Using brain ‘fingerprints’ to study and refine autism treatment

[T]he National Institutes of Health has been supporting research into the ‘human connectome’— the collection of information pathways in the brain that coordinate sensation, emotion, action and thought. The goal is to better understand how the 100 billion cells of the brain work together to perform the brain’s many functions. These complex interconnections shed light on the moment-to-moment activity of a typical brain, as well as how this activity can go awry in conditions such as autism.

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In a 2014 paper, we formalized the phenomenon of a personalized brain signature — the idea that each person’s brain is uniquely wired.

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[T]he mental processes involved in solving a geometry problem or leading a staff meeting do not enlist identical neural pathways in every person. Much of the variation in activity tends to occur within the brain’s most sophisticated networks, the ones that relate to memory, thinking and decision-making.
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Our next step is to do fMRI-derived brain fingerprinting in people with autism. From there, we aim to isolate clusters of individuals with autism whose connectotypes share common features.

Ultimately, we hope to classify the various brain-network profiles that are associated with autism. That information will help investigators test which treatments work best for which individuals with the condition. It may also help scientists zero in on the genetic underpinnings of the relevant neural networks.

Read full, original post: Unique brain ‘fingerprints’ may narrow search for autism subtypes