NEWS

Community Newsletter: Lab collaborations, interneuron network expansion, DDX3X

BY **SPECTRUM**

3 JULY 2022

Not all Twitter debates turn contentious. Case in point: This week a troop of scientists used the platform to call for greater collaboration between labs that work with nonhuman primates and those that work with rodents or humans.

“The challenge is getting the vast majority of neuroscientists, who conduct rodent or human experiments, to **acknowledge the necessity** of NHP research to bridge the gap between these phylogenetic levels,” tweeted **Douglas Crawford**, professor of neuroscience at York University in Toronto, Canada.

> The challenge is getting the vast majority of neuroscientists, who conduct rodent or human experiments, to acknowledge the necessity of NHP research to bridge the gap between these phylogenetic levels. Or even acknowledge the gap.
>
> — Doug Crawford (@J_D_Crawford) **June 27, 2022**

That task would be easier if “NHP folks were better at **articulating key areas** for which NHPs are indispensable,” replied **Anne Churchland**, professor of neurobiology at the University of California, Los Angeles. Too many, she continued, justify NHP work just by ‘claiming mice are ‘dumb, blind and not like us.’”

> I have done this a lot (at NIH, etc). My job would be easier if NHP folks were better at articulating key areas for which NHPs are indispensable. Honestly it can feel like a hard group of negotiate for b/c many justify NHPs by claiming mice are “dumb, blind and not like us.”
>
> — Anne Churchland (@anne_churchland) **June 27, 2022**

“Shitting on mice is counterproductive b/c **NHP is the minority**…by a lot,” tweeted **Cory Miller,** associate professor of psychology at the University of California, San Diego, who works with marmosets and wrote that he thinks NHP work needed “better integration with the mouse community to survive.”

> Anne, IMHO NHP work needs better integration with the mouse community to survive. Whether mice are 'dumb/blind/etc' is largely inconsequential. Shitting on mice is counterproductive b/c NHP is the minority ... by ALOT! Bridging this gap is a priority for SimCo w **@MIcheleABasso1**
>
> — Cory Miller (@CoryMillerMarmo) **June 28, 2022**

Such integration would only help both communities, others chimed in.

“I’ve seen a lot of mouse papers that suggest they’ve **discovered something novel** that’s actually been well studied in monkeys,” tweeted **Michele Basso**, professor of neuroscience at the University of California, Los Angeles. “Let’s work together !!”

> It goes both ways - I’ve seen a lot of mouse papers that suggest they’ve discovered something novel that’s actually been well studied in monkeys - the OKR is an example. Let’s work together !!
>
> — Dr. Michele A. Basso (@MIcheleABasso1) **June 28, 2022**

“**Likewise with humans and NHPs**,” Crawford commented. “Human neuroscience provides a

more global view, like looking at earth from space, while NHP neurophys is like getting down to the ground where the people are and shaking hands."

> Likewise with humans and NHPs. Having done both for many years I find human neuroscience provides a more global view, like looking at earth from space, while NHP neurophys is like getting down to the ground where the people are and shaking hands.
>
> — Doug Crawford (@J_D_Crawford) **June 28, 2022**

Other cross-species comparisons cropped up on Twitter in the feed of **Moritz Helmstaedter**, professor of neuroscience at the Max Planck Institute for Brain Research in Frankfurt, Germany, who asked "**What makes us human**, at the neuronal network level?" His recent finding offers one answer: a 10-fold expansion of interneuron-to-interneuron networks in the human brain compared with the mouse brain.

> What makes us human, at the neuronal network level? We discovered a dramatic (10-fold) expansion of interneuron-to-interneuron networks in the human brain compared to mouse: just published in **@ScienceMagazine @MpiBrain @maxplanckpress https://t.co/eRYZyDyKVz pic.twitter.com/BmpwkF5922**
>
> — Moritz Helmstaedter ???????? (@mh_lab) **June 24, 2022**

Helmstaeder went on to explain how he and his collaborators reached that conclusion in another 25+ tweets — earning thousands of likes, hundreds of retweets and tens of quote tweets.

"**Thank you for a great collaboration**," tweeted co-investigator **Hanno Meyer**, a neuroscientist and neurosurgeon at the Technical University Munich in Germany.

> Thank you **@mh_lab** for a great collaboration!Very proud that we were a part of this&could enable such an amazing study **@NCH_TUM @TU_Muenchen**. Clinical **#neuroscience** will soon realize the potential of this methodology& **#neurosurgery** will be key in its future development&application **https://t.co/uaeCD9H32s**

— Hanno Meyer (@hsmeyer) **June 26, 2022**

“Fascinating **study of #brainevolution**,” tweeted **Christopher Walsh**, Bullard Professor of Pediatrics and Neurology at Harvard University.

Fascinating study of **#brainevolution https://t.co/PrK8N1HBMd**

— ChrisAWalsh (@ChrisAWalsh1) **June 24, 2022**

Future work into “possible pathological alterations of human cortex” should consider “alterations in **interneuron-to-interneuron connectivity**,” tweeted **Cedric Boeckx**, research professor of linguistics at the University of Barcelona in Spain.

"Alterations in interneuron-to-interneuron connectivity should become a focus of study in the context of possible pathological alterations of human cortex"
Great study by **@mh_lab** et al. on the evolution of complex inhibitory network ????.
Summary ???? **@ScienceMagazine** paper link ???? **https://t.co/NRs2cr6ZtR**

— cedric boeckx (@cedricboeckx) **June 24, 2022**

And DDX3X, a gene linked to autism and cancer, featured in several other popular tweets. **Matthew Hurles**, head of human genetics at the Wellcome Sanger Institute in Hinxton, U.K., shared a **thread** about his new preprint that maps the functional effects of all known variants in the gene.

Really excited to present a ????on our new preprint **https://t.co/vN0OEGItBn**, using saturation mutagenesis to determine the function effect of >12,500 variants, including all SNVs, in the gene DDX3X. Work lead by **@HongkeeT**, Lizzie Radford and **@GeretySebastian**.

> — Matt Hurles (@mehurles) **June 20, 2022**

After introducing the variants into HAP1 cells and tracking their relative abundance over 21 days, the team grouped 3,432 variants into three categories: fast depleting, slow depleting and enriched.

The results are "**highly informative**" for neurodevelopmental conditions and cancer, Hurles summarized, even though they come from a cell type with minimal relevance to either condition, "suggesting that, for DDX3X, pathogenic variation is protein-intrinsic."

"Beautiful analysis" was how **Clare Turnbull**, professor of translational cancer genetics at the Institute of Cancer Research in London, U.K., described it a **quote tweet**. "Beautifully exemplifies the power to advance variant interpretation," she added.

"Terrific work," **wrote** Veera Rajagopal, a scientist at the biotechnology company Regeneron Pharmaceuticals in New York.

Debra Silver, associate professor of molecular genetics at Duke University in Durham, North Carolina, posted about her unrelated work on the mechanisms of DDX3X mutations in mice — findings that *Spectrum* **covered last month**. "We profile translation at onset of neurogenesis highlighting importance of RNA regulation," Silver wrote.

> Excited our study is out! Led by super talent **@mariahhoye** we discover new mechanisms by which Ddx3x mutations impair brain development and cause **@ddx3x** syndrome. We profile translation at onset of neurogenesis highlighting importance of RNA regulation 1/.**https://t.co/N4mgjVSpOD**
>
> — Debby Silver (@TheSilverLab) **June 30, 2022**

"**Great story** by Debbie Silver lab!" wrote **Joseph Gleeson**, professor of neurosciences at the University of California, San Diego, who **served as editor** for the study for the journal *eLife*.

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 **news@spectrumnews.org**.

Follow us on Facebook, Twitter (@Spectrum), Instagram and LinkedIn.

Cite this article: https://doi.org/10.53053/KXNO9098