NEWS

Genetics: New autism mouse reveals candidate gene

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A new mouse model for autism has obsessive behaviors and is less social and emits fewer vocalizations than controls, according to a study published 17 March in *Behavioral Brain Research*. These features could be be the result of **much higher levels of FAM46**, a gene of unknown function that may be involved in signaling between cells.

One **approach to creating mouse models of autism** is to screen for mutations in mice with behaviors that recapitulate autism-like symptoms.

In the new study, researchers introduced into single-cell albino mouse embryos a piece of DNA containing a gene that turns on skin pigmentation. This construct randomly disrupts regions of the genome. Of the resulting offspring, one line shows several behavioral features reminiscent of autism, representing the three core domains, and is dubbed multiple autistic-like trait transgenic, or MALTT.

MALTT mice are hyperactive and spin obsessively in circles, a new behavior reminiscent of restrictive interests in people. Each mouse circles in the same direction 87 percent of the time, though this direction varies among individuals.

MALTT mice also show less interest in a new mouse in their cage than do controls, and show less interest in odors of other mice. They also tend not to vocalize — an ultrasonic sound not audible to the naked human ear — when interacting with another mouse. By contrast, 84 percent of vocalizations produced by control mice are during social interactions.

In addition to replicating some of the core features of autism, MALTT mice are more aggressive and more easily startled than controls.

The gene construct in MALTT mice disrupts the X chromosome, but does not interfere directly with any specific gene. It does change the expression of surrounding genes, however, increasing expression of FAM46 to almost 400 times higher than normal.

FAM46 is of unknown function, but has been linked to cell signaling. It was also identified in another study that looked for genes expressed at higher levels in people with **both fragile X syndrome and autism**.

The results suggest that mutations in areas of the genome that do not code directly for protein can lead to changes in gene expression and autism-like behaviors.