Oxidative stress on the brain

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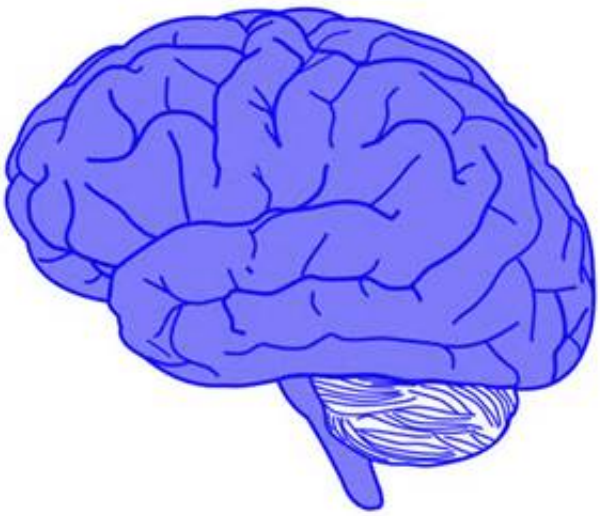

Credit: public domain

Smith-Lemli-Opitz syndrome (SLOS) is a rare disease that occurs when patients inherit from both parents defects in the Dhcr7 gene, which encodes the last enzyme in the cholesterol biosynthesis pathway. A large portion of SLOS patients exhibit autism spectrum disorder (ASD) behaviors.

Now in a paper published last month in the journal *Genes, Brain and Behavior*, Fiona Harrison, Ph.D., Ned Porter, Ph.D., and colleagues show that genetically altered mouse pups carrying two different

mutations in Dhcr7 genes make fewer vocal calls when separated from their mothers.

These communication-deficient mice also accumulate 7-DHC, a cholesterol precursor, in their brains. Cholesterol is a component of all cell membranes and is critical for brain function.

The mutant mice displayed an impaired serotonergic system, which possibly arises because of oxidative damage to the brain during early development, and may contribute to behavioral abnormalities.

This work suggests that oxidative damage may play an important role in the development of SLOS as well as in behavioral changes involved in ASD.

More information: N. F. Sharif et al. Oxidative stress, serotonergic changes and decreased ultrasonic vocalizations in a mouse model of Smith-Lemli-Opitz syndrome, *Genes, Brain and Behavior* (2017). DOI: 10.1111/gbb.12376

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