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Dr. Huda Zoghbi receives Breakthrough Award for Science
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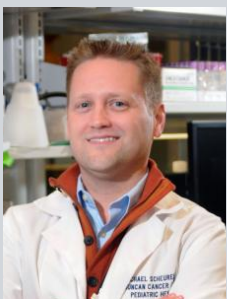
FEATURE ARTICLE . . .

BCM/TCH Will Lead Collaborative Effort to Address Cause of Childhood Cancer

“It is our mission to find a cure for all children with cancer, and ACCESS-Texas will help us understand why certain children get cancer, a critical step in finding cures.”

– Dr. David Poplack, Professor, Director of the TCH Cancer Center and Deputy Director of the BCM Dan L. Duncan Comprehensive Cancer Center

A grant of \$6 million from the Cancer Prevention and Research Institute of Texas will support a statewide effort, led by Baylor College of Medicine and Texas Children’s Hospital, to develop the Adolescent and Childhood Cancer Epidemiology and Susceptibility Service for Texas, or ACCESS-Texas. The cooperative effort involves eight childhood cancer treatment centers across the state: BCM and TCH, Children’s Hospital of San Antonio (ChofSA), UT Southwestern/Children’s Medical Center Dallas, Cook Children’s Medical Center in Fort Worth, Vannie Cook Children’s Cancer Clinic in McAllen, and Texas Tech University children’s hospitals in Lubbock, Amarillo and El Paso.



Dr. Michael Scheurer, Assoc. Prof., is Director of ACCESS-Texas, the goal of which is to identify and understand the causes of childhood cancer. Dr. Scheurer explained that, despite the progress that has been made in the treatment of childhood cancer, the vast majority of cases have no recognizable cause.

ACCESS-Texas will be built on a similar program already in place at TCH’s Cancer Center that has taken the lead in significant research findings,

including the first genome-wide assessment of maternal genetic effects among pediatric patients with acute lymphoblastic leukemia (ALL) and a study evaluating the role of gene-nutrient interactions on risk factors. Genetic risk factors have also been identified in neuroblastoma, but many other cancers need to be evaluated using a genome-wide approach. Also, few gene-environment links that may lead to susceptibility to developing cancer have been evaluated. Hence, a

centralized facility that provides researchers with access to data from a wide spectrum of sources is much needed and will advance current research in the state.

The primary focus of ACCESS-Texas will be to identify genetic risk factors and gene-environment interactions that may be associated with susceptibility to cancer in children and adolescents. ACCESS-Texas will enroll a diverse population of children with newly diagnosed cancer and their parents.

“There are approximately 250 physicians and scientists throughout the state of Texas who are focused on understanding the causes and biology of adolescent and childhood cancers. The resources gathered through ACCESS-Texas would place Texas researchers in a better position to develop and lead international collaborations to explore novel risk factors for childhood cancers,” he said.
“Once we more fully understand the causes of childhood cancers, we can then start to develop prevention strategies.”

– Dr. Michael Scheurer

Data will be collected through a risk-factor questionnaire given to patients and their parents that will focus on sociodemographics, lifestyle, clinical risk factors, family history of cancer and other diseases, environmental and occupational exposures, and maternal and infant diet.

The center will also collect blood and saliva samples, along with key clinical and follow-up data, including tumor pathology and staging and molecular characterization of the tumor, treatment summaries, treatment toxicities, and late-effects. All of the data and biospecimens will be stored in a central repository that will be accessible to researchers conducting family-based studies of genetic risk factors for childhood cancer and gene-environmental interaction studies.

Another focus is the Hispanic population, which is exceptionally vulnerable. ChofSA is one of the sites that cares for numerous Hispanic patients and will be able to address those specific needs.

Dr. Scheurer noted that it is a highly vulnerable population because Hispanics generally have higher rates of cancer and worse outcomes, and the opportunity to collect data and conduct research that may help us understand the reasons for this is very important.

“The Children’s Hospital of San Antonio is proud and excited to participate in this important statewide resource, the outcomes of which will greatly impact our understanding of children’s cancer. We serve a unique population that is often under-represented in national studies, so this is a significant opportunity to further advance knowledge that will benefit our children.”

-- Dr. Vivienne Marshall, Professor and director of clinical research at the Max and Minnie Tomerlin Voelcker Clinical Research Center at CHofSA



DEPARTMENT NEWS . . .

EVENTS & HAPPENINGS



CRIS Hosts Annual Education Retreat



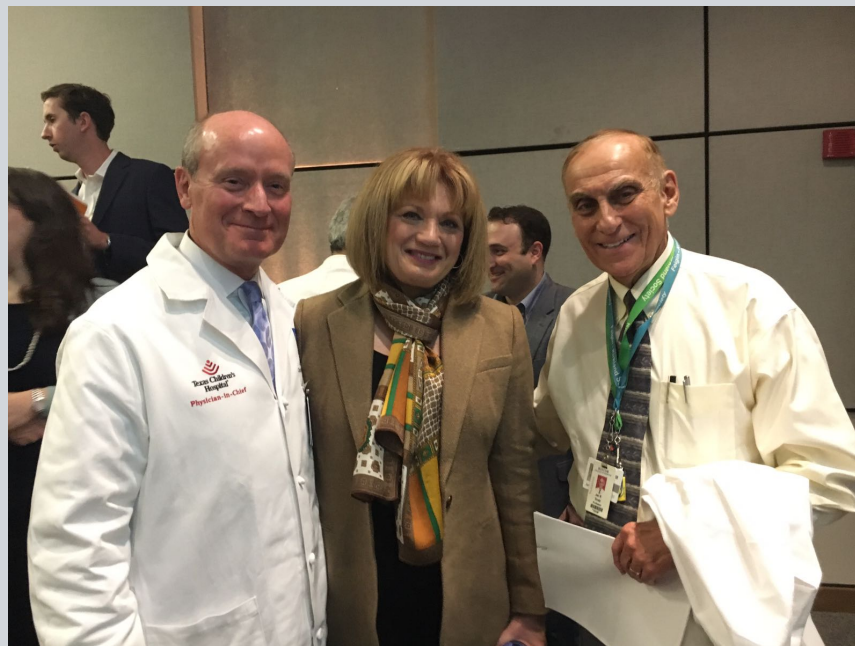
On December 2, 2016, the Center for Research, Innovation and Scholarship (CRIS) in Medical Education hosted the Annual Department of Pediatrics Education Retreat, entitled “Nurturing a Growth Mindset: A New Culture for Educators and Learners.” **Dr. Satid Thammasitboon** and **Dr. Julieana Nichols** were co-chairs of the planning committee, which put together a full day of educational events that began with a Welcome and Opening Remarks by Chairman, **Dr. Mark Kline**.

Left (from left): Dr. Geeta Singhal, Michael DeScioli (Dr. DeScioli’s husband), Michelle Feavel (Dr. DeScioli’s mother), Dr. Daniel West, and Dr. Satid Thammasitboon, Co-Chair.

Below (from left): Dr. Mark Kline, Chairman, Michelle Feavel, and Dr. Jan Drutz

The morning session opened with the **Dr. Kelly DeScioli Memorial Lecture**, “The New Frontier of Medical Education: Competency-Based Medical Education to Support Learning and Improve Patient Outcomes,” given by guest speaker, Dr. Daniel West. Dr. West is Professor of Pediatrics and Director of the Pediatric Residency Program and Vice-Chair for Education in the Department of Pediatrics at UCSF. The lecture is held in memory of Dr. Kelly DeScioli, a beloved resident and faculty member of the department, known for her educational contributions and exceptional communication style.

Three concurrent workshops completed the morning session. The titles and presenters are in the accompanying side-bar.



Concurrent Workshops

MORNING SESSION

"The Pediatric Value Meal: Supersizing High Value Care Education"

Lauren L. Walker, MD; Stephen Whitney, MD, MBA; Jennifer Rama, MD, MEd; and Ricardo Quinonez, MD.

"LinkedIn and Personal Branding Enhancing Your Online Footprint to Generate New Academic Opportunities"

Derek Haseltine, BS, MEd.

"Disseminate Scholarship of Teaching: How to Publish a Teaching Tool or Curriculum"

Adam D. Wolfe, MD, PhD, and Anne Gill, Dr.PH, MS.

AFTERNOON SESSION

"Designing Surveys to Effectively Measure Outcomes for Any Educational or Research Project"

Daniel West, MD.

"Optimizing Autonomy and Supervision within Medical Training: Is it Possible?"

John Darby, MD; Jared Rubenstein, MD; Andrea Dean, MD; Satid Thammasitboon, MD, MHPE; and Deb Hsu, MD, MEd.

"Teaching Team Building to Enhance Healthcare Team Performance Using Simulation Education"

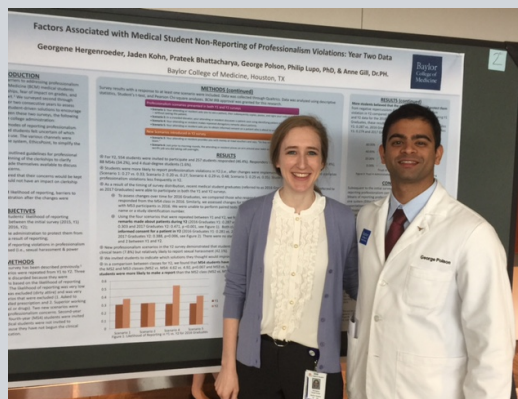
Ankhi Dutta, MD, MPH; Rachel Marek, MD; Karen Patricia, MD, MEd; Gemma Elegores, MSN, RN, CCRN; Kelly Wallin, MS, RN, CCRN; and Jennifer Arnold, MD, MSc.



After a break for lunch and networking, the retreat continued with the afternoon plenary session, "Nurturing Your Teaching Philosophy for

Today's Learners," given by Dr. Harold Henson (above). Three concurrent workshops were also held following the session, and the titles for the afternoon workshops are also in the side bar.

Right: Dr. Nichols, Co-Chair, with Dr. West



Poster Session

Medical students Georgene E. Hergenroeder, MS4, and George Polson, MS3, (left) generated lively interest during the poster session at the Annual Education Retreat.



The research explored barriers and incentives for medical students in reporting breaches in professionalism and was mentored by Dr. Anne Gill.

Winners of the Outstanding Posters at the TCH Annual Education Retreat Named

Mary Shapiro, MD, YoungNa Lee-Kim, MD, Amber Yates, MD
"The Texas Children's Cancer and Hematology Centers' Fellow's Handbook: Educational Resource for the Delivery of Quality Patient Care"

Kristy Hillier, MD, Larry Laufman, EdD, Pedro Diaz-Marsh, MD, Ellen Friedman, MD
"Incorporating Professionalism in GME Through Small Group Discussions of Clinical Vignettes"

Tessy Thomas, DO, MBE, Kimi Rafie, Eric Williams, MD
"Integrating Functional Resonance Analysis Method (FRAM) and Kolb's Learning Cycle to Understand Complex Socio-technical Systems"

Mobile Device Security: Protecting Patients' Protected Health Information

At TCH/BCM, we strive to be leaders in patient care, education, and research, which includes being mindful of the sensitivity of the information at our fingertips. We have a duty to our patients to access, use, and maintain their Protected Health Information (PHI) in a responsible manner. Mobile devices, such as laptops, smartphones, tablets, and thumb drives, are important tools for today's busy physicians. However, technology that delivers these advantages also represents a significant risk to protecting our patient's PHI. In fact, most breaches of PHI reported to the Office of Civil Rights (the federal agency that enforces privacy regulations) are related to the theft or loss of mobile devices.



Federal Enforcement

Following a breach of unsecured PHI, federal law requires organizations to notify the impacted patients, the Office of Civil Rights, and, in cases involving more than 500 patients, the media. In some cases, OCR has levied substantial fines against institutions.

Privacy Safeguards

Protecting our patient's PHI takes a multipronged approach. The privacy safeguards should be instilled in your daily routine.

Mobile Device Safeguards

- Mobile devices must be installed with TCH or BCM-approved encryption software
- Do not put PHI on flash drives, memory cards, other unencrypted devices, or open access devices
- Maintain your personal mobile devices by installing anti-virus software and security updates
- Do not transmit PHI using unsecured, public Wi-Fi networks
- Use strong passwords and screen locks
- Download applications only from trusted sources
- Do not store PHI on your personal device

Tip: The safest way to access PHI is by utilizing the Texas Children's remote capability: <https://remote.texaschildrens.org>. This feature allows registered users to remotely access the secure network at Texas Children's Hospital (e.g., from your home computer or mobile device).

Physical Safeguards

- Do not leave mobile devices unattended (e.g., in your car), even for a few minutes
- Never share your password or allow others to access your sign-on
- Lock your mobile device when it's not in use

Other Privacy Safeguards

- Do not leave documents containing PHI unattended (e.g., in your car)
- Be mindful of where you have sensitive conversations with colleagues and patients

Remember! The best practice for remotely accessing your patient's PHI is via the Texas Children's remote portal.

Contact Us

If you have questions about mobile device security, please contact the Texas Children's Compliance and Privacy Office at 832-824-2085 or via email at compliance@texaschildrens.org.

Providing Health Care at the Border



Reflections from
a pediatric fellow in the field . . .

“A pair of young but glazed brown eyes stare through me, not even realizing that I am there. After November 2016, there has been a surge of children and their families crossing the Southern Border. This nearly 1000-mile journey is often fraught with dangerous situations and a constant feeling of trepidation.

“In December, I travelled with **Drs. Stephanie Marton** and **Dr. Lynda Aririguzo** down to the Sacred Heart Church in McAllen, Texas. This church serves as a respite center for families who have been released from the Border Patrol Processing Center and are awaiting to take their buses to their final destinations in the United States.

“We had arrived well before the first set of families. There was a feeling of anticipation in the room, and the team was getting ready for the new arrivals by sorting clothes and preparing food.

“As the first group of weary travelers arrived, all of the volunteers gathered at the entrance and clapped while welcoming the group with warm “Bienvenidos!” The children stuck to the sides of their parents and appeared to be tired but, more so, fearful. After getting warm food and a hot shower with fresh clothes, the children transformed the room into one filled with laughter and squeals.



As medical professionals, we helped to see these families for any health-related questions. Most of them had a common cold or a cough, but for many of them, the biggest treatment was compassion. And with compassion, the pair of young eyes seemed to glitter and sparkle signifying the importance of love.”

-- **Dr. Padma Swamy**

Baylor-Uganda Hosts Record-setting Meeting



Baylor-Uganda hosted the **18th Annual BIPAI Network Meeting** in Johannesburg, South Africa between October 31 and November 4. A record 140 participants attended the main scientific meeting and the various breakout meetings, including Finance & Administration, Monitoring & Evaluation, and Facility & IT Management. Houston Mayor Sylvester Turner and his business delegation, including Dr. Robert Robbins, CEO of the Texas Medical Center, attended the opening evening reception.

Global Health to Co-Host Pre-Conference



Texas Children's Global Health will co-host a **Global Maternal and Child Health Pre-Conference** with the Rice Business Jones Graduate School of Business and the Houston Global Health Collaborative (HGHC) as part of the 2017 Sustain Sixth Annual Global Health Conference.

The conference will take place **March 23 -25, 2017** and is centered around the United Nation's Sustainable Development Goals. This

meeting is an annual gathering of interdisciplinary professionals with a passion for global health innovation and advancement and will be held at the Jesse H Jones Graduate School of Business at Rice University.

The Houston Global Health Collaborative began with the merger of two organizations with similar missions. The Wainerdi Global Health Roundtable began as an effort to convene faculty and administrators across the Texas Medical Center for regular conversations over dinner and focused discussion about various, and previously unconnected, global health endeavors. The Houston Global Health Collaborative began as an effort among students across the TMC to unite institutions to further global health. The merger of these two organizations allowed faculty, students, and other professionals the opportunity to combine resources and further the shared vision of the TMC and the greater Houston region as a true leader in global health.

Baylor-Malawi Celebrates 10 Years

BCM Children's Foundation, Malawi - or Baylor-Malawi - celebrated its 10th anniversary on Friday, November 11, 2016. It was commemorated with an open house showcasing activities at the Centre of Excellence in Lilongwe. Member of Parliament Juliana Lunguzi, Chairperson of the Malawi Parliamentary Committee of Health, was the guest of honor. A portion of her thoughtful and encouraging remarks are included below.

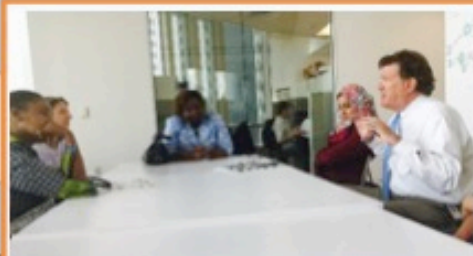


"Friday, November 11th, 2016 was a [great] day for Malawi as we celebrated the 10th anniversary of KCH's Baylor Pediatric HIV-AIDS Hospital. Friends, brothers and sisters, I am talking about the Kamuzu Central Hospital Pediatric Ward, BIPAI Malawi's Center of Excellence, standing on the premises where I learned the science of nursing. For me, this was part-homecoming because apart from undergoing training at KCH, I worked as a Matron in the pediatric ward back in the day. At that time, we had two specialist pediatricians, one of them being Dr. Peter Kazembe. A humble man, a professional through and through whose passion for the wellbeing of children is legendary. His mission was to close the gap in pediatric HIV care and treatment.

Has this mission been achieved? With support from Baylor College of Medicine, Abbott Fund, Texas Children's Hospital and Baylor International Pediatric AIDS Initiative, Dr. Kazembe led the establishment of Baylor College of Medicine Children's Foundation-Malawi as a Centre of Excellence for pioneering HIV treatment in pediatrics. The milestones in brief: Impressive growth from providing provider initiated counseling to provision of treatment, care and support, including outreach programs; Functioning and well-equipped clinics, which attend to in- and out-patients, plus outreach clinics; Robust adolescent programs to counsel and support all age groups, and to serve the kids who thrive on treatment and transition into adulthood; A vibrant "Tingathe Outreach Program," which follows up [with] those in need; A really robust laboratory and pharmacy; Dedicated social workers; A child-friendly, clean environment."



Around the World...



Headquarters

A delegation from the Botswana Ministry of Health, including the Minister, Permanent Secretary, and Program Coordinator visited BCM/TCH in Houston, Texas, to learn more about the institutions, services provided, and discuss the development of the pediatric hematology/oncology (PHO) program in Botswana.



Argentina

Baylor College of Medicine, TCH, Chevron, YPF Foundation, and the Provincial Ministry of Health in Neuquen signed a Memorandum of Agreement in October, which establishes the foundation for a development of a maternal-child health program.

...with Global Health



Romania

ExxonMobil awarded Baylor-Romania a \$10K grant for the dental clinic operations between November 2016 and March 2017.



Botswana

Members of the Collaborative African Genomics Network (CAfGEN) were well presented in the H3Africa Meeting in Mauritius. One of the PhD trainees in genomics was selected to present and won the best abstract competition, and several team members chaired various meetings. The program plans to apply for renewal for the next 5 years, and the NIH team expresses great support.



Uganda

Baylor-Uganda hosted Holly Wong, the Principal Deputy Assistant Secretary for Global Affairs at the U.S. Department of Health and Human Services, and Dr. Stephen Weirisma, the CDC Country Director, to discuss scaling-up treatment, care and prevention of HIV among children and adolescents in Uganda.

Dr. Adeodata Kekitiinwa signed a Programme Cooperation Agreement (PCA) with UNICEF (\$110,000 with counter funding from Baylor-Uganda of \$28,000). Dr. Kekitiinwa participated in the launch of the five-year Karamoja United Nations HIV Prevention Programme in Karamoja funded by the government of Ireland.

Swaziland

The Technical Support to PEPFAR Programs in the Southern Africa Region (TSP) roadshow to Swaziland was a great success. Issues identified for possible future funding were adolescent care, including establishment of teen clubs, training chiefs to run HIV programs at the community level, and pediatric test and start.

Lesotho

The Ministry of Health has asked Baylor-Lesotho to lead a Global Fund project to scale-up early infant diagnosis in five districts– Mafeteng, Quthing, Qacha's Nek, Mokhotlong , and Botha-Bothe.

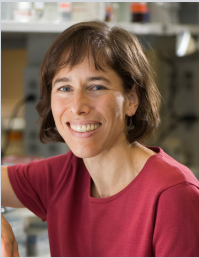
Their Majesties King Letsie III and Queen 'Masenate Mohato Seeiso, with the Minister of Health, visited the Centre of Excellence (COE) in Maseru to launch the 2016 World AIDS Day activities. They engaged in a hands-on community service project by planting some seedlings at the demonstration Keyhole Garden, where families learn how to start a vegetable garden at their homes to combat malnutrition.-

Three Researchers Receive Grants from Cancer Prevention & Research Institute

"I am very proud of the work of these three dedicated researchers and pleased that our faculty members continue to move the field forward toward the goal of an eventual cure for all forms of childhood cancer."

-- Dr. David Poplack, Director, Texas Children's Cancer Center

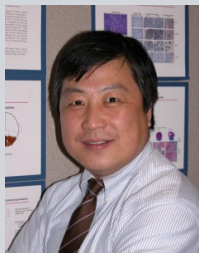
Three researchers at Texas Children's Cancer Center/Baylor College of Medicine recently received a total of \$3,866,831 from the Cancer Prevention and Research Institute of Texas (CPRIT). Synopses of their work are:



Dr. Karen Rabin was awarded \$1,200,000 for her project, "Molecular Epidemiology and Somatic Alterations Driving Acute Lymphoblastic Leukemia in Down Syndrome." She and co-investigator Dr. Philip Lupo will investigate the basis for the 20-fold increased risk of acute lymphoblastic leukemia (ALL) in children with Down syndrome. They seek to identify genetic variants in children with Down syndrome that are associated with an increased risk of ALL. They will also study the effects of a gene that is commonly mutated in Down syndrome ALL in a mouse model of Down syndrome.

"Findings from this study may lead to improved genetic testing and counseling strategies for children with Down syndrome, and may identify genes driving the development of Down syndrome ALL which could serve as therapeutic targets to improve outcomes in this vulnerable and high-risk patient population,"

-- Dr. Rabin



Dr. Xiao-Nan Li received \$1,198,726 for his study, "High Throughput Combinatory Drug Screening for Pediatric Medulloblastomas With a Dysregulated EZH2 Pathway." The goal of this study is to establish rationales that may help in clinical trials that use combination therapies to target EZH2 in children with medulloblastoma.

"Dysregulation of epigenetics may have played a more prominent role in driving medulloblastoma tumorigenesis. EZH2 is a histone methyl transferase subunit of a Polycomb repressor complex and is highly expressed in group 3 and 4 medulloblastomas, which are shown to have the worst prognosis."

-- Dr. Xiao-Nan



Dr. Philip Lupo received \$1,488,105 for his research, "Genetic Epidemiology and Molecular Basis of Cancer Predisposition in Pediatric Rhabdomyosarcoma." Dr. Lupo's study will leverage the resources of the Children's Oncology Group to obtain over 1,000 samples from children newly diagnosed with rhabdomyosarcoma. This study represents an important step toward a better understanding of the causes of pediatric rhabdomyosarcoma by combining population-based research strategies with innovative molecular biological approaches.

"We will also create the first family-based study of rhabdomyosarcoma for genomic analyses. We will then utilize state-of-the-art techniques in DNA sequencing, available at Baylor College of Medicine, to thoroughly study cancer predisposition genes in these individuals. We will also work with leading sarcoma experts at the University of Texas Southwestern Medical Center to understand the functional consequences of mutations in these genes on rhabdomyosarcoma using a novel zebrafish model. Our overall goal is to fully explain the role of cancer predisposition genes on the risk of rhabdomyosarcoma."

--Dr. Lupo

Online Resource Developed to Advance Global Education

Dr. Jeremy Slone, Asst. Prof., who spent three years in Botswana caring for children with cancer, has been involved in an effort with the International Society of Paediatric Oncology (SIOP) to develop a website that will promote the collection of information on training opportunities and materials for healthcare providers in resource-limited settings caring for children with cancer. In many resource-limited areas, where 80 percent of the world's population lives and has limited access to modern diagnostics and treatment, only 10 to 20 percent of children with cancer survive. The website initiative is aimed at making the knowledge available to these areas, where health professionals can make a difference in these figures.



The website is called **Paediatric Oncology International Network for Training and Education (POINTE)** and has the goal of promoting global childhood cancer education. It was launched at the SIOP Annual Congress in Dublin in late 2016. It includes an online database that lists more than 70 training opportunities in hematology/oncology for healthcare workers in resource-limited countries; because many of these individuals have inadequate access to the internet, the initiative also has a printable spreadsheet that lists the types of opportunities, the intended audiences, locations, duration of training, application deadlines, and other pertinent information. It also has a "Find an Expert" section that allows healthcare providers to connect with a physician or other healthcare personnel in North America and other parts of the world. In addition, other resources, such as lectures and handbooks, can be accessed on POINTE in open-access fashion. This allows anyone at any institution to submit materials through a two-step approval process so materials are available to everyone.

More information is available at <https://blogs.bcm.edu/2016/11/29/new-online-resource-aims-to-promote-advance-global-childhood-cancer-education/>

Students Brighten Holidays for Patients

Students from Brenham High School (Brenham Texas) visited the Cancer Center with special gifts they had worked hard to make for the young patients in the center. Although they were on holiday vacation, they chose to use that time to make the delivery themselves and to interact with the children. The students created 80 hardwood "lily pads" that fasten around the bottom of an IV pole so the children who are too weak to walk can ride instead. Mark Thiel introduced the concept to his construction technology class in September and said the students immediately got involved. They first fashioned the "lily pads" from wood and then teamed up with a senior citizens organization and the school's art club to decorate the pads. The children were delighted with their new "transportation."

"It's the neatest idea - it's just a platform that fits around the bottom of an IV pole - and helps children, who are too weak to walk! Kids can either ride, sit on it, or stand on it - and be pushed around - instead of having to walk."

-- Mark Thiel



2017 Biennial William T. Shearer Symposium “Innovations in Primary Immunodeficiency and Clinical Immunology”

Saturday, February 11, 2017,
JW Marriott Houston
Downtown
806 Main Street



This Allergy/Immunology
symposium is named for Dr.
William T. Shearer, Professor.

This year's event will
feature Dr. Bodo
Grimbacher,
University of
Freiburg, as the
keynote speaker and
many other superb
internationally
renowned lecturers.



The inaugural symposium, held in
2013, and the second symposium,
held in 2015, attracted audiences,
including physicians, nurses,
researchers, pharmacists, and
trainees, from across the South Texas
Region and the Texas Medical
Center. Along with valuable
updates, the symposium provides
CME or CNE hours as appropriate.

Registration online at:
<http://www.texaschildrens.org/biennial-william-t-shearer-innovations-primary-immunodeficiency-and-clinical-immunology-symposium>

For more information, feel free to
contact either Ruth Herrera,
herrera@bcm.edu or America Lueso,
aplueso@texaschildrens.org.

PROGRAM Saturday, February 11, 2017

7:00-8:00AM	Registration and Continental Breakfast
8:00-8:10AM	Mark Kline, MD, Physician-in-Chief Texas Children's Hospital, Houston, TX Opening Remarks and Welcome
8:10-8:25AM	Jordan Orange, MD, PhD Texas Children's Hospital, Houston, TX Advancement in Clinical Immunology
8:30-9:15AM	Bodo Grimbacher, MD, PhD University of Freiburg, Germany Keynote Address: New Innovations and Discoveries in Primary Immune Deficiency Diseases
9:20-9:40AM	James R. Lupski, MD, PhD, DSc (hon), FAAP, FACMG, FAAAA Baylor College of Medicine, Houston, TX Center for Mendelian Genomics Project and the New Discoveries from the Houston Project Collaboration
9:45-10:05AM	Chivon McMullen-Jackson, RN Texas Children's Hospital, Houston, TX Multidisciplinary Approach to Diagnostic Evaluation and Research in Primary Immune Deficiency Diseases
10:10-10:20AM	Break
10:25-10:45AM	<i>Global Immune Deficiency</i> Francisco Espinosa, MD National Institute of Pediatrics Mexico City, Mexico The Innovations in Diagnosis and Treatment of Primary Immune Deficiency Diseases in Latin America
10:50-11:10AM	Luis Alberto (Mateo) Pedroza, PhD University of San Francisco, Quito, Ecuador Results and Discoveries from the Houston Project: The Collaboration in Ecuador
11:15-11:35AM	Ricardo Sorensen, MD LSU Health Sciences Center, New Orleans, LA Therapeutic Uses for Immunoglobulin Replacement Therapy
11:40-12:55PM	Lunch
1:00-1:20PM	<i>Innovations in Immune Dysregulation</i> Sara Anvari, MD Texas Children's Hospital Food Allergy Center, Houston, TX Innovations and Advancement in the Treatment of Food Allergy
1:25-1:45PM	Carl Allen, MD, PhD Texas Children's Hospital, Houston, TX Innovations in the Discovery and Treatment of Lymphoproliferative Disorders
1:50-2:10PM	Sung-Yun Pai, MD Boston Children's Hospital/Dana-Farber Cancer Institute Boston, MA New Discoveries in Gene Therapy and Innovations in Treatment of Primary Immune Deficiency Diseases
2:15-2:25PM	Break
2:30-2:50PM	Virginia Pascual, MD Baylor Institute for Immunology Research, Dallas, TX New Innovations in Auto-immune and Auto-inflammatory Diseases
2:55-3:15PM	Silke Paust, PhD Baylor College of Medicine, Houston, TX Innate Regulation of Natural Killer Cell Responses to Influenza A Infections
3:20-3:40PM	Brian Crucian, PhD NASA, Houston, TX Immune Regulation in Space Travel
3:45-4:00PM	Closing Remarks – Jordan Orange, MD, PhD

Study Will Address Needs of Children in Foster Care

Public Health, one of our newest Sections, is starting 2017 off with a grant from the Health Policy Institute Funding Program of Texas Medical Center for a multi-center study, *Policies and Practices Addressing Medical and Mental Health Needs for Children in Foster Care*.



Dr. Christopher Greeley, Professor and Section Chief, (left) is Principal Investigator and will be joined by Drs. **Angelo Giardino** (TCH), Kim Cheung (UT Health), and Ken Wolpin and Favio Cunha (Rice University).

This grant will be used to generate evidence-based, experience-informed, impactful policy recommendations for medical and mental health care for children in foster care. They will utilize two strategies to inform their recommendations: 1) a systematic review of published and unpublished literature and reports and 2) focus groups and semi-structured interviews of children, parents, providers and county CPS employees and leadership.

In the first phase of the study, they will identify and clearly articulate the standards of medical and mental health care for children in foster care that are nationally standard, using the recommendations of three national listserves (The American Academy of Pediatrics Section on Child Abuse and Neglect, The Ray E. Helfer Society, and the Academic Pediatric Association). This phase will leverage the experience and strengths of **Drs. Kwabena Sarpong** (Public Health Pediatrics) and **Jean Raphael** (Academic General Pediatrics).

In reviewing the published and unpublished material, they will answer two critical questions regarding children in foster care: 1) what are the specific medical and mental health needs of children in the foster care system? and 2) what outcomes do we find of children in foster care, especially whether children in foster care are at greater risk for persistent medical and mental health consequences resulting from both their foster care and the circumstances that required they be placed in foster care.

They will also explore the identified medical and mental health standards and policies for children in foster care in order to evaluate the different models of service delivery that are recommended from a societal perspective.

A critical step within the project will involve focus-groups and structured interviews of CPS leadership and staff, foster parents, foster children who have aged out (are at least 21 years old) and medical and mental health providers in Houston. **Dr. Kim Lopez** (Public Health Pediatrics) will work with Dr. Cheung to gain a comprehensive appreciation of the current landscape for foster children and families in Houston.

Health economists Drs. Wolpin and Cunha will explore models of care to better deliver the needed medical and mental health services to the vulnerable children in foster care. The health services implications and recommendations of delivering care to children in foster care within hospital and clinic networks, community health departments and private and non-profit providers will be assessed. A goal of this proposal is to develop policy recommendations which will have a meaningful impact on the lives of foster children, not just in Texas but nationally.

This study is one of many projects planned by the Section with regard to the diverse and complex issues that affect patients at TCH and the community at large.

International SONG-Kids Pays Visit to TCH

In November 2016, the Renal Section at Texas Children's Hospital hosted a visit from the International SONG-Kids research initiative. SONG stands for "Standardized Outcomes in Nephrology." SONG investigators are involved in studies that contribute to the concept and design of standardized outcomes in nephrology, data collection and analysis, and projects that facilitate participant recruitment.



SONG aims to establish a set of core outcomes and outcome measures across the spectrum of kidney disease for clinical trials and other forms of research. The outcomes will be generated from the shared priorities of patients, caregivers, clinicians, researchers, policy makers, and other relevant stakeholders. The approach helps to ensure that research is reporting outcomes that are meaningful and relevant to patients with kidney disease and their family members, as well as their physicians. SONG is currently developing core outcomes for haemodialysis

(SONG-HD), transplantation (SONG-Tx), children and adolescents (SONG-Kids), and polycystic kidney disease (SONG-PKD). SONG-Kids for U. S. are **Helen Currier**, **Dr. Mini Michael**, and **Dr. Scott Wenderfer**. *



The team held focus groups with renal patients and their parents for a collaborative patient-oriented research study aiming at development of best practices. SONG-Kids involved children with chronic kidney disease (CKD) stages 1-5, children with end-stage kidney disease (ESKD) on dialysis, and children who had undergone kidney transplantation. TCH was selected as the only pediatric site in the U.S. for SONG-

Kids. Dr. Mini Michael and Dr. Scott Wenderfer are lead investigators at BCM. In 2017, SONG-Kids will be using its findings to develop web based Delphi surveys and will ultimately establish standardized outcomes for pediatric CKD at SONG consensus conferences.

[Top Photo: Dr. Michael at far right, top row; Carol Marsall, Quality of Life Coordinator, and Helen Currier, Director of Renal Services, at far left, top row.]

* Information taken from SONG website, where more information is available. <http://songinitiative.org>

Mentoring Grant Will Help Expand Work with Students

Dr. Oluwatoyin Asojo, Assoc. Prof. and co-coordinator of the Greater Houston American Chemical Society (ACS) Project SEED program, has received a grant from The Society for Science & the Public that furthers her work as a mentor to young scientists. The Advocate Grant Program supports underserved students across the U. S. who have conducted scientific or engineering research projects; it also encourages them to submit their research for scientific research competitions. The support of these underrepresented students leads to more career scientists from low-income populations. Dr. Asojo is one of the 31 Exceptional Advocates selected from 240 applications from 45 states, Washington D.C., Puerto Rico, and Guam. She will be mentoring seven high school interns to transition their summer research into applications for science competitions.



Dr. Asojo builds on her work as a mentor for K-12 students, having coordinated ACS's Project SEED programs for more than 15 years. Dr. Asojo is also an ACS Chemistry Ambassador and Rice University Civic Scientist. She extends her mentoring activities beyond K-12 by hosting pre- and post-baccalaureate researchers in her laboratory every summer.

For a full list of the 31 Advocates selected for the 2016-2017 year, please visit <https://www.societyforscience.org/content/press-room/society-science-public-announces-31-new-mentors-advocate-grant-program>. For more information about the Society's Advocate Grant Program, please visit <https://www.societyforscience.org/advocate-grant-program-0>.

New Faculty Member Appointed

"We're thrilled to have Dr. Garcia join our faculty, building on the vector-borne and zoonotic disease program established by Dr. Murray."

--Dr. Peter Hotez,

Section Head and founding Dean of the National School of Tropical Medicine



Dr. Melissa Nolan Garcia is the newest faculty member in the Section of Tropical Medicine. Dr. Garcia has worked with Tropical Medicine since 2013 in the Laboratory for Zoonotic and Viral Diseases, headed by Dr. Kristy Murray. She received a Ph.D. in Clinical Investigations from Baylor College of Medicine in 2015. Her recent work has focused on Chagas disease, a condition caused by the parasitic protozoa *Trypanosoma cruzi*. Her research has uncovered the largest autochthonous cohort of Chagas patients in the United States and shed new light on various aspects of the disease including its clinical manifestations, transmission routes, and vector distribution.

"I am very excited to continue work identifying epidemiological aspects of Chagas," said Dr. Garcia. Prior to her work on Chagas disease Dr. Garcia established several important findings in her study of West Nile virus.

DEPARTMENT NEWS . . .

FACULTY, FELLOWS, & STAFF FEATURES

Dr. Zoghbi Receives “Richest” Award in Science



"I turned to research for answers, and today, together with collaborators and trainees, we are charting new paths towards viable therapies. It's thrilling to see we are beginning to understand the language of life and translate it to help mankind."

Dr. Huda Zoghbi, Professor, is a recipient of the 2017 Breakthrough Prize in Life Sciences. The prizes, founded by Facebook's Mark Zuckerberg and Priscilla Chan, Yuri and Mulia Milner, Google's Sergey Brin, and 23 and Me's Anne Wojcicki, come with \$3 million each, no strings attached and recognize achievements in Life Sciences, Fundamental Physics, and Mathematics. The red-carpet ceremony, hosted by actor Morgan Freeman, was held in Silicon Valley and featured a performance by singer-songwriter Alicia Keys. It was broadcast live on the National Geographic channel and re-aired on FOX. The purpose of the award, now in its fifth year, is to celebrate scientists and their work in much the same way that movie stars are recognized at the Oscars, so the names of the recipients are kept secret until the award ceremony. The hope is to attract more young students to enter science. Other recipients of this year's Life Sciences awards are Drs. Stephen J. Elledge (Harvard Medical School), Harry F. Noller (University of California, Santa Cruz), Roeland Nusse (Stanford University), and Yoshinori Ohsumi (Tokyo Institute of Technology).

Dr. Zoghbi has been recognized previously for identifying genes responsible for two rare neurological disorders, Rett syndrome and Alzheimer's disease, thereby elucidating the brain's vulnerability at both ends of life. She also discovered the mutant gene that causes spinocerebellar ataxia. She refers to these findings as the "Goldilocks Principle" because they are associated with the brain's need for proteins that are "just right": neither too much nor too little. The research has provided helpful insights into developing therapeutic targets for more common devastating diseases, including autism and spinocerebellar ataxia. The potential for addressing autism includes deep brain stimulation, which is currently being used on patients with Parkinson's disease to ameliorate debilitating motor symptoms.

The Breakthrough Prize recognized Dr. Zoghbi for her "discoveries of the genetic causes and biochemical mechanisms of spinocerebellar ataxia and Rett syndrome, findings that have provided insight into the pathogenesis of neurodegenerative and neurological diseases."

First Hyundai Hope on Wheels Hero of Hope Lifetime Achievement Award Presented



Dr. David Poplack, Professor and Director of Texas Children's Cancer Center, recently received the first-ever "Hyundai Hope on Wheels (HHOW) Hero of Hope Lifetime Achievement Award" in recognition of his contributions and dedication to pediatric cancer research for over 40 years. The mission of the nonprofit organization is to find a cure for childhood cancer "one handprint at a time." The grants are given to expand the knowledge of pediatric cancer and to develop novel approaches to treat tumors. Since 1998, the organization has funded \$115 million in pediatric research. Every time a Hyundai vehicle is purchased, a donation is made to HHOW and the dealers. In December, 20-HHOW announced \$7 million in available funding for research in pediatric cancer. Dr. Poplack is a founding member of the Hope on Wheels Medical Advisory Committee and continues to make significant impacts in the field.

Dr. Malcolm Brenner Elected to NAM

Dr. Malcolm Brenner, Professor and founding Director of the Center for Cell and Gene Therapy at BCM, TCH, and Houston Methodist Hospital, was elected to membership in the National Academy of Medicine. Dr. Brenner was a pioneer in basic and clinical research focused on using gene transfer to augment the immune response to tumors. His work was instrumental in the development of genetically modified T cells that can safely and effectively target cancer tumors.



Dr. Brenner's clinical research spans a wide area of stem cell transplantation, including the use of genetic manipulation of cultured cells to obtain therapeutic effects. His laboratory's efforts to analyze the cell of origin when relapse occurs in patients with acute myelogenous leukemia led to the first labelling of autologous bone marrow cells genetically after purging, prior to being reintroduced to the patient. His current studies are focused on the use of gene-modified T lymphocytes to prevent and treat Hodgkin and non-Hodgkin lymphoma, lung cancer, nasopharyngeal cancer and neuroblastoma. He served as editor-in-chief of *Molecular Therapy* and a former president of the American Society for Gene and Cell Therapy (ASGCT) and the International Society for Cell Therapy.

Dr. Ayse A. Arikan, Asst. Prof., was awarded the Norton Rose Fulbright Faculty Excellence Award in the category of Teaching and Evaluation, in November 2016.

Dr. Susan Blaney, Professor and Deputy Director TCH's Cancer Center, was appointed to the Hematology-Oncology self-assessment team of the American Board of Pediatrics. In this role, she will develop content for Maintenance of Certification exams, one component of which is self-assessment. She also was invited to serve as a member of the American Association for Cancer Research Annual Meeting Clinical Trials Committee, which is responsible for identifying and recruiting clinical trials for presentation at the annual meeting.

Dr. Malcolm Brenner, Professor, received the prestigious Pioneer Award from the peer-reviewed journal *Human Gene Therapy*. The award recognized his scientific achievements and leadership in the field of cell and gene therapy. As part of the journal's 25th anniversary and presentation of awards to 12 leading pioneers in the field, Dr. Brenner also published a retrospective commentary on his career, "Gene Modified Cells for Stem Cell Transplantation and Cancer Therapy."

Dr. Anne Gill, Assoc. Prof., was named by the Association of American medical Colleges to chair the Student Surveys Advisory Committee. This committee is responsible for the annual administration of the Graduation Questionnaire, Matriculating Student Questionnaire, Post-MCAT Questionnaire, and the Year-Two Questionnaires. She will serve a 3-year term.

Dr. Meenakshi Hegde, Asst. Prof., received an "A" award from Alexi's Lemonade Stand Foundation. The award is designed specifically for the early independent career scientist who wants to establish a career in pediatric oncology research. The 4-year, \$800,000 award will support her research on T cell therapy for glioblastoma.

Dr. Ryan Himes was elected secretary for Texas Children's Hospital Department of Pediatric Medicine/Chiefs of Services Committee.

Dr. Imad Jarjour, Assoc. Prof. and Director of TCH's Clinic for Autonomic Dysfunction, was named a Fellow of the American Autonomic Society in recognition of his accomplishments and exemplary contributions to the field of autonomic physiology and medicine as an educator, researcher, and volunteer leader.

Dr. Mini Michael was awarded the Norton Rose Fulbright Faculty Excellence Award in the category of Teaching and Evaluation, in November 2016.

Dr. Eli Mizrahi, Professor and holder of the James A. Quigley Endowed Chair in Pediatric Neurology, was elected president of the American Epilepsy Society during its annual meeting in December. Dr. Mizrahi is internationally recognized for his work in the field of epilepsy in pediatric and adult patients and has been an active member of the American Epilepsy Society since 1981.

Dr. Cynthia Peacock, Professor and Director of BCM's Transition Medicine Clinic, was an editor of the textbook entitled, "Care of Adults with Chronic Childhood Conditions." It is one of the first textbooks to address the care of young adults with chronic conditions of childhood.

Dr. Karen Rabin, Assoc. Prof. and Director of the Leukemia Program at TCH's Cancer Center was appointed to the Children's Oncology Group Nominating Committee, which is responsible for selecting candidates for consideration for Children's Oncology Group leadership positions.

Dr. Craig Rusin, Asst. Prof., received the Congenital Heart Defect Research Award through a program funded by the American Heart Association and from the Children's Heart Foundation. He was one of only seven recipients in the country to receive this prestigious award. The award will help support his research to develop a new clinical diagnostic tool that can be used to help prevent life-threatening cardio-respiratory arrest events in children with congenital heart defects.

Dr. Lakshmi Srivaths, Assoc. Prof. and Co-director of the TCH's Young Women's Bleeding Disorder Clinic, received funding of \$311,000 from Baxalta US, Inc., for a three-year grant, "Genotype and Phenotype Analysis of Adolescents with Heavy Menstrual Bleeding and Low Von Willebrand Activity." He will partner with the national Women and Girls with Blood Disorders-Learning Action Network members for this research to provide better phenotypic and genotypic characterization of adolescent females with low Von Willebrand activity, which will in turn aid in optimizing therapy tailored to the patient's clinical and molecular framework.

Dr. Karen Queliza received the Thrasher Research Fund Early Career Award for her proposal entitled, "Utility and Cost-Effectiveness of a 'Triple Screen' for Large Intestinal Disease in Children."

Dr. Tiphonie Vogel was awarded the Earl J. Brewer Research Award at the American College of Rheumatology Annual Scientific Meeting for her abstract titled "Mechanism of STAT3 Gain-of-Function in a Patient with JIA."

Five Faculty Members Receive Grants from Cookies for Kids' Cancer Foundation

Dr. Carl Allen, Assoc. Prof., "Correlative Biology to Predict Response and Toxicity in Children Receiving Immunotherapy and Cytotoxic T Cell Therapy for Post-Transplant Lymphoproliferative Disease," \$200,000.

Dr. Ronald Bernardi, Asst. Prof., "Combined Inhibition of WEE1 and Oncogenic Receptor Tyrosine Kinases as a Therapeutic Strategy to Overcome Redundant Mitotic Checkpoint Control in Neuroblastoma," \$200,000.

Dr. Andras Heczey, Asst. Prof., "T Cells Expressing an Optimized Glypican-3-specific CAR for Children with Solid Tumors," \$428,047.

Dr. Ann Leen, Assoc. Prof., "Adoptive T-cell Therapy for ALL Targeting Multiple Tumor-associated Antigens," \$200,000.

Dr. Jason Shohet, Assoc. Prof., "A Safety Pilot Study of High Risk Induction Chemotherapy for Neuroblastoma without Prophylactic Administration of Myeloid Growth Factors (SPRING)," \$200,000.

DEPARTMENT RESEARCH . . .

HIGHLIGHTS & UPDATES

Study has Potential to Prevent Alzheimer's Disease

Dr. Huda Zoghbi, Professor, and researchers in her lab have made a ground-breaking discovery that could lead to preventing the accumulation of toxic molecules in the brain, in turn preventing or delaying the onset of Alzheimer's disease. Alzheimer's disease and other associated diseases are caused in part by the accumulation of certain proteins in the brain that become toxic, rendering the brain vulnerable to degeneration. One of those proteins is tau, so the researchers sought to find a way to prevent or reduce the accumulation of tau, thereby uncovering new possibilities for developing drug treatments. Using a three-pronged approach used in animal models, they were able to subdue early events that occur in the brain long before symptoms of Alzheimer's disease are manifest.

To determine which enzymes affect tau, they systematically inhibited 600 kinases one by one and finally identified one, called Nuak1, which resulted in reduced levels of tau. They screened the enzymes in cultured human cells and the laboratory fruit fly, the latter of which allowed them to assess the effects of inhibiting the enzymes in a functional nervous system. After identifying Nuak1 as a possible candidate, they took the result to the mouse model of Alzheimer's disease and had the same results: Inhibiting Nuak1 improved the mice's behaviors and prevented brain degeneration.

The confirmation in three independent systems indicates the likelihood that Nuak1 is a reliable potential target for drugs that prevent Alzheimer's and other diseases. They are hoping that this finding can now be taken the next step, which is to develop drugs that will inhibit Nuak1 and, in turn, lower tau levels in individuals at risk for dementia due to tau accumulation. The study was published in Cell Press journal *Neuron*, with **Dr. Cristian Lasagna-Reeves**, a postdoctoral fellow in the Zoghbi lab, as first author.

Other contributors to this work include María de Haro, Shuang Hao, Jeehye Park, Maxime W.C. Rousseaux, Ismael Al-Ramahi, Paymaan Jafar-Nejad, Luis Vilanova-Velez, Lauren See, Antonia De Maio, Larissa Nitschke, Zhenyu Wu, Juan C. Troncoso, Thomas F. Westbrook and Jianrong Tang.



"Scientists in the field have been focusing mostly on the final stages of Alzheimer's disease. Here we tried to find clues about what is happening at the very early stages of the illness, before clinical irreversible symptoms appear, with the intention of preventing or reducing those early events that lead to devastating changes in the brain decades later."

--Dr. Cristian Lasagna-Reeves

Research Yields Potential Treatment for Persistent Infections

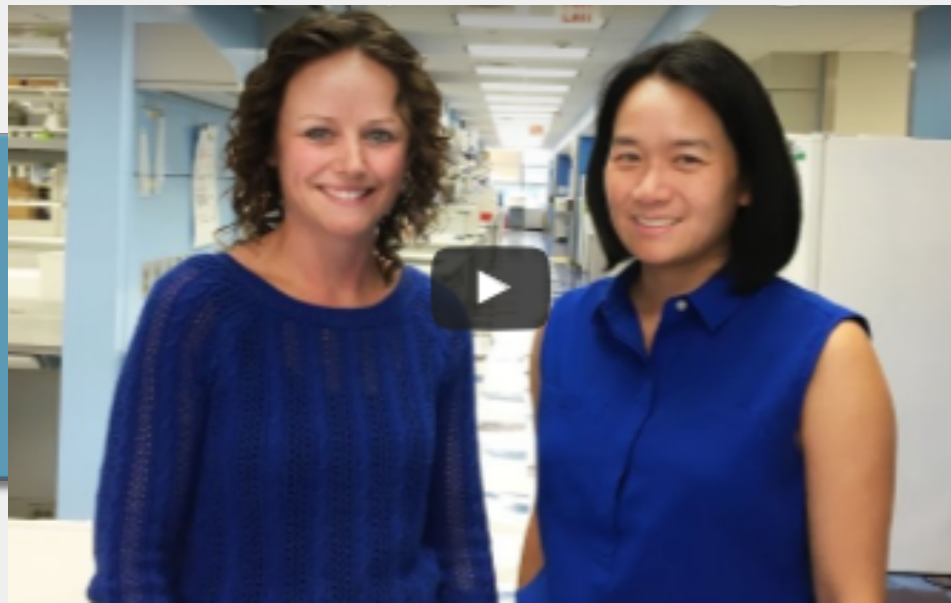
“We are hoping that by identifying genes such as **BATF2**, which mediates the depleting effect of inflammation and infection on stem cells, we can design drugs in the future to help preserve the stem cells compartment, even when the individual is having a long-lasting infection or persistent inflammation.”

--Dr. Katherine King

Research by scientists at BCM, Texas A&M University Health Science Center, and Rice University identified a gene, *BATF2*, which appears to be involved in the differentiation of progenitor cells that the infection triggers. Their research also shows that persistent infections trigger the loss of the progenitors of all blood cells, which suggests a strategy to help prevent or treat the conditions in the future. **Dr. Katherine King**, Asst. Prof. (senior author, right), and **Dr. Katie Matatall**, Postdoctoral Fellow (lead author, left) were part of a collaborative effort that investigated how the depletion of blood cells happens in mouse models with long-lasting infections caused by *Mycobacterium avium*.

Video interview available here:

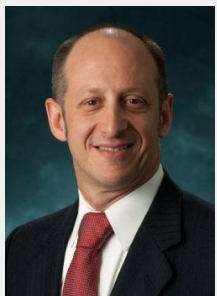
<https://www.bcm.edu/news/infectious-diseases/infections-in-mice-exhaust-progenitors>



They found that long-term infections of approximately 4 months leads to the loss of 95 percent of bone marrow progenitor cells, a result that surprised them because the bone marrow failure associated with persistent infections has been attributed primarily to fibrosis. Contrariwise, the animals in their study did not have high levels of fibrosis in their bone marrow but instead had almost no progenitor cells, which might explain why the bone marrow fails. The results led them to investigate whether the progenitor cells were dying or being displaced to other parts of the body but found that neither was occurring. Instead, the progenitor cells were differentiating into or becoming other cell types. The researchers postulated that infection and inflammation drive the pool of progenitor cells to develop into blood cells rather than self-renewing. Hence, the bone marrow loses the progenitor cells during the infections because they are trying to keep up with the demand for blood cells to help fight the infection; with the pool of stem cells depleted, the bone marrow is unable to produce new blood cells.

Other contributors to this study include Mira Jeong, Siyi Chen, Deqiang Sun, Fengju Chen, Qianxing Mo and Marek Kimmel. They are affiliated with one or more of the following institutions: Baylor College of Medicine, Texas A&M University Health Science Center, Rice University and the Silesian University of Technology.

Loss of NK Cells Associated with Fatal Viral Infections



Dr. Jordan Orange, Professor, **Dr. Emily Mace**, Asst. Prof., and colleagues have found the answer to a 12-year long mystery for a family. Drawing on studies from a family medical history first reported in 1982, which described the first example of an NK cell deficiency, they sought to elucidate the cause of the condition. The 1982 study described four siblings, two of whom died of repeated infections, one survived, and one was unaffected. Beginning in 2004, when he met the surviving patient described in the 1982 article, Dr. Orange has worked with the family and the patient directly. When he and Dr. Mace later joined BCM, they continued this work, using improved research tools.



Their collaborations with other researchers gave them access to various techniques and experiences, and they continued to work with remaining family members. They studied the genes of the patient, the mother, the unaffected sibling, and the patient's three children, sequencing the genetic material of the family members. They were able to pinpoint two rare variants of the gene *IRF8*, called P224L and A201V, as the cause of the condition. They noted that one of the lessons they learned is that to have NK cell deficiency as a result of *IRF8* mutations, both copies of the gene must be mutated into defective copies. They also found, after studying the effects of the disease-causing variants on NK cells, that individuals carrying two defective *IRF8* variants have fewer mature NK cells than the population with

the normal gene, and these genes do not work properly, resulting in a deficient response against viral infections. Dr. Mace noted, "This paper underscores the importance of NK cells in the control of viral infection. This is one of the purest cases of a loss of NK cells being responsible for fatal viral infections. We have studied other cases with other families with NK deficiencies and found that the clinical hallmark is severe viral infection, particularly with herpes virus, including Epstein-Barr virus." Dr. Orange emphasized the personal importance of this research.

"Visiting the family's home was one of the greatest rewards of being a physician-scientist that I have experienced," said Orange. "I sat with this family and went through the story of what they suffered, and thanks to our persistent research I was able to provide some answers. It was probably one of the highlights of my career."

-- Dr. Jordan Orange

Pediatrics Faculty Among Recipients of CPRIT Grants

Five faculty members were among the seven recipients of new grants from the Cancer Prevention & Research Institute of Texas (CPRIT) to support investigators in pediatrics, computational biology, and prevention and early detection of cancer. The grants are awarded to further the CPRIT's mission to develop the cancer-fighting ecosystem in Texas at institutions of higher education and to continue to attract top researchers to advance cancer research within Texas. The department's recipients were:

- Dr. Xiao-Nan Li**, Assoc. Prof., received \$1,198,726 for "High Throughput Combinatory Drug Screening for Pediatric Medulloblastomas With a Dysregulated EZH2 Pathway."
- Dr. Zhandong Liu**, Asst. Prof., received \$889,679 for "Development and Validation of a Network-guided, Multi-objective Optimization Model for Cancer Data Analysis."
- Dr. Robert Lupo**, Asst. Prof., received \$1,488,105 for "Genetic Epidemiology and Molecular Basis of Cancer Predisposition in Pediatric Rhabdomyosarcoma"
- Dr. Karen Rabin**, Assoc. Prof., received \$1,200,000 for "Molecular Epidemiology and Somatic Alterations Driving Acute Lymphoblastic Leukemia in Down Syndrome."
- Dr. Robert Waterland**, Assoc. Prof., received \$1,052,089 for "Developing Effective Epigenetic Biomarkers to Identify Individuals with High Risk of Cancer"

International Study Identifies Disease-Causing Gene Variants

Dr. James Lupski, Professor, and **Dr. Jordan Orange**, Professor, along with Dr. Asbjørg Stray-Pedersen and Hanne Sørmo Sorte of Norway, headed an international study that successfully identified disease-causing gene variants in 40 percent of previously undiagnosed patients with primary immunodeficiency diseases (PIDs). PIDs range from mild to life-threatening diseases, and precise timely diagnosis is critical to lowering the rates of morbidity and mortality.

The study, named *The Houston Project* because most of the analyses were done in Houston, applied next-generation genomic sequencing technologies to study various PIDs. The project was an international effort that was greatly expanded as Dr. Orange made contact with colleagues around the world, with the result that collaborators from 20 more countries joined the effort.

Most of the patients in the study had already undergone standard testing of individual, or a panel of genes, but the genetic cause of their conditions remained undefined. The researchers interwove a comprehensive genomic approach with a clinical approach to study almost 500 samples from both affected and unaffected family members. By forming a weekly immunogenetic rounds series at TCH, Dr. Orange provided a venue in which the clinical team and immunologists from the Center for Human Immunobiology (which Dr. Orange directs) could discuss their results and frequently have additional input from visiting scholars or via internet videoconferencing. They also analyzed their results in close collaboration with pediatricians, clinical immunologists, hematologists, clinical geneticists, molecular geneticists, and bioinformaticians. Of this collaboration, Dr. Sorte said, "We think that this multidisciplinary collaboration was one of the key factors determining our high diagnostic rate."

Dr. Lupski noted the tremendous value of doing genetic testing in PIDs, as many of the PIDs have underlying genomics that have not been recognized, and **Dr. William Shearer**, Professor, one of the original leaders of this and other PID projects, add, "We have also learned the tremendous value of international collaborations."

"We show that genomic sequencing screening tools like those used in this project are effective for detecting a broad spectrum of disease-causing gene variants in patients with PIDs. We have identified the genetic causes of diseases we have characterized clinically; we can now give the diseases a name and have a molecular 'entry point', the gene, into further understanding the disease biology."



-- Dr. James Lupski

"One of the most exciting aspects of this study is that we began with 278 families that did not have a genetic diagnosis; they only knew the patient had a certain type of PID. As a result of our analyses, 40 percent of the patients (110/278) received a genetic diagnosis that uniquely identifies their condition. Our 40 percent gene-variant-identification rate is high when compared with that of other equivalent genetic studies of various non-PID disease cohorts demonstrating the powerful signature of these immune diseases."



-- Dr. Jordan Orange

Unrecognized Developmental Disorder Found to Have Genetic Cause



Dr. Hsiao-Tuan Chao, Postdoctoral Research Fellow, and an international team of scientists have identified variants of the gene, *EBF3*, that causes a development disorder with features similar to those of autism. Three patients presented with a newly described syndrome, the main features of which are developmental delay, problems with coordination, limited facial expressions at an early age, abnormal verbal communication, and abnormal social behaviors. Using whole exome sequencing, the researchers found two new variants of *EBF3* that were not present in the patients' parents. Although mutations of *EBF3* are rarely found among the general population, they occur more commonly in individuals with autism spectrum disorders and intellectual disability. The findings will

lead to a better understanding of different complex conditions, with the possibility of providing diagnoses in patients with undiagnosed similar clinical disorders.

Because the small population was insufficient for establishing that the mutations caused the conditions, the researchers tested the effects of the mutations in the laboratory fruit fly, *Drosophila melanogaster*. They engineered fruit flies to carry mutations present in the patients. The defective gene product was unable to perform the functions of the normal gene, and the effect was so severe that the fly embryos did not survive. Contrariwise, when the normal version of the human gene was introduced, the flies developed normally.

For the patients and their families, the findings provided some relief and a focus for seeking support from a community of parents with children affected by similar disorders. For physicians, the findings will better equip them to deal with patients affected by *EBF3* dysfunction and to prognosticate the developmental outcomes for affected children.

Study Reveals Prevalence of Chagas in Texas



Dr. Kristy Murray, Asst. Prof. (senior author, left), **Dr. Melissa Nolan Garcia**, Instructor (first author, right), and colleagues at the National School of Tropical Medicine reported the results of an epidemiological study of recorded data regarding Chagas disease in the journal *PLOS Neglected Tropical Diseases*. Their findings revealed that the prevalence of the disease in south Texas is much greater than previously thought. The disease, known as American trypanosomiasis, is a serious infection caused by the parasitic



microorganism *Trypanosoma cruzi*. Transmitted by kissing bugs, Chagas disease is one of the leading causes of heart disease in Latin America. To determine the prevalence of the disease in south Texas humans, animals, and vectors that transmit the disease, the researchers analyzed blood samples previously collected for other purposes but adequate for testing for Chagas disease and found that one in 500 persons tested positive. They also found a high prevalence in local stray dogs (3.8%) and coyotes (8%), as well as an extremely high prevalence (56.5%) in the kissing bugs.

Others who took part in the study include Sarah O'Day with University of Texas Health Science Center at Houston School of Public Health; Susan Fisher-Hoch with the University of Texas Health Science Center School of Public Health Brownsville Regional Campus; Rodion Gorchakov, Job E. López and Kathryn M. Jones with Baylor and Texas Children's; Ramiro Patino and Teresa P. Feria Arroyo with the University of Texas Río Grande Valley and Susan T. Laing with McGovern Medical School at the University of Texas Health Science Center at Houston.

Research Paves the Way for New, Noninvasive Genetic Prenatal Testing

Dr. Arthur Beaudet, Professor and Henry and Emma Meyer Chair of Molecular and Human Genetics, and colleagues published findings of a recent study revealing that it is feasible to develop a prenatal, noninvasive genetic test based on rare fetal cells present in the mother's blood. The presence of the cells in pregnant women was reported more than 40 years ago, and researchers have been hoping since that time to use them for prenatal diagnosis. With the advancement of technology that emphasizes development of methods to analyze the cells' DNA to obtain more genetic information about the fetus and with the emergence of RareCyte's platform of technology for identifying rare circulating cells and retrieval of single cells, that hope can now be realized.

The noninvasive methods currently widely used, such as cell-free fetal DNA testing, have limitations. For instance, cell-free DNA testing does not reliably detect very small changes, especially gene deletions that can lead to devastating diseases, in the fetal genome. An example is Angelman syndrome, which results in a severe development disability. This new test, if it becomes routine in current and future forms, could transform the field of prenatal diagnosis and provide information that previously could be obtained only by amniocentesis and chorionic villus sampling.

At present, the test focuses only on abnormalities that are 2 to 3 million-base pairs in size, but future development of the test should lead to the ability to sequence the entire exome or genome of numerous fetal cells. Approximately 500 different genes can result in severe intellectual disability if they undergo a new deleterious mutation. Dr. Beaudet noted that, "The severe impairments coming from mutations in these genes are overall 3 to 5 times more common than Down syndrome and much more disabling. It's not going to be about testing for IQ, hair color, high blood pressure or arteriosclerosis risk. It's going to be about detecting the presence of devastating childhood disabilities."

"About two tablespoons of blood (20 to 30 milliliters) has hundreds of billions of maternal red blood cells and hundreds of millions of white blood cells but only 20 to 40 fetal cells. We showed that we frequently can recover 3 to 10 or more fetal cells and analyze them in various ways, including next generation DNA sequencing. At present the group can only process 5 to 10 samples per week on a research basis, and they are focused on increasing this number so that the test could be offered more widely as a routine clinical test. There are still 5 percent of the tests where we cannot recover any cells, but a second blood sample might be collected in such cases."

-- Dr. Arthur Beaudet



MAKE A NOTE . . .



UPCOMING EVENTS

Pediatric Research & Fellows' Symposium March 21, 2017

The Department of Pediatrics will acknowledge and celebrate the research accomplishments of our The Pediatric Research and Fellows' Symposium on **Tuesday, March 21, 2017**, with the Pediatric Research and Fellows' Symposium. The theme for the 2017 Symposium is "INNOVATION".

The event will be comprised of a keynote scientific address, a keynote scholarship presentation, fellows' workshop, and presentations of featured abstracts. A moderated poster session will broadly feature trainee pediatric research conducted at Texas Children's Hospital. There will also be prizes for the most meritorious submissions/presentations across a number of categories.

The symposium is an important forum for sharing research results and achievements, as well as for networking and establishing new collaborations. The symposium is also an excellent venue to address topics that may be relevant to the trainee's career development as they transition to more advanced or faculty positions. For more information, contact Research Administration at resadmin@texaschildrens.org or 832-824-3333.

***Editor's Note:** The information regarding the Symposium was incorrectly reported in the Fall 2016 issue of Pedi Press. The information above is the correct date and title.*

Resident Scholarship Day June 9, 2017

Texas Children's Pavilion for Women 4th Floor

Call for Abstracts

Submission Begins: 1/15/2017

Submission Deadline: 3/1/2017

The Resident Scholarship Program Executive Committee and the Pediatric House Staff Office announce the third annual Resident Scholarship Day. All residents (categorical and non-categorical) are encouraged to submit an abstract describing the scholarly work undertaken during their residency training, even if their project is not fully completed or they have not completed their Scholarly Activity block. The emphasis of the session is on the process of scholarship. Residents who submit an abstract will have the opportunity to present their work either as a traditional or electronic poster during a 1-hour poster session in the Pavilion for Women from 12:00 pm to 1:00 pm on Friday, June 9, 2017. Four abstracts will be chosen to present at Pediatric Grand Rounds, also on June 9th.

Please save the date and submit abstracts to spec@texaschildrens.org by March 1, 2017.
Decisions regarding poster and oral presentations will be made by April 1, 2017.

Please feel free to contact the Planning Committee (Teresa Duryea, John Darby, Amy Hair, Satid Thammasitboon, Judson Moore) if you have any questions or concerns.



2017 Calls for Applications

2017 Pediatric Pilot Awards

These awards are for research projects that have relevance to pediatrics. The purpose of these grants is to provide seed funding to generate data necessary for the submission of a grant application to the NIH or other peer-reviewed funding mechanisms.

BCM faculty members who have a primary appointment as an Instructor or Assistant Professor in the Department of Pediatrics are eligible to apply and serve as principal investigators.

All grant applicants must submit a Letter of Intent (LOI).

Important Deadlines:

LOI submission: **February 27, 2017 (6:00 pm)**

Application submission: **April 17, 2017 (6:00 pm)**

Award announcement: **July 2017**

Please visit our website for complete details, eligibility and application information. All LOIs and applications must be submitted online through the below website.

<https://ictr.research.bcm.edu/PGA/Home/Default.aspx>

TCH Educational Scholarship Award

The Center for Research, Innovation and Scholarship in Medical Education (CRIS)

These non-salary funds are awarded on a competitive basis.

Applicants may request funding for large projects up to \$40,000 each or small projects up to \$15,000 each.

To submit a brief Letter of Intent (comprised of your name, project title and project type, i.e. large or small), please go to <https://ictr.research.bcm.edu/EPISA/Home/Default.aspx>

DEADLINE for SUBMITTING A LETTER OF INTENT: February 10, 2017

DEADLINE for SUBMITTING A PROPOSAL: April 7, 2017

AWARDEES ANNOUNCED: June 1, 2018



BAYLOR COLLEGE OF MEDICINE/TEXAS CHILDREN'S HOSPITAL

February 11

7:00 am - 4:30 pm

Biennial William T. Shearer Symposium

"Innovations in Primary Immunodeficiency and Clinical

Immunology" JW Marriott Houston Downtown

806 Main

February 23

2:00 - 4:00

3rd Educational Scholarship Club

2-hours: hour 1 is interactive workshop; hour 2 is for works in progress

Feigin Center 1A and 14

March 9

1:00 - 3:00

Expert Consultation Session

One -on-one with CRIS faculty who submitted

letter of intent for TCH Educational Scholarship Award proposals

Location TBA

April 13

1:00 - 3:00

Norton Rose Fulbright Excellence Awards Session

Interactive workshop for faculty who are preparing

a portfolio in any of the four award categories

Please email CRIS@texaschildrens.org to register for the session.

NATIONAL EDUCATION MEETINGS

March 29 - April 1

Council on Medical Student Education in Pediatrics (COMSEP)

Portland, Oregon

For information, contact

<https://www.comsep.org/meetings/futuremeetings.cfm>

April 5 - 8

APPD Annual Spring Meeting

Anaheim, California

Pedi Press is a quarterly publication of the Department of Pediatrics. Articles and other items should be submitted to Dr. Lee Ligon at bligon@bcm.edu.

The next deadline is APRIL 3, 2017.

Dr. Mark Kline, Editor-in Chief

Dr. B. Lee Ligon, Managing Editor and
Graphics Design

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Julie O'Brien, Copy and Content Editor