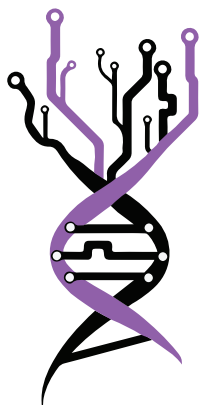


#BelBi2023 • Belgrade, Serbia

# BOOK OF ABSTRACTS



## 4th Belgrade Bioinformatics Conference

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EDITORS

**Dr. Ivana Morić**

**Dr. Valentina Đorđević**

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# FOREWORD

Dear colleagues and friends,

The 4th Belgrade Bioinformatics Conference - BelBi2023, where many high-quality scientific contributions were presented, has just ended. With great thanks to all participants, we now proudly present a book of abstracts that both reflects the scientific abundance and diversity of the conference and serves as a reminder of a memorable event.

Several research institutions, faculties, and scientific societies from Serbia joined forces in organizing this international conference, which covered numerous topics in computational biology, bioinformatics, and biomedical and health informatics. The main goal of BelBi2023 was to foster contact between scientists, both early stage career and senior researchers, allowing them to share experiences and latest advances in their fields. We sincerely hope that BelBi2023 has served as a platform for researchers from around the world to meet, initiate new collaborations, and expand professional contacts, and that all of you would become a part of the growing BelBi community.

We are grateful and proud to have welcomed more than 250 researchers from 21 countries. We have had 28 scientific sessions, consisting of more than 60 lectures (including eight Keynote talks), 47 presented posters, as well as three workshops and one satellite event – COST action. We have also organized seven industry lectures, including the NGS Challenge,

two Meet the Expert Sessions, and one Business Coffee Break where ten start-up companies took part. And finally, the future BIO4 campus was presented and first panel on Serbia's resources for storage and analyses of genetic data was organized.

We would like to thank all the members of the International Advisory Board and the International Program Committee for their efforts and help in making this event a success. We are very grateful to the Ministry of Science, Technological Development and Innovation of the Republic of Serbia, SAIGE project, and UNDP-Serbia for their support. Finally, the Local Organizing Committee is very grateful to all the sponsors of the conference - BGI, Illumina & Elta'90MS, PacBio & East Diagnostics, ThermoFisher Scientific & Vivogen, Huawei, Labena, DSP Chromatography, RNIDS, Telekom Srbija, Alfa Genetics, Kefo and Superlab, hoping that they will stay with us for many years to come.

Looking forward to seeing you again at the 5<sup>th</sup> Belgrade Bioinformatics Conference.

Belgrade, July 2023

*Dr. Valentina Đorđević*  
& *Dr. Ivana Morić,*  
On behalf of BelBi2023  
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## Keynote lectures

### Privacy-preserving Systems Medicine

Jan Baumbach<sup>1,2</sup>

<sup>1</sup>Institute for Computational Systems Biology, University of Hamburg,  
Notkestrasse 9, 22607 Hamburg, Germany

<sup>2</sup>Computational BioMedicine lab, Institute of Mathematics and Computer  
Science, University of Southern Denmark, Campusvej 1,  
5000 Odense M, Denmark

**Jan.baumbach@uni-hamburg.de**

Artificial intelligence (AI) offers game-changing opportunities to healthcare. However, it also harbors risks to patient privacy in particular when dealing with sensitive clinical data stored in critical healthcare IT infrastructure. Specifically, data exchange over the internet is perceived insurmountable, posing a roadblock hampering big-data-based medical innovations.

We created a novel AI platform, the FeatureCloud AI app store that is based on the idea of federated learning where only model parameters are communicated. To maximize privacy, sensitive datasets remain stored locally and are analysed behind safe firewalls to assure the high standards in data privacy in order to (by design) comply with the strict GDPR.

We will exemplarily investigate the power of FeatureCloud apps for decentralized (1) genome-wide association studies (GWAS), (2) gene expression data mining, and (3) time-to-event data analytics to demonstrate how FeatureCloud may enhance worldwide collaboration, accelerate innovation, and democratize scientific data usage. We show that apps developed in FeatureCloud can produce highly similar results compared to centralized approaches and scale well for an increasing number of participating sites.

FeatureCloud is a no-code platform for federated learning apps having the potential to vastly increase the accessibility of privacy-preserving and distributed data analysis in biomedicine and beyond.

**Keywords:** bioinformatics, data mining, federated learning

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