Abstract Submitted
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Fluorescence microscopy studies of the hyperactive antifreeze protein from an insect[1] N. PERTAYA, C.L. DI PRINZIO, L. WILEN, Ohio University, Athens, OH, E. THOMSON, J.S. WETTLAUFER, Yale University, CT, C.B. MARSHALL, P.L. DAVIES, Queen's University, ON, Canada, I. BRASLAVSKY, Ohio University, Athens, OH — Antifreeze proteins (AFPs) protect animals from freezing by binding to extracellular ice and inhibiting its growth. Since the initial discovery of AFPs in fish, non-homologous types have been found in insects, plants, bacteria, fungi, and vertebrates. Different AFP types have diverse structures and varied activities. For example, AFPs produced by insects are much more active in inhibiting ice crystal growth compared to most AFPs found in fish or plants. By putting a fluorescent tag on an insect AFP we were able to visualize AFP binding to ice, to determine the ice crystal surfaces to which the AFP adheres, and to follow the kinetics of AFP binding to ice. We expect this approach will contribute to a better understanding of the mechanism of AFP activity and in particular the hyperactivity of insect AFPs.

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