Summer 2023, Vol. 4, Issue 1

THE CNL

The newsletter of the Cognitive Neurophysiology Lab
& the Human Clinical Phenotyping Core of the Rose
F. Kennedy Intellectual & Developmental
Disabilities Research Center
at the Albert Einstein College of Medicine

editorial

We are pleased to share with you the Summer 2023 edition of The CNL Newsletter!

This edition provides an overview of various scientific and research related topics. We also share an interview with a parent whose children have participated in our research studies, to highlight her experience engaging in research. One of our study coordinators, Dennis, provides a brief history of Albert Einstein's Van Etten building, where the CNL currently resides. Fun fact: Dennis' grandmother started her nursing career in the 1950s in the very same building. We introduce our fantastic summer interns, who we love for the curiosity, enthusiasm and intelligence they bring to the lab as young budding scientists! We hope you also enjoy the pictures of our lab members and the wonderful participants like you who make our research happen. Finally, be sure to read about our current research studies and how you can take part in the important science we are undertaking here at the lab.

Editors:
Tringa Leçaj, Dennis Cregin, & Sophie Molholm

in this issue

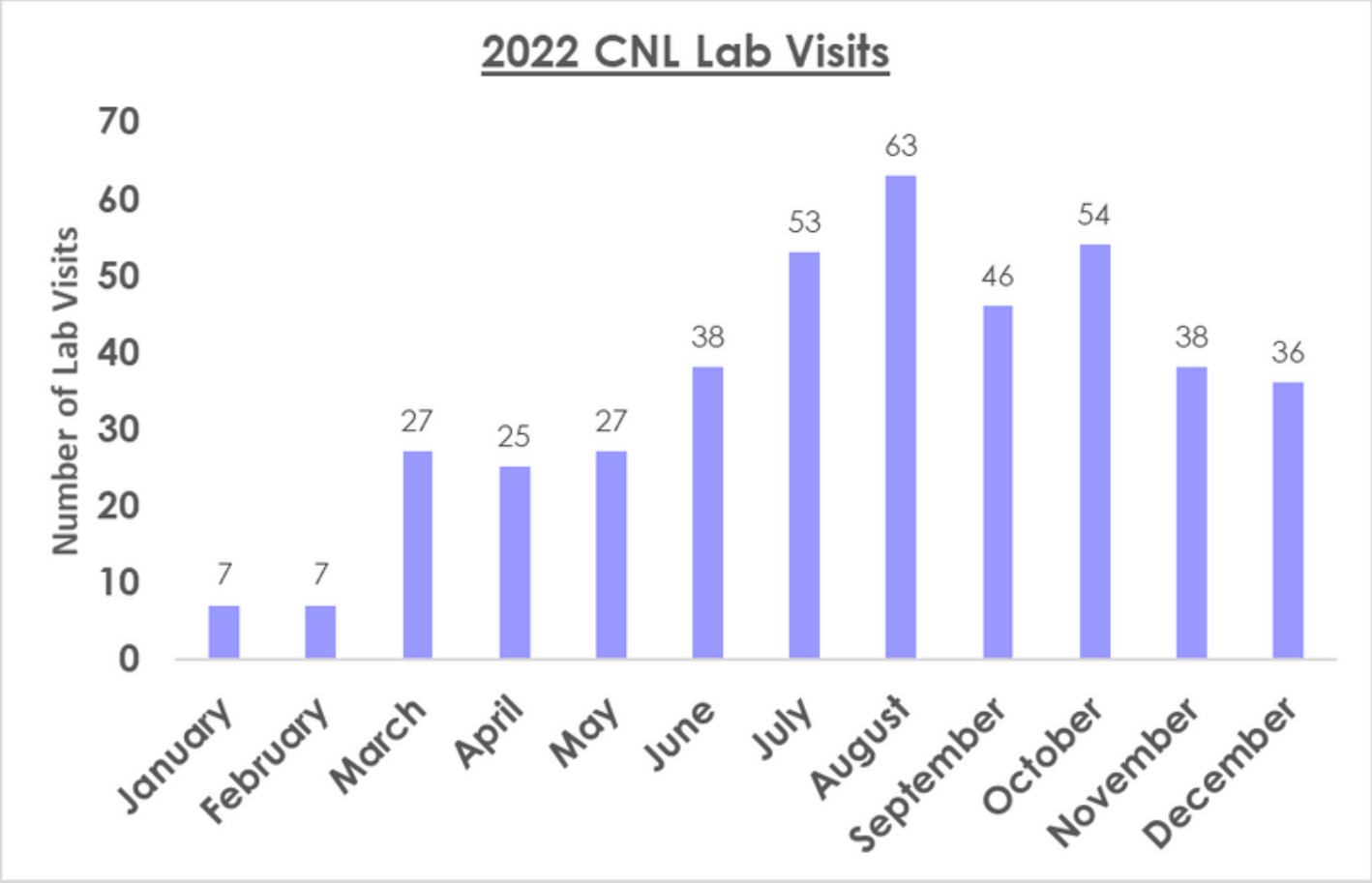
The Children's Hospital at Montefiore

EINSTEIN
Albert Einstein College of Medicine

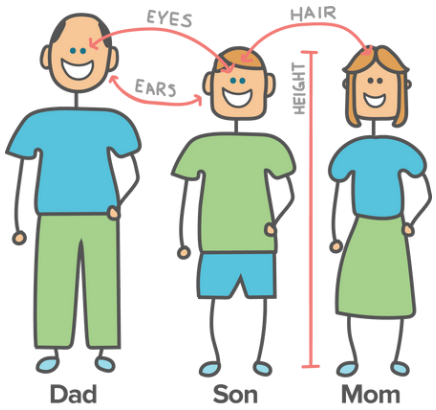
What we do

The Cognitive Neurophysiology lab consists of a team of investigators who seek to understand how the brain works. We use different approaches to study various brain processes that contribute to how we perceive the world, decide what to pay attention to, and retain this information in our memory. We investigate these functions in both children and adults. While a lot of the work we do is just to understand how the brain usually works, we also want to understand how it works in people with different brain related conditions including autism and rare genetic conditions. Some of the "tools" that we use are electroencephalography (EEG) to look at the electrical activity in the brain, eye tracking to see what people are looking at and to measure changes in pupil size (it changes when you are surprised by something!), and a bunch of questionnaires and clinical and cognitive testing so that we can understand how our experimental measures relate to individual characters such as memory, age, and so on!

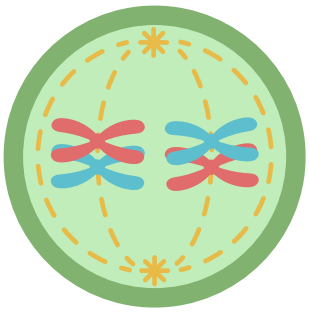
With the help of our research participants, we have been able to accomplish a lot over the past year. The chart below shows the number of EEG and cognitive testing appointments we had for each month of 2022. As you can see, summer and fall are busy times for us! But we are always open for business, so come any time. Our research wouldn't be possible without our participants and we are grateful for everyone who volunteers at our lab. Their contribution to science is immensely appreciated.



What are genetics?



Genetics is the study of genes, including how traits are passed down from parent to child

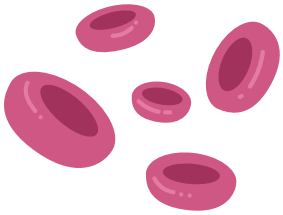


DNA is a chemical found in every cell. It contains all the information needed for living things, like you.

Genes are made up of DNA and come in pairs. Half of your genes are from your mother and half are from your father.

Genes hold the information that determine the color of your eyes and hair, the shape of your face, and much more!

Researchers study genes to learn about how certain genes, and mutations in certain genes, may affect the development of certain diseases & disorders



Sickle cell anemia is an example of an inherited genetic disorder. It causes blood cells, which are usually round in shape, to adopt a sickle-like shape. These sickle-shaped cells can reduce blood flow and cause pain as a result. Studying genetics is important because it can lead to a deeper understanding of disorders such as sickle cell anemia. This understanding can help in the development of treatments.

Click here to learn more about genetics!

A LOOK BACK: THE VAN ETTEN BUILDING

HOME OF THE COGNITIVE NEUROPHYSIOLOGY LAB

The Van Etten building, formerly Van Etten Hospital, is now part of the Albert Einstein College of Medicine. The building has a storied past and, today, houses scientific labs, clinical offices, and medical student simulation labs, no longer serving as an inpatient hospital. A look into the history of Van Etten proves that it has always been a center of compassionate care and cutting-edge scientific research. The foundation of Van Etten Hospital was laid in 1951, when it was designated to become a tuberculosis hospital three years prior to its official opening. It was to be one half of the Bronx Municipal Health Center, which consisted of both Van Etten Hospital and the Abraham Jacobi Hospital, the larger and better known of the two which is still open and functioning today. Van Etten Hospital cost $15,000,000 to construct, approximately $167 million in today's dollars, and was a 500-bed facility that opened in October of 1954.

The construction and design of Van Etten was overseen was Pomerance & Breines, Architects. Simon Breines, a founding partner of the firm, was a strong critic of "quickly executed architectural undertakings," favoring a "more deliberate pace and a more human scale." This attitude may very well be why, though originally slated for demolition shortly following Einstein's leasing of the building, the facility was found to be structurally sound and the College opted for renovating it instead. Van Etten was no hurried project.

Dr. Marcus Kogel, founding dean of the Albert Einstein College of Medicine, served as the Commissioner of the New York City Department of Hospitals from 1949 to 1953,

Finishing up construction of Van Etten Hospital

the time period during which Van Etten Hospital was being planned and constructed. Kogel prioritized the construction of tuberculosis hospitals. He asserted in a 1950 publication that "no phase of hospitalization program is of more concern than that related to the care of tuberculosis patients." With the discovery of streptomycin by Selman Waksman in the 1940s, Kogel was aware that advances in the treatment of tuberculosis may reduce the number of beds needed for tuberculosis patients in the coming years. Thus, he wanted to ensure that TB hospitals could be

Staff tend to one of Van Etten's first patients at opening of the hospital, 1954

convert[ed] into general hospitals or chronic disease wings of general hospitals." Nevertheless, he felt strongly that "the admission of hundreds of tuberculosis patients [should not] be further delayed [simply] because scientists feel hopeful that antibiotics will bring the bacillus of tuberculosis to the brink of disaster." It's clear that Kogel's concern for the mid-century TB patient was instrumental in the construction of tuberculosis hospitals in New York City, including Van Etten.

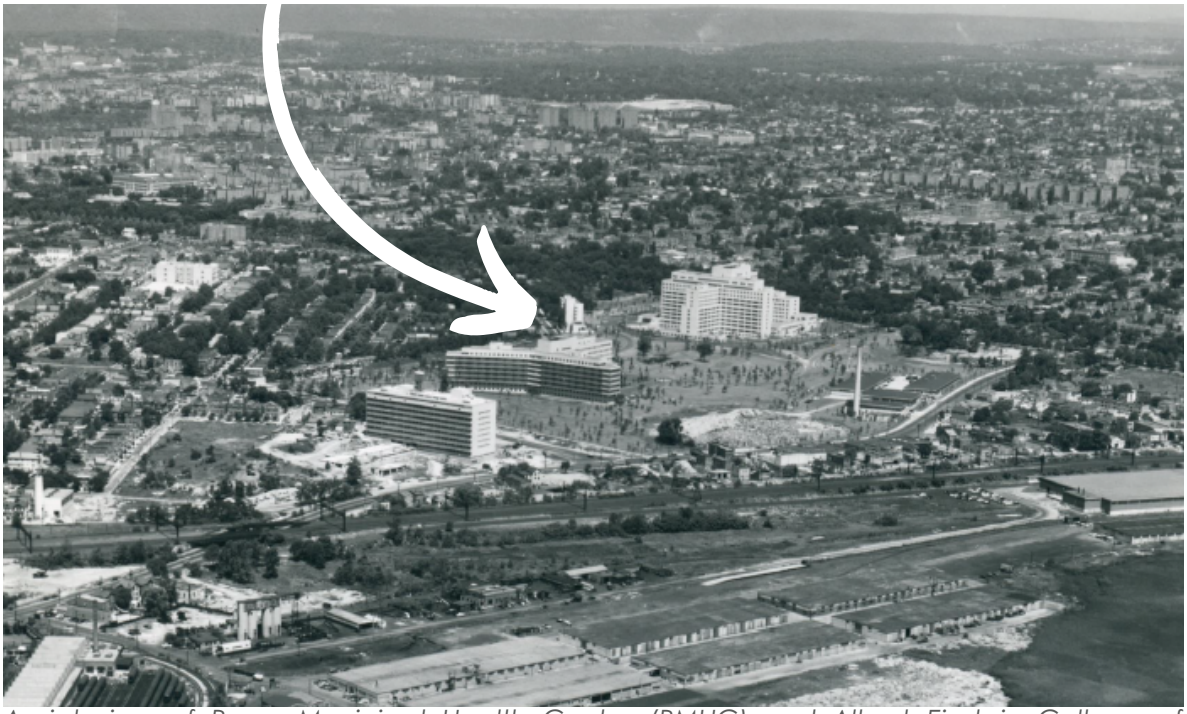
On the exterior of Van Etten are balconies that were originally intended to provide TB patients with sun exposure, known as heliotherapy, a common treatment for the disease in the early 20th century. In fact, even recent studies have shown that increased sun exposure is inversely related to tuberculosis incidence rates.

At the opening of the Van Etten Hospital in 1954, World War II was not long over and the Korean War was still in progress. In addition to providing space for tuberculosis patients to receive heliotherapy, the solariums of the hospital at the end of each ward along with the hallways and basement could be repurposed to "accommodate 5,000 extra patients in a national emergency." The balconies, reminiscent of a ship's deck, can still be seen on Van Etten's exterior today.

Van Etten Hospital was named after Nathan B. Van Etten, a well-known physician who served as president of the American Medical Association in the 1940s and, perhaps more importantly, espoused a deep concern for the sick poor. The hospital certainly lived up to its name, serving the sick of the Bronx and surrounding areas as an inpatient facility for the second half of the 20th century. In 2009, Albert Einstein College of Medicine leased the closed hospital facility from Jacobi Hospital/Bronx Municipal Hospital Center and has since been renovating the building. Today, the Van Etten building is home to the Cognitive Neurophysiology Lab, the Children's Evaluation and Rehabilitation Center (CERC), the Psychiatry Research Institute at Montefiore Einstein (PRIME), and many more.

The legacy of Van Etten as a hub of important scientific work and compassionate clinical care for the surrounding community endures to this very day!

Van Etten Hospital



Aerial view of Bronx Municipal Health Center (BMHC) and Albert Einstein College of Medicine, July 1955

Our Summer Interns

Jacklyn Brzoska
Student at Wesleyan University
Fun Fact: My first language was Polish but since I've picked up Spanish and French.

Rebecca Karpel
Student at Cornell University
Fun fact: I have two dogs, Carl and Cooper, and just won a pet goldfish at a fair named Gerald.

Hamza Zahurullah
MD student at Albert Einstein College of Medicine
Fun fact: I was born at Weiler Hospital and left NY when I was 2 only to come back for med school 22 years later.

Benjamin Davis
Student at Amherst College
Fun fact: I am a cross country and track runner.

Lilly Rosenberg
Student at the University of Michigan
Fun fact: Harry Potter is my favorite book.

Megan Darrell
MD/PhD student at Albert Einstein College of Medicine
Fun fact: During college soccer, I played against Liverpool's semi-professional team (& we lost 5-0).

Erin Wright
Student at the Florida State University
Fun fact: I was born in Saudi Arabia, grew up in the Philippines, and lastly came to Florida.

Grace Djabre

Student at Bronx High School of Science
Fun Fact: I have a twin sister and I am a sports editor for my school paper.

Sasha Herzog

Student at Pelham Memorial High School
Fun Fact: I do digital art.

Rachel Horn

Student at Blind Brook High School
Fun Fact: My ideal day starts with a pura vida playa bowl.

Fun Activity

Find the following words in the puzzle.

U	X	T	C	O	G	N	I	T	I	O	N	Z	E	X	M	J	U
D	A	T	A	N	F	B	D	P	W	Z	L	P	X	U	U	W	O
W	U	Y	P	D	P	R	E	D	I	C	T	P	P	Z	F	R	D
L	B	P	S	Y	C	H	O	L	O	G	Y	M	Q	O	N	E	G
D	N	H	A	U	T	I	S	M	G	E	S	E	N	L	E	S	B
I	N	V	E	S	T	I	G	A	T	E	R	Q	C	J	U	E	J
N	E	U	R	O	T	R	A	N	S	M	I	T	T	E	R	A	A
U	G	R	A	P	H	C	E	U	W	T	O	O	F	E	O	R	A
Y	T	H	Y	P	O	T	H	E	S	I	S	B	H	G	N	C	G
L	Y	Z	M	E	A	S	U	R	E	R	V	E	A	X	S	H	H
F	V	I	G	L	A	B	O	R	A	T	O	R	Y	W	O	C	A
Z	I	W	M	N	E	U	R	O	S	C	I	E	N	C	E	R	O

AUTISM
COGNITION
DATA
EEG
GRAPH
HYPOTHESIS
INVESTIGATE
LABORATORY
MEASURE
NEURONS
NEUROSCIENCE
NEUROTRANSMITTER
PREDICT
PSYCHOLOGY
RESEARCH

Parent Interview: Why Research?

Ms. Rocio Zumaya is the mother of KellyAnn, who is diagnosed with autism spectrum disorder (ASD), and three other daughters, all of whom have participated in research studies here at the CNL. Her experience, and that of her daughters, is detailed in the interview transcribed below:

Your daughters have participated in many studies here at the CNL. Do you remember the first time they volunteered in research?

I can't recall the exact date, but I know that we started getting involved in research around the time KellyAnn was diagnosed with ASD when she was 8 or 9 years old. Initially, I became aware of research opportunities through email, a common way that research centers and labs advertise. My whole family got involved in research, even KellyAnn's sisters who do not have autism but had many questions at the time. By participating in research with KellyAnn, my other daughters have gotten to experience cognitive and EEG testing along with her. When we first began signing up for studies, I was very nervous but came to be comforted by all the information that such participation has provided me with.

Did the research study help your other daughters understand their sister, KellyAnn, better?

I'm very grateful that my daughters are able to participate in research because it gives them an opportunity to learn more about the process of getting evaluated for autism. They've become more aware of what their sister goes through and even the type of assessments that are done with her. It's an opportunity for them to connect with her more deeply on an emotional level. Research participation has, in a way, broken the stigma surrounding autism for my daughters by helping them understand why some children think differently than others. Besides KellyAnn, there are many kids in their classroom who also have autism and I have found that research participation has also been a great opportunity for my daughters to learn about them as well.

Ms. Rocio Zumaya and daughter KellyAnn

What would you say to a parent that is hesitant about participating in research?

Give it a try! If you don't try, you have no way of knowing what the experience is like. It is a great opportunity to learn more about your child and receive information that you otherwise would not have known.

How do you see the future of autism research?

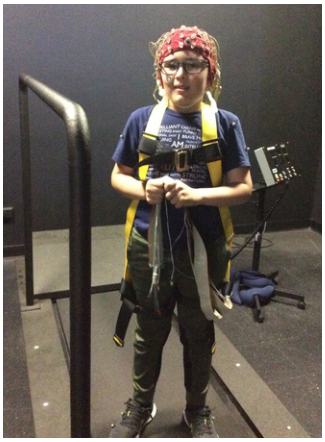
In the future, I would like for us to be kinder, more patient, and more inclusive towards others, including those with ASD. We should be able to support each other despite our differences. Research has potential to initiate this change by helping us understand those that differ from us more deeply. This will go a long way in supporting those with autism and creating a community that prioritizes inclusion.

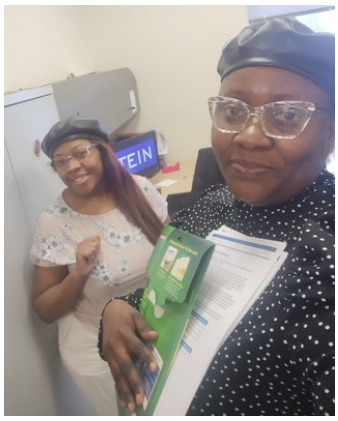
Has your daughter, KellyAnn, been able to learn about herself through research participation?

Yes. I find that, since participating, she is not afraid to say she is autistic. She knows that she is different. She is not afraid to admit this and she is very transparent with everyone. A couple of years ago, she was sitting down and she asked me how I felt when I first found out she was diagnosed with autism. It really hit me that she had such a question in her mind. This helped me understand her better because I realized that she was aware of who she is and her condition. I believe research participation has certainly contributed to that.

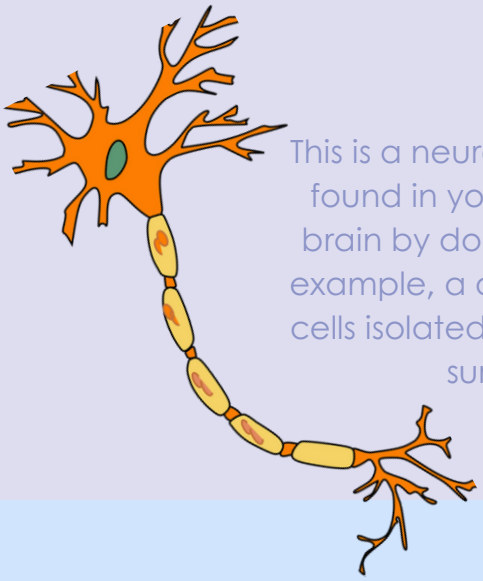
Faces of the CNL:

Our Wonderful Staff and Participants

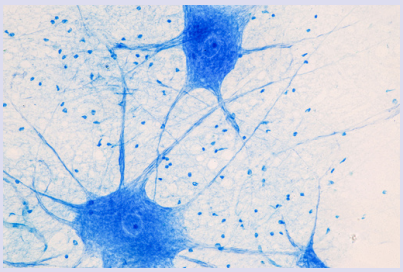


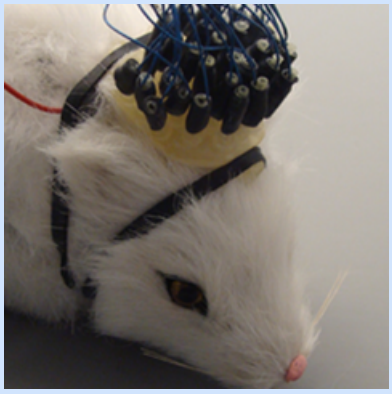


How is neuroscience research done?



This is a neuron. A neuron is a type of cell that is found in your brain. Some scientists study the brain by doing experiments on these cells. For example, a chemical or drug can be added to cells isolated in a dish to see how it affects their survival, growth, or activity.





Other scientists study the brain using animals like mice, rats, or monkeys. Many features of the brain are similar across species. For this reason, experiments with animals can help scientists develop drugs and treatments as well as learn more about how our brains work.

Here at the CNL we conduct neuroscience research with humans, like you. See the next page for a listing of our currently open studies. Many of these studies use EEG to help us learn more about simple brain functions like memory, visual & auditory processing, and decision-making.

JOIN OUR CURRENT RESEARCH STUDIES!

Autism Genetics Network: Increasing Representation of Human Diversity

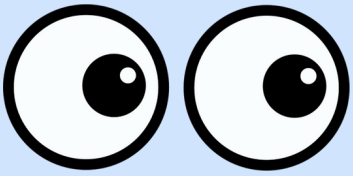
- Purpose: To increase diversity in autism and genetic research; provide autism evaluation for individuals with a confirmed or suspected ASD diagnosis.
- Eligibility: At least 3 years old with a confirmed or suspected diagnosis of ASD; must be of African, Afro-Latinx, Afro-Caribbean, or Black ancestry
- Participation entails:
  - At least 1 in-person visit to the lab
  - Autism and cognitive evaluations
  - Blood draw/saliva swab
  - Parent surveys and remote testing via Zoom
- Contact: (718) 862-1821 or elizabeth.akinyemi@einsteinmed.edu

Neuro-Oscillatory Function and Network Communication in ASD and Unaffected Siblings

- Purpose: To understand how brain processes differ in individuals with ASD.
- Eligibility: Child aged 8-12 with or without autism
- Participation entails: 2-3 in-person visits to the lab, each 4-5 hours
  - Autism and cognitive evaluation
  - EEG testing
  - Parent surveys
- ASD participants will receive a cognitive report of all cognitive/clinical testing done as a part of their participation.
- Contact: (718) 862-1826 or tringa.lecaj@einsteinmed.edu

Testing Computational Theories of Visual Processing in ASD with a Novel Integrated Approach

- Purpose: To understand how individuals with ASD organize and segment images.
- Eligibility: Aged 16+, with or without autism
- Participation entails:
  - 1 or more in-person visits to the lab, ranging from 2-5 hours
  - Computer task with EEG testing
- Participants can complete up to 3 sessions of this study.
- Contact: (718) 862-1895 or dennis.cregin@einsteinmed.edu



Participation in all studies is compensated!

Scan this QR code to fill out our interest form

Autism Awareness in Africa: Renate's Life

Klicks AFRICA FOUNDATION
Creating An Inclusive Society

Accra, Ghana

Renate is a 20 year old woman from Ghana who was diagnosed with autism spectrum disorder (ASD) at 7 years old. Upon her diagnosis, her mother, Mary Amoah Kuffour, started the Klicks Africa Foundation to raise awareness in her community as well as provide much-needed parent training and services for children with ASD. Renate and her mother came to visit the CNL in April as part of Autism Awareness Month. Mary told the lab members about the wonderful work her foundation is undertaking.

Since 2016, Klicks has been providing social skills training, physical and speech therapy, and even a sensory diet program to children with ASD and other special needs in Accra, Ghana. Today, the Foundation's Center serves 123 children aged 7 to 26, sixty five of which are below the age of five.

Additionally, Renate works as a model and inspires other individuals with autism to pursue their dreams. Her life is documented by her mother on social media. Follow Renate's amazing journey on Facebook at "My journey with Autism." Renate and her mom participated in a study at the CNL that aims to increase representation of individuals of African descent in genetic research.

SOME RECENT LAB ACCOMPLISHMENTS

CONGRATULATIONS...

TO DR. SEYDANUR REISLI ON THE SUCCESSFUL DEFENSE OF HER PHD,
PREDICTIVE PROCESSING IN AUTISM: EXAMINING PREDICTION CERTAINTY USING ELECTROENCEPHALOGRAPHY (EEG)
ON JUNE 2ND, 2023.

AND

TO DR. PIERFILIPPO DE SANCTIS ON RECEIVING A GRANT FROM THE NATIONAL INSTITUTES OF HEALTH (NIH) TO SUPPORT HIS RESEARCH,
LINKING DEMENTIA PATHOLOGY AND ALTERATION IN BRAIN ACTIVATION TO COMPLEX DAILY FUNCTIONAL DECLINE DURING THE PRECLINICAL DEMENTIA STAGE

THE CNL WISHES YOU A SAFE AND HAPPY SUMMER