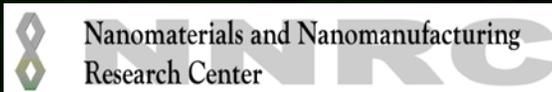


The burgeoning field of nanotechnology and nanoscience, which aims to create, understand, and use nanoscale structures, devices, and systems having novel properties and functions, is expected to lead to a better understanding of in vivo intracellular interactions, intracellular transport and bimolecular dynamics, which will stimulate the development of radically new technologies that might provide novel strategies for the diagnosis and therapy of diseases.

The fundamental concept of nanoparticles is that their actions are, in effect, the result of a series of directional and therefore predictable, molecular recognition events. Thus, nanoparticles can be engineered such that they are designed from first principles and can therefore consist of a diverse range of chemical components presently exemplified by coordination polymers( i.e. metals, organic and inorganic ligands), polymers sustained by organometallic linkages and hydrogen bonded organic compounds. A second aspect of nanoparticle chemistry that is presently under active development is exploitation of the principles of self-assembly of natural or synthetic polymers to generate nanoscale molecules, which have pivotal biomedical applications, including diagnostics and drug delivery. It is widely believed that research into the methods of engineering nanoparticles and mechanisms of nanoparticle-mediated detection of disease cells and molecules in vitro and in vivo will be the "holy grail" of disease detection, imaging and efficient management in 21st century. The goal of this workshop is to review and explore the latest advances in the application of nanotechnology in different diagnostic and therapeutic arenas.

## SPONSORED BY



## FOR FURTHER INFORMATION PLEASE CONTACT

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University of South Florida

# NANO-BIO Collaborative 2010

The Dr. Blaise F. Alfano  
Conference Center

Tampa, Florida, March 11<sup>th</sup>–12<sup>th</sup>

## HOSTED BY

USF Nanomedicine Research Center  
USF Office of Research and Innovation

USF Health Office of Research

USF Nanomaterials and  
Nanomanufacturing Research Center,  
College of Engineering

Draper Bioengineering Center,  
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Transgenex NanoBioTech Inc.

## OBJECTIVE

To discuss the emerging concepts and applications of nanotechnology and nanoscience to the diagnosis, imaging and targeted therapy, tissue engineering and Stem Cells technologies toward cure, prevention and treatment of human diseases.

## MISSION OF USF NANO-BIO COLLABORATIVE

- Promote collaborative research btw the Colleges of USF Health, and the Colleges of Engineering and Colleges of Arts and Sciences
- Support the Nanomedicine and Biomedical Engineering Initiatives of USF
- Help to create multidisciplinary education and research projects
- Develop novel approaches for translational research
- Provide new insights into nanomedicine applications for nanoscientists, clinicians and engineers in the areas of inflammatory disease, cancer, heart disease, neurological problems, drug delivery, diagnostic testing and therapeutics.

## ORGANIZING COMMITTEE

- **Shyam S. Mohapatra, PhD**  
Director, Nanomedicine Research Center, Chair of NanoBio Collaborative Conference, USF
- **Ashok Kumar, PhD**  
Director, Nanomedicine Research Center, Co-Chair of NanoBio Collaborative Conference, USF
- **Robert Deschenes**  
Chair, Molecular Medicine, Associate Dean of Research
- **Paul Sanberg, PhD**  
Associate VP, Office of Research, USF
- **Shankar Sundaram, PhD**  
Director, Draper Bioengineering Center, USF

### SESSION I CHAIR

Shankar Sundaram, PhD and Robert Deschenes, PhD

### SESSION II CHAIR

Shyam S. Mohapatra, PhD and Thomas Webster, PhD

### SESSION III CHAIR

Ashutosh Chilkoti, PhD and Ashok Kumar, PhD

### SESSION IV CHAIR

Paul Sanberg, PhD and Kam Leong, PhD

## FACULTY

- **Jeffrey Borenstein, PhD** Co-Program Leader, Engineering, The Charles Stark Draper Laboratory, Cambridge, MA
- **Cesario Borlongan, PhD** Professor, Neurosurgery and Brain Repair, USF, Tampa, FL
- **Ahmed Busnaina, PhD** William Lincoln Smith Professor, Director of the NSF Nanoscale Science Engineering Center for High-rate Nanomanufacturing, Northeastern University, Boston, MA
- **Don Cameron** Professor of Medicine Pathology and Cell Biology, College of Medicine, USF, Tampa, FL
- **Heather A Clark, PhD** Senior Scientist Biomedical Engineering Group The Charles Stark Draper Laboratory, Cambridge, MA
- **Ashutosh Chilkoti, PhD** Professor and Associate Director, Department Of Biomedical Engineering, Duke University, Durham, NC
- **Kyle Cissell, PhD** Research Scientist, TransGenex Nanobiotech Inc, USF, Tampa, FL
- **Robert Deschenes** Chair, Molecular Medicine, Associate Dean of Research
- **Nathan D. Gallant, PhD** Assistant Professor, USF, Tampa, FL
- **Don Haynie, PhD** Associate Professor, Nanomedicine and Bionanotechnology Laboratory, USF, Tampa, FL
- **Ashok Kumar, PhD** Director, Nanomaterials & Nanomanufacturing Research Center, USF, Tampa, FL
- **Ratneshwar Lal, PhD** Professor and Director, Center Of Nanomedicine, Department of Medicine San Diego, CA
- **Dale Larson, PhD** Director, Biomedical Engineering Program, Draper Laboratory Cambridge, MA
- **Kam Leong, PhD** James Duke professor, Department Of Biomedical Engineering, Duke University, Durham, NC
- **Shyam S. Mohapatra, PhD** Director, Nanomedicine Research Center, University of South Florida, Tampa, FL
- **Subhra Mohapatra, PhD** Assistant Professor, Department of Molecular Medicine, University of South Florida, Tampa, FL
- **Paul R. Sanberg, Ph.D., D.Sc.** Associate Vice President for Research & Innovation, Distinguished University Professor, USF, Tampa, FL
- **Edward Scott, PhD** Director, Program in Stem Cell Biology and Regenerative Medicine, The McKnight Brain Institute, University of Florida, Tampa, FL
- **Sudipta Seal** Professor and Director, Advanced Materials Processing Analysis Center and Nanoscience and Technology Center, University of Central Florida, Orlando, FL
- **John R. Sladek, PhD** Professor of Pediatrics, Neurology and Neuroscience, University of Colorado School of Medicine, Aurora, CO
- **Shankar Sundaram, PhD** Director, Draper Bioengineering Center, Tampa FL
- **Thomas Webster** Division of Engineering, Brown University, Providence, RI

## BRIEF ITINERARY

### Thursday March 11, 2010

8:00am–9:00am

#### REGISTRATION

9:00am–10:00am

#### OPENING REMARKS

**Karen A. Holbrook, PhD** Vice President for Research & Innovation and Professor of Molecular Medicine, USF, Tampa, FL  
**Phillip J. Marty, PhD** Associate Vice President, USF Health Office of Research, Tampa, FL  
**Stephen Klasko MD, MBA, CEO** USF Health, Dean, College of Medicine, Tampa, FL

10:45am–12:15pm

#### SESSION I: NANOSENSORS

**Heather Clark** Engineering the Future: Nanosensors for Biological Analysis  
**Dale Larson**  
**Chilkoti Ashutosh** Nanostructures that Interrogate and Control Biological Function  
**Rathneshwar Lal** Nanosensors and Devices for Diagnostics and Therapeutics

12:15pm–1:30pm

#### LUNCH

1:30pm–3:30pm

#### SESSION II: CELL TECHNOLOGY

**Don Cameron** Cell mediated drug deliver to the lungs by SNAP methodology  
**John Sladek** Stem Cell repair in the nervous system  
**Edward Scott**  
**Cesario Borlongan**

4:00pm–6:00pm

#### Poster Session/Break

6:30pm–7:30pm

#### Dinner Symposium: Future of Nano Technology

7:30pm–8:30pm

#### Dinner Lecture

### Friday March 12, 2010

8:00am–9:00am

#### BREAKFAST

9:00am–10:30am

#### SESSION III: NANOMEDICINE

**Thomas Webster** Nanomedicine: From Toxicity to Tissue Growth  
**Subhra Mohapatra** Targeted drug delivery for cancer  
**Sudipta Seal** Redox active nanoparticles for biomedical applications  
**Kyle Cissell** Luminescence-Based Methods for MicroRNA Detection

10:45am–12:15pm

#### SESSION IV: TISSUE ENGINEERING

**Kam Leong** Response of stem cells to nanotopography and subsequent generation of tissue-engineered blood vessel  
**Jeffrey Borenstein** Nanofabrication Technology for Tissue Engineering and Regenerative Medicine  
**Nathan Gallant** Cell Adhesion to Engineered Biomaterials  
**Donald Haynie** Polypeptide Multilayer Nanofilms

12:15pm–1:30pm

#### LUNCH