We are investigating the structure and roles of cell adhesion proteins and other cell surface markers in eukaryotes, especially yeast.

1. During mating in baker's yeast, *Saccharomyces cerevisiae*, two cell adhesion molecules bind the two yeast mating types together. This interaction is similar to those of other members of the immunoglobulin superfamily of cell adhesion proteins. In animals such proteins also have roles in fertilization, neurogenesis, and immune response.

   a. **We study the structure** of these proteins using molecular modeling, circular dichroism spectroscopy, peptide mapping.

   ![Diagram of cell wall and protein structure](image)

   **Model of 3 Ig-like domains of α-agglutinin**

   Biochemical, physical, and genetic studies are leading to three-dimensional models of the sexual cell adhesion proteins in baker's yeast, *Saccharomyces cerevisiae*. Currently (2006) we are overproducing these proteins for studies of domain function and glycosylation.
We also study the way that these proteins bind to each other to form a bond that is specific for the opposite mating type, and very tight. To quote the old musical South Pacific: “Once you have found (him/her), never let (her/him) go.”—Rogers and Hart. These binding studies include showing that changes in protein structure drive tightening of the bond between two cells.

Peptides in α-Agglutinin that Switch Conformation

(Both regions have been implicated in binding)
