The resolvase Sin regulates DNA strand exchange by assembling an elaborate interwound synaptosome containing catalytic and regulatory Sin tetramers, and an architectural DNA bending protein. The crystal structure of the regulatory tetramer was recently solved, providing new insights into the structural basis for regulation. Here we describe recent work on the identification and characterization of the protein-protein interfaces used to assemble the synaptosome, and on the mechanisms used to regulate events within the catalytic tetramer.