Electronic Supplementary Material (ESI) for Lab on a Chip.

Electronic Supplementary Data for

Human stomach-on-a-chip with luminal flow and peristaltic-like motility

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The current device design is followed by the long-term culture of hGO in the device as well as the feasibility of the needle insertion into hGO for luminal flow while imaging (Fig. S1). The purpose of two chambers in our platform is to simply supply enough culture media for hGO in the center chamber as it was cultured in the conventional wells. We have observed that the hGO could not survive when it was trapped in the microscale chambers, which could not provide enough media for hGOs. The current dimension of the center chamber relied on the size of the fully grown hGO, 2−3 mm in diameter. The insertion of the micropipettes into hGO depends on the rectangular-shaped window (1 mm width × 5 mm height) located in the center chamber of our platform. The width of the window was dependent on the maximum diameter of the borosilicate micropipette, 1 mm. The specific dimension of the rectangular window of the needle insertion depended on the free motion of the needles in the z-direction. The dimension for rectangular spots was efficiently designed to block the leakage through the spots of needle insertion in the system (Fig. 2B).

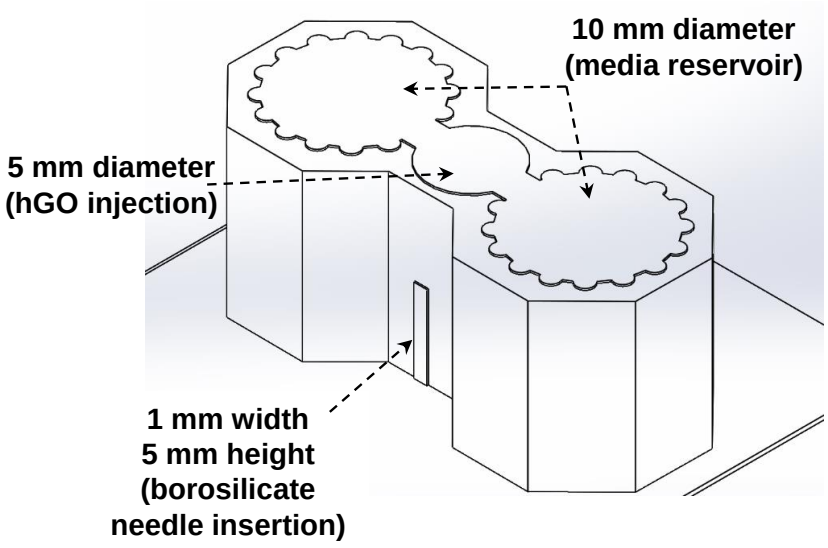

Fig. S1. Device design for human stomach-on-a-chip platform: two in-line chambers for medium and a window for needle insertion.

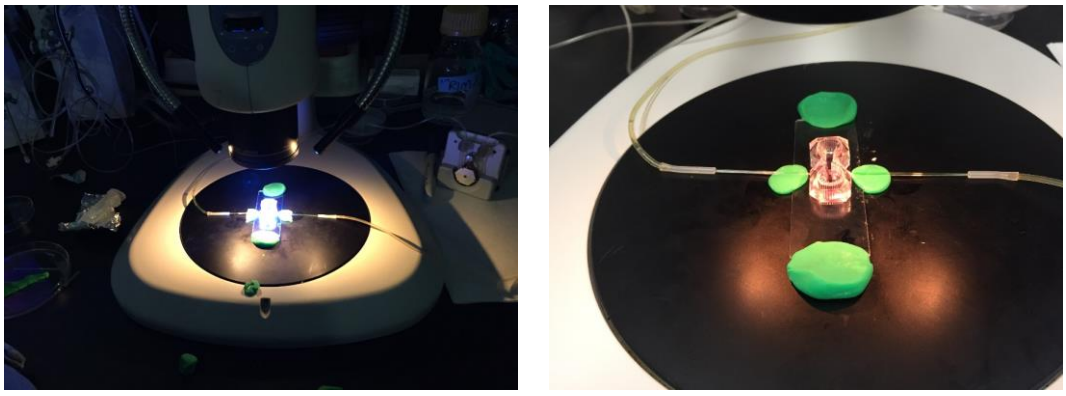

Fig. S2. Imaging setup of human stomach-on-a-chip with luminal flow under a microscope.