Biomedical Tools Unravel the 3D Cellular Environment

Xiushi Susan Sun

University Distinguished Professor, Grain Science and Industry & Biological and Agricultural Engineering

CURRENT RESEARCH

Mimicking the extracellular matrix for advanced applications in biomedicine

Biomedical advancement has been significantly limited by the poor performance of biomaterials as research tools that allow scientists to accurately predict what is going on in the biological system. Complicating the task is the sophisticated organization of cells in living organisms that are supported by an extracellular matrix and organized into 3D scaffolds to provide mechanical properties and facilitate communication between cells. Despite the 3D nature of cells, researchers in the past have used 2D cell culture plates to study cell intricacies. Dr. Xiuzhi Susan Sun, Distinguished Professor of Biomaterials and Technology Lab, Department of Grain Science and Industry as well as Biological and Agricultural Engineering, at Kansas State University, designs and develops high performance biomaterials to mimic the 3D cellular environment. Her research has important applications including, but not limited to, basic biomedical research, cell and gene therapy, regenerative medicine, tissue and organ engineering, and drug discoveries and deliveries. Specifically, the advances in cancer treatment, tissue and organ regeneration, and stem cell based therapeutic technology are severely limited by the 2D traditional cell culture tools, Dr. Sun's technology allows for enhanced study with properties that are allowing researchers to peer deeper into cells and disease process than ever before.

The core social benefits and impact from successful commercialization of this technology will occur in two broad business segments, first human health and second the biotechnology sector. With the potential to have a huge impact on human health improvement by enabling and accelerating critical health benefits related to cell culture...

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AFFILIATION

Kansas State University

EDUCATION

- Ph.D., in Agriculture & Biological Engineering, 1993 , University of Illinois
- M.S., Agricultural Engineering, 1986 , Northeast Agricultural University, China
- B.S., in Agricultural Engineering, 1982 , Northeast Agricultural University, China

AWARDS

- Member of National Academy of Inventors, 2015
- Lifetime Achievement Award, 2012, Bioenvironmental Polymers Society
- Higuchi Research Achievement Award, The University of Kansas, 2011
- University Distinguished Professor, Kansas State University, 2011
- 50 Kansans You Should Know recognition, Ingram's Kansas, 2013

RESEARCH AREAS

Life Science, Oncology / Cancer, Stem Cell, Oncology / Cancer

FUNDING REQUEST

Your contributions will support the continued research of Dr. Xiuzhi Susan Sun, of Kansas State University, as she designs and develops high performance biomaterials to mimic native extracellular matrix for 3D cell cultures and downstream applications. Donations will fund the necessary $3M over a five year period to accomplish research goals, support personnel, and provide materials and supplies. Join in developing biomedical research, cell and gene therapy, regenerative medicine, tissue and organ engineering, and drug discoveries and deliveries with Dr. Sun's powerful research!