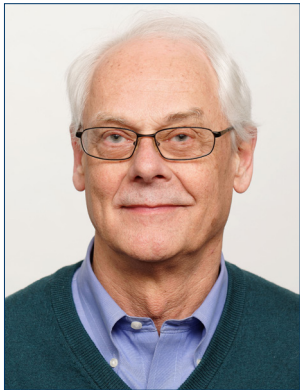


DEPARTMENT OF

BIOLOGY

Winter Newsletter 2016

MESSAGE FROM THE CHAIR



Dear Biology Alumni and Friends,

Greetings from warm and sunny Rochester! Our latest (Winter 2016) Department of Biology newsletter provides an update on the news and happenings within the department. Our departmental website www.rochester.edu/College/BIO, which is continually updated, provides the very latest news from the department.

We would like to grow our network of University of Rochester biology alumni and friends as much as possible and to remain connected with all of you. To that end, please send your news (professional, personal milestones, travel, etc.) to [Brenna Rybak](#), including photos, if you like, to add an extra dimension to your news.

As always, please stop by to say hello if you're ever in town.

With best wishes,

John Jaenike

Professor and Chair
Department of Biology

IN THIS ISSUE: Message from the Chair · Fall Retreat Recap · Community Outreach · The Art of Bee Collection · Specimen Collection · Faculty Headlines · Department News · Alumni Updates · Howard Bryant Memorial Golf Tournament



SCHOOL OF
ARTS & SCIENCES
UNIVERSITY of ROCHESTER

Biology Department Fall Retreat— Bristol Harbour Resort

October 6, 2015



The Department of Biology held its annual fall retreat at the gorgeous Bristol Harbour Resort in Canandaigua, New York. Lush foliage, hiking trails, and wineries enchanted our faculty, students, and staff. Many arrived the evening before to grill hot dogs and hamburgers and enjoy each other's company. They capped the night off with Biology Pictionary. The morning of the retreat brought fair weather and everyone was captivated by the view. Registration was never so peaceful! After alumni talks and lunch, everyone was free to explore the scenic grounds. The day concluded with a poster session and prizes.

Our first alumni speaker was Dr. Robert Unckless, a postdoctoral fellow at Cornell University who is jointly advised by Drs. Andrew Clark and Brian Lazzaro. Dr. Unckless earned his PhD in 2011 in the University of Rochester's biology department after training with Drs. John Jaenike and Allen Orr. He will join the faculty at the University of Kansas as an assistant professor this fall. Unckless is an evolutionary biologist studying genetic conflicts both within genomes of a single organism and between organisms (e.g., hosts and their parasites). In his talk, he described his work on the evolution of *Diptericin*—an antimicrobial peptide involved in *Drosophila* immunity. He found that a variant of *Diptericin* known to confer resistance to bacterial infection arose multiple times independently in different *Drosophila* species. Unckless's work reveals a pattern of evolution consistent with natural selection operating in a changing environment. This has important implications for understanding the evolutionary forces shaping antimicrobial peptides.

Our second alumni speaker was Dr. Xuetong (Snow) Shen, an associate professor in the Department of Epigenetics and Molecular Carcinogenesis at the University of Texas MD Anderson Cancer Center in Smithville, Texas. Dr. Shen received his PhD in biology in 1996 in the laboratory of Dr. Martin Gorovsky studying the role of linker histones. He then completed his postdoctoral training in the laboratory of Dr. Carl Wu at the National Cancer Institute in Bethesda, Maryland, where he discovered the INO80 complex and its role in DNA replication, repair, and recombination. After

his postdoctoral training, Dr. Shen joined the faculty at the MD Anderson Cancer Center, where he maintains an active research laboratory. Dr. Shen's research focuses on the regulation and maintenance of the eukaryotic genome. His recent work has focused on chromatin responses to DNA damage and the functions of nuclear actin. In his talk, Dr. Shen described the first discovery of nuclear actin methylation in cells. The methylation of nuclear actin represents a novel form of covalent modification on nuclear actin and provides another layer of regulation for actin and actin-related proteins in nuclear processes. This discovery opens up several new directions for understanding chromatin regulation in the context of genome maintenance.

[Click here to view the fall retreat slideshow \(14:29\).](#)

[Click here to view the movie the second-year grads put together for the fall retreat \(7:38\)](#)

Meliora Open House

October 9, 2015

As part of the University's Meliora Weekend festivities, the Department of Biology holds an open house annually, inviting alumni, parents, students, faculty, staff, and visitors to learn more about what the department has to offer. A myriad of information is available, from brochures about our undergraduate and graduate programs to the department specimen collection and old photo albums and emeritus publications. Hors d'oeuvres and refreshments are provided, and everyone is encouraged to attend. If you are interested in attending this year and would like more information, please send an email to our administrator, [Brenna Rybak](#).



Supporting the Department of Biology is easy! Watch for opportunities in this issue.

Gifts to the biology department help create academic and research opportunities for students and faculty that will have a profound effect on human health. Read Biology's *Meliora Challenge* Campaign summary for more information.

To make your gift or discuss opportunities to support the department, please contact **David Richardson '10E**, Assistant Director of Advancement at (585) 276-7423 or david.richardson@rochester.edu.



Community Outreach in Biology

December 2015

The Department of Biology is committed to making a difference in our community through outreach programs focused on STEM (science, technology, engineering, and mathematics) education. Two recent visits by high school advanced placement biology classes exemplify these efforts. Our goal for these visits was to provide enriching lab exercises beyond what could be provided at their respective schools. Our activities were designed around the curricular needs and vision of each of the teachers. Students were also exposed to college life on campus. Preparing and running these visits involved significant volunteer effort from our faculty, staff, and students, as well as financial support from our department.

On December 4, 2015, fourteen **World of Inquiry School No. 58** students and their teacher, Debra Ortenzi, visited our department. Before their arrival, Professors Bob Minckley and John Jaenike designed a lab on cold adaptation among *Drosophila* (fruit fly) species. Our teaching lab manager, Kristin Kelly, and her staff spent two weeks prepping the lab and rearing the flies so that everything would be ready to go for the students. Postdoctoral research associate Vince Martinson and undergraduate Rose Mbaye served as teaching assistants throughout the day.

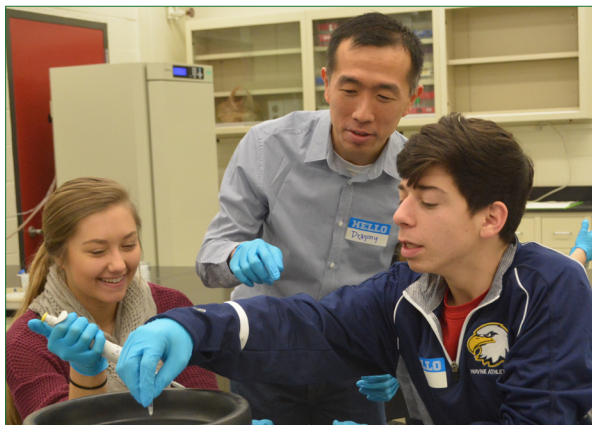
The students, composed mostly of AP juniors and seniors, attended lectures on either the cell cycle and cancer given by Professor Tom Eickbush, or population biology and evolution given by Professor Jennifer Brisson. In the laboratory, students worked in pairs to learn how to identify fly species under the dissecting scope and to quantify the ability of each species to recover from cold shock. Their results were tabulated and interpreted in real time. The results were conclusive: equatorial species recovered from cold stress less readily than flies from higher latitudes. Adaptation in action! After the lab, students participated in a demonstration by Brendan Mort of the University's visually stunning **Vista Collaboratory** located in Carlson Library. After a pizza lunch at the student union among undergraduates, the students returned by bus to their Rochester City School District school.





We were also visited by 24 students from [Wayne Central High School](#) on January 12, 2016. Their teacher, Nolan Flores, requested that his students experience labs on DNA gel electrophoresis and bacterial transformation. Students were divided into two groups for morning and afternoon labs presented by Professors Michael Clark, a Wayne High alumna, and Dragony Fu. The teaching assistants for these labs were graduate students Jillian Ramos and Jenna Lentini and undergraduates Audrey Goldfarb and Ashley Mackey. Kristin Kelly again prepped the labs. Later on, the students were treated to a walking tour of our campus by two of the University's [Meridian guides](#). After a pizza lunch among undergraduates at Wilson Commons, the students returned to their school by bus.

Both visits were a huge success for everyone! Students from both schools were engaged, bright, and fun to be around. Both teachers were thrilled with the activities, and our volunteers found the experience extremely satisfying. At the end of both visits, it was not clear who profited more from these interactions.



Please consider making a tax-deductible contribution to the Department of Biology's "U-ROC" (University of Rochester Outreach Committee) fund. All contributions will be used to enhance our expanding programs.

To donate, please make your check out to the University of Rochester and mail it to Kathy Giardina, Box 270211, Rochester, New York 14627. Please feel free to contact [Brenna Rybak](#) for more information.

The Art of Bee Collection

February 25, 2016

This February, art and science will unite at the **Hartnett Gallery** in Wilson Commons, when Heather Green from Arizona State University brings her traveling exhibit called ***Pinpoints of Perception: Portraits of 1000 Native Bees*** to the University of Rochester. Her portraits are life-sized oil paintings of bee species from southern Arizona and northern Mexico. In the same exhibit, Dr. Bob Minckley from the Department of Biology will display pinned bee specimens from his study on bee biodiversity from this same area.

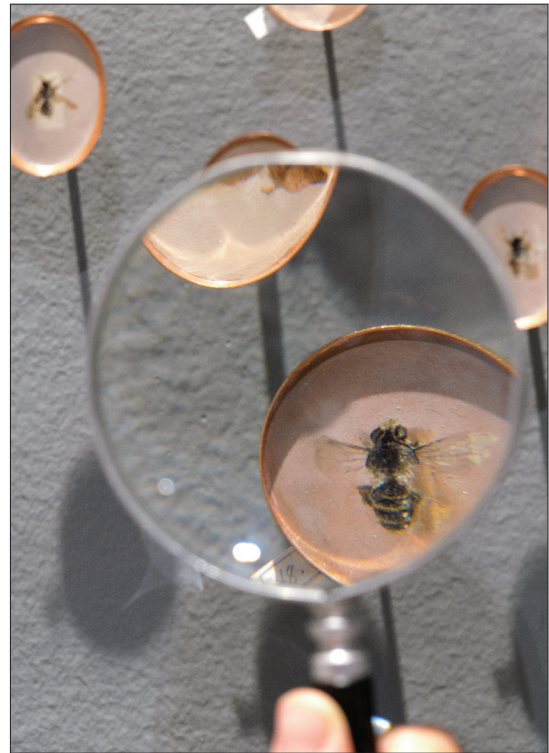
The collaboration is a serendipitous one. Green learned that the deserts where she lives are a major center for bee species diversity in the world, and she began to paint the bee species that Minckley listed on his [website](#). Eventually, Minckley and Green met and hatched a plan to showcase the diverse sizes, shapes, and colors of these pollinators to promote appreciation about the keystone role bees have in the world.

Green's artwork brings attention to the vast number of these tiny and solitary species while describing their individuality and bringing into focus their importance. The artwork also celebrates science and its long history of collecting expeditions.

The mixed-media installation allows the public a glimpse of the vast bee diversity endemic to the deserts of North America. The audience is invited to discover these diminutive and industrious creatures that hold such a critical ecological role as pollinators.

The portraits, rendered inside tiny copper plates, intricately describe the idiosyncrasies of each species. Each painting is numbered and keyed to information about the subject bee, including the scientist, year, and place of collection and sometimes more detail such as the Latin name of the flower it was found on. ***Pinpoints of Perception*** explores the paradox of the portrait: how the laborious capturing of an image becomes both archival and interpretative, creating greater awareness of these amazing creatures.

Please join Green and Minckley as they introduce the exhibit during the opening from 4 to 5:30 p.m. on February 25 at the Hartnett Gallery in Wilson Commons at the University of Rochester. The exhibit runs through March 20, 2016.



Pinpoints of Perception: Portraits of 1000 Native Bees
Oil on copper, etched glass, and mixed-media

HEATHER GREEN

**PINPOINTS OF PERCEPTION:
PORTRAITS OF 1000 NATIVE BEES**

02/25/16 - 03/20/16
DISCUSSION WITH HEATHER GREEN
AND DR. ROBERT MINCKLEY 4:30 PM 02/25
GOWEN ROOM WILSON COMMONS
RECEPTION 5:30 - 7:00 PM 02/25
HARTNETT GALLERY

HARTNETT GALLERY
WILSON COMMONS
UNIVERSITY OF ROCHESTER
ROCHESTER, NY

GALLERY HOURS
TUESDAY - FRIDAY
11:00 AM - 7:00 PM
SATURDAY & SUNDAY
12:00 PM - 5:00 PM
CLOSED MONDAYS

SPECIAL THANKS TO THE DEAN OF SCHOOL OF ARTS AND SCIENCES
HARTNETT PROVIDED BY THE UNIVERSITY OF ROCHESTER STUDENTS ASSOCIATION AND THE VENTURE FUND
FROM THE OFFICE OF THE PRESIDENT OF THE UNIVERSITY OF ROCHESTER

Specimen Collection Update— Opening Virtual Doors

As we continue working with the collection of specimens in our department, we are often presented with opportunities for interesting collaborations. Faculty from RIT recently visited Hutchison Hall to discuss using the specimens as models for their students who are interested in medical illustration and 3D animation.

In addition, we continue to move more of the specimens out of storage so they may be properly displayed. A beautiful new cabinet, funded by the University of Rochester, sits on the second floor of Hutchison Hall and will contain a fantastic mountain gorilla skeleton. Instead of being suspended from a rod in the way that human skeletons are shown to anatomy classes, the gorilla will be positioned lifelike in the cabinet.

Finally, we are collaborating with University Archivist Melissa Mead from the Department of Rare Books, Special Collections, and Preservation (RBSCP), the Digital Humanities Center, and the Department of Earth and Environmental Sciences (EES) to promote the enormous impact that Dr. Henry A. Ward had on the natural sciences between the end of the Civil War and 1900.

Ward founded the University of Rochester's Natural Science Museum and is the reason the biology and EES departments house their treasure trove of specimens. Because Ward lived in Rochester, the RBSCP houses a collection of his personal letters and the correspondences, records, and catalogs associated with his business. Thus, a comprehensive collection of archival material remains here that represents a period in US history (1860–1900) when

- science education was greatly expanding and incorporating the insights of Charles Darwin
- the public was first able to experience nature worldwide through museums
- the modern-day conservation movement originated.

The aim of this collaboration is to increase knowledge about Ward's pivotal role in this period and to make the breadth of material at the University of Rochester more accessible.

The first phase of the project will be to create a virtual museum, showcasing the specimens and the extensive



material that documents Ward's life. The Digital Humanities Center will develop the virtual museum. They will also create a central database to hold pertinent information on the locations and extent of Ward material preserved by other institutions worldwide.

Digital Humanities staff will use a 3D scanner developed for architectural purposes to digitize an intact room of Ward cabinets and specimens that Ward himself installed in 1892 in the village hall of Wyoming, New York. The digital reproduction of these cabinets will be animated, thereby allowing visitors to virtually "open" drawers to reveal the specimens inside. We will "seed" the virtual museum with high-quality 3D images and photographs of specimens from the biology and EES departments.

This virtual museum is intended to attract attention from institutions around the world that have material from Henry A. Ward and to allow those institutions to contribute to the virtual museum with photographs of their own material. In turn, this crowd-sourcing approach will allow us to map where those institutions are located and gain some insight into the amount of historical material still in collections. This information will be important for documenting the extent of Ward's impact on the development of natural history sciences.

We hope that these efforts will stimulate further research on the historical impact not only of Henry A. Ward but also of the numerous colleagues who worked in his institution and with whom he corresponded. We will eventually seek support to repair, sustain, and protect the specimens remaining at the University of Rochester and that were once part of the original Natural History Museum. Once cataloged and stabilized, the specimens can be more fully utilized in undergraduate classes and for STEM training of local high school students. The project is in its earliest stages, but we expect that organizations such as the National Endowment for the Humanities eventually will contribute funds to develop the project further.

Since our initial promotion of these efforts, gracious donations from alumni and friends of the department have helped to fund the hiring of an undergraduate assistant to help catalogue and research the collection.

If you would like to help, please contact our department administrator at brenna.rybak@rochester.edu or David Richardson, assistant director of Advancement at (585) 276-7423 or david.richardson@rochester.edu.



Dragony Fu Honored with NSF Award

Dragony Fu, an assistant professor of biology at the University of Rochester, has been named a winner of the prestigious Faculty Early Career Development Award (CAREER). This award, given by the National Science Foundation, is given to junior faculty “who exemplify the role of teacher-scholars through outstanding research, excellent education, and the integration of education and research within the context of the mission of their organizations.” The award is significant in that it provides junior investigators stability and support for the majority of their early career.

The award includes a five-year grant totaling \$1 million to fund Fu’s RNA research.



“RNA has traditionally been regarded as simply a messenger in transferring genetic information from DNA to generate a protein. However, it is rapidly emerging that RNA can undergo numerous modifications catalyzed by enzymes to modulate RNA structure and function. Intriguingly, RNA modifications have been shown to play a critical role in gene expression and cellular homeostasis,” says Fu. “With this CAREER Award, my lab will decipher the targets of RNA modification enzymes in human cells and their roles in cell growth and division. The discoveries made through this award will provide insight into novel gene regulation mechanisms and cellular pathways that have been linked to human neurodevelopment, cancer formation, and cellular stress survival.”

Faculty Headlines

Daven Presgraves appointed University Dean’s Professor (2/8/16)

Congratulations to Professor Daven Presgraves, who has been appointed a University Dean’s Professor.

[Read More...](#)

Scientists map genome of common bed bug (2/3/16)

The common bed bug, once considered rare in developed countries, has been proliferating on every continent but Antarctica for the last two decades, making it a growing concern for travelers and others. With an eye toward eradicating the parasite, which feeds on the blood of humans and other animals, an international research team has successfully mapped the genome of *Cimex lectularius* to get a better understanding of its genetic makeup.

[Read More...](#)

Gloria Culver: Defining the future of Arts & Sciences (12/1/15)

Culver was formally installed as dean of the School of Arts & Sciences during an investiture ceremony December 1, 2015, in the Interfaith Chapel. University Trustee Ani Gabrellian ’84 opened the program, followed by remarks from Provost Peter Lennie, the Robert L. and Mary L. Sproull Dean of the Faculty of Arts, Sciences & Engineering. Mariët Westermann, vice president of the Andrew W. Mellon Foundation, and Jon Lorsch, director of the National Institute of General Medical Sciences, served as guest speakers. Culver had been serving as interim dean since July 2014 and was selected following a yearlong national search.

[Read More...](#)

David Goldfarb patent most influential in recent years (9/20/15)

An analysis by Reuters and its sister company Thomas Reuters IP & Science revealed that U.S. Patent No. 8,642,660 is the most cited discovery to emerge from all fields of academic research in recent years. The patent, whose sole inventor is David Goldfarb, describes a set of drug-like molecules that extend yeast life span under assay conditions. Reuters reported that 108 patents cited Goldfarb’s discovery between 2008 and 2012. A follow-up patent demonstrated that some of these molecules are active in mammalian age-associated disease models.

[Read More...](#)

Jack Werren's article featured in *Highlights in Reproductive Biology* (7/2/15)

Males and females are made different through a diverse assortment of molecular mechanisms—from the XY chromosomal system of mammals to temperature-dependent systems in certain reptiles. In most species, some mixture of hormones, sex-specific transcription factors, and gene regulation carry out the initial instructions of the sex-determining triggers, but the outlines of these pathways have only recently begun to emerge in studies of various creatures.

[Read More...](#)

Jack Werren interviewed by BBC–Earth (2/12/15)

We humans tend to assume we rule the Earth. With our advanced toolmaking, language, problem-solving and social skills, and our top predator status, we like to think of ourselves as the dominant life-form on the planet.

[Read More...](#)

An extra protein gives naked mole rats more power to stop cancer (2/5/15)

A protein newly found in the naked mole rat may help explain its unique ability to ward off cancer. The protein is associated with a cluster of genes (called a locus) that is also found in humans and mice. It's the job of that locus to encode—or carry the genetic instructions for synthesizing—several cancer-fighting proteins. As Professor Vera Gorbunova from the Department of Biology explains, the locus found in naked mole rats encodes a total of four cancer-fighting proteins, while the human and mouse version encodes only three proteins. The findings by Gorbunova, Assistant Professor Andrei Seluanov, and their research team have been published in the *Proceedings of the National Academy of Sciences*.

[Read More...](#)

Department News

Jillian Ramos receives the Donald Donald M. and Janet C. Bernard Fellowship

Graduate student **Jillian Ramos** is a recipient of the 2015–16 Donald M. and Janet C. Bernard Fellowship. This fellowship recognizes PhD students with a strong research portfolio, outreach experience, leadership qualities, and mentoring experience. Congratulations, Jillian!

The department welcomed five new staff members last year!

- Sarah Baron, teaching lab assistant—March 2015
- J'Quan Graddic, stockroom/lab assistant—March 2015
- Lisa Rossow, purchasing agent—May 2015
- Kenny Brumfield, data control clerk—June 2015
- Michelle Sellix, data entry clerk—December 2015

Kathy Giardina (right) receives Witmer Award for Distinguished Service (4/15/15)

Kathy Giardina's position requires her to manage complex budgetary matters within the department—including 30 research grants, faculty start-up accounts, and capital equipment accounts as well as departmental operating and teaching budgets.

[Read More...](#)



Alumni Updates

Christine Hochmuth '11

Christine was awarded and has completed the highly competitive **Science and Technology Policy Fellowship** in California's capitol. The fellowship is run by the **California Council on Science and Technology (CCST)**, which is a nonpartisan, impartial, not-for-profit corporation that provides objective advice from California's best scientists and research institutions on policy issues involving science.

CCST trains and mentors PhD scientists and engineers in the policymaking process and places them as staffers for one year with assembly and senate offices. As fellows, these scientists and engineers experience a year of public service and leadership training and get the chance to explore a career in California's policy arena. At the same time, the state legislature benefits from access to highly skilled, science-savvy staff to inform their work.

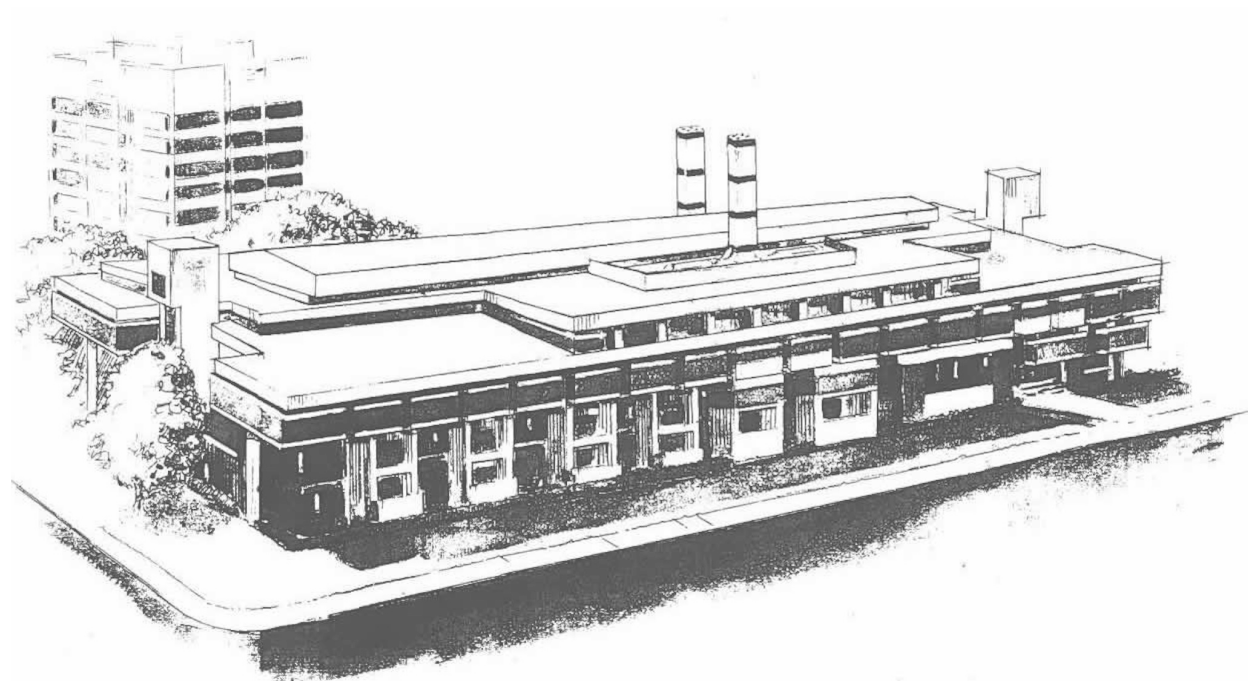
Bradley Radwaner '76

Hi, I'm Bradley Radwaner, University of Rochester Class of 1976, biology and psychology major, and Cornell University Medical College Class of 1980. I'm a board-certified cardiologist and founder of the New York Center for the Prevention of Heart Disease in Manhattan. I have many memories of sitting in Hubbel Auditorium in Hutchison Hall taking Vertebrate Biology, Plant Biology, Organic Chemistry, and many other courses. I remember studying in the math science library in Hutchison Hall and the lousy coffee from the vending machine.

I specialize in keeping people alive by preventing their heart attacks and strokes. My focus on advanced lipids and prevention follows 15 years as an interventional cardiologist doing balloon angioplasty and stents. Fortunately, no blue book exams at this point in my career! I'm always available for questions or three-week internships in my practice for New York premed students.

David H. Bushell '68

I was a biology major from 1964 to 1968, when William B. Muchmore was chairman of the department. I worked in the lab making bacteriological growth media. I spent much time in the building at the end of the quad . . . I have been doing pulmonary medicine for over 35 years in Fairfield, Connecticut.



Howard Bryant Memorial Golf Tournament



Howard Bryant Memorial Golf Tournament

Friday, June 17, 2016

Shadow Lake Golf Course - 1850 Five Mile Line Road - Penfield, NY 14526

www.rochestergolfcourses.com/our-courses

Please join us!

Check out the
slideshow from
last year's
tournament!

Registration Fee 18-hole: \$100

Fee includes golf, lunch, appetizers, and beef/pasta buffet dinner

Registration Fee 9-hole: \$60

Fee includes golf, appetizers, and beef/pasta buffet dinner. Lunch will be available for purchase.

Dinner Only:	Adults:	\$35.00
	Children 5-12:	\$10.00
	Children under 5:	FREE

To avoid a \$10 late fee, please submit your registration by June 1st.

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 Science or Engineering.

**You don't need a
foursome to play golf!**

**Singles are easily
matched with a team!**

Sponsor a hole (\$50) or sponsor dinner (\$75)!

Each hole or dinner sponsor will be acknowledged with an 18" x 24" monochrome sign featuring the business' name.

You may also donate goods or services to be used in our raffles or silent auctions. A great way to get your name out there!

Rather Donate Directly?

Direct Donations to the Howard Bryant Memorial Scholarship Fund are welcome and can be mailed to the address below.

If you wish to remain anonymous, please write "anonymous" on the memo line of your check. Thank you for your support!

Checks should be made payable to the University of Rochester and mailed to: Kathy Giardina, Box 27021, Rochester, NY 14627

Want to learn more?

If you are interested in participating or would like more information about the tournament, please contact:

brenna.rybak@rochester.edu

Chair

John Jaenike

Email: john.jaenike@rochester.edu

Phone: (585) 275-0009

Administrator

Brenna Rybak

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*For more information about our department,
please visit our website at
www.rochester.edu/college/bio*

*Alumni, we want to hear from you!
Let us know what you've been up to.*



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