EUROPEAN COMMISSION
RESEARCH EXECUTIVE AGENCY
Marie Skłodowska-Curie Innovative Training Networks

Marie Skłodowska-Curie Actions

Innovative Training Networks Projects Cluster

Microbial Biotechnologies for Food and Biochemicals

Wednesday 26th June 15:00 – 19:00

Piazza della Scienza 4, Building U4, room "Sironi" U4-08

Università di Milano-Bicocca

These projects have received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement numbers 764927, 764364 and 722287
Follow these @MSCActions on twitter: @YeastdocEU @aromagenesis @pacmen_itn

Microbial Biotechnologies for Food and Biochemicals
Marie Skłodowska-Curie Actions – Innovative Training Networks projects cluster

Organisation

This event will take place as an integrated symposium within the 7th Conference on Physiology of Yeast and Filamentous Fungi (PYFF7) http://www.efbiotechnology.org/PYFF that runs at University of Milano Bicocca, Milano, Italy from June 24th to June 27th, 2019. This conference will be attended by ~250 researchers from the fields of yeast and fungal biology, all of whom are welcome to participate in this special symposium. Invited experts will present keynote talks on society and education, and early stage researchers (PhD students) from three different MSCA ITNs will present their latest research findings from the field of Microbial Biotechnologies for Food and Biochemicals. Representatives of the Research Executive Agency (REA) and other experts will present and lead a discussion that links science, policy and doctoral training.

Goals of the session

- Inaugural event establishing an inter-ITN projects cluster in the theme **Microbial Biotechnologies for Food and Biochemicals**
- Showcase the contribution of the projects to the relevant scientific fields, promote discussion and collect policy relevant information and data, thus enhancing links between societal goals and policies.
- Opportunity for ESRs and PIs in the three ITNs (*YEASTDOC/PACMEN/AROMAGENESIS)* to enhance synergies among projects, create and/ or reinforce networking opportunities – both during the session and at an evening social event
- Present the MSCA and the ITN model of PhD training – stressing the broader dimensions of training in developing engaged researchers and contextualising PhD training for European policy goals

Programme

Session VII: Progressive training in yeast and fungal science related to food and biotechnology
Chairs: Irina Borodina, Amparo Querol, Patricia E. Rischitor and John Morrissey

Time	Speaker	*Title or topic*
Part 1: Collaborative International PhD training – Chair: Irina Borodina, Technical University of Denmark		
15:00 15:25	Invited Maurizio Bettiga (Chalmers University, Sweden)	*"Changing education landscape of doctoral and postdoctoral trainees transitioning to a career in bio-based economy: case studies on learners from diverse niches"*
15:25 15:35	Lorena Donzella (YEASTDOC)	*"Analysis of candidate xylose transporters in Kluyveromyces marxianus"*
15:35 15:45	Christoph Börlin (PAcMEN)	*"Understanding transcriptional regulation of amino acid metabolism through mapping of transcription factor binding sites using ChIP-exo"*
15:45 15:55	Irene De Guidi (AROMAGENESIS)	*"Genetic analysis of excessive production of H2S in presence of SO2 during wine making"*
15:55 16:05	Carmen Becerra Rodriguez (YEASTDOC)	*"Diversity of oligopeptide transporters in industrial yeasts"*
Part 2: Marie Sklodowska-Curie Actions for Policy and Careers – Chairs: Patricia E. Rischitor, EC Officer, Research Executive Agency, and John Morrissey, University College Cork		
16:05 16:20	Patricia E. Rischitor, Research Executive Agency (REA, Brussels)	*Food and Biotechnologies policies*
16:20 16:35	Barbara Mester, Research Executive Agency (REA, Brussels)	*Marie Sklodowska Curie Actions policies*
16:35 16:45	Irina Borodina (Technical University of Denmark)	*Experience of preparing / running an ITN*
16:45 16:55	David Peris (CSIC, Valencia)	*Developing your career with a MSCA IF*
16:55 17:20	Panel Discussion / Q & A *Panel will be Dr. Stefano Buiatti, University of Udine, Italy (invited REA expert) and session speakers*	*Moderated by JM, PER* *Discussion on science, society, policy and careers*

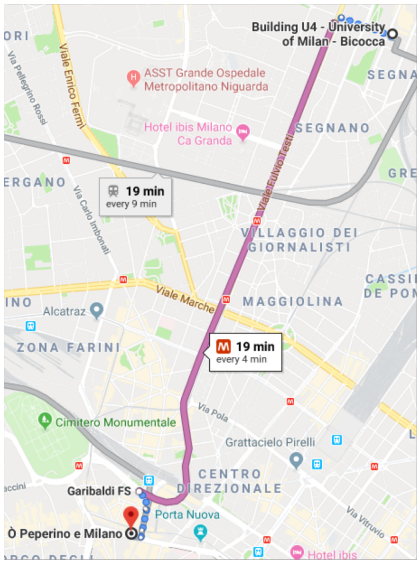
Session VII: Progressive training in yeast and fungal science related to food and biotechnology Chairs: Irina Borodina, Amparo Querol, Patricia E. Rischitor and John Morrissey		
17:20 17:35	Coffee break	Allows continued discussion
Part 3: Education and Training – Chair: Amparo Querol, Spanish Council for Scientific Research		
17:35 18:00	Invited Vera Meyer (TU Berlin, Germany)	*"Vita activa in biotechnology: What we do with fungi and what fungi do with us"*
18:00 18:10	Helén Olsson (PAcMEN)	*"High-throughput strain construction using CRISPR-Cas9 and Selective Ploidy Ablation - Employing the yeast mutant libraries for metabolic engineering purposes"*
18:10 18:20	Toni Rendulic (YEASTDOC)	*"Exploring plasma membrane transporters to improve organic acid production in yeast – Characterization and engineering"*
18:20 18:30	Dolores Pérez (AROMAGENESIS)	*"Differential nitrogen utilization and aroma production of commercial and wild Saccharomyces cerevisiae yeast strains during growth and alcoholic fermentation"*
18:30 18:40	Thomas Perli (PAcMEN)	*"Expanding the enzyme catalog of Saccharomyces cerevisiae by engineering molybdenum cofactor biosynthesis"*
18:40 19:00	University of Milano Bicocca (UNIMIB) Lecture: Raffaele Liberali	*"Early days of Marie Curie Actions"*

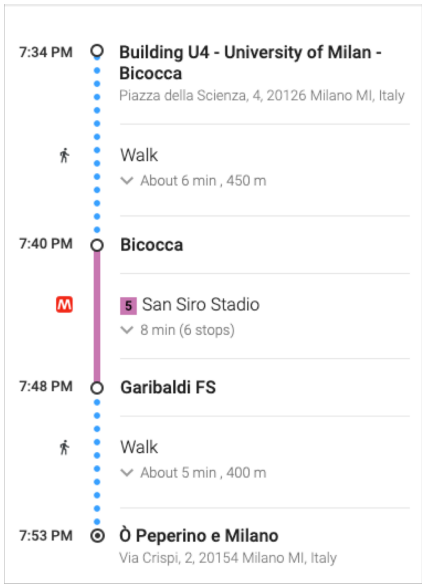
Networking dinner (20:30)

Members of the Microbial Biotechnologies for Food and Biochemicals ITN Cluster, session speakers and chairs are invited to a networking dinner following the symposium. Details are provided below, attendees should make their own way to and from the restaurant. Please note that attendance is by invitation only.

Date: Wednesday June 26th
Time: 20:30
Venue: Ò Peperino e Milano, Piazza XXV Aprile - 20154 Milano

Travel Logistics: From University of Milan Bicocca, the total journey takes about 20 minutes on the purple metro line (5) that runs about every 16 minutes in the evening. Take the Line 5 in the direction of San Siro Stadio to Garabaldi FS (6 stops, 8 minutes)





Participating ESRs from projects within the Microbial Biotechnologies for Food & Biochemicals Cluster

	Name	Poster/Talk Title	Poster
AROMAGENESIS	Beatrice Bernardi	Short-flank PCR-based targeting in layer yeast based on RAD51 overexpression	45
	Irene de Guidi	Genetic analysis of excessive production of H2S in presence of SO2 during wine making	Oral
	Dolores Peréz	Differential nitrogen utilization and aroma production of commercial and wild *Saccharomyces cerevisiae* yeast strains during growth and alcoholic fermentation	Oral
	Rafael Jiménez Lorenzo	Environmental conditions modulate the production of volatile sulfur compounds during wine fermentation	69
	Sebastián Tapia	Identification of species - specific genetic determinants of flavour compounds by comparative analysis	8
	Federico Visinoni	Selection of bespoke high-growth rate yeast strains in a selection of environments	59
PAcMEN	Christoph Börlin	Understanding transcriptional regulation of amino acid metabolism through mapping of transcription factor binding sites using ChIP-exo	Oral
	Thomas Perli	Expanding the enzyme catalog of *Saccharomyces cerevisiae* by engineering molybdenum cofactor biosynthesis	Oral
	Gang Li	The *Saccharomyces cerevisiae* pan-genome	4
	Helén Olsson	High-throughput strain construction using CRISPR-Cas9 and Selective Ploidy Ablation - Employing the yeast mutant libraries for metabolic engineering purposes	Oral
	Paul Drescher	Development of an integrated metabolic and transcriptional regulatory model for *Saccharomyces cerevisiae*	56
	Vasil D'Ambrosio	Directed evolution of small-molecule receptors for screening and selection of yeast cell factories	Oral
	Wasti Nurani	Role of molecular chaperones in attenuation consequences of oxidative stress during yeast biofactories operation	55
YEASTDOC	Lorena Donzella	Analysis of candidate xylose transporters in *Kluyveromyces marxianus*	Oral
	Angela Coral Medina	Contribution of the interaction between environment and genotype to flavour and aroma	10
	Franziska Huff	Controlling mating-type switching to enable genetic analysis of physiological variation in *Kluyveromyces marxianus*	9
	Toni Rendulic	Exploring plasma membrane transporters to improve organic acid production in yeast – Characterization and engineering	Oral
	Carmen Becerra Rodríguez	Diversity of oligopeptide transporters in industrial yeasts	Oral
	Liliane Barroso	Quantitative genetics of food spoilage properties in *Zygosaccharomyces (para)bailii*	40
	Frederico Mendonca Bahia	1,2-propanediol production from glycerol by engineered *Saccharomyces cerevisiae*	17
	Luís Ferraz	Membrane stress caused by short chain fatty acids in *Saccharomyces cerevisiae*	33
	Mehmet Gazaloglu	Enzymatic diversity among pectinolytic activities in yeast	15
	Nikola Gyurchev	Yeast hybrids with enhanced brewing characteristics	39
	Pooja Jayaprakash	Enhancing organic acid tolerance in the non-*Saccharomyces* yeast *Kluyveromyces marxianus*	34

The ITNs in the Microbial Biotechnologies for Food & Biochemicals Cluster

PacMen http://www.pacmen-itn.eu/home.html **Co-ordinator**: Irina Borodina, Technical University of Denmark

The European Training Network on Predictive and Accelerated Metabolic Engineering Network (PAcMEN) is training sixteen Early Stage Researchers (ESRs) in the following complementary research disciplines, which together offer an opportunity to revolutionize the development of cell factories for biotechnology:

- Systems Biology and Modeling,
- Synthetic Biology and Protein Engineering
- Applications for Development of New Biorefinery Processes

The United Nations have adopted a historical agreement on reduction of carbon dioxide emissions on the 12th of December 2015. The ambition is to hold the increase in the global average temperature to well below 2°C above the pre-industrial level, which means limiting the CO_2 emissions to 40 gigatonnes per year in 2030. This will require to double utilization of biomass and waste. A shift towards bio-based production of chemicals and fuels can significantly reduce our dependency on oil and gas and lead to a more environmentally friendly economic growth. The main challenge for industrial biotechnology is the development of novel cell factories that can efficiently convert feedstocks into the product of interest at minimum processing cost. Currently, it takes over 50 man-years and over $50 million to develop a cell factory, an investment that is difficult to finance and recover. Hence, there is a critical need for novel technologies and approaches that can change the paradigm and deliver novel cell factories faster and cheaper. For that we need researchers with interdisciplinary scientific training and with insight into the industrial biotechnology processes and business. The overall objective of PAcMEN research programme is to bring step-change innovation into development of cell factories for industrial biotechnology, where modeling and utilization of 'omic data will enable more predictive cell factory design and synthetic biology will accelerate strain construction and screening. The ultimate research aim is to cut down the cost and time of developing new cell factories.

AROMAGENESIS https://www.aromagenesis.eu/ **Co-ordinator**: Ursula Bond, Trinity College Dublin, Ireland

This project aims to train the next generation of researchers to provide knowledge and expertise for two major industries in the EU, namely the beer and wine industries. Yeasts belonging to the *Saccharomyces* stricto sensu group are the workhorses of these industries and an understanding of how yeasts contribute to the complex flavours and aromas of beer and wine is essential for the improvement of existing fermentation technology and for the development new flavoursome beverages. The research objectives of the consortium are to examine the biochemistry and genetics of the production of flavour compounds in yeasts used in wine and beer fermentations, to generate new strains of yeasts with improved or more varied flavour profiles and to develop novel approaches to expanding flavour profiles through co-fermentation of different yeasts. The network will provide a comprehensive education in yeast genetics, synthetic biology, flavour chemistry and fermentation technology for Early Stage Researchers through individual mentored research training in both academic and industrial institutions, through inter- and intra-sectoral exchanges and secondments and through academic workshops. The involvement of industry leaders in the consortium ensures that ESRs will be exposed to real challenges facing fermentation industries and through training in Innovation and Entrepreneurship, ESRs will develop the skills to provide solutions to these challenges. The research developed in this project will provide scientific innovation and new and exciting opportunities for the major fermentation industries and for emerging craft beer brewing SMEs.

YEASTDOC https://yeastdoc.eu/ **Co-ordinator**: John Morrissey, University College Cork, Ireland

YEASTDOC is a European Joint Doctoral programme to train researchers for outstanding careers as leaders in the field of yeast biotechnology. Six academic institutions are joined by 7 industry and 2 training partner organisations to offer an international training programme leading to the award of joint PhD degrees. The interdisciplinary, trans-sectoral research topic takes advantage of recent technological developments to link fundamental research in yeasts with new applications in the beverage and white biotechnology sectors. 12 Early Stage Researchers will each carry out a 36-month joint PhD project between two academic institutions, spending at least 12 months at each partner university in a different European country. All projects include an industry co-supervisor from a partner organisation and ESRs have an industry secondment of 4-6 months to gain intersectoral experience. Additional research training is provided via summer schools, scientific conferences, doctoral seminars and practical workshops. Further training in innovation-related skills will be provided through network-wide courses that include technology transfer management and entrepreneurship. Transferrable skills training is delivered locally in graduate schools and by network courses in responsible research and innovation, scientific writing, and research leadership. ESRs will disseminate research outcomes in the scientific sector and will participate in outreach activities to engage targeted public audiences in research. The long-term impact of the EJD will be an accredited, sustainable, inter-institutional doctoral programme that delivers high quality PhD graduates to drive research and innovation to maintain competitiveness in European biotechnology.