



SOMnews

Point of PRIDE

Horatio Gates Jameson, MD
UMSOM Class of 1813



Dr. Jameson was acclaimed as one of the most skilled surgeons of his day, performing the world's first excision of an entire upper jaw in 1820, and in 1823, the first tracheotomy in Baltimore.



SOMnews is your source for all news and information regarding the University of Maryland School of Medicine, including Clinical Care, Research, Education, Community Outreach, and its Culture Transformation Initiative.

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DEAN'S MESSAGE

The academic community maintains several expectations of both current and future medical students. They should:

- Possess strong critical thinking and analytical skills;
- Employ those skills in team settings and collaborate very well;
- Understand how to use data and distinguish accurate information from faulty information; and
- Practice cultural sensitivity with special mindfulness of our increasingly diverse communities.

Several years ago, an article in *Science Magazine* written by Andrew Schafer, MD, cited the key reasons why our field needs scientifically trained physicians: They bring indispensable perspectives to biomedical research, inspired by the priority of caring for patients; they play central roles in advancing medicine by acting as translators of fundamental research; and they are uniquely positioned within academic medical institutions to conduct cutting-edge research through the continuum of the biomedical enterprise (basic, translational, and clinical endeavors).

We declare the importance of research at the School of Medicine through our activities, priorities, and decisions. We begin by engaging medical students early in their training. On day one, we discussed some of our research opportunities with our Class of 2023, including the Program for Research Initiated by Students and Mentors (PRISM) and the annual Medical Student Research Day.

Biomedical research enlists medical students to think critically by comparing new data to existing data, determining how to respond to those data based on analytic tools, and improving or modifying experimental models. Research projects train students to critique data, identify whether conclusions are supported by evidence, and distinguish significant effect from random variability. The research laboratory setting provides an excellent proving ground for students to practice their critical thinking processes.

Our academic medical community is committed to educating and grooming scientifically trained physicians who have a strong grasp of research and analytical thinking, desire intellectual stimulation, demonstrate interest in education for themselves and for others, possess a variety of talents, and collaborate productively with other physicians and scientists.

Our curriculum includes several initiatives to ensure that we engage our medical students in scientific research. We require all first-year medical students to take the Foundations of Research and Critical Thinking (FRCT) Course; our expanding research development programs focus on students, trainees, junior faculty, minorities, and women; and we strongly encourage participation in the Student Summer Research Programs.

What's on My Mind...



...is the exemplary research and discovery taking place among our students.

I am very proud of the environment we foster for student scientific publications, presentations, and research-based competitions. It is easy to see how the resulting innovations, collaborations, and research discoveries from our students make us all particularly excited.

You will be read about some of these remarkable students and their innovations and discoveries in this issue of *SOMnews* — including **Huanwen (Alvin) Chen '21**, exploring new non-surgical methods to repair large nerve injuries; **Erik Klontz '21**, working on novel solutions to antibiotic resistance; **Daphine Kwasiga '22**, probing the causes of lung transplant rejection; and **Netsanet Woldegerima '21**, seeking better targeted therapies for melanoma. These all exemplify the high standards that our students set for themselves in transforming today's discoveries into tomorrow's treatments.

I wish to recognize our Office of Student Research (OSR) for all of its outstanding efforts in this area. In particular, I am grateful for the OSR leadership — **Kerri Thom, MD, MS**, Associate Professor of Epidemiology & Public Health, Assistant Dean for Student Research, and Director of the Office of Student Research, along with **Greg Carey, PhD**, Associate Professor of Microbiology & Immunology, Director of Student Summer Research and Community Outreach, and **Donald (Rick) Matteson, PhD**, Associate Professor of Physiology and Executive Director of Student Research Education and Dual Degree Programs. We salute the entire OSR team for everything they do to help produce the next generation of scientifically trained physicians!

In the relentless pursuit of excellence, I am
Sincerely yours,

E. Albert Reece

E. Albert Reece, MD, PhD, MBA
Executive Vice President for Medical Affairs, UM Baltimore
John Z. and Akiko K. Bowers Distinguished Professor and
Dean, University of Maryland School of Medicine





UMSOM is pleased to announce the appointment of **Three New Department Chairs**

PREEMINENT SURGEON-SCIENTIST CHRISTINE LAU, MD, MBA, TO LEAD DEPARTMENT OF SURGERY



"I am beyond thrilled to be joining such a talented team of surgeons and individuals. While I never saw myself leaving UVA, the opportunity to influence the future direction of surgery at the University of Maryland is simply something that I wanted to be a part of!"

- Dr. Lau

Christine Lau, MD, MBA, the George Minor Professor of Surgery and Chief of the Division of Thoracic Surgery at the University of Virginia (UVA), will become the next Chair of the Department of Surgery at the University of Maryland School of Medicine (UMSOM), and the Chief of Surgery at the University of Maryland Medical Center (UMMC), beginning December 1, 2019. Dr. Lau is a nationally renowned thoracic and lung transplant surgeon who is widely regarded for her leadership in the field of thoracic surgery. She also is a federally funded scientist and an expert clinician who is widely-acclaimed for her work in improving outcomes for lung transplant patients.

Dr. Lau's selection followed an extensive nationwide search in which nearly 100 candidates were nominated for this coveted position. Her appointment makes Dr. Lau the first woman to chair the Department of Surgery at the UMSOM — and one of only a small number of women throughout the U.S. to lead a major department of surgery.

"We are delighted that Dr. Lau will be the next chair of our excellent and nationally acclaimed Department of Surgery. She is ideally qualified to lead the department to new and even greater heights," said UMSOM Dean E. Albert Reece, MD, PhD, MBA. *"She has been a true pioneer in the field of lung transplantation, and the School of Medicine and the Medical Center will continue their upward trajectory resulting from her strong record of academic and clinical leadership, as well as her scholarly excellence and management experience."*

Mohan Suntha, MD, MBA, President and CEO of UMMC, added: *"Dr. Lau brings a stellar record of clinical and research accomplishments to our already outstanding Department of Surgery. Her demonstrated commitment to excellence in patient care, as well as to driving*

innovation and discovery, bode well for the future of the department. We are truly excited that she will be assuming this important leadership role."

Dr. Lau will continue her federally funded research program in her new position. She brings with her a multi-year \$3.3 million grant from the National Institutes of Health (NIH) to investigate the use of a new therapy to prevent ischemia-reperfusion injury in lung transplant recipients.

At UVA, Dr. Lau helped to build the lung transplant program to be among the best in the nation for patient outcomes during her time as the Director of Lung Transplantation. Her research, which she will continue at UMSOM, has added significant advances in areas that include lung injury and inflammation.

Dr. Lau specializes in all aspects of general thoracic surgery, and she is board certified in both general surgery and thoracic surgery. She has been consistently named a Top Doctor in America by *Newsweek* and other publications. She currently serves as Director of the American Board of Thoracic Surgery and serves on the Board for the American Association for Thoracic Surgeons. In addition, she serves on the expert panel for Leap Frog, a national nonprofit organization that collects and reports on hospital performance, and she serves on the National Heart, Lung, and Blood Institute (NHLBI) Study Section for Anesthesiology and Trauma Research.

She received her medical degree from Dartmouth Medical School in Hanover, NH, graduating #1 in her medical school class. She garnered numerous awards while she was there, including being elected to the National Medical Honor Society and receiving the Janet M. Glasgow Memorial Award. She subsequently did her internship and residency in general surgery at Duke University Medical Center in Durham, NC. After completing training in general surgery, she went to Washington University in St. Louis for her fellowship in cardiothoracic surgery and also in lung transplantation, which she finished in 2005. She earned an MBA in 2012 from UVA's Darden School of Business with a focus on management and leadership development.

VICTORIA MARCHESE, PHD, PT, NAMED CHAIR, DEPARTMENT OF PHYSICAL THERAPY AND REHABILITATION SCIENCE

Victoria Marchese, PhD, PT, Associate Professor and Interim Vice Chair for Academic Affairs in the University of Maryland School of Medicine's (UMSOM) Department of Physical Therapy and Rehabilitation Science (PTRS), has been selected to be the next Chair of the Department. She began her new role on August 15, 2019, taking the reins from **Andrew Pollak, MD**, the James Lawrence Kernan Professor and Chair in the Department of Orthopaedics, who served as Acting Chair of the department since June 2018.

Dr. Marchese, who joined the UMSOM faculty in 2014, is an award-winning scholar and clinical expert in the rehabilitation of children diagnosed with cancer. She has authored numerous book chapters and peer-reviewed articles in the area of assessment and physical therapy intervention for children with acute lymphoblastic leukemia and lower-extremity sarcoma. She also has received numerous awards for both her research and clinical work in pediatric cancer care and physical therapy and has presented nationally on the impact of student involvement in Transdisciplinary Education.

Dr. Marchese is a member of the University of Maryland Marlene and Stewart Greenebaum

Comprehensive Cancer Center Institute, as well as the UMSOM's Program in Oncology. As an active investigator, she has four current studies funded by the Academy of Pediatric Physical Therapy, Foundation for Physical Therapy, and the Dr. Gladys E. Wadsworth Physical Therapy Research Fund. These studies are investigating pediatric physiologic mechanisms that contribute to functional outcomes and quality of life in children with leukemia, sarcoma, and sickle cell disease.

"We are delighted to have Dr. Marchese join the UMSOM's academic leadership as chair of this very important department," said UMSOM Dean E. Albert Reece, MD, PhD, MBA. "With her outstanding scholarship and unique focus on the rehabilitation and care of pediatric cancer patients, Dr. Marchese provides unique strengths and important breadth of leadership to catapult the department to new heights."

"I am so pleased to be given this new opportunity to take our Department to the next level," said Dr. Marchese.



"We have a great team, and I am delighted to help advance education, scholarship, and research in the Department of PTRS."

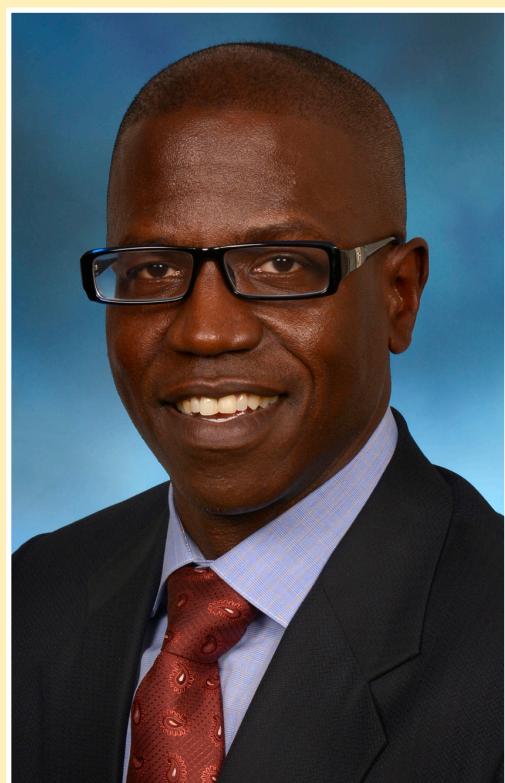
- Dr. Marchese

RODNEY J. TAYLOR, MD, MPH, NAMED CHAIR, DEPARTMENT OF OTORHINOLARYNGOLOGY-HEAD & NECK SURGERY

Rodney J. Taylor, MD, MPH, Professor in the UMSOM Department of Otorhinolaryngology-Head & Neck Surgery (HNS), a distinguished physician-scientist and head and neck surgeon, will become the next Chair of the Department, effective September 1, 2019. In addition, he will also serve as the Chief of Otorhinolaryngology for the University of Maryland Medical Center (UMMC).

Dr. Taylor has been consistently named a Top Doctor by *U.S. News and World Report*, *Baltimore Magazine*, and *Black Enterprise* magazine. In 2019, he received the Student National Medical Association Faculty of the Year Award, recognizing him as *"an inspirational mentor to our members as well as countless medical students; an exemplary physician and patient advocate, and a fervent community activist."*

He led the Department of Otorhinolaryngology initially as Vice Chair, and was named Interim Chair in October 2018 following the departure of **Scott Strome, MD, FACS**, who became Vice Chancellor for Health Affairs and Executive Dean of the College of Medicine at the University of Tennessee Health Science Center. The 2019-20 *U.S. News & World Report's* Best Hospitals Ranking recently assigned the Department with the highest ranking as the top ENT program in the State of Maryland and the 10th highest nationally.



"I am so pleased to be given this new opportunity to permanently take the helm of a Department that is second to none in the nation in terms of our research, clinical services, and the care we provide to our patients."

- Dr. Taylor

"Dr. Taylor is a highly accomplished scholar and superb head and neck surgeon who has already brought outstanding leadership to the Department," said UMSOM Dean E. Albert Reece, MD, PhD, MBA. "I have no doubt he will continue to move the Department forward in significant ways at a pace and trajectory to become one of the leading Departments of Otorhinolaryngology in the nation."

Dr. Taylor works collaboratively with other colleagues to oversee more than 20 full-time personnel in a laboratory with multiple grants, including six NIH/federal grants. His laboratory has focused on factors impacting immunocytotoxicity and immune tolerance using cancer cell lines and mouse tumor models. Based upon findings from his laboratory, he initiated and completed a multi-institutional clinical trial evaluating the impact of Natural Killer cells receptor polymorphisms on antibody-based therapy for HNC.

"We have a great team, and I am looking forward to advancing our research program, particularly in gaining new insights on genes involved in hearing loss and innovative ways to treat head and neck cancers," said Dr. Taylor.

Exploring New Paths in Medicine

UMSOM's MD STUDENTS ARE PURSUING NOVEL RESEARCH — AND EXTRAORDINARY CAREERS

As Kerri Thom, MD, MS, sees it, research experience is increasingly a critical component of a medical student's experience at the University of Maryland School of Medicine. *"Essentially, we think that our students' involvement in biomedical research, both in terms of awareness and in having the actual experience of doing the scholarly activity, provides them with skills that will be invaluable for them, no matter what career path they choose,"* she says.

She should know — an Associate Professor of Epidemiology and Public Health, Dr. Thom is both the Assistant Dean for Student Research and Education as well as the Director of the Office of Student Research. Her office serves as the lodestone for a spectrum of opportunities, ranging from summer research programs to seven MD/Masters Programs that offer advanced training in specific areas to enhance medical training and maximize career

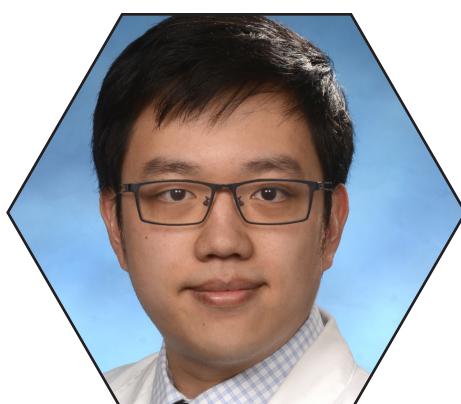


Dr. Thom

prospects after graduation. Through **Donald R. Matteson, PhD**, Associate Professor of Physiology and Executive Director of Student Research Education & Dual Degree Program, Student Research also oversees the operation of the seminal curricular course in research methodologies and practice for students starting in year one — Foundations of Research and Critical Thinking (FRCT).

"Having FRCT in our curriculum is a huge differentiator from other medical schools," states Dr. Thom. *"All of our first-year students receive training in basic biomedical research and participate in didactic small-group sessions starting in their first year. In addition, they are required to complete a scholarly project that is mentored by a faculty member. While some medical schools may offer research courses, few if any have made scholarly research a foundational requirement of the curriculum."*

STIMULATING NERVE REGENERATION

**Huanwen (Alvin) Chen**

MD CANDIDATE, CLASS OF 2021
PAPERS AUTHORED/CO-AUTHORED AND PUBLISHED: 11
Faculty Mentor(s):
Xiaofeng Jia, BM, MS, PhD
Associate Professor of Neurosurgery

Chozha V. Rathinam, Dr. rer. nat.
Associate Professor of Medicine

Alvin Chen's enthusiasm for research in neurological diseases has compelled him to extend his four-year MD education to six. After completing his first year, Chen spent his following year in independent research, working in UMSOM's Translational Neuroengineering and Neuroscience Lab, which is led by his mentor, **Xiaofeng Jia, BM, MS, PhD**, Associate Professor of Neurosurgery. With Dr. Jia, Chen worked on developing new methods and materials to bridge and repair large nerve injuries by stimulating nerve regeneration. Initial results showed that, in an animal model, stem cell technology augmented with electrical stimulation could facilitate nerve regeneration, and that outcomes of their experimental therapy were comparable to conventional surgical techniques.

Starting the summer of 2019, Chen is again embarking on an independent research year as one of 48 medical students selected nationally to participate in the prestigious Medical Research Scholars Program at the National Institutes of Health (NIH) in Bethesda, Maryland. During this year-long research training program, Chen will be pausing his medical studies to work with world-renowned neuro-oncologist Mark Gilbert, MD, on developing new ways to optimize brain cancer treatments.

"This is potentially a viable alternative to surgery, and can benefit the many individuals with large nerve injuries that are not treatable by standard surgical procedures," notes Chen.

FIGHTING ANTIBIOTIC RESISTANCE

**Erik Klontz**

MD/PhD CANDIDATE, CLASS OF 2021
PAPERS CO-AUTHORED
AND PUBLISHED: 9

Faculty Mentor:

Eric J. Sundberg, PhD

Professor of Medicine, Co-Director,
Basic Science Division, Institute of
Human Virology; Co-Director, Structural
Biology Shared Service, University
of Maryland Greenebaum Cancer Center

An MD/PhD student in the Medical Scientist Training Program through the Graduate Program in Life Sciences, Erik Klontz is well on his way toward his chosen career in Molecular Microbiology and Immunology. Working as part of the research team in the Institute of Human Virology's Sundberg Laboratory, Klontz is focusing on the growing problem of antibiotic resistance, which is responsible for upwards of 700,000 deaths per year worldwide. As resistance continues to spread, physicians are increasingly turning to antibiotics of last resort, including one, fosfomycin. Unfortunately, resistance to fosfomycin also has begun to emerge, caused by several multidrug-resistant Gram-negative bacteria that create enzymes called fosfomycin resistance proteins (FosA for short) that degrade fosfomycin and allow the bacteria to survive in its presence. With the discovery of a novel small molecule called ANY1 by collaborators at the University of Pittsburgh, Klontz's team learned how ANY1 inhibits FosA from various bacteria, allowing fosfomycin to retain its antibacterial properties.

"We discovered that ANY1 binds in the active site of FosA, preventing the enzyme from binding and degrading fosfomycin," states Klontz.

Having collectively patented the ANY1 molecule, Klontz and the team are now working towards rationally modifying it for improved properties so it can serve as a lead compound in clinical trials to combat fosfomycin resistance. *"We know what parts of the molecule we want to change so that it binds more tightly to the protein,"* says Klontz, *"so we will work with an organic chemist to make these specific modifications."*

DUAL RESEARCH: OVARIAN CANCER & LUNG TRANSPLANT REJECTION

**Daphine Kwasiga**

MD CANDIDATE, CLASS OF 2022
PAPERS CO-AUTHORED
AND PUBLISHED: 8

Faculty Mentor:

Irina L. Timofte, MD

Assistant Professor of Medicine

While Daphine Kwasiga is still weighing her options as to whether she wants to shift her studies towards an MD/MPH, she already has covered a good deal of ground in her research efforts. In 2018, through MPowering the State (MPower), a collaborative research initiative between the University of Maryland, Baltimore and the University of Maryland, College Park (UMCP), she received a sizeable State Summer Scholar grant to support her research evaluating the therapeutic potential of multivalent HER3 affibody molecules in ovarian cancer treatment within the lab of Dr. Steven Jay, an Assistant Professor in the Fischell Department of Bioengineering at UMCP. More recently, she is working with her faculty mentor and Primary Investigator **Irina L. Timofte, MD**, in studying the problem of acute cellular rejection (ACR), one of the most common complications following lung transplantation. Due to ACR, about 30-50 percent of lung transplant patients require anti-rejection treatment in the first year following their procedure. However, diagnosing the initial presence of rejection in lung

transplant recipients is frequently problematic, due to the poor sensitivity and specificity of the transbronchial biopsy. By conducting a retrospective study of data from lung transplant patients who underwent transbronchial biopsy, the study is seeking to identify a biomarker that detects the onset of ACR.

"We hypothesize that a correlation between T cell immunophenotypic analysis of the cellular infiltrate and cfDNA (a marker of lung injury) will improve the accuracy of the standard Hematoxylin and Eosin (H&E) stain. If we have significant findings to strongly push our hypothesis, we hope to work with NIH to then expand our data source," notes Kwasiga.

FOCUSING ON CANCER IMMUNOTHERAPY

**Netsanet Woldegerima**

MD CANDIDATE, CLASS OF 2021
PAPERS CO-AUTHORED
AND PUBLISHED: 2

Faculty Mentor:

Eduardo Davila, PhD

Adjunct Professor of Microbiology
and Immunology

Where research is concerned, Netsanet Woldegerima has a singular focus — cancer immunotherapy. While earning her Master's in Applied Molecular Biology from the University of Maryland Baltimore County, she worked in the lab of Dr. Suzanne Ostrand-Rosenberg, looking at ways to construct immunotherapeutic reagents that could bridge tumors to immune cells for enhanced targeting of tumor cells. After graduation in 2015, Woldegerima spent the subsequent year as a Post-baccalaureate Cancer Research Training Awardee, working in the lab of researcher Joost Oppenheim, MD, Senior Investigator at the National Cancer Institute of the NIH. Currently as an UMSOM MD candidate, she is involved in long-term research involving better targeted therapies for melanoma and other subsets of cancers, supported by a prestigious AOA Carolyn L. Kuckein Student Research Fellowship grant. Specifically, her work, in collaboration with her faculty mentor Dr. Eduardo Davila, addresses the

problem that immunotherapy and chemotherapy drugs that target cancer cannot recognize certain melanoma-related antigens (tumor-specific cell surface markers) due to their low or absent expression — and thus are therapeutically ineffective. To identify and target these illusive antigens, the study is using patient-derived melanoma cells and select drugs that were previously shown to up-regulate cell markers in melanoma cell lines. *"Our ultimate goal is to make sure that all people with melanoma can enjoy the same survival benefit. The marvel of targeted immunotherapies is that cancers with previously frightful prognosis are now treatable, but only for limited subset of eligible patients."* states Woldegerima.

"We want to expand this pool of eligible patients," adds Woldegerima.

Primate Study Finds Growth Factor is Key in Maintaining Healthy Pregnancy

Investigation Sheds New Insight into Causes and Potential Treatment for Placental Disorders

About 1 in 10 pregnant women experience placenta abnormalities that lead to life-threatening preeclampsia (hypertension), preterm labor, and fetal growth problems. However, finding effective treatments to effectively prevent or reverse these conditions has so far been elusive.

A new finding from University of Maryland School of Medicine (UMSOM) researchers, published in the June issue of the journal *Endocrinology*, could have important implications for developing novel treatments to prevent placental abnormalities. The study, which involved female non-human primates, provided confirmatory evidence that elevated levels of the female hormone estrogen early in pregnancy lead to abnormalities in the uterine artery that lessens blood flow to the placenta, providing less nourishment to the fetus. Instead of adapting to the increased blood flow of pregnancy by becoming more pliant — known as uterine artery remodeling — the arteries remain rigid when estrogen levels are elevated, which impedes blood flow and oxygen delivery to the placenta and, in turn, to the fetus.

More importantly, the researchers demonstrated for the first time that the condition can be reversed by delivering a signal protein called vascular endothelial growth factor (VEGF) to the maternal side of the placenta, which is attached to the uterine lining; pregnant primates with elevated estrogen levels that were treated with this growth factor during the first trimester of pregnancy experienced an increase in uterine artery remodeling and were more likely to deliver normal weight babies compared to those who were not treated with VEGF.

“Our findings show that VEGF plays an important role in helping to promote proper blood flow to the placenta, which could help prevent pregnancy complications that occur with defective uterine artery remodeling,” said Eugene D. Albrecht, PhD, Professor of Obstetrics, Gynecology and Reproductive Sciences at UMSOM and lead investigator on the study.

“If our exciting finding can be replicated in pregnant women, VEGF could have the potential for preventing preeclampsia and other problems associated with placenta abnormalities.”

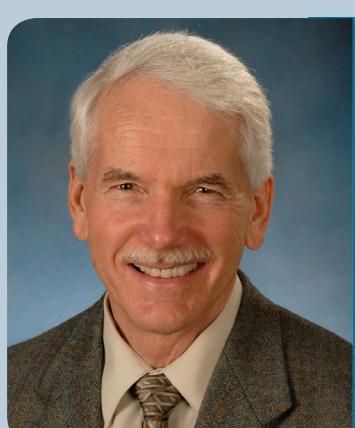
– Dr. Albrecht

To conduct the study, Dr. Albrecht and his colleagues treated 17 pregnant female primates with daily estradiol (the female hormone estrogen) during the first several weeks of pregnancy to elevate their estrogen levels and suppress uterine artery remodeling. Six of those pregnant primates were also infused briefly via a peripheral vein in their arm with VEGF treatment four times during the first trimester of pregnancy; the treatment consisted of the gene for VEGF that was attached to tiny microbubbles that circulated throughout the bloodstream. During each infusion, the researchers directed a beam of sound waves delivered via a contrast-enhanced ultrasound transducer to the uterine arteries, which caused the microbubbles to burst. This freed the VEGF gene which could then bind to cell receptors in the placenta and uterine arteries, promoting a beneficial increase in uterine artery remodeling. (The microbubbles of VEGF that circulated elsewhere through the body were not activated, so VEGF would not have any unintended consequences on blood vessels other than in the uterus.)

Images of the uterine arteries revealed an increase in uterine artery remodeling in the primates that were treated with VEGF while those that received estrogen alone had a decrease in this remodeling. More importantly, the researchers found that blood flow through the placenta was reduced in those primates who were not treated with VEGF and that the body weight of the newborns was 10 percent lower on average.

VEGF is thought to increase uterine remodeling by increasing cell migration to artery walls where the cells do a renovation of sorts, replacing smooth muscle cells and elastic fibers within the arteries to make them into less resistant to able to withstand a higher capacity of blood flow.

“This is the kind of cutting-edge science that defines our mission. This important new study provides vital evidence to explain one pathway that could lead to pregnancy-related complications, and we are eager to take the next step which is to replicate the research in pregnant women,” said UMSOM Dean E. Albert Reece, MD, PhD, MBA.





Women who develop preeclampsia currently have few effective treatments beyond delivering the baby, which often must occur before the pregnancy has reached full term to reverse the sudden, dangerous rise in blood pressure. There are also few treatments to halt pre-term labor or treat fetal growth problems. These three conditions combined contribute to more than half of all medically induced deliveries before 35 weeks in the United States and are associated with disproportionately high rates of life-threatening complications and death in newborns.

Previous research has found an association between high estrogen levels, often resulting from fertility treatments, and the development of these placenta abnormalities in pregnant women, though other factors may also contribute including a family history and previous pregnancy complications involving the placenta.

Dr. Albrecht and his UMSOM colleagues who led the study have currently enrolled more than 100 pregnant patients in a new study, where they are conducting 4-D ultrasound imaging to determine whether they can identify abnormalities in uterine artery remodeling early in human pregnancy. If that research has positive results, the researchers can then begin trials of VEGF treatments in pregnant women.

Researchers from Oregon Health and Science University, Buena Vista University, and Eastern Virginia Medical School also participated in this research, which was funded by the National Institutes of Health.

SOURCE: Babischkin JS, Aberdeen GW, Lindner JR, Bonagura TW, Pepe GJ, Albrecht ED. "Vascular Endothelial Growth Factor Delivery to Placental Basal Plate Promotes Uterine Artery Remodeling in the Primate." *Endocrinology*, 2019 Jun 1;160(6):1492-1505.

BLUE RIDGE RANKINGS

UMSOM Departments Rank Among the Top in Latest Ranking of Research Funding

The recently-released annual Blue Ridge Ranking, which compares NIH funding by academic department across U.S. medical schools, shows the UMSOM with more than half of its departments (12) now ranked in the Top 25 of all medical schools based on NIH funding (FY18), and nearly two-thirds ranked in the Top 20 of all public medical schools.

DEPARTMENTS

	AMONG ALL MEDICAL SCHOOLS	AMONG PUBLIC MEDICAL SCHOOLS
Public Health (Epidemiology)	4	1
Anesthesiology	11	6
Otolaryngology	14	7
OB-GYN	15	10
Orthopaedics	16	7
Neurosurgery	18	8
Psychiatry	18	9
Emergency Medicine	20	13
Physiology	21	11
Surgery	24	13
Anatomy	25	10
Radiology	25	10
Internal Medicine	35	15
Pediatrics	28	15
Microbiology	34	18
Biochemistry	34	18
Family Medicine	28	19
Pharmacology	44	28
Neurosciences	50	29
Ophthalmology	55	28
Pathology	62	37



The UMSOM has risen to the top echelon of U.S. medical schools, with FY19 total research funding expected to surpass FY18 \$537M.

The Nathan Schnaper Intern Program Celebrates Its First Reunion



The Nathan Schnaper Intern Program in Translational Cancer Research (NSIP) has trained more than 400 interns since its inception over 40 years ago. The program is named after and supported by an endowment honoring the late **Dr. Nathan Schnaper**, an eminent University of Maryland psychiatrist and cancer physician. The 10-week summer internship provides integrated research, educational, and clinical experiences for undergraduate students interested in cancer research. Over 85 percent of NSIP alumni matriculate to medical, graduate, and other professional degree programs. The program further serves as a robust recruitment mechanism with over 45 NSIP interns entering MD and PhD degree programs at the University of Maryland School of Medicine (UMSOM) in the past 19 years.

"The NSIP has been a cornerstone of undergraduate summer training and recruitment at the UMSOM and greatly benefits from joint activities with other Office of Student Research programs," says **Bret Hassel, PhD**, Professor of Microbiology and Immunology and NSIP Director. Dr. Hassel is also the Principal Investigator of the National Cancer Institute (NCI) grant which supports the program. *"NSIP interns gain an important perspective of the bi-directional flow of information between the laboratory and clinic through interactions with trainees and professionals at all levels."*

On June 30, NSIP alumni, mentors, program benefactors, and guests gathered to celebrate the program's accomplishments throughout its distinguished history. Dr. Schnaper's daughter, Dr. Lauren Schnaper, a renowned breast cancer surgeon and University of Maryland School of Medicine alumna, was in attendance and continues her father's legacy of meeting with the interns to share her experiences and provide career advice. Dr. David Carlton, Lauren's son, Dr. Nathan Schnaper's grandson, and former intern, also attended the event. Following in their footsteps, David discussed his career path and experiences with current interns throughout the evening.

The NSIP is a centerpiece of cancer education at the NCI-designated UM Marlene and Stewart Greenebaum Comprehensive Cancer Center (UMGCCC), and connects with other cancer-focused programs in a robust STEM education pipeline at University of Maryland, Baltimore (UMB), led by Drs. Hassel, Carey, and colleagues (see sidebar). These programs greatly benefit from the strong support of Marlene and Stewart Greenebaum Distinguished Professor in Oncology and UMGCCC Director **Kevin Cullen, MD**. Himself a graduate of a summer internship program, Dr. Cullen says, *"It's a wonderful win/win situation. The students get to do real work in real labs with real researchers and the Greenebaum Cancer Center gets eager, motivated students who contribute significant work to the lab. The interns bring a fresh perspective and ask intelligent questions."*



Dr. Cullen and Dr. Hassel with Dr. Lauren Schnaper

UMB selected to host the first-ever Diversity Pipeline Meeting this fall.

UMB is home to a robust pipeline of NIH-funded minority STEM education programs that span middle school through post-graduate training and was selected to host the inaugural NCI Diversity Pipeline Meeting on October 11, 2019. The meeting will bring together NIH officials, program directors, coordinators, and trainees from local, regional, and national pipeline programs to share best practices and identify capacity building opportunities with the common goal of increasing diversity in the biomedical workforce.

For more details, contact Dr. Bret Hassel at bhassel@som.umaryland.edu

Annual Student Research Forum Held

SUMMER RESEARCH PROGRAMS

Honor Student Achievements in Science

Hosted by the Office of Student Research (OSR), the annual Student Research Forum showcases summer research conducted by students mentored by faculty at the University of Maryland School of Medicine (UMSOM). Presenters include students from across the science pipeline — medical students, doctoral students, undergraduate, and even high school students. The annual forum creates a public stage for the assessment, presentation, and discussion of student-based research, as well as an opportunity to recognize their scholarship and achievements in science.

“Virtually all of our student presenters have received competitive intramural, national, and international fellowships and scholarships to work with faculty who have funded research projects throughout the University campus,” says **Kerri Thom, MD**, Associate Professor of Epidemiology and Public Health, Assistant Dean for Student Research and Education, and Director for the Office of Student Research. Dr. Thom, along with **Gregory Carey, PhD**, Associate Professor of Microbiology and Immunology, and **Donald Matteson, PhD**, Associate Professor of Physiology, have meticulously crafted a diverse array of research opportunities and programs to enhance research education for UMSOM students and increase diversity in the STEM pipeline.

The Summer Research Forum, in particular, is a rich UMSOM tradition begun by **Dr. Jordan Warnick**, Professor and Associate Dean, and Director of the OSR, who retired in 2012, and has expanded under the leadership of Dr. Carey, who joined the OSR in 2012.

Following the success of the multi-program student forum and cross-program collaboration, Dr. Carey and director colleagues launched the first annual Mid-Summer Summer Research Retreat in 2013. This multi-program event has now become a highlight of the student summer experience.

During the retreat, the students hear research seminars presented by an accomplished student researcher from the UMSOM’s Medical Scientist Training Program (MSTP) and impactful research vignettes from competitively selected representatives from the various student summer programs who then serve as panelists. What’s more, the program brings over 30 clinicians, scientists, physician-scientists, and various program directors and admissions personnel who guide the young scholars on their preparations for graduate studies, medical school, residency, and careers in medicine.

“The team carefully considers all elements to create intense and quality experiences for the students and mentors,” says Dr. Carey. *“We want the students to have fun and growth experiences, and for mentors to be happy about the hard work they put into their students. Products such as conference presentations, up- and downstream fellowships and research articles also matter as they give the students a sense of accomplishment and boosts them to the next stages of their training careers.”*

Built on all of these interactions and energy, participation has remained enthusiastic, peaking at 111 oral and poster presentations in 2018 and more than 75 in 2019.



Featured Summer Research Programs and Participants

University of Maryland Program for Research Initiated by Students and Mentors (PRISM) for Medical Students

University of Maryland Scholars Summer Research Program at the School of Medicine (UM Scholars at SOM)

Science Training for Advancing Biomedical Research Postbaccalaureate Program (STAR-PREP)

Program Director: Gregory Carey, PhD, Associate Professor of Microbiology and Immunology

Summer Program in Obesity, Diabetes & Nutrition Research Training (SPORT)

Program Director: Nanette Steinle, MD, Associate Professor of Medicine

Nathan Schnaper Intern Program in Translational Cancer Research (NSIP)

Program Director: Bret Hassel, PhD, Professor of Microbiology and Immunology

University of Maryland Summer Fellowships in Radiation Oncology (Rad Onc)

Program Director: Pranshu Mohindra, MD, MBBS, Associate Professor of Radiation Oncology

University of Maryland Scholars Program School of Nursing (UM Scholars at SON)

Program Directors: Erika Friedmann, PhD, Professor, School of Nursing and Larry Fillian, MEd, Associate Dean for Student and Academic Services, School of Nursing

Guest Programs and Other Represented Summer Research

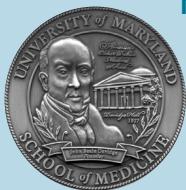
Bridges to Doctorate Program (B2D)

Program Directors: Bret Hassel, PhD, Professor of Microbiology and Immunology, Elana Ehrlich, PhD, Associate Professor, Towson University, and Michelle Snyder, PhD, Associate Professor, Towson University

Summer High School Research Experience (SHORE) – Institute of Human Virology

Program Director: Greg Snyder, PhD, Assistant Professor of Medicine, Institute of Human Virology

Terry J. Watnick, MD, The Joan B. and John H. Sadler Professor in Nephrology



Leaders in the field of Nephrology joined family, friends, and colleagues to celebrate the investiture of **Terry J. Watnick, MD**, Professor of Medicine in the Division of Nephrology, as the Joan B. and John H.

Sadler Professor in Nephrology. Dr. Watnick, who is one of the world's leading experts on an inherited form of kidney disease, called Polycystic Kidney Disease (PKD).

She joins a distinguished group of faculty who have been granted the honor of holding one of 82 endowed professorships established at the University of Maryland School of Medicine (UMSOM).

The professorship is named in honor of **John H. Sadler, MD**, an early pioneer in kidney and organ transplantation, and his late wife Joan B., who was a long-time member and donor of the National Kidney Foundation of Maryland.

"I have always been inspired by the work he and Joan have done to help kidney patients in Maryland," said Stuart Bowers, who was a PKD patient of Dr. Sadler. (PKD is a genetic disorder that causes fluid-filled cysts to grow in the kidneys, reducing function and potentially leading to kidney failure.)

Dr. Watnick and her colleagues at UMSOM have built a nationally recognized comprehensive PKD center that has supported groundbreaking research both at the University of Maryland and at other research programs around the world. Since 2010, she has served as the Director of the center, which is one of four PKD Centers of Excellence in the country supported by the National Institute of Diabetes and Digestive and Kidney Diseases. Her laboratory has



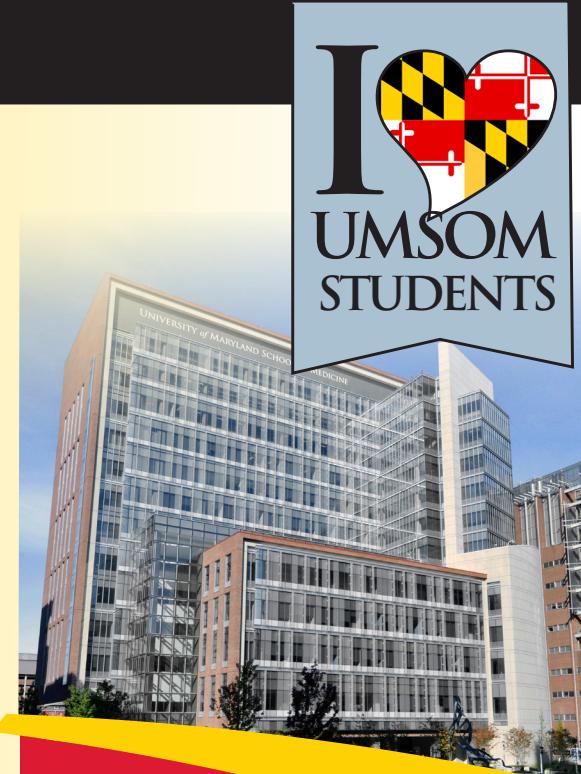
made major contributions to our understanding of PKD proteins, including their critical role in the development of the lymphatic system.

"She is among the great doctors who truly take a special interest in their patients," said Captain Schweitz, a grateful patient, who shared a compelling testimony about his journey to recovery.

UMSOM Dean **E. Albert Reece, MD, PhD, MBA**, added how proud he was of Dr. Watnick, noting that she had been a student of his at Yale.

"I am very humbled by this honor," Dr. Watnick said, as she thanked her guests. In particular, she gave special recognition to **Matthew Weir, MD**, Professor of Medicine and Division Head of Nephrology, who recruited her to the UMSOM, and to **Pamela Lambert** in UMSOM's Office of Development for her work in helping to establish the professorship.

"It is a privilege to serve my patients, and I am truly honored by every one of you, who was part of this very special day," said Dr. Watnick.



Welcome Class of 2023

JOIN DEAN REECE AT THE SCHOOL OF MEDICINE'S **BACK TO SCHOOL/ BACK TO WORK**

CARNIval

**Thursday, September 12
HSRF III Atrium, 4-6pm**

SOMPride

POLICY STATEMENTS:

All UMSOM clinical faculty members, residents, fellows, and students are required to wear white coats in all clinical settings — hospital or outpatient "practices."



"Practices"

UMSOM policy requires all patient care facilities to be called "practices."

We appreciate your cooperation.

SAVE the DATE **Wednesday, October 30**
2019 STATE of the SCHOOL ADDRESS

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