

# MEDINFO 2007 Panel Proposal

## Translational Research from an Informatics Perspective

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### Abstract

Clinical and translational research (CTR) is an essential part of a sustainable global health system. Informatics is now recognized as an important enabler of CTR and informaticians are increasingly called upon to help CTR efforts. The US National Institutes of Health mandated biomedical informatics activity as part of its new national CTR grant initiative, the Clinical and Translational Science Award (CTSA). Traditionally, translational research was defined as the translation of laboratory discoveries to patient care (bench to bedside). We argue, however, that there are many other kinds of translational research. Indeed, translational research requires the translation of knowledge discovered in one domain to another domain and is therefore an information-based activity. In this panel, we will expand upon this view of translational research and present three different examples of translation to illustrate the point: 1) bench to bedside, 2) Earth to space and 3) academia to community. We will conclude with a discussion of our local translational research efforts that draw on each of the three examples.

### Keywords (MeSH)

Biomedical Research, Information Science, Information Management, Medical Informatics

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### Description of Panel

Traditional clinical research involves the discovery and application of knowledge in the same context. For example, a clinical trial performed at an academic medical center to determine the efficacy of a specific drug for treatment of a particular condition. In contrast, translational research requires the application of knowledge gained in one context to another context. Traditionally, this meant using laboratory discoveries to improve patient care (bench to bedside). However, other examples of translation are: academia to community, Earth to space, “first world” to “third world” (e.g., Europe to Africa), urban to rural and military to civilian among others. Additionally, reverse translation must be considered. Indeed, the terrestrial application of technologies developed for and during space flight is an important reason to explore space.

However, multiple barriers to translational research impede progress. These include regulatory, educational and, perhaps most importantly, information-based barriers. As a result, information management and biomedical informatics are now recognized to be essential components of translational research. Processes, tools, methods and algorithms must be developed to enable translation in the broad sense (i.e., transfer of knowledge from one context to another) and not only in the narrow sense (e.g., bench to bedside).

Each panelist will discuss this view in the context of bi-directional translation from: 1) bench to bedside, 2) Earth to space, 3) academia to community and 4) informatics within the Texas Medical Center, the world’s largest clinical and research center.

### Learning Objectives

After attending the panel, participants will:

- Understand translational research as an information problem.
- Describe how and why translational research extends beyond the traditional definition (bench to bedside)
- Describe at least three examples of translation:
  - Bench to bedside and vice versa
  - Earth to space and vice versa
  - Academia to community and vice versa
- Understand how these principles are being applied at the Texas Medical Center in the context of a large federally-funded research effort.

### Brief Biographies of the Presenters

Elmer Bernstam, MD, MSE (Associate Professor of Health Informatics and Internal Medicine, UT-Houston) is a board-certified, practicing internist and fellowship-trained informatician. His research

focuses on information retrieval, translational biomedical informatics and consumer informatics. He is the co-director of biomedical informatics at the Center for Clinical and Translational Sciences (CCTS) at UT-Houston. Dr. Bernstam will serve as moderator, introduce the topic and place each speaker’s presentation in context.

Funda Meric-Bernstam, MD (Associate Professor of Surgery, M.D. Anderson Cancer Center) is a board-certified general surgeon with fellowship training in surgical oncology. Her research and clinical practice focus on breast cancer including molecular therapeutics and consumer informatics. Dr. Meric-Bernstam will discuss translational research as it has traditionally been defined (bench to bedside), but from an informatics perspective. Specifically, she will discuss information interventions to increase knowledge gained from multiple small phase I/II trials of novel molecular cancer therapies.

Kathy A. Johnson-Throop, PhD (Manager, NASA Johnson Space Center) holds a PhD in computer science. She leads the medical informatics and health care systems efforts at Johnson Space Center. Dr. Johnson-Throop will discuss the challenges and opportunities of translating terrestrial clinical knowledge to space flight, and vice versa. She will also discuss the need for clinical decision support in space flight and in terrestrial applications.

James P. Turley, RN, PhD (Associate Professor of Health Informatics, UT-Houston) holds a PhD in community health education as well as a Master’s degree in public health nursing. His research focuses on information approaches to improving health in the community. Dr. Turley will discuss the challenges in translating knowledge developed in academic medical centers to the community. He will review reasons why there may be a gap between academic and community practice and potential information-based solutions.

Jack W. Smith, MD, PhD (Professor of Health Informatics and Dean, School of Health Information Sciences, UT-Houston) is a pathologist who also holds a PhD in computer science (artificial intelligence). Dr. Smith is director of biomedical informatics for the CCTS at UT-Houston. His research focuses on applications of cognitive science to biomedical computing. Dr. Smith will discuss translational informatics efforts at UT-Houston including ongoing efforts to design and implement a research electronic medical record to enable and transform clinical and translational research.

### Referee

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