



# BACTERIAL ELECTRON TRANSFER PROCESSES & THEIR REGULATION

11-14 March 2018 | Saint-Tropez, France

## PROGRAMME

### Sunday, 11<sup>th</sup> of March 2018

13:00 *Bus leaves from Nice airport and arrival at Saint Tropez*

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15:00 - 15:45 *Registration opening*

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15:45 - 16:00 **Organisers' welcome address**

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16:00 - 16:50 Opening lecture: title to be communicated

**Patricia Kiley** (University of Wisconsin, USA)

### Session I: Genetic regulation

16:50 - 17:10 Complexation of sensor kinase DcuS of *E. coli* by the transporters DctA, DcuB and DauA: physiological role of free and complexed DcuS in sensing

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**Gottfried Uden** (University of Mainz, Germany)

17:10 - 17:25 The non-coding RNA RyhB controls aminoglycosides resistance by inhibiting respiratory complexes during iron starvation

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**Sylvia Chareyre** (Aix Marseille Univ, CNRS, France)

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17:25 - 17:45 *Coffee Break*



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**Session II: Stress adaptation**

**Chair: Ligia Saraiva**

17:45 - 17:50	<i>Introduction</i>
17:50 - 18:15	Bacterial cytochrome <i>bd</i> , a multifunctional respiratory oxidase <b>Alessandro Giuffrè</b> (CNR Institute of Molecular Biology and Pathology, Italy)
18:15 - 18:35	Bacterial peroxidases from pathogenic bacteria <b>Sofia Pauleta</b> (UCIBIO, Portugal)
18:35 - 18:50	Hydrogen-dependent carbon dioxide reduction by <i>Escherichia coli</i> <b>Magali Roger</b> (University of Dundee, Scotland)
18:50 - 19:05	Lifestyle change of an anaerobic sulfate reducing bacterium by experimental evolution: from sulfate to oxygen respiratory growth <b>Marine Schoeffler</b> (Aix Marseille Univ, CNRS, France)
19:05 - 19:20	<b>Flash presentations</b>
20:00 - 21:00	<i>Dinner</i>
21:00	<i>Poster and beer/wine session</i>



# BACTERIAL ELECTRON TRANSFER PROCESSES & THEIR REGULATION

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**Monday, 12<sup>th</sup> of March 2018**

**Session III: Structure/function**

**Chair: Manuela Pereira**

09:00 - 09:05	<i>Introduction</i>
09:05 - 09:30	The multifaceted roles of Fe/S clusters in respiratory complex I <b>Friedrich Thorsten</b> (Albert-Ludwigs-Universität, Germany)
09:30 - 09:50	Flavin-based electron bifurcation in anaerobic bacteria and Archaea. <b>Wolfgang Buckel</b> (Philipps-Universität, Germany)
09:50 - 10:10	Turning a [NiFeSe] hydrogenase into a standard [NiFe] enzyme <b>Ines Cardoso Pereira</b> (Universidade Nova de Lisboa, Portugal)
10:10 - 10:30	<i>Coffee Break</i>
10:30 - 10:45	Electron transfer in the dissimilatory sulfate reduction <b>Americo Duarte</b> (Universidade Nova de Lisboa, Portugal)
10:45 - 11:00	Energy conservation by cytoplasmic proton uptake in qNOR from <i>Neisseria meningitidis</i> <b>Pia Ädelroth</b> (Stockholm University, Sweden)
11:00 - 11:15	Study of the alternative arsenite oxidase: when thermodynamics clarifies phylogeny <b>Barbara Schoepp-Cothenet</b> (Aix Marseille Univ, CNRS, France)
11:15 - 11:30	Quinone-independent, solely protein-based microbial respiration with halogenated aromatics <b>Adrian Lorenz</b> (Helmholtz Centre for Environmental Research, Germany)



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## Session III: Structure/function

11:30 - 11:45 Deciphering cupredoxins involvement in the iron respiratory chain of *Acidithiobacillus ferrooxidans*

**Marianne Ilbert** (Aix Marseille Univ, CNRS, France)

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12:00 - 13:00 *Lunch*

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13:00 - 17:30 *Boat excursion Saint Tropez*

## Session IV: Biotechnological aspects

**Chair: John Coates**

17:30 - 17:35 *Introduction*

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17:35 - 18:00 A new role for an old cofactor: lipoic acid in prokaryotic sulfur oxidation

**Christiane Dahl** (Universität Bonn, Germany)

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18:00 - 18:25 Plug adapters for proteins: activating iron-sulfur enzymes for biosynthesis and Biotechnology

**Greg Bokinsky** (TU Delft, Netherlands)

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18:25 - 18:45 Synthesis and anti-oxidant function of bacterial furan-containing fatty acids

**Timothy Donohue** (University of Wisconsin-Madison, USA)

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18:45 - 19:00 Respiration as key process during the formation of silver nanoparticles catalyzed by *Geobacter sulfurreducens*

**Michael Fueg** (University of Bern, Switzerland)



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## Session IV: Biotechnological aspects

19:00 - 19:15      Unveiling the molecular bases for electron transfer performed by gram-positive bacteria at the electrode-microbe interface in bioelectrochemical systems  
**Catarina Paquete** (Universidade NOVA de Lisboa, Portugal)

## Session V: Antimicrobials

**Chair: Benjamin Ezraty**

19:15 - 19:20      *Introduction*

19:20 - 19:45      *Staphylococcus aureus*: survival strategies of a human Pathogen  
**Ligia Saraiva** (Instituto de Tecnologia Química e Biológica, Portugal)

19:45 - 20:00      What use are co-releasing molecules? Respiratory inhibitors or antimicrobial agents?  
**Hannah Southam** (The University of Sheffield, UK)

20:00 - 20:15      **Flash presentations**

20:15 - 21:15      *Dinner*

21:15              *Poster and beer/wine session*



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Tuesday, 13<sup>th</sup> of March 2018

## Session VI: Respiratory metabolism (*Part I*)

Chair: Ines Cardoso Pereira

09:00 - 09:05	<i>Introduction</i>
09:05 - 09:30	The power of biology to fuel the future: microbially mediated Electromagnetic to chemical energy transformations <b>John Coates</b> (University of California, USA)
09:30 - 09:55	Exploring bacterial respiratory chains <b>Manuela Pereira</b> (Universidade Nova de Lisboa, Portugal)
09:55 - 10:20	Respiratory nitrate reduction in spores of <i>Streptomyces coelicolor</i> is dependent on the cytochrome <i>bc1</i> complex <b>Gary Sawers</b> (Martin-Luther University, Germany)
10:20 - 10:45	<i>Coffee Break</i>
10:45 - 11:10	The flavin, a redox cofactor for all seasons <b>Wolfgang Nitschke</b> (Aix Marseille Univ, CNRS, France)
11:10 - 11:30	Energy conserving ETF: methylmenaquinone oxidoreductase: the missing energetic coupling during syntrophic biogas formation from fatty acids <b>Matthias Boll</b> (Universität Freiburg, Germany)
11:30 - 11:50	Respiratory processes in haloarchaea <b>Rosa Martinez-Espinosa</b> (University of Alicante, Spain)
11:50 - 12:05	New insights in the formate dehydrogenases family: lessons from <i>Bacillus subtilis</i> <b>Rodrigo Arias-Cartin</b> (Aix Marseille Univ, CNRS, France)
12:05 - 12:20	Functional and biochemical characterization of the electron bifurcating FeFe Hnd hydrogenase from the sulfate reducing bacterium <i>Desulfovibrio fructosovorans</i> <b>Myriam Brugna</b> (Aix Marseille Univ, CNRS, France)
12-20 - 14:00	<i>Lunch</i>



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## Session VII: Maturation

Chair: Thorsten Friedrich

- 14:00 - 14:05     *Introduction*
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- 14:05 - 15:30     The heme chaperone HemW inserts heme into the respiratory nitrate reductase NarGHI  
**Dieter Jahn** (University Braunschweig, Germany,)
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- 14:30 - 14:55     Biogenesis of cytochrome *c* complexes: cofactors, subunits, complexes and supercomplexes  
**Bahia Khalfaoui-Hassani** (University of Pau, France)
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- 14:55 - 15:15     The ErpA/NfuA complex builds an oxidative resistant Fe-S cluster delivery pathway  
**Béatrice Py** (Aix Marseille Univ, CNRS, France)
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- 15:15 - 15:30     Copper and heme *a* insertion chaperones involved in the assembly of the cytochrome *bc1-aa3* supercomplex of Actinobacteria  
**Cédric Davoudi** (Biotechnology, Institute of Bio- and Geosciences, Germany)
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- 15:30 - 15:45     Evidence of a Fe-S carrier activity for an unknown function protein of the *Desulfovibrio* ORP complex  
**Corinne Aubert** (Aix Marseille Univ, CNRS, France)



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## Session VIII Host pathogen interaction

Chair: Jeff Cole

- 15:45 - 15:50 *Introduction*
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- 15:50 - 16:15 Function, assembly and regulation of the electron transport chains of the microaerophilic food-borne pathogen *Campylobacter jejuni*  
**David Kelly** (The University of Sheffield, UK)
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- 16:15 - 16:40 Respiration-dependent programmed cell lysis drives biofilm formation in *Staphylococcus aureus*.  
**Jeff Boyd** (Rutgers University, USA)
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- 16:40 - 17:00 *Coffee break*
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- 17:00 - 17:25 Precision editing of the gut microbiota  
**Sebastian Winter** (UT Southwestern Medical Center, USA)
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- 17:25 - 17:45 Oxygen depletion induced by *Shigella* is essential for infection  
**Benoit Marteyn** (Institut Pasteur, France)

## Session IX Cell biology of respiration

Chair: Tim Donohue

- 17:45 - 17:50 *Introduction*
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- 17:50 - 18:15 Localised vs delocalised organisation of bacterial electron transport chains  
**Conrad Mullineaux** (Queen Mary University of London, U.K.)
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- 18:15 - 18:35 The how and why of cellular organization of electron transport chains in bacteria  
**Axel Magalon** (Aix-Marseille Univ, CNRS, France)
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- 18:35 - 20:00 *Time Discussion & Poster*
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- 20:00 - 21:00 *Gala dinner*
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- 21:00 *Farewell party*





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**Wednesday, 14<sup>th</sup> of March 2018**

## Session X: Respiratory metabolism (*Part II*)

Chair: Rosa Martinez Espinosa

09:30 - 09:35	<i>Introduction</i>
09:35 - 10:00	Composition and function of electron transport proteins involved in nitrous oxide respiration <b>Jörg Simon</b> (Technische Universität Darmstadt, Germany)
10:00 - 10:25	UbiJ chaperones isoprenoid lipids to a soluble multiprotein complex that synthesizes ubiquinone <b>Fabien Pierrel</b> (Univ. Grenoble Alpes-CNRS, France)
10:25 - 10:40	Two dedicated class C radical SAM methyltransferases synthesize the low-potential redox mediators 8-methylmenaquinone and 7,8-dimethylmenaquinone <b>Sascha Hein</b> (Technische Universität Darmstadt, Germany)
10:40 - 11:00	<b>Coffee break</b>

## Closing lecture

Chair: Axel Magalon

11:00 - 11:05	<i>Introduction</i>
11:05 - 11:50	Using the model green alga <i>Chlamydomonas reinhardtii</i> to discover novel proteins important for photosynthetic function <b>Arthur Grossman</b> (University of Stanford, USA)
11:50 - 12:15	<i>Closure of the meeting</i>
12:15 - 13:30	<i>Lunch</i>
13:30	<i>Bus leaves to Nice Airport</i>