



**Figure S1.** The relationships between the conservation ratios of molecular function pairs (MFPs) with the shared ratios of MFPs and with the number (dotted lines) of MFPs derived from 106,997 PPI families. The shared ratio of MFPs is 0.69 and the number of MFPs is 454,251 if the conservation ratio is 0.6 and the joint  $E$ -value is  $10^{-40}$  (green lines)