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Welcome to the Third Annual AMIA Clinical Research Informatics Summit. In a very short three years, the AMIA CRI Summit has become the premier meeting focused exclusively on cutting-edge innovations, scientific results, and professional networking in the rapidly expanding scope of clinical research informatics. Adjacent to the AMIA Translational Bioinformatics Summit, these two meetings cover the broad landscape of discovery and translational informatics research, innovations, systems, and results that impact translational science and research.

The 2012 AMIA CRI Summit Call for Participation resulted in the highest number of submissions in all categories: full presentations, podium presentations, panels and posters. The Summit’s four themes were carefully selected to cover the current “hot topics” in CRI: Research and resource discovery, collaboration and sharing; Bedside to Base Pairs – from clinical observations to genetic discovery; Clinical care and clinical research workflow integration; and emerging informatics platforms for integrated translational research. These themes were also chosen to integrate with the four themes in the TBI Summit. As in years past, the two Summits will host a joint plenary session during “Bridge Day” and the ever-popular “CRI Year in Review” closing session.

As a key scientific and professional networking venue, your participation is critical to the success of the CRI Summit. We invite you to come to the meeting to engage with leaders and innovators in the field. In addition, we have engaged key vendors that provide informatics services and systems to support translational research. Please come with questions, insights, new ideas and concepts to share with the rest of the CRI community.

The Scientific Advisory Board members, Track Chairs and I look forward to a very lively meeting in San Francisco!

Michael Kahn
Chair, CRI Summit Scientific Program Committee
University of Colorado
## SCIENTIFIC PROGRAM COMMITTEE

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## ABOUT THE JOINT SUMMITS ON TRANSLATIONAL SCIENCE

AMIA presents two essential back-to-back meetings for TBI and CRI scientists working throughout the spectrum of translational science. A ‘Bridge Day’ joins the two summit meetings for a day of shared sessions, a keynote, and informational exchange. The **AMIA Joint Summits on Translational Science** are a set of two joined conferences held annually with the Translational Bioinformatics Summit (TBI) immediately preceding the Clinical Research Informatics Summit (CRI). The Joint Summits provide a venue to gather translational bioinformatics and clinical research informatics professionals from academia, industry, government and non-profit sectors, along with those interested in the full translational science spectrum. The 2012 Joint Summits on Translational Science will be held March 19-23 at the Parc 55 Hotel in San Francisco. Registration is open and can be accessed at [http://www.amia.org/jointsummits2012/registration](http://www.amia.org/jointsummits2012/registration)
# SCHEDULE AT-A-GLANCE

## Wednesday, March 21
- 7:30 – 8:30 am  
  Coffee and Pastries
- 7:30 am – 5:00 pm  
  Registration Open
- 8:30 – 10:00 am  
  **Opening Session and Keynote Address: Dr. Robert M. Califf**
- 10:00 – 10:30 am  
  Coffee Break
- 10:30 am – 12:00 pm  
  **Scientific Sessions**
- 12:15 – 1:15 pm  
  Lunch & Learn - Velos
- 1:30 – 3:00 pm  
  **Scientific Sessions**
- 3:30 – 5:00 pm  
  **Keynote Presentation: Dr. Russ Altman - TBI Year in Review**
- 5:00 – 6:00 pm  
  Joint Summits Reception, sponsored by Booz Allen Hamilton

## Thursday, March 22
- 7:00 – 8:15 am  
  Birds of a Feather Session: IHE Integration
- 7:00 am – 5:00 pm  
  Registration Open
- 8:30 – 10:00 am  
  **Scientific Sessions**
- 10:00 – 10:30 am  
  Coffee Break
- 10:30 am – 12:00 pm  
  **Scientific Sessions**
- 12:15 – 1:15 pm  
  Lunch & Learn - Recombinant Data
- 1:30 – 3:00 pm  
  **Scientific Sessions**
- 3:00 – 3:30 pm  
  Coffee Break
- 3:30 – 5:00 pm  
  **Scientific Sessions**
- 5:00 – 6:00 pm  
  Poster Session and Reception

## Friday, March 23
- 7:00 – 8:15 am  
  Birds of a Feather Session: Governance Models for Research Informatics
- 7:00 am – 11:00 am  
  Registration Open
- 8:30 – 10:00 am  
  **Scientific Sessions**
- 10:00 – 10:30 am  
  Coffee Break
- 10:30 am – 12:00 pm  
  **Scientific Sessions**
- 12:15 – 1:15 pm  
  Closing Session and CRI Year in Review: Dr. Peter Embi
TRACK DESCRIPTIONS

TRACK 1: RESEARCH AND RESOURCE DISCOVERY, COLLABORATION AND SHARING

The days of the sole investigator are receding quickly as modern science demands access to broad-based teams that apply complimentary knowledge and tools in new and creative ways. But forming a team with access to the right resources, collaborating over large distances and sharing/re-using results by other teams remain daunting challenges. This track will focus on newly emerging semantic-web based search and discovery tools that leverage advances in social networking and distance team collaboration sciences, and new models for data and tool sharing that can help reduce barriers to the next-generation of team-based science.

TRACK 2: BEDSIDE TO BASE PAIRS – FROM CLINICAL OBSERVATIONS TO GENETIC DISCOVERY

Electronic medical records have long held the promise of capturing detailed clinical observations that could be mined for genetic associations. New techniques are required for capturing, storing and analyzing observational EMR data to support complex phenotype detection. This track will focus on advances in data and text mining, data interaction and visualization methods, and data integration tools that unlock the deep potential for phenotype discovery for genetic association studies.

TRACK 3: CLINICAL CARE AND CLINICAL RESEARCH WORK FLOW INTEGRATION

To date, clinical care and clinical research have existed as parallel, side-by-side processes. Much work has been done on exploiting EMR capabilities for study subject identification and recruitment. A significant amount of technical standards work has defined methods for integrating clinical care data collection with research data collection. This track will focus on the technical and regulatory barriers that exist in integrating clinical care and clinical research work flows, focusing on data collection, reporting, and adverse event detection.

TRACK 4: EMERGING INFORMATICS PLATFORMS FOR INTEGRATED TRANSLATIONAL RESEARCH

Clinical research informatics sits at the nexus of translational bioinformatics, clinical informatics and public health informatics. At its core reside challenges in integrating complex and heterogeneous data, including biological, clinical and population oriented data that span orders of magnitude in terms of the scale of the presented processes and the size of the involved data sets. Innovation models and technologies are emerging that attempt to harmonize across biological and clinical observations. This track will focus on emerging integrated informatics platforms that are being developed specifically to incorporate a wide range of highly disparate data into a uniform model, which utilizes ontologies to enable data sharing and analyses across previously siloed translational disciplines.

LEARNING OBJECTIVES

- To present the state-of-the-art in biomedical informatics approaches, theories, and methods relevant to clinical and translational science
- To present the latest research and development findings on using informatics approaches to improve clinical and translational biomedical research
- To demonstrate frameworks for deploying and assessing clinical research informatics initiatives.
- To explore interactions among professionals engaged in clinical and translational science including clinical and translational investigators, computational biologists, genomics researchers, statistical geneticists, clinical informaticians, public health informaticians, and those involved with clinical and research IT policy and regulatory issues.
- To provide a platform to discuss research-related issues among the national and international clinical and translational research informatics initiatives, such as CTSA, caBIG, CDISC, etc.
KEYNOTE SPEAKERS

WEDNESDAY, MARCH 21, 2012

8:30 – 10:00 am

Robert M. Califf, MD
Vice Chancellor for Clinical Research
Professor of Medicine, Division of Cardiology
Duke University's Translational Medicine Institute

Vice Chancellor for Clinical Research, Director of the Duke Translational Medicine Institute (DTMI), and Professor of Medicine, Cardiology, Duke University Medical Center, Dr. Robert Califf leads a large, multifaceted organization focused on transforming the path for scientific discoveries into improved medical care. Prior to his role at DTMI, he was the founding Director, Duke Clinical Research Institute, an academic research organization. He is the editor-in-chief of American Heart Journal, and has authored more than 1000 peer-reviewed articles.

3:30 – 5:00 pm

Russ Altman, MD, PhD
Professor of Bioengineering, Genetics, and Medicine
(and Computer Science, by courtesy)
Chairman, Department of Bioengineering
Director, Biomedical Informatics Training Program
Stanford University

The importance of Translational Bioinformatics continues to grow in biomedical research, genetics, education, and diagnostic and therapeutic discovery. In the past year, we have seen continued progress in linking clinical data to molecular data, as we usher in a new era of molecular medicine. This session will review notable publications over the past twelve months, highlighting trends and milestones achieved in the past year. This is the fifth installment of this keynote talk by Dr. Altman.

FRIDAY, MARCH 23, 2012

10:30 am – 12:00 pm

Peter Embi, MD, MS
Associate Professor & Vice Chair
Department of Biomedical Informatics Chief Research Information Officer
The Ohio State University Medical Center

Dr. Embi is an internationally recognized researcher and educator in the field of clinical research informatics, with numerous publications and presentations describing his innovations in the field. Dr. Embi has received numerous awards for his distinguished work in rheumatology including the 2008 Association of Rheumatology Health Professionals President’s Award. He currently serves on the American College of Rheumatology’s board of directors. In 2008 he was elected as a fellow in the American College of Physicians.
Panels

Going Beyond Cohort Discovery: Current Limitations, Advanced Methodologies and Future Trends
V. Huser, National Institutes of Health; V. Deshmukh, University of Utah; A. Wilcox, Columbia University; H. Lowe, Stanford University
The panel will present existing informatics approaches as well as challenges for future research which go beyond simple cohort discovery and providing count data.

Semantic interoperability for clinical research in Europe
C. Daniel, Paris Descartes University; B. Delaney, Kings College London; M. Jaulent, Paris Descartes University; P. Massonet, Cetic
The panel participants will present their technical implementation approaches for integrating EHRs to clinical research. Overall, an understanding of the key steps towards realizing semantic interoperability across Europe, focusing on the re-use of primary health data for clinical research, will be discussed.

Identifying Patients for Clinical Studies from Electronic Health Records: The TREC Medical Records Track
W. Hersh, Oregon Health & Science University; E. Voorhees, NIST; I. Provalov, Cengage Learning; D. Demner-Fushman, NLM
In 2011, TREC instituted a Medical Records Track, focused on the retrieval of medical records that could enable the selection of patients for possible participation in clinical studies. This panel reports on the development and implementation of the track including presentations by two of the track’s research participants.

Using Ontologies to Drive Clinical Research: Time to Get Real
M. Musen, Stanford University; S. Murphy, Partners Healthcare; R. Wynden, UCSF; P. Mirhaji, The University of Alabama at Birmingham; N. Shah, Stanford University
This panel brings together investigators who have been successful in putting ontologies to work to enhance the clinical research enterprise. The panelists will discuss the ways in which ontological resources have been important in their work, the benefits and limitations of their respective approaches, and the ways in which clinical organizations need to evolve to make maximal use of these new technologies.

Capturing Descriptions of Human Studies for Federated Data Sharing: Frontline Experiences from Three Institutions
I. Sim, UCSF; S. Chakraborty, Duke University; H. Lehmann, Johns Hopkins University; S. Mollah, The Rockefeller University
This panel will give an overview of our technical approach to semantically standardized data federation of human study protocols, and will present the sociotechnical experiences of three academic research institutions as they move towards sharing human studies information.

Natural Language Processing for Clinical and Translational Research
H. Liu, C. Chute, Mayo Clinic; W. Chapman, UCSD; H. Xu, Vanderbilt University; N. Shah, Stanford University
This panel will discuss utilities of NLP in clinical and translational research and efforts in tackling NLP interoperability issues.

Standardizing Clinical Data Elements to Support Regulatory Review of Marketed Therapeutics
M. Nahm, Duke University; R. Kush, CDISC; R. Richesson, University of South Florida
The panel will report the rationale, progress, and current efforts toward standardization of clinical data elements in specialty and disease domains in support of regulatory review of therapeutic products.

The Chief Research Information Officer (CRIO): Early Experiences with a New Leadership Role for Academic Health Centers
P. Embi, The Ohio State University; Y. Lussier, University of Illinois at Chicago; U. Tachinardi, University of Wisconsin-Madison
The conduct of research is critical to the tri-partite mission of academic health centers (AHC). Increasingly, clinical and research information systems have the potential to accelerate research and enable quality improvement. Given the challenges inherent in doing so, dedicated leadership and expertise is needed to optimally design, deploy and leverage various information resources to advance research activities at AHCs. Some institutions have created a new leadership position to oversee such activities, the Chief Research Information Officer (CRIO). Panelists will provide an overview their respective CRIO positions within their AHCs, discuss their early experiences, and share lessons learned for this emerging leadership role in clinical and translational research informatics.
**Next-generation Distributed Research Networks**

*J Speakman, NCI/CBIIT; C. Kesselman, USC/BIRN*

The use of distributed computing services has been adopted widely by the physical sciences community but has been much less successfully deployed in the biomedical sciences. caBIG, funded by the National Cancer Institute, and BIRN, funded by National Center for Research Resources, are two contemporary grid-based distributed data and services oriented architectures that have similar high level goals but markedly different use cases, user communities, and implementation approaches. Both caBIG and BIRN have also undergone continuous evolution as new challenges have emerged that have impeded adoption. In this panel, the leaders from caBIG and BIRN will reflect on the lessons learned from “Phase 1” of each network’s existence and look forward to the future “Phase 2” as both networks continue to push distributed services-oriented architectures forward.

**AcademyHealth/Electronic Data Methods Forum**

*E. Holve, AcademyHealth*

In 2010 the Agency for Healthcare Research and Quality (AHRQ) funded a series of twelve projects to advance the use of biomedical informatics for quality improvement (QI), comparative effectiveness research (CER) and patient centered outcomes research (PCOR). In total the projects represent an investment of approximately $100 million over three years and will address several timely challenges, including: interoperability between healthcare delivery sites and databases; collection of patient-reported outcomes; and the development of sound, sustainable infrastructure to protect patient privacy and ensure data quality. Concurrently, the Clinical Translation Science Award program has developed a new taskforce to discuss common challenges for informatics and CER, and the Office of the National Coordinator has been engaged in a variety of projects to advance the use of electronic clinical data for public health improvement and evaluation. The goal of this panel is to discuss implications of these significant investments to advance QI, research, and clinical decision support. Panelists will reflect on lessons learned over the course of several efforts to assess the challenges and opportunities of using electronic clinical data. The panel will inform participants of the scope of these projects and ways for the AMIA community to provide input and feedback on innovations as well as information and resource needs that may be addressed by the projects. Opportunities to leverage the methods, tools, and findings being produced by these projects to accelerate local efforts to use electronic clinical data for QI, research, and clinical decision support will also be discussed.

**Informatics Challenges and Solutions for Capturing, Taming, and Analyzing the Data Tsunami: Report of the ACMI 2012 Winter Symposium**

*S. Bakken, Columbia University*

As we move from clinical data warehouses and biobanks to broader conceptualizations of comprehensive health determinants data, numerous challenges arise. To address these challenges, the ACMI 2012 Winter Symposium focused relevant topics including: 1) database structures and ontologies that support linkages among disparate data types; 2) de-identification strategies: where and how; query tools for extraction of analytical data sets; 3) visualization tools that provide cognitive support for investigators, and 4) sharing across databases for discovery and translation. Panelists will provide a summary of the symposium and key recommendations from Symposium participants for solutions that address the informatics challenges related to capturing, taming, and analyzing large volumes of heterogeneous data.
At the CRI Summit, there will be many paper and podium presentations of exciting scientific results. Here is a sample of some featured content:

**Evaluating Alert Fatigue and Response Patterns to EHR-based Clinical Trial Alerts: Findings from a Randomized, Controlled Study**
P. Embi, The Ohio State University; A. Leonard, University of Cincinnati

**Feasibility of Pooling Annotated Corpora for Clinical Concept Extraction**
K. Wagholikar, Mayo Clinic; M. Torii, Georgetown University; S. Jonnalagadda, H. Liu, Mayo Clinic

**UMLS Term Occurrences in Clinical Notes: A Large-scale Corpus Analysis**
S. Wu, H. Liu, D. Li, C. Tao, Mayo Clinic; M. Musen, Stanford University; C. Chute, Mayo Clinic; N. Shah, Stanford University

**Cohort Identification for Clinical Research: Querying Federated Electronic Healthcare Records Using Controlled Vocabularies and Semantic Types**
S. Lim Choi Keung, L. Zhao, E. Tyler, University of Birmingham; A. Taweel, B. Delaney, Kings College London; K. Peterson, S. Speedie, University of Minnesota; R. Hobbs, University of Oxford; T. Arvanitis, The University of Birmingham

**Quality Evaluation of Value Sets From Cancer Study Common Data Elements Using the UMLS Semantic Groups**
G. Jiang, H. Solbrig, C. Chute, Mayo Clinic College of Medicine

**Named Entity Recognition in the MEDLINE Affiliation Field: A Step towards Enhanced Maintenance of Researcher Profile Systems**
M. Torii, Georgetown University Medical Center; K. Wagholikar, H. Liu, Mayo Clinic College of Medicine

**Integrating Diabetes Data for Analysis, Sharing, and Discovery**
N. Heintzman, UC San Diego; B. Chen, UCLA; T. Dave, San Diego State University; L. Ohno-Machado, UC San Diego

**A Patient-driven Adaptive Prediction Technique (ADAPT) to Improve Personalized Risk Estimation for Clinical Decision Support**
X. Jiang, A. Boxwala, R. El-Kareh, J. Kim, L. Ohno-Machado, University of California, San Diego

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**NEW THIS YEAR! BULLET PRESENTATIONS!**

Poster authors will present a five minute “bullet presentation” of their poster to convey their innovative ideas! Don’t miss this rare opportunity to learn about cutting edge ideas in the field. Bullet presentations will take place after paper and podium abstract presentations sessions.