Autism-linked gene stunts developing dendrites

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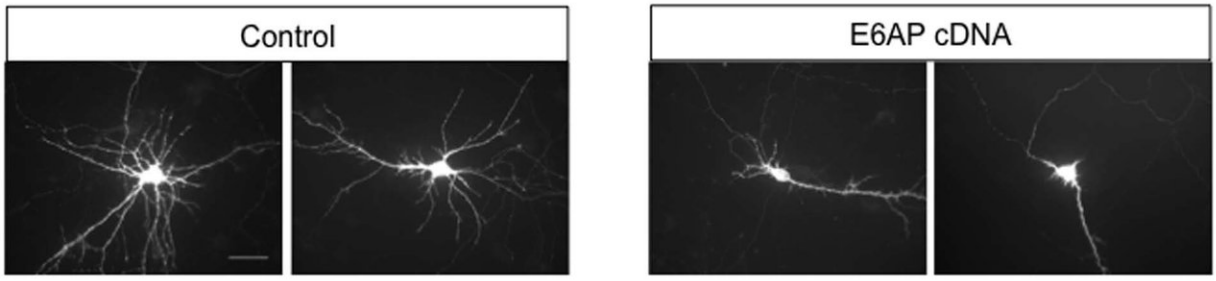

E6AP overexpression reduces the complexity of dendritic arborization. Credit: Man et al., *JNeurosci* (2017)

Increased expression of a gene linked to autism spectrum disorders (ASDs) leads to a remodeling of dendrites during brain development, according to a new study conducted in cultured neurons and an ASD mouse model published in *The Journal of Neuroscience*. The research identifies a series of cellular and molecular events that may contribute to differences in neuronal connectivity that underlie the social and communication deficits observed in autism.

The growth and refinement of dendrites—treelike structures that receive input from other neurons in the brain—is a crucial component of brain development during the first years of life that helps to optimize the function of neural circuits. Changes in the number and structure of

dendrites have been observed in patients with ASDs, which are typically diagnosed during this time.

Heng-Ye Man and colleagues found variations in the UBE3A gene that increase production of the E6AP protein cause significant elimination and shortening of dendritic branches. They show that the same pathway is responsible for these changes in both cultured cortical and hippocampal neurons from rats and in mice overexpressing Ube3A. These findings suggest that elevated E6AP activity leads to excessive pruning of dendrites.

More information: Natasha Khatri et al, The autism protein Ube3A/E6AP remodels neuronal dendritic arborization via caspase-dependent microtubule destabilization, *The Journal of Neuroscience* (2017). DOI: 10.1523/JNEUROSCI.1511-17.2017

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