

Protein Pathway

New research identifies role sex-biased protein may play in autism

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While statistics have long shown that autism is four times more common in boys than in girls, the why of that imbalance has remained a mystery. Now, researchers at UNH are hoping they have found a connection — and new possibilities for treatment — after identifying and characterizing the relationship of certain proteins in the brain to autism spectrum disorders.

Led by assistant professor of neurobiology Xuanmao Chen, the UNH study, recently published in *Frontiers in Cellular Neuroscience*, is the first to look at the sex-biased

regulation of proteins in the brain and the role they may play in the development of autism. Chen and his colleagues took a close look at a key process in the regulation of protein activity called phosphorylation to determine which proteins were influenced based on sex. They identified 204 proteins that were more highly regulated in females than in males. Of those, 31 percent were associated with autism.

“Our results suggest that proteins in the female brain, particularly autism-related proteins, are more tightly regulated than those in the male brain, possibly helping to prevent the development of autism in females,” Chen says. Protein regulation, Chen explains, dictates neural development and synapsis formation. When the regulation process goes awry, some synapses are too tight and others are too weak — the neurobiological basis for the narrow and rigid interests exhibited by individuals with autism.

The UNH research is still in the early, mouse-model phase, and more studies are needed. Chen, however, is hopeful the findings may ultimately open up new research directions and potentially lead to new pharmaceutical treatments for autism.

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