



# UNIVERSITY OF MARYLAND

DEPARTMENT OF CELL BIOLOGY AND MOLECULAR GENETICS

<http://www.chemlife.umd.edu/labs/mount/CBMG/Retreat.html>

To all members of CBMG,

Welcome to the first off-campus research retreat of the Department of Cell Biology and Molecular Genetics at the University of Maryland, College Park. Faculty interests span broad complementary disciplines. The department has strong research nuclei in genetics and genomics, cell biology, microbiology, immunology, virology, molecular biology, development, pathogenic microbiology, plant biology, and molecular evolution. One major purpose and challenge of this retreat is to understand and appreciate the significance of all topics studied by the department. To meet the future needs of a global society, it is important and essential to acquire a global perspective and an ability to integrate the various approaches and systems used in studying biology.

This retreat is a great opportunity to welcome and get acquainted with new graduate students, new research associates and new faculty members. Talks, posters and abstracts provide a snapshot of the ongoing research programs, teaching programs and shared facilities and equipment.

We look forward to the first departmental retreat held off-campus. The retreat organizing committee, Carl Womack and Claudine Saxton have worked hard to make this event possible. We thank many of you who have stepped up to help in various ways. We hope you enjoy the retreat and the relaxing setting at the Chesapeake Bay Foundation.

Organizing Committee:

Faculty members: Heven Sze, Steve Mount, Dan Stein  
Research Associate Rep. Buddy Cunningham  
Graduate Student Rep. Adrienne Kish, Jo Resnick

August 16, 2006

# Schedule

**8:30**                      **Breakfast**

**9:00**                      **Welcome      Heven Sze**

**9:08**                      **Session I    Signal Transduction and Defense**  
**Moderator    Daniel Stein**

9:08 AM - 9:26 AM

**1. "Neisseria gonorrhoeae Escape from Cervical Epithelial Cells to Promote Bacterial Persistence"**  
Samuel Bish (Stein)

9:26 AM - 9:44 AM

**2. "Regulation of Bacterial Cell Envelope by a Novel Second Messenger Molecule c-di-GMP"**  
Vincent Lee

9:44 AM - 10:02 AM

**3. "The memory B cell response to TLR4 and TLR9 ligands"**  
Wenxia Song

10:02 AM - 10:20 AM

**4. "Parasite-derived murine MCP-1 enhances the Recruitment of a Restrictive Population of CCR2+ Macrophages "**  
Sean M. Conrad (Mosser)

**10:20**                      **Break**

**10:50**                      **Session II    Metabolism and Transport**  
**Moderator    Francis (Buddy) Cunningham**

10:50 AM - 11:08 AM

**5. "A plant pathway for the biological production of astaxanthin"**  
Francis X. Cunningham, Jr. (Gantt)

11:08 AM - 11:26 AM

**6. "Breaking down the walls with a diversity of plant cellulases"**

Elena del Campillo

11:26 AM - 11:44 AM

**7. "Regulation of Amino Acid Metabolism during T cell Activation: Identification of Pathways Regulated by Glutamine"**

Erikka L. Carr (Frauwirth)

11:44 AM - 12:02 PM

**8. "Integrating Transport with Plant Reproduction, Growth & Survival"**

Heven Sze

12:02 PM - 12:20 PM

**9. "CBMG Core Laboratory Facility"**

Amy E. Beaven and Steve Wolniak

**Lunch 12:20      Poster Set up**

**1:30**

**Session III Recombination, Repair, RNA & Defense  
Moderator   Jocelyne DiRuggiero**

1:30 PM - 1:48 PM

**10. "Microbial genome evolution in hydrothermal environments"**

Jocelyne DiRuggiero (with Patricia Escobar-Paramo and Sulagna Gosh)

1:48 PM - 2:06 PM

**11. "Programmed -1 Ribosomal Frameshifting: It's Not Just For Viruses Anymore"**

Ashton T. Belew (Dinman)

2:06 PM - 2:24 PM

**12. "Frequency of Recombination Between Diverse HIV-1 Subtypes: Estimating Selection Pressure From Reverse Transcription to Virus Replication"**

Jeffrey J. Destefano

2:24 PM - 2:42 PM

**13. "Arrangement of the Minor Structural Protein L2 Within the Papillomavirus Virion"**

Christopher B. Buck

2:42 PM - 3:00 PM

**14. "Molecular mechanism and importance for bacterial virulence of *M.tuberculosis* mediated inhibition of host cell apoptosis"**

Volker Briken

**3:00**                      **Break** Poster viewing

**3:30**                      **Session IV** Development and Signaling  
**Moderator** Josephine Resnick

3:30 AM - 3:48 AM

**15. "From Genomics to Cellular Dynamics: Genetic dissection of ABA and calcium signaling in Arabidopsis guard cells"**

Aprajita Garg (Kwak)

3:48 PM - 4:06 PM

**16. "RTE1 , a novel membrane protein that is highly conserved in a wide range of organisms is important for ethylene receptor function in *Arabidopsis thaliana*"**

Josephine S. Resnick

4:06 PM - 4:24 PM

**17. "Mago nashi and the regulation of spermatogenesis in *Marsilea*"**

Corine M. van der Weele (Wolniak)

4:24 PM - 4:42 PM

**18. "Regulation and function of autophagy in cell survival and death"**

Eric H. Baehrecke

4:42 PM - 5:00 PM

**19. "Stress Signaling in Filamentous Fungi in the Induction of Resistance to Anti-Fungal Agents"**

David Straney

**5:00**                      **Break** Poster Viewing and Free Time

**7:00**                      **Dinner** catering by Tapenade

**8:30**                      music by the band "Natural Selection"

**10:00**                      bus leaves

# Posters

**Abstracts 20-40 are posters.**

- 20 Ray Anderson (Pick)  
**"Identifying Targets of FTZ and FTZ-F1"**
- 21 Shanjin Cao (Mosser)  
**"NF- $\kappa$ B1 (p50) Homodimers Differentially Regulate Pro- and Anti-Inflammatory Cytokines in Macrophages"**
- 22 Paul E. Clavijo (Frauwirth)  
**"NF- $\kappa$ B p65 and c-Rel regulation pattern during T cell stimulation"**
- 23 Francis X. Cunningham, Jr. (Gantt)  
**"Carotenoids biosynthesis in the primitive red alga *Cyanidioschyzon merolae*"**
- 24 Faten Deeb (Wolniak)  
**"Programmed Cell Death of the Jacket Cells is Essential for Spermatid Development and Differentiation in *Marsilea Vestita*"**
- 25 Faten Deeb (Wolniak)  
**"The Roles of Kinesin Motor Proteins in Spermatid Differentiation in *Marsilea vestita*"**
- 26 Senthilkumar Padmanaban (Sze)  
**"Role of AtCHX20 a novel cation transporter (CHX) in osmoregulation of guard cells"**
- 27 Ken Frauwirth (with Gopaul)  
**"Regulation of Amino Acid Transporter Expression During T-cell Activation"**
- 28 Rong Guo (Simon)  
**"Homologous 3' end sequences in satC and its helper RNA, Turnip crinkle virus, differentially affect RNA accumulation"**
- 29 Deena Jacob (DeStefano)  
**"A Possible Novel Activity for HIV Nucleocapsid Protein (NC): Inhibition of Extension of Non-Polypurine Tract RNA Primers"**
- 30 Madhura Kulkarni (Smith)  
**"Phenotypic characterization of a spermatogenesis defective mutation; *spe-32*, in *Caenorhabditis elegans*"**

- 31 Joanna Manoranjan and Ruby Kish (Gao)  
**"The study of Mycobacterium RD1 secretion and its role in pathogenesis"**
- 32 Aimee Marko (Frauwirth)  
**"Regulation of Glucose Metabolism in Primary T cells"**
- 33 Segun Onabajo (Song)  
**"The role of mammalian actin-binding protein-1 in coupling the signaling and antigen-internalization functions of the B cell antigen receptor"**
- 34 Mandy D. Reading (Chang)  
**"Regulation of the Raf-like protein kinase CTR1 in ethylene signaling in *Arabidopsis*"**
- 35 Patricia Shields  
**"Using technology to support active learning in large enrollment introductory science courses"**
- 36 Susan Shyu (Frauwirth)  
**"Correlation between Fyn activation and T cell anergy"**
- 37 Mathangi Srinivasan (Frauwirth)  
**"Differential regulation of nuclear localization of NFAT isoforms in anergic CD8 + Tcells"**
- 38 Corine M. van der Weele (Wolniak) **"A Functional Domain Interference Assay (FDIA) reveals that peptide motifs of Mago nashi are involved in development in *Marsilea*"**
- 39 Viji Vydeeswaran (Straney)  
**"Activation Mechanism for a Binuclear Zinc Transcription Factor in a Novel Fungal Stress Pathway"**
- 40 Ziyang Yang (Mosser)  
**"Activation of the Mitogen-Activated Protein Kinase, ERK, Following *L. amazonensis* Infection of Macrophages"**

## Abstracts not for presentation

Abstracts 41-73 will not be presented. They are listed here with complete authors and title. We have not generated an index, but this program is available online as a (searchable) PDF at <http://www.chemlife.umd.edu/labs/mount/CBMG/Retreat.html> and will remain there indefinitely.

41 Yakup Batlevi, Zhiping Nie, Udai Bhan Pandey, Stephanie L. Schwartz, Oren Schuldiner, J. Paul Taylor, Deborah L. Berry and Eric H. Baehrecke  
**" Impairment of the Proteasome and Induction of Autophagy in Neurodegenerative Disease "**

42 Jahda H. Batton and Eric H. Baehrecke  
**" Characterization of the role of a Class III Pi3-kinase complex in induction of autophagy "**

43 Kevin W. Bock, David Honys, John M. Ward, Senthilkumar Padmanaban, Eric P. Nawrocki, Kendal D. Hirschi, David Twell, and Heven Sze  
**" Integrating Membrane Transport with Male Gametophyte Development and Function through Transcriptomics "**

44 Courtney Busch and Jocelyne DiRuggiero  
**" Mismatch repair in *Halobacterium*: Bacterial-Like or Archaeal-Specific?"**

45 Todd Cooke  
**" Does the Expression of Fibonacci Numbers in Plant Phyllotaxis Reveal the Involvement of Geometrical Imperatives or Biological Interactions?"**

46 Jonathan D. Dinman, Jennifer L. Baxter-Roshek, Arturas Meskauskas, Kristi L. Muldoon-Jacobs, Alexey N. Petrov, Rasa Rakauskaitė  
**" Structure/function studies of the yeast 60S subunit: an overview."**

47 Chun-Hai Dong and Caren Chang  
**" Identifying regulatory components of the ethylene signaling pathway in *Arabidopsis* "**

48 Jason Edmonds, Stephen M. Mount  
**" Expression Pattern of Dispensable SR Protein Genes in *Arabidopsis thaliana* "**

49 Justin P. Edwards, Xia Zhang, Kenneth A. Frauwirth, and David M. Mosser  
**" Biochemical and Functional Characterization of Three Activated Macrophage Populations "**

- 50 Ann E. Field, Sagie Wagage, and David Mosser  
**" Transgenic *L. major* expressing murine CD40L reduce disease and provide protection against wild type challenge."**
- 51 Brenda L. Fredericksen  
**" West Nile Virus Evades Activation of RIG-I And MDA5-dependent Pathways Without Antagonizing Host Defense Signaling "**
- 52 Steve Hutcheson and Ron Weiner  
**" Genomic analysis of the biomass conversion systems of the marine bacterium *Saccharophagus degradans* 2-40. "**
- 53 Christina S. Kary and Eric H. Baehrecke  
**" Investigating the role of the Ubiquitin Proteasome System and Autophagy in *Drosophila* developmental cell death."**
- 54 Jeff L. Liesch and **Error! Reference source not found.**  
**" Screening for interactors of *Arabidopsis* RTE1 and RTH using the yeast split-ubiquitin system "**
- 55 Jeff L. Liesch, Horatiu Muresan, Eric S. Haag and **Error! Reference source not found.**  
**" Characterization and localization of the *C. elegans* ortholog of *Arabidopsis* RTE1"**
- 56 Benjamin D. Maggin, Maximo Rivarola, and Caren Chang  
**" Characterization of *RTE1* and *RTH* gene expression patterns in *Arabidopsis thaliana* "**
- 57 Christopher McClellan, Mandy D. Kendrick, and Caren Chang  
**" The isolation of new mutants in the ethylene signaling pathway in *Arabidopsis thaliana* "**
- 58 Deborah A. Ribardo, Traci L. Kinkel and Kevin S. McIver  
**" Defining the Mga Virulence Regulon in *Streptococcus pyogenes*: Core Genes, Serotype Specificities and Metabolic Links "**
- 59 Arturas Meskauskas and Jonathan D. Dinman  
**" Ribosomal Protein L3: Gateway to the A-Site "**
- 60 Edgar Moctezuma  
**" BSCI 124: The challenges of teaching plant biology to non-science majors "**
- 61 Steve Mount, Justin Benoit<sup>1</sup>, Yun Choi<sup>2</sup>, Natalie Dye<sup>3</sup>, Jason Edmonds and Aileen Pan  
**" An *in planta* assay for analysis of exonic splicing regulator activity in *Arabidopsis thaliana* "**



- 62 Nirupama Narayanan, Robert J. Gorelick, and Jeffrey J. Destefano  
**"Structure/Function Mapping of Amino Acids in the N-Terminal Zinc Finger of the Human Immunodeficiency Virus Type 1 Nucleocapsid Protein: Residues Responsible For Nucleic Acid Helix Destabilizing Activity"**
- 63 Alexey N. Petrov and Jonathan D. Dinman  
**" Ribosomal Protein L10: Pleiotrophic Roles in Large Subunit Biogenesis and Translation."**
- 64 Rasa Rakauskaite\* and Jonathan D. Dinman  
**" Unpaired "Pivot Bases" Enable Information Exchange Among Functional Centers Of The Ribosome "**
- 65 Reshma M. Anthony and Jeffrey J. Destefano  
**" *in vitro* Synthesis of Long DNA Products in Reactions With HIV-RT And Nucleocapsid Protein "**
- 66 Maximo Rivarola, Justin Benoit, and Caren Chang  
**" Unraveling the function of the novel *RTE1* and *RTH* genes in *Arabidopsis thaliana*"**
- 67 Johnathan R. Russ and Jonathan D. Dinman  
**" Genetic Characterization of Ribosomal Protein L2 in *Saccharomyces cerevisiae* "**
- 68 Dalit Strauss-Ayali, Sean Conrad and David M. Mosser  
**" Heterogeneity in monocyte populations during murine cutaneous leishmaniasis "**
- 69 Jennifer R. Vestal and Jocelyne DiRuggiero  
**" Transcription Coupled Repair in the Third Domain of Life "**
- 70 Ron J. Yahil, Xia Zhang, and David M. Mosser  
**" Genetic regulation of the *IL-19* promoter in murine macrophages"**
- 71 Xia Zhang, Justin P. Edwards, David M. Mosser  
**" Dynamic and Transient Remodeling of the Macrophage *IL-10* Promoter during Transcription\*"**
- 72 Xiao-Ning Zhang, Brian J. Haas and Stephen M. Mount  
**" Global Study of Alternative Splicing in *Arabidopsis thaliana*."**
- 73 Adrienne Kish and Jocelyne DiRuggiero  
**" Salts of the Earth: Genomic Studies on Microbial Life Under Extremely High Salt and Radiation Conditions "**