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Biological Psychiatry Publication

A new study from the Seaver Team’s Harony-Nicolas Lab has been published in *Biological Psychiatry*, a scientific journal of psychiatric neuroscience and therapeutics.

The study has yielded important findings regarding brain activity linked to social interaction, with potential implications for autism treatments.

The study was one of the first to examine brain cells in a specific region of the thalamus, the posterior intralaminar complex (PIL), and their response to social interaction with an unfamiliar stimulus.

In order to assess PIL neural activity in response to social interaction, researchers of the Harony-Nicolas lab placed male and female mice in environments with either a toy mouse, an unfamiliar real mouse, or nothing, and subsequently observed neuronal activity during their interactions with each of these stimuli. The team noted an increase in activity during interactions with another real mouse, but no such increase occurred during interactions with the toy.

Furthermore, researchers noted that the neurons exhibited the highest level of activation during the initial encounter with another mouse. As repeated encounters with the same mouse occurred over time, neuronal activity in the PIL diminished. These results suggest that neurons within the PIL play a crucial role in encoding social information, thereby aiding in the recognition of social stimuli.

Finally, the employment of viral tools to suppress the activity of PIL neurons resulted in social recognition deficits, providing additional confirmation of the crucial role played by the PIL in encoding social information.

Autism frequently manifests with challenges in social behavior including deficits in social recognition. Given these groundbreaking discoveries regarding

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Seaver Celebration

We are thrilled to report that the 2023 Seaver Celebration, commemorating the 30th anniversary of the Seaver Autism Center for Research and Treatment, was a great success.

The event was held at the Plaza Hotel on the evening of Thursday, November 16th, and consisted of an elaborate cocktail reception followed by a seated dessert and program.

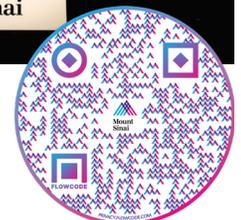
We were excited to honor Alex Kolevzon, MD, for his 16 years as Clinical Director of our Center. Dr. Kolevzon leads the Seaver Autism Center’s novel treatments program, which conducts important studies ranging from small pilot trials to multi-centered, pivotal research studies directed with the Food and Drug Administration. During his time at the Center, Dr. Kolevzon has touched the lives of thousands of families through his dedication to understanding the causes of autism and by developing new treatments.

During the program, our guests were shown two videos – one to celebrate 30 years of the Seaver Autism Center, and the other to honor Dr. Kolevzon. We also heard from two Seaver Center families – the Henderson family

presented Alex with his award, and the Egerton-Warburton family told our guests about their son, Rowland, who participated in the first-ever ADNP drug trial under Alex’s care. It was very moving to spend an evening celebrating and reflecting on the enormous impact Dr. Kolevzon has had on the autism and related rare disorder communities.

The proceeds from the celebration will provide significant funding to support our mission to enhance the diagnosis of autism and related disorders, discover the biological causes of those disorders, and develop and disseminate breakthrough treatments.

Help us celebrate by making a donation in honor of Alex to support our research. Your generosity will help us pioneer advances for individuals on the spectrum.

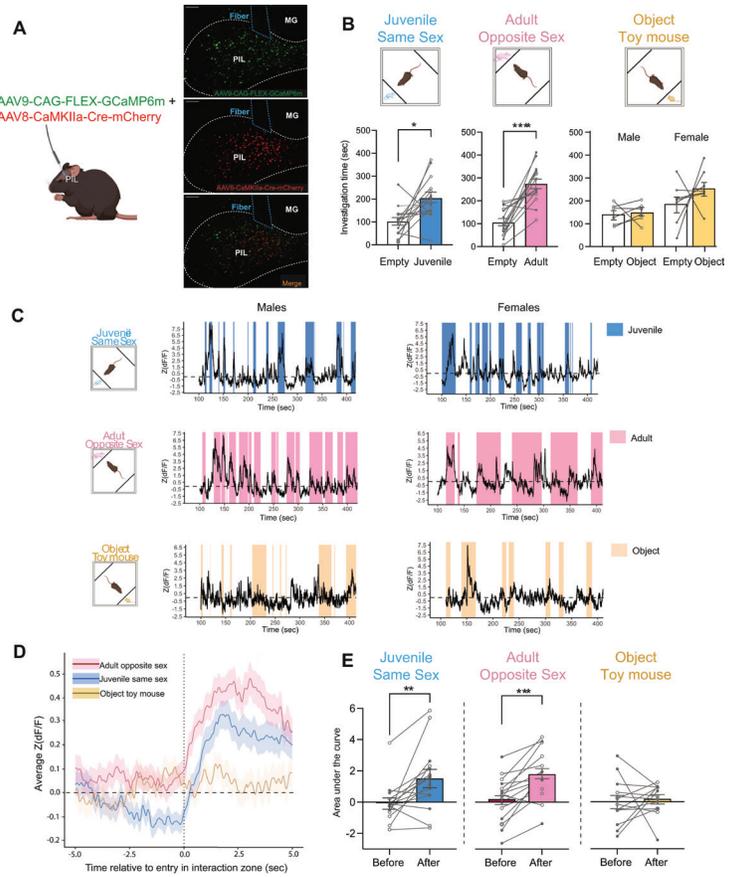


Biological Psychiatry Publication

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the PIL's involvement in social recognition, Dr. Harmony-Nicholas is optimistic that future research will focus on the precise neural pathways within the PIL associated with social recognition: "We see this study as a significant step forward in comprehending the PIL's involvement in social behavior and its potential function in processing social sensory input. Expanding on these findings will not only enhance our grasp of the PIL's role, but also enable us to investigate this brain region within the framework of neurological disorders characterized by challenges in social behavior and sensory sensitivities, such as autism."

→ This figure shows that brain cells within the PIL in both male and female mice become more active when they interact with other mice, whether of the same or opposite sex. This happens when they engage in social behaviors, but not when they interact with objects. The top part (A) gives an overview of how the Harony-Nicolas team studied this, including injecting a virus and using a special technique to measure brain activity. (B) Describes the experimental setup and the results, indicating that both male and female mice spent more time with live mice compared to object stimuli. (C) Provides examples of the brain activity patterns during different interactions. (D) Presents averaged traces of brain activity during investigations of different stimuli. Finally, (E) shows that the level of brain activity increases significantly during interactions with live mice, but not with objects.



Internal Seaver Events

Going Away Party



Congratulations to our Seaver Team members who are moving on to new adventures! This summer, we said goodbye to our colleagues Kristi Niblo and Amanda Leithead, valued members of the Harony-Nicolas Lab.

Data Blitz

Congratulations to our Seaver summer interns for presenting their research at our Data Blitz & Breakfast in August! Their projects pertained to autism, neurodevelopment, social behavior, and more. Some interns & mentors not pictured, as they joined via zoom.



New Grant



Marta Garcia-Forn, PhD has recently been awarded a Pilot Grant from the Mindich Child Health and Development Institute at the Icahn School of Medicine at Mount Sinai.

The MCHDI Trainee Pilot Grant Program supports up to two new trainee pilot projects for one year in the amount of

\$10,000. The purpose of the program is to support early career scientists in pursuing an independently funded research project.

Marta plans to further some of the work that she has done in the De Rubeis Lab, studying DDX3X syndrome. She will explore the mechanisms of cortical development in DDX3X syndrome using our mouse model for the disorder, with the aim to better understand the mechanisms underlying congenital brain malformations in neurodevelopmental disorders.

Marta's primary mentor for the project will be the Seaver Center's Silvia De Rubeis, PhD. Her secondary mentors will be Mladen-Roko Rasin, MD, PhD (Department of Neuroscience and Cell Biology, Rutgers University, RWJ Medical School), and Nikolaos P. Daskalakis, MD, PhD. (Harvard Medical School, McLean Hospital).

New Staff



Frankie Garces

Frankie graduated from Bowdoin College in 2023 with a BA in Biology, and joined the Seaver Autism Center as a Clinical Research Coordinator in June. She is focusing on a longitudinal investigation of Phelan-McDermid syndrome in order to better understand the history of this rare disorder.



Erina Hara, PhD

Erina joined the Seaver Center in June 2023 as the Center's Project Manager. Prior to her current position, she was a Scientific Research Project Manager at the Institute for Genomic Medicine at Columbia University. She received her PhD from Chiba University, Japan and has a BS and MS from Indiana State University, where her research focus was the neurobiology of vocal communication in animal models.



Arpana Arjun McKinney, PhD

Arpana recently completed her PhD at UCSF in the Panagiotakos Lab. Now, as a Postdoctoral Fellow in the lab, she continues to be fascinated with how calcium signaling mechanisms and ion channel diversity influence cortical development.



Georgia Panagiotakos, PhD

Dr. Panagiotakos recently joined Mount Sinai as an Associate Professor in the Departments of Psychiatry and Neuroscience. She is also a member of the Black Family Stem Cell Institute, the Alper Center for Neural Development and Regeneration, the Institute for Regenerative Medicine, and the Friedman Brain Institute. Prior to her arrival at Mount Sinai, Dr. Panagiotakos launched her independent research program as a Sandler Faculty Fellow at the University of California, San Francisco, after earning her PhD from the Stanford University School of Medicine Neurosciences Doctoral Program. The goal of the research in the Panagiotakos lab is to define cellular and molecular processes dependent on electrical activity and calcium signaling that underlie the development of the brain. Towards this goal, Dr. Panagiotakos and her team explore how neural stem and progenitor cells make sense of converging and competing developmental signals to produce distinct cell types. In addition, the Panagiotakos lab investigates how genetic mutations impinging on electrical activity and calcium signaling disrupt developmental processes to give rise to neuropsychiatric conditions.



Yeaji Park

Yeaji graduated from Macalester College and joined Dr. Silvia De Rubéis' lab as an Associate Researcher to study DDX3X syndrome. She is currently working on a project that focuses on investigating the role of the DDX3X gene on cortical development. She hopes to pursue a PhD in Neuroscience.



Vicente Gabriel Pedrozo

Vicente graduated from the University of San Francisco in 2019 and joined Dr. Panagiotakos's lab as a research associate while at UCSF. He now continues his research here at Mount Sinai studying calcium signaling pathways involved in cortical development and how their dysfunction contributes to autism and intellectual disability.



Abby Siegel

Abby graduated from Cornell University in May with a BS in Human Development. She joined the Seaver Autism Center in June as a Clinical Research Coordinator. Abby works under Dr. Alex Kolevzon and Dr. Paige Siper, helping coordinate a clinical drug trial examining the use of electrophysiological markers to detect nerve cell response to recombinant human growth in children with Phelan-McDermid syndrome and idiopathic autism. In addition, Abby is helping coordinate a study on evaluating sensory symptoms in children with ADHD. In the future, Abby hopes to attend medical school with a special interest in pediatrics.



Shelby Smout, PhD

Shelby Smout is a postdoctoral fellow in Dr. Mahjani and Dr. Bergink's labs. They received their PhD in Health Psychology from Virginia Commonwealth University in 2022. Dr. Smout studies women's mental health throughout the reproductive cycle and its impact on the neurodevelopment of their children as well as healthcare engagement among gender diverse populations.



Abigaël Thinakaran

Abigaël graduated from the University of Chicago in 2023 with a BS in Neuroscience, and recently joined the Center as a Clinical Research Coordinator in the Foss-Feig Lab. She manages the administrative, recruitment, and data-collection aspects of EEG and eye-tracking for all research studies. She also coordinates the SCAN neuroimaging study aimed to better understand how adults on the spectrum navigate their social space and modulate their behavior as a function of their familiarity and relationship with others.

Social Skills Group

The Seaver Center offered a 12-week Nonverbal communication, Emotion recognition, and Theory of mind Training (NETT) Social Skills group led by Jessica Zweifach, PhD and Renee Soufer, PhD, Clinical Psychologists at the Seaver Center: "We were thrilled to offer the Seaver NETT social skills group to families here at the Seaver Autism Center, where the protocol was first developed."

The NETT program includes strategies such as problem identification, affective education, performance feedback, and weekly homework activities to facilitate generalization. Structured teaching includes

defining skills, breaking them down into simple, concrete steps, modeling the skill through role-play, and introducing a game or activity to practice the target skill. The program is for school-age children on the autism spectrum and with related conditions. It includes a parent/caregiver component as well.

Data from this 12-week cognitive-behavioral intervention (CBI) course has shown that participants have displayed significant improvements in social behavior outcomes, such as nonverbal communication, empathic responding, and social relations.

Dr. Zweifach is very happy to report that these results have contributed to an increased quality of life for both participants and their families: "We had a wonderful group. We have even been told that some of the friendships between participants have extended beyond the clinic setting."

Thanks to a generous donation from RVC Blue Speaks, participation in the group is free of charge. If you are interested in participating in a future Seaver NETT Social Skills group, or know somebody that might be, please reach out to Jessica Zweifach (jessica.zweifach@mssm.edu) for more information.



Mount Sinai

Seaver Autism Center for Research and Treatment

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- **SEAVER IS CONTINUING TO GO GREEN!** Please send your email address to seavercentereditor@mssm.edu to receive this newsletter electronically.

Seaver in the Community



Autism Speaks Walk

We had so much fun representing the Seaver Center at this year's annual Autism Speaks Walk on October 1st in Manhattan. Our clinical research coordinators played games with kids and families that stopped by the table,

discussed our research studies with caregivers, and handed out toys and lanyards. It was wonderful to connect with the larger autism community. We look forward to next year.



Disability Awareness Month Fair

We were thrilled to have autism represented at Mount Sinai's Disability Awareness Month Fair on October 4th. It was great to meet everyone who stopped by, and to spread awareness about autism and the research and resources we offer within the hospital system.

Seaver Interns



Stephanie Nguyen
COLUMBIA UNIVERSITY
SEAVER MENTOR:
Xuran Wang, PhD



Katherine Santos
STONY BROOK UNIVERSITY
SEAVER MENTOR:
Georgia Panagiotakos, PhD



Avery Rogers
TUFTS UNIVERSITY
SEAVER MENTOR:
Silvia De Rubeis, PhD



Joscelyn Sanchez
UNIVERSITY OF CALIFORNIA,
Los Angeles
SEAVER MENTOR:
Jennifer Foss-Feig, PhD



Audrey Paulino
NEW YORK UNIVERSITY
SEAVER MENTOR:
Behrang Mahjani, PhD