

INFANT BRAIN IMAGING STUDY

Spring 2022

WE NEED YOUR HELP!

The IBIS sample (now over 1000) is unique in the world. We are extremely grateful to your family for participating. We desperately need your help in finding more families to participate in order to expand this groundbreaking research.

Our studies focus on early infant brain and behavior development in autism, Down Syndrome, and Fragile X Syndrome.


This work has already had a huge impact on the field in informing about prediction of later autism in infancy. We strongly believe that our findings and current research have the potential to transform how we think about, screen for and ultimately treat autism.


But ... this work is critically dependent on having enough families with infant children participate. **We need your help in recruiting for the two studies below. Please follow us on social media and re-share; tell your friends and others.** If you have ideas to recruit families, write us at ibis@wustl.edu.

Autism:

We need infants under 6 months who have an older full sibling with autism.

Connect and share on social media:

 [@ibis_research](https://twitter.com/ibis_research)

 [ibis_network](https://www.instagram.com/ibis_network)


 [IBIS.Network](https://www.facebook.com/IBIS.Network)

<https://ibis-network.com/infant/>

Down Syndrome:

We need infants under 6 months

Connect and share on social media:

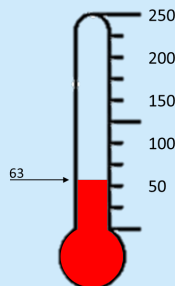
 [@dsstudies](https://twitter.com/dsstudies)

 [dsstudies](https://www.instagram.com/dsstudies)

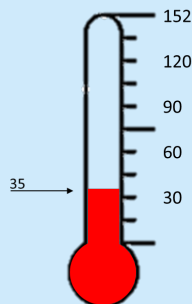
 [dsstudies](https://www.facebook.com/dsstudies)

<https://dsstudies.com>

Goal: 250 new babies



Goal: 152 new babies



IBIS

In this Issue

Researcher Spotlight:
Dr. Meghan Swanson

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IPS Cellular Models

Navigating the Pandemic

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School-Age Sleep Study

IBIS welcomes our newest partner, CHLA, represented by Dr. Shafali Jeste. See a recent write-up about Dr. Jeste's career in autism research from [Spectrum News](#).



How We Navigated Covid Pandemic with Safety Measures

Beginning in March of 2020, the IBIS network was faced with a new challenge: how do we continue to conduct the important work of clinical research during a pandemic? The vast majority of the work we do is completed face-to-face with our amazing families and their children, but suddenly the health and safety of all involved was a concern.

Quickly pivoting, the IBIS group decided follow suit with the rest of the world and go virtual! While not all aspects of the studies could be reformatted to be gathered remotely, our colleagues came together to explore all of these options and continued using online surveys, phone calls, and Zoom-based assessments wherever possible.

After about six months, new information about ways to protect everyone from COVID-19 using various types of PPE was coming to light. We were finally able to see families in person again, but this time ensuring everyone was pre-screened and utilizing the best combination of PPE available. One such mechanism that was implemented by the IBIS research teams was the MAXAIR CAPR system – a personal air purifying respirator device that allowed clinicians to stay safe while working directly with families.

As COVID-19 continues to be a challenge, each day is a new opportunity for research staff to evaluate the best way in which to remain healthy while also continuing the research that is vital to our communities.

New Study Measuring Sleep in School-Age Children

If your child participated in an IBIS assessment at school-age, they have the opportunity to participate in a new sleep project!

IBIS investigators are seeking clues about sleep patterns and sleep challenges faced by school-age children. With the support of a grant from NIH, your child can contribute to the first study able to see whether behavior and brain growth patterns at 6-, 12-, and 24- months of age might help reveal who is at risk for sleep problems in school-age. We will also study the relationship of sleep patterns to things that are important for school-age children like academic achievement, peer relationships, behavior regulation, and anxiety.

This study is completed 100% in your own home. Your study team will send you a scientific instrument called an actigraph that looks like a wrist watch (pictured on the wrist of one of our IBIS sleep super stars!) and a temperature, light, and sound sensor for your child's bedroom. You will fill out short on-line sleep diaries, several surveys, and your child will complete a 5-minute test called the psychomotor



vigilance test, designed to assess alertness. We will then pull this information together so you and your child can learn about your child's sleep, whether they are a "lark" or a "night owl," and get individualized tips for improving your child's sleep. We hope you find this fun, interesting, and full of valuable tips!

RESEARCHER SPOTLIGHT

Dr. Meghan Swanson is a developmental neuroscientist and Assistant Professor of Psychology at the University of Texas at Dallas. Meghan joined IBIS in 2013 as a postdoctoral fellow working with Dr. Joseph Piven and Dr. Martin Styner at the University of North Carolina.

Her postdoctoral research used data from IBIS families to show that infants who heard the most caregiver speech also had the best language skills. This work highlights the power of parents as positive change agents for their babies.

At UT-Dallas, she directs the Baby Brain Lab where trainees use multi-method approaches to understand the developing child, including neuroimaging, eye-tracking, cognitive assessments, and home language recordings. Her research aims to understand how parents and infants communicate, and how this communication supports infant brain and cognitive development.

Meghan and her team in the Baby Brain Lab are currently collecting data from IBIS Early Prediction families on the home language environment. This data will be used to help inform future intervention studies aiming to help support language development in autistic infants.



How We Scan 6-Month Old Babies

All infants are unique, which means their sleep preferences are unique as well. Since our MRI scans are scheduled at night around each baby's typical bedtime, our team gets lots of information from parents about what will help each individual baby feel secure and sleepy.

Some babies like being swaddled and snug, while others need room to stretch and spread out. Some babies prefer to be held and rocked to sleep, while others can put themselves to sleep independently with a pacifier or bottle. Some babies like sleeping on their side or stomach, so we have



tiny sandbags at the scanner to give a bit of gentle compression so all babies feel comfortable sleeping on their back. We also use earplugs and

high quality noise-cancelling headphones so the baby's ears stay fully protected during the scan.

Whatever your baby needs, our "baby whisperers" will be there during each MRI to make sure every infant is safe and sound asleep in the scanner. If and when babies do wake up before the MRI is fully complete, we can easily stop the scan to get them settled and sleeping again.

We will always prioritize your baby's safety, but we go the extra mile to ensure that each one is as cozy as possible during the MRI experience.

IPS Cell Project Underway: Understanding Brain Development in Autism

As IBIS families are returning for their School Age visits, some participants are choosing to donate small blood samples as part of the induced pluripotent stem cell (iPSC) project.

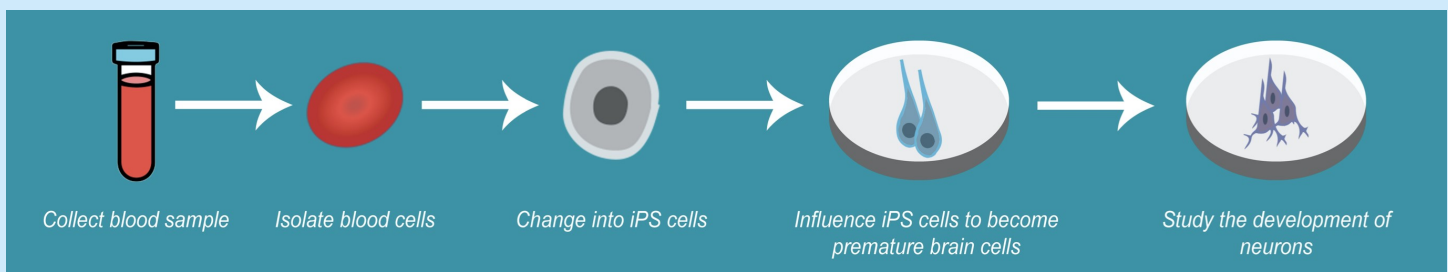
Using only 10mL of blood (about two teaspoons), IBIS researchers collect millions of cells that can be influenced to transition into cells that act like neurons. These neuron-like cells give researchers a glimpse into how brain cells grow and develop very early on in life (in utero), by studying them in a dish in the laboratory. These cells allow researchers to learn about how the fetal brain develops in autism, and how the rate at which these cells multiply might reflect what is known about brain overgrowth in infancy in autism.

Researchers will analyze IBIS participants' MRI brain images over time, alongside the

growth rate of the cells generated from their blood, to find associations between the two valuable datasets.

To date, six older siblings of IBIS participants have also donated blood for the iPSC project, allowing for future sibling-pair studies of fetal neural development. Blood is collected either on-site during the visit, remotely at a blood collection partner location, or at-home using the Tasso+ collection kit. The Tasso+ is a pain-free and needle-free, effective method for collecting blood from participating children who have an aversion to medical settings or needles.

Participants of the iPSC project are compensated \$50. If you are interested in having your child participate in this project, please contact your IBIS research assistant.



New Peer-Reviewed Research from the IBIS Network

Towards a Data-Driven Approach to Screen for Autism Risk at 12 Months of Age

<https://pubmed.ncbi.nlm.nih.gov/33161063/>

A voxel-wise assessment of growth differences in infants developing autism spectrum disorder

<https://pubmed.ncbi.nlm.nih.gov/33421871/>

Diagnostic shifts in autism spectrum disorder can be linked to the fuzzy nature of the diagnostic boundary: a data-driven approach

<https://pubmed.ncbi.nlm.nih.gov/33826159/>

Relations of Restricted and Repetitive Behaviors to Social Skills in Toddlers with Autism

<https://pubmed.ncbi.nlm.nih.gov/33956255/>

Variability in Responding to Joint Attention Cues in the First Year is Associated With Autism Outcome

<https://pubmed.ncbi.nlm.nih.gov/33965519/>

Cataloguing and characterizing interests in typically developing toddlers and toddlers who develop ASD

<https://pubmed.ncbi.nlm.nih.gov/34021722/>

Social and non-social sensory responsivity in toddlers at high-risk for autism spectrum disorder

<https://pubmed.ncbi.nlm.nih.gov/34145789/>

Infant vocalizing and phenotypic outcomes in autism: Evidence from the first 2 years

<https://pubmed.ncbi.nlm.nih.gov/34708871/>

Pre-symptomatic intervention for autism spectrum disorder (ASD): defining a research agenda