Stephan Wilkens, PhD, associate professor of Biochemistry & Molecular Biology, and three of his graduate students in the courtyard of Weiskotten Hall. From left: Sergio Couoh-Cardel, Dr. Wilkens, Stuti Sharma, and Nicholas Stam.

Students in Dr. Wilkens’ lab and others have access to an 800 MHz Nuclear Magnetic Resonance spectrometer purchased with a $2 million grant from the National Institutes of Health.

Dr. Wilkens was selected to receive the Graduate Student Association’s Outstanding Teacher Award in 2012 and 2013. He also won the President’s Award for Excellence in Teaching in 2014.
**INVESTIGATE WITH US**

**TRANSFORMING STUDENTS FROM CONSUMERS OF KNOWLEDGE INTO PRODUCERS OF KNOWLEDGE**

Welcome to SUNY Upstate Medical University’s College of Graduate Studies. Our university is part of an academic medical center, one of only 140 in the country, and is home to a well-funded, interdisciplinary research enterprise.

This is a forward-thinking university that fosters a supportive environment that maintains high standards. Our graduate students in the biomedical sciences enjoy a student-faculty ratio of nearly one-to-one. Our students consistently praise the individual attention they receive from their advisors, and they also enjoy mentoring from upper-level graduate students and researchers across the campus.

Right from the start, graduate students are empowered to make the best choices for their future careers. They choose three lab rotations their first year before deciding on a faculty research advisor and a lab. They are given responsibility for research projects, and take ownership of their work. Soon, the students are also the experts.

Consider joining us as we transform students from consumers of knowledge into producers of knowledge.

**IN THIS GUIDE**

| Research Mission | 2 |
| Research Programs | 4 |
| What You Need to Succeed | 6 |
| Your Academic Path | 8 |
| MD/PhD Program | 10 |
| Student First Authors | 11 |
| Campus Life | 12 |
| Admissions Information | 14 |
| Alumni Spotlight | 16 |
| Upstate at a Glance | 17 |

Opposite page: Microbiology and Immunology PhD student Arturo Barbachano-Guerrero (with Professor Timothy Endy, MD MPH) received a four-year fellowship from the Mexican National Council for Science and Technology. The award helps Arturo conduct research on dengue fever with Dr. Endy and colleagues from Upstate’s Center for Global Health & Translational Science.
Research labs at Upstate are exploring both common and complex illnesses that affect people all over the world. These include potential treatments and cures for cancer, cardiovascular diseases, diabetes, infectious diseases, neurodegenerative disorders, blindness, and many more.

Each student in the College of Graduate Studies works closely with research faculty on exciting areas of biomedical investigation. Students have three lab experiences before focusing on a specific area of study. Students ultimately will have opportunities to perform cutting-edge research in a wide range of areas with at-the-ready collaborations when new expertise is needed.

STRONG RESEARCH CENTERS AND INSTITUTES

To encourage strong collaborative and interdisciplinary research on important medical problems, Upstate has developed focused research centers and institutes.

- **The Center for Global Health and Translational Science (CGHATS)** is tackling global problems in infectious disease and disease outbreak modeling including malaria, zika, dengue fever, cholera, and emerging diseases such as chikungunya. In partnership with the Department of Defense, CGHATS is developing the next generation of vaccine testing protocols, including human infection models for dengue fever. In addition, CGHATS has research satellite sites in Ecuador, Thailand and Kenya, providing for student research opportunities abroad.

- **The Upstate Cancer Center** is the University's home for an integrated program in clinical cancer treatment and research within the Departments of Medicine, Radiation Oncology and Urology. With the recent opening of our Cancer Center, the university is investing in and reimagining our cancer research programs to advance our cancer research initiatives to rapidly take discovery from the bench to the bedside. Construction of a new molecular genetics laboratory will facilitate big data approaches to perform research and provide precision and personalized cancer care.

- **The Upstate Cancer Center** is the University's home for an integrated program in clinical cancer treatment and research within the Departments of Medicine, Radiation Oncology and Urology. With the recent opening of our Cancer Center, the university is investing in and reimagining our cancer research programs to create powerful research initiatives to rapidly take discovery from the bench to the bedside. Construction of a new molecular genetics laboratory will facilitate big data approaches to perform research and provide precision and personalized cancer care.

- **The Center for Environmental Health and Environmental Medicine** brings together faculty and students from neighboring SUNY campuses (CS Oswego, Upstate and Onondaga Community College) to study important problems at the intersection of environment, human health and infectious disease. Opportunities include remote sensor development, climate modeling, and insect vector study in what will be Upstate’s new BSL3 level insectary.

- **The Institute for Human Performance** and **Syracuse VA**.

MODERN LABORATORIES

Upstate investigators have at their disposal beautiful and highly functional laboratory space that is equipped with highly advanced instrumentation. The space is located in three dedicated research buildings — Weiskotten Hall, the Institute for Human Performance and our new flagship, the Neuroscience Research Building (NRB). The NRB brings together neuroscience researchers from the departments of Neuroscience and Physiology, Ophthalmology, Psychiatry, Neurosurgery and Anesthesiology to work on important problems in neurodevelopment, neuro-oncology, neuronal stem cells, physiological basis of behavior and psychiatric genetics.

POWERFUL CORE FACILITIES

Performing cutting-edge research requires access to powerful techniques and instrumentation. For this reason, Upstate has invested in research cores that provide faculty and students with the opportunities to leverage the latest technologies to advance their research programs. Capabilities within our cores include whole genome sequencing and analysis, proteomics and mass-spectrometry, confocal and two-photon imaging, super-resolution microscopy (STED), an 800MHz NMR, cryo-electron microscopy, flow cytometry, and in vivo computed tomography.

RESEARCH OPPORTUNITIES

It is impossible to summarize in such a short space all of the research opportunities available to our graduate students. Suffice to say no University will put as much emphasis as Upstate on your career development, whether your interests lie in academia, industry or using your PhD to develop a sustainable career in a related field. Upstate trains tomorrow’s scientists by working on today’s biomedical problems, and converting students from consumers of knowledge into producers of knowledge.
RESEARCH DEGREE PROGRAMS
IN BIOMEDICAL SCIENCES

The College of Graduate Studies at SUNY Upstate educates students to be research scientists at the PhD or master’s level, preparing them for careers in academic medical centers, colleges and universities, biomedical research institutes, the biotechnology industry, and government agencies. The college educates graduate students through its six biomedical science programs featured here: Upstate’s previously described areas of research focus are integrated throughout its degree granting programs.

BIOCHEMISTRY & MOLECULAR BIOLOGY
Faculty researchers in Biochemistry and Molecular Biology seek to understand the molecular and cellular bases of human health and disease. We apply a broad range of tools ranging from structural biology and biophysics to cell biology and genomics. Faculty with expertise in X-ray crystallography, electron microscopy, and spectroscopy investigate protein structure, folding, and interactions in order to help define disease mechanisms and develop new therapies. Other faculty members employ modern genetics and genomic technologies to integrate to generate a broader understanding of cellular pathways and systems biology. We use a number of different model systems, including mice, flies and single-celled organisms to model disease processes and development.

Areas of focus in the Department of Biochemistry and Molecular Biology include structure and function of membrane transporters, DNA replication and repair, transcription and epigenetics, mitochondrial biology, and cellular responses to stress. These studies are relevant for many human diseases, including cancer, neurodegeneration, and infectious disease.

Our department boasts a robust and longstanding record of extramural funding.

This program awards a PhD and an MS.

CELL & DEVELOPMENTAL BIOLOGY
Research in the Department of Cell and Developmental Biology explores the molecular and biochemical mechanisms of cellular function and development. Faculty researchers in the department have funding for fundamental studies of: proteins and structures responsible for the assembly and dynamics of myofilaments; the genetics and cell biology of heart formation; the role of class I myosins in kidney function; the mechanisms of actin assembly during endocytosis; the role of cell adhesion in regulating the cytoskeleton and cell motility in normal and cancerous cells; integrin regulation of the actin cytoskeleton; research on neural plasticity and spinal cord injury; the role of formins in the assembly of the actin cytoskeleton; the identification of genetic and population levels with goals of developing vaccines and therapeutics of infectious diseases.

This program awards a PhD and an MS in Anatomy.

MICROBIOLOGY & IMMUNOLOGY
Major research areas in the Department of Microbiology & Immunology are in diseases caused by viruses and parasites, the host response to infection, and the development and function of the immune system.

A range of viruses are studied, including dengue, zika, Epstein-Barr virus (EBV), Kaposi’s sarcoma-associated herpesvirus (KSHV), cytomegalovirus, herpes simplex virus and varicella zoster virus. The focus of virology research is on pathogenesis, gene regulation, molecular interactions between the virus and the host cell, antiviral agents, and viral replication as well as cancers caused by EBV and KSHV. Research on malaria and toxoplasma is also conducted.

Immunology research focuses on autoimmune diseases, macrophage function, T and B cell function, K cells, antigen presentation and presentation, viral immunity, immunototoxicology and vaccine development. A central theme is understanding how the immune system prevents or causes diseases.

Research is conducted at the molecular, biochemical, genetic and population levels with goals of developing vaccines and therapeutics of infectious diseases.

This program awards a PhD.

PHARMACOLOGY
Current research in the Department of Pharmacology focuses on cancer biology, leukemia, drug discovery and delivery, structure based drug design, cell signaling, cardiovascular electrophysiology and disease, neurodegeneration and stem cells.

This work is supported by extramural funding, particularly from NIH. To continue this excellent tradition in research and teaching and to keep pace with changes in Pharmacology, our department is enhancing its research strengths and expanding into new research areas.

This program awards a PhD and an MS degree.

PHYSIOLOGY
The major research area is neurophysiology.

The physiology program is an ideal vehicle for students looking to learn about brain or eye function/dysfunction or development.

Experimental approaches range from studies on whole animals and isolated tissues to studies of cellular and molecular events.

Scientific inquiry may include the complex interactions of systems in the whole individual, the orchestration of processes integrating organ and cell function, and/or the integration of molecular events within individual cells.

This program awards a PhD.

Distribution of current students by program

Anatomy & Cell Biology ........................................22
Biochemistry & Molecular Biology ..........................28
Microbiology & Immunology ................................11
Neuroscience .....................................................29
Pharmacology ....................................................19
Physiology .........................................................5
Undeclared (First-Year students) ..........................17
TOTAL - 131 STUDENTS

Models used in the research include: zebrafish, avian embryos, the algae C. reinhardtii, cell culture lines, C. elegans, yeast, rats and mice. Students and faculty use a variety of research methods including sophisticated light microscopy (laser scanning confocal microscopy, spinning disc confocal microscopy, wide-field deconvolution imaging, real-time fluorescence microscopy, TRF microscopy), high sensitivity digital cameras and image processing, electron microscopy, tissue culture, stereotactic surgery, and a complete range of molecular and biochemical techniques.

This program awards a PhD in Anatomy and Cell Biology, and an MS in Anatomy.
WE GIVE YOU WHAT YOU NEED…

**Biomedical sciences students at SUNY Upstate receive a great deal of regular, individual attention from faculty. Students can also count on advice from upper-level graduate students and other researchers, including those from other departments.**

Our laboratories are structured so that new students quickly gain a sense of ownership in a project. In a relatively short period of time, students become the experts and are given opportunities to speak about their research, present posters at conferences and submit articles to scientific journals.

---

**‘You’re in Good Hands’**

Ever since he was a child growing up in India, Dakshesh Patel has been fascinated with the concept of Pharmacology. How is it, he wondered, that you can swallow a pill and your head or another body part stops hurting?

After earning a master’s degree in pharmacology and working as a pharmacist in his native India, Dakshesh came to the United States to enroll in Upstate’s College of Graduate Studies. He works in the lab of Faculty Research Advisor Richard Veenstra, PhD, professor of pharmacology. Dakshesh is studying why certain molecules in some drugs used to treat cancer patients can be toxic to the heart.

“It’s not clear what the cause is,” Dakshesh said. “The goal is to find out why the molecules have an effect on the heart so in the future we can manufacture drugs with no side effects.”

Dakshesh is pleased with the training he is receiving at Upstate. “The Faculty Research Advisors are all prominent in their field,” he said. “Dr. Veenstra is very prominent in gap junctions. I go to conferences, and people know him.”

The atmosphere at Upstate is congenial, Dakshesh said, and the university’s size is an advantage because students don’t need an appointment to see their Faculty Research Advisors. “If you want to do a PhD at Upstate, you’re in good hands,” he said.

---

**‘The Opportunity to Forge Relationships’**

Upstate graduate Neva Watson’s research project made the cover of the prestigious *Journal of Immunology.*

Neva, who accepted a post-doctoral position at Cornell University, investigated the role of a protein in a virus that causes skeletal muscle inflammation. The journal featured her research as well as her image of skeletal muscle calcification caused by a virus.

Neva’s research focused on virus-induced myositis (inflammation and degeneration of muscle tissue), a disease that has emerged as a worldwide problem with few treatment options. She worked in the lab of Faculty Research Advisor Paul Massa, PhD, professor of Immunology & Microbiology, and professor of Neurology.

The virus can spread to the central nervous system, causing dramatically increased sickness. The Massa lab is continuing this project.

“This could have a broad range of therapeutic implications down the line,” Neva said, citing chronic inflammatory diseases such as multiple sclerosis and rheumatoid arthritis as potential treatment targets.

Neva is from Connecticut but went out west to Western Washington University. After earning a bachelor’s degree in biology, she came back east for graduate school to be closer to her family. Her experience at Upstate has been very positive.

“I appreciate the small environment where you interact with everyone and have the opportunity to forge relationships with all the Faculty Research Advisors in the departments throughout the school,” Neva said. “You can be successful coming from Upstate.”

---

**Our Students Go Places!**

**CAREER DEVELOPMENT INITIATIVES:**

- Students create an annual Individual Career Development Plan identifying professional development needs and career objectives. The plan serves as a communication tool for graduate students and their faculty advisors.

- A formal Peer Mentoring program that matches incoming students with upper-level graduate students.

- “Six Steps to Success,” a discussion series designed to help incoming students get off to a strong start.

- Career Development workshops (about a dozen) throughout the year for all students in the College of Graduate Studies.

- Lunch with the Dean – feedback sessions for students to discuss suggestions, successes or concerns.

---

**SPECIAL EVENTS**

**BIOMEDICAL SCIENCES RETREAT:**

A day-long event sponsored by the College, featuring poster presentations by students and presentations by faculty and invited guests, including alumni. The retreat is held each fall at a beautiful lodge in the Finger Lakes.

**STUDENT RESEARCH DAY:**

This annual event showcases research by students from the College of Graduate Studies as well as students from Upstate’s colleges of Medicine, Nursing and Health Professions. Students are selected to give platform presentations, and dozens of others give poster presentations. The day includes a keynote by a distinguished visiting researcher.

**TRAVEL OPPORTUNITIES: STUDENTS ATTEND PRESTIGIOUS CONFERENCES**

A well-deserved perk for students in the College of Graduate Studies is the chance to travel to prestigious conferences to present their research. It’s not just a free trip. It’s a valued opportunity to improve presentation skills, learn what other researchers are doing and foster relationships with students and faculty at other universities.

Here’s a sampling of places our students visited to present their research in the past year: Marine Biological Laboratories, Woods Hole, MA; Cold Spring Harbor Laboratory, Cold Spring, NY; New York Academy of Sciences, New York, NY; Andover, NJ; West Dover, VT; Bolton Landing, NY; San Diego, CA; Chicago, IL; Seattle, WA; Los Angeles, CA; New Orleans, LA; West Palm Beach, FL; Boston, MA.
EASING THE TRANSITION TO GRADUATE SCHOOL LIFE

Each new cohort in Upstate’s College of Graduate Studies can count on help from fellow students like Angelina Regua. Angelina, a student in the Biochemistry & Molecular Biology program, was a panelist on “Six Steps to Success,” a series of discussions designed to help new students get off to a strong start.

The discussions cover a wide range of topics (including critical reading skills, bioethics and preparing for qualifying exams) and address common questions among first-year graduate students.

“I had a lot of questions about lab rotations, how to choose a Faculty Research Advisor (mentor), research, social life,” Angelina said. “It really helped answer a lot of that. We had access to Faculty Research Advisors and students who had gone through it the year before. I felt like I was talking to friends.”

Mark Schmitt, PhD, Dean of the College of Graduate Studies, said students often feel overwhelmed when they arrive on campus.

“Student feedback has been excellent and has helped us to keep modifying and improving it,” Dr. Schmitt said. Indeed, in her six meetings her first year, Angelina felt at ease. “It helped calm me down a lot,” she said. “I wasn’t worried so much, and I could focus on school.”

Upstate’s size and atmosphere help new arrivals as well. “It’s a very cooperative institution,” Angelina said. “I know most of the grad students here.”

Angelina said she considered going to medical school, but that changed the summer after her junior year at Molloy College, a small school near her home on Long Island.

“I love research, the whole aspect of asking questions and finding answers, “ Angelina said. “I could do this forever.”

Learning to write grant applications under the supervision of a professor.

Students pass a qualifying exam to become candidates for the doctoral degree. This exam is scheduled by the end of the second year.

Second Year

By the start of the second year, most PhD students have begun work on the research project that will lead to their dissertation. Students take the Responsible Conduct of Scientific Research course, which examines the moral and philosophical issues confronting scientists, and continue to take electives based on their research interests as well as courses required by their program.

In Grant Writing, students learn to write grant applications under the supervision of a professor. Students pass a qualifying exam to become candidates for the doctoral degree. This exam is scheduled by the end of the second year.

Later Years

Immediately after passing the qualifying exam, students put together a dissertation advisory committee of three to six faculty members from different departments. The committee meets every six months to review the student’s progress, make suggestions and provide direction. After completing their research projects, students write a dissertation and defend it.

Most students complete their PhD requirements in five to six years.

MASTERS DEGREE

Two to Three Years

Three programs in the College of Graduate Studies offer master’s degrees: Biochemistry and Molecular Biology, Cell and Developmental Biology, and Pharmacology. The master’s degree program typically takes two to three years. Master’s students participate in selected parts of the core curriculum along with PhD students.

Unlike PhD students who usually affiliate with a degree-granting program at the end of their first year, master’s students join a program from the start. Master’s students write and defend a thesis, but they don’t take a qualifying exam. Additional requirements vary depending on the program.

NEW COURSES FOR DIVERSE CAREERS

QUALITY AND COMPLIANCE FOR BIOTECHNOLOGY

This course provides an overview of the skills and knowledge needed to perform and oversee quality and regulatory compliance functions within the biotechnology industry. In the rapidly growing field of biotechnology, compliance, regulations and guidelines govern the research, development, manufacture and clinical trials process, as well as the marketing and sales of drugs, biologics and medical devices. This introduction in Quality and Compliance for Biotechnology reviews Good Pharmaceutical Industry Practice (GXP) principles, procedural guidelines, FDA, and other regulations and ethical considerations.

TEACHING FOR THE BASIC SCIENTIST

This course prepares the graduate student who desires to pursue an academic track to teach by exploring the process for the design, delivery and assessment of any academic course for adult learners. The student will learn to write objectives and plan content as well as deliver content with an emphasis on active learning. The student will also learn appropriate assessment methods that fit the delivery and objectives of the course.
Dan is a student in the lab of Stephen Glatt, PhD, associate professor of applied translational research as possible. "Long Island. That a psychiatric clinic he volunteered at and psychology and the link mental health and with repetitive difficulties in social development award. Autism is an annual $30,000 into Autism Spectrum from Autism Speaks doctoral fellowship a two-year, pre-MD/PhD student having a passion for research in the biomedical sciences and clinical care, are dedicated to becoming caring academic physicians. After approximately three years of lab work and successful defense of their dissertation, MD/PhD students complete the last two years of medical school. Students are accepted into the program receive tuition waivers and a stipend of $25,000 per year (as of 2016). For more information on the MD/PhD program, visit www.upstate.edu/mdpPhd or contact the MD/PhD office at 315-464-7719 or MDPH@upstate.edu.

Dan is a student in the lab of Stephen Glatt, PhD, associate professor of Neuroscience & Physiology, and Psychiatry & Behavioral Sciences.

TWO-YEAR FELLOWSHIP FOR KIDNEY RESEARCH

Jing Bi Karchin, a 2016 graduate in Cell & Developmental Biology, landed a post-doctoral appointment in the Renal Electrolyte and Hypertension Division at the University of Pennsylvania’s Perelman School of Medicine. Before earning her PhD at Upstate, Jing was awarded a two-year fellowship from the American Heart Association for her research into the role of a protein in kidney disease and blood vessels permeability. The $46,000 award funded Jing’s work in the lab of her Faculty Research Advisor, assistant professor Mira Krendel, PhD. Jing’s research had clinical relevance, since the pediatric patients affected by the disease investigated – focal Segmental Glomerulosclerosis (FSGS) – eventually undergo dialysis. The common feature of FSGS is abnormal protein excretion in the urine caused by a leaky filtration barrier in the kidney.

LEARNING HOW THE BRAIN DEVELOPS

The cellular and molecular events underlying cerebral cortical development are under study in the Upstate laboratory of Eric Olson, PhD, an associate professor of neuroscience and physiology. The cerebral cortex is the brain’s outer layer that is responsible for cognition. The “Chinese Lanterns” are migrating and differentiating neurons in the developing mouse cerebral cortex imaged with a multiphoton microscope. The red signal fills individual neurons allowing visualization of the forming dendrites and axons that constitute the developing neural circuitry. The green signal is produced by GFP-tagged histone H2B that identifies the neuron’s nucleus. Many of the identified genetic alterations that underlie intellectual disability disrupt neural circuit formation or impair nucleokinesis, the process of moving the nucleus during migration.

GOOD ENVIRONMENT FOR STUDENT FIRST AUTHORS

Patrick Sweeney, a Neuroscience PhD student in the College of Graduate Studies, is first author of a paper on eating disorders published in the scientific journal Nature Communications in December 2015. Patrick collaborated with his research advisor, Yanlei Yang MD, PhD, assistant professor of Neuroscience and Physiology, on a study examining the neural circuitry involved in emotion and its link to eating behaviors and disorders. “The link (emotion and appetite) is very interesting and important,” Patrick said. “Obesity and anorexia are major problems, and they’re deadly.” Much of Patrick’s research relates to anorexia, an eating disorder characterized by an obsessive refusal to eat. Obesity also can be deadly, but is a slower process characterized by the overconsumption of food. Anorexia has been classified as a mental illness by the American Psychiatric Association, as have bulimia (purging) and binge eating.

“I’ve always been interested in behavior and emotion since I was a kid, and changing behaviors,” Patrick said. “This lab is right up my alley. The making of the brain is fascinating.” The Yang lab is using advanced techniques such as chemical genetics, electrophysiology and optogenetics, a technique that targets specific neurons in the brain with light. The light is converted to electrical signals that allow scientists to “turn on” or “turn off” specific neurons to determine how these neurons control behaviors. Dr. Yang said their work will provide insights into the neural circuitry of eating disorders that may someday lead to more effective treatments for these disorders.

FIRST-AUTHOR STUDENT PUBLICATIONS 2016

SUNY Upstate graduate students frequently publish first-author articles in professional journals and books. The list below is a sampling. For the full list of our student first-authors, visit www.upstate.edu/grad/students/publications.php.


Zachary Ochs et al. Mitochondrial dysfunction in the liver and autophagy-mediated liver production disease onset and respond to rapamycin in lupus prone mice. External Icon. Rheumatol. 2016 [Epub ahead of print].


YOUR INTERESTS

MAKE FRIENDS, PURSUE YOUR INTERESTS

SYRACUSE: A COLLEGE TOWN

Syracuse is an affordable, medium-sized city with big city sports, arts and recreation. The SUNY Upstate campus sits on the edge of downtown, next to Syracuse University and the SUNY College of Environmental Science and Forestry on University Hill—home to restaurants, theatres, shops and the Carrier Dome. Combine our three campuses with nearby Le Moyne College and Onondaga Community College, and you have a city filled with students, academics, research centers, libraries and great sports. Add abundant, affordable housing and a cost of living below the national average, and you have a great place to go to graduate school.

Just outside the city you will find numerous parks, lakes and mountains with golf courses, ski slopes, hiking trails and beaches. Syracuse is just a 4-5 hour drive from New York City, Boston, Toronto and Montreal.

CAMPUS ACTIVITIES

SUNY Upstate offers dozens of student clubs and organizations and an intramural sports program. The Campus Activities Governing Board schedules social, cultural and recreational programs for students, including a guest lecture series, comedy, hours, weekend trips and discount tickets to local sports and cultural events. The Campus Activities Building (CAB), has a computer lounge, snack bar, bookstore, TV lounge, pool, sauna, gym, treadmills, ellipticals, Nautilus, tennis courts, billiards, ping pong and more.

CAMPUS HOUSING

The renovated Geneva Tower opened in 2012 as housing for students, post-docs and medical residents at SUNY Upstate. The apartments are fully furnished, including a flat-screen television in each unit. Geneva Tower has a fitness facility, social rooms and laundry facilities, and is a non-smoking, pet-free environment. The residence is only a short walk from campus.

OFF-CAMPUS HOUSING

Most graduate students choose to live off-campus in apartments near the university. The College of Graduate Studies maintains a list of off-campus apartments, duplexes and houses to help students searching for housing.

STUDENT SERVICES

SUNY Upstate offers numerous student services including 24-hour security and escort service to all on-campus locations; a child care center with an elite accreditation that reserves spaces for the children of students; and a student health service providing primary care for acute conditions, illnesses and injuries to all students. A complete listing of student services can be found at www.upstate.edu/currentstudents/support

OUR STRENGTHS

Upstate is part of the State University of New York, the largest university system in the world, with 460,000 students on 64 campuses. SUNY is one of the top 10 U.S. institutions for patents issued each year.

ENJOY LIFE!

It’s true that the demands upon students in the College of Graduate Studies are rigorous. But there are also many opportunities to have fun at SUNY Upstate and in the community. From well-organized activities on campus (picnics, free or inexpensive comedy shows and concerts), to spontaneous outings with friends and short day trips, our students know how to find healthy releases from the laboratory. Central New York’s four seasons, numerous cultural offerings and wide range of entertainment options help our students lead well-balanced lives. As one of our PhD students said, “If you’re going to spend four or five years somewhere, it’s important to have some fun.”

LOTS OF THINGS TO DO — CENTRAL NEW YORK ATTRACTIONS AND EVENTS

Adirondack Mountains
Armory Square
Balloon Fest
Beaver Lake Nature Center
Chittenango Falls
Clark Reservation State Park
Destiny USA
Downtown Arts and Crafts Festival
Everson Museum of Art
Finger Lakes Wine Country
Green Lakes State Park
Highland Forest
LaFayette Apple Festival
Multicultural Festival
Museum of Science and Technology
New York State Fair
Old Forge
Onondaga Lake Parkway
Regional Farmers Market
Resume to Gildan Zoo at Burnett Park
Salmon River Fishing
Skaneateles Lake
Symphony

FACES & PLACES

1. Annual Biomedical Sciences Retreat
2. Heart Walk
3. Annual Graduate Studies Picnic
4. International Festival
5. Gone Fishing
6. Celebrating PhD Dissertation
7. Graduation Day
HOW TO APPLY
Visit upstate.edu/grad/admissions for step-by-step instructions for applying online.

ADMISSION REQUIREMENTS
Candidates for admissions are selected holistically on the basis of their record and qualifications for independent scholarship in a specialized field of study. All PhD and Master’s applicants should have:

• Bachelor’s degree or its equivalent.
• Official Graduate Record Examination (GRE) scores. The institutional code is 2547.
• Minimum undergraduate GPA of 3.0 and combined GRE of 295. Accepted students typically have much higher grades and scores (see table below).
• GRE Subject Tests in the sciences are also submitted.

REQUIREMENTS
• Three original letters of recommendation from people familiar with your academic record and potential for investigative research. These can be emailed or mailed from the recommender to the SUNY Upstate Office of Admissions.

ADMISSIONS
Student Admissions and Financial Aid Processing
SUNY Upstate Medical University
766 Irving Avenue
1213 Wesscott Hall
Syracuse, NY 13210

Applications for the MD/PhD program must be received by January 15th. Visit upstate.edu/grad/admissions for more information on the MD/PhD program, see page 10.

ADMISSIONS

INCOMING CLASS SCORES

<table>
<thead>
<tr>
<th>GPA</th>
<th>GRE (Q+V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>3.4</td>
</tr>
<tr>
<td>2015</td>
<td>3.5</td>
</tr>
</tbody>
</table>

APPLICABLE DEADLINES
The Biomedical Sciences PhD program application deadline for full consideration is January 15th.

Federal and International students must have an application beyond this date will be considered until the class is full. All students interested in the Biomedical Sciences PhD program apply to the undeclared program. If accepted, their first year at Upstate includes core classes and three lab rotations, of the student’s choosing, before deciding on a research program, lab, and mentor. The three Biomedical Science Master’s programs in:

• Anatomy
• Biochemistry
• Pharmacology
have an application deadline of April 1st.

applicant should meet the following requirements:

• Bachelor’s degree or its equivalent.
• GRE Subject Tests in the sciences are also submitted.

ADMISSIONS

APPLICABLE DEADLINES
The Biomedical Sciences PhD program application deadline for full consideration is January 15th.

requests for submitting an application beyond this date will be considered until the class is full. All students interested in the Biomedical Sciences PhD program apply to the undeclared program. If accepted, their first year at Upstate includes core classes and three lab rotations, of the student’s choosing, before deciding on a research program, lab, and mentor. The three Biomedical Science Master’s programs in:

• Anatomy
• Biochemistry
• Pharmacology
have an application deadline of April 1st.

Application Fee waivers are available for all Biomedical Sciences Master’s and PhD applications; email bioscis@upstate.edu to receive one.

Applications for the MD/PhD program require the AMCAS application to be completed by October 15th and the Upstate supplemental application by December 1st. For more information on the MD/PhD program, see page 10.

INTERNATIONAL STUDENTS
In addition to the documents listed on the website in “How to Apply,” international students who completed their bachelor’s degree abroad must also submit an official copy of the Test of English as a Foreign Language (TOEFL) score. The institutional code number is 2547. Our Global Ambassadors Program connects prospective international students with current students in the College of Graduate Studies. The program’s goal is to help accepted international students successfully transition to the PhD program and the United States, and to provide new students a mentor from their home country or with similar research interests.

WE CELEBRATE YOUR SUCCESS!
For five years, Jason Gokey worked with Faculty Research Advisor Jeffrey Amack, PhD, associate professor of Cell & Developmental Biology. Jason’s research focused on vascular ATPase and an accessory protein, characterizing genes responsible for heart defects in zebrafish.

Dr. Amack introduced Jason prior to his successful doctoral dissertation defense, and noted that Jason will have two first-author publications in scientific journals.

“It’s been an absolute privilege to be your mentor,” Dr. Amack said to Jason, “as more than 50 fellow students and faculty members looked on.”

“I look forward to following your career, and you certainly will be missed in the lab.”

Dr. Amack is a great mentor, Jason said. “If you have an idea, he’ll let you go do it. You can pop into his office anytime and ask questions. That’s true throughout Upstate, and my entire committee, all very open door.”

Jason landed a post-doctoral position at Cincinnati Children’s Hospital Research Center, where he studies neonatal pulmonary physiology, and the genes responsible for lung disease in children.

STIPENDS, TUITION, FEES AND FINANCIAL AID

PHD PROGRAM
All PhD students receive a full-tuition waiver and are paid a 12-month stipend of $25,008 as of 2016. By receiving stipends, PhD students become part of the SUNY Graduate Student Employers Union, which provides periodic and automatic increases in stipend awards in addition to other benefits including a low-cost health care package.

The comprehensive health benefits include: coverage for medical services; hospitalization; prescription drugs; and mental health, dental, and eye care.

Student stipends are derived from a variety of university sources including departmental and university fellowships, research grants and research assistantships.

Students are encouraged to apply for individual predoctoral fellowships from the National Institutes of Health (NIH), National Science Foundation, the Howard Hughes Medical Institute and the American Heart Association which could lead to higher stipends. In fact, some of our current students receive their own extramural funding.

The SUNY Graduate Diversity Fellowship Program was enacted with the expressed goal of enhancing diversity and academic excellence in SUNY’s graduate programs by recruiting outstanding students from different backgrounds, including individuals from groups that have been historically underrepresented, and providing them with the support necessary for achieving academic success.

The State University of New York offers graduate fellowships to students who have been admitted to graduate or professional study and who will contribute to the diversity of the students in the graduate or professional program in which enrollment is sought.

For more information on the PhD program, visit the website www.upstate.edu/grad; call the office at 315-464-7719 or 315-464-4538, or e-mail bioscis@upstate.edu.

MASTERS PROGRAM
The 2016-2017 tuition for master’s students is $453 per credit for New York residents and $925 per credit for out-of-state residents.

For more information on the Master’s program, visit the website www.upstate.edu/grad; call the office at 315-464-7719 or 315-464-4538, or e-mail bioscis@upstate.edu.

WE CELEBRATE YOUR SUCCESS!
For five years, Jason Gokey worked with Faculty Research Advisor Jeffrey Amack, PhD, associate professor of Cell & Developmental Biology. Jason’s research focused on vascular ATPase and an accessory protein, characterizing genes responsible for heart defects in zebrafish.

Dr. Amack introduced Jason prior to his successful doctoral dissertation defense, and noted that Jason will have two first-author publications in scientific journals.

“It’s been an absolute privilege to be your mentor,” Dr. Amack said to Jason, “as more than 50 fellow students and faculty members looked on.”

“I look forward to following your career, and you certainly will be missed in the lab.”

Dr. Amack is a great mentor, Jason said. “If you have an idea, he’ll let you go do it. You can pop into his office anytime and ask questions. That’s true throughout Upstate, and my entire committee, all very open door.”

Jason landed a post-doctoral position at Cincinnati Children’s Hospital Research Center, where he studies neonatal pulmonary physiology, and the genes responsible for lung disease in children.

STIPENDS, TUITION, FEES AND FINANCIAL AID

PHD PROGRAM
All PhD students receive a full-tuition waiver and are paid a 12-month stipend of $25,008 as of 2016. By receiving stipends, PhD students become part of the SUNY Graduate Student Employers Union, which provides periodic and automatic increases in stipend awards in addition to other benefits including a low-cost health care package.

The comprehensive health benefits include: coverage for medical services; hospitalization; prescription drugs; and mental health, dental, and eye care.

Student stipends are derived from a variety of university sources including departmental and university fellowships, research grants and research assistantships.

Students are encouraged to apply for individual predoctoral fellowships from the National Institutes of Health (NIH), National Science Foundation, the Howard Hughes Medical Institute and the American Heart Association which could lead to higher stipends. In fact, some of our current students receive their own extramural funding.

The SUNY Graduate Diversity Fellowship Program was enacted with the expressed goal of enhancing diversity and academic excellence in SUNY’s graduate programs by recruiting outstanding students from different backgrounds, including individuals from groups that have been historically underrepresented, and providing them with the support necessary for achieving academic success.

The State University of New York offers graduate fellowships to students who have been admitted to graduate or professional study and who will contribute to the diversity of the students in the graduate or professional program in which enrollment is sought.

For more information on the PhD program, visit the website www.upstate.edu/grad; call the office at 315-464-7719 or 315-464-4538, or e-mail bioscis@upstate.edu.

MASTERS PROGRAM
The 2016-2017 tuition for master’s students is $453 per credit for New York residents and $925 per credit for out-of-state residents.

For more information on the Master’s program, visit the website www.upstate.edu/grad; call the office at 315-464-7719 or 315-464-4538, or e-mail bioscis@upstate.edu.
GREAT CAREERS AHEAD

THESE SUCCESSFUL CAREERS …

Kaylen Lott graduated from Upstate’s Biochemistry & Molecular Biology PhD program in 2011, and is a postdoctoral fellow in Microbiology & Immunology at the University at Buffalo.

Kaylen was the invited alumni speaker at Upstate’s College of Graduate Studies annual Biomedical Sciences Retreat in 2014.

In her presentation, “From Upstate to Africa: Postdoctoral research in Trypanosoma brucei,” Kaylen discussed her research into the role of arginine methylation in Trypanosoma brucei, the eukaryotic pathogen that causes African trypanosomiasis, or sleeping sickness.

At Buffalo, Kaylen works in the lab of her mentor, Laurie Read, PhD. Kaylen received the 2012 Milgrom Award for Outstanding Postdoc in Microbiology and Immunology, and was awarded Outstanding Poster at the 2014 Rustbelt RNA Meeting in Pittsburgh.

At Upstate, Kaylen studied the dissection of the molecular mechanisms of cytonucleoplasmic transport. She is married to Dr. Masashi Ohira, a 2010 Upstate MD/PhD graduate in Family Medicine residency at the University at Buffalo.

WEBSTER’S AREA OF EXPERTISE

Webster’s area of expertise is Novel Functional Molecular Imaging Agent development. He has developed a small molecule amino acid transporter substrate for PET Imaging of oxidative stress, as well as small novel protein binding scaffolds for molecular targeting applications.

THE COLLEGE OF GRADUATE STUDIES

AT A GLANCE

DEGREE-GRANTING PROGRAMS:
• Biochemistry & Molecular Biology
• Cell and Developmental Biology
• Microbiology & Immunology
• Neuroscience
• Pharmacology
• Physiology

AREAS OF CONCENTRATION:
• Cancer
• Neuroscience
• Vision
• Molecular Genetics
• Structural Biology
• Infectious Disease
• Diabetes
• Behavioral Disorders

DEGREES OFFERED:
PhD, MS, MD/PhD

SUNY Upstate Medical University does not discriminate on the basis of race, sex, sexual orientation, color, creed, age, national origin, disability, marital status, or veteran status, in the recruitment and employment of faculty or staff; in the recruitment of students; or in the operation of any programs or activities, as specified by federal and state laws and regulations. For more information, contact the Office of Diversity and Affirmative Action, 711 Jacobsen Hall, 315-464-5234.

STUDENTS: 131
(54% women, 9% minority, 36% international)

FACULTY: 92

SUNY UPDATE CURRENT FUNDING:
Approximately $30 million

SUNY UPDATE RESEARCH PROJECTS: 547

STIPEND/TUITION:
All PhD students receive a full tuition scholarship and an annual stipend of $25,008 (as of 2016).

Master’s students pay tuition at the SUNY rate (see page 15).

SUNY Upstate Medical University does not discriminate on the basis of race, sex, sexual orientation, color, creed, age, national origin, disability, marital status, or veteran status, in the recruitment and employment of faculty or staff; in the recruitment of students; or in the operation of any programs or activities, as specified by federal and state laws and regulations. For more information, contact the Office of Diversity and Affirmative Action, 711 Jacobsen Hall, 315-464-5234.

APPLY ON-LINE:
www.upstate.edu/grad

THESE SUCCESSFUL CAREERS …

Kaylen Lott graduated from Upstate’s Biochemistry & Molecular Biology PhD program in 2011, and is a postdoctoral fellow in Microbiology & Immunology at the University at Buffalo.

Kaylen was the invited alumni speaker at Upstate’s College of Graduate Studies annual Biomedical Sciences Retreat in 2014.

In her presentation, “From Upstate to Africa: Postdoctoral research in Trypanosoma brucei,” Kaylen discussed her research into the role of arginine methylation in Trypanosoma brucei, the eukaryotic pathogen that causes African trypanosomiasis, or sleeping sickness.

At Buffalo, Kaylen works in the lab of her mentor, Laurie Read, PhD. Kaylen received the 2012 Milgrom Award for Outstanding Postdoc in Microbiology and Immunology, and was awarded Outstanding Poster at the 2014 Rustbelt RNA Meeting in Pittsburgh.

At Upstate, Kaylen studied the dissection of the molecular mechanisms of cytonucleoplasmic transport. She is married to Dr. Masashi Ohira, a 2010 Upstate MD/PhD graduate in Family Medicine residency at the University at Buffalo.

THESE SUCCESSFUL CAREERS …

Kaylen Lott graduated from Upstate’s Biochemistry & Molecular Biology PhD program in 2011, and is a postdoctoral fellow in Microbiology & Immunology at the University at Buffalo.

Kaylen was the invited alumni speaker at Upstate’s College of Graduate Studies annual Biomedical Sciences Retreat in 2014.

In her presentation, “From Upstate to Africa: Postdoctoral research in Trypanosoma brucei,” Kaylen discussed her research into the role of arginine methylation in Trypanosoma brucei, the eukaryotic pathogen that causes African trypanosomiasis, or sleeping sickness.

At Buffalo, Kaylen works in the lab of her mentor, Laurie Read, PhD. Kaylen received the 2012 Milgrom Award for Outstanding Postdoc in Microbiology and Immunology, and was awarded Outstanding Poster at the 2014 Rustbelt RNA Meeting in Pittsburgh.

At Upstate, Kaylen studied the dissection of the molecular mechanisms of cytonucleoplasmic transport. She is married to Dr. Masashi Ohira, a 2010 Upstate MD/PhD graduate in Family Medicine residency at the University at Buffalo.

THESE SUCCESSFUL CAREERS …

Kaylen Lott graduated from Upstate’s Biochemistry & Molecular Biology PhD program in 2011, and is a postdoctoral fellow in Microbiology & Immunology at the University at Buffalo.

Kaylen was the invited alumni speaker at Upstate’s College of Graduate Studies annual Biomedical Sciences Retreat in 2014.

In her presentation, “From Upstate to Africa: Postdoctoral research in Trypanosoma brucei,” Kaylen discussed her research into the role of arginine methylation in Trypanosoma brucei, the eukaryotic pathogen that causes African trypanosomiasis, or sleeping sickness.

At Buffalo, Kaylen works in the lab of her mentor, Laurie Read, PhD. Kaylen received the 2012 Milgrom Award for Outstanding Postdoc in Microbiology and Immunology, and was awarded Outstanding Poster at the 2014 Rustbelt RNA Meeting in Pittsburgh.

At Upstate, Kaylen studied the dissection of the molecular mechanisms of cytonucleoplasmic transport. She is married to Dr. Masashi Ohira, a 2010 Upstate MD/PhD graduate in Family Medicine residency at the University at Buffalo.

THESE SUCCESSFUL CAREERS …

Kaylen Lott graduated from Upstate’s Biochemistry & Molecular Biology PhD program in 2011, and is a postdoctoral fellow in Microbiology & Immunology at the University at Buffalo.

Kaylen was the invited alumni speaker at Upstate’s College of Graduate Studies annual Biomedical Sciences Retreat in 2014.

In her presentation, “From Upstate to Africa: Postdoctoral research in Trypanosoma brucei,” Kaylen discussed her research into the role of arginine methylation in Trypanosoma brucei, the eukaryotic pathogen that causes African trypanosomiasis, or sleeping sickness.

At Buffalo, Kaylen works in the lab of her mentor, Laurie Read, PhD. Kaylen received the 2012 Milgrom Award for Outstanding Postdoc in Microbiology and Immunology, and was awarded Outstanding Poster at the 2014 Rustbelt RNA Meeting in Pittsburgh.

At Upstate, Kaylen studied the dissection of the molecular mechanisms of cytonucleoplasmic transport. She is married to Dr. Masashi Ohira, a 2010 Upstate MD/PhD graduate in Family Medicine residency at the University at Buffalo.