In 2014 we celebrated the 5th anniversary of the Division of Biomedical Informatics (DBMI) and moved to our new offices. We started with seven people in 2009 and now have more than 70 to fill our mission of delivering the best research, training, and service products to the scientific community and to the public in general.

Initially focused on the research enterprise, our service mission is now significantly extending to the clinical informatics arena, in which many of our novel processes, algorithms and applications can help improve various aspects of clinical care and health sciences training.

In 2015 the DBMI became a UCSD health system department covering data analysis related to quality of care, research and training. With expanded recruitment of faculty, staff and trainees at several levels, the new DBMI will assist the enterprise in information management by clinicians, patients and other decision makers. This is a unique opportunity for us to make a difference in patient care.

We will continue to pursue a diverse portfolio for our research and facilitate the submission of informatics and information technology research proposals to various funding agencies.

We have much to celebrate. We would not get to this point without a great team. Thank you all for getting us here and let’s together start a new chapter in the history of DBMI.

Lucila Ohno-Machado, MD, MBA, PhD
Chair, Department of Biomedical Informatics
Associate Dean for Informatics & Technology
Training Highlights

- Shuang Wang, PhD was awarded a NIH/NHGRI K99 grant to develop algorithms and tools for genome research (Protecting the Privacy of Genomes in Research Studies).
- Juan Chaparro, MD, together with faculty members Robert El-Kareh, MD, MPH, and Brian Clay, MD continued work as part of a UC-wide team, led by Dr. Elisa Tong from UC Davis, to create a bi-directional eReferral to the California Smokers’ Helpline from all five UC medical centers. This eReferral went live at UCSD in December and creates a reliable connection between our patients and resources to help them quit smoking. The project is part of UC Quits and is supported by the UC Center for Healthcare Quality and Innovation.
- Edna Shenvi, MD wrote an essay selected as top finalist in the Resident and Associate Society of the American College of Surgery contest: Five-Year General Surgery Residency: Reform vs. Revolution.
- Xiaoqian Jiang, PhD, and Amir Schangali are organizing the first Pan-Pacific Biomedical Informatics Training Camp at UCSD, to take place in the summer of 2015.
- Outstanding articles led by Zhanglong Ji, MS and Shuang Wang, PhD were referred from the Translational Bioinformatics Conference to informatics journals.

Open Access Resources and Invited Presentations

- Rita Germann-Kurz organized 12 open access iDASH research and 9 journal club webinars, presented by authors of outstanding informatics JAMIA articles. This resource has received more than 33,000 views to date.
- Cleo Maehara, MD, MSc organized our first monthly bioCADDIE (data indexing) seminar.
- DBMI members presented their work in four continents.
- Lucila Ohno-Machado, MD, PhD was an invited lecturer at the Chinese Academy of Sciences.

Our Courses at UCSD, 2014

- MED264, Principles of Biomedical Informatics, taught by Xiaoqian Jiang, PhD, moved to our new facilities in BRF2. Kemal Eren and Stephanie Feudjio-Feupe served as TAs.
- MED267, Modeling Clinical Data and Knowledge for Computation, taught by Hyeon-eui Kim, RN, MPH, PhD, resulted in several practical projects by student groups. Jing Zhang served as TA.
- The Clinical Informatics Journal Club, organized by Robert El-Kareh, MD, MPH, discusses practical applications of informatics in clinical settings.
- The Cancer Genomics Journal Club, organized by Olivier Harismendy, PhD, meets weekly at the Cancer Center.
- MED262, Trends in Biomedical Informatics, our weekly seminar organized by Chun-nan Hsu, PhD had 31 sessions with guest speakers from around the country, and also served as a venue for trainee presentations.
- MED263, Bioinformatics Applications in Human Health, was taught by Sergei Pond, PhD and Jason Young, PhD.
Training News

Gail Moser, training program coordinator, retired in December. She will be missed for her long-lasting contributions, which helped shape the DBMI into what it is today.

Career advancements

- Tyler Bath, undergraduate intern working with Jihoon Kim, MS, joined the DBMI programming team led by Claudiu Farcaș, PhD
- Michael Conway, PhD started as Assistant Professor of Biomedical Informatics, University of Utah
- Alex Hsieh started at the BMI PhD program at Columbia University, after employment at DBMI and Illumina
- Wenchao Jiang, MS, former international trainee, was accepted to the PhD program in Bioinformatics at the University of Minnesota
- Mindy Ross, MD, MBA, MAS joined Rady Children’s Hospital clinical and informatics teams
- Krystal Tse, undergraduate intern, started at the PhD program in international relations at UCSD
- Rebecca Walker, former staff member, was accepted to the doctoral program in bioinformatics at UCLA
- Christopher Woelk, PhD joined the faculty at the University of Southampton, UK

Pre- and Post-Doctoral Trainees

- Adam Rule, Skylar Kerzner, Yingxiang Huang, joined pre-doctoral BMI program students Eric Levy, Jing Zhang, Kemal Eren, Stephanie Feudjio-Feupe, Wei Wei, MS, Zachary Lipton, and Zhanglong Ji, MS
- Graduate students Arya Iranmehr, Brian Sudjadi, Gordon Lin, Priyanka Ganapathi, Samuel Ko, Shima Salimi Tari, Shitij Bhargava, and Suvir Jain joined our research projects
- Juan Chaparro, MD, Rady Children’s Hospital, Gilbert Ramirez, MD, UCSF-Fresno, Augustine Obirieze, MD, MPH, Howard-Hopkins Surgical Outcomes Research Center, and Meng Wang, PhD, UCSD, joined postdoc fellows Divya Chhabra, MD, Katherine Homann, MD, Edna Shenvi, MD, and Shuang Wang, PhD
- Wenrui Dai, PhD, former exchange student, accepted a position as postdoctoral fellow in the DBMI

Interns

- Dexter Friedman and Briana Herrera joined Hyeon-eui Kim, RN, PhD in the iCONCUR project
- We hosted summer interns Feng Chen, U Oklahoma, Steve Cook, UC Riverside, Haoran Li, Emory, Sisi Lu, Pittsburgh, Ruiling Liu, UT Houston, Lichang Wang, Northwest A&F, Xuefu Wang, Indiana, Emily Fireman, Quentin Gautier, Arya Iranmehr, Mark Myslin, Alex Richardson, and Amanda Ritchart, UCSD

International Training

- We continued our fifteen years of collaboration with Heimar Marin, RN, PhD, from the Universidade Federal de São Paulo, for informatics training in Brazil and Mozambique
- Sandro de Souza, PhD, Beatriz Stransky Ferreira, PhD, Jorge de Souza, PhD from UFRN and i2bio, Brazil, Valter Nuaila, Universidade Eduardo Mondlane, Maputo and the DBMI organized the 1st Short Course in Bioinformatics in Maputo, Mozambique with help from Francisco Mabila and David Bila, PhD
- We established new partnerships with Hong Kong Baptist University and Soochow University in China
- Shanghai JiaoTong University students Yong Li and Yuchen Zhang, advised by Hongkai Xiong, PhD and Soochow University student Yujie (Jenny) Zhu, advised by Bairong Cheng, PhD started their internships at DBMI
- Morgan von Ebke is now supervising the processing of all new trainee and scholar appointments and visas
- We pride ourselves for collectively speaking more than 20 world languages: Cantonese, English, Farsi, French, German, Greek, Gujarati, Hindi, Italian, Japanese, Korean, Mandarin, Norwegian, Portuguese, Romenian, Russian, Sanskrit, Spanish, Taiwanese, and Vietnamese. This is in addition to several programming languages...
2014 ended on a high note with an award from the National Institutes of Health for the biomedical & healthCAre Data Discovery Index Ecosystem (bioCADDIE), a project led by Lucila Ohno-Machado, MD, PhD, and coordinated by Cleo Maheara, MD, MSc, in collaboration with

- Hua Xu, PhD, UT Houston, chair of the Data Shop taskforce, and investigators Elmer Bernstam, MD, Trevor Cohen, MBBS, PhD, Todd Johnson, PhD, Cui Tao, PhD, and Jim Zheng, PhD
- UCSD professor Maryann Martone, PhD and Stephanie Hagstrom who are organizing a large community of researchers and publishers, and Peter Rose, PhD from the PDB
- Susanna Assunta-Sansone, PhD, Oxford University, who leads our collaborative effort with the CEDAR BD2K Center of Excellence
- George Alter, PhD, University of Michigan, who leads our interactions with data repositories
- Ian Fore, PhD, National Cancer Institute, NIH science officer
- DBMI members Chun-nan Hsu, PhD, Xiaoqian Jiang, PhD, Hyeon-eui Kim, RN, PhD, Claudiu Farcas, PhD and Rita Germann-Kurz and several trainees
- Investigators from eight NIH-funded research projects and NIH representatives from several institutes

bioCADDIE’s goal is to do for data what PubMed did for the literature: transform the way data are discovered and make them easier to be accessed

Other New Grants

- Xiaoqian Jiang, PhD, NIH/NLM R21, to develop homomorphic encryption tools for cloud computing
- PCORI awarded a patient-centered privacy protection technology grant to Emory collaborator Li Xiong, PhD, with site investigators Xiaoqian Jiang, PhD and Shuang Wang, PhD
- We thank Cher Hehr for grant management support
The bioCADDIE consortium is part of the NIH’s Big Data to Knowledge (BD2K) initiative. Five initial pilot projects were planned for year 1.

Linking publications and underlying data sets using natural language processing
Hua Xu, UT Houston

Rating relationships in imaging reports: Machine learning vs. crowdsourcing approaches
Ricky Taira, UCLA

Data recommendation using machine learning and crowdsourcing
Xiaoqian Jiang, UC San Diego

Intelligent search expansion and visualization of data sets
Todd Johnson, UT Houston

Hyoeun Kim, UCSD

Development of citation and data access metrics applied to RCSB protein data bank and related resources
Peter Rose and Chun-nan Hsu, UCSD

We also issued a call for collaborators for these projects. An open call for new targeted pilot projects will be issued for year 2 and beyond.

Additionally, we are planning to form working groups to provide recommendations for the data discovery index.

bioCADDIE’s is planning a few workshops. The first one, on Data Citation, was organized by Drs. Martone and Sansone and co-located with the FORCE 2015 meeting in Oxford, UK.

**Collaborator News**

- Daniella Meeker, PhD, pSCANNER technical leader, is now assistant professor, preventive medicine, and CTSA informatics core director, USC
- Michael Matheny, MD, MS, iDASH and pSCANNER collaborator, is now director, Center for Population Health, Biomedical Informatics, Vanderbilt
- Zia Agha, MD, collaborator on pSCANNER and VA projects, is now Executive Vice-President, Clinical Research and Medical Informatics at the West Institute. Dena Rifkin, MD, PhD is site principal investigator for the San Diego VA
- Jonathan Nebeker, MD, director for the VA’s clinical warehouse VINCI, and Scott Duvall, PhD lead pSCANNER at the SLC VA
- Katherine Kim, MBA, PhD, pSCANNER patient engagement leader, is now assistant professor, nursing, UC Davis
- Mini Kahlon, PhD, former pSCANNER and UC ReX collaborator, is now Vice Dean for Partnerships & Strategy at UT Dell Medical School, Austin. Mary Whoolery, MD is now pSCANNER site principal investigator, UCSF
- Amy Sitapati, MD, biomedical informatics board-certified physician and collaborator for the ICONCUR project, is now medical director of the UCSD Internal Medicine Clinic in La Jolla
- Yunan Chen, PhD, collaborator in human-computer interaction, is co-advisor for Jing Zhang and associate professor at UC Irvine

**Linked grant**

- Kevin Patrick, MD, MPH received an NCI R01 for the iDASH-linked CYCORE project (cyberinfrastructure for cancer research)

**1st Data Sharing Meeting**

Leveraging the pSCANNER, iDASH, and bioCADDIE projects, we organized a joint conference on Data Sharing in September.

- This San Diego event, organized by Rita Germann-Kurz, brought collaborators from academic and healthcare institutions, government agencies, patient representatives, ethicists, clinicians and researchers

Our goal is to promote human subjects data sharing in a way that facilitates research while also preserving the privacy of individuals and institutions.

**Patient Engagement**

We are developing new collaborations with patient-powered and clinical data networks part of pSCANNER.

- Howard Taras, MD, leader for patient engagement at UCSD works closely with Kathy Kim, PhD, Hugo Campos, and other patient representatives in the pSCANNER stakeholder board.

- iDASH’s 44 data e-communities now serve more than 150 users in 28 institutions in the USA and abroad. Over 439,000 files have been downloaded so far, and 26 tools that impact over 3,000 researchers were developed.

Librarians are key collaborators in our data sharing initiatives.

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Service roles allow us to stay connected to real world issues that need to be solved in practice and allow our trainees to have a broad training experience. Our division started its service mission by implementing and managing information systems for the clinical and translational research enterprise. As our division evolved into a department, our mission is expanding to service and collaboration for clinical decision support and education. Starting in 2015 we will recruit information technology executives, managers, and technologists in addition to several faculty.

Innovations need to be designed to address problems in real settings where biomedical research and clinical decisions are made. Our team has expanded significantly with the implementation of an enterprise-wide clinical trial management system and several research database systems.

- The Clinical and Translational Research Institute informatics technical team is led by Antonios Koures, PhD
- Andrea Barker, Daniel Clark Jr, Erika Paul, James Graczyk, Jocelyn Saria, Karen Welborne, Melissa Generoso, Narimene Lekmine, Perry Shipman, and Zhaohong (Tony) Chen were joined this year by Carol Johnson, Helena Shevchuk, Natalya Abramovich, and Kyla Kelly
- The CTRI team now manages over 400 studies, 800 investigators, and data from more than 120,000 biosamples
- We are integrating research systems with the electronic health record to facilitate research and administration
- Paulina Paul directs our Clinical Data Warehouse for Research and, assisted by Wendy Zhu, PhD, continues to provide data to our CTSA research community and lead UC ReX at UCSD
- Statisticians Jihoon Kim, MS and Hai Yang, MS ensure that our research meets the highest technical standards
- We thank Hai Yang, MS for DBMI photos in this newsletter and in our web site http://dbmi.ucsd.edu

The scope and the size of the informatics service team continue to grow
- The iDASH private HIPAA-CLOUD, architected by Antonios Koures, PhD and our secure HIPAA resource designed by Claudiu Farcas, PhD are becoming FISMA-certified
- Jihoon Kim, MS and Olivier Harismendy, PhD designed the first “recipes” for the cloud
- Over 400 data sets from several institutions worldwide are hosted in iDASH and privacy-protecting analytic software developed by our team is now frequently downloaded
- Elizabeth Bell, MPH supports UC ReX users
- Claudiu Farcas, PhD developed an “honest broker” system to host clinical research data for UC ReX, pSCANNER, and other projects

Five years ago we helped launch the UC Research eXchange (UC ReX) consortium for informatics, linking the clinical data warehouses of five UC medical centers for research. The project helped our participation in other transformative nationwide initiatives
- pSCANNER, patient-centered SCAlable National Network for Effectiveness Research, funded by PCORI, is a network that includes records for more than 21 million patients in all USA states and territories. Michele Day, PhD is pSCANNER’s program manager
- ACT. Accrual for Clinical Trials. funded by NIH/NCATS, is a network of 13 institutions funded by NIH Clinical Translational Science Awards. Gary Firestein, MD, UCSD, is ACT’s co-PI with CTSA colleagues from Pittsburgh, Harvard, and UT.
The Division of Biomedical Informatics was established in the summer of 2009 with support from the School of Medicine and the Medical Center. In early 2015 it expanded into the Health System Department of Biomedical Informatics. It has now over 70 members among faculty, trainees, and staff in addition to regional, national and international collaborators. Located at UCSD in La Jolla, the DBMI develops and implements technology for privacy-protecting data sharing and cloud computing, patient-centered outcomes research, clinical decision support, and distributed predictive analytics.

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