TAUBMAN INSTITUTE
MICHIGAN MEDICINE

Can mom's weight loss affect baby's health?

Study of pre-conception nutritional coaching will follow moms and kids for two years.

Testing food allergens in the lab, instead of in toddlers

Personalized assays may spare kids with FPIES

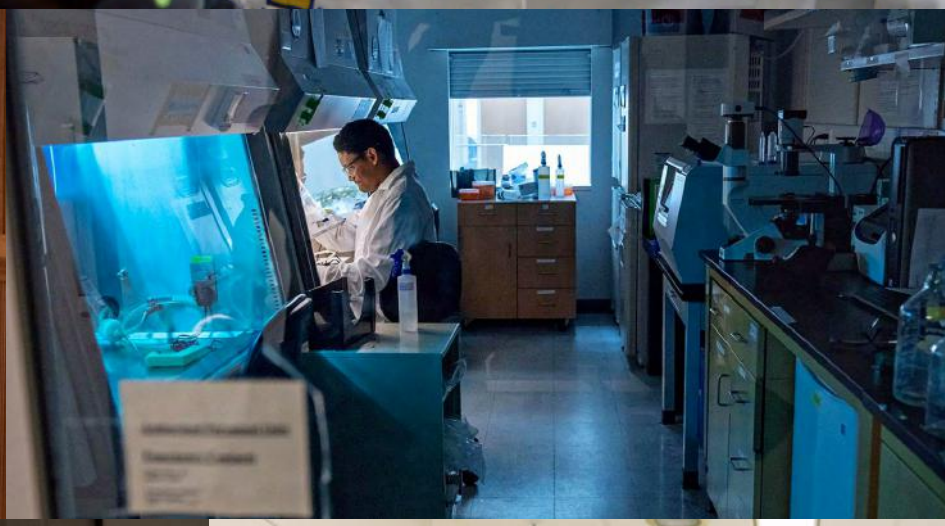
Repairing an infant's tiny blood vessels

Taubman-sponsored study aims to improve care for rare disorder

Balancing clinic, research and family

New grants will help caregivers stay on track


KELLOGG EYE CENTER

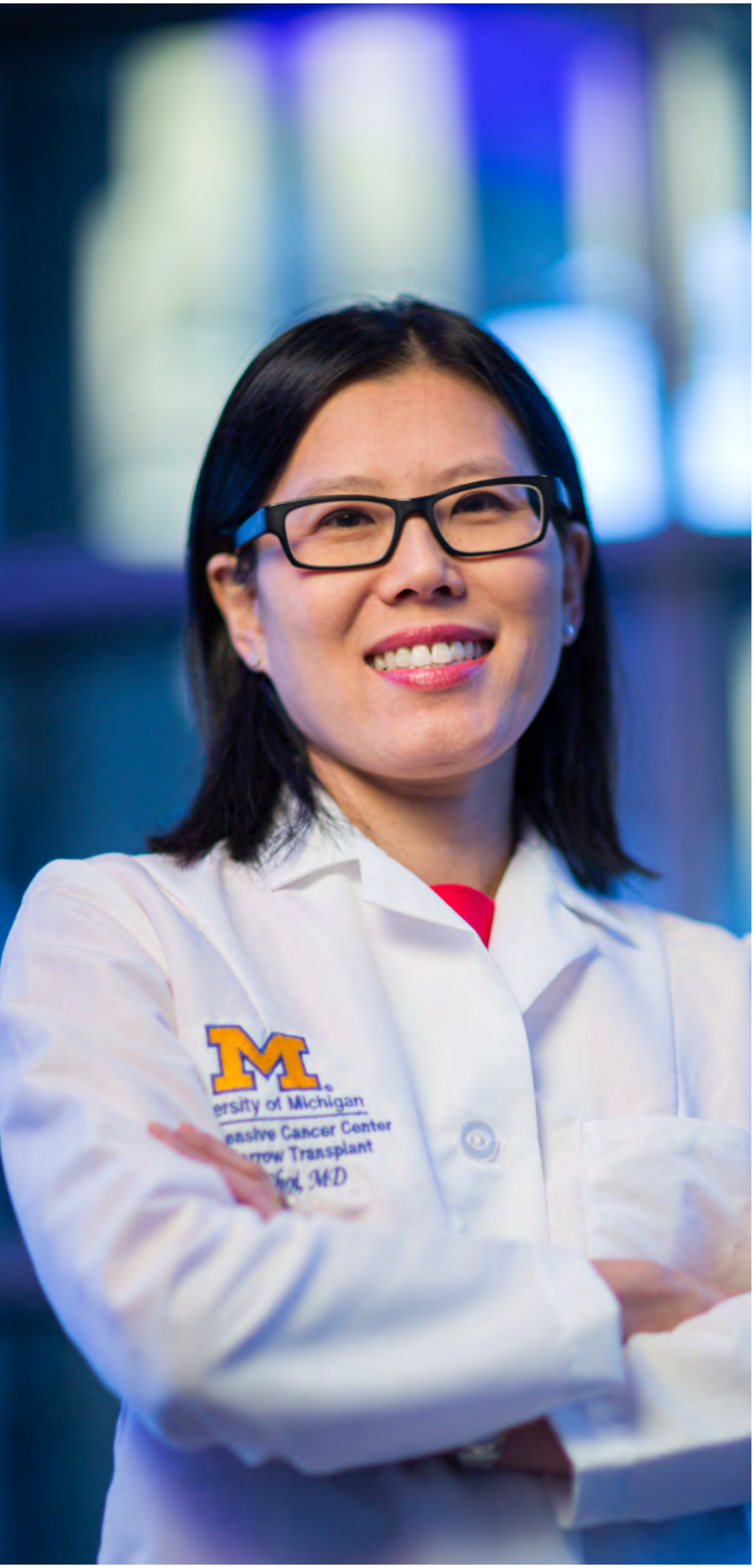


About the Taubman Institute

Created to support medical doctors who also perform laboratory research in the quest for new treatments and cures, the institute was founded in 2007 by leading entrepreneur and philanthropist, the late A. Alfred Taubman.

Mr. Taubman's vision was to advance the "high-risk, high-reward" ideas of the University of Michigan's most brilliant medical minds, thereby accelerating the delivery of new therapies to patients.

Thanks to these unrestricted grants, dozens of researchers are working to gain new understanding of disease processes, and to generate new drugs, devices and other therapies in fields ranging from diabetes to depression, bone marrow transplants to muscular dystrophy, cancer to vision loss.



Contents

FEATURES

DEPARTMENTS

From the Director

Dear Friends and Colleagues,

Like all of you, the Taubman Institute community has weathered and surmounted myriad challenges in recent times.

But despite uncertainty and logistical hurdles, our dedicated scientific investigators persisted, and maintained impressive productivity.

The structure of the Taubman Institute allows us to respond nimbly to changing circumstances, as demonstrated by our quick support of COVID-related discovery. From analyzing the immune response, to tracking symptoms via wearable devices, to deciphering the blood-clotting mechanism, our members are producing valuable insights into current challenges, as well as data for use by other researchers.

We've also made great strides in our mission to connect clinical and research activities – bringing together patients, staff, technicians, scientists, educators and physicians in a united quest for new therapies and cures. Our Taubman Institute Innovation Projects address conditions ranging from anti-rejection drugs for transplant patients to cancer to vision loss to food allergies.

We've appointed two new Taubman Scholars and two new Emerging Scholars, seated new members of our scientific advisory board, kicked off an educational webinar series and enhanced our support of the MD/PhD students who will become the physician-researchers of tomorrow.

Looking ahead with optimism, we will continue to serve as an accelerator for the life-changing biomedical research of U-M's most brilliant minds, with innovated grant programs and by providing a hub for collaboration, mentorship and knowledge-sharing.

Thank you for your interest in our work.

CHARLES F. BURANT, MD, PHD

Robert C. and Veronica Atkins Professor of Metabolism
Professor of Internal Medicine
Director, Taubman Institute

"DESPITE UNCERTAINTY AND LOGISTICAL HURDLES, OUR DEDICATED SCIENTIFIC INVESTIGATORS PERSISTED, AND MAINTAINED IMPRESSIVE PRODUCTIVITY."

Welcome New Scholars

Two new Taubman Scholars and two additional Taubman Emerging Scholars were appointed in 2021. They are:

TAUBMAN SCHOLARS

Srijan Sen, MD, PhD

Dr. Sen is a psychiatrist whose research focuses on the interactions between genes and the environment, and their effect on stress, anxiety and depression. Since earning his MD at the University of Michigan in 2004, he has consistently demonstrated innovative thinking, leadership, vision and the ability to execute novel ideas using the newest technology.

His research includes the large Intern Health Study, which focuses on physicians in their first year of post-medical school training to understand how stress leads to depression. As of February 2021, the study includes data from more than 25,000 interns at over 100 U.S. and Chinese teaching hospitals. He has also studied the relationship between duty hour requirements in medical training and medical errors.

The project has produced high-impact findings across a wide range of interdisciplinary academic topics including genomics, mobile technology, economics, gender and racial disparities, survey methodology and medical education policy.

Dr. Sen was appointed a Taubman Emerging Scholar in 2014. Currently, he serves and the director of the Frances and Kenneth Eisenberg and Family Depression Center, and the Frances and Kenneth Eisenberg Professor of Depression and Neurosciences. He also is Associate Vice President for Research – Health Sciences at Michigan Medicine, and a research professor at the Michigan Neuroscience Institute.

Vibha Lama, MD, MS

Dr. Lama is a pulmonologist whose research focuses on fibrosis pathways in the lung that are common to several pulmonary conditions. She is an expert on the mesenchymal cell and its fibrogenic transformation regarding lung transplants.

Pioneering translational work from her laboratory has provided human evidence for the presence of lung-specific mesenchymal progenitor cells and elucidated their biological behavior in normal repair and fibrotic remodeling. Dr. Lama's research is focused on understanding mechanisms of mesenchymal cell recruitment and differentiation, with a focus on pathways of cellular activation in fibrogenesis accompanying chronic allograft rejection.

She currently is the principal investigator of five R01 grants awarded by the National Institutes of Health, has received numerous professional commendations and is a sought-after presenter at premier medical conferences in the United States and internationally. Additionally, since 2013, Dr. Lama is an elected member of the American Society of Clinical Investigation.

EMERGING SCHOLARS

Anna Mathew, MD

Dr. Mathew is a Michigan Medicine nephrologist and assistant professor at the U-M medical school, who treats patients of all ages for an array of kidney diseases. She also is a researcher whose current project explores the role of activated immune cells in the development of heart disease in kidney patients.

Dr. Mathew's laboratory seeks to determine why patients with kidney disease have as much as 15 to 30 times higher risk of heart disease than patients of the same age with normal kidney function. She suspects metabolic pathways in immune cells are altered in kidney disease, leading to plaque formation in blood vessels and heart disease.

Her lab explores altered amino acid -tryptophan metabolism and its contribution to inflammation and progression of atherosclerotic disease in kidney patients. The altered tryptophan pathway demonstrates tremendous translational potential in clinical studies as a biomarker to predict incident cardiovascular disease in chronic kidney disease patients.

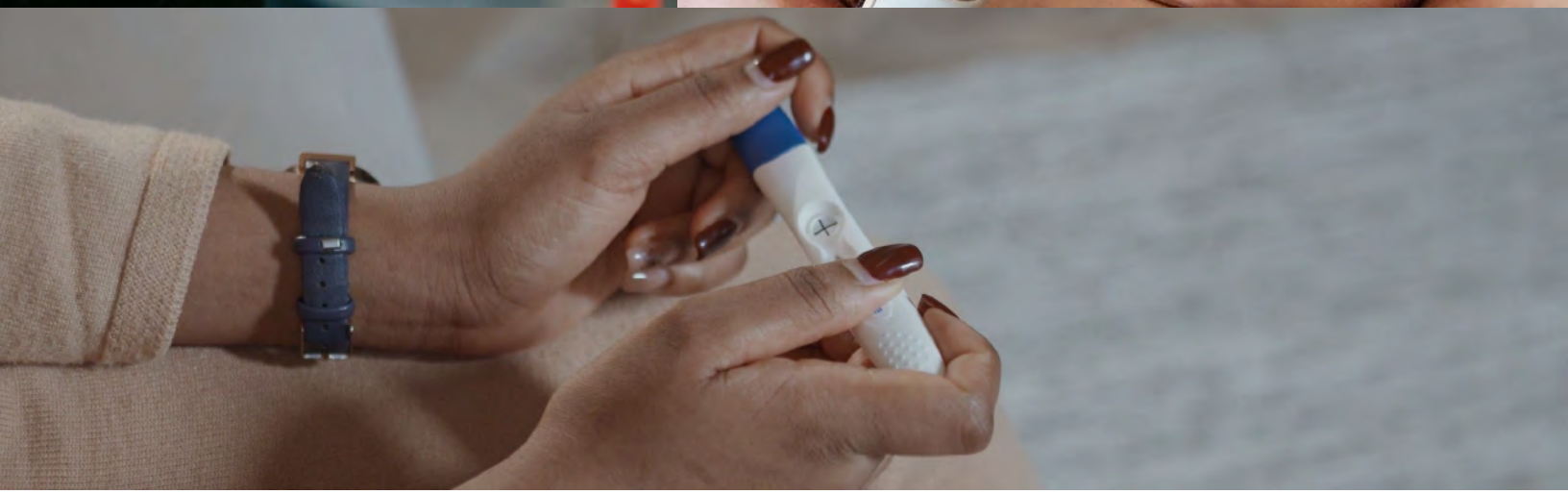
Brian Emmer, MD, PhD

Dr. Emmer is an assistant professor of internal medicine who cares for patients as a hospitalist. His research studies focus on the human genome, and his current project seeks to target ACE2, the receptor in human cells that interacts with COVID-19's spike protein.

Already, Dr. Emmer has tested all 20,000 genes in the human genome to identify 32 novel regulators of ACE2. His proposed work seeks to clarify the pathways that control ACE2 expression at a molecular level. Understanding this process may reveal why some patients with COVID-19 get only mild symptoms while others become critically ill and die. This project may also identify vulnerabilities of the virus which could then be exploited for pharmaceutical development.

Can mom's weight loss affect baby's health?

Study of pre-conception nutritional coaching will follow moms and kids for two years.



Can shedding a few pounds before pregnancy improve health outcomes for both mom and baby?

A study kickstarted by Taubman Institute funding is on its way to finding out, by providing nutrition and weight loss support to women who intend to conceive.

"We've designed one intervention that potentially helps two people," said Charles F. Burant, MD, PhD, one of the investigators and director of the Taubman Institute. "It'll help the mother now, and potentially will have a lifelong effect on the child."

Women with obesity before and during pregnancy are at risk of more complications than women with normal weight, including hypertension, gestational diabetes and increased need for caesarian delivery. Their children also have an increased risk of obesity and other metabolic problems.

Some of the risk in children may be due to a maladaptive programming of the developing fetus by exposure to an altered in utero environment due to overnutrition and obesity in mom causing 'epigenetic' changes in their DNA.

Michigan Medicine researchers including Burant, Amy Rothberg, MD; Dana Dolinoy, PhD, and Vasantha Pabmanabhan, PhD, have received a $3.3 million grant to study what happens to a woman and her child if the woman participates in a weight-loss program prior to becoming pregnant. The team is recruiting subjects for the study via UMHealthResearch.org.

The funds were awarded by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), part of the National Institutes of Health, the nation's medical research agency. Initial support to launch the study was provided by a Taubman Institute Grand Challenge grant.

"We had established a very successful medical weight loss clinic led by Dr. Rothberg," said Burant. "She has shown how weight loss improves or reverses diabetes, shortens hospital stays and increases fertility in women. The obvious extension was to see whether maladies that affect women in pregnancy were another opportunity to make a difference.

"Using the identical weight loss approach we've done with thousands of individuals in the clinic was a prime opportunity

to study this. We gathered other physicians doing related work, to study the clinical and biological aspects of environmental changes for the fetus."

Studies in animals suggest that certain conditions during pregnancy can program the offspring for long-term weight variations, said Burant.

And there is already a lot of evidence in humans that maternal obesity is associated with increased fat tissue in children at birth, at age three and even at age 37, Rothberg said. "One theory is that small changes to the intrauterine environment can cause changes to gene expression that may contribute to future risk of obesity and, potentially, other diseases."

Gene expression occurs when the instructions coded in our DNA are relayed to regulate cell functions, such as the production of protein.

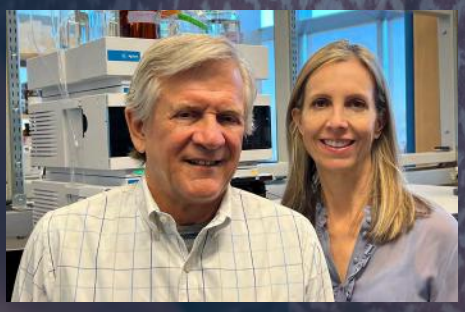
Several studies which sought to reduce weight gain in women with obesity after they become pregnant have been disappointing, showing minimal changes in pregnancy complications and no changes in birth outcomes, the researchers say.

"Yet despite evidence that obesity negatively impacts reproductive outcomes, few studies have been conducted to estimate the impact of medical weight loss that occurs ahead of conception," said Rothberg, director of the University of Michigan Weight Management Program.

"We believe that a lot of the programming of fetal growth occurs very early, and therefore, interventions in pregnancy are too late". Subhead here

The goal of the project is two-fold. First, to determine if the pre-pregnancy intervention will optimize the in utero environment for the fetus. Second, to examine the factors that change the intergenerational risk of obesity and its downstream consequences, such as type 2 diabetes and cardiovascular disease.

Women 18-39 who don't have diabetes and who plan to become pregnant within the next year are eligible to apply for inclusion in the study.



Dr. Charles Burant, MD PhD and Dr. Amy Rothberg, MD

> **"SO FAR, WOMEN IN THE PROGRAM GO INTO PREGNANCY ABOUT 15 POUNDS LIGHTER AND MAINTAIN THAT DIFFERENCE THROUGHOUT THEIR PREGNANCIES"**

Investigators will follow women with obesity as well as a group normal weight women for at least two years. Women with obesity are randomly assigned to one of two medical weight loss interventions. Some receive current best practice of nutritional counseling, education, and advice to manage their diet and lose weight, while others will be enrolled in an aggressive 16-week weight-management program.

Following the four-month weight-loss intervention, the participants will be prescribed a healthy maintenance diet until they conceive.

"So far, women in the program go into pregnancy about 15 pounds lighter and maintain that difference throughout their pregnancies," said Burant.

Metabolic status, pregnancy outcomes, and measures of infant growth are just some of the measures that are being evaluated by investigators, during visits at intervals before and after the birth.

"Overwhelmingly, the feedback about the study and the study staff has been very favorable," said Rothberg. "When asked if they would participate in another study given how this study went, there was a resounding 'yes.'"

About the study

TITLE: "Maternal metabolic and molecular changes induced by preconception weight loss and their effects on birth outcome."

WHO MAY APPLY: Women 18-39 who do not have diabetes and are not being treated for infertility. Participants must plan to deliver at the University of Michigan. There is no cost to participants for the weight management program.

MORE DETAILS: UMHealthresearch.org/#studies/HUM00124673

Testing food allergens in the lab, instead of in toddlers

Personalized assays may spare kids with FPIES

Making it easier for families to manage a perplexing infanthood food allergy is the goal of a Taubman Institute Innovation Project (TIIP) headed by U-M researcher Mohamad El Zaatari, PhD.

Currently, babies that develop food protein-induced enterocolitis syndrome (FPIES) experience vomiting, diarrhea, and dehydration, but symptoms aren't always immediate upon eating and standard allergy tests do not always result in a correct diagnosis.

FPIES is different from, and rarer than, the type of food allergies that cause anaphylactic reactions to substances like peanut protein. It generally occurs in children starting around six months, and most kids grow out of it by the time they enter kindergarten.

But in the meantime, Dr. El Zaatari says, kids with FPIES can fail to thrive, develop food aversions, suffer from trauma, and even sometimes have gastric feeding tubes inserted. It is stressful for parents and complicates childcare situations, and by extension the parents' jobs and employment, he said.

Due to the lag between eating and the appearance of symptoms, it's difficult for parents and doctors to pinpoint which foods cause a reaction and which don't. Parents generally are advised to offer single-ingredient foods to the child, in an attempt to distinguish between safe and reaction-causing items.

Dr. El Zaatari, who studies gastrointestinal inflammation, figured there had to be an easier way. He's running a study that tests foods against a patient's blood, in the laboratory, rather than on the patient herself.

Not only can such a screening more efficiently analyze the effects of multiple foods, it spares the child the distress of allergic reactions.

"This is a GI immune response issue, which is directly in my field," he said. "But this disease is very difficult to study. There are no mouse models, and you cannot scope a vomiting child's intestines.

"So, I thought, 'how can we design a project that will identify safe foods and trigger foods?'"

His TIIP, "Characterization of Non-IgE-Mediated Food Allergies in Food Protein-Induced Enterocolitis Syndrome (FPIES) Patients," detects responses in a lab dish to predict specific foods a patient might eat without problems.

"it's RNA technology on live cells," he said. "A technician it takes about 50 hours to run a panel of 30 foods for a single patient.

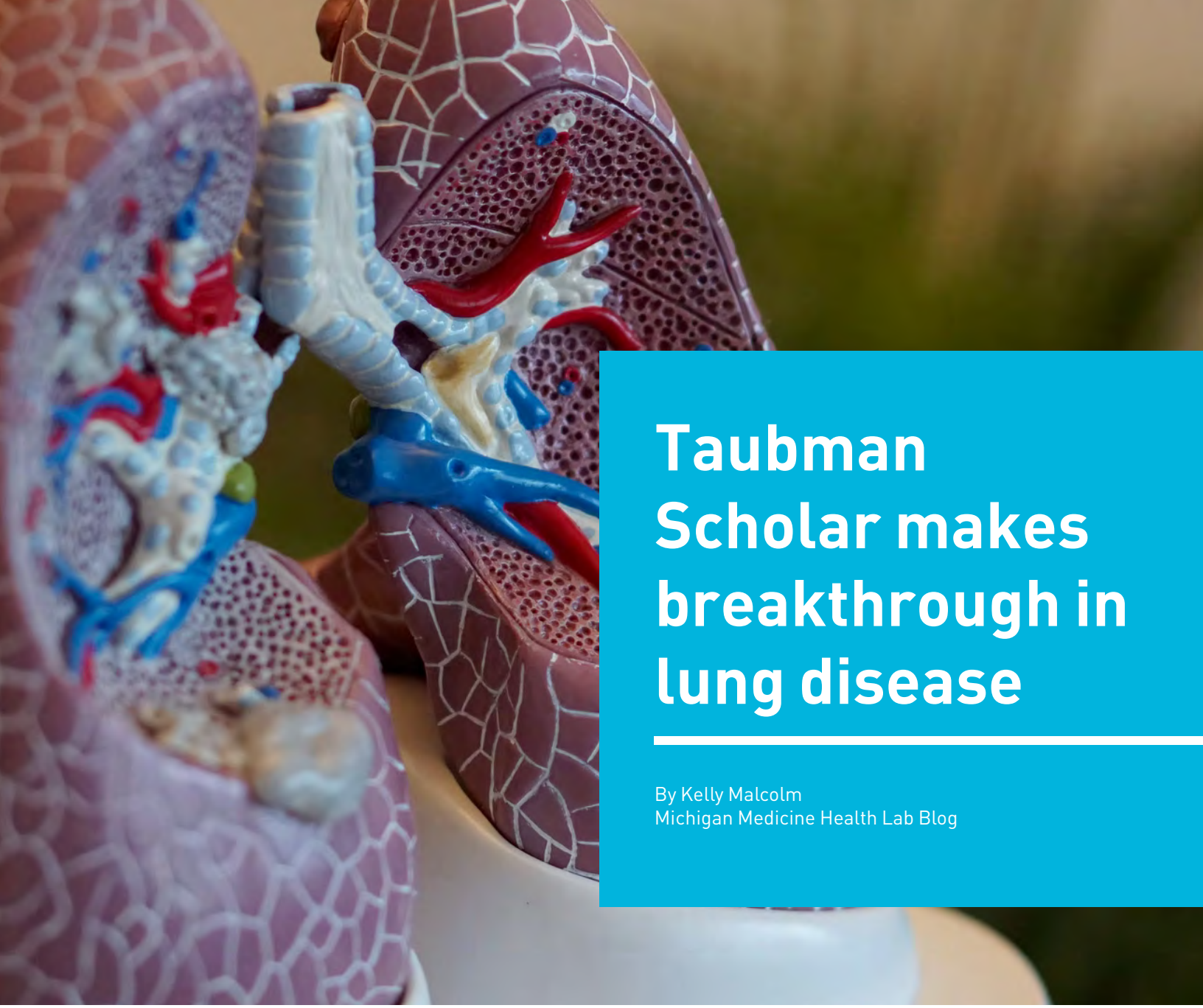
"Rather than parents trying one food at a time, we use the patient's own blood to "pre-test" foods and let them know what is more likely to be safe."

The aim is to expand a child's food repertoire from perhaps one or two foods to seven to 10 foods, to get them through the FPIES age range with better nutrition and less trauma.

The TIIP grant funds the collection of samples, running the assay and other research efforts. Once the patient's blood is drawn in the clinic, the samples are de-identified and used by Dr. El Zaatarie's team. Results are sent to the children's doctors at the Michigan Medicine Food Allergy Clinic and relayed to the patients' family.

"To date, we have predicted more than 60 safe foods for seven patients," said Dr. El Zaatari. "We're hoping to grow the project to a point where this test will be available in clinics."

Mohamad El Zaatari, PhD.



Taubman Scholar makes breakthrough in lung disease

By Kelly Malcolm
Michigan Medicine Health Lab Blog

A lung transplant can mean the difference between life and death for people with diseases such as pulmonary fibrosis, chronic obstructive pulmonary disease (COPD) and even severe COVID-19.

Yet, recipients of donor lungs must take daily medications to stave off damage caused by their own immune system, which attacks the organs it recognizes as foreign—a process known as rejection.

A new University of Michigan Health study by Taubman Scholar Vibha Lama, MD, MS, has identified cells that appear to play a pivotal role in creating the scarring, or fibrosis, characteristic of chronic rejection following a lung transplant.

Almost 15 years ago, Vibha Lama, MBBS, M.S., a professor in the Division of Pulmonary Disease and Critical Care Medicine, and her lab described the presence of stem-cell-like cells, called mesenchymal stromal cells, in lung sample fluid from lung transplant recipients.

"We found that even ten years post-transplant, these cells belonged to the donor, not the recipient," she explained. "At that time, we had no clue where in the lung they were coming from or what role they played."

To figure this out, her lab generated a mouse model to recreate what happens within a lung transplant recipient. With the model, they followed a transcription factor known as FOXF1 as a sort of trail of breadcrumbs back to the cells' original location.

They discovered that these cells formed a reservoir of stem cells within the bronchovascular bundle deep inside the lung. These bundles contain a bronchus (airway), arteries, connective tissue and other structures and is the part of the lung which connects it to the outside environment.

The study has been published in the Journal of Clinical Investigation. Dr. Lama, who is senior author on the paper, said it shows that these specific stem cells are interacting with neighboring epithelial cells within that airway niche.

Epithelial cells line and protect the airways and produce a protein known as Sonic hedgehog. Via this protein, epithelial cells signal the stem-cell-like mesenchymal cells, which make up the scaffolding of the lungs, to make FOXF1, a repressor that keeps the stem cells in check.

> **"WE FOUND THAT EVEN TEN YEARS POST-TRANSPLANT, THESE CELLS BELONGED TO THE DONOR, NOT THE RECIPIENT. AT THAT TIME, WE HAD NO CLUE WHERE IN THE LUNG THEY WERE COMING FROM OR WHAT ROLE THEY PLAYED."**

"We are just recently understanding that there are many different kinds of mesenchymal cells in the lung," said Lama. "What we describe here is not only are there many kinds of mesenchymal cells, FOXF1 is retained only in these specific stem-cell-like cells."

In the case of lung transplant rejection, Lama hypothesized that immune cells from the recipient attack the epithelial cells which disrupts the balance between them and the mesenchymal cells.

"Because of the damage caused by rejection, the epithelial cells get damaged, Sonic hedgehog is reduced and that interrupts the signaling to the mesenchymal cells to keep quiet," she said. "Because of that, these cells start dividing and they lay down more collagen, which leads to fibrotic scarring."

The work sets the stage for more research into the interaction of these cells with epithelial and other cells it their vicinity to further characterize what happens during chronic rejection and potentially how to prevent it. Furthermore, discovery of these cells is also important in understanding other airway diseases like asthma and COPD.

Paper cited: "Transcription factor FOXF1 identifies compartmentally distinct mesenchymal cells with a role in lung allograft fibrogenesis", J Clin Invest. DOI: 10.1172/JCI147343

Repairing an infant's tiny blood vessels

Taubman-sponsored study aims to improve care for rare disorder

Repairing the arteries of tiny children with life-threatening hypertension is one job that Michigan Medicine vascular surgeon Dawn Coleman, MD, performs in the operating room. Studying why these young patients develop abnormal arteries in the first place drives Dr. Coleman's research interests.

She is co-principal investigator, along with Santhi Ganesh, MD, on the Taubman Institute Innovation Project "Dysplasia-Associated Arterial Disease Precision Medicine Network (DAAD)." Arterial dysplasia is the abnormal narrowing or enlargement of blood vessels.

DAAD studies patients and their families, to identify genetic factors underlying arterial dysplasia, familial risk and markers of the disease, with the aim of developing a precision-medicine approach to existing therapies.

Dr. Coleman also was a lead organizer of the first-ever international symposium on pediatric renovascular hypertension (PRVH), held in Ann Arbor in 2019 and sponsored by the Taubman Institute. The symposium was dedicated to advancing collaboration and knowledge about the disease among clinicians and researchers worldwide and included the formation of working groups to develop patient cohorts and other groundwork for ongoing studies.

Early in 2021, Dr. Coleman received funding from the non-profit Patient-Centered Outcomes Research Institute, to formalize a PRVH research collaborative, whose international members are renowned experts in the field. We talked with Dr. Coleman about how her patient care and scientific objectives are entwined.

Q: Tell us about your research and how you came to choose this field of expertise.

A: I serendipitously was trained and mentored by Frankel Cardiovascular Center founder Dr. James Stanley and surgeon Dr. Jonathan Eliason to care for children with vascular pathology.

I have worked alongside a multi-disciplinary team to continue and expand Dr. Stanley's legacy through our pediatric renovascular hypertension program. This very rare disease is defined by often hard-to-treat high blood pressure that results from aortic and renal artery disease.

These patients often have complex anatomy, and at Michigan Medicine we receive many referral patients, as one of the few high-volume multidisciplinary centers of expertise domestically and internationally.

In caring for these unique and very special children, it has become clear that vascular disease burden and broader patient phenotype have a dramatic impact on patient natural history and response to treatment.

But research efforts have been hampered by the low disease frequency, which limits existing data. Therefore, the optimal management of these patients remains ill-defined.

I am working alongside Dr. Ganesh to explore the genetic basis of pediatric renovascular hypertension and to study a longitudinal cohort of these patients with precise angiographic, cellular, histologic, biochemical and genetic characterization.

Q: How will the PCORI funding advance your work?

A: We are prioritizing patient-centered outcomes research goals alongside a larger global collaborative of stakeholders.

The Collaborative's Virtual Research Network is forming now to facilitate future patient activation for pragmatic clinical trials (including cohort development for deep phenotyping and long-term longitudinal study), which are very much needed for this rare disease process.

Q: How has your involvement with the Taubman Institute aided your research in the past few years?

A: I remain incredibly grateful for the support that the Taubman Institute has provided our research team. The funding as allowed us to expand a local longitudinal cohort of patients with dysplasia-associated arterial disease with precision angiographic, cellular, histologic, biochemical and genetic characterization.

We've accrued important pathologic and genetic data that has translated into clinical practice changes.

Q: What are the pandemic-related challenges to your work and how have you managed them?

A: The pandemic certainly challenged laboratory operations, and patient enrollment and specimen collections, especially during the surgery 'shut-down'. We are pleased to be very much back on track.

Perhaps one benefit to the pandemic was the rise in comfort with a virtual platform for the conduct of both meetings and symposia. As such, we've been able to leverage a Zoom platform to engage broadly our diverse collaborative stakeholders and move our work forward.

Q: You also serve as a Lieutenant Colonel in the Army Reserve, and deployed three times to the Middle East, mostly recently in early 2020, as part of the Forward Surgery Team. How does your military service inform you in your roles as surgeon, faculty member and researcher at Michigan Medicine?

A. I think my military work enables me some degree of both resilience and resourcefulness – both qualities that have been important to leverage during this challenging time. I also believe that I have grown leadership qualities from the experience that help me co-direct our multi-disciplinary program and lead the PCOR Collaborative.

Dawn M. Coleman, MD is an Associate Professor of Surgery and Pediatrics & Communicable Disease at the University of Michigan where she serves as the Program Director for the Integrated Vascular Residency Program and Fellowship.

Dr. Coleman graduated with honors from the University of Cincinnati in 1999 and earned her medical degree from the University of Cincinnati's College of Medicine in 2003. She completed her general surgery residency at the University of Michigan in 2010 and then went on to complete a two-year vascular surgery fellowship at the same institution in 2012.

Learn more about the PRVH PCOR Collaborative at https://www.prvh-pcor.org/

Supporting work/life balance for early researchers

The COVID-19 pandemic has exposed the special challenges facing early-career faculty who are balancing family caregiving responsibilities with building their biomedical research careers.

Now, funding from national nonprofits and U-M resources including the Taubman Institute will help support selected U-M Medical School faculty facing this situation.

The Doris Duke Charitable Foundation (DDCF), in concert with the American Heart Association, the Burroughs Wellcome Fund and the John Templeton Foundation, has announced that Michigan Medicine was selected as one of 22 academic medical institutions to receive funds from a new $12.1 million COVID-19 Fund to Retain Clinical Scientists.

The Taubman Institute and the U-M Medical School will match the funds to create a mentoring program and provide $100,000 in funding to nine early-career faculty members, who will be chosen through an application process in coming months.

In creating the fund, the DDCF specified that it be used for "programs that provide eligible faculty who are experiencing periods of caregiving crisis supplemental support for their research, such as hiring administrative personnel, statisticians and technicians…these vital supports will allow hundreds of brilliant contributors to scientific discovery to keep their important work on track while directly tending to the needs of their families."

Julie Lumeng, MD, will serve as director of the fund. Dr. Lumeng is a professor of pediatrics and associate dean for research at the U-M Medical School, and executive director of the Michigan Institute for Clinical and Health Research.

Taubman Emerging Scholar Kanakadurga Singer, MD, associate professor of pediatrics and physiology, and Sonya Jacobs, chief organizational learning officer for the university and the senior director for faculty and leadership development at the medical school, will serve as co-directors, overseeing the implementation of the faculty development and mentoring program for awardees.

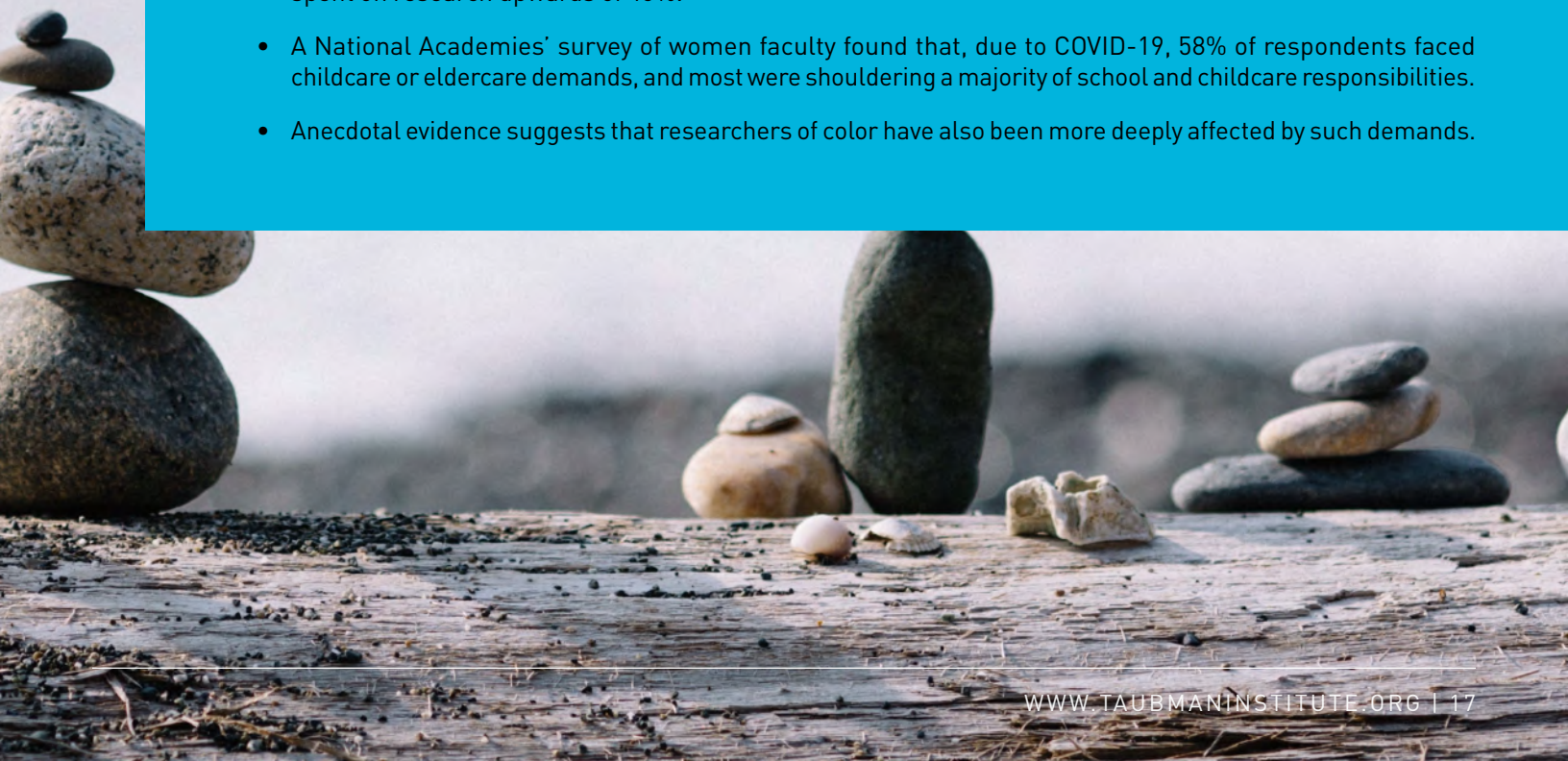
"The effects of lab shutdowns, COVID restrictions and caregiving likely will be felt for years to come and may have significant impacts on those who were in the critical stage of establishing their research programs," said Singer, the Valerie Castle Opipari, MD Professor of Pediatrics and associate professor of pediatric endocrinology. Her laboratory studies obesity-induced inflammation and its relationship to insulin resistance and diabetes.

"These new funds can be used to support those with caregiving responsibilities in doing clinical and translational investigation, in hope of maintaining progress in their research careers."

The COVID-19 Fund to Retain Clinical Scientists

The fund aims to advance the research productivity and retention of early-career faculty experiencing mushrooming family caregiving responsibilities due to the COVID-19 pandemic. In announcing the project, the Doris Duke Charitable Foundation noted:

- Even prior to the pandemic, studies pointed to unsupported family caregiving as a likely fundamental contributor to the loss of more than 40% of early-career physicians at their first full-time faculty appointments at academic medical schools within 10 years.
- With the pressures of COVID-19, bioscience researchers, especially those with dependents, decreased time spent on research upwards of 40%.
- A National Academies' survey of women faculty found that, due to COVID-19, 58% of respondents faced childcare or eldercare demands, and most were shouldering a majority of school and childcare responsibilities.
- Anecdotal evidence suggests that researchers of color have also been more deeply affected by such demands.



Pediatric Genetics Biobank

Developmental disorders account for the majority of admissions to children's hospitals, and many adult diseases have their origins in childhood.

In addition, one person in 10 has a genetic condition that affects their health.

Unfortunately, many genetic disorders go undiagnosed, and disease relationships for over half of human genes are completely unknown.

To address this knowledge gap, the Taubman Institute is funding the establishment of a Pediatric Genetics Biobank at Michigan Medicine, where genetic data, DNA and tissue samples will be collected and stored for use by medical researchers.

Donna Martin MD, PhD, chair of the Michigan Medicine Department of Pediatrics and a Taubman Scholar since 2018, directs the biobank, which is funded by a Taubman Institute Innovation Projects (TIIP) grants. TIIP grants support teams of researchers who are using patient data and samples to delve deeply into the origin of diseases, to explain variances in treatment outcome and pave the way for truly personalized therapies.

"Throughout the history of medicine, major breakthroughs in the understanding of common diseases have come from recognition of the genetic causes of rare conditions," said Dr. Martin, the Ravitz Foundation Endowed Professor of Pediatrics and Communicable Diseases.

"This research will enable discovery of new rare and common diseases using innovative genome-wide sequencing strategies to advance our understanding of disorders that have their onset in childhood," she said.

Dr. Martin, a member of the Taubman Institute executive committee and who Professor in Pediatrics and Human Genetics at the University of Michigan Medical School, focuses her research on the genetic basis of neural and sensory disorders and conditions that affect human development. She co-founded the pediatric genetics biobank with Michigan Medicine colleagues Stephanie Bielas, PhD, Sally Camper, PhD, and Jeffrey Innis, MD, PhD.

Patients with known or suspected genetic conditions, structural birth defects, syndromes, and developmental disorders who seek genetic testing and counseling will be recruited to donate samples to the biobank. Their health will be followed through visits to the Genetics clinic, as new technologies are used to establish diagnoses and monitor treatment responses.

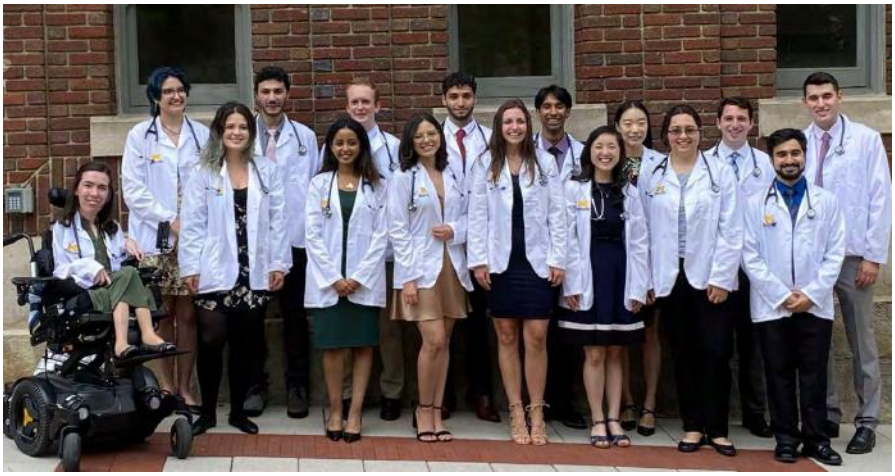
As of mid-November 2021, the biobank has completed recruitment of 894 individuals into the study. This includes 333 affected individuals, plus family members (290 mothers, 243 fathers, and 28 siblings.)

Dr. Martin's team has obtained funding from the NIH Gabriella Miller Kids First program to perform whole genome sequencing on 537 of these individuals. Once the data are available, it will be analyzed to identify novel genetic variants that cause or contribute to a wide variety of developmental abnormalities

"When children and their families are faced with serious illnesses that are not understood, one path to understanding 'why' this has happened is to examine the genes by sequencing their DNA. Using this approach, it is possible to identify changes in DNA that contribute to the illness," said Charles F. Burant, MD, PhD, director of the Taubman Institute.

"I'm very pleased that Taubman Institute is supporting Dr. Martin's effort to not only help understand the basis of these serious illnesses but also to find potential ways to help patients."

Donna Martin, MD, PhD



OUTREACH

MSTP Mentoring

The physician-researchers of the next generation are developed in Michigan Medicine's Medical Scientist Training Program, a rigorous eight-year program during which candidates earn both an MD and PhD.

Since 2020, Taubman Scholar Kathleen Collins, MD, PhD, has directed the program.

The Taubman Institute has a long tradition of nurturing these future physician-investigators, who will make the next generation's important biomedical breakthroughs. The students are welcomed at Taubman Scholar chalk talks, mentoring sessions and networking events, for example, and are hosted by scholars at an annual informal picnic at the start of each fall semester.

OUTREACH

Taubman Tech Talks

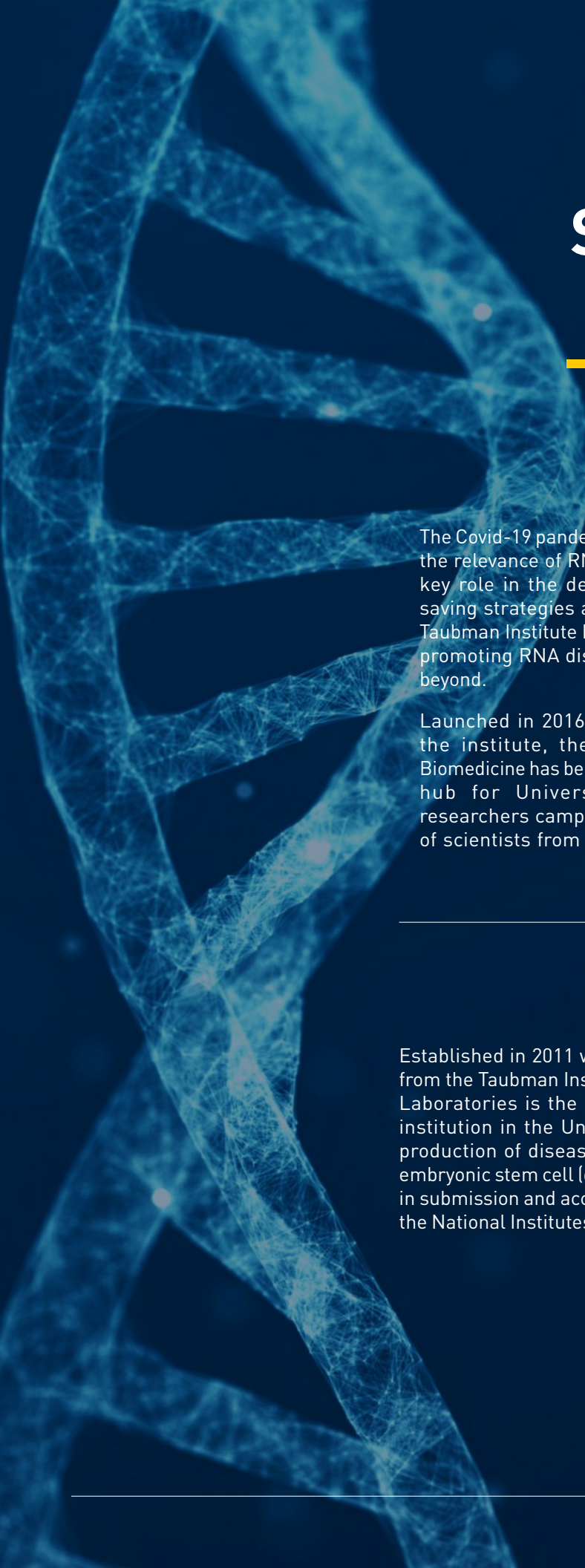
The institute hosts monthly seminars, open to the entire U-M community, featuring emerging technologies and their applications in medical research, from mass cytometry to imaging to 3D printing for therapeutic applications.

The tech talks migrated to the virtual space for 2021 and 2021, with great success in attendance and participation.

PAST TOPICS AND SPEAKERS INCLUDE:

- SEQ-Scope | Jun Lee, PhD
- Proteomic mapping of endocrine communication | Jonathan Long, PhD
- DNA Methylation Technologies | Kelly Bakulski, PhD
- Manipulating & Monitoring Neuronal Activity | Paula Goforth, PhD
- Math Modeling + Wearables | Olivia Walch, PhD
- Using Imaging as a Portal to Patient's Biological Medical Record | Stewart Wang, MD
- Microscopy: You Can Observe a Lot Just by Watching! | Aaron Taylor, PhD
- Adding Dimension to Clinical Care and Tissue Engineering with 3D Printing | David Zopf, MD
- Metabolomics | Charles Burant, MD, PhD
- Single Cell Analysis | Joshua Welch, PhD
- A Transcript for All Reasons: RNA Biomedicine | Mats Ljungman, PhD and Nils Walter, PhD
- Peeling Back the Molecular Layers of Genetic Disease Predisposition | Stephen Parker, PhD
- Sequencing | Olivia Koues, PhD
- Phenotype Risk Scores | Laura Scott, PhD
- Latest & Greatest in Imaging | Gary Luker, MD
- CyTOF Analysis | Fei Wen, PhD

TAUBMAN tech talks



Supporting Science Throughout U-M

Center for RNA Biomedicine

The Covid-19 pandemic has highlighted the relevance of RNA research and its key role in the development of life-saving strategies and therapies. The Taubman Institute has been a leader in promoting RNA discovery at U-M and beyond.

Launched in 2016 with a grant from the institute, the Center for RNA Biomedicine has become a collaborative hub for University of Michigan researchers campus-wide. Hundreds of scientists from Michigan Medicine and from academic departments such as chemistry and biology participate in RNA Center activities, sharing and leveraging discovery about this basic building block of life, and its potential for guiding personalized approaches to disease therapies.

The center, which has gone on to receive funding from U-M Pres. Schlissel's Biosciences Initiative, holds 20 seminars and one symposium each year.

RNA.umich.edu

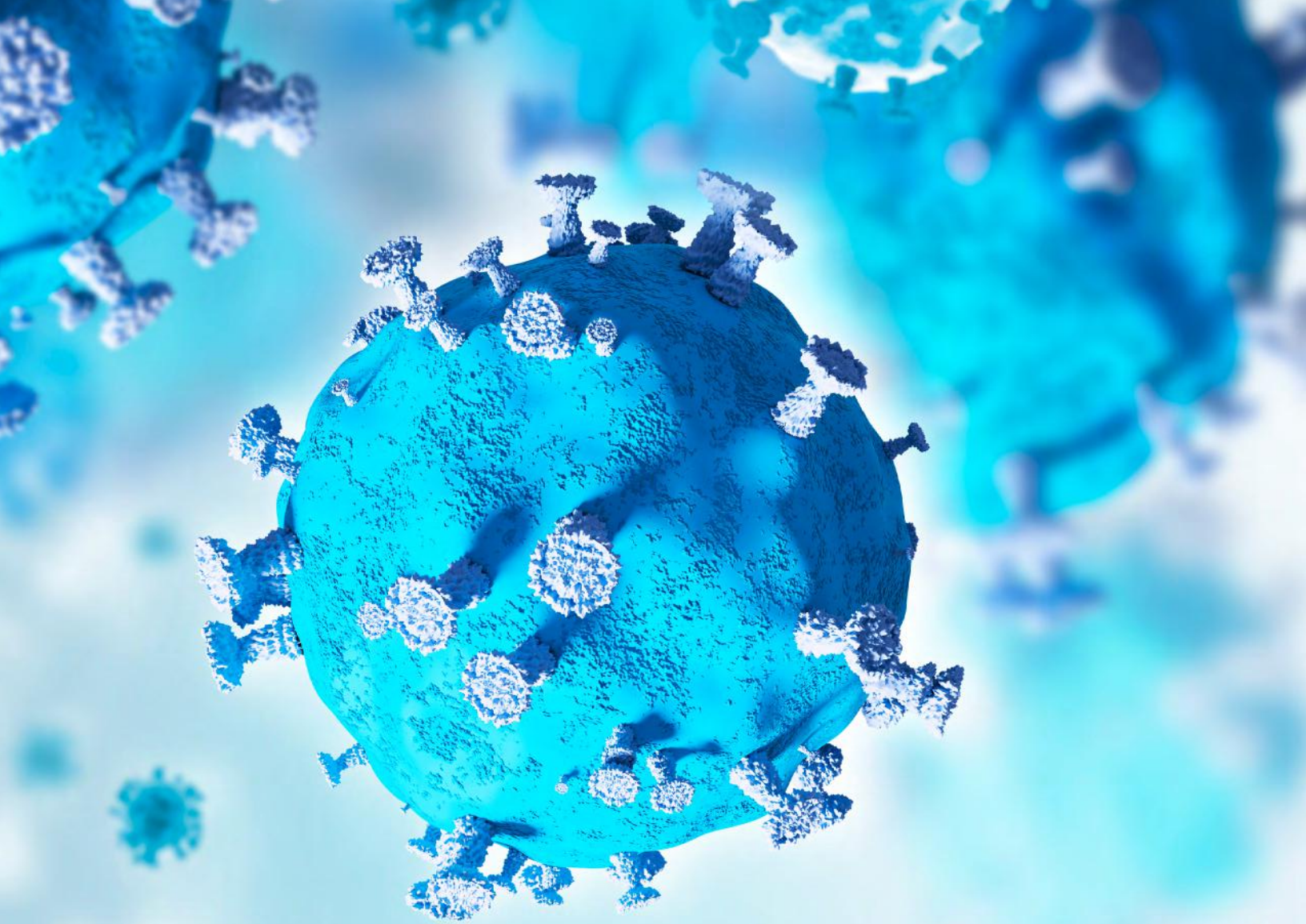
MStem Cell Laboratories

Established in 2011 with initial funding from the Taubman Institute, MStem Cell Laboratories is the leading academic institution in the United States in the production of disease-specific human embryonic stem cell (ds-hESC) lines and in submission and acceptance of lines to the National Institutes of Health (NIH).

Its mission is to advance the use of stem cells in biomedical research and to foster education, collaboration and new discovery.

MStem has registered 60 lines with the NIH, including 38 that are specific to diseases such as hemophilia and hypertrophic cardiomyopathy.

Mstemcell.org



Taubman Institute Innovation Projects

The Taubman Institute supports teams of scientists to develop novel and impactful approaches to integrate their research programs into the clinic setting. The goal is to perform systematic, multiscale phenotyping to gain insights into individual variation in the susceptibility, progression, course, or outcomes of disease.

Our goal is to make every patient a research subject, and to define the genetic, environmental, behavioral and other components of individuals that contribute to their distinct emergent property related to health and disease. The goal is to also utilize the data to stratified an individual in order apply interventions that lead to the prevention, improved treatment, or cure of disease.

CURRENT PROJECTS INCLUDE

Dysplasia-Associated Arterial Disease Precision Medicine Network (DAAD)

PRINCIPAL INVESTIGATORS:
Santhi Ganesh, MD; Dawn Coleman, MD

Personalized Medicine through Integration of Immune Phenotypes in Autoimmune Skin Disease (PerMIPA)

PRINCIPAL INVESTIGATORS:
Michelle Kahlenberg, MD, PhD;
Johann Gudjonsson, MD, PhD

Development of a Novel Precision Medicine Approach in Solid Organ Transplantation (ImPrec)

PRINCIPAL INVESTIGATORS:
Daniel Goldstein, MD; Vibha Lama, MD; Fei Wen, PhD

Developmental Origins of Human Disease

PRINCIPAL INVESTIGATOR:
Donna Martin, MD, PhD

A Comprehensive, Multi-omic Screen to Identify Candidate Biomarkers for Prediction of Cytokine Release Syndrome during CAR-T Therapy

PRINCIPAL INVESTIGATORS:
Sung Won Choi, MD; Muneesh Tewari, MD

Precision Medicine for Ocular Disease

PRINCIPAL INVESTIGATOR:
Thomas Gardner, MD, MS

A Novel Implantable Treatment for Iatrogenic Hypothyroidism in Cancer Patients Utilizing an Autotransplanted Thyroid Organoid Bioscaffold Generated from Adipose-Derived Stem Cells (ADSC)

PRINCIPAL INVESTIGATORS:
Mark Cohen, MD; David Zopf, MD

MAP COPD (Michigan eArly disease Progression cohort in COPD)

PRINCIPAL INVESTIGATOR:
Meilan Han, MD, MS

Characterization of Non-IgE-Mediated Food Allergies in Food Protein-Induced Enterocolitis Syndrome (FPIES) Patients

PRINCIPAL INVESTIGATOR:
Mohamad El Zaatari, PhD

Dipyridamole to Prevent Coronavirus Exacerbation of Respiratory Status (DICER)

PRINCIPAL INVESTIGATORS:
Yogendra Kanthi, MD; Jason Knight, MD; Yu Zuo, MD

Monitoring Healthcare Workers at Risk for COVID-19 Using Wearable Sensors and Smartphone Technology

PRINCIPAL INVESTIGATORS:
Sung Won Choi, MD; Muneesh Tewari, MD

News Briefs

Left to right: Dr. Valerie Opipari, Dr. Kanakadurga Singer, Ms. Edith Briskin, Dr. Donna Martin.

Professorship honors two Taubman scholars

Taubman Emerging Scholar Kanakadurga Singer, MD, has been designated as the inaugural Valerie Castle Opipari, MD Professor at Michigan Medicine.

This new professorship honors Dr. Opipari, a pediatric oncologist-hematologist and the first woman chair of Michigan Medicine's Department of Pediatrics, a post she held from 2003-2018. Dr. Opipari also is a founding scholar of the Taubman Institute.

The professorship, approved by University of Michigan regents, was endowed by the Shirley K. Schlafer Foundation, which is directed by longtime U-M benefactor Edith S. Briskin. Among other gifts to the university, Mrs. Briskin was instrumental in the development of the Taubman Emerging Scholars Program, and has provided past funding for several early-career physician-investigators, including Dr. Singer. Promoting the advancement of women in medicine, as well as advocating for better health care outcomes for children, has been the focus of Mrs. Briskin's philanthropy.

Dr. Singer's research focuses on understanding the impact and implications of diet induced obesity on the immune system.

Taubman Scholar Paulson Elected to National Academy of Medicine

Taubman Scholar Henry L. Paulson, MD, PhD, has been elected to the National Academy of Medicine.

Dr. Paulson is the Lucile Groff Chair of Neurology for Alzheimer's Disease, a professor of neurology and director of the Michigan Alzheimer's Disease Center. His research and clinical interests concern the causes and treatment of age-related neuro-degenerative diseases, with an emphasis on polyglutamine diseases, Alzheimer's disease and frontotemporal dementia.

Dr. Paulson also in 2021 was appointed interim co-director of the Michigan Neurosciences Institute (MNI). The MNI was established in 2020 to engage researchers from multiple disciplines and units across the University of Michigan in the pursuit of addressing the most pressing questions in neuroscience at the fundamental, translational, and clinical levels, while educating future leaders in the field.

Henry L. Paulson, MD, PhD

Kathleen Collins, MD, PhD

New chief for MD/PhD program

Taubman Scholar Kathleen Collins, MD, PhD, was appointed director of the Medical Scientist Training Program (MSTP) in the Medical School. She is a professor of microbiology and immunology and internal medicine in the Division of Infectious Diseases, an associate director of the Cellular and Molecular Biology Program, and a member of the institute's Executive Committee.

The MSTP program is an eight-year course that encompasses both clinical and research training; its participants earn both and MD and PhD in preparation for careers as physician-investigators.

Dr. Carethers Honored by American College of Physicians

Taubman Scholar John M. Carethers, MD, MACP, has been awarded the Harriet P. Dustan Award for Outstanding Work in Science as Related to Medicine by the American College of Physicians (ACP), a national organization of internists.

This award recognizes outstanding work in science related to medicine.

Dr. Carethers is the C. Richard Boland Distinguished University Professor and John G. Searle Professor and chair of the Department of Internal Medicine at Michigan Medicine. He also serves as a professor in the U-M Department of Human Genetics. He has been a Taubman Scholar since 2014.

His research focus is on colorectal cancer, particularly familial colon cancer syndromes. He is a recipient of Mastership in the American College of Physicians, which recognizes outstanding and extraordinary career accomplishments and notable contributions to medicine.

John Carethers, MD, MACP

Erika Newman, MD, PhD

Dr. Newman to lead DEIJ efforts

The University of Michigan Rogel Cancer Center has named Erika Newman, MD, PhD, as its first associate director for diversity, equity, inclusion and justice. She will lead the center's initiatives to diversify the next generation of healthcare professionals and researchers, and to champion an anti-racist and just culture within the cancer center.

Dr. Newman, a Taubman Emerging Scholar, is a pediatric surgeon with broad expertise in the care of children with solid tumors as well as a basic-science research lab that focuses on understanding tumor-specific DNA repair mechanisms as novel therapeutic options for pediatric neuroblastoma. She serves as surgical director of the C.S. Mott Children's Hospital's solid tumor oncology program.

In 2020, Newman was the recipient of a Harold R. Johnson Diversity Service Award in recognition of her work and leadership in the area of cultural diversity.

"My goal for this new role is to home in on DEIJ as a component of the cancer center's core mission," she said. "It touches everything we do from the way we take care of patients, to the way we recruit patients into clinical trials, to how we educate learners in the cancer space and how we build the pipeline of the next generation of leaders in the field."

New findings may aid psoriasis patients

Results from a study led by Taubman Emerging Scholar Michelle Kahlenberg, MD, PhD, reveal that targeting a protein found in the skin may reduce the severity of psoriasis.

Interferons play a major role in activating the body's response to viral threats, but they have also been detected in the lesions of many psoriasis patients at abnormal levels. New findings, published in the Journal of Investigative Dermatology, suggest using therapies to modulate interferon states may limit inflammation in psoriasis patients.

Some of Dr. Kahlenberg's work is funded with a Taubman Emerging Scholar grant. One of the paper's co-authors, Johann Gudjonsson, MD, PhD, also is a Taubman Emerging Scholar.

Michelle Kahlenberg, MD, PhD

News Briefs (CONTINUED)

Dr. Choi elected to ASCI

Sung Won Choi, MD, MS for being chosen as a member of the 2021 class of the American Society for Clinical Investigation (ASCI). She becomes the 90th Michigan Medicine physician-researcher in the society's current membership roster.

Dr. Choi is the Edith S. Briskin and Shirley K. Schlafer Foundation Research Professor, an Associate Professor of Pediatrics, and a member of the institute's executive committee. Her research focuses on graft versus host disease–prediction, prevention, and management in the setting of blood and marrow transplantation biomarkers.

The American Society for Clinical Investigation seeks to support the scientific efforts, educational needs, and clinical aspirations of physician-scientists to improve the health of all people.

Sung Won Choi, MD, MS

Brian Emmer, MD, PhD

Emerging Scholar tapped for Internal Medicine award

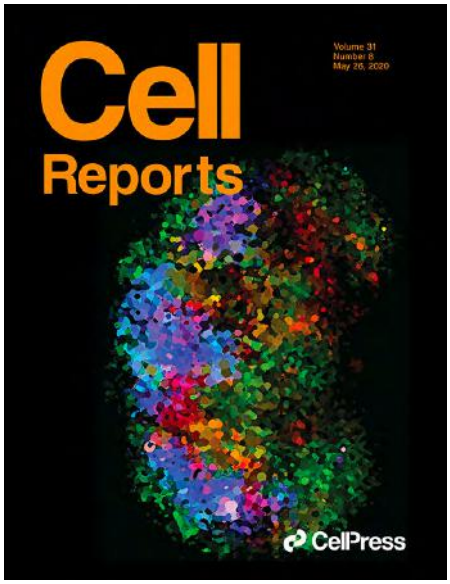
Brian Emmer, MD, PhD, has received a Laurence F. McMahon MD Dept. of Internal Medicine Early Career Endowment Award. His was one of just three awards announced for 2021.

The awards, which are intended to facilitate the research careers of promising junior faculty, were created in 2018 by the Department of Internal Medicine. Dr. Emmer was appointed a Taubman Emerging Scholar in October 2021.

Stem cell research published

Taubman Emerging Scholar Rajesh Rao MD, and his colleagues at U-M published their findings of how a couple of universally expressed proteins in stem cells and developing embryos influence an individual cell's ultimate fate — whether it ultimately becomes, for example, a retinal cell, a heart muscle cell, or a stomach lining cell, in the journal Cell Reports.

The research may also help illuminate an emerging class of anti-cancer drugs, WDR5 inhibitors — as the two proteins at the heart of the study, WDR5 and p53, have long been studied in relation to cancer, and the study sheds light on how WDR5 regulates p53, both directly and indirectly.



Scholar joins prestigious National Academy of Sciences

Arul Chinnaiyan, MD, PhD has been inducted into the National Academy of Sciences. Dr. Chinnaiyan is the S.P. Hicks Endowed Professor of Pathology, Professor of Urology, Director of the Michigan Center for Translational Pathology in the Medical School, a Howard Hughes Medical Institute investigator, and American Cancer Society Research Professor.

Dr. Chinnaiyan is an expert in the clinical care of patients with cancers, particularly prostate cancer. In the laboratory, he is using

functional genomic, proteomic, and bioinformatics approaches to study the genetic and molecular lesions that drive cancer progression.

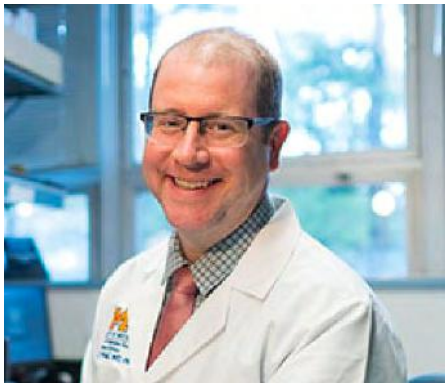
Arul Chinnaiyan, MD, PhD

Taubman Institute funds early-detection COVID study that uses wearable devices

In June, early in the wake of the pandemic as new epidemiological data were emerging, a concern shared by healthcare workers (HCWs) was the potential to transmit virus without any warning signs. A critical issue is whether early detection, especially of infection before obvious symptoms, can prevent "pre-symptomatic transmission" and stop further spread.

Emerging Scholar Sung Won Choi, MD, MS, and Muneesh Tewari, MD, PhD,

who are HCWs themselves, designed a study to recruit U-M HCWs that asks whether wearable devices, taking heart rate, body temperature, and other measurements, can pick up infection before symptoms appear. The study focused on HCWs as they are at risk for infection due to potential exposure to COVID-19 patients, which will allow their research team to determine the prevalence of pre-symptomatic infection in this population.



Daniel Wahl, MD, PhD

Taubman Institute boosts new approach to treating aggressive brain tumors

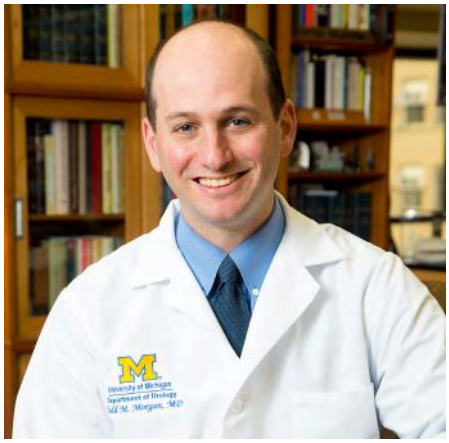
Daniel Wahl, MD, PhD, a radiation oncologist, says an existing FDA-approved drug used to prevent organ transplant rejection may make radiation therapy more effective for glioblastoma patients by targeting a critical metabolic pathway and disrupting its ability to repair the tumor's DNA damage caused by radiation.

Dr. Wahl, the institute's William Parfet Emerging Scholar, and co-author Yoshie Umemura, MD, an assistant professor of neurology, have launched a research study in human patients based on the team's research.

"Radiation therapy is a key treatment for nearly every patient with glioblastoma, and resistance to radiation leads to a recurrence of the cancer. Finding new ways to overcome this resistance could help improve outcomes for many patients," says Dr. Wahl.

Post-surgery genetic testing for prostate cancer patients

Taubman Emerging Scholar Todd Morgan, MD, has reported preliminary results from a study that involves testing tumor tissue removed from patients with prostate cancer. His team performed a randomized trial across 12 sites in the state of Michigan, seeking to understand whether genomic testing after prostatectomy impacts subsequent use of radiation and/or hormone therapy. The study found that a Decipher test – a commercially available test that grades tumor tissue at the genetic level -- did lead to increased use of adjuvant radiation in patients with high Decipher scores. Ultimately, this study will be able to help determine whether this testing and treatment leads to lower rates of recurrence.



Todd Morgan, MD

WEBINARS

Taubman Healthy You Conversations

As a community of biomedical researchers who also are for patients in the clinics, Taubman Scholars are at the vanguard of new discovery about disease origin and effective treatment.

In 2020, we launched Taubman Healthy You Conversations, a webinar that translates the latest knowledge and findings into lay-friendly presentations. Members of the general public as well as the entire U-M community are invited to attend these free, educational presentations.

Dr. Burant moderates the one-hour Zoom sessions, which include live question-and-answer periods with the presenting scholar.

Healthy You topics range from the science of addition to the treatment of autoimmune skin disorders to a primer on breast cancer variations and treatment.

View past webinars at TaubmanInstitute.org/youtube.

Institute Director

Charles F. Burant, MD, PhD
ENDOCRINOLOGY

Founding Scholars

Eva L. Feldman, MD, PhD
NEUROLOGY

Valerie P. Opipari, MD
PEDIATRICS

David J. Pinsky, MD
CARDIOLOGY

Yehoash Raphael, PhD
OTOLARYNGOLOGY

Max S. Wicha, MD
ONCOLOGY

Taubman Scholars

John Carethers, MD
GASTROENTEROLOGY

Arul Chinnaiyan, MD, PhD
PATHOLOGY

Kathleen Collins, MD, PhD
IMMUNOLOGY

Thomas Gardner, MD, MS
OPHTHALMOLOGY

David Ginsburg, MD
HUMAN GENETICS

Lynn Henry, MD, PhD
ONCOLOGY

Theodore Lawrence, MD, PhD
RADIATION ONCOLOGY

Vibha Lama, MD, MS
PULMONOLOGY

Donna Martin, MD, PhD
HUMAN GENETICS, PEDIATRICS

Jack Parent, MD
NEUROLOGY

Henry Paulson, MD, PhD
NEUROLOGY

Pavan Reddy, MD
HEMATOLOGY/ ONCOLOGY

Srijan Sen, MD, PhD
PSYCHIATRY

Emerging Scholars

Sami Barmada, MD, PhD

NEUROLOGY

Danto Family Foundation Emerging Scholar

Asheesh Bedi, MD

ORTHOPEDIC SURGERY

Frances and Kenneth Eisenberg Emerging Scholar

Sung Won Choi, MD, MS

PEDIATRIC HEMATOLOGY/ ONCOLOGY

Edith Briskin/ SKS Foundation Emerging Scholar

Katherine Gallagher, MD

VASCULAR SURGERY

Friends of Judy and Alfred Taubman Emerging Scholar

Sascha Goonewardena, MD

CARDIOLOGY

Frances and Kenneth Eisenberg Emerging Scholar

Johann Gudjonsson, MD, PhD

DERMATOLOGY

Frances and Kenneth Eisenberg Emerging Scholar

Michelle Kahlenberg, MD, PhD

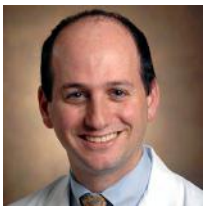
RHEUMATOLOGY

William U. Parfet Emerging Scholar

Karen McLean, MD, PhD

OBSTETRICS AND GYNECOLOGY

Frances and Kenneth Eisenberg Emerging Scholar



Todd Morgan, MD

UROLOGY

Taubman Institute Emerging Scholar

Jonathan Morrow, MD, PhD

PSYCHIATRY

Frances and Kenneth Eisenberg Emerging Scholar

Erika Newman, MD

PEDIATRIC SURGERY

Edith Briskin/ SKS Foundation Emerging Scholar

Parag Patil, MD, PhD

NEUROLOGICAL SURGERY

Young Friends of the Taubman Institute Emerging Scholar

Rajesh Rao, MD

OPHTHALMOLOGY

Frances and Kenneth Eisenberg Emerging Scholar

Kanakadurga Singer, MD, MA

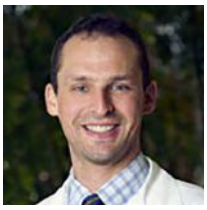
PEDIATRIC ENDOCRINOLOGY

Edith Briskin/ SKS Foundation Emerging Scholar

Corey Speers, MD, PhD

RADIATION ONCOLOGY

Frances and Kenneth Eisenberg Emerging Scholar



Scott Tomlins, MD, PhD

PATHOLOGY

A. Alfred Taubman Emerging Scholar

Scott Van Epps, MD, PhD

EMERGENCY MEDICINE

Leslie H. and Abigail S. Wexner Emerging Scholar

Sriram Venneti, MD, PhD

NEUROPATHOLOGY

Julie Reyes Taubman Emerging Scholar

Scott Visovatti, MD

CARDIOLOGY

Thomas G. Ruth Emerging Scholar

Daniel Wahl, MD, PhD

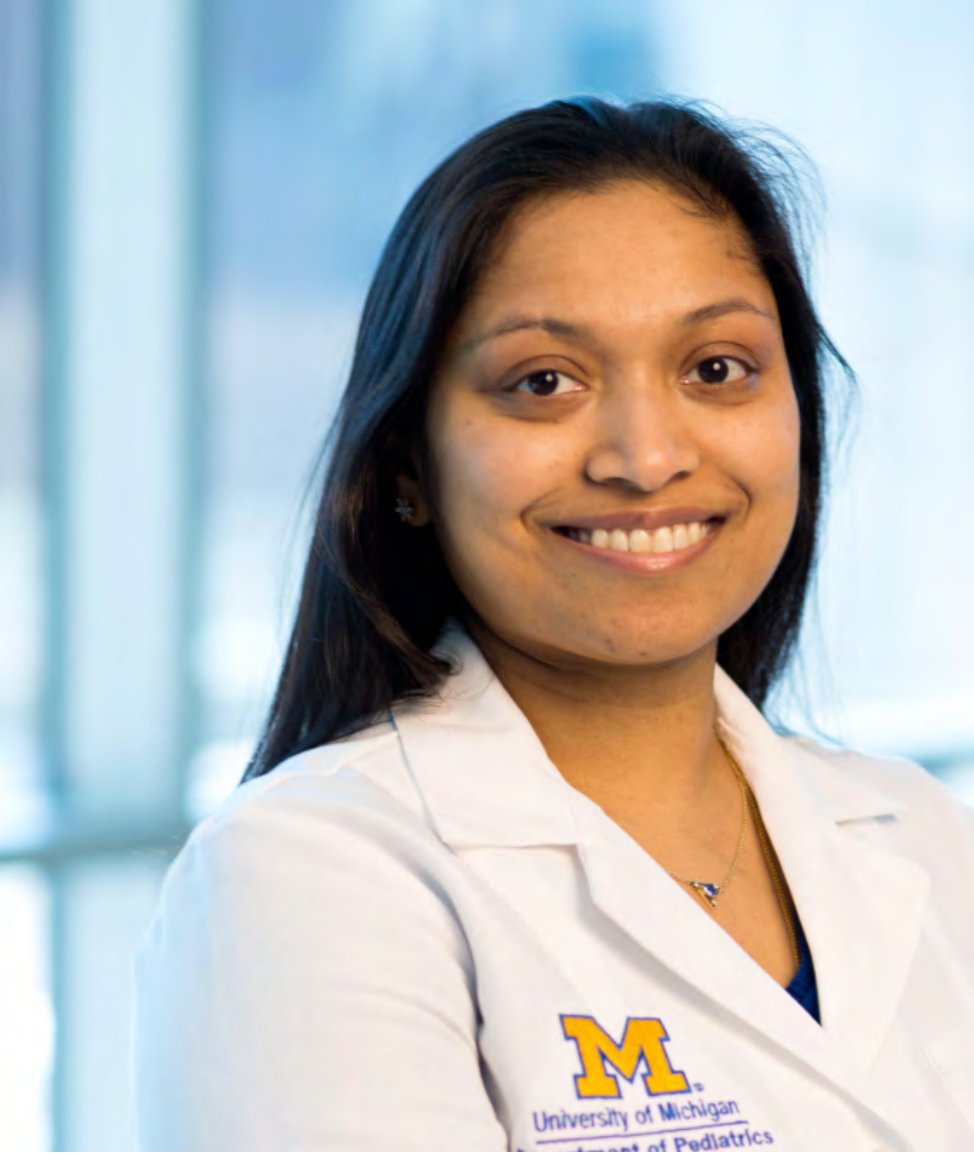
RADIATION ONCOLOGY

William U. Parfet Emerging Scholar

Brendon Watson, MD, PhD

PSYCHIATRY

Frances and Kenneth Eisenberg Emerging Scholar



Dr. Singer studies the relationship between obesity, inflammation and disease. Since becoming an Emerging Scholar, she has continued numerous research studies on the role of obesity as well as a clinical study of obesity and inflammation in children. She has been promoted to associate professor at the University of Michigan Medical School, and serves as Associate Director for the Graduate Program in Immunology and a Physician Advisor in Faculty Development. In 2020, Dr. Singer was installed as the inaugural Valerie Castle Opipari Professor of Pediatrics.

BEING SELECTED FOR THE EMERGING SCHOLAR PROGRAM HAS HAD AMAZING EFFECTS ON MY CAREER.

Funding for my research at a time that was critical for developing my lab helped fuel new areas of translational work and allowed me to start new collaborations. Building a relationship with my donor truly motivated me to continue my research even with the difficulties of funding and rejections, teaching me about true resilience. And the support of the amazing cohort of senior and emerging Taubman Scholars has provided a mentorship community for my scientific and career development.

KANAKADURGA SINGER, MD, MA
Associate Professor, Department of Pediatrics – Division of Pediatric Endocrinology
Valerie Castle Opipari, MD Professor of Pediatrics
Edith Briskin / SKS Foundation Emerging Scholar

Scientific Advisory Board

Dr. George Poste, Chair
Dr. Poste is Chief Scientist, Complex Adaptive Systems Initiative (CASI), Regents' Professor and Del E. Webb Chair in Health Innovation at Arizona State University. This program links expertise across the university in research on synthetic biology, ubiquitous sensing and healthcare informatics for personalized medicine. Dr. Poste founded the Biodesign Institute at ASU and served as Director for 2003 to 2009.

Atul Butte, MD, PhD
Atul Butte, MD, PhD is the Priscilla Chan and Mark Zuckerberg Distinguished Professor and inaugural Director of the Bakar Computational Health Sciences Institute at the University of California, San Francisco (UCSF). Dr. Butte is also the Chief Data Scientist for the University of California Health System.

Richard DiMarchi, PhD
Dr. DiMarchi's contribution in chemistry and related sciences consists of nearly four decades of work in academics, the pharmaceutical industry and biotechnology. He is a Distinguished Professor of Biochemistry and Gill Chair in Biomolecular Sciences at Indiana University. He is a co-founder of Ambrx, Inc., Marcadia Biotech, Assembly Biosciences, Calibrium, MB2 and MBX biotechnology companies.

Kevin B. Johnson, MD, MS
Kevin B. Johnson, MD, MS is the Penn Integrates Knowledge University Professor, Vice President of Applied Infomatics and a professor of pediatrics at University of Pennsylvania Health System.

Theodora Ross, MD, PhD
Theodora Ross, MD, PhD, holds the Jeanne Ann Plitt Professorship in Breast Cancer Research and the H. Ben and Isabelle T. Decherd Chair in Internal Medicine, in Honor of Henry M. Winans, Sr., MD at UT Southwestern Medical Center. She specializes in oncology and cancer genetics.

Promotions

NAME	PROMOTED TO
Karen McLean	Associate Professor, Obstetrics & Gynecology
Corey Speers	Associate Professor, Radiation Oncology
Jack M. Parent	Research Professor, Neuroscience
Peter Todd	Professor, Neurology
Brian Emmer	Assistant Professor, Internal Medicine
Jason Knight	Associate Professor, Rheumatology
Sami Barmada	Associate Professor, Neurology
Johann Gudjonsson	Professor, Dermatology
Amy Rothberg	Clinical Professor, Metabolism, Endocrinology & Diabetes
Kankadurga Singer	Associate Professor, Pediatric Endocrinology
Jacqueline Jeruss	Professor, GSA Administration
Todd Morgan	Professor, Urology
Jonathan Morrow	Associate Professor, Psychiatry
Srijan Sen	Research Professor, Neuroscience; Professor, Psychiatry
Sriram Venneti	Associate Professor, Pathology
Rajesh Rao	Associate Professor, Opthamology & Visual Science

What is a physician-researcher and why do we need more of them?

Physician-investigators are the source of myriad biomedical breakthroughs, thanks to the unique insight they bring from patient bedside to the laboratory bench. Supporting these clincian-scientists, whose ranks are dwindling, is the mission of the Taubman Institute.

As a sponsor of the 2021 TedXUofM event, the TI had the opportunity to present this video discussion about the urgent need to nurture the MD/PhDs of tomorrow.

Visit TaubmanInstitute.org/YouTube to view the talk featuring Taubman Institute Director Charles F. Burant, MD, PhD, and Taubman Scholar Kathleen Collins, MD, PhD, the director of the University of Michigan's Medical Scientist Training Program.

TAUBMAN INSTITUTE
MICHIGAN MEDICINE

6300 Brehm, 1000 Wall Street
Ann Arbor MI 48105-5714

To make a gift or subscribe to our e-newsletter, visit TaubmanInstitute.org.

To discuss giving opportunities, contact Assistant Director of Development Allyson Mlynarek at (810) 844-6132 or adoan@med.umich.edu.

Follow us on Twitter @TaubmanInstitute

TAUBMAN INSTITUTE
MICHIGAN MEDICINE