

Preparing for the New Clinical World



Table of Contents

Overview	page 2
Educational Mission	page 5
People of Upstate	page 11
Our Research	page 21
Caring for Patients	page 29
A Case Study: Coronavirus Response 2020	page 35
Our Campuses	page 43
College of Medicine Departments	page 47
Numbers	page 61

Pathway to Weiskotten Hall, the home of Upstate Medical University's College of Medicine and the heart of the region's only Academic Medical Center.

Welcome to Upstate

Find out How We Are Preparing for the New Clinical World

One of my deepest pleasures in the year since becoming Dean of our College of Medicine is to see the commitment and enthusiasm of our medical students. Even at the most challenging times, they were ready to step forward to help with COVID-19 volunteer work, support each other near and far, and even graduate early to join the front lines.

Despite the changes around us, my vision for our medical school remains steady and clear: it is to support our students and faculty to help them become the best physicians possible.

The Dean's Office is a resource for faculty, students and staff to support this. In this report you will see the new ideas and practical ways we are meeting this goal.

Each day, I see how students apply the lessons learned from the education we offer — in the clinical experience from our Syracuse and Binghamton campuses, and in settings that range from urban to rural; from rounding at our University, Community and Children's hospital sites; in our research labs; in our new clinical skills center; and from faculty who take the time with students to connect with their aspirations.

Students also are learning from each other, appreciating the unique perspectives and skills they bring to medical school.

Together, we support the diversity, social justice, and attention to wellbeing — starting from within — that will make us all true healers.

The physician of the future is here among us. I am proud of the role Upstate Medical University is taking to support them on their path.

Lawrence Chin, MD
Dean, College of Medicine
Robert B. and Molly G. King
Endowed Professor of Neurosurgery
Upstate Medical University



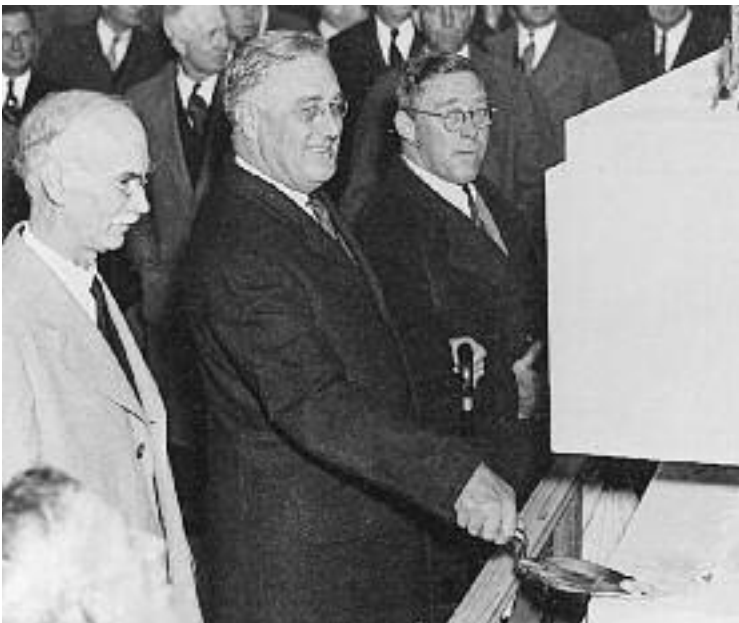


Medical students Sruti Akula and Neelima Dosakayala are ready to celebrate alumnae Dr. Elizabeth Blackwell's 200th birthday.

Elizabeth Blackwell

In 1847 when Elizabeth Blackwell applied to what was then Geneva Medical College, it was the only institution in the entire country that admitted her.

She graduated at the top of her class, making history as the first woman medical school graduate in the United States. Soon after graduating, she published a paper on typhoid fever, becoming the first woman to have an article published in a medical journal in the U.S. She founded the New York Infirmary for Women and Children in 1857 and the Women's Medical College in 1868. Today, Upstate Medical University — the successor to Geneva Medical College — is preparing to mark the 200th anniversary of Dr. Blackwell's birth.



The Cornerstone

President Franklin Delano Roosevelt came to Syracuse in 1936 to lay the cornerstone of Weiskotten Hall, the home of Upstate Medical University College of Medicine. While he was in town, Roosevelt launched his campaign for his second term as president. He won in a landslide.

Overview

State University of New York Upstate Medical University in Syracuse, New York, is an academic medical center serving an 18-county region stretching from Pennsylvania to the Canadian border. At its heart is the College of Medicine.

Tracing its roots back to the early 19th century, the College of Medicine has a proud history of innovation. Early Dean Edward Cutbush was a pioneering advocate for public health and helped popularize the use of lemon juice to combat scurvy. Elizabeth Blackwell — the very first American woman to graduate from medical school — is an alum, as is Sarah Loguen, the fourth African-American woman to become a doctor.

Today, Upstate Medical University is a bustling complex of healthcare facilities including Upstate University Hospital, Upstate Golisano Children's Hospital, Upstate Community Hospital, the academic halls that house the College of Medicine, the College of Graduate Studies, the College of Health Professions and the College of Nursing. In addition, there is the Institute



Sarah Loguen Fraser

Sarah Loguen Fraser, the daughter of Jermain Wesley Loguen, grew up in Syracuse, where her family home was the main stop on the underground railroad. In 1876, she graduated from the college of medicine now Upstate Medical University. She was only the fourth African-American woman to earn an MD. Today, she is the namesake for scholarships to the College of Medicine.

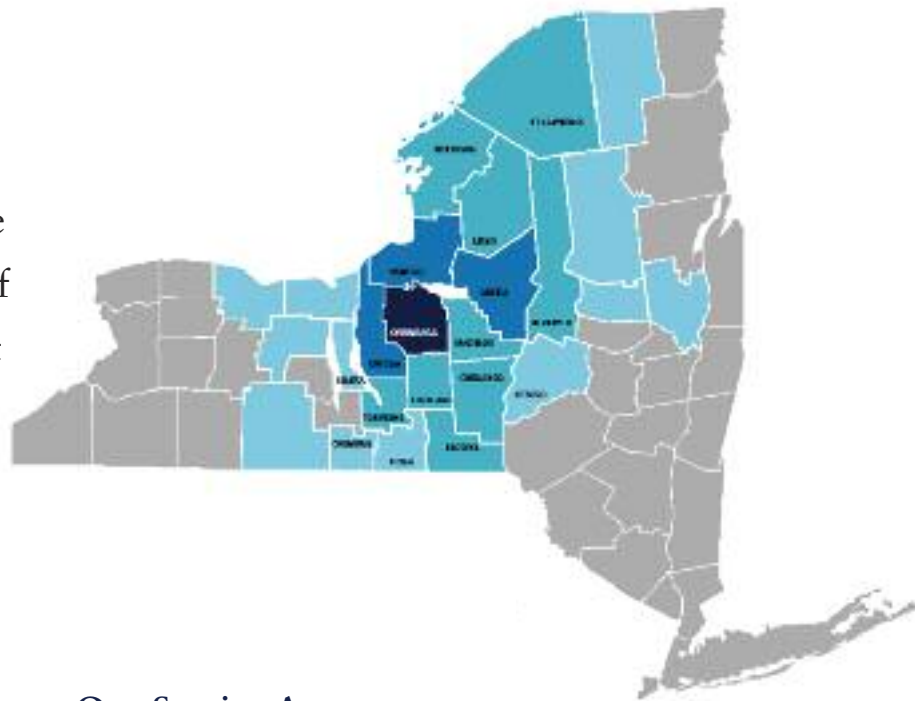
A quote from Sarah Loguen graces the walls of Upstate Medical University's Weiskotten Hall: "I will never, never see a human being in need of aid again and not be able to help."

for Human Performance, the CNY Biotech Accelerator, the Upstate Center for Vision Research, the Neuroscience Research building and a number of clinical sites to serve patients in Central New York — as well as international facilities to assist in training, research and patient care.

Upstate is unique in the region, having the only level one trauma center, the only children's hospital, the largest stroke team, the largest mental health department and a state-of-the art cancer center. Upstate is the largest employer in the region, with some 11,000 faculty, providers, professionals and staff.

All the facilities, all the research and all the practices are tied together by the College of Medicine. The ties aren't just historical but current as many of the faculty who teach at the College are practicing physicians within the academic medical center.

As part of the State University of New York, Upstate maintains a commitment to serving students and the community, providing an education that is excellent and affordable.



Our Service Area

Upstate Medical University is an academic medical center with 11,000 employees and a service area that stretches from Pennsylvania to the Canadian border. With the only tier one trauma center in a region with a population of more than one million, Upstate receives the most serious cases from 18 counties, often by helicopter.

Our Educational Mission

Educational Mission



Electronic Tablets

Electronic tablets have been a part of medicine at Upstate for some time. That experience helped healthcare providers adapt quickly when COVID-19 made limiting patient contact a necessity. Tablets helped providers communicate with patients and helped keep patients in contact with their loved ones.

Upstate Medical University College of Medicine educates the next generation of doctors, strong in skills, committed to treating patients and others equitably.

That commitment to fairness is reflected in the college's retention rates. More than 98 percent of students who enter the program go on to graduate. And those graduates are prepared to take the next step – in recent years match rates have topped 98 percent.



Wellness

Kaushal Nanavati, MD, assistant professor of family medicine, leads meditation with medical students Megan Taggart and Alison Stedman and intern Amani Mike.

The class of 2019 saw a 100 percent match rate. Twenty students matched at Ivy League and other prestigious institutions — five at Yale alone. Residency success included students of all backgrounds, reflecting the vigorous mentorship and advocacy provided to students by College leadership and faculty.

That commitment to success for all reaches those considering medical school. The College of Medicine has expanded its early admission opportunities to students at several SUNY schools as well as historically black colleges and universities. The Upstate

Accelerated Scholars program provides students the certainty that they will be accepted into medical school without having to take MCATs or go through the interview process, provided they maintain an appropriate GPA. This eliminates financial and cultural barriers for those who might otherwise have thought medical school was out of reach.

Standing on the homelands of the Haudenosaunee, Upstate has a particular commitment to Native American students. Upstate sponsors a pre-admission workshop (PAW) for Native American students from across the nation. The 2019 event was the largest of its kind on the East Coast since a similar initiative in Boston in 2000. Co-sponsored by the Association of American Indian Physicians, and led by Assistant Professor of Obstetrics and Gynecology Brian Thompson, MD, the program is designed to encourage and empower Native American students to consider medical



Students from Nottingham High School in Syracuse visited SUNY Upstate Medical University to learn about the university's academic programs and careers in health care. Pictured in front of Weiskotten Hall, home of Upstate's College of Medicine, these students are enrolled in a college-level biology course, available at Nottingham through Syracuse University's Project Advance program.



Patient-actors help medical students develop their clinical skills.



Simulation and the Simulation Center

Upstate Medical University's recently completed simulation center provides students and clinicians the opportunity to practice real-world medicine with state-of-the-art equipment, including high-tech mannikins that can simulate vital signs and medical crises. The 3,800-square-foot facility includes operating rooms, patient care rooms, haptics room and debriefing space. Students also learn from simulations involving actors who portray patients with varying symptoms. The patient-actors help medical students develop clinical skills — and empathy.



Accreditation

Upstate Medical University College of Medicine is accredited by the Middle States Commission on Higher Education and Liaison Committee on Medical Education (LCME).

school, or other medical professions, regardless of where they choose to pursue higher education.

Students experience a curriculum that emphasizes clinical relevance from the start, leading to rewarding “clerkships” starting in third year.

Upstate offers a special Rural Medical Scholars Program for students interested in practicing medicine in small communities. The RMED program provides students an opportunity to live in an underserved rural area in their third year of medical school. This exposes them to the physician’s role in a small community, a role that often goes far beyond the office or exam room.

As part of the State University of New York, the College of Medicine provides academic support services for students, services that can be particularly appropriate for students who are the first in their family to reach this level of education. Services include everything from time management to preparation for national exams.

Diversity and Inclusion

The College of Medicine was proud to have been recognized in the past year by Alpha Omega Alpha Honor Medical Society for excellence in inclusion, diversity and equity in medical education and patient care.

Upstate was just one of four schools in the nation so honored for “exemplary leadership, innovation and engagement in fostering an inclusive culture that transforms the ideals of inclusion, diversity and equity into successful programs that support medical students, house staff and faculty diversity in service to the community.”

Upstate Vice President for Academic Affairs Lynn Cleary, MD, shared the thinking behind Upstate’s efforts: “It’s about not just coming to a place because you were recruited. It’s about being welcomed and feeling like it’s your home,” Cleary said. “It’s a lot more nuanced than just looking at numbers of who we recruit and who we graduate.”



The annual Pathway to Wellness National conference attracts Native American students from across the country. Among its Upstate faculty is Brian Thompson MD, department of obstetrics and gynecology, who is a member of the Onondaga Wolf clan.



Balance and Well Being

Understanding the importance of a balanced life is part of learning at the College of Medicine. Students are supported with mentors, career advisors and, especially during exam periods, visits from therapy dogs. The emphasis on a balanced life is one reason the College of Medicine has an extremely high retention rate.

The People of Upstate

As the region's largest employer, more than 10,000 women and men bring a wealth of experience

and drive to pursue Upstate Medical University's mission: To improve the health of the communities we serve through education, biomedical research and health care.

The next few pages provide a sampling of the outstanding people of Upstate.



Darryl Dykes, PhD, MD, JD, in the OR

Darryl Dykes, PhD, MD, JD

Assistant Professor of Diversity and Inclusion
Chief Diversity Officer

A Syracuse native, educated at Syracuse schools, Darryl Dykes joined the Marine Corps as a young man to help pay for college. After graduating, he applied to and was accepted at Upstate Medical University, graduating in 1995. He served a residency in orthopedic surgery at the University of Minnesota and fellowship in orthopedic trauma surgery and spine surgery at Minnesota institutions. After years of practice, he returned to Upstate as an orthopedic surgeon and in 2020 was named Chief Diversity Officer.

At the direction of Upstate Interim President Mantosh Dewan, MD, Dr. Dykes has launched parallel efforts to increase diversity and identify and remove barriers to equity in recruiting and retaining, as well as in patient care.

The effort is part of an overall drive by Upstate to ensure

a workplace that is diverse and inclusive, one that is welcoming of new ideas, different backgrounds, perspectives, talents and abilities — one that treats all with dignity and respect and embraces diversity, including gender, ethnicity, race, national origin, age, religion, marital status, disability, veteran-era status, or sexual orientation.

Under Dr. Dykes, the Office of Diversity and Inclusion is clear about its work: “Our mission is to ensure a campus environment that respects and values the diversity of all who work, learn and receive care here.”

Preethi Ganapathy, MD, PhD

Assistant Professor of Ophthalmology and Visual Sciences
Assistant Professor of Neuroscience and Physiology

The standard of care for glaucoma has not changed much in the past several decades, Preethi S. Ganapathy, MD, PhD, observed. “It’s still creating a trapdoor to moderate the pressure in the eye.”

As a clinician, Ganapathy provides care to that standard for much of the week, but she also has a lab where she and her team are looking for other possible ways to approach glaucoma.

The team works on the relationship between neurons in the optic nerve, which are damaged in glaucoma, astrocytes (their main supportive cell), and extracellular matrix proteins (the scaffold that supports the nerve) to work out just how the extra pressure in the eye is communicated to the nerve. It’s that communication that leads to damage to the nerve head, the tiny portion of the optic nerve where it passes through the wall of the eye. The goal is to find different ways to block that communication and protect the nerve, saving patients’ vision.



Preethi Ganapathy, MD, PhD

Patients with glaucoma often suffer damage to the nerve head because of excess pressure within the eye. That pressure comes from an imbalance between fluid entering the eye and fluid leaving the eye. Ganapathy offered a faucet and a drain as a handy way to visualize the problem.

Eye drops can help turn down the faucet some, she said, and traditional surgery can create a larger or even new drain. In recent years, she said, Minimally Invasive Glaucoma Surgery (MIGS) has been used to clear the drain for patients with moderate cases. “It’s just like a little bit of Drano,” she explained, saying the surgery can clear what might be best described as “a clog.”

Glaucoma resists easy answers, Ganapathy explained. “It’s very humbling.” Pressure levels measured in the eye of one patient may be fine, but the same level in another patient could be damaging. Likewise, surgery that may leave one patient symptom free, may need to be repeated in another patient as the drain clogs up again.

One basic rule is that glaucoma becomes more common with age, but that doesn’t mean the young are immune. Ganapathy specializes in treating pediatric patients with glaucoma.

Ganapathy credits her colleagues — including Samuel Alpert, MD, and Robert Fechtner, MD — for making it possible for her to be both a clinician and to operate a lab, and keep up with developments in the field. “It’s a great department and a great team,” she said. Even on days when she is in the lab, “I know no patient’s care is going to be delayed.”

Julius Gene Latorre, MD, MPH

Medical Director of Neurology-Stroke Service
Associate Professor of Neurology

Time is essential in treating stroke, but delay does not mean hope is lost. Julius Gene Latorre, MD, PhD, the medical director of Upstate’s Neurology-Stroke Service, has helped expand the time patients have for treatment after a stroke.

What had been a four-hour window can be opened as long as 24 hours, Latorre explained, using software to assess patients and a clot-busting catheter.

Latorre’s work also involves expanding the places where stroke patients can get effective, state-of-the-art care. Creating partnerships with smaller hospitals in the region served by Upstate has widened telemedicine access to Upstate’s stroke specialists.



Gene LaTorre, MD, MPH, at Upstate’s Comprehensive Stroke Center, which is nationally recognized for clinical excellence with a Gold Plus designation from the American Heart Association.

When a patient arrives at the Emergency Department at one of the hospitals involved in the partnership with what the health care team has determined are symptoms consistent with stroke, the team can receive a consult with an Upstate neurologist. Within minutes the Upstate neurologist will be able to view the CT scan, examine the patient and talk with patients, families and physician about possible treatment.

The standard protocol for ischemic (non-hemorrhagic) stroke treatment is intravenous tPA, a clot-busting drug that can provide the best benefit to patients if administered within a short time after the first signs of stroke.

“Distance should never be a barrier to getting the best stroke care for patients,” Latorre said. Patients who can be treated in their local facility, can stay in their community. Those whose cases are more complicated, can be transported to Upstate under the partnerships.

Upstate is the region’s only Comprehensive Stroke Center as designated by DNV healthcare, a national hospital accrediting body. Upstate is also recognized as a primary stroke center as designated by the state Department of Health. Both of these designations speak to the high level of stroke care available at Upstate.



Jada McMahan

Jada McMahan

Second-year Medical Student

Jada McMahan was a senior at Binghamton University from Hempstead, N.Y., when she was selected as the first recipient for the Dr. Sarah Loguen Fraser Dean’s Student Distinction Award.

The award, named for the first African-American woman to graduate from what is now Upstate Medical University’s College of Medicine and the fourth African-American woman physician in the United States, is given to an incoming African-American female medical student with exemplary academic standing who best epitomizes the spirit and determination of Dr. Loguen Fraser.

The award is an annual full-tuition scholarship for four years, plus housing at Upstate’s on-campus residence and a stipend.

McMahan’s desire to pursue medicine was shaped by the death of her mother when McMahan was a young girl. “I gained a good perspective on medicine and the disease process from being with my mom as she battled breast cancer,” McMahan said. “But I realize now that I also gained a greater understanding of how the disease process affects the entire family, not just the patient. How the need for a family-oriented perspective to care, how the need for understanding a family’s cultural way of life is so important in health care.”

McMahan said her first year went well and she is proud

of what she has accomplished so far.

“I was able to do some research in public health humanities with Dr. Rachel Fabi this summer, which really brought me back to my passion for expanding the single narrative of marginalized populations in the world of health science. I’m now taking her “Physicians and Social Responsibilities” course as well as the Service Learning Leaders course with Ms. Simone Seward.”

“I’d say these classes are extremely helpful for putting my place in the world (particularly the city of Syracuse) into perspective and helping me hone in on the ambitions I have that afforded me this scholarship to begin with. It’s proving to be a truly invaluable experience.”

Zsuzsa Meszaros, MD, PhD

Associate Professor of Psychiatry and Behavioral Sciences

The dearth of psychological help available to rural Americans is well documented. As the American Psychological Association (APA) notes, rural areas have high unemployment rates, low household incomes, high poverty rates and also tend to have older populations. In addition, seeking out mental health care can carry a greater stigma in some rural areas than it might in urban areas.



Zsuzsa Meszaros, MD, PhD

A program at Upstate Medical University designed to address the shortage of psychiatrists in rural areas served by the academic medical center has been honored by the APA. Upstate’s Rural-Academic Partnership Program (URAPP) has been recognized by the APA with a 2020 Psychiatric Services Achievement Bronze Award.

The award, presented in April, recognizes Upstate for using “collaboration and community engagement to extend psychiatric expertise to distressed populations and rural hospitals facing a shortage of mental health manpower.”

“We’re delighted to receive this honor for the community/rural track of our psychiatry residency program that addresses the need for well-trained psychiatrists in rural areas of Central New York,” said Zsuzsa Meszaros, PhD, MD, director of the residency program in the Department of Psychiatry and Behavioral Sciences.

“Residents trained locally are more likely to enjoy working at rural settings and staying long term, which benefits underserved communities.”

The program provides six rural medical institutions with the ability to partially fund a psychiatric resident in exchange for a five-year obligation from the resident to affiliate as an attending with the medical institution through Upstate’s Department of Psychiatry.

During the residency portion of the program, psychiatric residents spend several months each year assisting at their institutions’ inpatient psychiatric and outpatient adult psychiatry clinics. Upon completion of their residency training, the individual becomes an attending physician at their partner institution.

Frank Middleton, PhD

Associate Professor of Neuroscience and Physiology
Associate Professor of Biochemistry and Molecular Biology
Associate Professor of Pediatrics
Associate Professor of Psychiatry and Behavioral Sciences

Non-invasive testing, the ability to ascertain if someone carries an illness or disorder with, for instance, a sample of saliva, holds the promise of higher compliance, earlier detection and more successful intervention.

Frank Middleton, PhD, has been in the forefront of developing important and timely non-invasive tests.

Recognizing the drawback to the nose-swab test for COVID-19, Middleton and other researchers built upon previous research to develop a “spit test” that has helped New York state, and especially the State University of New York, face down the threat of COVID-19 flare ups. It was a non-invasive saliva test that made it possible for school officials to detect a sudden outbreak among returning students at the SUNY Oneonta campus. Quick action helped spare other students and the Oneonta community from a more devastating outbreak.

This was the second breakthrough in non-invasive testing Middleton was involved in recent months. Middleton, collaborated with Quadrant Biosciences and with researchers from Penn State College of Medicine to create the first-ever epigenetic test for autism spectrum disorder (ASD). The test is the result of seven years of research



Frank Middleton, PhD, in his lab. In September, his lab received FDA-approval for a spit test for COVID-19.

Approximately 1 in 59 American children are currently diagnosed with ASD, a 10-fold increase in prevalence over the past 40 years. Unfortunately, this high rate of autism in the US, when combined with a relatively small number of specialists trained to make the diagnosis, has resulted in long waiting times for families to receive an autism evaluation. Consequently, while diagnosis is possible in children as young as 18 months, the average age of ASD diagnosis in the United States today exceeds 4 years of age. Early diagnosis is important because intensive behavioral therapy has been shown to improve the symptoms of autism, and children benefit more from such intervention the earlier it is started.

Middleton, co-lead investigator on the research behind the technology explained, “salivary poly-omic RNA measurements represents a novel, noninvasive approach that can accurately identify children with ASD. This technology could greatly improve the specificity of referrals for ASD evaluation or provide objective support for ASD diagnoses. It is also worth noting that the test we developed includes measures of small RNAs which may have originated in the brain and been transported to the mouth along nerve tracts, as well as measures of microorganisms that directly influence gut-brain interactions — a topic of considerable interest to autism researchers.”



Chris Tanski, MD, MSED, led patient care at the Javits Center during the height of COVID-19 in New York City.

Chris Tanski, MD, MSED

Assistant Professor of Emergency Medicine

During the largest health crisis in more than century, America’s largest city had the country largest hospital as military personnel converted the 1.8 million-square-foot Jacob K. Javits Convention Center of New York into a facility with more than 1,000 beds.

After the hospital was set up at the end of March, it was turned over to the state Health Department. The health department turned to Upstate for help from Christopher Tanski, MD, an assistant professor of medicine.

“Upstate was kind enough to loan me out, as it were,” Tanski explained.

His work covered some of the most basic parts of hospital management. While the military had done a great deal of work, some basics were missing. For instance, he explained, there were no call bells at patient bedsides. Additionally, bathroom facilities needed to be modified because patients were supposed to be isolated due to their diagnosis. “We are essentially a COVID hospital,” he said in a spring interview.

After the pandemic crested in New York City, fewer and fewer patients were treated at the Javits Center. By May,

the facility could be closed down as New York’s other standing healthcare facilities could handle the continuing demand.

In its brief service, the hospital at the Javits Center treated 1,095 patients.

Saravanan Thangamani, PhD

Professor of Microbiology and Immunology

Upstate Medical University Professor Saravanan Thangamani, PhD, encouraged the public to send him ticks by mail so his lab could test them for disease. In a four-month period, the lab received sometimes 70 samples per day, with 1,921 total submissions. They came from nearly every one of New York’s 62 counties. The response was far more successful than Thangamani anticipated, he said.

Thangamani, director of the SUNY Center for Environmental Health and Medicine, is studying the geographic expansion of ticks and tick-borne disease in New York. Using the citizen-supplied samples, Thangamani’s lab tested each tick for several diseases including Lyme, Babesia, Ehrlichia and several others. The researchers found that 26.14 percent of ticks sent in by the public were carrying Lyme disease and 32 percent in total were carrying some sort of disease.



Saravanan Thangamani, PhD, and his research team collecting ticks in the field.

The researchers also examined if the ticks were carrying more than one disease at a time. Thangamani's lab tested each tick and shared the results with the sender by email.

"This is a win-win partnership," Thangamani said.

"We get more ticks for our research investigation and the public gets to know if the tick they pulled from their body or from their pet's body had any infection or not."

As Thangamani's group was compiling data, the researchers made a startling discovery in a tick submitted from the downstate region; the tick tested positive for the Powassan or Deer Tick Virus (DTV) in a tick also carrying Lyme. The Powassan/Deer Tick Virus can cause severe disease, including infection of the brain (encephalitis) or the membranes around the brain and spinal cord (meningitis).

"Detection of Deer Tick Virus is significant for several reasons. It is a rare but fatal disease-causing, tick-borne virus; it could co-infect together with the Lyme disease agent leading to more severe Lyme disease outcomes," Thangamani said. "This highlights that the survivors of this infection could have a long-term health consequences."



Stephen Thomas, MD, spoke with anchor Nichole Berlie on the national news program NewsNation after the president was tested positive for COVID-19.

Stephen Thomas, MD

Professor of Medicine
Professor of Microbiology and Immunology
Division Chief of Infectious Disease

When COVID-19 first appeared in New York State, few organizations were as prepared as Upstate Medical University. Recognizing the threat early, Upstate created an Incident Command team led by Stephen Thomas, MD. With a background in infectious disease, including membership in the Armed Forces Infectious Diseases Society and research work on virology and countermeasure development, Thomas helped lead preparations.

He continued in the role as COVID-19 swept the country. Incident Command met frequently, discussing needs and actions, as well as news on therapies and the most up-to-date research findings.

Thomas' leadership was not limited to within the walls of Upstate. He became a public expert, sharing insights and valuable information throughout the darkest days of the pandemic.

Thomas has also been intimately involved in testing of vaccines for COVID-19. Prior to COVID-19, Thomas as well known for his work on another epidemic: America's opioid crisis. Thomas has been working on a vaccine that would prevent the psychoactive effects of heroin.

Along with a team of military scientists, Thomas and others at Upstate have been working to create a vaccine that would disarm the effects of heroin, helping people who have a substance abuse disorder by removing the drug's appeal. He sees this vaccine as one of multiple tools that people fighting heroin addiction might use to achieve sobriety.

Michael Williams, MD, MSc

Resident, Pathology

When Michael Williams, MD, MSc, arrived at Upstate, he was prepared to begin his pathology residency, graduate with a fellowship and eventually be a practicing pathologist. Throughout residency, however, he discovered a combined passion for both pathology and social media.



Michael Williams

When he entered medical school at the University of Buffalo, Williams thought he wanted to go into family medicine. He likes people and he liked the idea of being a primary care physician. However, he found himself attracted to anatomy and by the time he graduated had decided on surgery, where he could see anatomy up close every day.

Even while doing a surgery internship at the University of Buffalo, he found himself interested in pathology, in how labs function and how they reach diagnoses. Early in his residency, Williams got to take a pathology elective and, "I fell in love with it."

He brought his love of pathology, and the Pathology

Residency program at Upstate, online. It started with pictures of himself and his fellow residents getting posted to the SUNY Upstate Pathology Twitter account (@SUNYUpstatePath). Then Williams began posting interesting cases to his own Twitter account — @bluehat-comics85 — for educational purposes.

He developed a following — now more than 2,500 — interested in the slides showing healthy and unhealthy cells. There is a whole community of pathologists and students who share such slides, challenging others to make a diagnosis or, amuse each other by spotting incongruous shapes among the cells, the way others see animals in passing clouds.

His active social media life doesn't take much time, Williams says. In maybe 30 minutes he can tweet, browse, retweet and like a day's worth of posts. A specific Twitter post – with photo – might take 15 minutes, he says.

The posting has created a circle of friends, including fellow learners as well as senior members of pathology organizations, people Williams said he might not otherwise get to meet. They know him and come up to him at conferences. It has landed him a spot on a podcast and earned him a listing on The Pathologist's "Power List 2020."

After he completes his residency, Williams is headed to Birmingham, Alabama for a two-year fellowship in neuropathology. That will be followed by a one-year fellowship in Pittsburg focused on forensic pathology. After that, he is aiming toward becoming a medical examiner. .

Li-Ru Zhao, PhD, MD

Associate Professor of Neurosurgery

Li-Ru Zhao, PhD, MD, associate professor of neurosurgery at Upstate Medical University and a research scientist at the Veterans Administration Medical Center in Syracuse, has done extensive investigation into potential treatments for the debilitating effects of stroke as well as Alzheimer's Disease.

Her work includes the first demonstration of the neuroprotective properties of stem cell factor (SCF), granulocyte colony-stimulating factor (G-CSF) and SCF + G-CSF combinations in treating the effects of acute and chronic stroke. She discovered that these growth factors — naturally occurring substances capable of stimulating cellular growth, proliferation and healing — could be used alone or in combination to reduce brain damage from stroke and improve motor function. Her many



Li-Ru Zhao, PhD, MD

studies into SCF and G-CSF used a variety of approaches, including molecular and cell biology as well as brain and cell imaging.

Her contributions to Alzheimer's disease (AD) research include investigating how amyloid plaques in the brain (one of the causes thought to be behind the development of the disease) might be cleared by injections of bone marrow-derived monocytes/macrophages (BMDMs) and SCF+G-CSF, all of which have been found to be low in the blood and bone marrow of AD patients

Recent stroke studies by Zhao have looked at Cerebral Autosomal-Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy (CADASIL), the most common yet rare form of hereditary stroke disorder. In her research, she found that neural stem cells were radically reduced in patients with CADASIL, causing cognitive impairment.

In 2017 Zhao was awarded the Bernard Sanberg Memorial Award for Brain Repair from the American Society of Neural Therapy and Repair (ASNTR).

Each month...

Upstate Medical University recognizes teachers – faculty as well as residents – based on input from students. These Exceptional Moments in Teaching honors include quotes from student evaluations illuminating what has made these teachers exceptional.

Moustafa Hassan, MD

Moustafa Hassan, MD, an associate professor of Surgery who earned his MD at Ain Shams University in Cairo, Egypt, earned praise from students for creating an “extremely positive learning environment for students — and you can tell he loves teaching.”



Moustafa Hassan, MD

Another student called him, “the ideal physician to learn from. He incorporated me into the team from day one. He actively sought opportunities to allow me to experience what it would be like for me to be a surgeon. He allowed me to feel what it was like to make the first incision, to use the Bovie for the first time. He showed me how the daVinci machine worked, among other things. Truly a talented man with the passion to teach students!”

A third student put it this way: “His enthusiasm for what he does is obvious and infectious.”

Dana Mihaila, MD, PhD

Dana Mihaila, MD, PhD, an assistant professor of Cell and Developmental Biology and research assistant professor of Neurology, “expects great things from her students and provides us with the resources and motivation to accomplish our shared goals,” one student said. “Her passion for teaching and student learning is evident in the countless hours that she dedicates to preparing lectures, providing constant open office hours, and offering abundant wrap-up sessions and reviews.”



Dana Mihaila, MD, PhD

Another student noted, “Dr. Mihaila goes above and beyond for her students. She truly seems engaged and invested in our learning and wants us to understand and appreciate the material. She is one of the best.”

Mihaila, who earned her PhD from Upstate in Neuroscience, was called “an eloquent, knowledgeable and trustworthy professor.”

“Dr. Mihaila asked us pointed, poignant, relevant questions that were challenging and thought provoking, but never felt unfair, rather they inspired thought, growth, and understanding of the course material. She also repeatedly said she was proud of us and that we could do it,” reported a student. “Those kind words felt so nice.”

Michaela Simmons, DO

Michaela Simmons, DO, is a resident in the Department of Obstetrics and Gynecology who has already drawn the attention of students for her teaching talent.



Michaela Simmons, DO

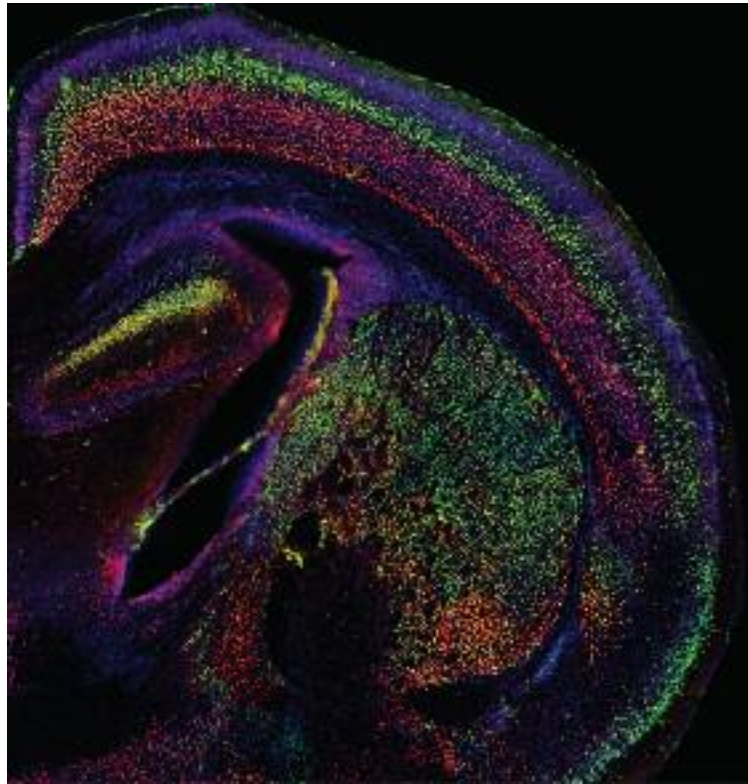
“Michaela is a natural teacher who was always extremely encouraging and supportive, yet constantly challenged with questions and clinical pearls on any case we worked together,” wrote one student. “She has an absolute gift in being able to explain complex topics in a digestible manner, all while never making the learner feel ‘small.’”

“Michaela embodies what it means to be a resident at an academic institution. She is incredibly kind and “knowledgeable, most of all she knows how to treat people. She hasn’t forgotten what it means to interact meaningfully with everyone on the healthcare team (including students) and including patients in decision making,” wrote another.

Another summed up the experience: “She challenged me in ways appropriate for my level of training, capitalized on every available opportunity to strengthen any of my observed weaknesses and consistently treated me with respect and a sense of educational ‘nurturing’ I have never before experienced.”

Our Research

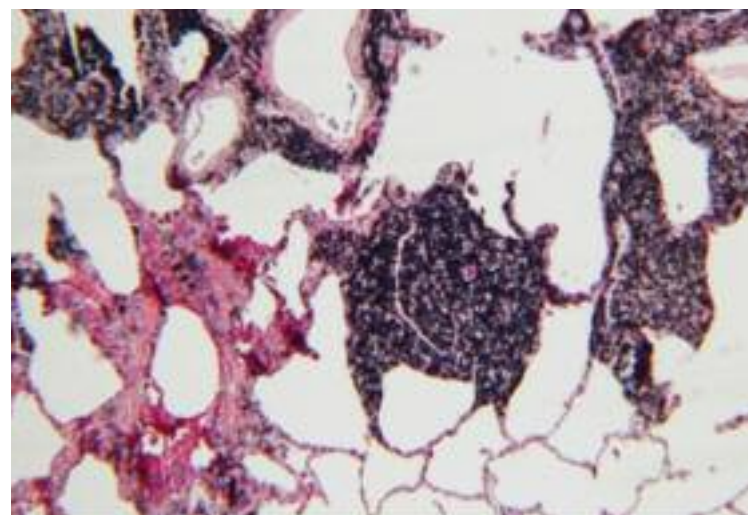
Research



Uncovering paxillin link to delayed neurodevelopment

A research team at Upstate identified an unusual form of neurodevelopmental delay that is caused by deficiency in a protein called paxillin. They have discovered that brain cells that are deficient in paxillin move more slowly than healthy brain cells, and there is a corresponding delay in the development of the cerebral cortex. This tissue sample shows multiple layers of the cerebral cortex, which have been labeled red and green with specific histological markers.

Researchers: Mamunur Rashid, Judson Belmont, David Carpenter, Christopher Turner, PhD, and Eric Olson, PhD.



Microscopic view of a coal miner's lung showing dark coal macules (collections of coal dust in the lung cells).

Research at Upstate Medical University is integral to student learning. The dual MD/PhD program is only the most refined example of how research at Upstate is intertwined with the College of Medicine.

College students at all levels are linked to research opportunities through the recently formalized Office of Medical Student Research. The Office helps coordinate student interest with the needs of Upstate's more than 100 labs and primary investigators, streamlining the process so that students can become creators of information.

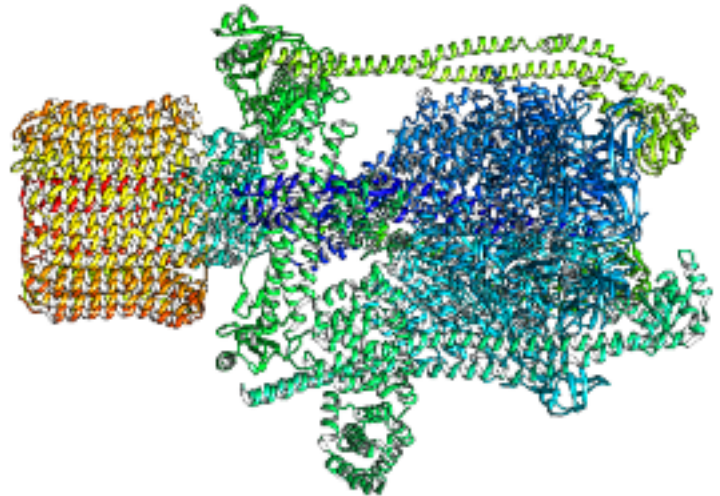
Biomedical research at Upstate spans studies on molecules to human populations. The research focuses on diseases that affect our local community such as diabetes and cancer as well as global health challenges such a dengue and zika.

Trigger sought for rise in black lung disease rates

Upstate pathology professor Jerrold Abraham, MD, and assistant professor Soma Sanyal, MD, are examining lung tissue from coal miners with black lung disease as a part of a large study into the reasons for a recent increase in the disease, which is also known as coal worker's pneumoconiosis. The increase may have to do with changes in coal mining technology, as well as the enforcement of safety regulations, says Abraham.

Lab assets include some of the most sophisticated equipment available, including the new Upstate/Leica Center of Excellence for Advanced Light Microscopy, and the Center for Research and Evaluation that provides assistance in biostatistics and data management for clinical research projects.

These resources give students in the College of Medicine the opportunity to pursue specific interests and build a greater understanding of scientific processes. Exposure to research can also give tomorrow's physicians insight to tomorrow's treatments and cures.



Cracking the code within an enzyme

The V-ATPases enzyme is present in every cell of the body, and also in plants and yeast. It has a connection to many diseases, including cancer and Parkinson's. Upstate biochemist Patricia Kane, PhD, focuses her research on yeast cells.

Kane, a professor who leads Upstate's department of biochemistry, was recently awarded a four-year, \$1.1 million grant from the National Institutes of Health to continue her lab's research into how cells regulate pH.

One of her projects studies how the V-ATPases knows where and how to help cells regulate pH. Kane has shown that the enzyme interacts with lipids at specific locations in the cell, and these interactions can make the enzyme more active at those locations. "There might be a code for the lipid within the enzyme, and we want to understand that code," Kane says.

Finding the genetic roots of ADHD

A combination of genes and environmental factors combine to trigger attention deficit hyperactivity disorder, according to researchers who identified 12 ADHD susceptibility genes.

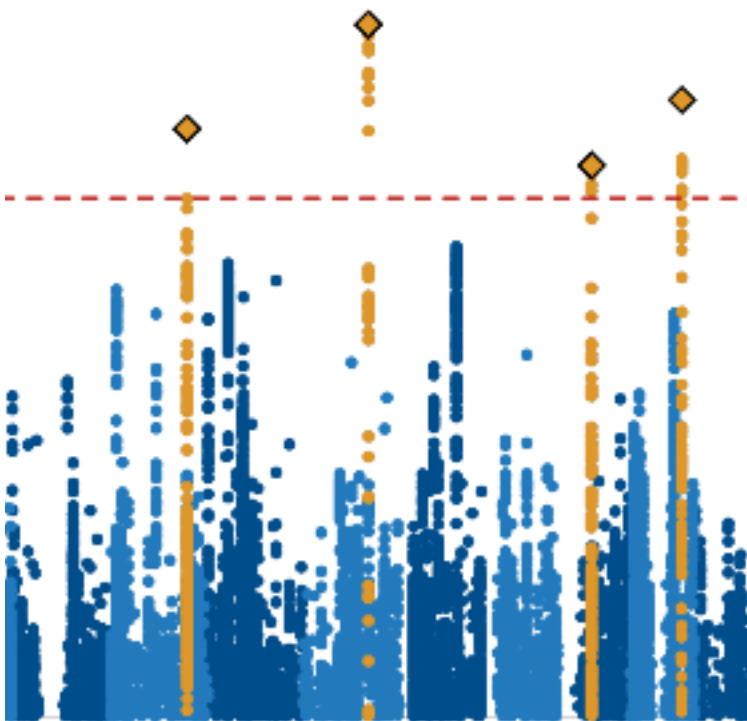
They say genes account for roughly 76% of cases of ADHD.

"That does not mean that the environment is not important. We know that the environment accounts for the other 24%, but we also know that the environment interacts with some of those genes that are responsible for the 76% of the variability, so both genes and environment are important," says Stephen Faraone, PhD, distinguished professor of psychiatry and behavioral sciences at Upstate.

After analyzing data from more than 55,000 people, he and a team of researchers identified 12 gene regions that are linked with ADHD. Their work was published in the journal *Molecular Psychiatry*.

This chart represents the entire genome. Each dot shows a locus on the genome. Any dot above the dotted line indicates a genomewide significant finding. In other words, at that locus is a DNA variant that increases risk for ADHD.

The dots form a "tower" because those markers on the genome are marking the same locus. Each tower corresponds to a separate locus; at each locus, there is more than one gene. More studies are needed to disentangle which genes are responsible.



Research Highlights

Leads national clinical trial for lupus drug

Upstate Division Chief of Rheumatology Andras Perl, MD, PhD, is leading a lupus drug clinical trial, based at Upstate Medical University that involves 20 lupus centers from academic institutions around the United States including Cedars-Sinai Medical Center and the University of Rochester. The National Institutes of Health has awarded Perl a \$7.2 million grant for the study.

The phase two trial involves systemic lupus erythematosus (SLE), which is the most common and the most severe form of the four types of lupus, according to the Centers for Disease Control and Prevention. SLE is a chronic inflammatory disease that affects 1.5 million Americans, according to the Lupus Foundation of America. This clinical trial will involve patients from across the United States, including many from Central New York. Each participant will take part for 13 months and the study is expected to last for five years.

The grant awards SUNY Research Foundation about \$1.5 million per year starting in 2020 through 2025 for a total of more than \$7.2 million. Additional support for ancillary biomarker studies is pending.

“The awarding of this grant to Dr. Perl is the culmination of many years of basic and translational research by his lab on the promise of N-acetylcysteine in treating lupus, a hypothesis wholly driven by Dr. Perl’s insight,” said Upstate Vice President for Research David C. Amberg. “This is also a recognition of Dr. Perl’s preeminence in this field as one of the top clinicians in treating patients with Lupus and top researchers developing new treatments for this devastating disease that impacts 1.5 million Americans.”



Andras Perl, MD, PhD

SLE, which has no cure, often has debilitating and potentially life-threatening side effects. Medications to treat the disease can also cause severe side effects. Perl’s study, “Treatment of Systemic Lupus Erythematosus (SLE) With N-acetylcysteine,” cites a depletion of glutathione, which is a substance made of three amino acids, in “lymphocytes of patients with SLE and associated this metabolic change with the elevation of the mitochondrial transmembrane potential.”

Participants will take pills twice daily — either the medication or a placebo — and the trial will closely monitor their condition. Participants will have a minimum of seven clinic visits and will donate blood for screening each time.

Focuses on causes of glaucoma

Sunlight streams through the lab of Audrey Bernstein, PhD, in Upstate Medical University's Neuroscience Research Building. The space, quieted by precautions taken due to the COVID-19 pandemic, is likely to become busier as Bernstein expands her team with the help of two new grants, a \$1.7 million award from the National Eye Institute (NEI) and a VA Merit Award grant with \$1 million direct to her lab and other support for the VA vision community.

The NEI award supports Bernstein's research into "an intracellular disorder within the eye that can lead to a severe form of glaucoma," she explained, and the VA award "extends [her] work on a patented therapeutic to prevent scarring in the eye."

To perform the work proposed in the NEI award, a team of scientists, with whom she has been collaborating for years, will join Bernstein. Their work was supported initially using seed money from the Safra Family, and expanded with funding from the Bright Focus Foundation, The Glaucoma Foundation, and most recently, the Mayer Family Foundation.

Those initial funding sources allowed their research to gain notice, and led to the support from the NEI, said Bernstein, who joined Upstate three years ago from the Icahn School of Medicine at Mount Sinai in New York City.

"There's a five-year history for this project," Bernstein said, noting collaborators include Dr. Wolosin from the Icahn School of Medicine at Mount Sinai and Dr. Ritch from New York Eye and Ear Infirmary of Mount Sinai. In addition to the basic science supported by the NEI, the Mayer's continuing gift will support the discovery of potential drug therapies for exfoliation glaucoma (XFG).

Bernstein's glaucoma research is focused on proteins that the eye may produce improperly; these proteins



Audrey Bernstein, PhD, in her laboratory in Upstate Medical University's Neuroscience Research Building.

can subsequently aggregate, leading to damaging increases in pressure within the eye. The result of the improper aggregation is exfoliation syndrome (XFS), an age-related disease involving deposits of material on the outside of certain cells of the eye, causing XFG.

The VA Merit Award will expand Bernstein's ongoing NIH-funded work, which is focused on developing a therapeutic target for scarring in the eye in conjunction with biotech collaborators. The NIH currently funds Bernstein's foundational basic science part of this work. With the VA award, Bernstein aims to make significant progress on the translational aspects of this work to prevent scarring; in particular, in veterans. Veterans are at higher risk for corneal scars and glaucoma than is the general public, and Bernstein's work will address the prevention of ocular scarring in veterans.

Research Highlights

Finds CVT rates far higher than thought

Cerebral venous thrombosis (CVT) occurs when a blood clot forms in one of the veins in the brain, preventing blood from draining out of the brain. A new analysis, led by SUNY Upstate Medical University has found that the incidence of CVT in the United States is higher than previously reported and has increased over time. The study, published online in *Neurology*, the medical journal of the American Academy of Neurology, found the increase occurred mainly in men and older women. Consistent with prior data, the incidence of CVT remained highest in younger women and it did not increase across the study. Researchers also found the incidence of CVT in Black people is higher than in people of other racial and ethnic groups.

Some of the main factors associated with cerebral venous thrombosis include oral contraceptives, pregnancy, cancer, head trauma and obesity. Symptoms include severe headaches, blurred vision and nausea. Rarely, CVT can lead to brain swelling and bleeding and, when most severe, stroke and permanent brain damage.

“Our study found that the number of cases of cerebral venous thrombosis in the United States is three times higher than previously reported, and who is being diagnosed with the condition is changing,” said study author Fadar Oliver Otite, M.D., Sc.M., of the SUNY Upstate Medical University and a member of the American Academy of Neurology. “CVT is most common in younger women and the higher incidence in this group has been attributed, in part, to the use of birth control pills and pregnancy. However, our new analysis did not find an increase in this population over time, but rather showed increases in men and older women.”



Fadar Oliver Otite, MD, ScM

For the study, researchers reviewed hospital records in New York and Florida, two states with diverse populations. They identified a total of 5,567 new cases of cerebral venous thrombosis diagnosed between 2006 to 2016. Researchers then used U.S. Census data to identify total population numbers for those states as well as the country overall to calculate the incidence of CVT in the United States. They also looked at data for all strokes and the percentage of strokes caused by CVT.

Uncovers effective sepsis treatment

A team of Upstate Medical University researchers published a paper in a Nature Communications about a new type of sepsis treatment that could bolster survival rates and be used to treat severe cases of COVID-19.

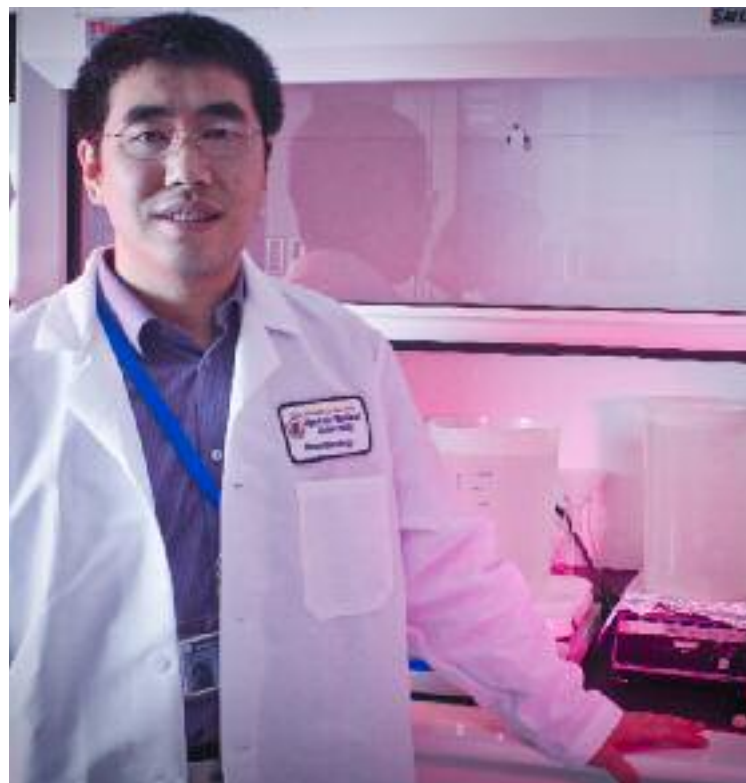
The team was led by Juntao Luo, PhD, an associate professor of pharmacology who has been studying this new therapy to neutralize severe inflammation during sepsis for the last three years.

Severe sepsis or septic shock, describes the detrimental effects of a life-threatening infection and hyperinflammation, which causes different organs (lungs, kidneys) to lose function and/or fail. Sepsis affects 1.7 million adults in the United States each year and contributes to more than 270,000 deaths. Doctors at Upstate have been pooling their expertise on the topic through the Sepsis Interdisciplinary Research Center (SIRC) since 2019. Luo's work is one of the center's primary projects.

"We are targeting the cytokine storm and inflammatory mediators," Luo said. The cytokine storm is when the body releases too many cytokines too quickly, which causes severe inflammation, organ failure and if uninterrupted can lead to death. Cytokine storm and hyperinflammation have been documented in many severe COVID-19 cases. Sepsis often contributes to organ failure, which is the leading cause of death among ICU patients.

Luo, with Professor and Chair of Surgery Robert Cooney, MD, have developed new technology to adsorb the excessive inflammatory mediators in blood and improve survival in experimental sepsis. "The novel nanotrap technology uses a combination of molecular charge and size characteristics to selectively capture inflammatory mediators in an experimental model of sepsis called cecal-ligation and puncture. In addition to reducing the inflammatory effects of infection, the nanotrap technology decreased injury to lung, kidney and liver and also improved survival," according to the summary.

"Inflammation is a double-bladed sword as it is meant to control infection naturally but can cause tissue damage if



Juntao Luo, PhD

unchecked," Luo said. "Inflammation in a sepsis patient is really hard to control and for many patients they cannot overcome that and may die."

Luo and Cooney's new nanotrap technology, when used in conjunction with antibiotics – a standard and integral method of treating sepsis – dramatically increased survival rates in experimental models.

"With antibiotics alone to control infection we get a 50 to 60 percent survival rate," Luo said. "Our new approach to control inflammation also gives us a 50 to 60 percent rate. But when they are combined together the survival rate is 100 percent. This technology can be used as a blood-cleaning therapy and is promising to improve the survival rate of severe sepsis."

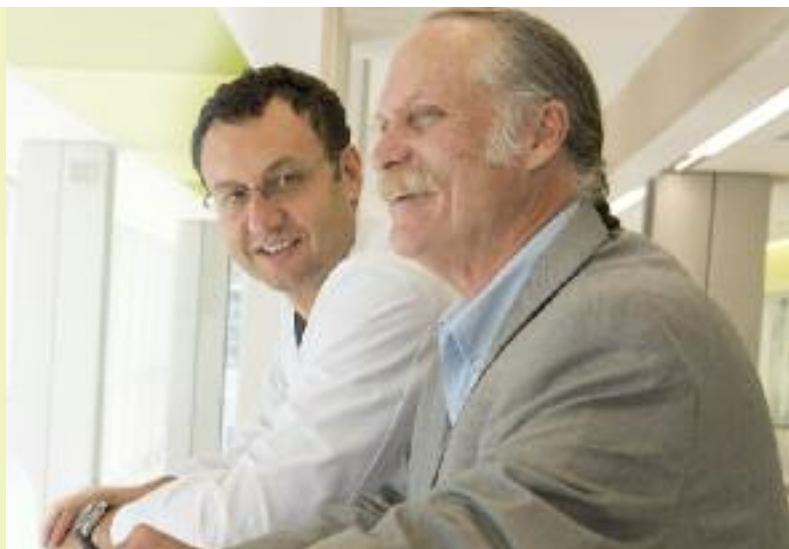
Luo said the conventional kind of blood-cleaning technology has already been approved by the FDA for emergency use in treating severe COVID-19 patients.

Caring for Patients

Clinical Overview

As an academic medical center, Upstate Medical University provides a rich array of clinical opportunities for learners to explore various aspects of health care.

- Upstate provides care for nearly 1 million patient encounters a year.
- Upstate has the region’s only pediatric hospital, which serves an area with 700,000 families, and the only pediatric emergency department.
- Upstate has the region’s only cancer center that treats patients of all ages. In addition to Syracuse, there are cancer outpatient facilities in Oneida and Oswego.
- Upstate has the region’s first comprehensive stroke center, providing telehealth care to many of the region’s smaller hospitals.
- Upstate’s family birth center recently underwent a multi-million-dollar renovation.
- Upstate’s four colleges provide a near-perfect environment for inter-professional training, providing up-to-date training for the way medicine is being practiced today.
- Upstate has special services for those transitioning.
- Upstate has new psychiatric facilities designed to serve the unique needs of adolescents and young adults.
- Upstate is home to the region’s only Level One adult and pediatric trauma center, which serves one-third of New York state. The hospital treats 2500 trauma patients annually and the helipad saw nearly 200 landings in the past year.
- Upstate’s satellite offices cover much of the region, providing clinical opportunities far beyond campus boundaries.
- Upstate’s Binghamton campus and its ties to North Country providers and preceptors provide students the opportunity to discover what sort of community they wish to serve.



Patient Care

When people in Central New York say “Upstate,” they mean Upstate University Hospital, the 420-bed hospital that has been a part of Upstate Medical University for more than 60 years.

That’s because Upstate University Hospital is a vital part of the community. As the region’s only Level One Trauma Center, it is where patients are brought when they are most in need of care. With more physicians, more nurses and more allied health professionals than anywhere else in the region, for many, Upstate is what they mean when they say, “the hospital.”

Upstate also includes Upstate Community Hospital — with a large family practice and the Upstate Family Birth Center, which recently underwent a \$9 million updating — and the Upstate Golisano Children’s Hospital, the region’s only hospital dedicated to the care and curing of the youngest patients.



Upstate graduate Heather Finn, MD, teaches in the new family medicine residency program, a joint venture of Upstate and the Syracuse Veterans Administration medical Center.



Sharon Brangman, MD, geriatrics chair, graduated from Upstate's College of Medicine in 1981.

It is in this environment that Upstate students learn to become doctors. In the center of New York's fifth largest city, Upstate has a diverse patient population that includes urban and suburban residents as well as rural residents from 17 counties, an area that stretches from Pennsylvania to Canada.

Students get exposed to a variety of cultures, from new immigrants drawn to the city center to Amish and Mennonite families who work the land. Respecting these patients and developing a rapport that dissolves language and cultural barriers is an integral part of an Upstate College of Medicine education.

Students learn in the classroom and in the new simulation center, where they practice on mannikins and model patients. Later, they get to bring those skills to the bedside where they refine their skills with real patients suffering from real health issues.

Center for Excellence for Alzheimer's Disease

A leading voice in geriatrics, Sharon Brangman, MD, is a graduate of Upstate Medical University College of Medicine whose research and work with patients has contributed to the understanding of frailty and Alzheimer's as well as disparities in health care for African Americans.

Brangman is the Division Chief of the Center of Excellence for Alzheimer's Disease. It has established itself as an innovative leader in the management of Alzheimer's disease. The Center is supported in part by a grant from the New York State Department of Health.

The CEAD currently has a staff that includes geriatricians who work in conjunction with geriatric nurse practitioners, social workers and nurses with expertise in geriatrics. Case management services are provided by social workers with a particular emphasis on elders at risk, especially those who live alone or with frail caregivers.

The CEAD has a strong working relationship with local adult protective services, which identifies and refers elders, especially those with dementia, who are at risk because of the inability of the patient, family or other caregivers, to seek and comply with medical management.

An individualized care and management plan is developed for each patient, and depends on the disease stage, patient's level of function, and amount of support that is available. Referrals are made to appropriate community resources, such as adult day care, home care, respite or long term care, and the social worker follows each care plan so that it can be adjusted or revised, as needed. The goal of all treatments and care plans is to reduce the stress and burden Alzheimer's disease has on the patient and family.



Construction has begun on the Nappi Longevity Institute, which will house an array of services.

The Nappi Longevity Institute

Part of Upstate Medical University’s continuing efforts to better serve the health needs of the region, the Nappi Longevity Institute will offer greater access to critical care and medical advancements in brain health when it reaches completion.

The \$158 million, 209,615 square-foot addition to the Upstate campus is designed so that the original five floors can be expanded to eight, should the future require it.

The Nappi Longevity Institute is meant to be a transformative health care facility. “It will bring essential health care services together, providing patients better access to specialists and foster greater collaboration between our health care providers to the benefit of our patients,” said Upstate Interim President Mantosh Dewan, MD.

The Nappi Institute will house an array of services, practices and programs, bringing key ambulatory services under one roof. The Institute will provide a focus on brain health and will be a site for Alzheimer’s disease research and care.

The Nappi Institute’s design will take advantage of integrated practice models where diverse medical services exist in a single setting, including primary care, geriatrics, radiology, laboratory services, behavioral health, family medicine, pediatrics and the Joslin Center for Diabetes (adults and pediatrics). The building will have several supportive ancillary services and a Transitions Clinic to ensure seamless post-acute follow-up for patients. An infusion center and urgent care center will also be in the facility.



Cardiac surgeons G. Randall Greene, MD, JD, MBA, and Stephen Waterford, MD, are part of the cardiac team at Upstate.

Upstate Heart Institute

The Upstate Heart Institute unites multidisciplinary expert teams in patient care, education and research to provide an advanced setting for patients and providers.

As a public trust, Upstate is committed to the reduction of health disparities and helping all patients achieve a continuum of good health through convenient, accessible services. Our faculty and staff are dedicated to providing our patients with innovative care, exceptional outcomes, and excellent service.

As a center for teaching, faculty members bring medical residents, fellows and students high quality training all in one multidisciplinary setting.

As Upstate provides a biomedical research enterprise dedicated to the improvement of human health, the Heart Institute serves as a hub for clinical trials and collaboration on basic research.



Pediatric patients like Landon, who has spina bifida, will benefit from the increased staff and expanded services that will be possible with the creation of Upstate's Golisano Center for Special Needs.



A Case Study: Our Coronavirus Response 2020

COVID-19 response



Upstate Medical University leaders made themselves available to the media to help inform the public about the COVID-19 pandemic.



In the early days of COVID-19, Upstate reached out to colleagues in Wuhan, China to consult on COVID-19.

Reaching out to Wuhan

In March, as the pandemic was reaching Upstate's service area, Upstate clinicians initiated a teleconference with a team of doctors and hospital administrators in Wuhan, China, where the COVID-19 pandemic is believed to have originated.

Upstate's Li-Ru Zhao, PhD, MD, professor of neurosurgery, explains: "I contacted Dr. Bo Hu, chair of neurology at Huazhong University of Science and Technology and Union Hospital, the best hospital in Wuhan."

Zhao continued, "Within two days, Dr. Hu had assembled a great team led by the hospital CEO, several department chairs and clinical experts."

The 90-minute call included a discussion of best practices, on both sides. "It validated many of the things that we're doing at Upstate in terms of proper protocols: isolating patients, protecting the staff and protecting the patients," said College of Medicine Dean Lawrence Chin, MD. "It was good to know that the things we're doing here were effective there."

The Novel Coronavirus 2019 (COVID-19) pandemic has been and continues to be a challenge for healthcare institutions around the globe. Upstate Medical University met the challenge, bringing to bear all the resources of an academic medical center.

Even when COVID-19 was perceived by some to be a threat only to China, preparations were underway at Upstate. When COVID-19 made its appearance in New York, Upstate had already been taking action, had an Incident Command in place, and was ready to face the crisis.

From the start, Upstate was tapped as a resource for the public. It created a triage line open to any member of the public looking for information on the illness. Calls came from worried parents, concerned children, from people who wanted to know if they should be tested and if there was a way they could protect themselves. The triage line was augmented with a chatbot specifically developed to handle the most common questions. Those with symptoms or more specific questions were referred to live members of the triage team.

To protect the health of students and patients, the College of Medicine halted

contact between the two, temporarily suspending clinicals. Wanting to help — wanting to “plunge right in,” as one student put it — students stepped up to other opportunities immediately. Students answered calls to the triage line, using their bedside training to reassure the anxious and educate all.

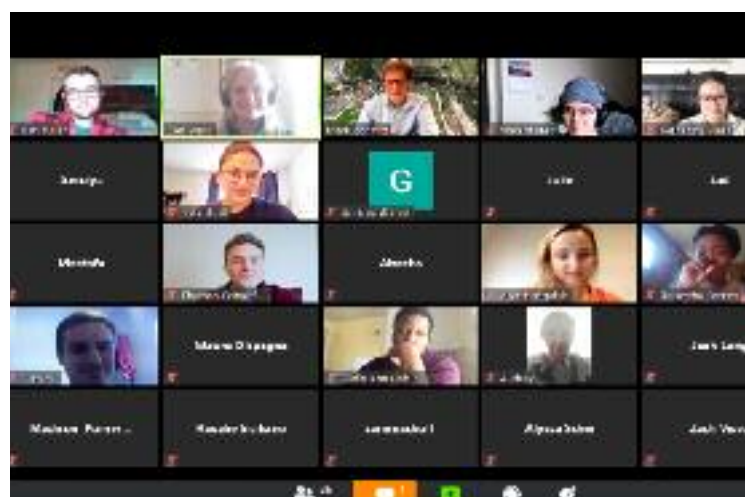
Additionally, Upstate developed a web site hosting a wealth of information on COVID-19 that offered advice to thousands of site visitors, provided a ready response to local news outlets, and created a specialty publication and a series of radio shows and podcasts to bring relevant and helpful information to the public. The information was also shared on Upstate’s blogs.

Upstate transformed a large outpatient facility into a drive-in COVID-19 testing site. Coordinating with county health officials, it became a place the ill and the worried could be tested without stepping out of their cars. Recognizing the need to minimize delays that resulted from samples having to be driven to Albany for testing, Upstate developed its own testing capabilities, reducing the wait for results from a week to a few days and, with the adaption of another technology, less than a day for certain patients.

Later in the summer, the drive-in testing site moved so the outpatient facility could



Upstate resident Prateek Harne, MD, appeared on CNN to discuss the COVID-19 pandemic.



Pulled off clinicals to protect their health and the health of patients, students stepped up in different ways to help combat the COVID-19 pandemic. Student teams scoured journals and the internet for sound information, contact quarantined patients to check on their health and lessen their loneliness, ran blood drives and took part in original research.



Sudie-Ann Robinson, one of the students whose research helped inform how Upstate doctors treated those with COVID-19.



Physicians, pharmacists, pharmacy technicians, respiratory therapists and nurses volunteered to care for coronavirus patients in the epicenter of the pandemic: on Long Island at the Stony Brook University Hospital and in New York City at the Javits Center.



William Paolo, MD, director of the emergency medicine residency program, in a poster series designed to encourage compliance with mask wearing

reopen without reducing the availability of COVID testing.

College of Medicine faculty provided regular updates to the government officials. They covered such topics as COVID transmission rates, how to flatten the curve, and how to communicate safety measures as well as shared surveillance dashboards to assist in decision making. Faculty became the experts on which city, town, school district and county officials depended upon as they made choices.

Upstate converted its recently acquired mobile mammography unit — known conversationally as the mammo-van — to a mobile COVID-19 testing unit. When the demand for tests was met through other efforts, using the parking lot of the Triple-A Syracuse Mets, the van was returned to its important work.

Recognizing that downstate New York was suffering greatly and healthcare providers there were stretched and stressed by the demand imposed by the pandemic, Upstate personnel volunteered to go to Stony Brook University Hospital. Personnel at the sister institution were grateful for the help.

In time, three waves of volunteers made the trip from Syracuse to Stony Brook.

For several weeks this spring, the Jacob K.

Javits Convention Center on the west side of Manhattan was one of America's largest hospitals, with more than 1,000 beds set up by the Army Corps of Engineers. For leadership, New York State turned to the College of Medicine to help the massive facility transition from military control. Upstate College of Medicine Assistant Professor of Emergency Medicine Christopher Tanski, MD, MEd, worked as chief medical officer at the facility.

The number of deaths in China, the high mortality rate in Italy and the rapid rise in COVID cases downstate stoked fear in Central New York. Upstate leaders consciously worked to replace fear with greater understanding.

Professor of Medicine Stephen Thomas, MD, division chief of Infectious Disease, had the key post of leading the Upstate Medical University Incident Team — coordinating all decision making. He made himself readily available to media outlets. He shared what was known about COVID as the knowledge was evolving. He also consulted with government officials, helping them respond to the changing situation.

Professor of Pathology Robert Corona, DO, Upstate University Hospital's CEO, became a public face as well, appearing at interac-



Online Incident Command meetings were the nexus of information gathering and decision making as Upstate responded to the COVID-19 pandemic.



The coronavirus required an instant overhaul in hospital practices. Changes helped reduce the toll the pandemic took on the region, allowing resources to be used in other, harder hit areas.



Upstate's Frank Middleton, PhD, left, one of the developers of the saliva-based COVID-19 diagnostic test, speaks with SUNY Chancellor Jim Malatras during a visit to the Upstate campus about how the test is being used on SUNY campuses across the state.



Upstate turned the parking lot of an outpatient facility into a drive-through testing site, allowing those getting tested to remain in their vehicles.

tive “town hall” meetings to ensure information was available so Central New Yorkers knew how to protect themselves and their loved ones.

Both leaders offered practical, informed advice and a calming presence during a stressful time for the community.

As it became apparent that testing for COVID-19 would be key to controlling future outbreaks, Associate Professor of Biochemistry and Molecular Biology Frank Middleton, PhD, worked with students to develop and refine a system of testing for COVID-19 that has been adopted across the SUNY system. The testing has helped spot “hot spots,” giving officials the ability to react quickly to protect communities from wider spread. The FDA’s October approval of the system provides institutions around the country a simpler alternative for testing.

Medical students haven’t proven key in several efforts necessitated by the pandemic:

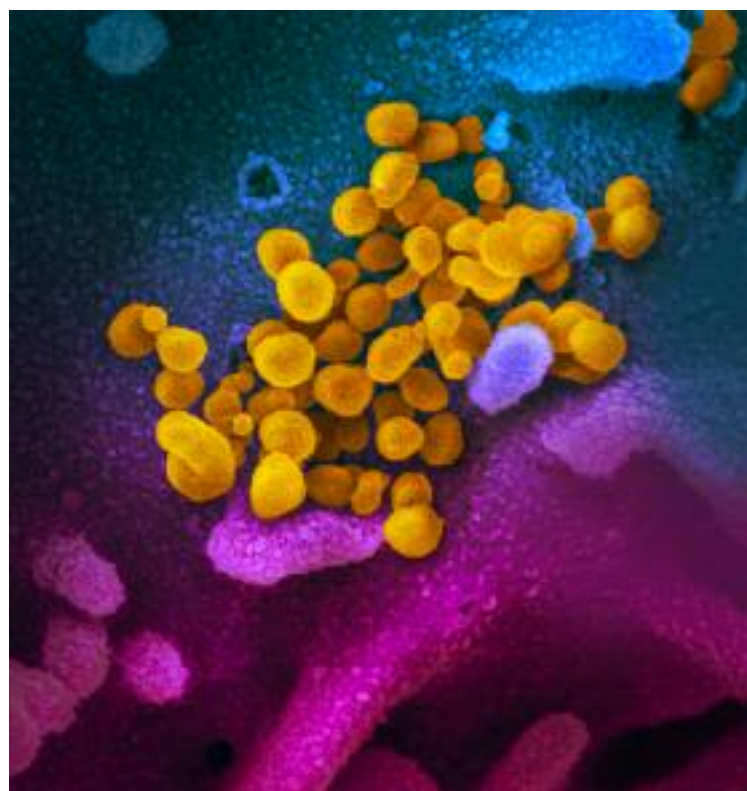
While student clinical work was suspended out of concern for their health and the health of patients, those studying at Upstate stepped up to help out in a number of ways. Students scoured research, sharing findings with those attending patients. Student findings became regular parts of meetings by

Incident Command, keeping those on the frontlines up to date.

With patients unable to have any visitors, students reached out by telephone to make sure concerns were heard and no one was denied human contact. This humanitarian effort helped students sharpen their understanding of patient concerns and on more than one occasion helped alert those caring for patients to previously undisclosed medical needs.

In a stirring example of commitment to provide care, 65 medical students who had completed their studies graduated early so they could move to the front lines in the effort against COVID. The pandemic required the ceremony, which included the recitation of the Physician's Oath, be held virtually. Jared Sweeney, MD, took part in the ceremony from his apartment in Albany. "Even though I may have limited experience, I'm ready to offer myself to do what's necessary," he said. "I know staffs are strained, and any role I can play to undo the burden on many, I will be ready."

This willingness to stand in the gap, to give one's all to help relieve the suffering of others is emblematic of what Upstate College of Medicine faculty and staff aim to imbue in each student who enters the college.



This image of the novel corona-virus that causes COVID-19 was produced in February on an electron microscope at the National Institute of Allergy and Infectious Disease's Rocky Mountain Laboratories in Montana, using a sample from a patient in the United States.

Spikes on the surface of corona-viruses give the virus family its name. Corona is Latin for "crown."

Clinical and basic scientists at Upstate are engaged in several activities related to the COVID-19 pandemic.

These include efforts to:

- Improve testing related to negative or inconclusive results.
- Precisely quantify the viral levels in patients as their disease progresses.
- Improve the care and therapies for COVID-19 patients.
- Determine factors that influence resistance to the disease or recovery.
- Identify social, economic, biological and ecological factors that affect the rates of the disease in Central New York.

In addition to researchers, more than 3,000 Upstate employees have volunteered for vaccine Phase III trials.

Our Campuses

PREPARING FOR THE NEW CLINICAL WORLD



The Binghamton campus is an option for third and fourth year medical students pursuing primary care specialties



Neuroscience Research building



Weiskotten Hall, home to classrooms, labs and administrative offices



Upstate Community Hospital, a part of Upstate since 2011, is a suburban hospital four miles from the downtown campus.



Cord Blood Center, the only facility of its type active in New York state



Upstate Health Care Center, one of numerous outpatient sites



View of Upstate's downtown campus. The Cancer Center, the five-story building in the right of the photo, opened in 2014.



Upstate Golisano Children's Hospital



Campus Activities Building



CNY Biotech Accelerator



Geneva Towers, a residential facility

Facilities for now, and the future

SUNY Upstate Medical University, in the heart of Syracuse, NY, is ever evolving with facilities being built and updated to meet the changing needs of medical treatment and medical education.

Recent projects include the conversion of a downtown high-rise to Geneva Tower, student housing a short walk from everything, and the construction of the Central New York Biotechnology Accelerator, speeding up the movement of promising ideas from the lab to the market.

In 2020 the Upstate Golisano Children's Hospital marked its 10th anniversary of bringing hope and healing to the smallest patients – and their families.

Looking to the future, work has begun on the Nappi Longevity Institute. The Institute will be home to brain health services as well as Alzheimer's disease research and care.



College of Medicine Departments

Department Profiles

Basic Science Departments

Biochemistry and Molecular Biology



CHAIR: Patricia Kane, PhD

Postdoctoral Fellow,
Institute of Molecular Biology,
University of Oregon

PhD: Cornell University, 1987

Faculty research in the College of Medicine's Biochemistry and Molecular Biology Department covers topics ranging from structural biology, bioenergetics and biophysics to cell signaling and cell biology. The department has particular interests in membrane proteins and transport, nucleic acid binding proteins, and oxidative stress, often using model systems in investigations.

These studies impact a number of human diseases, ranging from cancer to neurodegenerative disorders. Recent papers

by faculty members and students have appeared in *Science*, *Nature Cell Biology*, *Journal of Biological Chemistry*, *Journal of Cell Biology*, *Molecular Biology of the Cell* and *Journal of Molecular Biology*.

The department continues to have a strong record of extramural research funding, primarily from NIH.

Department research facilities have all been recently renovated. In addition, the department is home to several core facilities including the X-ray diffraction core, the Cyro-electron microscopy core, the mass spectrometry core and the genomics core.

Professors in the department include David Amberg, PhD, Upstate's vice president of Research, and Mark Schmitt, PhD, dean of Upstate's College of Graduate Studies.

Cell and Developmental Biology



CHAIR: Joseph Sanger, PhD

PhD: Dartmouth College, 1968

Our research advances the understanding of fundamental molecular and biochemical mechanisms of cellular function and development. The aim of our training and educational programs is to apply biological knowledge to critical medical problems and empower the next generation of scientists, clinicians, and educators.

Research in the Department of Cell and Developmental Biology explores the molecular and biochemical mechanisms of cellular function and development in several

exciting areas including the complex regulation of eukaryotic proteins in response to cellular events such as division, development and bacterial infection.

Other areas include understanding the mechanisms of the actin cytoskeleton assembly and role of myosin-1 during endocytosis in fission yeast, studying Actin Cytoskeletal Dynamics in the leukocyte inflammatory phenotype, and the biology of oligodendroglia and myelin formation during development, remyelination and repair in spinal cord injury and MS.

Professors in the department include Mira Krendel, PhD, Scott Blystone, PhD, David Pruyne, PhD, Vladimire Sirotkin, PhD, Jean Sanger, PhD and Marie Belchler, PhD.

Microbiology and Immunology



CHAIR: Timothy Endy, MD, PhD

MPH: University of Michigan, 1982

MD: Uniformed Services University,
F. Edward Herbert School of Medicine, 1986

Research in the Department of Microbiology and Immunology focuses on human disease and infection and is divided into two main areas: viruses and the diseases they cause and protection against infectious disease.

The Microbiology and Virology group works on a broad range of viruses and microorganisms including: HSV, EBV, CMV, VZV, KSHV, HTLV.

Interests include infectivity, gene regulation, DNA replication, pathogenesis of human viruses, microbes such as tuberculosis, some sexually transmitted diseases, virus/host interaction and animal models of human disease.

Our Immunology group research also covers a broad range of topics and includes work on diseases such as Lupus, multiple sclerosis, allergies, chicken pox and cancers including leukemia, lymphoma and oral cancers

A central theme is understanding how the immune system prevents or causes disease pathogenesis. Studies include how cells of the immune system fight viruses, bacteria and tumors, how microbes evade immunity, how the immune system becomes activated and destroys self tissues and how dioxin and estrogen affect cellular development of the immune system.

Research is conducted at the molecular, biochemical and genetic levels, with goals of developing gene therapies, vaccines and better treatment of disease. Research methods include cell culture, animal models, molecular genetics and gene therapy and microarray analysis of gene expression.

Neuroscience and Physiology



INTERIM CHAIR: Francesca Pignoni, PhD

PhD: University of California at Los Angeles

Postdoctoral fellow: University of California
at Los Angeles

The Neuroscience and Physiology Department is organized into groups, focusing on separate yet related areas of the field.

The Cell and Molecular Neuroscience group investigates a wide range of fundamental processes that underline neuronal function. Topics of interest include the regulation of gene expression in the nervous system, the physical bases of neuronal excitability, mechanisms of signal transduction, and the molecular foundations of neurological disease and disorders.

The Development and Regeneration group specializes in the mechanisms that control nervous system assembly and repair. This group investigates the regulation of gene expression during nervous system development and

regeneration, the cellular and molecular mechanisms that drive development of the cerebral cortex and the mechanisms that underline cellular regeneration in the central nervous system.

Faculty use a variety of research methods, including computational and behavioral techniques, gene array, real-time PCR, transgenesis, optical imaging, single-cell electrophysiology, and cell culture.

The Systems and Cognitive Neuroscience group studies the mechanisms and outcomes of neuronal function. Topics of interest include: the encoding of visual information by the brain; functional properties of olfactory system function and perception; fetal and adolescent neuronal plasticity and its role in drug addiction; imaging studies of neurodevelopment in individuals with genetic or psychiatric disorders; the molecular basis for dysfunction in neurological and psychiatric disease; CNS and spinal cord injury; developmental models of fetal alcohol syndrome and autism; and the control of behavior by specific aspects of neuronal activity, and how disease manifests alterations in neuronal function.

Pharmacology



CHAIR: Richard JH Wojcikiewicz, PhD

PhD: University of Sheffield, UK, 1985

The major focus of the program in Pharmacology is graduate education at the doctoral level. The various requirements are intended to prepare each student to be both scientist and teacher and to give the training necessary to begin a research career.

The curriculum provides a broad background in basic biomedical sciences in the first year, followed by more specialized coursework in the second year, depending on the student's interests and needs. Research itself is begun in the first year of the program through laboratory rotations, and career skills such as grant and manuscript writing, and oral presentation of scientific data are emphasized.

Students are encouraged to work in several different

laboratories during their research rotations as well as to participate in research training programs offered at other institutions. It is expected that after 3 rotations, students will select a mentor for their thesis research.

A newly developed Master's Degree is also now offered, focusing on drug action and development and the preparation of students for research careers in industry.

Research areas with the department include how dangerous cardiac arrhythmias develop, how they are sustained, and how they can be terminated; the structure-function relationships and mechanisms of action of the enzymes responsible for estrogen biosynthesis and metabolism; how cells communicate electrically and chemically via gap junctions to promote synchronized function and tissue homeostasis and the degradation of IP3 receptors and other endoplasmic reticulum proteins by the ubiquitin-proteasome pathway.

Clinical Departments

Anesthesiology



CHAIR: Xiuli Zhang, MD

MD: Qingdao Medical College

Our mission is to deliver high quality care and uncompromising safety to all perioperative patients requiring anesthesia services. Our faculty includes 30 physicians representing every subspecialty area in anesthesiology—cardiac, thoracic, pediatric, critical care, neuroanesthesia, regional anesthesia and trauma.

Together with our residents (44), and CRNAs (21), these teams handle the most complex cases in central New York. In addition, we have outstanding acute and chronic pain management services, including 7 fellows and 3 nurse practitioners, so that we can provide a continuous spectrum of care.

There is a diverse educational experience for our residents

and fellows in the Department of Anesthesiology at Upstate Medical University. As a level I trauma center, residents will see a broad-based patient population as they learn the practice of anesthesiology and its subspecialties.

Pain fellows encounter an equally diverse patient population as they build a knowledge base in both acute and chronic pain. Hands-on patient care combined with traditional didactic education will form the basis of our fellows' educational experiences.

Research areas include neuroanesthesia, neuromonitoring, subarachnoid hemorrhage, intraoperative neuro-monitoring, neuroprotection, brain ischemic injury, interoperative fluid management, pediatric anesthesia, protective role of hyperbaric oxygenation in ischemic and traumatic brain injury and the effect of hyperbaric oxygenation on chronic constriction induce sciatic neuropathic pain.

Emergency Medicine



INTERIM CHAIR: William Paolo, MD

MD: Albert Einstein College of Medicine, 2005

Clinically, we staff three emergency departments serving approximately 100,000 patients a year. At Upstate University Hospital we help provide specialty care for 18 counties of New York State. We provide subspecialty training in pediatric emergency medicine, pre-hospital medicine, wilderness medicine, hyperbaric medicine and wound care, and medical toxicology.

Upstate Emergency Medicine also serves our field by promoting research to advance medical knowledge in the areas of emergency medicine, wound care, hyperbaric and undersea medicine and EMS medical education.

Our department has outreach into our local community as well as the international community. Our international programs include sponsorship of educational meetings in

Family Medicine



CHAIR: Clyde Satterly, MD

MD: Medical College of Pennsylvania, 1994

Upstate's Department of Family Medicine is a group of professionals committed to the principles of family medicine and primary care. The principles are honored in diverse, patient-centered clinical practices, through teaching a wide-range of learners and through answering the important questions in the discipline through structured inquiry and strong research.

The mission of the Family Medicine Residency is to prepare exceptional Family Medicine trained physicians who will not only provide exemplary care to the patients but will foster a culture of academic inquiry, research and scholarship. Residents will be advocates for policies that support community health, holistic approaches to health care and prevention.

Residents receive a diversity of opportunities that train them to be excellent clinicians in urban, suburban and

India and China as well as hosting visiting Chinese physicians and nurses through ZAST (Zhejiang Association for Science and Technology).

We seek to serve patients by consistently offering excellent educational opportunities to pre-hospital care workers, medical students, ancillary health care personnel, emergency medicine residents and practicing emergency physicians. We are the regional leaders in resuscitative education and simulation education with high fidelity simulation mannequins.

The department's Research Division provides support to investigative efforts ranging from the subcellular to populations and from emergent care to chronic care. Working as a resource center, the Division provides guidance and support for development, design, implementation and/or reporting of research investigations. These services are provided to all levels of learners and faculty.

rural practice, and prepare them for leadership and faculty positions in family medicine. Additionally, they are committed to meeting the physical, mental, social and spiritual needs of their patients. They model the highest standards of patient care, teaching and research.

The Rural Medical Scholars Program, part of the Department, provides students with the opportunity to spend their third year immersed in a rural, underserved community. The program exposes students to the challenges and rewards of being a physician in a rural environment.

The Department operates a regional quality improvement project targeting breast, cervical and colorectal cancer screening and is involved with a regional research organization, the Studying-Acting-Learning & Teaching Network - SALT-Net. The Network has researched through surveys on matters such as opinions regarding obesity, social characteristics in regards to ADHD diagnosis and treatment, reporting rates of MRSA and provider participation in public health influenza surveillance.

Geriatrics



CHAIR: Sharon Brangman, MD

MD: Upstate Medical University, 1981

SUNY Upstate Medical University's Geriatrics Department is the clinical site of the Center of Excellence for Alzheimer's Disease (CEAD). It has established itself as an innovative leader in the management of Alzheimer's disease. The Center is supported in part by a grant from the New York State Department of Health.

CEAD staff includes geriatricians, geriatric nurse practitioners, social workers and nurses with expertise in geriatrics. Case management is provided by social workers with a particular emphasis on elders at risk, especially those who live alone or with frail caregivers.

CEAD works with Onondaga County Adult Protective Services, which identifies and refers elders, especially those with dementia, who are at risk because of the inability of the patient, family or other caregivers, to seek and comply with medical management.

An individualized care and management plan is developed for each patient, and depends on the disease stage, patient's level of function, and amount of support that is available. Referrals are made to appropriate community resources, such as adult day care, home care, respite or long-term care, and the social worker follows each care plan so that it can be adjusted or revised, as needed. The goal of all treatments and care plans is to reduce the stress and burden Alzheimer's disease has on the patient and family.

The Upstate geriatrics team is involved in several clinical trials for Alzheimer's patients.

A new program, LinkAges, is intended to improve geriatric care by advancing student-patient relationships. LinkAges brings together senior citizens and first-, second- and third-year medical students, giving students hands on, person-to-person experience in geriatric care years earlier than they previously received.

Medicine



CHAIR: Sriram Narsipur, MD, FASN, FACP, MRCP

MD: University of Michigan Medical School, 1988

The Department of Medicine is committed to engaging medical students, residents, nursing, and faculty in the quality improvement process. The goal is to create a culture of safety in which each individual has a voice in recognizing and preventing adverse events.

This culture is based on transparency, self-reflection and open communication.

The Department of Medicine is organized into twelve divisions and can treat patients for something as routine

as the flu, or provide comprehensive care for disease such as diabetes, cancer, heart or kidney disease.

The divisions are general internal medicine, cardiology, dermatology, endocrinology, diabetes and metabolism; gastroenterology; hematology/oncology; hospital medicine; infectious disease; nephrology; clinical pharmacology; pulmonary/critical care and rheumatology.

Research within the divisions covers a wide range of interests, including atrial fibrillation, cardiac rehabilitation, metabolic bone disease, thyroid nodules, psychosocial issues related to diabetes, GERD, cystic fibrosis and genes and viruses predisposing to autoimmunity, to name a few.

Neurology



CHAIR: Luis Mejico, MD

MD: Catholic University de Cordoba, Argentina, 1993

The Neurology team at SUNY Upstate Medical University is dedicated to providing state of the art neurological care to the Central New York community and region.

The Neurology Department faculty serve the educational needs of graduate students, medical students, residents in neurology and other fields plus fellows in various aspects of basic and clinical neuroscience. Physicians and staff routinely work with patients to educate and inform them about treatment options and matters related to their health and well-being.

In addition, the Department is engaged in basic, clinical, and translational research in Neuroscience with the goals of furthering understanding of neurological diseases, and developing new treatments that will improve the lives of patients.

The Infusion Center is dedicated to the treatment of Multiple Sclerosis, neuromuscular disorders and headaches. Upstate's board certified stroke physicians participate in the telemedicine program that has provided increased access to stroke/trauma care in rural areas and communities in the region. Using secure videoconferencing, physicians have instant access to the emergency departments of partnering regional hospitals.

Neurosurgery



INTERIM CHAIR:

Satish Krishnamurthy, MD, MCh, FAANS

MD: Mysore Medical College, India, 1984

As part of a medical university, the department's mission of education for students and residents goes back to 1958 when the department was started by Dr. Robert King. In 2020, prior Chair Dr. Lawrence Chin was appointed Dean of Upstate's College of Medicine in recognition of his work and leadership.

The Department's clinical practice — the Upstate Brain & Spine Center — offers the largest neurosurgical team in Central New York. Faculty and residents provide services to patients at Upstate University Hospital, which has an entire hospital floor dedicated to the Department's patients with neurological disorders. In addition to providing advanced care and technologies, a multi-specialty group supports patients at these Upstate

facilities: the region's only adult and pediatric Level-1 trauma center, a dedicated Cancer Center, the Upstate Golisano Children's Hospital, neonatal care units, and the region's first Comprehensive Stroke Center.

Department faculty members have trained more than one hundred neurosurgeons through the residency program, as well as influenced many medical students pursuing neurosurgery. Residents are educated in clinical decision making, technical aspects of neurosurgery, safety, quality, interpersonal and communication skills. Residents initiate and participate in both clinical and laboratory research.

To seek novel solutions through research has always been a focus of the Department. In addition to providing excellent patient care, the Department of Neurosurgery engages in basic, translational and clinical research aimed at finding new treatments and improved strategies for disorders of the brain and spine.

Obstetrics and Gynecology



CHAIR: JOHN NOSOVITCH, MD

MD: University of Texas Medical Branch at Galveston, Texas, 1986

Clinical research is actively pursued both in the department and with the collaboration of other departments within the medical university. Each resident is expected to become involved with one of the ongoing projects or initiate a new line of investigation with a faculty advisor.

Third- and fourth-year residents present papers on their case studies and research investigations at the annual Senior and Chief Residents' Departmental Scientific Forum, now in its eleventh year. The research rotation

with academic, faculty and fellowships tracks, prepare our residents for these pursuits and a career of lifelong learning.

Clinical research trials are available to our patients through our participation in the National Cancer Institutes' cooperative group, Gynecologic Oncology Group (GOG), or through a pharmaceutical-sponsored study. The research trials are currently open for ovarian cancer, uterine cancer and endometrial cancer.

The research team is composed of Mary Cunningham, MD, as principle investigator; W Douglas Bunn, MD; Margaret Mahan, RN NP, and Elizabeth Anderson, clinical research associate.

Ophthalmology



CHAIR: Robert D. Fechtner, MD

MD: University of Michigan Medical School

The Department of Ophthalmology and Vision Sciences consists of the clinical operation, the Upstate Center for Vision Care and the research endeavor, the Upstate Center for Vision Research.

The Upstate Center for Vision Care is the hub of the clinical enterprise with a core of full-time faculty and a full complement of community voluntary faculty. Residents work closely with the full-time and part-time faculty. Many subspecialty clinics are staffed by the voluntary faculty and the residents operate with these highly skilled surgeons in university operating rooms and in the community surgery centers. This broadens the perspective for residents.

The Department is also affiliated with the Syracuse Veterans Administration Health Center, which has a busy clinical and surgical service. Many residents go on to do top-notch fellowships and it is not uncommon for our residents to remain or return to the Syracuse area after they complete their training.

The department has a long history of community involvement. In addition to the tertiary level sub-specialty care, the Department is the eye-care resource for diverse immigrant and financially disadvantaged communities. Consequently, faculty and students see an extraordinary variety of interesting and challenging ophthalmologic problems. Close relationships with community subspecialists allow the Department to contribute to a high level of eye care for the more than one million people who call Central New York and the North Country home.

The Upstate Center for Vision Research seeks fundamental understanding of vision, from molecules to cells and tissues to visual perception, and to apply this knowledge to finding cures for blindness. The research faculty members include some of the most respected names in ophthalmology and bring a wealth of experience to their work. Current grant funding places the Department of Ophthalmology & Vision Sciences in the top 35 National Eye Institute-funded research centers in the nation. The Department of Ophthalmology & Vision Sciences is honored to have received an Unrestricted Grant from Research to Prevent Blindness, a distinction that is shared with only 37 other university centers in the country and just three others in New York state.

Orthopedic Surgery



CHAIR: Stephen Albanese, MD

MD: SUNY at Buffalo, 1980

The Department of Orthopedic Surgery in conjunction with Upstate Orthopedics, has trained many of the orthopedic surgeons practicing throughout Central New York today. Academics and research are integral to the work.

The primary objective of the SUNY Upstate Orthopedic Surgery Residency Program is to provide a well-balanced educational experience for residents that will allow them to develop into knowledgeable, competent, compassionate and ethical orthopedic surgeons.

The Department's orthopedic residency rotations are devoted to subspecialty services in all areas with a

community based general orthopedic rotation present in the third year. Residents work in a variety of hospital settings including Crouse Hospital, Upstate Community Hospital, Upstate University Hospital, Syracuse Veterans Affairs Medical Center, Upstate Golisano Children's Hospital and the Upstate Bone and Joint Center. This allows residents the opportunity to learn in a variety of settings and experience all subspecialties of orthopedic surgery throughout their training.

There are strong collaborative efforts between scientists and clinicians, and many research projects stem directly from the practice of orthopedic medicine at Upstate. Research is currently focused in the areas of orthopedic oncology, joint replacement, spine surgery, sports medicine, osteoporosis and bone biology, upper and lower extremity biomechanics and fracture fixation.

Otolaryngology



INTERIM CHAIR: Sherard Tatum, MD

MD: University of South Florida, 1985

The physicians and staff of the Department of Otolaryngology are committed to excellence in patient care, teaching, and research. The department has dedicated specialists in each area of Otolaryngology who provide expert care for patients.

The Department's academic program has a rich history, with the first Professorship of Otology dating back to 1872. The first full-time chair, Dr. George Reed, took his position in 1964. Since then, many faculty and residents have come through the program.

The residency program provides strong clinical training in all subspecialties of otolaryngology. The Department takes three residents a year. Approximately half of our residents go on to fellowship training and usually match in their top choices. There is also a one-year fellowship in craniomax-

illofacial surgery.

The clinical and surgical experience is enhanced through weekly basic science and subspecialty lectures, Grand Rounds Lectures, Multi-Specialty conferences, Morbidity and Mortality Conference, and Journal Club.

Throughout the year, a series of surgical anatomy laboratories are held in the College of Medicine gross anatomy lab and a temporal bone dissection course is performed within the department's temporal bone laboratory. PGY-5 residents also partake in a microvascular anastomosis laboratory. Residents also have a total of four months dedicated to research during the PGY-3 year.

Research by faculty covers an array of interests, including intracranial hypertension, Menieres disease, outcomes in cleft and craniofacial surgery, cosmetic and reconstructive facial surgery, head and neck oncologic surgery, health disparities in cochlear implantation, voice disorders, head and neck and sinonasal/skull base malignancies.

Pathology



**INTERIM CHAIR:
Michel R. Nasr, MD, FRCPC**

MD: Kursk State Medical University, Russia, 1999

The Pathology Department has a long history of scholarship, discovery, education and innovation. A fully integrated academic department with Divisions that cover most pathology specialty areas, Pathology is innovating in digital imaging, telepathology, bio-informatics and molecular diagnostics.

Upstate recently opened the region's only Cord Blood Bank and has industry collaborations in place. The Pathology Department is a key component of the Upstate Cancer

Center. This is a program focused on preparing pathology residents and fellows to be partners in delivering care that is predictive, preventative, personalized and participatory.

The Department has a faculty of 36 physicians and laboratory scientists representing the most comprehensive roster of specialty pathologists in the region. The depth of expertise is offered as a resource to other laboratories and physicians in the region.

As the science progresses in identifying specific disease targets making personalized medicine a reality, the Pathology Department is prepared to be a resource in providing guidance to clinicians and patients to make informed treatment decisions based on evidence.

Pediatrics



CHAIR: Gregory Connors, MD, MPH, MBA

MBA: University of Rochester, 2003

MPH: University of Rochester School of Medicine and Dentistry, 1998

MD: SUNY Stony Brook, 1989

Committed to serving the needs of children and families in the Central New York and surrounding communities, the Pediatric Department's mission includes delivery of the highest quality pediatric care, provision of excellent teaching and development of life-long learning skills for all levels of learners, discovery through important research, and support of our community through outreach and advocacy.

With the only children's hospital in the region, the Department is equipped to provide great care in great space. Young patients can still act like kids. They can play

video games, laugh out loud at their favorite cartoons, stay in sync with their friends and classmates. Most important, they can reach out and touch their families, day or night.

The facilities include pediatric intensive care rooms, pediatric surgery rooms, 12 single-patient rooms customized for patients with cancer and blood disorders, epilepsy rooms with seizure monitoring capability, as well as playrooms because a children's hospital serves children.

The Upstate Golisano Children's Hospital recently celebrated its 10th anniversary. In that decade the facility has become an integral piece of health care for children across an 18-county region with faculty and staff who dedicated to building a better community through providing comprehensive pediatric services and educating the next generation of pediatricians.

Physical Medicine and Rehabilitation



CHAIR: Robert Weber, MD

MD: Ohio State University, 1971

The Department of Physical Medicine and Rehabilitation supports scholarship in a variety of venues. The majority of the Department's scholarship is clinically or educationally based and relates to function, disability, neurophysiology, technology, quality, and health and wellness. Faculty members are encouraged to engage in clinically based research and other scholarly activity. Resident physicians are required to complete at least one approved project during their 3-year training program that results in an accepted platform/poster presentation with a PM&R national professional society, publication, educational module, quality improvement activity, or other scholarly product. Departmental support is provided for these activities (e.g., modest start-up funds, networking for national and local

experts, travel/room for presentations at regional and national meetings).

Long-standing themes of inquiry are in the areas of health and wellness for people with disability, traumatic brain injury and concussion, and neurophysiology and electrodiagnosis, with the more recent addition of spinal cord injury medicine focused on electrical stimulation. Quality improvement projects, case reports and series, and other descriptive electronic health record reviews are commonly the base of resident and student projects.

Active research subjects include electrical stimulation for bladder management, spina bifida, coding for cause of death for people with intellectual and developmental disabilities, balance following traumatic brain injury among adolescent and young adult populations and 3D printing and development of low-cost orthotic and prosthetic devices.

Psychiatry and Behavioral Sciences



CHAIR: Thomas Schwartz, MD

MD: Upstate Medical University, 1995

The Psychiatry and Behavioral Sciences Department has a long history of providing excellent training and patient care in regard to deploying psychodynamic techniques. The Department has a diverse faculty trained in different schools and subsets of psychodynamic psychotherapy. Faculty train interns and residents to provide CBT, DBT, IPT and EMDR, further diversifying the training experience and the types of treatments provided to patients.

The Department has experts in psychopharmacology, particularly in the area of treatment-resistant major depressive disorder and first-break psychosis associated with schizophrenia. The Department has a strong and parallel set of training curricula for psychotherapy and pharmacotherapy. There is ongoing and increasing support for both clinical and basic science researchers in the areas of functional neuroanatomy and psychiatric genetics.

The Department is multidisciplinary. Psychiatrists, psychologists, social workers, nurse practitioners and others all serve to treat patients and improve their quality of life. The Department prides itself on protecting its academic nature and continuing to provide high-quality teaching.

The department of Psychiatry has continued to attract high profile researchers with NIH grants: including ADHD authorities Steven Faraone, PhD from Harvard and Russell Barkley from the University of South Carolina and velocardiofacial syndrome expert Wendy Kates, PhD from Johns Hopkins.

With their NIH-funded studies and collaborations with existing faculty, Upstate soared in five years from the Department of Psychiatry with no NIH funding to 28th out of 125. But more significant than national stature are the department's long-range contributions to the field of psychiatry.

Through research, the Department creates new knowledge, develops more-targeted, more-efficient, more-effective treatments.

Radiation Oncology



CHAIR: Jeffrey Bogart, MD

MD: Upstate Medical University, 1989

The Department of Radiation Oncology at Upstate Medical University continues to be at the forefront of the latest treatment technology and clinical research, providing residents with a rich and comprehensive training environment.

During the 2019 to 2020 academic year, the department was proud to send two representatives to international conferences to present their work. This is a testament to the exceptional research taking place in the department, but it also highlights the collaborations among the medical education spectrum that the department actively seeks through a supportive work environment.

Dr. Tamara Nsouli presented “Treatment of ultracentral lung tumors with hypofractionated radiation therapy” at

the World Lung Conference in Barcelona, Spain. Members of Dr. Nsouli’s team included Dr. Ryan S. Alden, (then a fourth-year medical student at SUNY Upstate, Dr. William Ennis (former Chief Resident), Dr. Michael Mix (faculty member), and Dr. Jeffrey Bogart (Chair, Dept. of Radiation Oncology, Interim Director of SUNY Upstate Cancer Center).

Dr. Hsin Li joined members of his team to present, “Heterogeneous vs. Homogeneous Radiation Dose Calculations of Twice Daily Fractionation in Small Cell Lung Carcinoma” at the 2019 Latin America Conference on Lung Cancer. Dr. Li worked with Ryan Thibodeau (then a third-year medical student at SUNY Upstate), Dr. A. Gajra (Dept. of Internal Medicine, SUNY Upstate), Dr. Sean Tanney (Medical Physics), and Dr. Jeffrey Bogart (Chair, Dept. of Radiation Oncology, Interim Director of SUNY Upstate Cancer Center).

Radiology



CHAIR: David Feiglin, MD, FACR, FACP, FRCPC

MD: University of Melbourne, Australia, 1967

The Department of Radiology provides imaging and interpretation services to all clinical and research departments at University Hospital, as well as to three out-patient facilities.

The department provides a full complement of tertiary care radiologic services, including Neuroradiology and Interventional-Neuroradiology, Cardiovascular Interventional Radiology, specialized Musculoskeletal, Chest, and Abdomen Radiology, Women's Imaging, and Nuclear Medicine. The Department of Radiology includes a

diagnostic radiology residency teaching program (currently with 24 residents) and fellowship programs in Neuroradiology.

The Department includes eight divisions, including: Diagnostic, Neuroradiology, Nuclear Medicine, Vascular and Interventional Radiology, and six sections.

Faculty and staff are deeply committed to providing the highest quality patient care and resident education possible. For the Department, these goals are not only compatible, but complementary. The success of the program is manifested by residents’ performance on the Core and Certifying Board Examinations and by the ease with which they are able to obtain desirable fellowships, academic or private practice positions.

Surgery



CHAIR: Robert Cooney, MD

MD: University of Vermont College of Medicine, 1985

The surgical faculty at Upstate is composed of a diverse group of general surgeons, subspecialists, and researchers. The Department specializes in treating complicated illnesses and conditions serving as a regional referral center for central New York's population of over two million people.

The general surgery residency training program attracts outstanding students from medical schools around the country and graduates six chief residents per year. The operative experience for trainees is extensive and diverse including rotations at Upstate University Hospital, Upstate Community Hospital, Crouse Hospital and the VA Medical Center. Many residents pursue research opportunities as part of their surgical training at Upstate

and are recognized nationally for their clinically important research contributions.

The Department of Surgery has extensive research facilities that house both surgical and basic research scientists who are full-time members of the Department.

Representative areas of investigation in the Surgical Research Laboratories are: gastrointestinal, cardiovascular, pulmonary, platelet and burn physiology, immunology, metabolism and cancer.

Elective opportunities for basic and clinical research are available as part of the residency program. Research activity is encouraged throughout the residency program. In addition to the five clinical years, selected residents are encouraged to spend one or two years in laboratory research. This is usually after the second year of clinical training.

Urology



CHAIR: Gennady Bratslavsky, MD

Albany Medical College, 2000

The primary educational goal of the Department of Urology is to assist in training excellent urologists who can successfully practice quality medicine in both the inpatient and outpatient setting, develop skills as an educator and participate in research. The educational goals were developed and are regularly updated by broad representation of faculty and residents in order to clearly define the expectations of residents on specific rotations. Residents gradually increase their responsibility in regard to patient care and teaching responsibilities.

The Urology department education includes, but is not

limited to, monthly journal club, weekly urology grand rounds, bi-weekly urology/radiology case conferences, research conferences and weekly Campbell's club meetings.

Residents are expected to exhibit intellectual curiosity and that they will bring that style of practice to their patient care. The defined educational goals of the Urology Residency Training Program are intended to clarify the learning objectives for all inpatient and outpatient rotations. Program requirements are based on the Accreditation Council for Graduate Medical Education (ACGME) standards for categorical training in Urology.

Researchers within the Department include Dimitra Bourboulia, PhD; Gennady Bratslavsky, MD, Leszek Kotula, MD/PhD, Vladimir Kuznetsov, PhD and Mehdi Mollapour, PhD.

Other Academic Departments

Bioethics and Humanities



CHAIR: Kathy Faber-Langendoen, MD

MD: Washington University School of Medicine, St. Louis, Mo., 1986

The Center for Bioethics and Humanities, a department of the College of Medicine, advances the scholarly and professional understanding of bioethics and the medical humanities.

The goal is to promote health care and health policy that is patient centered, compassionate, and just. The Department provides education to learners in all of Upstate's Colleges and at University Hospital, publishes a wide range of scholarly work and a literary journal, and

provide clinical ethics consultations at University and Crouse Hospitals.

The Department's scholarly work includes theoretical and empirical research in bioethics and the health humanities, creative writing, and the publication of SUNY Upstate's literary journal, *The Healing Muse*. Specific research interests include the impact of social media on trust and communications between physicians and families, end of life issues, ethical leadership, professionalism and professional identity formation constructs, access to care for non-citizens, brain death criteria, transplantation ethics, attitudes toward and treatment of patients with sickle cell anemia and cultural diversity in health care.

Public Health and Preventive Medicine



CHAIR: Christopher Morley, PhD

PhD: Syracuse University, Social Science, 2009

The Department of Public Health and Preventive Medicine (DPHPM) reaches across the University with a commitment to educating students and conducting research in the broad disciplines of public health, preventive medicine, health promotion, and the health services for the communities served.

Faculty members from across the institution interested in population health are able to develop scholarly partnerships to better address community needs and enhance clinical research expertise.

The Department of Public Health and Preventive Medicine presently operates through three divisions: Upstate Public Health Programs, Preventative Medicine and the Center for Research and Evaluation.

The Center for Research and Evaluation functions as an analytic core facility that offers assistance and consultation on research design, methodology, analysis, and biostatistical consultation to the faculty, and researchers in Central New York.

The Preventive Medicine program teaches the essentials of epidemiology, biostatistics, public health, clinical prevention, population-oriented prevention, health systems, health policy and evidence-based medicine throughout the four year curriculum in the medical school.

The Upstate Public Health Program prepares graduates to manage public health issues via a 42-Credit Master of Public Health degree program, as well as a 15-credit Certificate of Advanced Study in public health, and a joint MD-MPH program. Upstate Public Health faculty also provide biostatistical training to graduate students in the College of Graduate Studies.

Current research efforts have focused on such broad areas as diabetes, asthma, maternal and child health and global health. Faculty work collaboratively with researchers throughout and beyond SUNY Upstate to not only further knowledge in the fields of public health and preventive medicine, but to find ways to apply that knowledge to real-life situations.

By the Numbers

1834 Geneva Medical College founded by Edward Cutbush, MD, the “father of American naval medicine.”

26 Academic Departments within the College of Medicine

161 Graduates in the class of 2020

667 Residents and Fellows

38 Clinical training sites for residents and fellows

1,575 Faculty in the College of Medicine

100% Residency match rate for the class of 2019

1871 Medical College transferred to Syracuse University

\$35,200,000
Annual research funding



52 ACGME-accredited residency programs in all major specialties and subspecialties

1950 State University of New York purchases Medical College, creating Upstate Medical College



7,746 Medical alumni worldwide

3,121 Medical alumni residing in New York, fulfilling a major commitment to serve the people of the state

STATE UNIVERSITY OF NEW YORK

UPSTATE

MEDICAL UNIVERSITY

COLLEGE OF MEDICINE

750 East Adams Street | Syracuse, NY 13210

Non Profit Org.
US Postage
PAID
Permit No 110
Syracuse, NY