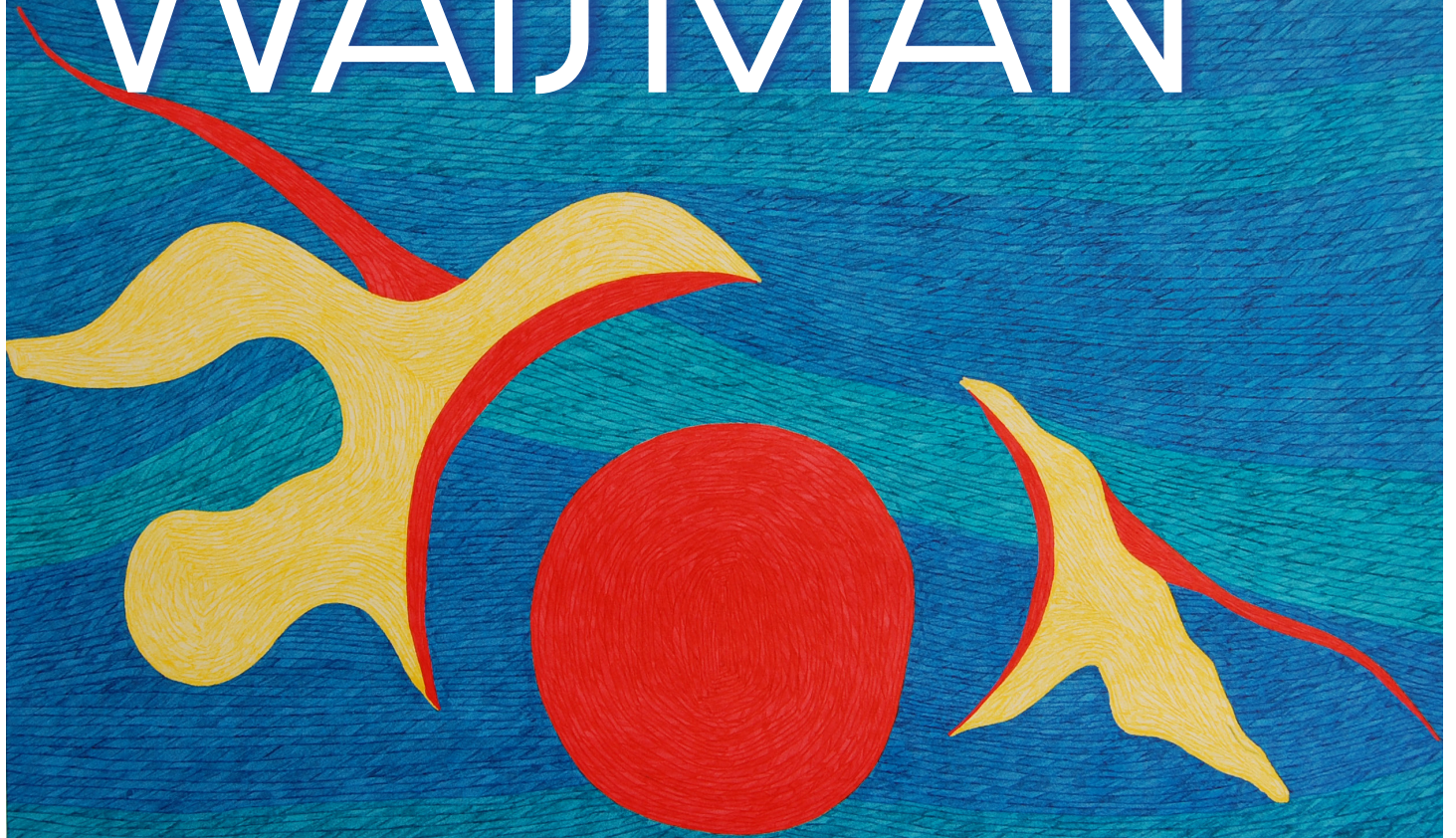


INSIDE WAISMAN



2022 IMPACT REPORT

- Xinyu Zhao's fragile X research
- Community TIES
- Las Maravillas del Waisman Spanish radio program
- Thoughts of Gratitude: The Dewey Family
- WI LEND Program
- Help celebrate 50 years in 2023



WAISMAN CENTER

1973-2023



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1973-2023



The Waisman Center is on the cusp of our golden anniversary. In 2023, we will celebrate 50 years of advancing knowledge about human development, developmental disabilities, and neurodegenerative diseases through research, clinical services, training, and outreach. We hope you will celebrate with us and save the date for our gala event on October 12, 2023 at the Monona Terrace in Madison. The support of our donors, like you, has been integral to our success and a driving force behind our accomplishments for nearly 50 years. We deeply appreciate your partnership.

The impact of your support is tangible and continues to sustain the Waisman Center now and into the future. You help improve lives and transform futures for the many individuals and families we serve with intellectual and developmental disabilities such as autism, Down syndrome, and cerebral palsy, or a neurodegenerative disease like Parkinson's or Alzheimer's.

These stories, plus more in our impact report, illustrate how your support makes a difference, inspires, and advances our work.

On behalf of the entire Waisman community, thank you for your support of the important work that we do and the people we serve. We hope to see you at our 50th anniversary celebrations next year.

A handwritten signature in blue ink, appearing to read 'Qiang Chang', with a long, sweeping underline that extends to the right.

Qiang Chang, PhD
Director, Waisman Center
Professor of Medical Genetics and Neurology

One mutation, many challenges: Unraveling the mystery behind fragile X syndrome

BY CHARLENE N. RIVERA-BONET

One mutation in a single gene, as straightforward as it may sound, can cause a broad range of symptoms and severity among those who carry it. This is the case for fragile X syndrome (FXS), the most common hereditary form of intellectual disability. The exact function of the gene that causes fragile X syndrome remains a mystery, but it is one of Waisman Center investigator Xinyu Zhao's goals to unravel it.

Fragile X syndrome is caused by a single genetic mutation in the *FMR1* gene on the X chromosome. *FMR1* makes a protein called FMRP that is important for brain development, but individuals with FXS fail to produce this protein. Under a microscope, the tip of their X chromosome can appear "fragile," which gives the condition its name. It is more common in males with approximately 1 in 4,000 versus 1 in 7,000 for females. The diversity of characteristics presented by individuals with FXS makes finding and developing treatments a little trickier.

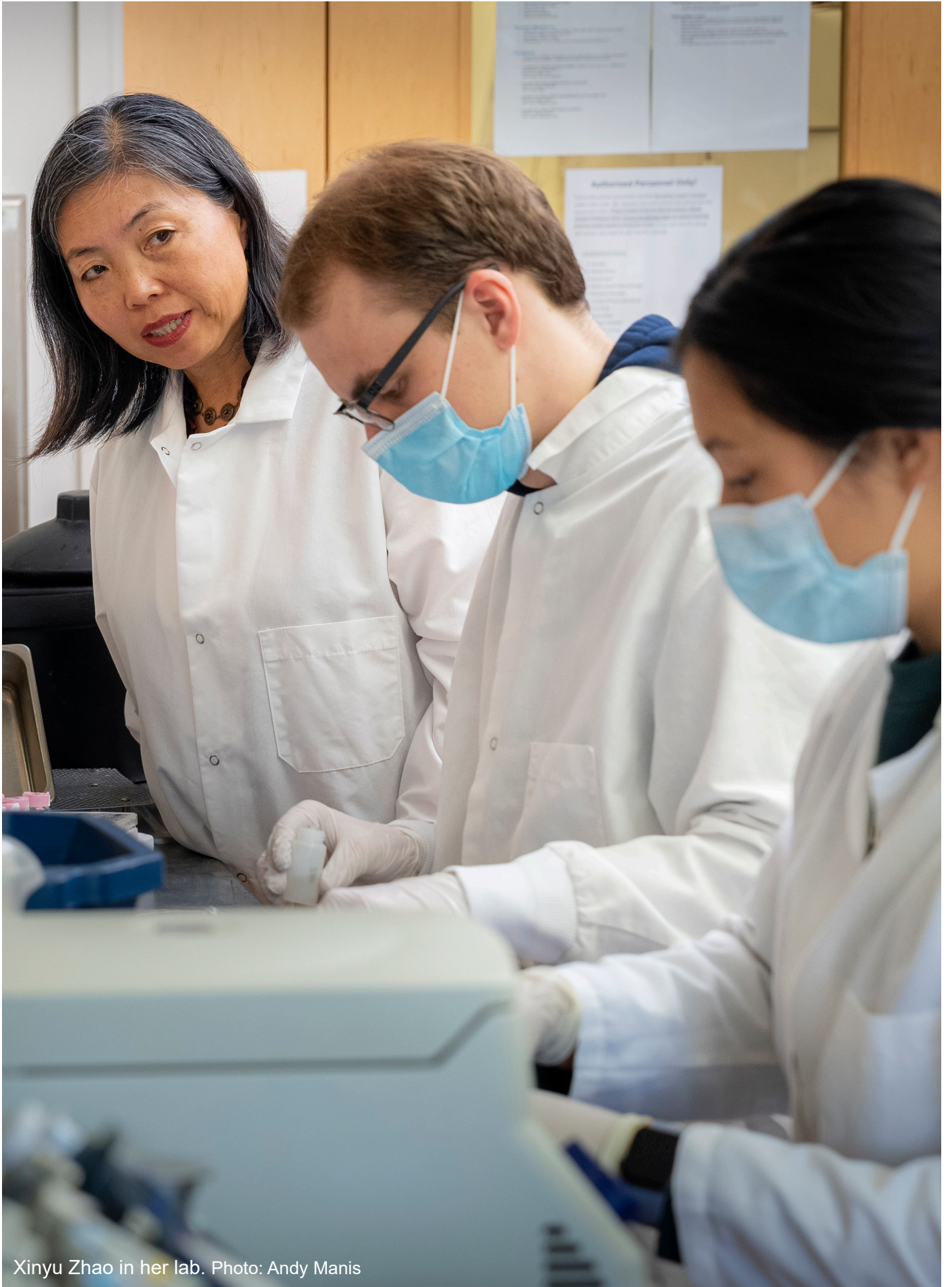
Xinyu Zhao, PhD, professor of neuroscience and Jenni & Kyle Professor in Novel Neurodevelopmental Diseases, is taking multiple novel approaches to understand the role of *FMR1* in human brain development, and

seeking ways to tailor treatments based on the characteristics of the patients for optimal outcomes.

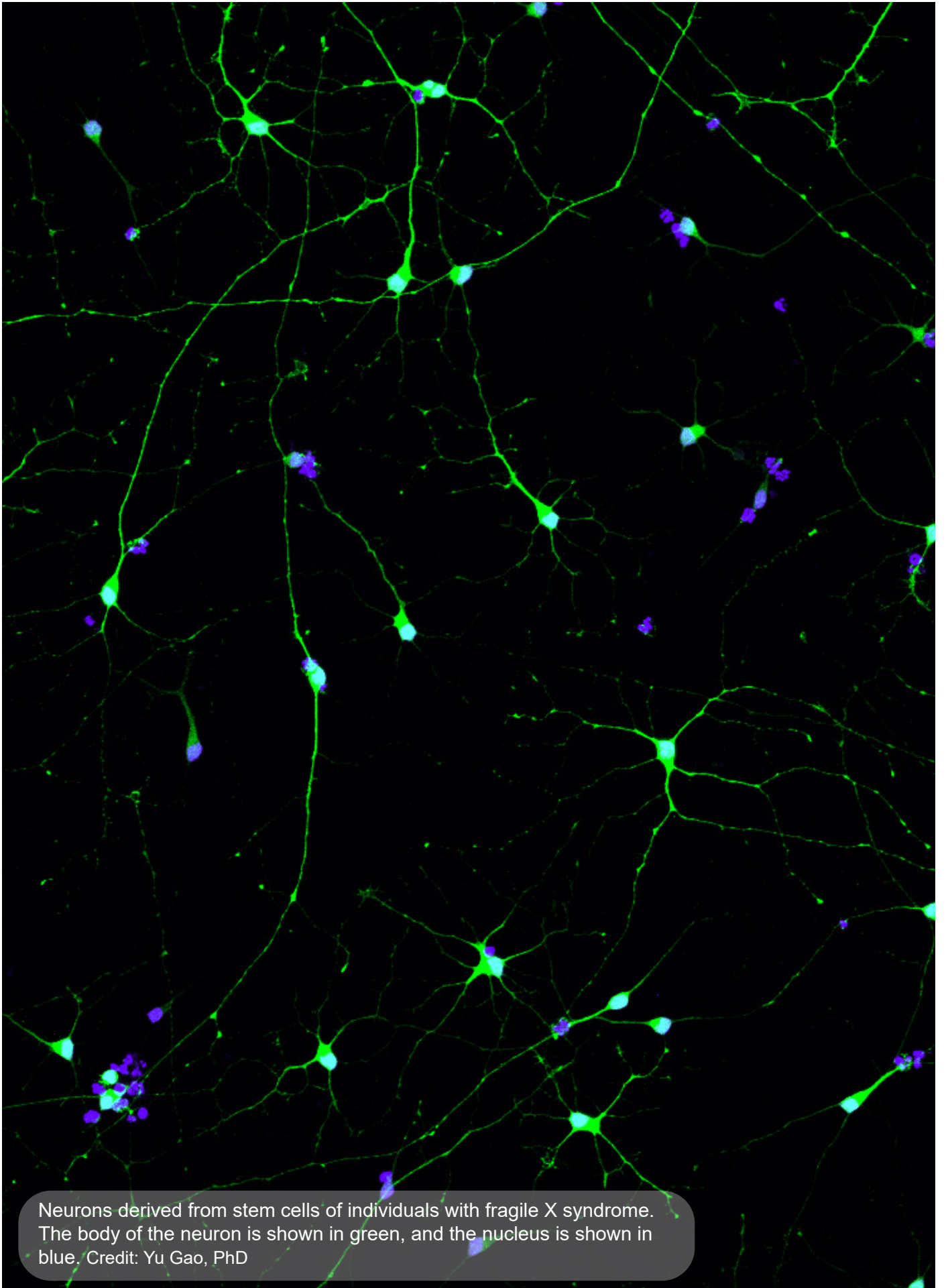
Individuals with FXS can present developmental delays, learning disabilities, and social and behavioral issues. About half of the individuals with FXS are also co-diagnosed with autism spectrum disorder (ASD). "Because [FXS] is a single gene disease, it provides a window of opportunity for us to understand autism, which is even more diverse in its phenotype and genetics," Zhao says. An individual's phenotype is the set of observable characteristics that result from the interaction between their genes and their environment.

Zhao's lab focuses on understanding the function of the *FMR1* gene in brain development by studying mutant mice that do not have FMRP and by investigating the characteristics of neurons derived from induced pluripotent stem cells (iPSC) of individuals with FXS, with the hopes of developing better treatments.

Zhao's work in FXS started somewhat serendipitously. She had an interest in the formation of neurons from stem cells – or neurogenesis – in the post-natal brain, and



Xinyu Zhao in her lab. Photo: Andy Manis



Neurons derived from stem cells of individuals with fragile X syndrome. The body of the neuron is shown in green, and the nucleus is shown in blue. Credit: Yu Gao, PhD

how that contributes to the process of learning and memory. During a symposium, she met scientists who worked on FXS and learned that individuals with the syndrome had lifelong learning and memory deficits. “So, I decided to investigate whether in fragile X the learning and memory deficits may have something to do with neurogenesis in post-natal adult brains,” Zhao says.

Zhao’s work in the field started with her showing that FMRP is important for neurogenesis and the deletion of the gene led to impaired learning and memory in mice. “These mouse models give us a platform to try to understand what happens when this gene is not expressed in human neurons,” Zhao says. Her work has come a long way since, furthered by the multiple fruitful collaborations at Waisman.

neurogenesis in the brain and reverse the cognitive and behavioral deficits in both young adult and older mice. Yue Li, PhD, and Zhao are co-inventors on a patent for this discovery filed by the Wisconsin Alumni Research Foundation (WARF). This reversal was long-lasting in the young adult mice. The drug, they discovered, alters both the intrinsic properties of adult neural stem cells and the microenvironment surrounding the neural stem cells leading to increased generation of new neurons.

However, there has been some resistance on repurposing cancer drugs such as compounds like Nutlin-3 as an FXS treatment. “Cancer and autism share many common molecular pathways,” Zhao says. She believes that repurposing some of the cancer drugs might lead to faster advancements in developing a treatment for FXS, as there is currently no treatment for the condition.

“So, one question is, how can changes in a single gene yield such differences among different human patients?” Xinyu Zhao

Repurposing a cancer drug to treat FXS

As Zhao’s research evolved, her lab discovered that the lack of FMR1 led to a cascade of events that affected the pathway that controls adult neurogenesis. They found that FMRP is important for repressing a protein called MDM2, which is involved in the differentiation of neural stem cells. In the absence of FMRP, MDM2 levels are too high.

MDM2 then became a new target. In an attempt to regulate the levels of MDM2, Zhao’s lab used a drug called Nutlin-3, an MDM2 inhibitor. Nutlin-3 and its derivatives are FDA-approved compounds for clinical trials for cancer treatments, since MDM2 also supports tumor formation.

In the mouse models of FXS, Nutlin-3, at a dosage much lower than those tested for targeting cancer, was able to rescue

Different brain waves call for different treatments

In parallel to mouse models, Zhao works with human models using iPSCs derived from individuals with FXS. “Using the human model allows us to identify the function of this gene in humans, which will be really important for effective clinical trial development,” Zhao says.

There is a high diversity of phenotypes, drug response, and symptom severity among individuals with fragile X. For example, an autism diagnosis is present in less than half of the patients, and anxiety and social behavior deficits are more severe in certain cases. “So, one question is, how can changes in a single gene yield such differences among different human patients?” Zhao asks.

Craig Erickson, MD, a clinician at Cincinnati Children’s Medical Center, has demonstrated that individuals with FXS show different resting

brain electrical activity as measured through noninvasive electroencephalogram (EEG). The electrical activity was classified as low gamma and high gamma. Low gamma versus high gamma FXS patients also present different symptom severity and respond differently to treatment. “And [Erickson] thinks that resting EEG may be a way to stratify patients before clinical trials,” Zhao says. Since clinical trials are expensive, it will be more efficient and cost effective to test the drugs in cultured neurons first. “If we can establish a cellular model for this differential EEG phenotypes of FXS, maybe we can also identify the molecular mechanism underlying these differential phenotypes, then design smartly the kind of drug, combination, or dosage to treat the two different populations of FXS,” Zhao explains.

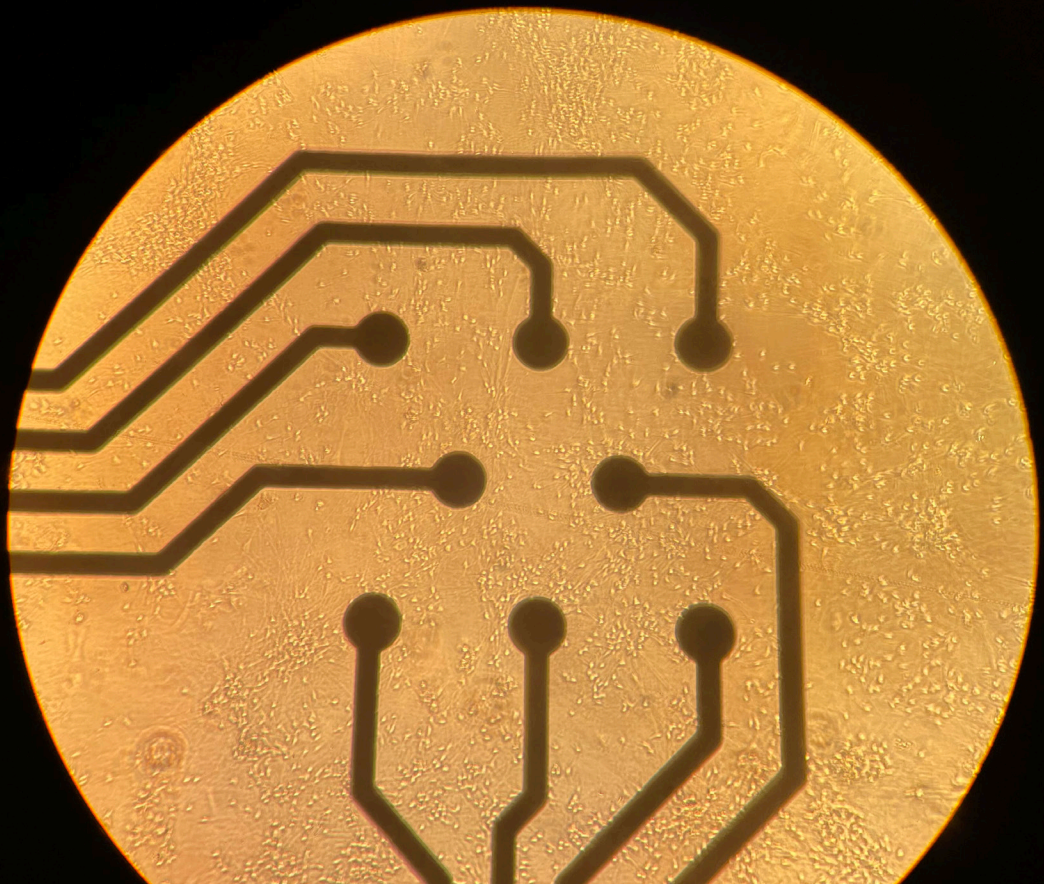
Erickson, Zhao, and Anita Bhattacharyya, PhD, assistant professor of cell and regenerative biology, started a collaboration to study these differences by characterizing iPSCs derived

from the patients. Initially funded by The John Merck Fund, they generated iPSC lines from high gamma and low gamma FXS patients and controls. Carissa Sirois, PhD, the postdoctoral fellow leading this project, has received fellowships from Fragile X Research Foundation (FRAXA), Autism Science Foundation, and UW-Center for Stem Cell and Regenerative Medicine to carry out the initial phase of this study. The study has now received \$3 million in funds from the Department of Defense.

Their preliminary results show that once the stem cells from high and low gamma individuals are differentiated into neurons, the neurons also show different electrical characteristics.

The group will also seek to understand what is happening at the molecular scale, first by doing gene expression analysis, and second by creating three-dimensional organoids. Grown from stem cells, these organoids are given the

Human fragile X neurons (bright cells) plated onto multi-electrode array (MEA), in which extracellular electrodes (black) are embedded in cell culture plates to measure electrical activities of human neurons. Credit: Carissa Sirois



appropriate nourishing environment to develop into neurons and glia in three dimensions representing the frontal cortex of the brain. They have limited organ functionality, but can be used to more accurately represent the natural environment of the cells in a living organism. This allows the scientist to measure the development of fragile X neurons over long term, since organoids can be kept in culture dishes for months or even over a year allowing for long term differentiation needed for human brain development. Soraya Sandoval, a neuroscience graduate student, has received an NIH Diversity Supplement to Zhao's NIH grant to work on FXS organoids. Natasha Mendez-Albelo, a molecular cellular pharmacology graduate student, together with Yu Guo, PhD a postdoctoral fellow, are investigating the contributions of other neuronal cell types as well as other genes to the altered electrical activities of FXS neurons.

This project will integrate the expertise of many scientists such as Daifeng Wang, PhD, assistant professor of computer sciences, and biostatistics and medical informatics, Ari Rosenberg, PhD, associate professor of computational neuroscience, André Sousa, PhD, assistant professor of neuroscience, and Qiang Chang, PhD, professor of medical genetics and neurology, and director of the Waisman Center.

"I think this new project is really exciting. It will provide the first comprehensive analysis of differential phenotypes among fragile X patients and then provide, not only a stellar model that can be used for preclinical testing of drugs, but also reveal the mechanisms that may underlie the differences among this population," Zhao says.

It also may shed light on how single gene disorders are treated, and provide a template on how to study neurological diseases without even knowing the gene that is causing it by using iPSCs derived from patients.

Extended reach and future directions

Zhao's work in FXS also extends beyond the walls of the Waisman Center. In addition to all the research advances and important findings

Zhao's lab has accomplished for the field, they have also created cell lines and molecular reagents to study FXS that have been widely distributed into both industry and academic labs. "We are generating important data, but also important resources for the field," Zhao says.

The Zhao group's work with Nutlin-3 and patient stratification based on brain waves are two of the many efforts they are running to better understand FXS and find treatments for it. They are also using human FXS neurons developed from stem cells and organoids to test other drug targets they previously identified in mouse models, such as the mitochondrial pathway, a project led by postdoctoral fellow Minjie Shen, PhD, who also received a FRAXA fellowship for the project.

Still unanswered in the field, Zhao says, is 'can the FMR1 gene be reactivated?'. In addition, gene delivery of FMR1 is also under consideration. However, one big question is, "how early and how much FMR1 should be reactivated or introduced to achieve therapeutic effect? "That's the other question I would like to ask for the next few years," Zhao says.

TRAINING

Leading the Way: WI LEND trains the next generation of clinicians and advocates focused on IDD

BY EMILY LECLERC

Daniel Deuel was a Wisconsin Leadership Education in Neurodevelopmental and related Disabilities Program (WI LEND) trainee at the Waisman Center from 2020-2021. While the pandemic changed the way LEND delivered its training, it was no less impactful for Deuel. His experience with LEND reinforced the importance of interdisciplinary clinical approaches and provided him with the necessary skills to be a leader in his field serving individuals with disabilities.

“There’s a lot more to life, lived experiences, and working alongside individuals with a variety of neurodevelopmental disorders and the folks who care for them has shown me that,” Deuel says. “I think LEND has

enriched my educational and life experience for sure.” Currently Deuel is pursuing a dual degree in physical therapy and public health at UW-Madison. This summer he worked alongside the Navajo Nation in New Mexico to provide physical therapy services that can be notoriously challenging to access.

His LEND experience pushed him to pursue career opportunities he may not have otherwise. “I worked as a home aid for an individual with cerebral palsy. I don’t think that would have been a work experience I would have pursued prior to LEND,” Deuel says. The impact and imparted skills that Deuel took away from his training exemplifies the goal LEND is trying to achieve: train leaders to



MCH LEND students in May of 2022. Photo: Clark Kellogg

improve services and supports for children with or at risk for neurodevelopmental disabilities. LEND is an integral part of training at Waisman Center and contributes to the training core function at the University Center for Excellence in Developmental Disabilities (UCEDD) located at Waisman.

“LEND trainees, including graduate students, self-advocates, and families, learn to explore perspectives in disability they might not otherwise experience. Starting with core knowledge of disabilities and how they are identified, trainees go on to learn about best practices for supporting families and then supporting individuals in their development

those with intellectual and developmental disabilities (IDD). Originally called Maternal and Child Health “interdisciplinary training”, the programs were renamed to LEND in 1994. Similarly, in 1994, LEND programs began to involve the family members of individuals with disabilities as trainees in the program.

Starting in 2011, all LEND programs across the country were encouraged to also include “disability advocates” (individuals with a disability) as LEND trainees. WI LEND is now in its’ twelfth year of including one or more disability advocate trainees, which is now a LEND requirement. This way students, family members, and disability advocates have the

“The world should be inclusive of the needs and respectful of the diversity of talents brought to the foray by all individuals” Daniel Deuel

to achieve optimal outcomes,” says Anne Harris, PhD, MPH, RD, director of the WI LEND Program. “Learning from those with lived experience helps LEND trainees determine how to make positive change in the systems and experiences of individuals with disabilities.”

The program brings students and community members together from 15 different disciplines to participate in seminars, interdisciplinary team-work, clinic or community-based practice, research projects, family mentor experiences, leadership development workshops and mentoring. Trainees learn leadership skills and how to educate legislators on best practices and ways to improve policies and programs for individuals with disabilities. The WI LEND program has trained nearly 3,000 people since it began at Waisman in 1973.

There are now 60 LEND programs across the United States all focused on training the nation’s next leaders capable of improving health and other services for individuals with disabilities. These training programs began in the 1960s with President Kennedy’s push to create better healthcare and services for

opportunity to learn from one another in a variety of ways. In a training program designed to empower people to support individuals with disabilities, who better to learn from than the individuals themselves. This inclusion follows the model of “nothing about us without us” which underscores the importance of including individuals with disabilities in guiding decisions that will ultimately impact them.

Many of the disciplines welcomed into LEND are clinically focused in areas which often have significant impact on a person’s life. Examples include specialties such as audiology, genetic counseling, medicine, nursing, occupational therapy, social work and physical therapy. LEND provides the training that promotes interdisciplinary communication and thought processes across these disciplines. Individuals with disabilities often receive care from multiple specialists and LEND trains those specialists to work together across disciplines to provide holistic high-quality care. Deuel took much away from this aspect of LEND.

“I have a particular interest in working with lots of different patient populations. LEND provided the leadership development I was after as well as exposure to physical therapy

practice within the early intervention setting,” Deuel says. “I was getting experience working alongside a clinician with a lot of insight and members of other practices so that I better understood what holistic, comprehensive, and interdisciplinary care could look like for the betterment of this patient population.”

Kali Kramolis, MD, MPH, a third-year pediatrics resident at the University of Chicago Comer Children’s Hospital, was a part of WI LEND from 2018 to 2019. Ever since medical school, Kramolis wanted to go into developmental behavioral pediatrics (DBP) – which is a field that specializes in caring for people with disabilities. “I was already planning to go into DBP, but LEND made me even more excited to. I felt surrounded by ‘my people’,” Kramolis says.

Kramolis’ experience as a public health trainee in LEND highlights one of the important aspects of LEND training – the development of the necessary skills to use evidence to inform policy changes which support individuals with disabilities. “What I remember learning most about was policy for people with disabilities in Wisconsin, advocacy-related tools, how to communicate with legislators, and the necessity of including folks with disabilities in policy making and education efforts,” Kramolis says. When making policy decisions for disability care and supports it is crucial to include individuals with disabilities in those discussions as they will be the ones directly affected.

The WI LEND Program serves an important purpose in training the next generation of clinical and community leaders in Wisconsin who will lead future health care and human services designed to improve the lives of individuals with disabilities and their families. “The world should be inclusive of the needs and respectful of the diversity of talents brought to the foray by all individuals,” Deuel says. LEND is an important part of creating that world.



Daniel Deuel



Kali Kramolis



Anne Harris



WAISMAN CENTER



Help us celebrate in 2023!

EVENING SAFARI AT THE HENRY VILAS ZOO

Saturday, May 20, 2023 from 5:30-8:00 p.m.

A sensory-friendly, afterhours, family event at the Henry Vilas Zoo



SCIENTIFIC SYMPOSIUM

Thursday-Friday September 21-22, 2023 at the Waisman Center

Hear about latest advances in autism, Down syndrome, functional genomics, and imaging research plus promising Waisman translational research in the areas of Alexander disease (Albee Messing), autism (Leann DaWalt), degenerative eye disease (David Gamm), Parkinson's disease (Su-Chun Zhang).

ANNIVERSARY GALA

Thursday, October 12, 2023 at the Monona Terrace Convention Center

A gala celebration, dinner, and silent auction with keynote speaker David Egan, an award-winning and acclaimed self-advocate, author, and Special Olympian who is an alumnus of the Waisman Early Childhood Program.

OUTREACH

Waisman's new Spanish radio show helps connect with Madison's Hispanic community

BY EMILY LECLERC

The fluorescent red on-air sign flicked on. The microphones crackled to life. Charlene Rivera-Bonet, PhD, Waisman science writer, and Lupita Montoto, La Movida radio host, made their final adjustments as the Facebook Live started recording and the opening music played across the airways. It was February 24, 2022 and listeners were tuning in for the first time to Las Maravillas del Waisman (The Wonders of Waisman) on La Movida, the greater-Madison area's local Spanish radio station.

For the next hour, Rivera-Bonet and Montoto spoke with Qiang Chang, PhD, director of the Waisman Center, and Paola Perez, MSSW, social worker and Waisman Center clinics operations manager, about the Waisman Center and its broad range of research, resources, and services for individuals with intellectual and developmental disabilities and their families. The first show in the monthly series was promising and surprisingly engaging with people calling in to ask questions, share stories about their experiences with disability, and on a fun note, someone even invited Chang over for homemade ceviche.

Las Maravillas del Waisman is one of several initiatives by the Waisman Center to better connect and engage with the local Hispanic community to make the center's information and resources more accessible to native Spanish speakers. Hispanics are the second largest ethnic group in Dane County, making up an estimated 6.5% of the population.

The show typically features a researcher and clinician from Waisman and then a short section of resources at the end. Las Maravillas del Waisman partners with Tim Markle, director of the Southern Regional Center, and the Southern Regional Center to provide listeners with resources pertaining to the topic of the show that month. That way the show's information is accompanied by actionable items.

The Hispanic community is typically an underserved community and often faces additional barriers to information, services, and supports related to intellectual and developmental disabilities – with language being one of those barriers. With the addition of Rivera-Bonet—who was born and raised in

“I think there's a need for information, especially on topics such as disability.” “There are families that might not know they have a child with special needs and these programs help them understand why their kids might be behaving in a certain way.”

Lupita Montoto



L-R: Lupita Montoto, Charlene Rivera-Bonet, Teresa Palumbo, Qiang Chang, Paola Perez
 Photo: Clark Kellogg

Puerto Rico and is a native Spanish speaker – to the communications team, Waisman hopes to start breaking down some of those barriers.

Part of Rivera-Bonet’s job, alongside her science writing duties, is to increase the accessibility of information and resources on intellectual and developmental disabilities to the Hispanic community. Waisman’s communications manager Teresa Palumbo thought that a radio show might be a good place to start.

Radio is among the top three ways Hispanic adults access information. “The radio is easy because it’s convenient – it doesn’t take time out of your day,” says Montoto. Understanding that this was a good avenue for conveying information and having the show be in Spanish on a well-established radio station that the community trusts, felt like a good starting line. Las Maravillas del Waisman also strives to feature native Spanish speakers from Waisman whenever possible. The show quickly revealed that there is a big need for disability-related knowledge in the Hispanic community. “I think there’s a need for information, especially on topics such as disability. To learn

the terminologies and the tools,” Montoto says. She runs La Movida alongside her husband and they are also parents to a son with autism. “There are families that might not know they have a child with special needs and these programs help them understand why their kids might be behaving in a certain way.”

The radio show began to reveal the depth of need for information and resources on IDD’s such as autism, Down syndrome, and cerebral palsy in the Hispanic community. After several shows, Rivera-Bonet started receiving phone calls. The Waisman Center was getting emails from Spanish-speaking families looking for information as well as someone to listen to their story. The Maravillas del Waisman show focused on autism had so many callers that half of the show was dedicated to just answering questions. This influx of questions and concerns underscored the need for more information on autism and also sparked the idea for a disability resource fair targeted to the Spanish-speaking community. The Waisman Center is working on coordinating the fair along with other community partners for summer 2023.



Charlene Rivera-Bonet

Rivera-Bonet continues to look for programming and opportunities to better serve the community. “I think our hope is that the radio show will be guided by the audience and it is not just us putting information out there,” Rivera-Bonet says. “It’s important that we ensure that the information is what is actually needed, relevant, and specific for the community because every community is going to be different.”

The experience has so far been gratifying for Rivera-Bonet. She feels the radio show is making important strides forward, not just in connecting the Waisman Center with the Hispanic community, but in establishing partnerships with local and trusted community stakeholders. “We’ve hosted great researchers that are very engaging and work on interesting research that is relevant to the community. We’ve also been able to highlight resources for families, and brought experts in relevant topics such as summer safety and physical activity for children with disabilities. In general, it’s been an exciting and great experience and I hope that people who have been listening to the show have learned a lot as well.”

Bringing scientists and clinicians who are themselves Hispanic also helps build

community trust and has a ripple effect of presenting Hispanic role models. Jose Martinez, a doctoral student in cellular and molecular biology who works in the Waisman lab of Anita Bhattacharyya, PhD, was a guest on the show, remembers a time when he visited Whitehorse Middle School to talk about neuroanatomy. “I heard some kids not paying attention to me talking in Spanish. So, I just busted out science in Spanish,” Martinez says. “One of the kids came up to me at the end and in Spanish asked, ‘so it’s possible for someone like me to be [a scientist] like you?’” An indirect effect of this radio program is representation. “You want to be visible [as a role model],” Martinez says.

Moving forward, Rivera-Bonet and the Waisman Center hope to continue to use Las Maravillas del Waisman as a platform to improve the accessibility of the center’s information and build a stronger and deeper relationship with the Hispanic community. “We hope that, little by little, the community becomes more familiar with the Waisman Center and sees us as an accessible and available resource,” Rivera-Bonet says. “And we are learning from this, too. We are learning what the needs of the community are and how we can better meet them. Las Maravillas del Waisman is our stepping off point.”

SERVICE

The Waisman TIES Clinic: A psychiatry clinic that looks at disability and mental health through a holistic lens

BY CHARLENE N. RIVERA-BONET

Daniel Kliever and his father sit in the only car parked in the lot right outside the Waisman Center TIES Clinic on Olin Ave. Daniel regularly comes to the clinic to see psychiatrist Steve Singer, MD. But it is Sunday morning and there is no one inside the clinic. For Daniel, however, this weekly routine proves to be quite therapeutic. “We drive up to the

front of his office, and we shout at the front of the building so that Daniel thinks we’re talking to Dr. Steve. And we pretend that Dr. Steve is telling him that he’s going to see him in many days,” narrates Mark Kliever, Daniel’s dad. “And then Daniel feels happy that he told Dr. Steve everything. And then we drive off.”



Mark and Daniel Kliever visit the TIES clinic on a Sunday afternoon. Photo: Clark Kellogg

Pretending to tell Singer all about his day is very reassuring for Daniel. But this is rooted in more than a decade of working with Singer and being part of Community TIES. Community TIES (Training, Intervention, and Evaluation Services) is a UW-Waisman Center behavioral support program that serves residents of Dane County with intellectual and developmental disabilities and their families. The Waisman Center TIES Clinic is a part of TIES that provides psychiatric care and consultation to Dane County residents with intellectual and developmental disabilities.

Once every few months, Daniel has an official session in the TIES clinic which actually includes Singer.

“It’s a very holistic approach they take to both the individual with disabilities and our family. And it makes a big difference in terms of his quality of life, and his ability to be out in the world.”
Eileen Ahearn

At six months old, Daniel, who is now 33, was diagnosed with Cornelia de Lange syndrome, a rare syndrome caused by a spontaneous genetic mutation. Cornelia de Lange is characterized by slow growth and smaller stature, developmental and behavioral differences, and intellectual disabilities ranging from mild to profound. Daniel also has autism and is non-verbal but communicates through sign language. “Even though he’s nonverbal, he’s very chatty,” says



Daniel Kliewer

Eileen Ahearn, Daniel’s mom.

The Kliewers came to Community TIES when Daniel was in junior high. In addition to the clinic, Daniel receives services through the Community TIES Behavioral Support, which is standard for every clinic participant. TIES behavioral support specialists and the TIES clinic work closely together to help improve participant’s independence and inclusion in their community.

Individuals with Cornelia de Lange syndrome can present behavioral issues that include self-injury and some aggression. At TIES, they take a holistic approach to help Daniel control his behavior, adapt to his environments including

home and workplace, and participate in the world in a safe and healthy manner.

The TIES Clinic’s unique and all-encompassing approach

The TIES psychiatry clinic often sees individuals who are unable to obtain psychiatric care from other providers due to their insurance, financial situation, behavioral issues, or medical complexities. They have two psychiatrists, Singer, and Lauren Bern, MD, who have extensive experience treating individuals with developmental disabilities.

A typical psychiatry session for Daniel, now done virtually, includes him, Singer, Mark and Eileen, TIES nurse and coordinator Joanne Law, Daniel’s TIES behavioral support staff, his home manager, and his job coach. This covers all areas of Daniel’s routines.

During the appointment, his home manager starts with describing Daniel’s behavior at home, as noted by their staff. She mentions they use a white board to communicate with

Daniel and help him better express himself. Parents then share medical updates and other observations, including changes that might be contributing to his behaviors.

Daniel's job coach joins too to talk about his experience at work. He works 20 hours a week doing laundry at Madison West High School. This is a new job for him, so his coach talks about how he has been adjusting. Mornings can be rough, but during the car rides home "He is as happy as a clam," his job coach says.

Singer then goes over the medication Daniel is prescribed and asks everyone their perspective on how it's working.

"It's a very holistic approach they take to both the individual with disabilities and our family. And it makes a big difference in terms of his quality of life, and his ability to be out in the world," Eileen says.

This comprehensive approach distinguishes the TIES clinic. "It's integrative. Medication is often necessary for managing mood swings, behavioral changes, frustrations, aggression, anxiety, depression, and it's wonderful to have that resource," Singer says. "But I am always confident that at TIES the management of a person's life and environment has been addressed with clarity and focus."

The half hour visit is designed to allow for the best level of understanding of the individual. Everyone's opinions and insights are welcomed in order to arrive at the most informed decisions on the course of treatment for the individual.

Law, who in addition to being a nurse also has experience in social work, is present to offer a medical perspective on the issues that might be physical, rather than behavioral or psychological. "A lot of people have medical issues that might be causing behavioral issues," Law says. Her input can be around whether they're having pain or other physical discomforts such as constipation or skin issues. "If you can identify and treat those physical issues, you might have less need for psychiatric medication," Law points out.



Lauren Bern



Steve Singer

Catching the symptoms on time

Kristin Kilmark has been part of the Waisman Center since very early on in her life. She received occupational, physical, and speech therapy at Waisman when she was a child. So, the fact that the TIES Clinic is part of the Waisman Center was encouraging for Kristin's mom, Connie Kilmark, when looking for a new psychiatrist for her daughter, who now sees Bern.

Kristin, who is 38 years old, was diagnosed with autism as a teenager. Since then, she has been seeing different psychiatrists to work through some mental health symptoms. Once Kristin turned 26 and could no longer be on her father's insurance, Meg Little, MD, her psychiatrist before Bern, suggested TIES. "And it's just been a godsend. Trying to find a psychiatrist for somebody who's on the kinds of insurance that Kristin has is just really, really hard," Connie says.

The dependable and readily available support that Kristin has found at TIES has helped her mental health symptoms remain stable. "Dr. Bern has been helping me with so much," Kristin says. "She has taught me to catch the symptoms sooner. So, when an anxiety attack arises, I can catch it after the symptoms," Kristin says. "Because you're in good therapy," Connie tells Kristin.

A circle of trust and stability

Kristin's team at TIES is composed of Connie, Bern, her job coach, her IRIS consultant, a support broker, her future legal guardian, and Josh Lapin, MSSW, a behavioral support specialist and the director of Community TIES who has known Kristin for many years. "And we all trust each other and she trusts all of us in different ways," Connie says. The team meets more often when Kristin is going through a rough patch, but they still continue to stay in touch when she is more stable.

Connie finds comfort in being part of this team, and in the relationship they have with Bern. "Kristin and I can assertively make requests with Dr. Bern, and she is willing to be a respectful partner in thinking about interventions," Connie says.

A few years ago, Connie recalls, Kristin started experiencing mental health symptoms that made it difficult for her to work, and get out



From left, Kristin and Connie Kilmark in Kristin's cohousing community, where she owns a condo.
Photo: Clark Kellogg

of the house. For several years, she would stay at home and not do much. “And I thought ‘We’re never going to recover this person. She’s never going to come out again,’” Connie says. “And because of all the treatment and all the skillful services and because we worked on the medication and all of that, slowly but surely she

White as the director. The clinic started shortly after with Mary Pearlman, MD, as psychiatrist. Dr. Meg Little joined soon after, and the clinic started growing significantly. Around 2009, Little left the clinic, and Singer was hired to work with teenagers and adults. At the beginning of 2010, Bern started working in the

“To be looked at attentively and empathically and treated humanely is kind of fundamental. I think TIES does a superb job of that” Lauren Bern

was getting ready.” Per Connie’s request, Bern discontinued Kristin’s strongest psychotropic medication. “What is most remarkable is that with the help of her team and overall community, this was a successful undertaking,” Bern says. Eventually, once Kristin was ready, she started a new job where she “just clicked.” She is currently working for a janitorial service, four hours a day, four days a week.

Her job and owning her own condo in the north side of Madison allow Kristin to live independently. Working also allows her to buy things she likes, such as her two stuffed animal friends, Artemis the owl and Imani the cheetah (pictured), which she got during a visit to the zoo. “You’ve really become such a dependable worker, that you have this great job that you’re getting pretty well paid from,” Connie tells Kristin. “So, you get more spending decisions and more power as a result of that.”

A stable place to live was something Connie worried about for Kristin. So, in 2007, Connie and Kristin’s father helped Kristin buy her own condo. “Which has made a huge difference because it means that Kristin is in a place that nobody can take away from her,” Connie says. It is a beautiful, cohousing community surrounded by greenery, and more importantly, neighbors who are Kristin’s age that act as an informal circle of support.

A longstanding community resource

The beginnings of the Waisman Center Community TIES trace back to 1986 with Paul

clinic with a focus on kids, and the elderly, but also attending to adults like Kristin. In 2016, Lapin became the director of TIES.

Both Singer and Bern brought expertise and decades of experience in mental health and intellectual and developmental disabilities. Singer also practices psychiatry privately, but dedicates two days a month to the TIES clinic.

Currently, the TIES Clinic is open four days a month and serves about 120 individuals, working closely with the TIES behavioral support team. “Medication plus behavior consultation might have a very positive impact on somebody’s quality of life. Even with the medication, we still use the support plan, we still do the training, and we still do the behavioral consultation,” Lapin says. Medication, he says, is used as a tool, but not as the answer to help behaviors. “We’re always navigating and working to make sure that we can look at what is driving behaviors, and what’s driving or triggering the issue.”

In addition to the behavioral support staff, guardians, family members, case managers, support brokers, residential and vocational support staff, and teachers are welcomed and encouraged to attend appointments and share their observations on symptoms and treatment progress. “Just the holistic idea – the medications are acting on a person’s body in the context of their own biology, and in the context of their interpersonal interactions – that kind of approach is what works for me,” Bern says.

Adapting to unforeseen changes in the system

Funding for the clinic comes from a variety of sources including Medicare, Medicaid and private insurance (when available).

A big challenge for the TIES program arose in 2018 when state designed long-term care services were expanded to include Dane County. Funding of services for individuals with intellectual disabilities stopped being the county's responsibility. With Dane County no longer being the primary funder of TIES, they had to recreate how they operated. "We had to go out and meet new funding sources and create a mechanism to maintain the work for individuals that we had been doing," says Axel Junker, outreach program director of Community Outreach Wisconsin, the umbrella program Community TIES falls under through the Waisman Center's University Center for Excellence in Developmental Disabilities (UCEDD). They had to convince new funding entities that their services were valuable, and figure out the logistics of the billing infrastructure.

Singer credits the survival of TIES through the redesign to Junker and Lapin. "They kept us alive, and we kept the work going while it was more fragmented and it was much more difficult to provide the integrated care," Singer says. Individuals and families who are strong advocates of the program also joined the trek.

A real impact when needs are unique and resources scarce

Many individuals, such as Daniel and Kristin, and their family members, have been significantly impacted by the work done at the TIES Clinic. Their efforts to encourage and facilitate independence for individuals with intellectual and developmental disabilities through a process that integrates all of the meaningful areas of their lives allows the individual to achieve the best outcomes. "There's a real kindness about the staff at the Waisman program, and a welcoming approach and flexibility. Those things go a long way when you're struggling with a family member

who's dealing with a lot of issues and so we're very grateful to them for their kindness and compassion and generosity," Eileen says. "It's hard to find that. It has to do both with the way it's organized and the people. And the people are really just great," she adds.

"To be looked at attentively and empathically and treated humanely is kind of fundamental," Bern says. "I think TIES does a superb job of that."



Untitled by Herleik, Norway
From the Harvey A. Stevens
International Collection of Art by People
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Thank you to everyone who supported the Friends of the Waisman Center events in 2022

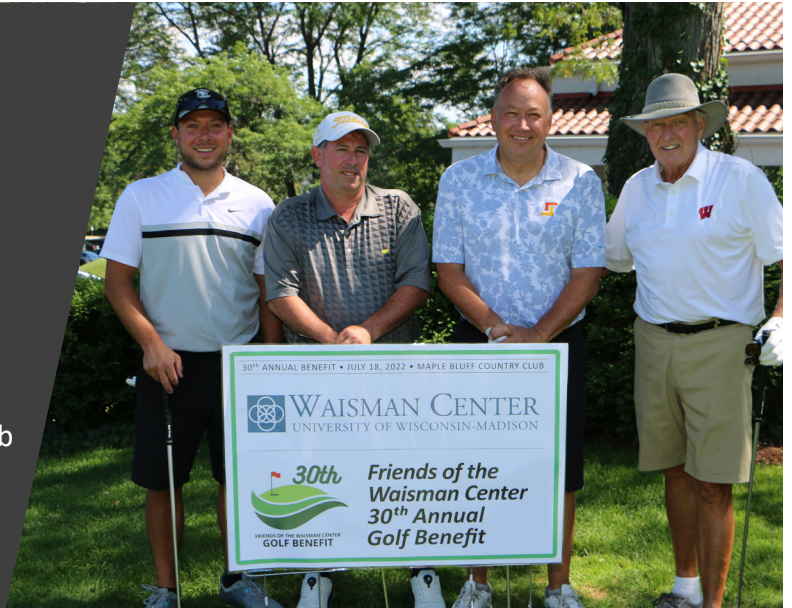


Waisman Whirl Run, Walk & Roll for All Abilities

- Raised more than \$21,000
- October 9, 2022 with in-person and virtual participants
- Jody Bleck and Eric Horler, co-chairs

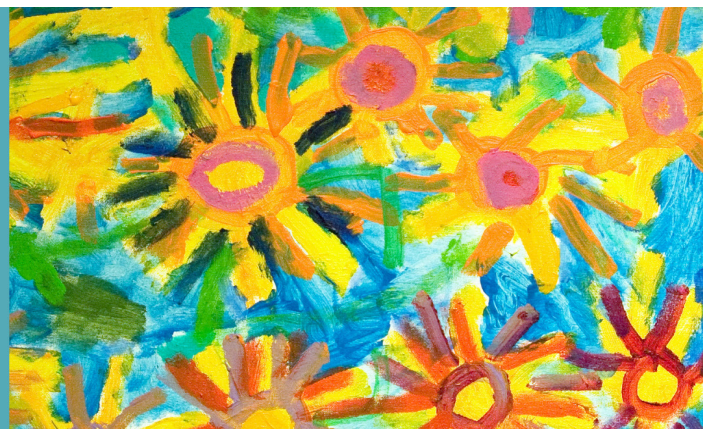
Friends of the Waisman Center Golf Benefit

- Raised nearly \$45,000
- Major support from **Godfrey & Kahn Capitol Bank** and **Exact Sciences**
- 30th anniversary of the event
- New location at Maple Bluff Country Club
- Guy Stratton, chair



Friends of the Waisman Center

Together for Waisman
A Stay-at-Home Benefit
Saturday, May 21, 2022



Together for Waisman

- Raised \$25,000 with a challenge grant from Jeff and Marv Levy
- Wine donated by General Beverage and Phillips Wine Company
- Linda Berman, chair

Thoughts of gratitude: The Dewey family is a catalyst of support for the Waisman Center

BY CHARLENE N. RIVERA-BONET

There are many reasons that families connect with the Waisman Center. For the Dewey family, it is Annie, a delightful and engaging woman, who loves people and is passionate about making a difference by participating in research. She also has Down syndrome. Annie has been part of a research study that looks at the development of Alzheimer's disease in Down syndrome. Her contributions to this study also inspired her brother Walter, and her mother Nancy, to contribute to the growth and advancement of the center by sharing their time, knowledge, and support.

Contributing to research

For more than a decade Annie, who is 52, has been part of a research study led by Waisman investigators Brad Christian, PhD, professor of medical physics and psychiatry and associate director of the Waisman Center, and Sigan Hartley, PhD, associate professor, 100 Women Chair in Human Ecology.

Among the things Annie enjoys, in addition to shopping, arts and crafts, and everything Disney, is participating in the research at Waisman. She looks forward to her visit every two years. "It's fun. And they make me happy," Annie says.

"To her it's an opportunity to see people she

knows who are interested in her," Walter says. According to her brother, Annie has a very active personality, loves being around people, and is very loving toward her friends and family. "And she's excited about the idea of hopefully contributing to favorable solutions because she's a very loving person, and nothing has bothered her more than seeing friends pass away from [Alzheimer's]."

Individuals with Down syndrome are at higher risk of developing Alzheimer's disease, and it typically presents at an earlier age than the general population. It is estimated that 90% of people with Down syndrome will have developed Alzheimer's by age 65.

Brad and Sigan investigate the course of Alzheimer's disease in individuals with Down syndrome by developing biomarkers and identifying risk and protective factors through a large, multi-site, longitudinal National Institutes of Health-funded study called Alzheimer's Biomarkers Consortium of Down Syndrome (ABC-DS).

According to Brad, one of the challenges of studying a disease that grows and accumulates as slow as Alzheimer's is that there are no shortcuts to obtaining the information, which makes studies long. "I think that the Deweys have really illustrated that patience with it. Knowing that these things take time, knowing



Annie Dewey with Brad Christian. Photo: Renee Makuch

that it takes true dedication from the families to be willing to help us out,” Brad says.

A typical research visit includes neuropsychological tests, neuroimaging scans, and blood sample collections. Annie’s favorite part is seeing Brad and the team of researchers.

Annie’s mom Nancy keeps her company whenever she visits. “She’s there to help calm nerves, make sure everybody’s at ease with what’s going on, and really watching out for the interests of her child,” Brad says.

“I think the Dewey family illustrates just how special all of our [participants] are,” Brad says. “We’ve known Annie’s brother Walter, who’s very active here in the Waisman Center, and the Board of Visitors and has just been a real spokesperson for the research going on here.”

“Over the years, Walter Dewey has been an active advisor to me and consistently advanced the center’s mission,” says Qiang Chang, PhD, Waisman Center director and a professor of medical genetics and neurology. “As a member of the Waisman Biomanufacturing Advisory Board, he has played a major role, along with several other members, in guiding the unit to operational and financial success.”

Walter got involved with the Waisman Center shortly before Annie did. He has always made it a priority to be involved in a number of activities in the community. One of them was being a board member at St. Coletta of Wisconsin, a non-profit organization that provides residential and vocational programs and services for persons with developmental disabilities, where Annie lived for a while. “But I was intrigued with what Waisman was doing. Primarily because

“The new gift from the Dewey family will encourage interdisciplinary collaboration between basic research scientists and physicians to tackle critical questions in the Down syndrome field, and focus on supporting early stage research where extramural funding is limited.” Qiang Chang

Leading with care

Walter has been a member of the Waisman Board of Visitors (BOV) for more than 11 years. His role, as he describes it, is being the eyes and ears to the community. He provides insights to the leadership at Waisman about what the community needs are and ways to meet them. Conversely, he makes members of the community aware of the Waisman Center and the services it provides.

The mission of the Waisman Center’s BOV, established in 1996, is to provide perspective and important connections with the business community and public policy makers. They also assist the Waisman Center director in strengthening partnerships with the private sector, provide advocacy network, and guide major fundraising efforts.

of my interest in just seeing opportunity for my sister,” Walter says. So, when Marsha Mailick, PhD, former director of the Waisman Center, approached him to be part of the BOV, he accepted.

Walter was also intrigued by the research done at Waisman and the unique collection of resources under one roof. A few years after Walter joined the BOV, Annie became part of Brad’s research program. “Getting to know Brad and what he was doing was educational for me. And then it basically led to this opportunity with my mother wanting to make a gift of consequence,” Walter says. From this, the Down Syndrome Catalyst Fund was born.

Inspired Giving

In addition to participation in research and in the BOV, the Dewey family has given a monetary gift to the Waisman Center to help support Down syndrome research. The family's idea behind the donation was changing the status quo and impact the trajectory of the research. Their wish is that the funds will be used to support early-stage research that does not already have funds from federal grants, such as pilot studies. Nancy looks forward to the results of this research. "I think it will be very interesting in the future," she says.

"Qiang did such an outstanding job of listening to what we were interested in from the standpoint of trying to do something different to affect outcomes for those with Down syndrome now," Walter says.

Anita Bhattacharyya, PhD, an assistant professor of cell and regenerative biology, and André Sousa, PhD, assistant professor of neuroscience, are the first recipients of this gift. They are collaborating on a research project that focuses on using stem cells to understand how brain development is altered in Down syndrome in ways that result in intellectual impairment.

"The new gift from the Dewey family will encourage interdisciplinary collaboration between basic research scientists and physicians to tackle critical questions in the Down syndrome field, and focus on supporting early stage research where extramural funding is limited," Qiang says.

The Waisman Center exists for and because of families such as the Deweys. Their dedication to both the research and service at the center has helped support the mission of advancing knowledge of human development, developmental disabilities, and neurodegenerative diseases.

"The way that I've sort of thought about this is not just getting folks that have Down syndrome to 50 but get them to 75 and have them be happy and productive people during that time,"

Walter says, "Waisman is on the cutting-edge of looking to achieve that goal."

Through research participation and support, and presence at the BOV the Dewey family has helped create a long-lasting impact that extends beyond the walls of the Waisman Center. It is because of the generosity of families like the Deweys that Waisman's mission can be accomplished.

To support the Down Syndrome Catalyst Fund, go to: www.waisman.wisc.edu/giving/



Cityscape by Erling, Denmark
From the Harvey A. Stevens
International Collection of Art by People
with Developmental Disabilities

OUR BOARDS

Board of Visitors & Friends of the Waisman Center

The **Waisman Board of Visitors** was established in 1996 to: provide perspective and important connections with the business community and public policy makers; assist the Waisman Center in strengthening partnerships with the private sector; provide an advocacy network; and guide major fundraising efforts.

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Founded in 1975, the **Friends of the Waisman Center** is a nonprofit 501(c)(3) organization that supports the Waisman Center through fundraising, volunteer efforts, and community outreach. The Friends raise awareness and support for the center through three community fundraisers: a spring benefit; a golf outing; and the Waisman Whirl Run, Walk, & Roll for All Abilities.

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