



Figure 1. Model for the Evolution of the Eukaryotic Nucleosome from an Archaeal Doublet Histone Ancestor

An archaeal tetramer with interchangeable subunits A and B (A/B) may have evolved into a dimer of fused dimers (“doublet”). This could have been followed by a gene split to give rise to the eukaryotic tetramer of H3 and H4, forming an $(H3 \cdot H4)_2$ “tetrasome” that occupies a single turn of DNA. H2A and H2B may have arisen from a similar event, assembling above and below the tetramer as suggested in the cartoon so being able to accommodate two turns of DNA (not illustrated). Single dots in the top part of the diagram represent dimeric contacts and double dots represent four-helix bundles between adjacent dimers (Reprinted from Malik and Henikoff 2003).