



Icahn School
of Medicine at
Mount
Sinai

*The Mindich
Child Health and
Development Institute*

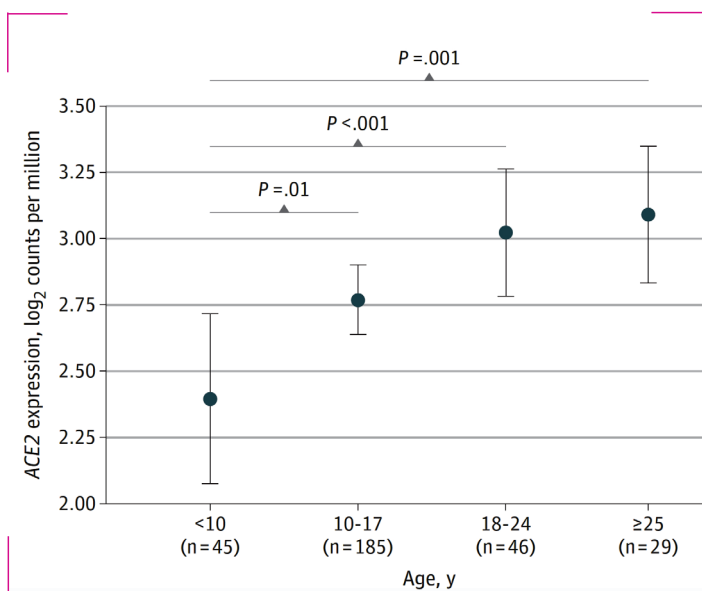
MCHDI Developmental Outcomes

Summer 2020

Research Advancements: COVID-19

MCHDI Faculty Explore Why Children May Be Less Susceptible to COVID-19

The virus that causes COVID-19 uses angiotensin converting enzyme 2 (ACE2) for host entry. ACE2, which stands for angiotensin converting enzyme 2, is a receptor that some might be familiar with because of its role in blood pressure regulation. The coronavirus uses ACE2 to enter the human body, where it spreads. ACE2 is known to be present in our airway, kidneys, heart, and gut. MCHDI and pediatric researchers Supinda Bunyavanich, MD, MPH, Anh Do, PhD, and Alfin Vicencio, MD took this knowledge a step further, finding that compared to adults, children have lower levels of ACE2 gene expression in their nasal passages. The team's finding may help explain children's lower risk of COVID-19 infection



Nasal Gene Expression of ACE2 in Different Age Groups

Data are means (data points) and 95% confidence intervals (error bars) for angiotensin-converting enzyme 2 (ACE2) gene expression in younger children (aged <10 years), older children (aged 10-17 years), young adults (aged 18-24 years), and adults (aged ≥25 years). Gene counts are shown as logarithmic (log₂) counts per million. P values are from linear regression modeling in which ACE2 gene expression in log₂ counts per million was the dependent variable and age group was the independent variable.

and mortality. These results, published in JAMA on May 20, 2020, may point to a potential biomarker of susceptibility to the SARS-CoV-2 virus.

“Why children get COVID-19 less than adults has been a puzzle,” says MCHDI faculty member Supinda Bunyavanich, MD, MPH, Professor of Genetics and Genomic Sciences and Pediatrics. “Researchers have hypothesized that lower expression of ACE2 might explain why children are less likely to get COVID-19. Our study shows that ACE2 expression in the nasal epithelium is lowest in younger children and increases with age into adulthood. These results may help explain why children account for less than 2% of identified cases of COVID-19. A biomarker of COVID-19 susceptibility based on ACE2 expression might be possible.”

The research focused on ACE2 due to its significance in COVID-19 infection. The nasal passages are usually the first point of contact for SARS-CoV-2 and the human body. The Bunyavanich team's study is one of only a few examining the relationship between ACE2 in the airway and age.

The retrospective analysis examined nasal brushings collected from Mount Sinai Health System patients aged 4 to 60. The researchers found ACE2 gene expression in nasal epithelium was age-dependent, lowest in younger children and increasing with age into adulthood.

Supinda Bunyavanich, MD, MPH

Professor, Pediatrics
Professor, Genetics and Genomic Sciences



COVID-19 Telehealth Program/FCC

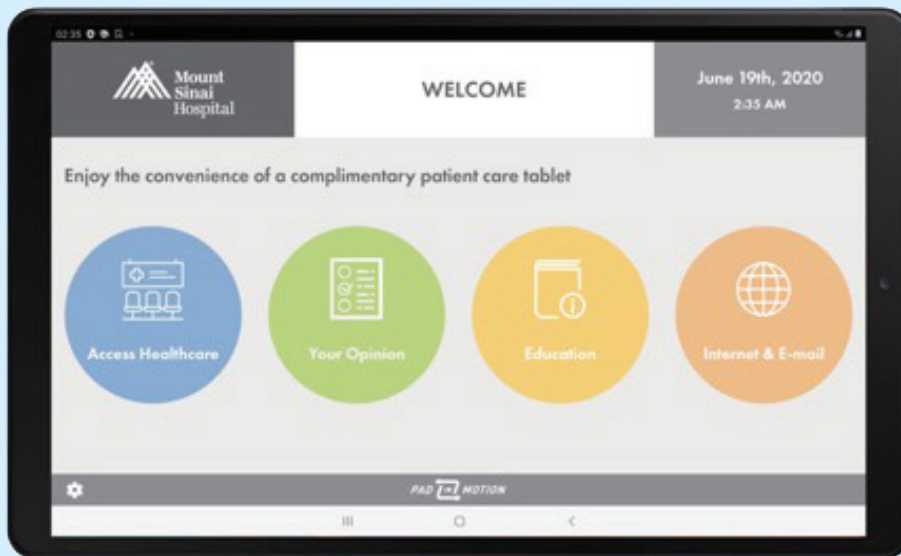
Eyal Shemesh, MD, a faculty member of MCHDI, in collaboration with Sudipto Srivastava, a Senior Director in the Mount Sinai health IT department, on behalf of the Mount Sinai medical Center, received an award of \$862,950 to provide more than 700 connectivity devices to pediatric patients within the health care system. The award, a part of an innovative and competitive extension to the Cares Act allocation, is hosted and managed by the Federal Communications Commission (FCC). Those devices are expected to help connect families of children with chronic health care needs to their Doctors and care providers within Mount Sinai's health system.

Mount Sinai pediatric practices treat more than 10,000 children from disadvantaged backgrounds with pre-existing, chronic conditions such as asthma, cardiac disease, diabetes, obesity, or immune-compromise, all of which meet CDC criteria for COVID-19

monitoring, patients who cannot take care of themselves, and patients whose families may be affected by the virus as well.

The funding allows for purchase, shipment, and maintenance and support services to a unique device that is provided to those families without charge. This device, which has been used in the health system before, is customized to the particular needs of each patient group, under oversight of our specialists.

The PadInMotion device (Picture) has been especially built to provide telehealth, educational, and connectivity services to populations that have serious barriers to participation in remote access health-promotion encounters: it is easy to use, and comes pre-loaded with the applications, including the required Mount Sinai interfaces. The platform is multi-lingual and HIPAA compliant. It comes with pre-loaded, fully paid for wireless or mobile broadband options.



PadInMotion customized patient connectivity and education device



Eyal Shemesh, MD

Professor, Pediatrics

Professor, Psychiatry

Chief, Division of Behavioral and Developmental Health

Director, Pediatric Clinical Trials Office

“vulnerable populations”. Those children are dependent on ongoing monitoring and surveillance of various chronic conditions to ensure that they remain in reasonable health. Many of those children, and their families, have become weary of coming to our clinics for their care. Although advanced telehealth options have been offered, unfortunately, some cannot access our telehealth services, because of connectivity difficulties. Those include a lack of an appropriate device, limited or non-existent broadband access, inability to upload the Mount Sinai connectivity application, and issues related to device malfunction. This puts them in an increased risk of a decompensation of their primary disease such as asthma exacerbation, rejection of a transplanted organ and more. This issue is even more devastating to young children who need closer

While providing the connectivity devices, a robust evaluation of their use to inform future implementation of telehealth practices within the health system will also be performed. The knowledge gained as well as the actual services rendered are expected to help in moving Mount Sinai's pediatric practices into a new and exciting era of providing integrated, highly personalized, remote and home-based surveillance and care. In this care model, clinic visits are still important but constitute only one component of a general strategy aimed at keeping our patients healthy at their home and in the community.

Pilot Project 2019-2020 Awardees

Project Title: Neural Control of Pancreatic Endocrine Function in the Development of Type 1 Diabetes

Principal Investigators: Adolfo Garcia-Ocaña, PhD, MCHDI Investigator and Professor of Medicine; Sarah A. Stanley, MBBCh, PhD, Assistant Professor of Medicine

Abstract: Type I diabetes (T1D) is a common chronic disease in childhood with significant effects on quality of life. New approaches to treating T1D can be created by controlling activity in pancreatic nerves to regulate blood glucose. However, there is a lack of detailed knowledge of pancreatic nerve structure, function and the effects of T1D required to achieve this. Without this, the likelihood of successfully targeting neural pathways to control blood glucose in diabetes is remote. This proposal aims to understand the effects of T1D on the structure and function of pancreatic sympathetic nerves. Their central hypothesis is that T1D increases

islet sympathetic innervation leading to excess glucagon and insufficient insulin to maintain normal glucose. Pancreatic islets are high innervated by sympathetic nerves and T1D disrupts pancreatic



Adolfo Garcia-Ocaña, PhD
Professor, Medicine

nerve structure and function. However, it is not known if the structural changes from T1D are uniform, which endocrine cells are affected or the time course. In addition, the precise functions of pancreatic sympathetic nerves or the effects of T1D on these physiological roles are unknown. To test this hypothesis, the investigators will determine the effects of T1D on a) the 3D structure of islet sympathetic nerves and their associations with immune infiltration and b) the function of islet sympathetic nerves to regulate blood glucose in juvenile mice. They will determine the effects of T1D on pancreatic sympathetic nerve structure and relationship with endocrine cells with 3D imaging of cleared pancreata. They will determine the effects of T1D on pancreatic sympathetic nerve function by measuring blood glucose and pancreatic hormone release in response to activation or inhibition of pancreatic sympathetic nerves. The proposed studies will provide a comprehensive understanding of pancreatic sympathetic nerve structure and function in T1D and form a critical foundation for future studies identifying mechanism and therapeutic targets to treat T1D.



Sarah A. Stanley, MBBCh, PhD
Assistant Professor, Medicine

Project Title: Identifying the Role of Early Environmental Toxicants in Newborns with Biliary Atresia

Principal Investigators: Jaime Chu, MD, MCHDI Investigator and Assistant Professor of Pediatrics; Lauren Petrick, PhD, Assistant Professor of Environmental Medicine and Public Health; Sanjiv Harpavat, MD, PhD, Assistant Professor of Pediatrics (Texas Children's Hospital, Baylor College of Medicine)

Abstract: Biliary atresia (BA) is the rapid and progressive destruction of bile ducts in neonates and results in 100% mortality by 1 year if misdiagnosed and left untreated. BA has long been the most common indication for pediatric liver transplantation, yet its etiology remains elusive and the field lacks any biomarkers to aid in early diagnosis. Research focused on GWAS and transcriptomic signatures at 6-8 weeks of age, the typical emergence of visible symptoms, have been unsuccessful at predicting cases of BA. The paradigm is shifting with recent data suggesting 1) a prenatal injury and the need for biomarkers at birth and 2) a role for environmental toxins in BA. Therefore, the investigators propose the first study to investigate toxicant exposure and endogenous biomarker levels in

humans, prior to onset of clinical BA symptoms. They will interrogate archived newborn dried blood spots (DBS) collected from neonates that later developed BA and healthy controls using robust analytical methods that were developed by our team. They will 1) perform targeted profiling of flame retardants, organochlorine pesticides, and polyaromatic hydrocarbons to determine if infants with biliary atresia have increased prenatal exposure compared to healthy controls and 2) perform untargeted metabolomics analysis to identify differences in metabolite profiles at birth between neonates that later developed biliary atresia compared to healthy neonate controls and ascertain which combination(s) of DBS metabolites increase BA risk as potential pre-diagnosis biomarkers. This proposal addresses the critical unmet need for early and effective biomarkers in BA. They will leverage diverse and complementary expertise in pediatric liver disease and innovative ability to extract small molecule data from DBS to establish a metabolic signature of infants with BA and introduce the novel prospect that analysis of newborn DBS can offer a window into etiology and earlier diagnosis, and potential transplant-sparing interventions.



Jaime Chu, MD
Associate Professor, Pediatrics
Associate Chief, Division of
Pediatric Hepatology
Director, Pediatric Physician-
Scientist Residency Program



Lauren M. Petrick, PhD
Assistant Professor,
Department of Environmental
Medicine and Public Health



Sanjiv Harpavat, MD, PhD
Assistant Professor,
Department of Pediatrics
Texas Children's Hospital
Baylor College of Medicine

New Extramural Faculty

Fernando Ferrer, MD, FACS, FAAP

Fernando Ferrer, MD, FACS, FAAP is a Professor of Pediatric Urology at the Icahn School of Medicine. Dr. Ferrer was most recently Professor of Surgery and Cell Biology at the University of Nebraska, and Surgeon-in-Chief at Omaha Children's Hospital. Previously, he served as Professor of Surgery, Pediatrics and Cell Biology at the University of Connecticut's School of Medicine where he was also Vice-Chairman of the Department of Surgery. In addition, he was the Peter J. Deckers MD, Chair of Surgery and Surgeon-in-Chief of Connecticut Children's Medical Center where he directed the Division of Pediatric Urology.

A native of the northeast, Dr. Ferrer attended Seton Hall University and Georgetown University School of Medicine. He completed his Urologic Surgical training at the University of Connecticut's School of Medicine and his pediatric urology and research fellowship at the Brady Urologic Institute at Johns Hopkins. Dr. Ferrer has published 100 articles and over 25 book chapters. He has given over 35 lectures and visiting professorships. Dr. Ferrer has also been an active investigator funded by the NIH. His research has focused on renal injury and cellular mechanisms of children's cancer.



During his career, Dr. Ferrer has served on several national committees, including the Children's Oncology Group and The Pediatric Urologic Oncology Working Group, where he is a Past

Fernando Ferrer, MD, FACS, FAAP
Professor, Urology

New Intramural Faculty

Tirtha Kamal Das, PhD

Tirtha Kamal Das, PhD is an Assistant Professor in the Department of Cell, Developmental & Regenerative Biology. He obtained his PhD degree at Wesleyan University studying the developmental genetics of fly embryogenesis and later completed his postdoctoral work modeling cancer and therapeutics in flies. He has continued his interest in understanding human disease and their lab uses an 'Integrated Fly-Vertebrate Modeling' approach to study genetic diseases and identify novel therapeutics. They use whole animal fly models, human cell lines, mouse xenografts, and patient data analysis to identify mechanisms of cancer and mendelian disease progression.

These studies have identified key cellular and molecular mechanisms driving cancer progression, and have shown that: i) oncogenic kinase-gene fusions drive complex signaling through multi-protein hubs, ii) epigenetic components promote programs of cancer cell invasion, and iii) centrosomal components promote metastasis.

They combine genetics and drug screening to rationally improve lead compounds and clinical therapeutics. Their work showed that optimal therapeutic index of cancer drugs is achieved through balanced inhibition of multiple targets – balanced polypharmacology.

They further developed drug cocktails to improve therapeutic index of standard of care drugs, by pairing them with low-dose, broad-acting drugs – 'network brakes' – that prevented compensatory activation of cellular networks, which lowered toxicity, and delayed emergence of drug resistance.



Tirtha Kamal Das, PhD
Assistant Professor, Department of Cell, Developmental & Regenerative Biology

Key Publications:

Ghosh M, Thangada S, Dasgupta O, Khanna KM, Yamase HT, Kashgarian M, ... **Ferrer FA**. Cell-intrinsic sphingosine kinase 2 promotes macrophage polarization and renal inflammation in response to unilateral ureteral obstruction. *PLoS One*. 2018;13(3):e0194053.

Caromile LA, Dortche K, Rahman MM, Grant CL, Stoddard C, **Ferrer FA**, Shapiro LH. PSMA redirects cell survival signaling from the MAPK to the PI3K-AKT pathways to promote the progression of prostate cancer. *Sci Signal*. 2017;10(470):eaag3326.

Gerber C, Harel M, Lynch ML, Herbst KW, **Ferrer FA**, Shapiro LH. Proximal tubule proteins are significantly elevated in bladder urine of patients with ureteropelvic junction obstruction and may represent novel biomarkers: A pilot study. *J Pediatr Urol*. 2016;12(2):120.e1-120.e1207.

Lepley D, Paik JH, Hla T, **Ferrer F**. The G protein-coupled receptor S1P2 regulates Rho/Rho kinase pathway to inhibit tumor cell migration. *Cancer Res*. 2005;65(9):3788-3795.

Ferrer FA, Miller LJ, Andrawis RI, Kurtzman SH, Albertsen PC, Laudone VP, Kreutzer DL. Vascular endothelial growth factor (VEGF) expression in human prostate cancer: in situ and in vitro expression of VEGF by human prostate cancer cells. *J Urol*. 1997;157(6):2329-2333.

President. He has been a permanent study section member for the National Cancer Institute, and has reviewed for the National Kidney Foundation, the National Academies and the American Urologic Association. He also serves as a peer reviewer for multiple scientific journals. Dr. Ferrer served as a Diving Medical Officer in the U.S. Navy and participated in operation Desert Storm.

Key Publications:

Cancer Mechanisms:

Das TK*, Cagan RL. KIF5B-RET Oncoprotein Signals through a Multi-kinase Signaling Hub. *Cell Rep*. 2017;20(10):2368-2383. *Corresponding author and lead contact.

Das TK, Dana D, Paroly SS, et al. Centrosomal kinase Nek2 cooperates with oncogenic pathways to promote metastasis. *Oncogenesis*. 2013;2(9):e69.

Das TK, Sangodkar J, Negre N, Narla G, Cagan RL. Sin3a acts through a multi-gene module to regulate invasion in Drosophila and human tumors. *Oncogene*. 2013;32(26):3184-3197.

Cancer Therapeutics:

Das TK*, Esernio J, Cagan RL. Restraining Network Response to Targeted Cancer Therapies Improves Efficacy and Reduces Cellular Resistance. *Cancer Res*. 2018;78(15):4344-4359. *Corresponding author and lead contact.

Dar AC*, **Das TK***, Shokat KM, Cagan RL. Chemical genetic discovery of targets and anti-targets for cancer polypharmacology. *Nature*. 2012;486(7401):80-84. *Co-first authors; alphabetically listed.

This integrated approach has also been applied to study dominant mendelian-inherited human Rasopathies and identified signaling differences between thirteen variants, and uncovered unique opportunities for therapy. Drugs inhibiting epigenetic components and treatments used for cardiovascular diseases have shown surprising efficacy in these Rasopathy models.

Faculty Grants

M. Cecilia Berin, PhD and **Maria Curotto de Lafaille**, PhD, NIAID, R01, “Heterogeneity of T cell phenotype and function in food allergy”

Dusan Bogunovic, PhD, NIAID-R01, “Inborn Errors of Immunity Leading to Autoinflammatory Syndromes”

Minji Byun, PhD, Castleman Disease Collaborative Network, Research Award, “The hyperinflammatory response associated with DNMT3A mutations in idiopathic multicentric Castleman disease”

Jaime Chu, MD, NIDDK, R01, “Mannose metabolism as a regulator of hepatic stellate cell activation and fibrosis”

Hala Harony-Nicolas, PhD, United State-Israel Binational Science Foundation, “Studying the relationship between socio-emotional valence, oxytocin and social brain activity in health and disease”

Ruth J.F. Loos, PhD, NIDDK, R01, “Resilience to obesity in carriers of monogenic obesity mutations - a study on the underlying mechanisms”

Eyal Shemesh, MD, Federal Communications Commission, COVID-19 Telehealth Program Grant

Faculty Highlights

Publications

Nowak-Wegrzyn A, **Berin MC**, Mehr S. **Food protein-induced enterocolitis syndrome**. *J Allergy Clin Immunol Pract*. 2020 Jan;8(1):24-35.

Kulczynska K, **Bieker JJ**, Siatecka M. A **kruppel-like factor 1 (klf1) mutation associated with severe congenital dyserythropoietic anemia alters its DNA-binding specificity**. *Mol Cell Biol*. 2020 Feb 12;40(5).

Martin-Fernandez M, Bravo Garcia-Morato M, Gruber C, Murias Loza S, Malik MNH, Alsohime F, ... **Bogunovic D**. **Systemic type I inflammation in human IISG15 deficiency leads to necrotizing skin lesions**. *Cell Rep*. 2020 May 12;31(6):107633.

Alsohime F*, Martin-Fernandez M*, Temsah MH, Alabdulhafid M, Le Voyer T, Alghamdi M, ... **Bogunovic D***, Alangari AA*. **Jak inhibitor therapy in a child with inherited USP18 deficiency**. *N Engl J Med*. 2020 Jan 16;382(3):256-65. *Co-first and last authors.

Breen MS, Garg P, Tang L, Mendonca D, Levy T, Barbosa M, Arnett AB, ... **Grice DE**, ... **Kolevzon A**, **Sharp AJ**, **Buxbaum JD**, **Siper PM**, **De Rubeis S**. **Episignatures stratifying Helmsmoortel-Van Der Aa syndrome show modest correlation with phenotype**. *Am J Hum Genet*. [In Press]

Maier B, Leader AM, Chen ST, Tung N, Chang C, LeBerichel J, ... **Brown BD**, Merad M. **A conserved dendritic-cell regulatory program limits antitumor immunity**. *Nature*. 2020 Apr;580(7802):257-62.

Mulloikandov G, Vijayakumar G, Leon P, Henry C, Wilson PC, Krammer F, ... **Brown BD**. **High-complexity extracellular barcoding using a viral hemagglutinin**. *Proc Natl Acad Sci U S A*. 2020 Feb 11;117(6):2767-9.

Lai JC, Ufere NN, **Bucvalas JC**. **Liver transplant survivorship**. *Liver Transpl*. 2020 May 6.

Wadhvani SI, **Bucvalas JC**, Brokamp C, Anand R, Gupta A, Taylor S, **Shemesh E**, Beck AF. **Association between neighborhood-level socioeconomic deprivation and the medication level variability index for children following liver transplantation**. *Transplantation*. 2020 Feb 6. [Online Ahead of Print]

Do AN, Watson CT, Cohain AT, Griffin RS, Grishin A, Wood RA, ... **Sampson HA**, **Sicherer SH**, **Sharp AJ**, **Schadt EE**, **Bunyavanich S**. **Dual transcriptomic and epigenomic study of reaction severity in peanut-allergic children**. *J Allergy Clin Immunol*. 2020 Apr;145(4):1219-30.

Bunyavanich S, Do A, Vicencio A. **Nasal gene expression of angiotensin-converting enzyme 2 in children and adults**. *Jama*. 2020 May 20;323(23):2427-2429.

Xu D, Wang C, Kiryluk K, **Buxbaum JD**, Ionita-Laza I. **Co-localization between sequence constraint and epigenomic information improves interpretation of whole-genome sequencing data**. *Am J Hum Genet*. 2020 Apr 2;106(4):513-24.

Satterstrom FK, Kosmicki JA, **Wang J**, **Breen MS**, **De Rubeis S**, An JY, ... **Buxbaum JD**. **Large-scale exome sequencing study implicates both developmental and functional changes in the neurobiology of autism**. *Cell*. 2020 Feb 6;180(3):568-84.e23.

Gopalakrishnan K, Aushev VN, Manservisi F, Falcioni L, Panzacchi S, Belpoggi F, ... **Teitelbaum SL**, **Chen J**. **Gene expression profiles for low-dose exposure to diethyl phthalate in rodents and humans: A translational study with implications for breast carcinogenesis**. *Sci Rep*. 2020 Apr 27;10(1):7067.

Zhang W, Liu W, Bao S, Liu H, Zhang Y, Zhang B, ... **Chen J**, **Hao K**, ... Xu S. **Association of adverse birth outcomes with prenatal uranium exposure: A population-based cohort study**. *Environ Int*. 2020 Feb;135:105391.

Lorenzini T, Fliegauf M, Klammer N, Frede N, Proietti M, Bulashevskaya A, ... **Cunningham-Rundles C**, ... Grimbacher B. **Characterization of the clinical and immunologic phenotype and management of 157 individuals with 56 distinct heterozygous nfkB1 mutations**. *J Allergy Clin Immunol*. 2020 Apr 9;S0091-6749(20)30422-X. [Online Ahead of Print]

Abolhassani H, Hammarstrom L, **Cunningham-Rundles C**. **Current genetic landscape in common variable immune deficiency**. *Blood*. 2020 Feb 27;135(9):656-67.

Popovitchenko T, Park Y, Page NF, Luo X, Krsnik Z, Liu Y, ... **De Rubeis S**, ... Rasin MR. **Translational derepression of elavl4 isoforms at their alternative 5' utrs determines neuronal development**. *Nat Commun*. 2020 Apr 3;11(1):1674.

Hadas Y, Vincek AS, Youssef E, Zak MM, Chepurko E, Sultana N, ... **Dubois NC**, ... Zangi L. **Altering sphingolipid metabolism attenuates cell death and inflammatory response after myocardial infarction**. *Circulation*. 2020 Mar 17;141(11):916-30.

Lu G, Rausell-Palamos F, Zhang Z, Vasavada RC, Valle S, Spindler M, ... **García-Ocana A**. **Dextran Sulfate Ameliorates Type 1 Diabetes, pancreatic beta cell death and autoimmunity**. *Diabetes*. [In Press]

Fu A, Alvarez-Perez JC, Avizonis D, Kin T, Bridon G, Evans L, ... **Garcia-Ocaña A**, **Danial NN**. **Glucose-dependent partitioning of arginine to urea cycle spares β -cells from inflammation**. *Nat Metab*. May 2020; 2, 432-446.

Seiden AH, Richter F, Patel N, Rodriguez OL, Deikus G, Shah H, ... **Sharp AJ**, **Gelb BD**. **Elucidation of de novo small insertion/deletion biology with parent-of-origin phasing**. *Hum Mutat*. 2020 Apr;41(4):800-6.

Publications, continued

- Edwards JJ, Rouillard AD, Fernandez NF, Wang Z, Lachmann A, Shankaran SS, ... **Gelb BD**. Systems analysis implicates wave2 complex in the pathogenesis of developmental left-sided obstructive heart defects. *JACC Basic Transl Sci*. 2020 Apr;5(4):376-86.
- Tanner EM, Bornehag CG, **Gennings C**. Dynamic growth metrics for examining prenatal exposure impacts on child growth trajectories: Application to perfluorooctanoic acid (pfoa) and postnatal weight gain. *Environ Res*. 2020 Mar;182:109044.
- Guttman K**, Flibotte J, DeMauro SB, Seitz H. A mixed methods analysis of parental perspectives on diagnosis and prognosis of neonatal intensive care unit graduates with cerebral palsy. *J Child Neurol*. 2020 Apr;35(5):336-43.
- Shao X, Cheng H, Zhou J, Zhang J, Zhu Y, Yang C, ... **Chen J**, ... **Hao K**. Prenatal exposure to ambient air multi-pollutants significantly impairs intrauterine fetal development trajectory. *Ecotoxicol Environ Saf*. 2020 May 29;201:110726.
- Stahl E, Roda G, Dobbyn A, Hu J, Zhang Z, Westerlind H, ... **Hao K**, ... Peter I. Collagenous colitis is associated with hla signature and shares genetic risks with other immune-mediated diseases. *Gastroenterology*. 2020 May 1.
- Horton MK**, Zheng L, Williams A, Doucette JT, Svensson K, Cory-Slechta D, ... Wright R. Using the delayed spatial alternation task to assess environmentally associated changes in working memory in very young children. *Neurotoxicology*. 2020 Mar;77:71-9.
- Espeso-Gil S, Halene T, Bendl J, Kassim B, Ben Hutta G, Iskhakova M, ... **Huckins L**, ... Akbarian S. A chromosomal connectome for psychiatric and metabolic risk variants in adult dopaminergic neurons. *Genome Med*. 2020 Feb 19;12(1):19.
- Heiss JA, Brennan KJ, Baccarelli AA, Tellez-Rojo MM, Estrada-Gutierrez G, Wright RO, **Just AC**. Battle of epigenetic proportions: Comparing illumina's epic methylation microarrays and truseq targeted bisulfite sequencing. *Epigenetics*. 2020 Jan - Feb;15(1-2):174-82.
- Gergoudis K, Weinberg A, Templin J, Farmer C, Durkin A, Weissman J, **Siper P**, ... **Del Pilar Trelles M**, ... **Buxbaum JD**, ... **Kolevzon A**. Psychometric study of the social responsiveness scale in phelan-mcdermid syndrome. *Autism Res*. 2020 May 14.
- Bae JH, Hong M, Jeong HJ, Kim H, Lee SJ, Ryu D, ... **Krauss RS**, Kang JS. Satellite cell-specific ablation of cdon impairs integrin activation, fgf signalling, and muscle regeneration. *J Cachexia Sarcopenia Muscle*. 2020 Feb 27.
- Deyssenroth MA, Marsit CJ, **Chen J**, **Lambertini L**. In-depth characterization of the placental imprintome reveals novel differentially methylated regions across birth weight categories. *Epigenetics*. 2020 Jan - Feb;15(1-2):47-60.
- Liu SH**, Liu B, **Sanders AP**, Saland J, **Wilson KM**. Secondhand smoke exposure and higher blood pressure in children and adolescents participating in nhanes. *Prev Med*. 2020 May;134:106052.
- Whiffen N, Armean IM, Kleinman A, Marshall JL, Minikel EV, Goodrich JK, ... **Loos RJF**, ... MacArthur DG. The effect of lrrk2 loss-of-function variants in humans. *Nat Med*. 2020 May 27.
- Xie J, Liu L, Mladkova N, Li Y, Ren H, Wang W, ... **Loos RJF**, ... Kiryluk K. The genetic architecture of membranous nephropathy and its potential to improve non-invasive diagnosis. *Nat Commun*. 2020 Mar 30;11(1):1600.
- Marlow FL**. Setting up for gastrulation in zebrafish. *Curr Top Dev Biol*. 2020;136:33-83.
- Humphries AC, Narang S, **Mlodzik M**. Mutations associated with human neural tube defects display disrupted planar cell polarity in drosophila. *Elife*. 2020 Apr 1;9.
- Smith MR, Yevoop P, Sadahiro M, Readhead B, Kidd B, Dudley JT, **Morishita H**. Systematic analysis of environmental chemicals that dysregulate critical period plasticity-related gene expression reveals common pathways that mimic immune response to pathogen. *Neural Plast*. 2020 May;2020:1673897.
- Bicks LK, Yamamuro K, Flanigan ME, Kim JM, Kato D, Lucas EK, ... **Morishita H**. Prefrontal parvalbumin interneurons require juvenile social experience to establish adult social behavior. *Nat Commun*. 2020 Feb 21;11(1):1005.
- Paisan-Ruiz C**, Jen JC. Canvas with cerebellar/sensory/ vestibular dysfunction from rfc1 intronic pentanucleotide expansion. *Brain*. 2020 Feb 1;143(2):386-90.
- Darvish H, Azcona LJ, Tafakhori A, Mesias R, Ahmadifard A, Sanchez E, Habibi A, Alehabib E, Johari AH, Emamalizadeh B, Jamali F, Chapi M, Jamshidi J, Kajiwara Y, **Paisan-Ruiz C**. Phenotypic and genotypic characterization of families with complex intellectual disability identified pathogenic genetic variations in known and novel disease genes. *Sci Rep*. 2020 Jan 22;10(1):968.
- Munn-Chernoff MA, Johnson EC, Chou YL, Coleman JRI, Thornton LM, Walters RK, ... **Huckins LM**, ... **Pinto D**, ... Agrawal A. Shared genetic risk between eating disorder- and substance-use-related phenotypes: Evidence from genome-wide association studies. *Addict Biol*. 2020 Feb 16:e12880.
- Modabbernia A, **Reichenberg A**, Ing A, Moser DA, Doucet GE, Artiges E, ... Frangou S. Linked patterns of biological and environmental covariation with brain structure in adolescence: A population-based longitudinal study. *Mol Psychiatry*. 2020 May 22.
- Bai D, Marrus N, Yip BHK, **Reichenberg A**, Constantino JN, Sandin S. Inherited risk for autism through maternal and paternal lineage. *Biol Psychiatry*. 2020 Apr 2.
- Heitman N, Sennett R, Mok KW, Saxena N, Srivastava D, Martino P, ... **Rendl M**. Dermal sheath contraction powers stem cell niche relocation during hair cycle regression. *Science*. 2020 Jan 10;367(6474):161-6.
- Ng DK, Xu Y, Hogan J, **Saland JM**, Greenbaum LA, Furth SL, ... Wong CS. Timing of patient-reported renal replacement therapy planning discussions by disease severity among children and young adults with chronic kidney disease. *Pediatr Nephrol*. 2020 May 3.
- Kim EH, Jones SM, Burks AW, Wood RA, **Sicherer SH**, Leung DYM, ... **Sampson HA**. A 5-year summary of real-life dietary egg consumption after completion of a 4-year egg powder oral immunotherapy (eoit) protocol. *J Allergy Clin Immunol*. 2020 Apr;145(4):1292-5.e1.
- Rosa MJ, Hair GM, Just AC, Kloog I, Svensson K, Pizano-Zarate ML, ... **Sanders AP**. Identifying critical windows of prenatal particulate matter (pm2.5) exposure and early childhood blood pressure. *Environ Res*. 2020 Mar;182:109075.
- Rein JL, Heja S, Flores D, Carrisoza-Gaytan R, Lin NYC, Homan KA, ... **Satlin LM**. Effect of luminal flow on doming of mpkccd cells in a 3d perfusable kidney cortical collecting duct model. *Am J Physiol Cell Physiol*. 2020 May 13.
- Carrisoza-Gaytan R, Ray EC, Flores D, Marciszyn AL, Wu P, Liu L, Subramanya AR, Wang W, Sheng S, Nkashama LJ, Chen J, Jackson EK, Mutchler SM, Heja S, Kohan DE, **Satlin LM**, Kleyman TR. Intercalated cell bkalph subunit is required for flow-induced k+ secretion. *JCI Insight*. 2020 Apr 7;5(8).
- Ackeyfi C, Wang P, Karakose E, Manning Fox JE, Gonzalez BJ, Liu H, ... **Scott DK**, **Garcia-Ocana A**, Stewart AF. Glp-1 receptor agonists synergize with dyrk1a inhibitors to potentiate functional human beta cell regeneration. *Sci Transl Med*. 2020 Feb 12;12(530).
- Rodriguez OL, Ritz A, **Sharp AJ**, Bashir A. Mspac: A tool for haplotype-phased structural variant detection. *Bioinformatics*. 2020 Feb 1;36(3):922-4.
- Annunziato RA, Stuber ML, Supelana CJ, Dunphy C, Anand R, Erinjeri J, ... **Bucuvallas J**, **Shemesh E**. The impact of caregiver post-traumatic stress and depressive symptoms on pediatric transplant outcomes. *Pediatr Transplant*. 2020 Feb;24(1):e13642.

Maciag MC, Bartnikas LM, **Sicherer SH**, Herbert LJ, Young MC, Matney F, ... Bingemann TA. A slice of food protein-induced enterocolitis syndrome (fpies): Insights from 441 children with fpies as provided by caregivers in the international fpies association. *J Allergy Clin Immunol Pract.* 2020 May;8(5):1702-9.

Platt S, **Sicherer SH**. Physician instructions to inject epinephrine with mild or no symptoms on food allergy and anaphylaxis emergency plans. *J Allergy Clin Immunol Pract.* 2020 Apr;8(4):1423-5.e7.

Giserman-Kiss I, Gorenstein M, Feldman E, Rowe M, Grosman H, Weissman J, ... **Kolevzon A**, **Buxbaum JD**, **Siper PM**. The immersive theater experience for individuals with autism spectrum disorder. *J Autism Dev Disord.* 2020 Mar;50(3):1073-80.

Zhang X, Spear E, Gennings C, Curtin PC, **Just AC**, Bragg JB, **Stroustrup A**. The association of prenatal exposure to intensive traffic with early preterm infant neurobehavioral development as reflected by the nicu network neurobehavioral scale (nnns). *Environ Res.* 2020 Apr;183:109204.

Day DB, Collett BR, Barrett ES, Bush NR, **Swan SH**, Wang C, Sathyanarayana S. Prenatal sex hormones and behavioral outcomes in children. *Psychoneuroendocrinology.* 2020 Mar;113:104547.

Wang T, Nichols HB, Nyante SJ, Bradshaw PT, Moorman PG, Kabat GC, ... **Teitelbaum SL**, ... Gammon MD. Urinary estrogen metabolites and long-term mortality following breast cancer. *JNCI Cancer Spectr.* 2020 Jun;4(3):pkaa014.

Song WM, Lin X, Liao X, Hu D, Lin J, Sarpel U, ... **Walsh MJ**, ... Zhang B. Multiscale network analysis reveals molecular mechanisms and key regulators of the tumor microenvironment in gastric cancer. *Int J Cancer.* 2020 Mar 1;146(5):1268-80.

Lieberman JA, Bingemann TA, **Wang J**. Diagnostic challenges in anaphylaxis. *J Allergy Clin Immunol Pract.* 2020 Apr;8(4):1177-84.

Cohen ASA, Simotas C, **Webb BD**, Shi H, Khan WA, Edelmann L, Scott SA, Singh R. Haploinsufficiency of the basic helix-loop-helix transcription factor hand2 causes congenital heart defects. *Am J Med Genet A.* 2020 May;182(5):1263-7.

Urreizti R, Mayer K, Evrony GD, Said E, Castilla-Vallmanya L, Cody NAL, Plasencia G, **Gelb BD**, Grinberg D, Brinkmann U, **Webb BD**, Balcells S. Dph1 syndrome: Two novel variants and structural and functional analyses of seven missense variants identified in syndromic patients. *Eur J Hum Genet.* 2020 Jan;28(1):64-75.

Sangmo L, Braune T, Liu B, Wang L, Zhang L, Sosnoff CS, ... **Wilson KM**. Secondhand marijuana exposure in a convenience sample of young children in new york city. *Pediatr Res.* 2020 May 13.

Kwon CS, Agarwal P, Subramaniam V, Dhamoon M, Mazumdar M, **Yeshokumar A**, ... Jette N. Readmission after neurosurgical intervention in epilepsy: A nationwide cohort analysis. *Epilepsia.* 2020 Jan;61(1):61-9.

Events / Announcements

Save the Date

8th Annual MCHDI Retreat

Date: November 20, 2020
Time: TBA



Icahn
School of
Medicine at
Mount
Sinai

*The Mindich
Child Health and
Development Institute*

Website: www.mountsinai.org/mchdi

Email: mchdi@mssm.edu

Facebook: www.facebook.com/mindichchdi

Twitter: @MindichCHDI

Contact: Tel: (212) 824-8938 Fax: (212) 241-3310

Address: 1470 Madison Avenue, 8th Floor
Hess Center for Science and Medicine at Mount Sinai
New York, NY 10029-6542