Pedi Press

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TABLE OF CONTENTS

Front cover photograph is courtesy of Michael Knapp

DEPARTMENT NEWS:

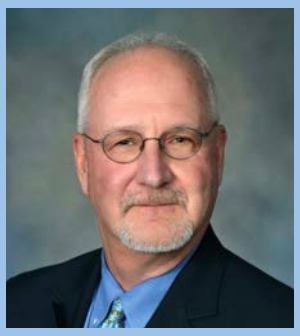
FACULTY, STAFF, FELLOWS, & RESIDENTS

Dr. Shekerdemian Named as Interim Chair

On April 29, 2022, Dr. Paul Klotman, President and CEO of Baylor College of Medicine announced that **Dr. Lara Shekerdemian**, Professor, had been appointed Interim Chair of the Department of Pediatrics. Dr. Shekerdemian joined Baylor in 2011. She also serves as Pediatrician-in-Chief at Texas Children's Hospital. Dr. Mike Coburn, Chair of the Department of Urology, has agreed to lead the search committee for the permanent Chair of the Department of Pediatrics.

A native of London England, Dr. Skekerdemian served as Director of Intensive Care at The Royal Children's Hospital in Melbourne, Australia, and as an Associate Professor of Pediatrics at the University of Melbourne, before joining Baylor College of Medicine/Texas Children's Hospital. While at Royal Children's, she established a groundbreaking program for transporting patients receiving extracorporeal membrane oxygenation (ECMO) treatment hundreds of miles to the hospital. Despite the medical challenges involved in providing critical care in a mobile setting, the service achieved survival rates that rival ECMO programs at some of the top children's hospitals Dr. Shekerdemian has an extensive medical education, beginning with medical school at University of Birmingham, where she earned a MB and ChB. She did internships in General and Neonatal Pediatrics, Emergency Medicine, General Surgery, and General Medicine. She completed residency in London and fellowships in Adult Intensive Care and Pediatric Intensive at Hospital for Sick Children and Great Ormond Street Hospital for Children.

Dr. Schutze Named Vice Dean



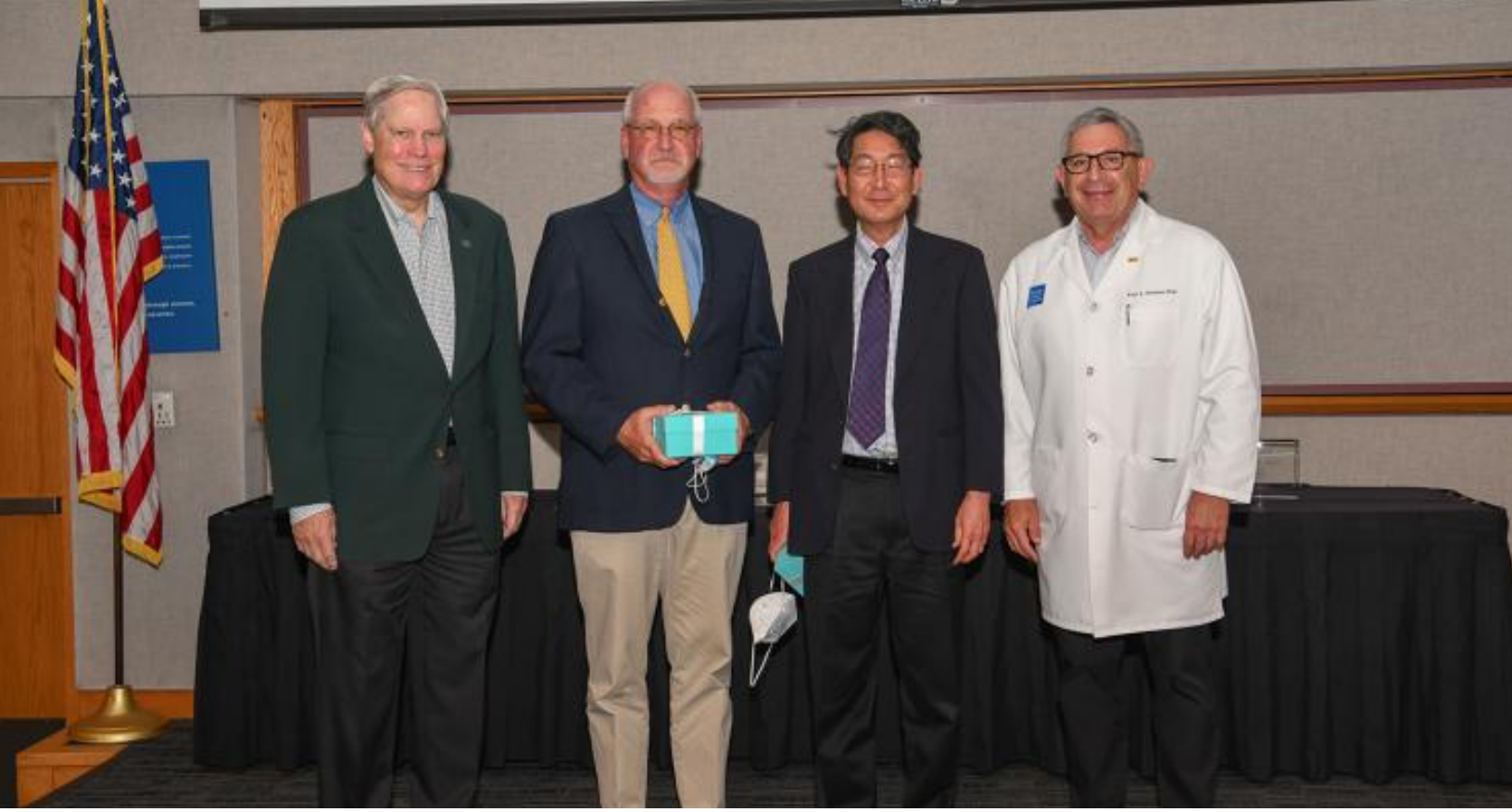
Dr. Gordon Schutze, Professor and Executive Vice-Chair of Education, was named Vice Dean of the School of Medicine. He will be involved in growing affiliate relationships, admissions, graduate medical education, and CPD.

Dr. Schutze served as Interim Chair of Pediatrics from 2020-2021. He also serves as the Executive Vice President for BIPAI. His special interests in medicine have been bacterial and tick-associated diseases, pediatric global health, and the education of learners. Dr. Schutze also is the recipient of Baylor College of Medicine Barbara and Corbin J. Robertson Jr. Presidential Award for Excellence in Education. More information about the BCM award and his service at BCM/TCH and BIPAI is available on page 5.

Dr. Taylor Appointed Assistant Dean

Dr. Sharonda Alston Taylor, Assoc. Professor, was appointed Assistant Dean of Admissions in the School of Medicine on July 1, 2022. Dr. Taylor received her MD from Johns Hopkins University School of Medicine, did her residency at Sinai Hospital of Baltimore, completed a Fellowship at Baylor College of Medicine, and received a Graduate Certificate from University of Texas Health Science Center – School of Public Health.

Her clinic work has focused on adolescents, and she considers this time in life to be "one of the most dynamic periods of growth in a person's life; physical, emotional, cognitive, and social changes occur at a rapid pace."



(l-r) Mr. Corbin Robertson, honorees ***Dr. Gordon Schutze*** *and Dr. William Huang, BCM President Paul Klotman*

Dr. Schutze Honored with Baylor College of Medicine Presidential Award

Dr. Gordon T. Schutze, Professor and Executive Vice-Chair of Pediatrics and Vice-Dean of the School of Medicine was honored with the Baylor College of Medicine Barbara and Corbin J. Robertson Jr. Presidential Award for Excellence in Education during the 2022 Faculty Awards Ceremony. In addition to recognizing faculty members who have made long-standing, consistent, and highly valued contributions to the educational mission of the College.

Dr. Schultze completed his pediatric residency and pediatric infectious disease fellowship at BCM/TCH before joining the University of Arkansas for Medical Sciences/Arkansas Children's Hospital in 1991, where he led the general pediatric residency and launched a pediatric infectious diseases fellowship. He was recognized for his contributions with the Parker J. Palmer Courage to Teach Award by the Accreditation Council for Graduate Medical Education

After 15 years in Arkansas, Dr. Schutze returned to BCM (2006) to work with the Baylor International Pediatric AIDS Initiative (BIPAI). He was responsible for training the Pediatric AIDS Corps physicians who were being placed in Africa and other practitioners around the globe. In 2009, he was named Vice Chair of Education in the Department of Pediatrics, where he worked with other leaders to establish a 4-year pediatric residency program that included the traditional 3 years of categorical pediatric training and 1 year abroad working at an HIV/AIDS clinic site. He subsequently was named Executive Vice Chair and served as interim Chair from 2020 -2021. In 2022, he was named Vice-Dean of the School of Medicine at BCM.

His many awards include a Fulbright and Jaworski L.L.P. Faculty Excellence Award for Educational Leadership and two Norton, Rose, Fulbright Faculty Excellence Awards for Enduring Materials and Educational Leadership. In 2011, he was admitted into the Baylor College of Medicine Academy of Distinguished Educators. He has held numerous positions at the American Academy of Pediatrics, including the editorial board of the Pediatrics Review and Educational Program (PREP) Self-Assessment Program and the infectious disease sub-board and as Associate Editor of *Pediatrics*, the official journal of the AAP.

Dr. Gilger Retires from CHofSA

Dr. Mark Gilger, Professor and inaugural Pediatrician-in-Chief at Children's Hospital of San Antonio (CHofSA), retired in June 2022. Dr. Gilger is a graduate of Creighton University School of Medicine (1980). He did his pediatric residency at University of Rochester School of Medicine & Dentistry (1980-1983), after which he served in the United States Public Health Service – Indian Health Service, Ft. Yuma, Yuma, Arizona, from 1983-1986. He trained in the Pediatric Gastroenterology, Hepatology and Nutrition fellowship at BCM/TCH in 1986, completing it in 1989. He planned the first "Gastrointestinal Procedure Suite" at TCH and became its first medical director in 1990. Dr. Gilger was the Fellowship Director from 1990-1994, when he became Division Chief of Gastroenterology, Hepatology, and Nutrition, a position he held until 2013. In 1998, he completed the BCM Master Teacher Program, and he has pursued business training via the Executive Education Program, Management for the Health Care Practitioner, at Rice University. From 2013-2019, he was Pediatrician-in-Chief at CHofSA and during his tenure hired the initial 175 faculty.

He holds the title of Pediatrician-in-Chief Emeritus. Since 2018, he has been the Program Director of the BCM pediatric residency program at ChofSA. He also holds the Sister Angela Clare Moran CCVI Endowed Chair in Pediatrics. In 2019, he became the Assistant Dean of Clinical Education for the University of the Incarnate Word School of Osteopathic Medicine. That same year, he was honored with the Arnold J. Rudolph Award for Lifetime Excellence in Teaching by the BCM Department of Pediatrics. He is a fellow of the American Academy of Pediatrics and a member of the North American Society of Pediatric Gastroenterology, Hepatology, and Nutrition, the American Society for Gastrointestinal Endoscopy, and the American Gastroenterology Association.

Dr. Braun Steps Down as Division Chief

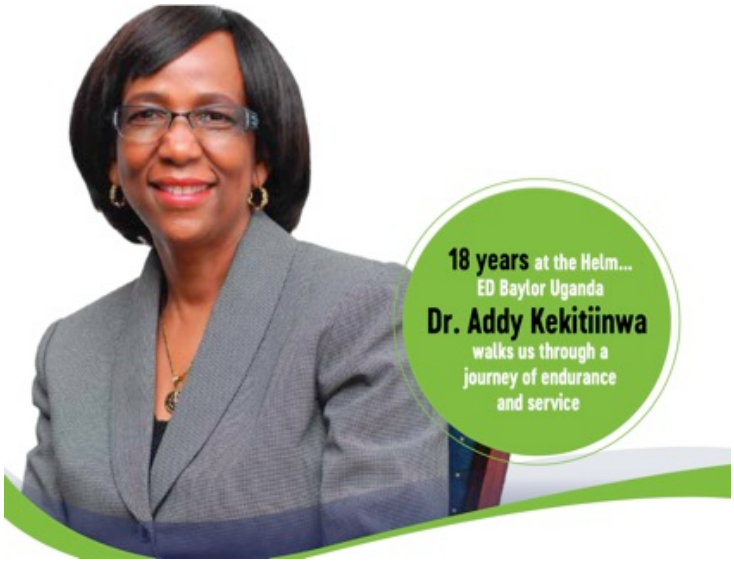
"It has been a truly remarkable experience to lead the Renal Service for the last 11 years. I am very proud of what we have accomplished together, and feel incredibly fortunate to have had the opportunity to lead a fantastic group of people."

--Dr. Michael C. Braun

In early April, 2002, Dr. Michael C. Braun, Professor, announced that he would be transitioning from Division Chief of Renal to a senior faculty position in the coming months. After more than a decade in the position of Chief, Dr. Braun decided on the transition to be able to focus on patient care and faculty development within the Division. Although he had been contemplating the change for a while, he delayed the decision and announcement to help his team and the Department navigate through the change in Department leadership and then the Omicron surge. He plans to continue in his current role until a new Division Chief is recruited.

"Dr. Addy" Retires from BIPAI Network

After more than 18 years leading the BIPAI efforts in Uganda, **Dr. Adeodata Kekitiinwa**, Associate Professor affectionately known as "Dr. Addy," is retiring. For 18 years, the accomplished physician, lecturer, and leader has served as Executive Director of the Baylor College of Medicine Children's Foundation – Uganda. She also is a Clinical Research Leader at Baylor-Uganda, IMPAACT P1115 Investigator of Record, Site Principal Investigator for the ODYSSEY trial and the D3 trial, Co-investigator for the SMILE trial, and Principal Investigator of the Breather Plus trial. Since 2005, Dr. Addy has been involved in establishing, developing, and managing numerous technical HIV pediatric and adolescent campaigns at Uganda's Ministry of Health. She has been integral to the formulation of policies for implementing pediatric and adolescent HIV prevent programs across Africa.



The Uganda program is part of a network of BIPAI clinical centers created initially to offer specialized pediatric HIV/AIDS care and treatment services, which now includes 11 countries. When the CDC Global AIDS Program (GAP) and University Technical Assistance Program (UTAP) invited BIPAI to help build Uganda's outreach, Prof. Philippa Musoke, then head of the Department of Paediatric and Child Health, invited Dr. Addy to assume responsibility for the Pediatric Infectious Diseases Clinic at the Child Health Centre, Mulago, Hospital. She was a senior consult for a diarrhea ward at the time. She recalls that more than 50% of the children admitted were born with HIV and the death rate was very high, due in part because "there were no prevention of other services in the country save for those women participating in research. Over 50% of the children born with HIV died before their second birthday."

In 2004, Dr. Addy became the first Clinic Director. Working with Dr. Denis Tindyebwa, she was able to address these issues, and the clinic began to see some distinct advances. In 2006, with support from BIPAI, Baylor Uganda registered to become an NGO and formed governance structures, hired staff, and began to implement BCM's best practices for the entire operation. It began as a small clinic that operated only one day a week. From that meager start, it now boasts more than 25 projects, 17 active studies, and seven evaluations. Dr. Addy was able to attract several partnerships and collaborations, which have led to the current programs and research studies that today are a mix of HIV/AIDS; Global Health Security; and maternal, newborn, child, and adolescent health

The next year, Baylor Uganda was awarded its first CDC PEPFAR grant, which allowed expansion of the Paediatric HIV care outside Kampala. In 2010, Dr. Addy and her team established the first Paediatric and Adolescent unit at the Ministry of Health, will continuing to expand pediatric and adolescent services nationally. Today, what began with a grant of $640,000 from the CDC is an operation with a budget close to $40 million, according to Dr. Addy.

On July 31, 2022, she will hand over the leadership position but will continue as an active participant of the Advisory Board.

For more information, see the Uganda newsletter, from which this article is extracted, at https://www.baylor-uganda.org/newsletter/

Dr. Zoghbi Named 2022 Kavli Prize Laureate in Neuroscience

Dr. Huda Zoghbi, Professor, was awarded the prestigious **2022 Kavili Prize** in the field of neuroscience in recognition of her two discovers, the gene responsible for spinocerebellar ataxia 1 (SCA1) and the MECP2 gene responsible for Rett syndrome. SCA1 is a progressive, often deadly, disease in which neurons in the cerebellum and brain stem degenerate, resulting in loss of balance and coordination, as well as swallowing difficulties. Rett syndrome is a developmental disorder that causes regression and disability, affecting mostly girls.

Dr. Harry Orr and Dr. Huda Zoghbi in Capri, Italy, where they presented their discovery at an international ataxia meeting in the summer of 1993

Dr. Zoghbi is the first Kavli prize winner at BCM and TCH. The prizes honor scientists for breakthroughs in astrophysics, nanoscience, and neuroscience that "transform our understanding of the big, the small, and the complex." The prize was launched by Fred Kavli, a Norwegian-American physicist, entrepreneur, and philanthropist. It "recognize pioneering science in the development of helioseismology and asteroseismology; development of self-assembled monolayers on solid substrates and molecular-scale coatings to control surface properties; and the discovery of genes underlying a range of serious brain disorders."

The Kavli Prize Laureates are celebrated in Oslo, Norway, in a ceremony over which the Royal Family presides. The Norwegian Academy of Science and Letters appoints three committees on the basis of nominations from leading international academies and organizations. The prize committees are responsible for reviewing and discussing the nominations and for putting forth a unanimous recommendation for the laureates. Each committee works independently of the others.

Dr. Zoghbi's longtime collaborator and colleague Dr. Harry T. Orr, Professor in the Department of Laboratory Medicine and Pathology at the University of Minnesota, also received the same award.

Dr. Zoghbi is the founder of the Neurological Research Institute at BCM/TCH which opened in 2010 and now has 30 principal investigators and 400 scientists and trainees. The faculty, which have discovered more than 60 disease-causing genetic mutations and have numerous clinical trials underway, have published more than 1300 scientific studies in top-tier journals.

Dr. Zoghbi Recognized for Work on Rett Syndrome

Dr. Huda Zoghbi, Professor and Director of the Jan and Dan Duncan Neurological Institute at TCH, was one of two recipients of the **Max-Planck-Gesellschaft International Prize for Translational Neuroscience** of the **Gertrud Reemtsa Foundation** (the other recipient is Pro. Dr. Adrian Bird, University of Edinburgh). The prize has been awarded for outstanding achievements in basic neurological research every year since 1990. It is endowed with 50,000 Euros and has, until recently, always been awarded and shared by two scientists. She and Dr. Bird both were recognized for their research on the causes of Rett syndrome. The following announcement was made on June 13: "Huda Zoghbi from the Baylor College of Medicine in the US has identified the *MECP2* gene as the cause of Rett syndrome and studied its role in various neurons. Adrian Bird from the University of Edinburgh has uncovered the role of the MECP2 protein in the regulation of genes and genetically modified mice so that Rett syndrome can be researched in them. The two researchers have thus made a substantial contribution to better understanding the disease and creating the basis for new treatment options. The prize will be awarded on 16 June 2022 at the Bucerius Kunst Forum in Hamburg."

Gertrud Reemtsma established the Gertrud Reemtsma Foundation in 1989 in memory of her deceased brother, the neurologist Prof. Dr. Klaus Joachim Zülch, former Director of the Cologne Department of General Neurology at the Max-Planck-Institute for Brain Research, Frankfurt. In setting up the Foundation, Gertrud Reemtsma intended to keep the memory of her brother's scientific work alive and to recognize and promote exceptional achievements in basic research in neurology.

Dr. Bottazi Honored as "Great Immigrant"

Dr. Maria Elena Bottazi, Professor and Associate Dean of the National School for Tropical Medicine (BCM) and Director of the Texas Children's Hospital Center for Vaccine Development, was named to the Carnegie Corporation of New York annual list of "Great Immigrants." The recognition is for naturalized citizens whose contributions and actions have enriched and strengthened our society and democracy. Dr. Bottazzi is among 34 honorees named this year. She was recognized for her work on neglected tropical diseases, as well as emerging diseases and honored for her pioneering work on the development of a COVID-19 vaccine with her collaborator, Dr. Peter Hotez.

The Carnegie Corporation celebrates the exemplary contributions of immigrants to American life every fourth of July. This year's Class is comprised of individuals from 32 countries with a wide range of backgrounds. This year, recognition was focused on immigrants who "have been leaders in their local communities and beyond through their work in education, the arts, law enforcement, public service, health care, and small business ownership, as well as for their contributions as advocates for education equity, climate change, food security, and the homeless. Since 2006, the Corporation has named 700 Great Immigrants.

The website describes the background as: "The Corporation's annual recognition of outstanding immigrants is a tribute to the legacy of Andrew Carnegie, a Scottish immigrant who, like these honorees, found success as an American and gave back to his adopted country. Carnegie founded more than 20 philanthropic organizations, including Carnegie Corporation of New York, a grantmaking foundation established in 1911 to advance the causes of democracy, education, and international peace."

Dr. Hotez Receives Honorary Doctor of Science from Roanoke College

Dr. Peter J. Hotez, Professor and Dean of the National School of Tropical Medicine, was awarded an honorary Doctor of Science at the 2022 Roanoke College commencement ceremony held on May 7, 2022. He was recognized for his contributions in formulating and manufacturing a coronavirus vaccine designed for widespread distribution, especially in underserved countries. He is the first physician-scientist to establish vaccine development and manufacturing facilities in developing nations for COVID-19 and other diseases.

He was introduced by Dr. Kirby Davis Deshotels, a former student of Roanoke College and now a practicing pediatrician at BCM, where she is a Professor of Pediatrics and Molecular Virology and Microbiology.

While at Roanoke College, Dr. Hotez was guest speaker at the college's Phi Beta Kappa induction ceremony, where he described his professional challenges and encouraged the inductees to chart a professional course that will make a difference. He also gave a live interview to CNN and toured the Fralin Biomedical Research Institute Vaccine Center at Virginia Tech Carilion School of Medicine in Roanoke.

Dr. Hotez Named 2022 AMWA Award Recipient

"Dr. Hotez's advocacy for health equity among underserved populations, continued work on vaccines and COVID-19, and passion for communicating science has resonated with medical communicators."
--Katrina Burton, AMWA President. "

Dr. Peter Hotez, Professor, was selected for the American Medical Writers Association (AMWA) 2022 John P. McGovern Award, which recognizes individuals who make preeminent contributions to the various modes of medical communication. It is named in honor of renowned allergist and philanthropist John P. McGovern, MD. AMWA cited Dr. Hotez's contributions as including his many science and medical communications, including numerous scientific publications, interviews, and books. The association noted that during the COVID-19 pandemic, Dr. Hotez appeared almost daily on national platforms to educate the world on vaccines and to address the spread of misinformation. The award will be given at the AMWA 2022 Medical Writing & Communication Conference in Denver, Colorado, where Dr. Hotez will also give an address.

Dr. Brewer Recognized for Lifetime Achievement

Dr. Eileen Brewer, Professor, was awarded the 2022 **Henry L. Barnett Award by the American Society of Pediatric Nephrology & AAP Section on Nephrology.** The award recognizes her for lifetime achievement in the field of pediatric nephrology. Dr. Brewer received her MD from Washington University School of Medicine and completed an internship at St. Louis Children's Hospital, a residency at University of California Hospitals and Clinics, and a clinical fellowship at University of California, San Francisco School of Medicine. Dr. Brewer is an internationally known expert in pediatric renal diseases, dialysis, transplantation and hypertension. She is past president of the American Society of Pediatric Nephrology, former Council Member of the International Pediatric Nephrology Association and organizer of International Workshops on Hypertension in Children and Adolescents in 2001, 2004 and 2007.

Dr. Plon to Assume New Role

Dr. Sharon Plon, Professor, and Director of the BCM Medical Scientist Training Program, will step down from her position with the MSTP to assume her new role as Assistant Dean overseeing dual degree and pathway programs for the School of Medicine. Dr. Plon received her MD and PhD from Harvard Medical School, completed postdoctoral fellowships at National Cancer Institute and Fred Hutchinson Cancer Research Center, and completed a clinical fellowship at University of Washington Affiliated Hospitals. She is Director of the Cancer Genetics Clinical and Research Programs at TCH and Co-Leader of the Pediatric Cancer Program of the Dan L. Duncan Comprehensive Cancer Center.

Dr. Starke Recognized by Pediatric Infectious Disease Society

Dr. Jeff Starke, Professor has been awarded the **PIDS Distinguished Research *Award.*** This award recognizes the outstanding investigative efforts of a Society member who, throughout his or her career, has made outstanding contributions to research with significant impact on the field of pediatric infectious diseases. He was honored at the 2022 IDWeek meeting in Washington, DC. Dr. Stark received his MD from University of Rochester School of Medicine and Dentistry and completed advanced training in 1981, 1983, and 1985 from BCM Affiliate Hospitals. Dr. Starke is an internationally recognized expert in the management of childhood tuberculosis and mycobacteria infections. He has served as the Director of the Children's Tuberculosis Clinic for almost 30 years and has participated in the writing of numerous clinical guidelines for the City of Houston, State of Texas, the U.S. Centers for Disease Control and Prevention, the American Thoracic Society, the International Union Against Tuberculosis and Lung Disease, and the World Health Organization.

Dr. King Named to MSTP Leadership Position

Dr. Katherine Y. King, Assoc. Professor, was named Co-Director (along with Dr. Benjamin J. Frankfort) of the BCM Medical Scientist Training Program (MSTP). They will assume leadership of the MSTP, BCM's MD/PhD training program on July 1, 2022. Dr. King completed her MD and PhD degrees from Washington University in St. Louis and completed her residency training and chief residency in pediatrics and fellowship in pediatric infectious disease at BCM in 2007 and 2010, respectively. A member of the BCM faculty since 2010, Dr. King is an active physician scientist who attends on the infectious disease service at Texas Children's Hospital and runs an NIH-funded laboratory. Dr. King has been involved in MSTP leadership since 2011 as a member of the faculty operating committee and since 2018 as an associate director.

Faculty Promotions

PROFESSOR

Dr. Lisa S. Kahalley (Psychology)
Dr. Jennifer G. Christner (Dean)
Dr. Karen Rabin (Hematology/Oncology)
Dr. Sanghamitra Misra (Academic General)
Dr. Charleta Guillory (Neonatology)

ASSOCIATE PROFESSOR

Dr. Marc Anders (Critical Care)
Dr. Ioanna Athanassaki (Endocrinology)
Dr. Nancy Ayers (Cardiology)
Dr. Regine Fortunov (Neonatology)
Dr. Adita Gupta (Academic General)
Dr. Amy Hair (Neonatology)
Dr. Meenakshi Hegde (Hematology/Oncology)
Dr. Kevin Kaplan (Pulmonary)
Dr. Brent Kaziny (Pediatric Emergency Medicine)
Dr. Matthew Musick (Critical Care)
Dr. Alice Obuobi (Neonatology)
Dr. Sarah Perry (BIPAI)
Dr. Uma Ramamurthy (Hematology/Oncology)
Dr. Alan Riley (Cardiology)
Dr. Nidhy Varghese (Pulmonary)

Pediatrics Outstanding Clinician Awards Announced

Congratulations to

Joseph Allen, MD, Emergency Medicine
Eric Chiou, MD, Gastroenterology
Jill Ann Jarrell, MD, MPH, Palliative Care
David Paul, MD, Diabetes / Endocrinology
Muralidhar Premkumar, MBBS, DCH, DNB, MRCPCH, MS, Neonatology
Veena Ramgopal, DO, Hospital Medicine
Sara Risen, MD, Developmental, Neurology
Elizabeth Roeder, MD, Genetics (CHoSA)
Kristen Sexson-Tejtel, MD, PhD, MPH, Cardiology
Fatima Westry, PA-C, Critical Care

2022 BAYLOR COLLEGE OF MEDICINE AWARDS

PEDIATRICS RECIPIENTS

THE BARBARA AND CORBIN J. ROBERTSON, JR.
Presidential Award for Excellence in Education

GORDON E. SCHUTZE, M.D.

MASTER CLINICIAN
Faculty Award for Excellence in Patient Care

ALISON BERTUCH, M.D., PH.D.
GAIL DEMMLER-HARRISON, M.D.
GEORGE MALLORY, M.D.

CLARK FACULTY SERVICE AWARD

MILENKA CUEVAS GUZMAN, M.D.
BHERU GANDHI, M.D.
SHARADA GOWDA, M.D.

NORTON ROSE FULBRIGHT
Faculty Excellence Award for Teaching and Evaluation

NATASHA AFONSO, M.D., M.P.H.
SAMIYA FATIMA AHMAD, M.D.
SARA ANVARI, M.D., M.SC.
JENNIFER BENJAMIN, M.D., M.S.
JESSICA A. CASAS, M.D., M.P.H.
STEPHANIE DEAL, M.D.
LISA T. EMRICK, M.D.
NICHOLAS ETTINGER, M.D., PH.D.
BHERU B. GANDHI, M.D.
SHARADA HIRANYA GOWDA, M.D.
DANIEL P. MAHONEY, M.D.
ANA C. MONTERREY, M.D., M.P.H.
ADERONKE OJO, M.B.B.S., M.H.A.
MONIKA PATIL, M.D.
TIM POREA, M.D., M.P.H.
MEGHNA RAPHAEL, M.D.
AMEE REVANA, D.O.
JARED RUBENSTEIN, M.D.
SARAH E. SARTAIN, M.D.

NORTON ROSE FULBRIGHT
Faculty Excellence Award for Educational Leadership

JULIEANA NICHOLS, M.D., M.P.H.

NORTON ROSE FULBRIGHT
Faculty Excellence Award for Educational Research

HEATHER CROUSE, M.D.
CARA B. DOUGHTY, M.D., M.ED.
ANNE C. GILL, DR.PH., M.S., RN

NORTON ROSE FULBRIGHT
Faculty Excellence Award for Educational Materials

DANIEL LEMKE, M.D.
SARAH K. LYONS, M.D.
LUCILA MARQUEZ, M.D., M.P.H.
ADERONKE OJO, M.B.B.S., M.H.A.
ADAM D. WOLFE, M.D., PH.D.

STAR Award for Excellence in Patient Care

JOSEPH Y. ALLEN, M.D.
JOSEPH R. ANGELO, M.D.
MEGAN A. BLUM, PA-C, M.M.S.
MANISH BANSAL, M.D.
PATRICIA BAXTER, M.D., M.S., M.B.A.
MARIA GABRIELA BUHEIS, M.D.
KASEY DAVIS, M.D.
STEPHANIE DEAL, M.D.
ADEL A. ELHENNAWY, M.D., M.SC.
CATHERINE JOSEPH, M.D.
MEGHA KARKERA KANJIA, M.D.
MONA KARIMULLAH, M.D.
SUSAN E. KIRK, PA-C
FATEMA MALBARI, M.D.
KATE A. MAZUR, M.S.N., APRN, CPNP
ADERONKE OJO, M.B.B.S., M.H.A.
NINO RAINUSSO, M.D.
MARK RICCIONI, D.N.P., APRN, CPNP-AC/PC
ERIC S. SCHAFER, M.D., M.H.S.
SARAH J. SWARTZ, M.D.
JENILEA THOMAS, APRN, M.S.N., CPNP AC/PC, NNP
MARIA FATIMA G. WESTRY, M.S.P.A.S., PA-C

EARLY CAREER
Faculty Award for Excellence in Patient Care

THARA R. BALA, M.D., M.H.A.
SALEH BHAR, M.D., FAAP
SHELBY R. BOONE, M.S.N., APRN, CPNP-AC, CPN
LINDSAY DAY, M.D.
SOPHIA J. EBENEZER, M.D.
CATHERINE FOSTER, M.D.
AMANDA BELL GRIMES, M.D.
ERIN B. HENKEL, M.D.
CHRISTOPHER T. HIGGINS, D.O.
JAIME JUMP, D.O.
HOLLY B. LINDSAY, M.D., M.S.
HATEL RANA MOONAT, D.O.
KAREN E. PATRICIA, M.D., M.ED.
VENESSA LYNN PINTO, M.B.B.S.
MEGAN MCGOWAN PURSER, PH.D.
NEHA SETH, M.D.
SAHAR SIDDIQUI, M.D., M.P.H.
ALLYSON WYATT, M.D.

Faculty briefs….

Dr. Maria Elena Bottazi, Professor, received the Best Academic Research Team Award at the Vaccine Industry Excellence Awards Ceremony & Dinner, hosted by the World Vaccine Congress Washington. Their award was in recognition of their dedication and effort in the development of the COVID-19 vaccine and that is currently being administered in India. The event was held April 19.

Dr. Lisa Bouchier-Hayws, Asst. Professor, was honored with a Women of Excellence Award from the Office of Institutional Diversity, Equity and Inclusion. The award was established in 2018 to celebrate individuals who exemplify Baylor and demonstrate exceptional dedication to issues that affect women at BCM, or in the larger community.

Dr. Nick Ettinger, Asst. Professor, is the lead author on a new American Academy of Pediatrics national policy statement released earlier this month called "Guidance for Structuring a Pediatric Intermediate Care Unit." The statement is a revision of a 2004 clinical report on intermediate care.

Dr. Titilope Fasipe, Asst. Professor, was named as the new chair of the American Society of Pediatric Hematology/Oncology's (ASPHO) Hemoglobinopathies Special Interest Group (SIG). The Hemoglobinopathies SIG promotes collaboration among pediatric hematologists/oncologists who care for children, adolescents and young adults with sickle cell disease and other hemoglobinopathies.

Dr. Olivia Ginnard, Postdoc Fellow, recently received a Rising Star Award from the Pediatric Endocrine Society for her work with vitamin D and diabetes.

Dr. Natalie Guerrero, Resident, received the Academic Pediatric Association Resident's Research Award for her abstract entitled "Racial Discrimination in Late Adolescence and Mental Health."

Dr. Heather Haq, Asst. Professor, was named Spokesperson through the American Academy of Pediatrics, after being invited to apply for the opportunity by the AAP Director of News, Media & Public Relations. She was supported by Dr. Guillory, the current Texas Pediatrics Society President, who also nominated Dr. Haq to be a spokesperson for TPS.

Dr. Peter Hotez, Professor,

-- spoke on "COVID-19 Vaccines: Science vs. Antiscience" at the eighth annual Bobby R. Alford, M.D. Grand Rounds Distinguished Lecture on Wednesday, April 27, at main Baylor, with a reception following in Alkek Lobby by the DeBakey Museum and Library. The lecture is endowed by Diana Helis Henry and Adrienne Helis Malvin Medical Research Foundations.

-- received the Best Academic Research Team Award at the Vaccine Industry Excellence Awards Ceremony & Dinner, hosted by the World Vaccine Congress Washington. Their award was in recognition of their dedication and effort in the development of the COVID-19 vaccine and that is currently being administered in India. The event was held April 19.

Dr. Shani Johnson, Fellow, was accepted for the 2022 PRIDE-Functional and Translational Gnomic of Blood Disorder Program (PRIDE-FTG) at Augusta University. The goal of this 1-year training program is to increase the potential success of independent investigator in health-related research.

Dr. Katherine King, Assoc. Professor, has been recognized in *Cell Stem Cell's* "The Best of Cell Stem Cell" for 2021. She was ranked eighth for her findings that inflammatory signaling during infection drives Dnmt3a mutant clonal hematopoiesis.

Dr. Madhulika Kulkarni, Asst. Professor, was awarded the 'Physician of the Year" award by St. Luke's Woodlands Hospital.

Dr. Philip Lupo, Professor,

-- was invited to join the *Journal of the National Cancer Institute's* Cancer *Spectrum* editorial board.

-- was elected as Vice President-Elect for the Society for Birth Defects Research and Prevention and will advance to President in 2024. The mission of the society is to understand the cause and pathogenesis of structural and functional birth defects, developmental delays, perinatal death, and other disorders of developmental and reproductive origin to prevent their occurrence and improve diagnosis and treatment.

Bailey Martin-Giacalone, graduate student in the lab of Dr. Philip Lupo, was recently awarded the 2022 Women in Cancer Research Scholar Award. The awards are given annually to American Association for Cancer Research (AACR) members who are scientists-in-training and presenters of meritorious scientific papers at the AACR Annual Meeting.

Dr. Julie McCaw, Asst. Professor, will be the next Associate Medical Director for Simulation for Pediatric Critical Care, working with Dr. Cara Doughty, other associate medical directors, and simulation center staff to develop and lead simulation in critical care.

Dr. Tara Ness, Fellow, won the logo contest of the ASTMH American Committee on Clinical Tropical Medicine and Travelers' Health (ACCTMTH) clinical.

Dr. Dan Penny, Professor and Section Chief, gave the McNamara Keynote Address at the American College of Cardiology in April.

Dr. Kriti Puri, Assist. Professor, was awarded the Pediatric Heart Network (PHN) Scholar Award for the 2022–2024 cycle - 75,000$

Dr. Maria J. Redondo, Professor, has joined the NIH NIDDK Human Studies of Diabetes and Obesity (HSDO) study section as a standing member for 2022-2026.

Dr. Luisanna Sanchez Ventura, Fellow, was selected by the American Society of Hematology to receive the 2022 ASH Minority Hematology Fellow Award. This award encourages early-career researchers from historically underrepresented minority groups to pursue a career in academic hematology. Each awardee receives $100,000 for clinical or laboratory-based hematology research projects, to develop additional research skills and generate preliminary data.

Dr. Michael Scheurer, Professor and Co-leader of the Cancer Prevention and Population Sciences program at the Dan L Duncan Comprehensive Cancer Center, was recently named U.S. Co-president of the Brain Tumor Epidemiology Consortium (BTEC) and will serve a two-year term. The goals of BTEC's international group of researchers are to learn the causes of brain tumors, reduce the incidence through prevention and early detection and improve outcomes for those diagnosed with these diseases.

Dr. Adam Wolfe, Assoc. Professor, has been named Associate Editor for MedEdPORTAL.

Dr. Justin Zachariah, Assoc. Professor, served as Chairperson for the 9/11 World Trade Center Special Emphasis Panel Study Section from CDC/NIOAH.

Dr. Huda Zoghbi, Professor, gave the keynote address for the third Harvard International Keynote Series on Genomic Medicine on April 19. Her keynote talk was "Genetic and Therapeutic Approaches to Tackle Neurodevelopmental Disorders: Lessons and Prospect."

DEPARTMENT NEWS:

HEALTH & RESEARCH

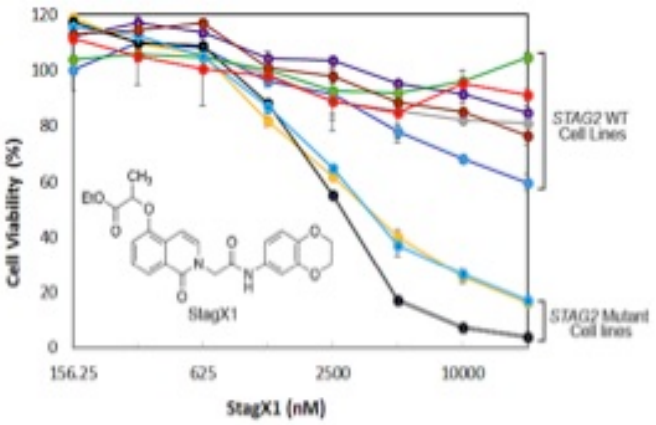
Innovative Strategy Targets Mutated Tumor Suppressor Gene

***Going STAG**: Selectively inhibiting cancer cells that lack stromal antigen 2 (STAG2) is an attractive approach for cancer therapy, particularly Ewing sarcoma. Pati and Colleagues report in the Journal* ChemMedChem *a small-molecule, StagX1, and the synthesis of derivatives of such by a new route. These compounds selectively inhibit cancer cells that lack STAG2.*

Ewing sarcoma, the second most common type of bone cancer in children, is a rare but aggressive and highly metastatic pediatric cancer with a dismal prognosis. Approximately 200-250 children and young adults are found to have EWS each year in the USA. About half of all EWS tumors occur in children and young adults between the ages 10 and 20 years, and the remainder occur in adults. For the past 30 years, the 5-year survival rate for pediatric EWS remains <20% for patients with metastatic or recurrent tumors.

Dr. Debananda Pati, Professor of Pediatrics in the Division of Hematology and Oncology, and his group have employed an innovative strategy to precision target a commonly mutated tumor suppressor gene called *STAG2* in 20-25% of Ewing sarcoma tumors, by inhibiting a sister protein called STAG1. STAG1 and STAG2 have very similar cellular functions and, in case of an absence or malfunction of one protein (for example due to mutations), the functional sister protein fills the mutant protein's shoes. However, when functions of both the proteins are inactivated, the cells die, a process called *synthetic lethality*. An innovative way is to use this phenomenon to selectively kill off cancer that results from genetic mutations, without harming healthy cells. Targeting a related protein of a tumor suppressor gene often mutated in tumors through a manufactured lethality is perhaps one of the most exciting prospects for the future of cancer therapy.

Dr. Pati and colleagues hypothesized that clinically relevant agents that inhibit the SA1 protein and kill *SA2*-mutant Ewing sarcoma cells by synthetic lethality while sparing the normal bone cells is targeted and advantageous over the current "kill them all" chemotherapy. In collaboration with Dr. Clifford Stephan, Director of Texas A&M University High Throughput Research and Screening Center, Using two pairs of *STAG2*-mutants and *STAG2*-WT EWS cell lines, Dr. Nenggang Zhang, a senior staff scientist in the Pati group carried out a high throughput screen (HTS) and identified a drug-like small molecule compound they have named StagX1 that exhibit lethality in the context of EWS cell lines expressing clinically relevant mutant *STAG2*, but have little effect on *STAG2*-WT cells.



StagX1 (structure in the inset) selectively kills the *STAG2*-mutant Ewing Sarcoma cell lines with little effect on lines with intact *STAG2* gene.

In a series of studies published recently in the Journal *ChemMedChem*, the Pati group in collaboration with Medicinal Chemist Professor Scott Gilbertson and his graduate students, Keng-Fu Lin and Christian Yang from the Department of Chemistry at the University of Houston have worked to further improve the efficacy of StagX1 through structure-activity studies.

This study was funded by the Cancer Prevention and Research Institute of Texas (CPRIT) Grant to Dr. Pati. Follow FDA guidelines, Pati and colleagues are developing StagX1 further as a 'first-in-class' drug in order to submit an Investigational New Drug (IND) application to treat Ewing sarcoma and other tumors with *STAG2* mutations.

Details of their work can be found at Zhang N, et al. (2022). Synthesis and Evaluation of a Class of Compounds Inhibiting the Growth of Stromal Antigen 2 (STAG2)-Mutant Ewing Sarcoma Cells. ***ChemMedChem***. 4;17(9):e202100653. doi: 10.1002/cmdc.202100653. Epub 2022 Feb 19. PMID: 35018729.

Researchers Designate Special Category of Liver Cancers

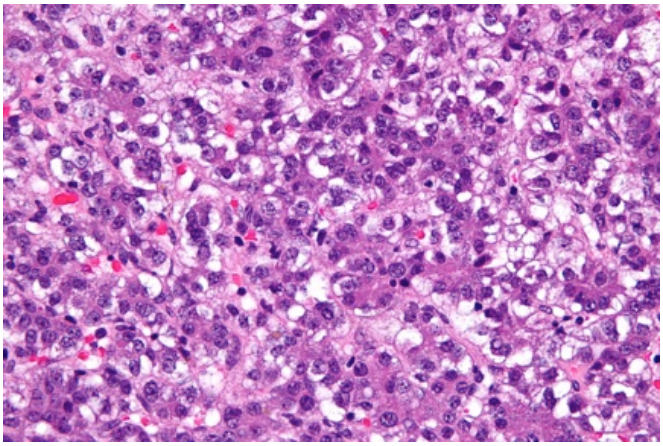


Figure 1

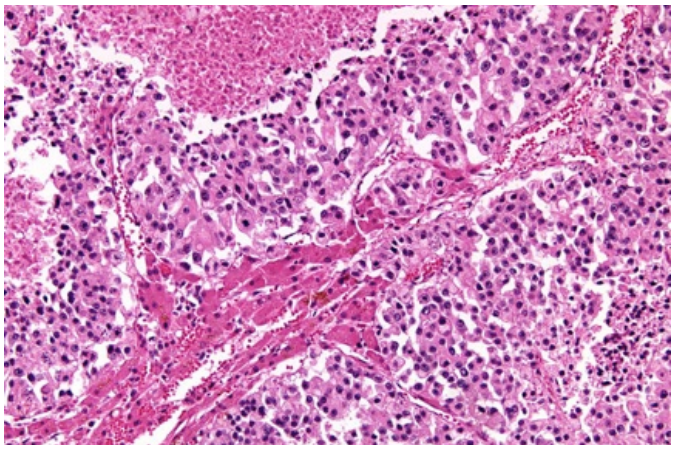


Figure 2

Researchers at BCM/TCH have identified tumors with profiles that do not fit into the two predominant categories of almost all pediatric liver cancers, hepatoblastoma (HB) (figure 1, stock photo) or hepatocellular (HCC) carcinoma (figure 2, stock photo). The outcomes and treatment options for these two types differ dramatically, with HBs having favorable outcomes following treatment with a combination of chemotherapy and resection. Contrariwise, tumors with mixed HB and HCC histological features, are more challenging.

To address this issue, **Dr. Pavel Sumazin**, Assoc. Professor, and **Dr. Dolores Lopez-Terrada**, Professor and Chief of Genomic Medicine at TCH, and their team examined liver tumors that have histological features that do not easily fit into either of these two carcinoma models and also are known to be less likely to respond to chemotherapy, and patients' outcomes are poor. They examined the molecular profiles of the tumors, including genetic alterations and gene expression profiles. Specifically, they compared the molecular features of hepatocellular neoplasm not otherwise specified (HCN NOS), including copy number alterations, mutations, ad gene-expression profiles, with those of other pediatric hepatocellular neoplasms, including HBs and HCCs, as well as HBs that demonstrated focal atypia or pleomorphism (HB FPAs) and HBs diagnosed in children older than 8 years of age.

Their results revealed that the profiles of these tumors do not fit those of the HB or HCC models; instead, they exhibit recurring molecular features that have been observed in both HBs and HCCs. Hence, the researchers designated these tumors as hepatoblastomas with hepatocellular carcinoma features (HBCs).

The team also examined the response of HBCs to treatments and found that these tumors are more resistant to standard chemotherapy and require more aggressive surgical approaches, including transplantation. The researchers proposed a diagnostic algorithm to stratify HBCs and guide specialized treatment; they also emphasized the importance of molecular testing and early therapeutic intervention for aggressive childhood hepatocellular neoplasms.

Dr. Sumazin was first author and Dr. Lopez-Terrada was corresponding author on the article published in *Journal of Hepatology*: "Hepatoblastomas with carcinoma features represent a biological spectrum of aggressive neoplasms in children and young adults," published online ahead of print on May 13, 2022.

Other authors from Baylor and Texas Children's include Tricia L. Peters, Stephen F. Sarabia, Hyunjae R. Kim, Martin Urbicain, Emporia Faith Hollingsworth, Karla R. Alvarez, Cintia R. Perez, Mohammad Javad Najaf Panah, Jessica L. Epps, Kathy Scorsone, Barry Zorman, Sarah E. Woodfield, John A. Goss, Sanjeev A. Vasudevan, Andras Heczey, Angshumoy Roy, Kevin E. Fisher, Kalyani R. Patel and Milton J. Finegold.

Study Demonstrates Benefits of Genetic Screening in Refractory Tumors

Dr. Will Parsons, Assoc. Professor and APEC162 study chair, was corresponding author on a multi-institute, ground-breaking study of genetic screening for refractory tumors, recently published in the *Journal of Clinical Oncology*. Although cancer therapies targeting specific genetic mutations benefit some patients for whom other standard chemotherapy treatments have not been sufficiently effective, genetic screening of tumors is not performed routinely for pediatric and young adult patients with cancer. To address this deficit, the National Cancer Institute (NCI; part of the NIH) and the Children's Oncology Group (COG) partnered to create the NCI-COG pediatric MATCH trial (APEC621). The study was conducted at COG member sites across the United States by a collaborative team that included lead investigators at BCM/TCH. The scope of the NCI-COG pediatric MATCH involved 138 COG institutions from across the U.S. enrolling at least one patient on the screening study.

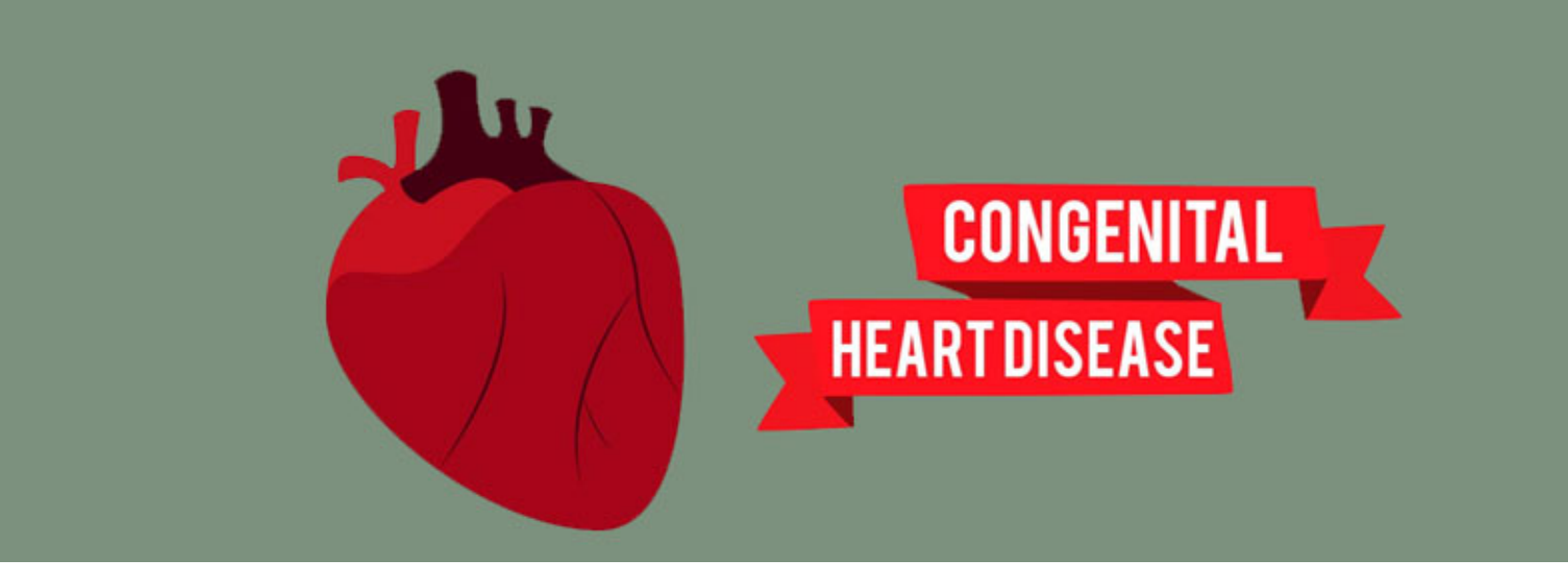
The protocol, which calls for using tumor sequencing to find actionable genetic mutations, enrolled more than 1000 patients since 2017, to match patients to 13 different phase 2 clinical trials of molecularly targeted therapies. Analysis of these first 1,000 patients revealed that tumor sequencing was effective in identifying actionable tumor mutations in pediatric and young adult patients with refractory solid tumors, lympomas, or histiocytic disorder. Actionable mutations were found in 31% of tumors, with 28% of patients assigned to a phase 2 clinical trial treatment arm of the study. Of utmost importance is that the MATCH provided access to molecularly targeted therapy to children and young adults who have the greatest need for innovative treatment, those with recurrent or refractory cancer.

A second publication in *Journal of Clinical Oncology* reports the results of the first phase 2 treatment trial completed as part of the APEC621. This study also included lead investigators from BCM/TCH and tested the MEK inhibitor selumetinib in children and young adults with tumor mutations in genes of the MAPK pathway, a key biological driver that underlies many types of cancer.

The drug showed limited efficacy in 20 patients with aggressive cancers that had continued to be progressive, despite patients receiving standard treatments. Although selumetinib has been shown to be efficacious in treating other cancer types, the results of this trial indicate that response to treatment with selumetinib cannot be predicted by the presence of MAPK pathway mutation alone.

Dr. Carl Allen, Professor and corresponding author and APEC1621E study chair noted that the study "was successful in being able to rapidly recruit patients with MAPK gene mutations to a clinical trial testing safety and efficacy of a drug that specifically targets MAPK activation. The results point to the need to look broadly at the genetic landscape of tumors to predict tumors that may be effectively treated by a single agent versus those that may require multiple agents." The study is an important early step in the challenge to develop strategies for personalized therapy for aggressive cancers.

This work was supported by the National Cancer Institute of the National Institutes of Health (CA180886, CA180899, CA196173) and by the St. Baldrick's Foundation. See the publications for a full list of study authors. Study APEC1621E is supported by NCI and AstraZeneca through a Cooperative Research and Development Agreement.



Study Reveals Different Genetic Pathways Among Types of CHD

This unprecedented analysis showed what abnormal genetic changes each patient has, answering the first question about what causes the condition. Having this information opens the door to answer the second question. The alterations at the genetic and cellular levels that lead to the abnormal development of the heart guide the researchers and physicians' decisions on how to treat CHD."
-- Dr. Diwakar Turaga

Dr. Diwakar Turaga, Asst. Professor, and colleagues recently published research in *Nature* that represents the first reported single cell analysis of the genes expressed by heart cells and immune system cells of congenital heart disease (CHD) in patients. The disease involves a spectrum of heart defects that develop before birth and remain one of the leading causes of childhood death. The authors note in the article that with current therapies, more than 90% of patients with CHD survive into adulthood but often suffer premature death from heart failure and non-cardiac causes.

The key differences the team identified among different types of CHD provide insights into the mechanism of the disease, helping to define clinical outcomes and offering opportunities to devise personalized treatments. The discovery that genetic pathways activated in the CHD are different from those in adult heart failure have significant implications for both diagnostic and therapeutic management of patients with CHD, who are at much greater risk of having heart failure than is the general population. The findings set the foundation for the researchers' long-term goal of developing therapies that specifically slow the progression of heart failure in patients with CHD, thereby extending their lives and offering better quality of life.

The researchers used heart tissue samples from numerous patients with different forms of CHD to identify the genetic underpinnings of the disease. Using single nuclear RNA sequencing (snRNA-seq), they analyzed the gen expression signature of single cells and studied different types of heart cells and immune cells in each sample. Their analyses revealed genetic pathways that are activated in each cell. Corresponding author Dr. James Martin noted that treating CHD requires a multiprong approach that "involves both repairing the genetic pathways that are altered in heart cells and modulating the damaging pro-inflammatory activity of immune system cells."

Co-author Dr. Ii Adachi commented on the value of collaborative work, stating that, "It's very exciting that this is a product of a powerful collaboration between one of the most sophisticated laboratories in cardiovascular research and the top pediatric heart center."

Hill MC, Kadow ZA, Long H, Morikawa Y, Martin TJ, Birks EJ, Campbell KS, Nerbonne J, Lavine K, Wadha L, Wang J, Turaga D, Adachi I, Martin J. Integrated multiomi jaracterization of congenital heart disease. Nature 22 June 2022 [online ahead of print]

Team of Researchers Identify Potent BET Bromodomain 1 Stereoselective Inhibitors

For more than a decade, research has shown that bromodomain (BD)-inhibitors can help control cancer growth but has had some adverse side effects and limited efficacy, as noted by **Dr. Joanna Yi**, Asst. Professor, who recently published along with colleagues, their research to identify more effective BD-inhibitors.

BD-containing proteins have been associated with cancer, inflammation, infectious diseases, and metabolic disorders. They have emerged as potential drug targets in numerous diseases.

In the recently published work, the researchers focused on identifying inhibitors specific for the first BDs (BD1) in the bromodomain and extra-terminal (BET) subgroup of human proteins. The team used innovative, faster, and more cost-effective discovery tool, DNA-encoded chemistry technology (DEC-Tec), developed in BCM's Center for Drug Discover, because it enabled them to screen billions of compounds. Whereas the more commonly used method for discovering drugs, high-throughput screen, involves screening, at most, a million compounds in individual test tubes, DEC-Tec allowed the team to screen 4 billion DNA-encoded molecules all in one test tube against BD1 to identify one that would bind to it with high specificity when compared to binding to other bromodomains.

Using the DEC-Tec, they were able to identify CDD-724, a compound that is highly selective for BD1, being approximately 2,000 times better at inhibiting BD1 than at inhibiting other human bromodomains, including the second bromodomain (BD2) of the BET subgroup, according to Dr. Ram K. Modukuri, one of the researchers.

To gain a greater understanding of why their BD1-inhibitor is greater than other inibitors, the team sought advice from researchers in the Dan L. Duncan Comprehensive Cancer Center, who conducted 3D molecular studies to determine the precise location on the BD1 protein to which the BD1-inhibitor binds.

They found that the BD1-inhibitor binds to a shallow area on the BD1 protein, not seen with the other BD1 inhibitors. This finding allows for exploration of other BD1-selective inhibitors. The conclusion of the authors was that "Our findings highlight the robustness and efficiency of the DECL platform to identify specific, potent protein binders that have promise as potential anticancer and anti-inflammatory agents and as male contraceptives."

Modukuri RK, Yu Z, Tan Z, Ta HM, UcisikMN, Jin Z, Anglin JL, Sharma KL, Nyshadham P, Li F, Riehle K, Faver JC, Duong K, Nagarajan S, Simmons N, Palmer SS, Teng M, Young DW, Yi JS, Kim C, Matzuk MM. Discovery of potent BET bromodomain 1 stereoselective inhibitors using DNA-encoded chemical library selections. Proc Natl Acad Sci USA 119(22):32122506119, 2022.

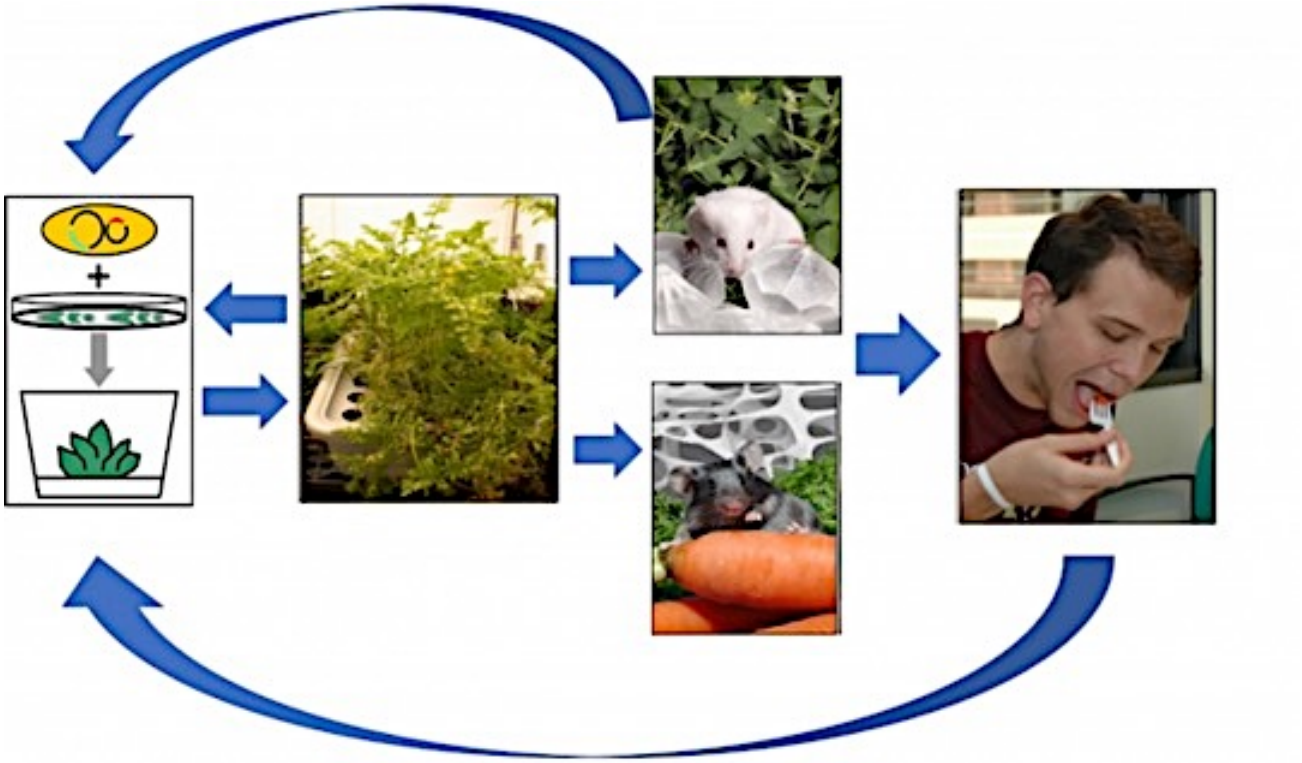
DEPARTMENT NEWS

FOCUS ON PEDIATRIC LABS

Hirschi Lab Leverages Knowledge to Impact Yield and Nutrient Content of Plants

Dr. Kendal Hirschi, Professor, and researchers in his lab study the basic mechanisms of plant growth, leveraging the knowledge they gain to impact yield and nutrient content in agriculturally important crops. The lab is part of the USDA/ARS Children's Nutrition Research Center, which houses laboratories, state-of-the-art equipment, observation labs, a greenhouse, and a metabolic kitchen. The researchers in the Hirschi lab work diligently to make plants healthier so that they will grow more effectively during adverse conditions and will provide extra minerals and vitamins while having fewer antinutrients.

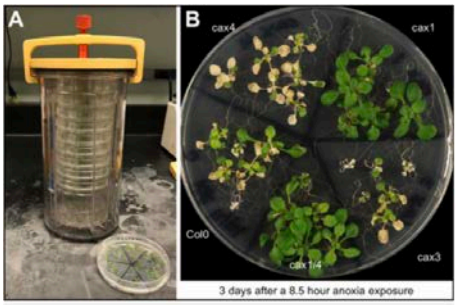
We provide herein are brief descriptions of three projects currently underway in the Hirschi lab.



Helping Plants Overcome
Adverse Environmental Stressors

Plants experience numerous stress conditions with weather changes and other environmental influences, requiring that these conditions be mitigated simultaneously. One such environmental influencer is flooding, which induces various stressors, including limited oxygen and changes in temperature, light, and osmotic and oxidative conditions.

One of the major projects in the Hirschi lab focuses on sustaining the health of plants during heavy raining seasons so the plants can continue to grow even while submerged in water. In this situation, a plant closes some of its pores to decrease the absorption of water, but that action also limits the intake of oxygen, and the plant then begins to shut down completely and die, a process called *anoxia*. Based on the concept that a plant that does not shut down completely can keep its energy reserves active and, thereby, live, Dr. Hirschi and his researchers are working to understand the mechanism that helps plants remain strong under conditions of limited oxygen, including investigating whether some plants actually alter some of their genes in the process. The lab has discovered that mutations in the Arabidopsis vacuolar cation/proton exchanger 1 (CAZ1) cause dramatic tolerance to anoxic conditions. This robust phenotype was an unexpected finding and highlights the limitations of the transcriptional profiling usually used to study the networks that control gene regulation during oxygen deprivation. They found that the CAX gene expression remains unchanged during hypoxia, leading to the initiation of a series of genetic, imaging, and physiological experiments to characterize the role of CAXs in post-anoxic injury.



Plant Anoxia Tolerance: A) Plants are placed in a standard microbiology gaspack to remove oxygen. They are left in the chamber for around 8 hours. B) Several days after the stress, it is apparent the cax1 lines (i.e do not have the transporter) are tolerant. We think this phenotype is cool (and important for production agriculture).

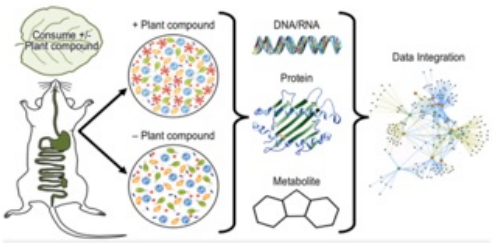
Increasing the Bioavailable Portion of Nutrients

Another research project is seeking to determine if nutrition may include the digestion of genetic information. Nutritional scientists have been cataloging the nutrients in foods for generations, and more recent plant genome projects have facilitated the development of genetic tools to manipulate nutrient content. Despite these advances, the impact that these genetic modifications have on nutrient bioavailability remain under studied. The Hirschi lab, which contends that bioavailability is determined by the allocation of nutrients within plant cells, emphasizes the importance of increasing the bioavailable portion of nutrients, rather than simply increasing the bulk amount of nutrients in food. To test their hypothesis, the researchers are trying to define the relationship between nutrient partitioning in the plant matrix and nutrient absorption. The initial studies involve using transgenic approaches to systematically repartition various nutrients among isogenic crop lines. Using techniques such as synchrotron X-ray Fluorescence (SXRF) microspectroscopy, which was pioneered by collaborators (T. Punshon-Dartmouth), they are able to visualize how genetic and environmental alterations redistribute nutrients inside plant cells. Once they have developed these spatial maps, the group can compare and contrast bioavailability of these nutrients in animal and human feed studies. As previous findings suggest that simply knowing the nutrient content within plant cells is insufficient, their long-range goal is to optimize an assortment of technologies to provide a scalable model that can help remedy nutrient deficiencies throughout the world.

Bioavailability of Nutrients: We utilize the tools we develop in yeast and Arabidopsis to alter the nutrient content of agriculturally important crops.

Determining the Role of Therapeutic Plant-Based Diets in Decreasing Malnutrition

A third study addresses the concern of malnutrition, which continues to contribute to nearly half of all deaths worldwide of children younger than 5 years of age. For those who survive, malnutrition is part of a cruel cycle of weakened immunity and recurrent infections. Recent evidence that gut microbiome is implicated in childhood malnutrition has led to studies of cooperative diet-microbe interactions that could be important aspects of malnutrition-related deficiencies targeted by therapeutic foods. Although the World Health Organization recommends that all malnourished children be treated with therapeutic foods, the health-promoting components of many foods have not been identified. Plant diets are associated with intestinal health and aid in promoting the development of a diverse and stable microbial system. Plants use exosome-like nanoparticles (ELNs) to communicate to microbes and fungi through the transport of various lipids, proteins, and RNAs, adding evidence of the potential impacts on host health through the gut microbiome. Preliminary studies from the Hirschi lab demonstrate that specific gut microbes appear to be ELN-competent and that this uptake is associated with enhanced bacterial growth. Their ongoing work will recalibrate the role of therapeutic plant-based diets and their associated ELNs on gut microbiome composition and function.



Experimental Outline for Microbiome Work: Initially, diets that differ in a single plant gene (or plant ELN) are used in mice feeding studies to develop an experimental platform to study the role of single dietary plant-based nutrients on intestinal microbial ecology.

All photos courtesy of Hirschi lab.

"End with Good Stuff."

-- Dr. Gordon Schutze

Some Therapy Comes on Four Paws

D&D Borden's Lady Plurabelle of the Liffey, CGC, THDN
Owned and Handled by Rev. Gordon Borden & Dr. Lee Ligon-Borden
Borden's Lady Brittany of the Liffey, CGC, THD
Owned and Handled by Rev. Gordon Borden & Dr. Lee Ligon-Borden