Table E3: Parameter estimates under models of variable $\omega$ ratios among lineages and LRTs of their fit to the $L d h-A$ and $L d h-C$ gene family.

| Models | $\omega_{\mathrm{A} 0}$ | $\omega_{\mathrm{A} 1}$ | $\omega_{\mathrm{C} 1}$ | $\omega_{\mathrm{C} 0}$ | $\boldsymbol{\ell}$ | LRT |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathrm{H}_{0}: \omega_{\mathrm{A} 0}=\omega_{\mathrm{A} 1}=\omega_{\mathrm{C} 1}=\omega_{\mathrm{C} 0}$ | $?$ | $=\omega_{\mathrm{A} .0}$ | $=\omega_{\mathrm{A} .0}$ | $=\omega_{\mathrm{A} .0}$ | $?$ | $?$ |
| $\mathrm{H}_{1}: \omega_{\mathrm{A} 0}=\omega_{\mathrm{A} 1}=\omega_{\mathrm{C} 1} \neq \omega_{\mathrm{C} 0}$ | $?$ | $=\omega_{\mathrm{A} .0}$ | $=\omega_{\mathrm{A} .0}$ | $?$ | $?$ | $?$ |
| $\mathrm{H}_{2}: \omega_{\mathrm{A} 0}=\omega_{\mathrm{A} 1} \neq \omega_{\mathrm{C} 1}=\omega_{\mathrm{C} 0}$ | $?$ | $=\omega_{\mathrm{A} .0}$ | $?$ | $=\omega_{\mathrm{C} .1}$ | $?$ | $?$ |
| $\mathrm{H}_{3}: \omega_{\mathrm{A} 0} \neq \omega_{\mathrm{A} 1} \neq \omega_{\mathrm{C} 1}=\omega_{\mathrm{C} 0}$ | $?$ | $?$ | $?$ | $=\omega_{\mathrm{C} .1}$ | $?$ | $?$ |

The topology and branch specific $\omega$ ratios are presented in Figure 5.
$\mathrm{H}_{0}$ v $\mathrm{H}_{1}$ : $\mathrm{df}=1$
$\mathrm{H}_{0}$ v $\mathrm{H}_{2}: \mathrm{df}=1$
$\mathrm{H}_{2}$ v $\mathrm{H}_{3}: \mathrm{df}=1$
$\chi_{d f=1, ~}^{2}=0.05=3.841$

