



SPP1710 CONFERENCE
"THIOL-BASED SWITCHES AND REDOX-REGULATION
- FROM MICROBES TO MEN"
SANT FELIU, 15.-20.SEPTEMBER 2019



CONFERENCE PROGRAMME

Sunday - 15 September 2019

- 14:00-18:30 Arrival and registration
- 18:30-20:45 Dinner
- 20:45-21:00 Welcome by the organizer (Haike Antelmann)
- 21:00-21:45 Keynote lecture: Ruma Banerjee "Signaling through Hydrogen Sulfide"

Monday - 16 September 2019

Session 1: Tools in redox biology to monitor redox changes (Chair: Thomas Dickmeis)

- 09:00-09:25 Vsevolod V. Belousov "New tools for redox engineering and imaging"
- 09:25-09:50 Jing Yang "Quantitative reactivity profiling of protein thiols and persulfides"
- 09:50-10:15 Christine Winterbourn "Ability of CO₂/Bicarbonate to modulate reactions of H₂O₂ with regulatory thiol proteins"
- 10:15-10:30 Vamsi Mootha "New genetic tools for causal metabolism"
- 10:30-10:45 Valeriy Pak "Hyper7: ultrasensitive H₂O₂ biosensor"
- 10:45-11:00 Alexander Kostuyk "A novel genetically encoded fluorescent biosensor for visualization of (pseudo)hypohalous acids and their derivatives"
- 11:00-11:30 Coffee break
- 11:30-11:55 Kate Carroll "Chemical proteomics reveals new targets of cysteine sulfinic acid reductase"
- 11:55-12:20 Joris Messens "Cysteine S-sulfenylation in *Arabidopsis* uncovers redox sensitive sites"
- 12:20-12:35 Olga Lyublinskaya "Measuring intracellular concentration of H₂O₂ with the genetically encoded H₂O₂ biosensor HyPer"
- 12:35-12:50 Oliver Thorn-Seshold "Novel chemical probes for studying redox biology based on thiol-disulfide enzymatic activity"
- 12:50-13:05 Sophie Rahuel-Clermont "Dynamics of a determinant conformational transition in peroxiredoxin sulfinylation mechanism"
- 13:05-15:00 Lunch

Session 2: Redox regulation in microbes and infections (Chair: Luise Krauth-Siegel)

- 15:00-15:25 Jean-Francois Collet "Redox-regulated stress sensing in the bacterial envelope"
- 15:25-15:50 Lars E.P. Dietrich "The interplay of metabolism and structure in microbial biofilms"
- 15:50-16:15 Haike Antelmann "Thiol-based redox signalling in the major pathogen *Staphylococcus aureus*"
- 16:15-16:30 Guillaume Petit "Targeting the disulfide bond forming proteins of the pathogen *Burkholderia pseudomallei* to tackle its virulence"
- 16:30-16:45 Mehmet Berkmen "Genetic selections for the discovery of new reductases and oxidases of methionine"
- 16:45-17:15 Coffee break
- 17:15-17:40 Katja Becker "Antioxidant defense and redox regulation in malaria parasites - an update on implications for drug discovery"
- 17:40-17:55 Marta Bogacz "Highlighting the unknown thiol metabolism in the single mitochondrion of African trypanosomes"
- 17:55-18:20 Marcelo Comini "Glucose-6-phosphate dehydrogenase from the human pathogen *Trypanosoma cruzi* evolved unique structural features to support efficient product formation"
- 18:20-18:35 Mariana Bonilla "Thioredoxin-monothiol glutaredoxin hybrid protein from *Trypanosoma brucei*: biochemistry, structure and biological relevance"
- 18:35-18:50 Mark Hampton "Caspase oxidation switches cell death from apoptosis to necroptosis"
- 18:50-19:05 Agnes Ulfig "Immunomodulatory role of HOCl-modified human plasma proteins"
- 19:05-19:20 Alessandro Foti "How ROS modulate neutrophil extracellular traps"
- 19:20-20:45 Dinner
- 20:45-23:30 Poster session-I

Tuesday - 17 September 2019

Session 3: Redox-signalling of ROS by antioxidant enzymes (Chair: Helmut Sies)

- 09:00-09:25 Elena Hidalgo "Monitoring cytosolic H₂O₂ fluctuations arising from altered plasma membrane gradients or from mitochondrial activity"
- 09:25-09:50 Bruce Morgan "Establishment of a roGFP2-based screen to monitor glutaredoxin structure-function relationships"
- 09:50-10:15 Tobias P. Dick "Identification and analysis of thiol-based signaling complexes"
- 10:15-10:30 Prince Saforo Amponsah "Peroxioredoxins couple changes in cell metabolism to cell division"

10:30-11:00	Coffee break
11:00-11:25	Arne Holmgren "Targeting DNA synthesis and antioxidant responses in therapy of cancer and bacterial infections"
11:25-11:40	Jose Manual Ugalde "ROS tracking: Redox coupling of subcellular compartments during photo-oxidative stress triggered in chloroplasts"
11:40-12:05	Leslie B. Poole "Regulatory modifications of peroxiredoxins"
12:05-12:20	Francisco Javier Cejudo "The function of 2-Cys peroxiredoxins in chloroplast redox homeostasis"
12:20-12:45	Elizabeth Ann Veal "Unravelling the who, what, when and how of peroxide signalling"
12:45-13:00	María José López-Gruoso "Function of Peroxiredoxin 6 in regulation of cellular metabolism in hepatocarcinoma cell line under nitrosative condition"

13:00-15:00 Lunch

Session 4: Redox regulation in eukaryotes and organelles (Chair: Elena Hidalgo)

15:00-15:25	Johannes Herrmann "The mitochondrial oxidoreductase Mia40: more than just an oxidative folding factor"
15:25-15:40	Iria Medraño-Fernandez "Topologically restrained peroxiporin systems as redox signaling routers"
15:40-16:05	Markus Schwarzländer "Dissecting the impact of metabolic fluctuations on subcellular thiol redox dynamics in plants"
16:05-16:30	Michel B. Toledano "Redox control of eukaryotic secretion by the glutathione and thioredoxin pathway: seeking clues to the redox function(s) of glutathione"
16:30-16:45	Sasha De Henau "Mitochondrial redox signaling induces cell polarization"

16:45-17:15 Coffee break

17:15-17:40	Jan Riemer "Redox Processes in Complex I Biogenesis"
17:40-17:55	Dana Reichmann "Cross talk between redox regulation and protein homeostasis"
17:55-18:10	Anna Caccamo "H ₂ O ₂ signaling from mitochondria and chloroplast to the nucleus in the green microalga <i>Chlamydomonas</i> : <i>in vivo</i> and <i>in vitro</i> approaches"
18:10-18:25	Nguyen Ho Thuy Dung "Defining the inter-organellar redox communication in <i>Chlamydomonas reinhardtii</i> "
18:25-18:50	Gloria Muday "Flavonoid antioxidants modulate ROS signaling and stress response in guard cells and pollen"
18:50-19:05	Jordan Chapman "Identification of oxidized proteins that participate in redox regulation of root architecture of lateral root and root hair development in <i>Arabidopsis</i> "

19:05-20:30 Dinner
20:30-23:00 Poster session-II

Wednesday - 18 September 2019

Session 5: Redox signalling with thiol-based metal centres (Chair: Christopher Lillig)

- 09:00-09:25 Jeffery Boyd "The roles of bacillithiol in intracellular metal processing"
- 09:25-09:50 Andres Vazquez-Torres "Oxidoreductase-independent functions of thioredoxin control two-component signaling"
- 09:50-10:15 Nick E. Le Brun "Iron-sulfur cluster binding Wbl proteins as regulatory sensor switches"
- 10:15-10:30 Kathrin Ulrich "The functional switching of redox-regulated Get3"
- 10:30-10:45 Marianne Ilbert "The redox-regulated molecular chaperone Hsp33 and its role during copper stress"
- 10:45-11:00 Fabia Canonica "Pathway for metallochaperone-assisted assembly of the CuA center in cytochrome oxidase"

11:00-11:30 Coffee break

- 11:30-11:55 Nicolas Rouhier "Towards the functional characterization of novel oxidoreductases"
- 11:55-12:20 Roland Lill "Multiple redox requirements connected to the biogenesis and function of mitochondrial iron-sulfur proteins"
- 12:20-12:35 Claudia Montllor Albalade "The Role of Cu/Zn Superoxide Dismutase (SOD1) in Redox Signaling and Metabolism"
- 12:50-13:05 Armindo Salvador "Detailed analysis of Prdx2's Trp fluorescence recovery after H₂O₂ treatment reveals unexpected complexity of resolution kinetics"

13:05-16:00 Lunch and free time

**Session 6: Redox biology in cancer, pathology and aging
(Chairs: Eva Maria Hanschmann & Inken Lorenzen)**

- 16:00-16:25 Vadim Gladyshev "Roles of selenium and stress responses in aging"
- 16:25-16:40 Jesalyn Bolduc "Controlling the Tumor Killing Phenotype of Macrophages: Are Redox Relays Involved?"
- 16:40-16:55 Julie Atkin "The protective activity of PDI family members in Amyotrophic Lateral Sclerosis/Motor Neuron Disease (ALS/MND)"
- 16:55-17:10 Carsten Berndt "The enzymatic taoism represented during redox regulation of migration-based functions"
- 17:10-17:25 Sander Busker "Disrupting oncogenic STAT3 activity by targeting TrxR1 with irreversible covalent inhibitors"

17:25-17:55 Coffee break

- 17:55-18:20 Cristina Furdul "Opportunities for cancer diagnosis and treatment through integrated redox biology"

- 18:20-18:35 Tobias Dansen "Cysteine oxidation triggers amyloid fibril formation of the tumor suppressor p16INK4A"
- 18:35-18:50 Francisco R.M. Laurindo "Protein disulfide isomerase-A1 is a master organizer of vascular smooth muscle phenotype switch responses"
- 18:50-19:05 Liliana Francois "Moonlighting functions of BCAT1"
- 19:05-19:20 Manuela Gellert "Receptor-induced redox signalling relay - from signal to effector"
- 19:20-21:00 Dinner

Thursday - 19 September 2019

Session 7: Redox signalling of gaseous molecules (Chair: Tobias Dick)

- 08:30-08:55 Miriam Cortese-Krott "Redox physiology of red blood cells: redox regulation and redox switches in the cytoskeleton"
- 08:55-09:20 David P. Giedroc "Sensing persulfides: H₂S homeostasis and signaling in microbial pathogens"
- 09:20-09:35 Brandan Pedre Perez "Using a genetically-encoded redox probe to monitor a metabolite of H₂S signaling"
- 09:35-09:50 Brenna Walsh "H₂S sensing through reactive sulfur species and protein S-sulfuration in the human pathogen *Enterococcus faecalis*"
- 09:50-10:20 Coffee break
- 10:20-10:45 Milos Filipovic "Selective persulfide detection reveals evolutionarily conserved anti-aging effects of protein persulfidation"
- 10:45-11:00 Beate Hutzler "Gene targeting approach to study the specific role of vascular endothelial nitric oxide synthase in cardiovascular effects of exercise and cardioprotection"
- 11:00-11:15 Dunja Petrovic "The importance of H₂S production/protein persulfidation in *C. elegans*: from development to aging"
- 11:15-11:30 Jérémy Couturier "Sulfur trafficking and H₂S mediated-redox signalling in plants: roles of *Arabidopsis thaliana* 3-MP sulfurtransferases"
- 11:30-11:45 Emilia Kouroussis "Dimedone switch method for selective persulfide labelling"
- 11:45-12:20 **Closing lecture:** Rafael Radi "Mitochondria, peroxynitrite, peroxiredoxins"
- 12:20-14:00 Lunch
- 14:00-19:00 Excursion to Girona or Dali museum or Free time
- 19:30 Final remarks, poster prize awards and Conference dinner

Friday - 20 September 2019

- 7:00-9:00 Breakfast and departure (busses 7 am and 9 am)