# Brain organoids may have ‘critical’ research limitation: Imperfect modeling of human development

Despite their potential, [brain] organoids still have some critical limitations. In a study presented [October 22] at the Society for Neuroscience meeting in Chicago, Arnold Kriegstein, a stem cell biologist at the University of California, San Francisco, and his team demonstrate that human brain organoids don’t accurately recapitulate all aspects of development. After comparing cells from organoids to those from normally developing tissue, his team reports that organoids have altered gene expression patterns and lack the cellular diversity found in the human brain.

The Scientist spoke to Kriegstein about the study.

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TS: What were the most important differences that emerged in your study?

AK: The good news is, the major categories of cell types are reproduced in the organoids. And this has been reported by other labs as well. The bad news is, when you probe more deeply, you’ll see that there are blended gene expression patterns that are not seen in normally developing cells.

To give you an example, in normal tissue, [progenitor cells] don’t express mature neuronal genes, they only express genes that are appropriate for progenitors. In the organoids, we found those same cell types also express some neuronal genes, some of them in very abnormal combinations.

**Read full, original post:** Organoids Don’t Accurately Model Human Brain Development