



FRONTIERS IN BIOPHYSICS SEMINAR SERIES

STRUCTURAL AND COMPUTATIONAL BIOLOGY & BIOPHYSICS (SCBB)
AND THE MOLECULAR BIOPHYSICS TRAINING PROGRAM (MBTP)



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1:30 PM in MJIS 1001

(Coffee and cookies @ 1:15 PM – Bring your own MUG!)

Intra- and inter-protein signal transduction mechanisms in the Blue Light Using FAD protein BlsA

The Blue-Light Using FAD (BLUF) domain proteins belong to a class of photoreceptors that mediate biological responses to light and are implicated in biofilm formation. The details of the intra- and inter-protein signal transduction mechanisms are poorly understood for this photoreceptor. Using the BLUF-domain protein from *A. baumannii* (BlsA), we solved X-ray crystal structures of a ground state and photoactivated state and identified significant conformational changes that occur upon photoactivation. We also identified a new BlsA binding partner, BfmR, that directly links photoactivation to biofilm regulation. We are currently using a combination of structural, spectroscopic and biophysical approaches to determine how the ultrafast photoreception signal is transmitted through the protein and converted into a slower timescale structural change that ultimately leads to the downstream biological output. We are also developing a surface-acoustic-wave based technology to allow us to manipulate protein crystals for efficient serial crystallography experiments. We plan to use this technology to capture time-resolved images of the structural rearrangements that occur during the BlsA photocycle.

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