CARD and Imperial College London Collaborate to Advance Research Knowledge on Metabolic Profiles of Children with Autism

The research will evaluate if metabolic variables can differentiate children with autism from children with typical development as well as siblings of children with autism.

WOODLAND HILLS, Calif. (Sept. 1, 2015) – Center for Autism and Related Disorders (CARD) and Imperial College London today announced their partnership to conduct research on metabolic profiles of children with autism spectrum disorder (ASD). The research will specifically investigate if metabolic differences can discriminate children with ASD from children with typical development and siblings of children with ASD. Furthermore, the study will evaluate whether behavioral subtypes of ASD have different metabolic features. If such distinctions are made, these findings may lead to advancements in both detection and targeted treatment of ASD.

Existing evidence suggests that metabolic features in the guts of children with ASD differ from children with typical development. CARD and Imperial College London aim to expand on existing research with a large-scale study. The study will include approximately 500 children with ASD, 200 siblings of children with ASD and 200 children with typical development. The study will investigate metabolic differences between groups. Also, since ASD is known to be a heterogeneous disorder, metabolic variations will also be explored within the ASD group.

"We are very excited about our research collaboration with Professor Jeremy Nicholson and Imperial College London," said Doreen Granpeesheh, Ph.D., founder and executive director of CARD. "The field of molecular phenotyping shows great promise for advancements in the detection of autism."

CARD will be recruiting participants from its 40 clinics around the U.S. and their surrounding communities. Participants will be compensated for their time commitment. A number of urine

and fecal samples will be collected from each participant and samples will be sent to Imperial College London where their profiles will be analyzed.

"Autism is a mosaic disease originating from complex gene-environment interactions. Molecular phenotyping gives a unique window into these interactions that will give us deeper understanding of the origins of the condition," said Jeremy Nicholson, Ph.D., head of the Department of Surgery and Cancer, director of the MRC-NIHR National Phenome Centre, professor of Biological Chemistry, Imperial College London.

The Centers for Disease Control and Prevention (CDC) estimates that one in every 68 children in the U.S. is diagnosed with ASD, with one in 42 boys and one in 189 girls diagnosed. At this time, no physical tests are available to diagnose ASD. Diagnoses are based on a child's developmental history and observable behavior. Oftentimes, children are diagnosed later than 4-years-old, which is unfortunate since evidence shows that behavioral intervention is most effective if delivered early. Metabolic research may not only advance detection technologies for ASD leading to earlier diagnoses, but detectable differences between ASD subgroups may allow for more targeted treatment strategies. For more information about the study, email research@centerforautism.com.

About Center for Autism and Related Disorders (CARD)
CARD treats individuals of all ages who are diagnosed with autism spectrum disorder (ASD) at treatment centers around the globe. CARD was founded in 1990 by leading autism expert and clinical psychologist Doreen Granpeesheh, PhD, BCBA-D. CARD treats individuals with ASD using the principles of applied behavior analysis (ABA), which is empirically proven to be the most effective method for treating individuals with ASD and recommended by the American Academy of Pediatrics and the US Surgeon General. CARD employs a dedicated team of nearly 2,000 individuals across the nation and internationally. For more information, visit www.centerforautism.com or call (855) 345-2273.

About Imperial College London
Imperial is a science and technology-based institution with an international reputation for excellence in teaching and research (ranked overall third in Europe and fifth in the world) that attracts 13,000 students and 6,000 staff of the highest caliber. Imperial fosters interdisciplinary research between the basic sciences and medicine to provide real world solutions to individual and public health problems. Professor Jeremy Nicholson is Head of the Department of Surgery and Cancer and will lead this research project. He has pioneered the use of advanced metabolic profiling statistics and together with Professor Elaine Holmes (Head of the Division of Computational and Systems Medicine) has developed a suite of analytical protocols for metabolic profiling. These analytical tools and methods have been applied to phenotype multiple physiological and pathological conditions and have also been used to investigate the association between the gut microbiome, metabolism, diet and disease via profiling of host-microbiome co-metabolites. Additionally, Dr. Julian Marchesi (Reader in Digestive Health) has been applying and developing molecular based methods, such as metataxonomics, to identify bacterial biomarkers and predictors in a range of gastrointestinal and extra-gastrointestinal

conditions, including cancer, liver disease and behavior. For more information, visit http://www1.imperial.ac.uk/computationalsystemsmedicine/.

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