Seeking origins of schizophrenia, autism by putting ‘stress’ on mini-placenta, mini-brains

Biologist Jennifer Erwin of the Lieber Institute for Brain Development, however, has no intention of babying her organoids: the world’s first human placentas in a dish that were made from stem cells. Challenging as the half-millimeter-across organoids were to create, she intends to starve them of oxygen and douse them with stress hormones, among other assaults. It’s all for a good cause: to mimic pregnancy complications that raise the risk of brain development going off the rails, resulting in conditions including schizophrenia, autism, attention deficit hyperactivity disorder, and intellectual disability.

If those experiments work, Erwin has a sequel in mind. She plans to grow the placental organoids with brain organoids. Then, when the mini-placenta suffers physiological distress, she will be able to measure what goes wrong in the mini-brain, gathering clues about how these disorders arise — Are genes overactive? Or underactive? Are neurons forming too few synapses? Too many? — and, ideally, identifying ways to prevent them.

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[B]etween “complicated pregnancy” and “schizophrenia” is the black box of the brain. By measuring how placental distress affects brain organoids, Erwin hopes she’ll learn what happens in the full-size versions.

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