

SCIENTIFIC  
PROGRAM

Genome Informatics

Precision Medicine

& Clinical Omics

-- in a world of

Data Economies


# HELLENIC BIOINFORMATICS 2018



THESSALONIKI, NOVEMBER 15-18, 2018



**HB-11 PRE-CONFERENCE WORKSHOPS****Thursday, November 15, 2018**

<b>Venue</b>	<a href="#">Computer Laboratory</a> , Computer Science and Numerical Analysis Department, School of Mathematics, Aristotle University of Thessaloniki
08:30-09:00	Registration & Coffee
<b>Workshop I</b>	<b>Proteomics Workshop – Hands-on</b>
	<b>Proteomics Bioinformatics: From raw MS-data to, knowledge - Hands-on Workshop</b> <i>Chair: Michalis Aivaliotis</i>
09:00-09:15	<b>Introduction to proteomics - <u>Michalis Aivaliotis</u></b> <ul style="list-style-type: none"> <li>○ <i>Brief history of MS-based proteomics</i></li> <li>○ <i>State-of-the-art quantitative MS-based proteomics approaches</i></li> </ul>
09:15-10.30	<b>Bioinformatics I – MS-Raw data processing - <u>G. Orfanoudaki, K. Psatha, M. Aivaliotis</u></b> <ul style="list-style-type: none"> <li>○ <i>Proteome identification, quantitation and characterization</i></li> <li>○ <i>Available bioinformatics platforms for MS-data processing</i></li> <li>○ <i>Quality control and filtering of proteomics data</i></li> </ul>
10:30-13:00	<b>Bioinformatics II – Meta-data analysis and visualization - <u>N. Fikas, G. Orfanoudaki, A. Malousi, K. Psatha, M. Aivaliotis</u></b> <ul style="list-style-type: none"> <li>○ <i>Comparative proteomics analysis</i></li> <li>○ <i>Functional proteome annotation</i></li> <li>○ <i>GO terms and pathways enrichment analysis</i></li> <li>○ <i>Protein-protein interaction networks</i></li> <li>○ <i>Visualization of proteomics data</i></li> </ul>
13.00-14.00	 <b>Coffee break</b>
<b>Workshop II</b>	<b>RNA-Seq and ChIP-Seq data analysis – Hands-on</b>
	<b>Advanced RNA-Seq and ChIP-Seq data analysis – Hands-on Workshop</b> <i>Chair: Andigoni Malousi, Lab. of Biological Chemistry, School of Medicine, AUTH</i>
15:00-15:30	<b>Introduction to sequencing technologies - <u>Andigoni Malousi, Stefania Maniatsi</u></b> <ul style="list-style-type: none"> <li>○ <i>From Sanger to nanopores: Advances in sequencing technologies</i></li> <li>○ <i>Public data repositories and data formats</i></li> <li>○ <i>Basic processing steps and bioinformatics tools</i></li> </ul>
15:30-16:00	<b>Prerequisites - <u>Andigoni Malousi, AUTH IT expert</u></b> <ul style="list-style-type: none"> <li>○ <i>Introduction to the AUTH's cluster environment</i></li> <li>○ <i>Basic bash commands</i></li> <li>○ <i>Working environment setup</i></li> </ul>
16:00-18:00	<b>RNA-Seq data analysis - <u>Andigoni Malousi, Stefania Maniatsi</u></b> <ul style="list-style-type: none"> <li>○ <i>Fetching raw RNA-Seq data from public repositories</i></li> <li>○ <i>Quality control and mapping to reference genome</i></li> <li>○ <i>Quantification and differential gene expression</i></li> <li>○ <i>Visualisation and downstream analysis (fusion genes, gene set enrichment)</i></li> </ul>
18:00-20:00	<b>ChIP-Seq data analysis - <u>Andigoni Malousi, Stefania Maniatsi</u></b> <ul style="list-style-type: none"> <li>○ <i>Quality control and trimming of raw reads</i></li> <li>○ <i>Mapping to reference genome</i></li> <li>○ <i>Peak calling</i></li> <li>○ <i>Visualization and peak annotation</i></li> </ul>
	<b>Important Notes:</b> <ul style="list-style-type: none"> <li>- Number of maximum participants 30</li> <li>- A digital textbook and references will be provided to all participants in advance.</li> <li>- The organizers will provide computers with all the required bioinformatics tools and demo data</li> </ul>

# HB-11 CONFERENCE AGENDA

## Friday, November 16, 2018






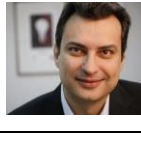


### Theme: DATA ECONOMIES

08:00-12:00 **Registrations**

09:00-10:00 **HB-11 Welcome notes and Conference outline**

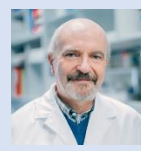
### Session 1: Data Ecosystems

Chair: Anastasia Chasapi and Nikos Kyripides

10:00-10:40		<b>Keynote Talk</b>
		<b>Giorgos Papadopoulos</b> , CEO, Atypon, USA
		<i>Scientific editors: how to use them for collaboration, integration with experimental data and submissions</i>
10:40-11:00	 <b>Coffee break</b>	
11:00-11:25		Invited Talk
		<b>Andreas Persidis</b> , President, Hellenic BioCluster, & CEO BioVista Inc., Greece
		<i>Big data and AI in healthcare - so where's the money in an AI-powered health industry?</i>
11:25-11:50		Invited Talk
		<b>Stavros Papadopoulos</b> , CEO, TileDB Inc., USA
		<i>Managing genomics data with TileDB</i>
11:50-12:15		Invited Talk
		<b>Cath Brooksbank</b> , Head of the EMBL-EBI Training Program, UK
		<i>Nurturing a bioinformatics training program - from gestation to the teenage years'</i>
12:15-12:30		Short Talk
		<b>Pantelis Angelidis</b> , President, Alexander Innovation Zone, Greece
		<i>Health data ecosystems in health tourism</i>
12:30-12:45		Short Talk
		<b>Maria Chatzou</b> , Founder & CEO, LifeBit, UK
		<i>How AI is powering genomics and personalized medicine, and setting new computational standards</i>
13:00-14:00	 <b>Lunch</b>	

### Session 2: Bio-Economy

Chair: Irimi Angelidaki and Anastasios Chanalaris

14:00-14:40		<b>Keynote Talk</b>
		<b>Victor de Lorenzo</b> , Professor, National Center of Biotechnology, Spain
		<i>Scaling-up bioremediation from the test tube to planet Earth: what we need to know</i>

14:40-15:05		Invited Talk
		<b>Costas Kiparissides</b> , Professor Emeritus, CERTH/CPERI and Aristotle University of Thessaloniki, Greece
		<i>Model-based intensification and optimization of biopolymers production in microbial factories</i>
15:05-15:30		Invited Talk
		<b>Vassily Hadzimanikatis</b> , Professor, EPFL, Switzerland
		<i>Databases, computational methods, and models for a bio-based economy</i>
15:30-15:45		Short Talk
		<b>Dominik Danso</b> , Universität Hamburg, Germany
		<i>Finding rare enzymes in nature with high value to bioeconomy: Identifying novel PET hydrolases</i>
16:00-16:30	 <b>Coffee break</b>	
<b>Session 3: International Programs</b>		
<i>Chair: Amaryllis Malegiannaki and George Spyrou</i>		
16:30-17:10		Keynote Talk
		<b>Lynn Schriml</b> , Assoc. Professor, University of Maryland, USA
		<i>International microbiome data coordination and consortium studies</i>
17:10-17:35		Invited Talk
		<b>Eddy Rubin</b> , Chief Scientific Officer, Metabiota
		<i>The Global Virome Project</i>
17:35-18:00		Invited Talk
		<b>Sophie Schbath</b> , Research Director, INRA, France
		<i>The French "Microbial Ecosystems &amp; Meta-omics" metaprogram from INRA</i>
18:00-18:15		Short Talk
		<b>Christos Arvanitidis</b> , Research Director, Hellenic Center for Marine Research (HCMR), Crete, Greece
		<i>Research infrastructures and their collaborative potential in addressing challenging scientific questions at global scale</i>
18:15-18:30	<b>Group Photo</b>	
<b>Session 4: Roundtable – Infrastructures and Elixir</b>		
<i>Chair: Babis Savakis and Christos Ouzounis</i>		
18:30-19:15	Participants: <ul style="list-style-type: none"> <li>• Alfonso Valencia (Spain)</li> <li>• Ioannis Xenarios (Switzerland)</li> <li>• Giorgos Spyrou (Cyprus)</li> <li>• Nikos Kyrpides (USA)</li> </ul>	
19:15-20:15	 <b>Poster Session &amp; Reception</b>	
21:00-23:00	 <b>Speakers Dinner (reservations required for non-invited speakers)</b>	

## Saturday, November 17, 2018

### Theme: GENOME INFORMATICS

#### Session 5: Metabolic Engineering and Omics Approaches

Chair: Georgia Orfanoudaki and George Tsiamis


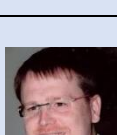
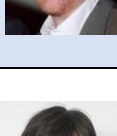
09:00-09:40		<b>Keynote Talk</b>
		<b>Peter Karp</b> , Director, Bioinformatics Research Group, Artificial Intelligence Center, SRI, USA
		<i>Computing metabolic routes in organism communities</i>
09:40-10:05		Invited Talk
		<b>Steven Hallam</b> , Professor, University of British Columbia, Canada
		<i>Global scale metabolic pathway reconstruction from environmental genomes</i>
10:05-10:20		Short Talk
		<b>Sotirios Vasileiadis</b> , Research Scientist, University of Thessaly, Greece
		<i>Elucidating the roles and interactions of the members of a bacterial consortium along the degradation of the recalcitrant fungicide thiabendazole via a multi-omic approach</i>
10:30-11:00	 <b>Coffee break &amp; Posters</b>	
<b>Session 6: Human Microbiome</b>		
Chair: Lynn Schriml and Michalis Aivaliotis		
11:00-11:25		Invited Talk
		<b>Daniel van Der Lelie</b> , Chief Scientific Officer, Gusto Global LLC, USA
		<i>Modular agent-based modeling platform for bridging interdisciplinary research in ecology, evolution, behavioral biology and computational neuroscience</i>
11:25-11:50		Invited Talk
		<b>Todd DeSantis</b> , Vice-President of Informatics, Second Genome, USA
		<i>Microbiome strain and protein level meta-analysis for therapeutic discovery</i>
11:50-12:15		Invited Talk
		<b>Ruth Schmitz-Streit</b> , Professor, Kiel University, Germany
		<i>Methanoarchaea as part of the human microbiome - friends or foes</i>
12:15-12:40		Invited Talk
		<b>Rob Finn</b> , Group Lead, European Bioinformatics Institute, UK
		<i>Increasing our knowledge of human gut microbiota</i>
12:40-12:55		Short Talk
		<b>Nikos Kyrpides</b> , Head, Prokaryote Super Program, DOE-JGI, USA
		<i>Novel biological insights from uncultivated genomes of the global human gut microbiome</i>
13:00-14:00	 <b>Lunch</b>	






**Session 7: Metagenomics**Chair: *Elena Sarropoulou and Panos Kougias*

14:00-14:40		<b>Keynote Talk</b>
		<b>Irini Angelidaki</b> , Professor, Technical University of Denmark, Denmark
		<i>Exploring the biogas microbiome</i>
14:40-15:05		Invited Talk
		<b>Tom Curtis</b> , Professor, University of Newcastle, UK
		<i>Multiscale modelling of microbial communities</i>
15:05-15:20		Short Talk
		<b>Jihyun F. Kim</b> , Professor, Yonsei University, Republic of Korea
		<i>Identification and isolation of a keystone species in the rhizosphere microbiome of tomato resistant to bacterial wilt</i>
15:20-15:35		Short Talk
		<b>Stefano Campanaro</b> , Professor, University of Padua, Italy
		<i>Definition of a novel strategy for assembly and binning of 148 shotgun sequenced samples collected from biogas reactors</i>
15:35-15:50		Short Talk
		<b>George Tsiamis</b> , Assist. Professor, University of Patras, Greece
		<i>Deciphering the dynamics of the insect gut microbiome</i>
15:50-16:05		Short Talk
		<b>Vassiliki Lila Koumandou</b> , Lecturer, Agricultural University of Athens, Greece
		<i>Comparative analysis of outer membrane vesicle proteins and their targeting signals</i>
16:05-16:30	 <b>Coffee break &amp; Posters</b>	

**Session 8: Computational Technologies**Chair: *Maria Chatzou and Pantelis Angelidis*

16:30-16:55		Invited Talk
		<b>Mark Borodovsky</b> , Regents' Professor, Georgia Tech, USA
		<i>Improving tools for structural annotation of genomes and metagenomes</i>
16:55-17:20		Invited Talk
		<b>Folker Meyer</b> , Professor, University of Chicago, USA
		<i>What a complex metagenome taught me about the need for reproducible workflows — Towards solving the microbiome reproducibility crisis</i>
17:20-17:35		Short Talk
		<b>Maria de la Mercè Lladrés Segura</b> , University of the Balearic Islands, Spain
		<i>Evaluation of virus-host gene relationship</i>



17:35-18:00		Invited Talk
		<b>Aydin Buluc</b> , Staff Scientist, Lawrence Berkeley National Lab, USA
		<i>Large-scale parallel computing for computational genomics</i>
18:00-18:15		Short Talk
		<b>Georgios Pavlopoulos</b> , Head of Bioinformatics, Biomedical Science Research Center "Alexander Fleming"
		<i>Expanding the protein space using metagenomic data</i>
18:15-18:40		Invited Talk
		<b>Sergey Ovchinnikov</b> , Group Lead, Harvard University, USA
		<i>From new lineages of life and metagenomics to new protein families &amp; complexes</i>
19:30-21:30	🍷 <b>Dinner (reservations required for non-invited speakers)</b>	
22:00-24:00	🍷 <b>Social (optional <a href="#">concert</a>)</b>	

## Sunday, November 18, 2018

### Theme: **PRECISION MEDICINE & CLINICAL OMICS**



#### Session 9: **Developing Computational Biology in Greece and Cyprus**

Chair: *Vasilis Promponas and Ilias Kappas*

09:00-09:15		Strategy Talk
		<b>Christos Ouzounis</b> , Research Director, CERTH, Greece
		<i>Developing computational biology at meridian 23° E, and a little eastwards</i>
09:15-09:30		Strategy Talk
		<b>Vasilis Promponas</b> , Assist. Professor, University of Cyprus, Nicosia, Cyprus
		<i>Towards establishing the ELIXIR-CY node: aims, challenges and opportunities</i>
09:30-09:45	<b>Roundtable discussion with students</b> <ul style="list-style-type: none"> <li>- Christos Ouzounis (Greece)</li> <li>- Vasilis Promponas (Cyprus)</li> </ul>	

#### Session 10: **Translational Genomics**

Chair: *Florentia Konstantopoulou and Ioannis Iliopoulos*

09:50-10:30		Keynote Talk
		<b>Soren Brunak</b> , Professor, Technical University of Denmark, Denmark
		<i>Population-wide analysis of disease trajectories in a 40-year perspective</i>
10:30-11:00	☕ <b>Coffee break &amp; Posters</b>	
11:00-11:25		Invited Talk
		<b>Ugur Sezer</b> , Professor, Acibadem University, Turkey
		<i>Integration of multiple omics data in a pathway related context reveals individualized disease aetiology and potential therapeutical targets in cancer</i>

11:25-11:50		Invited Talk
		<b>George Spyrou</b> , Head of the Bioinformatics Group, The Cyprus Institute of Neurology and Genetics, Cyprus
		<i>Network-based integration of multisource data from neurodegenerative diseases</i>
11:50-12:05		Short Talk
		<b>Ian Cook</b> , Clinical Solutions Manager – QIAGEN Bioinformatics, UK
		<i>QIAGEN bioinformatics – evidence driven precision medicine</i>
12:05-12:20		Short Talk
		<b>Anastasios Chanalaris</b> , Research Scientist, Kennedy Institute of Rheumatology, University of Oxford, UK
		<i>The Somalogic's Soma Scan aptamer platform in screening human osteoarthritic knee joint proximal synovial fluid</i>
12:20-12:35		Short Talk
		<b>Michalis Aivaliotis</b> , Assoc. Professor, School of Medicine, Aristotle University of Thessaloniki, & Group Leader and Director of Proteomics Facility, IMBB-FORTH, Crete, Greece
		<i>Functional and clinical proteomics in the era of precision medicine</i>
<i>Chair: Nikos Kyrpides</i>		
12:40-13:00		Vision Talk
		<b>Nektarios Tavernarakis</b> , FORTH Chairman, Crete, Greece
		<i>Developing precision medicine in Greece</i>
13:00-14:00	 <b>Lunch</b>	
<b>Session 11: Functional Genomics</b>		
<i>Chair: Konstantina Psatha and Christos Ouzounis</i>		
14:00-14:40		Keynote Talk
		<b>Alfonso Valencia</b> , Life Sciences Department Director, Barcelona Super-computing Center (BSC), ICREA Research Professor, Spain
		<i>Disease networks: In the search of the molecular basis of co-morbidity</i>
14:40-15:05		Invited Talk
		<b>Alexandra Gruca</b> , Assist. Professor, Silesian University of Technology, Poland
		<i>PersonALL – molecular diagnostics, multi-omics data integration and treatment personalization of acute lymphoblastic leukemia for Polish children</i>
15:05-15:30		Invited Talk
		<b>Anton Enright</b> , Group Lead, University of Cambridge, UK
		<i>Genome free prediction of microRNAs using machine learning</i>



15:30-15:45		Short Talk
		<b>Kostas Billis</b> , Ensembl Developer, European Bioinformatics Institute, UK
		<i>Gene annotation in Ensembl</i>
15:45-16:00		Short Talk
		<b>Dimitrios Vlachakis</b> , Assist. Professor, Agricultural University of Athens and Biomedical Research Foundation of the Academy of Athens, Greece
		<i>Insights into the mechanisms underlying antibody/antigen interactions using deep learning and data mining pipelines</i>
16:00-16:30	 <b>Coffee break</b>	
<b>Session 12: Databases &amp; Ontologies</b>		
Chair: Lila Koumandou and Christos Arvanitidis		
16:30-17:10		Keynote Talk
		<b>Ioannis Xenarios</b> , Professor, University of Lausanne, Switzerland
		<i>Reference based knowledge from functional annotation of sequences to genome-scale models</i>
17:10-17:35		Invited Talk
		<b>Ylva Ivarsson</b> , Assoc. Professor, University of Uppsala, Sweden
		<i>Exploring transient protein-protein interactions and phosphoswitches</i>
17:35-18:00		Invited Talk
		<b>Radoslav Davidovic</b> , Research Scientist, Vinča Institute of Nuclear Sciences, Serbia
		<i>Prediction of human phenotype ontology terms using sequence information and enrichment analyses</i>
18:00-18:15		Short Talk
		<b>Tereza Manousaki</b> , Research Scientist, Hellenic Center for Marine Research (HCMR), Crete, Greece
		<i>A phylogenomic quest to find the closest sequenced relative of sparids: Challenges and new insights</i>
18:15-18:30		Short Talk
		<b>Evangelos Pafilis</b> , Research Scientist, Hellenic Center for Marine Research (HCMR), Crete, Greece
		<i>Text-mining-based interpretation of microbiome data</i>
18:30-18:45		Short Talk
		<b>Anastasia Chasapi</b> , Research Scientist, Swiss Institute of Bioinformatics, Switzerland
		<i>SourceData: A semantic platform to make data and figures discoverable</i>
18:45-19:00	<b>Awards</b>	
19:00-19:30	<b>Society Matters</b> – Ilias Kappas and H.bioinfo Board of Directors	
19:30-19:45	<b>Concluding Remarks - Handoff to H.bioinfo-12</b>	
	<b>Adjourn</b>	

# HELLENIC BIOINFORMATICS

CO-ORGANIZED BY



School of Mathematics  
Aristotle University of Thessaloniki



School of Medicine  
Aristotle University of Thessaloniki



Thank You!  
to our Sponsors

Atypion

lifebit

FORTH  
FOUNDATION FOR RESEARCH AND TECHNOLOGY - HELLAS  
INSTITUTE OF MOLECULAR BIOLOGY AND BIOTECHNOLOGY

"ALEXANDER FLEMING"  
Biomedical Sciences Research Center

elixir  
Greece

MICROBIAL GENOMICS  
Publishing for the community

SafeBlood  
BioAnalytica

ELPEN

LABnet  
ΔΙΚΤΥΟ ΕΡΓΑΣΤΗΡΙΩΝ

biogenea™ Εταιρεία Φαρμακευτικής  
Βιοτεχνολογίας  
PHARMACEUTICALS

RESEARCH COMMITTEE  
ARISTOTLE UNIVERSITY OF THESSALONIKI

GUSTOGLOBAL

P. Zafiropoulos s.a.  
Diagnostics  
Advancing Life Sciences - Innovating Health Care™  
www.pzafiropoulos.gr

Journal of  
Biological  
Research-  
Thessaloniki

CERTH  
THE CENTER FOR  
RESEARCH & TECHNOLOGY  
HELLAS  
ΕΡΕΥΝΑ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑ

ARISTOTLE  
UNIVERSITY  
OF THESSALONIKI

