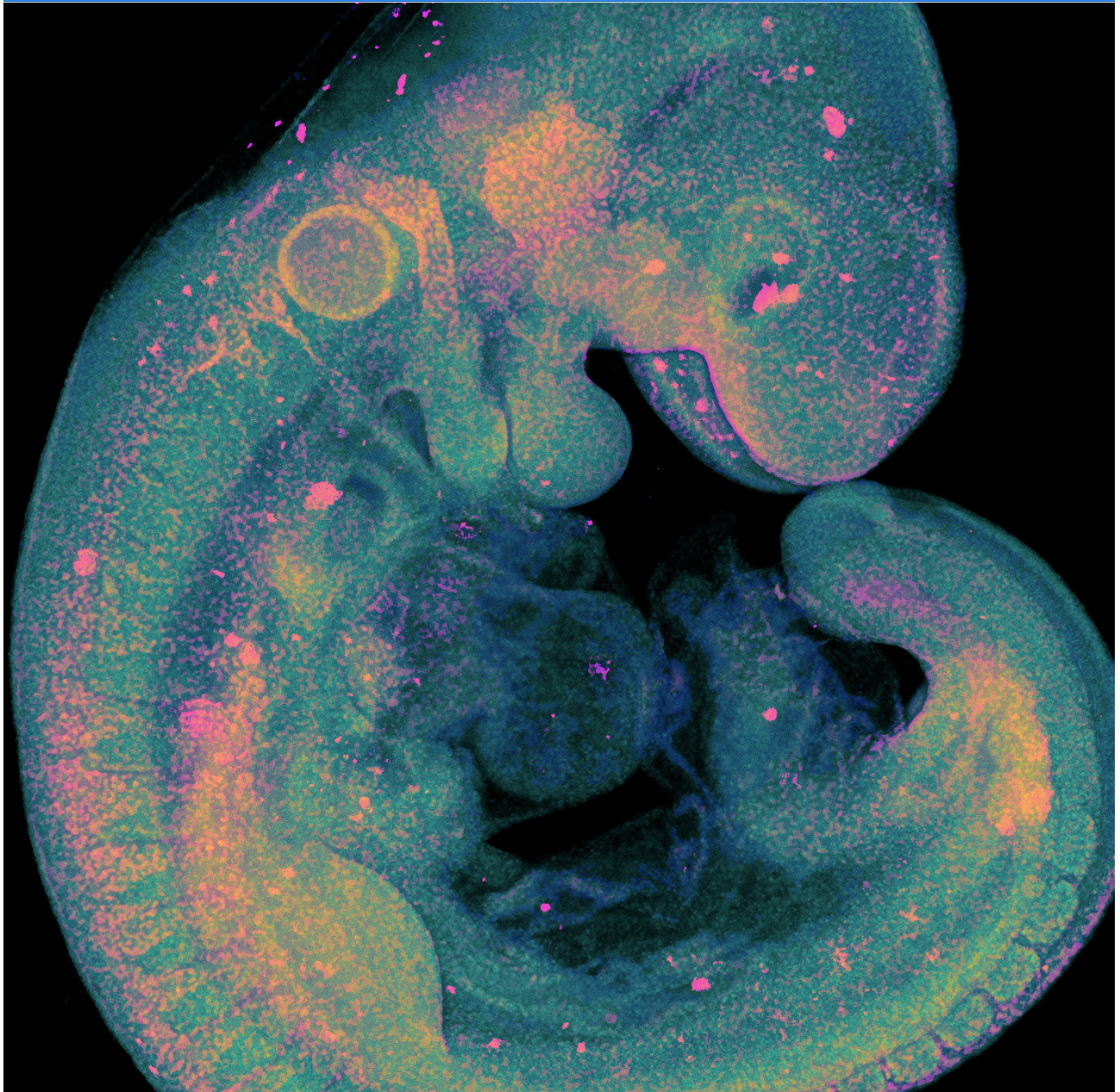


2020 Annual Research Report

Department of Pediatrics

Baylor College of Medicine



Dr. Naomi Tjaden, a resident in the Baylor/Texas Children's Hospital Physician Scientist Program, was our cover art winner for the Pediatrics Research Symposium of 2020. Her image of the developing nervous system of a mouse embryo.

Dear Colleagues,

On behalf of research leadership, it is a great pleasure to present to you our 2020 Annual Research Report for the Department of Pediatrics. From the beginning of the COVID-19 pandemic, 2020 brought with it many changes, challenges, and impacts to our research mission. Despite shutdowns and setbacks, our faculty and staff demonstrated resilience and determination, as proven by our accomplishments. We had our highest year of publications and grant submissions to date, and despite a slight drop from 4 to 5 in the Blue Ridge Report rankings, we saw an increase of ~\$5 million in NIH funding from the year prior. While the Blue Ridge rankings only focus on quantity of NIH dollars brought into the Departments of Pediatrics, I wish to focus on the quality and impact of our research, which is priceless.

I am consistently in awe of our research faculty, trainees, and staff. The breadth and depth of clinical, basic science, and translational research across the department is impressive and exciting. I thoroughly enjoy hearing your ideas, celebrating your research successes, and witnessing the outcomes of your enduring intellectual curiosity on the lives of children. We have so much to be proud of as a department. With our welcoming Dr. Catherine Gordon as our new Chair, I have no doubt our research mission will continue to grow and flourish. I look forward to another productive and fruitful year ahead for 2021 and beyond.



Finally, I wish to acknowledge our interim chair, Dr. Gordon Schutze, for his incredible support and dedication to ensuring a bright future for our research mission. We are so grateful for his unwavering leadership during a challenging time. I also want to thank my Associate Vice Chairs, Drs. Lisa Bomgaars and Katherine King, for all of their hard work serving the department, as well as our research leadership and administrative teams at both Baylor College of Medicine and Texas Children's Hospital. Without doubt, they are the best of the best.

Kindest regards,

Kristy O. Murray, DVM, PhD

Vice-Chair for Research & Professor of Pediatrics, Dept. of Pediatrics
Director, Texas Children's Hospital William T. Shearer Center for Human Immunobiology
Assistant Dean of Faculty and Academic Development, National School of Tropical Medicine



Dear Faculty, Staff, Trainees, and Other Research Stakeholders,

I am delighted as the new Chair of Pediatrics at Baylor College of Medicine and Pediatrician-in-Chief at Texas Children's Hospital to write this introductory message for our research annual report. The innovative research and diverse scientific community here is one of the most exciting aspects of my new position. I look forward to supporting the ongoing discovery efforts, participating as a clinical scientist myself in this outstanding community, and attracting new team members in the months ahead.

I sincerely appreciate our research leadership team's efforts in compiling our department's metrics and accomplishments to present in this report. I wish to thank Drs. Kristy Murray (Vice Chair for Research), Lisa Bomgaars (Associate Vice Chair for Clinical Research and Medical Director of the Research Resources Office) and Katherine King (Associate Vice Chair for Basic and Translational Research) for their leadership and commitment to the Department. We are all grateful for their dedication and support of our trainees, faculty, and research staff.

I look forward to getting to know all of you in the coming years. Thank you for your interest in our department's ongoing work and achievements.

Most appreciatively,

A handwritten signature in dark ink, appearing to read "C. Gordon".

Catherine M. Gordon, MD, MS

J.S. Abercrombie Professor and Chair
Ralph D. Feigin Chair
Pediatrician-in-Chief

Research Leadership Teams

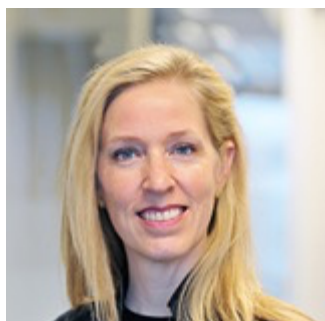
Baylor College of Medicine, Department of Pediatrics



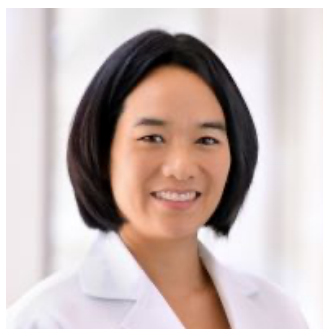
Catherine Gordon, MD
Chair and Pediatrician-in-Chief



Kristy Murray, DVM, PhD
Vice Chair for Research



Lisa Bomgaars, MD, MS
Associate Vice Chair for Research,
Clinical Research
Medical Director, RRO



Katherine King, MD, PhD
Associate Vice Chair for Research,
Basic and Translational Science

Texas Children's Hospital, Research Administration



Tabitha Rice
Senior Vice President

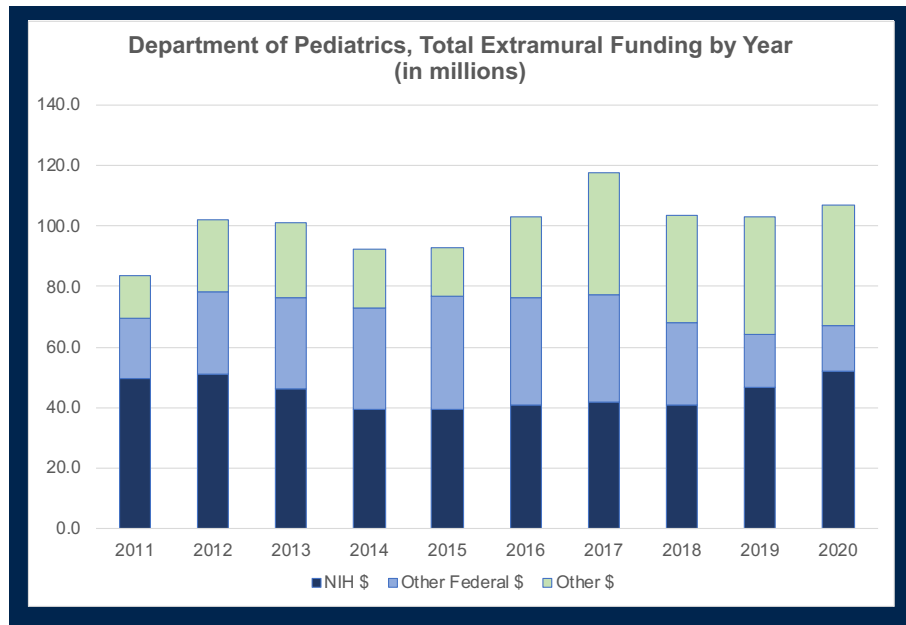


Paige Schulz
Assistant Vice President

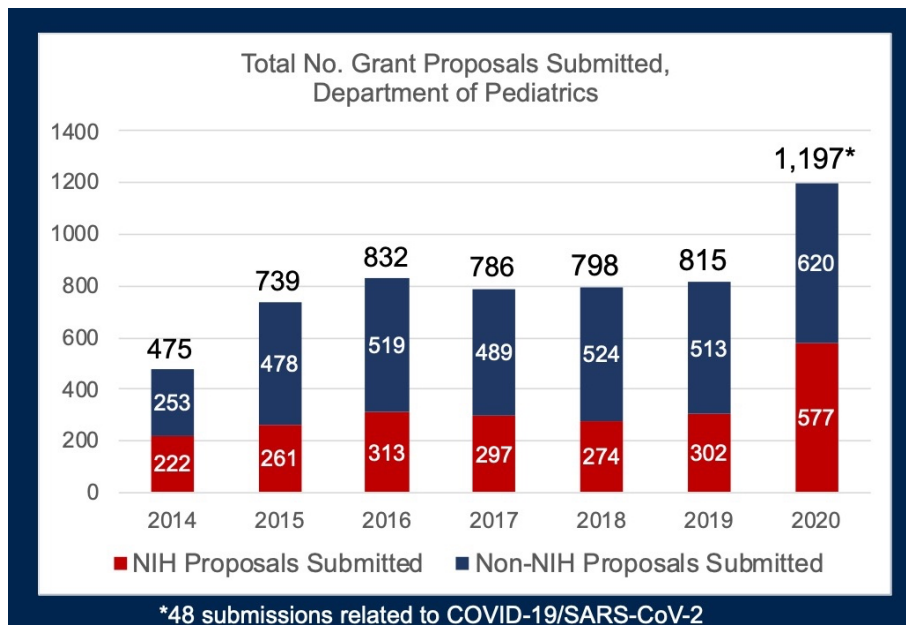
Research Metrics, by the Numbers

Department of Pediatrics

\$106 million in Extramural Funding

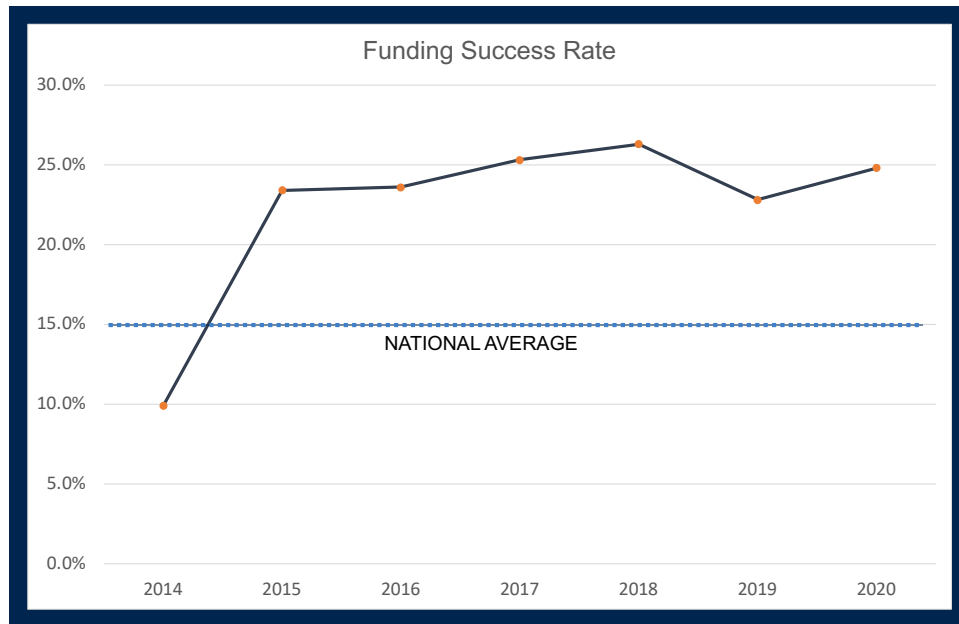


Increases in proposal submissions and success rates since the inception of the Junior Faculty Research Development Program/Research Advancement Program in 2015.

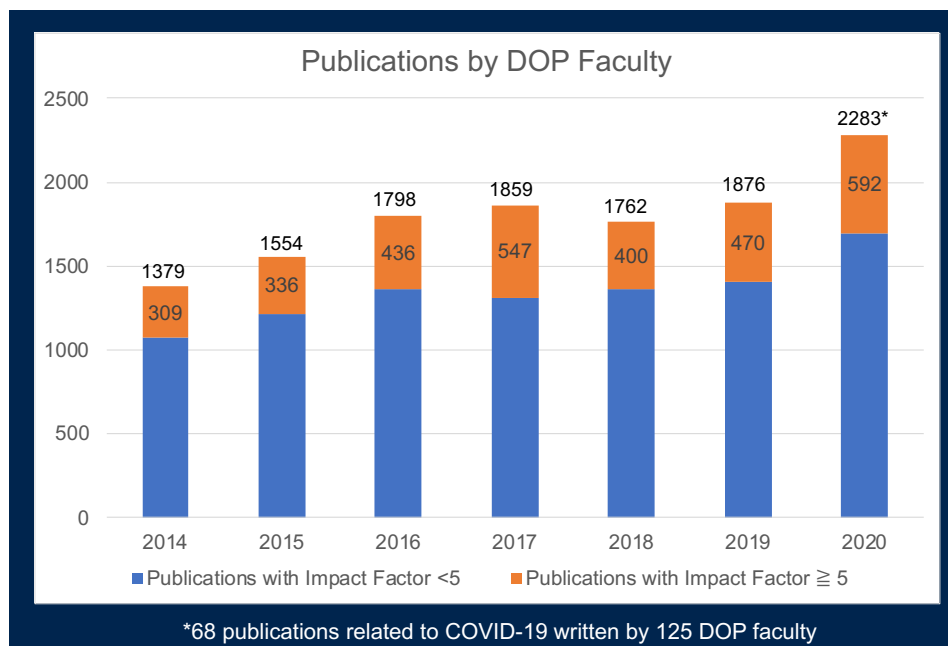


In 2020, 363 faculty submitted proposals, with an average of three submissions per faculty member. With 389 faculty in the department with dedicated research effort in their CART model, 93% submitted grant proposals in 2020.

Increase in funding success rates over time in the Department of Pediatrics, 2014 - 2020.



Publications by the DOP faculty over time.



In addition to grant proposal productivity and funding success, we have also seen improved productivity and quality of research publications from our faculty. We have seen an increase to ~1,800 publications each year, with around a quarter published in journals with impact factors ≥ 5 (Fig. 5).

Research Accomplishments for 2020

We would like to acknowledge those faculty within the department who have been successful in achieving extramural support. Below are the names of those faculty who brought in over \$500k and over \$1 million in extramural funding over the past year. Congratulations to each of you on your success.

Investigators with > \$2 million in extramural funding in 2020*:		
BIER, DENNIS HECZEY, ANDRAS HESLOP, HELEN HOTEZ, PETER	METELITSA, LEONID MOORTHY, BHAGAVATULA MURRAY, KRISTY PLON, SHARON	RABIN, KAREN ROONEY, CLIONA SCHEURER, MICHAEL SHULMAN, ROBERT

*Brought into the Department of Pediatrics

Investigators with > \$1 million - <\$2 million in extramural funding in 2020*:		
AHMED, SAEED BOOM, JULIE BOTTAZZI, MARIA DIAZ, ROSA GEE, ADRIAN GOODELL, MARGARET	LEE, HYUN-KYOUNG LINGAPPAN, KRITHIKA LUPO, PHILIP MACK, STEPHEN MANDALAKAS, ANNA MONTEALEGRE, JANE	SHEN, LANLAN SUTER, BERNHARD SWANN, JOHN XU, YONG

*Brought into the Department of Pediatrics

Investigators with \$500k - <\$1 million in extramural funding in 2020*:		
BLANEY, SUSAN CHAO, HSIAO-TUAN DAVE, JAYNA DAVIS, CARLA DAVIS, TERESA DINARDO, ANDREW FLANAGAN, JONATHAN HILL, RYAN HILLIARD, MARISA	KAHALLEY, LISA KIM, MARIA KING, KATHERINE LOPEZ, JOB MALETIC-SAVATIC, MIRJANA O'CONNOR, TERESIA PARIHAR, ROBIN PAUL, MARY POMPEII, LISA	REDONDO, MARIA RUIZ, FADEL RUSIN, CRAIG SHEEHAN, VIVIEN SCHNEIDER, BENJAMIN SUMAZIN, PAVEL WATERLAND, ROBERT

*Brought into the Department of Pediatrics.

Beginning on **page 50**, you will find more detailed tables listing all of our faculty with (1) highly competitive, large-scale federal grants and contracts, (2) NIH R-series grants, (3) research training grants, (4) other government (both state and federal) grants and contracts, (5) foundation and non-profit awards, and (6) industry-sponsored research funding.

BLUE RIDGE RANKINGS

In 2019, we moved up in the Blue Ridge Institute for Medical Research rankings from #7 to #4 among Departments of Pediatrics in NIH research funding. In 2020, we dropped down one rank to #5; however, our funding increased by ~\$5 million. Information and data can be found at www.brimr.org.

2020 Rankings of the Departments of Pediatrics from the BLUE RIDGE INSTITUTE for MEDICAL RESEARCH		BRIMR.ORG
Rank	Name	Pediatrics
1	EMORY UNIVERSITY	\$97,142,316
2	DUKE UNIVERSITY	\$74,805,966
3	UNIVERSITY OF COLORADO DENVER	\$57,243,484
4	VANDERBILT UNIVERSITY	\$46,037,716
5	BAYLOR COLLEGE OF MEDICINE	\$44,371,037
6	UNIVERSITY OF CALIFORNIA SAN DIEGO	\$41,767,629
7	INDIANA UNIV-PURDUE UNIV INDIANAPOLIS	\$32,413,945
8	UNIVERSITY OF MINNESOTA	\$30,562,004
9	UNIVERSITY OF CALIFORNIA LOS ANGELES	\$29,061,064
10	WASHINGTON UNIVERSITY ST LOUIS	\$27,999,836

2019 Rankings of Departments of Pediatrics from the BLUE RIDGE INSTITUTE for MEDICAL RESEARCH		BRIMR.ORG
Rank	Name	Pediatrics
1	DUKE UNIVERSITY	\$55,619,016
2	UNIVERSITY OF COLORADO DENVER	\$47,071,079
3	EMORY UNIVERSITY	\$45,792,606
4	BAYLOR COLLEGE OF MEDICINE	\$39,369,396
5	UNIVERSITY OF CALIFORNIA, SAN DIEGO	\$35,888,543
6	VANDERBILT UNIVERSITY	\$30,231,127
7	INDIANA UNIV-PURDUE UNIV AT INDIANAPOLIS	\$29,288,834
8	UNIVERSITY OF MINNESOTA	\$26,043,959
9	JOHNS HOPKINS UNIVERSITY	\$25,956,592
10	UNIVERSITY OF WISCONSIN-MADISON	\$23,751,426

2018 Rankings of Departments of Pediatrics from the BLUE RIDGE INSTITUTE for MEDICAL RESEARCH		BRIMR.ORG
Rank	Name	Pediatrics
1	UNIVERSITY OF COLORADO DENVER	\$53,735,074
2	DUKE UNIVERSITY	\$39,483,376
3	VANDERBILT UNIVERSITY	\$35,953,851
4	EMORY UNIVERSITY	\$35,698,192
5	JOHNS HOPKINS UNIVERSITY	\$29,559,821
6	UNIVERSITY OF CALIFORNIA, SAN DIEGO	\$27,924,053
7	BAYLOR COLLEGE OF MEDICINE	\$27,807,269
8	UNIVERSITY OF MINNESOTA	\$27,497,032
9	INDIANA UNIV-PURDUE UNIV AT INDIANAPOLIS	\$25,919,145
10	CASE WESTERN RESERVE UNIVERSITY	\$24,359,967

NIH Research Career Development Awardees

Over the past five years, we have greatly increased the number of early career research faculty within the DOP who have successfully been funded with NIH K awards. This is an incredible accomplishment. Congratulations to each of you!

2020 NIH Career Development (K) Awardees			
K23 Patient-oriented Research	K08 Clinical Scientist Research	K01 Research Scientist	K07 Academic Leadership
Andrew Dinardo Sanjiv Harpavat John Hollier Keila Lopez Christina Miyake Christopher Rhee Venée Tubman	Jonathan Davies Fong Lam Geoffrey Preidis Jill Weatherhead	Alex Kay Amy Sanyahumbi Chunmei Wang	Austin Brown

Spotlight on Diversity and Equity in Research

Written by Dr. Kristy Murray, Emily Schaffer, Bettina Siegel, and Catherine Johnson

As a department, we pride ourselves in our progress over the years to enhance diversity among our clinical trainees and faculty. We wholeheartedly agree with NIH's Notice of Interest on Diversity: *"Scientists and trainees from diverse backgrounds and life experiences bring different perspectives, creativity, and individual enterprise to address complex scientific problems. There are many benefits that flow from a diverse NIH-supported scientific workforce, including: fostering scientific innovation, enhancing global competitiveness, contributing to robust learning environments, improving the quality of the research, advancing the likelihood that underserved or health disparity populations participate in, and benefit from health research, and enhancing public trust."*

In 2018, **Dr. Lara Shekerdemian** created what has now become the the Equity Committee of the Department of Pediatrics (Pediatrics Equity Advancement Committee; PEACe) to address concerns about equity, diversity, and inclusion. PEACe was formed with the mission of promoting the wellness and careers of all physicians and trainees irrespective of their sex, race/ethnicity, or gender orientation. The mission is to foster leadership and professional development, as well as research, education, clinical care and advocacy in Pediatrics. PEACe aims to remove disparities for promotion to leadership positions, improve communication, support research and educational endeavors, and support mentoring and advocacy for all. The goal is to ensure a dynamic roadmap of progress to overcome traditional roles and gender disparity by investing effort in the following areas: Workforce, Professional Development, Research and Education/Advocacy.

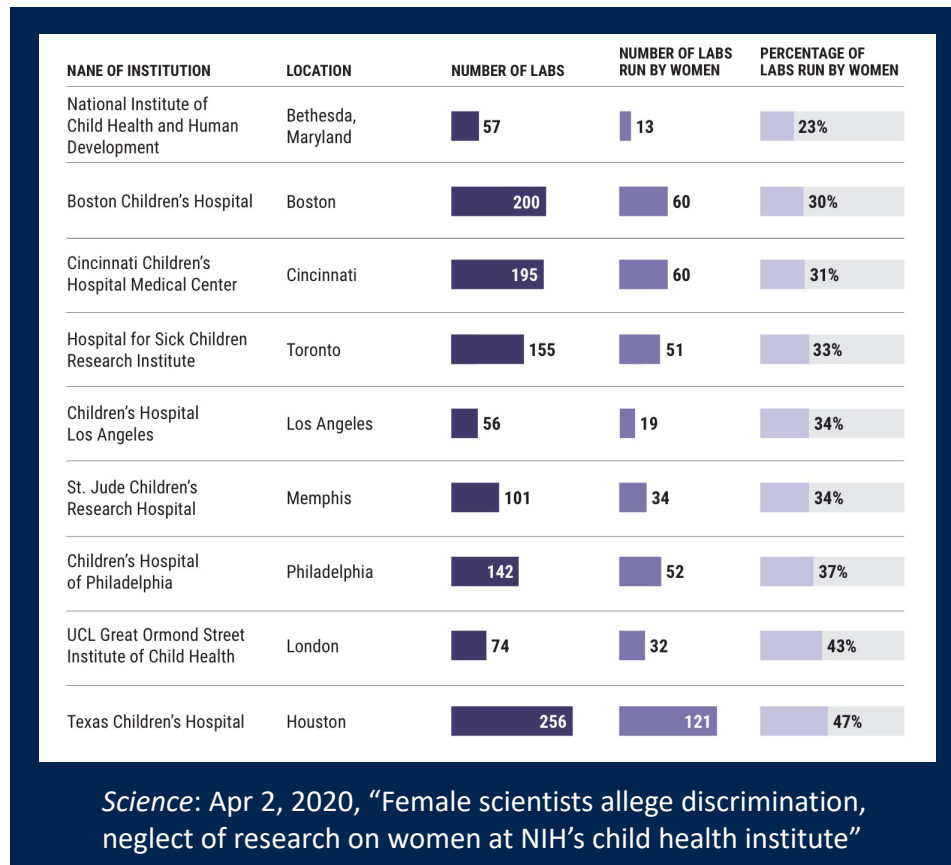
Dr. Catherine Gordon, upon her arrival in October 2021, has named **Dr. Susan Gillespie** as the inaugural Vice Chair for Diversity, Equity and Inclusion (DEI) for the Department of Pediatrics. Dr. Gillespie will be working collaboratively with PEACe, as well as a DEI Executive Steering Committee whose purpose to serve in an advisory capacity to the Chair.

Gender Equity in the DOP at TCH

In general, women dominate the junior faculty ranks but are underrepresented at the senior rank of Professor. In our department, we have made strong strides toward gender equity, with 65% of our faculty being women (see table below). Women also comprise a large percentage of leadership positions within the department, with 75% appointed as Vice Chairs, and 45% appointed as Section Chiefs. While we are now trending towards higher levels of recruitment of women junior faculty (78% and 69% at the Instructor and Assistant Professor levels, respectively), we continue to see underrepresentation at the Professor level (39%).

RANK, DEPT OF PEDIATRICS	TOTAL	Female	Male	% Female
INSTRUCTOR	178	139	39	78%
ASSISTANT PROFESSOR	627	430	197	69%
ASSOCIATE PROFESSOR	192	109	83	57%
PROFESSOR / SR FACULTY	103	40	63	39%
SECTION CHIEFS	29	13	16	45%
VICE CHAIRS	12	9	3	75%
TOTAL DOP FACULTY	1,100	718	382	65%

In 2019, the journal *Science* reached out to Texas Children’s Hospital and requested data on the breakdown of wet lab principal investigators by gender. The percentage of labs run by women across the world’s largest children’s hospitals was then published in an article on gender equity among lab-based researchers. Texas Children’s Hospital had the largest number of research labs and ranked the most equitable, with 47% of our labs run by women.



Racial/Ethnic Diversity in the DOP at TCH

Houston is the most diverse city in the nation. While we are growing stronger in our gender equity, we still have work to do to improve our trainee and faculty population of underrepresented minorities (URMS) with the goal of having our racial/ethnic diversity more accurately reflect our community and patient population here in Houston. In the tables below, we can see some improvements in representation of URMs among our residents and fellows; however, we are still underrepresented among all categories when compared to the Houston 2019 Census.

Category	Total	White, Non-Hispanic	Hispanic	Black	Asian/Asian Indian	Native American	Two or more races
Residents	171	86 (50%)	22 (13%)	20 (12%)	33 (19%)	0 (0%)	10 (6%)
Clinical Fellows	184	90 (49%)	20 (11%)	14 (8%)	54 (29%)	2 (1%)	6 (3%)
Faculty	947	525 (55%)	94 (10%)	60 (6%)	231 (24%)	2 (<1%)	37 (4%)
Houston census	N/A	25%	44%	23%	7%	<1%	2%

We would like to recognize and celebrate some of our URM research leaders in the DOP:



Carla Davis, MD

Dr. Carla M. Davis is the Director of the Texas Children's Hospital Food Allergy Program and a Professor in the Immunology, Allergy and Retrovirology Division of the Department of Pediatrics at Baylor College of Medicine. She credits her parents—a nuclear physicist and a professor in chemistry and science education—for inspiring her interest in research.

Dr. Davis works tirelessly to prevent and treat food allergies. Her current projects include the development of immunotherapy treatments for food allergies, including oral immunotherapy regimens for tree nuts and seafood and the “peanut patch” (epicutaneous immunotherapy). She is also a principal investigator on the SUNBEAM Study—a twelve-center study that will establish a birth cohort to study the biological, genetic, and environmental factors that lead to the development of food allergies and atopic dermatitis—and the PARK Study—a trial designed to test whether treating children ages 2 to 3 who are at high risk of developing asthma with omalizumab will prevent the progression of, or reduce the severity of, their disease.

For Dr. Davis, improving quality of life for patients with food allergies is the driving force behind her passion for research: “Whenever we discover that a treatment is effective and tell patients about it, and then treat them with it—there’s nothing better than that.”

Rayne Rouce, MD

Dr. Rayne Rouce is physician-scientist and Assistant Professor in the Department of Pediatrics’ Hematology-Oncology Section and Associate Director of Community Engagement in the Office of Diversity, Equity and Inclusion at BCM. She treats pediatric leukemia and lymphoma patients at TCH’s Cancer Center, is a member of its Leukemia and Lymphoma service and, due to her cellular therapy expertise, of its Bone Marrow and Stem Cell Transplant Section. Her clinical and laboratory work focuses on using a patient’s own immune-boosting cells to best fight their particular cancer. “Most of my patients have cancer that hasn’t responded to traditional therapies,” she explains. “We’re often their last shot.”



While TCH has been “very supportive” during the pandemic—“they recognized that our lab *couldn’t* shut down, because patients’ lives depend on the work we do there”—COVID has shined a bright light on the inequities that are intrinsic in personalized medicine and translational research. “Families travel from all over the world and must stay near the hospital for weeks. That’s challenging enough without quarantine and travel restrictions, especially for families with one caretaker, multiple siblings, or elderly or disabled dependents, or who have inflexible jobs and significant financial stressors.” Dr. Rouce rejects the status quo, in which her research group’s groundbreaking, lifesaving work is more accessible to families of privilege. She therefore spends her virtually non-existent “spare time” amplifying her message—that we need to reexamine and fix the systemic inequities that make healthcare harder for under-represented minorities and lower-income families to access—at scientific conferences, as a Be the Match Foundation and American Society for Gene and Cell Therapy board member, with her colleagues, and to her students and trainees. “I finally feel like I’m at a point in my career where I’m not being dismissed as a Black woman when I talk about health disparities relevant to my field,” she says. “But I do look forward to the day when it won’t be necessary for me to speak up.”



John Hollier, MD

Dr. John Hollier can trace his passion for scientific research back to his undergraduate years at Xavier University of Louisiana. “I first encountered research opportunities in college,” he recalls, “and I truly fell in love with asking scientific questions and learning different methods to investigate them. I guess you could say I was bitten early by the research bug.” Now a pediatric gastroenterologist at Texas Children’s Hospital and an Assistant Professor at Baylor College of Medicine’s Department of Pediatrics, Dr. Hollier is focusing that passion on improving the lives of children who suffer from disorders of gut-brain interaction, a set of chronic abdominal pain conditions that can’t be diagnosed through lab testing or imaging studies.

Approximately 15 percent of kids and teenagers worldwide suffer from these disorders, such as irritable bowel syndrome, resulting in missed school days and diminished quality of life. Therapy that teaches the patient how to suppress pain symptoms is a highly effective option, but many families often encounter barriers like inadequate insurance or the inability to visit a therapist. A NIH K23 Career Development Award supports Dr. Hollier’s research to develop an app that can remotely deliver pre-recorded therapy sessions via a smartphone or other mobile device. After receiving “overwhelmingly positive” feedback from affected children and their caregivers, Dr. Hollier is refining his app prototype and plans to start a clinical pilot trial in 2022. “I’m truly thankful to Texas Children’s and Baylor College of Medicine for providing additional support in this endeavor,” he says. “I’m particularly grateful to the kids and teenagers who have helped us and to my mentors and collaborators for their input and support.”

Ashley Butler, PhD

Dr. Ashley Butler is a research psychologist at Texas Children’s Hospital and Associate Professor of Psychology in Baylor College of Medicine’s Department of Pediatrics. She works in research for two main reasons: (1) her graduate school mentors, who used research to drive better care for children and families, inspired her, and (2) she observed a lack of diversity not only amongst research psychologists, but in the research itself. “Not only were there few women and underrepresented minorities doing this work, but also few researchers focused on how we can improve care for underrepresented and underserved families,” she said.

Dr. Butler focuses her clinical-trial-based work on health disparities amongst children with diabetes and, since the pandemic began, young adults with mental health challenges. She is proud to work with a diverse team to recruit diverse subjects for her clinical trials, and thinks this approach is critically important given the trauma underrepresented minorities have experienced with research in this country. “Working with a team that includes doctors and researchers who look like them and speak their language matters to families,” Dr. Butler explained. “We have frequent outreach events where we ask families what *they* want and need—for example, hearing from a diabetes medical device rep who has overlooked their community—and try to deliver. Our Parent Advisory Board is so important. Health Equity research has shown that you need to give something back to communities to earn their partnership. Building trust is everything. Families who trust us are more likely to participate in our clinical trials and refer friends and neighbors to us. This is how we improve both health equity and quality of life for kids and families living with diabetes and mental health challenges.”



Juan Marini, DVM, PhD, MS

Dr. Juan Marini, an Associate Professor of Critical Care Medicine at Baylor College of Medicine, has devoted much of his research career to the study of amino acid metabolism, with a specific focus on arginine and its precursor, citrulline. Arginine is essential to human health, playing a critical role in protein synthesis, blood pressure maintenance, immunity, and cell differentiation.

Funded by a NIH R01 Research Project Grant, Dr. Marini is currently studying whether arginine supplementation could help reduce mortality from sepsis. “One of the things that happens during sepsis is arginine gets depleted and the heart starts pumping harder, affecting perfusion of the organs” he explains. “About 20 percent of kids die when it comes to sepsis, and the sooner you intervene, the higher the chances of survival. So the idea is to have a way to prevent arginine depletion very early on.” Through the Children’s Nutrition Research Center, Dr. Marini is also currently funded by the U.S. Department of Agriculture to study certain intestinal enzymes present only in newborn animals and humans, exploring their role in converting citrulline into arginine.

Dr Marini traces his interest in arginine to his initial training as ruminant nutritionist, in that the amino acid plays a central role in the unique urea cycle of ruminant animals. But his broader decision to pursue a career in research has deeper roots. “I guess it’s curiosity,” Dr. Marini says. “I’ve always been a tinkerer. I like to figure things out.”



Venée N. Tubman, MD, MMSc

Dr. Venée N. Tubman is Co-Director of the Sickle Cell Program at Texas Children’s Hospital and an Assistant Professor in the Hematology/Oncology Section of the Department of Pediatrics at Baylor College of Medicine.

Dr. Tubman’s love for science dates back to her childhood. She attended a magnet high school for science and technology and matriculated at Harvard University, where she majored in chemistry. Her junior year, an independent study project sparked an interest in sickle cell disease—one that quickly developed into a career-defining passion.

After Harvard, Dr. Tubman entered medical school at the University of Pennsylvania. During her final year there, away rotations on the Navajo Indian Reservation and in Botswana exposed her to the need for improving access to healthcare for underserved populations around the world. A trip to Guatemala during residency cemented her commitment to global health initiatives. These experiences culminated in a decision to travel to Liberia, where her family has deep roots, and volunteer her services as a doctor. Her work there resulted in the establishment of a local newborn screening program for sickle cell disease, which ultimately served as the blueprint for the Consortium on Newborn Screening in Africa, an initiative to improve outcomes for children with sickle cell disease in seven countries in sub-Saharan Africa.

In 2017, Dr. Tubman joined the faculty at BCM, a move that allowed her to take her already impressive career to the next level. In addition to her clinical work as Co-Director of the Sickle Cell Program at TCH, Dr. Tubman serves as Associate Director of Hematology for Global Hematology-Oncology Pediatric Excellence (Global HOPE). In 2019, she received the Chao Physician-Scientist Award, which provided interim funding for her career development grant proposal to examine the role of B lymphocyte deficiency in sickle cell disease. Her K23 grant was awarded in 2020. Dr. Tubman is also involved in multiple therapeutic trials and collaborates with colleagues from different departments to jumpstart clinical projects.

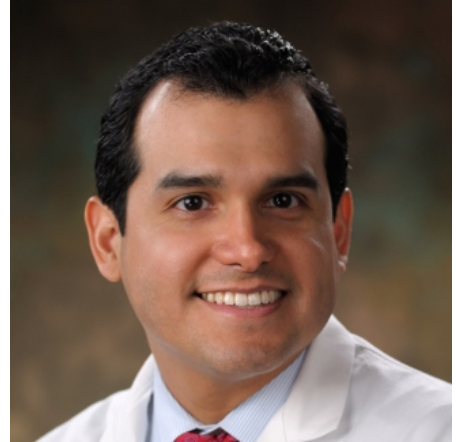
Dr. Tubman is grateful for the high level of support and mentorship offered to junior faculty at BCM, as well as its world-class core facilities—particularly the Center for Human Immunobiology, which she describes as an “amazing gift” for researchers.

Bruno Chumpitazi, MD, MPH

Dr. Bruno Chumpitazi is Director of the Neurogastroenterology and Motility Program at Texas Children's Hospital and an Associate Professor in the Gastroenterology Division of the Department of Pediatrics at Baylor College of Medicine. He received his BS from the University of Michigan and his MD/MPH from Tufts University School of Medicine. His original plan to be a clinical pediatric gastroenterologist was upended when he caught the research bug during his fellowship at Boston Children's Hospital. Dr. Chumpitazi's mentor at the time, Dr. Samuel Nurko, inspired a love for neurogastroenterology that has since defined his career.

Dr. Chumpitazi is passionate about helping children with gastrointestinal functional and motility disorders. His research interests center on understanding the relationship between diet and gastrointestinal symptoms in order to provide personalized therapies. By teaming with other investigators at BCM, his research group's NIH-funded research has focused on examining the role of gut microbiota and fermentable carbohydrates (sugars) in producing irritable bowel syndrome symptoms. He is co-principal investigator with Dr. Robert Shulman on a NIH-supported consortium study to advance the clinical understanding of pediatric gastroparesis.

Dr. Chumpitazi describes BCM as "...a fantastic place to do research, to work collaboratively within multidisciplinary teams, [and] to find people who are really interested in taking pediatric clinical science and translational science to another level."



Emergence of the COVID-19 Pandemic and Impact to Research

Written by Dr. Kristy Murray, Emily Schaffer, Bettina Siegel, and Catherine Johnson

2020 marked a year of drastic changes with the emergence of COVID-19 in March. The impact on research was both positive and negative. To reflect first on the latter, on March 19, leadership both at TCH and BCM initiated lockdowns in an effort to curb disease transmission and protect the health of both employees and patients. These lockdowns included closure of labs and clinical research studies. We also had to reduce census in the animal facilities in order to preserve personal protective equipment supplies, which at that time were becoming more and more difficult to find. The lockdowns did not have an end date, leading to severe concerns over the long-term impact on research productivity and sustainability.

Over the two-month period of lockdowns and lab closures, our faculty, trainees, and staff demonstrated their resiliency to persevere and even succeed. The time at home led to protected time to write, reflected in the spike in both the number of grant proposals submitted and manuscripts published, as seen on pages 6 and 7 of this report. We shifted to Zoom and Teams calls and continued collaborations. Most impressively, our faculty came together to address the pandemic through research. Multidisciplinary groups were created to understand COVID-19 and MIS-C in children, bringing together experts in rheumatology, immunology, cardiology, infectious diseases, critical care, oncology, hospital medicine, emergency medicine, and epidemiology. Observing the way our faculty came together to tackle this new health emergency was moving and impressive. We not only know how to persevere and adapt, but also how to come together and fight for the greater good of our hospital, our patients, and our community. We should all reflect on 2020 and be proud of our collective accomplishments.

There are several faculty we wish to spotlight who stepped up in different ways to fight the pandemic, from adapting our high containment BSL-3 research facilities to allow for faculty to conduct research on the virus itself, to clinical trials for treatment and vaccines, to surveillance for COVID-19 among our patients:

Shannon Ronca, PhD, MPH

The pandemic means that Dr. Shannon Ronca is doing exactly what she's been trained to do—but for higher stakes, and many more hours, than she likely imagined.

As an Assistant Professor of Tropical Medicine in the Department of Pediatrics and Director of the Biosafety Level-3 (BSL-3) Facility at Texas Children's, Dr. Ronca has been working overtime to support COVID-19 research. Because there are relatively few BSL-3 facilities (laboratories specially designed to accommodate high-risk pathogens), and because research involving live COVID-19 strains must be performed in a BSL-3 facility, "when everyone else was working from home, we were working double time...and that hasn't really stopped."

Dr. Ronca first began working at the BSL-3 as a postdoc with Dr. Kristy Murray, BCM's Vice-Chair for Research, Professor of Tropical Medicine, and Assistant Dean for Faculty and Academic Development at the National School of Tropical Medicine. With TCH's strong support and "Herculean efforts"—especially those of Kristen Parsons, now TCH's Director of Research Administration—the BSL-3 became a Core. Dr. Ronca assumed its leadership in March 2019.

"Although many of my colleagues were having to close their labs once COVID hit, we knew that the BSL-3 could really help people. There were a lot of investigators who weren't BSL-3 trained, but who could do great work on COVID-19 in our facility—like seeing how the virus interacts with the lungs or



works in a mouse model, or how it responds to vaccine. Plus, we were doing our own work on COVID pathogenesis post-infection, and knew that making the BSL-3 more accessible could attract collaborators.”

So, the BSL-3 remained open, and Dr. Ronca (1) developed a more robust training regimen to efficiently and safely teach scientists how to use the BSL-3, and (2) figured out how much implementing this training and opening the BSL-3 to others would cost. “We then created a ‘fee-for-service’ option that allowed scientists to ‘hire’ our already-trained staff—which, at first, was just me—to perform experiments for them, since BSL-3 training usually takes three to six months.” Scientists could also take the training course and then pay to use the BSL-3 to perform their own work.

Although she admits that creating and rolling out this training protocol, plus performing others’ experiments, was “very, very time consuming,” Dr. Ronca says that the groundbreaking COVID-19 research and new, long-term collaborations that sprang from the BSL-3’s expanded accessibility are worth it.

Word of the BSL-3’s new offerings spread quickly. “It started out as just me working in the facility and doing as much [training and scheduling scientists, and performing others’ experiments] as I could; now, we are a team of four.” Since the pandemic began, Dr. Ronca estimates that she and her team have trained 10 new BSL-3 users with several more in the queue.

“Now, we track progress and issue certificates of completion [for the BSL-3 training program]. It’d be great for a national or international organization to accredit scientists for completing our BSL-3 training. I’d especially love to offer a two- or three-week-long version of our training course that people could then take back to [their institutions].” Dr. Ronca dreams of TCH’s BSL-3 being a global hub for this training, thereby supporting safe high-risk pathogen work around the world.

“I did my PhD and MPH training at UTMB, which has one of the most robust biosafety training programs available. I love basic research *and* biosafety, and feel lucky to use both to figure out how preexisting Cores like ours can help end pandemics—and be ready if anything like this happens again,” she says.

In addition to brainstorming how to respond to the next pandemic, training scientists to use the BSL-3, and performing others’ experiments, Dr. Ronca is doing her own COVID-related research (geared toward discovering how to mitigate the virus’s effects) *and* continuing her work on arboviruses (insect-borne viruses), for which she regularly travels internationally. She feels that the dual-focus on both corona- and arboviruses is important because of their profound effects on public health. If only Dr. Ronca could find more time to sleep. “I can’t tell you the last time I worked less than a 60-80 hour week, to be honest,” she admits.

But, “the work is fun. I wouldn’t keep going at this rate if I didn’t love what I’m doing. There’s something about that problem solving—how can we use this facility to help everyone around us survive this pandemic?—that keeps me going. Plus, I get to meet all these great collaborators and hire a really cool and fun staff who are just as passionate as I am.”

How does she feel about the COVID-19 pandemic now?

“Well, I can look back and think about all the things that we as a state, nation, and world did wrong. We’ve come a long way, but a lot of things still concern me—like the many countries that still lack access to vaccine, or what wrench the next mutation will throw at us. That’s why we need to keep researching—I think I’ll be interested in this for a long time. And I really hope we can start seeing a true and constant decrease in cases so that we can start having a more relaxed experience around others.”

Perhaps Dr. Ronca’s most profound takeaway is that “COVID has reminded us that we work better when we work together. We came together as a global scientific community and amazing things happened. If we came together like this for other problems, I think we’d be a lot more successful.”



Maria Elena Bottazzi, PhD

To say that the pandemic has been a busy time for Dr. Maria Elena Bottazzi would be an understatement.

Dr. Bottazzi—Associate Dean of the National School of Tropical Medicine, Professor in the Department of Pediatrics and Molecular Virology and Microbiology, Chief of the Division of Pediatric Tropical Medicine, and Co-Director of Texas Children’s Hospital’s Center for Vaccine Development—began working on coronavirus vaccine development ten years ago.

She stresses that vaccine research and development “has always been an enormous team effort involving not only our own faculty, scientists, and staff from within the Center for Vaccine Development, but also a number of partners from institutions around the world.” The collaborative nature of Dr. Bottazzi’s work, and the global coming-

together of professionals to improve public health, is a major inspiration to her.

When her group was recruited to Texas Children’s and Baylor in 2011, they already had a decade of experience engaging global partners to advance vaccines that fight parasitic diseases. So, in 2010, when the NIH issued a call for scientists to develop vaccine prototypes against pathogens of pandemic importance, Dr. Bottazzi and her team were ready. They were particularly interested in focusing on coronaviruses and joined forces with virology experts from the New York Blood Center and University of Texas Medical Branch; together, they began working to advance vaccine prototypes against SARS and MERS.

“We responded to the NIH call because we knew that, together, we had all the necessary expertise and experience to perform the translational research needed to fashion a prototype vaccine with data that would make it suitable for transition into the clinic,” Dr. Bottazzi explains. “We were awarded a \$6.1M grant. Because of our track record in regulatory-enabling research and expertise in advancing other vaccines from the bench to the clinic, BCM/TCH were the primary awardees.”

The team was thrilled to meet its goals: they successfully manufactured a SARS vaccine prototype suitable for transition into the clinic. “But when we called the NIH to tell them we’d completed our work in 2016, they said that a SARS vaccine was no longer a priority. They suggested that we shift our efforts to develop a prototype vaccine for MERS. But by the time we submitted a new proposal, MERS was no longer a priority, either. We were convinced that continuing with coronavirus research was important, even if the urgency regarding SARS and MERS had waned. So we continued to nurture our research partnerships and brainstorm ways forward together.”

When Dr. Bottazzi’s group failed to obtain meaningful funding for their SARS and MERS work, they decided to change tacks. “We requested money to work on pan-coronavirus vaccines—vaccines that could be applied to the entire Beta family of coronaviruses. We wanted to apply what we’d learned from SARS and MERS to design a universal vaccine and be ready for whatever came next. But, while our grant application to the NIH received very positive comments, we did not receive funding.”

Undeterred from their conviction that a proactive approach to coronavirus vaccines deserved serious attention, “we asked TCH to use some of our intramural funds to support our ongoing coronavirus research. That’s what kept that our coronavirus program alive between 2017 and 2020.”

This stick-to-itiveness, as we all now know, became critically important. “The ‘aha!’ moment came when we heard what was happening in China at the end of 2019. When the COVID-19 sequence came out in early 2020, we were ready; we knew how to do this. It was like magic: the same scientific evidence we’d built for SARS and MERS—that had taken us six years to accumulate—well, it took us three months to replicate that work, with the same dedicated teams of scientists in place, for COVID-19.”

Dr. Bottazzi’s team’s work on COVID-19 represents “the first time a children’s hospital has been at the forefront of not only creating and testing a vaccine prototype, but shepherding the prototype all the way to a fully licensed vaccine that will serve populations around the world. We could not have tackled COVID-19 vaccine development without TCH’s out-of-the-box thinking, trust in our vaccine center, and steadfast support.”

But Dr. Bottazzi's group knew that they needed to recruit more partners to leverage additional expertise and raise more money. "So we engaged colleagues from some very highly respected organizations like PATH, the Infectious Disease Research Institute, and the International Vaccine Institute to help us brainstorm how to develop a very rapid [vaccine] strategy, and also how to use this strategy to ensure that our vaccine would reach low- and middle-income countries. We wanted to develop a safe, effective, and affordable technology that others could easily adopt and adapt."

Dr. Bottazzi was profoundly moved by donations from predominantly Texas-based institutions, foundations, high-net-worth individuals, and five- and ten-dollar donors who "came to our financial rescue. It was very important to us that our intervention would be available to those in the global south—not just rich countries."

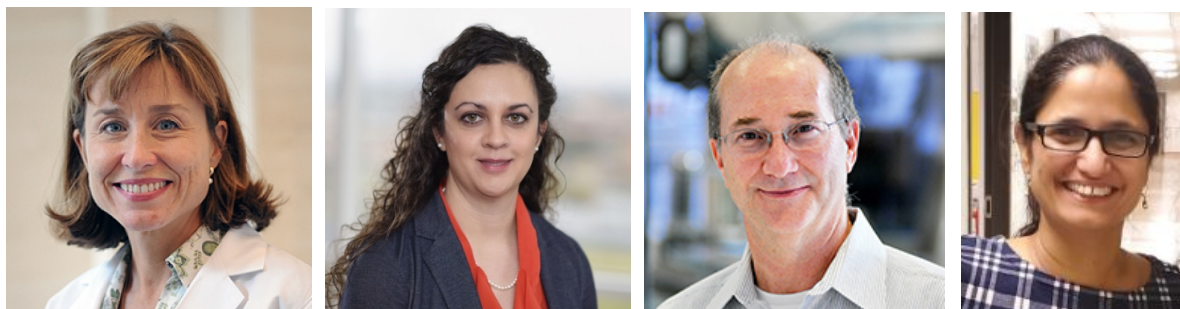
As thrilled as she is to have successfully developed a COVID-19 vaccine prototype, Dr. Bottazzi is perhaps most proud that her group's vaccine technology has global reach. "Our most advanced partnership so far is with India. That vaccine (co-developed at TCH in partnership with the Indian company Biological E) will most likely be authorized for use in India by the end of 2021. The Indian government has already acquired 300 million doses, and Biological E is currently gathering evidence for pediatric indication and looking to export vaccine beyond India."

It didn't take long for others to notice Dr. Bottazzi's group's success. To Dr. Bottazzi's delight, "everyone started calling us. We're now in partnership with Indonesia—we've worked to adapt our vaccine for countries with significant Muslim populations by making it Halal-ready—and in conversation with Uganda, Bangladesh, Botswana, and Vietnam. The whole world now recognizes that there's value in collaborating with low- and middle-income countries so that they, in the future, can have their own resiliency and resistance [to a pandemic]. We need to share our knowledge to train and build our next generation of vaccine scientists, not only in first-world countries like the U.S., but across the globe."

Speaking of the next generation and global medicine, Dr. Bottazzi is proud to be a successful Hispanic woman in science. "The privilege of leading a team of scientists and this program, alongside Peter Hotez with the support of both TCH and BCM leadership, has been above and beyond all opportunities."

Dr. Bottazzi hopes that young and aspiring scientists around the world will see her—a graduate of her home country, Honduras', National Autonomous University, which "may not be top-tier, but is top-tier to me"—and realize that, "no matter where they're from, if they're passionate, committed, and surrounded by great mentors, they too can achieve leadership positions in science." In particular, Dr. Bottazzi is hoping to see more Latinx and female representation in science as she continues her groundbreaking, lifesaving work.

Drs. Julie Boom, Leila Sahni, Pedro Piedra, and Vasanthi Avadhanula and the New Vaccine Surveillance Network



In 2009, Texas Children's Hospital was invited to join the New Vaccine Surveillance Network (NVSN), a multicenter initiative coordinated by the Centers for Disease Control and Prevention. NVSN study sites evaluate the impact of new vaccines and vaccine policies through active sentinel surveillance and conduct surveillance for acute gastroenteritis and acute respiratory illness in both inpatient and outpatient settings. As the nation's largest children's hospital—with a bustling emergency center, inpatient floors, and a robust pediatric immunization registry already in place—TCH was a natural fit for the program.

Since its inception, TCH's NVSN research team has been led by Dr. Julie Boom, Director of the Immunization Project at TCH and a Professor in the Division of Academic General Pediatrics at Baylor College of Medicine, and Dr. Leila Sahni, Instructor in the Division of Hematology-Oncology and the Center for Epidemiology and Population Health in the Department of Pediatrics at BCM. For the last seven years, they have worked hand in hand with Dr. Pedro A. Piedra, Professor in the Departments of Molecular Virology and Microbiology, Pediatrics, and Pharmacology and Director of the CLIA-Certified Respiratory Virus Diagnostic Laboratory (the Piedra Lab) at BCM, and Dr. Vasanthi Avadhanula, Assistant Professor in the Department of Molecular Virology and Microbiology and Co-Director of the Piedra Lab, who test all of the samples collected by the research team.

Before the pandemic, the research team conducted all of its work—identifying potential participants, obtaining parental consent, obtaining samples, and administering questionnaires—in person. COVID-19 temporarily brought the program to a screeching halt. To keep it running, Drs. Boom and Sahni had to rapidly amend their IRB protocols and make adjustments on a near-daily basis to accommodate what felt like constant changes in hospital policy. Dr. Boom says, “We were forced to think of different ways to do what we needed to do with the barriers that were put in front of us.” Dr. Sahni echoes this sentiment and describes the challenges of those early days as akin to “trying to run up the down escalator. Where you run and run and run and run and you don’t go anywhere.”

For the first few months, the research team operated almost entirely remotely—via telephone calls, verbal consent procedures, and a reliance on bedside clinical staff to collect samples. Eventually, they switched to a hybrid model that combined in-person and remote work. Obtaining sufficient personal protective equipment and other items was difficult at first, but restrictions on TCH's supply chain soon loosened and the research team was able to acquire what it needed. When TCH's outpatient clinics transitioned to using a drive-through COVID-19 testing center in the Meyer Building parking garage to screen patients with symptomatic illness, the research team partnered with clinical staff to collect research swabs in addition to conducting clinical COVID-19 tests.

Drs. Piedra and Avadhanula faced their own challenges in the Piedra Lab. In addition to its existing workload, the lab was asked to serve as BCM's primary COVID-19 testing facility. To accommodate a higher volume of samples and 24-hour turnaround times, the lab had to be transformed. Dr. Avadhanula coordinated the purchase and installation of robotic equipment and Dr. Erin Nicholson spearheaded the development of a data-sharing infrastructure that allowed the lab to accept test orders and return results in a timely manner. When testing ramped up, graduate students from other labs at BCM quickly volunteered their time to the Piedra Lab as their labs were temporarily shut down. “People came together very quickly on this,” Dr. Piedra says. “We all worked long hours.”

As demanding as these circumstances were, efforts made by both the research team and the lab team to keep their programs up and running proved fruitful. Collaborating with the drive-through testing site allowed the research team to enroll children in the program from a wider geographic area than usual, increasing the diversity of the program's sample pool. The research team also changed its protocols to permit enrollment of children up to age 18. As a result, TCH was one of the highest-enrolling sites in the NVSN during this period. TCH NVSN data contributed to a multicenter finding that the incidence of other acute respiratory illnesses declined during the pandemic, likely due to community mitigation measures. The research team also assessed the validity of mid-turbinate nasal swabs compared to nasopharyngeal swabs typically used for SARS-CoV-2 testing.

With its increased capacity, the Piedra Lab was able to retrospectively test frozen NVSN samples dating back to December 2019 for COVID-19. Results from those tests demonstrated that COVID-19 was not circulating among pediatric patients in Houston who were hospitalized or treated in an emergency room early in the pandemic. In addition to its work with the NVSN, the Piedra Lab worked on viral loads in clinical patients, wastewater testing, seroprevalence studies, variant sequencing, and collaborated with BCM's Biosafety Level 3 lab to study the infectiousness of viral shedding.

In all, the NVSN research and Piedra Lab teams have published an impressive 9 papers in response to the COVID-19 pandemic.

Despite the difficulties of the past two years, members of the NVSN team emphasize the teamwork, ingenuity, collaboration, spirit of volunteerism, and willingness to help that they encountered time and

again working with BCM and TCH colleagues and parents of patients. “Everyone came together,” Dr. Avadhanula says.

Asked for a final thought on his pandemic experience thus far, Dr. Piedra had this to share: “I’m glad that [the pandemic] is getting under control. If anything, I want to emphasize the relevance of vaccinations. This pandemic has taken a terrific toll on our society, and vaccines are the way out of it.”



Flor Muñoz, MD

Long before COVID-19 emerged in late 2019, Dr. Flor Muñoz had devoted years to thinking about and anticipating exactly this kind of public health crisis.

An Associate Professor of Pediatrics and Infectious Diseases at Baylor College of Medicine, and the Director of Transplant Infectious Diseases at Texas Children’s Hospital, Dr. Muñoz specializes in respiratory diseases, vaccines, and evaluating the safety and efficacy of vaccines in pregnant women, children, and transplant recipients.

She also belongs to several organizations that, pre-COVID, had been helping the United States and other countries prepare for a possible future pandemic. These include CEPI (the Coalition for Epidemic Preparedness Innovations), a global partnership created to develop

vaccines for epidemics, as well as pandemic-preparedness panels for the Centers for Disease Control and the World Health Organization. “So this development was really no surprise,” Dr. Muñoz says. “We were already working on pandemics, although all along we were thinking the next one was going to be a flu pandemic—until COVID hit.”

When COVID-19 did hit, Dr. Muñoz quickly shifted into high gear. Within weeks, she was attending weekly virtual meetings with colleagues around the country to explore the use of convalescent plasma in children with COVID, and she was one of several faculty members who developed the algorithms upon which Texas Children’s Hospital based its management guidelines for treating COVID-19 patients. She also led a group convened by CEPI to develop the case definitions for evaluating COVID-19 vaccine safety, and she currently co-chairs the COVAX Maternal Immunization Working Group, which helps ensure vaccine access among pregnant women. In addition to leading this effort, she also recruited our TCH experts to participate in these global efforts.

Equally impressive is the speed with which Dr. Muñoz commenced COVID-related clinical research and the breadth of her areas of inquiry. Almost immediately, she recalls, “I started getting involved in as many research projects as possible. For example, I brought to Texas Children’s the first treatment study of remdesivir in children, back in June of 2020.” Fortuitously, when COVID-19 first emerged she also had conducted clinical research that would later prove valuable in assessing COVID-19 vaccines for pregnant women. “A lot of the work that led to the development of the COVID vaccine was related to RSV (respiratory syncytial virus) studies,” she says. “And I had RSV and flu vaccine studies going on at the time of the pandemic, in terms of looking at their impact on pregnant women. This study then pivoted to focus on the impact of COVID-19 on pregnant women and their infants.”

Once vaccines were developed, Dr. Muñoz became the principal investigator for one of the ongoing clinical trials evaluating the Pfizer vaccine in children aged 6 months to 11 years. When she initially proposed conducting the study at Texas Children’s, the hospital readily embraced the idea. “The Pfizer study received significant support from the institution,” Dr. Muñoz says, “and Dr. Versalovic and Dr. Bomgaars were just incredibly supportive from the very beginning.”

As if these initiatives and studies weren't enough to occupy her time, Dr. Muñoz is also overseeing a large, multi-state, NIH-funded study called MOMI-VAX. The goal of this observational study, which so far has enrolled about 300 vaccinated pregnant mothers, is evaluating how the various COVID-19 vaccines affect a mother's antibodies during pregnancy, delivery, and postpartum; how those antibodies are delivered through the placenta and breast milk; and the degree to which the infant is protected. "We expect to have some results by early next year," Dr. Muñoz says, "and it will be an important study. We need to vaccinate pregnant women, and this is an opportunity to collect a lot of helpful information on how to protect their babies, too."

Dr. Muñoz traces her interest in medicine to early childhood—"I was one of those unusual kids who always said, 'I'm going to be a doctor'"—but Texas Children's Hospital can take credit for sparking her interest in infectious diseases. Her first exposure to the field was during a stint as a medical exchange student from Guatemala's Marroquín University, and she eventually returned to TCH for her residency and fellowship.

Being part of Texas Children's has been especially important to Dr. Muñoz during the ongoing Pfizer trial. "TCH is the best place in the Medical Center to conduct vaccines studies for children. Everything here is designed for children, including how the staff interacts with them, and it's just incredible to see. To bring this study here and have it so supported—it's been a great experience."

The 2020 Research Mentor Awards

Annually, we recognize our faculty for their outstanding dedication and passion for mentoring students, residents, fellows, and junior faculty with the **Research Mentor Awards**. To be nominated for this award, faculty must demonstrate:

- Continuous contribution to the growth and development of students, trainees, staff, fellows, and junior faculty in their area of research and pursuit of research goals;
- A willingness to contribute to the strength of the overall research activities and research training in the Department of Pediatrics;
- A strong independent research program;
- The attributes of a positive career role model;
- Evidence of leadership, compassion and constructive feedback to their students, trainees, staff, and colleagues.

A historical list of Research Mentor Awards is now available on the TCH website:

<https://www.texaschildrens.org/research/awards/research-mentor-awards>

Congratulations to the following faculty for receiving the 2020 Research Mentor Awards. Below are selected quotes from mentees' letters of support that highlight the impact of each awardee's mentorship.



Jennifer Foster, MD, MPH, Associate Professor (was an Assistant Professor at the time of the award), Hem-Onc: “She has taught me the many facets and requirements of protocol writing, implementation, and overseeing of clinical trials. Her mentorship has been invaluable in learning these crucial skills and successfully implementing clinical trials for patients with hepatoblastoma.” “She goes out of her way to insure that they are included in manuscripts and clinical research decision making. She constantly promotes others, and will always have a Junior Faculty or trainee as first-author. In addition, she will also mentor a Junior Faculty member in the last-author position, ensuring that all members of our team are able to advance academically and become recognized experts in their fields of

clinical research.” “Her mentees have a record of accomplishment of becoming successful independent researchers, due in large part to her guidance.” “I have come to know her not only as an outstanding clinician and gifted researcher, but also as an incredible mentor – both personally and professionally.” “Her innate ability to connect with patients and families was matched by a remarkable command of evidenced-based practice and a clear dedication to trainee education.” “Few clinicians are able to provide care that is so genuinely compassionate, informed by and inspiring of the very latest clinical research in the field, and rich in seamless teachable moments. Dr. Foster does this all effortlessly.” “At every opportunity, Dr. Foster has empowered me to take ownership of the project and present our findings for individual advancement. I have watched as she encourages other faculty to take on leadership roles in her research initiatives, and suggests they take the title of senior author over herself. Her mastery of guiding by example has created a space in which we all feel comfortable in taking risks, and challenged to grow and evolve with our work.”



Rayne Rouce, MD, Assistant Professor, Hem-Onc: “Dr. Rouce understands the value and importance of mentorship during all stages of career development, from grade school all the way to postdoctoral fellowship and beyond. In addition to being an integral part of Saturday Morning Science, a community outreach program aimed to motivate inner city middle and high school students to reach their highest potential and expose them to careers in bioscience, she has helped countless other students achieve their goal of matriculation into medical and graduate schools. Her name recognition is far-reaching, leading to many mentees seeking mentorship and guidance from her, especially in the research realm.” “What was astounding to me was that she not only completely had my future career goals in mind in every decision she made, she realized her own mentorship

“deficiencies” and wasn’t afraid to recruit other well-established collaborators to ensure that my research year was fruitful and effective in paving the way to my eventual goal of being a leading translational investigator.” “She pushed me to greater heights, helping me accomplish things I never thought possible.” “Innovative, supportive, inspirational, authentic.” “Rayne cultivates a culture of positive reinforcement.”

Sowdhamini Wallace, DO, MS, Assistant Professor, Hospital Medicine: “In my opinion, she is the single greatest factor contributing to the expansion of research efforts, productivity, and publications within the Section of Hospital Medicine.” “Dr. Wallace is a visionary in our PHM field, and she has not only produced clinically relevant research, but she has made an incredible impact on the research passion and productivity within our group. She has mentored trainees and faculty at all levels, and I particularly wanted to highlight the tremendous impact her mentorship has had on our section.” “Dr. Wallace is always a consistent source of support and guidance to anyone interested in research or scholarly activities, and she is proactive in encouraging others to consider opportunities that arise for collaboration, joining multicenter studies, and educational courses.”



Teresia O'Connor, MD, MPH, Associate Professor, Nutrition:

“Dr. O'Connor has demonstrated a significant willingness to contribute to the strength of the overall research activities and research training in the Department of Pediatrics.” “Dr. O'Connor is greatly invested in the development of the next generation of researchers. Her excellence in research mentoring is highlighted by the extensive list of mentees at the research fellow, graduate student, medical student, undergraduate, and junior faculty level.” “As a mentor, Dr. O'Connor is selfless with her time, meeting with me and other mentees on a weekly basis. She has been deeply invested in assisting me in developing project ideas and research proposals, often giving significant time to reviewing and advising on publications, research proposals, and reports. She is a connector mentor, never

hesitating to connect me to her contacts, resources, and network, which has allowed me to foster collaborative partnerships and begin to establish a professional network of my own. In addition to the scholarly mentorship, Dr. O'Connor cares and takes interest in the personal health and growth of her

mentees. She fosters a supportive environment and takes a lead role in cultivating team dynamics and social relationships within our team.” “Many qualities lie in her mentorship style and approach, but perhaps her greatest is that she understands the art and science of behavioral research including the need for scholarly activity and clinical practice to mutually influence one another, and encourages this level of curiosity, understanding, and drive in her mentees.”



Lisa Kahalley, PhD, Associate Professor, Psychology: “In her role as Research Director for the Psychology Section at BCM/TCH, Dr. Kahalley not only provides research mentorship to junior faculty establishing their careers in our section, but also provides guidance, counsel, support, and hands-on mentorship around grant writing and managing labs to behavioral researchers whose work focuses on autism, diabetes, health disparities, and trauma.... She is a dedicated, patient, and thoughtful mentor, who gives of her time and expertise, and who gladly connects mentees with resources and colleagues who can help them achieve their own career goals.” “Dr. Kahalley’s outstanding contributions to raising the next generation of researchers make her highly deserving of this prestigious award.” “From my initial visit, Lisa

sought to explore my goals and what I could learn from her lab. She encouraged me to share my ideas and develop projects. She made it clear that she would fully support me to pursue a career in research.” “I feel extremely fortunate to have worked with many excellent mentors during my training. Of these, I consider Dr. Kahalley to be the most integral to my development as a researcher.” “That she quickly recognized my potential mentorship needs and freely offered her time and expertise is evidence of her dedication to research mentorship and her ability as a leader and role model.”

Connie Wiemann, PhD, Professor, Adolescent Medicine: “Dr. Wiemann has been an invaluable leader of the section for 22 years and is unrivaled in her commitment to student, trainee, and faculty education and research support.” “Her professionalism, skills as a fantastic listener and passion for lifelong learning are testament to her position as a strong academic role model within our section and the institution at-large.” “Her teaching helps turn new Adolescent Medicine Fellows who may never have done a research project of their own before into excellent clinical researchers who have the skills necessary to become leaders in their field.” “Dr. Wiemann is a powerful driver in the Adolescent Medicine section with regard to keeping the faculty engaged in scientific research and scholarship. With Dr. Wiemann’s passion for research and tenacity for maintaining interest and excitement in research, our section of Adolescent Medicine has consistently produced important, relevant, and high-quality research for many, many years.”



The 2020 Highest Impact Research Publication Awards

Beginning in 2018, we recognized the importance of identifying high impact papers published within the DOP and providing awards to those who deserve recognition. Out of more than 2,000 publications, the following two faculty were awarded the **Highest Impact Research Publication Awards** as First and Senior Author:

First Author Publication Awards



Dr. Sanjiv Harpavat

March 24/31, 2020

Diagnostic Yield of Newborn Screening for Biliary Atresia Using Direct or Conjugated Bilirubin Measurements

Sanjiv Harpavat, MD, PhD¹; Joseph A. Garcia-Prats, MD²; Carlos Anaya, MD³; Mary L. Brandt, MD⁴; Philip J. Lupo, PhD⁵; Milton J. Finegold, MD⁶; Alice Obuobi, MD²; Adel A. ElHennawy, MD²; William S. Jarriel, MD⁷; Benjamin L. Shneider, MD¹

[Author Affiliations](#) | [Article Information](#)

JAMA. 2020;323(12):1141-1150. doi:10.1001/jama.2020.0837

Original Investigation | Caring for the Critically Ill Patient

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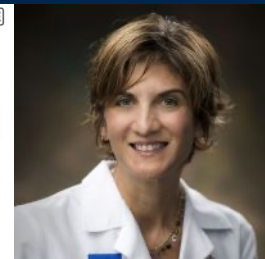
May 11, 2020

Characteristics and Outcomes of Children With Coronavirus Disease 2019 (COVID-19) Infection Admitted to US and Canadian Pediatric Intensive Care Units

Lara S. Shekerdeman, MD, MHA¹; Nabihah R. Mahmood, MD²; Katie K. Wolfe, MD³; Becky J. Riggs, MD⁴; Catherine E. Ross, MD⁵; Christine A. McKiernan, MD⁶; Sabrina M. Heidemann, MD⁷; Lawrence C. Kleinman, MD, MPH⁸; Anita I. Sen, MD⁹; Mark W. Hall, MD¹⁰; Margaret A. Priestley, MD¹¹; John K. McGuire, MD¹²; Konstantinos Boukas, MD¹³; Matthew P. Sharron, MD¹⁴; Jeffrey P. Burns, MD, MPH¹⁵; for the International COVID-19 PICU Collaborative

[Author Affiliations](#) | [Article Information](#)

JAMA Pediatr. 2020;174(9):868-873. doi:10.1001/jamapediatrics.2020.1948



Dr. Lara Shekerdeman

Senior Author Publication Award



Dr. Lisa Forbes

Case Reports > N Engl J Med. 2020 Oct 8;383(15):1494-1496. doi: 10.1056/NEJMc2022226.

STAT1 Gain of Function, Type 1 Diabetes, and Reversal with JAK Inhibition

Natalia S Chaimowitz¹, Sophia J Ebenezer¹, I Celine Hanson¹, Mark Anderson², Lisa R Forbes³

The 2020 Young Investigator Awards

In 2019, we created a new award program: the **Young Investigator Awards**. To be eligible for this award, faculty must be at the rank of Instructor or Assistant Professor and have been a faculty member within the Department of Pediatrics for 5 or more years. Department of Pediatrics faculty who are nominated for this award must demonstrate:

- Exemplary performance in research (basic, translational, and/or clinical);
- Success in obtaining extramural funding;
- Consistent history of publishing high quality manuscripts that create a meaningful impact to the medical literature;
- A willingness to contribute to the strength of the overall research activities and research training in the Department of Pediatrics;
- The attributes of a positive role model.

Information on past award recipients can be accessed at:

<https://www.texaschildrens.org/research/awards/young-investigators-awards>

Congratulations to the following 2020 Young Investigator Awardees:

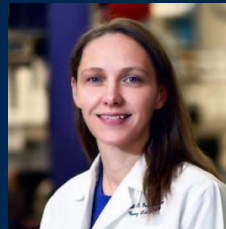
2020 Young Investigator Awards



Alexis Wood, PhD



Lisa Forbes Satter, MD



Rachel Rau, MD



Job Lopez, PhD



Jayna Dave, PhD



Meenakshi Hegde, MD



Qi Wu, PhD



Andrew DiNardo, MD

Jayna Dave, PhD: Dr. Jayna Dave became an Assistant Professor in the Children's Nutrition Research Center in 2012 and has become a leader in the field addressing health disparities as they relate to obesity and chronic disease prevention. She has developed innovative ways to improve dietary behaviors and overall health outcomes in low-income at-risk populations, including by collaborating with the Houston Food Bank and Hunger Free Texans. She has been funded by an R03, two R21s, a grant from the USDA, and an R01 from NHLBI to study the impact of Child and Adult Care Food Program nutrition standards on child food intake. Aside from her academic work, Dr. Dave also volunteers for community organizations such as Children at Risk.

Andrew DiNardo, MD: Dr. Andrew DiNardo became an Assistant Professor in the Division of Global Health in 2015. Dr. DiNardo's work elucidates the impact of helminth infection on the host response to tuberculosis and HIV, and the impact of epigenetic reprogramming on host immunity during chronic infections. He has made seminal contributions to the field, notably through his delineation of DNA hypermethylation in human cells during tuberculosis infection, a study that was published in the *Journal of Clinical Investigation*. Aside from a K23 award, Dr. DiNardo has also secured funding to implement a Phase 1/2 clinical trial to evaluate the efficacy of the hypomethylating drug azacytidine in restoring immune function in patients with tuberculosis.

Meenakshi Hegde, MD: Dr. Meenakshi "Meena" Hegde joined the Division of Hematology-Oncology as an Assistant Professor in 2012 after completing her fellowship here at TCH. Dr. Hegde has become a leader in the preclinical development of novel chimeric antigen receptor T-cell (CAR-T) therapies and has led clinical trials to administer these cells to patients with recurrent or refractory malignancies, particularly sarcoma and brain tumors. Her innovative work to engineer CAR-T cells to escape checkpoint blockade or SHP2-mediated inhibition has been published in *Nature Communications* and other leading journals. Her work is funded by the NIH Pediatric Brain Tumor Consortium as well as grants from Stand Up to Cancer, Curing Kid's Cancer, the Alliance for Cancer Gene Therapy, Alex's Lemonade Stand, and others.

Job Lopez, PhD: Dr. Job Lopez joined the Division of Tropical Medicine as an assistant professor in 2014 to further his research program to study the ecology and epidemiology of medically important soft body ticks, develop diagnostic platforms, and conduct basic research on the pathogenesis of tick-borne relapsing fever. Aside from speaking engagements around the world, Dr. Lopez also serves on the Vector Biology Study Section at the NIH and was the organizer of the 2019 International Conference on Relapsing Fever. Dr. Lopez's work is funded by two active R01 grants from the National Institutes of Allergy, Immunology and Infectious Disease.

Rachel Rau, MD: Dr. Rachel Rau was recruited to BCM an Assistant Professor in the Hematology-Oncology Section of the Department of Pediatrics at Baylor College of Medicine from Johns Hopkins in 2012 to join the BCM/TCH NIH K12-supported faculty fellowship program. Dr. Rau has been extremely productive both as a basic/translational researcher studying the role of the histone methyltransferase DOT1L in acute myelogenous leukemia and as a clinical researcher currently serving as the Study Chair for a Children's Oncology Group trial to improve outcomes for pediatric acute lymphoblastic leukemia. She has been awarded a NIH K08, V Foundation Scholar Award, Hyundai Hope on Wheels Scholar Award, and BCM Chao Physician Scientist Award for her translational work, not to mention funding for her clinical trials work. While juggling these demands in both bench science and clinical research, Dr. Rau has also distinguished herself as a talented mentor of several hematology-oncology fellows who are rising young investigators in the Department.

Lisa Forbes Satter, MD: Dr. Lisa Forbes Satter became a founding faculty member of the TCH Center for Human Immunobiology in 2012 and has led critical research studies related to rare immune deficiency syndromes, particularly those affecting STAT signaling. She described STAT5b deficiency syndrome, established the efficacy of JAK signaling blockade for STAT1 and STAT3 gain of function disease, and authored a paper in the New England Journal of Medicine describing reversal of Type I Diabetes in a patient with STAT1 gain of function using JAK inhibition therapy. She has been a leader for the TCH COVID-19 Immunomodulation Team, facilitating life-saving immunomodulatory therapy for children critically ill with COVID-19 and MIS-C. She has been the recipient of the Chao Physician Scientist Award and an R21 to study IL27RA deficiency.

Alexis Wood, PhD: Dr. Alexis Wood joined the Children's Nutrition Research Center as an Assistant Professor in 2014. Described as an "academic dynamo," Dr. Wood's research integrates large-scale genomics with behavioral measures in cognitive psychology to examine the association between cognitive abilities, feeding behaviors, and adiposity across infancy. She is the PI of the Baylor Infant Twins Study and has been the author of more than 100 peer-reviewed manuscripts and PI of 12 externally funded research projects, including awards from the American Heart Association and the NIH. Dr. Wood also volunteers her time as a statistician with the TCH Research Resources Office, thereby supporting many other investigators in the Department.

Qi Wu, PhD: Dr. Qi Wu joined the Children's Nutrition Research Center as an Assistant Professor in 2014. His groundbreaking work investigates the functional cross-talk between neural circuits that control feeding, energy metabolism, and mental and neurodegenerative disorders. Dr. Wu's work, which has been published in leading journals including *Nature*, *Neuroscience*, and *Nature Communications*, is funded by R01 and R56 grants from the NIDDK, and has received funding from Pew Charitable Trust and the American Diabetes Association.

Research Support Services in the Department of Pediatrics

Research Resources Office

Our goal in the DOP's Research Resources Office (RRO) is to provide unified, coordinated, and comprehensive support and education for investigator-initiated, NIH cooperative group, and pharmaceutical industry studies, as well as provide centralized resources for the pre- and post-award processes involved in developing and implementing the wide range of basic, translational, or clinical studies performed by Pediatrics investigators. RRO services range from:

- Clinical research regulatory and coordination
- Quality assurance
- Statistics and study design support
- Clinical trial cost assessment
- Budget negotiation and contracting
- Research informatics and database development
- Research grant budget and application assistance

Consultation and service requests may be submitted through the RRO request portal at <https://orit.research.bcm.edu/rro/>

The RRO strategically partners with several industry partners and clinical research institutions, including Pfizer, BMS, and quintiles. In addition, they serve as the Department of Pediatrics liaison for the Institute for Advanced Clinical Trials for Children, (I-ACT), which, with FDA support, endeavors to advance development of new medications and devices for children.

RRO Leadership

Lisa Bomgaars, MD, MS	Medical Director
Scott Wenderfer, MD, PhD	Assistant Medical Director
Miki Gillis	Executive Director
Joe Kanewske	Senior Manager Business Operations
Serpil Tutan	Director of Clinical Research
Lori Malone MBA	Director of Research Administration
Deborah Barrera RN	Nurse Manager
Uma Ramamurthy, PhD, MBA	Executive Director, Research Information Technology

Success by the Numbers

In 2020, the RRO:

- Supported 160 clinical research studies across 13 sections in the DOP
- Reviewed and approved approximately 1,200 award submissions for the DOP
- Provided pre- and post-award management for 15 sections

Clinical Research Center (CRC)

The Clinical Research Center (CRC) is a state-of-the art facility that allows TCH investigators to conduct complex, often high-risk, patient-oriented clinical research safely and accurately. The CRC affords patients and families the space and privacy needed to complete lengthy, complicated studies—whether an experimental cancer treatment or carefully calibrated allergy food-challenge—and keeps them close to the nurses and other dedicated staff best equipped to care for them. Located on the Abercrombie Building's seventh floor, the CRC includes outpatient clinical research space, five clinical bed spaces, a room for patient interviews and consultations, sample-preparation laboratory, blood-draw room, waiting area, playroom, and Nourishment Room. It is also near the ICU and EC in case of emergency, and to the Feigin Center laboratories in which many investigators analyze samples obtained in the CRC. Two West Tower floors provide inpatient support. The CRC's facilities, specially-trained staff, and other resources are available to clinical studies that have been approved by IRB and the CRC Scientific Advisory Committee (SAC). A CRC application is required and can be located at <https://orit.research.bcm.edu/rro/CRC-page.html>

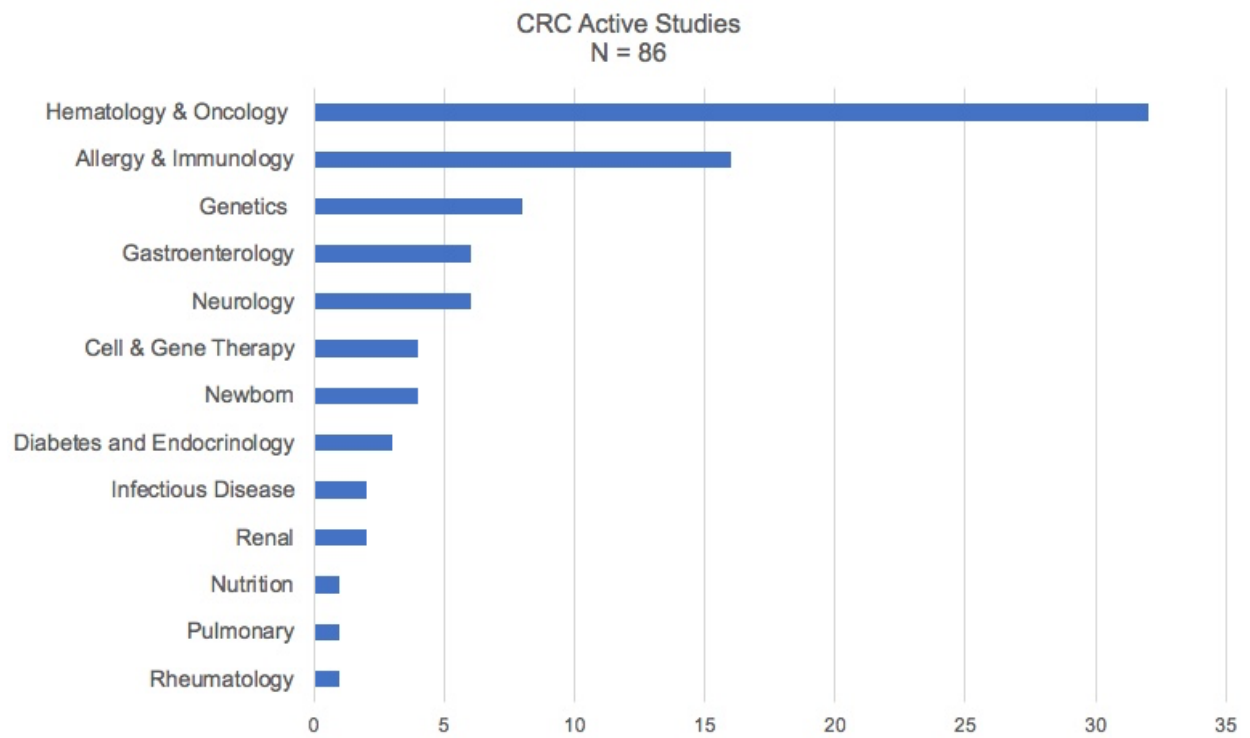
CRC Leadership

Lisa Bomgaars, MD, MS	Medical Director
Stephanie Hulsey, RN	Nurse Manager
Marco Costilla, RN	Assistant Director Nursing
Lisa Forbes Satter, MD	SAC Chair

2020 SAC Committee Membership

Anvari	Sara	Allergy & Immunology
Bomgaars	Lisa	Hematology & Oncology
Calarge	Chadi	Psychiatry & Behavioral Sciences
Chumpitazi	Bruno	Gastroenterology
Eng	Christine	Medicine-Molecular & Human Genetics
Glaze	Daniel	Neurology
Hair	Amy	Neonatology
Loftis	Laura	Critical Care
Lynds	Jennifer	Pharmacy
McCartney	Tara	Pharmacy
McMeans	Ann	Nutrition
Minard	Charles	ICTR
Motil	Kathleen	Nutrition
Murray	Kristy	Tropical Medicine
Patel	Shital	Infectious Disease
Paul	Mary	Allergy & Immunology
Rialon	Kristy	Surgery
Schafer	Eric	Hematology-Oncology
Srivaths	Poyyapakkam	Pediatrics-Renal
Zachariah	Justin	Cardiology

Number of active studies in the CRC:



CRC Clinical Research Awards

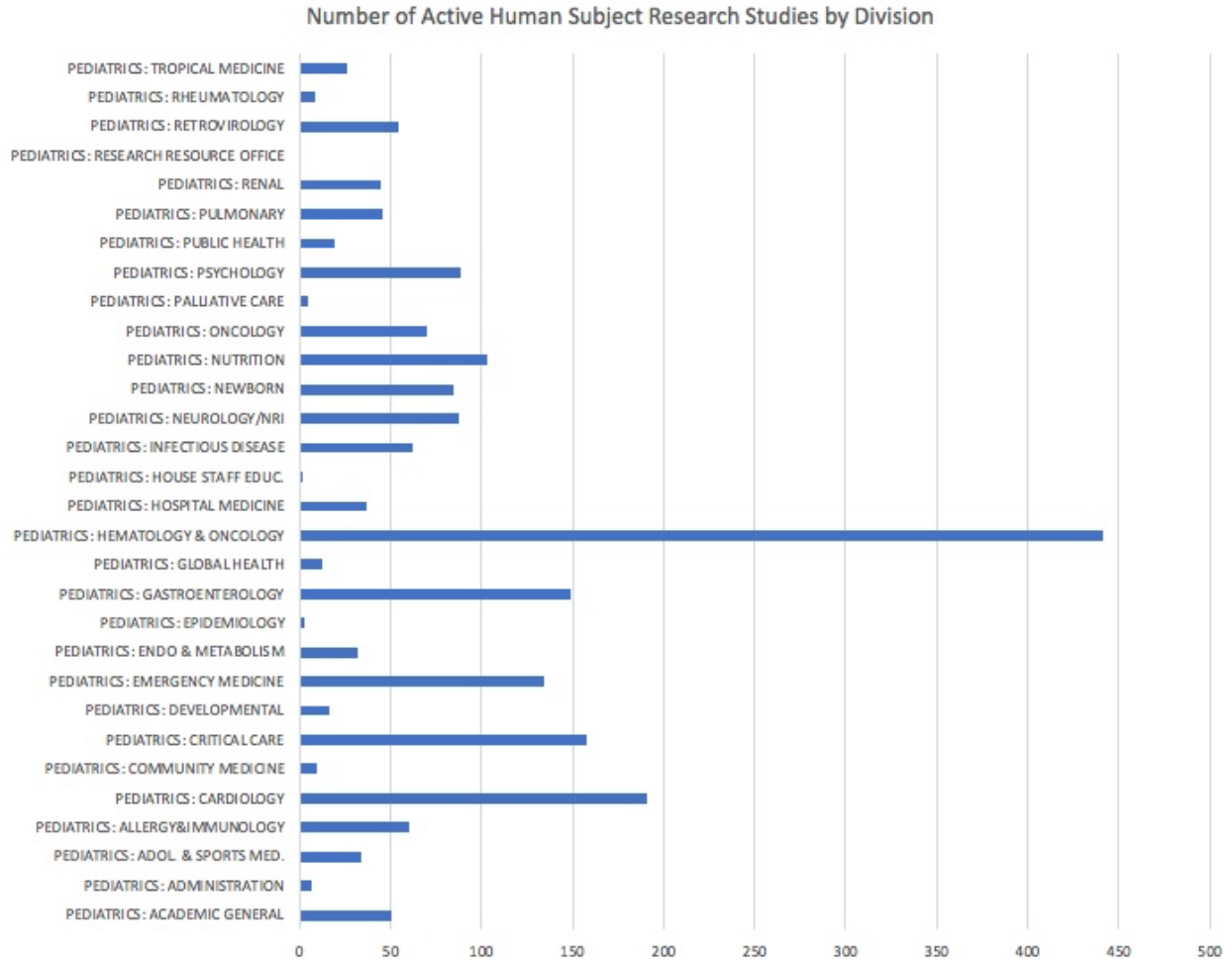
The CRC presented the Clinical Research Awards to the following recipient in 2020. The CRC established this award in collaboration with the RRO to recognize and honor individual contributions to protecting research subjects' best interests and complying with applicable rules and regulations.

Farida Lalani is an Instructor in the Department of Pediatrics and Assistant Manager of Research Coordination in the RRO. Ms. Lalani supervises a team of 20 study coordinators and 3 data managers. Her team is responsible for 84 coordinated clinical studies, including 50 interventional trials in TCH's CRC. She excels in training new coordinators, assessing study feasibility, and implementing new studies. Her team assists primary investigators in handling adverse event reporting and study monitoring visits. She also advocates for study participants and their families so that they feel informed and empowered. Ms. Lalani was selected by her peers to receive the 2020 CRC and RRO Clinical Research Award. The award seeks to recognize and honor outstanding individual contributions to the protection of research subjects and compliance with clinical research rules and regulations.



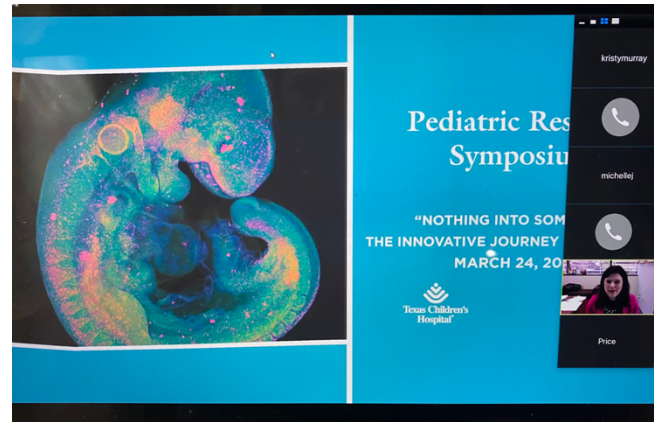
Department of Pediatrics Human Subjects Research

In 2020, DOP investigators had 2,040 active human subjects research studies.



2020 Pediatric Research Symposium

We had another successful Pediatric Research Symposium in March 2020, despite the need to quickly adapt from an in-person conference to a virtual meeting format. The theme, which was chosen prior to the pandemic, was “*Nothing into Something: The Innovative Journey into Science.*” This title also accurately reflects the innovative creativity of the Pediatric Research Symposium Chair, **Dr. Lisa Forbes Satter**, to go from the discussion around cancelling the event to successfully pulling off an exciting day of transformative science. Over 200 faculty, fellows, and students attended the virtual event, which highlighted research within the department and provided a day of some normalcy at the beginning of the pandemic shutdowns and lockdowns. We wish to commend Dr. Forbes, Anissa Quiroz, and the Pediatric Research Symposium planning committee for all of their hard work.



The keynote address, entitled “B Cell and Antibody Defects: Learning Genetics from our Patients,” was delivered by Charlotte Cunningham-Rundles, MD, PhD, the David S. Gottesman Professor of Immunology from Mt. Sinai School of Medicine in New York City. Our very own Dr. Amy Arrington provided the career pathway talk, entitled “Oh the Places You’ll Go,” providing a timely discussion about the special isolation unit at TCH West campus and importance of working together as a team.

Over 150 abstracts were submitted this year by fellows, students, and trainees in the department. Here is the list of the top 5 chosen for oral presentations:

- **Dr. Brian King (Neonatology):** Economic Burden of Clinician-Driven Tests and Treatments in Very Low Birth Weight Preterm Infants
- **Anna Meyer (PhD candidate, Immunology, Allergy and Rheumatology):** Extraction of the proteome of the immunological synapse in NK cells
- **Dr. Omar Shakeel (Hematology / Oncology):** Improving Comfort and Knowledge of Oncofertility: An Institutional Quality Improvement Project
- **Dr. Michael Smaglick (Critical Care):** Comparing the impact of DIC on mortality in pediatric HLH and sepsis
- **Dr. Jian Zhou (Molecular & Human Genetics):** Tcf20 haploinsufficiency results in autistic-like phenotypes in mice

Symposium Cover Art Award Winner: Dr. Naomi Tjaden, Pediatrician Scientist Training and Development Program. Description: “*In 9.5 days, I have transformed from a single cell to a recognizable embryo. The colors highlight the developing nervous system of this young mouse embryo.*”

Special Thanks

We especially want to acknowledge the hard work and contributions of our planning committee and abstract reviewers to ensure that the symposium was a huge success:

Symposium Chair:	Lisa Forbes Satter, MD
Chair-elect:	Fong Lam, MD
Immediate Past Chair:	Sanjiv “Sonny” Harpavat, MD
Program Administrator:	Anissa Quiroz

Symposium Planning Committee

Lisa Bomgaars, MD, MS

Judith Campbell, MD

Lisa Forbes Satter, MD

Sanjiv Harpavat, MD

Kristy Murray, DVM, PhD

Jennifer Rama, MD

Scott Wenderfer, MD, PhD

Paige Schultz, MBA, MHA

Dequita Hall, MBA

Stacey Staples

Hematology-Oncology

Infectious Diseases

Allergy, Immunology, & Retrovirology

Gastroenterology

Tropical Medicine

Pulmonary

Renal

TCH Research Administration

TCH Research Administration

TCH Research Administration

We would like to thank the following faculty members for their assistance in reviewing abstracts:

Agrusa, Jennifer

Allen, Carl E.

Anagnostou, Aikaterini

Ansah, Deidra Abenlah

Bacha, Fida

Bachim, Angela

Barbieri, Eveline

Bernhardt, Melanie B.

Bertuch, Alison A.

Bhalakia, Avni M.

Bottazzi, Maria

Brown, Austin

Chakraborty, Rikhia

Chao, Hsiao-Tuan

Chinen, Javier

Chinn, Ivan Kingyue

Cutitta, Katherine

Davis, Kim

Dinu, Daniela

Doherty, Erin E.

Duran, Petra

Dutta, Ankhi

Eckstein, Olive

El-Mallawany, Nader Kim

Flanagan, Jonathan Michael

Flores, Saul

Forbes, Lisa

Friend, Brian D.

Gowda, Sharada Hiranya

Greeley, Christopher

Grimes, Amanda Bell

Harpavat, Sanjiv

Hill, Ryan

Hilliard, Marisa

Hodges, Holly K.

Hooli, Shubhada B.

Hotez, Peter

Howell, Alicia R.

Injac, Sarah Garrett

Jones, Kathryn

Kentor, Rachel

Kitagawa, Melanie Gwendolyn

Lai, Jamie Thuy

Lam, Fong

Leen, Ann M.

Lin, Frank Y.

Lu, Linchao

Lupo, Philip J.

Lyons-Warren, Ariel

Marton, Stephanie

McNeil, Jonathon C

Mejia, Rojelio

Monterrey, Ana Cristina

Morales-Perez, Liliana

Munoz-Rivas, Flor

Murray, Kristy

Nance, Christina L

Navai, Shoba A.

Ocampo, Elena Catherina

Omer, Bilal A.

Parihar, Robin

Patil, Monika Sachin

Pollet, Jeroen

Rabin, Karen

Rao, Seema L.

Redell, Michele L.

Redondo, Maria Jose

Rider, Nicholas L.

Ronca, Shannon

Rouce, Rayne

Sanchez Mejia, Aura

Santana, Jonathan Angel

Sanyahumbi, Amy

Sasa, Ghadir Suleiman Issa

Schwartz, David D.

Shivanna, Binoy

Shneider, Benjamin

Soltero Ngwolo, Erica Gabrielle

Soni, Krishnakant

Steffin, David H.

Stevens, Alexandra M.

Strych, Ulrich

Torrey, Susan B

Tosur, Mustafa

Tsang, Rocky

Tubman, Vennee

Tume, Sebastian Cezary

Vallejo, Jesus G.

Vogel, Tiphannie P.

Wallace, Sowdhamini S.

Ward, Mark A

Weatherhead, Jill

Wenderfer, Scott Edward

Whittle, Sarah

Wood, Margaret

Yee, Andrew

Yi, Joanna S.

Zhan, Bin

Zhu, Yi

Pediatrician-Scientist Program

The Baylor College of Medicine Pediatrician-Scientist Program (PSP) Residency Track is an ideal career choice for MD/PhD or MD graduates with significant research experience who are seeking to build a career as a pediatrician-scientist. As the largest children's hospital and Department of Pediatrics in the United States, we have the resources and commitment to provide expert clinical training, mentorship, and educational opportunities necessary to support the development of a successful career as a physician scientist. The PSP program has been designed to offer structured educational activities along with the flexibility required to foster longitudinal development as a physician-scientist.

Program Website: <https://www.bcm.edu/departments/pediatrics/education/pediatrician-scientist-training-development>

Program Leadership

Donald Williams Parsons, MD, PhD, Program Director

Audrea Burns, PhD, Associate Program Director

Current Residents		
<ul style="list-style-type: none"> Natalie Cofie Guerrero, MD, PhD, PGY3 (Research Mentors: Drs. Jean Raphael and Teresia M. O'Connor) Yike Jiang, MD, PhD, PGY3 (Research Mentor: Dr. Kristy Murray) Prasanna Ramachandran, MD, PhD, PGY3, (Research Mentor: Dr. Hugo Bellen) Marimar Bonilla Cruz, MD, PhD, PGY2 (Research Mentor: Dr. Cliona Rooney) Ian Francis, MD, PhD, PGY2 Jennifer Rha, MD, PhD, PGY2 Dr. Jimmy Chang, MD, PhD, PGY1 Dr. Audra Iness, MD, PhD, PGY1 		
Steering Committee Members		
Anna Mandalakas	Fong Lam	Maria Redondo
Huda Zoghbi	Hsiao-Tuan Chao	Michael Braun
Audrea Burns	James (Jim) Thomas	Peter Hotez
Benjamin Shneider	Jean Raphael	Robert Shulman
Brendan Lee	Karen Rabin	Sanjiv Harpavat
Daniel Penny	Lisa Bomgaars	Susan Blaney
Flor Munoz	Trung Nguyen	Carl Allen

TCH RESEARCH NEWS FROM 2020

As a department, we made impactful and innovative advances in pediatric research that deserve celebration. Below, you will find the list of headlines from TCH Research News in 2020, each linked to the full article on the TCH Research News website. We highly encourage researchers in the DOP to promote their novel research findings, publications, and grant awards by emailing TCHResearchNews@texaschildrens.org. Full stories for each of the headlines below can be found at <https://www.texaschildrens.org/research/news>.

EIF2AK2 variants cause symptoms akin to Pelizaeus-Merzbacher disease (Dec 21, 2020)

A comprehensive analysis of two unrelated individuals now reveals that variants in Eukaryotic Initiation Factor 2 Alpha Kinase 2 (EIF2AK2) gene can result in clinical symptoms that are remarkably similar to Pelizaeus-Merzbacher disease (PMD). The lead authors of this study, who are child neurologists and neuroscientists at Texas Children's Hospital and Baylor College of Medicine, suggest that "EIF2AK2-related Leukoencephalopathy, Developmental Delay, and Episodic Neurologic Regression (LEUDEN) syndrome," a brand-new disorder that they discovered in March 2020 should be considered as a differential diagnosis for PMD and other hypomyelinating dystrophies.

Novel gene variants that modify the risk of late-onset Alzheimer's disease discovered (Dec 7, 2020)

Researchers at Baylor College of Medicine and Texas Children's Hospital have found 216 new genetic modifiers of late-onset Alzheimer's disease, many previously not suspected to play a role in this disease. This is an exciting first step toward understanding this paradox. The newly-identified biomarkers could potentially be used in the future to refine risk assessment and patient prognosis in APOEε2 and APOEε4 carrier populations and act as therapeutic targets for this untreatable condition.

A role for the slow oscillations of the neocortex in epileptic spasm generation (Dec 7, 2020)

Epileptic spasms are a type of brief seizures that are the hallmark of catastrophic seizure disorders, which are characterized by severe cognitive and motor deficits. While common in West syndrome (or infantile spasms), these spasms can occur in people of any age group. Very little is known about the underlying neurophysiological mechanisms and the neuronal circuit(s) responsible for the generation of these spasms. Researchers from Baylor College of Medicine and Texas Children's Hospital now provide evidence that epileptic spasms originate from the pyramidal cells in the deep layers of the neocortex. Further, they uncovered a novel neurophysiological phenomenon that explains how cortical neurons generate spasms. This is also the first study to reveal a hitherto unknown relationship between a normal brain state, like sleep, and spasms. The study was recently published in the [*Annals of Neurology*](#).

Dr. Rayne Rouse featured highlighted by American Society for Transplantation and Cellular Therapy (Dec 7, 2020)

In an interview in *Nucleus*, an online magazine of ASTCT, Dr. Rayne Rouse discusses how she is leveraging the lessons she learned through the ASTCT Leadership Course to help guide her decisions during COVID-19.

King receives a highly competitive federal award (Dec 1, 2020)

[Dr. Katherine King](#), associate professor of the Infectious Disease Division in the Department of Pediatrics at Baylor College of Medicine and Texas Children's Hospital, received a highly competitive Emerging

Investigator Award. This award of \$600,000 per year for seven years is from the National Heart, Lung Blood Institute (NHLBI) at the NIH.

[BICRA gene provides answers to patients, doctors and scientists \(Nov 23, 2020\)](#)

Physicians and scientists are constantly on the lookout for new disease genes that can help them understand why patients have undiagnosed medical problems. Often the first clues come from genetic testing that reveals a change or mutation in a gene that they see in a child but not their parents. This is exactly what led to a new study published today in the [American Journal of Human Genetics](#).

[Maraxilibat reduces debilitating itching in children with Alagille Syndrome \(Nov 18, 2020\)](#)

On behalf of Childhood Liver Disease Research Network (ChiLDReN), Texas Children's Hospital and Baylor College of Medicine researchers report that prolonged treatment with Maraxilibat resulted in clinically meaningful improvements in debilitating itching (pruritus) and related quality of life outcomes in children with Alagille syndrome. This syndrome is a rare genetic systemic disorder in which problems with bile flow can cause significant liver injury and potential liver failure, necessitating liver transplantation. The novel pharmacological approach addresses a major unfulfilled therapeutic need to control severe itching in pediatric patients with Alagille syndrome.

[An epidemic outbreak of Mesoamerican Nephropathy in Nicaragua linked to nickel toxicity \(Nov 12, 2020\)](#)

For more than 20 years, an epidemic of chronic kidney disease (CKD) of unknown origin has severely affected specific coastal communities along South America's Pacific coastline from Mexico to Panama leading to more than 50,000 deaths. The condition, known as Mesoamerican Nephropathy (MeN), has a perplexing clinical presentation. Unlike traditional forms of CKD, it affects healthy young working-age individuals who do not have other traditional risk factors for kidney disease, such as diabetes or hypertension. The underlying cause of this devastating public health crisis has remained a mystery.

[NIH funds a new Fragile X Research Center at Baylor College of Medicine and Duncan NRI at Texas Children's Hospital \(Nov 11, 2020\)](#)

The NIH chose Baylor College of Medicine as a site for one of the three Centers for Collaborative Research on Fragile X syndrome, the most common inherited form of intellectual and developmental disability. The new Fragile X Center will receive about \$9 million over the next five years and will be led by co-directors, [Dr. David Nelson](#), Professor of Molecular and Human Genetics at Baylor College of Medicine and investigator at the Jan and Dan Duncan Neurological Research Institute (Duncan NRI) at Texas Children's Hospital, and [Dr. Peter Todd](#), Associate Professor of Neurology at the University of Michigan School of Medicine.

[The Intellectual and Developmental Disabilities Center at Baylor College Receives Competitive Federal Grant to Advance Research and Therapies \(Nov 11, 2020\)](#)

The Eunice Kennedy Shriver [Intellectual and Developmental Disabilities Research Center](#) (IDDRC) at Baylor College of Medicine recently received a highly-competitive grant from the NIH. The \$6.4 million five-year competitive grant was awarded to the IDDRC's director, [Dr. Huda Zoghbi](#), Professor at Baylor College of Medicine, Director of the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital and Howard Hughes Medical Institute investigator; as well as Dr. [David Nelson](#), Professor at Baylor College of Medicine and Dr. [Rodney Samaco](#), Assistant Professor at Baylor College of Medicine, who are the IDDRC's co-directors and investigators at the Duncan NRI.

NIH-funded study no difference in safety of efficacy between three common anticonvulsant medicines (Oct 27, 2020)

There are three treatment options commonly used by doctors in the emergency room to treat patients with refractory status epilepticus (severe seizures that continue even after benzodiazepine medications), which are effective in controlling seizures in more than two-thirds of patients. New findings published in the *New England Journal of Medicine* reveal that the three drugs—levetiracetam, fosphenytoin, and valproate—are equally safe and effective in treating patients with this condition. The study was supported by the National Institute of Neurological Disorders and Stroke (NINDS), part of the NIH.

Texas Children's Awarded Inaugural Survivorship Champion's Prize (Oct 15, 2020)

Children's Cancer Cause named Texas Children's Hematology and Cancer Center's Long-term Survival Program as the 2020 recipient of the inaugural Survivorship Champion's Prize in recognition of the Program's innovative work to provide comprehensive, integrated care for childhood cancer survivors.

Researchers find CAR-NKT could be promising immunotherapy for solid tumors (Oct 14, 2020)

Researchers at Baylor College of Medicine, Texas Children's Hospital, and the University of North Carolina at Chapel Hill have genetically modified human NKT cells with a chimeric antigen receptor (CAR) that enables them to specifically recognize and attack neuroblastoma, a form of childhood cancer. Expressed with the CAR is interleukin-15 (IL-15), a natural protein that supports NKT cell survival.

Kirk earns Fasser Visionary Award (Baylor College of Medicine - October 9, 2020)

[Susan Kirk, MSPAS, PA-C](#), Assistant Professor of Hematology/Oncology at Baylor and Texas Children's Cancer Center, is the 2020 recipient of the Carl E. Fasser Visionary Leadership Award. Named for the longtime director of the Physician Assistant Program at Baylor College of Medicine, the award recognizes excellence by a physician assistant in education, research, clinical practice, and service. The award was announced during National PA week, on Oct. 6

First reversal of Type 1 Diabetes using precision medicine (Oct 8, 2020)

In a letter published today in the [New England Journal of Medicine](#), a team of physicians from Baylor College of Medicine, Texas Children's Hospital, and the University of California, San Francisco, describe a remarkable case of a Type 1 diabetes (T1D) patient, who no longer needs insulin to maintain optimal blood sugar levels. The physicians employed a precision/personalized medicine approach to specifically correct the underlying genetic mutation, which was the primary driver of this patient's diabetes.

ASPHO spotlights Dr. Lubega's career path (Oct 6, 2020)

The career path of Dr. Joseph Lubega, Assistant Professor at Baylor College of Medicine, Associate Director of Pediatric Hematology-Oncology Fellowship Program, and Vice Chair of Global Health SIG at ASPHO, was spotlighted in an article by ASPHO.

Texas Children's, Baylor College and other area institutions receive \$12 million NIH grant to study multidrug resistance (Oct 2, 2020)

The National Institute of Allergy and Infectious Diseases (NIAID) awarded a five-year, \$12 million grant to the Dynamics of Colonization and Infection by Multidrug-Resistant Pathogens in Immunocompromised and Critically Ill Patients (DYNAMITE) program, which includes researchers from the Microbiome Center at Texas Children's Hospital and Baylor College of Medicine, as well as several

other institutions in the Texas Medical Center, to study factors that increase the risk of multidrug-resistant bacterial infections in severely ill and immunocompromised patients.

[Global HOPE provides infrastructure for improving pediatric cancer care in Africa \(Oct 2, 2020\)](#)

Since Burkitt lymphoma was initially described in Uganda in the 1960s, it has emerged as the most common pediatric cancer in equatorial Sub-Saharan Africa and the most common pediatric non-Hodgkin lymphoma worldwide. In the early years, survival rates were slim. After decades of improvements in treatment options, the cure rate today for Burkitt lymphoma exceeds 90% in high-income countries like the U.S. and those in Western Europe. But the prognosis is dramatically worse in low-income countries in Africa, with survival rates estimated at less than 30%. Doctors at Baylor College of Medicine, Texas Children's Cancer and Hematology Centers, and Texas Children's Global HOPE (Hematology-Oncology Pediatric Excellence) Program are working to improve those odds. They have been caring for children with endemic Burkitt lymphoma in Malawi and Uganda, striving to improve survival rates.

[NIH grant supports national study of atypical diabetes causes \(Oct 1, 2020\)](#)

Diabetes mellitus is the most common metabolic disease affecting hundreds of millions around the world. Although patients are typically classified as having type 1 or type 2 diabetes, increasingly many people do not fall neatly into one of these categories. They may have atypical or new forms of diabetes and need a more precise diagnosis and specific treatment. The NIH has selected Baylor College of Medicine and the University of Chicago to lead a national, multicenter study to discover atypical and rare forms of diabetes, the Rare and Atypical Diabetes Network (RADIANT).

[Low doses of insecticide trigger neurodegeneration in insects \(Sep 28, 2020\)](#)

Insect populations are consistently declining around the world and intense use of insecticides is suspected to play a role. This week, a study published in the *[Proceedings of the National Academy of Science USA](#)* by researchers at the [University of Melbourne](#), Baylor College of Medicine, Texas Children's Hospital, and other institutions shows that very low doses of imidacloprid, the world's most used insecticide, trigger neurodegeneration and disrupt body-wide functions, including energy production, vision, movement, and the immune response in the laboratory fruit fly, *Drosophila melanogaster*.

[Dr. Huda Zoghbi named Citation Laureate by Clarivate Web of Science \(Sep 23, 2020\)](#)

Dr. Huda Zoghbi, Director of the Jan and Dan Duncan Neurological Institute at Texas Children's Hospital and a Howard Hughes Medical Institute investigator at Baylor College of Medicine, has been named a Citation Laureate for 2020 by Clarivate Web of Science.

[Dr. Taylor Receives Pediatric Infectious Disease Society Antimicrobial Stewardship Fellowship Award \(Sep 17, 2020\)](#)

Margaret "Maggie" Taylor, M.D., a second-year pediatric infectious disease fellow at Baylor College of Medicine, was one of three candidates awarded the Pediatric Infectious Disease Society (PIDS) Antimicrobial Stewardship Fellowship Award on Aug 26, 2020. This award is given annually to fellows pursuing research in antimicrobial stewardship and provides mentorship from leaders within the Pediatric Committee on Antimicrobial Stewardship.

[Baylor College of Medicine selected as a new Center of Excellence for research on environmental health disparities \(Sep 17, 2020\)](#)

Baylor College of Medicine has received a grant from the NIH to fund a new Maternal and Infant

Environmental Health Riskscape (MIEHR) Research Center. Baylor will receive \$7.1 million over five years and is one of only three sites in the country selected as a Center of Excellence for environmental health disparities research by the National Institute of Minority and Health Disparities. The goal of this new center is to identify key drivers of racial disparities in pregnancy outcomes, such as preterm birth and hypertensive disorders during pregnancy.

Three research teams earn Dunn Awards (Sep 4, 2020)

Three teams of Rice University and Baylor College of Medicine researchers have been named winners of the 2020 John S. Dunn Collaborative Research Awards. The teams include Baylor College and Texas Children's researchers: Drs. Swathi Balaji, Andrew DiNardo, and Mingshan Xue.

Fighting cancer with rejection-resistant, 'off-the-shelf' therapeutic T cells (Aug 20, 2020)

Personalized cancer treatments are no longer just options of the future. In the past few years, researchers have made significant progress in 'teaching' the body's immune T cells to recognize and kill specific cancer cells, and human clinical trials have shown that this approach can successfully eliminate tumors.

Novel regulators of myelin repair and regeneration discovered (Aug 13, 2020)

Myelin, a type of glial cell, forms an insulating sheath that surrounds the nerves of the brain and the spinal cord and is critical for rapid and accurate transmission of nerve signals. Damage or loss of myelin sheath is a hallmark of several neurological diseases in adults (e.g., multiple sclerosis) and in infants (e.g., cerebral palsy) and is common after injury. However, little is known about the signaling mechanisms involved in the repair and regeneration of myelin. A recent study from Baylor College of Medicine and Texas Children's Hospital has identified a new regulator (Nedd4) and genetic pathway (Daam2-VHL-Nedd4) that controls myelin formation during development and after injury. The study appears in the journal [*Genes and Development*](#).

Dissecting the genetics of neurodevelopmental disorders – one cell at a time (July 20, 2020)

In recent years, a large number of genes have been implicated in neurodevelopmental disorders such as autism, developmental delays, intellectual disabilities, and epilepsy. However, without a thorough understanding of how a gene functions in different brain cells during various stages of development and later in post-natal life, it is difficult to determine how they individually – and as a group – contribute to disease pathologies.

Shulman receives Derek Denny-Brown Young Neurological Scholar Award (July 17, 2020)

The [*American Neurological Association*](#) (ANA), a leading and among the oldest associations for academic neurology, selected [*Dr. Joshua Shulman*](#) for this year's [*Derek Denny-Brown Young Neurological Scholar Award in the Physician-Scientist - Basic Sciences category*](#).

CAR T cell immunotherapy results in patient recovery (July 16, 2020)

In a clinical trial evaluating a novel immunotherapy option for cancer treatment, a child with rhabdomyosarcoma, a form of muscle cancer, that had spread to the bone marrow, showed no detectable cancer following treatment with chimeric antigen receptor (CAR) T cells that were engineered to target the HER2 protein on the surface of the cancer cells.

[COVID-19 study, recruitment underway to assess emotional impact on children and their families \(July 16, 2020\)](#)

For many of us, 2020 has been an unprecedented year filled with numerous challenges. Since March, the COVID-19 global pandemic has disrupted our normal way of life. Many of us are working from home. We're social distancing ourselves from each other, and wearing protective face masks wherever we go – both at work and in public - to protect ourselves and curb the spread of this virus.

[Meta-Analysis of the Alzheimer's Disease Human Brain Transcriptome and Functional Dissection in Mouse Models \(July 15, 2020\)](#)

A collaborative study in *Cell Reports* led by Drs. Zhandong Liu and Joshua Shulman presents a meta-analysis of the [Alzheimer disease](#) human [brain transcriptome](#) and functional dissection in mice.

[Nano-radiomics unveils treatment effect on tumor microenvironment \(July 13, 2020\)](#)

Drs. Robin Parihar and Ketan Ghaghada at Texas Children's Hospital and Baylor College of Medicine developed Nao-Radiomics, a novel method to assess the effect of cellular immunotherapy against the inhibitory effects of tumor microenvironment to improve treatment of cancers.

[Solving the CLN6 mystery in Batten Disease \(June 30, 2020\)](#)

Batten disease is a family of 13 rare, genetically distinct conditions. Collectively, they are the most prevalent cause of neurodegenerative disease in children, affecting 1 in 12,500 live births in the U.S. One of the Batten disease genes is CLN6. How mutations in this gene lead to the disease has been a mystery, but a study led by researchers at Baylor College of Medicine and Texas Children's Hospital and published in the [Journal of Clinical Investigation](#) reveals how defective CLN6 can result in Batten disease.

[Chao receives the Philip R. Dodge Young Investigator Award \(June 29, 2020\)](#)

[Dr. Hsiao-Tuan Chao](#), pediatric neurologist, assistant professor at Baylor College of Medicine and an investigator at the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital, received the prestigious 2020 Philip R. Dodge Young Investigator Award from the [Child Neurology Society](#).

[Texas Children's publishes a paper detailing the clinical course of 57 children with COVID-19 \(June 23, 2020\)](#)

Interim Physician-in-Chief Dr. James Versalovic and several other Texas Children's physicians recently published a [paper](#) in the *Oxford Academic: The Journal of the Pediatric Infectious Diseases Society* detailing the clinical course of 57 children with COVID-19 cared for at Texas Children's at the beginning of the pandemic. Dr. Catherine Foster with Infection Control and Prevention is the lead author of the paper and Dr. Judith Campbell with Infection Control and Prevention is the senior author.

[Lipid emulsions can prevent liver disease in preterm babies \(June 22, 2020\)](#)

A study by Drs. Doug Burrin, Lee Call, and Muralidhar Premkumar provides clues on how lipid emulsions prevent liver disease in preterm babies.

[Baylor and Texas Children's researchers launch a landmark online pediatric cancer study \(June 18, 2020\)](#)

Researchers at Baylor College of Medicine and Texas Children's Hospital have launched a landmark online study, called "The Reasons Why Us," to investigate the environmental and associated genetic risk factors for pediatric cancer. This epidemiological study is being conducted in partnership with [The Oliver Foundation](#) in Florida, which so far has engaged nearly 400 families who have been affected by pediatric cancer and want to participate in the research.

Unraveling a novel role for TFEB in liver development, regeneration and biliary cancer (June 17, 2020)

Transcription factor EB (TFEB) is a master regulator protein that allows cells to adapt and respond appropriately to ever-changing environmental cues, such as changes in nutrition, physical exercise, and infections. The protein senses changes in the cell's immediate environment and alters fundamental metabolic processes to ensure that cellular processes remain at equilibrium. A recent study by the researchers at the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital, Baylor College of Medicine, and [Telethon Institute of Genetics and Medicine](#) (TIGEM) in Italy, reports a novel role for TFEB in liver development and regeneration.

Cancer Center faculty and trainees recognized with awards (June 15, 2020)

The following faculty received 2020 BCM Awards:

- Ricardo Flores—Clark Faculty Service Award
- Ghadir Sasa and Jeremy Slone—Norton Rose Fulbright Faculty Excellence Award for Teaching and Evaluation
- Raj Venkatramani,— Norton Rose Fulbright Faculty Excellence Award for Enduring Educational Materials
- Mary Shapiro— Early Career Faculty Award for Excellence in Patient Care
- Rodrigo Erana, Kala Kamdar, Caridad Martinez, Surya Rednam, Amber Yates—STAR Faculty Award for Excellence in Patient Care
- Juan Carlos Bernini, Murali Chintagumpala, ZoAnn Dreyer, Donald Mahoney, Kenneth McClain—Master Clinician Faculty Award for Excellence in Patient Care

Others in the Center who were also recently recognized:

- Nader El-Mallawany received the teaching award from graduating pediatric residents at TCH/BCM.
- Valeria Smith was selected as a BCM Critical Thinking and Problem Solving (CTAPS) facilitator for academic year 2020-2021.
- Khaled Sanber, BCM resident in Internal Medicine MeRIT program, mentored by Meena Hegde, received the Early Stage Professional Abstract Award by the International Society of Cell and Gene Therapy (ISCT), for "Modulating negative receptor signals to improve anti-glioblastoma CAR T-cell therapy." Dr. Sanber is one of the three recipients of this award announced at the 2020 ISCT Annual Meeting.

Hematology and Oncology faculty selected as leaders of national professional associations (June 15, 2020):

- Dr. Michelle Fritsch named president-elect for the Association of Pediatric Oncology Social Workers, the national social work association.

- Dr. Quinn Franklin named president-elect for the Association of Child Life Professionals, the national child life specialist association.
- Dr. Rayne Rouse selected as Chair of Pediatric Hematological Malignancies for the 2020 ASH Annual Meeting.
- Dr. Donald Parsons invited to join the National Cancer Institute's PDQ Pediatric Treatment Editorial Board to provide guidance related to pediatric cancer genomics and neuro-oncology.
- Dr. Philip Lupo selected to serve on the Genetics of Health and Disease Study Section, part of the NIH Center for Scientific Review.
- Dr. Ghadir Sasa invited to join the Bone Marrow Transplant Clinical Trials Network Non-Malignant Disorders State of the Science Committee preceding the symposium in Honolulu in February of 2021.

Dr. Mahoney receives George R. Buchanan Lectureship Award (June 15, 2020)

Dr. Donald Mahoney received the George R. Buchanan Lectureship Award from the American Society of Pediatric Hematology/Oncology. This honor is in recognition of his scientific contributions to the field and his outstanding mentorship. The award will be presented at the 2021 ASPHO Conference in Portland, Oregon.

[Dr. Geoffrey Preidis leads the AGA technical review on the use of probiotics for specific gastrointestinal conditions \(June 9, 2020\)](#)

The American Gastroenterological Association (AGA), a leading society of medical professionals, has published the first-ever clinical guidelines for the use of probiotics in the prevention and treatment of common gastrointestinal (GI) conditions. These guidelines are a culmination of a comprehensive two-year technical review conducted by a team of researchers and gastroenterologists. The review team, led by [Dr. Geoffrey Preidis](#), pediatric gastroenterologist at Texas Children's Hospital and assistant professor at Baylor College of Medicine, performed a rigorous analysis of published clinical trials to find evidence supporting the use of probiotics in preventing and treating specific GI disorders. The [review](#) and [guidelines](#) were published in *Gastroenterology*, the official journal of AGA. [technical review](#) and [guidelines](#) were published in *Gastroenterology*, the official journal of AGA.

[Assessing cancer diagnosis in children with birth defects \(May 29, 2020\)](#)

Scientific studies suggest that children with birth defects are at increased risk of cancer. However, it has not been assessed whether the type of cancer, the age at which they are diagnosed, or the extent of cancer spread at the time of diagnosis, is different for children with birth defects compared to children without birth defects. In this study led by Baylor College of Medicine and Texas Children's Hospital, researchers compared about 13,000 children with cancer but no birth defects with nearly 1,600 children with cancer and one or more birth defects. The results were published in the journal *Cancer*.

[Study finds excess monitoring of oxygen levels in certain pediatric populations \(May 26, 2020\)](#)

Monitoring blood oxygen levels with continuous pulse oximetry is overused in infants with bronchiolitis who do not require supplemental oxygen, according to a multi-institutional study published recently in *JAMA*. The researchers found frequent use of continuous pulse oximetry and a wide variation in its usage among hospitals in their sample, despite national recommendations advising against the practice.

[Research reveals new way to predict genetic diseases \(May 18, 2020\)](#)

Most genetic diseases are caused by spontaneously arising mutations in the genetic code. Point mutations that cause miscoding of the amino acid, arginine, occur more often than mutations in any other amino

acids. A comprehensive genome-wide study from the laboratory of human geneticist [Dr. Michael Wangler](#), Assistant Professor at Baylor College of Medicine and investigator at the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital, has led to a method to predict

[Dr. Cohen receives the HTRS 2020 Mentored Research Award \(May 11, 2020\)](#)

[Dr. Clay Cohen](#), pediatric hematologist at Texas Children's Hospital Cancer and Hematology Center/Baylor College of Medicine, received his Pediatric Hematology and Oncology fellowship training at Texas Children's Hospital. Dr. Cohen joined Dr. Joel Moake's laboratory during his fellowship at Rice University and developed his research project, investigating the role of the vascular wall in coagulation. Following the completion of his fellowship in 2018, Dr. Cohen has remained at Texas Children's as a faculty member, where he is an active member of the Hemostasis and Thrombosis clinical team and is continuing his basic research with Dr. Moake. To date, his research project has demonstrated that human endothelial cells and fibroblasts produce the coagulation proteins necessary for factor X activation, and that coagulation reactions occur on human endothelial cell surfaces without the addition of external coagulation proteins or phospholipids.

[Dr. Abhishek Seth receives grant to study urological birth defects \(Apr 30, 2020\)](#)

[Dr. Abhishek Seth](#), pediatric urologist at Texas Children's Hospital and Assistant Professor in the Divisions of Pediatrics and Urology at Baylor College of Medicine, received a federal grant from the National Institutes of Health to support his research on congenital urological anomalies.

[Dr. Huda Zoghbi awarded the Brain Prize \(Apr 29, 2020\)](#)

[Dr. Huda Zoghbi](#) and Sir Adrian Bird have mapped Rett syndrome, a rare neurological disorder that primarily affects girls during their early childhood. Their research also gives a unique insight into the epigenetics and overturns previous understanding, indicating that neurological developmental disorders are not necessarily irreversible. For this, the two neuroscientists received the world's most prestigious prize for brain research—the Lundbeck Foundation Brain Prize.

[Bellen elected to prestigious National Academies \(Apr 28, 2020\)](#)

[Dr. Hugo J. Bellen](#), professor of [molecular and human genetics](#) and [neuroscience](#) at Baylor College of Medicine, Howard Hughes Medical Institute investigator, and member of the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital has been elected as one of the newest members of the [American Academy of Arts and Sciences](#), one of the country's most prestigious honorary titles. He is among 276 artists, scholars, scientists, and leaders in the public, non-profit, and private sectors elected to the Academy for the class of 2020.

[Promising new treatment for recurrent pediatric brain cancer \(April 27, 2020\)](#)

Two pediatric brain cancers that are challenging to treat if they recur, medulloblastoma and ependymoma, are the target of a clinical trial using a new type of therapy. A multi-institutional, international team led by researchers at Baylor College of Medicine, Texas Children's Hospital, and the Hospital for Sick Children (SickKids) has developed a novel approach that delivers appropriately-targeted chimeric antigen receptor (CAR) T cell therapy directly into the cerebrospinal fluid that surrounds the tumor.

[An international collaboration finds a novel neurodevelopmental syndrome \(April 23, 2020\)](#)

An international study led by researchers at Baylor College of Medicine, Texas Children's Hospital, and Hunan Provincial Maternal and Child Health Care Hospital in China identified spontaneous point mutations in a cyclin-dependent kinase 19 (CDK19) gene, which causes a novel early-onset neurodevelopmental disorder characterized by uncontrolled early-onset seizures. The study provides the first experimental evidence that links mutations in the CDK19 gene to a human disorder. It appears in [American Journal of Human Genetics](#).

[Researchers engineer better way to target leukemia cells \(April 8, 2020\)](#)

Acute Lymphoblastic Leukemia (ALL) is the most common childhood cancer. While most children respond well to chemotherapy, some experience resistant or relapsed disease. Building on an immunotherapy treatment called CAR T cell therapy, researchers at Baylor College of Medicine, working with colleagues from multiple institutions, were able to engineer a new fighter T cell that more effectively targeted leukemia cells in preclinical studies.

[Srivaths recognized with Baylor College of Medicine's Women of Excellence award \(April 8, 2020\)](#)

A group of women from across all mission areas and roles at Baylor College of Medicine were honored as Women of Excellence for their leadership, mentorship, and commitment to academic medicine, including [Dr. Lakshmi Srivaths](#) of Texas Children's Cancer and Hematology Centers. In addition, allies who support women in their roles at Baylor also were recognized. [See the award video and list of winners.](#)

[Dr. Ivan Chinn's research recognized by international disease association \(Apr 7, 2020\)](#)

Dr. [Ivan Kingyue Chinn](#), a physician-scientist and director of the Immunogenetics Program at Texas Children's Hospital, and assistant professor in the Pediatric Immunology, Allergy and Retrovirology section at Baylor College of Medicine, was honored by the [Associazione Italiana Linfoistiocitosi Emofagocitica](#). This Italian nonprofit organization supports the families of children affected by hemophagocytic lymphohistiocytosis (HLH), a group of immune disorders that affect 1 in 50,000 children each year.

[A new screening approach may improve outcomes for newborns with biliary atresia, a serious liver disease \(Apr 6, 2020\)](#)

A study led by physicians and scientists at Texas Children's Hospital and Baylor College of Medicine has developed a new screening approach for early diagnosis of biliary atresia, a serious pediatric liver disease that is the leading cause of liver transplantation among children. The study published in the [Journal of American Medical Association](#) reports elevated serum levels of direct or conjugated bilirubin can quickly and accurately identify newborns with this condition within two weeks of birth.

[Inappropriate cellular response to stress linked to a new neurological disorder \(Mar 24, 2020\)](#)

An international team led by researchers at the Baylor College of Medicine and Texas Children's Hospital in collaboration with the [Undiagnosed Diseases Network](#) have identified gene variants in the *EIF2AK* family of kinases leads to previously unidentified neurodevelopmental disorders, in which inappropriate response to stress (such as fever triggered by viral infections) triggers degeneration of the nerve fibers connecting major brain regions, collectively known as the white matter.

[Researchers learn to control brain cell that triggers tremor \(Mar 18, 2020\)](#)

Researchers at Baylor College of Medicine and the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital have improved our understanding of how tremor—the most common movement disorder—happens, opening the possibility of novel therapies for this condition.

[New insight on ACOX1-related neurodegenerative disorders \(Mar 12, 2020\)](#)

A recent study led by researchers at Baylor College of Medicine and Texas Children's Hospital in Houston reports that a hyperactive variant of enzyme ACOX1 produces elevated levels of toxic reactive oxygen species (ROS) and causes a previously unidentified late-onset neurodegenerative disorder. The team named this new syndrome “Mitchell disease” in reference to the first patient to be diagnosed with this disorder.

[Zhandong Liu and team win a highly competitive award from Allen Institute \(Mar 12, 2020\)](#)

Drs. Zhandong Liu and Jinyuan Hu are one of the three teams that were announced as winners of the Allen Institute Cell Lineage Reconstruction DREAM Challenge conducted by the Allen Institute and Sage Bionetworks, an open science competition for computational approaches to building accurate cell lineages in developmental biology.

[The Neurosciences Program at Texas Children's hosts an inaugural retreat \(Mar 4, 2020\)](#)

Texas Children's Neurosciences Program is all about improving patient outcomes. Every day, our team of neurologists, neurosurgeons, geneticists, physician-scientists and researchers are working together tirelessly to pioneer innovative therapies to improve the lives of children with neurological disorders. On February 21, neuroscience leadership at Texas Children's, together with faculty and staff, convened for the inaugural Neurosciences Retreat at the Jan and Dan Duncan Neurological Research Institute. This informative and engaging event provided our multidisciplinary team of neurologists, neurosurgeons, clinicians, researchers, behavioral health experts, and more the opportunity to reflect on past successes, discuss areas of possible improvement, identify transformative goals, and actively plan for the future.

[Srivaths honored by blood disorder foundation \(Mar 2, 2020\)](#)

[Dr. Lakshmi Srivaths](#), Professor of Pediatrics—Hematology, was selected as an Honorary Member of the [Foundation for Women and Girls with Blood Disorders](#). In this role, she will help advance the foundation's efforts in improving clinical care, education and research in the field of adolescent females with bleeding and thrombophilia/thrombosis. She has been involved with the foundation for 10 years in various roles, including as a member of the Medical Advisory Council and chair of the Education and Advocacy Sub-committee.

[Rooney elected microbiology fellow \(Mar 2, 2020\)](#)

[Dr. Cliona Rooney](#), professor of pediatrics and part of the Center for Cell and Gene Therapy, was one of 68 [new fellows](#) elected to American Academy of Microbiology for 2020. Fellows are an honorific leadership group within the academy, elected annually through a selective, peer-review process based on their records of scientific achievement and original contributions that have advanced microbiology.

[Xue lab develops animal models for STXBP1 encephalopathy \(Feb 19, 2020\)](#)

A study from the laboratory of [Dr. Mingshan Xue](#), assistant professor at Baylor College of Medicine and investigator at the Jan and Dan Duncan Neurological Research Institute at Texas Children's

Hospital, reports the generation of novel mouse models that mimic the key features of *STXBPI* encephalopathy – a rare neurological condition that encompasses a broad range of cognitive, motor, and psychiatric dysfunction, as well as recurrent seizures.

[Study highlights pediatrics medical overuse \(Feb 5, 2020\)](#)

A literature review in *JAMA Pediatrics* by Dr. Nathan Money and others at Texas Children's Hospital and Baylor College of Medicine highlights established and emerging practices that represent medical overuse in pediatrics setting.

[Rooney honored as leader in science \(Jan 31, 2020\)](#)

[Dr. Cliona Rooney](#), Professor of Pediatrics and in the Center for Cell and Gene Therapy, was honored as one of four 2020 Women Leaders in Science by BioHouston, a local organization seeking to position the city as a leader in life science and biotechnology commercialization. Rooney was honored with her fellow awardees at the 11th annual WISE Luncheon at the River Oaks Country Club.

[Dr. Katherine King weighs in on coronavirus outbreak \(Feb 3, 2020\)](#)

In an interview with Chinese American news station, Sinovision, infectious disease expert [Dr. Katherine King](#) weighed in on the coronavirus outbreak.

[Brain tumors remodel neuronal synapses to promote growth \(Jan 30, 2020\)](#)

Scientists in [Dr. Benjamin Deneen's lab](#) at Baylor College of Medicine and Texas Children's Hospital have found new evidence that glioma, a lethal form of brain cancer, alters the activity of neighboring neurons, accelerating a vicious cycle that drives tumor-associated epilepsy and tumor progression.

[Dr. King receives the St. John's School's Distinguished Alumna award \(Jan 29, 2020\)](#)

[Dr. Katherine King](#), Associate Professor of Pediatric Infectious Diseases, Baylor College of Medicine, and Co-Founder of Doctors for Change, was recognized for her outstanding achievements or contributions to St. John's, the community, the state, or the nation.

[TAMEST protégés selected \(Jan, 2020\)](#)

[Drs. Mirjana Maletic-Savatic](#), [Maria Elena Bottazzi](#), and [Maksim Mamonkin](#) from Texas Children's Hospital were selected as the 2020 Academy of Medicine, Engineering and Science of Texas (TAMEST) Protégés for 2020.

[Study led by Dr. Maria Redondo finds sustained increase in BMI among older children and teens raises their risk for type 1 diabetes \(Jan 22, 2020\)](#)

The study results support that elevated BMI may exacerbate islet autoimmunity prior to clinical T1D, particularly in children with lower risk based on age and HLA. Interventions to maintain normal BMI may prevent or delay the progression of islet autoimmunity.

[Heczey lab finds an effective way to curb liver cancers \(Jan 21, 2020\)](#)

The study published in *Cancer Immunology Research* finds glypican-3-specific CAR T cells co-expressing IL15 and IL21 have superior expansion and antitumor activity against hepatocellular carcinoma

Fruit fly screen uncovers genes regulating peroxisomal disorders (Jan 16, 2020)

A recent study in the laboratory of [Dr. Michael Wangler](#), assistant professor at Baylor College of Medicine and investigator at the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital, uncovered 18 genes that regulate peroxisomal biology, many of which may be potential therapeutic candidates for PBD-ZSD and other disorders affecting the peroxisomes. The study was published in [G3: Genes/ Genomes/Genetics](#) journal.

Dr. Hugo Bellen elected 2020 Vice-President/2021 President of the Genetics Society of America (Jan 8, 2020)

Dr. Hugo Bellen, professor at Baylor College of Medicine and investigator at the Howard Hughes Medical Institute and the Jan and Dan Duncan Neurological Research Institute, has been elected the 2020 Vice-President/2021 President of the Genetics Society of America.

ACTG2 variants discovered as a reliable diagnostic marker and prognostic tool for visceral myopathy (Jan 7, 2020)

Visceral myopathy is a rare disorder of smooth muscle dysfunction that manifests in a broad range of symptoms ranging from severe gastrointestinal and genitourinary dysfunction requiring surgical and nutritional interventions in newborns to mild gastrointestinal issues in adults. An international research team led by Dr. [Michael Wangler](#), assistant professor at Baylor College of Medicine, clinical geneticist and investigator at the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital, performed an in-depth clinical and genomic analysis which revealed *ACTG2* gene as the primary determinant of severe symptoms and worse long-term prognosis in majority of the patients.

RESEARCH FUNDING RECIPIENTS IN THE DEPARTMENT OF PEDIATRICS

The following faculty served as principal investigators (or lead PI on multi-PI grants) on highly competitive, large-scale federal grants in 2019:

Principal Investigators (PIs)/Contact PIs	Section	Type of Grant(s)	Federal Institution
ALLEN, CARL	HEM-ONC	R01 & U54	NCI
BARBIERI, EVELINE	HEM-ONC	R01	NCI
BERTUCH, ALISON A	HEM-ONC	R01	NHLBI
BOUCHIER-HAYES, LISA	HEM-ONC	R01	NIGMS
BURRIN, DOUGLAS G	NUTRITION	R01	NIDDK
CASTILLO, HEIDI	DEVELOPMENTAL	U01	NCBDDD
CHAO, HSIAO-TUAN	NEUROLOGY	DP5	OD
CHEN, MIAO-HSUEH	NUTRITION	R01	NIDDK
DAVIS, TERESA A	NUTRITION	R01 x 2	NICHHD
FIOROTTO, MARTA	NUTRITION	R01	NICHHD
FLANAGAN, JONATHAN	HEM-ONC	R01	NHLBI
GOODELL, MARGARET A.	HEM-ONC	R01 x 3, U01	NCI & NIDDK
HESLOP, HELEN E	HEM-ONC	P50 & UG1	NCI & NHLBI
HILLIARD, MARISA	PSYCHOLOGY	R01	NIDDK
HOTEZ, PETER	TROPICAL MED	R56	NIAID
KAHALLEY, LISA	PSYCHOLOGY	R01	NCI
KIM, MARIA	BIPAI	R01	NIMH
KING, KATHERINE	INFECTIOUS DIS	R01 x 2	NHLBI
LEE, HYUN KYOUNG	NEUROLOGY	R01	NINDS
LINGAPPAN, KRITHIKA	NEONATOLOGY	R01 x 2	NHLBI
LIU, ZHANGDONG	NEUROLOGY	R01 x 2	NIGMS
LOPEZ, JOB E	TROPICAL MED	R01	NIAID
LUPO, PHILIP	HEM-ONC	R01	OD
MALETIC-SAVATIC, MIRJANA	NEUROLOGY	R01 x 2	NIGMS
MANDALAKAS, ANNA	GLOBAL HLTH	R01 & U01	NIAID & CDC
MARINI, JUAN	CRITICAL CARE	R01	NIGMS
MCNEIL, CHASE	INFECTIOUS DIS	R01	AHRQ
METELITSA, LEONID	HEM-ONC	R01	NCI
MONTEALEGRE, JANE	HEM-ONC	R01	NIMHD
MOORTHY, BHAGAVATULA	NEONATOLOGY	R01 & P42	NIEHS
MORENO, JENNETTE P	NUTRITION	R00	NICHHD
MURRAY, KRISTY	TROPICAL MED	U01 X 2	CGH
O'CONNOR, TERESIA	NUTRITION	R01	NIDDK
PARSONS, WILL	HEM-ONC	U01	NCI
PENNY, DANIEL	CARDIOLOGY	UG1	NHLBI
PLON, SHARON	HEM-ONC	U01	NCI
POMPEII, LISA A	RRO	R01	NIOSH
RABIN, KAREN	HEM-ONC	R01	OD
REDONDO, MARIA	ENDOCRINE	R01	NIDDK
RUSIN, CRAIG	CARDIOLOGY	R01	NHLBI
SCHEURER, MICHAEL	HEM-ONC	R01 & U54	NCI & FIC
SHEKERDEMIAN, LARA	CRITICAL CARE	UG1	NHLBI
SHEN, LANLAN	NUTRITION	R01 x 2	NCI & NICHHD
SHIVANNA, BINOY	NEONATOLOGY	R01	NHLBI
SHNEIDER, BEN	GI	U01	NIDDK
SHULMAN, ROBERT	NUTRITION	R01 & U01	NINR & NIDDK
SWANN, JOHN	NEUROLOGY	R01 & R61	NINDS
TANG, JIANRONG	NEUROLOGY	R01	NINDS
WATERLAND, ROBERT	NUTRITION	R01 x 2	NIDDK
WU, QI	NUTRITION	R01	NIDDK

XU, YONG	NUTRITION	R01 x 3	NIDDK
YANG, JIANHUA	HEM-ONC	R01	NINDS
ZACHARIAH, JUSTIN	CARDIOLOGY	R01	NHLBI
ZHU, YI	NUTRITION	R00	NIDDK
ZOGHBI, HUDA	NEUROLOGY	R01 & R37	NINDS

The following faculty served as principal investigators on R-series NIH grants (R03, R21, R34, R56, R33, R13):

Principal Investigator	Section	Type of Grant	Institute
DAVIS, ALAN	HEM-ONC	R21	NIAMS
HIRSCHI, KENDAL	NUTRITION	R03	NIAID
HOLDER, JIMMY	NEUROLOGY	R03	NINDS
HOTEZ, PETER	TROPICAL MED	R21	NIAID
LINGAPPAN, KRITHIKA	NEONATOLOGY	R21	NHLBI
LOPEZ, JOB	TROPICAL MED	R03	NIAID
PAMMI, MOHAN	NEONATOLOGY	R03 & R21	NICHD
POWERS, JACQUELYN	HEM-ONC	R21	NHLBI
REDELL, MICHELLE	HEM-ONC	R21	NCI
SHEN, LANLAN	NUTRITION	R21 x 2	NCI
SHULMAN, ROBERT	NUTRITION	R33	NCCIH
SUMAZIN, PAVEL	HEM-ONC	R21	NCI
YUSTEIN, JASON	HEM-ONC	R21	NCI

Research training grants are critical to the development of our students and post-doctoral trainees. The following faculty are principal investigators of training grants within the DOP:

Principal Investigator	Section	Type	Institute	Title
GOODELL, MARGARET	HEM-ONC	T32	NIDDK	Hematology Training Program
HESLOP, HELEN	HEM-ONC	T32	NHLBI	Training in Cell and Gene Therapy
PLON, SHARON	HEM-ONC	T32	NIGMS	Medical Scientist Training Program
SHULMAN, ROBERT	NUTRITION	T32	NIDDK	Research Training in Pediatric Gastroenterology
SWANN, JOHN	NEUROLOGY	T32	NINDS	Multidisciplinary Training in Brain Disorders and Development
BLANEY, SUSAN	HEM-ONC	K12	NCI	Pediatric Oncology Clinical Research Training Program

Below are those faculty who serve as principal investigators on non-NIH government sponsored grants and contracts:

Principal Investigator	SECTION	State or Federal Government Sponsor
AHMED, SAEED	RETROVIROLOGY	USAID
ANTAR, ALLI	NUTRITION	USDA
BACHA, FIDA	NUTRITION	USDA
BARBIERI, EVELINE	ONCOLOGY	CPRIT
BASSHAM, BRIAN	EMERGENCY MEDICINE	HRSA
BIER, DENNIS	NUTRITION	USDA x 3
BOTTAZZI, MARIA ELENA	TROPICAL MEDICINE	DOD
BOOM, JULIE	ACADEMIC GENERAL	CDC
BROWN, AUSTIN	ONCOLOGY	CPRIT
BURRIN, DOUGLAS	NUTRITION	USDA
CASTILLO, HEIDI	DEVELOPMENTAL	CDC
CHACKO, SHAJI	NUTRITION	USDA
CHAKRABORTY, RIKHIA	HEMA & ONCOLOGY	DOD
CHEN, MIAO-HSUEH	NUTRITION	USDA
CHUMPITAZI, CORRIE	EMERGENCY MEDICINE	HRSA
CRUZ, ANDREA	EMERGENCY MEDICINE	HRSA
DAVE, JAYNA	NUTRITION	USDA X 2
DAVIS, ALAN	HEMA & ONCOLOGY	DOD
DAVIS, TERESA	NUTRITION	USDA
DIAZ, ROSA	HEMATOLOGY	CDC & HRSA
FIOROTTO, MARTA	NUTRITION	USDA
FUKUDA, MAKOTO	NUTRITION	USDA
GEE, ADRIAN	HEMA & ONCOLOGY	CPRIT
GILLESPIE, SUSAN	ALLERGY&IMMUNOLOGY	TX DSHS
GREELEY, CHRISTOPHER	PUBLIC HEALTH	TX DEPT FAMILY PROTECT SERV
GUNTER, SARAH	TROPICAL MEDICINE	TX DSHS
HADSELL, DARRYL	NUTRITION	USDA
HEALY, CATHERINE	INFECTIOUS DISEASE	CPRIT
HECZEY, ANDRAS	ONCOLOGY	CPRIT
HERGENROEDER, AL	ADOLECENT MED	HRSA & OJJDP
HILL, RYAN	PSYCHOLOGY	SAMHSA
HIRSCHI, KENDAL	NUTRITION	USDA
HORTON, TERZAH	ONCOLOGY	CPRIT
HOTEZ, PETER	TROPICAL MEDICINE	DOD X 2
HUGHES, SHERYL	NUTRITION	USDA x 2
HURWITZ, RICHARD	ONCOLOGY	CPRIT
JAHOOR, FAROOK	NUTRITION	USDA
KIM, JEFFREY	CARDIOLOGY	CPRIT
LAM, FONG	CRITICAL CARE	VA
LIU, ZHANDONG	NEUR NRI	CPRIT & NSF
LUPO, PHILIP	ONCOLOGY	CPRIT x 2, CDC, DOD
MACK, STEPHEN	ONCOLOGY	CPRIT
MAN, TSZ-KWONG	ONCOLOGY	CPRIT
MANDALAKAS, ANNA	GLOBAL HEALTH	CDC
MARINI, JUAN	CRITICAL CARE	USDA
MCKAY, SIRIPOOM	ENDOCRINE	NSF
MCNEIL, JONATHON	INFECTIOUS DISEASE	AHRQ
MISRA, SANGHAMITRA	ACADEMIC GENERAL	CPRIT
MOHAMMAD, MAHMOUD	NUTRITION	USDA
MONTEALEGRE, JANE	ONCOLOGY	CPRIT x 2
MOORTHY, BHAGAVATULA	NEONATOLOGY	CPRIT
MORAN, NANCY	NUTRITION	USDA

MORENO, JENNETTE	NUTRITION	USDA
MUNOZ-RIVAS, FLOR	INFECTIOUS DISEASE	CDC
MURRAY, KRISTY	TROPICAL MEDICINE	CDC X 2
NAKATA, PAUL	NUTRITION	USDA
NICKLAS, THERESA	NUTRITION	USDA
O'CONNOR, TERESIA	NUTRITION	USDA
PALAZZI, DEBRA	INFECTIOUS DISEASE	AHRQ
PARIHAR, ROBIN	ONCOLOGY	CPRIT
PARSONS, DONALD (WILL)	ONCOLOGY	CPRIT X 2
PATI, DEBANANDA	ONCOLOGY	CPRIT x 2
POMPEII, LISA	EPIDEMIOLOGY	CDC & OSHA
POPLACK, DAVID	HEMA & ONCOLOGY	CPRIT
ROONEY, CLIONA	HEMA & ONCOLOGY	CPRIT
SCHEURER, MICHAEL	ONCOLOGY	CPRIT
SEXSON TEJTEL, SARA	CARDIOLOGY	PCORI X 2
SHAH, MANISH	EMERGENCY MEDICINE	HRSA
SHEN, LANLAN	NUTRITION	USDA
SHULMAN, ROBERT	NUTRITION	USDA
SISLEY, STEPHANIE	NUTRITION	USDA
SOLTERO NGWOLO, ERICA	NUTRITION	USDA
SPINNER, JOSEPH	CARDIOLOGY	DOD
STARKE, JEFFREY	INFECTIOUS DISEASE	TX DSHS
SUMAZIN, PAVEL	ONCOLOGY	EUROPEAN UNION
THOMPSON, DEBORAH	NUTRITION	USDA
TONG, QIANG	NUTRITION	USDA
WATERLAND, ROBERT	NUTRITION	USDA & CPRIT
WIEMANN, CONSTANCE	ADOL. & SPORTS MED.	HRSA
WOOD, ALEXIS	NUTRITION	USDA
WU, QI	NUTRITION	USDA
XU, YONG	NUTRITION	USDA
YUSTEIN, JASON	ONCOLOGY	CPRIT
ZHU, YI	NUTRITION	USDA

***USAID**: UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT; **CPRIT**: CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS; **HRSA**: HEALTH RESOURCES & SERVICES ADMINISTRATION; **DOD**: DEPARTMENT OF DEFENSE; **USDA**: UNITED STATES DEPARTMENT OF AGRICULTURE; **CDC**: CENTERS FOR DISEASE CONTROL; **FDA**: FOOD AND DRUG ADMINISTRATION; **DHHS**: DEPARTMENT OF HEALTH AND HUMAN SERVICES; **TX DSHS**: TEXAS DEPARTMENT OF STATE HEALTH SERVICES; **OJJDP**: OFFICE OF JUVENILE JUSTICE AND DELINQUENCY PREVENTION; **SAMHSA**: SUBSTANCE ABUSE AND MENTAL HEALTH SERVICES ADMINISTRATION; **NSF**: NATIONAL SCIENCE FOUNDATION; **AHRQ**: AGENCY FOR HEALTHCARE RESEARCH AND QUALITY; **PCORI**: PATIENT-CENTERED OUTCOMES RESEARCH INSTITUTE

Below are those faculty who serve as principal investigators on awards granted by foundations and other non-profit organizations:

Principal Investigators of Foundation or Non-Profit Awards		
AGRUSA, JENNIFER	HORTON, TERZAH	POWERS, JACQUELYN
ALLEN, CARL	HOTEZ, PETER	RABIN, KAREN
ANDERSON, ANNE	HOWARD, TAYLOR	RAMIREZ, ANDREA
ANTAR, ALLI	HURWITZ, RICHARD	RAU, RACHEL
BARBIERI, EVELINE	INJAC, SARAH	REDELL, MICHELE
BAXTER, PATRICIA	JENSEN, CRAIG	REDNAM, SURYA
BERG, STACEY	JUNCO, JACOB	REDONDO, MARIA
BERNINI, JUAN	JUSTINO, HENRI	REYES, JAIME
BERTRAND, KELSEY	KAMDAR, KALA	RIDER, NICHOLAS
BERTUCH, ALISON	KATAKAM, LAKSHMI	RONCA, SHANNON
BIER, DENNIS	KELLERMAYER, RICHARD	ROUCE, RAYNE
BOOM, JULIE	KOCHEL, ROBIN	RUDAR, MARKO
BROWN, AMANDA	LEE, HYUN-KYOUNG	RUIZ, FADEL
CHAKRABORTHY, RIKHIA	LIU, ZHANDONG	SARTAIN, SARAH
CHAO, HSIAO-TUAN	LOTZE, TIMOTHY	SCHAFER, ERIC
CHINTAGUMPALA, MURALI	LUPO, PHILIP	SCHEURER, MICHAEL
CHUMPITAZI, BRUNO	MACK, STEPHEN	SHAH, MONA
COHEN, CLAY	MALETIC-SAVATIC, MIRJANA	SHANGHVI, DHVANI
CONNEELY, SHANNON	MANDALAKAS, ANNA	SHEN, LANLAN
DINARDO, ANDREW	MANN, MICHELLE	SHENOI, ROHIT
FIOROTTO, MARTA	MEJIA, ROJELIO	SISLEY, STEPHANIE
FLEURENCE, JULIEN	METELTSIA, LEONID	SREEKANTAMURTHY, SAHANA
FLOREZ, MARCUS	MISRA, SANGHAMITRA	STEVENS, ALEXANDRA
FOSTER, JENNIFER	MIYAKE, CHRISTINA	SUNDGREN, NATHAN
FREDRICKS, KARLA	MORALES-MANTILLA, DANIEL	SUTER, BERNHARD
GABER, MOSTAFA	MORRIS, SHAINÉ	SWARTZ, SARAH
GLAZE, DANIEL	MOTIL, KATHLEEN	TAO, LING
GOODELL, MARGARET	MURRAY, KRISTY	TONG, QIANG
GRAMATGES, MARIA	MUSCAL, EYAL	TOSUR, MUSTAFA
GUPTA, ROHIT	MUSCAL, JODI	VAN HORNE, BETHANIE
HAJJAR, JOUD	MYSORE, KRUPA	WANG, LISA
HE, YANG	NEBOR, DANITZA	WASSWA, PETER
HECZEY, ANDRAS	OZUAH, NMAZUO	WENDERFER, SCOTT
HEGDE, MEENAKSHI	PARIHAR, ROBIN	WHITTLE, SARAH
HELLSTEN, MELODY	PARSONS, DONALD (WILL)	WONG, WILLIAM
HERGENROEDER, ALBERT	PECKHAM-GREGORY, ERIN	WOOD, ALEXIS
HESLOP, HELEN	PEHLIVAN, DAVUT	WULFF, JADE
HIATT, PETER	PLON, SHARON	YEE, ANDREW
HILL, RYAN	POLLET, JEROEN	YI, JOANNA
HILLIARD, MARISA	POMPEII, LISA	YUSTEIN, JASON
HOLDER JR, JIMMY	POTTER, SAMARA	

The following faculty are principal investigators on industry-sponsored research:

Principal Investigators with Industry-Sponsored Research		
ABID, FARIDA	HECZEY, ANDRAS	PATNIYOT, IRENE
ALI, IRFAN	HESLOP, HELEN	PHAM, YEN
ALLEN, CARL	HIATT, PETER	PIGNATELLI, RICARDO
ANAGNOSTOU, AIKATERINI	HIMES, RYAN WALLACE	POTTER, SAMARA
ANDERS, MARC	HORTON, TERZAH	POWERS, JACQUELYN
ANDERSON, ANNE	HOTEZ, PETER	QURESHI, ATHAR
ANDERSON, DIANE	HULTEN, KRISTINA	RABIN, KAREN
ANVARI, SARA	HWU, KATHERINE	REDONDO, MARIA
BACHA, FIDA	IACOBAS, IONELA	RONCA, SHANNON
BARBIERI, EVELINE	JOHN, TAMI	ROONEY, CLIONA
BAXTER, PATRICIA	JUSTINO, HENRI	ROUCE, RAYNE
BERTUCH, ALISON	KAPLAN, SHELDON	RUIZ, FADEL
BOCCHINI, CLAIRE	KARAM, LINA	SATTER, LISA FORBES
BOMGAARS, LISA	KELLERMAYER, RICHARD	SCHAFER, ERIC
CARISEY, ALEXANDRE	KHAN, ASRA	SHEEHAN, VIVIEN
CHIOU, ERIC	KOH, CHESTER	SISLEY, STEPHANIE
CLARK, GARY	KRANCE, ROBERT	SRIVATHS, LAKSHMI
COHEN, CLAY	LAM, WILSON	SULLY, KRYSTAL
DAVIS, CARLA	LEEN, ANN	SUTER, BERNHARD
DEGUZMAN, MARIETTA	LEUNG, DANIEL	TESSIER, MARY ELIZABETH
DESALVO, DANIEL	LOPEZ, JOB	TUBMAN, VENE
DESPOTOVIC, JENNY	LOTZE, TIMOTHY	TUME, SEBASTIAN
DIAZ, ROSA	MACK, STEPHEN	VALDES, SANTIAGO
DY, ROCHELLE COLEEN	MANDALAKAS, ANNA	VENKATRAMANI, RAJKUMAR
EDWARDS, MORVEN	MANN, MICHELLE	WALLACE, SOWDHAMINI
EMRICK, LISA	MARINI, JUAN	WENDERFER, SCOTT
FOSTER, JENNIFER	MCKAY, SIRIPOOM	WHITFIELD VAN BUREN, K
FRANKLIN, WAYNE JAY	MCNEIL, CHASE	WILLIAMS, LAUREL
GARCIA-PRATS, J	MEJIA, ROJELIO	WULFF, JADE
GEE, ADRIAN	MELICOFF-PORTILLO, E	YATES, AMBER
GIRONELLA, ANNA CARMELA	METELITSA, LEONID	YEE, DONALD L.
GLAZE, DANIEL	MICHAEL, MINI	YI, JOANNA
GRIMES, AMANDA	MILOH, TAMIR	
GUNTER, SARAH	MOTIL, K	
HAIR, AMY	MUNOZ-RIVAS, FLOR	
HARPAVAT, SANJIV	MUSCAL, JODI	
HARRISON, GAIL	OPINA, ANGELINE	