

## **Structural Biology Postdoctoral Opportunities @University of Wisconsin-Madison**

The Forest Lab studies the structures, functions, and mechanisms of bacterial proteins with consequences to prokaryotic physiology and symbiosis with eukaryotes. Using X-ray crystallography as our primary tool, as well as electron microscopy and NMR, we draw on our diverse backgrounds in microbiology, biophysics, biochemistry and chemistry to uniquely approach our main areas of research. The structural biology community at UW-Madison is welcoming and collaborative with a lively monthly super-group meeting. We have regular access to data collection at LS-CAT, a new and state of the art cryoEM facility, and the long established National Center for Magnetic Resonance (NMRFAM). The successful candidate will work in state of the art facilities in the magnificent Microbial Sciences Building. Madison itself is a thriving diverse city with ready access to cultural activities, outdoor pursuits, and stimulating neighbors and colleagues.

Job Posting Details: \* Note there are two separate openings \*

- 1) Tiny uncultured actinobacteria, *acl*, are among the most abundant microbes in most fresh water lakes, rivers, and ponds. Our work demonstrating the rhodopsin encoded in *acl* genomes is expressed in the natural environment and is a functional light-driven proton pump (Dwulit-Smith et al., AEM 2018) has opened a new area of research for a postdoc into the biological significance of this abundant protein and its impact on cellular structure at the smallest length scales and on fresh water microbial community structure at the largest length scales.
- 2) Bacterial Type IV pili and Type 2 secretion systems depend on an integral membrane protease for maturation of the pilin and pseudopilin subunits at their cores. In many cases these bifunctional enzymes are also methyl transferases. Our open project will include structural analysis of the prepilin peptidase, identification of inhibitors and their impacts on bacterial virulence, and elucidation of the enzyme properties of the methyl transferase and the cellular function of the methylation of pilins and pseudopilins. This is an excellent opportunity to integrate understanding of a novel membrane enzyme from biochemistry to cellular physiology.

*A Ph.D. in a related field as well as strong writing skills, as evidenced by publication record, are required. The ideal candidate will be skilled in molecular biology and have experience working with membrane proteins in proteoliposomes and/or experience with modern cellular imaging such as tomography.*

*We encourage **all** qualified applicants.*

**Please submit CV and names of three references to Professor Katrina Forest, forest@bact.wisc.edu**