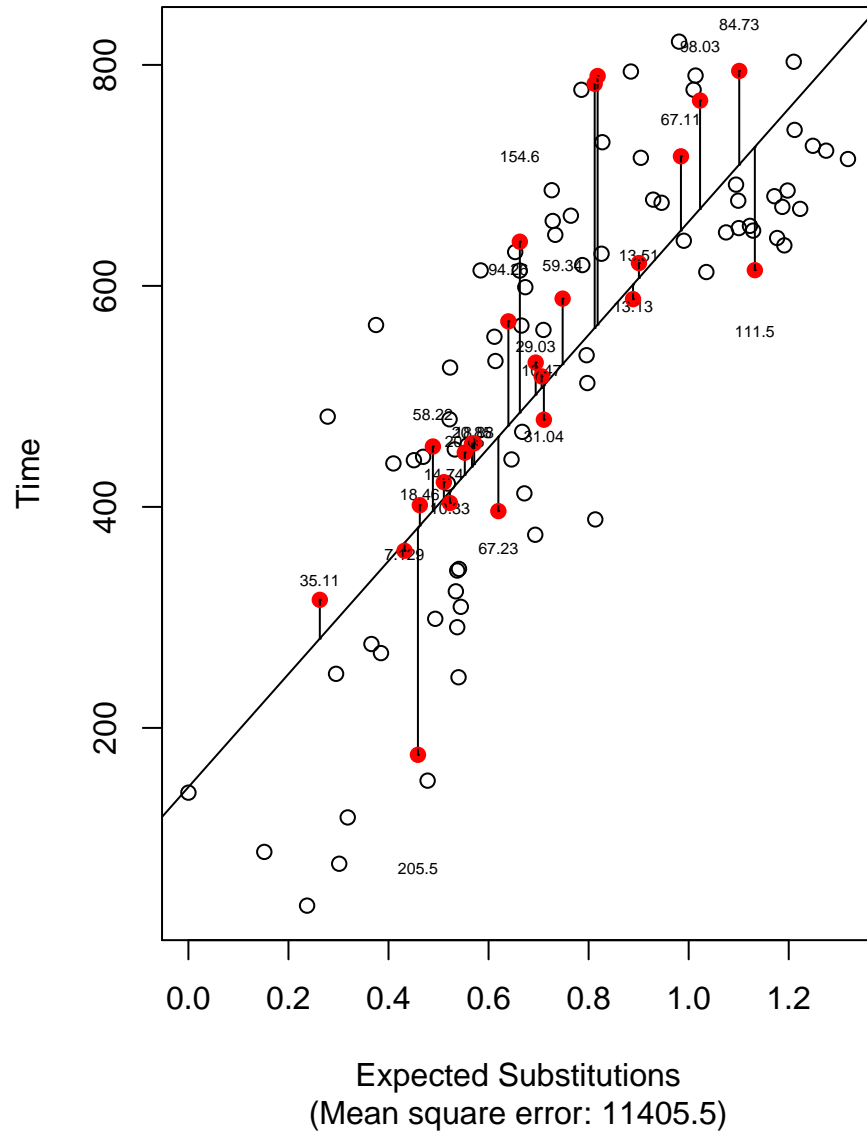
### Time vs Distance





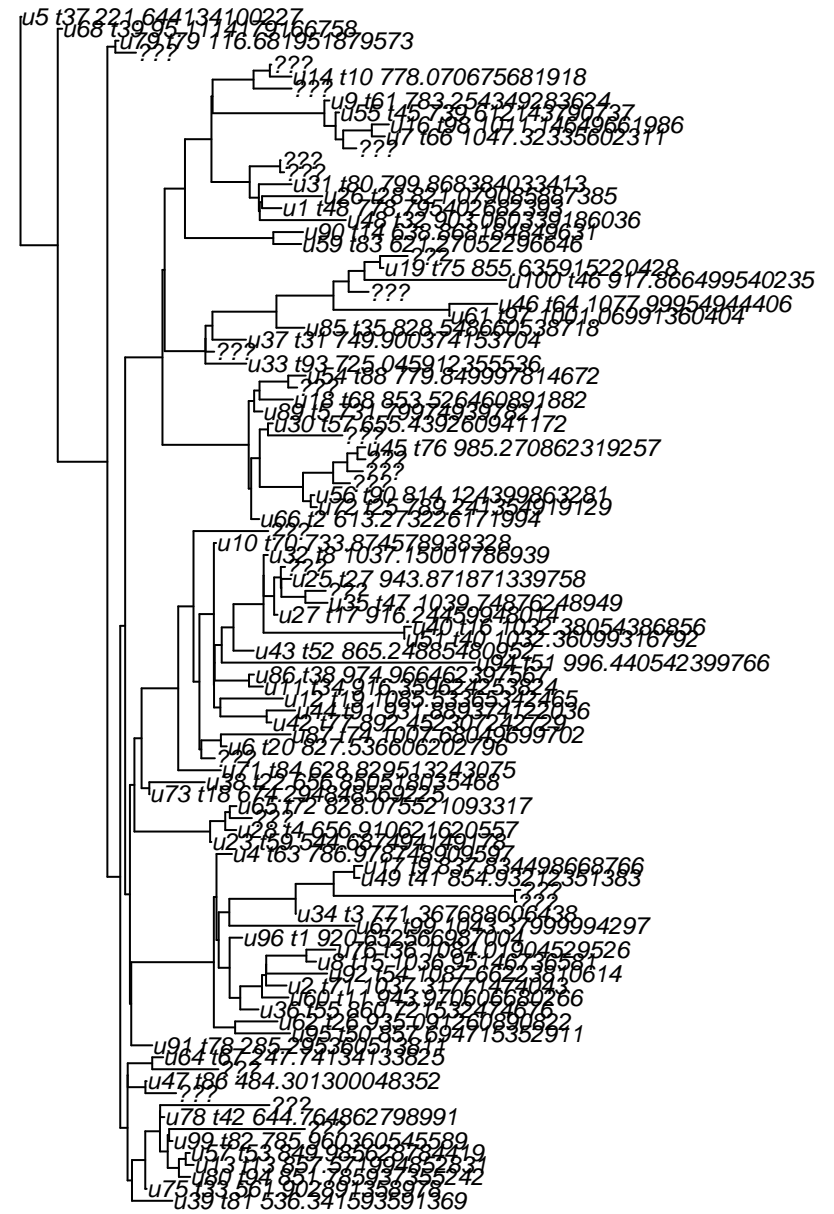
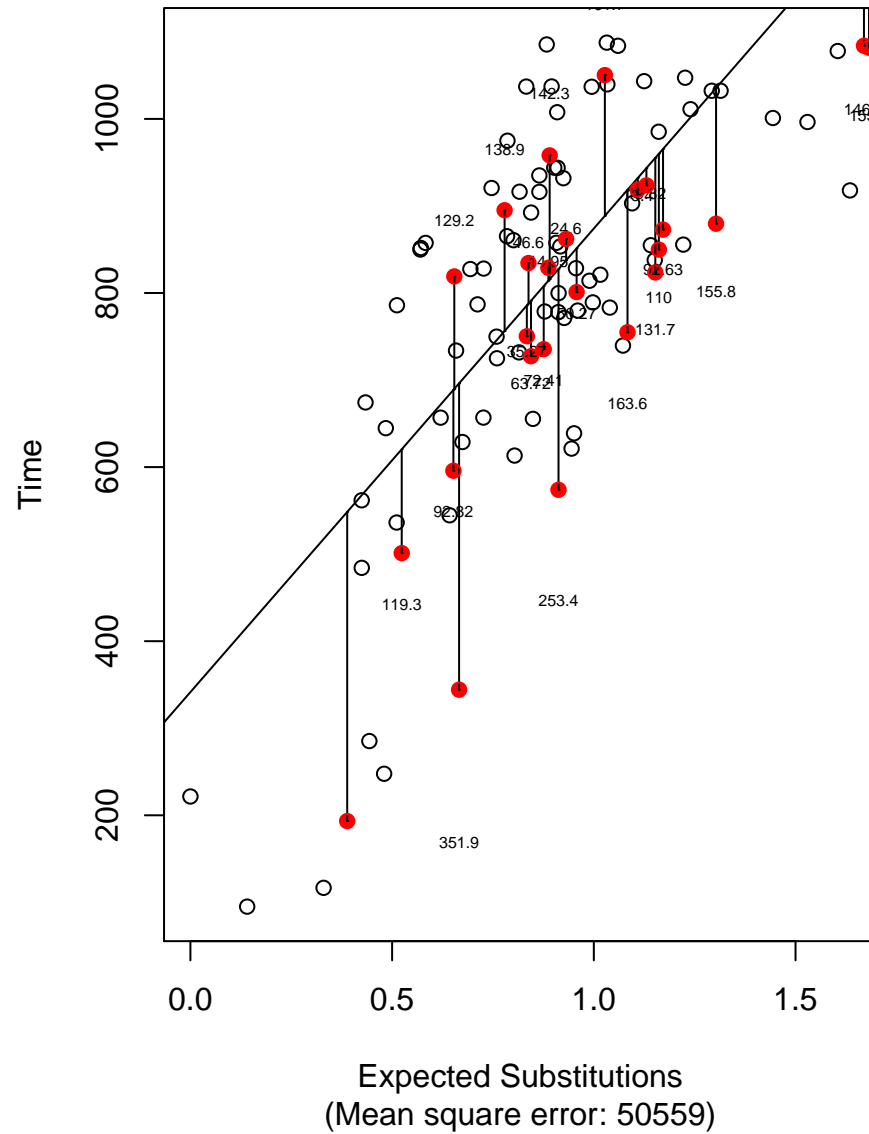
# HIV RNA: Simulated-no.46 (Remove 25)

## Time vs Distance



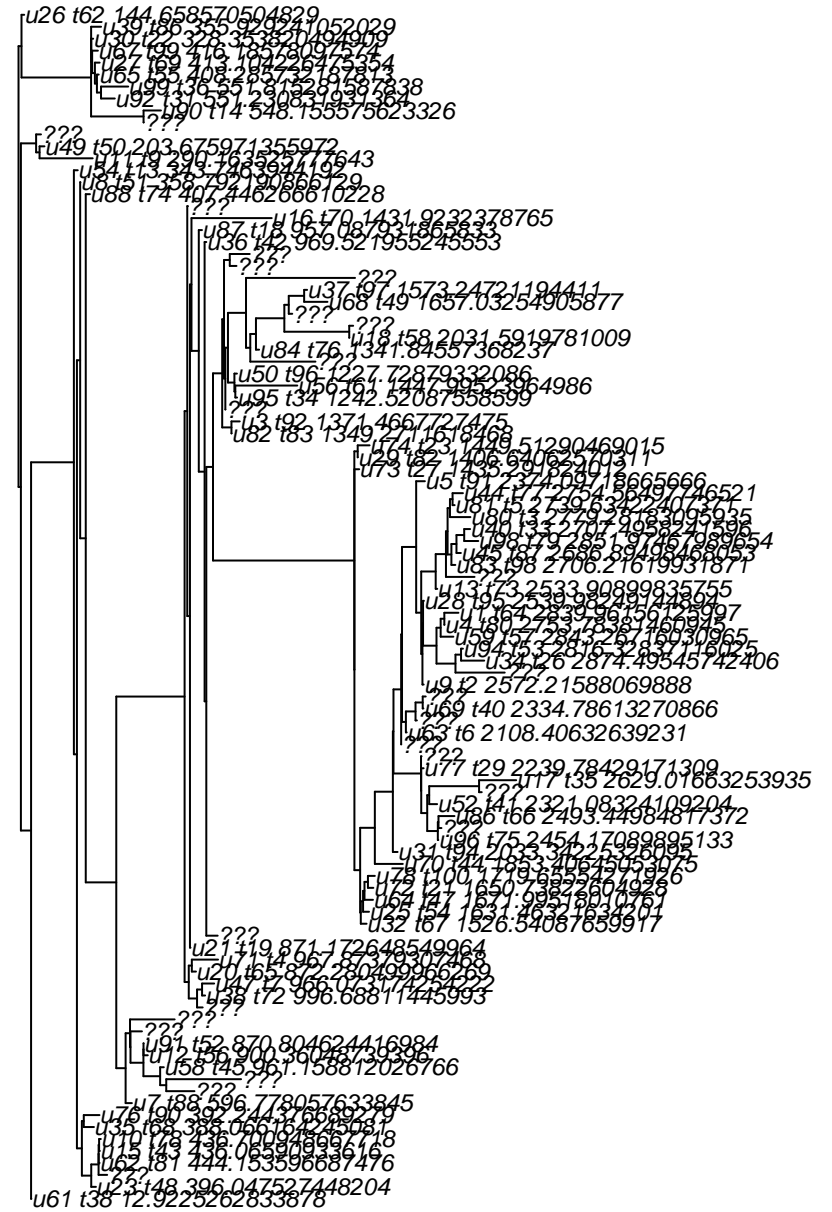
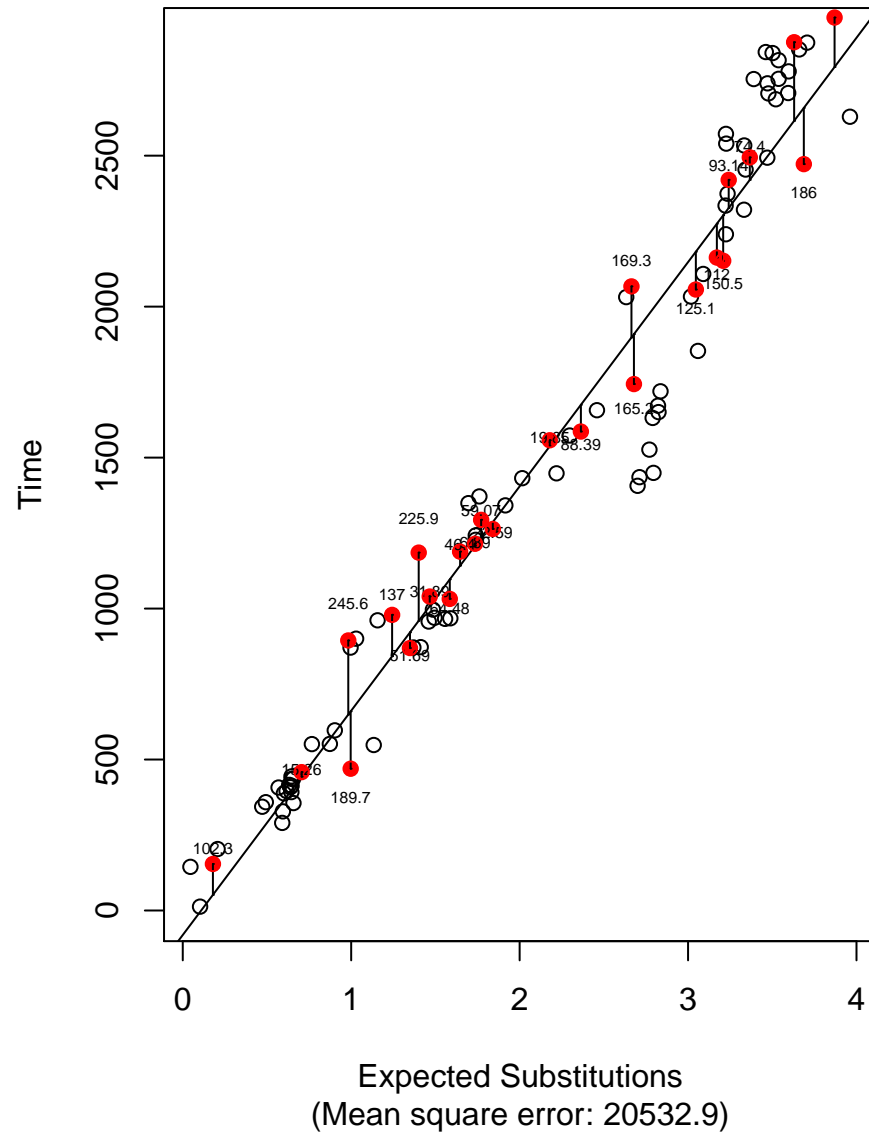
## HIV RNA: Simulated-no.47 (Remove 25)

## Time vs Distance



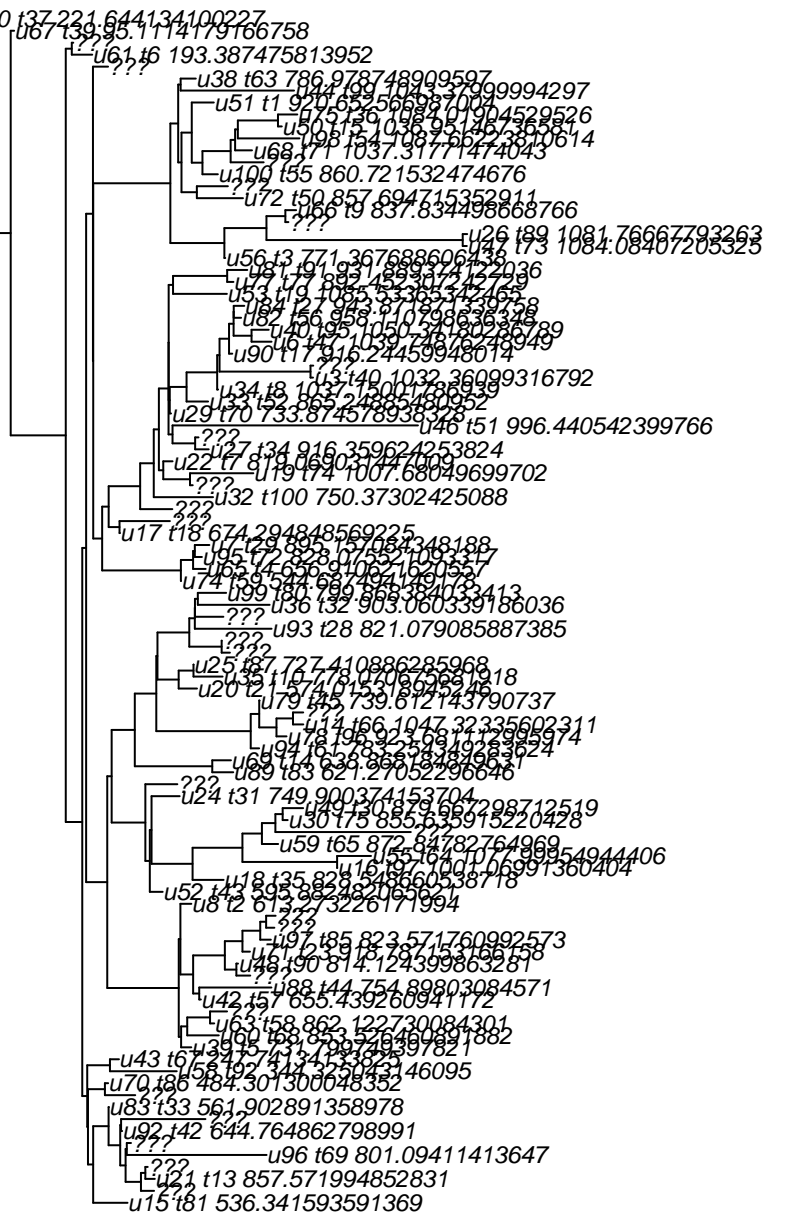
## HIV RNA: Simulated-no.48 (Remove 25)

## Time vs Distance

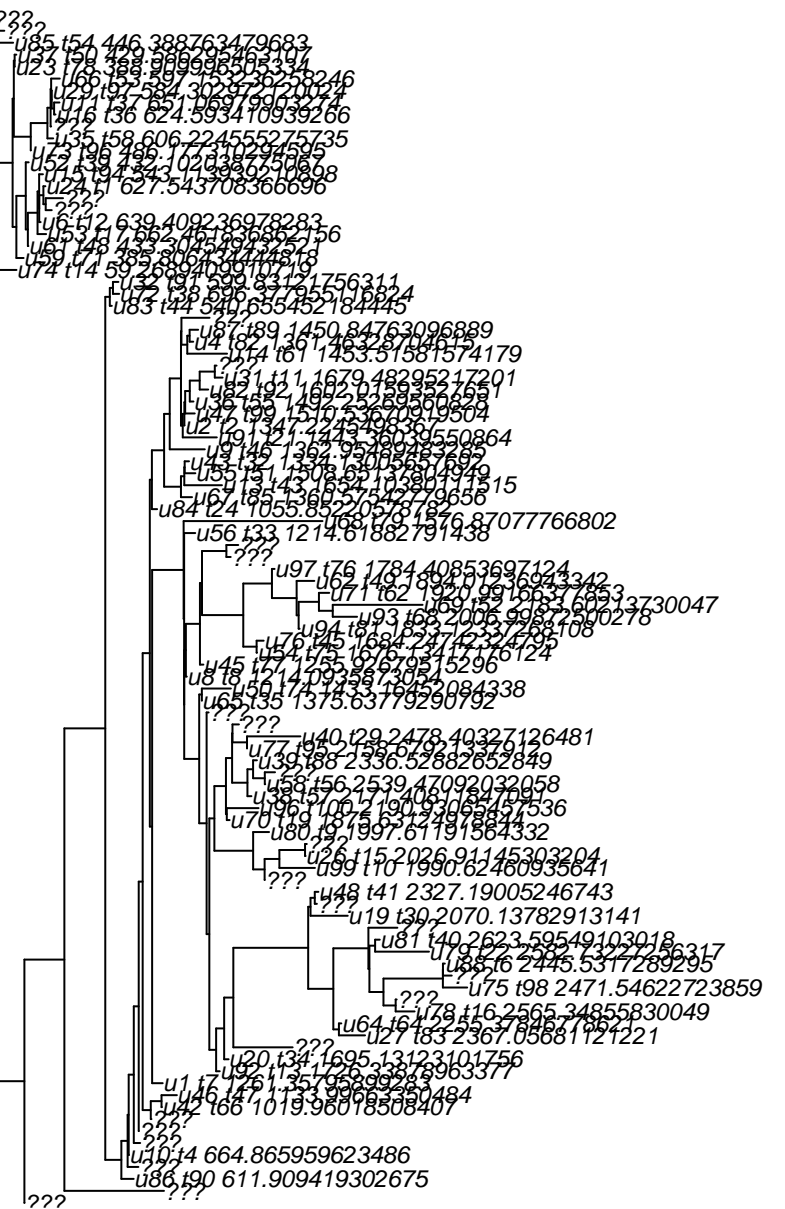




0.137221.644134100227  
u67 t32 95.1114179766758  
u61 t6 193.387475813952  
u38 t63 786.978748909597  
u44 t69 484.37999994297  
u51 t1 920.652566987002  
u50 t5 6 0.38 51.304529526  
u98 t54 1037.66523350614  
u68 t71 1037.31777474043  
u100 t55 860.721532474676  
u72 t50 857.694715352911  
u99 t9 837.834498668766  
u26 t89 1081.76667793263  
u13 t3 1084.08407250323  
u56 t3 771.367688606436  
u79 t72 883.488317427036  
u53 t13 1082.53335342462  
u87 t56 958.910798833428  
u40 t95 1050.54182236789  
u90 t17 916.24459948074  
u3 t40 1032.36099316792  
u34 t8 165.21401460529  
u29 t70 733.8745789383252  
u46 t51 996.440542399766  
u22 t7 819.069031253824  
u19 t74 1007.68049699702  
u32 t100 750.37302425088  
u17 t18 674.294848569225  
u95 t72 828.075531003187  
u65 t4 636.910621620557  
u74 t99 787.999184529033413  
u36 t32 965.060339186036  
u93 t28 821.079085887385  
u25 t87 727.410886285968  
u20 t2 115.4701520669291218  
u79 t45 739.812143790737  
u14 t66 1047.32235602311  
u94 t81 198.3259319136374  
u69 t14 638.9878381983324  
u89 t83 621.27052296646  
u24 t31 749.900374153704  
u30 t75 855.535915220428  
u59 t65 872.84782764969  
u15 t61 1017.66991360404  
u52 t43 593.88238210652338718  
u8 t2 613.273226171994  
u97 t85 823.571760992573  
u61 t6 8910.281513166158  
u49 t90 814.124399863281  
u88 t44 754.89803084571  
u42 t57 655.439260941172  
u63 t58 862.122730084301  
u60 t83 885.526460981882  
u39 t5 743.4897997821882  
u43 t6 561.924425503146095  
u70 t86 484.301300048352  
u83 t33 561.902891358978  
u92 t42 644.764862798991  
u96 t69 801.09411413647  
u21 t13 857.571994852831  
u15 t81 536.341593591369



Phylogenetic tree showing the relationships between 1000 random samples from the 1000 Genomes Project. The tree is rooted on the left and branches out to the right. Each node is labeled with a sample ID and its corresponding genetic distance from the root. The labels are in a monospace font, with some nodes having multiple labels (e.g., 'u85 154 446 388763479683'). The tree shows a complex branching pattern, indicating the genetic relationships between the samples. The root is at the top left, and the branches extend downwards and to the right. The labels are placed at the nodes, with some nodes having multiple labels. The tree is a visual representation of the genetic data, showing the hierarchical structure of the samples.



Histogram of MSE

