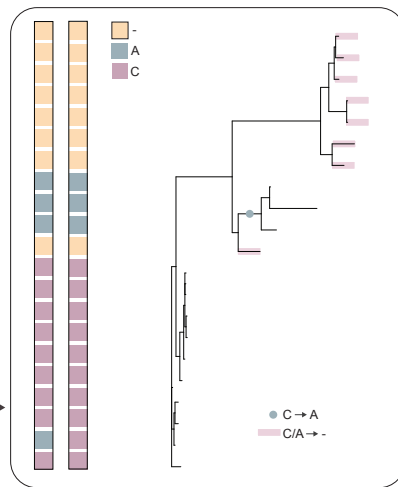
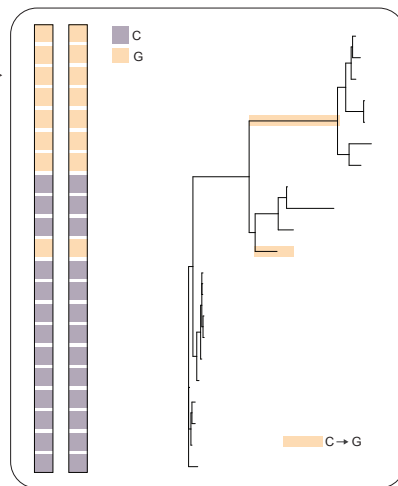
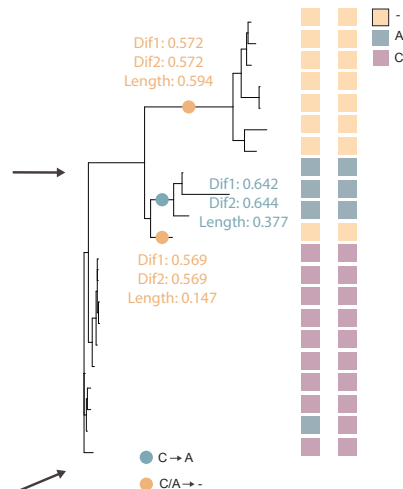
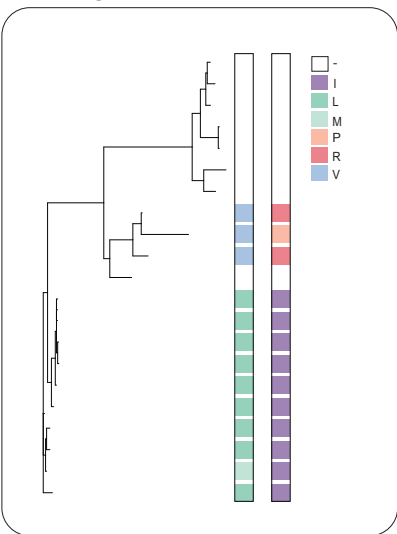


MSA₁MSA₂

Original MSA & Tree



Total Change per Branch

| Dif ₁ | Dif ₂ | Branch diversity |
|------------------|------------------|------------------|
| 0.64 | 0.64 | 0.377 |
| 0.57 | 0.57 | 0.594 |
| 0.57 | 0.57 | 0.147 |
| 0.28 | 0.28 | 0.155 |
| 0.07 | 0.07 | 0.040 |
| 0.01 | 0.01 | 0.102 |
| 0.01 | 0.01 | 0.056 |
| 0.01 | 0.01 | 0.120 |
| 0.01 | 0.01 | 0.078 |
| 0.01 | 0.01 | 0.055 |
| 0.01 | 0.00 | 0.062 |
| 0.01 | 0.00 | 0.016 |
| 0.02 | 0.00 | 0.007 |
| 0.00 | 0.00 | 0.026 |

$$score = \omega_1 WCC(dif_1, dif_2, \omega_2)$$

where WCC is weighted concordance correlation coefficient

$$WCC(x, y, z) = \frac{2cov_z(x, y)}{Var_z(x) + Var_z(y) + (mean_z(x) - mean_z(y))^2}$$