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INTERIM DEPARTMENT HEAD

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GRADUATE PROGRAM COORDINATOR

Dr. Wouter D. Hoff

UNDERGRADUATE ACADEMIC ADVISOR

Dana Hatter

ADMINISTRATIVE STAFF

Sallie Robinson and
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THE CAMPAIGN FOR OSU.

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From the Interim Department Head



Bill Picking receives a farewell gift from our graduate students

We are grateful for the tremendous efforts of **Bill Picking** as head of the MMG department and we are sad to say that he and his wife, **Wendy** left OSU as of June 1, 2014. Bill has joined the **University of Kansas Foundation** as **Distinguished Professor of Pharmaceutical Chemistry**, and will lead in establishing the **Kansas Vaccine Development Center**. Wendy has also joined KU as **Professor of Pharmaceutical Chemistry** and will also be involved with the **Kansas Vaccine Development Center**. We wish them both continued success in their new opportunities.

We will miss Bill's cheerful demeanor, great sense of humor and undying optimism. The MMG Department is in great shape in terms of all of the most important measures and we believe we can best thank Bill for his efforts by keeping the department moving in this direction. I personally hope that we can continue Bill's efforts to ensure that

the department provides a warm and nurturing atmosphere for our students both undergraduate and graduate.

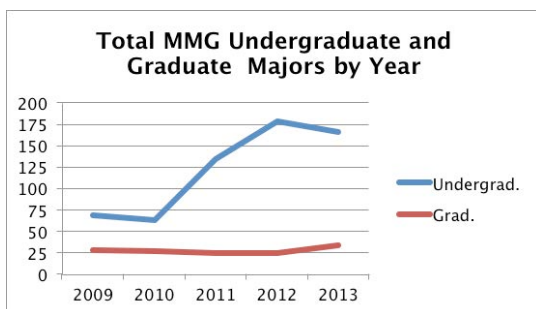
My name is **Kim Burnham** and I have been asked to be the interim head of the department while an external search for a new head is conducted. My education and training include stops at **Brigham Young University, The University of Texas, Southwestern Medical Center** and the **University of Utah**. **Immunology** is my main field of interest with an emphasis on dendritic cells. I was raised in Farmington, New Mexico. While growing up, I enjoyed camping, fishing, and I confess, some bouts of pyromania. But I keep that in check nowadays except for blowing up gingerbread houses each New Years Eve. I came to Stillwater as a new assistant professor in 1988. Just after arriving here, I received a local wrong number call on the Friday before Labor Day. Once the caller realized their mistake, they apologized profusely, and then wished me a happy Labor Day weekend. I knew then, that I was home.

Our faculty balance a rigorous agenda of teaching, research and service. This work is conducted in a spirit of collegiality in an atmosphere of shared commitment to our students, state and community. Our department is thriving, but there is a lot of work to be done. And we are proud to be a part of Oklahoma State University's overall mission to enrich, enlighten and serve.

continues

ACADEMIC PROGRAMS

Since 2009, we have seen a large increase in our number of undergraduate students. Although this number tapered off a bit for 2013, our admitted majors for Fall 2014 stands at 60 which is the largest incoming group within the last three years. Finding space for these students as they progress into their lab classes is a challenge but it's a problem that we welcome.



Our graduate program has also experienced a positive transition thanks to the hard work of the **Graduate Program Committee**. They have implemented a core curriculum for our first year graduate students to give them a common foundation and more interaction with each other. At present more than half of our graduate students are supported on external grants. And during the past academic year, our graduate students were authors on 20 publications in respected peer-reviewed international scientific journals. All of this is occurring as we have increased our emphasis on pre-doctoral training, however, last year, the Graduate Program Committee implemented a fast-track non-thesis Masters degree program to target an underserved group of new scientists whose interests include industry and pursuit of additional training prior to entrance into professional programs. Although brand new, there are already several students involved in this program.

Our **Microbiology Club** for undergraduate students currently has 67 members. It was very active this year and took a prominent role in the implementation of our departmental symposium and our annual awards luncheon. Our **Microbiology and Molecular Genetics Graduate Student Association (MMGGSA)** took the lead role in both of the above events, including a poster session at the annual awards luncheon that included prizes for first through third place for both graduate and undergraduate presenters and bringing in an outside speaker

for the symposium. And a team of graduate and undergraduate students is working toward raising funds for the **Cystic Fibrosis Foundation** and spreading awareness about cystic fibrosis on campus.

RESEARCH

Two of our faculty members have served as **NSF Program Officers** and our faculty members routinely serve on editorial boards and grant review panels at the NIH, NSF and elsewhere. And one of our faculty members has recently been named a **fellow of the American Physical Society**. The number of peer-reviewed papers published by our faculty has increased more than 50% since 2010 and we have been the top externally-funded department in the OSU College of Arts & Sciences for the last five years. This success has been made possible by the monumental efforts of our faculty, staff and students.

As you can see, we have been hard at work building our program, but we have no intentions of slowing down. MMG hired two new tenure-track faculty just last year. They are highlighted in this newsletter. In the meantime, we ask you to consider joining us as we reach new heights. Please feel free to contact us at any time to find out more about what we are doing and to express your support for our program. We look forward to hearing from you. Likewise, we appreciate any financial contribution that you may be able to provide to support our student-oriented academic goals or research mission. Your support can help provide our students with opportunities to travel to national or international meetings or perhaps support a student assistantship or scholarship. We are doing great things and with your help we can do even more.

Regards,
Kim

D. Kim Burnham,
Associate Professor
and Interim Head
Department of Microbiology
and Molecular Genetics
Oklahoma State University



Dr. Erika Lutter, A New MMG Faculty Member



Hello everyone, my name is **Erika Lutter**. I am an **assistant professor** in the Department of Microbiology and Molecular Genetics at OSU. My adventures in science started with Bachelor's degree in Biochemistry from the **University of Lethbridge** (in Lethbridge, Alberta, Canada). I then went to the **University of Calgary** (in Calgary, Alberta, Canada) for my graduate studies where I completed my Masters studying the pathogenic bacteria *Burkholderia cepacia*. Soon after, I enrolled for my PhD, studying the pathogen *Pseudomonas aeruginosa* and polymicrobial infections in cystic fibrosis patients. I graduated in 2009 and moved to Montana to start my postdoctoral studies with **National Institutes of Health** at the Rocky Mountain Laboratories where I switched gears and decided to work on the intracellular pathogen *Chlamydia trachomatis*. The extensive training I obtained gave me a solid foundation as a diverse microbiologist in the field of bacteria pathogenesis.

I was recruited by OSU in 2013 as a tenure track assistant professor and have set up a state of the art laboratory to conduct research and train future scientists. My lab currently has two graduate students and four undergraduate students who are researching two areas of pathogenesis: 1) *Chlamydia trachomatis* host-pathogen interactions and transmission, and 2) the polymicrobial nature of cystic fibrosis infections.

Between teaching, meetings and mentoring I still try to find some time to perform experiments. However, when I am not at work I enjoy spending time with friends, trying out new recipes, brewing beer, and taking my cat for walks on a leash!

Dr. Noha Youssef, a New MMG Faculty Member



My name is **Noha Youssef** and I am an **assistant professor** in the Department of Microbiology and Molecular Genetics at OSU. I graduated with Bachelor's in Pharmacy from **Ain Shams University**, Cairo, Egypt. I came to the US in the year 2002 to start my PhD program in the department of Botany and Microbiology at the **University of Oklahoma**. My graduate studies were focused on microbially-enhanced oil recovery using biosurfactant-producing *Bacillus* species. I graduated in 2006 and moved to Stillwater to start my postdoc journey in **Dr. Elshahed's lab**, where I spent 6 years, first as a postdoctoral fellow, then as a visiting assistant professor. I learned a lot in those years so I can safely describe myself now as a microbial ecologist.

I started my tenure track career in Fall 2013. My lab is currently hosting two graduate students and two undergraduates. We are actively researching two areas; 1) Using anaerobic fungi as efficient biomass degraders for biofuel production, and 2) Genomic and metagenomic analysis of novel bacterial and archaeal candidate phyla. I am always on the search for bright graduate and undergraduate students. My lab is located off-campus in Venture 1 building, a multidisciplinary OSU research facility with access to the electron microscopy lab.

If I am not at work, you will find me chasing my two kids (8 and 4), running, cooking, or most certainly shopping. I also love travelling but don't get to do it that often, but I sure hope I will get to go on a hiking trip one of these days.

Our New Advisor



My name is **Dana Hatter** and I am proud to be the new **undergraduate advisor**. This is my 10th year at OSU. Formerly, I taught science writing in a specially designed composition course. Developing the voices of future scientist is a passion of mine. I work closely with the **Pre-Health program** and **Career Services** to assist students in the pursuit of their chosen career path. My main goal is to continue the growth of the department.

Dr. Lutter and I developed a virtual 360-degree tour of our newest lab. This will be linked to the main campus tour and will reach out to future students and faculty. Bragging about what is happening with the students and the department is one of my favorite pastimes! Keep an eye out on the microbiology webpage for more exciting changes.



News from our Microbiology Club President

“We aim to provide Undergraduate Microbiology students with a network of students and faculty members in the same discipline, to provide students with information and resources on employment after graduation, and to enhance learning outside the classroom.”

Club meetings are held at least once a month. We discuss events that are coming up both in the department and on campus. Our goal is to get students involved! We also talk about some of the latest and greatest scientific advancements and achievements we find to be the most exciting to us. Professors from the department sometimes come to the meetings to give us advice and information about research and jobs in the microbiology field. They also answer any questions we may have and help us prepare for life after graduation. Each semester the OSU Microbiology club contributes in the department banquets by providing cookies and snacks for recognition by the university and recruitment for the club and the field we love so much. We also advocate going to see speakers and talks that the department brings in.

Community service is important to us. This year in particular, we have been working to raise money and awareness for the **Cystic Fibrosis Foundation**. As people who have cystic fibrosis are prone to bacterial infections of the lungs, especially by the pathogen *Pseudomonas aeruginosa*, we felt it was particularly close to home and wanted nothing more than to take action. We hope to continue growing in numbers in the upcoming years so we can do more for the community and our department!

Sara Greenlee,
OSU Microbiology Club President

Graduate Program News from our Graduate Coordinator, Wouter Hoff

In the academic year 2013/14 our graduate program involved 33 graduate students (29 PhD, 4 MS). This academic year two students have already received their degrees (1 PhD, 1 MS), and an additional 7 students will be graduating by the end of the summer of 2014 (6 PhD and 1 MS). During this period, MMG graduate students were authors on **20 publications in respected peer-reviewed international scientific journals**, including *Appl. Env. Microbiol.*, *ISME. J.*, *Microbiology*, *Infect. Immun.*, *Anaerobe*, *Plos One*, *Protein Science*, *Biochemistry*, and *Biophys. J.* These publications reported original contributions to a range of important topics, including the molecular mechanism of photosynthesis, the proteins and mechanism that pathogenic bacteria require to be infective, progress on the development of vaccines, fundamental aspects of protein function, the characterization of medically relevant enzymes in bacteria, the properties of novel fungi that hold great promise for biofuel production, and the diversity of halophilic bacteria.

The above numbers reflect the strategic decision in our department to focus on research and to emphasize our PhD program. To balance the success in our PhD program, a highlight of development in our graduate program this year is the implementation of our 1-year accelerated non-research MS degree. A key aim of this novel graduate degree option in our department is to help students prepare for medical professional programs. This year the first student from this program graduated and successfully received admission to vet med school. In addition, we substantially improved the coursework for our first year graduate students to provide a solid basis in graduate level microbiology and molecular genetics.

The yearly graduate recruitment effort has almost been completed, and starting Fall 2014 we are excited to welcome 4 new PhD students, 1 new MS student, and a number of accelerated MS students into our department.

OTHER MMG FACULTY ACTIVITY

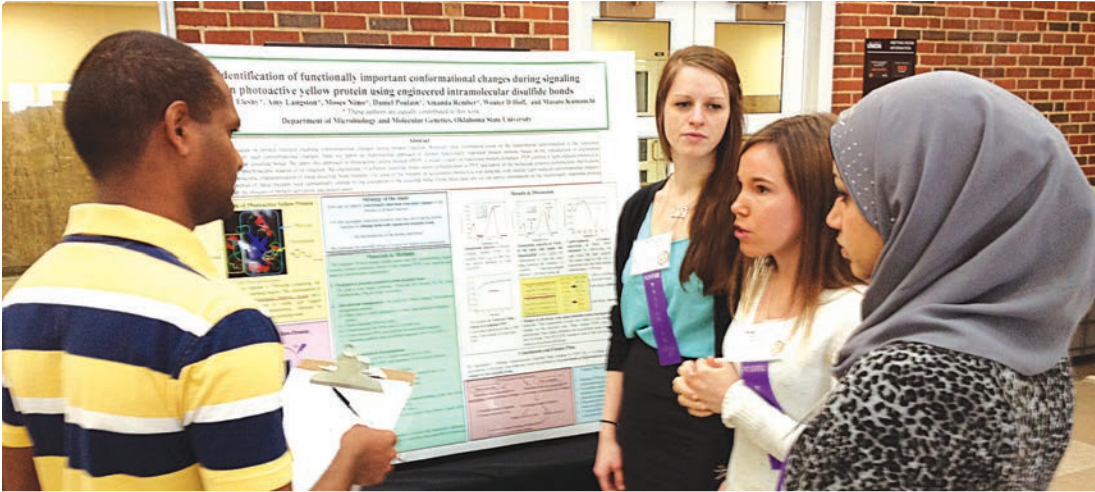
In 2013-2014 the department of MMG published 37 documents in international peer reviewed scientific literature, including 35 articles, 1 review, and 1 editorial comment.

Wouter Hoff was elected as a fellow of the **American Physical Society** (for “fundamental contributions to elucidating the molecular mechanisms of protein folding and function, especially using light-sensitive proteins as model systems”).





Microbiology Club Officers bid farewell to Bill Picking.



Students presenting at the Annual OSU Research Week Poster Session.



Special mixer for undergraduate MMG majors.



Sallie Robinson, holding the flowers was honored July 3rd, 2014 by our students and faculty, for her many years of service to the MMG Department as our Senior Administrative Support Specialist. Thank you Sallie, for all of your hard work.

Graduate Student Association President's Report



Amanda Behar

Greetings from the **Microbiology and Molecular Genetics Graduate Student Association (MMGGSA)**! This past academic year, the MMGGSA held the **5th Annual Microbiology and Molecular Genetics Symposium** at Oklahoma State University on March 31st, 2014. This symposium was open to undergraduate students and graduate students alike, of all biological sciences departments, and was attended by many scientific communities on campus. The student symposium is an excellent platform allowing for the discussion and sharing of many scientific topics and aims to integrate the broad areas of scientific research we have at Oklahoma State University. Students were encouraged to share the latest research opportunities for which they have indulged from the previous year. The invited symposium seminar speaker was **Dr. Tovia Kallas** of the **University of Wisconsin-OshKosh**. Students attended Dr. Kallas' seminar, entitled, "**Metabolic engineering of fast-growing cyanobacteria for solar-powered CO₂ capture and isoprenoid hydrocarbon production.**" The events of the day enlightened and encouraged students to share ideas about Dr. Kallas' research expertise of global ecology, biofuels, entrepreneurship and work in industry versus academia. Through this symposium, awards were given to much deserving students for their poster presentations of their research and we are grateful for our many sponsors who donated prizes. The rewards for this symposium were made possible by: the **American Society of Microbiology**, the **Department of Microbiology and Molecular Genetics, Oklahoma State University, Graduate and Professional Student Government Association, Bio-Rad, Life Technologies/ Thermo Fisher, VWR, Eppendorf, MidSci, GIANTMicrobes, Tokyo Pot, and the Oklahoma State University Microbiology Club.**



Students and Faculty at the 2013 Annual Great Plains Infectious Diseases conference.

Students at the 2014 ASM Regional meeting in Kansas City, Missouri.



Not only are the graduate students of the Microbiology and Molecular Genetics Department actively involved in the sharing of education and knowledge, but also they take part in many volunteering and philanthropic activities. A team of graduate and undergraduate students are working toward raising funds for the **Cystic Fibrosis Foundation** and spreading awareness about cystic fibrosis on campus. The graduate students of the department participated in several conferences this year, the first being **Great Plains Infectious Diseases**, in the fall of 2013. Another conference a majority of graduate students attended was the **2014 meeting of the Missouri and Missouri Valley Branch of American Society for Microbiology** in Kansas City, Missouri. Students learned of many topics and had the opportunity to share their research projects in oral presentations. We are proud to have outstanding award winners at this conference. Many students plan to travel to the **2014 National meeting** sponsored by **American Society for Microbiology in Boston, Massachusetts**, this year, as well. Students also attended the annual **Midwest/Southeast Photosynthesis meeting** in Indiana and the **International Congress on Photosynthesis**, and its satellite meeting, the **Cyanobacterial Workshop** meeting. Throughout the upcoming year, the MMGGSA plans to encourage the spread of information and knowledge, continue with philanthropy, and serve as a supporting group of education for all students of the MMGGSA.



The Microbiology and Molecular Genetics Department, along with speaker, Dr. Tovio Kallas, at the 2014 Annual OSU Microbiology and Molecular Genetics Symposium

Students presented their research at the 5th Annual Microbiology and Molecular Genetics Research Symposium.



A Little History by Alumnus Jerry Ritchey



In 1982, I came to Oklahoma State with the sole desire to become a veterinarian. I remember walking into the Student Union Ballroom at enrollment day and seeing the banners for all of the colleges scattered around the room. Sadly, I did not see “**Veterinary Medicine.**” I saw a banner for “**Arts & Sciences**” and presumed that is where I needed to be. Soon I was talking with a College Advisor who labeled me “pre-vet” and placed me in a **Biomedical Sciences** major.

During my freshman year and presumably a little older and wiser, I realized that “pre-vet” was not a major. I completed my first year in Biomedical Sciences, mainly fulfilling pre-requisites for veterinary school. During this time, I met many people on the same path as well as those seeking other professional programs (pre-med, pre-dental, medical technology, etc). We all became good friends, supportive of one another and sympathetic to the rigors of maintaining excellent grades required for our professional school applications.

My sophomore year, I was struck with the reality that I may not be accepted to the Veterinary program at OSU as it was extremely competitive. Admission was not a given. I then wondered what I was going to do with a Biomedical Sciences degree. What exactly was that anyway? At that time, I was enrolled in Introduction to Microbiology, a pre-requisite to Veterinary Medicine that was being taught by **Dr. Mark Sanborn**. I absolutely loved the class, which was made even more fun by the dynamic teaching and personality of Dr. Sanborn. After a few meetings and some investigation, I was completely sold. I changed by major to **Microbiology** and chose Dr. Sanborn as my advisor. It was absolutely the

best decision that I ever made. Dr. Sanborn was an excellent advisor and teacher and I credit him for making sure I was always on the right track. Those people that traveled through Microbiology surely remember **Dr. Sanborn’s Virology course**, **Dr. Mary Grula** and the **Food Microbiology course** and **Dr. Helen Vishniac’s Culture and Propagation of Microorganisms**. There was also the brief stop made by **Dr. Rebecca Craven** and her **Pathogenic Microbes course**. She was an excellent instructor and her course provided the first window into the application of microbiology for those pursuing medicine. Although I was still focused on becoming a veterinary student, there was no doubt I had found my niche’ and would find success in microbiology.

During my last semester of undergrad, I was not going to forgive the Department for requiring **Quantitative Analysis Chemistry** for a degree in Microbiology. Surely they were kidding, right? I never worked so hard for a C in my entire life and I was happy to get it. During my first year of veterinary school, I realized that the rigorous undergraduate experience of the Microbiology program is solely responsible for the foundation of my academic success, then and now. There are many memories of studying for exams, numerous laboratory groups and many wonderful fellow students (**David S., Barbie J., Shannon R., Janet G., Brent J., Angela M.**). My only regret is that I’ve lost track of many. All in all, it was an excellent experience. **If given another opportunity, I would repeat it the same way, not changing anything.**

Retirement Dinner for Bob Miller.





Farewell to Bob Miller

Robert V. Miller came to Stillwater in 1991 to serve as our Department Head. Now, many years later, Bob has served an additional stint as our department head, has received the prestigious title of **Regents Professor** and been named a **Fellow of the American Academy of Microbiology**. He has also been inducted to the **Oklahoma Higher Education Hall of Fame**.

Born in Modesto, California, Bob earned his B.A. degree in microbiology at the **University of California at Davis** and then went on to the **University of Illinois** to obtain his doctorate in 1972. After a postdoctoral appointment at the **University of California, Berkeley**, he was employed at the **University of Tennessee** and **Stritch School of Medicine, Loyola University of Chicago** before being recruited by OSU.

Bob is one of the last true **“Renaissance Men.”** He has performed world-renowned research on lateral gene transfer and DNA repair in aquatic environments, including the Southern Ocean near Antarctica, in addition to being an outstanding teacher and administrator. Bob is also a skilled clarinetist and has had a life-long interest in art, theater and the opera. Bob has also been extensively involved in many university and community service groups, having served as Chair of the **OSU Faculty Council** and a mentor for the **Grant Writing Workshop** held each summer by the State Regents for Higher Education. We wish him well as he moves to **Santa Fe, New Mexico**. Bob’s retirement is not complete, however. In New Mexico, he plans to continue his collaboration with a University of New Mexico colleague **Diana Northup** on the microbial ecology of Carlsbad Caverns.

Bob, you will be missed.

Currently Funded Research Projects of the MMG Faculty

Rob Bunap

Unraveling Genetic Regulatory Circuits Integrating the Light and Dark Reactions of Oxygenic Photosynthesis

SPONSOR: US DEPARTMENT OF ENERGY, BASIC ENERGY SCIENCES

Assembly and Function of the Photosystem II Complex

SPONSOR: NATIONAL SCIENCE FOUNDATION, MOLECULAR AND CELLULAR BIOCHEMISTRY

Kim Burnham

Regulation of Langerhans cell migration and immune function following laser exposure

SPONSOR: AIR FORCE OFFICE OF SPECIAL RESEARCH

Mostafa Elshahed

A Genomics and Cultivation-Based Study on Novel Candidate Divisions OD1, SR1, OP11, and TM7 in a Sulfur-Rich Spring (Zodletone Spring, OK

SPONSOR: NATIONAL SCIENCE FOUNDATION

Biofuel production from lignocellulosic biomass using members of the anaerobic fungi (Phylum Neocallimastigomycota): A dual bioprospecting and strain development strategy

SPONSOR: NATIONAL SCIENCE FOUNDATION EPSCOR PROGRAM

Development of a customized enzyme cocktail for corn stover and Switchgrass saccharification

SPONSOR: DEPARTMENT OF TRANSPORTATION SUN GRANT INITIATIVE

Microbial Dark Matter project phase II - stepping deeper into unknown territory

SPONSOR: DEPARTMENT OF ENERGY (DOE)-JGI COMMUNITY SEQUENCING PROGRAM

Babu Fathepure

Characterization and Mediation of Microbial Deterioration of Concrete Infrastructures

SPONSOR: OKLAHOMA TRANSPORTATION CENTER

Understanding Early Time Biogeophysical Signals of the Microbial Degradation of Crude Oil from the BP Spill in Saline Marshlands

SPONSOR: NATIONAL SCIENCE FOUNDATION

Discovery of Novel Lignin-Degrading Genes in Bacteria Using Metagenomic and Proteomic Approaches for Enhanced Biomass Conversion to Biofuel

SPONSOR: SUN GRANT (US DEPARTMENT OF TRANSPORTATION)

continues

Jeff Hadwiger

Role of STAT proteins in MAPK signal transduction pathways

SPONSOR: NATIONAL INSTITUTES OF HEALTH

Specificity of MAP Kinase Regulation of Phosphodiesterases

SPONSOR: OKLAHOMA CENTER FOR THE ADVANCEMENT OF SCIENCE AND TECHNOLOGY (OCAST)

Wouter Hoff

Bacterial Light Sensing by Photoactive Yellow Protein

SPONSOR: NATIONAL SCIENCE FOUNDATION

Advanced FTIR system for interdisciplinary research and training at Oklahoma State University (PI: A Xie, coPIs: WD Hoff, RL Burnap, J Deng, W Yin)

SPONSOR: NATIONAL SCIENCE FOUNDATION MRI

Photoreceptors as a novel class of virulence factors in opportunistic pathogens (PI: Wouter Hoff, co-PI: Marianna Patrauchan)

SPONSOR: NATIONAL INSTITUTES OF HEALTH COBRE

Collaborative research: Resolving how excited-state dynamics couple into long-range structural changes in native and synthetic light-induced photosensitive proteins (PIs: Wouter Hoff and Delmar Larsen, UC Davis)

SPONSOR: NATIONAL SCIENCE FOUNDATION CHEMISTRY OF LIFE PROCESSES

STEM persistence through flexible authentic research opportunities (PI: Don French)

SPONSOR: HOWARD HUGHES MEDICAL INSTITUTE

Gilbert John

Azoreductase Structure and Function Studies

SPONSOR: NATIONAL SCIENCE FOUNDATION

Azoreductase characterization of *Pseudomonas aeruginosa* strain FRD1, a cystic fibrosis isolate

SPONSOR: NATIONAL INSTITUTES OF HEALTH COBRE GRANT

Marianna Patrauchan

Photoreceptors as a novel class of virulence factors in opportunistic pathogens

SPONSOR: NATIONAL INSTITUTES OF HEALTH (NIH) OCRID COBRE

Induced Polarization Signature of Biofilms in Porous Media: From Laboratory Experiments to Theoretical Developments and Validation

SPONSOR: DEPARTMENT OF ENERGY

Antimicrobial effect of a new class of light resistant silver (I) complexes. Adhesion and biofilm studies

SPONSOR: NATIONAL INSTITUTES OF HEALTH (NIH)

Antibiotic resistance in *Pseudomonas aeruginosa*

SPONSOR: OKLAHOMA CENTER FOR THE ADVANCEMENT OF SCIENCE AND TECHNOLOGY (OCAST)

Wendy Picking

Control of type III Secretion of *Shigella* by IpaD

SPONSOR: NATIONAL INSTITUTES OF HEALTH

A *L. lactis*-based vaccine for children with broad spectrum for enteric pathogens

SPONSOR: NATIONAL INSTITUTES OF HEALTH

Use of type III secretion system antigens as a novel vaccine against *Shigella* species

SPONSOR: PATH

TTSS proteins as protective antigens against Salmonella

SPONSOR: OKLAHOMA CENTER FOR THE ADVANCEMENT OF SCIENCE AND TECHNOLOGY (OCAST)

The multiple states of IpaB *Shigella* type III secretion

SPONSOR: NATIONAL INSTITUTES OF HEALTH

Mucosal Immunity, Vaccines and Microbiota Interplay in Humans and Macaques

SPONSOR: NATIONAL INSTITUTES OF HEALTH

William Picking

The multiple states of IpaB *Shigella* type III secretion

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Mucosal Immunity, Vaccines and Microbiota Interplay in Humans and Macaques

SPONSOR: NATIONAL INSTITUTES OF HEALTH

Rolf Prade

Gene Library for Bio-mass-Conversion Enzymes

SPONSOR: NATIONAL RENEWABLE ENERGY LABORATORY NREL/DOE

Edward Shaw

Analysis of the *Coxiella burnetii* Type IV Secretion System During Infection

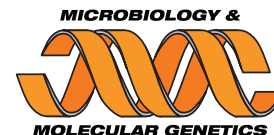
SPONSOR: NATIONAL INSTITUTES OF HEALTH

Research Supplements to Promote Diversity in Health-Related Research

SPONSOR: NATIONAL INSTITUTES OF HEALTH

Assessment of Type 4 Secretion System Proteins as Vaccines against *Coxiella burnetii*

SPONSOR: DEPARTMENT OF DEFENSE, DEFENSE THREAT REDUCTION AGENCY



MMG Awards Banquet



Microbiology & Molecular Genetics Student Honors and Awards for the 2013/2014 Academic year

GRADUATE STUDENTS

Amanda Behar received a 2nd place, award at the Missouri Valley meeting of the **American Society for Microbiology**.

Brian Couger received an **American Society for Microbiology Travel Award** for the national meeting and he received 1st place for his poster at our **MMG Symposium**.

Ibrahim Farag received an **American Society for Microbiology Travel Award** for the national meeting and he received an **Outstanding Student Poster** award at this meeting.

Manita Guragain received a **Distinguished Graduate Fellowship for Genetics Research** from the **OSU Graduate College**

Kelly Harrison received a 2nd place poster award at our **MMG Symposium** and a 2nd place graduate poster award in **Biomedical Sciences** at the annual **OSU Research Symposium**.

Steven Holland received a 3rd place poster award at our **MMG Symposium**.

Sharmilly Khanam received the 1st place and **People's Choice** awards and an **Outstanding Poster Presentation** at the **National American Society for Microbiology** meeting. She also received a 2nd place for her oral presentation at the **Missouri Valley American Society for Microbiology** meeting.

Nick Kuburich received a 1st place award at the **Missouri Valley American Society for Microbiology** meeting.

Jorge Lightfoot received an **OKLSAMP Bridge to Doctorate Fellowship**.

Shalaka Lotlikar received the **Women's Faculty Council Research** award and a 1st place at the **Missouri Valley American Society for Microbiology** meeting.

Jessica Morrison received the **Eduard A. Gula Fellowship**, a 2nd place award at the **Missouri Valley American Society for Microbiology** meeting and a **Society for the Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS)** travel scholarship.

UNDERGRADUATE STUDENTS

Keely Redhage was named the **MMG Outstanding Undergraduate Researcher**. She was also selected for a prestigious research internship in Paris, France.

Amber Price received the **MMG Outstanding Senior** award.

Breana Graham was named an **MMG Outstanding Senior** finalist.

Eve Adams was named an **MMG Outstanding Senior** finalist.

Joshua Encinas was named an **Outstanding Undergraduate Researcher Finalist**

Amber Washington was named an **Outstanding Undergraduate Researcher** finalist.

Cory Gray was named an **Outstanding Senior** nominee.

Brett Davis was named an **Outstanding Senior** nominee.

Tammy Olvera was named an **Outstanding Undergraduate Researcher** nominee.



DEPARTMENT OF
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*America's Brightest **ORANGE***



Our alumni and friends have the unique opportunity to partner with us in the important work we are doing in Microbiology & Molecular Genetics. As one of the region's best Microbiology programs, we impact the world through our students and our research.

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