

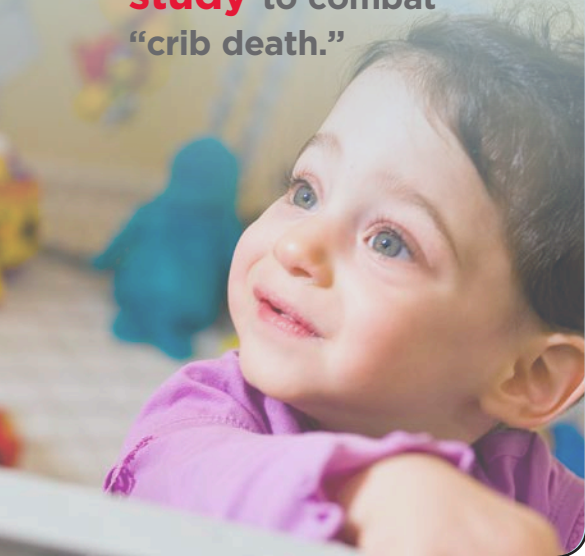


SOM *news*



Point of Pride

In 1980, the Sudden Infant Death Syndrome (SIDS) Institute at the University of Maryland opened (it is now known as the Center for Infant and Child Loss). The Institute was the **first in the Nation to combine education, research and patient care into a comprehensive study** to combat “crib death.”



What's New...

SOMnews has now expanded to eight pages, with more information and special sections on Research & Discovery, Clinical Care, Academic Innovations and Community Engagement.

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DEAN'S MESSAGE

The month of May marks an important step in the lives of our senior medical, graduate and allied health students: commencement. All of our graduating class will be transitioning into the next phase of their careers. For some, it means a residency and additional years of specialized medical training. For others, it is a postdoctoral fellowship and an opportunity to explore a new area of biomedical research. For a few students, it is a first job and a chance to implement the education they've received at the School of Medicine in the real world. Whatever their path may be, all our graduating students are facing their personal futures.

This month we also held a School of Medicine-wide research strategy forum to discuss the future of our biomedical research portfolio, which is, once again, facing a tenuous outlook. We've just come from a time where the future of science looked bright. The American Recovery and Reinvestment Act of 2009 spurred on new projects, many of which were initiated at the School of Medicine. In addition, the BRAIN Initiative, the Precision Medicine Initiative and the Cancer Moonshot clearly demonstrated that public support of research was alive and well. Indeed, the great need to stabilize the NIH's budget was brought to the fore by the passing of the 21st Century Cures Act in 2016.

However, the hope that these programs has cultivated over the last years has been thwarted by the long-lasting effects of the 2008 financial crisis and Sequestration in 2013. Now, we face a new challenge threatening to set the biomedical research community back once again: the proposed cuts to the NIH's budget. The half-day research strategy forum was intended to help us plan for the future of our research, not only for the sake of the dynamic and innovative projects ongoing at the School of Medicine, but for the countless patients' lives which are saved because of the work we do here every day.

In this month's issue of the *SOMnews*, we address another type of future — our children. As an academic medical school with clinical care as a key mission area, we have a great responsibility to enhance the health and wellbeing of children and adolescents. From managing a healthy pregnancy, to a healthy birth, to a healthy childhood, our faculty physicians and clinical practice staff have a key role in ensuring that the children whose lives we impact will become adults who contribute positively to the good of our society. To the extent that we can provide very best care, we are investing in our future.

Indeed, the World Health Organization measures a country's prosperity and development status on the health of the infants and children within it. Despite progress in maternal and perinatal care, in the United States, which has some of the most advanced health care available, approximately 6 deaths per 1,000 live births occur annually, and we rank 44th for infant mortality in the world. As a nation, we've not been good investors in our children's future.

However, over the course of our 210-year history, the School of Medicine has made an indelible impact

What's on My Mind...



...is the importance of planning for the future, whether it is in our own lives or for the betterment of others.

on children's health. In 1867, University of Maryland School of Medicine was the first in America to appoint a chair of diseases of women and children, recognizing the importance of gynecology and pediatrics as disciplines. Dr. James Rowland, a School of Medicine graduate and dean from 1916-1940, championed better obstetrical care for women living in Baltimore's inner city. Dr. Ruth Baldwin, a School of Medicine alumna, was the co-discoverer of the causes of congenital cerebromacular degeneration, which causes children to lose their sight at age 6 or 7.

Today, we continue our legacy in providing the very best care for all our patients over the entire course of their lives. We have a robust children's faculty practice, which not only includes general pediatrics but pediatric surgery. Our Dean's Surgical Council, introduced several years ago, brings together surgeons for children's services into a single group dedicated to collaborative care. As a school which practices discovery-based medicine, the care we provide our pediatric patients is greatly impacted by our research — from research aimed to uncover and treat developmental birth defects, to pediatric cardiac stem cell research, to metabolic disorders that affect young children and teenagers.

As we look toward our future, and to that of the youngest and most vulnerable among us, I strongly encourage you to recommit yourselves to the high level of scholarship and achievement that has set us apart for the last two centuries. Our ultimate goals are to advance health and cure disease. The faculty physicians in children's health services are working assiduously to accomplish those goals. I am supremely confident that we can continue on this extraordinary trajectory, **ushering in a healthier generation to the third century.**

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

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



A Network of H-O-P-E

UM CANCER NETWORK OFFERS HIGH-QUALITY CARE CLOSE TO HOME



“Through the power of the University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center (UMGCCC), we have catalyzed hospitals throughout the UM Cancer Network to offer not only exceptional clinical care, but cutting edge clinical trials as well.”

— Kevin J. Cullen, MD

Cancer. As the second leading cause of death in America after heart disease, the word itself is enough to make one pause. Although the US death rate from all cancers fell 25 percent from 1991 to 2014, the American Cancer Society predicts that in 2017 an estimated 1,688,780 new cancer cases will be diagnosed in the US, along with 600,920 cancer deaths.

However, for Marylanders afflicted with cancer, there is today a greater reason for hope. Founded in 2015, the University of Maryland Cancer Network is bringing advanced, high-quality care to communities throughout the state. **Kevin J. Cullen, MD**, Director of the University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center

(UMGCCC), and Marlene and Stewart Greenebaum Distinguished Professor in Oncology at the University of Maryland School of Medicine, explains the network’s impact, “Across the University of Maryland System, we now care for one-third of the cancer patients in Maryland. Through the power of the University of Maryland Marlene and Stewart Greenebaum Comprehensive Cancer Center, we have catalyzed hospitals throughout the UM Cancer Network to offer not only exceptional clinical care, but cutting edge clinical trials as well. Our network is designed to ensure that we provide care of the highest quality and greatest access at the most appropriate cost to our patients.”

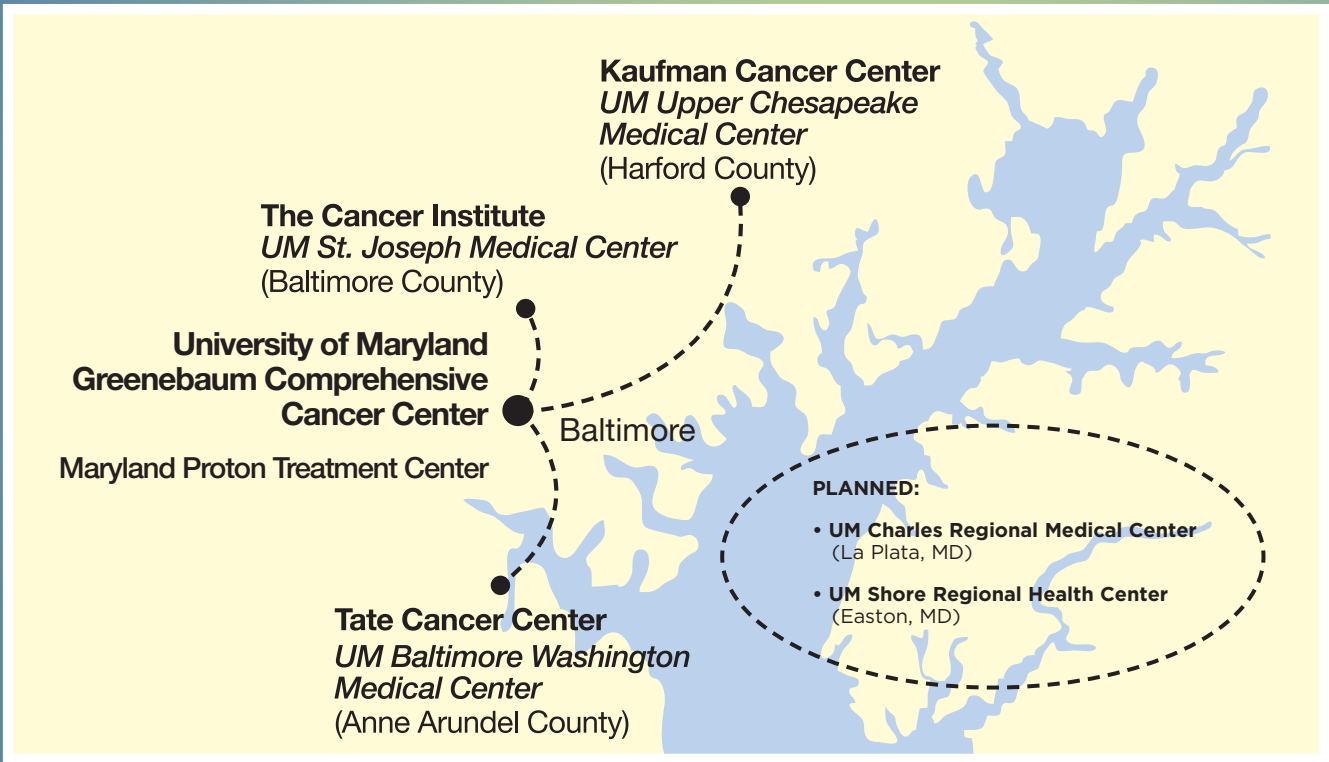
Founded in 2015, the UM Cancer Network grew out of an initial series of research agreements between community-based cancer centers and the UMGCCC. These affiliations were largely but not exclusively based on clinical care and clinical research support. “The idea was that our network affiliates would promote best practices in cancer care and also would be supported by UMGCCC in their clinical research in terms of infrastructure and training,” says **John A. Olson, Jr, MD, PhD**, Director of the UM Cancer Network, UMGCCC Associate Director, Chief of UMMC’s Division of General and Oncologic Surgery, and the Campbell & Jeanette Plugge Professor and Vice Chair of Surgery at the School of Medicine.

In October 2016, with the National Cancer Institute’s elite designation of UMGCCC as a Comprehensive Cancer Center for its clinical and scientific excellence, the concept of the network was formalized, with Dr. Olson chosen to serve as its founding director. The new network connected three UM community cancer centers — UM Baltimore Washington Medical Center’s Tate Cancer Center, UM St. Joseph Medical Center’s Cancer Institute, and UM Upper Chesapeake Health’s Patricia D. and M. Scot Kaufman Cancer Center — with UMGCCC’s nationally-recognized academic cancer center,



Dr. John Olson

University of Maryland Cancer Network



Network Mission

The UM Cancer Network will be the leading caregiver for Marylanders who suffer from cancer, and will become a pioneering organization devoted to the discovery and dissemination of valuable therapies for cancer patients everywhere.



Dr. Cherif Boutros

as well as the Maryland Proton Treatment Center, which offers a highly advanced and precise form of radiation treatment. Through the network, cancer patients living in or near Anne Arundel, Baltimore, and Harford counties now can seek treatment close to home at their nearby UM community hospital, while having immediate access to UMGCC’s specialists, leading-edge technology, and more than 150 innovative clinical trials.

“Today, the UM Cancer Network collectively cares for one in every three patients diagnosed with cancer in the state — more than 7,000 Marylanders,” cites Dr. Olson. “We are the largest and most complete cancer network in the state and the only one formally linked to an NCI comprehensive cancer center.”

For the network’s leadership, comprehensive care means leaving no aspect of the patient’s needs to chance. “At any of our cancer centers, patients are the focus of a myriad of patient care services including genetic counselors, dietitians, social workers, survivorship, and nurse navigators. In addition, multidisciplinary tumor boards assure that our patients are receiving the best quality of cancer care in a coordinated manner,” says **Cherif Boutros, MD**, Medical Director of the Tate Cancer Center and Chair of Surgical Oncology at UM BWMC

The network’s mission is organized around four foundational initiatives:

- 1. Cancer research.** Building upon UMGCCC’s national reputation for leading cancer research, the UM Cancer Network has set an ambitious goal to enroll 10% of its patients in therapeutic trials within the next five years, an accomplishment that will easily double national standards.
- 2. Cancer care quality.** Quality initiatives are driving network-wide quality standards for major cancer types and implementing those standards through quality assurance metrics and quality improvement opportunities.

Dr. Olson points out that input from School of Medicine faculty plays a decisive role in driving quality efforts. “The SOM value-add is enormous,” he says.

3. Cancer care cost & value. “We are relentlessly seeking opportunities to reduce cost to provide high-value care to patients,” notes Dr. Olson.

4. Cancer access & outreach. Communities are regularly kept informed of the network’s presence and current efforts through symposia, newsletters, and other media.

To extend its mission as “the leading caregiver for Marylanders who suffer from cancer,” the UM Cancer Network already is planning to add two new centers in 2017—at the UM Charles Regional Medical Center in La Plata, MD, and at the UM Shore Regional Health Center in Easton, MD. A third center is under future consideration in Prince George’s County, MD.

“For me, the best way to measure growth is to ask whether we are continuing to do a better job for Maryland’s cancer patients,” says Dr. Olson. “in that regard, I think our answer is an unequivocal yes. This network reflects the combined intention of the University of Maryland Medical System and the School of Medicine to have university-quality cancer care available to all of Maryland’s citizens within 50 miles of where they live.”



Cancer Care within 50 miles from home.



HEALTH

Faculty and staff within our Department of Pediatrics are conducting research that they hope will benefit children from the moment they are born all the way through to their passage into adulthood. Children from around the corner and around the world are getting a chance at a life and/or a better quality of life that might not have been possible just a few years ago. Here is a taste of the work being done.

PREVENTING BRAIN DAMAGE FROM HYPOXIA IN THE SMALLEST OF PATIENTS

With \$10 million in funding over five years thanks to a PO1 grant from NIH/NICHD, **Cynthia Bearer, MD, PhD, FAAP**, the Mary Gray Cobey Professor in Neonatology in the Department of Pediatrics and her fellow investigators are doing pre-clinical work using a well-established rat model to test several hypotheses related to mechanism of, and intervention for, preterm infant hypoxic-ischemic injury with or without concurring inflammation/infection. “This grant works particularly well since we are all using the same animal model, and measuring the same behavioral outcomes, but investigating sex differences, microglial involvement, the role of signal transduction and lipid rafts, as well as glial-neuronal metabolism,” said Dr. Bearer.

The grant is unique in that all of the investigators are women. They include **Margaret McCarthy, PhD**, Professor and Chair in the Department of Pharmacology; **Mary McKenna, PhD**, Professor, Department of Pediatrics; **Jaylyn Waddell, PhD**, Assistant Professor, Department of Pediatrics; and **Maureen Kane, PhD**, Associate Professor, School of Pharmacy.

Hypoxia during birth can lead to irreversible brain damage, so research such as this into how it might be prevented is extremely exciting. “*Even with our best clinical interventions, hypoxic ischemia is a major global problem,*” Dr. Bearer explained. “*This grant will allow new insight into interventions which are easily translatable into clinical studies. And given our new NICU, and the focus on neurodevelopment, we have just the place and the patients to begin such studies.*”

The Drs. Rouben and Violet Jiji Neonatal Intensive Care Unit (NICU) is a \$30 million, state-of-art unit that launched in 2015. One of the biggest NICUs in Maryland, it includes 52 single, family-centered rooms. “*Each room is constructed so that the parents (and visiting siblings) have their own space,*” Dr. Bearer said. “*We encourage our families to stay with their babies. We even have a man cave to encourage fathers to stay. It is also a LEED certified unit, meaning it meets criteria for environmental standards - low toxins, noise, easily cleaned with non-toxic cleaners, attention to detail around noise, light, and air quality. The art is all of nature in Maryland. It is a calm and quiet place, and as close to the womb as we can make it.*”

Quite a bit of research is going on in the department related to the NICU itself. “*We are looking at various sources of exposures such as air quality within the isolettes, the solvents used in medications so that they can be given intravenously, and the effect of the sound environment on the maturity of the brain,*” Dr. Bearer told us. “*We are also investigating heavy metals in blood transfusions and known neuroprotective agents in nutrition.*”

Volunteers are welcome. The cuddlers program, where volunteers learn how to cuddle drug-addicted babies to help them get through withdrawal, is especially popular.

USING NUTRITION EDUCATION TO BRING ABOUT POSITIVE CHANGE

Maureen Black, PhD, the John A. Scholl, MD and Mary Louise Scholl, MD Professor in Pediatrics, leads the Division of Growth and Nutrition within the department. Its mission is to nurture children’s growth and development. Many of their research projects are conducted in collaboration with community or state organizations, with the goal of promoting children’s

health and development and preventing excessive weight gain and associated problems.

Among their current projects is **Wellness Champions for Change**, for which **Erin Hager, PhD**, Associate Professor, is the PI. Funded by a grant from the USDA, this program focuses on enhancing school-level implementation of Local Wellness Policies (LWPs) in 30 elementary and middle schools from five school systems in Maryland. The intervention builds upon the LWPs to develop leader/advocates among school teachers and students who will become ‘wellness champions’ and lead wellness teams trained in health literacy, so that messages about healthy behaviors are tailored appropriately for different groups. The student outcomes being studied include diet, physical activity, and obesity. The project also investigates the role that home and school neighborhood environments play in the success of school wellness policies on student outcomes. This program is aimed at elementary and middle school students.

Another current program is **Project CHAMP (Creating Healthy Habits Among Maryland Preschoolers)**. Dr. Black is the PI. Funded by the National Institute of Diabetes, Digestive, and Kidney Disorders (NIDDK), the project focuses on preventing health disparities by building healthy habits related to diet and motor development among preschool children in 48 child care centers throughout five Maryland counties. *“Using an evidence-based intervention developed at Colorado State University and scaled up throughout Colorado, Project CHAMP has adapted the intervention for preschool children in Maryland and extended it to include families,”* says Dr. Black. The child outcomes include diet (willingness to try new foods), motor development, physical activity, and changes in growth. The project also investigates the roles that families, teachers, and child care centers play in children’s development. This program is aimed at preschoolers (ages 4&5).

The division also includes **Yan Wang, MD, DrPH**, Assistant Professor, a biostatistician who is very involved in all of the division’s projects. A recently published paper on which she was the lead author showed that a safety prevention intervention was effective in reducing home safety problems among families of toddlers, compared with a control intervention.

Past projects within the division that have also focused on growth and development include **Challenge**, an intervention to promote healthy growth among adolescents by training college students to be personal trainers; **Challenge in Schools**, an intervention to promote healthy growth among sixth and seventh grade girls in Baltimore City Schools by making a healthier school environment; **Three Generation**, an intervention to prevent second births among adolescent mothers by providing a mentor (“big sister”); and **TOPS** (Toddler Overweight Prevention Study), an intervention to promote healthy growth among toddlers.



HELPING CELIAC PATIENTS THRIVE

For those with celiac disease, keeping to a strict diet is the only way to avoid painful symptoms. That is sometimes difficult for children, who want to eat the things others around them are eating, even if they know doing so will make them sick. The Division of Pediatric Gastroenterology and Nutrition works closely with these young patients and their families, seeing close to 900 patients a year for celiac disease and gluten sensitivities.

“We do quite a bit of clinical research, as we have an in-depth celiac registry,” said **Runa Watkins, MD**, Assistant Professor, Department of Pediatrics, who works closely in the celiac practice with **Samra Blanchard, MD**, Clinical Associate Professor of Pediatrics and Head of the division. *“We have a research coordinator, Elaine Puppa, who organizes the registry and is responsible for enrolling patients, if they choose to participate.”*

Although research into a cure for celiac is ongoing, Dr. Watkins and her group recently did a study as to how one food that is a staple in most diets of celiac patients might be affecting them. *“We have done a study to look at serum arsenic levels in those with Celiac Disease, as it was hypothesized that those on a gluten free diet consume larger amounts of rice, as their main source of a grain,”* Dr. Watkins explained. *“However, our findings were not consistent with increased arsenic levels.”*

That was great news to all of those in the division who treat these patients. *“We are dedicated to our patients with Celiac Disease, especially the pediatric population, as we are able to follow these patients through their lifetime”* said Dr. Watkins. *“We are also able to provide extensive nutrition counseling, as the diet is the only treatment available. This allows our pediatric patients to thrive and reach their height potentials.”*

TRANSITIONING YOUNG ADULTS WITH HIV INTO ADULT CARE

One of the distinct challenges faced by emerging adults with HIV is the transition of their care from their long-term pediatric HIV provider to treatment within an adult HIV program, particularly in developing countries. While the transition from pediatric to adult care may seem straightforward, the reality is that it is often a very difficult process. The consequences of an unsuccessful transition can range from difficult to catastrophic.

Funded by a RO1 grant from NIH, and lead by PI **Vicki Tepper, PhD**, Associate Professor, Department of Pediatrics, and Head of the Division of Pediatric Immunology and Rheumatology, the Adolescent to Adult Patient-centered HIV Transition (ADAPT) Study is a randomized trial of innovative interventions targeting gaps in care that

are major drivers of loss in the continuum of care cascade among adolescents with HIV in Nigeria.

The specific aims of ADAPT are:


- To inform strategies for transition services in resource-limited settings;
- To examine the developmental, clinical, and other factors that predict a successful transition; and
- To gain fundamental insight on implementation barriers among African adolescents through the application of the ego-network defined social support that will inform targets for structured intervention.

“Our multi-PI team includes strong complementary expertise in pediatric and adolescent HIV care, epidemiology, and social science,” Dr. Tepper said. *“ADAPT will be conducted in central, southern, and northern Nigeria at selected PEPFAR sites supported by the Institute of Human Virology, Nigeria. The finding from this study will guide institution of best practices for transitioning adolescents in Nigeria and other lower- and middle-income countries with similar challenges and potential for high impact.”*

The Pediatric and Adolescent HIV Program at UM SOM was designed to meet goals stated in the National HIV/AIDS Strategy.

“Our program was created to address unmet service needs of populations disproportionately affected by HIV/AIDS (e.g., persons of color, women, infants, children and youth), reduce health disparities, and increase access to care,” Dr. Tepper explained. *“It was created to bring into care HIV-infected and at-risk women, infants, children, and youth and young adults who have not had access to services or who have been engaged in treatment and were lost to follow up care. Our comprehensive program also offers specialized care for HIV-infected young men who have sex with men (YMSM) and transgender youth.”*

Through years of work, Dr. Tepper and her team have become trusted members of the communities they serve. *“We are recognized as a leader in adolescent healthcare, providing state of the art comprehensive care with integrated reproductive healthcare in a youth-friendly setting. This reputation has enabled us to engage hard-to-reach populations in care.”*

Similar work is also being done here in Baltimore, including a program which provides HIV care and hormonal therapy for transgender youth. It is the only youth-focused program of its kind in the Baltimore metropolitan area. 



INTERNSHIP CAMP

Prepped to Become Doctors

Medical students spend much of their fourth year of school traveling. They cross the country interviewing for residency programs, hoping to get good news on Match Day. Once all of the envelopes are opened, then comes the reality that life as a student is almost over, and soon everyone will be calling you Doctor. Many of the medical students here at the School of Medicine choose to have one last learning experience with us before heading off to where the Match has sent them. It is called Internship Prep Camp.

Now in its fourth year, Internship Prep Camp is a brief, high-yield learning experience for graduating fourth-year students to prepare them for internship. It takes place over three afternoons during the week before graduation, and is broken up into 30-minute teaching sessions and hands-on lab experiences covering a variety of topics and skills. Although it is not mandatory, nearly 100 of the 160 graduating fourth-year students participated in this year's class, which was held on campus May 9-11.

Topics this year included:

- Rapid Response Scenarios in the MASTRI Center
- Things that Go Beep in the Night (*scenarios for which you might be paged*)
- What to Do Until Your Resident Arrives
- Time Management and Efficiency
- Anaphylaxis: When Meds Bite Back
- EKG Interpretation
- Your Patient Died. Now What?
- Ultrasound Skills
- Wellness in Residency

Internship Prep Camp has three course directors: **Neda Frayha, MD**, Clinical Assistant Professor, Department of Medicine, and Assistant Dean in the Office of Student Affairs; **Phil Dittmar, MD**, Assistant Professor, Department of Medicine; and **Laura Bontempo, MD, MEd**, Assistant Professor, Department of Emergency Medicine. Although medical schools around the country have similar programs, the one here at the School of Medicine is unique in that it is specialty-neutral, so it's designed for students going into any field. Many students choose to participate in boot camps for their chosen fields, as well, but they are drawn to this generalized program because of the breadth of skills and topics covered. The School of Medicine's camp is also unique in that it goes for only three days, while some medical schools cover similar material over the course of a month.



Dr. Neda Frayha



Dr. Phil Dittmar




Dr. Laura Bontempo

Dr. Frayha follows up with students to see what is working and what isn't. Among the comments she's gotten back are:

- "It was very personal. Loved it. Made me feel like Maryland really cares about our wellbeing as residents regardless of where we go."
- "This course focused a lot on practical skills that will help you as a new physician. These are things that aren't uniformly taught in school and are very useful."
- "The three days effectively brought my clinical experiences together and built a foundation I will use during intern year."
- "The prep camp has been hugely valuable for internship preparation. It has cemented some crucial skills I had learned and introduced others. This should absolutely be made a part of clinical education in years 3 and 4."

Dr. Frayha also follows up with the newly minted doctors about three-months into their intern year to find out how useful the camp was. She shared some of those responses from last year's class:

- "My first few months of intern year were remarkably calmer and less dramatic thanks to Internship Prep Camp and my UMSOM education."
- "The short and focused sessions were very helpful and targeted to the most useful information. I have relied on things I learned or re-learned in prep camp many times already, and am sure it will only continue as the year goes on."
- "I would highly recommend the prep camp to any incoming intern. It provides that first day confidence you need."

One of the reasons the camp is so helpful to students is that they have a great deal of input into the topics that are covered and the faculty chosen to teach them. Student recommendations for instructors are taken very seriously by the course directors. "It's a really diverse group of teachers from a variety of fields, which is exciting," said Dr. Frayha. The dates for next year's Internship Prep Camp will be announced in the winter. 

STUDENT ENTREPRENEURS



‘Shark Tank’ Competition for Aspiring Medical Entrepreneurs

COMPETITORS PITCHED ON STEM CELL BANKING, BETTER CANCER MONITORING, AND OTHER IDEAS

To encourage entrepreneurial leadership among its medical students, the University of Maryland School of Medicine hosted a contest to give aspiring student entrepreneurs a chance to share product ideas, with winners receiving cash prizes and expert help. The four finalists competed before a panel of judges, including doctors, researchers and investors, using a format similar to the popular television program “Shark Tank.”

The event, called the Lightbulb Competition, took place February 27 at the University of Maryland Biopark. Students, business leaders and faculty from the School of Medicine were all in the audience. The keynote speaker was Alfred Berkeley, the former president of NASDAQ and Chairman of Princeton Capital Management.

Prior to the event, the competitors went through pitch training with a volunteer from the Baltimore Angels, an angel investing firm based in Baltimore, as well as a staff member from the School of Medicine.

The winner of the competition was **Nanobernetics, LLC**, which has an idea for a device for monitoring molecular remission in Chronic Myeloid Leukemia. They won \$500 and a three-month membership to Betamore, a non-profit working to develop Baltimore into a global hub for entrepreneurship and education for the twenty first century. Second Place went to AgamiLife, Inc., which won \$250, while EasyGene came in third, winning \$100.

Here are the problems for which the four finalists are seeking answers:

AgamiLife, Inc. is a stem cell banking service for people undergoing tonsillectomies. Tonsils are discarded after being removed, but these students propose saving them as a way to harvest stem cells. The team included graduate students **Ben Portney** (PhD student in Biochemistry and Molecular Biology), and **Alex Meltzer** (PhD student in Biochemistry and Molecular Biology), and **David Hurwitz, MBA**, a medical school student (Class of 2019).



Nanobernetics, LLC employs newly developed carbon nanotube technology that uses electrical current to very precisely detect levels of cancer cells. The team included **Elizabeth Weingartner** (PhD student in Molecular Microbiology and Immunology), **Camilo Vanegas** (PhD student in Molecular Medicine), and **Michael Lee** (MD/PhD candidate).

EasyGene is a new method for early detection of lung cancer. Now, lung cancer is typically not detected until much later. The team included graduate students **Tyler Gable** (PhD student in Molecular Biology-Cancer Biology) and **Edward Cherok** (PhD student in Molecular Medicine), and two medical school students, **Wesley Chan** (Class of 2019) and **Azam Qureshi** (Class of 2018).

IM-Print is a way to get immunization records by fingerprint via an app that will store this information. Now, doctors have a hard time getting these records; typically patients must get immunized again if there are no records. This project was by **Albert Zhou**, an MD/PhD student in Epidemiology & Human Genetics.



IGH Awarded \$9 Million Grant to Fund Malaria Research in Myanmar

The Institute for Global Health (IGH) was awarded an International Center of Excellence for Malaria Research (ICEMR) grant by the National Institutes of Health's National Institute of Allergy and Infectious Diseases (NIAID), one of seven ICEMRs awarded worldwide. With funding of more than \$9 million over seven years, the grant will be used to research and develop new tools to help eliminate drug-resistant malaria in Myanmar and neighboring countries in Southeast Asia.

Principal investigators for the project are the husband-and-wife team of **Christopher Plowe, MD, MPH**, the Frank M. Calla MD Professor of Medicine and Founding Director of the Institute for Global Health (IGH), and **Myaing Myaing Nyunt, MD, MPH, PhD**, an Assistant Professor of Medicine and Director of IGH Myanmar in the Division of Malaria Research (DMR) at the IGH. "The initial strategy was to try to contain drug-resistant malaria and prevent it from spreading, but our research will help us move forward toward completely eliminating malaria from this region," said Dr. Plowe.



Dr. Christopher Plowe and
Dr. Myaing Myaing Nyunt

Despite significant progress in reducing malaria incidence and mortality, the World Health Organization estimates that roughly 212 million new cases of malaria and 429,000 malaria deaths occurred in 2015 alone. In addition, drug-resistant cases are on the rise. The emergence of multi-drug resistant malaria parasites in Southeast Asia is especially concerning to public health officials, who fear it may spread worldwide, resulting in untreatable malaria.

At sites in central Myanmar and on both sides of its borders with China and Bangladesh, the new Myanmar Regional Center of Excellence for Malaria Research will integrate findings from clinical and field research, including molecular surveillance, genomics, and geo-spatial mapping and modeling of malaria risk, to provide essential knowledge, tools, and evidence-based strategies to stratify malaria risk, with the ultimate aim of accelerating malaria elimination in the region.

IGH has already conducted genetic studies to track the emergence and spread of resistance to artemisinins, the first line drugs used to treat malaria worldwide. They have also developed highly sensitive diagnostic tests for low-level malaria infections that serve as a reservoir, causing no symptoms in infected people. "We think these 'silent' infections may be a critical source of ongoing malaria transmission that are missed by standard tests and interventions," said Dr. Nyunt, who is originally from Myanmar.

"The spread of drug-resistant malaria is a growing public health problem in many parts of the world, and our research will help eradicate this disease, building upon our long legacy of advancing research in developing countries," said UM SOM **Dean E. Albert Reece, MD, PhD, MBA**, who is also Vice President for Medical Affairs at the University of Maryland and the John Z. and Akiko K. Bowers Distinguished Professor. "Research conducted through our Institute for Global Health has already helped save many lives, and this generous grant from NIAID will allow our scientists — working with national and international partners — to continue their important work of making malaria a disease of the past."



Malaria Vaccine News

An experimental malaria vaccine protected healthy subjects from infection with a malaria strain different from that contained in the vaccine, according to a study published in February in *Proceedings of the National Academy of Sciences* (PNAS). The research was conducted by scientists at the University of Maryland School of Medicine and the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health (NIH).

The Phase 1 clinical trial is important because in places where malaria is common, there is usually more than one strain of malaria. To be effective in the real world, a vaccine must protect against more than one. The study's lead researcher,



Kirsten E. Lyke, MD, Associate Professor of Medicine, Center for Vaccine Development, said the vaccine's versatility was promising. "Our study shows that that this vaccine can protect against at least two strains of malaria," said Dr. Lyke, who has studied malaria for more than a decade. "We need to continue our research, but this is a fantastic finding."

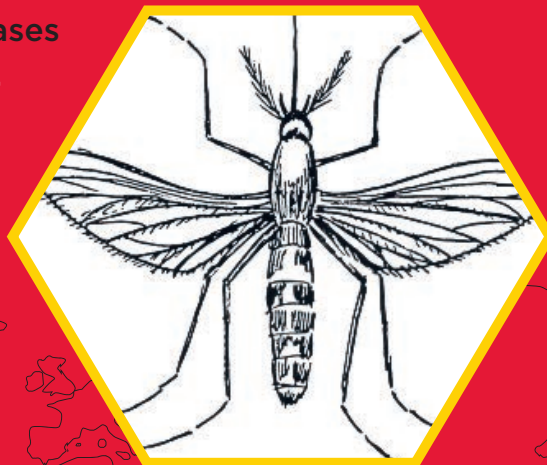
Ongoing research will determine whether protective efficacy can be improved by changes to the PfSPZ Vaccine dose and number of immunizations. Accordingly, a Phase II efficacy trial testing three different dosages in a three-dose vaccine regimen is now underway in 5- to 12-month-old infants in Western Kenya to assess safety and efficacy against natural infection.

"Malaria remains an urgent global health problem, one that shortens far, far too many young lives," said University of Maryland School of Medicine **Dean E. Albert Reece, MD, PhD, MBA**, who is also the vice president for Medical Affairs, University of Maryland, and the John Z. and Akiko K. Bowers Distinguished Professor. "This vaccine has the potential to save millions of lives, and I am sure that these researchers will continue to collaborate on this exciting work."

WorldHealthcrisis

Millions of Malaria Cases

The emergence of multi-drug resistant malaria parasites in Southeast Asia is especially concerning to public health officials, who fear it may spread worldwide, resulting in untreatable malaria.



- Roughly 212,000,000 new malaria cases.
- 229,000 malaria deaths.

Source: World Health Organization, 2015

University of Maryland School of Medicine Institute for Global Health, Division of Malaria Research, is helping to solve the crisis in Myanmar.

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