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# The Open Reading Frame

University of Rochester  
 Department of Biology  
 Newsletter

## Message from the Chair

On behalf of the Biology Department I would like to congratulate our graduating seniors for the successful completion of their studies at the University of Rochester. I would also like to acknowledge their parents, family and friends for the support they have given these seniors. It has been a joy participating in the education of these young men and women. We in the Biology Department have learned to appreciate their capabilities and enthusiasms and are confident they will achieve success in their future careers.

Interest in the discipline of biology has never been as great as it is today. This increased focus on biology stems from a wide range of interests including new advances in health and medicine, new business opportunities, and rising environmental concerns. While the short term economic forecasts may appear bleak, the renewed emphasis and support of our government in the important role of education and science in our society suggests that the 105 students graduating this year can look forward to an exciting and bright new future.

This department takes pride in our ability to teach the courses needed by our students for their education as well as to maintain successful research programs. Our funding for research increased to over \$6 million this year, and with the stimulus package passed by the Obama administration, this value is expected to substantially increase next year. Our department has contributed to recent new discoveries in biology and has over the past few years hired a number of new faculty to ensure that we stay abreast in this ever changing field. You can learn about our newest faculty member, Daniel Garrigan, in this newsletter. One of Dan's main interests is in the use of human genomic DNA sequences to understand human origins. Other new faculty members include Henri Jasper, who studies how stress impairs stem cell function in aging tissues; Vera Gorbanova, who has found a new approach to specifically and effectively target cancer cells; and Daven Presgraves, who has identified how changes in genes result in the splitting of one species into two species. You can learn more about these and all other Biology faculty by going to our website ([www.rochester.edu/College/BIO](http://www.rochester.edu/College/BIO)).

Finally, I would like to thank the many seniors for their thoughtful and entertaining contributions to this newsletter, and encourage all of our alumni to keep us informed of developments in their careers. You can place any information you would like to share on our website ([www.rochester.edu/College/BIO/alumni\\_update.php](http://www.rochester.edu/College/BIO/alumni_update.php)). I would also like to thank Tara and Justin Ramsey and Mary Fredendall for assembling this newsletter, and to Cheeptip Benyajati, Marianne Arcoraci and Jenn Baylark for efficient running of the Undergraduate Program in Biology and Medicine and for organizing our graduation ceremony.

–Tom Eickbush

## One Hundred and Five Biology Majors Earn Degrees in 2009

The Department of Biology will be awarding one hundred and five diplomas (not including seniors who are participating in the take five program) on Sunday, May 17th, 2009, at 11:30 a.m. in the Interfaith Chapel. This year's graduating class is made-up of sixty-two women and forty-three men. The Class of 2009 have satisfactorily completed the requirements for one of the four Biology Department tracks including: B.A. in Biology (BIO), B.S. in Biological Sciences: Cell and Developmental Biology (BCD); B.S. in Biological Sciences: Evolutionary Biology and Ecology (BEB), B.S. in Biological Sciences: Molecular Genetics (BMG).

Dr. Thomas Eickbush, Professor of Biology and Department Chair, will be the Master of Ceremonies by welcoming students and guests.

The ceremony will begin with two student speakers from the class of 2009 who are chosen by the faculty for excellence in academics, research, and for their service to the department. This year's student speakers are Caitlin McIntyre (BMG), who will be introduced by Dr. Elaine Sia, and David Leibers (BEB), who will be introduced by Dr. John Jaenike.

Dr. Cheeptip Benyajati will present the Ayman Amin-Salem Memorial Fund Award. This College-wide award is given each year to a member of the senior class who best evidences the qualities of good character and good citizenship, such as decency, reliability, responsibility, and congeniality. Ayman was a student in the Class of '87 who died in a car accident. His family established this fund in his memory. This year's recipients are: Colleen Kellenberger

(BMG), Jeremy Gaden (BIO), and David Leibers (BEB).

Dr. David Goldfarb will present The Donald R. Charles Memorial Prize. This prize is given annually by the Biology Department to students who show great potential and have exhibited excellence in science. The 2009 Donald R. Charles Award will be received by Mindy Altemose (BMG), Thomas Brekke (BEB), Matthew Brockway (BMG), Anne Eshenour (BMG), Colleen Kellenberger (BMG), David Liebers (BEB), Caitlin McIntyre (BMG), and Christopher Miller (BMG).

Dr. Gloria Culver will present the students who have earned degrees with Distinction in Research in the BIO, BCD, BEB, and BMG majors. Students who have earned distinction in research this year are: Jessica Chery (BIO/CHM), Kathleen Mulvaney (BMG), and Justin Sysol (BEB).

The department of Biology will also be recognizing the undergraduate students who assisted in undergraduate teaching.

The ceremony will culminate in the awarding of diplomas. Personalized messages written by graduates will be announced as they receive their diplomas by: Dr. Cheeptip Benyajati, Dr. James Fry, Dr. Richard Glor, Dr. Vera Gorbunova, and Dr. Robert Minckley.

A reception will be held immediately following the ceremony in the Frederick Douglass Dining Center.

### Graduating Class of the Undergraduate Program in Biology and Medicine (UPBM) 2009

#### Bachelor of Arts Biology (BA BIO):

Neha Arora  
Mina N. Ayyad  
David Bahk  
Laura K. Bailer  
Stephanie M. Barnoff  
David C. Berman  
Farouk R. Chatman  
Jessica Chery  
Seung W. Choi  
Robert M. Corey  
Michael J. Denson  
Richard L. Dubois  
Robert A. Duran  
Kelly L. Dusenbery  
Gretchen A. Eckel  
Allison M. Fleming  
Laura A. Fox  
Jeremy A. Gaden  
Tammy L. Garcia  
Jenie George  
Janna R. Gewirtz  
Emily J. Hermann  
Marina Joh  
Dong S. Kim  
Mellanie F. Kim  
Peter T. Langer  
Michael R. Langsdale  
Sooji Lee  
Ashley Lekich  
Dayo E. Lukula  
Brian T. Magee  
Renata Mazurek  
Kenneth M. Mckay  
Nishi Mehta  
Johan Nakuci  
Asnaketch Negussie  
Athena N. Nguyen  
Jonathan B. Noble  
Ashanti D. O'Steen  
John C. Oakford  
Jonathan C. Oh  
Danielle Y. Pak  
Lauren M. Pengrin  
Erin B. Philbrick

Lenee M. Plauche-Perry  
 Benjamin A. Plog  
 Sarah L. Plumridge  
 Benjamin J. Primack  
 Mustafa Rehmani  
 Cory M. Ribson  
 Kazuki Sakamoto  
 Malik R. Sams  
 Stephanie S. Santell  
 Brogan M. Schoeneman  
 Kaitlin A. Schulz  
 Rosemary E. Shojaie  
 Erica L. Skipton  
 Margaret R. Stein  
 Kate L. Trono  
 Kelsey A. Turley  
 Asif Uddin  
 Matthew Valerio  
 Jozal S. Waroich  
 Hannah D. Weiss  
 Amy S. Wesoly  
 Laney J. Widener  
 Anthony R. Williams  
 Christina Y. Wong  
 James Wu  
 Brett S. Young  
 Geraldine Yu  
 Kara Zabelny  
 Nicholas J. Zampa  
 Paul Q. Zhang

**Bachelor of Science  
 Biochemistry (BS BBC):**

Brittany M. Bowman  
 Steven F. Capen  
 Anjali Chandra  
 Elodie M. Coutinho Fernandes  
 Peter A. Dvorak  
 Steffen J.A. Haider  
 Christopher J. Hautman  
 Christopher B. Hergott  
 Andrea U. Jakubowski  
 Megan E. Jenkins  
 Aja E. Kalkanoglu  
 Molly E. Kelly  
 Rebecca A. Kohnken  
 Dana M. Lord  
 Myra L. Mathis  
 P. Henry Namkung  
 Brian Palmisano  
 April E. Rose  
 Brian C. Ruhle  
 Alison K. Spencer  
 Konstantin Stojanovic  
 Elizabeth T.H. Tien

Ashley J. Tisosky  
 Kevin T. Van Bortle  
 Chase A. Weidmann

**Bachelor of Science  
 Cell and Developmental  
 Biology (BS BCD):**

John P. Humphrey  
 Lester Liu  
 Niranjani Thuppal  
 Jessica A. Wilson

**Bachelor of Science  
 Evolutionary Biology  
 and Ecology (BS BEB):**

Thomas D. Brekke  
 Arielle L. Camp  
 Brittany L. Celeste  
 Alyse M. Larkin  
 David T. Liebers  
 Katelin A. Noble  
 Samantha R. O'Connell  
 Alexandra I. Olsen  
 Monica V. Patel  
 Deborah M. Philbrick  
 Emily R. Rosen  
 Ariel J. Simons  
 Justin R. Sysol  
 Colleen K. Zenczak

**Bachelor of Science  
 Microbiology (BS BMB):**

Arthur J. Chang  
 Shan Chen  
 Daniel Cooper-Vince  
 Jennifer A. Coukos  
 Karen M. Crow  
 Sara K. Fagan  
 Christine A. Fedorchuk  
 Sandra S. Garcia  
 Peter K. Hong  
 Sharon E. Hopcraft  
 Usman Javed  
 Daniel S. Kim  
 Chelsea M. Mcguire  
 Linnell B. Randall  
 Riley A. Robinson  
 Rachel M. Simpson  
 Stacey R. Stahl  
 Stefanie A. Trop  
 Jennifer W. Tsang  
 Scott A. Walter  
 Zhaomin Xu  
 Kira R.A. Zebroski

**Bachelor of Science  
 Molecular Genetics  
 (BS BMG):**

Lindsey M. Alico  
 Mindy L. Altemose  
 Matthew R. Au  
 Matthew M. Brockway  
 Lisa E. Clough  
 Anne C. Eshenour  
 Jamie J. Francisco  
 Henry A. Garcia  
 Colleen A. Kellenberger  
 Arthur F. Kornitsky  
 Do Lim Lee  
 Joon Ho Lee  
 Celine Leung  
 Caitlin A. Mcintyre  
 Kelly Q. McMahan  
 Marisa D. Mendes  
 Christopher G. Miller  
 Matthew G. Morrissey  
 Kathleen M. Mulvaney  
 Diamondo D. Psomiadis  
 Jessica R. Socha  
 Kristine M. Wadosky  
 Abby J. Woodward  
 Meizhong Zhang

**Bachelor of Science  
 Neuroscience (BS BNS):**

Joseph L. Bedont  
 Jun H. Choi  
 Jennifer L. Choudri  
 Tatiana A. Cichanowicz  
 Erin C. Frye  
 Rex C. Garland  
 Lucy E. Gee  
 Sarah R. Green  
 Archit Gulati  
 Katherine E. Herman  
 Erica Kaminski  
 Kwang J. Lee  
 Tina Lu  
 Bruce E. Maki  
 Katherine M. Medford  
 Meaghan A. Paganelli  
 Ji S. Park  
 Jamilynn B. Poletto  
 Eve Privman  
 Harshika Satyarthi  
 Tyler T. Socash  
 Sarah V. Stelma  
 Linh-Tu A. Thai  
 Larissa A. Wortalik  
 Lisa J. Zou

## Independent Research

In addition to being an outstanding undergraduate institution, the University of Rochester is also a major research university. One of the Rochester Advantages is the opportunity for undergraduates to gain hands-on experience doing modern biological research. Research opportunities are made possible by the enthusiasm of faculty for cooperative learning. A student's opportunity to do research is limited only by their talent and persistence to find faculty to sponsor research projects within their area of interest.

One way students may gain research experience is through registering Independent Research (395) Courses. Independent Research courses allow students in B.A. and B.S. tracks to gain research experience for academic credit. Several members of the 2009 Undergraduate Program in Biology and Medicine graduating class have done one or more semesters of Independent Research for credit.

The following is a list of students and faculty sponsors that have taken one or more semesters of independent research courses:

**NEHA ARORA HLS/BIO**

Faculty Sponsor: Dr. Ignacio Sanz  
Department: Microbiology

**MATTHEW AU BMG**

Faculty Sponsor: Dr. Mark Noble  
Department: Biomedical Genetics

**JOSEPH BEDONT PSY/BNS**

Faculty Sponsor: Dr. Robert S. Freeman  
Department: Pharmacology & Physiology

**THOMAS BREKKE BEB**

Faculty Sponsor: Dr. John Jaenike  
Department: Biology

**MATTHEW BROCKWAY BMG**

Faculty Sponsor: Dr. Michael Welte  
Department: Biology

**ANJALI CHANDRA BBC/HLS**

Faculty Sponsor: Dr. Fred Sherman  
Department: Biochemistry

**MICHAEL DENSON BIO/PSY**

Faculty Sponsor: Dr. David Goldfarb  
Department: Biology

**RICHARD DUBOIS BIO**

Faculty Sponsor: Dr. Jiyong Zhao  
Department: Biomedical Genetics

**AYNSLEY DUNCAN BNS**

Faculty Sponsor: Dr. Troy Zarcone  
Department: Environmental Medicine

**CHRISTINE FEDORCHUK BMB (2)**

Faculty Sponsor: Dr. Jian-Dong Li  
Department: Microbiology

**HENRY GARCIA BMG (2)**

Faculty Sponsor: Dr. Willis Li  
Department: Biomedical Genetics

**CHRISTOPHER HERGOTT BBC (3)**

Faculty Sponsor: Dr. Baek Kim  
Department: Microbiology

**SHARON HOPCRAFT BMB (2)**

Faculty Sponsor: Dr. Brian Ward, Dr. Toru Takimoto  
Department: Microbiology

**ANDREA JAKUBOWSKI BBC**

Faculty Sponsor: Dr. Patricia Hinkle  
Department: Pharmacology & Physiology

**MEGAN JENKINS BBC**

Faculty Sponsor: Dr. Alan Grossfield  
Department: Biochemistry

**AJA KALKANOGLU BBC (2)**

Faculty Sponsor: Dr. Mesut Muyan  
Department: Biochemistry

**ARTHUR KORNITSKY BMG**

Faculty Sponsor: Dr. Main Maines  
Department: Biochemistry

**KWANG LEE BNS**

Faculty Sponsor: Dr. Voyko Kavcic  
Department: Neurology

**Independent Research (cont)****CELINE LEUNG BMG (2)**

Faculty Sponsor: Dr. Bradley Nilsson  
Department: Chemistry

**DAYO LUKULA BIO (2)**

Faculty Sponsor: Dr. Xia Jin  
Department: Biostatistics

**MYRA MATHIS BBC**

Faculty Sponsor: Dr. Alan Friedman  
Department: Environmental Medicine

**KENNETH MCKAY OPT/BIO (2)**

Faculty Sponsor: Dr. Todd Krauss  
Department: Chemistry

**KELLY MCMAHON BIO (2)**

Faculty Sponsor: Dr. J.H. David Wu  
Department: Chemical Engineering

**MARISA MENDES BMG**

Faculty Sponsor: Dr. John Werren  
Department: Biology

**KATHLEEN MULVANEY BMG (2)**

Faculty Sponsor: Dr. Shawn Murphy  
Department: Obstetrics & Gynecology

**STEPHANIE PAINE HLS/BIO**

Faculty Sponsor: Dr. David Pearce  
Department: Biochemistry

**BRIAN PALMISANO BBC/CHM**

Faculty Sponsor: Dr. Janet Sparks  
Department: Biochemistry

**DEBORAH PHILBRICK BEB**

Faculty Sponsor: Dr. John Jaenike  
Department: Biology

**EVE PRIVMAN BNS/CHM (2)**

Faculty Sponsor: Dr. David Rempe  
Department: Neuroscience

**APRIL ROSE FR/BBC**

Faculty Sponsor: Dr. Robert Bambara  
Department: Biochemistry

**HARSHIKA SATYARTHI BNS/HIS**

Faculty Sponsor: Dr. Shirley Joseph  
Department: Neuroscience

**JORAWER SINGH BIO**

Faculty Sponsor: Dr. Carol Miller-Graziano  
Department: Microbiology

**STACEY STAHL BMB**

Faculty Sponsor: Dr. Catherine Ovitt  
Department: Microbiology

**JUSTIN SYSOL BEB (2)**

Faculty Sponsor: Dr. John Werren  
Department: Biology

**ELIZABETH TIEN BBC**

Faculty Sponsor: Dr. Jian-Dong Li  
Department: Microbiology

**STEFANIE TROP BMB/MUS**

Faculty Sponsor: Dr. Stephen Dewhurst  
Department: Microbiology

**JENNIFER TSANG BMB/PSY**

Faculty Sponsor: Dr. Michelle Dziejman  
Department: Microbiology

**KEVIN VAN BORTLE BBC (2)**

Faculty Sponsor: Dr. Jeffrey Hayes  
Department: Biochemistry

**CHASE WEIDMANN BBC (2)**

Faculty Sponsor: Dr. Elizabeth Grayhack  
Department: Biochemistry

**LANEY WIDENER BIO/RLS**

Faculty Sponsor: Dr. Justin Ramsey  
Department: Biology

**PAUL ZHANG BIO**

Faculty Sponsor: Dr. David Quesnel  
Department: Mechanical Engineering

## De Kiewiet Fellowship

The Undergraduate Program in Biology and Medicine (UPBM) has been awarding de Kiewiet Summer Research Fellowships since 1983 to UR students majoring in one of the UPBM tracks. Although the number of applicants is small compared to most summer programs, the competition is intense.

Students applying must already have a Faculty Sponsor and must submit a detailed research proposal. The summer fellows work fulltime in a lab for 10 weeks. Class of 2009 graduates who have been de Kiewiet fellows are:

**Peter Dvorak, BBC**

Title: *"Multicopy and Spontaneous Suppressors of Temperature Sensitive thg1 Mutants"*

Faculty Sponsors: Dr. Eric Phizicky

**Anne Eshenour, BMG**

Title: *"The Effect of Wolbachia Genes Introduced by Lateral Gene Transfer into the Drosophila Ananassae Genome"*

Faculty Sponsors: Dr. John Werren

**Chris Hergott, BBC**

Title: *"Investigation of the L409U Pfu Polymerase Mutant: Implications of Fidelity and Enzyme Kinetics"*

Faculty Sponsors: Dr. Baek Kim

**Myra Mathis, BBC**

Title: *"Identification of Proteomic Changes that Characterize the Onset of Prostate Cancer"*

Faculty Sponsors: Dr. Alan Friedman

**Caitlin McIntyre, BMG, PSY**

Title: *"Function Of Rev1p In the mitochondria compartment of Saccharomyces cerevisiae"*

Faculty Sponsors: Dr. Elaine Sia

**Chelsea McGuire, BMB**

Title: *"Improving HIV-1 Immunogenicity by Bacteriophage Lambda High Density Display"*

Faculty Sponsors: Dr. Stephen Dewhurst

**Eve Privman, BNS**

Title: *"Astrocyte Survival During Ischemia"*

Faculty Sponsors: Dr. David Rempe

**Kevin Van Bortle, BBC**

Title: *"Determination of H2B: H4 Interface Stability; Enzymatic/Acetylation Effects on H2A/H2B Dimer Association within the Nucleosome"*

Faculty Sponsors: Dr. Jeffrey Hayes

## Ten UPBM Graduates Earn Distinction in Research

The Undergraduate Program in Biology and Medicine (UPBM) provides majors in the B.S. or B.A. tracks the opportunity to graduate with distinction in research. Students must achieve a minimum GPA of 2.7 and must defend their written thesis at a meeting of their advisory committee. Most students seeking a degree with distinction have worked on a research project for a year or more and have achieved significant results. They then immerse themselves in the time-consuming process of writing the thesis. Those who successfully complete their research and then push on to write the required paper are rewarded with the phrase "Distinction in Research" added to their transcripts.

The ten members of the class of 2009 who have earned the honor of "Distinction in Research" are:

**Jessica Chery, BIO/CHM**

Title: *"Anti-Viral effect of Single Chain Antibodies Against Influenza A Virus Nucleoprotein (NP)"*

Faculty Sponsor: Dr. Baek Kim

**Steffen Haider, BBC**

Title: *"Generation of a Substrate for Detection of tRNA m<sup>3</sup>C Methyltransferase Activity"*

Faculty Sponsor: Dr. Eric Phizicky

**Christopher Hergott, BBC**

Title: *"A Novel Pyrococcus Furiosus DNA Polymerase Mutant with Reduced Fidelity: Implications of Exonuclease-Mediated Fidelity Rescue"*

Faculty Sponsor: Dr. Baek Kim

**Andrea Jakubowski, BBC**

Title: *"Characterization of the Structural Requirements of the Melanocortin 2 Receptor MRAP Dependent Surface Expression and Signaling Activity"*

Faculty Sponsor: Dr. Patricia Hinkle

**Kwang Lee, BNS**

Title: *"Tentative Neural Mechanism of Proximity Effect"*

Faculty Sponsor: Dr. Robert Doty

**Kathleen Mulvaney, BMG**

Title: *"Effects of Histone Deacetylase Inhibitors on Major Histocompatibility Complex Class II Expression in Diffuse Large B Cell Lymphoma"*

Faculty Sponsor: Dr. Shawn Murphy

**Eve Privman, BNS/CHM**

Title: *"Astrocyte Survival During Ischemia"*

Faculty Sponsor: Dr. David Rempe

**Stacey Stahl, BMB**

Title: *"Characterization of Suspended Salivary Gland Spheres"*

Faculty Sponsor: Dr. Catherine Ovitt

**Justin Sysol, BEB**

Title: *"Hybrid Incompatibility Between Two Species of Nasonia Wasps: Is the Mitochondrial Ribosome Involved?"*

Faculty Sponsor: Dr. John Werren

**Kevin Van Bortle, BBC**

Title: *"Development of Cysteine Reactivity Assay to Monitor H2B:H4 Interface Stability in a Nucleosome"*

Faculty Sponsor: Dr. Jeffrey Hayes

## Life-Shaping Experiences and Future Plans

### Mindy Altemose ('09 BMG)

There is one thing I know for sure – nothing has ever given me more academic excitement than the field of biology. Yes, I was that dork in middle school competing in Pennsylvania Junior Academy of Science competitions because of the thrill of creating, executing, and defending my 'research' (my first project tackled the important question of where is the best place to store bread to avoid molding).

Then, in the ninth grade, I had an epiphany when my teacher introduced me to the field of genetics by saying,



'Genetics is constantly expanding, with new discoveries being made everyday. Yet, there is so much of the field left to be discovered.' Despite my young age and lack of understanding, I knew I wanted to get into research in the genetics field. From that point on, my goal was to be involved in a field where I could make a mark and discover something novel. Looking back, I had no idea what I was getting myself into.

From there, I found the University of Rochester, a school with an incredibly solid science program, beautiful campus, a varsity softball team, and a plethora of research opportunities. It was a perfect fit for me. When I wanted to begin real scientific research, I was amazed at the response I got from the faculty. Specifically, Dr. Lambert and his lab were willing to help me get started in research. At the beginning I learned how to fill pipette tip boxes and by the end, I was carrying out in situ hybridizations. Additionally, through my upper-level science courses and with the help of passionate professors, my enjoyment for learning the complex workings of the cell grew greatly. Rochester solidified that my enthusiasm for molecular genetics was real, and

further encouraged my never-ending thirst for knowledge.

Looking back on my time at Rochester, I was able to get involved in many research and extracurricular activities that provided important opportunities that shaped my future career goals. This included a great amount of experience I had with health care research. I have done research at both Kings College in London in the pharmaceutical department and at Strong Memorial Hospital in both the pre-natal intensive care unit and the physiology department. In addition to the research experience, speaking with many different people I met in the health care field helped me gain a broader perspective of the field, and further helped me realize how I could apply what I had learned in biology toward future career choices. Each of these experiences has led me to my next exciting academic move: attending the University of Pennsylvania to become a dentist.

I could never have gotten here, at Rochester, in the first place without the support of my parents, sisters, grandparents, and friends. They have helped me stay grounded and have been a phenomenal support system by constantly reinforcing how proud they were of me. I have come a long way since my bread mold research project in middle school, and I know the opportunities at Rochester have been a vital stepping-stone toward my future academic aspirations.

### Anne Eshenour ('09 BMG)

I'm not sure when my love of science began, but by the time I took my first genetics class at the University of Rochester, I was hooked. I couldn't



help but admire the logic behind the research Professor Sia presented in class, and I found myself challenged by the complexity this research revealed. From here, it was an easy decision to major in Molecular Genetics.

I'm so grateful for the opportunities the Department of Biology has given me, including the chance



to begin some research of my own. Last summer, I was fortunate enough to receive a DeKiewiet Research Fellowship. I worked on a project in Professor Werren's laboratory, examining the effects of bacterial genes inserted into the *Drosophila ananassae* genome via lateral gene transfer. This experience was very rewarding. I learned everything from new experimental techniques to how to present my research findings.

My undergraduate career has been one of tremendous personal growth. In addition to pursuing my scientific interests, I have also studied Italian Literature and Religion. One of the most defining experiences I had was studying abroad in Peru with Professor Cadorette. Looking at the 'Big Picture' (yes, I do this outside of class Professor Benyajati) I feel both privileged and honored to be graduating from the University of Rochester and I thank everyone who has been a part of my time here.

### Christopher Hergott ('09 BBC)

I came to the University of Rochester with the intention of studying chemistry or chemical engineering. Biology was not something I had seriously considered as a field of study or a career. I had not even taken a single biology course since the eighth grade. While planning my first semester's courses with my adviser, I decided to enroll in Dr. Olek's BIO 110 course with the hope that learning about biology might help me decide whether pharmacy would be a good way to utilize my chemistry education. What followed was a semester of learning the fundamentals of the biochemical processes that animate life. By the third class, I was hooked.



The following year, I took Dr. Platt's undergraduate biochemistry course and substantially improved my depth of knowledge in the field and how to learn in general. As it turned out, "sipping from the fire-hose" was actually a great time. Beyond just providing a great deal of new information, these two courses helped to reinforce a curiosity and tenacity toward learning more and answering my own questions. Subsequently, I had the privilege of

working to pass these benefits on as a workshop leader for both courses. Helping students gain confidence and take away a conceptual understanding from my workshops was one of the most satisfying experiences of my life.

For the last two years, research in Dr. Baek Kim's laboratory has been my job, hobby, and passion. I learned as much in two years of lab meetings as I did in any class, from the work and results of a remarkable group of kind and brilliant graduate students. I especially owe Matt Kennedy, my graduate student mentor, a debt of gratitude. He showed me almost everything I know about laboratory technique and taught me to be present and conscientious at the bench and then equally confident in defending the results. Also, he put up with my compulsive apologizing in my first month in the lab. Lastly, Dr. Kim, my adviser, deserves my thanks for having faith in my ability to handle new responsibilities and experiences in the lab. Always available and amicable, he has always made clear that I could accomplish as much as my ambition allowed in his lab.

These people and opportunities have indelibly shaped me as a student and a scientist during my time at the University of Rochester. As I move on, I strive to live up to their example in my future pursuits at the NIH and beyond.

### Jenie George ('09 BIO)

"But, why?" has been in my vernacular since my elementary days and has continued into college with a greater intensity. When I started in Rochester, it only made sense to pursue a degree that would allow me to further delve into various biological worlds. I realized quickly in my time here that while the material is interesting and challenging, it is the way of learning and interactions with others that I find rather profound.

My freshman biology 112 class with Dr. Platt right away challenged me to go beyond memorizing the facts that were given, but instead learn the information with understanding and questioning. In one of his first lectures, my way of learning was rattled after he made an analogy for the information we would receive to feeling like "drinking from a fire hose." After participating in workshops and working through the wealth of material, I soon began to see how it is manageable. While individual work was still necessary, learning in workshop with my peers allowed my understanding to go deeper.

The time spent learning in workshop, as well being a leader for them, were some of my most memorable times as a U of R student. I quickly learned that unless you are fully prepared to teach a concept, you have yet to fully understand it. As a Biology 112 workshop and Chemistry lab leader, I was fortunate to give back to a process that developed my way of thinking. In addition to teaching students, I was able to interact with and see growth in students of varying backgrounds.



Another memorable time in my undergrad was when I studied in Rome, Italy. I had the opportunity to explore diverse religions, being only steps away from the St. Peter's Basilica and the Roman Ghetto. The Coliseum was a staple on my way to class and my Italian proficiency improved to the point

where I could interact with native Italians. As a future physician, it is essential for me to be able to connect to different people to better aide their needs. Being abroad added another dimension to my learning and I grew as a person from it.

The final pieces that stand out from my undergrad experience were the diligent, concerned professors that taught all my classes. Not one professor has ever turned me away or left me feeling discouraged. In fact, they always had their doors open for my multitude of questions and cared for my personal progress. With four such stimulating years behind me, I am confident to pursue a medical degree this fall at the University Of Rochester School Of Medicine. God-willing, I will be able to handle the next four exciting and challenging years, and come out a prepared, conscientious physician.

## Caitlin McIntyre ('09 BMG)

When looking at colleges, I knew I wanted to major in Genetics and attend a school where I would be able to get involved in research as an undergraduate. I found the University of Rochester to be a perfect fit and applied early decision.

I have had the opportunity to spend two semesters conducting independent research in the lab of Dr. Elaine Sia, and in the summer of 2008 was awarded the deKiewiet Summer Research Fellowship to continue my research in the Sia lab. My project involved investigating the translesion polymerases in the mitochondria and looking at their role in the maintenance of the mitochondrial genome. I have also had the privilege to be a Teaching Assistant for Bio 112, Bio 113 and Bio 198. This has proved to be a great opportunity to share a subject I love with other students and to deepen my understanding of the material by explaining it to others. These experiences have been a crucial part of my education here at U of R, and have provided me with a strong foundation that is useful for my future endeavors.

Upon graduation, I am sad to see my time here at the University of Rochester come to a close, but my time spent here has greatly shaped who I have become. I look



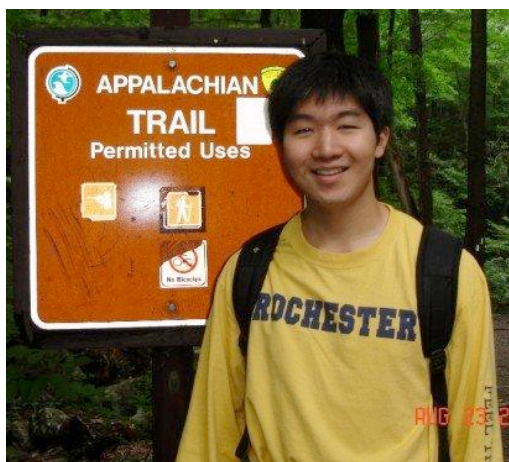
forward to taking with me the many valuable lessons I have learned during my undergraduate career, and plan on going to Medical School after taking the next year to do research.

I would like to thank my family for all their love and guidance; my friends for making the past four years so memorable; Dr. Elaine Sia for being my mentor, my advisor and my friend; Dr. Terry Platt for all his advice and encouragement; Dr. Cheeptip Benyajati for her support; Lidza Kalifa and everyone in the Sia

Lab for making my time spent in the lab so valuable and so much fun; and all my professors and everyone in the Biology Department for my wonderful experience here at the University of Rochester.

## Henry Namkung ('09 BBC)

In the summer of my junior year, I began working in a lab, where I performed Reverse-Transcriptase PCR (RT-PCR) and Western Blot of Monocyte Chemoattractant Protein-1 (MCP-1), a protein involved in atherosclerosis. Today, I continue working in the lab and am beginning a project on subcloning Nuclease Sensitive Element Binding Protein-1 into an adenovirus vector. Throughout this period, I worked on the Tchaikovsky Piano Concerto No. 1 in B-flat minor for the River Campus Concerto Competition. I describe how the process of learning music helped me to be a better learner of science.



First, while I was preparing for the competition, I listened to many recordings of the concerto, as performed by Horowitz, Rubenstein, and Van Cliburn. In the lab, I continually read about MCP-1 and Western Blot. Reading the literature helped me to appreciate the depth of the experiments.

Second, I focused on learning all the notes of the concerto to get a sense of the overall scheme of the piece. In the first couple of weeks of lab, I performed RT-PCR followed by Western Blot several times and better understood the importance of consistency in experimental technique.

Third, I focused on specific weaknesses in the concerto regarding technical issues. (e.g. unsteady rhythm) In the lab, I tried to understand the causes of badly run gels and how I could prevent these issues in the future.

Dr. Harold Smith of the Biochemistry Department told me to "Apply how you learn what you are talented in (e.g. music) to learning science". Because I am a musician and biochemistry major, I felt these words to be helpful. I hope that others who have skills in areas other than science can also benefit from his advice.

## Ariel Simons ('09 BEB)

Rewind four years – honestly, my goals as a student at UR were elementary and naive: get a degree and get out. High school had prepared me to be hard-working yet academically apathetic; a "liberal arts" school seemed ideal. I was drawn by the opportunities to explore different areas of study, and intrigued that Rochester receives what some believe to be too much winter. Impossible.

Initially, I picked classes at random: no path intended and none required, I thought. My academic advisor was not amused. Avoiding my haphazard selections he saw I had chosen a chemistry course, and promptly rearranged my schedule to fit the default Premed outline.

Fast forward three years – decision time. Not only had I found I had no interest in medicine after the first few weeks, but once again I lacked an academic plan and found myself going through the motions for the sake of being done. In a panic I chose Ecology and Evolution as my major: minimal physics and abstract molecular biology courses? Check!

Wandering through my college career in an entirely arbitrary fashion made me sure that my choices would inherently be wrong, my education wasted, and my parents would be supporting me into my 40s, at least. It was not until I enrolled in Ecology and Evolution that I finally felt I was doing something right. Going to class (and staying conscious for the full hour) was no longer a chore, and I found myself, dare I say, actually enjoying the material. Suddenly it was so clear: my life-long obsession with the Discovery Channel, a preference for David Attenborough's documentary narrations over all other sounds, the dorkiest childhood dreams of being a paleontologist or entomologist, and a "Google Images" window constantly open to some exotic species – I never expected that I could major in something I enjoyed. Higher education was supposed to be painful and arduous, right?

Today – I am leaving UR with Ecology and Evolution major, chemistry minor, fieldwork experience in New Zealand, and laboratory jobs ranging from human genetics, to caterpillar color mutation analysis, to general undergraduate lab slave. Fortunately, my goals have shifted dramatically and I have found that above all else college is a time to find something you are passionate about and enjoy the path it spreads in front of you. My arbitrary methods are clearly a lacking model and I am



forever indebted to my dedicated professors, family, peers, and TAs, who have reminded me that getting a degree is not just an ultimate goal, but there is also an exciting and fascinating trail leading there (and in a similar vein, I am forever apologetic to my peers, friends, and

family who are subject to my endless “fun facts” about biology and Planet Earth/Blue Planet marathons). Now ready to make a thoughtful decision about my future I have applied to be a Peace Corps Volunteer to teach environmental education in sub-Saharan Africa in hopes of inciting enthusiasm through the topics that have guided my childhood dreams and continue to shape my future. Finally, to fill an expectation of closing with wise and profound words based on my college experience at UR: yes, there is such a thing as too much winter.

## Justin Sysol ('09 BEB)

“Fortunate are those who have learned to see, in the wild things of nature, something to be loved, something to be wondered at, something to be revered, for they will have found the key to a never-failing source of recreation and refreshment.” This quote by the celebrated zoologist Hugh B. Cott encapsulates my four years at the University of Rochester. Here I have been given the opportunity to unearth my passion for biology, like a fossil underfoot that was waiting to be discovered.

I have always felt an inherent urge to unravel and understand the mysteries of nature, but had a difficult time learning how to focus this curiosity before college. As my studies have now taken me through courses in animal behavior, ecology, biochemistry, and evolutionary biology, to name a

few, I feel as though I have found a career path that will allow me to pursue my interests and also feed my appetite for knowledge. There is so much left to be uncovered about how “from so simple a beginning” such diversity and complexity has triumphed in the world around us!

My undergraduate experience would not have been the same without the caring and passionate members of the biology department, including all of my past and current professors. I would especially like to thank Dr. Jack Werren, my research advisor and mentor. He has continued to catalyze my growth as both a student and a scientist, and for this I will be forever indebted. I would also like to thank the rest of the Werren lab, who have offered their time, assistance, and thoughtful



opinions when I needed them most. Special thanks go to Dr. Baek Kim and the entire Kim lab for welcoming me warmly and giving me the opportunity to lend a hand. Most of all, I would like to thank my family for always supporting me and pushing me to succeed.

After graduation, I will be gaining further research experience either here at the University of Rochester or at the National Institutes of Health in Washington, D.C. I will then be applying to PhD programs the following year. As I step past undergraduate life into the frontiers of the real world, I feel privileged to have had the opportunity to attend the University of Rochester. The friendships, experiences, and knowledge I have gained here will stay with me for the rest of my life.

## Kristine Wadosky ('09 BMG)

The University of Rochester’s workshop model has played an integral role in the development of my goals. As a freshman, I was instantly attracted to the interactive peer learning environment. I learned to listen to and teach my peers while remaining sensitive of the group’s dynamics. It became clear that cooperation was invaluable and thus synergy was the cornerstone of our development. I found

myself motivated to study outside the sessions, not only for my own knowledge, but to help my peers. It was within this environment that my passion for the scientific community ignited.

This was especially true in Biochemistry. Many of the workshop exercises for Biochemistry were fictional case studies. These studies centered on diseases related to the mechanisms and pathways we were learning about in lecture. One of those pathways was that of insulin, for which we examined a case that focused on a man with diabetes. This exercise quelled my



misconceptions about diabetes--namely that insulin was a miracle drug. We experienced this man's struggle through amputations, liver failure, and other health problems which plague diabetics. I was moved by this story, for it made me aware of the suffering people afflicted with any disease have to endure. Now, I describe this exercise as a story because we assumed it was fictional, just as the other case studies had been. Workshops continued and this remained our belief until the last day of class when we met the real person this diabetes workshop had been based upon.

Meeting this man, who had the courage to share his story for our educational benefit, had a two-fold impact on me. First, the man's story became my inspiration for concentrating in molecular pathology and translational research in graduate school; and second, it made me an advocate for the workshop model. The latter of which resulted in my becoming a biochemistry peer leader the following year. Throughout the semester during which I was a workshop leader I was eager to observe the effect the diabetes workshop would have on my students.

About a week before we presented the exercise to our students, however, we were informed of the man's death. I was shocked and devastated—I didn't know him personally, but his bravery was an inspiration to me. Additionally, I was saddened that neither my students, nor subsequent classes, would have the opportunity to experience the full impact of the exercise. The man from the diabetes workshop has symbolized the humanity which I have found so

difficult to visualize in the abstract world of biological research. Thanks to him, a human face will forever be at the forefront of whatever project I undertake.

## Hannah Weiss ('09 BIO)

I have always been interested in the sciences. Even when I was in elementary school general science was my favorite subject. Of course back then I loved weather and volcanoes and generally things that were largely destructive and easily seen. At least, that was what I loved until my fifth grade science fair, where I grew *E. coli* and tested which household detergents were most effective against bacterial growth. That science fair accomplished two very important things; it got live cultures banned from all future science fairs at the elementary school and it sparked my interest in biology for the first time.

By high school I knew I was going to major in biology and so when applying to schools I only considered the science programs, despite the fact that I had other interests. Luckily, I ended up at UR and so was able to take the creative writing and linguistics courses that piqued my interests alongside amazing biology classes like BIO 112 with Professor



Platt and Animal Behavior with Professor Werren. UR also allowed me to rediscover mathematics.

And so now I'm graduating with a BA in biology, a minor in mathematics and probably enough creative writing courses to fill another minor- had I ever actually registered it. But also, I'm graduating with a number of questions. When I entered UR I wanted to go to medical school and had never explored anything else as a future career. But at the university I was exposed to so many other possibilities that I'm now no longer sure. The only thing I am sure of is that I love biology. Whatever the future holds for me, I can be sure biology will play a part. And maybe math.

## Science in Action: Graduate student and postdoctoral research

### Lidza Kalifa

(grad student Sia lab)

I grew up in McAllen, a small town located in the southernmost tip of Texas, approximately five miles from the U.S.-Mexico border. I am the middle child of a family consisting of five daughters. My father is Lebanese and my mother Mexican, we grew up speaking predominately Spanish and well integrated in our Hispanic culture. When I graduated high school in 2001, I decided to venture out of my comfort zone and attended the University of Rochester for my undergraduate education.

While I knew I wanted to pursue a degree in Biology, it was Dr. David Hinkle's lectures on DNA replication and repair that helped shape my future. At Rochester, I majored in Molecular Genetics with a minor in American Sign Language. As an undergraduate, I



worked in the laboratories of Dr. David Goldfarb and Dr. Elaine Sia. In the summer of 2004, I participated in the Graduate Education in Biological Sciences (GEBS) summer research program here at the University of Rochester. I worked with Dr. Sia investigating the role of the nuclear gene *MGM101* in mitochondrial genome maintenance. This experience helped determine that I really wanted to pursue a PhD in biology. After graduating in 2005, I decided to continue my education at the University of Rochester. I am now a fourth year graduate student in Dr. Sia's laboratory.

My thesis project focuses on damage tolerance and repair pathways in the mitochondrial compartment. Mitochondria are well known as the powerhouses of the cell, producing cellular energy in the form of ATP. These organelles contain their own DNA genome and maintenance of this genome is vital for normal organismal function. Mutations in

mitochondrial DNA have been implicated in aging and age-related diseases as well as many other human diseases. Our laboratory focuses on the various pathways required for replication and repair of the mitochondrial genome. Specifically, my projects aim to uncover the proteins and mechanisms involved in damage recognition, base excision repair, double-strand break repair, and characterization of polymerases in the mitochondrial compartment. Currently I plan to complete my thesis research by fall of 2010 and intend to continue studying DNA metabolism in my post-doctoral work. Eventually I would like to head my own laboratory at a large research institution.

I have received several scholarships to attend scientific conferences including two Keystone Symposium scholarships, a Carl Storm Underrepresentative Minority fellowship, Graduate Women In Science travel award, and an American Society of Microbiology scholarship. These fellowships have given me the opportunity to present my research at scientific conferences all over the U.S. as well as Canada and Europe. I am a recipient of a Ruth L. Kirschstein National Research Service Award through the National Institutes of Health as well as a University of Rochester Provost's Fellowship.

Apart from my life in the Biology Department, I enjoy spending time with my long-haired Chihuahua, Beaker, hanging out with friends, working out, traveling, and reading.

### Julienne Ng

(grad student Glor lab)

"So I see that you're going to be doing a Biology PhD in Rochester," said the immigration officer looking up from my pile of paperwork. "Rochester! Why didn't you just stay in Australia to study those koala bears?"

Over the last three years, my tale of a trek around the world to live in Rochester has left many incredulous that I would leave Melbourne for a small city with bitter cold and unrelenting winters. Trust me, never having visited Rochester before I made the decision to undertake a PhD at the U of R, combined with being an absolute wuss when it comes to the cold, I was a little worried about what I had signed up for. My time here, however, has been an absolute thrill, having had opportunities to engage with prominent leaders of my field, explore exciting new concepts in evolutionary biology and

experience the magical qualities of my first snow fall.



I grew up in Melbourne, Australia, and undertook a combined Science (Zoology) and Information Systems degree at the University of Melbourne. My enthusiasm for research was sparked during an undergraduate marine field course when I investigated egg and larval cannibalism in ascidians. Inspired, I sought out opportunities to help PhD students with their research projects. I was primarily involved with ecological research, and worked with a range of organisms, such as butterflies, koalas and possums. It was, however, during my Honours research year, when I studied the genetic and adaptive diversity of a species of lizard called a Mountain Dragon (*Rankinia diemensis*), that I developed a keen interest in herpetological research. My Honours project had only just begun to whet my appetite for research and I was eager to pursue a PhD.

I had met Dr. Rich Glor during my Honours year when he came down to Australia for field work. Upon hearing that he was to be an Associate Professor at the U of R, I was extremely keen to join his lab to continue to use lizards as a study system to further investigate the evolutionary processes that underlie species diversity. For my dissertation, I am currently studying the role of dewlap coloration in *Anolis* lizards. The dewlap is an extendable flap of skin on the throat that males use in signaling displays and is thought to be important for adaptation and speciation. My research involves extensive field work in the Dominican Republic and Florida to observe, capture and collect tissue samples for genetic analyses. I have also established captive breeding groups in Rochester to study dewlap color inheritance.

My time so far at the University of Rochester has been extremely gratifying. Coming from a large

university with approximately 40,000 students, I have found the vibe of a smaller university to be enriching with its focused avenues of inquiry, and extremely approachable and inspiring faculty. In addition, with the U of R's encouraging research environment for undergraduates, I have enjoyed the opportunity to interact with many bright undergraduates both in the Glor lab and in classes that I have taught on teaching assignments.

Despite the initial concerns, and having left friends and family behind on the other side of the world, I have no doubt that I made the right decision to come to Rochester. I have met some amazing people, been exposed to new ways of thinking, and it is my hope that I will be able to share my experiences with others when I move on to new pursuits.

### **Jeremy Rabinowitz** (grad student in Lambert lab)

During my first developmental biology class as an undergraduate at Cornell University, I became deeply intrigued by asymmetric cell division – the process by which one cell divides to produce two cells, each having different properties. When I started looking into graduate schools, I came across work from Dr. Dave



Lambert who studied a novel mechanism of asymmetric RNA segregation that occurs during early development in the snail *Ilyanassa*. I became very excited about this, and consequently designed my thesis project on identifying the mechanism by which these RNAs are asymmetrically segregated and the role this process has during snail embryogenesis.

During the five years I have been working on this project, perhaps the biggest surprise was to find out that I had grown up right next to the natural habitat for *Ilyanassa* on the eastern end of Long Island. In fact, this mud snail is naturally found all along the northeastern coast of the US. Not all developmental biologists have the chance to get their hands dirty with field work, but I now go to the bay and collect our "research specimens" every time I go home.

I plan on finishing my thesis work within the next year and have started the search for a post doctoral position. I will be changing my focus a bit and hope to begin work using stem cells as a model to study regeneration. One important factor in my post-doc search is location. As you may have noticed, I've lived in New York my entire life and while I do love New York, I want to try a different location, at least for a little while. Who knows, maybe I'll do something crazy and move to Australia.

## Tracie Ivy (post-doc Fry lab)

I think my science career began sometime around age 8. We had just studied skeletons in science class, and while walking home from school one day, I saw a dead squirrel. All I could think was that I would *really* like to have that skeleton. I took the squirrel home, put it in a pot of boiling water, thinking that I could just boil the meat off, leaving the bones for me to study. It didn't work at all the way I'd planned, but the disappointment, several weeks of grounding, and the smell of decay permeating our house did not deter me from continuing my scientific pursuits.



The first two years of my undergraduate study at University of Illinois at Urbana-Champaign were spent as a completely mediocre (actually, that's kind of generous) general biology major. We didn't take our first biology course until our second year and didn't get to evolutionary biology until the second semester of the course. Once I learned that it was possible to study evolution for a living, I immediately changed my major to Ecology, Ethology, and Evolution, and my interest in school, not to mention my performance, improved considerably. Senior

year, I was involved in an undergraduate research project on population dynamics of meadow voles. That was pretty "unfun" research, seeing as how it involved going out in double-digit subzero weather and checking metal traps for voles (who frequently bite). But my advisor, Lowell Getz, was a fantastic mentor and encouraged me to go to grad school, which I did after taking a year off school working as possibly the least welcoming receptionist ever.

I did my M.S. and Ph.D. at Illinois State University examining mating behavior in crickets. My interest in this subject was very difficult to explain to my family, whose reactions ranged from mirth to outrage over the fact that our government gives people money to do research on the sex lives of insects. Probably my grandmother summed up their feelings best when I answered her question about why I was collecting ground crickets from her yard, and she said, "Well, that's one way to spend your time." The impact of their skepticism was easily outweighed by my fascination with insects and the fact that studying sex always leads to interesting conversations. While at ISU, I applied for and received an NSF International Postdoctoral Fellowship to spend two years at the Zoological Museum at the University of Zürich in Switzerland. There, I was involved in several projects, including measuring the impact of genotype by environment interactions on yellow dung fly development and reproductive success. The wonderful people there, the hilarity that inevitably ensues when you work closely with poop, and the beauty of Switzerland definitely made this one of the best experiences of my life.

From Zürich, I moved to Rochester to work with Jim Fry, to whom I am grateful for being brave enough to hire me even though I knew nothing about genetics or fruit flies. We are investigating the genetics of ethanol tolerance in *Drosophila melanogaster*, where natural populations of flies vary considerably in their ability to utilize food sources containing high levels of ethanol. Though I don't find flies as cute as crickets, since I began this work I have existed in a constant state of amazement over what the genetic tools available allow one to learn about evolution. Much to the chagrin of my former behavioral ecology colleagues, who consider working with *Drosophila* to be positioning yourself firmly on the dark side of the force, I feel that studying sex in flies could be one way I'd like to spend my time.



## Alumni Update

**Kiana Frank (B.S. 2008 Molecular Genetics)** of Harvard was named an NSF Graduate Research Fellow.

**Jeff Jackson (Ph.D., Benyajati lab, 1992)** recently left GSK and joined Bristol-Myers Squibb as Group Director Oncology Biomarkers.

**Vaishali Katju (B.S. 1993 Ecology and Evolutionary Biology)** and **Ulfar Bergthorsson (Ph.D., Ochman lab, 1998)** We both have tenure-track positions in the Department of Biology at the University of New Mexico in Albuquerque, NM. Both of our labs focus on evolutionary genetics and genomics. We are also (tired) parents to two and a half year old twins Oria Ulfarsdottir and Karna Ulfarsson. Now our family has the distinction of each family member having a different surname. We miss Rochester and wish you all well.

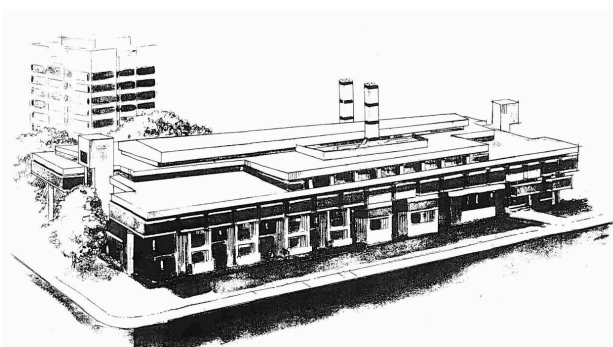
**Nima Mosammaparast (B.S. 1998 Molecular Genetics)** I was a graduate of the UR Biology department and left in 1998 with a B.S. in Molecular Genetics. Looking back at my time there, I think that those years were truly formative, although I didn't realize it at the time. One of the key features of the department is that the faculty encourage undergraduates early on to think critically within the field of biology, as opposed to seeing biology as a summation of facts to be learned. This lured me away from majoring in chemistry or chemical engineering, which were other majors I was considering when I started at UR. I was encouraged by the Biology faculty, particularly David Goldfarb, to take on more challenging classes early, such as the Advanced Cell Biology series, taught at the time by Marty Gorovsky and Joanna Olmsted. Hardly taught by the book, these courses were taught primarily by critical examination of the current literature, and the love of the subject material taught by these teachers was infectious. I also spent two years doing research on the mechanisms of protein transport in Dr. Goldfarb's lab and spent my senior year in David Hinkle's lab (who is now retired) focusing on mechanisms of DNA damage repair. I was bitten by the research bug, and it bit me hard. I was completely hooked.

I graduated from a combined M.D./Ph.D. program at the University of Virginia in 2006, and entered a residency program in clinical pathology at Brigham and Women's Hospital (BWH), Harvard Medical School. I'm now a research fellow in the department

of pathology at Harvard, spending most of my time doing research, mixed in with occasional clinical responsibilities at BWH. On the clinical side, I spend part of my time developing novel laboratory diagnostic tests, using molecular biology approaches. In clinical pathology we also see patients on the transfusion medicine service, most of whom have hematological malignancies. Our responsibilities for these patients involve stem cell collection for transplantation, or procedures where we remove or exchange unwanted blood cells (such as in the case of an acute leukemia, or a patient with severe sickle cell anemia). On the research side, I am working on how human cells respond to DNA damage; more specifically, I am interested in how cells change their chromatin structure when confronted with damaged DNA, and how these changes are necessary for the process of DNA repair. While balancing all of this can be a challenge at times, it is hard to imagine a more rewarding career, and I'm glad that the UR Biology department served as its foundation.

### **Megha Shah (B.S. 2005 Cell and Developmental Biology)**

I'm finishing up my medical degree at the University of Pittsburgh this May and will be starting residency in internal medicine at NYU in July. Right now I've been pretty active in hematology-oncology research at the cancer center here and I hope to do a fellowship after residency. Other than that, I'm also getting married at the end of May in Orlando, Florida to Mithun Sahdev, who was UR Class of 2003, after seven years! We'll move to the big city soon after that.



## Faculty Hellos

### Daniel Garrigan

*Submitted by Richard Glor*



Daniel Garrigan joined the department as an Assistant Professor in the Fall of 2008. Dan's research applies genomic data and coalescent theory to questions about the origin and evolution of humans. Dan's work expands the Department's research in several important

directions by bringing work on human evolution, genomics, coalescent theory, and bioinformatics into focus.

Dan grew up in Los Angeles before beginning his academic career at the University of Washington under Dr. Scott Edwards. As a precocious young scientist, Dan participated in an effort to sequence the major histocompatibility complex (MHC) from songbirds. In terms of functionality, the MHC plays an important role in vertebrate immune systems (among other functions), but Dan was more interested in the MHC because of its astounding levels of allelic diversity. This allelic diversity made MHC an ideal locus for studies of population genetic variation at the dawn of the genomic era.

Dan continued to use the MHC to investigate evolution and natural selection when he moved to Arizona State University to conduct his doctoral studies in the laboratory of Dr. Philip W. Hedrick. Initially, Dan's graduate work focused on the conservation genetics of species ranging from California chinook to coyotes to bighorn sheep. As his graduate career progressed, however, Dan's interest shifted from the genetics of declining species to the genetics of the species whose expansion was responsible for these declines: *Homo sapiens*.

Dan's shift to work on the historical population genetics of humans was complete by the time he began his first post-doctoral appointment in the laboratory of Dr. Michael Hammer at the University of Arizona. When Dan joined the Hammer Lab in 2003, this lab was accumulating massive amounts of

sequence data from across human populations and using this data to address exciting new questions about the evolutionary history of humans. Some of Dan's earliest work on human population genetics investigated the history of the Ashkenazi Jews, a human population with a unique and particularly well-characterized history of dispersal and migration.

As the pool of available data expanded and his own computational expertise grew, Dan began to tackle even more profound questions about the history of human-kind. Among his most startling discoveries was that populations of modern humans (*Homo sapiens*) expanding outward from Africa likely hybridized with archaic populations (*Homo erectus*) from Eurasia that subsequently went extinct.

In 2005, Dan moved to Harvard University, where he continued his studies of human evolution further blossomed thanks to an ever-expanding repertoire of data, tools, and theory. His work at Harvard include development of new methods that permit population genetic studies at the level of the whole genome. While at Harvard, Dan also collaborated with Dr. Richard Lewontin, a man in whose footsteps he would soon follow to a faculty position in the University of Rochester's Department of Biology. With Lewontin, Dan developed a new method for detecting the signature of natural selection with sequence data that is less reliant on simple null hypotheses than previous approaches.

Dan's move into our department has been occurring somewhat incrementally since his arrival early in the Fall of 2008. His laboratory in Hutchison Hall (the former Orr Lab) opened after extensive renovation and retooling in the Spring of 2009. Dan's lab reflects the integrative nature of his work, with an inviting space for computing work up front, a wet lab for molecular work in the back, and a small conference room for discussion in between. Perhaps more important than the completion of his lab was the arrival in Rochester of Dan's wife Sarah Kingan. Sarah moved to Rochester in the Spring of 2009 to complete work on her PhD thesis and will begin a post-doctoral position in the Presgraves Lab once her defense is behind her (at the time of this writing Dan and Sarah are back in Boston for the defense!). Sarah is also an accomplished population geneticist whose expertise will further supplement the Department's growth in this rapidly expanding field.

## Achievements and Milestones

**Cheeptip Benyajati** will receive "The University Dean's Award for Meritorious Service in Ph.D. Defenses" at the doctoral commencement on Saturday, May 16, at the Eastman Theatre. She will be the guest of President and Mrs. Seligman at the celebratory dinner in honor of the University of Rochester's Commencement Award Recipients on Saturday, May 16 at Schlegal Hall Eisenberg Rotunda in the evening.

**Deepika Calida** and **Zhili Xu** received department teaching awards for excellence in undergraduate TA'ing.

**Vicky Cattani, Dave Loehlin, and Rob Unckless** received NSF Doctoral Dissertation Improvement Grant.

**Alan Dietsche** received the Professor of the Year award for Natural Sciences from the University of Rochester Students' Association. This is the third time Prof. Dietsche has received this award!

**Henri Jasper** won a Senior Fellow Award from the Ellison Medical Foundation for his work showing how stress affects stem cell function, leading to symptoms of aging.

**Adam Green** received a Sigma-Xi Grants in Aid of Research award for his research on Ivy (*Hedera*).

**Rob Laport** was a recipient of an "Edward Peck Curtis Award for Excellence in Teaching by a Graduate Student," which is awarded by the UR Graduate Affairs/Admissions Committee.

**H. Allen Orr** received the Darwin-Wallace Medal from the Linnean Society.

**Daven Presgraves** received the 2008 Balfour Prize from the Genetics Society of the United Kingdom; an Alfred P. Sloan Foundation Fellowship; and a David and Lucile Packard Foundation Fellowship for Science & Engineering.

The Biology Department would like to extend a special thank you to **Hiram Lyon** for 30 years of service to the Department, working in the labs of Joanna Olmsted, Elaine Sia and Gloria Culver. Hiram's generous character and dedication has been a special gift. Thank you, Hiram!

**Nitin Phadnis** (Ph.D. 2008 Orr lab) is a co-winner of the Outstanding Dissertation Award for the Natural Sciences offered by the University of Rochester College of Arts, Sciences & Engineering and a winner of the 2009 Harold M. Weintraub Graduate Student Award.

**Nitin and Naina Phadnis** (Ph.D. 2007 Sia lab) welcomed daughter Sahana on April 16, 2009, at 7:19 a.m. Sahana was 6 pounds 15 ounces and 19.5 inches.



**Justin and Tara Ramsey** welcome border collie puppy Hiesey and Siamese kitten Keck, both born in spring 2008. They join older brother Clausen, also a Siamese. Hiesey graduated from puppy class and tricks' classes, and will soon move onto agility class. He is an incredible



Frisbee player and can often be seen in action at Genesee Valley Park. Keck is a tiny fellow but an incredible hunter. Justin was thrilled to awaken one morning and discover that Keck had gifted him with a freshly killed shrew. Sadly, the Ramsey's hiking, backpacking and thoroughly spunky Pomeranian, Frances, died last spring at age 7. She is much missed.

**Rich Glor's** hound dog, Ed, graduated from puppy kindergarden and puppy II, the later with a gold star.



Thursday, June 18, 2009  
Brockport Country Club

## The Howard Bryant Memorial Golf Tournament

### PLEASE JOIN US!

Thursday, June 18, 2009

Registration: 10:00 AM  
Shotgun Start: 11:00 AM  
Dinner: 5:30 PM

Fee: \$90.00  
Fee includes golf, lunch, and  
chicken/rib dinner.

### PRIZES

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one free golf pass (\$30 value)  
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Line Rd, Brockport  
[www.playbrockport.com](http://www.playbrockport.com)

**NOT A GOLFER?**  
“Dinner only” fee is  
\$30.00 (kids free)

Putting Contest at  
4:00 PM  
Open to everyone

**Free Chicken Wing Bar**  
before Dinner!

Open Bar after Dinner!

**HOWARD BRYANT**  
*Howard was a beloved  
member of the Biology  
Department at the  
University of  
Rochester for over 40  
years.*

*All proceeds from this  
tournament benefit  
The Howard Bryant  
Memorial Scholarship  
Fund. The Fund was  
established in 2004 to  
honor Howard's  
legacy of caring and  
support by providing  
aid to students in need  
of financial assistance  
and who are interested  
in pursuing a career in  
Sciences or  
Engineering.*

Register at [www.rochester.edu/College/BIO/HB/HB.htm](http://www.rochester.edu/College/BIO/HB/HB.htm)



**UNIVERSITY of ROCHESTER**