LIVING 'GUT-ON-A-CHIP' TO HELP STUDY INTESTINAL DISORDERS

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The silicon polymer device, lined by living human cells, mimics the 3D structures, behaviors, and environment of the intestine.

These bio-inspired micro devices that mimic the structures, behaviors, and environments of human organs could help scientists better understand the inner workings of a variety of diseases and disorders - in this case intestinal ones such as Crohn's disease and ulcerative colitis - without resorting to often less reliable animal testing.

The latest so-called "gut-on-a-chip" is a silicon polymer device whose central chamber is lined by a single layer of human intestinal epithelial cells that recreate the intestinal barrier by growing on a flexible and porous membrane. The device mimics the movement of food along the digestive tract as well as the flow of blood through capillaries.

The researchers report that they were even able to grow (and support) common intestinal microbes on the surfaces of the intestinal cells, mimicking various physiological features that could help understand diseases.

In addition to being an in vitro diagnostic tool to help develop new therapeutics, Ingber's gut-on-a-chip might even be able to test the metabolism and oral absorption of drugs and nutrients.

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