We modelled neoteny using the liability model proposed by Felsenstein (#CITE) and expanded by Revell (#CITE). This model treats the multiple observable discrete states as manifestations of a continuously-varying “hidden” or latent trait that evolves by Brownian Motion. This approach has two useful statistical properties. First, although movement of the continuous trait is constant and symmetrical, transition rates between character states can be asymmetrical without having to optimize a large rate matrix. Second, although the rate of change for the continuous trait is constant across the tree, and the thresholds for discrete states are fixed, the actual frequency of transition between states among subclades can vary. This means that some clades can frequently shift between states while other clades may be “locked” in a single state, again without having to estimate transition points along the phylogeny. Biologically, this model is also very appropriate for neoteny in salamanders, as the discrete states described above are known to be influenced by continuously-varying levels of thyroid hormones (#Rose 1996; #CITE). Paedomorphosis in salamanders may occur in anything from the failure of skull bones like the pterygoid to be resorbed to the retention of gills and juvenile coloration at sexual maturity. For the purposes of this study, we discretized this array of forms with four states: direct development (no larval stage), biphasic/metamorphosing, facultative neoteny (some populations metamorphose in certain conditions), and obligate neoteny (no populations metamorphose).