

**Web Figure 2.** Results of AlignACE analysis of the search results. The 34 elements found in the search were searched using AlignACE for overrepresented subsequences. Of the 755 motifs found, 25 are perfectly conserved between *D. melanogaster* and *D. virilis* in either the Eve MHE or the Hbr DME. The 25 motifs cluster into 14 groups at a 0.8 correlation coefficient level. Sequence logos for each of the 25 motifs are shown below.

