

NEWS, SYNAPTIC

Community Newsletter: Assembloids, autism-ADHD overlap, calcium signaling

BY MICHAEL FERGENSON

2 OCTOBER 2022

How do the hundreds of genes associated with autism shape specific stages of human brain development? **Sergiu Pasca**, professor of psychiatry and behavioral sciences at Stanford University in California, tweeted a link to his new **preprint**, in which he and his colleagues used “a bold approach ... to **map 425 genes** on interneuron dev stages” to answer that question.

Hundreds of genes have been associated with autism & neurodev disorders
But how do these genes impact specific stages in human development?
In a new preprint, **@XianglingM** took a bold approach & developed CRISPR screens in **#assembloids** to map 425 genes on interneuron dev stages ????
pic.twitter.com/TFt1Og1ow8

— Sergiu P. Pasca (@Sergiu_P_Pasca) **September 8, 2022**

Pasca and his colleagues integrated a previously developed stem-cell-based platform with CRISPR screening, revealing a surprising contribution from the endoplasmic reticulum, an organelle responsible for protein and lipid synthesis.

Mable Lam, a research fellow at Stanford University, called it “such a cool screen that uncovered an unexpected role for **endoplasmic reticulum dynamics**.”

Wow ???? such a cool screen that uncovered an unexpected role for endoplasmic

reticulum dynamics <https://t.co/ktagHM6f6e> <https://t.co/Mo7TRN9Px6>

— Mable Lam (@mablelam_phd) **September 8, 2022**

Ambrin Fatima, assistant professor at Aga Khan University in Karachi, Pakistan, called the research a “massive work on the **role of NDD genes** in brain using assembloids.”

Massive work on the role of NDD genes in brain using assembloids. Congratulations [@Sergiu_P_Pasca](#) and team <https://t.co/ry5dw5CgRA>

— Ambrin Fatima (@AmbrinFatima1) **September 9, 2022**

“This work is important in understanding the **pathophysiology of human disease**, which will ultimately help develop targeted treatments!” tweeted the **KCNC1 Foundation**, a nonprofit organization in Toronto, Canada.

Our brains are truly so interesting. This work is important in understanding the pathophysiology of human disease, which will ultimately help develop targeted treatments! **#CureRareDisease #NDD #autism #development** <https://t.co/WaOprycxCB>

— The KCNC1 Foundation (@KCNC1foundation) **September 8, 2022**

Cedric Boeckx, research professor at the Catalan Institution for Research and Advanced Studies in Barcelona, Spain, described the research as a “massive work ... exploiting the power of [brain] **#organoids** (assembloids) to highlight the role of interneuron development in **neurodevelopmental disorders**.”

Massive work by [@XianglingM](#) [@Sergiu_P_Pasca](#) and colleagues exploiting the power of **???? #organoids** (assembloids) to highlight the role of interneuron development in neurodevelopmental disorders. **???? ???? + link to preprint: <https://t.co/OIZ00LxVyL>**

<https://t.co/34vzXmapFy>

— cedric boeckx (@cedricboeckx) **September 8, 2022**

Another gene study that caught our attention came from **Manuel Mattheisen**, associate professor of psychiatry at Dalhousie University in Halifax, Nova Scotia, Canada. He and his colleagues “found that individuals diagnosed with both ASD and ADHD are double-burdened with **genetic risk** for both disorders.”

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We found that individuals diagnosed with both ASD and ADHD are double-burdened with genetic risk for both disorders.

— Manuel Mattheisen (@immaqua) **May 21, 2021**

The **preprint** serves up “novel insights into the biological foundation for developing just one or both of the disorders and for driving the psychopathology discriminatively towards either ADHD or ASD.”

Veera Rajagopal, a scientist at the biotechnology company Regeneron Pharmaceuticals in Tarrytown, New York, tweeted that the analysis was “another fascinating and important work from the iPSYCH cohort on the shared and differential **genetic architecture** of ADHD and ASD.”

Another fascinating and important work from the iPSYCH cohort on the shared and differential genetic architecture of ADHD and ASD. ??? <https://t.co/DZiNDP0h2w>

— Veera M. Rajagopal (@doctorveera) **May 21, 2021**

“Interested in shared and **differentiating genetics** between autism spectrum disorder and attention deficit/hyperactivity disorder?” tweeted **Bru Cormand Rifa**, professor of genetics at the University of Barcelona in Spain and an investigator on the study. “Check out our new preprint!”

Interested in shared and differentiating genetics between autism spectrum disorder and attention deficit/hyperactivity disorder? Check out our new preprint! [@GeneticsUB](#) [@BiologiaUB](#) [@UBDivulga](#) [@craibiologia](#) [@mindgap_psy](#) <https://t.co/PEPPNx Cbdm>

— Bru Cormand Rifà (@bcormand) **May 24, 2021**

Lastly, [Georgia Panagiotakos](#), a Sandler Fellow in biochemistry and biophysics at the University of California, San Francisco (UCSF), tweeted a link to her new **review** “describing how calcium directs **neurodevelopmental events** in the cortex.”

Check out our new review [@Dev_journal](#), (Ca²⁺)ptained by [@UCSF](#) graduate student Arpana Arjun McKinney in collaboration with former postdoc Ralitsa Petrova, describing how calcium directs neurodevelopmental events in the cortex. Congrats to both on a tremendous effort! <https://t.co/YihIQ1nRTa>

— Georgia Panagiotakos (@panagiog) **September 16, 2022**

“Fantastic read for everyone interested in **brain development!**” tweeted [Tom Nowakowski](#), a developmental neurobiologist at UCSF.

Fantastic read for everyone interested in brain development! <https://t.co/fxfrIFYwyG>

— Nowakowski_Lab (@LabNowakowski) **September 16, 2022**

“Looks like a lot of cool **membrane proteins** are involved!” tweeted [Willow Coyote-Maestas](#), an affiliate in [James Fraser](#)’s lab at UCSF.

???? So many favorites! We should definitely chat again soon!

— Georgia Panagiotakos (@panagiog) **September 16, 2022**

Dan O’Shea, a neuroscientist and engineer at Stanford University, offered congratulations, tweeting, “**These diagrams** are incredible.”

Yesssssss!

— Georgia Panagiotakos (@panagiog) **September 16, 2022**

That’s it for this week’s Community Newsletter! If you have any suggestions for interesting social posts you saw in the autism research sphere, feel free to send an email to michael@spectrumnews.org.

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