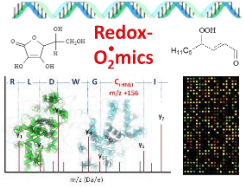


SFRR-E Summer School 2018:

FEBS Advanced Lecture Course on Redox-omics Technologies and their Application in Health and Disease Spetses, Greece, 17th – 23rd September, 2018

Organizing Committee: Prof. Corinne Spickett, Dr Niki Chondrogianni, Prof. Daniela Caporossi and Prof. Andrew Pitt. Course Administrator: Debbie Toomeoks

The SFRR-Europe Summer School 2018 (17th – 23rd September) was held in Spetses, Greece, as a "FEBS Advanced Lecture Course on Redox-omics Technologies and their Application in Health and Disease", co-organized by Corinne Spickett (Birmingham, UK) and Niki Chondrogianni (Athens, Greece). The course provided young scientists with advances in modern omics technologies that enable identification of oxidative changes to biomolecules and their roles in functional redox biology.

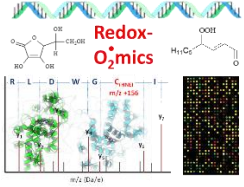
Topics covered in lectures, poster sessions, tutorials, and discussions included: the principles of redox biology; genomics and transcriptomics; introduction to LC-MS technologies; metabolomics; lipidomics & ox-lipidomics; proteomics and lipoxidation. There was also a session on bioinformatics and the principles of equality & diversity in science, as well as an opportunity to discuss publishing with Tilman Grune and careers in science with Mike Davies and Andrew Pitt.

The course was aimed at young scientists from different areas of basic biological sciences and medicine, primarily post-doctoral level scientists within 5 years after completion of their Ph.D. as well as Ph.D. students in the end phase of their Ph.D. project. 57 students (including 3 post-doctoral scientists) from 16 countries (including one from Uruguay) had the opportunity to interact with 20 senior scientists in the field and to present and discuss their results in poster sessions and oral presentations.

Location	No. of particpants	Location	No. of particpants
Belgium	2	Italy	4
Croatia	1	Poland	1
Czech Republic	1	Portugal	3
Denmark	3	Serbia	3
Estonia	1	Spain	4
Germany	15	Turkey	2
Greece	3	United Kingdom	8
Hungary	5	Uruguay	1

The FEBS Advanced Lecture Course was co-sponsored by the Society for Free Radical Research, EuPA, IUBMB and MASSTRPLAN (funded by Marie Sklodowska-Curie EU Framework for Research and Innovation Horizon 2020, under Grant Agreement No. 675132).

The scientific programme started with an initial introduction to omics and redox biology, to ensure that all of the participants had a common understanding of the basics in the fields. The course was then structured to provide an introduction to each of the omics areas (genomics, proteomics, metabolomics and lipidomics) to acquaint the ECRs with the basic technologies, strategies and outputs, followed by a more detailed discussion of the benefits and challenges of applying the technology to redox biology, including experimental design and data analysis. Each section then finished with presentations on the application of the methodologies in cutting edge biological research to demonstrate the value of the different technologies.



Following a welcome address by Andrew Pitt on “omics”, Professor Helmut Sies gave the opening lecture entitled “Redox biology and signaling: historical perspectives to current status” on Monday (September 17th.

Each day then started out with a presentation on one of the scientific societies in Europe that foster research in the field of this advanced lecture course (FEBS, SFRR-E, EuPA, and MASSTRPLAN) as well as a talk by Tilman Grune on Redox Biology. The programme then had lectures, outlining the basics and most recent developments in different aspects of redox-omics and their application in health and disease and a different “meet the experts” session each day.

Before lunch and the poster sessions, the young scientists gave a 3 minute “flash presentation” on their research to promote their poster. 2 further lectures and poster viewing sessions took place each evening before dinner.

On Tuesday 18th September, the sessions were mainly focussed on genomics and transcriptomics with lectures by Professor Claude Thermes from Institut de Biologie Intégrative de la Cellule in France and Dr Juan Sandoval Director of Epigenomics at Health Research Institute La fe in Spain.

Wednesday started with an overview of SFRR-E by Professor Michael Davies and was followed by an introduction to metabolomics and its application to biological samples by Dr Karl Burgess from Glasgow University. The afternoon sessions focussed on lipidomics and ox-lipidomics with presentations from Dr Dominik Schwudke from Leibniz-Center for Medicine and Biosciences in Germany and Professor Corinne Spickett from Aston University, UK

The lipidomics sessions continued on Thursday morning with a lecture on the clinical applications of redox lipidomics by Professor Hulya Bayir from the University of Pittsburgh, USA. Thursday afternoon introduced the delegates to the principles of proteomics followed by a talk on the analysis and effects of protein cysteine oxidation by Dr Jennifer van Eyk from Cedars-Sinai Medical Center in Los Angeles.

Friday was a shorter day due to the cultural excursion but included presentations on the analysis of oxPTMs in muscle proteins by Dr Brian McDonagh (National University of Ireland Galway) and studies of protein sulfhydration in disease by Dr Viviana (Greco Institute of Biochemistry and Clinical Biochemistry, Catholic University of Sacred Heart and EuPA).

The week finished with lectures on data integration & signature aided functional interpretation from Dr Aristotelis Chatziioannou and combined omics approaches in the study of human aging by Dr Niki Chondrogianni, both from the National Hellenic Research Foundation in Athens, Greece.

15 students were supported by a bursary from SFRR-E, 11 by FEBS, 4 by EuPA and 16 by the MASSTRPLAN H2020 project. 3 Young Investigator Awards were granted by SFRR-E, as well as other poster prizes sponsored by commercial organizations.

In summary, this advanced lecture course covered topics of current interest and importance for scientists in the field of biochemistry and molecular biology, as well as related fields, such as technology development and medicine. It gave young scientists the opportunity to meet with some of the most prominent senior scientists in the field of redox biology and redox-omics.