



STANFORD
MATERNAL & CHILD HEALTH
RESEARCH INSTITUTE



ANNUAL REPORT **FY 2020**

ADVANCING RESEARCH IN MATERNAL AND CHILD HEALTH

Annual Report FY 2020

Stanford Maternal and Child Health Research Institute

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GOVERNING BOARD

Cynthia J. Brandt, PhD
Jeff Chambers, MBA
James Dunn, MD, PhD
Paul A. King
Mary Leonard, MD, MSCE
Lloyd B. Minor, MD
Anthony Oro, MD, PhD
David K. Stevenson, MD

MCHRI EXECUTIVE COMMITTEE

Leadership

Mary Leonard, MD, MSCE, *Director*
Anthony Oro, MD, PhD, *Co-Director*
David K. Stevenson, MD, *Co-Director*
Karl Sylvester, MD, *Director of Clinical Research Support Office (CRSO)*
Mary M. Chen, MS, MBA, *Executive Director*

Members

David Cornfield, MD
James Dunn, MD, PhD
Michelle Monje, MD, PhD
Thomas Robinson, MD, MPH
Kathleen Sakamoto, MD, PhD
Virginia Winn, MD, PhD
Fan Yang, PhD

Advancing research to solve the greatest health challenges facing pregnant women and children

Mobilizing Stanford Discoveries and Expertise to Launch Healthier Lives

The Stanford Maternal and Child Health Research Institute (MCHRI) accelerates Stanford discoveries to improve the health of pregnant women and children by fostering transdisciplinary research in the pre-clinical, clinical, and basic sciences.

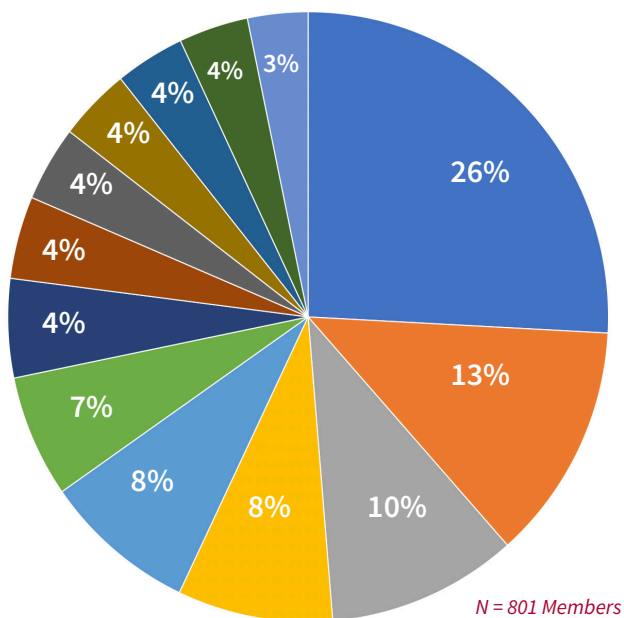
MCHRI's strategic goals are to:

- Focus Stanford's intellectual talent on solving the greatest health challenges facing expectant mothers and children
- Increase the number of future academic leaders dedicated to these problems
- Accelerate innovative research to make transformational discoveries
- Enable the translation of our discoveries into action
- Promote maternal and pediatric health and well-being, nationally and globally



OUR COMMUNITY

FY20 MCHRI Membership by Department



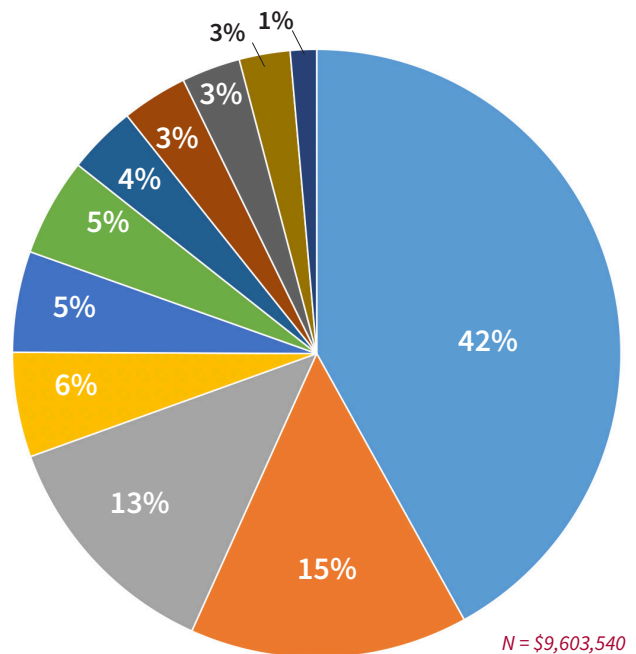
N = 801 Members

- Pediatrics
- Medicine
- Other Depts.
- Basic Science Depts.
- Psychiatry & Behavioral Sciences
- Neurology & Neurosurgery Depts.
- Surgery, Orthopaedic Surgery, & Cardiac Surgery Depts.
- Pathology
- Humanities & Sciences Depts.
- Engineering Depts.
- Radiology
- Anesthesiology, Perioperative, & Pain Medicine
- Obstetrics & Gynecology

Other Depts & Units: Biology, Cardiothoracic Surgery, Cardiovascular Medicine, Depts. of Earth System Science and of Energy Resources Engineering, Dermatology, Emergency Medicine, Graduate School of Education, Law School, Ophthalmology, Orthopaedic Surgery, Otolaryngology Head & Neck Surgery, Photon Science Directorate, Pulmonary, Urology

FUNDING OVERVIEW

FY20 Total Funding Awarded by Department



N = \$9,603,540

- Pediatrics
- Psychiatry & Behavioral Sciences
- Basic Science Depts.
- Neurology & Neurosurgery
- Other Depts.
- Radiation Oncology
- Bioengineering & Chemical Systems
- Anesthesiology, Perioperative, & Pain Medicine
- Otolaryngology
- Obstetrics & Gynecology

Other Depts & Units: Cardiothoracic Surgery; Cardiovascular Medicine; Emergency Medicine; Institute for Stem Cell Biology & Regenerative Medicine; Medicine; Orthopaedics; Pathology; Pulmonary & Critical Care; Sean N. Parker Center for Allergy & Asthma Research; Urology

HIGHLIGHTS OF 2019-2020

Awarded **106** new grants for maternal and child health research across the University, for a total of

\$9,638,540

Provided critical biostatistical support leading to funding of

7 NIH GRANTS

out of 19 NIH grant submissions enabled through
partnership with Quantitative Sciences Unit.

MCHRI membership
increased by
25 % for a total of

801 MEMBERS

In partnership with the Eureka Institute for Translational Medicine,
the Institute welcomed **23 learners** to the inaugural

MCHRI Eureka Certificate Course in Translational Medicine

a career-development program dedicated to enhancing the Stanford
translational medicine community.



Thanks to generous donor gifts, MCHRI offered **new research program funding** in:

Additional Ventures Innovation Fund Single Ventricle Disease Research

Promoting innovative research to treat and
functionally cure single ventricle heart defects.

Uytensu-Hamilton 22q11 Neuropsychiatry Research

Promoting research to improve the
neurocognitive outcomes and behavioral
symptoms of 22q11.2 Deletion Syndrome.

Expanded the **Clinical Research
Coordination Support** services to assist
divisions with hiring and onboarding clinical
research coordinators, leading to four **new divi-
sion-dedicated clinical research coordinators.**

Launched the **Drug & Device Development
(D³) Services** to support Stanford investigators
in the maturation of breakthrough therapies through
proof-of-concept studies and commercialization.



Clinical Research Support Office Executive Advisory Committee

Stanford Children's Health, Packard Children's Health Alliance, and MCHRI Leadership

Kathleen Bradley, DNP, RN, NEA-BC
 Mary M. Chen, MS, MBA
 Cameron D'Alpe
 Mary Leonard, MD, MSCE
 Dennis Lund, MD
 Rick Majzun
 Annette Nasr, RN, PhD
 Natalie Pageler, MD
 Kristin Petersen
 Rishi Seth, MPA
 Karl Sylvester, MD

Streamlining clinical research operations

Under the leadership of Stanford Children's Health (SCH) and MCHRI, the Clinical Research Support Office (CRSO) was officially launched in 2019, serving as a central resource for operational, informatics, regulatory, and other support for the execution of studies at SCH.

CRSO Highlights of 2019-2020

- Partnered with Stanford Children's Health (SCH) Department of Nursing Research and Evidence-Based Practice to extend CRSO services to support hospital staff within Patient Care Services at SCH.
- Initiated new efforts to enable efficient and compliant conduct of clinical research studies, including developing a hospital research intake portal and implementing rigorous training for SoM and SCH staff engaged in maternal and child health research.
- Joined as a member of the Institute for Advanced Clinical Trials for Children (I-ACT) to support and catalyze pediatric therapeutics clinical research and education.
- Established an Information Systems Research Governance Committee.
- Enabled online requests for remote monitor access to SCH Epic.
- Expanded research functionality in Epic for SoM research staff.
- Allowed for use of Epic in research participant recruitment via My Chart and Best Practice alerts.
- Trained 162 SoM research staff to use basic and advanced features of Epic.

Partners

Promoting strategic partnerships



New Quantitative Science Faculty to Facilitate Maternal and Child Health Research

MCHRI sponsors the Quantitative Sciences Unit (QSU) in the Department of Medicine at Stanford School of Medicine (SoM) to provide support in bio-statistics and data management to investigators who are conducting research in maternal or child health.

Led by Manisha Desai, PhD, the QSU is part of a larger collection of data science resources within SoM and offers consultation sessions to MCHRI members and grant applicants to collaborate with on their studies, including grant proposal development, manuscript preparation, and project implementation.

This partnership led to the appointment of a new pediatric faculty member, Maya Mathur, PhD, to facilitate maternal and child health research studies initiated by Stanford investigators.

Dr. Mathur's research is geared toward solving problems relevant to maternal and child health. She focuses on evidence syntheses, a systematic process for bringing together complex information from various sources. This is important for fields where sample sizes may be limited, which is often the case in maternal and child research.



Partnership with QSU Highlights of 2019-2020

52 New Projects focused in maternal and child health were initiated with the Quantitative Sciences Unit.

MCHRI projects initiated through QSU spanned across **9 Departments**, including: Anesthesia, Medicine, Neurology, Neurosurgery, Otolaryngology, Pathology, Pediatrics, Psychiatry, and Surgery

Partnership with QSU led to funding of **7 NIH Grants** out of 19 NIH grant submissions.

MCHRI Launches New Course in Translational Medicine for Maternal and Child Health Scientists

Over the last seven years, MCHRI has partnered with the Eureka Institute for Translational Medicine to sponsor junior investigators' participation in their annual international certificate course, a career-development program for translational medicine scientists.

In February of 2020, MCHRI launched its own Eureka-inspired course held in Monterey, California at the Asilomar Conference Grounds.

The inaugural Stanford MCHRI Eureka Course was led by Stanford's own Eureka alumni who were inspired to build a community of translational medicine (TM) professionals.



Over five days, learners received a deep and broad overview of the latest developments in TM, such as marketing to drug companies, protecting intellectual property, and developing collaboration skills that are essential for successful teams.

The curriculum was delivered by Eureka Institute alumni and faculty, and subject matter experts who brought experience from academia, industry, regulatory agencies, venture capital, and intellectual property (IP) law.

By the end of the program, learners walked with an immersive learning experience, including receiving deep knowledge of the TM field, exploring challenges and opportunities professionals encounter in TM, and learning about Stanford resources in IP and TM.

23
Stanford
Learners



27
Instructors
and Experts



1
Unique
Experience



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MCHRI Eureka Certificate Course in Translational Medicine provided a comprehensive and immersive learning experience in multiple aspects of translational medicine research. The course provided an outstanding mentoring and learning experience, and installed a sense of connection and community between the attendees, faculty and the alumni.

Alma-Martina Cepika, MD, PhD
Pediatrics

Education & Training

Creating an interactive community



Second Annual Research Symposium Highlights

The annual event drew in more than **400 people** from across the campus and beyond with a diverse array of speakers, including NICHD Director, Dr. Diana Bianchi.

60 poster presenters showcased their research on maternal and child health topics, ranging from advocacy and community health to stem cell and regenerative medicine.

Keynote speaker in neonatal and perinatal medicine

The keynote speaker for the second annual research symposium was **Diana Bianchi**, MD, director of the Eunice Kennedy Shriver National Institute of Child Health and Human Development. She earned her medical degree at Stanford and is an expert in neonatal and perinatal medicine.

Dr. Bianchi delivered her keynote address entitled, "The Earlier the Better: Using Precision Medicine to Develop Fetal Treatments."

Visionary leaders for contributions to maternal and child health

In honor of MCHRI's 10-year anniversary, MCHRI recognized visionary leaders who made unique and significant contributions to the formation of the Institute. MCHRI proudly honored the following leaders with the Visionary Leadership Awards:

- Hugh O'Brodovich, MD, FRCP(C) - Former Director of MCHRI & Chair, Department of Pediatrics
- Christopher Dawes, MBA - Former President & CEO, Stanford Children's Health
- Philip Pizzo, MD - Former Dean, Stanford School of Medicine



MCHRI Education Committee

Anthony Oro, MD, PhD, *Chair*
 Natalia Gomez-Ospina, MD, PhD
 Meena Kadapakkam, MD
 Melissa Mavers, MD, PhD
 Michelle Monje, MD, PhD
 Trung Pham, MD, PhD
 Thomas Robinson, MD, MPH
 Manpreet K. Singh, MD, MS
 Virginia Winn, MD, PhD
 Fan Yang, PhD

MCHRI hosted 11 compelling research topics focused on the latest developments and innovation in maternal and child health.

Research topics for the seminar series included:



Adolescent and
Young Adult Health



Asthma and
Food Allergies in Children



Autism and
Developmental Disorders



Child Health Disparities and
Health Policies



Maternal-Fetal
Precision Medicine



Mental and Behavioral
Health Disorders

Investing in people & innovation

MCHRI creates better lives for children and mothers by advancing high-risk, high-reward research, and speeding the most promising discoveries to patients.

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A key goal of the Maternal and Child Health Research Institute is to catalyze investigative efforts across the University and to encourage the translation of discoveries into diagnostics and therapeutics that improve the health of mothers and children everywhere.

David K. Stevenson, MD
Co-Director, MCHRI

Thank you to our Reviewers!

We are grateful for dedicated community of expert Scientific Reviewers who enable the Institute to invest in the most promising science and investigators!



GRANTS AND OTHER AWARDS

Faculty Scholars

\$100K/year for three to five years

Program Co-Chairs

- Harvey Cohen, MD - Professor, Pediatrics
- David K. Stevenson, MD - Professor, Pediatrics

Valerie Chock, MD, MS

Arline and Pete Harman Endowed Faculty Scholar (2020-2023)
Associate Professor, Pediatrics (Neonatal & Developmental Medicine)
Study Title: Targeted Cerebral Saturations in Extremely Preterm Infants (Brain Oxygenation or BOX Study)

Manish Saggar, MD, PhD

Tashia and John Morgridge Endowed Faculty Scholar in Pediatric Translational Medicine (2020-2025)
Assistant Professor, Psychiatry & Behavioral Sciences
Study Title: A Computational Neuropsychiatry Approach Towards Characterizing Adolescent Brain and Cognitive Development

Peter Santa Maria, MD, PhD

Tashia and John Morgridge Endowed Faculty Scholar in Pediatric Translational Medicine (2020-2025)
Assistant Professor, Otolaryngology (Otology & Neurotology)
Study Title: Sensory Hearing Loss in Chronic Suppurative Otitis Media

Pervez Sultan, MD, MBChB

Arline and Pete Harman Endowed Faculty Scholar (2020-2023)
Associate Professor, Anesthesiology, Perioperative & Pain Medicine
Study Title: Development and Validation of a New Postpartum Quality of Recovery Patient-Reported Outcome Measure

Suzanne Tharin, MD

Tashia and John Morgridge Endowed Faculty Scholar in Pediatric Translational Medicine (2020-2025)
Assistant Professor, Neurosurgery
Study Title: MicroRNA Control of Connectivity in the Developing Central Nervous System

Jiangbin Ye, MD, PhD

The Lucile Packard Foundation for Children's Health Faculty Scholar (2020-2025)
Assistant Professor, Radiation Oncology (Radiation & Cancer Biology)
Study Title: Targeting Pediatric Cancer Epigenome with Metabolic Intervention

Transdisciplinary Initiatives Program

\$100K/year for two years

Study Title: Modeling the Earliest Developmental Stages of Human Cardiac Vascularization using Pluripotent Stem Cells

PI: Daniel Bernstein, MD, Professor, School of Medicine (Pediatrics);
Co-Is: Oscar J. Abilez, MD, PhD, Instructor, School of Medicine (Medicine); Ellen Kuhl, MS, PhD, Professor, School of Engineering (Mechanical Engineering)

Study Title: Lysosomal Dysfunction in Childhood-Onset Neurodegeneration: Biochemical Profiling and Genetic Correction of Progranulin Deficiency

PI: Natalia Gomez-Ospina, MD, PhD, Assistant Professor, School of Medicine (Pediatrics); Co-I: Monther Abu-Remaileh, Assistant Professor, School of Engineering (Chemical Engineering)

Study Title: Deciphering the Cellular and Molecular Basis of Congenital Arteriovenous Malformations Using Stem Cell-Derived Artery and Vein Endothelial Cells

PI: Kyle M. Loh, PhD, Assistant Professor, School of Humanities & Sciences (Development Biology); Co-Is: Kristy Red-Horse; Associate Professor, PhD, School of Humanities & Sciences (Biology); Marlene Rabinovitch, MD, Professor, School of Medicine (Pediatrics); Lay Teng Ang, PhD, Instructor, Institute for Stem Cell Biology and Regenerative Medicine

Study Title: Discovering Adolescents' Smartphone Food Environments

PI: Thomas N. Robinson, MPH, MD, Professor, Pediatrics (General Pediatrics); Co-Is: Kristy Red-Horse; Associate Professor, PhD, School of Humanities & Sciences (Biology); Marlene Rabinovitch, MD, Professor, School of Medicine (Pediatrics); Lay Teng Ang, PhD, Instructor, Institute for Stem Cell Biology and Regenerative Medicine

Study Title: Identifying Neurobiological Markers of Autism by Leveraging "Big Data" and Using Deep Learning

PI: Kaustubh Supekar, PhD, Clinical Assistant Professor, School of Medicine (Psychiatry & Behavioral Sciences); Co-Is: Vinod Menon, PhD, Professor, School of Medicine (Psychiatry & Behavioral Sciences); Tengyu Ma, PhD, Assistant Professor, School of Engineering (Computer Science) & School of Humanities & Sciences (Statistics)

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Funding from MCHRI has allowed us to investigate, for the first time, neurobiological markers that detect autism and predict severity of autism symptoms in male and female children in novel quantitative ways that were not previously possible. Our studies will transform our understanding of brain mechanisms underlying behavioral impairments in childhood autism and contribute significantly towards the development of more effective and precise diagnostic and treatment strategies for autism.

Kaustubh Supekar, PhD
Psychiatry and Behavioral Sciences
The Taube Family Endowed Transdisciplinary
Investigator for Maternal Child Health

Clinical (MD) Trainee

100% salary/benefits support for up to two years

Program Co-Chairs

- Daniel Bernstein, MD - Professor, Pediatrics
- Gerald Grant, MD, FACS - Professor, Neurosurgery

Xuxin Chen, MD

Stanford Maternal & Child Health Research Institute Fellow
Clinical Fellow, Pediatrics (Neonatal & Developmental Medicine)
Study Title: Predictive Modeling of Outcomes for the Periviable Population

Myong Sun Choe, MD

Tashia and John Morgridge Endowed Postdoctoral Fellow
Clinical Fellow, Pediatrics
Study Title: Improving Use of a Standardized Neurological Examination in High-risk Infant Follow-up: Evaluation of a Novel Simulation Curriculum for Residents

Rachel E. Herdes, MD

Elizabeth and Russell Siegelman Postdoctoral Fellow
Clinical Fellow, Pediatrics (Gastroenterology)
Study Title: Utility of Early Weight Loss Medications in Adolescent Patients with Inadequate Weight Loss after Vertical Sleeve Gastrectomy: A Retrospective Review and Pilot Feasibility Study

Machiko Hosoki, MD, MPH

Charles B. Woodruff Endowed Fellow
Clinical Fellow, Pediatrics
Study Title: Association of Behavioral Problems and White Matter Characteristics in a Sample of Children Born Preterm and Term

Pearl Houghteling, MD

Stanford Maternal & Child Health Research Institute Fellow
Clinical Fellow, Pediatrics (Neonatal & Developmental Medicine)
Study Title: The Impact of Supplemental Iron and Anemia on the Microbiome of the Premature Neonate

Diane J. Hsu, MD

Elizabeth and Russell Siegelman Postdoctoral Fellow
Clinical Fellow, Pediatrics (Gastroenterology, Hepatology & Nutrition)
Study Title: Characterizing the Role of the Appendix in Children with Ulcerative Colitis

Iroque I. Igbinosa, MD

Tashia and John Morgridge Endowed Postdoctoral Fellow
Clinical Fellow, Obstetrics & Gynecology (Maternal-Fetal Medicine)
Study Title: Prevention of Severe Anemia At Time of Birth Admission

Uptej K. Khalsa, MD

Harry Lyon Machen Fellow
Clinical Fellow, Pediatrics (Rheumatology)
Study Title: Evaluating OurNotes in the Pediatric Rheumatology Setting: A Pilot Study

Aslam Khan, DO

The Marion and Jack Euphrat Pediatric Translational Medicine Fellow
Clinical Fellow, Pediatrics (Infectious Diseases)
Study Title: Investigating Asymptomatic and Symptomatic Dengue Virus and Chikungunya Virus Infections in Kenya

Ian Lee, MD

Ernest and Amelia Gallo Endowed Postdoctoral Fellow
Clinical Fellow, Pediatrics (Pulmonary Medicine)
Study Title: Unbiased Systems-Based Data Analysis to Discover Unsuspected Mechanisms of Disease and Predictors of Disease Progression in Patients with Asthma

Adrienne H. Long, MD, PhD

Anne T. and Robert M. Bass Endowed Fellow
Clinical Fellow, Pediatrics (Hematology & Oncology)
Study Title: Understanding Thymic Education Of Self-Specific CD8+ T Cells To Guide Development of Novel Cancer Immunotherapies

Julia A. Marlow, MD

Stephen Bechtel Endowed Fellow in Pediatric Translational Medicine
Clinical Fellow, Pediatrics (Hospital Medicine)
Study Title: Perceptions of Benefit for Oxygen Supplementation in Acute Viral Bronchiolitis: Nurse, Respiratory Therapist and Physician Perspectives

Kevin J. McKim, MD

Stanford Maternal & Child Health Research Institute Fellow
Clinical Fellow, Pediatrics (Neonatal & Developmental Medicine)
Study Title: Effects of Maternal Intrapartum Infection and Antibiotic Exposure on Neonatal Immune System Development in Immediate Newborn Period

Raul Montiel-Esparza, MD

Pete and Arline Harman Fellow
Clinical Fellow, Pediatrics (Hematology & Oncology)
Study Title: Dissecting Biomarkers of Acute Graft-Versus-Host Disease in Pediatric Alpha/Beta-T-cell/CD19 B-cell Depleted Hematopoietic Stem-Cell Transplant Recipients

Jessica A. Moriarty, MD

Stanford Maternal & Child Health Research Institute Fellow
Clinical Fellow, Pediatrics (Hospital Medicine)
Study Title: Understanding Medical Student, Resident, and Faculty Perspectives of Team-Based Emotional Debriefing in Pediatric Clinical Education

Lance Ronald Nelson, MD, MA

Mary Gallo Endowed Postdoctoral Fellow in Adolescent Medicine
Clinical Fellow, Pediatrics (Adolescent Medicine)
Study Title: Clinician Practices and Comfort in Screening for Hypothalamic Pituitary Gonadal (HPG) Axis Suppression in Patients With An Eating Disorder

Ruby V. Patel, MD

Ernest and Amelia Gallo Endowed Postdoctoral Fellow
Clinical Fellow, Pediatrics (Nephrology)
Study Title: The Adolescent Kidney Transplant Patient and Family and Peer Relationships

Kim H. Piburn, DO

The Marion and Jack Euphrat Pediatric Translational Medicine Fellow
Clinical Fellow, Pediatrics (Nephrology)
Study Title: Are Highly Variable Tacrolimus Drug Levels Associated with Inferior Outcomes in Pediatric Kidney Transplant Patients?

Lokesh N. Shah, MD

Elizabeth and Russell Siegelman Postdoctoral Fellow
Clinical Fellow, Pediatrics (Nephrology)
Study Title: Cystatin C and Creatinine Predict Pediatric Sarcopenia

Zachary H. Smith, MD

Stanford Maternal & Child Health Research Institute Fellow
Clinical Fellow, Pediatrics (Critical Care Medicine)
Study Title: Mixed-Methods Evaluation of an mHealth Adaptive Learning Training Module for Pediatric Healthcare Workers in Tanzania

Nina E. Suresh, MS, MD

Ernest and Amelia Gallo Endowed Postdoctoral Fellow
Clinical Fellow, Pediatrics (Pulmonary Medicine)
Study Title: Developmental Heterogeneity of Pulmonary Mesenchymal Cell Phenotype at Single Cell Resolution

Postdoctoral Support Up to \$80K/year for up to two years

Program Panel Chairs

- Jeffrey A. Feinstein, MD, MPH - Professor, Pediatrics
- Julien Sage, PhD - Professor, Pediatrics
- Kathleen Sakamoto, MD, PhD - Professor, Pediatrics
- Virginia Winn, MD, PhD - Associate Professor, Obstetrics & Gynecology

Amy Braun, PhD

Postdoctoral Fellow, Obstetrics & Gynecology (Maternal-Fetal Medicine)
Study Title: Determining the Role of Sex Chromosomes in Normal and Abnormal Placentation with Implications for Pregnancy and Child Health

Lisa Bruckert, PhD

Postdoctoral Fellow, Pediatrics (Neonatal & Developmental Medicine)
Study Title: Predicting Long-Term Neurodevelopmental Outcomes in Infants Born Preterm from Diffusion MRI Measures

Phoom Chairatana, PhD

Postdoctoral Fellow, Microbiology & Immunology
Study Title: Developing Therapeutic Strategies to Target Type VI Secretion System-Mediated Effectors that Salmonella Uses to Promote Its Infection in Host Cells


Ananya Chakraborty, PhD

Postdoctoral Fellow, Medicine (Pulmonary, Allergy, & Critical Care Medicine)
Study Title: ROR2 Signaling in the Pathogenesis of Adult and Pediatric Pulmonary Arterial Hypertension

Charles A. Chang, PhD

Postdoctoral Fellow, Developmental Biology
Study Title: Advancing Islet Replacement, Survival and Function Through Bone Marrow Chimerism

Carla Dib, PhD

Postdoctoral Fellow, Pediatrics (Stem Cell Transplantation & Regenerative Medicine)
Study Title: Development of HSC Base-Editing and Non-Genotoxic Antibody Based Conditioning For Safe and Effective Treatment of X-linked Severe Combined Immunodeficiency

Racquel Domingo-Gonzalez, PhD

Postdoctoral Fellow, Pediatrics (Critical Care Medicine)
Study Title: Identification of Macrophage Heterogeneity During Late Lung Development at Single Cell Resolution

Elveda Gozdas, PhD

Postdoctoral Fellow, Psychiatry & Behavioral Sciences
Study Title: Assessing Individual Connectomic Markers of Long-term Cognitive Outcomes in Preterm Infants with Structural and Functional Brain Imaging

Ilina Iri Karipidis, PhD

Postdoctoral Fellow, Psychiatry & Behavioral Sciences
Study Title: Functional Brain Signatures of Learning in Children with Sex Chromosome Aneuploidies: A Model For Neuroendophenotypes in Specific Learning Disorders

Recipients of MCHRI Support

Takahiro Kawagishi, PhD

Postdoctoral Fellow, Microbiology & Immunology

Study Title: In Depth Analysis Of Rotavirus Diarrhea and Systemic Infection In Vivo Using a Newly Developed Reverse Genetics System

Brittany Matheson, PhD

Postdoctoral Fellow, Psychiatry & Behavioral Sciences (Child & Adolescent Psychiatry)

Study Title: Identifying Psychological, Behavioral, and Neurocognitive Predictors of Weight Loss Following Bariatric Surgery in Adolescents

Percy Mistry, PhD, MBA

Postdoctoral Fellow, Psychiatry & Behavioral Sciences

Study Title: Computational Approaches to Precision Phenotyping and Uncovering Brain-Based Predictors of Childhood Psychopathologies

Yuki Miura, PhD

Postdoctoral Fellow, Psychiatry & Behavioral Sciences

Study Title: A Human 3D Cortico-Striatal Assembloid Platform to Study Neurodevelopmental Disorders

Hesamaldin Movassagh, MSc, PhD

Postdoctoral Fellow, Sean N. Parker Center for Allergy & Asthma Research

Study Title: Deciphering Classical Monocytes as a Novel Immune Signature Specific to Air Pollution in Pediatric Asthma

Neha Nandwani, MSc, PhD

Postdoctoral Fellow, Biochemistry

Study Title: Investigating the Molecular Basis of Childhood-Onset Hypertrophic Cardiomyopathy Causing Mutations in Myosin And Myosin Binding Protein-C

Abigail Powell, PhD

Postdoctoral Fellow, Biochemistry

Study Title: Using Protein Nanoparticles to Develop a Safe and Stable Vaccine Against Ebola

Ni Su, PhD

Postdoctoral Fellow, Orthopaedic Surgery

Study Title: Microribbon Scaffolds with Dual Functions of Immunomodulation and Chemotherapeutic Delivery for Treating Osteosarcoma

Marilou Tetard, PhD

Postdoctoral Fellow, Pediatrics (Infectious Diseases)

Study Title: Discovering Essential Host Factors for Plasmodium Falciparum Malaria Rosetting

Supawat Thongthip, PhD

Postdoctoral Fellow, Pediatrics (Stem Cell Transplantation & Regenerative Medicine)

Study Title: Combination Lentiviral Gene Therapy and Non-Genotoxic Anti-c-Kit (CD117) Antibody-Based Conditioning for Curative Treatment of Fanconi Anemia

Zhiyuan Yao, PhD

Postdoctoral Fellow, Infectious Diseases & Geographic Medicine

Study Title: Deciphering the Pathogenesis of Severe Dengue in Children Via Novel Single Cell Transcriptomic Approaches

Pilot Grant Programs \$35K for one year

Program Co-Chairs

- Paul C. Grimm, MD - Professor, Pediatrics
- Gary M. Shaw, DrPH - Professor, Pediatrics

New Idea Grants

Cristina Alvira, MD

Associate Professor, Pediatrics (Critical Care)

Study Title: Diverse Homeostatic Roles for Distinct Macrophage Populations in the Developing Pulmonary Vasculature

Suzan Carmichael, PhD

Professor, Pediatrics (Neonatal & Developmental Medicine)

Study Title: Impact of Medicaid Expansion on Reproductive Health in the US

Kathy Sakamoto, MD, PhD

Professor, Pediatrics (Hematology & Oncology)

Study Title: Chromatin Regulation of Erythropoiesis Genes in Diamond Blackfan Anemia

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X monosomy (XO) is the most common chromosomal abnormality in miscarriage, with nearly 99% of conceptuses aborting early in pregnancy.

This suggests a crucial contribution of the sex chromosomes to early placental development that is not currently appreciated. MCHRI has made it possible for me to leverage the natural experiment of sex chromosome aneuploidy in placenta to investigate the mechanisms of sex-linked pregnancy loss and complication risk.

Amy Braun, PhD

Obstetrics & Gynecology (Maternal Fetal Medicine)
2020 MCHRI Funded Postdoctoral Fellow

Early Career Grants

Lay Teng Ang, PhD

Instructor, Institute for Stem Cell Biology & Regenerative Medicine
Study Title: Developing Abundant Human Hepatocytes from Embryonic Stem Cells - A New Tool to Study Fatty Liver Disease

Agnieszka Czechowicz, MD, PhD

Assistant Professor, Pediatrics (Stem Cell Transplantation & Regenerative Medicine)
Study Title: Characterization of Novel Human HSC-Cell Surface Receptors

Bereketeab Haileselassie, MD

Instructor, Pediatrics (Critical Care)
Study Title: Role of Cell-Free Mitochondrial Content in Sepsis-Induced Immune Paralysis

Michael Ma, MD

Assistant Professor, Cardiothoracic Surgery (Pediatric Cardiac Surgery)
Study Title: Understanding Heart Valve Dysfunction in Patients with Single Ventricle Defects

Juno Obedin-Maliver, MD, MPH, MAS

Assistant Professor, Obstetrics & Gynecology
Study Title: The Association Between Self-Reported Parental Structures on California Birth Certificates and Perinatal Health

Kunj Raju Sheth, MD

Assistant Professor, Urology
Study Title: Novel Prenatal Lower Urinary Tract Obstruction (LUTO) Vesicoamniotic Shunt

Clinician Educator \$35K for one year

Program Co-Chairs

- Bertil Glader, MD, PhD - Professor, Pediatrics
- Deirdre J. Lyell, MD - Professor, Obstetrics & Gynecology

Catherine C. Aftandilian, MD

Clinical Assistant Professor, Pediatrics (Hematology & Oncology)
Study Title: Comparative effectiveness of Antibiotic Prophylaxis for Bacteremia, Death, C Difficile Infection, and Time to Next Course Of Chemotherapy in Pediatric Patients with Acute Myeloid Leukemia

Thomas A. Anderson, MD, PhD

Clinical Associate Professor, Anesthesiology, Perioperative & Pain Medicine (Pediatric Anesthesia)
Study Title: Characterization of Adolescent Prolonged Opioid Use After Surgery: Healthcare Burden and Machine Learning Prediction Algorithms Using a National Insurance Database



Sumit Bhargava, MD

Clinical Associate Professor, Pediatrics (Pulmonary Medicine)
Study Title: Pediatric Home Sleep Apnea Testing in Moderate to Severe Obstructive Sleep Apnea

Katherine Bianco, MD

Clinical Associate Professor, Obstetrics & Gynecology (Maternal-Fetal Medicine)
Study Title: Does Pregnancy Accelerate Cellular Aging? Maternal Telomere Length as a Novel Marker for Pregnancy Outcomes

Weidong Cai, PhD

Clinical Assistant Professor, Psychiatry & Behavioral Sciences
Study Title: Dynamic Brain Circuits Underlying Childhood ADHD: Leveraging Big-Data to Investigate Robustness, Stability, Generalizability and Methylphenidate Treatment Effects

Victoria Cosgrove, MD

Clinical Associate Professor, Psychiatry & Behavioral Sciences (Child & Adolescent Psychiatry)
Study Title: Toward mechanisms to Inform Treatment precision in Adolescent Depression: The Role of Psychological Stress and Executive Control in Group CBT Response

Kay Daniels, MD

Clinical Professor, Obstetrics & Gynecology (Maternal-Fetal Medicine)
Study Title: Pilot Evaluation Study of Simulation-Based Training to Improve Emergent Obstetric Procedures in Low Resource Settings Within the United States

Michelle Kaplinski, MD, MPH

Clinical Assistant Professor, Pediatrics (Pediatric Cardiology)
Study Title: Establishing Dosing Parameters for the Use of Maternal Hyperoxygenation to Affect Fetal Cardiovascular Physiology

Recipients of MCHRI Support

Maya Kasowski, MD, PhD

Instructor, Medicine; Pathology

Study Title: The Pediatric Leukemia Metabolome: Identifying Predictive Biomarkers and Metabolic Vulnerabilities

Hyunmi Kim, MD, PhD

Clinical Professor, Neurology & Neurological Sciences (Child Neurology)

Study Title: Association of Continuous EEG Use with Hospitalization outcomes in Critically Ill Children

Moon Lee, MD, MPH

Clinical Associate Professor, Emergency Medicine

Study Title: Emergency Medicine Physician Screening for Physical Child Abuse in Infants with Isolated Skull Fractures

Kara Meister, MD

Clinical Assistant Professor, Otolaryngology (Pediatric Otolaryngology)

Study Title: Next-Generation Sequencing to Detect Cell-Free Microbial DNA in Pediatric Patients with Neck Abscesses

Anoop Rao, MBBS, MS

Clinical Instructor, Pediatrics (Neonatal & Developmental Medicine)

Study Title: Wearable Sensor for Non-invasive Detection of Continuous Blood Pressure in Neonates

Xinshu She, MD

Clinical Assistant Professor, Pediatrics

Study Title: Planting Seeds For Resilience-A Pilot Mindfulness and Mentorship Program in Migrant Chinese Children

Marie E. Wang, MD

Clinical Assistant Professor, Pediatrics (Pediatric Hospital Medicine)

Study Title: Outcomes of Children with Bacteriuria without Pyuria

Instructor K Award Support Up to \$50K/Year for up to two Years

50% support from both MCHRI & awardee's department

Laya Ekhlaspour, MD

Instructor, Pediatrics (Endocrinology & Diabetes)

Study Title: Training Research Leaders in Type 1 Diabetes

Rayhan Lal, MD

Instructor, Pediatrics (Endocrinology & Diabetes)

Study Title: Training Research Leaders in Type 1 Diabetes

Melissa Mavers, MD

Instructor, Pediatrics (Stem Cell Transplantation & Regenerative Medicine)

Study Title: Immunosuppressive Human Invariant Natural Killer T Cells for Prevention of Graft-Versus-Host Disease

Sharon Paige, MD, PhD

Instructor, Pediatrics (Cardiology)

Study Title: Patient-Specific Induced Pluripotent Stem Cells for Modeling Single Ventricle Congenital Heart Disease

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I am extremely grateful for the support from Additional Ventures and MCHRI, which will allow us to carry out an exploratory high risk, high reward project that would have been very difficult to fund through traditional mechanisms. Our project will develop a mechanical device to drive favorable ventricular growth in patients with single ventricle congenital heart defects. Our hope is to ultimately identify novel functional cures for this complex and high-risk patient population.

Alison Marsden, PhD

Pediatric and Bioengineering

Additional Ventures Innovation Fund

Single Ventricle Disease Research Awardee

Trung Pham, MD

Instructor, Pediatrics (Infectious Diseases)

Study Title: Dissecting Mechanisms of Granuloma Macrophage Polarization and Granuloma Formation in Chronic Salmonella Infection

Zachary Sellers, MD, PhD

Instructor, Pediatrics (Gastroenterology, Hepatology & Nutrition)

Study Title: CFTR-Independent Bicarbonate Secretion is a Novel CF Therapeutic Target

Molly Tanenbaum, PhD

Instructor, Pediatrics (Endocrinology & Diabetes)

Study Title: ONBOARD: Overcoming Barriers & Obstacles to Adopting Diabetes Devices

Master's Tuition Support Full Tuition & Fees Coverage

Neha Joshi, MD

Clinical Fellow, Pediatrics (Hospital Medicine)

Julia A. Marlow, MD

Clinical Fellow, Pediatrics (Hospital Medicine)

Lance Ronald Nelson, MD, MA

Clinical Fellow, Pediatrics (Adolescent Medicine)

Joelle Rosser, MD

Clinical Fellow, Medicine (Infectious Diseases)

Brindha Saravanabavanandhan, MD

Clinical Fellow, Obstetrics & Gynecology (Reproductive Endocrinology & Infertility)



DONOR-DIRECTED AWARDS

Additional Ventures Innovation Fund Single Ventricle Disease Research Program

Jesse Engreitz, PhD

Assistant Professor, Genetics

Study Title: Mapping the Regulatory Wiring of Heart Development to Identify the Genetic Etiology of Single Ventricle Defects

Kyle M. Loh, PhD

Assistant Professor, Developmental Biology

Study Title: Understanding Arterial, Vein and Lymphatic Circulatory Dysfunction in Single-Ventricle Disease Using Human Stem Cells

Alison Marsden, PhD

Associate Professor, Pediatric (Cardiology); Bioengineering

Study Title: Device for Mechanically Induced Ventricular Growth in Single Ventricle Patients

Mark Skylar-Scott, PhD

Assistant Professor, Bioengineering

Study Title: A 3D Printed Vascularized Cardiac Biopump to Assist the Fontan Circulation

Uytengsu-Hamilton 22q11 Neuropsychiatry Research Program

Vinod Menon, PhD

Professor, Psychiatry & Behavioral Sciences

Study Title: Leveraging Big Data and Using Deep Learning Neural Networks to Predict Progression of Psychosis in 22q11 DS

Thomas Sudhof, MD

Professor, Molecular & Cellular Physiology

Study Title: Multi-level Analysis of Mouse and Human Neurons with the 22q11.2 Deletion

Alexander Urban, PhD

Assistant Professor, Psychiatry & Behavioral Sciences

Study Title: A Genome Analysis Method to Detect and Resolve the Exact Boundaries of the 22q11 Deletion

“

Much progress has been made in elucidating the genetics and disease pathology of 22q11 DS. Stanford is a leading institution in neuroscience, stem cell biology, psychiatry, immunology and microbiology. Now it is time to join forces and focus on developing therapies for the many different disease manifestations of 22q11 DS so that affected children can reach their full potential. This is the mission of the Uytengsu-Hamilton 22q11 Neuropsychiatry Research Program.

Candice Uytengsu-Hamilton
Sponsor and Founder
MCHRI Uytengsu-Hamilton 22q11
Neuropsychiatry Research Program

FUNDED PARTNERS AWARDS

Global Child Health Program

Clea Sarnquist, DrPH, MPH

Clinical Associate Professor, Pediatrics (Infectious Diseases)

Study Title: Elucidating the Effects of Physical and Sexual Violence on HIV Viral Load Suppression and ART Adherence Among Adolescent Girls in Kenya: Prevalence, Associations, and Targets for Future Intervention

David Relman, MD

Professor, Medicine (Infectious Diseases); Microbiology & Immunology

Study Title: Perinatal Transmission Dynamics of Antimicrobial Resistance in Bangladesh: A Comparison of Hospital and Home-Based Birth

SPARK

Paul Bollyky, MD, PhD

Associate Professor, Medicine (Infectious Diseases)

Study Title: Targeting CD44 Variant Isoforms to Treat Diabetes

Nayak Jayakar, MD, PhD

Associate Professor, Otolaryngology (Head & Neck Surgery Divisions)

Study Title: CFTR CRISPR Edited Upper Airway Stem Cell Transplantation into Animal Models for Pre-Clinical Application of Human Airway Stem Cells to Treat Cystic Fibrosis

Jin Billy Li, PhD

Associate Professor, Medicine (Genetics)

Study Title: Utilizing Endogenous ADAR for Therapeutic Transcriptome Engineering by Antisense Oligonucleotides

Stanley Qi, PhD

Assistant Professor, Bioengineering; Chemical & Systems Biology

Study Title: Drug-controlled CAR T Cells for the Treatment of Pediatric Leukemia

Peter Santa Maria, MD, PhD

Assistant Professor, Otolaryngology (Otology & Neurotology)

Study Title: A Topical Antibiotic Adjuvant Nanoparticle for the Treatment of Chronic Suppurative Otitis Media

Peter Santa Maria, MD, PhD

Assistant Professor, Otolaryngology (Otology & Neurotology)

Study Title: Synthetic Antimicrobial Peptoids for the Treatment of chronic suppurative otitis media



Stanford Byers Center for Biodesign Faculty Fellowship

Ritu Asija, MD

Clinical Associate Professor, Pediatrics (Cardiology)

Project concept: A way to prevent catheter-associated deep vein thrombosis (DVT) in patients with PICC lines in order to reduce the need for systemic anticoagulation and preserve future vascular access

Yael Gernez, MD, PhD

Clinical Assistant Professor, Pediatrics (Immunology and Allergy)

Project concept: A way to detect early signs of an allergic reaction in patients with food allergy (FA) or at increased risk of FA in order to prevent anaphylaxis and admission to the Emergency Department

Anita Honkanen, MD

Clinical Professor, Anesthesiology, Perioperative & Pain Medicine

Project concept: A way to support skin and soft tissues in immobilized patients in hospital critical care settings to decrease incidence of pressure-related injuries

Kunj Sheth, MD

Assistant Professor, Urology

Project concept: A way to allow continuous bladder drainage (urethral catheterization) in male patients that decreases urethral trauma.

Stanford Cardiovascular Institute

Francois Haddad, MD

Clinical Professor, Medicine (Cardiovascular Medicine)

Study Title: Developing Novel Computational Methods for the Early Detection of Right Heart Failure and Pulmonary Hypertension in the Pediatric and Adult Populations

Sushma Reddy, MD

Assistant Professor, Pediatrics (Cardiology)

Study Title: A Non-invasive Signature of Myocardial Signaling in Children with Single Ventricle Heart Failure

Stanford Diabetes Research Center

Laya Ekhlaspour, MD

Instructor, Pediatrics (Endocrinology & Diabetes)

Study Title: Modeling and Modulating Insulin Delivery in Automated Insulin Delivery Systems to Accommodate for Meal Compositions

Eric Foote, MD

Clinical Assistant Professor, Pediatrics (Neonatal & Developmental Medicine)

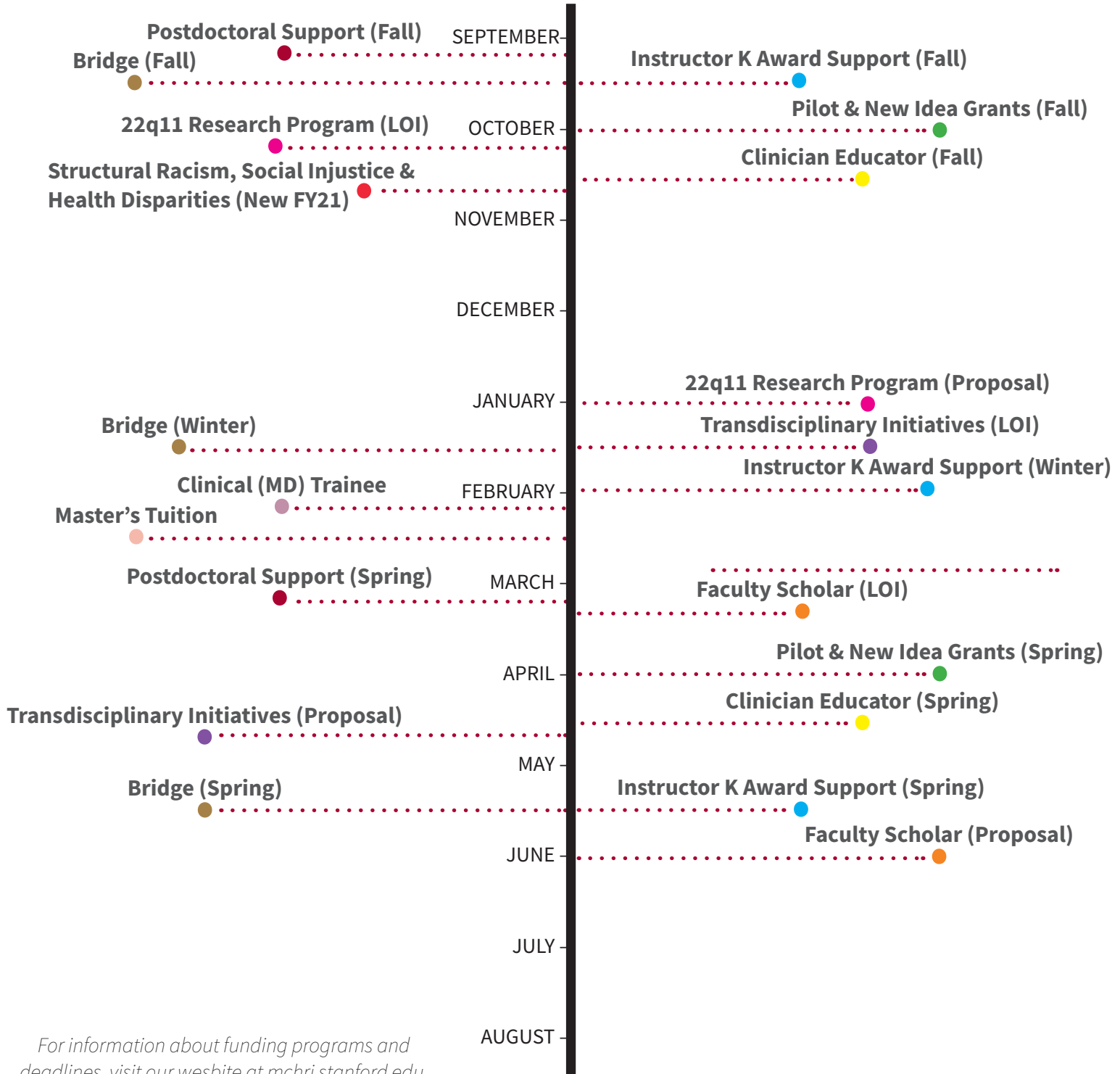
Study Title: Expanding Global Access to Insulin by Eradicating the Cold Chain

James Priest, MD

Assistant Professor, Pediatrics (Cardiology)

Study Title: Dissecting Mechanisms of Maternal Diabetic Risk for Congenital Heart Disease in Offspring

PROGRAM TIMELINE





Annual Report FY 2020

MCHRI ADMINISTRATION

Mary Chen, MS, MBA
Executive Director

Grant Wells, MS
Grisel Arrue
Rachael Panizzo, PHD
Carol Schulze
Kimberly Stern
Roxanna Van Norman, MA

MCHRI CLINICAL RESEARCH SUPPORT OFFICE

Karl Sylvester, MD
CRSO Director

Alyson Falwell, MPH
Sijo Thomas, RN, MSN, MBA

MCHRI CLINICAL RESEARCH CORE

May Zepeda, CCRP
Clinical Research Manager

Julia Buckingham
Allie DaCar
Andrea Miranda
Aisha Nisar
Elvi Sanjines
Mariam (Ani) Stephen
Jessica Whalen

ACKNOWLEDGEMENTS

Thank you to all of our MCHRI members, leadership, staff, awardees, collaborators, and partners for their support.

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