

biospain

2014

7th INTERNATIONAL
MEETING ON
BIOTECHNOLOGY

> 24 -26 September, 2014
SANTIAGO DE COMPOSTELA, SPAIN

Scientific Sessions Program

> Organized by:



Universida de Vigo



> Scientific Sessions, September 25th

"BIOIMAGING: NEW TECHNOLOGICAL APPROACHES IN THE FIELD OF IMAGING"
Thursday, September 25th – 9h00-10h30



> Spanish Society for Cell Biology (SEBC)

The session will present advances in the field of imaging in biomedical research, from the study of membrane receptors at the cell level and image analysis applied to the study of autophagy, use of powerful high-throughput zebrafish phenotyping, to using magnetic resonance imaging to elucidate brain changes.

> Speakers:

- > Marian Castro, Associate Professor of Pharmacology, Center for Research in Molecular Medicine and Chronic Diseases, University of Santiago de Compostela (Spain). *"Resonance energy transfer techniques applied to the study of G protein-coupled receptors"*.
- > Blanca Lizarbe, Postdoctoral Scientist, Laboratoire Leenaards-Jeantet d'Imagerie Fonctionnelle et Métabolique, Ecole Polytechnique Fédérale de Lausanne (EPFL) (Switzerland). *"Imaging brain changes during obesity development and appetite regulation"*.
- > Carlos Pardo, Associate Consultant, McKinsey & Company (USA). *"High-throughput imaging and phenotyping of zebrafish larvae"*.
- > Patricia Boya, Research Professor, Biological Research Centre, Spanish National Research (CSIC) (Spain). *"Developing quantitative image analysis for intracellular processes, the case of autophagy"*.

"TRANSLATIONAL PERSPECTIVES IN METABOLIC RESEARCH AND METABOLOMICS"
Thursday, September 25th – 11h00-12h30



> Spanish Society for Biochemistry and Molecular Biology (SEBBM)

Metabolic disorders underlie several very prevalent diseases in both the richest countries and the developing ones. Some studies estimate up to 1,300 million of affected people in the world and 3 million of associated fatalities every year. The causes of the metabolic disorders are complex, including bad nutritional habits.

Research in nutrition and metabolism should provide valuable information to understand the origin and progression of the disorders, as well as to develop healthier life styles and pharmacological targets to prevent, attenuate and cure the related diseases. The emerging metabolomic techniques will assist to these aims by presenting a comprehensive view of the complex balance among food intake, body requirements and genetic background as the ultimate cause of the disorders.

The Spanish Society of Biochemistry and Molecular Biology (SEBBM) has more than 3700 members, active researchers in many fields, including nutritional biochemistry and metabolic regulation, among many others. SEBBM objectives include to stimulate research, to encourage knowledge transfer, and to contribute to the expansion and internationalization of Spanish science.

> Moderator:

- > Enrique J. de la Rosa, Member of the Board of Directors, Spanish Society for Biochemistry and Molecular Biology (SEBBM) (Spain).

> Speakers:

- > Stefan Offermanns, Director, Max Planck Institute for Heart and Lung Research, Department of Pharmacology (Germany). *"Regulation of metabolism and immune functions through metabolite G-protein coupled receptors"*.
- > José M. Mato, General Director, CIC bioGUNE & CIC biomaGUNE (Spain). *"Metabolomics: a tool for the detection, prevention and treatment of complex diseases"*.
- > Rafael Llorach, Associate Scientist, Nutrition & Food Science Department, Pharmacy School, University of Barcelona (Spain). *"Nutrimetabolomic strategies in clinical nutrition research: The food metabolome and dietary exposure biomarkers"*.
- > Carlos Diéguez, Center for Research in Molecular Medicine and Chronic Diseases (CIMUS), University of Santiago de Compostela (Spain). *"New drug targets for obesity"*.

"IMPROVING BIOPROCESSES BY METABOLIC ENGINEERING AND SYNTHETIC BIOLOGY"
Thursday, September 25th - 12h30-14h00



> Spanish Society of Biotechnology (SEBiot)

> Moderator:

- > Juan Lema, Professor, Chemical Engineering Department, University of Santiago de Compostela & Coordinator, Environmental Biotechnology Section, Spanish Society of Biotechnology (SEBiot) (Spain).

> Speakers:

- > Christer Larssonk, Professor, Chalmers University of Technology (Sweden). *"2-butanol production and tolerance in the yeast Saccharomyces cerevisiae"*.
- > María López-Abelairas, Researcher, University Santiago de Compostela (Spain) & Researcher, French Institute of Petroleum (France). *"Challenges in biopolymers production: The role of synthetic biology"*.
- > María Vázquez, Downstream MSAT Manager, Lonza Biologics (Spain). *"Large scale production of biopharmaceuticals: Optimization strategies"*.
- > Pau Ferrer, Associate Professor, Department of Chemical Engineering, Autonomous University of Barcelona (Spain). *"Systems metabolic engineering for recombinant protein production with the yeast Pichia pastoris"*.

"INNOVATION TRENDS IN MICROBIOLOGY DIAGNOSTICS & INFECTIOUS DISEASES"
Thursday, September 25th – 15h00-16h30



> **Spanish Society of Infectious Diseases and Clinical Microbiology (SEIMC)**

> **Moderators:**

- > Germán Bou, Department of Microbiology, A Coruña University Hospital (Spain).
- > Rafael Cantón, Director, Microbiology Department, Ramón y Cajal Institute for Health Research-IRYCIS (Spain).

> **Speakers:**

- > Germán Bou, Department of Microbiology, A Coruña University Hospital (Spain).
- > Rafael Cantón, Microbiology Department, Ramón y Cajal Institute for Health Research-IRYCIS (Spain).
- > Alex Van Belkum, Corporate Vice President R&D Microbiology, Microbiology Unit AND Geraldine Durand, bioMérieux S.A. (France).
- > Carlos Martín, Professor, Department of Microbiology, Preventive Medicine and Public Health, University of Zaragoza (Spain).

"BIOTECHNOLOGY & HUMAN GENOME SEQUENCING: SOCIO-ECONOMIC & HEALTH IMPACT"
Thursday, September 25th – 15h00-16h30



> **Spanish Association of Human Genetics (AEGH)**

> **Moderator:**

- > Member of the Board of Directors, Spanish Association of Human Genetics (Spain).

> **Speakers:**

- > Gert Matthijs, Head of European Projects 3GB-test & Eurogentest, Center for Human Genetics in Leuven, University of Leuven (Belgium) – *to be confirmed*.
- > Juliane Menezes, Postdoctoral Researcher, Spanish National Cancer Research Center (CNIO) (Spain).

"NEW CHALLENGES IN IMMUNOTHERAPY" Thursday, September 25th – 17h00-18h30

> Spanish Immunology Society (SEI)

Components of the Immune system are increasingly being used in human therapy for patients suffering from several pathologies. Immunotherapy is changing our way of facing autoimmune diseases, cancer, etc., but it is a reality and not a promise any longer. The use of monoclonal antibodies, cytokines, dendritic cells or modified T cells is currently giving encouraging results, changing the evolution of many illnesses. The prestigious journal Science has considered Cancer immunotherapy "the breakthrough of the year 2013": This year marks a turning point in cancer, as long-sought efforts to unleash the immune system against tumors are paying off—even if the future remains a question mark.

This session will try to show some of the advances in immunotherapy, but also the new challenges for its near future.

> Moderator:

- > José Ramón Regueiro, President, Spanish Society of Immunology (SEI) & Professor in Immunology, Complutense University (Spain).

> Speakers:

- > Carl June, Professor in Immunotherapy, Pathology and Laboratory Medicine Department, Perelman School of Medicine, University of Pennsylvania (USA). *"Engineering T Cells for cancer"*.
- > Pere Santamaria, Centre Esther Koplowitz (CEK), IDIBAPS-Hospital Clinic of Barcelona & Professor in Microbiology, Immunology & Infectious Diseases, University of Calgary (Spain & Canada). *"Peptide-major histocompatibility complex-based nanomedicines for the treatment of autoimmune diseases"*.
- > Maria Luisa Villar, Head of Immunochemistry Lab., Department of Immunology, University Hospital Ramon y Cajal (Spain). *"Biomarkers for a personalized treatment election in multiple sclerosis"*.
- > África González-Fernández, Director, Biomedical Research Center (CINBIO) & Professor in Immunology, University of Vigo (Spain). *"Lights and shadows in Immunotherapy"*.
- > Dora Pascual-Salcedo, Immunology Unit, La Paz Hospital (Spain). *"The immunogenicity as a tool to optimize TNF-inhibitor drug treatment"*.

"BIOTECHNOLOGY APPLIED TO THE DIAGNOSIS & TREATMENT OF DIGESTIVE DISEASES" Thursday, September 25th – 17h00-18h30

> Spanish Society of Digestive Pathology (SEPD)

- > Promote new technology in the field of study of the pancreas and its complications.
- > Promote the development of technological advances in endoscopic endoluminal surgery.
- > To promote and encourage the study of new technologies and mobile applications in chronic digestive diseases such as Crohn's Disease.

> Moderator:

- > J. Enrique Domínguez-Muñoz, Director, Department of Gastroenterology and Hepatology, University Hospital of Santiago de Compostela & President, Spanish Foundation of Gastroenterology & President, Foundation for Research in Digestive Diseases (Spain).

> Speakers:

- > Augusto Villanueva, Senior Lecturer and Honorary Consultant Hepatologist, Institute of Liver Studies, King's College London (United Kingdom). *"Biomarkers applied to the diagnosis, prognosis and individualization of therapy in patients with liver cell cancer"*.
- > Juan Evaristo Suárez Fernández, Professor of Microbiology, University of Oviedo (Spain). *"Probiotics and prebiotics in the management of digestive and extradigestive diseases: Present and future"*.
- > Jaume Boix Valverde, Endoscopy Unit-Department of Gastroenterology, University Hospital of Badalona "Germans Trias i Pujol" (Spain). *"Biodegradable stents for gastrointestinal stenosis: Present and unmet needs"*.
- > María Luisa Valenzuela de Damas, Doctorate student, University of Granada (Spain). *"New technologies applied to the management of gastrointestinal diseases: The role on inflammatory bowel disease"*.

> Scientific Sessions, September 26th

"VIRUSES AND BIOTECHNOLOGY"
Friday, September 26th – 9h00-10h30



> Spanish Society of Virology (SEV)

Viruses through evolutionary adaptation to their host cells have developed molecular strategies for successful transcription of their genomes and efficient protein expression to complete their life cycle, replication and spread. Their remarkable molecular properties have turned these infectious agents into useful tools for several biotechnology applications. One relies in reovirus ability to build proteic microespheres in the cell which may be decorated by specifically tagged proteins. This system can be exploited for the production of polyantigenic vaccines in microespheres and to optimize therapeutic protein bioavailability. To produce these structures or any other protein with interest in therapeutics, vaccinations or diagnostic, baculoviruses, used as expression vectors, are one of the best available alternatives. Genetic manipulations of the genome of these vectors by introducing regulatory elements acting in cis and trans in combination with different promoters significantly improved the production yields and protein integrity of the recombinant products in insect cells or insect larvae used as biofactories. These improvements reduced drastically some bottlenecks of the baculovirus-based technologies for the production of many products including vaccines based on virus-like particles.

Viruses affecting humans, plants and animals represent a current sanitary threat and a high economic burden. New antiviral drugs are targeting the initial stages of HIV-1 and Ebola viral infections such as the limiting step of virus-receptor binding. Glycofullerenes and carbosilane dendrimers are tridimensional

mannose-like sugars that mimic viruses and are able to compete efficiently with virus binding to specific receptors and subsequent entry and spread. These compounds are effective antivirals that can be used topically as microbicides. Current research in vaccines against viruses affecting livestock resulted in efficient new formulations against foot-and-mouth disease virus. Both antivirals and vaccines provide further insights in the pathogenesis and immune response of these relevant virus infections.

> Moderator:

- > Covadonga Alonso, Board of Directors, Spanish Society of Virology (Spain).

> Speakers:

- > José Martínez Costas, Associate Professor Biochemistry and Molecular Biology, Center for Research in Biological Chemistry and Molecular Material (CIQUS), University of Santiago de Compostela (Spain). *"Viral factories-based biotechnological applications"*.
- > José M. Escibano, Staff Scientist, Dpt. Biotechnology, INIA & Founder and Scientific Advisor, Alternative Gene Expression SL (ALGENEX) (Spain). *"Unleashing the potential of baculovirus expression technologies"*.
- > Zahia Hannas, Head of Cell & Viral Process Development, Merial (France). *"Protective immune responses against foot-and-mouth disease virus by vaccination with virus-like particles"*.
- > Rafael Delgado, Molecular Microbiology Laboratory, Biomedical Research Institute, University Hospital 12 de Octubre (Spain). *"DC-SIGN interactions with enveloped viruses: a model to develop glycodendrimer-based antivirals"*.
- > M^a Angeles Muñoz-Fernández, Laboratory Head Molecular Immunobiology, Hospital General Universitario Gregorio Marañón (Spain). *"Antiviral Mechanism of Polyanionic Carbosilane Dendrimers against HIV-1"*.

"APPLIED FOREST BIOTECHNOLOGY: SOMATIC EMBRYOGENESIS FOR MULTI-VARIETAL FORESTRY, TRANSGENESIS, AND EPIGENETICS"
Friday, September 26th – 9h00-10h30



> Spanish Society of Forest Sciences (SECF)

Somatic embryogenesis (SE) is increasingly considered as the best biotechnological method of plant regeneration and clonal mass propagation of forest species, being the enabling technology for implementing multi-varietal forestry. The main advantage of SE is that selected varieties (clonal tested genotypes) can be deployed in plantations (balancing genetic gain and variability) much more early than when improved material obtained by traditional breeding methods is used. Schemes of plant production by SE are more flexible than those based on seed orchards, allowing them to adapt better to changing environments and market demands. In addition tissues from embryogenic lines are the best target materials for transformation techniques, for both operational and research (functional genomics) applications.

Plants will have to cope with the future predicted conditions of climate change, likely suffering increased biotic and abiotic stresses. Therefore the resilience of the improved plantations will be increasingly considered as one of the main breeding objectives. Selection and propagation of tolerant/resistant

individuals, and production of transgenic plants with increased expression of genes coding for pathogenesis related proteins are tools for this purpose. An emerging field in which SE might play a significant role in the next future is the study of effects and possible applications of transgenerational epigenetic stress memory. This scientific session will deal with these issues.

> Moderator:

- > Mariano Toribio Iglesias, Researcher, IMIDRA & Deputy Coordinator, IUFRO Working Party 2.09.02 & Member of the working group on Forest Genetics, Spanish Society of Forest Sciences (Spain).

> Speakers:

- > Yill-Sung Park, Research Scientist, Forest Biotechnology, Canadian Forest Service, Canadian Wood Fibre Centre, Natural Resources Canada & Coordinator, IUFRO Working Party 2.09.02 (Canada). *"Integration of somatic embryogenesis and genomic selection in multi-varietal forestry"*.
- > Antonio Ballester, Research Professor, CSIC (recently retired) & Secretary, Royal Galician Academy of Sciences AND Elena Corredoira, Researcher, CSIC & Member of Dr Ballester's team, Institute of Agrobiological Research of Galicia-CSIC (Spain).
- > Olatz Garcia-Mendiguren, Ph.D. student at the Dr. Paloma Moncaleán's team, NEIKER - TECNALIA (Spain).
- > Alejandro Solla, Professor, University of Extremadura & Member of the working group on Forest Health, Spanish Society of Forest Sciences (Spain).

"BIOTECHNOLOGY FOR A NEW AGRICULTURE"

Friday, September 26th – 11h00-12h30

Spanish Society of Plant Physiology (SEFV)

Through four presentations by leading researchers, current applications of biotechnology to modern agriculture will be discussed. Diverse but very important issues such as improving crop yields and food quality, the use of plants as biofactories or biofuel production will be exposed.

> Speakers:

- > Paul Christou, Head of the Applied Plant Biotechnology Laboratory & ICREA Research Professor ICREA, Lleida University (Spain). *"The creation of novel metabolic profiles in plants through the combination of multiple transgenic and endogenous pathways"*.
- > Antonio Granell, Plant Molecular and Cellular Biology Institute, UPV-CSIC & Research Professor, CSIC (Spain). *"Solanaceae plants as biofactories of added value products: from small molecules to antibodies"*.
- > Leandro Peña, Principal Researcher, Fundo de Defesa da Citricultura (Fundecitrus) (Brazil). *"Improvement of the orange nutritional properties by biotechnology"*.
- > Ignacio Zarra, Full Professor, Santiago de Compostela University (Spain). *"Engineering of transcription factors for improvement of ligno-cellulosic biofuel production"*.



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