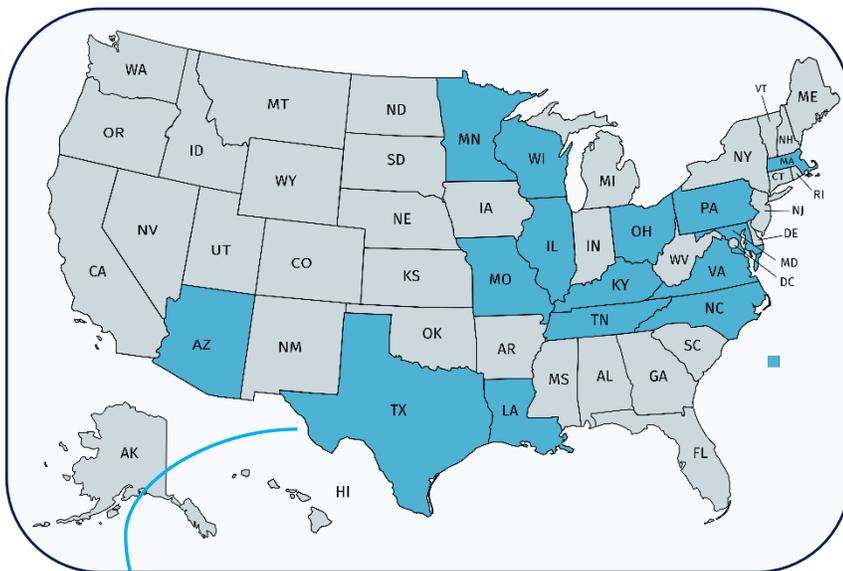


Global Newsletter

The NiAD research teams in Pittsburgh (PA), Madison (WI), Phoenix (AZ), and Cambridge (U.K.) have been working hard to meet recruitment goals. At this point in time, the three active research sites (Pittsburgh, Madison and Cambridge) are scheduling Visit #2 and Visit #3 for participants, as well as starting to analyze the data with the hopes that it will lead them to more information about amyloid accumulation and its relationship to Alzheimer's disease.

We have met so many wonderful participants and their families and want to thank you all again for your participation! We have had families travel near and far to be a part of the study, so we put together a map to show you where our participants are from:

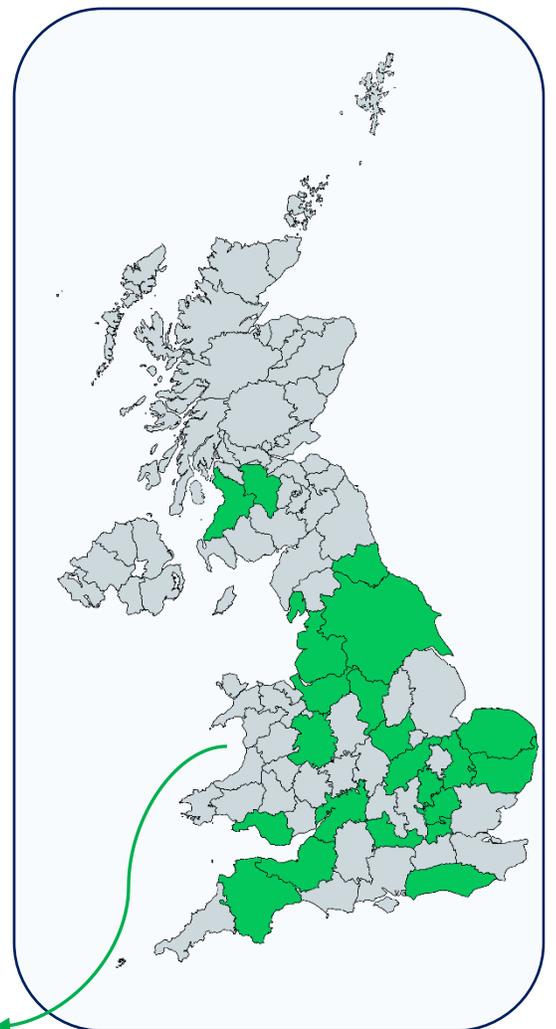


The Pittsburgh, Madison, and Phoenix sites in the U.S. recruited 124 Participants and 28 Sibling Controls from 15 different states! Of these participants and siblings:

- 59 Participants with DS are female
- 65 Participants with DS are male
- 23 Sibling Controls are female
- 5 Sibling Controls are male

The Cambridge site in the United Kingdom recruited 42 Participants and 7 Sibling Controls from 23 different counties! Of these participants and siblings:

- 25 Participants with DS are female
- 17 Participants with DS are male
- 5 Sibling Controls are female
- 2 Sibling Controls are male



Recruitment Updates:

In addition to working hard on recruitment, we have also added a new NiAD study site in:



WashU will begin recruiting participants in April or May 2019, but they are so excited to be a part of this research and are looking forward to meeting all the families they can.

To educate the community, Drs. Ances & Constantino (the site primary investigators) presented a lecture entitled "The Connection Between Alzheimer's Disease and Down Syndrome" on February 13th at the Albert Pujols Wellness Center for Adults with Down Syndrome in St. Louis, MO. There was a lot of interest from the community and the event was a huge success!

Additionally, WashU is preparing to submit a supplement to the current National Institute of Aging NiAD grant for the June 2019 deadline to look at additional early markers of cognitive decline in adults with Down Syndrome.

If you know anyone near the St. Louis area who might be interested in participating, please contact:

Olga Del Rosario
at (314) 747-1035
or delrosario.o@wustl.edu

As of February 2019:

Total # of Participants with Down syndrome enrolled across **all** sites: 166

Total # of Sibling Controls enrolled across **all** sites: 35

Total # of Participants with Down syndrome who completed **Visit #2**: 54

Total # of Sibling Controls who completed **Visit #2**: 7

Our recruitment goal is to enroll:

180 Participants with Down syndrome and **40 Sibling Controls** across **all** sites.

We are excited to try and reach our goal in 2019!

Conferences & Meetings

In 2018, our research teams travelled near and far to present NiAD research data in both slide presentations and poster presentations. The conferences they attended are listed below, but more detailed information about the presentations can be found on the NiAD website (<https://niad-project.org/>).

- 12th Annual Human Amyloid Imaging Conference:** *January 2018 (Miami, FL)*
- Alzheimer's Association International Conference:** *July 2018 (Chicago, IL)*
- NiAD & AD-DS Meeting:** *November 2018 (Washington, DC)*

At this year's NiAD Meeting, all four NiAD sites met together in Washington, DC for a two-day conference. During this conference, NiAD research teams participated in informative lectures, as well as collaborative discussions about study progress and the next steps for the study.

Principal Investigators from each study site led discussions about which data will be analyzed first. At this point in time, with your help and important research contributions, we have collected blood samples, genetic material, brain scans, neuropsych data, as well as cerebrospinal fluid from lumbar puncture procedures (for participants who consented to that procedure). Investigators decided they will place priority on analyzing the scanning data for our first upcoming papers and poster presentations.

Lead Research Coordinators from each study site met to discuss recruitment goals and updates. They determined how many more Participants with Down syndrome and Sibling Controls each site will continue to recruit in 2019, as well as discussed what's next for our participants. Sigan Hartley, who is the Neuropsychologist at the University of Wisconsin, presented her recently approved supplement which will help us learn more about lifestyle factors of Alzheimer's disease progression in adults with Down syndrome. Participants at Madison (WI) and at Pittsburgh (PA) are invited to participate in that part of the study.

More Updates: What's next?

Current study participants at the Pittsburgh and Madison sites will be invited to participate in a new supplemental project called: **Lifestyle Predictors of Alzheimer's Disease Progression in Adults with Down Syndrome**. This new part of the study will help researchers understand how lifestyle including sleep problems, diet, physical activity, social engagement (e.g., being around others), and cognitive stimulation (e.g., doing puzzles and reading) influence declines in memory and early brain changes associated with Alzheimer's disease in Down syndrome. While adults with Down syndrome are all genetically at risk for Alzheimer's disease, if and when brain changes and memory declines occur can vary quite a bit. Lifestyle factors may explain some of this difference.

This new part of the study involves a 7-day daily diary. On each day, participants record how well they slept, what they ate, and the activities they did. In addition, the adult with Down syndrome wears an actigraph accelerometer to record sleep and physical activity.

Individual Site Updates:

University of Pittsburgh *Pittsburgh, Pennsylvania*

This past summer, the Pittsburgh site successfully completed 4 lumbar puncture procedures.

As we continue through the second visits, we hope more participants will consider completing the LP procedure. We are looking forward to continuing seeing families for their second visit as well as beginning to bring a few families back for their **third** visit.

We are excited to begin enrolling participants in the supplemental project that will look at lifestyle factors of Alzheimer's disease progression in adults with Down syndrome.

Waisman Center *Madison, Wisconsin*

Over the past year we recruited 13 adult siblings (2 brothers, and 11 sisters) to participate at the Wisconsin site for their first NiAD visit.

Both male siblings had sisters with DS, seven female siblings had brothers with DS, and four female siblings had sisters with DS. We have enjoyed meeting and working with these siblings.

We are halfway through seeing our Participants with DS for Visit 2 and look forward to seeing everyone again soon!

University of Cambridge *Cambridge, England*

The UK site have said a sad 'goodbye' to Conchy Padilla, Study Coordinator, who has returned to Spain, her home country, to live and work.

Anna Bickerton, Research Assistant, has also moved on to begin her training to be a doctor (physician).

However, we are delighted to welcome Monika Grigorova, Research Assistant, who was able to attend the US congress and meet our US colleagues face-to-face in November.

NiAD Participant Spotlight: *Across the pond in the U.K.*



On a cold January afternoon, Liz and Monika visited one of the NiAD participants, Russell, at his home close to Cambridge to talk about his many connections with the U.S. His parents, Joe and Linda, joined us and over a very English cup of tea, they reminisced about their connections with and visits to the States. We heard how Russell's father Joe was born in New Mexico, the result of his parents (Russell's grandparents) meeting and marrying in Britain during World War II while his father was serving in the US Navy.

So, it seems Russell has many relatives living in the U.S. and tells us that he is also a Great-Uncle to nieces living there. We expect he must be the favourite and most fun uncle! His relatives live across the states in North Carolina, Las Vegas, Pennsylvania and Philadelphia.

However, Russell has also travelled to many other places in the U.S. and across the world. Russell keeps a world map to log and keep track of all the places he has visited. This year he is very much looking forward to an extra special trip to the Galapagos Islands!

One of Russell's favourite places is Central Park in New York. During his recent NiAD research visit doing the tests, he found a shared interest with our researcher Monika, as they are both fans of the U.S. sitcom 'Friends' which, as Russell remarked, also has a character named Monica.

Finally, Russell told us about his interest in Memphis, Tennessee. When he was younger, he had not been keen on Elvis but, after visiting his home there, and finding out about his story and music, Elvis has now become Russell's biggest idol. You can see from the photo that they share the same good looks and charm. 'Watch out ladies'!



NiAD Participant Spotlight: *Pittsburgh, PA*

Dan
successfully
completed
a lumbar
puncture
at Visit #2



How did you decide to go through with the lumbar puncture (LP) procedure and why?

“First I was scared a little bit, but I wanted to try it out. I tried it out and I did it. I did ok and I was brave enough to do it. My mom and I discussed it and it was my decision to make and I did it.”

How was your experience?

“Actually, it was okay. They numbed my back a little bit and put it in slowly and I was fine after that. And after it was all over I went back to my daily activities.”

Any advice to our participants who are thinking about doing the LP procedure?

“Basically, my advice would be, good experience to do because if someone needs it. It is like the organ donor on a driver’s license. It’s kind of like saving a life, so if someone needs that.”

Why did you want to be a part of the NiAD study?

“The stuff I’m into, interested in work with the brain and seeing it light up different colors. I wanted to do it.”

Anything you’d like to tell the readers about yourself?

“I was proud to do it and happy to do it again. The experience was kind of like a life-changing experience.”

NiAD Participants Spotlight: North Carolina to Pittsburgh



Shari and Jill are sisters who successfully completed their Visit #2 which included an FDG scan

What inspired you to get involved in this study?

- Shari said she wanted to help in learning about Alzheimer's.
- Jill participated in the study to help researchers learn about Alzheimer's.

How was your experience at the second visit?

- Shari didn't like the MRI or the PET scan, but she asked mom to come in with her and she was able to get through it. She didn't like to have her head in the holder and the MRI was very noisy. Shari said nothing hurt (except getting the IV) and the staff would tell her how much longer until it was over and that helped.
- Jill didn't think that the PET scan or MRI were that bad. The staff would explain everything and help you get through them. She was a little afraid when the table moved up but was able to get through without any problems. She did ask for mom to come in for a little while to help her get through it. Nothing hurt (except the IV) but it wasn't bad.

Is there anything you'd like to share with our readers?

- Jill and Shari both say It's a good thing to do the study to help other people.

Fun facts about Jill and Shari!

- In their spare time Shari and Jill go to Brunswick County Community College. Shari loves to dance, sing and cheer. She is a cheerleader for Special Olympics and went to Seattle in July for USA games and had a great time. She also swims and plays soccer. Shari works at a coffee shop on Saturday mornings.
- Jill loves dance, sing and cheer. She is a cheerleader for Special Olympics and went to Seattle in July for USA games. She attends theatre on Saturday mornings and works at a coffee shop on Saturday afternoons. Jill loves face-timing her boyfriend in her spare time. She also swims and plays soccer.

NiAD Participants Spotlight: *Madison, Wisconsin*



About once every year and a half, Erin takes time off her job as a teacher's aide and along with her mom, Nancy, makes a two-and-a-half-hour drive from her home in central Illinois to the University of Wisconsin-Madison Waisman Center to "embark on an afternoon of adventure."

At the Waisman Center, Erin, who is 36 years old and has Down syndrome, completes a variety of tasks and tests. Her favorite is a vocabulary exercise where she is asked to match words with correct images.

"I just love it, and I am good at it," Erin says. "When people ask Erin about her activities, she always mentions the NiAD study," says Nancy, "It is a hallmark of her adulthood."

The Waisman Center is a key partner of the NiAD study, which combines sophisticated brain imaging techniques, innovative biomarker assays, and comprehensive cognitive tests to further our understanding of Alzheimer's.

Megan, who is 37 years old, travels with her parents, Harold and Maureen, from near St. Louis, Missouri, to be a part of the NiAD study at the Waisman Center. She is a self-advocate as an individual with Down syndrome, has two jobs, and is part of a local theater group.

Researchers at the Waisman Center work with Megan and her parents to schedule visits around her work and social commitments. Megan, who has already made three visits to the Waisman Center says, "I do it because I want to help other people." Her parents support her completely. "We have been blessed with Megan," says Maureen, "and we want to give back some of that blessing."



Fred participates in the NiAD study and helps Dr. Christian and other researchers understand the connections between plaques and tangles. Fred works at the St. John's Military Academy in Delafield, Wisconsin. He loves dogs, hanging out with his nieces and nephews, and sports an epic moustache. "Fred is an organizer," says his sister and guardian Kathy. "He could spend all day organizing and re-organizing!"

Fred is 53 years old, and Kathy has started noticing changes in his cognitive abilities, especially when trying to learn new things. "Fred would always do the laundry," she says, giving an example. "We recently got a new laundry machine. It isn't very different in how it's operated, but Fred cannot use it."

Alzheimer's disease is thought to disrupt how neurons in the brain communicate, affecting learning, memory and other mental abilities. One of the challenges in studying Alzheimer's disease is that researchers don't know ahead of time who is going to develop the disease decades in the future. "That makes studies really difficult and expensive because we have to recruit large numbers of participants," says Dr. Christian.

But because the majority of individuals with Down syndrome will develop Alzheimer's disease, researchers can follow them over time to understand how the disease progresses. "Understanding the natural history of Alzheimer's and the related biomarkers is key to developing therapies and treatments," says Dr. Christian.

Searching for biomarkers

To test for different biomarkers, the NiAD study collects blood and other body fluids from study participants. Erin, who comes from Verona, Wisconsin, to take part in the study, is not a big fan of the blood draw, but she says "it's pretty cool to be able to help people with Alzheimer's."



Erin, who is 44 years old, was diagnosed with Alzheimer's about a year ago. "She is now a little shaky on her feet and has some issues with short-term memory," says her mother, Pat. Erin still lives independently with roommates, enjoys creating works of art and zooming down zip lines.

But sometimes, Erin's diagnosis with Alzheimer's throws a shadow on her life. "I am afraid," she whispers. The next second, she is smiling, though. "I love you," she says to her mom and gives her a big hug.

"I love you too," says Pat.

Finding accurate tests

Along with Erin, more than 180 individuals with Down syndrome participate in the NiAD study at the Waisman Center, the University of Pittsburgh and Cambridge University in England. Each study participant brings unique capabilities and a wide range of expression and vocabulary.

The NiAD study would be impossible without participation from the Down syndrome community. "It has been incredible working with our study participants," says Dr. Christian. "We couldn't have made the progress we have without them."

