The 10th meeting in the series 'Bacterial Electron Transfer Processes and their Regulation' was held in Alicante, Spain on 6-8th March 2024. This meeting, organized by the European Federation of Biotechnology, brought together an international group of researchers who share interests in bacterial electron transfer. In 2024, the meeting presented the latest breakthroughs in microbial respiration and its regulation with a particular focus on how respiration has been identified in a number of studies at the frontiers of the field. Sessions were organized around different topics, including bioenergetics, metabolism, stress adaptation, respiration of human microbiota, antibiotic resistance, host-pathogens relationship and cell biology aspects. The conference provided opportunities for interaction between established leaders in the field and early career scientists.

The topics covered included:

- Bioenergetics
- Metabolism
- Stress adaptation
- Respiration of human microbiota
- Antibiotic resistance
- Host-pathogens relationship and cell biology aspects.

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Scientific Programme

Wednesday, 6 March 2024

13:00 – 14:00	*Registration*
14:00 -14:15	Opening and welcome **Rosa Martinez-Espinosa**, University of Alicante, Spain

Opening session

Chair: **David Richardson**, University of East Anglia, United Kingdom

14:15 – 15:00	**Opening lecture:** Extracellular electron transfer: mechanisms and opportunities **Thomas Clarke**, University of East Anglia, United Kingdom

Session 1: Extracellular and direct interspecies electron transfer

15:00 – 15:20	Interaction of living cable bacteria with carbon electrodes in bioelectrochemical systems **Kartik Aiyer**, Aarhus University, Denmark
15:20 – 15:50	*Coffee break*
15:50 – 16:10	New insights into the mechanism of centimetre-scale electron transport in cable **Filip Meysman**, University of Antwerp, Belgium
16:10 – 16:30	Evolution, distribution and engineering extracellular electron transfer in bacteria **Jeffrey Gralnick**, University of Minnesota, USA
16:30 – 16:50	Periplasmic electron flux is coupled to proton translocation from the cytoplasm onto an extracellular halogenated electron acceptor in *Dehalococcoides mccartyi* **Lorenz Adrian**, Helmholtz Centre for Environmental Research-UFZ, Germany
16:50 – 17:10	Microbial heme-tethered redox strings - a new class of cytochromes revealed by PgcA from *Geobacter sulfurreducens* **Leonor Morgado**, UCIBIO, i4HB-Institute for Health and Bioeconomy, Portugal
17:10 – 17:30	Conductive cytoplasm membrane nanotubes in *Lysinibacillus varians* GY32 **Yonggang Yang**, Foshan University, China
17:30 – 17:50	Characterization of electron transfer chains in *Geobacter sulfurreducens* **Américo G. Duarte**, Universidade NOVA de Lisboa, Portugal
17:50 – 18:10	Understanding the biochemical mechanism of an autoproteolytic delivery pathway for extracellular redox enzymes **Benjamin Nash**, University East Anglia, United Kingdom
18:10 – 18:25	Flash poster presentations
18:25 – 22:00	*Dinner and poster exhibition*

Thursday, 7 March 2024

Session 2: Electron transfer processes in biogeochemical cycles (I)

9:00 – 9:20	Electron bifurcating complexes in energy metabolism and aromatic compound degradation in *Geobacter sp* **Matthias Boll**, Albert Ludwig University of Freiburg, Germany
9:20 – 9:40	Dual control of the *Bradyrhizobium diazoefficiens* RegSR regulatory system on norCBQD gene expression in response to oxygen **María Jesús Delgado**, CSIC, Spain
9:40 – 10:00	The amazing microbiology of the biogeochemical chlorine cycle **John Coates**, University of California, Berkeley, USA
10:00 – 10:20	Interpreting the MopB molybdoenzyme superfamily in the genomic era **Daan Speth**, University of Vienna, Austria
10:20 – 10:40	The mosaicity of flavodiiron proteins: the role of the multiple domains in the intramolecular electron transfer and enzymatic activity **Filipe Folgosa**, ITQB-Universidade Nova de Lisboa, Portugal
10:40 – 10:55	Flash poster presentations
10:55 – 11:30	*Coffee break*
11:30 – 11:50	Is your favourite sulfate reducer capable of sulfide oxidation? **Lea Emile Plum-Jensen**, Aarhus University, Denmark
11:50 – 12:10	Electron competition between reduction pathways in denitrifying bacteria carrying N2O reductase clade II **Alicia Caro-Pascual,** Norwegian University of Life Sciences, Norway
12:10 – 12:30	Architecture of the NADH: ferredoxin oxidoreductase RNF1 from *Azotobacter vinelandii* that drives biological nitrogen fixation **Lin Zhang**, Albert-Ludwigs-Universität Freiburg, Germany
12:30 – 13:30	*Lunch and poster exhibition*

Thursday, 7 March 2024

Session 3: Electron transfer processes in biogeochemical cycles (II)

13:30 – 13:50	*Streptomyces coelicolor* spore-specific nitrate reductase 1 depends on the oxygen-respiring bcc-aa$_3$-supercomplex for its activity **Gary Sawers**, Martin-Luther University Halle-Wittenberg, Germany
13:50 – 14:10	Molecular basis for the oxygen tolerance of the *Desulfovibrio vulgaris* FdhAB formate dehydrogenase **Inês Cardoso Pereira**, ITQB NOVA, Portugal
14:10 – 14:30	Draw me an oxidoreductase that reacts with menaquinones: the case of the formate dehydrogenase ForCE from *Bacillus subtilis* **Axel Magalon**, Institut de Microbiologie de la Méditerrannée, France
14:30 – 14:50	Architecture of bacterial electron transport chains terminated by clade II nitrous oxide reductases **Jörg Simon**, TU Darmstadt, Germany
14:50 – 15:10	Metalloenzymes from Pathogenic Bacteria **Sofia Pauleta**, Nova University Lisbon, Portugal
15:10 – 15:30	Sulfate-reducing prokaryotes induced corrosion: Electron transfer from element iron to **Jizhou Duan**, Institute of Oceanology, Chinese Acadamy of Sciences, China
15:30 – 16:00	*Coffee break*

Session 4: Handling stress and reactive oxygen and nitrogen species (I)

16:00 – 16:20	sNOR does not function as nitric oxide reductase in ammonia-oxidizing bacteria **Petra Pjevac**, University of Vienna, Austria
16:20 – 16:40	Transmembrane signalling by fumarate sensor kinase DcuS: a piston-driven cytoplasmic PASC hinge **Gottfried Unden**, Johannes Gutenberg University Mainz, Germany
16:40 – 17:00	Multiple roles for the electron transport chains of the enteric pathogen *Campylobacter jejuni* in respiration and detoxification **David Kelly**, University of Sheffield, United Kingdom
17:00 – 17:20	RsuR, from the alpha-proteobacterium *Zymomonas mobilis*, regulates Fe-S cluster biogenesis **Isabel Askenasy**, University of Wisconsin-Madison, USA
17:20 – 17:40	No oxygen, no stress? Exploring oxidative stress in anaerobic environments **Benjamin Ezraty**, Institut de Microbiologie de la Méditerranée, France
17:40 – 18:00	Anaerobic biosynthesis of ubiquinone and O_2-independent hydroxylation **Rodrigo Arias Cartin**, Institut Pasteur, Université Paris-Cité, France

Thursday, 7 March 2024

18:00 – 18:20 The role of AAA-ATPase RavA-ViaA complex in respirator chains
Frédéric Barras, Institut Pasteur, France

18:20 – 19:30 Poster exhibition

20:00 – 22:30 Gala dinner and networking evening

Friday, 8 March 2024

Session 5: Dehydrogenases, oxidases and quinones

9:00 – 9:20 Energy coupling in *Escherichia coli* complex I
Luca Mérono, Albert-Ludwigs-University, Germany

9:20 – 9:40 Function of the isolated CIV from the obligate respiratory supercomplex (CIII2CIV2SOD2) from *Mycobacterium smegmatis*
Jóhanna Vilhjálmsdóttir, Stockholm University, Sweden

9:40 – 10:00 Structure, cofactor composition and mechanism of electron and Na^+ transport of the Rnf complex from *Acetobacterium woodii*
Jennifer Roth, Goethe-Universität Frankfurt, Germany

10:00 – 10:20 Diversity of quinones in *Pseudomonadota*: focus on ubiquinone biosynthesis and physiology of under anaerobic conditions
Fabien Pierrel, CNRS-Université Grenoble Alpes, France

10:20 – 10:40 Cytochrome c-dependent nitric oxide reductase is activated by a pair of chaperone proteins
Sofia Appelgren, Stockholm University, Sweden

10:40 – 11:00 Characterization and comparison of the oxidoreductase activity of cytochrome bd-I and bd-II oxidases from *Mycobacterium smegmatis*
Mateusz Janczak, Stockholm University, Sweden

11:00 – 11:30 Coffee break

Session 6: Handling stress and reactive oxygen and nitrogen species (II)

11:30 – 11:50 Transcription circuits that respond to electron transfer stress
Timothy Donohue, University of Wisconsin-Madison, USA

11:50 – 12:10 L-arginine sensing reprograms the energy metabolism of *P. putida*
Simone Angeli, Sapienza University of Rome, Italy

12:10 – 12:30 Interactions between G-quadruplex DNA and hemin structures induce staphylococcal biofilm tolerance to hemin toxicity and electroactivity
Obinna Ajnuwa, Aarhus University, Denmark

Closing session

Chair: **Jeff Cole**, University of Birmingham, United Kingdom

12:30 – 13:15	**Closing lecture:** Dawn is breaking: electron transfer and its regulation during dissimilatory sulfur oxidation **Christiane Dahl**, University of Bonn, Germany
13:15 – 13:30	Closing words **Rosa María Martínez-Espinosa**, University of Alicante, Spain