



# CHDD Outlook 2015 Issue #3

News from the Center on Human Development and Disability at the University of Washington

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## New Research Affiliates Join CHDD

Research Affiliates of the Center on Human Development and Disability are faculty members at the University of Washington with special interest and special expertise in the field of neurodevelopmental disorders. As we begin our new funding cycle at CHDD's Eunice Kennedy Shriver Intellectual and Developmental Disabilities Research Center, we have included the work of 25 Research Affiliates recruited during the past 5 years. These affiliates, who have been actively participating in CHDD-relevant research activities, are critical to our strategic plans and our efforts to intensify our basic and translational research mission.

Efforts to further expand and enhance our research program continue as six new Research Affiliates have joined the CHDD since our recent award from the NICHD. To introduce these new affiliates to the CHDD community, their research programs are described below.

Mike Guralnick, Ph.D., Director and Professor

**Dr. Roxanne Hudson** is an Associate Professor of Special Education. Dr. Hudson is examining the development of language and emergent literacy skills of children diagnosed with Autism Spectrum Disorder. The effectiveness of two interventions (Dialogic Reading and Phonological Awareness) in preschool children are being compared. Children are then followed into kindergarten to assess longer term effects on vocabulary and reading. More generally, Hudson and her colleagues investigate the emergent literacy and reading development and interventions for a range of children with documented disabilities and those at risk for reading disabilities. This research has focused on children in preschool and the primary grades.



**Dr. Sara Kover** is an Assistant Professor of Speech and Hearing Sciences. The overarching aim of Dr. Kover's research is to understand how specific cognitive processes and learning mechanisms interact with the learning opportunities afforded by the linguistic environment, both over the course of development and among individuals with shared and distinct sources of disability. More specifically, Kover's research investigates the role of memory and attention for word learning in children with fragile X syndrome, autism spectrum disorder, or typical development, with special attention to distributional cues that support lexical acquisition.



**Dr. Katie McLaughlin** is an Assistant Professor of Psychology. Dr. McLaughlin's lab conducts studies to understand which types of stressors are most likely to influence emotional, cognitive, social, and brain development and what kinds of supports might protect children from the effects of toxic stress. A number of tools such as behavioral measures, cognitive tests, assessments of social and emotional functioning, and brain imaging (MRI) are employed to shed light on the relationship between stressful life experiences and different aspects of children's development. Current projects include the relationship between child maltreatment and neural systems underlying emotional development.

**Dr. Suzie Pun** is a Professor of Bioengineering. Dr. Pun develops both gene and protein transfer techniques to promote neurogenesis following trauma, injury, or disease that result in loss of neurons. Her laboratory integrates techniques from engineering, chemistry, and cell biology to achieve this goal. The overarching goal of Pun's work is to develop bio-inspired materials for medical applications. One current project focuses on traumatic brain injury (TBI) using ultrasound to enhance non-viral gene transfer to neural progenitor cells in the brain mediated by a targeted polymer delivery vector, thus enabling the delivery of genes encoding fibroblast growth factor-2 and neurogenin2, proteins shown to enhance neurogenesis and direct neuron differentiation, respectively. An animal model of TBI will be used to evaluate whether induced migration and increased neuronal integration can lead to functional improvement through a combination of histology, cognitive evaluations, and motor assessments.



**Dr. Mark Stein** is a Professor of Psychiatry and Behavioral Sciences. Dr. Stein's research interests focus on individuals with ADHD and related neurodevelopmental disorders. Stein's research is multidisciplinary in nature, involving genetics, pharmacological treatment and comparative efficacy, pharmacogenomics, and sleep for these populations. Current work includes a clinical trial of Quillivant XR in children with ASD and ADHD, the effects of treating mothers with ADHD of preschoolers with ADHD symptoms, predictors of adverse events in ADHD treatment, and the effects of methylphenidate discontinuation on children with ADHD.

**Dr. Libin Xu** is an Assistant Professor of Medicinal Chemistry. Dr. Xu's research is designed to understand the role of oxidized sterols (oxysterols) in the pathophysiology of Smith-Lemli-Opitz syndrome (SLOS), a cholesterol biosynthesis disorder that affects central nervous system development. SLOS manifests in a broad spectrum of phenotypes including multiple congenital malformations, neurological defects, intellectual disability, and behavior problems. Over 70% of SLOS children display autism spectrum disorder. Xu's goals are to examine the effect of these oxysterols on lipidome by mass spectrometry and transcriptome by qPCR and sequencing. His research contributes to a broader understanding of intellectual and developmental disabilities, particularly disorders of metabolism that affect brain function and development. Also of interest are the mechanisms of action of common ammonium environmental toxins in neuronal cells using metabolomic and transcriptomic approaches.



CHDD is an interdisciplinary center dedicated to the prevention and amelioration of developmental disabilities through research, training, clinical service, and community outreach. CHDD includes the University Center of Excellence in Developmental Disabilities and the Eunice Kennedy Shriver Intellectual and Developmental Disabilities Research Center.

#### CHDD Outlook

Center on Human Development and Disability, University of Washington, Box 357920, Seattle, Washington 98195-7920

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For more information please contact us at [chdd@uw.edu](mailto:chdd@uw.edu)