# ISCBNEWSLETTER



FALL 2017 ISSUE 03

#### CONGRATULATIONS

TO

Nick Schurch,
University of Dundee
Impact Factor
2017 ART & SCIENCE
COMPETITION WINNER!

**EXCITING HIGHLIGHTS FROM ISMB/ECCB 2017!** 

ISMB/ECCB 2017 in Prague, Czech Republic opened with a dedication to the memory of Anna Tramontano, long-time ISCB member and renown Italian computational biologist whom died in March. This year also marked the 25th celebration of ISMB and the 16th annual ECCB conference while welcoming nearly 1,800 delegates!

ISMB/ECCB 2017 provided an intense multidisciplinary forum for disseminating the latest developments in bioinformatics/computational biology, and fostered fresh dialogues. This year's conference focused organization of the scientific content around the ISCB Communities of Special Interest (COSIs) who have previously organized the Special Interest Group (SIG) meetings at ISMB. ISCB would like to thank all of the COSI track organizers for supporting the scientific organization of the conference and organizing these dynamic tracks.

The conference format retained the key features that made ISMB a successful open conference, including proceedings talks and presentations that include highlights (previously published research) and late-breaking research (unpublished research). Over the four-day conference, delegates had the opportunity to listen to the outstanding keynote lectures (Aviv Regev, James Sharpe, Zhiping Weng, and Pavel Pevzner), explore new technologies and services in the technical tracks and exhibitirs, and identify with their home community (or for some several communities) in the COSI track presentations. The conference also featured a variety of workshops, special sessions,

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2017 Wikipedia Competition



ISMB/ECCB 2017 Highlights continued...







#### MEMBER GET A MEMBER CAMPAIGN

Do you have a vast network of potential proffesional members? Start recruiting today and Win an all expense paid trip to ISMB 2018!

You've seen first-hand the value in ISCB membership, and now its time to share that value, your stories of ISCB with your students, colleagues, and friends.

Through our Student Council, ISCBconnect, ISCBtv, and worldwide conferences, we strive to get our members connected and engaged. Through increased membership participation, we can do even more! Imagine more travel fellowships, online training, complimentary e-books, or even recorded talks from ALL the official ISCB conferences. As membership grows, ISCB can use the additional funding to invest back in the organization and offer a plethora of new programs!

We just need YOUR help! Start recruiting TODAY!

https://www.iscb.org/ member-get-a-member

#### ISMB/ECCB 2017 Highlights continued...

equal opportunities activities, a students' council day and focused presentations on other important research area topics in computational biology that were outside of the established COSIs. Many of the conference talks were recorded and are now available online at https://www.iscb.org/ismb-mm/media-ismb2017.

Over 900 posters were presented at the meeting, many of them, which are available through the ISCB Community Journal - https://f1000research.com/gateways/ISCB/iscbconferences. Those who have not submitted their posters may still do so if you are interested and publishing a poster is complimentary.

Thank you to all who attended to make ISMB/ECCB 2017 a smashing success! We hope you enjoyed the conference. A special thanks to our conference chairs, Janet Thornton and Yves Moreau! ISCB would also like to thank all of the many volunteers who dedicated time to review papers, abstract submissions, posters, technology talks, and travel fellowship applications. Without this dedicated community, we would not be able to produce such an outstanding event.

We hope to see you in Chicago for ISMB 2018, or in Athens for ECCB 2018!

View some photos here - https://www.flickr.com/photos/ismb/albums/72157685707870621





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### ISCB-Africa ASCBC Conference on Bioinformatics Highlights

2017 marked the 5th joint meeting of the ISCB and ASBCB Conference on Bioinformatics that featured a broad bioinformatics scope with a special focus on diseases relevant to Africa. The ISCB Africa ASBCB Conference on Bioinformatics is the premier African bioinformatics conference held biannually on the continent, and showcases the most exciting current bioinformatics research being conducted by African students and scientists.

In October, more than 120 delegates from leading Biomedical research labs within and outside of Africa joined us at the Uganda Virus Research Institute (UVRI), to present on and discuss contemporary research in bioinformatics. The conference program included five scientific research talk sessions focusing on avant-garde bioinformatics tools as well as biological breakthroughs primarily by African students and scientists, and three poster viewing sessions. The 5th ISCB Africa ASBCB Conference on Bioinformatics also marked the closure of the first phase of the H3Africa Pan African Bioinformatics network, H3ABioNet. A special joint H3ABioNet ASBCB session was dedicated to student research and relevant bioinformatics project presentations. Special sessions attached to the conference were arranged, which included the ISCB Student Council Symposium, career development and NGS data analysis using Galaxy workshops, as well as a discussion panel supported by the Mozilla Open Science Foundation focusing on the importance of Open Science in accelerating biomedical research discovery. The latter generated very interesting discussions and stimulated more interactions between panelists and attendees during the conference.

Three remarkable and engaging keynote speeches covering a variety of genomics related topics were given by outstanding speakers:

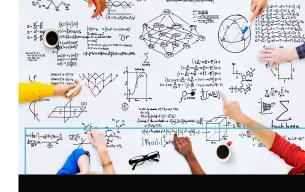
Francis Ouellette (Chief Scientific Officer and Vice President of Scientific affairs at Génome Québec, Canada)

Julie Makani (Associate Professor, Department of Haematology and Blood Transfusion, Muhimbili University of Health and Allied Sciences, Tanzania) Daniel Masiga (Head of the Molecular Biology, Bioinformatics & Biostatistics Unit, International Center of Insect Physiology and Ecology, Kenya)

The Conference and Scientific Program Chairs gratefully acknowledge the sponsors of the 5th ISCB ASBCB conference, H3ABioNet, Mozilla Foundation, Wellcome Trust, MUII-Plus and the African Partnership for Chronic Disease Research (APCDR) for their support and providing in total 56 travel fellowships to African bioinformatics students to attend the 5th ISCB ASBCB Conference on Bioinformatics and exhibit their scientific work.

ISCB ASBCB 2017 conference and Scientific Program Chairs

Dr. Sumir Panji, Prof. Alan Christoffels, Prof. Nicky Mulder Dr. Amel Ghouila, Dr. Segun Fatumo, Dr. Ruben Cloete



U C O M I N G C O N F E R E N C E S : M A R K Y O U R C A L E N D A RS

# RECOMB/ISCB Conference Regulatory and Systems Genomics with DREAM

November 19 - 21, 2017 New York, NY

### **Rocky 2017**

Dec 7 - Dec 9, 2017 Aspen/Snowmass, CO

#### **NGS 2018**

April 9-11, 2018 Barcelona, Spain

#### **ISMB 2018**

July 6 - July 10, 2018 Chicago, Illinois

#### ISCB's Annual Wikipedia and Wikidata Competition

Furthering Computational Biology Knowledge

The International Society for Computational Biology (ISCB) announces its 6th annual international competition to improve the coverage on Wikipedia of any aspect of computational biology. A key component of the ISCB's mission to further the scientific understanding of living systems through computation is to communicate this knowledge to the public at large. Wikipedia has become an important way to communicate all types of science to the public and Wikidata plays an increasingly growing role in that. The ISCB aims to further its mission by increasing the quality of Wikipedia and Wikidata coverage of Computational biology, and by improving accessibility to this information via Wikipedia and its sister sites. The competition is open to students and trainees at any level either as individuals or as groups.

The prizes for the best Wikipedia articles in any language provided by the ISCB will be:

- 1st prize \$500 (USD) and 1 year membership to the ISCB.
- 2nd prize \$250 (USD) and 1 year membership to the ISCB.
- 3rd prize \$150 (USD) and 1 year membership to the ISCB.

The prizes for the best Wikidata contributions provided by the ISCB will be:

- 1st prize \$300 (USD) and 1 year membership to the ISCB.
- 2nd prize \$150 (USD) and 1 year membership to the ISCB.

COMPETITION ENTRY AND FURTHER INFORMATION: https://en.wikipedia.org/wiki/WP:ISCB2017



DO YOU HAVE A RECORDED RESEARCH PRESENTATION THAT YOU WOULD LIKE TO SHARE?

SUBMIT TO THE COMMUNITY ON ISCBtv!

Send your video to ncostello@iscb.org

### INCOMING BOARD

#### Meet the Newly Elected Members of the 2018 Executive Committee and Board!

P. Age

#### ISCB Officers



Secretary: Scott Markel, Director, Life Sciences Modeling and Informatics Dassault Systèmes BIOVIA. Scott Markel, PhD (Mathematics, University of Wisconsin-Madison) leads BIOVIA's bioinformatics effort for the Pipeline Pilot product line, working daily with an interdisciplinary team of bioinformaticians, computer scientists, and biologists to develop commercial software for sequence analysis (including next gen sequencing), gene expression, and mass spec for proteomics. Scott is the current Secretary of ISCB and has been a member of the Board of Directors since 2006, and a member of the Executive Committee since 2009. He also serves as the Co-chair for the Publications and Communications Advisory Council and is ISCB's representative to the FASEB Publication Committee. Scott also serves on the editorial board for PLOS Computational Biology and OUP Bioinformatics.



Vice President: Bonnie Berger, Professor, Applied Mathematics and Computer Science, Massachusetts Institute of Technology, USA. Bonnie Berger, PhD (Computer Science, Massachusetts Institute of Technology) has 25 years of experience working at the interface of algorithms and biology, designing algorithms to gain biological insights from current and emerging sources of high-throughput data. She currently works on a diverse set of problems, including Compressive Genomics, Systems Biology, Structural Bioinformatics, and Genomic Privacy. Bonnie is a current Vice President and has been a member of the Board of Directors since 2013, and serves as ISCB's Awards Committee Chair, and Fellows Selection Committee Chair. She is also the Chair of RECOMB. Bonnie spearheaded a highly successful effort to work towards inclusion and diversity within ISCB, with an initial emphasis on gender-balance among our Fellows, as well as expanding the pool of potential Fellows to younger individuals who have also had a substantial impact on our field.



Vice President: Christine Orengo, Professor, University College London
United Kingdom. Christine Orengo, PhD (Biochemistry, University College London) studies how proteins function and evolve – how relatives in a family acquire new functions and how they evolve to operate in different biological contexts. Over twenty years ago her lab established the CATH evolutionary classification of protein domains, which is a partner resource in InterPro and widely accessed. They develop methods for predicting functions for proteins and the networks they participate in. Christine is a current Vice President of ISCB and has been a member of the board of Directors since 2011. She is the Chair of the Communities of Special Interest (COSIs) Committee, and a Co-chair of the Conference Advisory Task Force. Christine has been instrumental in the scientific program restructuring of the ISMB conference. Through collaborative conversations and community involvement, she was able to successfully integrate the Special Interest Group meetings into ISMB, which lead to a more streamlined and engaging conference. Christine continues to work tirelessly to serve the members of the ISCB community and to ensure that ISCB offers the best scientific programs possible.

### **Incoming Board Members**



Russell Schwartz, Professor of Biological Sciences and Computational, Biology Carnegie Mellon University. Russell Schwartz, PhD (Computer Science, Massachusetts Institute of Technology) main direction of work is computational genetics and genomics, with his current research primarily focused on bringing methods from phylogenetics, population genetics, and machine learning to understand cancer heterogeneity and progression. Russell currently serves as the Great Lakes Bioinformatics conference (GLBIO) Steering Committee Co-chair and is an active contributing member of the ISCB Education Committee. He has been very active in the computational biology community with service as ISMB Proceedings Chair, ISMB Area Chair, Associate Editor of the IEEE/ACM Transactions on Computational Biology and Bioinformatics and for Biomedical and Healthcare Applications for the INFORMS Journal on Computing, as well as the principal local organizer of past iterations of RECOMB, GLBIO, and two RECOMB satellite meetings.





Wataru Iwasaki, Associate Professor, University of Tokyo, Japan. Wataru Iwasaki, PhD (Computational Biology, University of Tokyo) research integrates bioinformatics, genomic, and metagenomic approaches, and aims at finding principles of how the life has evolved and ecosystems have been organized. Wataru is currently serving as the Vice President of the Japanese Society for Bioinformatics (ISCB Affiliate). Wataru is a member of the Japanese Society for Bioinformatics Board of Director, and the Manager of Promotion of Young Researchers, Newsletter Publication, for Japanese Society for Bioinformatics. He also served as the Secretary for the Regional Student Group in Japan, ISCB Student Council [2009-2011]. Wataru is a rising young star within the bioinformatics community, research and conference planning in Japan.

### Directors Re-elected to a 2nd Term



Nicola Mulder, Professor, University of Cape Town, South Africa. Nicola Mulder, PhD (Medical Microbiology, University of Cape Town) focuses her research on the use of bioinformatics and systems biology to study infectious diseases, particularly tuberculosis, from both host and pathogen perspectives. Her lab also studies human genetic diversity and the genetic basis of diseases and develops new algorithms and visualization tools to facilitate this research. Nicky has played and continues to play a major role in bioinformatics capacity building in Africa. She manages a Pan-African Bioinformatics network, which has trained over 1000 people on the continent to date in a variety of Bioinformatics topics and using various media outlets (face to face and online training and internships). Nicky is the Co-chair of the ISCB Education Committee and was the Chair of the Officer Nominations Committee in 2017. She also has been instrumental in the success of the ISCB-Africa ASBCB Bioinformatics conference where she currently serves as Conference Co-Chair.

Francisco Melo Ledermann, Professor, Universidad Catolica de Chile, Chile. Francisco Melo Ledermann, PhD (Structural Biology, Universidad Notre Dame de la Paix) current research involves the study of the key determinants at the structural level that mediate the molecular recognition process between proteins and DNA. He is developing new computational tools for: 1) the accurate full atom three-dimensional modeling of protein-DNA complexes, 2) the acquisition of various sources of knowledge from experimental data (sequence, structural, functional data) to better predict in silico the binding affinity of protein-DNA complexes, 3) the alternative graphical representation and visualization of protein-DNA binding modes, 4) the structural comparison of protein-DNA complexes, and 5) the rational design and engineering of new DNA binding proteins with multiple technological applications. Francisco is the Co-chair of the ISCB Conferences Advisory Council and has served as a member of the Board of Directors since 2014. He has been instrumental in the successful creation and continued success of the ISCB-Latin America conference where he served as Chair in 2012 and has been a member of the Steering Committee





since its inception.

Predrag Radivojac, Professor, Indiana University, USA. Predrag Radivojac, PhD (Computer and Information Sciences, Temple University) research interests focus on understanding protein function and the development of methods for its prediction and impact upon sequence variation. He is also interested in mass-spectrometry proteomics in particular, method development for protein identification and quantification from tandem mass spectra with computational interest is in machine learning and data mining. Pedja has lead ISCB efforts in understanding members behavior as it relates to the decision of a prospective member to join and later within member retention. He lead the task force that developed the Senior Member designation program and also serves as the Publications and Communications Advisory Council Co-chair. Pedja has also served as the principal conference organizer for the Greal Lakes Bioinformatics conference and is an incoming ISMB Proceedings Chair.



### RECOMB/ISCB CONFERENCE on **REGULATORY & SYSTEMS GENOMICS** with DREAM CHALLENGES

NOVEMBER 19-21, 2017 NEW YORK, NY



#### WHEN

**NOVEMBER 19-22. 2017** 

#### WHERE

MEMORIAL SLOAN KETTERING CANCER CENTER

**417 E 68<sup>TH</sup> STREET** NEW YORK, NY 10065

#### COST\* **ISCB**

Professional \$400 | Post Doc \$300 | Student \$275

#### Non-Members

Professional \$600 | Post Doc \$500 | Student \$475

\*Reflects Earlybird rates. Rates increase on Oct 17

#### **MORE INFO**



www.iscb.org/recomb-regsysgen2017

# **THESE GREAT KEYNOTES!**

#### DREAM CHALLENGES



Joel Dudley, PhD of Medicine



National Cancer Institute, NIH

#### SYSTEMS IMMUNOLOGY SPECIAL SESSION



Nir Hacohen PhD General Hospital



Dana Pe'er, PhD Kettering Cancer Center New York, USA



Jedd Wolchok, PhD Ludwig Center for Cancer

#### **REGULATORY GENOMICS & SYSTEMS BIOLOGY**



lef Boeke PhD of Medicine



Manolis Kellis PhD and Harvard



Frez Lieberman-Aiden PhD Baylor College of Medicine & Rice University Texas, USA



Dehora Marks PhD Harvard Medical School Massachusetts, USA



Laxmi Parida PhD IBM Research New York, USA

### News from Bioinformatics:

Bioinformatics has recently implemented a new policy of accepting format-free submissions. Accepted manuscripts will need to be formatted for revision, but we hope this will ease the burden on authors at the point of first submission.

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Members of the ISCB are now eligible for a 15% discount to publish open access in Bioinformatics. To claim the discount please notify the Production Editor that you are a member of the ISCB before signing your license to publish.

The journal is also taking part in a **trial with Publons**, a service that allows reviewers to track, verify, and showcase their previously hidden peer review work. Find out more here.

The journal's Impact Factor has risen significantly to **7.307** and the journal is now ranked 2nd in the field of Mathematical & Computational Biology (2016 Journal Citation Reports, Clarivate Analytics, 2017).

> For more information and the latest research please visit our website: https://academic.oup.com/bioinformatics/



Engage



### **EXCLUSIVELY FOR MEMBERS**



#### Member Discount

ISCB Members enjoy discounts on conference registration (up to \$150), journal subscriptions, book (25% off), and job center postings (free).



#### Why Belong

Connecting, Collaborating, Training, the Lifeblood of Science. ISCB, the professional society for computational biology!

### COSI Session Highlights from ISMB/ECCB 2017

#### Don't miss a minute of incredible science!

ISMB/ECCB 2017 talks are now available!

Visit: https://www.iscb.org/ismb-mm/media-ismb2017

RegGen - The Regulatory Genomics track offered many interesting presentations, including Jan Grau on DREAM Challenge results on de novo prediction of transcription factor binding sites, and Leelavati Narlikar on motif modules in ChIP-seq data. Cole Trapnell delivered a keynote talk entitled "Powering quantitative models of gene regulation in development with single-cell genomics" to a standing-room-only crowd at the Regulatory Genomics COSI.

BOSC - BOSC's two days included sessions on Community Building and Citizen Science, followed by a session of Late-Breaking Lightning Talks. There were also talks about Open Data, followed by a lively panel discussion: "Open Data: Standards, Opportunities, and Challenges" (OD-SOC). Finally, Nick Loman delivered the closing keynote on using sequencing and open data sharing to do real-time monitoring of Ebola and Zika outbreaks. See twitter.com/@OBF\_BOSC for lots more about BOSC 2017, including highlights from Day 1 and the Codefest!

#### NetBio

The Network Biology COSI speakers and participants enjoyed an informative, and fun-filled day hearing about advances in network biology. The day included 23 talks (6 proceedings) and 96 posters! The day ended with an inspiring closing plenary from Gary Bader, who talked about going from Genotype to Pathways to Phenotypes.

CAMDA - Lodewyk Wessels kicked off the first day of the CAMDA@ISMB track with an inspiring keynote on hierarchical integrative models and inference of cancer drug response. CAMDA was grateful to speakers coming to from 8 countries and the lively, engaged audience in the following CAMDA Neuroblastoma Data Integration Challenge session, discussing a variety of computational approaches for improving the prediction of clinical endpoints, identifying relevant markers, and elucidating molecular mechanisms, with methods spanning a wide range from multi-view kernel k-means, via stacked similarity network fusion, variation of information based layers of networks, to classical machine learning, sequence analysis, and cox hazard regression. In flash talks integrated with a matched poster session, the track explored cutting edge topics for both the neuroblastoma challenge as well as the CAMDA MetaSUB Inter-City Challenge.

SysMod - The three SysMod sessions covered how to take into account the different levels of uncertainty affecting modelling and simulations, how to use modelling to understand gene regulation, signalling and response to drugs, and multi-scale modelling. A common theme crossing all three sessions was the variability, biological or experimental. The 13 speakers discussed how to make the most of it to maximise the accuracy and usefulness of computational models, and answered the many questions of a full Panorama Hall.

BioVis - The BioVis 2017 COSI meeting (http://biovis.net/2017/program\_ismb/) showcased a broad range of data visualization research in biology, spanning an impressive spectrum of talks that covered visualization approaches for omics data, protein and other molecular structures, as well as neuroimaging data. Two keynotes that highlighted the gamut of open challenges that are relevant to the BioVis community framed the event. Boudewijn Lelieveld of Leiden University Medical Center (The Netherlands) presented significant technological advances in visual analytics for spatial transcriptomics and deep biological insights across single cells and tissue data. Miriah Meyer from the University of Utah Scientific Computing and Imaging Institute presented an inspiring talk about her ongoing research into scientific approaches for applied data visualization projects.

TransMed - In the TransMed COSI track at ISMBECCB2017 meeting, current status of computational biology and bioinformatics approaches solving both theoretical and practical challenges in translational medicine has been discussed. In this year's TransMed, the talks were ranging from modelling disease progression, treatment prediction, (integrated) genome-phenome analysis in various disease areas to large human genome projects (UK 100K Genomes) and FAIR of data and services towards personalised medicine. Three keynote talks have provided new insights in new methodical approaches, outlined a major initiative to use genomics to bring benefit to patients within the health care system and brought us to the challenges and chances in open science and FAIR data and services. Contributed talks from the communities address new attempts and solutions in solving various disease related problems by building new methods, algorithms and analytics and including not only phenotypic and mulit-omics data but also imaging and temporal information.

Don't miss these talks and MANY MORE! Visit https://www.iscb.org/ismb-mm/media-ismb2017 today and learn in depth the exciting opportunities for learning new technologies and methods being developed within the field.

### **ISCB ANNUAL AWARDS**

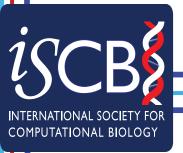
Nominate a Deserving Scientist Today for One of Four ISCB Annual Awards!

**ISCB Overton Prize Award** 

ISCB Accomplishments by a Senior Scientist

ISCB Outstanding Contributions to ISCB Award

**ISCB Innovator Award** 



www.iscb.org/iscb-awards



## **CALL FOR FELLOWS NOMINATIONS!**

The International Society for Computational Biology introduced the ISCB Fellows Program in 2009 to honor members that have distinguished themselves through outstanding contributions to the fields of computational biology and bioinformatics. During the inaugural year of the program, ISCB conferred the Fellow status on the seven winners-to-date of the ISCB Accomplishment by a Senior Scientist Award, and recognized these distinguished scientists during the ISMB/ECCB 2009 conference in Stockholm, Sweden. Since then ISCB has sought nominations from our community of members, which are reviewed and voted upon by a selection committee. New Fellows are introduced at each year's ISMB conference.

### **NOMINATE A FELLOW**



### UPCOMING A F F I L I AT E D CONFERENCES



#### Computational and Molecular Biology Symposium 2017

Ireland – Dublin Nov 30, 2017 through Dec 01, 2017 Event URL: http://compmolbiosymp.ucd.ie/ ISCB Member Discount: 20 percent

#### **BBCC2017**

Italy - Naples Dec 18, 2017 through Dec 20, 2017 Event URL: http://www.bbcc-meetings.it ISCB Member Discount: 20 percent

#### Pacific Symposium on Biocomputing (PSB) 2018

The Big Island of Hawaii January 3 - 7, 2018 URL: http://psb.stanford.edu/ ISCB Member Discount: 50 USD

#### **BIOSTEC'18: International Joint Conference on Biomedical Engineering Systems and Technologies**

Portugal - Funchal, Madeira Jan 19, 2018 through Jan 21, 2018 Event URL: http://www.biostec.org/ ISCB Member Discount: 60 EUR

#### **ISCB Executive Committee**

Alfonso Valencia, Ph.D. President, ISCB Thomas Lengauer, Ph.D. President-elect Bonnie Berger, Ph.D. Vice President Terry Gaasterland, Ph.D. Vice President Janet Kelso, Ph.D. Vice President Christine Orengo, Ph.D. Vice President Bruno Gaeta. Ph.D. Treasurer Scott Markel, Ph.D. Secretary Diane E. Kovats, CAE, CMP **Executive Director** 

#### **Incoming Board of Directors**

Wataru Iwasaki, Ph.D. Russell Schwartz, Ph.D.

#### **ISCB Board of Directors**

Alex Bateman, Ph.D. Bonnie Berger, Ph.D. Michelle Brazas, Ph.D. Yana Bromberg, Ph.D. Francisco De La Vega, Ph.D. Dan DeBlasio, Ph.D. Iddo Friedberg, Ph.D. Terry Gaasterland, Ph.D. Bruno Gaeta. Ph.D. Paul Horton, Ph.D. Janet Kelso. Ph.D. Nicolas Le Novere, Ph.D. Thomas Lengauer, Ph.D. Scott Markel, Ph.D. Francisco Melo Ledermann, Ph.D. Jill P. Mesirov, Ph.D. Yves Moreau. Ph.D. Nicola Mulder, Ph.D. Christine Orengo, Ph.D. Predrag Radivojac, Ph.D. Burkhard Rost, Ph.D. Reinhard Schneider, Ph.D. Hagit Shatkay, Ph.D. Alfonso Valencia, Ph.D. Lonnie R. Welch, Ph.D.