



**Figure S2. Histograms of pairwise angle distributions with the highest and lowest KL difference.** The figure shows the pairwise angle distributions, where BARNACLE performs best (rows 1 and 3) and worst (rows 2 and 4), compared to the mixture model. Rows 1 and 2: The pairwise distributions *within nucleotides* with the highest KL difference ( $\alpha^i$  versus  $\gamma^i$  at 0.301 bits) and the lowest KL difference ( $\gamma^i$  versus  $\delta^i$  at -0.002 bits) from Table S2A. Rows 3 and 4: The pairwise distributions in *consecutive nucleotides* with the highest KL difference ( $\zeta^i$  versus  $\alpha^{i+1}$  at 0.279 bits) and the lowest KL difference ( $\delta^i$  versus  $\gamma^{i+1}$  at -0.038 bits) from Table S2B.