

**EXECUTIVE SUMMARY:** (State in layman's terms the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project for California.)

Many bacteria contain hair like filaments on their cell surface. These filaments (also known as fimbriae) facilitate bacterial attachment to host surfaces, contribute to the long-term survival and persistence of bacterial pathogens, and therefore, play an important role in disease pathogenesis. One such class of fimbriae, known as thin aggregative fimbriae (Tafi, also known as curli), found in various *Escherichia* and *Salmonella* species are composed of a single protein which oligomerize (with it self) to form fibers on the cell surface. A recent report has shown experimental evidence indicating that Tafi from *E. coli* share many biochemical and structural properties with proteinacious amyloid fibers found in a number of human diseases such as Alzheimer's disease, Parkinson' disease and type II diabetes. Based on this evidence it has been suggested that Tafi may serve as a valuable model system to study the formation of amyloid fibers. Despite their importance, details regarding the structural organization of proteins within Tafi are lacking. In this study we propose to investigate the structure of the *Salmonella* thin aggregative fimbrial protein AgfA, in its oligomerized form using a variety of biophysical techniques. In the long-term the proposed experiments will provide us with structural information that may enable the development of novel, fimbriae based, therapeutics to reduce bacterial survival and persistence. Such compounds may be of particular benefit to the agricultural resources of California given its frequent susceptibility of *E. coli* and *Salmonella* infections.