Summit on Clinical Research Informatics

March 12-13, 2010

Parc 55 Hotel • San Francisco
Zero Degrees of Separation

**Locally**
A comprehensive platform supporting patient-oriented research, biospecimen management, and clinical research that easily integrates with local systems like EHR, lab, and IRB.

**Regionally**
The tools you need for affiliate network management and multi-center trial support.

**Nationally**
Standards-based data sharing and aggregation through the Crescendo Clinical & Translational Research Exchange.

**Learn More...**
Visit the PercipEnz website to view OnCore adoption statistics and case studies at http://www.percipenz.com/adoption
Welcome to the 2010 Summit on Clinical Research Informatics

Dear Colleagues and Friends,

Welcome to AMIA's First Annual Summit on Clinical Research Informatics (CRI).

In recent years, there has been substantial growth of the field of CRI, fueled by the rapid pace of biomedical advances and the need to more efficiently and effectively conduct clinical research and translate research findings into practice. The need for effective research informatics has led to the emergence of CRI as a distinct field of study and practice—one critical to the goal of advancing biomedical science and quality health care delivery. As members of the broad and expanding community of scientists, professionals, and innovators working to accelerate work in this important field, we are pleased that you have joined us in San Francisco for this exciting new meeting.

The CRI Summit provides a unique venue for CRI scientists and professionals to share their work, develop new collaborations, and identify potential avenues of research and development that will ultimately advance discovery-driven health care. Given the overlap of CRI with Translational Bioinformatics, we are pleased to have co-located and scheduled the CRI Summit to overlap and immediately follow the AMIA Translational Bioinformatics Summit. By adjoining these Summits, we hope to accelerate work at their intersecting areas of focus, thereby bringing added value to both the CRI and Bioinformatics communities and greater benefits to the larger health care community.

We could not be more excited about the Summit. We hope you find it to be a highly productive and informative experience, and look forward to your feedback during and after the meeting. Thank you for attending!

Best wishes,

Peter J. Embi, MD, MS
Chair, Scientific Program Committee
2010 AMIA Summit on Clinical Research Informatics

Table of Contents

Program-at-a-Glance .......................................................................................................................................................... page 2
Scientific Program Committee List .................................................................................................................................... page 4
Keynote Presentation ............................................................................................................................................................ page 5
Distinguished Presentation Awards .................................................................................................................................... page 6
Program Chronology

  Friday, March 12 ............................................................................................................................................................... page 8
  Saturday, March 13 ............................................................................................................................................................. page 11
### Program-at-a-Glance

#### Friday, March 12

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 am – 5:00 pm</td>
<td>Registration Open</td>
<td>Cyril Magnin Foyer</td>
</tr>
<tr>
<td>12:30 pm – 1:30 pm</td>
<td>Opening Session and Keynote Presentation</td>
<td>Cyril Magnin I/II</td>
</tr>
<tr>
<td>1:45 pm – 3:15 pm</td>
<td>Concurrent Sessions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(S01) Service-oriented Architecture and Knowledge Management</td>
<td>Cyril Magnin III</td>
</tr>
<tr>
<td></td>
<td>(S02) Panel: Optimizing Clinical Research via Standardization: The Clinical Data Interchange Standards Consortium (CDISC) Protocol Representation Model</td>
<td>Divisadero</td>
</tr>
<tr>
<td></td>
<td>(S03) Panel: Informatics Education for Clinical and Translational Researchers: Activities from the CTSA Program</td>
<td>Mission</td>
</tr>
<tr>
<td>3:15 pm – 3:30 pm</td>
<td>Coffee Break</td>
<td>Cyril Magnin Foyer</td>
</tr>
<tr>
<td>3:30 pm – 5:00 pm</td>
<td>Translational Bioinformatics Year in Review</td>
<td>Cyril Magnin I/II</td>
</tr>
<tr>
<td>5:15 pm – 7:00 pm</td>
<td>CRI Poster Session and Reception</td>
<td>Cyril Magnin Foyer</td>
</tr>
</tbody>
</table>

#### Saturday, March 13

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am – 7:30 am</td>
<td>Continental Breakfast</td>
<td>Market Street Foyer</td>
</tr>
<tr>
<td>7:00 am – 3:00 pm</td>
<td>Registration Open</td>
<td>Market Street Foyer</td>
</tr>
<tr>
<td>7:30 am – 8:30 am</td>
<td>Plenary Session: Clinical Research Informatics from the CTSA Perspective</td>
<td>Market Street</td>
</tr>
<tr>
<td>8:45 am – 10:15 am</td>
<td>Concurrent Sessions</td>
<td>Powell</td>
</tr>
<tr>
<td></td>
<td>(S04) Panel: Data Warehousing in the Trenches</td>
<td>Mission I/II</td>
</tr>
<tr>
<td></td>
<td>(S05) Advancing Participant Recruitment</td>
<td>Mission I</td>
</tr>
<tr>
<td></td>
<td>(S06) People and Organizational Issues</td>
<td>Market Street</td>
</tr>
<tr>
<td></td>
<td>(S07) Panel: National, Regional, and Local Policy Issues in Clinical Research Informatics</td>
<td></td>
</tr>
<tr>
<td>10:15 am – 10:30 am</td>
<td>Coffee Break</td>
<td>Market Street Foyer</td>
</tr>
<tr>
<td>10:30 am – 12:00 pm</td>
<td>Concurrent Sessions</td>
<td>Mission I</td>
</tr>
<tr>
<td></td>
<td>(S08) Knowledge Discovery in CRI</td>
<td>Mission II/III</td>
</tr>
<tr>
<td></td>
<td>(S09) Study Design and Feasibility</td>
<td>Market Street</td>
</tr>
<tr>
<td></td>
<td>(S11) Panel: Clinical Research Workflow Support: Methods and Issues</td>
<td>Powell</td>
</tr>
<tr>
<td>Time</td>
<td>Session</td>
<td>Location</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>12:15 pm – 1:15 pm</td>
<td>“Birds-of-a-Feather” Sessions and Box Lunch</td>
<td>Market Street</td>
</tr>
<tr>
<td></td>
<td>BOF1: Data Warehousing and Clinical Research</td>
<td>Powell</td>
</tr>
<tr>
<td></td>
<td>BOF2: Clinical Trials Eligibility and Screening</td>
<td>Mission I</td>
</tr>
<tr>
<td></td>
<td>BOF3: People, Organizational, and Policy Issues in Clinical Research Informatics</td>
<td></td>
</tr>
<tr>
<td>1:30 pm – 3:00 pm</td>
<td>Concurrent Sessions</td>
<td>Mission I</td>
</tr>
<tr>
<td></td>
<td>(S12) Knowledge Representation and Cognition</td>
<td>Powell</td>
</tr>
<tr>
<td></td>
<td>(S13) Secondary Use in Clinical Research</td>
<td>Mission II/III</td>
</tr>
<tr>
<td></td>
<td>(S14) Panel: Uniting Clinical Care Data and Clinical Research</td>
<td>Powell</td>
</tr>
<tr>
<td></td>
<td>Data to Enable a Learning Health Care System</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(S15) Panel: Outcomes Research and Comparative Effectiveness</td>
<td>Market Street</td>
</tr>
<tr>
<td>3:00 pm – 3:30 pm</td>
<td>Coffee Break</td>
<td>Market Street Foyer</td>
</tr>
<tr>
<td>3:30 pm – 5:00 pm</td>
<td>Concurrent Sessions</td>
<td>Market Street</td>
</tr>
<tr>
<td></td>
<td>(S16) Panel: Implementation Experiences with the caBIG®</td>
<td>Powell</td>
</tr>
<tr>
<td></td>
<td>Clinical Trials Suite and an Overview of the New Services-based Version</td>
<td>Mission II/III</td>
</tr>
<tr>
<td></td>
<td>(S17) Design of Research Support Tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(S18) Community-based and Multi-site Studies</td>
<td></td>
</tr>
<tr>
<td>5:15 pm – 6:15 pm</td>
<td>Closing Session and Awards</td>
<td>Market Street</td>
</tr>
</tbody>
</table>
Scientific Program Committee

Peter Embi, Program Committee Chair
University of Cincinnati

Track Chairs:

Michael Kahn, University of Colorado Denver
Philip Payne, The Ohio State University

SPC Members:

Elmer Bernstam, University of Texas, Houston
Chris Chute, Mayo Clinic
Rebecca Crowley, University of Pittsburgh
Robert DiLaura, Cleveland Clinic
Douglas Fridsma, Arizona State University
Bill Hersh, Oregon Health & Science University
Paul Harris, Vanderbilt University
Stephen Johnson, Columbia University
Shawn Murphy, Harvard University
Rachel Richesson, University of South Florida
Ida Sim, UC San Francisco
Justin Starren, Marshfield Clinic
Samson Tu, Stanford University
Mark Weiner, University of Pennsylvania
Adam Wilcox, Columbia University
S. Claiborne Johnston, University of California, San Francisco

Biomedical and Healthcare IT and Informatics: Where is the Revolution?

Information technology and informatics have accelerated to a stunning pace. Advances in the tools available and standardization of platforms have made task-specific applications progressively easier to produce. These changes have been associated with dramatic reductions in cost. In the biomedical research and healthcare arena, the story is very different. Technologies have only increased costs, and IT implementations have been very slow with clunky results. In the research arena, the duration and cost of developing new therapies has increased dramatically. In healthcare delivery, a physician visit has changed little in the last 20 years, except to be associated with greater cost. Why has the IT and informatics revolution lagged in health? Are physicians and biomedical researchers luddites, are the problems too big, the institutions too stodgy? Where are the areas of greatest potential impact? What structural changes are required to get the revolution started? Can the Clinical Translational Science Award consortium play a role? What is the role of academics vs. industry? As we scheme about a possible revolution, answers to these questions become crucial.

S. Claiborne Johnston, M.D., Ph.D., is Associate Vice Chancellor of Research, Director of the Clinical and Translational Science Institute, Professor of Neurology and Epidemiology, and Director of the Stroke Service at the University of California, San Francisco. He received his undergraduate education at Amherst College and completed medical school at Harvard University. He received a Ph.D. in epidemiology from the University of California, Berkeley. He completed his residency in Neurology at UCSF, where he later trained in Vascular Neurology.

Dr. Johnston has won several national awards for his research and teaching. He has led three multicenter randomized trials and several large cohort studies of cerebrovascular disease. Dr. Johnston studies stroke treatment and prevention using the tools of computer science and epidemiology.

Dr. Johnston is the Executive Vice Editor of the Annals of Neurology and has served on the editorial boards of several other journals. He has been honored with the American Heart Association’s Feinberg Award for clinical stroke research, as well as the Academy of Neurology’s Pessin Prize for Stroke Leadership and the American Stroke Association’s Siekert New Investigator Award. He has also held leadership positions in the American Academy of Neurology (serving on its Foundation Board and as Chair of its Clinical Research Subcommittee) and the National Stroke Association.
Nominees for distinguished paper, abstract, and poster awards were selected based upon their novelty, quality, and impact on Clinical Research Informatics knowledge and practice. This selection process was performed by the meeting track chairs, based upon comments and recommendations provided by members of the Scientific Program Committee. An independent awards committee, chaired by Dr. Rachel Richesson (University of South Florida), will further evaluate the nominated submissions during the course of the summit, and select two finalists from each category (paper, abstract, and poster) to receive a distinguished submission award during the summit’s closing session.

**Nominated Submissions**

*(Nominated submissions are organized by submission type. Session numbers or poster board numbers are listed next to each).*

**Papers**

**(S01) The Human Studies Database Project: Federating Human Studies Design Data Using the Ontology of Clinical Research**
I. Sim, S. Carini, UCSF; S. Tu, Stanford; R. Wynden, UCSF; B. Pollock, UTHSC San Antonio; S. Mollah, The Rockefeller University; D. Gabriel, UC Davis; H. Hagler, UT Southwestern; R. Scheuermann, UT Southwestern; H. Lehmann, Johns Hopkins; K. Wittkowski, The Rockefeller University; M. Nahm, Duke Translational Medicine Institute; S. Bakken, Columbia University

**(S01) Ontology Mapping and Data Discovery for the Translational Investigator**
R. Wynden, UCSF; M. Weiner, Hospital of the University of Pennsylvania; I. Sim, UCSF; D. Gabriel, University of California, Davis Health System; M. Casale, University of Rochester; S. Carini, UCSF; S. Hastings, D. Ervin, Ohio State University; S. Tu, Stanford University; J. Gennari; N. Anderson, University of Washington; K. Mobed, P. Lakshminarayanan, UCSF; M. Massary, U Penn Health System; R. Cucina, UCSF

**(S09) Analysis of Eligibility Criteria Complexity in Clinical Trials**
J. Ross, UCSF; S. Tu, Stanford; S. Carini, I. Sim, UCSF

**(S12) A Collaborative Framework for Representation and Harmonization of Clinical Study Data Elements Using Semantic MediaWiki**
G. Jiang, Mayo Clinic; H. Solbrig, Mayo Clinic; D. Iberson-Hurst, Clinical Data Interchange Standards Consortium (CDISC); R. Kush, Clinical Data Interchange Standards Consortium (CDISC); C. Chute, Mayo Clinic

**(S12) Representing Multi-Database Study Schemas for Reusability**
J. Logan, Oregon Health & Science University; L. Delambre, Portland State University; S. Britell, Portland State University; V. Kapoor, Oregon Health & Science University; J. Buckmaster, Portland State University

**(S17) User Requirements for Exploring a Resource Inventory for Clinical Research**
B. Mirel, University of Michigan; J. Tenenbaum, Duke University; P. Saxman, University of Michigan Institute for Clinical and Health Research (MICHR); K. Smith, University of Michigan Institute for Clinical and Health Research; Z. Wright, University of Michigan
Abstracts Presentations

(S01) A Statewide Colorectal Cancer Database in Utah as Clinical Research Use Case for the i2b2 Hive
S. Meystre, A. Stroup, A. Hartz, University of Utah

(S05) RetroGuide, a Knowledge Representation and Execution System for Clinical Research Informatics Alerts Based on Workflow Technology
V. Huser, Marshfield Clinic /University of Wisconsin-Madison; L. Rasmussen, J. Starren, Marshfield Clinic

(S06) Digital Vita: Facebook for Scientists
T. Schleyer, H. Spallek, B. Butler, L. Schmandt, University of Pittsburgh

(S09) Self-service Support for Research Patient Cohort Identification and Review of Clinical Data in the STRIDE Clinical Data Warehouse

(S12) Mapping Local Clinical Investigator Systems Data to Standards for Transmission to a Central Data Center: Preliminary Results
M. Perry, M. Barnett, A. Dent, Jackson State University; J. Tcheng, E. Eisenstein, Duke University; M. Nahm, A. Walden, Duke Translational Medicine Institute; J. Conde, University of Puerto Rico; P. Harris, Vanderbilt University; A. Fadie, Meharry Medical College; C. Tolk, Clinical Data Interchange Standards Consortium

(S18) Community-based Data Share: Achieving Exponential Return on Original Research
C. Green, Duke University Medical Center; M. Nahm, Duke Translational Medicine Institute; J. Shostak, Duke Clinical Research Institute

Posters

(Board 3) Transforming Research through a National Cardiovascular Research Infrastructure
B. McCourt, B. Barham, L. Melton, L. Poole, Duke Clinical Research Institute; J. Rumsfeld, University of Colorado; R. Harrington, E. Peterson, Duke Clinical Research Institute; D. Kong, Duke University Medical Center

(Board 9) Quantifying Cohorts for Clinical Research Using Statewide, Multi-source Data: the Utah UPDB-L Cohort Analysis Tool
J. Hurdle, University of Utah; G. Mineau, S. Courdy, C. Haroldsen, C. Spigle, A. Hammer, C. Schaefer, R. Pimentel, A. Fraser, Huntsman Cancer Institute

(Board 11) Privacy and Confidentiality Annotation Model for Research and other Secondary Uses of Clinical Information
K. Coonan, Dana-Farber Cancer Institute; A. Shabo, IBM Haifa Research Lab

(Board 19) p2s Connector: Integrating Biorepositories with i2b2
A. Mandel, M. Palchuk, D. Housman, Recombinant Data Corp.

(Board 20) Integrating the Electronic Medical Record and Clinical Research System to Help Prevent Drug Dosing Errors for Therapeutic Protocol Patients
J. Niland, S. Berger, E. Huang, D. Johnson, A. Londrc, S. Hmwe, S. Pannoni, City of Hope National Medical Center

(Board 42) Providing a High Security Environment for the Integrated Data Repository
R. Wynden, M. Kamerick, UCSF
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 am – 5:00 pm</td>
<td>Registration Open</td>
<td>Cyril Magnin I/II</td>
</tr>
<tr>
<td>12:30 pm – 1:30 pm</td>
<td>Plenary Session</td>
<td>Cyril Magnin I/II</td>
</tr>
<tr>
<td><strong>Opening Session and Keynote Presentation</strong></td>
<td></td>
<td>Cyril Magnin I/II</td>
</tr>
<tr>
<td>1:45 pm – 3:15 pm</td>
<td>Concurrent Sessions (S01) Service-oriented Architecture and Knowledge Management</td>
<td>Cyril Magnin III</td>
</tr>
<tr>
<td>(S01) Service-oriented Architecture and Knowledge Management</td>
<td></td>
<td>Cyril Magnin III</td>
</tr>
<tr>
<td><strong>A Statewide Colorectal Cancer Database in Utah as Clinical Research Use Case for the i2b2 Hive</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S. Meystre, A. Stroup, A. Hartz, University of Utah</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Exposing caGrid Data Services as Linked Data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J. Pathak, Mayo Clinic; J. Phillips, SemanticBits LLC; A. Beltran, A. Finkelstein, University College London</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The Human Studies Database Project: Federating Human Studies Design Data Using the Ontology of Clinical Research</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Sim, S. Carini, UCSF; Tu, Stanford University, R. Wynden, UCSF; B. Pollock, UTHSC San Antonio; S. Mollah, The Rockefeller University; D. Gabriel, UC Davis; H. Hagler, R. Scheuermann, UT Southwestern; H. Lehmann, Johns Hopkins University; K. Wittkowski, The Rockefeller University; M. Nahm, Duke Translational Medicine Institute; S. Bakken, Columbia University</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ontology Mapping and Data Discovery for the Translational Investigator</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. Wynden, UCSF; M. Weiner, Hospital of the University of Pennsylvania; I. Sim, UCSF; D. Gabriel, University of California, Davis Health System; M. Casale, University of Rochester; S. Carini, UCSF; S. Hastings, D. Ervin, The Ohio State University; S. Tu, Stanford University; J. Gennari; N. Anderson, University of Washington; K. Mobed, P. Lakshminarayanan, UCSF; M. Massary, U Penn Health System; R. Cucina, UCSF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(S02) Panel: Optimizing Clinical Research via Standardization: The Clinical Data Interchange Standards Consortium (CDISC) Protocol Representation Model

J. Niland, City of Hope National Medical Center  
R. Kush, CDISC  
L. Chatterjee, Digital Infuzion  
J. Evans, CDISC  
D. Wold, GlaxoSmithKline

The Clinical Data Interchange Standards Consortium (CDISC), with biopharmaceutical, regulatory, academic, and technology partners, is working to optimize clinical research through the creation and adoption of standards. The CDISC-Health Level 7 (HL7) Protocol Representation Group (PRG) is developing a structured protocol model to facilitate the interchange of clinical research data, allow studies to be mounted more rapidly, and support machine-computable decision support. The CDISC Protocol Representation Model (PRM) V1 has now been completed and will be described in this panel, sponsored by the AMIA Clinical Research Working Group. An overview of the CDISC PRG will be given, along with a description of the PRM and its alignment with the Biomedical Research Integrated Domain Group (BRIDG) model. Use cases to support a standard protocol authoring tool, study design, clinical trial registration, and computable eligibility criteria will be described. Current work to HL7 messages and other implementations to support the standard will be presented. The panel will end with an overview of future plans, and time for input and discussion from the audience on this emerging clinical research standardization initiative.

(S03) Panel: Informatics Education for Clinical and Translational Researchers: Activities from the CTSA Program

W. Hersh, Oregon Health & Science University  
P. Embi, University of Cincinnati  
E. Berner, University of Alabama at Birmingham  
R. Friedman, Boston Medical Center

Biomedical informatics is an essential component of clinical and translational research (CTR). This necessitates that academic CTR centers provide education in informatics. There are two main audiences for such education: CTR investigators, who must be knowledgeable users of informatics systems and tools, and CTR informaticians, who must implement and innovate the systems and tools that investigators use. This panel will describe efforts in biomedical informatics education in the Clinical and Translational Research Award (CTSA) program. It will begin with an overview that frames the work and challenges and provides a historical perspective of CTSA informatics education work. Subsequent presentations will describe a survey that defines the gaps between what is and should be offered as well as curriculum efforts for various audiences.
(TBI-S25) Integrating Data II

Room: Cyril Magnin I/II

A Case Study of Goal-directed User-centered Design for an Interactive, Integrated Bioinformatics Information Retrieval System
J. Bartlett, McGill University

Defining the Neural Circuitry of Depression using Integrated Brain Imaging Modalities
D. Gutman, J. Saltz, P. Holtzheimer, H. Mayberg, Emory University

Comparison of Multiplex Meta-analysis Techniques for Understanding the Acute Rejection of Solid Organ Transplants
A. Morgan, P. Khatri, R. Jones, M. Sarwal, A. Butte, Stanford University

Multi-dimensional Discovery of Biomarker and Phenotype Complexes
P. Payne, K. Huang, The Ohio State University; K. Circle, Mount Carmel College of Nursing; A. Kundu, J. Zhang, T. Borlawsky, The Ohio State University

3:15 pm – 3:30 pm Coffee Break Room: Cyril Magnin Foyer

3:30 pm – 5:00 pm Plenary Session

Translational Bioinformatics Year in Review Room: Cyril Magnin I/II

Russ Altman, 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 the public-release of the first human diploid genome, as well as tens of thousands of individuals participating in genome-wide association studies. This session will review a sample of notable events that have occurred in the past twelve months. Included will be new findings from the published literature, achievements in the application of bioinformatics, changes in public policy and government, and emerging new methodologies. The implications of these events for the future of Translational Bioinformatics and clinical practice will be addressed.

5:15 pm – 7:00 pm CRI Poster Session and Reception Room: Cyril Magnin Foyer

(See Page 19 for details)
Saturday, March 13, 2010

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am – 7:30 am</td>
<td>Continental Breakfast</td>
<td>Market Street Foyer</td>
</tr>
<tr>
<td>7:00 am – 3:00 pm</td>
<td>Registration Open</td>
<td>Market Street Foyer</td>
</tr>
<tr>
<td>7:30 am – 8:30 am</td>
<td>Plenary Session</td>
<td>Market Street</td>
</tr>
</tbody>
</table>

**Clinical Research Informatics from the CTSA Perspective**

*Moderator:* Philip Payne, The Ohio State University

*Panelists:*
Brian Athey, University of Michigan
Elaine Collier, National Center for Research Resources
Peter Tarczy-Hornoch, University of Washington
Jessica Tenenbaum, Duke University

This panel will provide an overview of current CRI research and development activities occurring throughout the Clinical and Translational Science Award (CTSA) consortium, with a particular emphasis on the challenges, opportunities, and best practices that have been identified during the course of such efforts. Panelists will discuss these topics from the perspective of the NCRR, individual CTSA sites, and the CTSA National Informatics Key Function Committee (IKFC). In addition, panelists will discuss the benefits and approaches associated with the engagement of basic science, clinical, and translational research collaborators throughout the course of CRI-focused informatics research, development, and evaluation initiatives.

<table>
<thead>
<tr>
<th>Time</th>
<th>Concurrent Sessions</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:45 am – 10:15 am</td>
<td>(S04) Panel: Data Warehousing in the Trenches</td>
<td>Powell</td>
</tr>
</tbody>
</table>

S. Murphy (Chair), Massachusetts General Hospital
G. Weber, Beth Israel Deaconess Medical Center
K. Marsolo, Cincinnati Children’s Hospital Medical Center
A. Wilcox, Columbia University
M. Kamerick, University of California, San Francisco

This panel will discuss some of the latest developments in healthcare data warehousing for clinical research and the environments that support the use of this data within the enterprise.
**S05) Advancing Participant Recruitment**

EHR-based Clinical Trial Alert Effects on Recruitment to a Neurology Trial Across Settings: Interim Analysis of a Randomized Controlled Study  
P. Embi, M. Eckman, University of Cincinnati; P. Payne, The Ohio State University; A. Leonard, R. Wise, N. Elder, S. Cotton, University of Cincinnati; E. Patterson, The Ohio State University

RetroGuide, a Knowledge Representation and Execution System for Clinical Research Informatics Alerts Based on Workflow Technology  
V. Huser, Marshfield Clinic/University of Wisconsin-Madison; L. Rasmussen, J. Starren, Marshfield Clinic

Corpus-based Approach to Creating a Semantic Lexicon for Clinical Research Eligibility Criteria from UMLS  
Z. Luo, R. Duffy, S. Johnson, C. Weng, Columbia University

Meaningful Use of E-Screening in Clinical Trial Recruitment  
C. Weng, Columbia University; S. Thadani, California Pacific Medical Center; J. Ennever, The Western Institutional Review Board; D. Wajngurt L. Busacca, T. Bigger, Columbia University

**S06) People and Organizational Issues**

Business Process Requirements for Clinical Trials Finance Applications  
J. Bondy, University of Colorado School of Public Health; M. Ames, Z. Katiliene, A. Buchmeier, M. Walters, University of Colorado Comprehensive Cancer Center

The Missing Link: Lessons Learned From Procuring and Implementing a Commercially Available EMR that Supports Clinical Research  
J. Kannry, K. Myers, Mount Sinai Medical Center, A. Kushniruk, University of British Columbia

Evolution of a Clinical Research Informatics Group within a Service-oriented Clinical Trials Data Management Organization  
B. McCourt, D. Fasteson-Harris, S. Chakraborty, C. Bova Hill, Duke Clinical Research Institute

Digital Vita: Facebook for Scientists  
T. Schleyer, H. Spallek, B. Butler, L. Schmandt, University of Pittsburgh
**Panel: National, Regional, and Local Policy Issues in Clinical Research Informatics**

*M. Kahn (Moderator)*, University of Colorado Denver  
*C. Chute*, Mayo Clinic  
*J. Cimino*, NIH  
*J. Starren*, Marshfield Clinic  
*N. Anderson*, University of Washington

This panel will explore the complex interactions between clinical and research informatics policy issues from the national, regional and local perspectives. Common themes and challenges to implementing research informatics systems due to vague and conflicting policy interpretations will be highlighted. Successful solutions that have worked in actual cross-institutional collaborations will be presented.

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:15 am – 10:30 am</td>
<td>Coffee Break</td>
<td>Market Street Foyer</td>
</tr>
<tr>
<td>10:30 am – 12:00 pm</td>
<td>Concurrent Sessions</td>
<td>Mission I</td>
</tr>
</tbody>
</table>

**Knowledge Discovery in CRI**

*Social Network Analysis of an Online Melanoma Discussion Group*  
K. Durant, C. Safran, A. McCray, Beth Israel Deaconess Medical Center

*Analysis of False Positive Errors of an Acute Respiratory Infection Text Classifier due to Contextual Features*  
B. South, S. Shen, University of Utah; W. Chapman, University of Pittsburgh; S. Delisle, University of Maryland; M. Samore, A. Gundlapalli, University of Utah

*An Automated Approach to Calculating the Daily Dose of Tacrolimus in Electronic Health Records*  

*VISAGE: A Query Interface for Clinical Research*  
G. Zhang, Case Western Reserve University; P. Siegler, Marshfield Clinic Research Foundation; P. Saxman, University of Michigan; N. Sandberg, N. Johnson, Case Western Reserve University; D. Hunscher, University of Michigan; S. Arabandi, Case Western Reserve University

**Study Design and Feasibility**

*A Temporal Sequence Alignment Strategy to Find Similar Treatment Histories in Clinical Databases*  
W. Lee, S. Tu, A. Das, Stanford University

*Self-service Support for Research Patient Cohort Identification and Review of Clinical Data in the STRIDE Clinical Data Warehouse*  
**Analysis of Eligibility Criteria Complexity in Clinical Trials**
J. Ross, UCSF; S. Tu, Stanford University; S. Carini, I. Sim, UCSF

**R Package for Simulation Experiments Evaluating Clinical Trial Designs**
Y. Wang, R. Day, University of Pittsburgh


B. Delaney, A. Taweel, Kings College London
K. Peterson, University of Minnesota
T. Arvanitis, University of Birmingham
S. Speedie, University of Minnesota

The electronic Primary Care Research Network (ePCRN) is an international, open-source consortium, funded initially as an NIH Roadmap pilot project. ePCRN has been building a system of software tools and services to recruit eligible subjects from community-based electronic health records and manage research data collection and manipulation. ePCRN is to be used as the basis for a major collaborative project funded by the European Union as well as delivering a deployable system for practice-based research in the USA. These presentations will discuss the use of a standardized, XML-based, computable representation of detailed clinical trial protocols to create data collection forms and data storage facilities dynamically.

**(S11) Panel: Clinical Research Workflow Support: Methods and Issues**

C. Weng, Columbia University
W. Suarez, MN Health Data Institute
S. Tu, Stanford University
M. Kahn, University of Colorado

This is a late-breaking panel on the state-of-the-art of clinical research workflow support research. In this session, four panelists will discuss the workflow support needs from clinical researchers, the latest HITSP standards being developed to support clinical research workflow, the important knowledge representation considerations, and the typical pragmatic issues and recommendations.

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 pm – 12:15 pm</td>
<td><strong>Box Lunch</strong></td>
<td>Market Street Foyer</td>
</tr>
</tbody>
</table>

Box lunches are provided for registrants to pick up on their way to one of the birds-of-a-feather sessions listed below. Sponsored by **Velos, Inc.**
**12:15 pm – 1:15 pm  “Birds of a Feather” Sessions**

**BOF1: Data Warehousing and Clinical Research**  
**Room: Market Street**

**Moderator: Adam Wilcox, Columbia University**

This “Birds of a Feather” session will focus on the technical and organizational challenges and opportunities associated with the design, operation, and use of data warehousing platforms in support of clinical research.

**BOF2: Clinical Trials Eligibility and Screening**  
**Room: Powell**

**Moderator: Rachel Richesson, University of South Florida**

This “Birds of a Feather” session will focus on the modeling and execution of computable clinical trials eligibility criteria in support of automated approaches to participant screening and recruitment.

**BOF3: People, Organizational, and Policy Issues in Clinical Research Informatics**  
**Room: Mission I**

**Moderator: Umberto Tachinardi, University of Chicago**

This “Birds of a Feather” session will focus on foundational people, organizational, and policy issues associated with the design, deployment, management, and evaluation of informatics tools and methods intended to support and enhance clinical research activities.

**1:30 pm – 3:00 pm  Concurrent Sessions**

**Room: Mission I**

**A Collaborative Framework for Representation and Harmonization of Clinical Study Data Elements Using Semantic MediaWiki**  
G. Jiang, H. Solbrig, Mayo Clinic; D. Iberson-Hurst, R. Kush, Clinical Data Interchange Standards Consortium (CDISC); C. Chute, Mayo Clinic

**Representing Multi-Database Study Schemas for Reusability**  
J. Logan, Oregon Health & Science University; L. Delcambre, Portland State University; S. Britell, Portland State University; V. Kapoor, Oregon Health & Science University; J. Buckmaster, Portland State University

**Distributed Cognition Artifacts on Clinical Research Data Collection Forms**  
M. Nahm, Duke Translational Medicine Institute; V. Nguyen, E. Razzouk, M. Zhu, J. Zhang, University of Texas at Houston

**Mapping Local Clinical Investigator Systems Data to Standards for Transmission to a Central Data Center: Preliminary Results**  
M. Perry, M. Barnett, A. Dent, Jackson State University; J. Tcheng, E. Eisenstein, Duke University; M. Nahm, A. Walden, Duke Translational Medicine Institute; J. Conde, University of Puerto Rico; P. Harris, Vanderbilt University; A. Fadiel, Meharry Medical College; C. Tolk, Clinical Data Interchange Standards Consortium
(S13) Secondary Use in Clinical Research

Secondary Use of EHR: Data Quality Issues and Informatics Opportunities
T. Botsis, G. Hartvigsen, University of Tromso; F. Chen, C. Weng, Columbia University

Building a Successful Platform for Secondary Data Use for Payors
P. Peele, J. Buchanan, A. Docimo, UPMC Health Plan

Refinement of an Automated Text Abstraction Informatics Tool for CHF
J. Garvin, SLCVA; P. Elkin, Mount Sinai School of Medicine; M. Weiner, University of Pennsylvania; L. Hoke, Hospital of the University of Pennsylvania; T. Speroff, S. Brown, Center for Health Services Research; M. Leecaster, SLCVA; S. Shen, SLCVA

A Strategy for Defining Common Data Elements to Support Clinical Care and Secondary Use in Clinical Research
R. Richesson, University of South Florida, College of Medicine; D. Mon, C. Kallem, American Health Information Management Association; P. Gunter, Duke Translational Medicine Institute

(S14) Panel: Uniting Clinical Care Data and Clinical Research

Data to Enable a Learning Health Care System

G. Downing, Department of Health & Human Services
J. Nadler, Deloitte Consulting
J. Niland, City of Hope National Medical Center
M. Ullman-Cullere, Partners HealthCare
R. Kush, CDISC

Health information technology and technical standards are vital to integrating clinical research, genetic, genomic, and ultimately clinical care data. Advances in genetics, genomics and informatics, concurrent with an administrative focus on the quality of health care, present a unique opportunity to develop a learning health care system that can provide individualized care. Seizing this opportunity requires rapid accumulation of an evidence base from multiple data sources, which will involve the capability of EHRs to transfer data to clinical research systems, house genetic and molecular information, identify subjects for clinical studies and ultimately assist clinicians in using this information to make care decisions. The foundation for this process is being built today. Experts in the field will discuss an interoperability specification for the exchange of a core set of research data elements from EHR to research systems and clinical genetic test results from the laboratory into the EHR as developed by HITSP using existing standards and integration profiles. They are available and could easily be linked to exchange genomic information with research systems. Combining these data, collected through the course of clinical care, will shorten the interval between biological discovery and impact on health care practice.
Despite the availability of results of clinical trials that support the value of many current therapies, clinicians require better evidence to make optimal choices among competing therapies. To address this increasingly recognized clinical information need, a number of funding opportunities have arisen that support comparative effectiveness and outcomes research (CER/OR). Whether the approach to CER/OR involves traditional randomized controlled trials of interventions, or retrospective review of existing data, informatics methods play a central role in the conduct of these studies and their translation into practice. This panel will describe several CER/OR initiatives and the informatics issues that must be addressed to ensure the integrity of the findings and their appropriate application in clinical care.

(S16) Panel: Implementation Experiences with the caBIG® Clinical Trials Suite and an Overview of the New Services-based Version

W. Dyer, J. Speakman, National Cancer Institute
U. Topaloglu, University of Arkansas

caBIG® is a virtual international network of interconnected data, individuals, and organizations whose goal is to accelerate cancer research and healthcare by redefining how research is conducted, care is provided, and patients and participants interact with the biomedical research enterprise. The caBIG® Clinical Trials Management System is a comprehensive set of modular, interoperable, open-source, and standards-based tools designed to meet diverse clinical trials management needs. The new release of the caBIG® Clinical Trials Suite is a service-based set of applications that not only accelerate and extend research and care capabilities, but also reduce the duplication of information and therefore, minimizes errors. Over the past year, the University of Arkansas for Medical Sciences (UAMS) has used the caBIG® Clinical Trials Suite to transform the way they operate and clinical research is conducted.
(S17) Design of Research Support Tools

Design and Early Experience with a Web-based Research Record System for Managing Research Support Requests Based on an EMR Metaphor
P. Embi, C. Lindsell, R. Witzke, University of Cincinnati; A. Morrow, Cincinnati Children's Hospital Medical Center; J. Kues, J. Tsevat, University of Cincinnati; J. Heubi, Cincinnati Children’s Hospital Medical Center

StarBRITE: The Vanderbilt University Biomedical Research Integration, Translation and Education Portal
P. Harris, J. Swafford, J. Pulley, M. Zhang, T. Edw ards, S. Nigavekar, T. Yarbrough, D. Masys, G. Bernard, Vanderbilt University

User Requirements for Exploring a Resource Inventory for Clinical Research
B. Mirel, University of Michigan; J. Tenenbaum, Duke University; P. Saxman, K. Smith, University of Michigan Institute for Clinical and Health Research; Z. Wright, University of Michigan

Evaluating the Impact of Conceptual Knowledge Engineering on the Design and Usability of a Clinical and Translational Science Collaboration Portal
P. Payne, T. Borlawsky, R. Rice, The Ohio State University; P. Embi, University of Cincinnati

(S18) Community-based and Multi-site Studies

Community-Based Data Share: Achieving Exponential Return on Original Research
C. Green, Duke University Medical Center; M. Nahm, Duke Translational Medicine Institute; J. Shostak, Duke Clinical Research Institute

Pragmatic Randomized Trials in Community Primary Care: The COMPETE III trial
A. Holbrook, E. Pullenayegum, McMaster University; K. Keshavjee, Infoclin Inc; G. Foster, S. Troyan, C. Investigators, McMaster University

Facilitating Health Data Sharing Across Diverse Practices and Communities
C. Lin, R. Black, J. LaPlante, G. Keppel, University of Washington; L. Tuzzio, Group Health Research Institute; A. Berg, R. Whitener, D. Buchwald, L. Baldwin, University of Washington; P. Fishman, S. Greene, Group Health Research Institute; J. Gennari, P. Peter Tarczy-Hornoch, K. Stephens, University of Washington

Improved Patient Safety via an Automated Lab-based Adverse Events Grading Tool
J. Niland, J. Neat, T. Stiller, D. Johnson, A. Londrc, R. Sarbora, J. Lee, S. Pannoni, City of Hope National Medical Center

5:15 pm – 6:15 pm Plenary Session: Closing Session and Awards

Onsite Program 18
Research Planning and Conduct

Challenges Performing Literature Database Searches Using PubMed (Board 1)
A. Joshi, UMBC; E. Preslan, University of Maryland

Design of an Agile Ontology-Anchored Integrative Query Tool (Board 2)
O. Lele, T. Borlawsky, P. Payne, The Ohio State University

Transforming Research through a National Cardiovascular Research Infrastructure (Board 3)
B. McCourt, B. Barham, L. Melton, L. Poole, Duke Clinical Research Institute; J. Rumsfeld, University of Colorado; R. Harrington, E. Peterson, Duke Clinical Research Institute; D. Kong, Duke University Medical Center

ViewFinder for Detection and Retrieval of Alzheimer's Disease (Board 4)
J. Mostafa, M. Agarwal, University of North Carolina at Chapel Hill

Development of an Experimental Decision Support System to Bridge Statistical Literacy Gaps in Biomedical Research (Board 5)
T. Pressler, P. Binkley, P. Payne, The Ohio State University

Rapid development of EMR based Disease Registries - Lessons Learned (Board 6)
J. Sharp, Cleveland Clinic; A. Jain, Cleveland Clinic

A Blocked Urn Design for Subject Randomization in Clinical Trials, Bring a High Efficiency in Imbalance Control and a Low Proportion of Determinative Assignments Together (Board 7)
W. Zhao, Q. Wu, Medical University of South Carolina

Recruitment Issues

Automated Screening of Systemic Inflammatory Response Syndrome (Board 8)
R. Black, P. Tarczy-Hornoch, M. Wurfel, University of Washington

Quantifying Cohorts for Clinical Research Using Statewide, Multi-source Data: the Utah UPDB-L Cohort Analysis Tool (Board 9)
J. Hurdle, University of Utah; G. Mineau, S. Coudry, C. Haroldsen, C. Spigle, A. Hammer, C. Schaefer, R. Pimentel, A. Fraser, Huntsman Cancer Institute
## Data Access, Integration, and Analysis

**Modeling Gene Expression Profiles for Querying and Visualization (Board 10)**  
M. Ames, University of Colorado Comprehensive Cancer Center; C. Coldren, University of Colorado; J. Bondy, University of Colorado School of Public Health; P. Bunn, University of Colorado Cancer Center

**Privacy and Confidentiality Annotation Model for Research and Other Secondary Uses of Clinical Information (Board 11)**  
K. Coonan, Dana-Farber Cancer Institute; A. Shabo, IBM Haifa Research Lab

**Classifying Cancer Forum Text by Its Author’s User Type (Board 12)**  
K. Durant, C. Safran, A. McCray, Beth Israel Deaconess Medical Center

**Automated Detection of Infection by Anatomic Site and Organism in a Clinical Laboratory Database (Board 13)**  
C. Fong, B. Laxmanan, R. Black, M. Wurfel, University of Washington

**Electronic Medical Record Analysis Using Cloud Computing (Board 14)**  
V. Fusaro, P. Kos, Harvard Medical School; M. Tector, A. Tector, Aurora Health Care; P. Patil, P. Tonellato, Harvard Medical School

**Using Derived Concepts from Electronic Medical Record for Discovery Research in Informatics for Integrating Biology and the Bedside (i2b2) (Board 15)**  
V. Gainer, S. Goryachev, Partners Healthcare; Q. Zeng, University of Utah; K. Liao, R. Plenge, Brigham and Women's Hospital; S. Churchill, Partners Healthcare; I. Kohane, Children's Hospital; J. Glaser, Partners Healthcare; S. Murphy, MGH

**Use of an Ambulatory Electronic Health Record for an AHRQ-Sponsored Comparative Effectiveness Research Study (Board 16)**  
R. Kudiyakov, Baylor Health Care System; E. Ewen, Christiana Care Health System; S. West, RTI International; N. Fleming, A. Masica, Baylor Health Care System

**Development of an Osteoarthritis Phenotype Model Using Conceptual Knowledge Engineering Techniques (Board 17)**  
A. Lai, T. Bortlawsky, O. Lele, S. James, S. Ababneh, M. Gurcan, P. Payne, The Ohio State University

**Automated Data Collection and Integration for Cancer Treatment Design and Clinical Quality Evaluation Investigations (Board 18)**  
E. Lee, K. Cha, Georgia Institute of Technology

**p2s Connector: Integrating Biorepositories with i2b2 (Board 19)**  
A. Mandel, M. Palchuk, D. Housman, Recombinant Data Corp.
Integrating the Electronic Medical Record and Clinical Research System to Help Prevent Drug Dosing Errors for Therapeutic Protocol Patients (Board 20)
J. Niland, S. Berger, E. Huang, D. Johnson, A. Londrc, S. Hmwwe, S. Pannoni, City of Hope National Medical Center

Individual Whole Genome Mapping: From NGS Reads to Clinical Variants (Board 21)
P. Patil, P. Tonellato, Harvard Medical School

Laboratory Information Management System Adoption in a Clinical and Translational Research Environment (Board 22)
J. Pennington, Children’s Hospital of Philadelphia Research Institute; T. Morris, Emory University

A Wide Variety of Privacy Protection Policies: A Model to Evaluate Utility for Multi-institutional Querying Systems (Board 23)
M. Porwit, N. Anderson, V. Rastogi, J. Gennari, University of Washington

L. Rouse, H. Tang, S. Berger, J. Niland, City of Hope National Medical Center

Use of the MeSH Thesaurus in the PORTAL-DOORS System (Board 25)
C. Taswell, Global TeleGenetics, Inc.

A Grid-based Framework for Comparative Effectiveness Research in Newborn Dried Bloodspot Screening for Long-term Follow-up (Board 26)
A. Tirado-Ramos, T. Pan, J. Saltz, R. Singh, Emory University

User Experience Evaluation of Google Search for Obtaining Medical Knowledge: A Case Study (Board 27)
L. Wang, Digital Biology Laboratory; D. Xu, Christopher S. Bond Life Sciences Center; J. Wang, College of Computer Science and Technology; Y. Liang, Key Laboratory of Symbol Computation and Knowledge Engineering of Ministry of Education; M. Wang, Ellis Fischel Cancer Center; X. Shi, Digital Biology Laboratory

DASI - A Federated Data Access and Sharing Initiative (Board 28)
Developing a Sleep Domain Ontology (Board 29)
S. Arabandi, Case Western Reserve University; C. Ogbuji, Cleveland Clinic; S. Redline, Case Western Reserve University; R. Chervin, University of Michigan Health System; J. Boero, Marshfield Clinic; R. Benca, University of Wisconsin - Madison; G. Zhang, Case Western Reserve University

Using the caBIG Clinical Trials Suite to Achieve Continuity of Care (Board 30)
T. Hardin, W. Dyer, J. Speakman, National Cancer Institute

Advancing Child Health Research Through Harmonized Pediatric Terminology (Board 31)
S. Hirschfeld, Eunice Kennedy Shriver National Institute of Child Health and Human Development; R. Samavedam, M. Keller, D. Smith, R. Ohira, R. Srivastava, K. Johnson, T. Bordonaro, Booz Allen Hamilton

Clinical Research Data Management Tasks and Definitions (Board 32)
M. Nahm, Duke Translational Medicine Institute; J. Zhang; T. Johnson, School of Health Information Sciences; A. Walden, Duke Translational Medicine Institute; C. Johnson, Duke University

City of Hope Research Informatics Enterprise Architecture Framework (Board 33)
A. Shakir, S. Berger, J. Lee, D. Halbert, City of Hope National Medical Center

[RD] PRISM Library: Patient Registry Item Specifications and Metadata for Rare Diseases (Board 34)
D. Shereff, R. Richesson, USF College of Medicine; J. Andrews, University of South Florida; D. Konicek R. Moldwin, E. Hafeza, College of American Pathologists

Semantic Measurement for SNOMED Sub-domains: A Pilot Study Using Clinical Notes (Board 35)
W. Wei, University of Minnesota; C. Chute, Mayo Clinic; G. Jiang, Mayo Clinic; C. Tao, Mayo Clinic
### Workflow

**The Avonex Combination Trial (ACT): An Early Service Oriented Architecture Implementation (Board 36)**
S. Chakraborty, Duke University; R. Annechiarico, Duke University; P. Imrey, J. Cohen, J. Perryman, C. Hara-Cleaver, Cleveland Clinic

**Enhancing Clinical Research and Patient Safety via an Automated Engraftment Application (Board 37)**
M. Kaminski, K. Viers, J. Palmer, E. Huang, R. Sarbora, City of Hope National Medical Center

**World Trade Center Medical Monitoring and Treatment Program: A Clinical Workflow Analysis (Board 38)**
M. Kim, D. Mohrer, B. Trusko, P. Landrigan, P. Elkin, Mount Sinai School of Medicine

**Usability Analysis of Protein-protein Complex Structure Prediction Software (Board 39)**
D. Mohrer, M. Kim, B. Trusko, P. Elkin, Mount Sinai School of Medicine

**Rapid Approach to Software Development for Research in Response to the H1N1 Influenza Pandemic (Board 40)**
P. Siegler, L. Rasmussen, S. Irving, L. Benetti, K. Jordan, J. Starren, Marshfield Clinic Research Foundation

**System Architecture for a Home Grown Clinical Trial Management System - Balance of Flexibility and Reliability (Board 41)**
W. Zhao, K. Pauls, J. Kim, Medical University of South Carolina

### Regulatory and Policy Issues

**Providing a High Security Environment for the Integrated Data Repository (Board 42)**
R. Wynden, M. Kamerick, UCSF

### Socio-Organizational Issues

**A Q-sample to Solicit Clinical Researchers’ Opinions of Barriers in Informatics to Advance Clinical Research (Board 43)**
A. Boyd, G. Stevenson, M. Dieter, T. Johnson, A. Valenta, UIC

**Biomedical Informatics and Computing: A Paradigm Shift (Board 44)**
A. Séror, eResearch Collaboratory