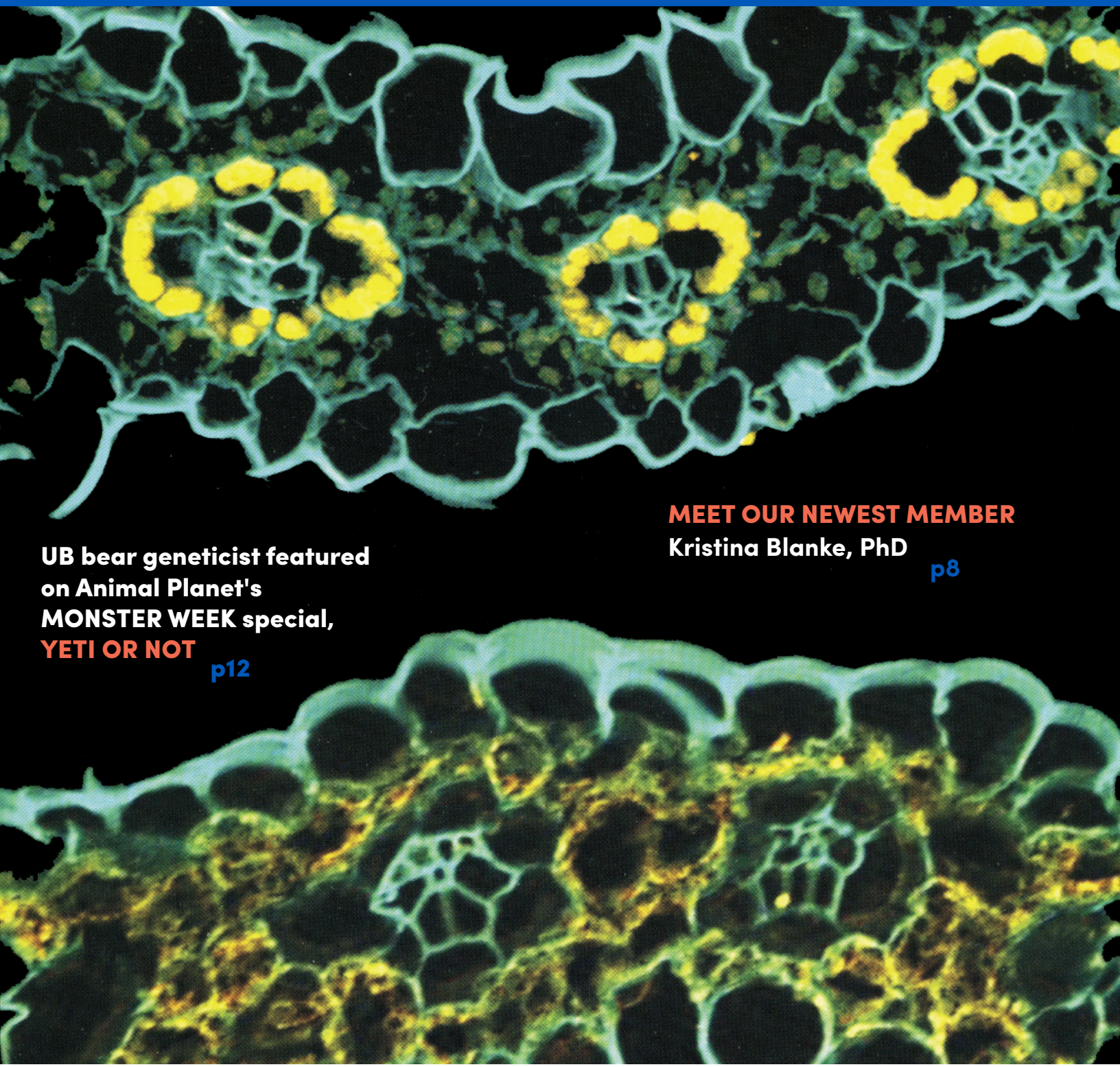
BIONEWS

18th Annual Edition 2016-17



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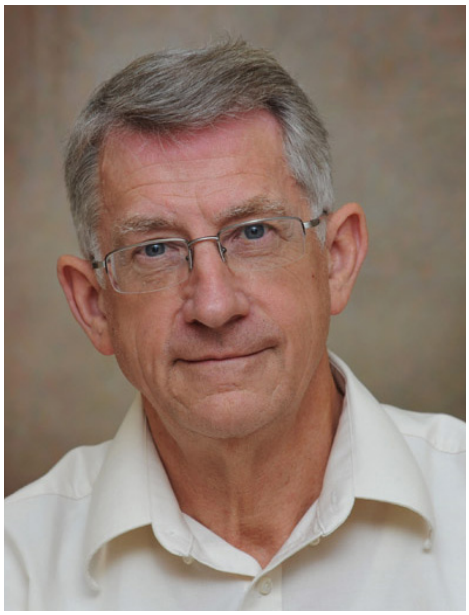
University at Buffalo
Department of Biological Sciences
College of Arts and Sciences

MESSAGE FROM THE CHAIR

STEPHEN J. FREE, PhD



Dear Alumni and Friends,

This is a wonderful time for the Department of Biological Sciences at the University at Buffalo. We have a record number of undergraduates studying with us and preparing for careers in the life sciences. Biology is among the most popular majors at the University at Buffalo. Last year, we had 215 undergraduates receiving their bachelor's degrees from our bachelor of arts and bachelor of sciences programs. Many of our graduates are attending medical schools, dental schools, and other advanced degree programs. We are justifiably proud of our undergraduate students and their accomplishments.

During the past several years, our Undergraduate Affairs Committee has improved and updated our undergraduate programs to keep pace with the rapid advances being made in biology. Many of our lecture courses have been updated to provide our students with the new information, and our laboratory courses have been rewritten to provide our students with the latest techniques. The University at Buffalo has instituted a new university curriculum, which includes small class freshman seminar courses and a writing in the discipline course. We are happy to welcome Kristina Blanke, PhD, who is teaching our Communicating in Biology course, and we're grateful for our senior faculty members who are teaching in the biology freshman seminar courses.

Our faculty continues to turn out excellent research in areas across the biological sciences. We are very proud of our PhD students, who are learning research skills and leaving UB to enter careers in academic settings and in research laboratories. During the past few years, we have expanded our graduate program to include an MA degree. This degree is for students who have Bachelor's degrees and need a little further preparation to enter medical and dental school programs. Our MA program is a flexible program that allows these students to prepare for careers in medicine and dentistry. Our MA graduates have had great success in getting admission into medical and dental school programs.

In closing, I would like to thank you, our many friends and alumni who have helped us in so many ways. We appreciate the support you give by setting wonderful examples of what it means to have gotten a degree from our program and recommending our program to others. We're particularly grateful to those alumni and friends who have offered financial support. We've used your funds to refurbish and update our teaching laboratories and to help support undergraduate research projects. Your funds have enriched the lives of our students, and we appreciate your generosity.

Stephen J. Free, PhD
Professor and Chair

Cooke Hall

DEPARTMENT NEWS

Department taking part in pedagogical innovation

UB EXCITE (University at Buffalo Excellence in Course Instruction Through Enquiry) is UB's latest initiative to promote innovation in teaching and learning at UB. Two of our faculty members have received funding to redesign their courses and the support needed to teach them. They will then teach the redesigned courses and collect data to evaluate the courses' effectiveness. The collected data over time will guide further refinement of the redesigned courses.

Jessica Poulin, PhD

Lara Hutson, PhD

Jessica Poulin, PhD, teaches two sections of our large (350-450 students) introductory BIO 200 course, 'Evolutionary Biology.' She has observed that the course remains difficult for many of our students and course instructors commonly face issues related to disparities in preparation for college-level work or basic background in biology necessary for student success. Poulin proposes to provide targeted instructional support to transfer students and returning students enrolling in BIO 200, many of whom feel out of step with the rest of their classmates. In many cases, these students are unaware of how to effectively utilize the resources being made available to them, do not have a supportive peer group, and lack guidance in adjusting to student life at UB. Poulin will set up specific laboratory sections to accommodate these students and to help meet their needs. Her proposed laboratory classes for these students will provide excellent mentoring, direct them to the appropriate academic and career advisement, and help integrate them into supportive peer groups. The proposed changes in how the department delivers BIO 200 to these transfer and returning students will help them rapidly acclimate to the university and set them up for a successful undergraduate experience, an approach that could make a major difference in the academic success of these students.

Lara Hutson, PhD, teaches two large sections (350-450 students) of our introductory BIO 201 course, 'Cell Biology.' Hutson was instrumental in updating and dramatically improving the course, and she is passionately committed to providing the best possible learning experience for her students. Many of the students in BIO 201 are freshman and/or come from at-risk student populations. Hutson is a staunch supporter of using teaching techniques that promote active learning, and her proposal is based on using flipped classroom modules to create an active learning environment. Her proposal includes using TopHat educational software to strongly encourage the students to come to the flipped classroom prepared for the learning experience. Her proposal also includes actively reaching out to students who frequently miss classroom sessions to encourage their attendance. The second part of her proposal is based on observations that attendance is a strong predictor of performance in biology. In 2014 and 2015, she collaborated with the office of the Vice Provost for Undergraduate Education to test whether contacting students who are absent from class improves outcomes in BIO 201. The results of this study were so encouraging that part of her funding will be used to hire a graduate assistant to contact and provide guidance to students who meet specific criteria for absenteeism.

DEPARTMENT NEWS

Life Sciences and Art merge to form new Center for Biological Art

Exploring life's greatest questions through biological art is the focus of a new studio laboratory space which opened in March 2016, called Coalesce: Center for Biological Art. Coalesce is a hybrid studio laboratory facility dedicated to enabling hands-on creative engagement with the tools and technologies of the life sciences. A grand new experiment in interdisciplinary learning, its aim is to get UB students, researchers, and the public together to explore biological concepts like microbes, genes and stem cells through a tangible, creative lens.

Complementing UB's expertise in the life sciences, Coalesce is a key project of the Genome, Environment and Microbiome (GEM) Community, one of UB's three Communities of Excellence. A major initiative of GEM, the program aims to expand public understanding of and participation in the life sciences. The hybrid facility will support the study of biological art and emerging practices in the arts, interdisciplinary coursework, and residencies, workshops, and exhibitions. "Biological art, or bioart, is a highly interdisciplinary new field in the arts. Biology is not only a subject of the work, but often the medium of the work as well," says Paul Vanouse, professor in the Department of Art and director of Coalesce. "Through this medium, artists are engaging some of the most important philosophical and ethical issues of our time, from the changing definitions of life to the shifting policies surrounding its alteration and ownership." Laboratory manager for Coalesce is Solon Morse, who earned his PhD in biological sciences from our department.

At the end of March 2016, Coalesce launched with a series of inaugural events and public activities to get the campus and the community engaged with the evolving practice of bioart. Our own Jerry Koudelka,PhD, participated in a roundtable discussion on the various meanings of "skin" following a workshop titled "Skin: Membrane: Habitat," which was lead by Zbigniew Oksiuta, a Lecturer in the School of Architecture at Rensselaer Polytechnic Institute.

Kristie Reilly, the newest member of the Instructional Support team, comes to the University at Buffalo Biological Sciences Department after working in different roles in the environmental field. She has worked in government, non-profits, and private industry, including over five years of experience working in an environmental testing laboratory. Before starting at UB, Reilly had lived in Hawaii for six years. In May she returned to the Buffalo area, where she grew up. Outside of work, she has volunteered with various non-profit groups such as the Hawaiian Humane Society, Hawaii Nature Center, Surfrider Foundation, and currently with the Niagara Chapter of Sierra Club. She enjoys spending time adventuring outdoors, especially hiking and running. She is excited to be working at UB, helping to run the undergraduate student labs in cytogenetics, cell biology, and developmental biology. She holds a master's degree in biology from the University of Nebraska – Kearney.

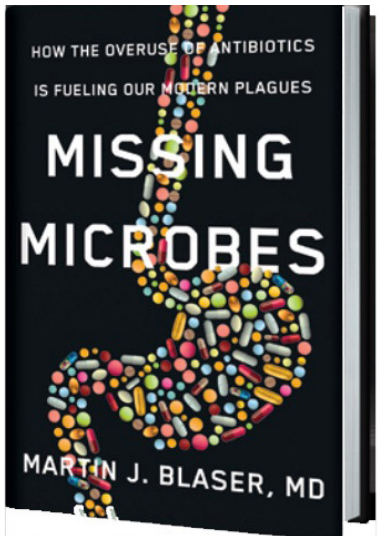
Kristie Reilly

DEPARTMENT NEWS

Department co-hosts Thermo Fisher New Frontiers in Science and Technology Distinguished Speaker

The Department of Biological Sciences and the Department of Microbiology and Immunology hosted Martin Blaser, PhD, Muriel G. and George W. Singer Professor of Translational Medicine, and director of the NYU Human Microbiome Program, for two days last April. With financial support from Thermo Fisher Scientific, both departments are able to bring individuals of international renown to campus. A physician and microbiologist, Blaser pioneered work that has led to an understanding of the relationships we have with our persistently colonizing bacteria. Over the last decade, he has been actively studying the relationship of the human microbiome to health and such important diseases as asthma, obesity, diabetes, and allergies. In addition to other honors, Blaser was elected to the Institute of Medicine of the National Academy of Sciences in 2011. He is a member of the editorial boards of *Cell Host & Microbe*, *mBio*, *Helicobacter*, *Emerging Infectious Diseases*, *Gut*, *and Microbiome*. Most recently, he has written the book, *Missing Microbes: How the Overuse of Antibiotics Is Fueling Our Modern Plagues*, about the degradation of our internal microbial ecosystem as a result of modern medical practices. Blaser presented two seminars, the first titled "Altering the early life microbiome and its consequences," which was held on the South Campus, and the second, "Helicobacter pylori at the crossroads of health and disease," given the following day on the North Campus.

Martin Blaser, PhD



University funding to department will examine how microbiome can impact health

Gerald Koudelka, PhD, received funding for one of five pilot research projects that aim to improve our understanding of the human microbiome, in the first round of funding from UB's Community of Excellence in Genome, Environment and Microbiome (GEM). The projects will study how the interplay of the human microbiome — the collection of microorganisms that reside in and on the human body — and the environment affect a person's risk for certain diseases. GEM is an interdisciplinary community of UB faculty and staff dedicated to advancing research on the genome and microbiome. Understanding the relationship these microorganisms have with our bodies may enable development of personalized medicine and empower individuals to have greater control over their health. Koudelka, professor in the

Gerald Koudelka, PhD

Department of Biological Sciences, and Mira Edgerton, research professor in the Department of Oral Biology, will lead a study of protists in the oral microbiome. Of all the microbiomes in and on the human body, the one found in the mouth is the most diverse, comprised of bacteria, viruses, fungi, and more. Bacteria are responsible for two of the most common diseases known to man: tooth decay and gum disease. However, scientists have not yet created a method that can reliably predict the severity and onset of dental disease based on the amount of bacteria in the mouth. Protists, a group of varied, single-cell organisms, can significantly impact the size of a bacterial population, but few studies focus on their role in the oral microbiome. Koudelka and Edgerton aim to identify and quantify the protist population in the mouth and examine the impact of the bacterial-protist relationship on oral health. The findings could aid in the diagnosis of oral diseases and lead to interventions that prevent disease development.

Longtime faculty member and department administrator remembered

Michael Hudecki, PhD, a retired UB faculty member and administrator who conducted research on his own illness, died July 30 in his home. Mike officially retired in December 2005, after over 25 years of outstanding service to the department's instructional and research missions. He also served as the departmental executive officer, assisting the chair, faculty, and students in navigating the intricacies of UB's academic corridors. After receiving his PhD in biological sciences from UB in 1972, he pursued postdoctoral research in muscle pathology because he and his youngest sister, Patricia, were afflicted with a type of inherited muscular dystrophy called limb-girdle muscular dystrophy. With a fellowship from the Muscular Dystrophy Association, he studied protein turnover in cultured muscle while at Syracuse University. He joined UB's biology department as a research faculty member in 1977, with grant support from the MDA and National Institutes of Health. For the next 26 years, he developed and implemented animal models in the study of dystrophy pathogenesis and chemotherapy. His lab soon became the national preclinical testing center for the MDA. During this time, Hudecki and his colleagues published nearly 50 papers in this area. The recipient of numerous awards, among them a Chancellor's Award for Excellence in Teaching, Mike taught a variety of undergraduate courses, including nutrition, embryology, basic biology, and "Perspectives in Human Biology," a popular course for nonmajors. Mike was known for his insight, wit, and counsel. He'll be missed by one and all.

Michael Hudecki, PhD – Self Portrait

FACULTY NEWS

Professors crowdfund to save the African violet

Victor Albert, PhD, and Charlotte Lindqvist, PhD, along with Aureliano Bombarely, PhD, a genobotanist at Virginia Tech with an interest in plant domestication and evolution, initiated a crowdfunding effort last year to help assure the future of the African violet. The African violet is a very common houseplant that is the basis of a multi-million dollar industry. They're extremely easy to grow, and flower virtually all the time. The paradox, however, is that natural populations are largely threatened due to loss of habitat in southeastern Kenya and northeastern Tanzania. The crowdfunding was intended to raise money to sequence the entire genome of the plant. For conservation purposes, sequencing the African violet will be key, providing a perspective of the evolutionary history of this species. Having a genome of the plant will inform the scientific community about how the African violet has adapted to past environmental changes, and how it might adapt or respond to future changes, both when it comes habitat encroachment and to changes in the environment and the global climate. Albert and Lindqvist had hoped that this would be the start of a much larger project sequencing multiple individuals and multiple species of African violet to better prioritize which populations to conserve for future generations. Unfortunately, their fundraising goal fell short, but they're pursuing other strategies to keep this project alive.

Charlotte Lindqvist, PhD

Victor Albert, PhD

From the University Archives – Past Homes of the Department of Geology

1903: the Erie County Almshouse constructs a Nurses Dormitory on land that will eventually become UB's South Campus.

1922: The College of Arts and Sciences moves out of Townsend Hall on Niagara Square and into Foster Hall on the University's new campus.

Health Science Building ca. 1961

1931-32: The former Nurses Dormitory is renovated and was then occupied by the Department of Biology.

1954: after the original Townsend building on Niagara Square in downtown Buffalo was vacated by the university, the Townsend name was transferred to the Biology Building on the Main Street Campus.

Today, Townsend Hall is still owned by the university, but is presently vacant.

1960: the Department of Biology moved out of Townsend and into the newly constructed Health Sciences Building on the other side of campus which, in 1975, was renamed Cary Hall.

Townsend Hall, c1920s.

1978: the department moved again into its present location, Hochstetter and Cooke Halls.

FACULTY NEWS
...MEET OUR NEWEST MEMBER

Kristina Blanke, PhD

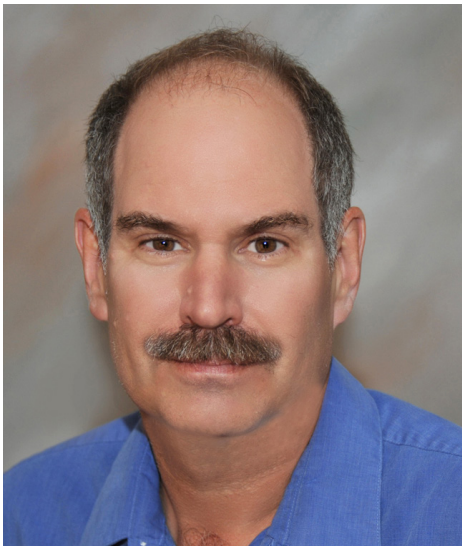
Dr. Kristina Blanke joined the biological sciences department as a science writing lecturer in Fall 2016. She received her PhD from the Molecular and Environmental Toxicology Center at the University of Wisconsin-Madison. Before joining the University at Buffalo, Blanke taught as a biological sciences lecturer and lab instructor for Carroll University in Waukesha, Wis. and Marquette University in Milwaukee. She is a Wisconsin enthusiast, connoisseur of dairy food, and an aficionado of Milwaukee Brewers baseball.

Blanke teaches BIO 387: Communicating in Biology for upper level biology students. This course is designed to develop writing and oral communication skills for science literature and presentation. Students work through writing the components of a journal article, design a poster, and give a group presentation based on published biology literature. This course facilitates collaborative learning through class discussions, peer review, and constant feedback about writing techniques. By the end of the course, students are able to think critically about scientific literature and communicate effectively to scientific audiences.

Blanke will also be teaching a freshman seminar, BIO 199: Biology in the News, covering topics ranging from climate change to antibiotic resistance and genetically modified organisms. This course will include facilitated discussions, group work, and presentations. Students will learn how to think critically and evaluate biology topics presented in the news and better understand their impacts on society.

Paul Gollnick, PhD, Recognized for Outstanding Contributions

On the basis of his excellent record of research, research originality, and leadership in the microbiological sciences, Paul Gollnick, PhD was elected to Fellowship in the American Academy of Microbiology (AAM). AAM is the honorific leadership group within the American Society for Microbiology (ASM), which is the world's oldest and largest life science organization. The AAM recognizes scientists for outstanding contributions to microbiology and provides microbiological expertise in the service of science and the public. Academy fellows are eminent leaders in the field of microbiology and are relied on for authoritative advice and insight on critical issues in microbiology. He studies gene expression, looking specifically at how DNA is converted to RNA through a process known as transcription, and has collaborated on and published more than 100 academic articles. Gollnick earned his undergraduate degree in biochemistry at Washington State University and PhD in biochemistry from Iowa State University. Prior to coming to UB, he was a postdoctoral research associate at Stanford University while being sponsored as a fellow in the American Cancer Society and the American Heart Association. Dr. Gollnick's election was recognized at the Academy Fellows Reception at ASM Microbe, a conference held in Boston, June 16-20.



Paul Gollnick, PhD

Omer Gokcumen, PhD

Omer Gokcumen's research featured in UB news releases

What do saliva and eczema have in common? They were the subject of Omer Gokcumen's research that was featured in two news releases last year. Gokcumen, an assistant professor, studies the impact of genomic structural variation to human evolution. His research has found that structural variants, an underappreciated form of genetic variation, have interesting evolutionary histories and disease connections. His eczema research finds no evidence that a genetic predisposition for this disorder has helped humans, unlike a genetic disease that can benefit human health such as sickle cell anemia, a disorder in which the red blood cells take on a crescent moon shape, leading to anemia. But carrying a copy of the sickle cell gene can guard against malaria. The research, published in the journal *Genome Biology and Evolution*, examines a genetic variant strongly associated with the most common form of eczema, atopic dermatitis, a condition that can cause a slew of unpleasant symptoms, including extreme itchiness and dry, scaly rashes. However, there doesn't seem to be a tradeoff for this discomfort; the genetic variant studied appears to be a random vestige of evolution. "We present a complex evolutionary history of this disease variant, and it seems to be just bad luck that it has endured for so long," he says. "Unlike other disease variants, such as those linked to sickle cell anemia or psoriasis, the one we studied is just not that important from the standpoint of evolution. It doesn't appear to affect what biologists call 'fitness,' which is another word for reproductive success." The research was based on a data set that included the genomes of more than 2,500 people from around the world.

The takeaway from a new study that looks to the saliva of humans, gorillas, orangutans, macaques, and African green monkeys for insights into evolution is that sometimes there's no need to reinvent the genetic wheel. Gokcumen's research, which was published in *Scientific Reports*, examined a gene called MUC7 that tells the body how to create a salivary protein of the same name. The protein, which is long and thin, forms the backbone of a bottlebrush-shaped molecule that helps to give saliva its slimy, sticky consistency. The study found that within the MUC7 gene, instructions for building important components of the bottlebrush were repeated multiple times in each of the five primate species studied. Gorillas had the fewest copies of this information (4-5), while African green monkeys had the most (11-12). Humans fell somewhere in between, with 5-6. Having numerous copies of the repeated instructions resulted in longer, denser proteins, which likely conferred an evolutionary advantage to primates, possibly by enhancing important traits of saliva, such as lubricating the mouth — which facilitates talking, chewing, and other vital functions — and latching onto microbes, an action that's thought to expedite the removal of disease-causing pathogens from the oral cavity. "You don't always have to invent a new tool," says Gokcumen."Sometimes, you just need to amplify the tool you already have."

FACULTY NEWS

Department expertise leads to research funding for 2016

In the past year, department faculty have been awarded a total of $4,120,933 over varying periods of time to conduct research on a number of projects, which span a wide range of topics. Details follow:

Paul Cullen, PhD – National Institute of General Medical Services, 9/1/2016 to 8/31/2020, total award = $1,306,591, "Control of MAPK Signaling by Cell Polarity Proteins"

Katharina Dittmar, PhD – National Science Foundation, 3/15/2016 to 2/28/2019, total award = $353,925, "Collaborative Research: Evolutionary trends and ecological drivers of eye reduction in bat flies (Hippoboscoidea)"

Denise Ferkey, PhD - National Institute on Deafness & Other Communication Disorders, 12/1/2016 to 11/30/2021, total award = $1,660,417, "Gap Junction-Mediated Regulation of Nociceptive Sensory Signaling"

Gerald (Jerry) Koudelka, PhD – UB GEM (Genome, Environment, and the Microbiome) seed grant, 6/1/2016 to 6/30/2017, total award = $50,000, "Protists in the oral microbiome". Co-PI is Mira Edgerton, PhD – Research Professor, Department of Oral Biology, Jacobs School of Medicine and Biomedical Sciences

Charlotte Lindqvist, PhD – National Science Foundation, 3/1/2016 to 2/28/2018, total award = $150,000, "Collaborative Research: A Paleogenetic Survey of Late Quaternary Mammal Biodiversity in Southeast Alaska"

Laura Rusche, PhD – National Science Foundation, 9/1/2016 to 8/31/2019, total award = $600,000, "Evolving contributions of the origin recognition complex (ORC) to subtelomeric chromatin"

Department professor invited to participate in the PhD defense of a European student

Paul Cullen, PhD, associate professor, was in Gothenburg, Sweden this December to participate in a PhD defense. The PhD system in Sweden and some other European countries is quite different from the defense process in the U.S.. After the student develops their thesis for four years, an 'opponent' (Cullen in this case) is chosen to read and challenge the thesis.

Six weeks before the defense, the PhD is physically nailed to a plank of wood in the department's common room, symbolizing the public release of the thesis, which cannot be defended until it has been public. At the defense, the 'opponent' gives the introduction to the thesis. The student talks for about 20 minutes, then the opponent and student sit across from each other and discuss the thesis in public for at least an hour. There follows more questions from the examining committee, and then the committee, PhD mentor, and 'opponent' retire to a separate room to deliberate the merits of the thesis, after which the examining committee votes. Paul Cullen was invited to be the 'opponent' for Sviatlana Shaskova in the lab of Stefan Hohmann, PhD, at the Chalmers University of Technology. After two hours of questions and committee discussions, Shaskova passed. The defense was followed by four cheers of Hurragh with champagne and later that night was a formal gathering with dinner, skits put on by students, and many toasts. The 'opponent' system varies widely throughout Sweden.

Read more about the Swedish PhD defense system here>

Paul Cullen, PhD

FACULTY NEWS

Katharina Dittmar, PhD

Katharina Dittmar, PhD, awarded SUNY Chancellor's Award for Excellence in Teaching

The Chancellors Award for Excellence in Teaching is the highest award for teaching in the SUNY system. It recognizes consistently superior teaching at the graduate, undergraduate, or professional level in keeping with the State University's commitment to providing its students with instruction of the highest quality, and who have demonstrated outstanding teaching ability through superb classroom performance. Dittmar was recognized for her inspirational teaching and mentoring of undergraduate and graduate students alike, her exceptional classroom instruction, and for her innovative pedagogy. Praised by colleagues as a talented instructor whose dedication to teaching has led her to become one of the most innovative instructors at UB, Dittmar is focused on developing her students' ability to conceptualize, rather than memorize, the material she presents. A UB faculty member since 2007, Dittmar served as a member of a committee charged with revamping the biology department's first-semester biology course, "Evolutionary Biology" (BIO 200). She was instrumental in implementing a restructured format for students that incorporated more experiments, more data collection, and more basic data analysis into the class labs. This work led to a lab-focused software design project that attracted three different teaching-based grants, including a nearly $250,000 National Science Foundation (NSF) grant. As co-principal investigator on the NSF grant, her work secured funding to professionalize and expand the software developed for BIO 200 called Pop!World, which is now the centerpiece of the BIO 200 lab on population genetics. Dittmar was also PI on two SUNY Innovation Instructional Technology Grants that have focused on developing a virtual teaching environment for Pop!World. Honorees were formally recognized at UB's Annual Celebration of Academic Excellence held last October. As a 2016 awardee, Dittmar becomes the 11th BIO faculty to be honored with this award. Our previous teaching award winners are listed **here**.

Ron Berezney, PhD, was appointed to the Editorial Board of *BioEssays* in June. *BioEssays* is a monthly peer-reviewed review journal covering molecular and cellular biology. The journal also publishes commentaries on aspects of science communication, education, policy, and current affairs. He was also an invited member of the National Cancer Institute's Special Emphasis Panel on October 13-14, 2016, in Bethesda, Md. The panel reviews grant and cooperative agreement applications and contract proposals for research projects and for research and training activities in broad areas of basic and clinical cancer research. Members are selected to serve for individual meetings on an "as needed" basis in response to specific applications or proposals. Berezney was also an invited speaker at the 3rd Conference on Aneuploidy and Cancer, January 26-29, 2017, in Berkeley, Calif. The title of his talk was "Wide-scale alterations in interchromosomal organization in breast cancer cells: defining a network of interacting chromosomes."

FACULTY NEWS

UB Professor and bear geneticist featured on *Animal Planet's* MONSTER WEEK special, YETI OR NOT

Charlotte Lindqvist, PhD, was a featured scientist on an *Animal Planet* special which aired Sunday, May 29, 2016, as part of the network's popular television event, MONSTER WEEK. The special, YETI OR NOT, explored the origins of the fabled Yeti — a mysterious bipedal creature that is part of the mythology of the Himalayan region of Nepal and Tibet. Many people have speculated that bears may have played an important role in the origin of the Yeti legend, so Lindqvist, an internationally known expert on bear genomics, thought the *Animal Planet* project could yield samples of Himalayan and Tibetan bear (rugged creatures representing two subspecies of the world's brown bears, and which are critically endangered and rarely sighted in the wild) DNA for her research. She was also fascinated by the idea of using modern science — in particular, genomics — to help trace the roots of ancient myths. Previous genetic tests of alleged Yeti samples suggested that it might be some kind of special or perhaps hybrid bear, having some of the traits of a polar bear. The special featured Lindqvist's genetic analysis of untested biological specimens believed by locals to be from Yetis. The specimens came from fur, bone, tooth, and hand/paw samples. In the end, the DNA analysis confirmed that all the samples came from either Tibetan or Himalayan brown bears and there was no possible interbreeding between those species and polar bears. As Lindqvist says, "Myths and legends are not my area of expertise, but it certainly is intriguing how science can help shed light on some of these mysteries."

More>

University at Buffalo biologist Charlotte Lindqvist, left, with Mark Evans, veterinarian, explorer, and host of YETI OR NOT.

ALUMNI NEWS

Department honors yet another Distinguished Alum

Biological Sciences' Distinguished Alumni Speaker for 2016 is David Toczyski, PhD, from the Department of Biochemistry and Biophysics at the University of California at San Francisco School of Medicine. David received his BS degree from our department in 1987, summa cum laude. He subsequently earned his MPhil and PhD degrees at Yale University, followed by a postdoctoral appointment at the Fred Hutchinson Cancer Research Center in Seattle from 1993 to 1998. He joined the UCSF Department of Biochemistry and Biophysics in 1998 as an assistant professor and was promoted to full professor in 2010. His research focuses on two main topics: regulation of the cell cycle at the DNA damage checkpoint using yeast as a model system and the regulation of cellular activity by ubiquitin-mediated proteolysis.

Left to Right: Stephen Free, PhD, David Toczyski, PhD, Ronald Berezney, PhD.

During his time at UCSF, he is or has been PI or co-PI on 14 NIH grants totaling nearly $4M. Toczyski spent his day renewing acquaintances, meeting some of his old professors as well as newer ones, and touring the department. He was presented with his Distinguished Alumni Award prior to his talk and was guest of honor at the post-seminar wine and cheese reception. His seminar title was "Degrading activities, the regulation of cellular biology by the ubiquitin pathway."

We appreciate the generosity of our dear friends who have helped us along.

We hope that you have fond memories of your time as a student at UB and of your studies in the Department of Biological Sciences. We hope your UB education has been the passport to a wonderful career. We are fortunate to have received donations from many of our alumni and friends, which have helped us provide excellent learning opportunities for our students. Thanks to you, we have been able to:

- Provide research opportunities for undergraduate students.
- Update our laboratory courses and facilities.
- Fund teaching assistants needed to offer laboratory classes to an increasingly large number of BIO majors.

With your support, we can expand our opportunities. We invite you to donate to the department and continue to provide for our students by contributing to the following funds:

- Biological Sciences Resource Fund—a general fund that allows us to meet our greatest needs.
- The Phillip G. Miles Undergraduate Research Fund—provides research funds for undergraduate research projects.
- The Darrell Doyle Memorial Lecture and Travel Awards fund—provides graduate students with funds to attend research conferences.

You can contribute online by visiting https://biology.buffalo.edu/give and clicking on the fund you wish to support. We appreciate your kindness and generosity. The funds donated will benefit our students and help them follow you into successful career paths.

Thanks so much to those who have been helpful.

Stephen J. Free, PhD
Professor and Chair

Visit the department website and stay connected
http://biology.buffalo.edu/alumni-friends/

ALUMNI NEWS

Michael Farkas (PhD, 2009) is an assistant professor in the Department of Ophthalmology in the Jacobs School of Medicine and Biomedical Sciences at the University at Buffalo. After graduating from the department, where he worked on the effects of environmental pharmaceutical contaminants on plants, he changed fields. Following an ophthalmology postdoctoral fellowship at the University at Pennsylvania, he was at the Ocular Genomics Institute, Massachusetts Eye and Ear Infirmary, at Harvard Medical School where he was an instructor of ophthalmology before returning to Buffalo. Farkas studies novel gene therapy strategies for inherited blindness, which is caused by mutations in genes that are important for retinal function. He has expertise in areas including bioinformatics, eukaryotic pathogenesis, gene expression, gene therapy, genomics and proteomics, molecular and cellular biology, molecular basis of disease, molecular genetics, and stem cells.

Michael Farkas, PhD

GRADUATE STUDENT NEWS

Paul Pizzella and Marta Ayala Award

The opportunity for some of our graduate students to either attend or present their research findings at a scientific conference or to work in another research lab outside the department has been made possible through a generous continuing donation from Paul Pizzella (BA, 1986) and his wife Marta Ayala. Students have commented that these opportunities bring them in contact with new colleagues in their field. In some instances, it gives students a perspective about career opportunities after graduation, and on occasion, insights on potential experiments they might want to include in their thesis research. This past year, two students were awarded funds to present their research findings at conferences.

Dolonchapa Charkaborty

Dolonchapa Charkaborty, a senior graduate student in Gerald Koudelka's lab, attended the American Society for Microbiology Microbe 2016 meeting last June in Boston, where she presented a poster of her research "Phage-encoded molecules regulate STEC (Shiga toxin-encoding Escherichia coli) virulence."

Sukanya Basu, a senior graduate student in Paul Cullen's lab, presented her research in poster format at the 2016 American Society for Cell Biology Annual Meeting in San Francisco, last December. The title of her poster was "Unique modalities of MAP kinase signaling generates specificity among pathways that share components."

To date, seven students have been beneficiaries of this award funding, one student twice. With the exception of one student who used the award to visit a research lab in Germany, everyone else has attended high profile conferences either as an attendee or to present their research.

Sukanya Basu

GRADUATE STUDENT NEWS

Eight BIO graduate students win Doyle Travel Awards

Eight UB biological sciences graduate students were honored with a Darrell Doyle Travel Award for their presentations of their research at the 11th Annual Biological Sciences Graduate Student symposium on January 22, 2016, an all-day event organized exclusively by the graduate students in our department. There were 23 poster presentations and 9 platform presentations in all. The student choice for keynote speaker was **James H. Westwood, PhD,** professor in the Department of Plant Pathology, Physiology and Weed Science, Virginia Polytechnic Institute and State University. Darrell Doyle Travel Awards are provided to the best student platform presentations and posters. The Darrell Doyle Travel Award provides funding to our best students, who then have the opportunity to present their work to a national and international audience.

Dr. James Westwood 3rd from right

The award winning students are:

Platform Presentation:

1st Place: **Neah Likhite**: The protein arginine methylase PRMT5 promotes D2-like dopamine receptor signaling

2nd Place (tie): **Courtney Szyjka**: Suppression scree for the identification of protein interactors of the trp RNA binding protein attenuation protein (TRAP)

Joseph White: Huntintin transports a novel Rab4-containing vesicle complex in axons

3rd Place: **Ashleigh Hanner**: The heterochromatin protein Sir3 specialized after duplication

Poster Presentation:

1st Place: **Maria Haniam**: Identifying secondary targets of Sir2 deacetylases in Kluveromyces lactis

2nd Place (tie): **Chris Rupert**: Molecular characterization of C. parapsilosis HST1 and its role in pathogenicity

Jacky Chow: Role of Cdc42P and MAPK signaling in regulating aggregation-dependent fungal behavior

3rd Place: **Ryan Hindman**: NPH I and the role of the non-template strand of the transcription bubble in vaccinia early gene transcription

Congratulations to all the award winners and thank you to our generous donors who make these awards possible! For more information about the awards, see here .

Left to Right: Maria Haniam, Neah Likhite, Joseph White, Ryan Hindman, Ashleigh Hanner, Courtney Szyjka, Chris Rupert, Jacky Chow

UNDERGRADUATE STUDENT NEWS

Sampurna Chakrabarti, who graduated summa cum laude in May 2016 with a BS in biological sciences and BA in psychology, and the recipient of a departmental **Knobloch endowed scholarship**, is currently attending the University of Cambridge in the United Kingdom on a Gates Cambridge Scholarship. Considered as one of the most prestigious international scholarships in the world, a Gates Scholarship provides full support for a student to pursue any graduate degree offered at the University of Cambridge. Gates Scholars are chosen based on intellectual ability and a commitment to improve the lives of others. Chakrabarti was one of 55

Sampurna Chakrabarti

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recipients of the scholarship chosen from a pool of more than 3700 nominees worldwide. As an undergraduate, Chakrabarti's research interest was in neuroscience, where she worked in Malcolm Slaughter's lab in the Department of Physiology and Biophysics in the Jacobs School of Medicine and Biomedical Sciences at UB. For her PhD, she is studying drug targets for arthritic pain in the lab of Ewan St. John Smith at the Department of Pharmacology. Her research will help understand arthritis and pain pathologies that affect millions of people worldwide. She is also passionate about educational equality and hopes to work with organizations around the world, especially in developing countries, to make quality education available to all. In her spare time, she likes to paint and write a neuroscience blog. Chakrabarti's award was recognized at UB's Celebration of Student Academic Excellence in April 2016.

Oluwatosin Oniyide, biological sciences undergraduate, wins an Undergraduate Award for Excellence in Research, Scholarship and Creativity

Oluwatosin Oniyide and Mary Bisson, PhD

Oluwatosin (Tosin) Oniyide, an undergraduate student in the department, received the UB Undergraduate Award for Excellence in Research, Scholarship and Creativity at the Celebration of Student Academic Excellence held on campus April 7, 2016. The award recognizes outstanding scholarly contributions that achieve superiority in presentation, content, and scope, and which merit acknowledgement of efforts worthy of university-wide recognition. A research student with Mary Bisson, professor in the Department of Biological Sciences, Oniyide was recognized for his work on the production of reactive oxygen species in response to cadmium uptake by Chara australis, an algae that shows potential for use in phytoremediation of aquatic ecosystems that have been polluted by heavy metals. In summer 2015, Oniyide was one of five campus winners of the CSTEP (Collegiate Science and Technology Entry Program) Summer Research Symposium Poster Awards. This award provided him with all-expenses paid travel to present his research at the CSTEP Statewide Conference, held this past April 8-10 at the Sagamore Resort in Lake George, N.Y. The title of his poster presentation was "A flouresence microscopy study of ROS production in Chara australis (R.Br)."

Department Honors symposium highlights undergraduate research

The departmental Honors program (as distinct from the University Honors College), is open to both BA and BS students with an overall GPA of a 3.6 or higher. Students apply to participate in the program, must be accepted by a research adviser, be doing biologically relevant research at the honors level, and register for six credits of research (Bio 497, Honors Research in Biology) which must be completed during the senior year, resulting in a project that the student can present at the departmental honors research symposium held during May of the senior year. Students with GPAs of 3.8 and above can volunteer to give a short talk on their research at the symposium. Two of the students selected to give talks will graduate with Highest Honors. Successful participation in the honors program and distinction level are reflected on student diplomas. Platform talks were given by **Sampurna Chakrabarti** and **Jonathon Hoffman**, titled "Characterization of alpha 3 glycine receptors with ginkgolide B and picrotoxin" and "Sex differences in aversive behavior of C. elegans," respectively. Chakrabarti is currently a Gates Cambridge Scholar

Honors Symposium - Robing Ceremony. All student presenters receive a blue and white chord, which represents completion of the Biological Sciences Honors program

at the University of Cambridge, pursuing her doctoral degree in the Department of Pharmacology. Hoffman is currently a research assistant on the UB Downtown Campus in the Clinical and Translational Research Center (CTRC) in the lab of Mark Hicar, PhD, where he's researching broadly neutralizing antibodies to HIV, and another project on B-cell response to inflammation in Kawasaki Disease. He is beginning the process of applying to medical schools, with the hope to start in fall 2018. Posters were presented by the following students:

Benjamin Balderman, "Genetic control of metastasis." Ben is a first- year Medical Student in UB's Jacobs School of Medicine and Biomedical Sciences.

Sushobhn a Batra, "Effects of ethanol on microglia cells." Sushobhna is at the University of Texas Southwestern Medical Center where she's pursuing a PhD in immunology.

Eric Becker, "Efficacy analysis of toothpaste supernatant on smooth titanium disks via various redox assays."

Lauren Boehnke, "The evolution of GHR deletion in human populations."

Cui Chen, "Why are conscientiousness and alcohol use associated? Clarifying the roles of distress avoidance, behavioral avoidance, and urgency in male and female college students." Cui is double majoring in biological sciences and biomedical sciences, and will graduate in May 2017 with a double degree. She has been accepted into UB's Accelerated Baccalaureate Degree in Nursing (ABS) Program beginning May 2017, but is also applying to physician assistant programs as well.

Westin Doney, "Sorting nexins in phagosomal maturation." Westin's plans are to work for a year in a dental office and then off to (hopefully) dental school.

Justin Durland, "Identifying new factors involved in regulating the B. subtilis tryptophan genes." Justin is currently working as a medical scribe for a year before applying to medical school.

Morgan L. Endreson, "The role of the serotonin signaling pathway in sex-based differences in C. elegans behavior." Morgan is a first-year medical student at New York Medical College (NYMC).

Drake Garner, "Improving photosynthesis through transgenic C3 tobacco and arabidopsis." Drake is pursuing his PhD in plant molecular and cell biology at the University of Florida.

Aidan McGonigle, "Olfactory receptor copy number association with age at onset of alzheimer disease."

Kenneth Minorczyk, "Neurons in the retina of the twitcher mouse are non-pathologic and sphingosine-1-phosphate as a potential therapeutic pharmacological agent for globoid cell leukodystrophy." Kenneth is a first-year medical student at the University of Chicago School of Medicine.

Gabriella Quartuccia, "Assessing the geographic ranges of North American Bears in times of climate change." Gabriella is a research technician at Columbia University in the Department of Medicine. She hopes to apply to various PhD programs in the near future.

Marisa Rigali, "Vaccinia capping enzyme alanine scanning project." Marissa is a first-year medical student at the Pennsylvania State University College of Medicine.

Ivelisse Trujillo, "Commercial NanoGen vs nano calcium sulfate". Ivelisse is currently getting her MBA at UB with a concentration in health care administration.

Kenneth W. Minorczyk Jr., Biological Sciences' Outstanding Senior

Every year, each department in the College of Arts and Sciences nominates an outstanding senior student, someone who demonstrates academic excellence exemplified by an exceptional grade point average, election to honor societies, participation in research or scholarly activity, and any other academic or extracurricular achievements departments may wish to consider. This year's recipient is Kenneth Minorczyk Jr. As a reflection of his mastery of class material—and desire and ability to teach and help others—Kenneth was asked to serve as an undergraduate teaching assistant for two classes in the department: BIO200 (Cell Biology) and BIO205 (Biochemistry). He was an exceptional TA for both courses, receiving rave reviews from students and working well with the faculty instructors and with the other TAs. During his time at UB, Minorczyk was the recipient of the Grace Capen Award (students completing their sophomore years of study with a 3.95 or higher cumulative GPA) and Sophomore Merck Index Award (to the top 1 percent of the organic chemistry class at UB) and also scored in the

›› Continued on next page

UNDERGRADUATE STUDENT NEWS

Kenneth W. Minorcyzk

99th percentile on the Medical College Admissions Test. He spent his junior and senior years studying human globoid cell leukodystrophy under Laura Feltri, MD, at the Hunter James Kelly Research Institute, the results of which were presented at the departmental Honors Symposium in May. Outside of school, he has volunteered at Mercy Hospital, InterVarsity Christian Fellowship, and Elderwood Nursing Home during his undergraduate career. After graduating this past spring summa cum laude with a 3.989 GPA, Minorcyzk is currently attending the University of Chicago Pritzker School of Medicine on a full-tuition merit-based scholarship, where he aspires to be a neurosurgeon.

ACADEMIC EXCELLENCE Annual event spotlights student research

UB's 12th Annual Celebration of Student Academic Excellence held this past April featured research conducted by students from biological sciences under the guidance of many different faculty members. This is an annual event in which the UB community gathers to recognize and celebrate the outstanding academic contributions of our students, faculty, and research mentors. The students' research is presented in poster format. This year's poster titles, student presenters, and faculty mentors are listed below:

"Role of rmt5 in cryptococcus neoformans titan cell formation," **Judite Ayeh**; faculty mentor, John C. Panepinto

"Recent evolution and subfunctionalization of two pathogen interacting salivary proteins, HTN1 and HTN3," **Alexa Bracci**; faculty mentor, Omer Gokcumen

"Telomere-binding protein Rif2; product of subfunctionalization or neofunctionalization from the replication protein Orc4," **Shawn Gibson and J. Theresa Rubi**; faculty mentor, Laura Rusche

"Investigating Rab5 in APP-mediated axonal transport," **Hayley Hofmar-Glennon and Joseph White**; faculty mentor, Shermali Gunawardena

"Metagenomic investigation of the whale gut microbiome," **Armond June**; faculty mentor, Charlotte Lindqvist

"Investigating how PI3K is activated due to oxidative stress," **Claire Thant**; faculty mentor, Shermali Gunawardena

"Treponema denticola's outer membrane vesicles uptake mechanism on host cell types," **Leandra Velazquez**; faculty mentor, Michelle Visser

"A flouresence microscopy study of ROS production in Chara australis (R.Br)," **Grace Cragie and Oluwatosin Oniyide**; faculty mentor, Mary A Bisson

"Nano material as a bone regenerative system for the oral cavity: a comparative study," **Hoda Moussa**; faculty mento, Rosemary Dziak

"Does ethanol affect chemokine Induced microglial migration?," **Sushobhna Batra**; faculty mentor, Richard A. Rabin

"Modeling patient adherence in a compromised population," **Temitayo Sodeke**; faculty mentor, Murali Ramanathan

"Formulation of biodegradable nanoparticles for the treatment of infectious disease," **Kwame Boakye-Yiadom**; faculty mentors, Hilliard Kutscher and Gene Morse

UNDERGRADUATE STUDENT NEWS

Undergraduate Scholarship and Fellowship recipients for the 2016-2017 academic year

The department is fortunate to have generous alumni and friends who have established fellowship and scholarship programs—some endowed, some with continuing financial support—to enhance the educational experiences of our undergraduate students. These fellowships and scholarships are open to undergraduates who are majors and/or intending to major in biological sciences and are interested in the research our faculty conduct. This year's fellowship and scholarship recipients are:

Sidney M. and Marjorie I. McCroskey Scholarship

Alexa Bracci – a senior, enrolled in the departmental Honors Program, she is undertaking her research in Omer Gokcumen's lab, whose current focus is studying the impact of genomic structural variation to human evolution. Bracci is working on capturing long-read sequences to use state-of-the-art sequencing platforms to resolve complex regions in the human genome. She will then use this new method to ask novel questions about the evolution and function of these previously underappreciated complex regions. Bracci also participated in a National Science Foundation funded program, Research Experience for Undergraduates, during summer 2016 at the University of Cincinnati where she researched the behavioral genetics and genomics of chemosensory behavior. A Dean's List honoree each semester while at UB, she has been involved in numerous departmental activities, as a teaching assistant in BIO 200, Evolutionary Biology; undergraduate representative on the department and College of Arts and Sciences Undergraduate Grievance Committee; and has served as a recruitment liaison, contacting top accepted students who are interested in biological sciences to answer questions about the department and UB. She is now interviewing at multiple PhD granting institutions, including Columbia, Cornell, Penn State, and Roswell Park Cancer Institute, to name a few.

Catherine Zhang – in her senior year as well, with a concentration in pre-health studies, Zhang is currently conducting research in Laura Rusche's lab, where she is studying gene expression of a human pathogen, Candida albicans, regulated by a sirtuin, Hst1. Sirtuins are proteins that regulate important biological pathways in bacteria, archaea, and eukaryotes; specifically, they are NAD+ dependent histone deacetylases, which are involved in gene silencing. She is interested in Candida albicans because it causes oral candidiasis, commonly known as thrush. Catherine is also in our departmental Honors Program and will be presenting her research at the Honors Symposium later in the spring 2017 semester. Outside of her studies, she is a member of Alpha Phi Omega, a national coeducational service organization in which she has done volunteer work for numerous Buffalo-area human services agencies such as Habitat for Humanity, Friends of Night People, Amherst Baptist Church for New Beginnings Food Pantry, Ronald McDonald House Charities, and Meals on Wheels, to name a few. She is also an involved member of the Asian American Student Association and Pre-dental Association. Her post-graduation plan is to take a gap year to travel all around Asia and then go to dental school.

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UNDERGRADUATE STUDENT NEWS

Irving W. and Natalie A. Knobloch Scholarship

Siying Chen – another of our students in the department Honors Program, Chen is in her last year as an undergraduate. She is the first person in her family to attend college, and has been a research assistant for Xiaozhong Wen in the Department of Pediatrics at UB's Jacobs School of Medicine and Biomedical Sciences since May 2015. Wen's research specialties are behavioral medicine, pediatrics, and public health and general preventive medicine. Some of her research projects have involved maternal smoking in lactation and infant weight-for-length gain; using multi-component intervention to assist pregnant women to stop smoking throughout pregnancy; and, most recently, research about infant secondhand smoke exposure trajectories and how that affects infant growth, appetite, and health. Some of her other extracurricular activities include being a college ambassador for the College of Arts and Sciences and a teaching assistant for an introductory human anatomy laboratory course. She is a current member of the National Society of Leadership and Success for the past three years, and is currently Vice President of Service for Alpha Phi Omega, a national co-educational service organization, and has volunteered in numerous community activities throughout the Buffalo area. Chen's long term goal is to apply and be accepted into a MD-PhD program.

Darryl Raszl Undergraduate Research Fellowship

Katherine Zimmerman – in her senior year and planning to graduate in May 2017, Katherine has been a long-time member of Shermali Gunawardena's lab, where she has conducted research on Huntington's and Parkinson's disease using drosophila as a model system. Katherine explored the effects of varying levels of Huntington's disease protein, huntingtin, on motility of different Rab g-proteins and investigated possible linker proteins for a huntingtin complex. She was also involved in characterizing mitochondria with varying levels of fission/fusion proteins in order to put it in context with the Parkinson's disease protein alpha-synuclein. She is the co-author of a paper that appeared in *Human Molecular Genetics* in October 2015 titled, "Huntingtin Differentially Regulates the Axonal Transport of a Sub-set of Rab-containing Vesicles in Vivo." A member of the University Honors College, Katherine has received numerous university scholarships and awards, and has presented her research on many occasions both at UB and nationally. She served as a TA for our introductory Evolutionary Biology course, is a member of Alpha Epsilon Delta, the National Pre-Health Honor Society, has worked the previous three summers as a MDA summer camp counselor, and currently volunteers for Dancability

Inc. which offers an individualized dance, fitness, and movement program serving the special needs community. Katherine would like to attend medical school after graduation.

Philip G. Miles Undergraduate Summer Research Fund

Hayley Hofmar-Glennon–entered her senior year having spent summer 2016 in Shermali Gunawardena's lab. Gunawardena's interest is to elucidate if degeneration of neurons in two neurodegenerative diseases (Alzheimer's disease or Huntington's/ other polyQ diseases), is related to a defect in the axonal transport system and what mechanisms facilitate the normal transport of Amyloid Precursor Protein (APP) and huntingtin. Hofmar-Glennon studied the underlying causes for how APP and Rab5 disruptions occur in axonal transport in Drosophila larvae. While in Gunawardena's lab, she learned how to dissect larvae and image axonal transport defects, used antibodies to identify particular synaptic proteins, and image axonal blockages using a fluorescent microscope. Currently, she is working on investigating the role of neurodegenerative disease proteins during autophagy which is often perturbed in disease. When not in class or the lab, Hofmar-Glennon has been co-chair of Lab Fair Day at UB, is a member of the National Honor Society of Leadership and Success, and a member of the UB Aces, the club tennis team of UB. Hofmar-Glennon hopes to go to veterinarian school after graduation.

Bailey Kemp – also in her senior year and a member of UB's Honors College, Kemp spent summer 2016 in Kathryn Medler's lab. Medler's lab studies the physiology of signal transduction pathways and the regulation of these pathways in neuronal systems, focusing on peripheral sensory systems, primarily the taste system. A member of Medler's lab since her sophomore year, Kemp has mastered the lab techniques she needed in order to conduct her summer research which aimed to help understand the relationship between diet-induced obesity and taste sensitivity, as preliminary data shows that obesity affects mice's ability to taste, as well as causing reduced levels of the proteins involved in transducing taste. An impaired taste system could contribute to serious health issues such as weight gain. Outside academia, Kemp was a member of UB's varsity cross country and track and field team for three years, and has volunteered at various long-distance running events, as well as the Buffalo and Erie County Botanical Gardens.

Alumni Undergraduate Research Fellowship

Hannah Calkins – is in her junior year and pursuing research under the guidance of Omer Gokcumen, working with transgenic mice to understand genetic variation in the growth hormone receptor. This mouse model will help in understanding the clinical and evolutionary implications of a common genetic variant that affect human growth and development. Selected out of 4,000 applicants, she is slated to present her research as a poster, titled, "Evolutionary origin and functional impact of the GHR deletion," at the National Conference on Undergraduate Research, April 6-8, 2017 at the University of Memphis. Calkins works part-time as a service desk employee and trainer at a well-known Buffalo-area supermarket and volunteers as a Big Sister with the Big Brothers Big Sisters of Erie County.

OUR GRADUATES

Arts and Sciences PhD

Tien-Hao Chang
Michael P. Colon
Christopher A. Jackson
Neah Likhite
Daniel Samorodnitsky
Yang Yang
Pradeep Kalyan Yerramsetty
Amy M. Zielinski

Arts and Sciences Masters Degrees

Rupkatha Banerjee
Debarghya Dutta Banik
Barinaepkee Banuna
Breanna Bridges
Katherine A. Collins
Alexis Gasiewicz
Romario Gibson
Muhammad Ali Jaffari
Tenzing Namgyal Lama
Deukbuhm Lee
Mark Lojacono
Johan Nakuci
Aditi Prabhakar
Samantha Rose Queeno
Genesis Serrano-rodriguez
Tamer Shogan
John Joseph Stocking
Kelly Tram
Victoria Yellamaty
Justin Morgan Zonneville

Arts and Sciences Baccalaureate Degrees

Jasmin Aiman Abdel-malek
Samar Adhami
Asma Akram
Andrew James Albright
Eric Michael Alessi
Jafor Syed Ali
Nabeel Salim Almuti
Jacob J. Altmire
Jean Tyler Aluc
Boma Zelma Aminigo
Abdullah Anwar
Taaha Anwar
Saniya Attar
Judite Kafui Ayeh
Benjamin Balderman
Max Barnhart
Sushobhna Batra
Eric Patrick Becker
Kwame Joshua Boakye-Yiadom
Lauren Marie Boehnke
Vidan Boga
Justin Mallari Bondoc
Hayley Kirsten Brown
Eric Yuri Bychkov
Gina Marie Caccamise
Mary K. Calhoun
Aloni Maria Carrion
Lydia Chai
Sampurna Chakrabarti
Matthew Chapman
Aniqa Chowdhury
Jessica Chung
Kyung Ah Chung
Cristina Marie Cisneros
John P. Cooke
Dillon Coughlin
Kelly Coughlin
Katherine Cwiklinski
Lataesha Alexandra Davidson
David Deng
Jessica E. Deyoe
Tek Dhakal
Tila Dhakal
Yahui Ding
Westin Alexander Doney
David Donnelly
Shannon Dowling
Sara Marie Duncan
Justin Noble Durland
Melissa Elizabeth Ebbing
Ashley Elsayad
Morgan Endreson
Meghan Valerio Evangelista
Dominick Anthony Farina
Kara Feminella
Antonio D. Figueiredo
Alyssa Lynn Fortuna
Masako Fukuchi
Chris Anabell Galarraga
Drake Mitchel Ginter Garner
Benjamin Isaac George
Daniel Evan Gershman
Shawn Alexander Gibson
Jeffrey David Gloff
Andris Elaine Gomez
Mackenzie Marie Gorham
Jessica Hall
Anne-Marie Lynne Hathaway
Ashley Ann Hayes
Estephanie Lucero Herrera
Jonathon Hoffman
Nathan Housley
Yasmin Hussain
Elizabeth Susan Ibbotson
Mohammad Tamzid Iqbal
Irum M. Jaffri
Jasdeep Singh Jassar
Sunbul Javaid
Young Ju Jeon
Akshay Varshnay Jetty

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Sebastian Andres Jimenez
Naomi Joseph
Kamruddin Kader
Amar Kaur Kajla
Elizabeth Ann Kaltenbach
Laura Kandl
Oluwakanyinsola Karunwi
Brian William Kawecki
Brendan Thomas Kerr
Kirsten Elizabeth Kibler
Jin Sung Kim
Min Young Kim
Kendra Kokofu
Nyonsuawlue Kollue
Molly Maral Koochekpour
Alison Lindel Kraus
Monika Sophia Krzak
Megan Lamb
Angela Marie Leblanc
Dam Sil LeeJinwook Lee
Tara Lemen
Yun Xia Li
Alex Leonel Linares
Pauline Lio
Anna Maria Lipinska
Nicole Marie Locascio
Anthony Luis Lopez
Kelly Lulek
Joseph Lullo
Roksolana Lypska
Milani Yaashanti Machicote
Katie Lynn Madlen
Shelly Ann Manyevitch
Brandon Maranto
Carmen Angelo Marra
Julia Elizabeth Marrandino
Aidan M. McGonigle
Akhil Mehta
Ling Yi Mei
Kalyna Larysa Melnyk
Jacob Carson Mesiti
Branka Mijic
Darla Jeannine Milczewski
Benjamin Joseph Miller
Kenneth Minorczyk
Anthony Edward Mirabelli
Hoda Moussa
Jason Mu
Joel Gabriel Nassi
Crystal Ashley Naylor
Kaeleigh Elizabeth Nissen
Joseph Edward Noble
Christian Kwaku Nyarko
Hussain Nazal Odeh
Joo Won Oh
Folake Grace Olaleye
Michael Olu-Talabi
Joedie Ann Padilla
Leah Ann Panasiewicz
Poonam Parmar
Nicholas Ryan Paul
Sarah Jillian Perrotta
Daniel Andrew Pinto
Carly Brooke Polisoto
Maria Pollack
Lindsay Marie Ponto
Dylan John Prahovic
Atindra Pujari
Peter Puskas
Gabriella Isabella Quartuccia
Alexander Jeffrey Rabey
Salam Radwan
Anthony George Rawda
Rebecca Reigelman
Stephen Tyler Richmond
Marisa Ann Rigali
Katherine Lynn Saff
Cooper James Sailer
Payraw Salih
Hunter Thomas Salmon
Nazmus Saquib
Brianna Satter
Malerie Saunders
Katie Ann Sawyer
Collin James Sears
Kelly Segal
Lutfi Alp Serbetci
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Daniel J. Thorner
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Ivelisse Trujillo
Alexander Tseyko
Saingghech Ung
Shreya Pratulkumar Vachhani
Sharon Vadapalli
Nina Marie Ventura
Jack Henry Visco
Michelle Visser
Jimmy Tran Vu
Sharlin Akhter Wadud
Marissa Walters
Joshua Lawrence Werner
Thomas James Willis
Josette Jessica Wlaschin
Fanny Wong
Jessica Tace Wood
Stephanie C. Wu
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Cover photo from the Laboratory of James Berry, PhD with assistance from PhD student Christopher Mure.

An immunolocalization performed on a leaf cross-section of corn (Zea mays) highlighting the Kranz (wreath-like) anatomy found in all C4 plants. The front cover is a fluorescent antibody-staining of two photosynthetic proteins.

The top panel shows Rubisco within internal bundle sheath cells, and the bottom panel PEPcase in an outer layer of mesophyll cells.

Excerpted from the book
"Shots of Knowledge - The Science of Whiskey" by Rob Arnold and Eric Simanek

For information, suggestions, or questions, please contact: Editor - Mr. Joseph Helfer

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BIONEWS

18th Annual Edition 2016-17