

SPOTTED

# Fathering geeks; GWAS weaknesses; Prozac protection and more

BY EMILY WILLINGHAM

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## Fathering geeks

Having an older father has been identified as **an autism risk factor**. Now older paternity may also **be a factor in general geekiness**.

Researchers have developed a 'geek index,' which they associate with educational success and higher intelligence quotient, intense focus on subjects of interest, and insouciance about 'fitting in.' Boys' performance on the geek index correlates with having an older father, Magdalena Janecka of King's College London and her colleagues reported 20 June in *Translational Psychiatry*. Different 'doses' of genetic changes associated with paternal age may underlie the spectrum they see from being a 'geek' to having autism, the researchers say.

### SOURCES:

**Translational Psychiatry** / 20 Jun 2017

Advantageous developmental outcomes of advancing paternal age

<http://www.nature.com/tp/journal/v7/n6/abs/tp2017125a.html>

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## GWAS weaknesses

Genome-wide association studies (GWAS), which isolate genetic signal from the noise of the genome, may be based on a wobbly assumption. The premise is that the genetic variants consistently associated with a specific condition likely play an important role in it. But the signals that GWAS detect **may instead relate to peripheral actors** simply doing common jobs to support the cell, according to an analysis by Stanford geneticist **Jonathan Pritchard** and his colleagues, published 15 June in *Cell*. Targeting these variants for treatment development could be a wild gene

chase.

**SOURCES:**

**Cell** / 15 Jun 2017

An expanded view of complex traits: From polygenic to omnigenic

[http://www.cell.com/cell/fulltext/S0092-8674\(17\)30629-3](http://www.cell.com/cell/fulltext/S0092-8674(17)30629-3)

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## Prozac protection

Mice with a duplication of chromosomal region 15q11-13, **which is linked to autism**, show improvements in social behaviors following antidepressant administration in early life. The time the animals spend with unfamiliar mice increases after treatment with fluoxetine (Prozac), which boosts serotonin levels. The effect **may be a double-edged sword**, however: The animals also score higher for anxiety after the treatment.

Trials of selective serotonin reuptake inhibitors in people with autism have not led to “unified conclusions,” the researchers write in their report, published 21 June in *Science Advances*. Increased exposure to serotonin in the womb has been proposed to **mediate infection as an autism risk factor**. On the other hand, in mice with a 15q11-13 duplication, low levels are linked to changes in social behavior and sensory responses.

**SOURCES:**

**Science Advances** / 21 Jun 2017

Serotonin rebalances cortical tuning and behavior linked to autism symptoms in 15q11-13 CNV mice

<http://advances.sciencemag.org/content/3/6/e1603001.full>

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## Neurodiverse Church

Avoiding food from 6 a.m. to 6 p.m. and standing whenever possible are two ways that CRISPR giant **George Church** avoids nodding off because of his narcolepsy, reports *STAT*. He took several decades to embrace his condition, in part because he saw high-school peers with autism become the target of bullying, and his professors at Duke University threw chalk at him when he had an episode in class. Church now views his narcolepsy as a **“feature, not a bug,”** in part because the onset and end of an episode have often unveiled epiphanies related to his most innovative ideas as a geneticist.

**SOURCES:**

**STAT** / 08 Jun 2017

'A feature, not a bug': George Church ascribes his visionary ideas to narcolepsy  
<https://www.statnews.com/2017/06/08/george-church-narcolepsy/>

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## Funding freefall

Clinical-trial funding has **dropped by 45 percent** since the U.S. National Institute of Mental Health (NIMH) shifted its focus from clinical trials to the biological roots of mental health conditions.

The freefall, uncovered this week in an analysis by *Nature*, largely traces to the launch of NIMH's **Research Domain Criteria (RDoC) initiative** in 2011. According to *Nature*, many clinical researchers are "infuriated" at these losses. NIMH director **Joshua Gordon** reinforced the agency's commitment to the initiative in a 5 June blog post, in which he also announced participation in a **new big-data resource** for accumulating data on psychiatric conditions.

The RDoC framework sets aside the long-time handbook of psychiatry, the "Diagnostic and Statistical Manual of Mental Disorders," now in its fifth edition. Instead of relying on the handbook's diagnoses, RDoC instead assigns people to categories based on cognition, social behaviors and some biological factors.

Some investigators say the science underlying RDoC lacks validation. Gordon says NIMH will **work to validate the framework**.

**SOURCES:**

**Nature** / 13 Jun 2017

US mental-health agency's push for basic research has slashed support for clinical trials  
<http://www.nature.com/news/us-mental-health-agency-s-push-for-basic-research-has-slashed-support-for-clinical-trials-1.22145>

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## Murine defensiveness

Sensory sensitivities and defensiveness are common among people with **fragile X syndrome** and those with autism. Now researchers report that knockout mice used as a model for fragile X **also show a tactile defensiveness**. The animals have exaggerated responses to whisker stimulation as pups and continue to exhibit an aversion to touch stimuli as adults. The findings, published 12

June in the *Journal of Neuroscience*, also link these behaviors to an inability of some neural circuits to adapt to sensory inputs.

**SOURCES:**

**Journal of Neuroscience** / 12 Jun 2017

Tactile defensiveness and impaired adaptation of neuronal activity in the Fmr1 knockout mouse model of autism

<http://www.jneurosci.org/content/early/2017/06/12/JNEUROSCI.0651-17.2017>

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## Fragile tools

The **tools researchers use for fragile X syndrome** and autism-related studies need an upgrade. Researchers reviewing 22 clinical trials of fragile X rated the tools in current use as “moderate,” at best.

In their report, published 12 June the *Journal of Neurodevelopmental Disorders*, Johns Hopkins professor **Dejan Budimirovic** and his colleagues call for more sensitive and objective metrics, such as **biomarkers**, for such studies. They note in particular a current reliance on parent-based measures to obtain behavioral data. Obviously, such measures lack objectivity. One drawback of the lack of objective measures, Budimirovic said in a statement, is that human studies follow “an uncharted path, and several have unfortunately failed.” The report is one of four publications in the 12 June issue of the journal that **collectively trace the 26-year path** of fragile X research.

**SOURCES:**

**Journal of Neurodevelopmental Disorders** / 12 Jun 2017

Updated report on tools to measure outcomes of clinical trials in fragile X syndrome

<https://jneurodevdisorders.biomedcentral.com/articles/10.1186/s11689-017-9193-x>

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## iPsychiatrist Insel

**Thomas Insel**, former director of the National Institute of Mental Health (NIMH), has waded neck-deep into the Silicon Valley ways of doing, including **changing tech teams with whiplash rapidity**. David Dobbs profiles Insel in *The Atlantic*, giving details of Insel’s journey from voles to NIMH to Google-backed Verily, which Insel left in May to found his own company, Mindstrong. Insel hopes to mine the power of smartphone behavioral data to detect, distinguish and deliver appropriate treatment for mental health conditions.

**SOURCES:**

**The Atlantic** / 13 Jun 2017

The smartphone psychiatrist

<https://www.theatlantic.com/magazine/archive/2017/07/the-smartphone-psychiatrist/528726/>

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## Overwhelming eyes

People on the spectrum have reported that eye contact **can be uncomfortable for them**. Now researchers have identified brain areas that **could be associated with this discomfort**. Functional magnetic resonance imaging shows overactivation of face-processing pathways when participants with autism focus on the eyes while viewing a face. The overactivation is particularly evident with fearful faces, according to findings published 9 June in *Scientific Reports*.

**SOURCES:**

**Scientific Reports** / 09 Jun 2017

Look me in the eyes: constraining gaze in the eye-region provokes abnormally high subcortical activation in autism

<https://www.nature.com/articles/s41598-017-03378-5>

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## Racialized autism

Take a visit to a little-explored intersection where race and autism meet. A first-of-its-kind anthology authored entirely by people of color who are on the autism spectrum, “All the Weight of Our Dreams: On Living Racialized Autism” features 61 writers and artists with autism, hailing from seven countries. They write about issues of **“marginality, intersectionality and liberation”** in a series of essays, including “Stop Your Hands, Stop Your Breath,” by Leyla; “I Am Autistic, and I Am Obsessed With Violence,” by Lydia X.Z. Brown, who also is an editor; and “Monster Girl,” by Helene Fischer.

**SOURCES:**

**Lydia X. Z. Brown, Autism Women’s Network** / 09 Jun 2017

All the weight of our dreams: On living racialized autism

<https://autismandrace.com/>

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## Science Tinder

Creators of the web application **Papr** want users to see it as the “Tinder for preprints,” referencing the popular racy dating app that lets you swipe left (reject) or right (accept) for potential matches. In the case of Papr, the swiping, which can be left, right, up or down, **communicates something a little different**, according to an article last week in *Science*: “exciting and probable,” “exciting and questionable,” “boring and probable” or “boring and questionable.” What about desktop users, you ask? They have to click and drag the abstract to register their opinions.

### SOURCES:

**Science** / 15 Jun 2017

Great paper? Swipe right on the new ‘Tinder for preprints’ app

<http://www.sciencemag.org/news/2017/06/great-paper-swipe-right-new-tinder-preprints-app>

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## Brain drain?

U.S. research scientists are dining like celebrities on wine and cheese as global recruiters see an opening in the current political landscape. At a huge industry-lobbyist-sponsored gathering this week, the **BIO International Convention**, recruiters from Canada and Europe wooed the 16,000 or so scientists and entrepreneurs with the aforementioned eatables, swag from the exhibits floor and, from Canada, **fast-track visas for skilled workers**. As *STAT* reported on 18 June, concerns about White House policies are motivating researchers to look beyond U.S. borders for a welcoming change of climate.

### SOURCES:

**STAT** / 18 Jun 2017

As biotech elite gather, foreign countries aim to woo them with wine, cheese — and promises of a friendly political climate

<https://www.statnews.com/2017/06/18/trump-bio-foreign-countries/>

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## Gut connection

A wide-ranging review of rat, mouse and human studies addressing **potential links between autism and the gut** has generated some online buzz. The authors offer up a **kitchen sink of findings** related to gut microbiota, the immune system, autism and the brain. Intervention trials, most of them quite small, have included everything from probiotic treatments to fecal transplants

and a variety of dietary approaches. The review, published 28 April in *Frontiers in Cellular Neuroscience* and **publicized in a news release on 19 June**, covers more than 150 studies. But the authors conclude by calling for better-designed studies with more participants.

**SOURCES:**

**Frontiers in Cellular Neuroscience** / 28 Apr 2017

The gut microbiota and autism spectrum disorders

<http://journal.frontiersin.org/article/10.3389/fncel.2017.00120/full>

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## Neurotribes movie

“Neurotribes,” Steve Silberman’s best-selling book on the **“lost history of autism,”** is headed for the big-screen treatment. *Variety* reported on 20 June that **Paramount has bought the movie rights** and will be working with Lorne Michaels of “Saturday Night Live” fame on the project. Silberman’s book traces autism’s modern history, with a special focus on autism’s emergence as a diagnostic entity in the mid-20<sup>th</sup> century.

**SOURCES:**

**Variety** / 20 Jun 2017

Paramount, Lorne Michaels developing autism book ‘Neurotribes’ as movie

<http://variety.com/2017/film/news/paramount-lorne-michaels-utism-book-neurotribes-movie-1202472447/>

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## Summer reads

Once you’ve checked “Neurotribes” off of your reading list, you can continue your summer immersion in the written word with **35 health and science reads collated by STAT**. Curators include famous people such as Chelsea Clinton (recommendation: the children’s book “Ada Twist: Scientist”), *STAT* readers and staff. The list includes Ed Yong’s blockbuster, “I Contain Multitudes: The Microbes Within Us and a Grander View of Life,” and Heather Sellers’ meditation on propagnosia (face blindness), “You Don’t Look Like Anyone I Know: A True Story of Family, Face Blindness, and Forgiveness.”

**SOURCES:**

**STAT** / 21 Jun 2017

The 35 best health and science books to read this summer

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## Educational nest

If **Catherine Lord** says she’s “completely impressed” with an education program for children with autism, that is praise indeed. Lord, a leading autism researcher, is quoted in a *New York Times* story about the **ASD Nest program**, launched in 2003 in some New York City public schools. ASD Nest is the brainchild of **Dorothy Siegel** and involves fine-tuning a general-education learning environment to better meet the needs of grade-school children with autism. In addition to having an adult son with autism, Siegel cites another leading light in the autism community as her inspiration: **Temple Grandin**, whose “Thinking in Pictures” was like a “religious” call to vocation for Siegel to develop ASD Nest.

### SOURCES:

**The New York Times** / 15 Jun 2017

For children with autism, no more being hushed

<https://www.nytimes.com/2017/06/14/nyregion/for-children-with-autism-no-more-being-hushed.html>

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## Job news

Making a career move? Send your news to [jobmoves@spectrumnews.org](mailto:jobmoves@spectrumnews.org).

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