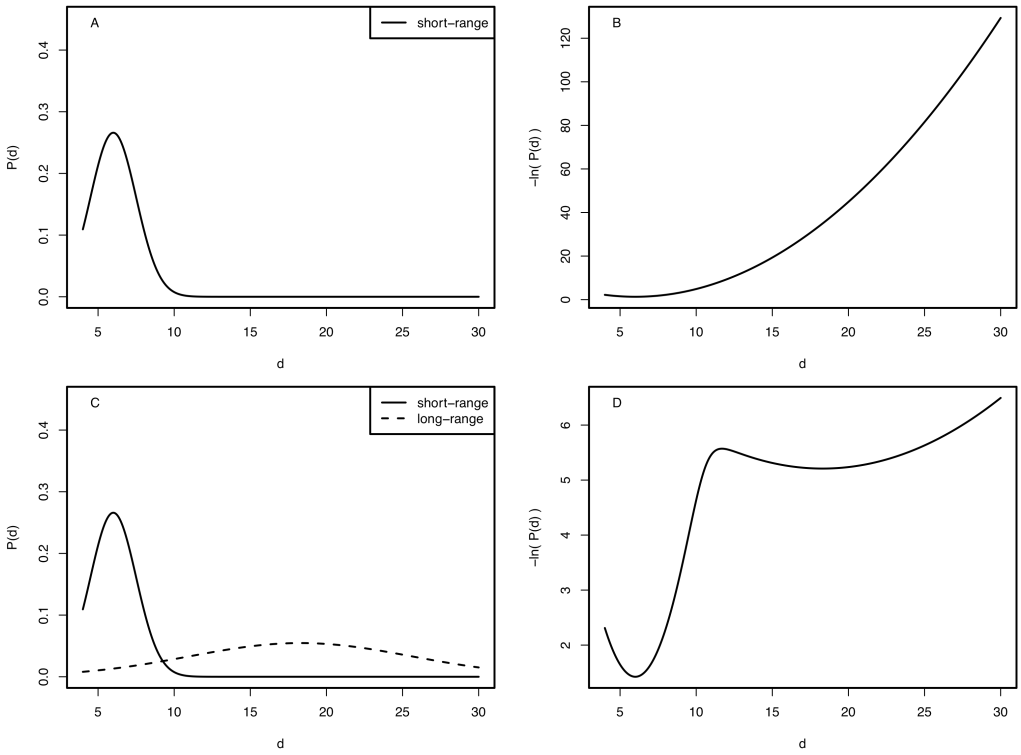

Supporting Figure S1: Schematic view of the two-component Gaussian mixture model. In order to describe the Gaussian mixture approach outlined in *Methods*, the behavior of a simple model system is shown. Panel A shows the Gaussian probability density function given a template distance of 6.0Å and a standard deviation of 1.5Å. Panel B shows the score of that restraint as incorporated into Rosetta, which is simply the negative logarithm of that probability distribution. Panel C shows the same short-range Gaussian alongside a Gaussian with mean of 18.3Å and standard deviation of 7.3Å, which are the values expected given sequence separation of 12 residues. In Panel C the short-range and long-range probability distribution functions are multiplied by 0.9 and 0.1 respectively, so that the mixture of these two distributions integrates to 1.0. Panel D shows the negative log-probability of the Gaussian mixture model, which is similar at the minimum of the potential but avoids the quadratic penalty associated with high distance deviations from the template structures.