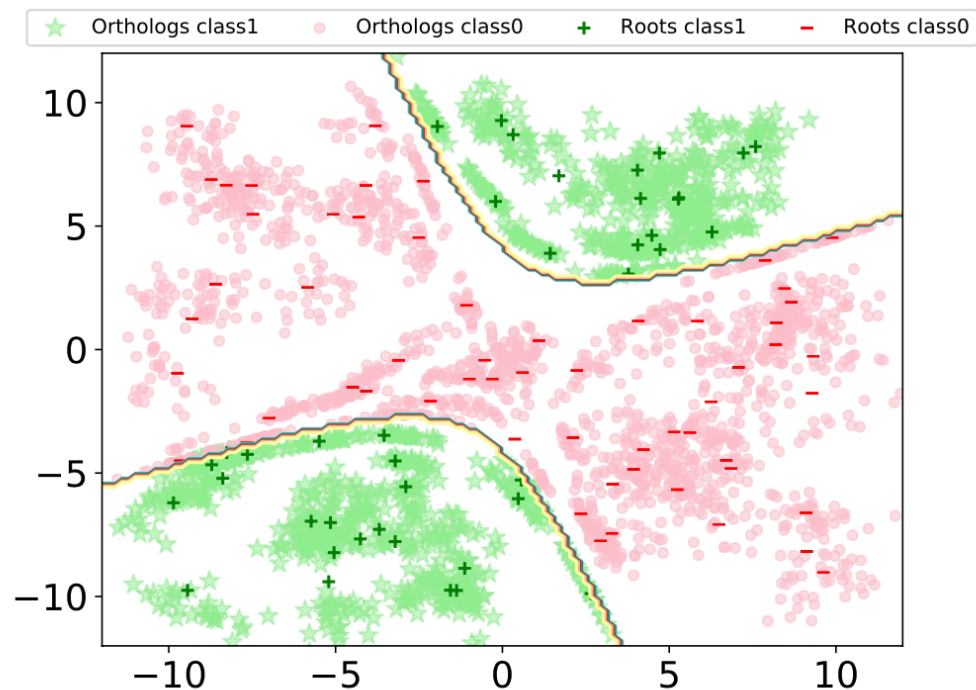


(a) Selection Pressure = 0, Mutation Rate = 1.



(b) Selection Pressure = 100, Mutation Rate = 1.

Fig. S1: Example of a two-dimensional simulated data set. 100 points (marked with plus and minus signs) are chosen to initialize the evolutionary process. The orthologs evolve randomly along the branches of a complete binary tree of depth 5, producing a set of 31 points. The activity function is  $A(x_1, x_2) = \sigma(x_1^2 \cdot w_1 + x_1 \cdot x_2 \cdot w_2 + x_2^2 \cdot w_3 + w_4)$ . (a) Data set generated using a selection coefficient of zero. Orthologs cluster around their ancestor. (b) At higher selection coefficient (100), orthologs tend to stay on the same contour line as their ancestor. This effect is most notable in portions of the space with a strong gradient, (e.g. near the black curves).