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383
             (CHIN_01, EG101) Node17) Node15) Node7, (((ITALY_1998_EQUINE, PAAN001) Node22,
             (RO97_50, VLG_4) Node25) Node21, KN3829) Node20) Node6, AST99) Node5, PAH001) Node4, IS_98) Node3, MEX03) "
384
385
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         "p-value":0
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| Model       | Log L    | # p | dN/dS                  | LRT    | p-value |
|-------------|----------|-----|------------------------|--------|---------|
| Null        | -7745.48 | 49  | 1                      |        |         |
| Alternative | -6413.5  | 50  | 0.009<br>[0.007-0.011] | 2512.6 | ~0      |

Very strongly conserved

## HIV-1 env

| Model       | Log L   | # p | dN/dS                | LRT  | p-value |
|-------------|---------|-----|----------------------|------|---------|
| Null        | -2078.3 | 40  | 1                    |      |         |
| Alternative | -2078.2 | 41  | 1.122<br>[0.94-1.33] | 0.33 | ~0.6    |

Not significantly different from neutral

## SARS-CoV-2 spike

| Model       | Log L   | # p | dN/dS               | LRT   | p-value |
|-------------|---------|-----|---------------------|-------|---------|
| Null        | -9311.0 | 176 | 1                   |       |         |
| Alternative | -9292.0 | 177 | 0.54<br>[0.48-0.61] | 37.94 | ~0      |

Very strongly conserved