Theses for Honors in Biochemical Sciences
2009

Meera Elizabeth Atreya ~Hoopes Prize~
Engineering Recombinase Enzymes to Emulate the CCR5delta32 Mutation Conferring Resistance to HIV Infection
Dr. David Liu, Laboratory Sponsor

Justin S. Becker ~Hoopes Prize~
Budding yeast Bub1 and Sgo1 have an Ipl1-independent role in promoting sister chromatid biorientation that is essential in cells of higher ploidy
Dr. David Pellman, Laboratory Sponsor

David Blauvelt
Analysis of Olfactory Bulb Glomerular Responses to Odors in Mice of Different Behavioral States
Dr. Venkatesh Murthy, Laboratory Sponsor

Bianca Calderon
Tandem Repeats in Promoter Regions of S. cerevisiae Generate Variability in Gene Expression with Phenotypic Consequences
Dr. Kevin Verstrepen, Laboratory Sponsor

Gustav Cederquist
Post-Mitotic Regulation of Lmo4 During the Generation of Precise Neuronal Subtype and Cortical Area Identities
Dr. Jeffrey Macklis, Laboratory Sponsor

Anna Hang Chen
Probing the Spatial and Temporal Organization of Carbon Fixation: In Vivo Visualization of the Cyanobacterial Caboxysome
Dr. Pamela Silver, Laboratory Sponsor

Calvin Hughes Chen
Studies on TarO Bi-functionality using Heterologous Complementation and Identification of the Glycosyl Transferase Involved in Late-Stage Wall Teichoic Acid Modifications in Staphylococcus aureus
Dr. Suzanne Walker, Laboratory Sponsor
Tzong-Yang Albert Chen
Characterizing Transcriptional Dynamics and Networks of Endodermal Organ Formation
Dr. Doug Melton, Laboratory Sponsor

Hannah Chung
The Distribution of Fitness Effects of Deleterious Mutations in the Yeast Saccharomyces Cerevisiae
Dr. Andrew Murray, Laboratory Sponsor

Nicolae Done
Cloning, Expression and Purification of Moen5, A Prenyltransferase in the Moenomycin A Biosynthetic Pathway
Dr. Suzanne Walker, Laboratory Sponsor

Jennifer Esch
Morphology and Laminar Segregation of Single Retinal Ganglion Cell Axon Arbors in the Superior Colliculus of the Mouse
Dr. Joshua Sanes, Laboratory Sponsor

Michael Gladstone
The Role of Interleukin-21 in CD8+ T Cell Anti-Viral Immune Responses
Dr. Norm Letvin, Laboratory Sponsor

Jessica Stewart Hightower
In Vitro Directed Differentiation of Mouse ES Cells to Cells in Pancreatic Lineage using Small Molecules and Ectopic Expression of Key Transcription Factors
Dr. Doug Melton, Laboratory Sponsor

Jenny Hsu
Insights into the Intercellular Transport of Gene Silencing in a Nematode Worm
Dr. Craig Hunter, Laboratory Sponsor

Russell Phelps Kelley
~Hoopes Prize~
Modulation of Gag-Specific Cellular Immune Responses to Prototype HIV Vaccines by Toll-Like Receptor Ligands in Mice
Dr. Dan Barouch, Laboratory Sponsor
June-Ho Kim
~Hoopes Prize~
*The Role of an Alternatively Translated Intracellular Isoform of Osteopontin in T Helper Cell Polarization*
Dr. Harvey Cantor, Laboratory Sponsor

David Bernard Kopelman
*Y-Box Binding Protein 1 is a Novel Substrate of Granzyme A*
Dr. Judy Lieberman, Laboratory Sponsor

Yonit Lavin
*B Cell Cross-Presentation and their Role in CD8+ T Cell Priming*
Dr. Hidde Ploegh, Laboratory Sponsor

Albert Li
~Hoopes Prize~
*Structural Studies of TRPV1 Activation by Capsaicin*
Dr. Rachelle Gaudet, Laboratory Sponsor

Christina Wenshin Li
*Progress Toward the Total Synthesis of Lepadiformine*
Dr. David Evans, Laboratory Sponsor

Janet Li
*The Collaboration between Epigenetic and Genetic Mutation in Medulloblastoma*
Dr. Laurie Jackson-Grusby, Laboratory Sponsor

Michael Lin
*The Role of Sonic hedgehog in adult skeletal muscle development*
Dr. Amy Wagers, Laboratory Sponsor

Jennifer S. Love
*Investigation of the Molecular Basis for Variant Late-Infantile Neuronal Ceroid Lipofuscinosis through Identification of CLN6 Protein Binding Partners using the Split-Ubiquitin Yeast System*
Dr. Susan Cotman, Laboratory Sponsor

Cesar Lopez Angel
*SIV Envelope Evolution in the Semen and Blood of Acutely SIV-Infected Rhesus Macaques*
Dr. Norm Letvin, Laboratory Sponsor

Sara Aviva Manning
~Hoopes Prize~
*The Great Wall of Bacteria: Discovery of Different Intrinsic Length Biases in Penicillin-Binding-Proteins*
Dr. Dan Kahne, Laboratory Sponsor
Amanda Mason
*Identifying Cell Cycle Stage-Specific Polycomb Group Protein Complexes*
Dr. Nicole Francis, Laboratory Sponsor

Efi Efraim Massasa
*Memory of the mouse ES cell transcriptional program through cell division*
Dr. Kevin Eggan, Laboratory Sponsor

David Mattos
*Studying the extracellular function of Protocadherin-a proteins*
Dr. Tom Maniatis, Laboratory Sponsor

Benjamin Morris
*Site-directed Fluorescent Labeling of the Dual Transmembrane Domains of the Ecto-enzyme CD39*
Dr. Guido Guidotti, Laboratory Sponsor

Vanessa Mitsialis
*Role of CC2D1A in Brain Development and Non-Syndromic Mental Retardation*
Dr. Christopher A. Walsh, Laboratory Sponsor

Vera Mucaj
*Developing a Novel Targeted Therapy for Brain Cancers*
Dr. Pamela Silver, Laboratory Sponsor

Eva Nong
*Force-dependent DNA Replication of HIV Reverse Transcriptase, Taq and T7 polymerases: A minimalist Two-Segment Structural Model*
Dr. Dudley Herschbach, Laboratory Sponsor

Kimberly Wei Wei Oo
*A Synthesis of an Eight-Carbon Disulfide Crosslinker Still Images of a Motion Picture: Using Static Crystal Structures to Understand the Behavior of a DNA Glycosylase*
Dr. Greg Verdine, Laboratory Sponsor

Jason Pan
*Molecular determinants of SIRT6 subcellular localization*
Dr. Frederick Alt, Laboratory Sponsor

Gordon Powers
*A novel screen to identify small molecule natural products mediating interspecies interactions between soil microbes and Bacillus subtilis*
Dr. Roberto Kolter, Laboratory Sponsor
**Zoe Sarnak**
*Characterization of the B-box 2 Domain of TRIM5α and its Role in Anti-Retroviral Activity*
Dr. Joseph Sodroski, Laboratory Sponsor

**Christina Eloisa Tartaglia**
*Suppression of a mouse model of multiple sclerosis by immunization with an aluminium adjuvant and low dosages*
Dr. Jack Strominger, Laboratory Sponsor

**Pedro Teixeira**
*Significance of the Association Between Epstein-Barr Virus’s EBNA3A and Human Protein CtBP for Maintaining Immortalized B Cell Growth*
Dr. Elliot Kieff, Laboratory Sponsor

**Kaloyan M. Tsanov**
~Henderson Prize~
*An Embryonic Stem Cell Based System for Rapid Analysis of Developmentally Regulated Enhancer Elements*
Dr. Andrew McMahon, Laboratory Sponsor

**Lekha Tummalapalli**
*Characterization of Endoplasmic Reticulum Tubule Generation in BSCI cells*
Dr. Tomas Kirchhausen, Laboratory Sponsor

**Cindy Ung**
*Role of Arl8b in Phagolysosome Biogenesis*
Dr. Michael B. Brenner, Laboratory Sponsor

**Christina G. Vangelakos**
*The Immune Response of Murine Peritoneal Cells to Bacteroides fragilis*
Dr. Dennis Kasper, Laboratory Sponsor

**Jue Wang**
*Characterizing the Microscopic Culturability of Soil Microbes*
Dr. Roy Kishony, Laboratory Sponsor

**Xinyu Wang**
*Histone Deacetylase 2 Negatively Regulates Extinction of Conditioned Fear*
Dr. Li-Huei Tsai, Laboratory Sponsor

**Wenxin Xu**
*Characterization of the mutational landscape for type-2 antifolate resistance at the DHFR locus of P. falciparum*
Dr. Dan Hartl, Laboratory Sponsor
Jennifer Yan
Manipulations of autophagy-related genes and their effects on the protective properties of parkin
Dr. Matthew LaVoie, Laboratory Sponsor

Jimmy Chen Yang
Discovery, Synthesis, and Steps Toward Target Identification of the Novel 2-amino-3-hydroxyindole Anti-malarial Drug Class
Dr. Jon Clardy, Laboratory Sponsor

~Hoopes Prize~

Youyang Yang
SALL4 regulates HOXA genes in normal hematopoiesis and leukemogenesis
Dr. Li Chai, Laboratory Sponsor

Ching Zhu
A Novel Interaction between Calmodulin and the Proteasome
Dr. Daniel Finley, Laboratory Sponsor