

The MicroScope

The 2011-2012 Department of Microbiology Newsletter



Dr. Jill Mikucki meeting some Gentoo penguins in Anvord Bay at Neko Harbor, Antarctic Peninsula. This picture was taken in May, 2011 while collecting marine sediment samples.

Jill Mikucki, New Assistant Professor, Studies Life Below Antarctica's Ice

Dr. Jill Mikucki, one of UT's newest microbiology professors, sits at her office desk on a hot and muggy May afternoon talking ice. More specifically, Mikucki talks about how her interest studying microbial communities below the surface of Antarctica's ice sheets spawned from a love for the cold.

"If you can marry several things that are very important to you, you will be more productive and engaged in the long run, and I was a ski bum," laughs Mikucki, explaining how various undergraduate interests fused

into lifelong passions. Mikucki majored in environmental studies as an undergraduate, but through her postgraduate work at Portland State and Montana State universities, she developed a particular interest in microbial metabolism, or how microbial communities capture energy needed to survive and prosper.

For an unblemished view of how microbe communities interact and influence one another, researchers must go to the far reaches of Earth for samples and take painstaking care not to contaminate them with outside organisms or materials. What better field site for watching microbes interact without outside intervention than Antarctica?

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Words from the Department Head

Professor Jeffrey M. Becker



Dear Friends of Microbiology:

The past year has been an exciting one for the Department as reported in this issue of The MicroScope. Some of the highlights of the past year were:

- Three new faculty members, Nathan Schmidt, Jill Mikucki, Karen Lloyd are starting their amazing research programs
- Another Governor's Chair, Terry Hazen, has joined our faculty (with a co-appointment in the School of Engineering and the Department of Earth and Planetary Sciences)
- Our faculty members have excelled in their research performance, teaching, and service to the University and the microbiology community

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Mikucki's interest in Antarctica began while earning her doctoral degree in Montana. Her doctoral field-work took place in Antarctica's McMurdo Dry Valleys, where she would spend three months at a time conducting research. After receiving her doctorate, she served as a postdoctoral fellow at both Harvard and Dartmouth universities.

In total, Mikucki has spent roughly 2 years in Antarctica between nine separate excursions. Antarctica, the coldest, driest, windiest continent on our planet, is a largely unexplored region. Such logistically challenging field research requires interdisciplinary knowledge and collaboration.

Mikucki focuses on microbial communities below Antarctic ice, but due to technological challenges in drilling and clean sampling, she also works with researchers interested in deeper insight into what controls ice sheet stability and the hydrology—the makeup and movement of water in a particular environment—below the surface of glaciers.

Antarctica was long seen as a “dead” place, but in the past few decades scientists have detected a diverse mix of microbial life living in the cold extremes of the continent, both within and below the ice. These developments, coupled with the Antarctica's sparsely inhabited landscape, necessitate researchers collaborating on new methods to study organisms in such harsh environments. “[The research] can tell us how life survives in cold extremes,” Mikucki says.

Not only does Mikucki's research help describe how organisms live in one of Earth's polar frontier, but she is also interested in whether similar life forms can exist elsewhere in the Universe.

Antarctica serves as the best terrestrial testing site for life beyond Earth. “Subglacial environments provide one of our best earthly analogs to study the most promising exobiological targets such as Europa [a moon of Jupiter] and Enceladus [a moon of Saturn],” Mikucki says.

Researchers take great care to avoid contaminating samples, and Mikucki is particularly concerned about collecting Antarctic samples cleanly . Drills and other



Mikucki taking a break while trekking across the Canada Glacier in December 2010. Canada Glacier is located in the McMurdo Dry Valleys where Jill conducts the majority of her research. Mt. Erebus, an active volcano on the Ross Island can be seen in the background. Canada Glacier is where the IceMole craft will be field tested in the fall of 2013.

sampling equipment must be vigorously cleaned to avoid contamination of pristine subglacial environments. Researchers also use ultraviolet radiation or chemical processes to help create a sterile environment. Mikucki is an investigator on the Whillans Ice Stream Subglacial Access Research Drilling (WIS-SARD) project, funded by the National Science Foundation, which is working to develop clean hot-water drilling methods for such a purpose.

Another one of Mikucki's current collaborations is with aerospace researchers at the University of Aachen (Germany), which involves developing and testing their IceMole craft. Once fully developed, IceMole will serve as an unmanned craft capable of collecting samples from icy environments both on Earth and hopefully beyond. Mikucki , along with other US collaborators and the German IceMole team, plan to test the IceMole in Antarctica in 2013.

With so much experience collaborating between various scientific disciplines, Mikucki saw UT as a great place to be. “I consider myself to be fairly interdisciplinary,” Mikucki says, explaining her interest in coming to UT. “I saw the opportunity to learn a lot from my future colleagues as well as provide an interesting system for folks to think about,” she says.

-Eric Gedenk

UT Microbiology in the News

- Chunlei Su was named QUEST Scholar of the Week, May 29, 2012.
- Karen Lloyd, newly appointed Assistant Professor of Microbiology, was invited to give a keynote lecture at the 22nd Goldschmidt Conference in Montreal on “Single cell genomics of uncultured archaea.” In addition, Karen has been invited to be the Holger Jannasch Visiting Scholar this summer at the Woods Hole Oceanographic Institute.
- Madelyn Crawford was awarded a 2012 American Society for Microbiology Undergraduate Research Fellowship. The award comes with a \$3000 stipend and up to \$1000 for student travel to the 2013 ASM General Meeting. Crawford also won an award for best research presentation in the UT EURECA competition.
- Elizabeth McPherson has been promoted to Senior Lecturer by the Provost.
- Tingting Xu, graduate student in the Saylor lab, won an award for best graduate student presentation at the UT Comparative and Experimental Medicine and Public Health Research Symposium, May, 2012.
- Erik Zinser and former student Jeff Morris, publish important “Black Queen” hypothesis on microbial evolution. The paper, published in the American Society for Microbiology's top journal, mBio, received global coverage from the National Science Foundation (US) and popular press coverage in New Scientist and the Huffington Post.
- Assoc. Prof. Alison Buchan receives 2012 Chancellor's Award for Professional Promise in Research.



Words From The Department Head (continued)

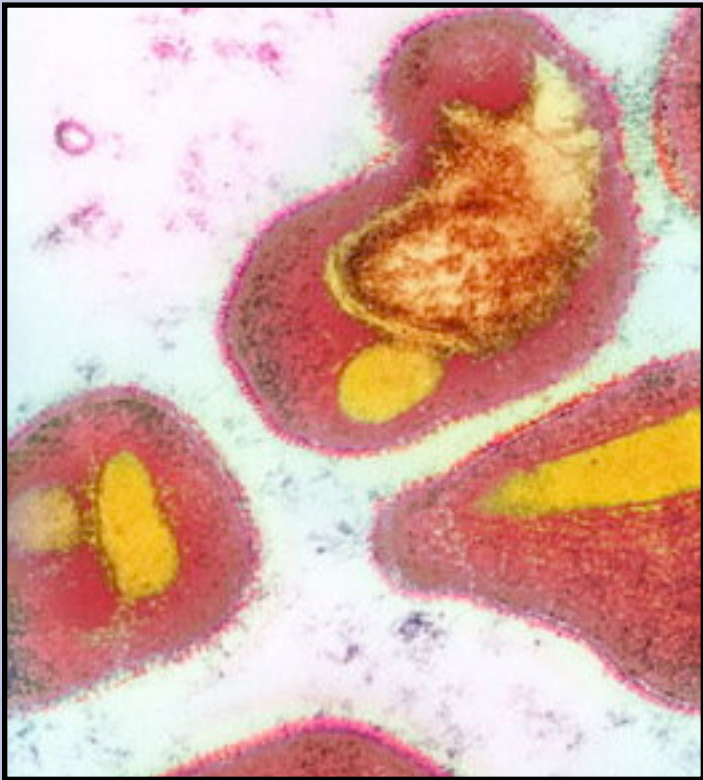
- The College of Arts & Sciences has an accomplished new Dean, Theresa Lee, who joins us from the University of Michigan
- Our graduate and undergraduate students have carried out award-winning research projects in our labs.
- The Microbiology Board of Visitors was re-established with a very successful meeting in May, 2012

The field of Microbiology has continued to amaze and astound in both the areas of pathogenesis and microbial ecology. The human microbiome project is producing tremendous amounts of new knowledge about the microbes associated with us that affect all aspects of human life; metagenomic and proteomic projects continue to surprise us with the discovery of many previously unknown biological worlds composed of microbes and microbial interactions.

It is a privilege and honor to serve such an outstanding group of faculty, students, and staff. I thank you all for your interest in our Department.

Sincerely,
Jeff Becker, Chancellor's Professor and Head

**New Assistant Professor Nathan Schmidt
Searches for New Malaria Cure**



An image of Plasmodium-infected red blood cells. Image courtesy of the London School of Hygiene and Tropical Medicine Science Photo Library

Dr. Nathan Schmidt has always been interested in infectious disease research. After receiving his PhD from Indiana University in 2005, though, he was not sure exactly where his passions would take him. That is, until he began working as a postdoctoral fellow in Dr. John Harty’s lab at the University of Iowa.

It was here that Schmidt started working on a more effective vaccine for malaria, a disease caused by the parasite *Plasmodium* that affects 250–500 million people every year and claims over 1 million lives.

“You start to read the stories of what it is really like in these endemic areas, and you’re talking about a disease where children under the age of five are the most susceptible,” Schmidt says. “You see pictures of the suffering, and it is immense.” As a result, malaria research became more than Schmidt’s post-doctoral research project, it became his career path.

“I wanted to get into a research field that would have a translational impact, and something that would really have an impact on human health, not only in the US, but around the world,” he says.

Schmidt is not only interested in studying how the human body’s immune system responds to the *Plasmodium* parasites that cause malaria, but he also wants to create an effective vaccination to prevent the disease.

One of the highlights of Schmidt’s post-doctoral tenure was discovering that antibodies—proteins in the body that help identify and bind to foreign objects—can effectively prevent malaria infections. It was this discovery that made UT such an attractive place for Schmidt. Dr. Tim Sparer, UT associate professor of microbiology, specializes in a particular method of generating large quantities of proteins that aligns itself very well with Schmidt’s research.

Using this approach Dr. Schmidt will generate *Plasmodium* proteins and use those in a vaccine to generate antibodies that recognize the proteins. The end objective is to identify the level of these antibodies necessary to prevent a *Plasmodium* infection. He hopes that this information will also provide a benchmark in the evaluation of future malaria vaccines. In addition, Schmidt plans to collaborate with UT assistant microbiology professor Dr. Vitaly Ganusov to better understand how the immune system recognizes and eliminates *Plasmodium*-infected cells.

In addition to antibodies, which are produced by B cells in the human body, other malaria research relies on creating vaccinations that work with the body’s T cells—particular white blood cells that identify infected cells in the body and destroy them.

Most approved vaccines are based on the body’s B cells, which only strengthens Schmidt’s hypothesis. “I think antibody-mediated protection against the parasite is a critical component to a successful vaccine; however the most successful malaria vaccine will likely incor-

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porate B cells and T cells,” Schmidt says. Student response to Schmidt’s research has also been positive. “Several people have already been interested in joining the lab,” Schmidt says. “Obviously this is something that I’m passionate about, but to see other people passionate about it is exciting to me.” Schmidt was able to take on one graduate student in his lab during the 2011-2012 school year, and has had several undergraduate students volunteering in the lab as well.

In addition to vaccinating with *Plasmodium* proteins to combat the parasite, Schmidt hopes to understand why immune system responses to the parasite infection do not develop natural protective immunity.

UT has provided Schmidt with a stable of able collaborators for his research, but also a good sense of community over the last year. “The move to Knoxville has been great, and my family and I have really enjoyed settling in here,” Schmidt says. “The University of Tennessee has been a great place to start a faculty position, but also from a personal perspective. The community here has been a good fit for me and my family.”

-Eric Gedenk



Dr. Nathan Schmidt

UT-ORNL Partnerships Push the Front Line of Microbiology Forward

What do a world-class national laboratory and flagship state university have in common?

In the case of the University of Tennessee–Knoxville (UT) and Oak Ridge National Laboratory (ORNL), the institutions share highly motivated researchers who not only advance research in their respective fields, but also educate next-generation microbiologists.

“We are facilitating the collaboration between faculty members and students at both places,” says Dr. Terry Hazen, an environmental biologist who runs laboratories at both institutions by serving as UT’s newest Governor’s Chair. Hazen, who has UT appointments with the Engineering and Earth and Planetary Sciences departments in addition to Microbiology, specializes in bioremediation, or using microorganisms to help clean polluted environments.

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The Joint Institute of Biological Sciences, located on the ORNL campus. Image Courtesy of ORNL.



The ORNL NGEE-Arctic team used a sled-mounted hydraulic drill to remove samples of permafrost tundra in Barrow, Alaska for biogeochemical analysis of microbial activity and carbon transformation (left). Core samples included significant amounts of ground ice and organic matter that has been preserved, frozen for hundreds or thousands of years (top, right). The cores were stored frozen in snowbanks to prevent thawing before shipment to Oak Ridge (bottom, right). Image Credit: David Graham, ORNL.

Former Tennessee Governor Phil Bredesen started the Governor's Chair program to help foster collaboration between UT and ORNL. Hazen, one of the most recent Governor's Chairs, became renowned for his work on the Deepwater Horizon oil spill in the Gulf of Mexico.

Hazen's research team, then based at Lawrence Berkeley National Laboratory (LBL), discovered oil-eating bacteria near the site of the oil leak that helped remove oil from the ocean.

In addition to Hazen, Dr. Frank Loeffler also serves as an environmental microbiology Governor's Chair, specializing in detoxifying environments through the use of microbes. Hazen noted that East Tennessee's wealth of microbiologists aided in both he and Loeffler's decision to become Governor's Chairs. "There is a tremendous number of microbiologists here," Hazen says. "We had a reception for lead principal investigators in microbiology at Oak Ridge and UT. There were over 100, and that does not include post-docs or graduate students. It allows us to draw on a lot of expertise."

Governor's Chairs' ability to foster and direct collaborations between different science disciplines and institutions has helped create a thriving interdisciplinary environment at both UT and ORNL. "One of the reasons we're so successful is because of direct interaction with the Governor's Chairs at ORNL," said Dr. David Graham, group leader of Microbial

Ecology and Physiology at ORNL and a Joint Faculty Research Associate Professor of Microbiology at UT.

Graham's group studies how microbes transform the environment and how microbial genes affect Earth's carbon cycle. This research helps find improved conditions for biofuel production, capturing and storing carbon from the environment, and bioremediation. Graham leads the Biogeochemistry team in a new project directed by Dr. Stan Wullschleger at ORNL, *Next-Generation Ecosystem Experiments in the Arctic*, to understand impacts of increased thawing in Arctic permafrost areas. Graham notes that although the Arctic has long been seen as a carbon sink, meaning it captures and holds more carbon than it produces, increased melting could reverse this trend. This project is funded by the Department of Energy's (DOE's) Office of Biological and Environmental Research.

Dr. Mircea Podar, who leads the Systems Genetics group at ORNL, also works on various projects connected to UT as a Joint Faculty Research Associate Professor of Microbiology. Podar's research interests are multidisciplinary. One of his current projects is based on a DOE-funded grant to study and model the interaction between two single-celled organisms capable of living in extreme heat, *Ignicoccus* and *Nanoarchaeum*, by combining evolutionary and functional genomic approaches to the research.

Another project, funded by the National Institutes of Health, focuses on uncultured microbes in the



Dr. Mircea Podar collecting samples of hyperthermophilic organisms, or organisms that can thrive in extreme heat, at Obsidian Pool, a thermal spring in Yellowstone National Park. Image Credit: Mircea Podar, ORNL.

human body. This research aims to more thoroughly identify the genomes of more mysterious bacteria at work in our bodies. By using a combination of single cell genomics and metagenomics, which gleans genetic material directly from an organism's environment, this research aims to provide insights into bacterial groups and their functions which, though so far unknown, may provide greater insight into human health and disease.

Other ORNL-based projects in Podar's group include studies of the poplar tree microbiome, which is comprised of the microorganisms in the area of soil influenced directly by root systems known as the rhizosphere. That work, led by Dr. Christopher Schadt, also a UTK Microbiology Joint Faculty member, hopes to identify what organisms and plant-microbe interactions most positively influence plant growth and can aid in greater poplar cultivation for bioenergy biomass production.

One of the largest collaborations between UT and ORNL falls in the context of a nationwide project with major environmental implications. The Ecosystems and Networks Integrated with Genes and Molecular

Assemblies (ENIGMA) project, a DOE-funded \$12.5 million per year project based at LBL, seeks greater detail about how microbial communities interact in various environments, namely those polluted with heavy metals such as mercury, uranium, or chromium. Hazen is the environmental lead, while Dr. Dwayne Elias leads an ORNL-based ENIGMA team studying microbial community dynamics and physiology at ORNL, in collaboration with Loeffler, Podar and Dr. Steven Brown of ORNL. Every year, roughly \$1.3 million comes to UT and ORNL from the ENIGMA project.

Not only are these ORNL staff members driving major research collaborations, but they also are working to help UT faculty train students. Both Graham and Podar are part of the Research Experience for Undergraduates program, funded by the National Science Foundation and run by the Microbiology department. Students coming to UT for the summer will have opportunities to work at ORNL as well as the UT departmental laboratories (see story on page 8).

-Eric Gedenk

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Faculty, staff and students gather at the Microbiology Undergraduate Club (MUC) Picnic. The MUC hosts meetings and special presentations for undergraduates interested in career opportunities and all things microbial.

Microbiology Department to Host National Science Foundation-funded Undergraduate Collaborations for Summer Research Experience

As the UT microbiology department grows, its faculty and staff are always looking for new ways to foster collaboration and train next-generation microbiologists. What better way than to host a diverse mix of undergraduate students for a 10-week research experience over the summer?

“The way many places make themselves better is through training programs,” Dr. Steven Wilhelm, UT microbiology professor, said. “This creates the opportunity to bring in students that have different ideas and experiences and integrate that into how we do things here. It also creates the opportunity for our own students from Tennessee to meet people of different backgrounds.”

This rationale got Wilhelm and associate professor Dr. Erik Zinser thinking about how they could entice students to come work at UT over the summer. The professors applied for one of the National Science Foundation’s (NSF’s) Research Experience for Undergraduate (REU) Site grants for 2013, and they succeeded.

“We are very excited that the NSF awarded us an REU; these are highly competitive grants,” said Zinser. “I

think one of the main reasons why we were successful is the strength and breadth of microbiological research in the area, not only in the Microbiology department, but across the UTK campus and at Oak Ridge National Laboratory as well.”

10 students’ will relocate for the summer to work side by side with accomplished researchers in various fields. The NSF places particular emphasis on identifying qualified students in areas typically economically or geographically underrepresented in science. In the case of Wilhelm’s and Zinser’s grant, students will work side by side with an interdisciplinary mix of researchers based at both the University of Tennessee and nearby Oak Ridge National Laboratory (ORNL).

The program’s title is “Microbial Community Interactions and Function.” The various labs will expose students to topics ranging from Antarctic microbe communities living below ice to the physiology of fungal communities and how they affect their surround areas. In addition to microbial organisms, students will also be interacting with one another and learning to function inside a variety of research labs based on professors’ expertise. “The focus is to really get these students integrated into research labs,” Wilhelm said.

About 20 faculty members have signed up to help this process in various ways. Some will participate in structuring the program, while others will host students. In

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addition to microbiology faculty, professors from the Biosystems Engineering & Soil Science, Earth & Planetary Science, and Ecology & Evolutionary Biology departments will participate in this REU Site. In addition, adjunct professors based at ORNL will host students. Graduate students will serve as “big siblings” to help the visitors acclimate to both the research environment and Knoxville in general.

“While the individual research projects will in most cases be performed in a single lab, there will be many opportunities for the students to interact with other students and faculty in the program,” said Zinser. “This will add breadth to their experience here in the summer.”

Receiving an REU Site grant is a pretty competitive process, as the NSF is only able to fund 8–15% of proposals they receive, but the student application process will be competitive as well. Wilhelm says typical REU Sites receive 100’s of applications for only 10 spots. Students need to be returning to their home universities as undergraduates the following fall to qualify for the program, and a committee of 3–5 faculty members will make decisions based on students’ letters of interest, transcripts, and reference letters.

UT students themselves will not be left out of similar opportunities. The Department of Microbiology has issued endowment funds over the past five years to provide UT undergraduates with similar opportunities. The UT Office of Research also provides similar opportunities.

In essence, UT faculty involved in this project are not just teaching undergraduates during the school year, but offer dozens of motivated undergraduates paid research opportunities to work with them throughout summer.

The faculty who runs the UT Microbiology REU Site varies greatly in their fields of study, ages, and experiences, but there is a common bond holding them together. “Many of the faculty that are the leaders of this program actually had experience as undergrads doing research themselves, to the point where many of them contributed to scientific papers,” Wilhelm said. By established this program, many of the faculty will see their careers come full-circle by guiding research experiences that were the origins of their own career paths. *-Eric Gedenk*



Padilla-Crespo at the NSF Headquarters in Virginia

Microbiology Students Venture Into the World

UT Microbiology students leave their marks in various ways. One thing they have always done, though, is take opportunities to enrich their learning by venturing out of the friendly confines of Knoxville and collaborating with other research environments.

Padilla-Crespo Works on the U.S. Science Agenda at the NSF Headquarters

Elizabeth Padilla-Crespo (pictured above) is one such case. Padilla-Crespo, a doctoral candidate in the Microbiology department, wanted to enrich her knowledge of the field by working in the funding environment at the National Science Foundation (NSF). With encouragement to apply, Padilla-Crespo became an intern for the summer at the NSF's central offices in Virginia.

"The guidance and mentorship I have received in the UT-Microbiology Department, especially my advisor Frank E. Loeffler, gave me the confidence to apply,"

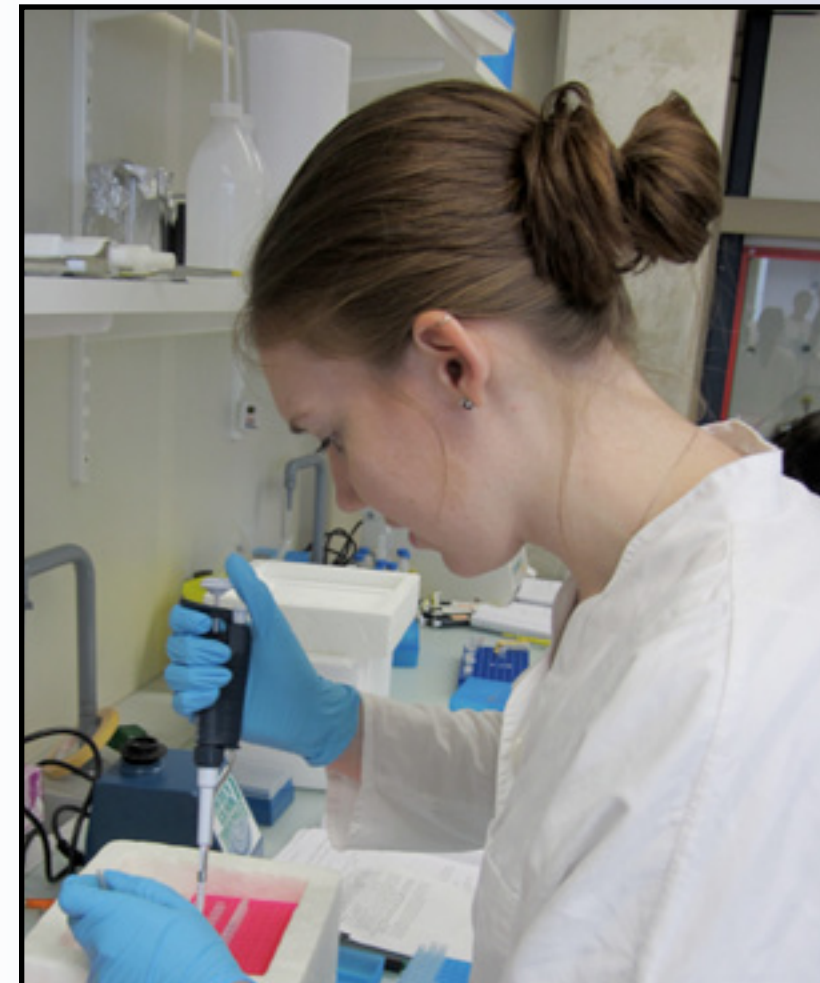
Padilla-Crespo said. "I've been lucky to have great teachers who have also served as mentors, they have not only given me the tools to become a competitive microbiologist and researcher, but they have also inspired me take my science outside the conventional settings of classrooms and laboratories."

Steffen Takes Her Research to Germany

Second-year graduate student Morgan Steffen also got experience while abroad. Steffen was selected to take part in a two-week bioinformatics course in Bremen, Germany at Jacobs University. Steffen works in Dr. Steven Wilhelm's lab and studies *Microcystis*, a toxic cyanobacteria that lives in freshwater environments. Through this NSF-funded course, Steffen worked to develop new techniques to analyze her own data from UT.

"It gave a really comprehensive overview of important tools that can be used for bioinformatics analysis, but more importantly how to ask appropriate questions

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Frank collecting samples with a pipette at the University of Lausanne in Switzerland

The course, which consisted of 11 American and 11 European students, had all students working together on different aspects of bioremediation in contaminated soil. The students remained extremely busy, working from 8 a.m. to 10 p.m. most every day, but that was part of the beauty of the course for Frank. "We barely had time for meals, as the work was very concentrated, but it was incredible," she said.

Frank was selected for a fellowship based at the University of Lousanne that covered all of her expenses. The opportunity to interact with up-and-coming researchers like herself on a subsidized trip was invaluable.

"Whenever you're interacting with other people, especially in science, you learn the value of establishing connections with different people," Frank said. "I still maintain contact with each one of my coursemates, so I know that right now I have 21 other individuals I can talk to about different subjects." -Eric Gedenk



Steffen (right) working on analyzing her data at Jacobs University in Bremen, Germany.

with the type of data we can generate now, and also how to be critical of the current conclusions that are coming out of sequencing data," Steffen said.

Steffen thought the experience of working with other young researchers coming from different backgrounds was an invaluable part of the course. "I would say that if a student has the chance to participate in anything like this, they should definitely go for it," she said. "Both the networking and knowledge gained seem like they will prove to be valuable assets both now and further along in my career."

Frank learns bioremediation techniques in Switzerland

Another second-year graduate student, Ashley Frank, knows the value in making connections with other young, motivated researchers. Frank was encouraged by her adviser, Dr. Alison Buchan, to apply for a two-week environmental biotechnology course based at the University of Lausanne in Switzerland last summer.

MICROBIOLOGY BOARD OF VISITORS REFORMED



Bottom Row (Left to Right): Davis Allen, Sandra White, Karen Goss, and Rod Blum Top Row (Left to Right): Tim Townes, Guy Caldwell, Frank Bowden, Teresa Compton, Oladele Ogunseitan, and Jeff Becker.

A highly successful Board of Visitors meeting was held in Knoxville on April 29-30, 2012. The Board of Visitors (See Photograph) was re-established after some years of inactivity. The twelve-member Board membership is listed below.

- Davis Allan, Physician, Summit Medical Group, Knoxville, TN
- Karen Goss, Head of Science Dept., South College, Knoxville, TN
- Roger Hubbard, CEO, Molecular Pathology Laboratory Network, Maryville, TN
- Teresa Compton, Vice-President for Research, Biogen Idec, Cambridge, MA
- Oladele Ogunseitan, Head of Dept of Population Health & Disease Prevention, U. California, Irvine, CA
- Guy Caldwell, Professor of Biology, University of Alabama, Tuscaloosa, AL
- Tim Townes, Head of Dept. of Biochemistry and Molecular Genetics, U. Alabama, Birmingham, AL
- Rod Bunn, Vice-President, Vashaw Scientific, Inc., Atlanta, GA
- Sandra White, Microbial Insights, Inc., Rockford, TN
- Frank Bowden, Physician, Bowden Eye Associates, Jacksonville, FL

The Board met faculty, graduate students, undergraduate students, and College administrators to

learn about the accomplishments, needs, and goals of the Department.

We trust that in future years the Board will take an active role in its Mission of:

- (1) facilitating communication, cooperation, interaction and investment between the Department of Microbiology and the profession,
- (2) serving as an advocate for the Department to the College of Arts & Sciences and the University of Tennessee as a whole,
- (3) advising the Department in many areas to advance the impact and tradition of the microbiology profession through teaching, research and service,
- (4) reviewing program goals and recommending strategies for both current and future challenges and initiatives,
- (5) providing counsel to the department in areas that facilitate the prestige of our programs including, curriculum and courses, research and teaching, collaboration with industry, and student and faculty recruitment,
- (6) identifying prospective individual and corporate donors with the potential of investing in the Department and to help reach out to alumni in order to strengthen their ties back to the Department.

Faculty

- Jeffrey M. Becker**
Chancellor’s Professor and Head
- Alison Buchan**
Associate Professor
- Elizabeth Fozo**
Assistant Professor
- Vitaly V. Ganusov**
Assistant Professor
- Igor Jouline**
Joint Professor with ORNL
- Frank Loeffler**
Governor's Chair and Professor
- Terry Hazen**
Governor’s Chair and Professor
- Robert N. Moore**
Professor; Executive Director of the UT Space Institute
- Nathan Schmidt**
Assistant Professor
- Jill Mikucki**
Assistant Professor
- Karen Lloyd**
Assistant Professor
- Todd Reynolds**
Associate Professor
- Gary S. Saylor**
Beaman Distinguished Professor of Microbiology, and Ecology & Evolutionary Biology, Director - Joint Institute for Biological Sciences, Director - Center for Environmental Biotechnology
- Tim E. Sparer**
Associate Professor
- Chunlei Su**
Associate Professor
- Steven W. Wilhelm**
Professor, Associate Head and Graduate Director
- Erik Zinser**
Associate Professor
- Pamela L. C. Small**
Professor Emeritus
- W. Stuart Riggsby**
Professor Emeritus

Associated Faculty

- John Biggerstaff, Adjunct Associate Professor
- Barry Bruce, Adjunct Professor
- Brad Fenwick, Adjunct Professor
- Martin Keller, Adjunct Professor
- Mark Radosevich, Adjunct Professor
- Loren Hauser, Adjunct Professor
- Nathan Verberkmoes, Adjunct Assistant Professor
- David Graham, Joint Faculty Research Associate Professor
- Mircea Podar, Joint Faculty Research Associate Professor
- Christopher Schadt, Joint Faculty Research Associate Professor
- Melinda Hauser, Research Assistant Professor
- Thomas Masi, Research Assistant Professor
- Kirsti Ritalahti, Research Assistant Professor
- Alice Layton, Research Associate Professor
- Steven Ripp, Research Associate Professor

2011-2012 Departmental Awards



Non- Departmental Awards

Brandon Boyd, Dustin Lawrence, and Igor Tkachenko recieved the D. Frank Holtman Undergraduate Academic Achievement Award for their work as undergraduate microbiology students.

Dr. Liz Fozo recieved the Under-graduate Faculty Teaching Award for excellence in undergraduate instruction.



Kathleen Hauther recieved the Lisa Kahn Undergraduate Research Award for her superior work as an undergraduate researcher in the Sparer lab.

Nathan Cude and Chris Gulvik recieved the Graduate Teaching Award for excellence in undergraduate instruction.

Liyin Huang was awarded the Excellence in Graduate Research Award.

Brietta Lusby recieved the Microbiology Staff award for excellence in administrative work.

Nathan Cude (Buchan), Sarah Davis (Reynolds), Chris Gulvik (Buchan), Anthony Montedonico (Reynolds), Wilson Robinson (Sparer), Neha Sarode (Reynolds), Abby Smartt (Sayler), Seraj Uddin (Becker), and Tingting Xu (Sayler), all recieved David White Travel Awards to continue their research in the future.



Madelyn Crawford (Becker Lab), and Shafer Belisle (Wilhelm Lab) recieved Awards in UT's Exhibition of Undergraduate Research and Creative Achievement. The pair both won for their projects, *C-terminal His6-tag Influences the Function of a Model G Protein-coupled Receptor* (Crawford) and *Is rea a Driver for Microcystis Blooms?* (Belisle).

Jace Natzke and Travis Sullivan (Undergraduates), received pre-med scholarships for 2012-2013

Madelyn Crawford (Becker lab) is one of seven undergraduates that presented a poster in the Tennessee State Capitol to showcase undergraduate research.

Nana Ankrah (Buchan lab) and Chris Gulvik (Buchan lab) won first and second place (respectively) for Best Oral Presentation at the Tennessee-Kentucky Branch of the American Society for Microbiology (ASM) conference.

Sarah Davis (Reynolds lab) received an ASM travel award to the 11th ASM Conference on Candida and Candidiasis (March 2012).

Mary Holtman-Reed, director of alumni programs and adviser to the Student Alumni Associates (SAA), received the Outstanding Advisor Award by the Affiliated Student Advancement Program (ASAP).

Alison Buchan received the Chancellor's Honors Award for Professional Promise in Research & Creative Achievement (Spring 2012)

We Want to Hear from You!

Your full name: _____

Address: _____

Graduation year(s): _____

Degree(s): _____

Place of employment: _____

Job title and description: _____

How did your time at UT prepare you for this position? _____

You may also send your comments to microbiology@utk.edu. Please include "The MicroScope 2010-2011" in the subject line.

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Department of Microbiology

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