

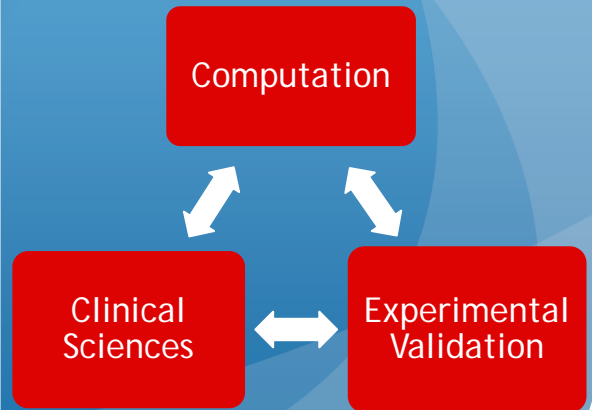
CYBHOR

Cyber-Physical Systems for the Hospital Operating Room

Our Vision

Be the leading research center in the emerging and multi-disciplinary field of Modern Surgery enabled by computational science and technologies.

Cyber-Physical Systems for the Hospital Operating Room



CyBHOR - Mission Statement

A vibrant, interdisciplinary team of computational scientists and faculty members in surgery is working, in synergy with the health industry, to improve patient care through next generation and high-tech medical practices.

By providing a proven collaborative framework for industry partners, hospitals, and universities to engage in cooperative research of interest and value to our members, CyBHOR advances, develops, and promotes research into the principles and technologies of computational surgery.

Research areas include:

- Mathematics and algorithm design
- Imaging, robotics, informatics, and simulation technologies
- Biological and physical principles



CyBHOR also works to increase the quantity and quality of professionals prepared to work in the field. We bring together a multi-disciplinary team of faculty from Houston Methodist Research Institute, University of Florida, and University of Houston in close collaboration with the Houston Methodist Institute of Technology, Innovation and Education, and affiliated hospitals and other institutions.

CyBHOR's Projects

Minimally Invasive Procedures

Laparoscopy
Endovascular Surgery
Endoscopy

Unobtrusive and Passive Operating Room Technologies

Non-invasive Tracking
Logistics
Optimization
Safety

Imaging

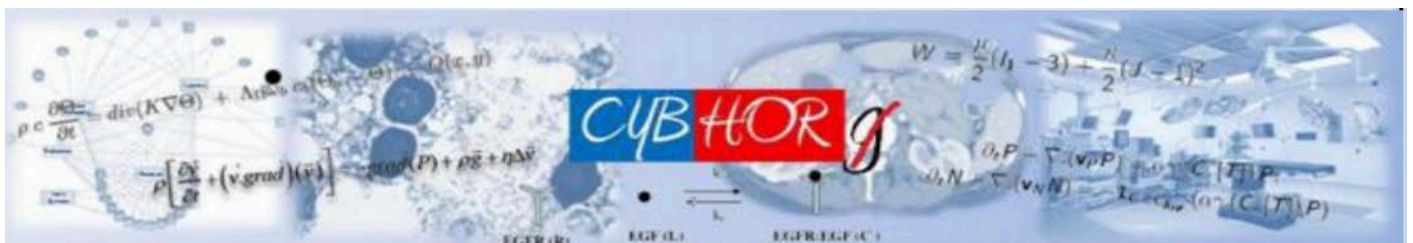
Acquisition
Reconstruction and Analysis
Procedural Guidance

Cell Directed Therapies and Genetic Modification

Stem Cell Implantation
Delivery Vehicles

Translational Tools for Pre-clinical Development

High-throughput Analyses
Multi-scale Modeling
Systems Biology



What is the NSF I/UCRC ?

Mission: Contribute to the nation's research infrastructure base by developing long-term partnerships among industry, academia and government.

Leverage NSF funds with industry contributions to support graduate students performing industrially relevant research.

Vision: Expand innovation capacity of our nation's competitive workforce through partnerships between industries and universities. Bedrock of trusted, long-term relationships between industry and academia based on shared value needs.

NSF Contribution: Facilitate a Center environment in which long-term relationship between industry and academia can thrive:

- Cooperative agreement & operational framework
- Franchise of centers for collaboration
- Best practices based on decades of evaluation
- Funding opportunities available to I/UCRC's.

CyBHOR's STAFF:

Director: **Marc Garbey**, PhD - Scientific Director of the Center for Computational Surgery at Houston Methodist Hospital, Director of Research Integration MITIE

Co-Director: **Scott Berceli**, MD, PhD - Professor of Surgery at the University of Florida and Chief of Vascular Surgery, NF/SG VHS

Co-PI: **Barbara Bass**, MD - Director of MITIE and Chair of the Department of Surgery at Houston Methodist Hospital

Co-PI: **Roger Tran-Son-Tay** PhD - Professor of Mechanical and Aerospace Engineering, University of Florida

Managing Director: **Verena Kallhoff**, PhD, MBA

Scientific Liaison: **Remi Salmon**, PhD

Administrative Liaison: **Claire Saunier**

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- Industry driven research projects
- Investment leveraging via cooperative
- Networking with industry peers and customers
- Access to intellectual property
- Pre-publication access to research
- World-class researchers & facilities
- Access to

IAB
Research
needs

I/UCRC

Center
Faculty
Research

- New research and education program dimensions
- Leveraging of Proof-of-Concept results from IUCRC projects
- Trusted relationships with industry
- Ready partners for translation of discoveries
- Student recruitment, retention and placement
- Means to achieve institutional mission and meet constituency expectations.

Partners

STORZ
KARL STORZ – ENDOSKOPE

Boston
Scientific

Endoscopy

GID

TIETRONIX



HOUSTON
Methodist
LEADING MEDICINE



Medtronic