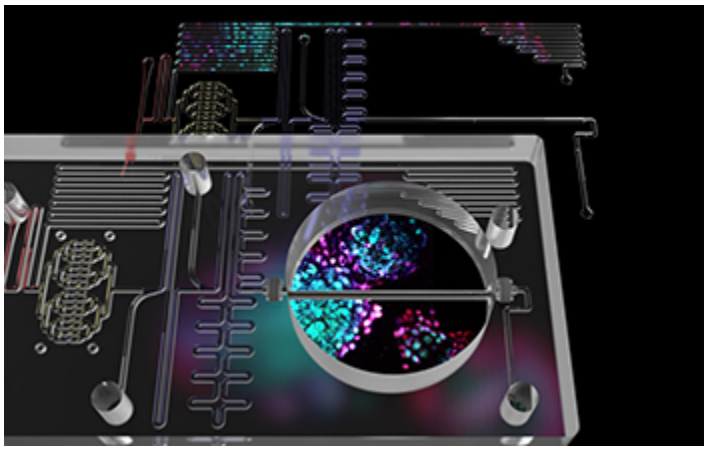
Research News

Pancreas on a chip

Scientists develop new tool for diabetes research



Scientists have developed a pancreas on a chip, a new tool for diabetes research.

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By combining two powerful technologies, scientists are taking diabetes research to a new level. In a study led by Harvard University (/cgi-bin/good-bye?https://news.harvard.edu/gazette/story/2019/08/islet-on-a-chip-technology-streamlines-diabetes-research/)'s Kevin Kit Parker, microfluidics and human insulin-producing beta cells have been integrated in an "Islet-on-a-Chip." The new device makes it easier for scientists to screen insulin-producing cells before transplanting them into a patient, to test insulin-stimulating compounds, and to study the fundamental biology of diabetes.

The results were published in the journal *Lab on a Chip* (/cgi-bin/good-bye?https://pubs.rsc.org/en/content/articlelanding/2019/LC/C9LC00253G#!divAbstract).

The design of the Islet-on-a-Chip was inspired by the human pancreas, in which islands of cells ("islets") receive a continuous stream of information about glucose levels from the bloodstream and adjust their insulin production as needed.

"If we want to cure diabetes, we have to restore a person's ability to make and deliver insulin," said Douglas Melton, co-director of the Harvard Stem Cell Institute. "Beta cells, which are made in the pancreas, have the job of measuring sugar and secreting insulin, and normally they do this very well. But in diabetes patients

these cells can't function properly. Now, we can use stem cells to make healthy beta cells for them. But like all transplants, there is a lot involved in making sure that can work safely."

Beta cells must be tested for proper functioning before being transplanted. The current method, based on technology from the 1970s, takes so long to run and interpret that many clinicians give up on it altogether.

The new, automated, miniature device gives results in real time, which can speed up clinical decision-making.

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