

The 25th SEM Congress (Logroño, Spain, July 7–10, 2015)

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Summary. The 25th Congress of the Spanish Society for Microbiology (SEM) took place on 7–10 July, 2015, at the University of La Rioja, in Logroño. This meeting brought together microbiologists from several prestigious universities and research centers throughout Spain, as well as experts from other countries including the United States, United Kingdom, Portugal, Germany, Mexico and Venezuela. The program included an opening lecture, one invited lecture and a closing lecture, twelve symposia on selected topics, ten sessions of oral presentations, four poster sessions, and three workshops. There were around 230 poster presentations and 55 oral communications. Relevant Spanish and foreign researchers participated at the symposia in order to get a straightforward vision of the new and more successful scientific results. Besides, joint symposia with the Portuguese Society for Microbiology as well as with the Spanish Society for Virology were held. One of the main goals of the meeting was to stimulate the participation of young microbiologists, given them an excellent opportunity to present their more recent results. [*Int Microbiol* 18(3):135-140 (2015)]

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The 25th Congress of the Spanish Society for Microbiology (SEM) took place on 7–10 July, 2015 at the University of La Rioja, in Logroño [<http://www.congresosem2015.unirioja.es>] (Figs. 1 and 2) under my presidency. This was the first SEM biennial Congress presided by a woman. This meeting brought together microbiologists from several prestigious universities and research centers throughout Spain, as well as experts from other countries including the United States, United Kingdom, Portugal, Germany, Mexico and Venezuela.

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The opening ceremony was presided over by José Arnáez Vadillo, Rector of the University of La Rioja; José Luis López de Silanes, President of the Social Council of the University of La Rioja; Antonio Ventosa, President of the Spanish Society for Microbiology (SEM) and Elena González-Fandos, President of the 25th SEM Congress (Fig. 3). The opening lecture, “The Spanish Society for Microbiology. Advances in Microbiology” was delivered by Prof. César Nombela, Rector of the University Menendez Pelayo. Prof. Sandra McLellan, from the University of Wisconsin-Milwaukee (USA) gave the invited lecture, “Metagenomics and microbes present and future” (see article by S. McLellan, in this issue, pp 141–149).

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Fig. 1. The Ebro River, passing through the city of Logroño.

The closing lecture was delivered by Diego Romero Hinojosa, from CSIC-University of Malaga, SEM Prize Jaime Ferrán of this year.

The topics covered by the program included interaction, communication and symbiosis in the microbial world; microbial pathogenesis from the molecular point of view; new methodologies applied to biodeterioration, biodegradation and bioremediation; emerging viral infections; Fungi: model for studying biological and biotechnological processes;

microbial strategies development of biotechnology and environmental interest; environmental stress and biotechnology in photosynthetic microorganisms; the utility of -omics technologies on microbial taxonomy, diversity and adaptive evolution studies; beneficial bacteria in sustainable agriculture; microbiology of aquatic environment; microbial biofilms and food industry; update microbiology in the curriculum of pre-university student. The different sessions of the conference were held at the University of La Rioja (Fig. 4).



Fig. 2. Poster announcing the 25th Congress of the Spanish Society for Microbiology (SEM).



Fig. 3. Opening ceremony of the 25th Congress of the Spanish Society for Microbiology (SEM).

The congress was particularly devoted to the young microbiologists. A workshop on “How to write a research article” was presented by Prof. Ricardo Guerrero (University of Barcelona, and past-president of SEM, 2006–2014). This topic, based on the large experience of Prof. Guerrero as founder and editor-in-chief of the official journal of SEM, *International Microbiology*, was of especial interest for young researchers. Moreover, the SEM gave 12 awards to those young researchers that presented the best oral and poster works; besides that, 15 travel grants were given to young microbiologists.

Interaction, communication and symbiosis in the microbial world

The Congress included the traditional Joint Symposium Portuguese Society for Microbiology (SPM)-Spanish Society for Microbiology (SEM). The topic was “Interaction, communication and symbiosis in the microbial world”, and was chaired by Ricardo Guerrero (University of Barcelona) and Arsénio M. Fialho (Technical Institute, Lisbon). This was an all-women symposium in which researchers from different universities talked about their present research and achievements.

Bacteria live in complex communities. Living organisms interact with their habitats, selectively taking up compounds from their surroundings to meet their particular needs but also excreting metabolic products and thus modifying their environment. It has been suggested that communication and cooperation, both within and among bacterial species, have

produced emergent properties that give such groups a selective advantage. Examples of symbiosis and communication in microbial ecosystems were provided in the talks given by Mercedes Berlanga (University of Barcelona) and Gemma Reguera (Michigan State University, USA).

Biofilms are microbial communities adhered to surfaces, or formed on an air-liquid interface, composed of cells embedded in a self-produced polymeric matrix. Biofilm formation constitutes a smart strategy of bacterial survival in adverse environmental conditions and this is why biofilms are widespread in nature. The role of biofilms as a strategy for microbial survival and virulence was analyzed in the talk given by Joana Azeredo (University of Minho, Portugal). The Symposium ended with the contribution of Luísa Peixe (University of Porto, Portugal) on antimicrobial resistance.

Emerging viral infections

Emerging virus disease are a major threat to human and veterinary health, the majority are viruses originating from an animal host. A Symposium on emerging viral infections, chaired by Juan J. Borrego (University of Málaga) and Albert Bosch (University of Barcelona) was held.

One strategy to better understand and address the contemporary health issues created by the convergence of human, animal, and environmental domains is the concept of “One Health”. The “One Health” concept recognizes that the health of humans is connected to the health of animals and the environment. This approach encourages the collaborative efforts



Fig. 4. Building of the University of La Rioja where the sessions were held.

to attain optimal health. Miguel Ángel Jiménez (Research Center of Animal Health, INIA) presented the one health concept and showed different examples. The most relevant emerging virus were reviewed: Ebola virus (Ana Negredo, Health Institute Carlos III), MERS (Inmaculada Casas, Health Institute Carlos III) and Ranavirus (Alí Alejo Herberg, Research Center for Animal Health, INIA).

New methodologies applied to biodeterioration, biodegradation and bioremediation

A serie of talks examined the new methodologies applied to biodeterioration, biodegradation and bioremediation, chaired by Constantino Ruibal (Complutense University of Madrid). The potential confocal laser and electronic microscopy in bioremediation of environments contaminated with metals was presented by Antonio Solé (Autonomous University of Barcelona). Mohamed Larbi (University of Granada) presented microscopic and spectroscopic studies of microbial interactions with uranium for bioremediation purposes. Pedro M. Martín-Sánchez (BAM Federal Institute for Materials Research and Testing, Berlin) presented two study cases on the contribution of Quantitative PCR Assays to biodeterioration research. The quantitative PCR is a useful and reliable tool for monitoring the microbial communities involved in biodeterioration processes. In addition, such methods allow the early detection of microbial outbreaks improving control procedures. Finally, Concepción Abrusci (Autonomous University of Madrid) presented different monitoring techniques for biodegradation of polymers.

Fungi: Model for studying biological and biotechnological processes

A series of talks examined the role of Fungi as a model for studying biological and biotechnological processes. The following lectures were included in the program: Yeast as

a model study in intracellular transport of proteins: from synthesis of chitin to Nobel Prize (Cesar Roncero, Institute of Functional Genomics and Biology), post-transcriptional regulation and pathogenesis in the fungus rice piriculariosis (Ana Sesma, Technical University of Madrid), Fungi that produce enzymes of industrial interest (María Jesús Martínez, Biological Research Center, Madrid) and *S. cerevisiae* (María Ángeles de la Torre, University of Lleida).

Environmental stress and biotechnology in photosynthetic microorganisms

The program included lectures on environmental stress and biotechnology in photosynthetic microorganisms chaired by Juan Carlos Gutiérrez Fernández (Complutense University of Madrid). The lectures included were: response to stress in microalgae: new biomarkers of cytotoxicity (Angeles Cid Blanco, University of La Coruña), activation of autophagy by abiotic stress in the model alga *Chlamydomonas reinhardtii* (José Luis Crespo González. CSIC-University of Sevilla), using cyanobacteria in environmental monitoring aquatic environments (Francisca Fernández Piñas. Autonomous University of Madrid) and biotechnological applications of microalgae (Miguel García Guerrero, University of Sevilla).

The utility of -omics technologies on microbial taxonomy, diversity and adaptive evolution studies

The Symposium on “The utility of –omics technologies on microbial taxonomy, diversity and adaptive evolution studies” was chaired by Juncal Garmendia (dAB-CSIC) and María José Figueras (University Rovira i Virgili). Genomics contribution to prokaryotic taxonomy was evaluated by David Ruiz Arahal (University of Valencia). The utility of genomics in the case of *Legionella pneumophila* (Fernando González-Candelas,

University of Valencia) and *Haemophilus influenzae* (Joshua Mell, Drexel University, USA) were also evaluated. The theoretical and real potential of -omics, enzyme discovery and human gut as cases of investigation, were presented by Manuel Ferrer (CSIC, Madrid). Evolution of the tuberculosis bacillus was discussed by Iñaki Comas (FISABIO Public Health, Valencia). Metagenomics reveals unknown or known microorganisms not detectable by conventional culture methods. The composition of the media and the incubation culturing conditions may select specific populations and this could be one of the reasons for discrepancies observed between both approaches. Results obtained by classical sequencing PCR or conventional culture methods are essential and needed for understanding and interpreting metagenomic data. M. José Figueras (University Rovira i Virgili) presented results obtained in the case of *Arcobacter* in wastewater. The *Roseobacter* lineage is a key component of marine bacterioplankton. Amongst the interesting capabilities of roseobacters there is the ability to degrade aromatic compounds. The capabilities for aromatic compound catabolism of *Roseobacter* isolates obtained from hydrocarbon-polluted samples by genome and proteome analysis was presented by Balbina Nogales (University of the Balearic Islands). Sandra McLellan (University of Wisconsin-Milwaukee) presented their work on detecting human sewage contamination in urban waters.

Microbial strategies development of biotechnology and environmental interest

The Symposium “Microbial strategies development of biotechnology and environmental interest” was chaired by María Jesús Martínez (CIB-CSIC) and José Antonio Gil (University of León). The following lectures were presented; Genetic manipulation of microorganisms for the production of monoterpenes (Margarita Orejas, IATA-CSIC, Valencia), towards a competitive and fully enzymatic production of biodiesel (Pilar Díaz, University of Barcelona), *Streptomyces* oxidative systems for degradation of emerging contaminants (María Enriqueta Arias, University of Alcalá de Henares), exploring the biotechnological potential of actinomycetes: search for new bioactive compounds (Carlos Olano, University of Oviedo).

Beneficial bacteria in sustainable agriculture

The Symposium “Beneficial bacteria in sustainable agriculture” was chaired by Jesús Murillo Martínez (Public University of Navarra). The following lectures were given: probiotics for plants (Pedro F. Mateos, University of Salamanca). molecular

biofertilizers for sustainable agriculture (Manuel Megias Guijo, University of Sevilla), endophytes: technological potential (Jesús Mercado Blanco, IAS-CSIC Córdoba), reflections of a Gram-positive bacteria on their potential as biocontrol of plant diseases (Diego F. Romero Hinojosa, CSIC- University of Málaga).

Microbial biofilms and food industry

It is well documented that biofilm has become a problem in food industries as it renders its inhabitants resistant to antimicrobial agents and cleaning. A symposium on Biofilms and Food Industry was celebrated. A first talk presented biofilms as a way of living in society, the ability of *Staphylococcus aureus* to form biofilms was also discussed (Jaione Valle, Institute of Agrobiotechnology of Navarra). Many foodborne outbreaks have been found to be associated with biofilm. The negatives consequences of biofilms in the Food Industry were evaluated by Belén Orgaz (Complutense University of Madrid). However, positive effects have been observed in fermented foods (Rufino Jiménez, Institute of Fats, CSIC). Advances in detection, control and elimination of biofilms were discussed by J. Juan Rodríguez (Autonomous University of Barcelona).

Microbiology of aquatic environment

A symposium on “Microbiology of aquatic environment” chaired by Manuel Lemos (Univ. of Santiago de Compostela) was held. The following lectures were given: Effect of salinity on microbial populations of microbial mats of the Ebro delta (Isabel Esteve Martínez, Autonomous Univ. of Barcelona), Populations of wild fish: Are they responsible or sufferers of viral diseases in aquaculture? (Carlos Pereira Dopazo, Univ. of Santiago de Compostela), Diversity of *Aeromonas* in the aquatic environment and its implications for human and animal health (María José Figueras, Univ. Rovira i Virgili), and Marine microbial diversity on a global scale: where have we come (Silvia González Acinas, ICM-CSIC, Barcelona).

Updating microbiology in the curriculum of pre-university students

In order to promote microbiology teaching at different education levels it is relevant to evaluate the current situation. First, microbiology contents in primary and secondary

schools were evaluated (Cristina Valles and Bárbara Herrera). Afterwards, proposals for improvement and encourage students were discussed (Antonio Guillén and Silvia Lope).

Microbial resources research infrastructure (MIRRI)

The aim of the Microbial Resources Research Infrastructure (MIRRI) [www.mirri.org] is to build a pan-European distributed research infrastructure that provides facilitated access to high quality microorganisms, their derivatives and associated data for research, development and application. The MIRRI connects resource holders with researchers and policy makers to deliver the resources and services more effectively and efficiently to meet the needs of innovation in biotechnology. Currently, more than 40 research centers

and public culture collections from 19 countries throughout Europe collaborate to establish MIRRI as an European Research Infrastructure Consortium (ERIC) under EU law. The workshop was presented by Rosa Aznar (CECT-University of Valencia).

In summary, the Spanish Society for Microbiology held a high quality and successful meeting, complemented by social activities such as a visit to a cellar, and a guided tour to historical places in Logroño. The closing dinner was celebrated at a historic cellar in Logroño. Newspapers, radio and television showed a great interest in the Conference. Newspapers included eight comments on the Congress, seven interviews were included in radio and six news in television.