In 1997 four courageous but concerned families of autistic children came together to seek a place where treatment would be available to their families, but found none. That was the beginning of what would become the legend of the UC Davis MIND (Medical Investigation of Neurodevelopmental Disorders) Institute. Two of the fathers, Chuck Gardner and Rick Hayes, in January 1997 would be the first to formally approach UC Davis about establishing a neurodevelopmental research center. Within a brief period, and with the support of then School of Medicine Executive Associate Dean Thomas Anders, the university would agree to match private donations up to $1.5 million to underwrite the endeavor. With the help and guidance of founding father Louis Vismara, pledges of financial support came from Angelo and George Tsakopoulos, Steve Beneto, Clara Massie, David and Susan Muller and an anonymous donor, which brought seed money for the project to $3.7 million. Gardner and Rick Rollens, former secretary of the California senate and the parent of a child with autism, were instrumental in encouraging former state Sen. Diane Watson to introduce a bill in the legislature to establish the institute with an annual appropriation of $2 million. It was signed into law by then-Gov. Pete Wilson in August 1998. Two years later the state’s budget would include a $30 million appropriation to support the MIND Institute’s research mission.

The MIND Institute would go on to become known as “the house that collaboration built.” The iconic sandstone building, designed by Hammel, Green and Abrahamson, Inc., was designed to inspire “collaboration, integration and an ambience conducive to providing groundbreaking research.” The grand opening would be held in March 2003 – only a few short years after the idea was first conceived.

It has been nearly 15 years since the passage of that first legislation brought the MIND Institute into being. During that brief period of time the MIND Institute has
Autism Research Training Program graduates advance autism research

The key goal of the MIND Institute is conducting leading-edge research, and integral to that effort is increasing the number of highly skilled, well-trained and committed investigators in the field. The Autism Research Training Program (ARTP) was launched to expand the numbers of autism scientists. Since its inception in 2005, the program has enrolled 37 postdoctoral fellows. These young investigators are trained to make important contributions to the field of autism science.

Many already have. In 2011, Rebecca J. Schmidt, now a UC Davis assistant professor of public health sciences, published groundbreaking research that found women who did not take a daily prenatal vitamin before and during their first month of pregnancy were twice as likely to have a child with autism. Extending this research in 2012, Schmidt and her colleagues published a study that identified folic acid in the prenatal vitamins as providing the protective effect. The research attracted international media attention.

The work was the first peer-reviewed research to suggest a concrete step that women may take to reduce the risk of having a child with autism. The landmark study’s findings recently were replicated by researchers in Scandinavia.

Schmidt completed the ARTP in 2010. Her primary mentor was professor of public health sciences Irva Hertz-Picciotto.

“Graduating from the ARTP at the MIND Institute positioned me well for conducting leading-edge, interdisciplinary research on the etiology and prevention of autism,” Schmidt said. “Under the mentorship of the program and in the enriched MIND Institute environment, I was able to secure funding for research projects that led to publication of high-impact papers and follow-up grants.

The key goal of the MIND Institute is conducting leading-edge research, and integral to that effort is increasing the number of highly skilled, well-trained and committed investigators in the field.
“Collaborations initiated as a post-doctoral student in the ARTP continue to augment my research, and new collaborations with researchers I connected with through the program have developed as I expand my research,” she said.

Tracy DeBoer Riggins, another ARTP graduate who is now an assistant professor of psychology at the University of Maryland, College Park, said that participating in the program expanded the breadth of her knowledge and widened the lens through which she viewed science in relationship to children’s health. Riggins has published articles on risk groups including infants of diabetic mothers and adolescents exposed to drugs prenatally.

Riggins completed the ARTP in 2006. Her primary mentor was Professor of Psychiatry and Behavioral Sciences Tony Simon.

“During my fellowship at the MIND Institute, I was exposed to scientific thinking that was very different from my own and my graduate training. I vividly recall sitting in seminars and being able to comfortably ask researchers from other fields to define terms or explain concepts with which I had little or no experience,” Riggins said.

“I strive to carry the experiences and the knowledge I gained as an ARTP fellow forward and apply them in both my teaching and research.”

A.J. (Amy Jo) Schwichtenberg completed the Autism Research Training Program in September 2010 under the mentorship of Professor of Psychiatry and Behavioral Sciences Sally Ozonoff. Schwichtenberg recently was appointed assistant professor in the Departments of Human Development and Family Studies and Psychological Studies at Purdue University.

“I grew tremendously as a diagnostician and a scholar,” Schwichtenberg said of her ARTP experiences. “The structured coursework and dual mentorship model used in ARTP exposed me to explore diverse areas of study and afforded me the opportunity to learn more about autism and a specialty area of interest – sleep.”

Schwichtenberg recently published research with her mentor Sally Ozonoff on “Behavior and Sleep Problems in Children with a Family History of Autism.”

“I am truly humbled by the support provided by my mentors and I am eternally grateful to them and the Autism Research Training Program,” she said.

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3-8-2006
MIND Institute launches largest biomedical assessment of children with autism (APP)

4-5-2007
Babies who do not respond to their names may be at risk for developmental delay, autism

5-2-2007
Grant to establish the Center for Excellence in Developmental Disabilities received

8-31-2007
UC Davis receives $22 million to study fragile X tremor-ataxia syndrome (FXTAS)
Awards, honors and grants

Leonard Abbeduto: Eunice Kennedy Shriver National Institute of Child Health & Human Development ▪ $3 million to explore expressive language sampling as an outcome measure for treatment studies for people with fragile X and Down syndromes

Jacqueline Crawley: Autism Speaks ▪ $94,000 to start a new initiative to discover pharmacological compounds effective in treating autism

David Hessl: John Merck Foundation ▪ $1 million to study cognitive training in children with fragile X

Sally Ozonoff: Autism Speaks ▪ $450,000 to develop a new, video-based method of identifying autism in very young children

Sally Rogers: Research on the Early Start Denver Model named among the top five medical breakthroughs of 2012 by TIME magazine.

Sally Rogers: Breaking the Glass Ceiling Award from the Caucus of Legislative Women of the California state legislature

Three MIND Institute studies are included in the Top 10 Autism Research Achievements of 2012 by Autism Speaks:

- Clinical research by Randi Hagerman, MIND Institute medical director, found that an investigational compound known as arbaclofen that targets the core symptoms of fragile X syndrome is effective for addressing the social withdrawal and challenging behaviors characteristic of the condition, making it the first such discovery for fragile X syndrome, and potentially, the first for autism

- Clinical Research by Sally Rogers found that the Early Start Denver Model, an early childhood autism intervention, is effective for improving cognition and language skills among very young children with autism, that it normalizes their brain activity, decreases their autism symptoms and improves their social skills.

- Research by Isaac Pessah, Irva Hertz-Picciotto and Janie Shelton strongly suggests that certain pesticides may increase the risk of autism.

TIMELINE

2-21-2008
Some cases of autism may be traced to the immune systems of mothers during pregnancy

10-31-2008
MIND Institute researchers begin widespread newborn screening for fragile X syndrome

11-6-2008
Unusual use of toys in infancy a clue to later autism diagnosis

1-7-2009
MIND Institute study shows that California’s autism increase not due to better diagnosis and counting
grown to become one of the leading neurodevelopmental research institutes in the United States, known for its transformational, paradigm-changing research. Some scientists, such as Research Director David Amaral and Clinic Director Robin Hansen, were involved from the outset in launching the MIND Institute. Together with researchers recruited from around the country, the MIND Institute's investigators have constructed an unparalleled intellectual framework that has brought recognition and attention from around the world. The MIND Institute is engaged in high-impact, multidisciplinary, collaborative research across a range of fields – from pediatrics to psychiatry to public health sciences to neuroanatomy and molecular biology. There are more than 40 research studies taking place at the MIND Institute today, including basic science and clinical studies. Clinical studies involve participants from infancy, childhood and adolescence through young adulthood and late middle age. Areas of inquiry include autism, fragile X syndrome, attention-deficit/hyperactivity disorder (ADHD), Down syndrome and 22q11.2 deletion syndrome. This research includes nationally recognized studies such as the Early Autism Risk Longitudinal Investigation (EARLI) and the Markers of Autism Early Risk in Babies-Learning Early Signs (MARBLES) studies, as well as groundbreaking treatment studies, such as those focused on the Early Start Denver Model and drug treatments for fragile X syndrome.

At its 15-year anniversary the MIND Institute celebrates the vision of the founding families, as well as the critical support provided by Angelo Tsakopoulos, Clara Massie and others. We also celebrate the incredible breadth of the discoveries of MIND Institute researchers who – because of that vision and support – continue to work toward improving the lives of people with autism and other neurodevelopmental disabilities and their families every day.
Early intervention found to normalize brain activity in children as young as 18 months

“Early Start Denver Model research named among the top studies in the world by TIME, Autism Speaks, praised by director of the National Institute of Mental Health.”

“The Early Start Denver Model, an intensive early intervention therapy that is effective for improving cognition and language skills among very young children with autism also normalizes their brain activity, decreases their autism symptoms and improves their social skills. The intervention, developed by MIND Institute Professor of Psychiatry and Behavioral Sciences Sally Rogers, was named fifth among the world’s top medical breakthroughs of 2012 by TIME magazine, and was among the top autism research discoveries identified by Autism Speaks.

“We know that infant brains are quite malleable and previously demonstrated that this therapy capitalizes on the potential of learning that an infant brain has in order to limit autism’s deleterious effects,” said Rogers said. “The findings on improved behavioral outcomes and the ability to normalize brain activity associated with social activities signify that there is tremendous potential for the brains of children with autism to develop and grow more normally.”

Rogers’ research was published in October 2012 in the Journal of the American Academy of Child & Adolescent Psychiatry. It found that the children who received the intervention exhibited greater brain activation when viewing faces rather than objects, a response that is characteristic of typically developing children, and the opposite of the children with autism who received other intervention.

The intervention method was developed by Rogers and Geraldine Dawson, chief science officer of the research and advocacy organization Autism Speaks. The therapy fuses a play-based, developmental, relationship-based approach and the teaching methods of applied behavioral analysis.

“This may be the first demonstration that a behavioral intervention for autism is associated with changes in brain function as well as positive changes in behavior,” said Thomas R. Insel, director of the National Institute of Mental Health, which funded the study. “By studying changes...
in the neural response to faces, Dawson and her colleagues have identified a new target and a potential biomarker that can guide treatment development.”

The researchers recruited 48 diverse male and female children diagnosed with autism between 18 and 30 months in Sacramento, Calif., and in Seattle, as well as typically developing case controls. The ratio of male-to-female participants was more than 3-to-1. Autism is more common among boys than girls.

Approximately half of the children with autism were randomly assigned to receive the ESDM intervention for over two years. The participants received ESDM therapy for 20 hours each week, and their parents also were trained to deliver the treatment, a core feature of the intervention. The other participants with autism received similar amounts of various community-based interventions as well as evaluations, referrals, resource manuals and other reading materials.

At the study’s conclusion, the participants’ brain activity was assessed using electroencephalograms (EEGs) that measured brain activation while viewing social stimuli – faces – and non-social stimuli – toys. Earlier studies have found that typical infants and young children show increased brain activity when viewing social stimuli rather than objects, whereas children with autism show the opposite pattern.

Twice as many of the children who received the ESDM intervention showed greater brain activation when viewing faces rather than when viewing objects – a demonstration of normalized brain activity. Eleven of the 15 children who received the ESDM intervention, 73 percent, showed more brain activation when viewing faces than toys. Similarly, 12 of the 17 typically developing children, or 71 percent, showed the same pattern. But the majority – 64 percent – of the recipients of the community intervention showed the opposite, “autistic” pattern, i.e., greater response to toys than faces. Only 5 percent showed the brain activation of typical children.

Further, the children receiving ESDM who had greater brain activity while viewing faces also had fewer social-pragmatic problems and improved social communication, including the ability to initiate interactions, make eye contact and imitate others, said MIND Institute researcher Rogers. Use of the ESDM intervention has been shown to improve cognition, language and daily living skills. A study published in 2009 found that ESDM recipients showed more than three times as much gain in IQ and language than the recipients of community interventions.

“This is the first case-controlled study of an intensive early intervention that demonstrates both improvement of social skills and normalized brain activity resulting from intensive early intervention therapy,” said Dawson,
the study’s lead author and professor of psychiatry at the University of North Carolina, Chapel Hill. “Given that the American Academy of Pediatrics recommends that all 18- and 24-month-old children be screened for autism, it is vital that we have effective therapies available for young children as soon as they are diagnosed.”

“For the first time,” Dawson continued, “parents and practitioners have evidence that early intervention can alter the course of brain and behavioral development in young children. It is crucial that all children with autism have access to early intervention which can promote the most positive long-term outcomes.”

Other authors of the study are Emily J.H. Jones, Kaitlin Venema, Rachel Lowy, Susan Faja, Dana Kamara, Michale Murias, Jessica Greenson, Jamie Winter, Milani Smith and Sara J. Webb, all of the University of Washington, and Kristen Merkle of Vanderbilt University. The study was funded by a grant from the National Institute of Mental Health and by a postdoctoral fellowship to Jones from Autism Speaks.

**Early intervention** from page 7

**More about ESDM**

Sally Rogers, Geraldine Dawson and Laurie A. Vismara, also a researcher with the MIND Institute, have authored two books on the Early Start Denver Model. One for professionals is titled “Early Start Denver Model for Young Children with Autism: Promoting Language, Learning, and Engagement” and one for parents titled “An Early Start for Your Child with Autism: Using Everyday Activities to Help Kids Connect, Communicate, and Learn.”

The ESDM intervention is available in Sacramento through the MIND Institute and in a number of locations throughout the U.S. and other nations. For further information regarding its availability at the MIND Institute, please contact Megan Devitt at 916-703-0465. Training in delivering the ESDM method is provided through the MIND Institute and the University of Washington.

**TIMELINE**

- **9-29-2011**
  - Markers of Autism Risk in Babies – Learning Early Signs (MARBLES study receives $10 million NIH grant

- **10-18-2011**
  - Gene variant and autoantibodies linked to having a child with autism

- **11-30-2011**
  - Boys with regressive autism, but not early-onset autism, have larger brains
**SACRAMENTO KINGS VS. DALLAS MAVERICKS**

Friday, April 5  
7 p.m.  
Sleep Train Arena  
Ticket prices vary

Cheer the Kings and visit the MIND Institute information table. A portion of ticket sales, 25 percent, will benefit the MIND Institute. To purchase tickets visit www.corporatepartnerbenefits.com/UCDavis. 

Se habla español. Child friendly.

**SACRAMENTO RIVER CATS VS. LAS VEGAS 51’S**

Saturday, April 6  
7 p.m.  
Raley Field  
Ticket prices vary

Cheer the home team and stay for the fireworks. A portion of ticket sales will benefit the MIND Institute. Visit www.milb.com/index.jsp?sid=t105, select MIND Institute and use the offer code ‘MIND’ to purchase tickets. 

Se habla español. Child friendly.

**POETRY AND ART AT THE MIND INSTITUTE**

Monday, April 8  
7 p.m.  
MIND Institute  
FREE – limited seating

Enjoy spoken and written poetry from the Sacramento Poetry Center and view the institute’s art collection. For more information, visit sacramentopoetrycenter.com 

Se habla español.

**AUTISM – FROM THE TEEN YEARS TO YOUNG ADULTHOOD**

Wednesday, April 17  
5:30 p.m. – 7 p.m.  
MIND Institute  
FREE – limited seating

A panel of experts and community members will give updates on promising research and interventions for teens transitioning into adulthood. The MIND Resource Center opens at 4:30 p.m. Event is part of the Minds Behind the MIND series. 

Se habla español.

**ART SPARK: AN INCLUSIVE ARTS FESTIVAL FOR FAMILIES**

Sunday, April 21  
11 a.m. – 1 p.m.  
Crocker Art Museum  
FREE

An inclusive celebration of visual and performing arts, including El Dorado Dance Academy, AIM HIGHER, Afia Walking Tree and Francie Dillon with Puppet Art Theater. Activities will include gallery tours and hands-on fun stations for visitors of all abilities. Presented by the Crocker Art Museum’s Art Access Committee, I Can Do That!, Short Center South and the MIND Institute. Co-sponsored by the MIND Institute. 

Se habla español. Child friendly.

**FAMILY OPEN HOUSE & FESTIVAL**

Saturday, April 27  
Noon – 4 p.m.  
MIND Institute  
FREE

Performers will include The Star Dancers, I Can Do That!, Dream Achievers, Jordan the Science Wizard, Latin jazz of Ivan Najera & Friends, emcee Jack Gallagher, magicians, balloon artists, and other special guests. Representatives from the MIND Institute and community agencies will be on-site with resource information. Create art projects, participate in hands-on activities, ride a train, or jump in a bounce house. Food trucks from Sacramento’s FoodMob will sell food, or bring a blanket and a picnic lunch. Quiet areas for families will be available throughout the event. 

Se habla español. Child friendly.

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**Fever during pregnancy doubles the risk of autism or developmental delay**

**Folic acid intake associated with reduced risk of autism**

**Diagnosis often missed for Latino children with autism, developmental delay**
With deep roots in California, Montna family lends it support to the MIND Institute

The Montna family has deep roots in Northern California. In the late 1800s, Peri Montna migrated from France to California to grow prunes, apricots, peaches and Thompson seedless grapes in Sutter County. In the late 1930s, Alfred “Dutch” Montna purchased land in Dingville, south of Yuba City, developing it into a rice-growing operation in the 1930s. Today the Montnas specialize in growing Japanese short-grain rice, shipping it to markets all over the world.

The family’s ties to each other are as strong as their agricultural roots. The entire family, Al Montna and his wife, Gail, and their daughters Nicole Montna Van Vleck and Michelle Montna Vogt, are involved in the family business. Al and Gail have six grandchildren, and look forward to one day passing the farm on to the next generation.

After Michelle’s son Ryan, now 7, was diagnosed with autism, the entire family rallied. When Ryan was first diagnosed at the age of 3, Michelle sprang into action to ensure that her son could benefit from the best therapies possible. Michelle brought Ryan to the UC Davis MIND Institute, where he received a comprehensive evaluation and treatment plan from Medical Director Randi Hagerman. Today, he is enrolled in the social skills program led by Marjorie Solomon and Beth Goodlin-Jones, associate professors of clinical psychiatry, and making great progress.

“He wasn’t talking when we started. Now he can say anything he wants. He seeks us out to tell us that he loves us. He looks you in the eyes. He shows you the rainbow that he drew. He’s not just hidden away in his room anymore,” Michelle said. “With time and effort and consistency we’ve been able to successfully go anywhere, even to amusement parks.”

“After speaking with Dr. Hagerman and (MIND Institute Director) Dr. Leonard Abbeduto, we have hope,” she added.

Michelle also credits Ryan’s progress to the love and support of her family, especially Ryan’s siblings, Nicolas, Natalie, twin sister Emma and his cousins Christian and Tori, who are great role models.

“We are passionate about autism because it has affected our family. If we can help in any way with any programs or any research that would directly help Ryan or others that are going through the same thing, it would make us feel like we’re doing something significant.”

– Michelle Montna Vogt

TIMELINE

9-19-2012
New targeted drug for treating fragile X, potentially autism, is effective

10-26-2012
Intensive early intervention (ESDM) found to normalize brain activity in children with autism

11-5-2012
Higher anxiety is associated with poorer functioning in children with 22q11-2deletion syndrome
“We are passionate about autism because it has affected our family,” Michelle said. “If we can help in any way with any programs or any research that would directly help Ryan or others that are going through the same thing, it would make us feel like we’re doing something significant.”

The Montna family has made a financial gift to the MIND Institute, and Ryan’s grandmother, Gail, has taken on a leadership role at the MIND Institute, joining its Community Advisory Board.

“The research being done at the MIND Institute is so important, and it’s making life better for families like ours and children like Ryan,” Gail said. “It’s crucial that the research continue and that it be accessible to more people.”

Giving Opportunities

The UC Davis MIND Institute is unique in its vision and multidisciplinary research approach. We are committed to finding the causes, developing improved treatments and preventing the onset of neurodevelopmental disorders. Though we are community based, the MIND Institute is an international research facility providing much needed information, education and outreach throughout the world. The speed towards accomplishing our mission is directly related to our resources. To succeed, we need your support. For further information about giving opportunities, please contact Bob Stout, UC Davis MIND Institute Development Director at 916-703-0221 or by email at robert.stout@ucdmc.ucdavis.edu.
From the Director

On the 15th anniversary of the MIND Institute, it’s both humbling and inspiring to recognize that a place that is changing the lives of individuals with neurodevelopmental disabilities worldwide every day is only in its adolescence. The MIND Institute’s many successes, chronicled through the timeline on the pages of this newsletter, are a testament to the wisdom and vision of the founding families, who wanted to create a center that would conduct research to understand the causes of, and develop treatments for, autism. The successes also are testimony to the years of dedication, creativity, and collaboration of the hundreds of people who work at the MIND Institute – in fields as wide-ranging as developmental pediatrics, psychiatry, neurology, molecular biology, and education – to bring that dream to reality. I am thrilled to report that the many years of collaborative hard work have yielded much success. As director, I am grateful for the vision of the founding families and the commitment of my colleagues.

The founding families’ dream has grown to encompass numerous neurodevelopmental disabilities such as fragile X syndrome, chromosome 22q11.2 deletion syndrome, attention-deficit/hyperactivity disorder (ADHD) and Down syndrome, among others. Some of these conditions exist in combination with autism or share symptoms with autism, so studying them also advances autism research. The MIND Institute also now houses the Center for Excellence in Developmental Disabilities (CEDD), which reaches out to collaborate with individuals with developmental disabilities and their families to ensure their full inclusion in the community.

The MIND Institute has been called the house that collaboration built. Researchers throughout UC Davis, the nation, and the world collaborate to accomplish its work. Advocates and organizations in Sacramento and beyond collaborate with its faculty and staff.

As we celebrate National Autism Awareness Month, I am deeply grateful for the vision, commitment, and dedication upon which the MIND Institute is founded. I look forward to many more years of collaboration to improve the lives of individuals with neurodevelopmental disabilities worldwide.