THE Flexner DISCOVERY LECTURE SERIES

Upcoming Discovery Lecture:

ANDREW Z. FIRE, PH.D.
Stanford University

January 24, 2013
208 Light Hall / 4:00 P.M.

THE Flexner DISCOVERY LECTURE SERIES

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DEPARTMENT OF BIOCHEMISTRY &
CENTER FOR STRUCTURAL BIOLOGY
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BRENDA A. SCHULMAN, PH.D

TWISTS AND TURNS IN UBIQUITIN CONJUGATION CASCADES

JANUARY 10, 2013
4:00 P.M.
208 LIGHT HALL

VANDERBILT UNIVERSITY
MEDICAL CENTER

TWISTS AND TURNS IN UBIQUITIN CONJUGATION CASCADES

Post-translational modification by ubiquitin-like proteins (UBLs) is a predominant eukaryotic regulatory mechanism. The vast reach of this form of regulation extends to virtually all eukaryotic processes that involve proteins. UBL modifications play critical roles in controlling the cell cycle, transcription, DNA repair, stress responses, signaling, immunity, plant growth, embryogenesis, circadian rhythms, and a plethora of other pathways. UBLs dynamically modulate target protein properties including enzymatic activity, conformation, half-life, subcellular localization, and intermolecular interactions. Moreover, the enzymatic process of UBL ligation to proteins is itself dynamic, involving cascades of E1, E2, and E3 enzymes. The UBL C-terminus is first activated, then transferred between multiple enzyme active sites, and ultimately ligated via an E3 enzyme to a target. With roughly 300 members, the largest E3 family consists of Cullin-RING ligases (CRLs), which regulate a staggering number of biochemical pathways and biological processes. In my presentation, I will discuss how dynamic mechanisms underlying regulation of and by this large family of ubiquitin E3 ligases.

BRENDA A. SCHULMAN

MEMBER OF THE DEPARTMENTS OF STRUCTURAL BIOLOGY AND GENETICS/TUMOR CELL BIOLOGY
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Brenda Schulman is an Investigator of the Howard Hughes Medical Institute, and a Member at St. Jude Children's Research Hospital. She is also Co-Director of the Program in Molecular Oncology at the St. Jude Cancer Center, and holds affiliate faculty positions at the University of Tennessee College of Medicine and Vanderbilt University. Schulman received her B.A. from Johns Hopkins, and her Ph.D. in Biology from M.I.T. She did postdoctoral studies in cell cycle research at Massachusetts General Hospital, and in X-ray crystallography at Memorial Sloan-Kettering Cancer Center. She has received a Pew Scholar Award in the Biomedical Sciences, a Beckman Young Investigator Award, a U.S. Presidential Early Career Award for Scientists and Engineers, a Dorothy Crowfoot Hodgkin Award from The Protein Society and was elected to the American Academy of Arts and Sciences. Her current research is focused on understanding the conjugation pathways for ubiquitin and ubiquitin-like proteins, and on the roles of these pathways in controlling cell proliferation.