

2018 Southeastern Pediatric Research Conference: Precision Medicine

Georgia Aquarium
Atlanta, GA
June 8, 2018

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Welcome to the 2018 Southeastern Pediatric Research Conference!

Dear Colleagues,

We would like to officially welcome you to the 2018 Southeastern Pediatric Research Conference. Over the last eight years, this conference has evolved from a small local event to a major regional conference bringing together clinicians, scientists and engineers to highlight cutting edge child health research. We are pleased to welcome colleagues this year from throughout the eastern United States, including Duke University, Vanderbilt University, University of Alabama at Birmingham, University of Tennessee, Howard University, and The Ohio State University, as well as our colleagues throughout Georgia from institutions including the University of Georgia and Philadelphia College of Osteopathic Medicine - Georgia Campus.

Our theme this year is precision medicine, an approach to healthcare focused on identifying treatment and prevention strategies effective for individual patients based on genetic, environmental and lifestyle factors. Our keynote speakers are leaders in both the clinical and research aspects of precision medicine and will cover a range of related topics from genomics to patient specific 3D printing to social and ethical considerations. We hope the combination of presentations from local researchers and colleagues from institutions throughout the country will build discussion and innovation on the leading edge of precision medicine child health research.

We encourage you to take every opportunity to connect with other clinicians and researchers today, forge new collaborations and continue pushing the field of precision medicine forward.

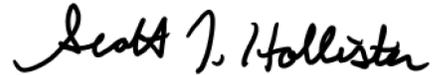
Sincerely,



Clinton H. Joiner, MD, PhD
Vice Chair for Research
Department of Pediatrics
Aflac Children's Chair for
Hematology
Director, Section of Hematology
Aflac Cancer and Blood Disorders
Center
Children's Healthcare of Atlanta
Professor of Pediatrics
Emory University School of
Medicine

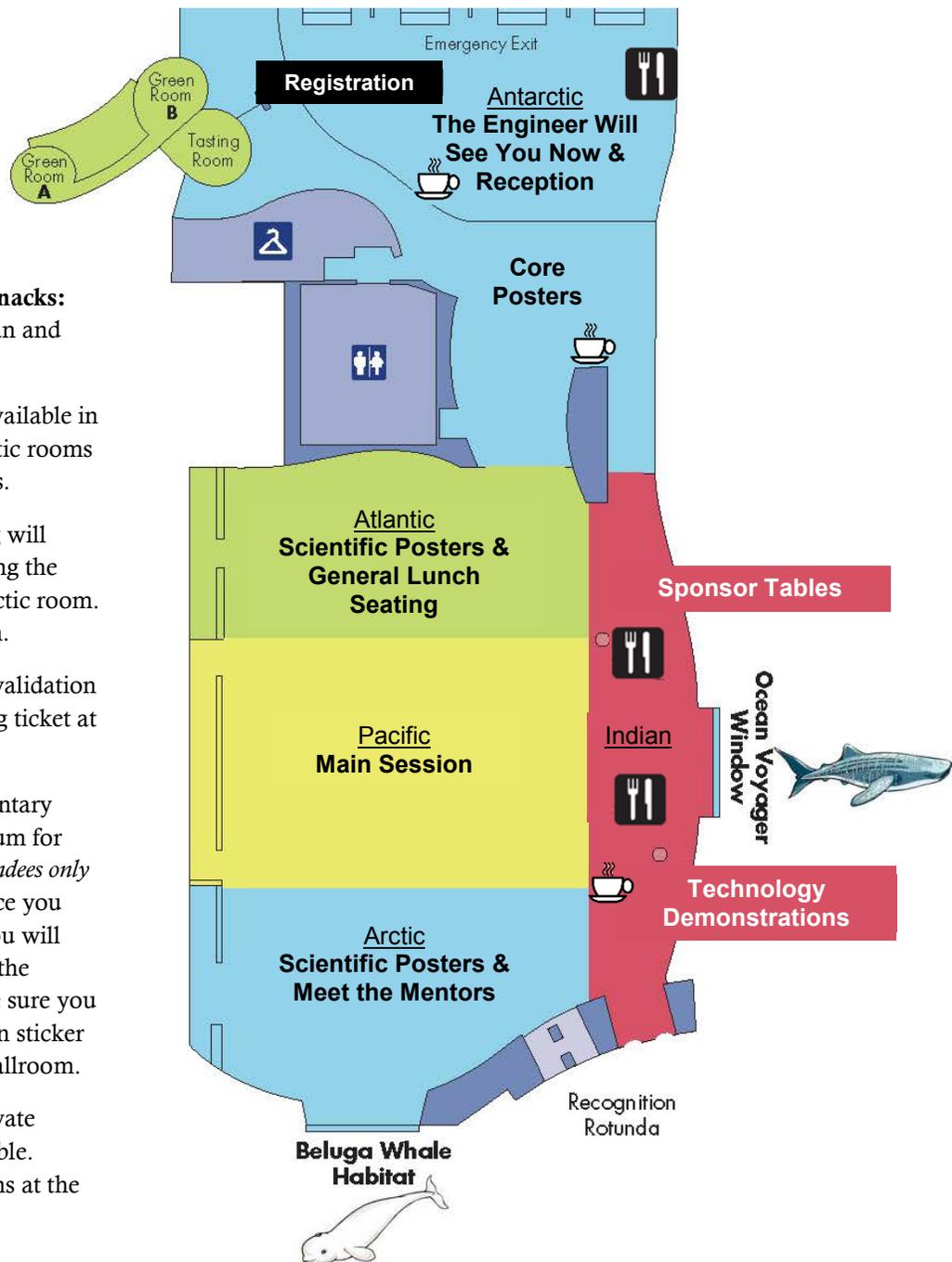


Beatrice E. Gee, MD
Medical Director, Sickle Cell and
Hematology Program
Children's Healthcare of Atlanta at
Hughes Spalding
Professor of Pediatrics
Associate Director for Translational
Science
Cardiovascular Research Institute
Morehouse School of Medicine



Scott J. Hollister, PhD
Patsy and Alan Dorris Chair in
Pediatric Technology
Director, Center for 3D Medical
Fabrication
Director, Tissue Engineering &
Mechanics Laboratory
Professor, Wallace A. Coulter
Department of Biomedical
Engineering
Georgia Institute of Technology and
Emory University

Georgia Aquarium Map



Breakfast, Lunch & Snacks:

Buffets are in the Indian and Antarctic rooms.

Beverage Stations:

Available in the Indian and Antarctic rooms and by the core posters.

Door Prizes: Drawing will occur at 4:30 PM during the reception in the Antarctic room. Must be present to win.

Parking: Please get a validation sticker for your parking ticket at the registration desk.

Aquarium: Complimentary entrance to the aquarium for *registered conference attendees only* opens at 5:00 PM. Once you enter the aquarium, you will not be able to re-enter the ballroom. Please make sure you get a parking validation sticker before you leave the ballroom.

Nursing Room: A private nursing room is available. Please ask for directions at the registration desk.

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Abstracts & Participant Directory



New this year!



Lunch Session: The Engineer Will See You Now

Have a clinical problem and in search of an engineering solution? Sign up using the QR code to eat lunch with an engineer and build a new collaboration. See page 5 for a list of engineers and their research areas.



Lunch Session: Meet the Mentors

Are you a junior faculty member or just interested in career advice from an experienced mentor? Sign up using the QR code to eat lunch with a mentoring team and get answers to all your questions. See page 6 for a list of mentors.



Vote for the best poster presentation!

Ten posters have been selected as finalists for this year's poster competition. See page 8 for a list of finalists. Winners will be selected based on audience voting. Vote for your top three choices by using the QR code. Submit your votes by 3:05 PM!



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[#precisionmedicine](https://twitter.com/precisionmedicine)



[Facebook.com/ATLPedsResearch](https://www.facebook.com/ATLPedsResearch)

Agenda

7:00 – 8:00	Registration and Continental Breakfast
8:00 – 8:05	Opening Remarks by Co-Chairs
	<p>Clinton H. Joiner, MD, PhD Vice Chair for Research and Professor, Department of Pediatrics, Emory University School of Medicine Aflac Children’s Chair for Hematology and Director, Section of Hematology, Aflac Cancer and Blood Disorders Center, Children’s Healthcare of Atlanta</p> <p>Beatrice E. Gee, MD Medical Director, Sickle Cell and Hematology Program, Children’s Healthcare of Atlanta at Hughes Spalding Professor of Pediatrics and Associate Director for Translational Science, Cardiovascular Research Institute, Morehouse School of Medicine</p> <p>Scott J. Hollister, PhD Patsy and Alan Dorris Chair in Pediatric Technology Director, Center for 3D Medical Fabrication Director, Tissue Engineering & Mechanics Laboratory Professor, Wallace A. Coulter Department of Biomedical Engineering Georgia Institute of Technology and Emory University</p>
8:05 – 8:10	Statement from Presenting Sponsor: CURE Childhood Cancer
	<p>Kristin Connor Executive Director, CURE Childhood Cancer</p>
8:10 – 8:25	Welcome
	<p>Donna Hyland President and Chief Executive Officer, Children’s Healthcare of Atlanta</p> <p>M.G. Finn, PhD Professor and Chair of Chemistry and Biochemistry James A. Carlos Family Chair for Pediatric Technology Chief Scientific Officer, Georgia Institute of Technology Pediatric Technology Center</p>
8:25 – 8:40	Update on Pediatric Institute
	<p>Lucky Jain, MD, MBA George W. Brumley, Jr. Professor and Chair, Department of Pediatrics, Emory University School of Medicine Chief Academic Officer, Children’s Healthcare of Atlanta</p>
8:40 – 9:20	Precision Oncology in the Pediatric Clinic: What Have We Learned?
	<p>Will Parsons, MD, PhD Director, Center for Precision Oncology Texas Children’s Cancer Center and Baylor College of Medicine</p>

9:20 – 9:30	The Aflac Precision Medicine Program (APMP) at Children’s Healthcare of Atlanta and Emory University
	Daniel S. Wechsler, MD, PhD Professor of Pediatrics, Director of Pediatric Oncology and Thomas R. Giddens Chair Aflac Cancer and Blood Disorders Center, Children’s Healthcare of Atlanta Emory University School of Medicine
9:30 – 10:00	Short Talks on Selected Abstracts
	Personalized Hydroxyurea Dosing to Optimize the HbF response: Results from the TREAT Study Patrick McGann, MD, MS , Cincinnati Children's Hospital Medical Center Examining Heterogeneous States of Drug Responses of Cancer Cells by Microfluidic Sorting Todd Sulchek, PhD , Georgia Institute of Technology Chemosensitizing Solid Tumors to DNA Damaging Chemotherapy via Polymer-Mediated RNA Interference Erik C. Dreaden, PhD , Georgia Institute of Technology and Emory University
10:00 – 10:45	Break & Poster Session: Even-numbered Posters & Core Posters
10:45 – 11:15	A Perspective on Precision Therapeutics for Rare CFTR Alleles
	Eric Sorscher, MD Hertz Endowed Professorship and Georgia Research Alliance Eminent Scholar Professor of Pediatrics, Emory University School of Medicine
11:15 – 11:30	Biomedical Engineering at Emory and Georgia Tech: Opportunities for Collaboration
	Susan Margulies, PhD Chair, Wallace H. Coulter Department of Biomedical Engineering Georgia Institute of Technology and Emory University
11:30 – 1:00	Lunch, Technology Demonstrations & Breakouts <ul style="list-style-type: none"> • 11:30 – 1:00: Lunch & Technology Demonstrations • 11:45 – 12:45 <ul style="list-style-type: none"> ○ The Engineer Will See You Now ○ Meet the Mentors
1:00 – 1:10	Afternoon Welcome
	Yasmin C. Tyler-Hill, MD, FAAP Associate Professor and Chair of Clinical Pediatrics, Morehouse School of Medicine Medical Director, Children’s Healthcare of Atlanta – Hughes Spalding
1:10 – 1:50	The Art and Science of Precision Medicine
	Charmaine DM Royal, MS, PhD Associate Professor, Departments of African & African American Studies, Biology, and Community & Family Medicine, Duke University

1:50 – 2:20	Short Talks on Selected Abstracts
	<p>The Biorepository and Integrative Genomics (BIG) Initiative at Le Bonheur Children’s Hospital Robert Rooney, PhD, University of Tennessee</p> <p>Modeling Familial Dysautonomia Using Human Pluripotent Stem Cells Nadja Zeltner, PhD, University of Georgia</p> <p>3D Bioprinted Vascular Cardiac Tissue as a Platform to Study Congenital Heart Defects Vahid Serpooshan, PhD, Georgia Institute of Technology and Emory University</p>
2:20 – 3:05	Break & Poster Session: Odd-numbered Posters
3:05 – 3:45	3D Printing in Orthopedic Surgery & Musculoskeletal Regenerative Medicine
	<p>Michael J. Yaszemski, MD, PhD Krehbiel Family Endowed Professor of Orthopedic Surgery and Biomedical Engineering Departments of Orthopedic Surgery and Biomedical Engineering Director, Tissue Engineering and Biomaterials Laboratory Mayo Clinic</p>
3:45 – 4:05	Immunoengineering and Cell Manufacturing: Emerging Areas for Collaboration Between Engineers and Pediatric Researchers
	<p>Krishnendu Roy, PhD Robert A. Milton Endowed Chair, Wallace H. Coulter Department of Biomedical Engineering Georgia Institute of Technology and Emory University</p>
4:05 – 4:10	Presentation of Poster Awards
4:10 – 4:15	Closing Remarks
4:15 – 5:00	Reception with Door Prize Drawing at 4:30 PM Must be present to win
5:00 – 8:00	Complimentary Aquarium Admission for Conference Participants

Children's Healthcare of Atlanta is accredited by the Medical Association of Georgia to provide continuing education for physicians. Children's designates this live event for a maximum of 5.5 AMA PRA Category 1 credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Lunch Sessions

11:45 AM – 12:45 PM

The Engineer Will See You Now (Antarctic Room)



The purpose of this lunch session is to match pediatric clinicians and researchers with bioengineers to develop research partnerships of mutual interest. Pediatric clinicians and researchers are encouraged to sign up at the QR code to sit with one of the biomedical engineering faculty members below. The engineers will briefly describe their research and clinical experiences, and the pediatric clinicians and researchers will discuss their interests and specific clinical problems that may have an engineering solution. Out of these shared experiences it is hoped that new research partnerships will be generated.



Erin Buckley, PhD—Assistant Professor, Wallace H. Coulter Department of Biomedical Engineering
Research interests: Our laboratory is currently focused on improving clinical outcomes in pediatric patients at high-risk for brain injury. We study the brain using 2 novel optical techniques known as diffuse correlation spectroscopy (DCS) and frequency domain near-infrared spectroscopy (FDNIRS).



Hee Cheol Cho, PhD—Associate Professor, Wallace H. Coulter Department of Biomedical Engineering
Research interests: We seek to develop biological pacemakers for pediatric patients who are dependent on implantable electronic pacing devices to keep their heart beating. By exploiting stem cell engineering and genetic technologies, we create new pacemaker cells that work just like the natural cardiac pacemaker cells that we are all born with.



Erik Dreaden, PhD—Assistant Professor, Wallace H. Coulter Department of Biomedical Engineering
Research interests: The Dreaden Lab uses molecular engineering to impart augmented, amplified, or non-natural function to cancer therapies and immunotherapies.



M.G. Finn, PhD—Professor and Chair, Department of Chemistry & Biochemistry, Georgia Institute of Technology and Children's Healthcare of Atlanta Research Scholar
Research interests: Current interests include the use of virus particles as molecular and catalytic building blocks for vaccine and functional materials development, the discovery of click reactions for organic and materials synthesis, polyvalent interactions and advanced linker technologies in drug targeting, and the use of evolution for the discovery of chemical function.



Scott Hollister, PhD—Patsy and Alan Dorris Chair in Pediatric Technology; Director, Center for 3D Medical Fabrication; Director, Tissue Engineering & Mechanics Laboratory; Professor, Wallace A. Coulter Department of Biomedical Engineering
Research interests: Focus on image-based computational design and 3D biomaterial printing for patient specific devices and regenerative medicine, with specific interests in pediatric applications. Clinical application interests include airway reconstruction and tissue engineering, structural heart defects, craniofacial and facial plastics, orthopaedics, and gastrointestinal reconstruction.



Melissa Kemp, PhD—Associate Professor, Wallace H. Coulter Department of Biomedical Engineering and Georgia Cancer Coalition Distinguished Cancer Scholar
Research interests: My research expertise is in computational systems biology. My lab has experience customizing models of drug metabolism to be patient-specific and predicting responsiveness to chemotherapeutics.



Wilbur Lam, MD, PhD—Associate Professor, Wallace H. Coulter Department of Biomedical Engineering
Research interests: Involve developing and applying micro/nanosystems and microfluidic technologies to advance biomedical research in pediatric medicine with a specific focus on the biophysics of blood diseases and cancer. In addition, our lab also develops novel point-of-care diagnostics and biophysics-based drug delivery systems for pediatric applications.



Michelle C. LaPlaca, PhD—Associate Professor, Wallace H. Coulter Department of Biomedical Engineering

Research interests: Surround translational research in preclinical and clinical traumatic brain injury (TBI). The goals are to better understand acute injury mechanisms, such as mechanotransduction and membrane damage, link the biomechanics of injury to functional outcome and underlying pathology, identify novel TBI biomarkers, and develop multimodal concussion assessment tools to aid in clinical decisions.



Susan Margulies, PhD—Professor, Wallace H. Coulter Chair, Georgia Research Alliance Eminent Scholar in Injury Biomechanics

Research interests: Pediatric brain injury and pediatric critical care medicine



Krishnendu Roy, PhD—Professor, Robert A. Milton Endowed Chair, Director, Center for ImmunoEngineering, Wallace H. Coulter Department of Biomedical Engineering

Research interests: The overall goal of our research endeavor is the development of new biomaterial-based strategies for gene/drug delivery and stem cell engineering.



Vahid Serpooshan, PhD—Assistant Professor, Wallace H. Coulter Department of Biomedical Engineering

Research interests: Uses a multidisciplinary approach to develop functional bioartificial tissues and organs. The bioengineered constructs are used either for in vivo regenerative therapies, or as tissue models for in vitro disease modeling and drug screening. In particular, our lab uses 3D bioprinting and perfusion-bioreactor technologies to create 3D vascular tissue platforms to study a variety of pediatric diseases including hypoplastic left heart syndrome (HLHS) and pediatric neuroblastoma.



Leanne West, MS—Chief Engineer, Pediatric Technologies, Pediatric Technology Center at Georgia Institute of Technology and Children’s Healthcare of Atlanta Research Scholar

Research interests: Optical sensing, mobile health technologies, and pediatric healthcare devices and technologies. Her current role is to connect clinicians with engineers to solve issues clinicians have that technology can solve.

Meet the Mentors (Arctic Room)



The purpose of the Meet the Mentors lunch session is to connect junior faculty with experienced mentors and create the opportunity for mentors to share their wisdom in key areas such as career development, establishing realistic goals, networking and collaboration. Mentor teams participating in this session are as follows. Please sign up at the QR code to join them for lunch!

Table 1



Stacy Heilman, PhD

Assistant Professor &
Director for Pediatric Research Operations, Grants
Education & Cores
Emory University & Children’s Healthcare of Atlanta

Academic Scientist

Best Mentoring Advice I Have to Offer:
When building your mentor team, include someone that you ‘want to be when you grow up.’



Daniel S. Wechsler, MD, PhD

Professor of Pediatrics & Director of Pediatric
Oncology
Thomas R. Giddens Chair
Aflac Cancer & Blood Disorders Center
Children’s Healthcare of Atlanta
Emory University School of Medicine

Clinician and Basic Scientist

Best Mentoring Advice I Ever Received:
“There’s always an out” – you are never “locked in” to a given situation – it’s critically important to be happy doing whatever it is you are doing, and if you’re not, you need to do something else!

Table 2



Larry J. Anderson, MD
Professor
Division of Infectious Disease
Department of Pediatrics
Emory University School of Medicine

Clinician Scientist

Best Mentoring Advice I Ever Received:
Listen more and talk less.



Paul Dawson, PhD
Professor, Gastroenterology
Department of Pediatrics
Emory University School of Medicine
Children's Healthcare of Atlanta Research Scholar

Basic Scientist

Best Mentoring Advice I Ever Received: To be a good mentor, you should be a good role model – someone who is curious, passionate about their work, honest, and experimentally rigorous.

Table 3



Chris Gunter, PhD
Associate Professor, Department of Pediatrics
Emory University School of Medicine
Director of Communications Operations
Marcus Autism Center, Children's Healthcare of Atlanta

Clinician and Basic Scientist

Best Mentoring Advice I Have to Offer:
When it comes to your career, don't let anyone else define "success" for you.



Larry Scahill, MSN, PhD
Professor of Pediatrics, Department of Pediatrics
Emory University School of Medicine
Director of Clinical Trials, Marcus Autism Center
Children's Healthcare of Atlanta

Clinician Scientist

Best Mentoring Advice I Have to Offer:
Write, rewrite until you get it right.

Table 4



Eric J. Sorscher, MD
Department of Pediatrics, Division of Pulmonary, Allergy/Immunology, Cystic Fibrosis & Sleep
Emory University
Hertz Endowed Professorship
Georgia Research Alliance Eminent Scholar

Clinician and Basic Scientist

Best Mentoring Advice I Ever Received:
Follow your passion.



Yasmin Tyler-Hill, MD, FAAP
Department Chair and Professor
Department of Pediatrics
Morehouse School of Medicine

Academic Physician

Best Mentoring Advice I Ever Received:
Have lunch with Dr. Tyler-Hill to find out!

Poster Competition Finalists

Presenting author in bold

- 10 **Clinical Utility of Targeted RNA-Sequencing in the Diagnosis of Neuromuscular Disorders**
Berger, Kiera; Chakravorty, Samya; Arafat, Dalia; Shenoy, Sreekala; Gibson, Greg; and Hegde, Madhuri
- 28 **Medulloblastoma Organotypic Slice Cultures: From Deciphering Tumor Microenvironment to Delivering Precision Medicine**
Dey, Abhinav; Malhotra, Anshu; Felker, James; Liu, Jingbo; Scheniderjaan, Matt; Ahn, Song Ih; Hovell, Candice; Sei, Yoshitaka; Virtue, Theodore; Kim, Yongtae; MacDonald, Tobey; and Kenney, Anna
- 34 **Calcineurin-dependent Immune Evasion During Leukemogenesis Mediated by a Novel, Targetable Protein, S15**
Fonseca, Jairo A; Dougan, Jodi; Gardner, Lori; Rabe, Jennifer; Gearheart, Christy; Henry, Curtis; and Porter, Christopher C.
- 59 **Pediatric Nanomedicines for Synergistic Combination Therapy of Childhood Leukemias**
Kelvin, James; Perdue, Lacey; and Dreaden, Erik
- 66 **Optical Bedside Monitoring of Cerebral Blood Flow in Children with Sickle Cell Disease during Head-of-Bed Manipulation**
Lee, Seung Yup; Sanders, Bharat; Lam, Wilbur A.; and Buckley, Erin M.
- 74 **Formulation and Evaluation of RSV Virus-Like Particle Microparticulate Vaccines for RSV Infection**
Menon, Ipshita; D'Sa, Sucheta; Kang, Sang-Moo; and D'Souza, Martin
- 79 **An Expression Based Risk Score for Prediction of Colectomy in Pediatric Ulcerative Colitis**
Mo, Angela; Marigorta, Urko M.; Hyams, Jeffrey; Mack, David; Boyle, Brendan; Griffiths, Anne; LeLeiko, Neal; Baldassano, Robert; Rosh, Joel; Keljo, David; Markowitz, James; Walters, Thomas; Kugathasan, Subra; Denson, Lee; and Gibson, Greg
- 94 **Cardiac Toxicity from Ethanol Exposure in Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes**
Rampoldi, Antonio; Singh, Monalisa; Wu, Qingling; Duan, Meixue; Jha, Rajneesh; Maxwell, Joshua; Zhang, Xiaoyu; Gibson, Greg; Brown, Lou Ann; and Xu, Chunhui
- 102 **Harnessing an Innate Frog Defense Peptide as an Anti-Influenza Agent**
Shartouny, Jessica; Lee, Song-Hee; Holthausen, David; and Jacob, Joshy
- 111 **Prospective Fontan Surgical Planning: Challenges and Accuracy**
Trusty, Phillip; Slesnick, Timothy; Wei, Zhenglun; Rossignac, Jarek; Kanter, Kirk; Fogel, Mark; and Yoganathan, Ajit

Keynote Speakers



Will Parsons, MD, PhD, is a board-certified pediatric oncologist and Associate Professor of Pediatrics at Baylor College of Medicine and Texas Children's Hospital in Houston, TX. He is the Director of the Precision Oncology Program at Texas Children's Cancer Center (TCCC) and the Co-Director of the Neuro-Oncology Program and the Cancer Genetics & Genomics Program at TCCC. Dr. Parsons' work has been instrumental in the characterization of the genetic landscapes of a variety of pediatric and adult cancers, including the first identification of IDH1 and IDH2 as critical oncogenes in gliomas. His current research primarily focuses on the clinical application of genomic technologies in pediatric cancer care. Dr. Parsons was one of the principal investigators of the BASIC3 clinical exome sequencing study (2011-2017) and currently helps lead the KidsCanSeq

study (2017-2021) the NHGRI/NCI-funded Clinical Sequencing Exploratory Research consortium. He is the Children's Oncology Group (COG) study chair for the NCI-COG Pediatric MATCH study, the first nationwide precision oncology clinical trial for children with relapsed and refractory solid tumors, lymphomas, and histiocytic disorders. Dr. Parsons received his B.A. (chemistry) from Princeton University and his M.D. and Ph.D. degrees from The Ohio State University College of Medicine. He completed his pediatric residency at Johns Hopkins University and his oncology/neuro-oncology fellowship training at Johns Hopkins and the National Cancer Institute.



Charmaine DM Royal, MS, PhD, is Associate Professor in the Departments of African & African American Studies, Biology, and Community & Family Medicine at Duke University. She is also core faculty in the Duke Initiative for Science and Society, faculty affiliate in the Duke Global Health Institute, and senior fellow in the Kenan Institute for Ethics at Duke. Dr. Royal's global research, scholarship, and teaching focus on social and ethical issues in genetics and genomics, particularly the intersection of 'race' and genetics, its policy implications and practical interventions. She serves on several national and international professional committees and boards related to these topics. She directs the Duke Center on Genomics, Race, Identity, Difference (GRID) that aims to inform and transform the concepts, uses, and impacts of 'race' in research, healthcare, and society. Dr. Royal received a master's in genetic counseling and a doctorate in human genetics from

Howard University. She completed postgraduate training in bioethics and ELSI (ethical, legal, and social implications) research at the National Human Genome Research Institute of the National Institutes of Health, and in epidemiology and behavioral medicine at Howard University Cancer Center.



Michael J. Yaszemski, MD, PhD, is the Krehbiel Family Endowed Professor of Orthopedic Surgery and Biomedical Engineering at the Mayo Clinic and director of its Polymeric Biomaterials and Tissue Engineering Laboratory. He is a retired U.S. Air Force Brigadier General and served in the office of the Air Force Surgeon General and the office of the President of the Uniformed Services University of the Health Sciences prior to retiring in 2013. He served as president of the Mayo Clinic medical staff from 2013-2014, and served for 10 years as the Chair of the Spine Surgery Division of the Department of Orthopedic Surgery at Mayo Clinic Rochester prior to entering the presidential line. He received both Bachelor's and Master's degrees in Chemical Engineering from Lehigh University in 1977 and 1978, an M.D. from Georgetown University in 1983 and a Ph.D. in Chemical Engineering from the Massachusetts Institute of Technology in 1995. He

organized and then served as the first Chair of the Musculoskeletal Tissue Engineering study section at NIH, and served as a member of the Advisory Council of the NIH National Institute of Biomedical Imaging and Bioengineering from 2010-2014. He is currently a member of the NIH Advisory Council of the National Institute of Arthritis, Musculoskeletal, and Skin Diseases. He served as Chair of the FDA Center for Devices and Radiologic Health Advisory Committee, and is currently a member of the FDA Science Board. He is an emeritus member of the Lehigh University Board of Trustees. He is a member of both the National Academy of Medicine and the National Academy of Inventors. His clinical practice encompasses spine surgery and musculoskeletal oncology. His research interests are in the synthesis and characterization of novel degradable polymers for use in bone regeneration, cartilage regeneration, nervous tissue regeneration, and controlled delivery of chemotherapeutic agents to musculoskeletal tumors.

Pediatric Research Alliance Centers

Please visit www.pedsresearch.org for more information.

Aflac Cancer and Blood Disorders Center

Director: Douglas K. Graham, MD, PhD

Center for Childhood Infections and Vaccines (CCIV)

Director: Ann Chahroudi, MD, PhD

Center for Clinical and Translational Research (CCTR)

Center for Cystic Fibrosis and Airways Disease Research (CF-AIR)

Director: Nael McCarty, PhD

Center for Drug Discovery (CDD)

Director: Baek Kim, PhD

Children's Center for Neurosciences Research (CCNR)

Interim Director: Susan Margulies, PhD

Clinical Outcomes Research and Public Health (CORPH)

Interim Director: Stacy Heilman, PhD

Pediatric Technology Center (PTC)

Director: M.G. Finn, PhD

Center for Transplantation and Immune-mediated Disorders (CTID)

Directors: Subra Kugathasan, MD and Greg Gibson, PhD

Heart Research and Outcomes Center (HeRO)

Director: Mike Davis, PhD

Marcus Autism Center

Director: Ami Klin, PhD

Director of Research: Warren Jones, PhD

Director of Communication Operations: Chris Gunter, PhD

Pediatric Research Alliance Cores

Please visit www.pedsresearch.org for more information. Visit core posters during poster session 1.

Animal Physiology Core

Director: Josh Maxwell, PhD, jtmaxwe@emory.edu

Contact: Ming Shen, mshen@emory.edu

Location: Emory University

The Animal Physiology Core provides pediatric researchers with services and equipment to develop and characterize animal models relevant to investigating pediatric diseases. We perform acute and survival surgery for small animals such as rats and mice. Surgical services include pulmonary and aortic banding, myocardial infarction, hindlimb ischemia, and ultrasound guided injection for targeted drug delivery or cell therapy. Our Visualsonics Vevo 2100 High Frequency Ultrasound system provides high-resolution small animal ultrasound examinations for noninvasive measurement of in vivo structure and function. Comprehensive cardiac exams, characterization of liver and kidney blood flow, measures of arterial stiffness and imaging of tumor growth are some examples of available services. Additionally, the Vevo LAZR add-on system incorporates photoacoustic imaging into high-resolution ultrasound allowing for anatomical, functional, and molecular imaging. The directors also work with investigators to develop new surgical and imaging techniques to meet their needs.

Biopolymer Characterization Core

Director: Andreas Bommarius, PhD, andreas.bommarius@chbe.gatech.edu

Contact: Bettina Bommarius, PhD, bettina.bommarius@chbe.gatech.edu

John Robbins, PhD, john.robbins@chbe.gatech.edu

Location: Georgia Institute of Technology

The biopolymer characterization core assists users and provides them with the appropriate instrumentation to perform their analytical experiments within the wide range of protein and other biopolymer characterization. We target all disciplines that have an interest or quest to analyze their samples and assist both in equipment training and setup as well as experimental design. Our core, located on the 5th floor of the Krone Engineered Biosystems Building, proudly announces the addition of the only new Analytical Ultracentrifuge in an academic location throughout the southeastern region that is available for your research. In addition, our core features equipment that range from Biotek H4 Synergy plate readers with fluorescence and luminescence capabilities, Chiroscan CD spectrophotometry, AktaPure protein and peptide purification system, HPLC, DLS light scattering both for single and plate use to more specialized equipment such as a stopped flow spectrometer, a SEC-MALLS system, the Nanosight NS300 from Malvern using NTA technology and an analytical ultracentrifuge.

Cardiovascular Imaging Core

Director: Ritu Sachdeva, MD, sachdevar@kidsheart.com

Contact: Kelsey Zinck, MPH, kelsey.zinck@choa.org

Location: Children's Healthcare of Atlanta

The Cardiovascular Imaging Core (CIRC) provides non-invasive cardiovascular imaging support for investigators involved in clinical research involving infants, children and adolescents. The CIRC has dedicated space, equipment and experienced staff to provide high quality cardiovascular imaging services as well as post-processing of previously acquired images using specialized software. These services include performance of a routine complete or limited congenital or non-congenital two-dimensional echocardiography, color and spectral Doppler imaging; advanced echocardiographic imaging including three-dimensional echocardiography, tissue Doppler imaging, strain and strain rate imaging; stress echocardiography and cardiac magnetic resonance imaging. CIRC also launched a program for assessment of vascular health in pediatric patients that includes non-invasive assessment of endothelial function using brachial artery flow-mediated dilation, measurement of arterial stiffness using applanation tonometry and assessment

of structural arterial changes using carotid imaging. In 2015, CIRC expanded our research administration offerings to include data coordinating center and core imaging site capabilities for multi-center studies. We commit to working with each investigator to provide a research plan that best fits your research goals in an effort to increase your scientific productivity.

Cellular Analysis & Cytometry

Director: Steve Woodard, PhD, steve.woodard@ibb.gatech.edu
Contact: Sommer Durham, MS, sommer.durham@ibb.gatech.edu
Location: Georgia Institute of Technology

The Georgia Institute of Technology Cellular Analysis & Cytometry Core (CAC) provides enhanced cell analysis and sorting services. In addition, we offer far infrared imaging of gels & western blots, access to Cell Counters / Multi-Sizers & FlowJo Analysis Software, as well as Automated Cell Culture Technology. Core Lab Managers offer continual support & panel design assistance to facilitate successful Flow Analysis and Cell Sorting.

Children's Clinical & Translational Discovery Core

Director: Chris Porter, MD, chris.porter@emory.edu
Contact: Bradley Hanberry, PhD, bradley.hanberry@emory.edu
Location: Emory University

The Children's Clinical and Translational Discovery Core (CTDC) offers laboratory and technical assistance to investigators conducting basic science, epidemiologic, translational, and clinical research. Through the use of our Emory University IRB approved protocol, consent, and assent, the CTDC is currently building a repository of biological samples from both healthy control participants and patients with a variety of diagnoses. Our mission is to support and compliment the research efforts of investigators by providing laboratory research services, technical assistance, and access to biological samples that represent a variety of diagnoses and healthy volunteers.

Cystic Fibrosis Translational Research Core

Director: Arlene Stecenko, MD, astecen@emory.edu
Contact: Julie Flores, jkozars@emory.edu
Location: Emory University

The CF Discovery Core utilizes the Cystic Fibrosis Biospecimen Registry (CF-BR) which is a storage bank of several thousand biofluids collected from patients with cystic fibrosis at varying disease states. Patients are consented from both the adult and pediatric clinics at Emory and may donate samples at each outpatient clinic visit, at their annual visit only (which typically runs long and includes more lab tests), when hospitalized, or any combination of the above. We believe that these treasured samples may be the keys that will allow our researchers to unlock the mysteries underlying the changes that occur in the lungs of CF patients as the disease progresses.

Emory Stem Cell Core

Director: Megan Merritt-Garza, MS, memerri@emory.edu
Location: Emory University

The Emory Stem Cell Core (ESCC) is one of the newest Emory Integrated Core Facilities (EICF). The core's focus and technical expertise will be to derive and characterize human induced pluripotent stem cells (iPSCs) from terminally differentiated somatic cells (such as blood cells or fibroblasts) using non-integrating methods. Other services offered includes karyotyping of cell lines, thawing of iPS/human ESCs, processing peripheral blood for isolation of PBMCs/EPCs, processing skin biopsies for fibroblast isolation and thawing fibroblasts. Additionally, the core will provide training and educational resources to support investigators with interest in human stem cells.

High Throughput DNA Sequencing Core

Director: Fredrik Vannberg, PhD, fredrik.vannberg@biology.gatech.edu

Contact: Shweta Biliya, MS, shweta.biliya@biology.gatech.edu

Location: Georgia Institute of Technology

The High Throughput DNA Sequencing Core provides DNA/RNA and exome library preparation and sequencing services as well as bioinformatics solutions. We also provide custom solutions to individual projects and provide in-depth consultation services from project design to data analysis. The core is home to instruments like the Illumina HiSeq 2500 and the Hamilton Nimbus 4, that have aided in data generation for a wide variety of internal and external researchers and prides itself on its high standards in data quality and rapid turnaround time.

Integrated Cellular Imaging

Director: Adam Marcus, PhD, aimarcu@emory.edu

Contact: Neil Anthony, PhD and April Reedy, PhD, ici@emory.edu

Location: Emory University

ICI provides state-of-the-art light microscopy tools including Confocal (Olympus FV1000 inverted and upright, Leica SP8), Live cell (Nikon A1R, Leica SP8, DeltaVision OMX, Lattice Light Sheet, Perkin Elmer Ultraview Spinning Disk), Multi-photon (Leica SP8 MP, Zeiss 710 MP), Widefield & deconvolution (Biotek Lionheart, Olympus IX51, Zeiss Axioplan 2), Super resolution (Nikon SIM and DeltaVision OMX), and Image analysis (five computer workstations). We provide consultations, expert training, and support for all our systems.

Laboratory and Pathology Clinical Research Core

Director: Beverly Rogers, MD, Beverly.Rogers@choa.org

Contact: Bethany Watson and Cherie Lumpkin, labresearchcoordinator@choa.org

Location: Children's Healthcare of Atlanta

The Children's Healthcare of Atlanta Laboratory and Pathology Clinical Research Core provides clinical laboratory testing, specimen processing, research histology, and de-identified tumor bank specimens to investigators conducting research at Children's (Egleston and Scottish Rite) and affiliated organizations. The lab currently provides services for over 130 actively enrolling studies since merging with the Children's core lab in January 2015. It has a tiered pricing schedule, which is based on individual study sponsors and the time required for processing and shipping. The clinical research technologists are all IATA and CITI trained to ensure research samples are processed accurately and shipped to laboratories around the world following federal regulations. Our core also includes the Ian's Friends Foundation (IFF) Brain Tumor Biorepository established to collect, culture, and distribute pediatric brain tumor cell cultures for research studies with Children's IRB approval and patient consent. The goal of IFF is to make these cultures available free of charge except for shipping to research investigators working on advancing the molecular understanding and treatment of pediatric brain tumors.

Molecular Evolution

Director: Anton Bryksin, PhD, anton.bryksin@ibb.gatech.edu

Manager: Naima Djeddar, MA/MS, naima.djeddar@ibb.gatech.edu

Location: Georgia Institute of Technology

Molecular Evolution Core Facility is a recently open facility housed in an 800 square feet suite on the second floor of the Engineered Biosystems Building. The purpose of the facility is to provide a routine access to the molecular evolution methods and serve as a force-multiplier for any laboratory at Georgia Tech and beyond that is in search for new molecular catalysts or molecular binders. The facility currently capable of performing phage, bacterial and yeast displays. Additional services include custom cloning, Sanger and next generation sequencing. Students and postdocs at Tech also have an opportunity to be trained cutting-edge methodologies to either take the methods back to their home

groups, or be engaged in longer-term collaborations. The facility includes all equipment necessary for semi-automated production and characterization of DNA libraries, cell transformation, growth and binding analysis.

Neuro Design Suite

Director: Bo Yang, PhD, bo.yang@me.gatech.edu

Technical Support: Mighten Yip, mighteny@gatech.edu

Location: Georgia Institute of Technology

The Neuro Design Suite is a state-of-the-art facility for neuroscience research. It consists of three major rigs allowing researchers to perform manual and/or automated in vitro, in vivo patch clamping, and in vivo extracellular electrophysiology recordings. Automatic patch clamping devices (autopatchers) are attached to both in vitro and in vivo patch clamping rigs to obtain high yield and high quality whole cell recordings. A mini surgery station, equipped with various types of stereotaxic systems, advanced anesthesia incubation chamber and isoflurane vaporizers, is also available for facilitating in vivo electrophysiology experiments. The Neuro Design Suite is open to all the neuroscience researchers in the Georgia Tech community, Emory University, and other research institutions or facilities in southeastern US. Assistance, guidance and trainings on using all the equipment may be requested on our website.

Optical Microscopy Core

Director: Aaron Lifland, PhD, aaron.lifland@ibb.gatech.edu

Contact: Andrew Shaw, MS, andrew.shaw@ibb.gatech.edu

Location: Georgia Institute of Technology

The Optical Microscopy Core provides state-of-the-art microscopy tools to Georgia Tech researchers and surrounding academic and industry community. Expert training and consultation is available from the core staff on all of our systems including point scanning confocal, spinning disk confocal, 2-photon, super-resolution, lightsheet, darkfield and widefield systems. Advanced imaging modalities including Live-cell, single plane illumination/lightsheet, Intravital, FRET, FRAP, FCS, TIRF, Fluorescence Lifetime (FLIM), multipoint imaging and many others are available.

Pediatric Biomarkers Core

Director: Lou Ann Brown, PhD, lbrow03@emory.edu

Contact: Frank Harris, fharris@emory.edu

Location: Emory University

The Pediatric Biomarkers Core assays samples using gas or liquid chromatography and mass spectrometry. These services are applicable to a wide variety of sample types and will allow small-molecule metabolite profile identification. The Core has a Thermo Scientific Vanquish UHPLC/TSQ Quantis triple quadrupole mass spectrometer, an Agilent gas chromatography/mass spectrometer and a Waters High Performance Liquid Chromatograph with fluorescence detector. Current analyses include biomarkers of oxidative stress (reduced/oxidized glutathione, cysteine, cystine), amino acids, polyunsaturated fatty acids, isoprostanes, hydroxynonenals, and malonyldialdehydes. The Core also analyzes fatty acid ethyl esters in biological samples (meconium, hair, placenta, plasma) as markers of alcohol use and exposure.

Pediatric Biostatistics Core

Director: Courtney McCracken, PhD, courtney.mccracken@emory.edu

Location: Emory University

The Pediatric Biostatistics Core assists investigators in designing statistically sound research projects and provides the analytical expertise required to properly analyze the results tied to clinical, translational and basic science research projects. The core provides expertise in statistical methodology and analytic help in study design and data analysis geared towards grant applications and manuscript preparation. The staff also routinely partner with investigators on implementing and analyzing the results from funded research studies. The core is staffed by two PhD-level statisticians and several masters level statisticians.

Pediatric Flow Cytometry Core

Director: David Archer, PhD, darcher@emory.edu

Contact: Aaron Rae, ajrae@emory.edu

Kira Smith, PhD, kira.smith@emory.edu

Location: Emory University

The Pediatric Flow Cytometry Core provides cytometry services for the analysis and sorting of cells as well as expert consultation for experimental design and planning. The Flow Cytometry Core offers access to several analytical flow cytometers (LSRII and Cytoflex), high-speed cell sorting (AriaII and Sony), and imaging cytometry (Image Stream and Zellkraftwerk). The Flow Cytometry Core also offers immunological-based assay services (Luminex). Training and technical expertise is available to enable our users to improve the quality and scope of their research.

Pediatric Imaging Research Core

Director: Nadja Kadom, MD, nadja.kadom@emory.edu

Contact: Lawrence Matarutse, MHA, Lawrence.maarutse@choa.org

Location: Children's Healthcare of Atlanta

Introducing the Pediatric Imaging Research Core (PIRC), an interdisciplinary research program that recognizes the importance of medical imaging in the diagnosis and treatment of diseases in children and young adults. PIRC gives investigators access to state-of-the-art pediatric imaging technology, pediatric radiologists, physicists, pediatric technologists, nurses and pediatric sedation providers.

Qualitative Research Core

Contact: qualitative.core@emory.edu

Location: Emory University

The qualitative research core in the Pediatric Research Alliance is a multi-disciplinary group of investigators who utilize rigorous qualitative methodologies in the field of pediatric health services research. We study people's experiences and perceptions in the context of health and healthcare. We use a variety of qualitative research methods such as focus groups and interviews to engage a diverse range of stakeholders, including patients, caregivers, physicians, and policymakers. We provide consultation in the areas of design, implementation, and analysis. Our team consists of physicians, nurses, and a sociologist.

Systems Mass Spectrometry Center

Director: David Smalley, PhD, dsmalley@gatech.edu

Contact: David Gaul, PhD, david.gaul@chemistry.gatech.edu

Fantashia Goolsby, fantashia.goolsby@ibb.gatech.edu

Location: Georgia Institute of Technology

The mission of SyMS-C is to provide state-of-the art instrumentation, resources, and technical support in both proteomics and metabolomics to Georgia Tech and the surrounding research community. Standard proteomics services include protein identification of simple and complex mixtures, relative protein quantification, and protein characterization. Standard metabolomics services include both targeted assays for various analyte classes as well as untargeted assays to evaluate metabolome alterations in biofluids and tissues-generating new hypotheses. More specialized services, such as global phosphoproteome analysis (among others), are available to examine cellular pathway activation. Customized research needs will also be met through the incorporation of new technologies.

Research Resources

Please visit www.pedsresearch.org for more information.

Emory Research Laboratory Information Management System (LIMS)

Contact: Sharon Mason, smason5@emory.edu

The Emory Research Laboratory Information Management System (LIMS) is a secure, internally hosted application designed to support workflow automation and information tracking related to biospecimen sample management and processing as part of Emory's Bio-Banking infrastructure. Emory's Library & Information Technology Services (LITS) Laboratory Solutions team supports the application.

LabKey

Contact: Wayne Harris, waharri@emory.edu

LabKey provides software solutions that help researchers overcome the data management and workflow challenges faced in today's research environment. LabKey was developed as a "biology-aware" data integration platform that can be customized to meet the needs of diverse research organizations. Emory's Library & Information Technology Services (LITS) and the Emory Integrated Computational Core (EICC) collaboratively support the Emory Enterprise LabKey Server.

REDCap

CHOA Contact: redcap@choa.org, <https://redcap.choa.org/redcap/surveys/?s=NEW8C4F7LA>

Emory Contact: <https://it.emory.edu/catalog/data-and-reporting/redcap.html>

REDCap is a secure web application for building and managing online surveys and databases. While REDCap can be used to collect virtually any type of data, it is specifically geared to support online or offline data capture for clinical research studies and operations. It is available through both Emory University and Children's Healthcare of Atlanta. If you are collecting Pediatric/Children's data, please inquiry at redcap@choa.org. For all other data collection inquiries, please contact Courtney McCracken, PhD (courtney.mccracken@emory.edu) of the Pediatric Biostatistics Core.

Tableau

Contact: Patrick Maloney, patrick.maloney@emory.edu

Tableau provides self-service data discovery through interactive visualizations. Tableau enables the Emory community to see and understand their data, answering valuable business questions and giving insight into large data sets collected over time. This fosters collaboration between colleagues and creates a culture of data driven business.

Egleston Pediatric Research Center

The Pediatric Research Center (PRC) at Egleston was created to facilitate Children's Healthcare of Atlanta's vision for clinical excellence and to support the mission to make kids better today and healthier tomorrow. Inpatient and outpatient units offer core support facilities and resources including nursing, pharmacy, laboratory, and bio nutrition. The PRC studies children with asthma, cardiac disease, hypertension, Crohn's Disease, Type 1 and 2 Diabetes Mellitus, kidney and hepatic disease, Sickle Cell, and cystic fibrosis among others. Research studies follow exacting standards for delivering the interventions and collecting the requisite data. The PRC will be moving to the 5th floor of the NEW Center for Advanced Pediatrics in September. The research-focused 4,327 square feet of space more than doubles the current 1,543 square feet with six dedicated exam rooms, two observational rooms, a triage room and consult room. Coordinators will have 10 dedicated work spaces. The Investigational Drug Services will be located inside the PRC as well as a new Emory research lab. To learn more about how the PRC can support your research, please call the PRC at 404-785-0400, or email Cheryl Stone, RN, CCRP, Clinical Research Team Lead, at cherylL.stone@choa.org.

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