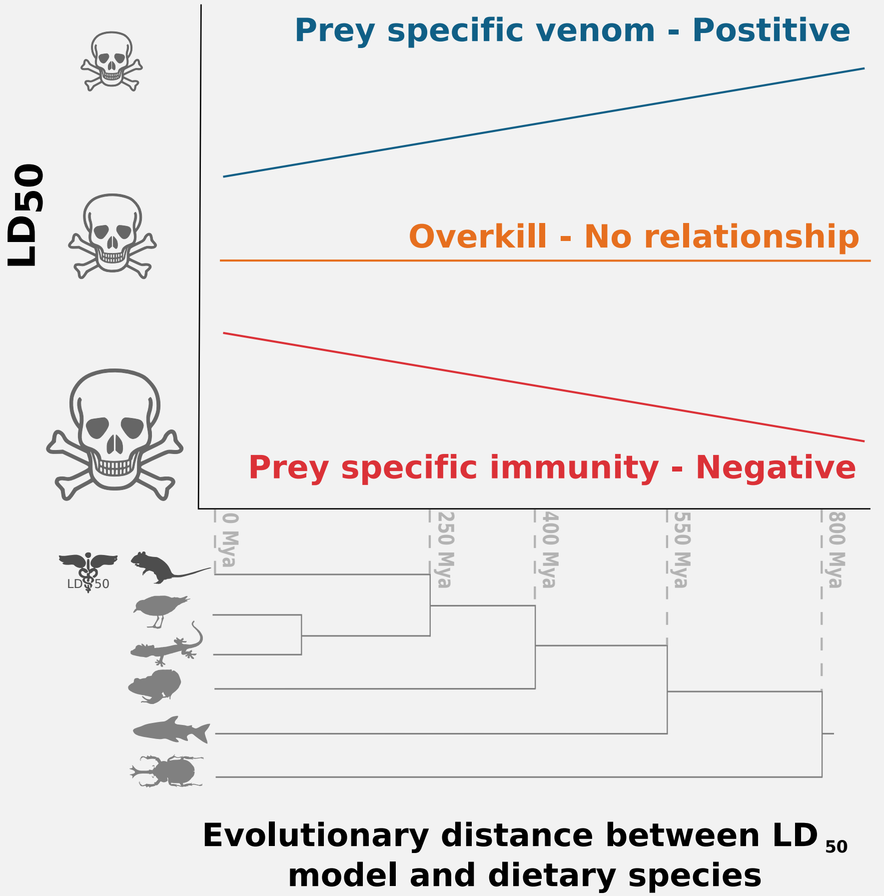

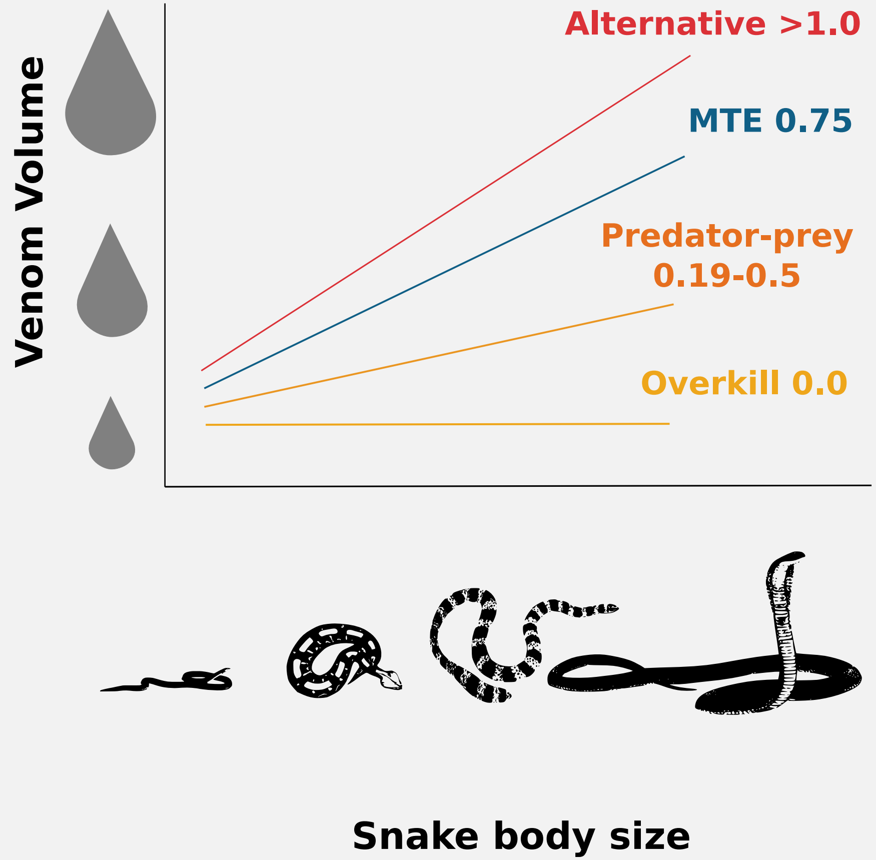

To test if venom is prey-specific we calulated the evolutionary distance between the LD_{50} model species and the species of the diet.
For example, if LD_{50} was tested on a mouse a diet comprising of mammals would have a distance of 0 Mya while a diet of fish would be 550 Mya (See methods). Using this metric we test the following hypothesis:
Prey-Specific Venom: As venom is expected to be adapted towards typical prey targets it predicts a positive relationship between LD_{50} and the distance between LD_{50} model and diet.
The Overkill Hypothesis: Under neutral selection LD $_{50}$ is expected to show no pattern relating to prey identity.
Prey-Specific Immunity: If prey immunity evoloves faster than venom potency LD50 would be expected to be highest on phylogentically distance venom nieve species.

The amount of venom a snake porduces is likely to be determined by factors relating to body mass. These potential drivers can be tested based on predictions of the allometric scaling of venom volume with body size including;
The Overkill Hypotesis: Predicts no relationship.
Predator-prey: If venom volume follows scaling associeted with predator-prey size scaling a coefficent of between 0.19 and 0.51 is predicted (equation 2).
MTE: If venom production scales with according to the metabolic theory of ecology (MTE) venom volume would be expected to scale acording to 0.75.
Altrenative: Scaling expoents of >1 would suggest drivers such as sexual selection or defense are important in venom evolution.