



Shang-Tian Yang

The Ohio State University

Dr. S. T. Yang is Professor of Chemical & Biomolecular Engineering at the Ohio State University, where he has been on the faculty since 1985. He is the director of Ohio Bioprocessing Research Consortium and has worked with many companies in commercial technology development. Yang received his B.S. degree in Agricultural Chemistry from National Taiwan University and M.S. and Ph.D. degrees in Biochemical Engineering from Purdue University. Yang has broad research interests in bioengineering. His current research involves biocatalysis, metabolic engineering, stem cell engineering, and high-throughput cell-based assays and biodiagnostics. He has more than 300 scientific publications and 12 patents in the bioengineering field, is a co-founder of 2 biotechnology startup companies, an elected fellow of American Institute of Medical and Biological Engineering, Associate Editor for the journal *Process Biochemistry*, past chair of Division 15 Food, Pharmaceutical & Bioengineering of AIChE.

CBST Seminar

366 Colburn Lab

October 16, 2018

11:30 a.m.

"Stem Cell Engineering in (Micro) Bioreactor: from Regenerative Medicine to High-Throughput Screening for Drug Discovery"

Stem cells with pluripotency and ability to differentiate into all types of somatic cells have important applications in regenerative medicine and drug discovery. How to mass produce stem cells and their derived cells and control stem cell fate in bioreactors has been a grand challenge for decades. We have been working on a fibrous scaffold as 3D carriers for growing various types of stem cells in bioreactors. The 3D fibrous carriers provide conditions mimicking in vivo microenvironments to facilitate cell adhesion, proliferation and differentiation to desirable cell types. We have also developed fluorescent stem cells for high-throughput drug screening in novel microbioreactors. Drug responses of EGFP-expressing stem cells in 3D cultures can be monitored in real time and noninvasively for cytotoxicity and embryotoxicity assessments. In addition to drug discovery, the 3D cultures in microbioreactors can also be used for medium optimization and cell culture process development.

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