

SYNAPTIC PRUNING

Differences

Increased neural connectivity in Autism

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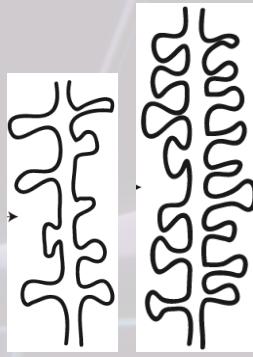
At birth, an infant's brain is packed with roughly 100 billion neurons—some 15% more than it will have as an adult. As we learn and grow, our experiences strengthen the circuits that prove most relevant while the others weaken and fade.

“One extreme view of this would be that you start out wired up for **every possible contingency**,” says Jeff Lichtman, a neuroscientist at Harvard University in Cambridge, MA. Over time, a large percentage of those wires are permanently disconnected, says Lichtman. “What you're left with is a narrower nervous system,” he explains. “But it's tuned exactly to the world you found yourself in.” (Sakai, 2020)

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• Increased dendritic spines

Diagram from
Bowling & Klann, 2014.



Allistic

Autistic

The “buds” on the branches are called dendritic spines.

Each spine connects with another neuron across a space called a synapse.

More spines = more synapses = more connections.

Spine density is higher in dissected brains of autistic humans and mice.

(Kim, et. al., 2017)

Every Possible Contingency

• Less pruning

16% in autistics vs 45% in allistics (Tang, et. al., 2014)

Imagine that you stay wired for 84% of “every possible contingency,” instead of the 55% that others are wired for.

Imagine feeling more possibilities and being compelled to look at things from many more angles.

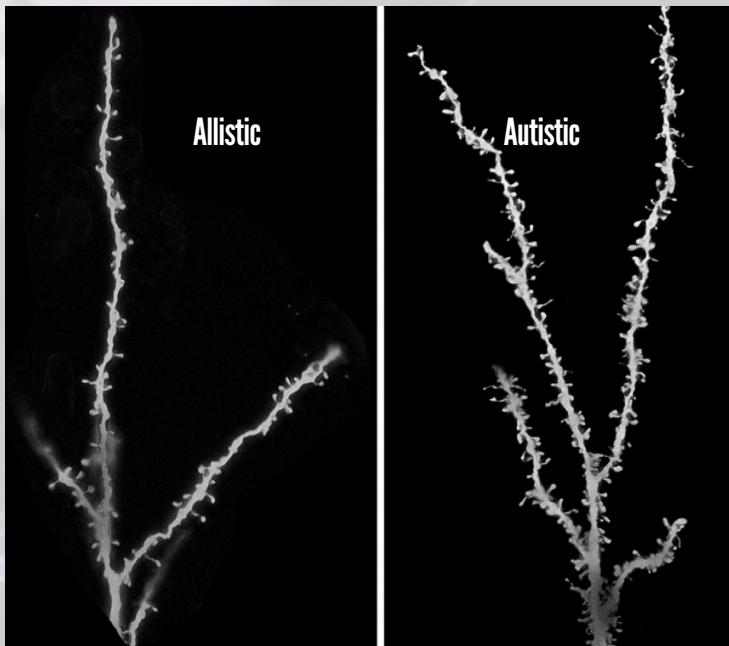


Photo Credit: Columbia University Irving Medical Center, 2014.

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