Valente Foundation pledges $1 million to the MIND Institute

The George and Lena Valente Foundation, administered by Lynn and Keith Volkerts, has made an initial pledge of $1 million to the UC Davis MIND Institute, to help fund autism research and expand the institute’s advocacy and assistance to families in need of services.

The Volkert’s initial donation to the MIND Institute came in 2012, to support the institute’s longstanding drive to advance research and stimulate the creation of social services programs statewide to help adults affected by autism. Their resolve was strengthened after their two granddaughters were diagnosed with autism and began beneficial treatments at the MIND Institute.

Marjorie Solomon, associate professor in the Department of Psychiatry and Behavioral Sciences, who is affiliated with the UC Davis MIND Institute and Imaging Research Center, has been named to the Marvin “Buzz” Oates and Family Endowed Chair in Lifespan Development in Autism in the UC Davis School of Medicine.

“This is an incredible honor and opportunity for UC Davis Medical Center, the MIND Institute, the Department of Psychiatry and Behavioral Sciences, and for me,” Solomon said. “This endowment will greatly accelerate my ability to study the lives of individuals with autism.”

Solomon joined the MIND Institute in 2000. Her research examines higher cognitive development in individuals with autism through their lifespans, using neuropsychology and cognitive neuroscience methods.

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Research finds differences in the brains and behavior of girls and boys with autism

New research conducted by the UC Davis MIND Institute on a large cohort of preschoolers with autism spectrum disorder has found differences in the underlying biology of their brains, and in their behavior, that may help explain how the condition affects a little-studied and poorly understood population of children: girls.

Autism spectrum disorder is diagnosed much more frequently in boys than girls, at a ratio of 4 to 1. Despite recent efforts, little research has been done on girls — there are fewer of them, so fewer are represented in autism research. An estimated 1 in 42 boys has autism; in girls the statistic is 1 in 189.

The U.S. Centers for Disease Control and Prevention currently estimates the overall incidence of autism at 1 in 68 children born today.

In a brain study, the researchers found differences in the corpus callosum, the region of the brain that connects the left and right hemispheres.

That study is published in the journal Molecular Autism, as part of a special issue devoted to gender differences. It adds to the growing body of evidence that suggests that in autism, there are underlying biological differences between boys and girls.

In separate research presented at the International Meeting for Autism Research (IMFAR) in Salt Lake City May 13 - 16, the researchers find that the behavioral differences between girls who have autism and typically developing same-age girls are much greater than the differences between boys with autism and typically developing same-age males. The finding suggests that girls with autism have greater social impairments than do boys.

The research was led by Christine Wu Nordahl, assistant professor in the UC Davis Department of Psychiatry and Behavioral Sciences and principal investigator of the Girls with Autism Imaging of Neurodevelopment (GAIN) study, and MIND Institute investigator.

“It’s important to identify differences in underlying biology in boys and girls, because this could help us determine whether there are different etiologies of autism, and that potentially could lead us to different treatments and interventions,” Nordahl said.

**Brain Study**

The magnetic resonance imaging (MRI) study of brain structure was conducted in a large sample of 3- to 5-year-old children, 112 boys and 27 girls — a large number for girls with autism — and 53 boys and 29 girls who were developing typically and served as control subjects.

“Previous studies have found alterations in the corpus callosum in children and adults with autism, but most were focused on males only, or had very small female sample sizes,” Nordahl said.

The study used a technique called diffusion tensor imaging (DTI), a type of magnetic resonance imaging that allowed the researchers to neuroanatomically subdivide the corpus callosum, based on where in the cerebral cortex the fibers projected.

“We found that the organization of callosal fibers was different in boys and girls with autism, particularly those projecting into the frontal lobes,” she said. “The frontal lobes are involved in many aspects of functioning, including social behavior, goal-directed behavior and executive functioning. Differences in the patterns of callosal fibers projecting to these areas may lead to differences in how autism manifests in boys and girls.”

**Behavioral Study**

For the preliminary research presented at IMFAR, Nordahl explored behavioral differences in boys and girls with autism. Research in the area previously has been inconsistent.

“Most behavioral studies of gender differences directly compare males and females with autism. Our approach was to evaluate social impairments in a large group of children that included girls and boys with both autism and typical development,” Nordahl said. “We were interested not only in directly comparing boys and girls with autism, but also in assessing how boys and girls with autism compare in relation to their typically developing peers.”

“We found that the behavioral differences between girls with autism and typically developing girls are much larger than differences between boys with autism and typically developing boys,” she said. “In other words, girls with autism deviate further from typically developing girls than boys with autism relative to typically developing males, suggesting that girls with autism have more severe social impairments than boys.”
“Valente Foundation pledges $1 million to the MIND Institute” continued...

“So many families do not have access to the resources needed to nurture the development of their children. And the scarcity of social programs for adults who are on the autism spectrum is distressing,” said Lynn Volkerts, a retired cosmetologist who serves as president of the George and Lena Valente Foundation, based in El Macero near Davis. Her husband Keith, the retired executive director of Yolo Hospice, is vice president-secretary of the foundation.

We have a growing generation of adults who need assistance in the years ahead to secure a fruitful, meaningful life,” Lynn explains. “We felt compelled to act quickly to aid these children, young adults and their families.”

Lynn is the daughter of Lena and George Valente, who built a network of nine successful car dealerships throughout California, including Downtown Ford Sales in Sacramento. Following the death of George in 2013, Lynn and Keith Volkerts stepped in to guide the foundation.

“We discovered that we had the same vision for wanting to help families,” said Leonard Abbeduto, director of the MIND Institute. “We have a shared sense of urgency about filling the need and closing the gap between so many families and the help they need but aren’t yet obtaining from social services agencies.

“We have to do something to change that, and the faster, the better. That exigency fueled the Volkerts’ eagerness to authorize this remarkable pledge from the George and Lena Valente Foundation.”

Abbeduto said that the gift will support pilot projects and seed grants to help early career faculty build toward larger-scale research studies in autism; support innovations in clinical treatment options, including application of telehealth and other technologies to make treatment more readily accessible to underserved families; and expand activities that increase public awareness and encourage community inclusion nationwide for adults and children with neurodevelopmental disabilities.

“Marjorie Solomon named to Marvin ‘Buzz’ Oates and Family Endowed Chair in Lifespan Development in Autism” continued...

including functional magnetic resonance imaging (fMRI). She has studied learning and memory, friendship and gender differences in these individuals.

“My father was instrumental in the formation of the MIND Institute,” said Phil Oates, chairman of the board, the Buzz Oates Group of Companies. “Autism affects our family, so we are thrilled to be able to partner with the MIND Institute and Marjorie Solomon in helping others to assimilate into our community.”

“We have always believed in what the MIND does,” Oates said.

Solomon is the recipient of a recent grant award from the National Institute of Mental Health to study the relationship between early hippocampal development and intervention and later memory, cognitive control and language in middle childhood in a cohort of individuals with autism who have been followed since they were toddlers. From 2010 to 2012, Solomon served as an appointee of then Department of Health and Human Services Secretary Kathleen Sebelius to the InterAgency Autism Coordinating Committee, which coordinates all of HHS’s research strategic planning efforts concerning autism.

She also is highly regarded for her extensive and highly impactful Social Skills Training Group Program, which has served hundreds of higher-functioning children, youth and young adults with autism and their families, teaching skills and techniques for successful social interaction. Many children and teens with autism spectrum and other social communication disorders have social difficulties, such as trouble making and keeping friends and having two-sided interactive conversations.

“This endowed chair is designed to accelerate research and its translation into programs that improve outcomes and enhance quality of life for people with autism and their families,” said Leonard Abbeduto, director of the MIND Institute. “I am delighted that Dr. Solomon is the inaugural appointee to this chair. She is uniquely qualified to fulfill the vision of the Oates family and the other donors who created the endowment.”

Solomon’s ultimate goal is to apply what she learns through her neuroscience investigations to the development of interventions – the area where she began her career at the MIND, and one she continues to develop as the director of the Social Skills Training Group Program. Solomon and her colleagues currently are developing intervention programs for adults with autism.

“The Oates Endowed Chair will enable me to continue to conduct neuroscience investigations that may help us to better tailor personalized intervention strategies to help people with ASD to be successful and happy in their lives,” Solomon said.
Randi Hagerman receives International Sisley-Lejeune Foundation Award

Randi J. Hagerman

Randi J. Hagerman, medical director of the UC Davis MIND Institute, has received the prestigious International Sisley-Lejeune Award 2014 from the Paris-based Jérôme Lejeune Foundation, for her groundbreaking work developing targeted treatments for individuals with fragile X syndrome, a leading cause of intellectual disability and the leading single-gene cause of autism spectrum disorder.

The award recognizes significant accomplishments in therapeutic research for Down syndrome or other genetic intellectual disabilities for researchers who have ‘contributed to creating knowledge of these pathologies and the discovery of treatments and cures.’

The Jérôme Lejeune Foundation was founded by Jérôme Lejeune, discoverer of the cause of Down syndrome, which in 1958 he renamed trisomy 21, to accurately describe the genetic abnormality. Hagerman received the award in Strasbourg on March 10, in an event before the European Parliament timed to coincide with World Down Syndrome Awareness Day. The award comes with a 30,000 Euro – or $33,855 prize, and a lecture.

“I am very positive about new targeted treatments that have the potential to reverse intellectual disability at a variety of ages, including childhood, adolescence and even in adulthood. My work will continue for this very important goal,” said Hagerman, distinguished professor of pediatrics and Endowed Chair in Fragile X Research and Treatment.

Hagerman is one of the world’s leading physician-scientists investigating fragile X-related disorders, including fragile X syndrome and fragile X-associated tremor/ataxia syndrome, or FXTAS, a condition affecting primarily older men that she discovered with her husband, Paul Hagerman, in 2001. In 1984 she founded the National Fragile X Foundation in the United States.

Hagerman said during her acceptance speech that she is hopeful that her ongoing trials of investigational drugs, such as ganaxolone, mGluR5 antagonists, minocycline, and sertraline, eventually may improve language, attention, socialization and learning in people with fragile X syndrome and other genetic conditions, such as Angelman syndrome. This work, she said “leads the way for treatments that may reverse neurobiological abnormalities in autism and many other neurodevelopmental disorders.” These treatments must be coupled with educational programs to ensure that patients may take advantage of their improved cognitive strengths.

Hagerman also is director of the MIND Institute’s Fragile X Research and Treatment Center. She is the recipient of numerous honors, including the Jarrett Cole Clinical Award from the National Fragile X Foundation for dedicated service to families in the worldwide fragile X community; the Bonfils-Stanton Foundation Award for her pioneering work in fragile X disorders; and the Distinguished Scholarly Public Service Award from UC Davis. In 2008 she received a Lifetime Achievement Award from the National Fragile X Foundation and, in 2014, she received the C. Anderson Aldrich Award from the American Academy of Pediatrics, for her outstanding contributions to the field of child development.

Randi Hagerman receives International Sisley-Lejeune Foundation Award

Randi J. Hagerman

The MIND Institute launches international training program

MIND Institute researchers are working to bridge the knowledge gap for health-care professionals around the world who are caring for children with autism and other neurodevelopmental conditions. Spearheaded by Medical Director Randi Hagerman, the MIND Institute recently launched the International Training Program in Neurodevelopmental Disorders (ITPND). It will educate health-care professionals from around the world in the study, evaluation, treatment and management of individuals with neurodevelopmental conditions such as autism, fragile X syndrome and related conditions, including 22q11.2 deletion syndrome, attention-deficit/hyperactivity disorder.
Children with autism spectrum disorder (ASD) were more than twice as likely to have been exposed in utero to preeclampsia, and the likelihood of an autism diagnosis was even greater if the mother experienced more severe disease, a large study by researchers with the UC Davis MIND Institute has found.

Women with preeclampsia experience hypertension during the latter half of their pregnancies, and may have increased levels of protein in their urine and edema, or fluid retention. Preeclampsia can develop into eclampsia, a life-threatening condition in which seizures may occur.

The study was conducted in more than 1,000 children between the ages of two and three years enrolled in the Childhood Risks of Autism from Genetics and the Environment (CHARGE) Study in Northern California. It is published in JAMA Pediatrics.

“We found significant associations between preeclampsia and ASD that increased with severity. We also observed a significant association between severe preeclampsia and developmental delay,” said Cheryl Walker, study senior author, assistant professor, Department of Obstetrics and Gynecology Division of Maternal Fetal Medicine and a researcher affiliated with the UC Davis MIND Institute.

While preeclampsia has previously been examined as a risk factor for autism, the literature has been inconsistent. The current study provides a robust population-based, case-controlled examination of the association between autism and preeclampsia and whether risk was associated with preeclampsia severity.

The research was conducted in more than 500 male and female children diagnosed with autism; nearly 200 diagnosed with developmental delay; and 350 children who were developing typically. All of the mothers had confirmed diagnoses of preeclampsia.

It found that the mothers of children with autism were more than twice as likely to have had pregnancies complicated by preeclampsia. Mothers of children with autism and children with developmental delay also were significantly more likely to have had placental insufficiency, severe preeclampsia or both, when compared to the mothers of children who were developing typically. The children with autism of mothers with preeclampsia also were more likely to be cognitively lower functioning.

The large, population-based study also found a correlation between preeclampsia and developmental delay without autism, primarily in instances involving placental insufficiency.

There are several mechanisms by which preeclampsia may affect the developing brain, Walker said.

For the fetus, limitations in nutrient and oxygen availability cause progressive oxidative stress which prompt the release of proteins into the maternal bloodstream in an effort to improve circulation.

“The level of detail obtained by the CHARGE Study on predictors, confounders, and outcomes enabled a comprehensive exploration of this topic,” Walker said. “While single studies cannot establish causality, the cumulative evidence supports efforts to reduce preeclampsia and diminish severity, to improve neonatal outcomes.”

Other study authors include Paula Krakowiak, Alice Baker, Robin Hansen, Sally Ozonoff, all of UC Davis and the UC Davis MIND Institute.

The study was funded by grants from the National Institute of Environmental Health Sciences P01 ES11269, RO1 ES 015359, the Eunice Kennedy Shriver National Institute of Child Health and Human Development 1U54 HD079125, the U.S. Environmental Protection Agency through Science to Achieve Results (STAR) Program R829388 and R833292 and the UC Davis MIND Institute.

Cheryl Walker
Aubyn Stahmer, expert in translating autism research into community practice, joins MIND Institute

“We evaluate how to take evidence-based interventions that are effective in research settings and make it possible to deliver them in settings where kids are getting usual care, in schools and early-intervention settings in the community,” Stahmer said.

She is an internationally respected expert in the use of naturalistic developmental behavioral interventions which are validated treatments for autism. Derived from developmental science and applied behavioral analysis, these interventions are play-based and child-initiated. Goals include the development of communication, language and positive social behaviors.

Stahmer is the principal investigator of two U.S. Department of Education grants designed to examine methods of translating research-based interventions in collaboration with community providers. One adapted model, called Classroom Pivotal Response Teaching, is for classroom use in children 3 to 11. Another, Project ImPACT for Toddlers, provides parent coaching for very young children at risk for autism. Stahmer will continue that research, which is based in public schools and early intervention programs, at the MIND Institute, potentially including Sacramento-area public school and community settings.

At Rady Children’s Hospital Stahmer operated a preschool program for children from 18 months to five years with autism in a setting that also included typically developing peers.

“Dr. Stahmer’s expertise and interests complement and enhance our established programs of research on evidence-based practices in autism treatment,” said Leonard Abbeduto, director of the MIND Institute.

“She will extend the reach of the MIND Institute even further into our community, and so ensure we help even more families affected by autism.”

Stahmer said that she plans to work closely with Sally Rogers, professor of Psychiatry and Behavioral Sciences and developer of the Early Start Denver Model (ESDM) approach to early autism intervention. Together they will examine methods of increasing access to evidence-based care to families of children with autism in rural and underserved areas.

“I am very excited to work with Dr. Rogers to examine new ways to increase access to ESDM in the community, both locally and internationally,” Stahmer said.

Rogers said she shares Stahmer’s enthusiasm.

“I am delighted to be able to work with such a wonderful scientist and clinician,” Rogers said. “Her research and expertise in moving interventions from the lab into the community will be a great help to all the intervention scientists at UC Davis.”

Stahmer received her bachelor’s degree from the University of Colorado, Boulder. She received her master’s and doctoral degrees from UC San Diego.
MIND Institute researchers receive grant to study schizophrenia in children with 22q11.2 deletion syndrome

Researchers studying a genetic disorder that in childhood causes anxiety and learning differences, but in adolescence or early adulthood results in schizophrenia in nearly one third of those affected, will investigate how emotional and intellectual challenges impact the development of early psychosis symptoms in this very high-risk population, through a new five-year, $2.5 million grant from the National Institute of Mental Health.

The grant will allow the UC Davis MIND Institute's 22q11.2 Deletion Syndrome Research Center and Clinic to assess how cognition, stress and emotions are associated with the likelihood of developing psychosis among teens with chromosome 22q11.2 deletion syndrome, or 22q11.2DS — a genetic condition that previously has been known as Velocardiofacial Syndrome or DiGeorge Syndrome.

The symptoms of 22q11.2DS vary so widely that the condition often is misdiagnosed in childhood. Children may have a range of medical complications, including congenital heart disease, defects of the palate and mild facial anomalies. Infections are commonplace because of problems with their immune systems. Most children with 22q11.2DS have mild to moderate intellectual disability and difficulties with acquiring written and spoken language.

The center is led by Tony J. Simon, professor in the Department of Psychiatry and Behavioral Sciences, who noted that news of the grant’s selection for funding came almost 10 years to the date from when he joined the MIND Institute. “This is truly ‘the grant that the MIND Institute made,’” Simon said.

“When I arrived at the MIND Institute, my primary focus on 22q11.2DS was on the cold cognitive neuroscience aspects of the learning difficulties,” he said. “But we were so strongly influenced and shaped by the MIND’s clinical translational environment, the interaction between our researchers and clinicians, and the intense time we spend with the kids we study and their families, that our research mission and how we approach it has been literally transformed.”

“Now our approach is to combine measures of neurocognitive and emotional functioning and stress biology with established and novel clinical measures to attempt to establish, not only the predictors of risk for, but also protection against psychotic thinking symptoms. As a result we might be able to reduce the burden of psychosis symptoms on the individual and their families, and maybe even prevent the development of schizophrenia in some,” Simon said.

The research will enroll 100 youth diagnosed with 22q11.2 deletion syndrome between the ages of 12 and 18 years and 50 age- and gender-matched typically developing youth, who will receive two assessments 2-1/2 years apart over the five-year life of the project. The measures will include cognitive functioning tasks that involve either positive or negative emotional stimuli along with variants that do not contain any emotional content.

Some of the tests will be done while brain activity is measured using Event-Related Potentials (ERP) in the MIND Institute’s new ERP Lab. ERPs measure specific responses from brain cells in reaction to events, images or sounds. They are measured by placing an elasticated cap in which are embedded numerous electrodes that can detect electrical brain activity merely by resting next to the scalp.

Stress hormone levels will be sampled during testing via simple saliva tests and all participants will complete a structured interview for psychosis-proneness symptoms carried out by a highly trained clinician. Brain connectivity will be assessed using functional magnetic resonance imaging (fMRI). A third assessment will be included, at 3-1/2 years, for a subset of young people whose psychosis symptoms worsen.

Other members of the project team include Cameron Carter, professor of psychiatry and behavioral sciences and director of the Behavioral Health Center of Excellence and Imaging Research Center at UC Davis; Tara Niendam, assistant professor of psychiatry and behavioral sciences; Steven Luck, professor of psychology and director of the UC Davis Center for Mind and Brain; and Emilio Ferrer, professor of psychiatry and behavioral sciences. The team also will include consultants from Stanford University, Emory University and Tel Aviv University.
The UC Davis MIND Institute focuses on translating research into therapies and programs that improve quality of life for children with neurodevelopmental disorders and their families. As you will read in this newsletter, one recent addition to our faculty — Aubyn Stahmer — is highly regarded for implementing autism therapies in community settings, including public schools. She will be exploring ways to increase access to evidence-based care for children in rural and other underserved areas in the U.S.

One way we share MIND Institute expertise is by harnessing UC Davis’ leadership in telemedicine, especially video-teleconferencing. In my lab, we use these capabilities to teach parents of children with fragile X syndrome how to support their children’s learning and language development — and they never have to leave their homes.

I am also very pleased that we are increasing the number of patients who can be seen in our Massie Family Clinic by adding new providers. We look forward to offering new treatment options in the clinic, including treatments for anxiety, which is a considerable challenge for many people with neurodevelopmental disorders.

Finally, our International Training Program in Neurodevelopmental Disorders has launched. Our first visiting scholar joined us a few months ago, with others expected to arrive soon. Through this program, scholars from China, Turkey, Iran and elsewhere have opportunities to collaborate with our faculty and discover new ways to help children with neurodevelopmental disorders in their home countries.

It’s truly an exciting time at the MIND Institute!

Leonard Abbeduto
Director, UC Davis MIND Institute