

SCIENTIFIC
PROGRAM


Precision Medicine,
Biodiversity and
Genome Biology

HELLENIC BIOINFORMATICS 2019



HB-12 PRE-CONFERENCE WORKSHOPS

Thursday, October 10, 2019

Venue	Conference room "Stelios Orphanoudakis" Foundation for Research and Technology, Hellas (FORTH)
Workshop I	From intrinsically disordered proteins to protein-protein interaction networks Chair: Michalis Aivaliotis and Silvio Tosatto
09:00-09:30	Introduction to Intrinsically Disordered Proteins (IDPs) <u>Instructors:</u> <i>Alexander Monzon, Silvio Tosatto</i> <ul style="list-style-type: none"> ○ Discovering the (un)structure – function paradigm ○ IDPs and interactions (MORFs, LIPs, etc.)
09:30-11:00	Exploring Protein Intrinsic Disorder with MobiDB <u>Instructors:</u> <i>Alexander Monzon, Silvio Tosatto</i> <ul style="list-style-type: none"> ○ Curated, derived and predicted data ○ Consensus disorder predictions (MobiDB – Lite and Simple consensus) ○ Using MobiDB API to retrieve proteins ○ Working case: p53
11:00-12:00	Introduction to protein-protein interaction networks <u>Instructors:</u> <i>G. Orphanoudaki, K. Psatha, M. Aivaliotis</i> <ul style="list-style-type: none"> ○ Brief introduction to PPIs and network analysis ○ Import different types of PPI data into Cytoscape (tab, sif, gml) ○ Import and map experimental data on PPI networks using Cytoscape ○ Customized network visualization and analysis with Cytoscape
12:00-14:00	Practical session <u>Instructors:</u> <i>G. Orphanoudaki, K. Psatha, S. Maniatsi, A. Monzon, S. Tosatto, M. Aivaliotis</i> <ul style="list-style-type: none"> ○ Download protein information from MobiDB ○ Inspecting protein interactions from MobiDB JSON file ○ Protein interaction network visualization and analysis
14:00-15:00	 Coffee break
Workshop II	Introduction to single-cell RNA analysis Chair: Anastasios Chanalaris and Adam Cribbs
15:00-15:30	Introduction to sequence and single-cell RNA-seq – quick intro to R and R studio <u>Instructors:</u> <i>Anastasios Chanalaris, Adam Cribbs</i>
15:30-16:15	General approaches related to quality of data and sequence alignment to genome/transcriptome <u>Instructors:</u> <i>Anastasios Chanalaris, Adam Cribbs</i>
16:15-16:30	Overview of the scRNA-seq pipeline <u>Instructors:</u> <i>Anastasios Chanalaris, Adam Cribbs</i>
16:30-19:00	Implementation of the pipeline and work-through example: From raw data to pseudotime analysis (temporal data) and differential expression <u>Instructors:</u> <i>Stefania Maniatsi, Anastasios Chanalaris, Adam Cribbs</i>
	Important notes: A digital textbook and the required software will be provided to all participants in advance. Computers will not be provided. The participants are requested to bring their own laptops.

HB-12 CONFERENCE AGENDA

Friday, October 11, 2019

Theme: HUMAN HEALTH & PRECISION MEDICINE

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

Conference Opening Session - Chair: Ioannis Iliopoulos and Ilias Kappas

09:30-10:00 **HB-12 Welcome notes and conference outline**

Session 1: Human Health

Chair: Anastasia Chasapi and Anastasios Chanalaris

10.00-10:40		Keynote Talk
		Stylianos Antonarakis , University of Geneva, Switzerland
		<i>Chromatin organization and gene dosage in trisomy 21</i>
10.40-11:05		Invited Talk
		Ramit Mehr , Bar-Ilan University, Israel
		<i>Adaptive immune receptor repertoires - Challenges, solutions and future directions</i>
11:05-11:30		Invited Talk
		Silvio Tosatto , University of Padua, Italy
		<i>Computational resources for the study of intrinsically disordered proteins</i>
11:30-11:45		Short Talk
		Dimitra Tsakona , Aristotle University of Thessaloniki, Greece
		<i>Deleterious mutation enrichment in intrinsically disordered regions (IDRs) and short linear motifs (SLiMs) in the human transcription factor ZNF217</i>
11:45-12:00		Short Talk
		Shula Shazman , The Open University of Israel, Israel
		<i>A machine learning approach to select the type of intermittent fasting in order to improve health by effects on type 2 diabetes</i>
12:00-12:15		Short Talk
		Verrou, Kleio-Maria , BSRC Alexander Fleming, Greece
		<i>Semi-supervised binary categorization analysis of integrated single-cell RNA-seq data</i>

12:15-12:30		Short Talk
		Konstantina Psatha, IMBB-FORTH, Greece
		<i>A “hawk-eye” view of the proteomic and transcriptomic p53-dependent landscape in human lymphoma cells</i>
12:30-14:00	🍽️ Lunch	
Session 2: Precision Medicine Chair: Konstantina Psatha and Michalis Aivaliotis		
14:00-14:40		Frontiers Talk
		Nektarios Tavernarakis, FORTH, Greece
		<i>Genome editing technologies in the service of personalized medicine and gene therapy</i>
14:40-15:05		Invited Talk
		Panos Roussos, Icahn School of Medicine, Mount Sinai, USA
		<i>Big data and genetic liability to neuropsychiatric disease</i>
15:05-15:30		Invited Talk
		Paris Skourides, Department of Biological Sciences, University of Cyprus, Cyprus
		<i>Adhesion independent roles of focal adhesion proteins</i>
15:30-15:45		Short Talk
		Maria Astrinaki, School of Medicine, University of Crete, Greece
		<i>Multidimensional data management, exploration and analyses in the era of precision medicine</i>
15:45-16:00		Short Talk
		Georgia Orfanoudaki, IMBB-FORTH, Greece
		<i>Branched computational analysis of transcriptomic data explores signaling circuits and active modules in Mantle Cell Lymphoma</i>
16:00-16:15		Industry Talk
		Pablo Prieto, LifeBit, UK
		<i>Deployit - The GitHub for federated & cloud-native multiomics analysis</i>
16:15-16:50	☕ Coffee break	

Session 3: Viral Ecogenomics		
<i>Chair: Tereza Manousaki and Nicolas Kylilis</i>		
16:50-17:15		Invited Talk
		Philip Hugenholtz , University of Queensland, Australia
		<i>A proposal for a rank-normalized taxonomy for the viral order Caudovirales</i>
17:15-17:30		Short Talk
		Joan Carles Pons , University of the Balearic Islands, Spain
		<i>Host infection prediction and taxonomy classification of metagenomic viruses</i>
17:30-17:45		Short Talk
		Nikos Kyrpides , Joint Genome Institute, USA
		<i>Diversity, evolution, and classification of virophages uncovered through global metagenomics</i>
17:45-18:25		Keynote Talk
		Eugene Koonin , National Center for Biotechnology Information, USA
		<i>Metaviromics and the global structure of the virus world</i>
18:30-21:00	 Group Photo, Poster Session & Reception	
Saturday, October 12, 2019		
09:00-10:30		Society matters & Elections
Theme: BIODIVERSITY AND EVOLUTION		
Session 4: Biodiversity		
<i>Chair: Lynn Schriml and George Kotoulas</i>		
10:30-11:10		Keynote Talk
		Chantal Abergel , CNRS, France
		<i>Commensalism in the giant Mimiviridae</i>

11:10-11:35		Invited Talk
		Anna Papadopoulou , Department of Biological Sciences, University of Cyprus, Cyprus
		<i>Promoting methodological unification in the field of biodiversity genomics</i>
11:35-12:00		Invited Talk
		Antonis Rokas , Vanderbilt University, USA
		<i>Genomics and the evolution of budding yeast metabolic diversity</i>
12:00-12:15		Short Talk
		Tereza Manousaki , Hellenic Centre for Marine Research, Greece
		<i>Development of a combined species SNP array for the European sea bass and the gilthead sea bream</i>
12:15-12:30		Short Talk
		Evangelos Pafilis , Hellenic Centre for Marine Research, Greece
		<i>Island sampling day, chapter one: Crete, a microbiome study to explore environmental drivers of community composition across the island's ecosystems</i>
12:30-14:00	 Lunch	
Session 5: Environmental Genomics Chair: Anastasia Gioti and George Tsiamis		
14:00-14:40		Keynote Talk
		Irimi Angelidaki , Technical University of Denmark, Denmark
		<i>Anaerobic digestion: A well-organized microbial society?</i>
14:40-15:05		Invited Talk
		Mircea Podar , ORNL, USA
		<i>Cultivation of microbial "dark matter" by a targeted reverse genomics approach</i>
15:05-15:30		Invited Talk
		Rob Finn , European Bioinformatics Institute, UK
		<i>Broadening our knowledge of the human microbiome</i>
15:30-15:45		Short Talk
		Laura Treu , University of Padova, Italy
		<i>Complex microbial community dynamics in hydrogen-fueled biogas systems determined by genome-centric metatranscriptomics</i>

15:45-16:00		Short Talk
		Arianna Basile , University of Padova, Italy
		<i>Flux balance analysis unveiled the dynamicity of microbial interactions in anaerobic digestion system during the shift between different experimental conditions</i>
16:00-16:15		Short Talk
		Ilias Lagkouvardos , Technical University of Munich, Germany
		<i>Integration of global amplicon sequence data, a step towards estimation of global microbial diversity</i>
16:15-16:45	 Coffee break & Posters	
Session 6: Structure, Function and Evolution Chair: Anna Papadopoulou and Christos Ouzounis		
16:45-17:10		Invited Talk
		Miguel Andrade , Johannes-Gutenberg University in Mainz, Germany
		<i>Evolutionary study of low complexity regions in protein sequences</i>
17:10-17:35		Invited Talk
		Milana Frenkel-Morgenstern , Azrieli Faculty of Medicine, Bar-Ilan University, Israel
		<i>Evolution utilizes 3D topologically associated domains to build new proteins by means of chromosomal translocations</i>
17:35-17:50		Short Talk
		Georgios Spyroulias , Department of Pharmacy, University of Patras, Greece
		<i>NMR conformational dynamics of RNA- and nucleotide-binding proteins</i>
17:50-18:30		Keynote Talk
		Jean-Michel Claverie , School of Medicine of Aix-Marseille University; Mediterranean Institute of Microbiology, France
		<i>Oddities in the giant Pandoraviruses</i>
19.30-22:00	 Dinner (reservations required for non-invited speakers)	

Sunday, October 13, 2019

Theme: GENOMICS & BIOTECHNOLOGY

Session 7: Data and Text Mining

Chair: Milana Frenkel-Morgenstern and Evangelos Pafilis

10:00-10:40		Keynote Talk
		Ylva Ivarsson, University of Uppsala, Sweden <i>Mining intrinsically disordered regions for motif-based interactions</i>
10:40-11:05		Invited Talk
		Tamir Tuller, Tel Aviv University, Israel <i>Computational modelling of novel gene expression rules and their applications</i>
11:05-11:30		Invited Talk
		Aleksandra Gruca, Silesian University of Technology, Poland <i>Determining molecular markers in leukemia by applying machine learning methods for multi-omics data integration and rule-based survival analysis</i>
11:30-11:55		Industry Talk
		Nikolaos Nanas, Atypon, Greece <i>From biology to SCITRUS: An intelligent discovery tool for researchers</i>
11:55-12:10		Short Talk
		Alexandros Kanterakis, Foundation for Research and Technology, Greece <i>openbio.eu: A social workflow management system and research object repository for open and reproducible bioinformatics</i>
12:10-12:25		Short Talk
		Vasilis Promponas, Department of Biological Sciences, University of Cyprus, Cyprus <i>Hypothesis, analysis and synthesis: It's all Greek to me!</i>
12:30-14:00	 Lunch	
Session 8: Omics Technologies <i>Chair: Georgia Orfanoudaki and Vasilis Promponas</i>		
14:00-14:40		Keynote Talk
		Lynn Schriml, University of Maryland, USA <i>MlxS & Genomic FAIRness</i>
14:40-15:05		Invited Talk
		Folker Meyer, University of Chicago, USA <i>MG-RAST, lessons learned from processing 300,000 data sets</i>
15:05-15:20		Short Talk
		Anastasia Chasapi, CERTH, Greece <i>From human genetic disease through exposomics to the microbiomes of built environments</i>

15:20-15:35		Short Talk
		Ioulia Karagiannaki , University of Crete, Greece
		<i>Explainable and robust sparse latent representations in gene expression data</i>
15:35-15:50		Short Talk
		Georgios Kotoulas , Hellenic Centre for Marine Research, Greece
		<i>The Elixir-GR Marine -omics pilot action and the LifeWatch-GR microCT vLab</i>
15:50-16:30		Frontiers Talk
		Mark Borodovsky , Georgia Institute of Technology, USA
		<i>New machine learning algorithms for annotation of prokaryotic and eukaryotic genomes</i>
16:30-17:00	 Coffee break	
Session 9: Industrial Biotechnology Chair: Irini Angelidaki and Nikos Kyrpides		
17:00-17:25		Invited Talk
		Vitor Martins dos Santos , Wageningen University, Netherlands
		<i>Bioprospecting and model-driven design in industrial biotechnology</i>
17:25-17:50		Invited Talk
		Daniel van der Lelie , Gusto Global LLC, USA
		<i>Bioinformatic analysis of microbial communities for novel live biotherapeutic product discovery and patient stratification</i>
17:50-18:05		Short Talk
		Anastasis Oulas , The Cyprus Institute of Neurology & Genetics, Cyprus
		<i>Bacterial Wars – a network-based method for the prediction of bacterial compatibility based on antimicrobial peptide sequence similarities</i>
18:05-18:45		Keynote Talk
		Victor de Lorenzo , National Centre for Biotechnology (CNB), Spain
		<i>Scaling-up bioremediation: from the test tube to planet Earth</i>
18:45-19:00	Awards	
19:00-19:45	Concluding Remarks & Roundtable	
	Adjourn	
20:00-22:00	 Dinner (reservations required for non-invited speakers)	

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