

## Preface

Welcome to the 2012 IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2012) being held in Philadelphia, PA, USA, on October 4-7, 2012. On behalf of the BIBM 2012 organizing team, we would like to thank you for your participation and hope you enjoy the conference.

Bioinformatics and biomedicine research is fundamental to our understanding of complex biological systems, impacting the science and technology of fields ranging from agricultural and environmental sciences to pharmaceutical and medical sciences. This type of research requires close collaboration among multidisciplinary teams of researchers in computer science, statistics, physics, engineering, life sciences and medical sciences, and their interfaces. The IEEE International Conference on Bioinformatics and Biomedicine aims to provide an open and interactive forum to catalyze the cross-fertilization of ideas from these disciplines and to bridge our knowledge gaps.

BIBM 2012 promises to provide great scientific quality and to have a broad impact, with world-renowned scientists as keynote speakers and invited speakers, contributed talks at a highly competitive acceptance rate, special issue publications in well-known scientific journals, and the broad participation of the research community serving on the Program Committee and the organizing committees for workshops, tutorials, and posters.

The scientific program highlights four themes to provide breadth, depth, and synergy for research collaboration: (1) genomics and molecular structure, function, and evolution; (2) computational systems biology; (3) medical informatics and translational bioinformatics; (4) cross-cutting computational methods and bioinformatics infrastructures, and (5) healthcare informatics, which includes 20 topics.

Since its inception in 2007, the BIBM conference has been growing both in size and global reach, from 136, 160, 233, and 355, 299 research paper submissions in 2007, 2008, 2009, 2010, and 2011, respectively. This year we received 299 research paper submissions from 1015 authors and co-authors at 44 countries, which ties the second highest submissions in the history of BIBM conferences. The 305 Program Committee members from 29 countries accepted 121 papers this year, of which 58 (19.4%) are regular research papers and 63 (21.07%) are short papers. In addition to three keynote speeches and a few invited talks from preeminent scientists and contributed talks from the accepted regular papers, the conference will feature a dozen workshops and three tutorials on special topics of interest, as well as poster sessions for accepted short papers and other submitted posters on topics relevant to bioinformatics and biomedicine. To broaden the reach of the scientific work presented at the conference, accepted research papers have been published in this IEEE Conference Proceedings, while workshop papers and poster abstracts have been published in the Workshop and Poster Proceedings. Special issues will be published in these scientific journals: *IEEE Transactions on Information Technology in Biomedicine*, *IEEE Transactions on System, Man and Cybernetics*, *IEEE Transactions on Nanobioscience*, *International Journal of Data Mining and Bioinformatics*, *BMC Bioinformatics*, *BMC Genomics*, *BMC Proteomics Science*, *Proteomics*, *Journal of Network Modeling and Analysis in Health Informatics and Bioinformatics*.

Following the success of the BIBM 2011 Industry program, BIBM 2012 continues to organize the Industry track, to focus on papers that address the practical, applied, or pragmatic challenges related to the use of bioinformatics and biomedical technologies in industry. This year's Industrial Track expands to two full session presentations and three workshops with specific themes and panel discussions. All the talks and discussions reflect perspectives from industry on how to bring next generation bioinformatics and biomedicine solutions relevant to industrial settings.

We wish to thank all of the authors who submitted papers and participated in the conference. Our deepest appreciation goes to the 300+ researchers who served as Organizing Committee members, and Program Committee members for their extraordinary dedication and distinguished reviewing efforts to serve our scientific community. Finally, we would like to acknowledge the funding support from the National Science Foundation (NSF) in USA, OmicSoft Inc., IEEE Computer Society Technical Committee on Life Science. The Travel Awards support the participation of graduate students and early career researchers, especially those from underrepresented groups, while the Best Paper/Poster Awards promote the scientific excellence of young researchers in the field of bioinformatics and biomedicine. We would like to specially encourage the active participation of early career researchers and graduate students in future BIBM conferences as a training opportunity for our next generation of scientists and engineers!

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