

# 8<sup>th</sup> Workshop on Biomedical and Bioinformatics Challenges for Computer Science (BBC 2015)

<http://bbc2015.wordpress.com/>

Reykjavík, Iceland, 1-3 June, 2015

held in conjunction with

## International Conference on Computational Science (ICCS 2015)

<http://www.iccs-meeting.org/iccs2015/>

### **IMPORTANT DATES**

- Papers submission: January 31, 2014
- Notification of acceptance: March 8, 2015
- Camera-ready papers: March 31, 2015

### **CALL FOR PAPERS**

#### **AIMS & SCOPE**

Emerging technologies in genomics, transcriptomics, metagenomics and other life science areas are generating an increasing amount of complex data and information. Traditionally, bioinformatics has been focused on the design of methods and technologies facilitating the acquisition, storage, organization, archiving, analysis and visualization of biological and medical data. However, recent changes related to the emerging technologies have made the role of computer science (both theoretical and applied aspects) much more critical in all the bioinformatics research directions. Computational biology, on the other hand, has emphasized mathematical and computational techniques facilitating the modelling and simulation of biomedical processes and systems. In recent years the distinction between these two fields has become increasingly blurred. In order to tackle the growing complexity associated with emerging and future life science challenges, bioinformatics and computational biology researchers and developers need to explore, develop and apply novel computational concepts, methods, tools and systems. Many of these new approaches are likely to involve advanced and large-scale computing techniques, computational approaches, technologies and infrastructures such as:

- High-performance architectures and systems (e.g., multicore, GPU);
- Distributed computing (e.g. grid, cloud, peer-to-peer, Web services, e-infrastructures);
- Computational simulation (mechanistic, stochastic, multi-model);
- Algorithms (theoretical and experimental aspects);
- Applied bioinformatics (analysis pipelines, tools, applications);
- Artificial and computational intelligence (machine learning, agents, evolutionary techniques, bio-inspired methods).

Together, these topics cover the key bioinformatics and computational biology techniques and technologies encountered in modern life science environments: (1) Advanced computing architectures/infrastructures; (2) Data/information management and integration; (3) Data/information analysis and knowledge discovery; (4) Integration of quantitative/symbolic knowledge into executable biomedical “theories” or models. The aim of this workshop is to bring together computer and life scientists to discuss emerging and future directions in these areas.

This is the 8th edition of this workshop, which was previously held in Kraków (2008), Baton Rouge (2009), Amsterdam (2010), Singapore (2011), Omaha (2012), Barcelona (2013), and Cairns (2014).

## **TOPICS OF INTEREST**

The workshop is seeking original research contributions presenting innovative bioinformatics and computational biology concepts and solutions in the areas outline above. The topics of interest include but are not limited to the following:

<b>Computer Science</b>	<b>Bioinformatics</b>	<b>Computational Biology</b>
<ul style="list-style-type: none"><li>• Dedicated hardware &amp; architectures</li><li>• High performance &amp; distributed computing</li><li>• Parallelisation techniques</li><li>• Grid/cloud computing</li><li>• Service-orientation</li><li>• Peer-to-peer computing</li><li>• (Distributed) workflows</li><li>• E-infrastructures</li><li>• Algorithms</li><li>• Analysis tools</li></ul>	<ul style="list-style-type: none"><li>• Biological sequence &amp; structure analysis</li><li>• Genomics, transcriptomics, metagenomics, metabolomics,...</li><li>• Analysis of biological networks</li><li>• Biomedical image analysis</li><li>• Neuroimaging</li><li>• Data visualization</li><li>• Data mining &amp; knowledge discovery</li></ul>	<ul style="list-style-type: none"><li>• Simulation of biological systems/processes</li><li>• Multi-model approaches</li><li>• Systems biology</li><li>• Knowledge-based techniques</li><li>• Knowledge management</li><li>• Artificial / computational intelligence techniques</li><li>• Executable theories and models</li></ul>

## **PAPER SUBMISSION AND PUBLICATION**

**The manuscripts of up to 10 pages (using the Procedia format), written in English and formatted according to the EasyChair templates, should be submitted electronically. Papers must be based on unpublished original work and must be submitted to ICCS only. Submission implies the willingness of at least one of the authors to register and present the paper. Copyright forms are only needed after the paper has been accepted for publication in the proceedings.**

Manuscripts must be submitted electronically through the EasyChair submission system choosing the workshop titled:

### **8th Workshop on Biomedical and Bioinformatics Challenges for Computer Science (BBC 2015).**

All accepted papers will be printed in the conference proceedings published by Elsevier Science in the open-access Procedia Computer Science and indexed by Scopus, ScienceDirect, Thomson Reuters Conference Proceedings Citation (former ISI Proceedings) -an integrated index within Web of Science. The papers will contain linked references, XML versions and citable DOI numbers. ICCS is an ERA 2010 A-ranked conference series.

## **JOURNAL SPECIAL ISSUE**

After the workshop, selected papers may be invited for a special issue of the Journal of Computational Science.

## **WORKSHOP CO-ORGANIZERS**

- Stefano Beretta, CNR - Istituto di Tecnologie Biomediche (ITB), Italy
- Mauro Castelli, ISEGI - Universidade Nova de Lisboa, Portugal
- Mario Cannataro, University Magna Græcia of Catanzaro, Italy (Chair)
- Riccardo Dondi, University of Bergamo, Italy
- Werner Dubitzky, University of Ulster, United Kingdom
- Joakim Sundnes, Simula Research Laboratory, Norway
- Rodrigo Weber dos Santos, Federal University of Juiz de Fora, Brazil

## **MORE INFORMATION:**

For further information, please check Website: <http://bbc2015.wordpress.com/>