

Synthetic Hydrogel for Human Organoid Generation (#7536)

A method to synthesize a hydrogel that supports in vitro generation of human organoids

Inventors at Georgia Tech and the University of Michigan have engineered a method to synthesize a hydrogel that supports in vitro generation of human organoids. The hydrogel supports robust and highly reproducible in vitro growth and expansion of HIOs. Additionally, this synthetic hydrogel serves as an injectable vehicle to deliver HIOs to intestinal wounds via colonoscope resulting in organoid survival, engraftment, and wound repair.

Benefits/Advantages

- **Overcomes barriers for human applications** – synthetic gel is reproducible and safe for use in humans
- **Promotes enhanced wound healing** - HIOs have been shown to improve wound healing in murine models
- **Control of gelling time** – allows for injectable therapeutic approaches

Potential Commercial Applications

- **Intestinal disease modelling**
- **Drug development**
- **Research Tool**- personalized, regenerative, and translational medicine

Background/Context for This Invention

In vitro generation of human intestinal organoids (HIOs) from pluripotent stem cells is a technique capable of producing tissue analogous to human tissue. Current methods for generating HIOs rely on growth in Matrigel, a murine tumor-derived extracellular matrix (ECM). Due to the composition and variability of Matrigel, this method severely limits the use of organoid technologies for regenerative and translational medicine. There is a need for an alternative method of producing HIOs for use in human therapeutic applications.

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More Information

Publications

[*Synthetic Hydrogels Deliver Cells to Repair Intestinal Injuries*](#), Georgia Tech Research Horizons, Oct. 23, 2017

For more information about this technology, please visit:

<https://licensing.research.gatech.edu/technology/synthetic-hydrogel-human-organoid-generation>

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