The Duke Center for Autism and Brain Development’s interdisciplinary team of neurobiologists, computer engineers, data scientists, psychiatrists, psychologists, and physicians is conducting ground-breaking research to create more accurate and scalable methods of early detection, improve and disseminate interventions, test new treatments, and make new discoveries in genetic and molecular science. The center’s research discoveries meaningfully impact individuals with autism throughout the lifespan and play a pivotal role in reducing global healthcare disparities and increasing access to proven therapies worldwide. The center has been named an “NIH Autism Center of Excellence,” a designation given to only five U.S. research centers, and is a part of the multi-site NIH Autism Biomarkers Consortium for Clinical Trials, which received approval for the first – and only – psychiatric biomarkers under the FDA’s Biomarker Qualification Program.

UNRAVELING THE COMPLEXITIES OF AUTISM TO BRING LIFELONG IMPROVEMENTS

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OUR FOUR-PART MISSION

SCIENCE
Through scientific research, we develop more effective methods of early detection and treatment for individuals with ASD across the lifespan.

POLICY
Our research shapes public policy, positively impacting the quality of life for neurodiverse individuals, especially in the areas of access to and options for screening, interventions, and service delivery.

CLINICAL
Our clinical providers use evidence-based interventions and treatments to address the needs of the whole person, seeking to meet each patient’s unique needs with compassion.

TRAINING
As a part of Duke University School of Medicine, we educate and inspire the next generation of scientists and practitioners.
SCIENTIFIC ADVANCES, NOVEL AUTISM DIAGNOSTIC TOOLS & INNOVATIVE THERAPIES

The Duke Center for Autism and Brain Development’s ground-breaking research makes meaningful and lasting improvements in the quality of life for people with autism throughout their lives.

Creating accurate, scalable tools for early detection and treatment monitoring – A collaborative team of neurobiologists, computer engineers, data scientists, and psychologists have created a digital app to track behaviors such as attention span, motor skills, emotional expressiveness, vocalizing, and interest in social cues. Using computer vision analysis and machine learning, the team has published research showing that the app detects early signs of autism in toddlers and now is testing the same tool in Duke primary care with infants as young as six months. The app allows precision in measuring changes in behavior, providing a more reliable, sensitive tool for measuring improvement in clinical trials.

Harnessing artificial intelligence to guide physicians – Nearly 3,000 patients with autism are seen at Duke each year. The center’s data scientists and clinicians are applying artificial intelligence, such as machine learning and natural language processing, to Duke patients’ electronic health records to determine whether information collected during routine health care visits could alert physicians to patients at risk for neurodevelopmental disorders. The same methods are being used to better understand variations in lifelong health trajectory for individuals with autism and other developmental disorders, helping medical providers anticipate unique health needs and customize patient care.

Examining cellular therapies and brain function – Center researchers are testing whether cell therapies, derived from umbilical cord blood or tissue, could improve social and communications skills in children and adults with autism. Researchers are currently examining potential improvements in behavioral outcomes, as well as changes in brain activity and attention abilities. The team has published study results showing that umbilical cord blood might enhance attention to stimuli and improve communication skills in children with autism who do not have intellectual disability. More research is underway to evaluate whether cellular treatments could benefit children and adults with autism.

Unveiling how genetic mutations affect synaptic pathways – A center team of molecular biologists, neurobiologists, and neuropsychopharmacologists are using animal models and state-of-the-art technologies, such as CRISPR, to help understand how genetic mutations impact synaptic pathways in the brain, affecting speech, social and communication skills. Using novel techniques developed at Duke, the team is developing a deeper understanding of how rare gene mutations affect brain function, setting the stage for finding new treatments to improve quality of life.

Adapting and disseminating interventions to reduce disparities in access to treatment – Proven behavioral intervention methods developed by center investigators, such as the Early Start Denver Model, can have a significant impact on outcomes for those on the autism spectrum. Yet, for many people in low-resource communities in the U.S. and worldwide, these interventions are out of reach. Center investigators are assessing whether effective caregiver coaching can be delivered via telehealth and by non-specialist providers. Another study is extending methods that were originally developed for young children to school age children. These studies could open the door to greater access to scientifically proven treatments for those living in socio-economically disadvantaged and rural communities worldwide.

We invite you to partner with us. Your philanthropic support is critical to our ability to continue to conduct ground-breaking research that leads to innovative tools and therapeutic treatments.

To support our efforts, contact:
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morgan.pope@duke.edu or 919-451-5093