Researchers create unique bioengineered organoids for modeling colorectal cancer

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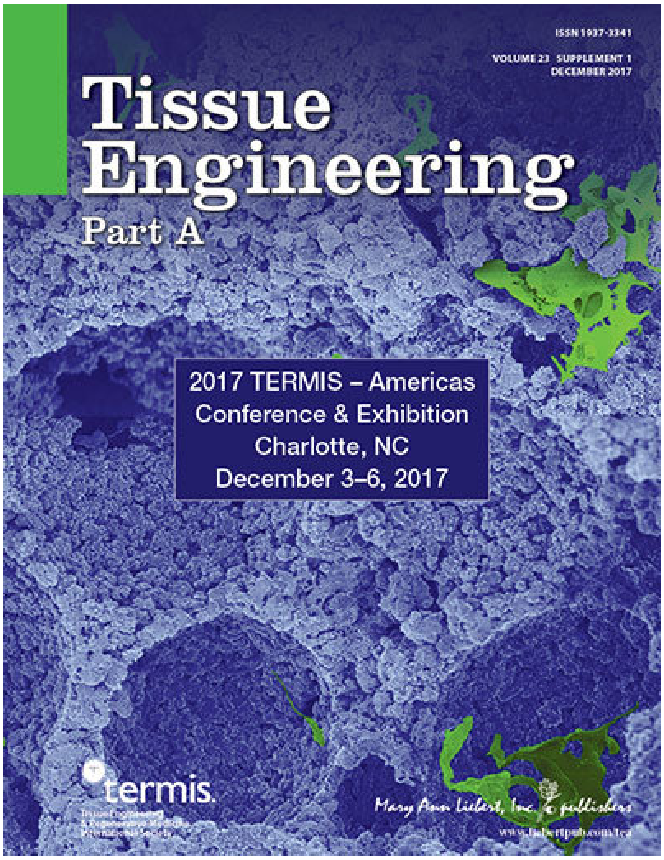

Tissue Engineering, Part A brings together scientific and medical experts in the fields of biomedical engineering, material science, molecular and cellular biology, and genetic engineering. Credit: Mary Ann Liebert, Inc., publishers

A new study describes a unique bioengineered tissue construct, or organoid, into which colorectal cancer cells are embedded, creating a model of the tumor and surrounding extracellular matrix (ECM). Researchers can use this model to study how the physical features of the ECM affect the behavior, growth, and even susceptibility to chemotherapy, as described in an article published in *Tissue Engineering, Part A*.

This article is the winner of the 2017 Mary Ann Liebert, Inc. Outstanding Student Award, which will be presented at the TERMIS Americas meeting on December 6th to coauthor Mahesh Devarasetty, PhD, Wake Forest School of Medicine.

In the article entitled "Bioengineered Submucosal Organoids for in vitro Modeling of Colorectal Cancer," coauthors Devarasetty, Shay Soker, PhD and colleagues from Wake Forest School of Medicine and Wake Forest Baptist Medical Center, Winston-Salem, NC, report on the method they developed to produce the submucosal organoids using primary smooth muscle cells embedded in collagen hydrogel. This approach yielded a tumor ECM with aligned and parallel fibers, creating a topography around the tumor similar to what is seen in tumors in the body. The authors propose that in the future these organoids could be made using a patient's own cells for personalized medicine applications.

"Our increasing understanding of tumor architecture is guiding the development of tumor extracellular matrix 'mimics' that better reflect the tumor microenvironment and thereby create more realistic systems for assessing tumor cell behavior in response to treatment," says *Tissue Engineering* Co-Editor-in-Chief Peter C. Johnson, MD, Principal, MedSurgPI, LLC and President and CEO, Scintellix, LLC, Raleigh, NC.

More information: Mahesh Devarasetty et al, Bioengineered Submucosal Organoids for In Vitro Modeling of Colorectal Cancer, *Tissue Engineering Part A* (2017). DOI: 10.1089/ten.tea.2017.0397

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