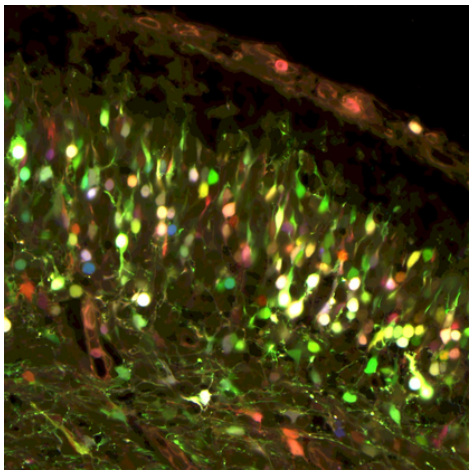
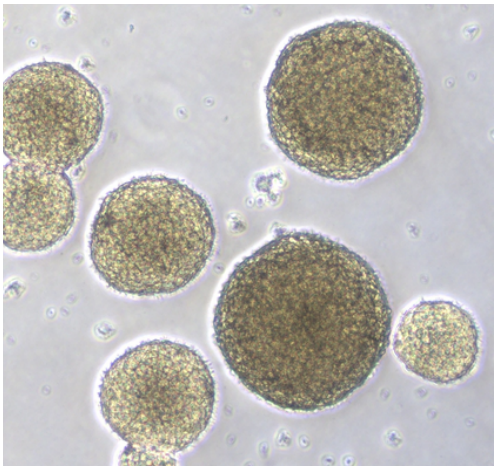
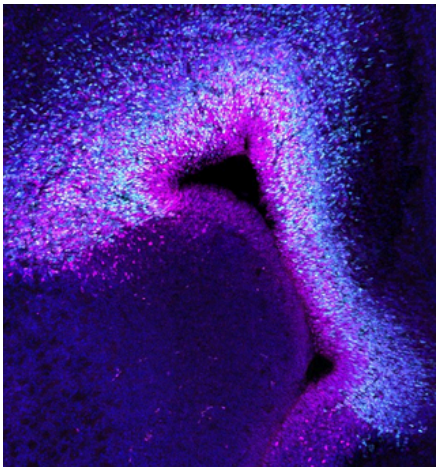
WashU Medicine

Brain Development & Disorders Symposium

Wednesday, November 11th 2026
8am - 6pm
Neuroscience Research Building Auditorium
4370 Duncan Avenue, St. Louis, MO 63110







Welcome to the Brain Development & Disorders Symposium.

This symposium brings together leading investigators from Washington University and institutions around the world for a full day exploring advances in brain development and neurodevelopmental disorders. This event features scientific presentations spanning genetics, cerebral cortex development, molecular mechanisms, and cognitive and neurological phenotypes, along with poster sessions designed to foster discussion and collaboration.

WashU Medicine

NEUROSCIENCE / IDDRC / NEUROLOGY

Symposium Agenda

Wednesday, November 11, 2026 · NRB Auditorium & Atrium

8:00am — Poster set-up · Morning coffee & pastries

8:30 – 8:40 am	**Opening Remarks** —Linda Richards (Welcome) · Natasha Marrus (IDDRC)
SESSION 1 Genetics of Neurodevelopmental Disorders Chair: Dustin Baldridge	
8:40 – 8:55 am	**Jenn Cremins, WashU** "Mechanisms and Consequences of Chromatin Loop Memory *In Vivo*"
8:55 – 9:10 am	**Tychele Turner, WashU** "The Noncoding Genome in Cortical Development and Autism"
9:10 – 9:25 am	**Harrison Gabel, WashU** "Probing Neurodevelopmental Disorders at Single Cell Resolution in the Brain"
9:25 – 9:40 am	**Linda Richards, WashU** "Molecular Mechanisms Governing Cerebral Cortex Formation and Their Disruption in Human Developmental Disorders"
9:40 – 10:00 am	***Morning Tea Break & Poster Session***
SESSION 2 Early Development of the Cerebral Cortex Chair: Liz Pollina	
10:00 – 10:45 am	**Chiaki Ohtaka-Maruyama, Tokyo Metropolitan Inst. of Medical Science** "Molecular Basis of Subplate Layer Expansion in Human Fetal Brain Development"
10:45 – 11:30 am	**Alessandra Pierani, INSERM, Paris** "Transient Moving Organizers: Life and Death from Cortical Development to Disease Treatment"
11:30 am – 12:15 pm	**Takako Kikkawa, Tohoku University, Sendai** "mRNA Localization and Kinesin Function in Radial Glia: Implications for Neurodevelopment"
12:15 – 12:30 pm	**Rafael Galindo, WashU** "From Genotype to Treatment: Early Diagnosis and Emerging Therapies for Pediatric Neurodegenerative Disorders"
★ LUNCH & POSTER SESSION ★ **12:30 – 2:00 pm 90 minutes NRB Atrium**	
SESSION 3 Molecular Mechanisms of Developmental Brain Disorders Chair: Natasha Marrus	
2:00 – 2:45 pm	**Jeffrey Russ, Duke University Medical Center** "Untangling Cortical Intratelencephalic (IT) Neurons in Development and Disease"
2:45 – 3:00 pm	**Joe Dougherty, WashU** "Metabolite-Gene Expression Interactions in the Developing Human Cortex"
3:00 – 3:15 pm	**Jason Yi, WashU** "Dissecting Neuronal Growth Suppression in Angelman Syndrome"
3:15 – 3:30 pm	**Kris Kroll, WashU** "Modeling Chromatinopathies Involving Brain Overgrowth and Intellectual Disability (OGID)"
3:30 – 3:50 pm	***Afternoon Tea Break & Poster Session***
SESSION 4 Cognitive & Neurological Phenotypes in Developmental Brain Disorders Chair: Chris Smyser	
3:50 – 4:35 pm	**Mitsuhiro Kato, Showa Medical University, Tokyo** "Targeted Therapy and AI-Driven Diagnosis: Moving Beyond the Molecular Pathogenesis of Cortical Dysplasias and Functional Neurodevelopmental Disorders"
4:35 – 4:50 pm	**Cynthia Rogers, WashU** "Preterm Birth, Executive Function, and the Preterm Behavioral Phenotype"
4:50 – 5:05 pm	**Adam Kepecs, WashU** "How Confidence Guides Learning and What Happens When It Doesn't"
5:05 – 5:20 pm	**Chad Sylvester, WashU** "Brain Network Development in Children at Risk for Anxiety Disorders"
5:20 – 5:35 pm	**Hysell Oviedo, WashU** "Out of Sync: Building and Breaking Hemispheric Specialization"
5:35 – 5:45 pm	**Closing Remarks** — Linda Richards

Supported by the **McDonnell Center for Cellular and Molecular Neurobiology**

SESSION 1 Genetics of Neurodevelopmental Disorders

Session Chair



Dustin Baldridge
WashU Medicine, Department of Pediatrics

Dustin Baldridge, MD, PhD, is a board-certified pediatrician and WashU Medicine Assistant Professor of Pediatrics, specializing in translational genomics research. His work focuses on diagnosing children with genetic disorders at a molecular level. After completing his MD/PhD at Baylor College of Medicine, he underwent postgraduate training in the WashU Medicine Department of Pediatrics. Baldridge also served as chief resident at St. Louis Children's Hospital for a year. He is a funded NHGRI K08 awardee, leading a team to address the challenge of variants of uncertain significance (VUS) in human genetics derived from sequencing efforts. Baldridge is also a co-investigator at the WashU Medicine Model Organism Screening Center (wuMOSC) within the Undiagnosed Diseases Network (UDN). His role there involves evaluating gene variants from a human genetics standpoint and selecting suitable model organisms—such as worms, flies, or fish—to study these variants.

Session Speakers



Jennifer Phillips-Cremins
WashU Medicine, Department of Genetics, Department of Neuroscience
"Mehanisms and Consequences of Chromatin Loop Memory *In Vivo*"

Jennifer Phillips-Cremins, Ph.D. is a James McDonnell Professor and BJC Investigator at the Washington University of St. Louis School of Medicine with primary appointments in the Departments of Genetics and Neuroscience. Dr. Cremins obtained her Ph.D. in Biomedical Engineering from the Georgia Institute of Technology in the laboratory of Andres Garcia. She conducted a multi-disciplinary postdoc in the laboratories of Job Dekker and Victor Corces. Dr. Cremins is the founder and leader of the Laboratory of Chromatin and Spatial Neurobiology, first at the University of Pennsylvania from 2014-2025 before moving to WashU on November 1, 2025. Her primary research interests lie in understanding the long-range chromatin architecture mechanisms that govern neural specification and synaptic plasticity in healthy neurons and how chromatin-synapse communication is dysregulated in neurodevelopmental and neurodegenerative diseases. She has been selected as a 2014 New York Stem Cell Foundation Robertson Investigator, a 2015 Albert P. Sloan Foundation Fellow, a 2016 and 2018 Kavli Frontiers of Science Fellow, 2015 NIH Director's New Innovator Awardee, 2020 NSF CAREER Awardee, a 2020 CZI Neurodegenerative Disease Pairs Awardee, the 2022 ISSCR Susan B. Lim Outstanding New Investigator Award, 2021 NIH Pioneer Awardee, 2024 NIH WALs lecturer, 2025 NIH MERIT Awardee, 2025 BJC Investigator Awardee, and a 2026 Alexander M. Cruickshank Lecturer.



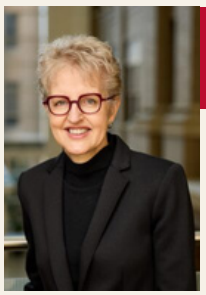
Tychele Turner
WashU Medicine, Department of Genetics
"The Noncoding Genome in Cortical Development and Autism"

Tychele N. Turner, Ph.D., is an Assistant Professor in the Department of Genetics at Washington University School of Medicine in St. Louis and a Simons Foundation Investigator. Her research focuses on understanding the genetic architecture and molecular mechanisms of autism and other neurodevelopmental disorders through the integration of human genomics, computational biology, and functional genomics. The Turner laboratory investigates coding and noncoding genetic variation, with a particular interest in how regulatory mutations influence gene function and neurodevelopment. Combining human genomic studies with experimental approaches, including mouse models, Dr. Turner examines the functional consequences of autism-associated genetic variation. The laboratory also studies chromosome 9p deletion and duplication syndromes. Dr. Turner earned her Ph.D. from Johns Hopkins University School of Medicine and completed her postdoctoral training at the University of Washington and Howard Hughes Medical Institute. In 2022, she was named one of Spectrum's "40 Under 40" Rising Stars in Autism Research.



Harrison Gabel
WashU Medicine, Department of Neuroscience
"Probing Neurodevelopmental Disorders at Single Cell Resolution in the Brain"

Harrison Gabel is an associate professor of neuroscience at Washington University in St Louis. Since establishing his laboratory in 2015, he has studied epigenetic mechanisms in the brain and investigated how disruption of these mechanisms can lead to neurodevelopmental disorders. His group has identified new mechanisms of gene regulation mediated by a unique form of neuron enriched non-CpG DNA methylation and the Rett syndrome protein MeCP2, and shown that this gene regulatory pathway is susceptible to disruption across multiple genetic causes of Autism Spectrum Disorder (ASD). His ongoing work is exploring the potential for molecular convergence across epigenetic ASD genes. His lab is utilizing emerging genomic technologies, including spatial transcriptomics, to decipher the impact of mutations in these genes on gene expression and neuroanatomy at cellular resolution in the brain.

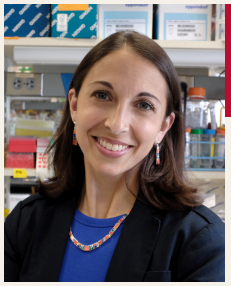


Linda Richards
WashU Medicine, Department of Neuroscience
"Molecular Mechanisms Governing Cerebral Cortex Formation and Their Disruption in Human Developmental Disorders"

Linda J. Richards AO, FAA, FAHMS, PhD is the Edison Professor and Chair of the Department of Neuroscience and Director of the McDonnell Center for Cellular Neurobiology at Washington University in St Louis School of Medicine. Prior to this role, she was a Professor of Neuroscience and Deputy Director of the Queensland Brain Institute at the University of Queensland. She has held previous roles as President of the Australasian Neuroscience Society (ANS) and Chair of the Australian Brain Alliance, an organization founded through the Australian Academy of Science to advocate for a funded Australian Brain Initiative. She was a founding member of the International Brain Initiative and worked to develop strong ties between the Brain Initiatives in the USA, Europe, Japan, China, Canada and South Korea. Professor Richards awards include election as a Fellow of the Australian Academy of Science in 2015 and as a Fellow of the Australian Academy of Health and Medical Sciences in 2016. Professor Richards was awarded the Order of Australia in 2019. Professor Richards is passionate about the public awareness of science and advocacy for people with disabilities due to brain disorders. She is a scientific advisor to American and Australian family organizations supporting people with corpus callosum disorders and a Board Member of NODCC. In 2006 she founded the Australian Brain Bee Challenge, a competition for high school students to learn about the brain. Her research focuses on disorders of brain development, particularly disorders of the corpus callosum (DCC) and how they occur. Her laboratory studies brain plasticity and how brain wiring is altered in DCC and how these changes impact cognitive function and quality of life.

SESSION 2 Early Development of the Cerebral Cortex

Session Chair



Liz Pollina

WashU Medicine, Department of Developmental Biology

Elizabeth Pollina is a molecular neuroscientist studying the mechanisms that preserve longevity and promote rejuvenation in the nervous system. Throughout our lives, neurons retain a remarkable level of plasticity that facilitates learning, memory, and behavior. As animals encounter new sensory stimuli and learn complex behaviors, these experiences trigger changes in neuronal activity patterns that drive dynamic alterations to the transcriptome, epigenome, and the genome itself. What mechanisms safeguard neuronal genomes, and how are these mechanisms adapted in organisms of vastly different lifespans? The Pollina Lab leverages interdisciplinary tools from neuroscience, epigenetics, and DNA repair to uncover how long-lived cells of the brain protect their genomes in response to physiological cues and its relevance to neurological disease.

Session Speakers

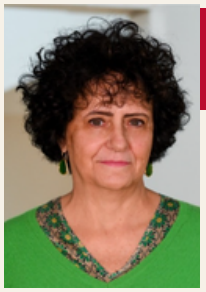


Chiaki Ohtaka-Maruyama

Tokyo Metropolitan Institute of Medical Science

"Molecular Basis of Subplate Layer Expansion in Human Fetal Brain Development"

Dr. Chiaki Ohtaka-Maruyama obtained her Ph.D. from the Department of Biology at the University of Tokyo. She then worked as a post-doctoral fellow at NEI, NIH (Bethesda, MD, USA), and Riken (Wako) and became a Research Scientist at the Tokyo Metropolitan Institute for Neuroscience (the predecessor of the Tokyo Metropolitan Institute of Medical Science) in 2006. She studies neural development and has been a project leader since April 2019. Her research focuses on understanding the molecular and cellular mechanisms of cortical development. In particular, she is interested in how the mammalian six-layered structure developed during evolution. Using time-lapse imaging and functional analyses, she discovered a novel function of subplate neurons in regulating radial neuronal migration.



Alessandra Pierani

Institute of Psychiatry and Neurosciences of Paris and Imagine Institute, France

"Transient Moving Organizers: Life and Death from Cortical Development to Disease Treatment"

Alessandra Pierani is Director of Research at the National Center for Scientific Research (CNRS). She heads the team "Genetics and Development of the Cerebral Cortex" with a dual affiliation at the Institute of Psychiatry and Neurosciences of Paris (Hôpital St Anne, Paris) and the Imagine Institute (Hôpital Necker, Paris) (France) since 2017. Her research focuses on the role of transient neurons in cerebral cortex development, evolution and pathology. Her team has demonstrated that deficits in the development of transient neurons are responsible for brain malformations in humans. She obtained two PhDs in Biology at the University of Florence (1986) and University of Paris XI (1994) and trained first as a molecular biologist and biochemist at the Rockefeller University (New York, U.S.A.). She then begun her work on neural development at the Curie Institute (Orsay) and pursued it at Columbia University (New York, U.S.A.) and the Ecole Normale Supérieure (Paris). 2006- 2017 she was a group leader at the Jacques Monod Institute in Paris. She was awarded the Foulon Prize of the French Academy of Science (2012) and the Médaille de Biologie Integrative of the French Academy of Science (2025).

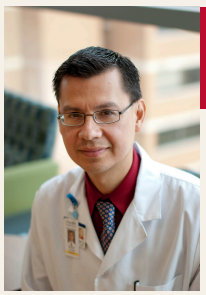


Takako Kikkawa

Tohoku University, Sendai

"mRNA Localization and Kinesin Function in Radial Glia: Implications for Neurodevelopment"

Dr. Takako Kikkawa is a lecturer at Tohoku University, where she specializes in neurodevelopmental biology, neurodevelopmental disorders, neurodegenerative diseases, lipid biology, nutrition, and epigenetics. Her current research focuses on the molecular mechanisms of brain development and maintenance, and the elucidation of genes, environmental factors, and epigenetic factors underlying neurodevelopmental disorders.



Rafael Galindo

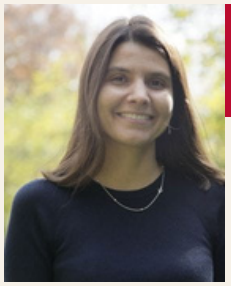
WashU Medicine, Department of Neurology

"From Genotype to Treatment: Early Diagnosis and Emerging Therapies for Pediatric Neurodegenerative Disorders"

Rafael Galindo, MD, PhD, is an Associate Professor of Neurology at Washington University School of Medicine and Director of the WashU Leukodystrophy and Neurometabolic Care Center. He specializes in newborn neurological disorders, leukodystrophies, and neurometabolic diseases. Dr. Galindo's research focuses on the mechanisms of neuronal degeneration in the neonatal brain and the development of neuroprotective strategies. He also serves as Co-Director of the Research Development Program at the Institute of Clinical and Translational Sciences and is committed to mentoring early-career investigators through various NIH-funded training initiatives.

SESSION 3 Molecular Mechanisms of evelopmental Brain Disorders

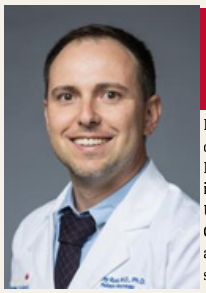
Session Chair



Natasha Marrus
WashU Medicine, Department of Psychiatry

Dr. Marrus is a child psychiatrist and Associate Professor of Psychiatry and Radiology at Washington University (WashU) School of Medicine. Her clinical practice has focused on children with autism and co-occurring psychiatric conditions, including intellectual disability. Her developmental neuroscience research aims to advance quantitative measures of early childhood autism endophenotypes and characterize neural systems underlying familial autism liability and brain development in Down syndrome. She is co-Director of the WashU Intellectual and Developmental Disabilities Research Center (IDDRC) and also co-directs the IDDRC's Clinical Translational Core, through which she oversees deep phenotyping services and supports community engagement. By advancing these lines of research, Dr. Marrus hopes to improve early risk assessment and identification of autism while also elucidating mechanisms that will advance individualized treatment strategies.

Session Speakers



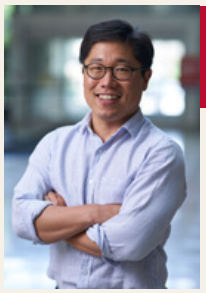
Jeffrey Russ
Duke University Medical Center
"Untangling Cortical Intratelencephalic (IT) Neurons in Development and Disease"

Dr. Russ is a fetal/neonatal neurologist and developmental neuroscientist in the Departments of Pediatrics and Neurology at Duke. He completed his B.A. in Neuroscience at the University of Pennsylvania in 2008. He then pursued an MD-PhD through the Weill Cornell/Sloan Kettering/Rockefeller University MD-PhD Program where he graduated with joint degrees in 2016. Dr. Russ received his PhD in Neuroscience, studying under the mentorship of Dr. Julia Kaltschmidt where he studied how transcription factors control the identity of developing spinal interneurons, as well as how spinal inhibitory synapses respond to perinatal stroke. His research in early neurodevelopment led Dr. Russ to pursue clinical training in Child Neurology at the University of California San Francisco (UCSF), where he undertook additional elective training in neonatal neurology. Following residency, Dr. Russ was awarded the Child Neurologist Career Development Program (CNCDP) K12 from the National Institute of Neurological Disorders and Stroke (NINDS), which supported his transition to a junior faculty position at Duke and mentored research in the lab of Dr. Josh Huang in the Duke Department of Neurobiology. In Dr. Huang's lab, Dr. Russ gained experience using cutting-edge neuroscientific tools to study the genetics and cell development that guide formation of the cerebral cortex. Now Dr. Russ aims to combine his clinical and scientific training to study the detailed molecular and cellular pathophysiology in the cortex in perinatal brain injury and genetic neurodevelopmental disorders.



Joe Dougherty
WashU Medicine, Department of Psychiatry
"Metabolite-Gene Expression Interactions in the Developing Human Cortex"

Dr. Joseph Dougherty, Professor at Washington University in St. Louis, has built a unique team that uses high-throughput molecular and behavioral analysis to identify the cellular and molecular mechanisms of psychiatric disease. His work includes developing and applying analytical methods for high-throughput in vivo studies of genetically defined cell types in mice. He has conducted extensive experiments profiling different cell types, optimizing protocols, and developing analytical pipelines. His group focuses on assays for cell type-specific transcription and translation. Dr. Dougherty combines human genetic analysis with this expertise in mouse genetics and genomics to advance the study of psychiatric disease. His team most often models in mice the disruptions of transcriptional and translational regulatory genes discovered by human psychiatric genetics. This work includes studies using TRAP-seq, CLIP-seq, ribosome footprinting, and massively parallel reporter assays (MPRAs) to understand gene regulation, along with a wide variety of behavioral analyses. Overall, his scientific background gives him a unique combination of expertise in cellular, molecular, and behavioral neuroscience, and in bringing new technologies to bear on the mechanisms underlying neurodevelopmental disorders of the central nervous system. As co-director of the local Intellectual and Developmental Disabilities Research Center (IDDRC), Dr. Dougherty is strongly committed to applying this expertise to improve the lives of patients and their families. He also works to build strong infrastructure that supports a wide range of approaches to key scientific questions in neurodevelopmental disorders.



Jason Yi
WashU Medicine, Department of Neuroscience
"Dissecting Neuronal Growth Suppression in Angelman Syndrome"

The Yi laboratory is broadly interested in the molecular pathways that shape nervous system development and function, with the ultimate goal of understanding how dysfunction in these pathways contributes to disease. The current focus of the lab is on autism spectrum disorders (ASD). We use genetic information from human patients to guide our in vitro and in vivo experiments using biochemical, genetic manipulation, cell biological, and microscopy techniques. These studies aim to bridge our knowledge of disease genetics with a mechanistic understanding of the neurobiology of ASD. The lab is studying the role of the ubiquitin ligase UBE3A in the brain. Individuals lacking UBE3A activity in the brain develop a severe form of mental retardation known as Angelman syndrome, while excessive UBE3A activity, through duplication of the UBE3A gene, causes a highly penetrant form of autism. It was recently discovered in the lab that a single phosphorylation event in UBE3A turns off its ubiquitin ligase activity. This phosphorylation site is mutated in autism, thereby mimicking excessive UBE3A activity seen in individuals with multiple copies of UBE3A. The lab is using the insights from this study to identify the pathways involved in ASD pathogenesis, and to define the developmental timepoint for ASD onset.

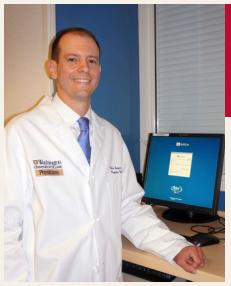


Kristen Kroll
WashU Medicine, Department of Developmental Biology
"Modeling Chromatinopathies Involving Brain Overgrowth and Intellectual Disability"

Kristen Kroll, Ph.D., is a professor of developmental biology at WashU Medicine. Her research focuses on defining gene regulatory networks (GRNs) that control neural cell specification, neurogenesis, and the generation of specific neuronal cell types. She is particularly interested in understanding how epigenetic regulation modulates these networks and how their dysregulation contributes to neurodevelopmental disorders, including autism spectrum disorder, intellectual disability, and epilepsy. This work uses directed differentiation of human pluripotent stem cells (embryonic stem cells and induced pluripotent stem cells), mouse models, and a wide range of cellular, molecular, and genomic approaches, to define roles for transcriptional and epigenetic regulation in shaping developmental transitions.

SESSION 4 Cognitive & Neurological Phenotypes in Brain Developmental Disorders

Session Chair



Chris Smyser
WashU Medicine Department of Neurology

Christopher Smyser, M.D., M.S.C.I., is the A. Ernest and Jane G. Stein Professor of Developmental Neurology and Director of the Division of Pediatric and Developmental Neurology at Washington University where he is a Professor of Neurology, Pediatrics, Radiology, Psychiatry, and Neurosurgery. He is also Neurologist-in-Chief at St. Louis Children's Hospital. Dr. Smyser is a pediatric neurologist with additional training in neonatal neurology. With a background in biomedical engineering, Dr. Smyser's research focuses on the use of advanced neuroimaging techniques to provide greater understanding of early brain development and the pathway to neurodevelopmental disabilities. He is co-director of the Washington University Neonatal Developmental Research (WUNDER) Laboratory. Dr. Smyser's research efforts have centered upon the use of multimodal MRI to investigate functional and structural brain development in high-risk pediatric populations from infancy through adolescence. He is currently the principal investigator for multiple NIH-funded longitudinal studies focused upon defining the deleterious effects of prematurity, brain injury and environmental exposures on neurodevelopmental and psychiatric outcomes through development and application of state-of-the-art neuroimaging approaches.

Session Speakers



Mitsuhiro Kato
Department of Pediatrics, Showa Medical University School of Medicine
"Targeted Therapy and AI-Driven Diagnosis: Moving Beyond the Molecular Pathogenesis of Cortical Dysplasias and Functional Neurodevelopemtnal Disorders"

Prof. Mitsuhiro Kato is Board Certified in Pediatrics, Pediatric Neurology, Clinical Genetics, and Epileptology. He is a Professor of Department of Pediatrics at Showa Medical University School of Medicine and a head of Epilepsy Medical Center at Showa Medical University Hospital. He graduated Yamagata University in 1988 and underwent training in Pediatric Neurology at Tottori University (1991-1992) and worked at University of Chicago (2001-2003) to advance his research interest in brain malformations. In 2002, he initiated a research project to reveal the molecular mechanisms underlying age-dependent epileptic encephalopathies, now called developmental and epileptic encephalopathies, and found several responsible genes particularly for Ohtahara syndrome, such as ARX (DEE1), STXBP1 (DEE4), SPTAN1 (DEE5), KCNQ2 (DEE7), GNAO1 (DEE17), PIGA (DEE20), CAMK2A/B (MRD53/54), CNPY3 (DEE60), etc. He served as editorial board member of Pediatric Neurology (2010-), Epilepsia (2011-2017), and Journal of Human Genetics (2019-). He organized a group of pediatric neurologists and neuroradiologists to discuss the undiagnosed cases in Japan, so called Zao seminar or the Annual Zao Conference on Pediatric Neurology, in 1996, which is now successfully making progress in communication and collaboration in the field of pediatric neurology with more than 1,500 members. He served as President of the Japanese Society of Child Neurology (2022-2026) and Chairman of Internationalization Promotion Committee of JSCN since 2014, and is serving as an executive board member of International Child Neurology Association since 2018, executive board member of JSCN, executive board member and director of International Affairs of the Japan Epilepsy Society, and Advocacy Task Force member of ILAE Pediatric Commission. His research interest continues to reveal the connection between structural disorders, such as brain malformation, and functional disorders, such as intellectual disability, movement disorders and epilepsy, illustrated by ARX (Nat Genet 2002; AJHG 2007) and ATP1A3 (Sci Adv 2021). He also led a clinical trial of sirolimus for focal cortical dysplasia type II (Ann Clin Transl Neurol 2022). As the president of JSCN, he launched an English official journal, Brain and Development Case Reports. He started the Young Child Neurologists Communication Project among Asian countries, and the Tri-Nation meeting with Korea and Taiwan. He received the Excellent Teacher Award at Yamagata University in 2005, the Japan Society of Human Genetics' Award for Effort in 2008, the Japan Epilepsy Society's June and Mary Wada Award in 2009, the Japan Pediatric Society's Research Award in 2011. He has co-authored 316 English papers in peer-reviewed journals. His h-index is 72 in all and 50 since 2021.



Cynthia Rogers
WashU Medicine, Department of Psychiatry
"Preterm Birth, Executive Function, and the Preterm Behaviroal Phenotype"

Cynthia Rogers, M.D., is a child psychiatrist and researcher at Washington University School of Medicine in St. Louis, where she is the Blanche F. Ittleson Professor of Child and Adolescent Psychiatry, Executive Vice Chair of the Department of Psychiatry, and Director of the Division of Child and Adolescent Psychiatry. Dr. Rogers co-directs the Washington University Neonatal Development Research group and studies how a child's earliest experiences, including before birth, shape the developing brain and influence mental health years later. Her research follows children from pregnancy and the newborn period into adolescence, using brain imaging to understand how circumstances such as poverty, stress, premature birth, and prenatal substance exposure affect early brain development, and, just as importantly, what helps children thrive despite those challenges.She pairs that research with direct care for families. She founded the Perinatal Behavioral Health Service, which serves patients facing mental health and substance use challenges during pregnancy and after birth, and leads a clinic for children born prematurely. She also serves as Co-Executive Director of the Hermann Center for Child and Family Development, a research center building new approaches to mental health care for young children and their caregivers. Dr. Rogers is Deputy Editor of the Journal of the American Academy of Child and Adolescent Psychiatry and serves on the editorial board of Biological Psychiatry.



Adam Kepecs
WashU Medicine, Department of Neuroscience
"How Confidence Guides Learning and What Happens When it Doesn't"

The long-term goal of the Kepecs Lab is to reverse engineer the computational and neurobiological processes underlying cognition and decision-making and apply these insights to biological psychiatry. By reverse-engineering how the brain performs cognitive tasks — often surpassing the most advanced machine learning models — we aim to uncover the circuit-level principles driving behavior, inform AI design, and open new avenues in psychiatric research. Our experimental approach combines marking, mapping, monitoring, and manipulating neural circuits to understand how populations of neurons control behavior, emotions, and cognitive functions. We integrate quantitative behavioral analysis, high-density electrophysiology and imaging, optogenetics, anatomical tracing, molecular biology, and computational modeling, working across levels of analysis from individual neurons to whole circuits.Since joining Washington University, we've expanded into biological psychiatry and immunology, exploring new frontiers in brain-body physiology. We're committed to translating our findings from animal models to clinical applications, aiming to improve mental health research and care.



Chad Sylvester
WashU Medicine, Department of Psychiatry
"Brain Network Development in Children at Risk for Anxiety Disorders"

Chad Sylvester, M.D., Ph.D., is a child and adolescent psychiatrist, and a Castle Connolly Top Doctors physician. He specializes in Pediatric Anxiety Disorders and directs this specialty clinic at Washington University. He is also a professor of radiology and psychiatry at WashU Medicine. His research focuses broadly on the development of functional brain networks in children with and without psychiatric disorders; and uses this information to develop and test novel treatments. Dr. Sylvester has led research that relates brain function (using fMRI) to psychiatric symptoms or psychiatric risk in newborn infants, young children, adolescents, and adults. Over the last couple of decades, he has led several studies that use fMRI and behavioral methods in children with and without anxiety disorders and other psychiatric illnesses. This work includes task-based fMRI of neonates in which variation in response to salient sound stimuli is related to risk trajectories for childhood anxiety disorders; and fMRI studies of executive function- and attention-related brain systems in children versus without anxiety disorders. His research group also used precision functional neuroimaging (PFM) to precisely characterize brain development during infancy as well as windows of high neuroplasticity. More recently, they have measured brain activity in children and adolescents as they watch movies, enabling rich characterization of brain responses to complex socio-emotional stimuli. Additional work involves testing novel computer-based cognitive training programs to retrain brain systems altered in pediatric anxiety disorders and reduce symptoms of anxiety.



Hysell Oviedo
WashU Medicine, Department of Neuroscience
"Out of Sync: Building and Breaking Hemispheric Specialization"

Dr. Hysell Oviedo's research program seeks to understand the neural circuits underlying vocal communication. Processing of conspecific vocalizations is lateralized in the human brain and other species, but functional significance, mechanisms, and ontogeny of lateralization have remained a mystery for over a century. Her research group has focused on mice, which have become a viable model system to study evolutionarily conserved mechanisms of vocal communication thanks to growing evidence of their vocal repertoire's complexity during social interactions and auditory plasticity triggered by parental experience. Dr. Oviedo's laboratory leverages the cutting-edge tools available in rodents to study circuitry in the context of species-specific vocalizations providing behavioral and computational constraints. Processing social calls requires simultaneously recognizing, categorizing, and assigning communicative importance to these fleeting signals. Lateralization—assigning specific computational tasks to each cerebral hemisphere for parallel processing—is an important strategy to solve this challenge. The novel approach of my research program has been to use lateralization as a comparative tool to reveal molecular, structural and functional differences between the left and right Auditory Cortices. They have discovered lateralized processing of specific acoustic features in the mouse Auditory Cortex and identified circuit asymmetries that could support the necessary specialized computations. They plan to capitalize on these findings to determine the development and diversity of lateralized cortical specializations, and how they go awry in communication disorders."

Poster Presentations

1. **Ladan Abbasi - Department of Neuroscience**
   Investigating the interaction between gene regulation and genome integrity in neurons

2. **Jesse Antoniak - Department of Neuroscience**
   NFI transcription factors and TCF4 converge to regulate neuronal differentiation during neocortical development

3. **Faiza Batool - Department of Developmental Biology**
   Disruption of the NSD1 and DNMT3A chromatin axis drives convergent transcriptional changes in brain overgrowth and intellectual disability disorders

4. **Samantha Blake - Department of Psychiatry**
   Mapping individualized functional organization of the basal ganglia and thalamus near birth

5. **Shuzheng Fang - Department of Radiology**
   Juvenile social isolation fragments social interaction and shortens nucleus accumbens dopamine responses after regrouping in male mice

6. **Francesca Higgins - Department of Neuroscience**
   Scalable phenotyping of innate auditory behavior across neurodevelopmental and psychiatric disorder mouse models

7. **Emran Hossen - Department of Neuroscience**
   Development of midline glia and their role in interhemispheric remodeling of the cerebral cortex

8. **Jung Eun Ji - Department of Neuroscience**
   Characterization of activity-regulated transcription disruption in neurodevelopmental disorder mouse models using spatial transcriptomics

9. **Peter Kim - Department of Neuroscience**
   TMEM106B D253N in Hypomyelinating Leukodystrophy: Insights from a Novel Mouse Model

10. **Jonathan Lim - Department of Neuroscience**
    Nuclear factor one transcription factors regulate radial glia differentiation during early cortical development

11. **Demetrios Neophytou - Department of Neuroscience**
    Deep-layer circuit failure in auditory cortex disrupts social sound processing in a mouse model of Rett Syndrome

12. **Suranjana Pal - Department of Neuroscience**
    Emergence of patterned spontaneous activity in the developing mammalian brain

13. **Shelei Pan - Department of Neurosurgery**
    Developmental Disruption of the Midline Brain-CSF Interface Underlies Ventricular Pathology Following Germinal Matrix-Intraventricular Hemorrhage

14. **Arvinden VR - Department of Genetics**
    High-Throughput Screening Of De Novo Noncoding Variants To Study Its Implication In Autism Spectrum Disorders

15. **Judith Weisenberg - Department of Neurology**
    Hope and Honest Conversations: a family workshop on the risks of AAV gene therapy trials for CDKL5 Deficiency Disorder

16. **Cabell Williams - Department of Psychiatry**
    Assessing a latent maternal internalizing factor across the perinatal period on neonatal behavior and neural development

17. **Desiree Zanetti Alepuz - Department of Neuroscience**
    NF1 neurodevelopmental heterogeneity is dictated by germline genetics

18. **Komal Kaushik - Department of Develpomental Biology**
    Exploring ZNF292 requirements for brain development and consequences of mutation for neurodevelopmental disorders