Center to Stream Healthcare in Place (C2SHiP)
Planning Meeting

November 6 & 7

Texas Medical Center (TMCx), 2450 Holcombe Blvd., Suite x04, Houston TX
Center to Stream Healthcare In Place (C2SHIP)

Our Mission: The Center to Stream Healthcare In Place (C2SHIP) is part of the US National Science Foundation (NSF) Industry/University Cooperative Research Centers (I/UCRC) program (Award # 1747664 and Award # 1747734). The mission of the C2SHIP Center is to engage academic and industrial partners in joint efforts that develop in-home technologies for managing chronic diseases at the patient’s own home (in-place care), and accelerate innovation through multi-specialty collaborations and resource sharing, and prepare and educate a workforce with the capacity for promoting wellness through the development of self-care technologies. These goals will be attained through the following complementary strategies: (1) emphasize fundamental investigations that provide in-depth understanding for the core disciplines needed for personalized technology that promotes in-place care; (2) establish effective interactions with Center members to build innovation capacity and accelerate technology transfer; and (3) promote collaborations with other existing centers to create multi-center innovative technology for the involved core disciplines.

The Center is composed of an advisory board of industry and government partners that funds and directs cutting edge academic research in four areas:

1. **Design:** Wearable sensors/Internet of things/in-home devices/manufacturing
2. **Datamining:** Machine learning models to extract clinically meaningful information to promote in-place care
3. **Cybersecurity/Feedback:** Methods to securely stream data from multiple sensors/devices and/or visualize results back to patients/care providers using multi-modal interfaces to promote in-place care
4. **Broader Impact:** Education and Societal Impact of in-home technologies

About I/UCRC program: The Industry–University Cooperative Research Centers (IUCRC) Program was initiated in 1973 to develop long-term partnerships among industry, academe and government. The National Science Foundation (NSF) invests in these partnerships to promote research programs of mutual interest, contribute to the nation's research infrastructure base, enhance the intellectual capacity of the engineering or science workforce through the integration of research and education, and facilitate technology transfer. The IUCRC program seeks to achieve these goals by:

- Contributing to the nation's research enterprise by developing long-term partnerships among industry, academe, and government;
- Leveraging NSF funds with industry to support graduate students performing industrially relevant pre-competitive research;
- Expanding the innovation capacity of our nation's competitive workforce through partnerships between industries and universities; and
- Encouraging the nation's research enterprise to remain competitive through active engagement with academic and industrial leaders throughout the world.

Pre-competitive research is cooperatively defined and funded on shared value:

- Industrial members pool their funding investments to address pre-competitive shared needs
- The shared project portfolio is cooperatively defined and selected
- $50K per year → 1 vote
- The NSF IUCRC agreement provides an organizational framework for coordination of industry-inspired research
- Royalty-free nonexclusive access to IP by members
- Requires trust to be built in the model and among all partners in the center
Center to Stream Healthcare In Place (C2SHIP)

Location: Texas Medical Center – Innovation (TMCx), 2450 Holcombe Blvd., Suite X, Houston, TX. [http://www.tmc.edu/innovation/innovation-programs/tmcx/](http://www.tmc.edu/innovation/innovation-programs/tmcx/)

Date: November 6-7, 2018

**November 5, 2018 (Social Event – Gathering Dinner)**

6:00 -7:30 pm Pappasito’s Cantina –
NRG Stadium 2515 S. Loop West, Houston TX 77054
([https://pappasitos.com/location/nrg-stadium](https://pappasitos.com/location/nrg-stadium))

**November 6, 2018 (Day 1)**

8:00 am Participant Registration

8:00 - 8:30 am Breakfast and Networking Time

8:30 - 9:00 am Welcome Remarks

8:40 - 8:45 Adam Kuspa, Vice President and Dean of Research, Baylor College of Medicine

8:45 - 8:50 Mark Kunik, Director, VA South Central MIRECC; Chief, IQuEST Behavioral Health and Implementation Program; Professor, Menninger Department of Psychiatry and Behavioral Science

8:50 - 8:55 Steven Devlin, Associate Dean of Economic Development and Industrial Engagement, College of Engineering, University of Missouri

8:55 - 9:00 Randolph Hall, Vice President of Research, University of Southern California

9:00 - 9:15 am A population health approach to manage acute care

David H. Berger, Professor Michael E. DeBakey Department of Surgery, SVP and Chief Operating Officer, Baylor St. Luke’s Medical Center

9:15 - 9:35 am Vision, Capabilities and Value Proposition of the Center

9:15 - 9:20 Bijan Najafi, Professor of Surgery and Bioengineering, C2SHIP Director at Baylor College of Medicine (BCM)

9:20 - 9:25 Marjorie Skubic, Professor of Electrical Engineering and Computer Science, C2SHIP Director at University of Missouri (UM)

9:25 - 9:30 David Armstrong, Professor of Surgery, C2SHIP Director at University of Southern California (USC)
9:30 - 9:35 am Janet Roveda, Professor of Electrical and Computer Engineering, Biomedical Engineering and BIO5 Institute, C2SHIP Director at University of Arizona (UA)

9:35 - 10:30 am **NSF IUCRC Presentation** (IUCRC Program Director and Evaluator) Dmitri Perkins IUCRC Program Director NSF Ms. Connie Chang Evaluator

10:30 - 11:00 am BREAK

11:00 - 12:15 pm **The Potentials for in-home technologies to support Aging in Place**
11:00 - 11:10 P001: Tracking chronic health conditions in senior housing. By Prof. Kari Lane (MU, Nursing)
11:15 - 11:25 P002: Apply technological approaches to measure capacity, By Prof Aanand Naik (BCM)
11:30 - 11:40 P003: Monitoring wound healing and adherence to offloading with a smart boot, By Prof David Armstrong (USC)
11:45 - 11:55 P004: Remote assessment of diabetic foot at risk. By Prof. Chiara Daraio (CalTech)
12:00 - 12:10 P005: Digital health to Promote Aging in Place. By Prof. Bijan Najafi (BCM)
12:15 - 12:25 P006: Coming together to stay in place: A collaboration to extend ulcer-free, hospital-free days in diabetic foot remission. Br Dr. Karen D’Huyvetter, (USC)

12:30 - 1:30 pm LUNCH

1:30 - 2:30 pm **Understand and Coordinate Healthcare system interfaces**
1:30:1:45 Drones, smart cars, our new way’s care deliver for remote area
   - by Dr. Hao Xin (Lunewave)
1:45:1:55 P007. Multimodal consumer interfaces for managing chronic health conditions
   - by Prof. Marjorie Skubic (MU, EECS)
2:00:2:10 P008. Communications for sensors/wearables in medication delivery
   - by Prof. Kathleen Melde, Director, Graduate School, (UA, ECE)
2:15:2:25 P009. Edge Computing and Networking to integrate IoT Devices and Secure Cloud Platforms
   - by Dmitrii Chemodanov, PhD student, Computer Science, (MU)

2:30 - 3:00 pm BREAK

3:00 - 3:45 pm **Real time Dynamic Data Analysis using AI and machine learning to assist design and diagnosis in one place**
3:00 - 3:15 From Deep Blue to computational biomedical research, are we ready?
   - by Dr. Frank Liu, RSM, IBM, IEEE Fellow
3:15 - 3:25 P010 Combining Molecular Imaging of the Brain and Wearable
- by Dr. Phil Kuo, Professor, Medical Imaging, Division Chief, Nuclear Medicine, and Director of PET/CT, UA

3:30 - 3:40 P011 Explainable AI for Healthcare
- by Bryce Murray, PhD student, ECE, MU

3:45 - 4:00 pm BREAK

4:00 - 5:30 pm Industry Workshop (Moderator: Dr. Linda Powers)

4:00 - 4:10 pm Presentation by Medline, “Advancing the Health of Healthcare Margaret Halstead, VP - Health Economics & Market Access, Medline Industries, Inc.

4:10 - 4:20 pm Presentation by Google, “Consumer Health Platforms at Google” Todd Whitehurst, Director, Hardware Development at Google Life Sciences

4:20 - 4:30 pm Presentation by United HealthCare, Salil V. Deshpande, Chief Medical Officer, United Healthcare Community Plan of Texas

4:30 - 4:40 pm Presentation by WeHealth by Servier, David Guez, Managing Director WeHealth by Servier (eHealth)

4:40 - 4:50 pm Presentation by Sonoran Analytics, Linda Powers, CEO

4:50 - 5:00 pm Presentation by Woundtech, Paul Hayre, CEO, “A Proven and Scalable Care Platform: Bringing Best Practice, Low Cost, and Equitable Precision Wound Care to Patients”

5:00 - 5:10 pm Presentation by Streamlined Performance, Jeff Utsch, CEO, “Improve human performance through alternative weightless training”

5:10 - 5:30 pm Q&A, General Discussions about the potential challenges, markets, and future directions,

5:30 - 5:35 pm Review of evening and Day 2 activities, Janet Roveda

5:45 pm Technical Forum and Social (Poster session)

November 7, 2018 (Day 2):

7:30 - 8:00 am Arrival and Breakfast

8:00 - 9:30 am LIFE FORM review and Discussion - NSF Evaluator Moderated (All participants)

9:30 - 10:15 am Center Response to Feedback from Industry Workshop, LIFE (Center, Site Directors)

10:15 - 10:30 am BREAK
10:30 - 11:15 am  NSF Closed Session with Industry (NSF and Industry)
11:15 - 11:45 am  Next Steps, Action Items & Closing Remarks (All participants)
11:45 am  ADJOURN (Box lunches)

1:00 pm - 1:30pm  JLABS@TMC tour (pre-registration is required)

About the tour: Everything is bigger in Texas, and JLABS @ TMC is no exception. With over 34,000 square feet of common, wet lab, and office space, our Houston site boasts the largest JLABS footprint in the US. The JLABS @ TMC portfolio is as diverse as our hometown, with companies hailing from five countries, and seven states. Here the companies are diverse, so are their technologies. The JLABS @ TMC portfolio spans the breadth of life sciences with companies focused on oncology, therapeutics, pharma and medical device, turning Houston into the true third coast of innovation. To help our medical device companies and partners in the TMCx cohort and BioDesign program innovate faster, we recently renovated a ~1,000-square foot concept lab into a full-scale prototyping space, which includes specialized software, electronics testing and assembly equipment, rapid fabrication and 3D printing capabilities. The ~30 minutes JLABS Tour will include:

- Welcome and Brief Introduction
- Common Research Labs
- Common Prototyping Labs
- Bio/Chem Labs and Service Alcoves
- Tissue Culture & Private Cell Culture Facilities
- Concept Lab
- Event Space & Lounge
- Open Work Stations
Center Directors

Janet M. Wang-Roveda, University of Arizona
Bijan Najafi, Baylor College of Medicine
David Armstrong, University of Southern California
Marjorie Skubic, University of Missouri

Pending Center Directors

Larry Lavery, The University of Texas Southwestern Medical Center
Chiara Daraio, California Institute of Technology
Nanshu Lu, University of Texas at Austin

NSF Center Evaluators

Connie K. N. Chang, National Science Foundation
Dmitri Perkins, National Science Foundation
Industrial Members

Alexander Senemar, Medopad
Ashkan Vaziri, BioSensics
Dave Kleidermacher, Google
David Berger, CHI Baylor St. Lukes

Estelle DUCLAY, EWIN Consulting
Eddy Warman, Medtronic
Franco Salvatelli, Optima Molliter
Frank Liu, IBM Research

David Guez, WeHealth by Servier
Hadi Rahemi, Circulation Concepts
Jeffrey S Utsch, Streamline Performance
Linda Powers, Sonoran Analytics

Margaret Ann Halstead, Medline Industries
Melody Williams, NMB Tech Corp
Nicholas von Horn, Peter Sheehan Diabetes Care Foundation
Patrick Sheehan, Peter Sheehan Diabetes Care Foundation
Paul Costello, Medopad
Paul Hayre, WoundTech
Praduman Jain, Vibrent Health
Ran Ma, Siren

Ravi Swami, Nokia Bell Labs
Robin Greubel, VentureWell
Salil V. Deshpande, United Healthcare
Todd Whitehurst, Google

Tong H. Kim, ICO Systems Corporation
Hao Xin, Lunewave
Academic Members

Aanand Naik, 
Baylor College of Medicine

Akshay Jain, 
University of Missouri

Ana Enriquez, 
Baylor College of Medicine

Andrew Buck, 
University of Missouri

Anup Kumar Mishra, 
University of Missouri

Ao Li, 
University of Arizona

Barbara Trautner, 
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Dmitrii Chemodanov, 
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Eric Storch, 
Baylor College of Medicine

Feng Wei, 
Baylor College of Medicine

Gu Kang, 
Baylor College of Medicine

He Zhou, 
Baylor College of Medicine

Hung Nguyen, 
Baylor College of Medicine
Franco Salvatelli, Optima Molliter

Steven Devlin, University of Missouri
Stuart Corr, Baylor College of Medicine
Syed Kamrul Islam, University of Missouri
Adam Kuspa, Baylor College of Medicine

Peter Crisologo, The University of Texas Southwestern Medical Center