

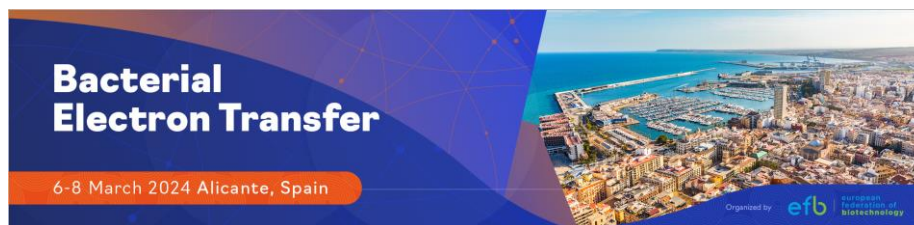
The 10th meeting in the series 'Bacterial Electron Transfer Processes and their Regulation' was held in Alicante, Spain on 6-8th March 2024. This meeting, organized by the European Federation of Biotechnology, brought together an international group of researchers who share interests in bacterial electron 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.

Thank you to our sponsor





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

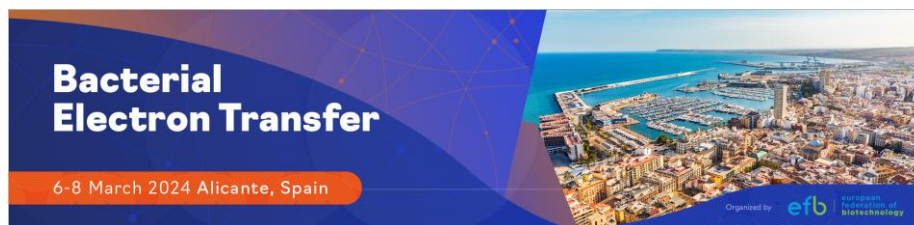
17:10 – 17:30 Conductive cytoplasm membrane nanotubes in *Lysinibacillus varians* GY32
Yonggang Yang, Foshan University, China

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 autoprolytic delivery pathway for extracellular redox enzymes
Benjamin Nash, University East Anglia, United Kingdom

18:10 – 18:25 Flash poster presentations

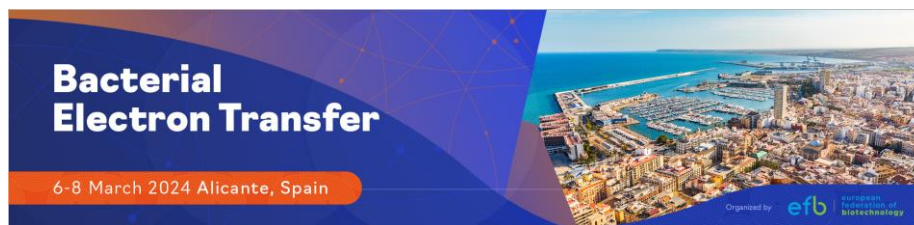
18:25 – 22:00 *Dinner and poster exhibition*



Thursday, 7 March 2024

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

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|----------------------|--|
| 9:00 – 9:20 | Electron bifurcating complexes in energy metabolism and aromatic compound degradation in <i>Geobacter sp</i>
Matthias Boll , Albert Ludwig University of Freiburg, Germany |
| 9:20 – 9:40 | Dual control of the <i>Bradyrhizobium diazoefficiens</i> 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 |
| <i>10:55 – 11:30</i> | <i>Coffee break</i> |
| 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 <i>Azotobacter vinelandii</i> that drives biological nitrogen fixation
Lin Zhang , Albert-Ludwigs-Universität Freiburg, Germany |
| <i>12:30 – 13:30</i> | <i>Lunch and poster exhibition</i> |



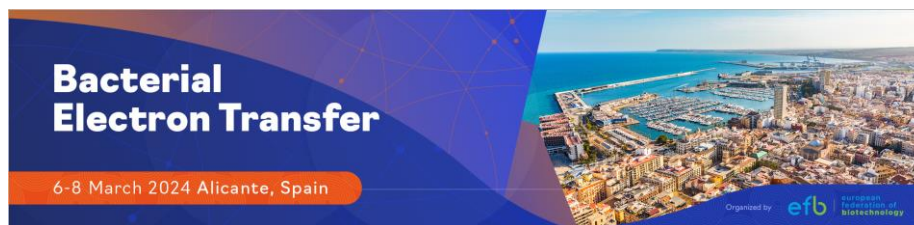
Thursday, 7 March 2024

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-aa₃-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 Méditerranée, 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 Academy 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 O₂-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