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Engineering 3-D brain tissues with chip technology

Dylan McGrath

11/29/2012 3:30 PM EST

SAN FRANCISCO—Borrowing from fabrication techniques used in the semiconductor industry, engineers from the Massachusetts Institute of Technology (MIT) and Harvard Medical School say they have developed a simple and inexpensive way to create three-dimensional brain tissues in a lab dish.

According to the researchers, the new technique yields tissue constructs that closely mimic the cellular composition of those in the living brain, allowing scientists to study how neurons form connections and to predict how cells from individual patients might respond to different drugs. The work also paves the way for developing bioengineered implants to replace damaged tissue for organ systems, according to the researchers.

"We think that by bringing this kind of control and manipulation into neurobiology assistant professor in the Harvard-MIT Division of Health Sciences and Technolo

Demirci and Ed Boyden, associate professor of biological engineering and brain : authors of a paper describing the new technique, which appears in the Nov. 27 o Umut Gurkan, a postdoc at HST, Harvard Medical School and Brigham and Wom

According to Boyden, while researchers have had some success growing artificia unique challenges."One of the challenges is the incredible spatial heterogeneity," wiring."

Next: Enter photolithography

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