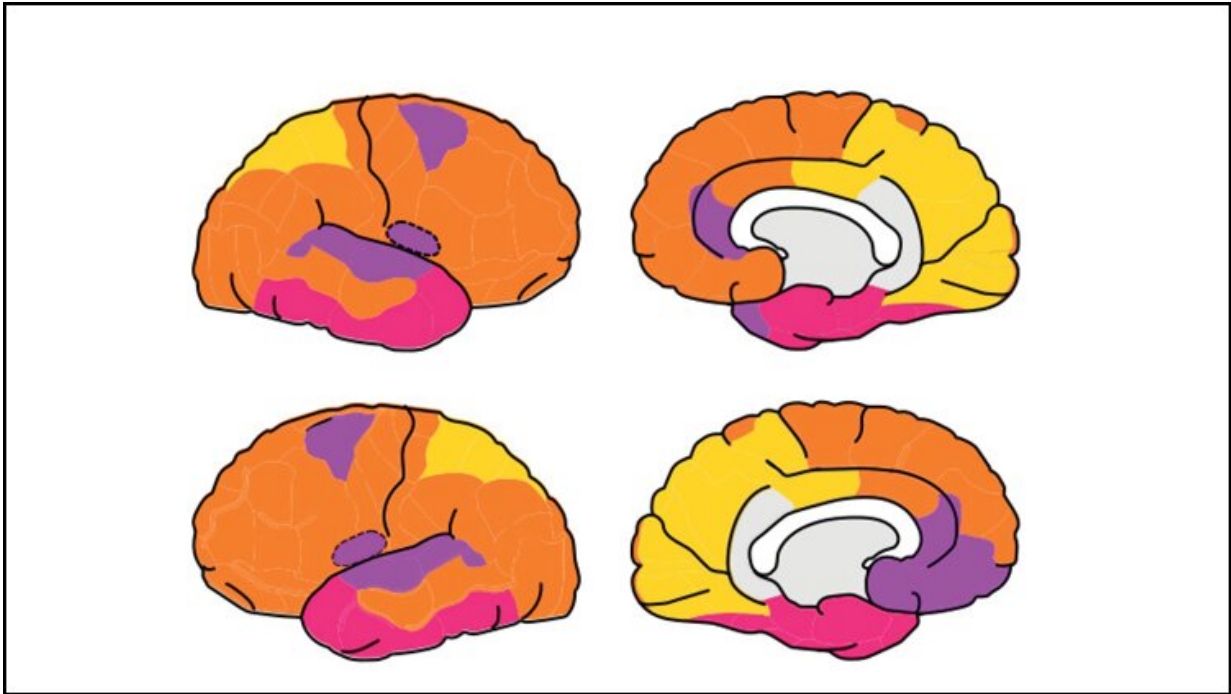


The fetal brain possesses adult-like networks

November 4 2019



Modular organization plotted on the fetal cortex. Each color represents a different functional module. Credit: Turk et al., *JNeurosci* 2019

The fundamental organization of brain networks is established in utero during the second and third trimesters of fetal development, according to research published in *JNeurosci*. The finding lays the groundwork for understanding how the prenatal period shapes future brain function.

The brain functions as a complex network of regions that communicate

with each other, known as the functional connectome. During [fetal development](#), the functional connectome begins to take form as early as the late second trimester of pregnancy.

Turk et al. examined 105 [pregnant women](#) between 20 and 40 weeks gestation who participated in a [functional magnetic resonance](#) imaging (fMRI) study—a non-invasive technology that allows researchers to peer at the connections forming in the fetal brain.

The researchers found that second and third trimester fetuses possess a blueprint for the functional connection. In comparison with the mature adult connectome, the fetal connectome showed a 61% overlap in motor, visual, auditory and some cognitive functions. The research opens the possibility to examine how maternal stress, alcohol use, infections and risk factors exert lasting impact on brain circuitry.

More information: Functional Connectome of the Fetal Brain, *JNeurosci* (2019). [DOI: 10.1523/JNEUROSCI.2891-18.2019](https://doi.org/10.1523/JNEUROSCI.2891-18.2019)

Provided by Society for Neuroscience

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