

RESEARCH CONFERENCES

ESF-EMBO Symposium

Glutathione and Related Thiols in Living Cells

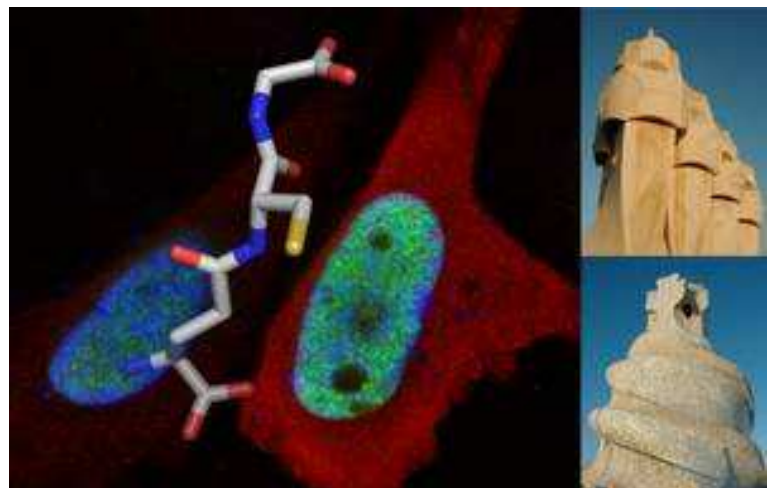
4-9 September 2011

Hotel Eden Roc, Sant Feliu de Guixols, Spain

Chair: Joris Messens, VIB Department Structural Biology, BE

Co-Chair: Arne Holmgren, Karolinska Institute Stockholm, SE

Organising Committee: **Grzegorz Bartosz** - Lodz University, PL; **Katja Becker** - Giessen University, DE; **Jean-François Collet** - UC Louvain, BE; **Arne Holmgren** - KI Stockholm, SE; **Claus Jacob** - Saarland University, DE; **Jean-Pierre Jacquot** - Nancy University, FR; **Pierre Leroy** - Nancy University, FR; **Joris Messens** - VIB, Vrije U. Brussel, BE; **Michel Penninckx** - ULB, BE



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Conference Highlights

Please provide a brief summary of the conference and its highlights in non-specialist terms (especially for highly technical subjects) for communication and publicity purposes. (ca. 400-500 words)

In general

We had a wonderful meeting in a relaxing atmosphere at the Costa Brava in Catalonia. The concept that made of this meeting a real success was the fact that leading-experts from different fields, but with a common and shared interest in thiol and redox biology, were brought together in a sunny environment in a resort at the cost. As the lecture hall was only limited to 160 participants, we were only able to accept 124 participants together with 36 invited speakers, discussion leaders and organizing committee members. From the 225 applicants we selected based on the following criteria:

1. Quality of the science
2. Rejected students and postdocs with no abstract
3. No more than 5 researchers from the same lab
4. People from the same lab should have different abstracts, otherwise only one could attend.
5. Criteria for the reduced grants:
 - Eastern countries and countries which are far away
 - All the young students born between 1990 and 1985
6. Selection of the short talks: a good mix between graduate students and experienced scientists
7. The members of the organising committee (OC) should get some exposure (chairing a session, short talk, invited talk), but no financial support for registration and travel

Poster session with a novel interacting element

All poster sessions started with a 1 minute elevator talk in which the poster presenter had to convince the leading expert in the field to come to visit her/his poster while they are standing next to each other in an elevator which moves to the top of a skyscraper in New York. These elevator talks to start poster sessions were a real success. Many scientists agreed that this act should become established in the near future.

By splitting the poster session in 3 groups of 35 posters and by keeping the poster session open after dinner (9 - 11 pm), we were able to give the poster presenters the necessary forum for discussion. The evening poster sessions were combined with an open bar, for the afternoon sessions coffee was provided.

The joint meals, the open bars after the poster session have been shown to be important for a prolongation of the on-going scientific discussions and for informal networking and interactions.

The committee selected three poster prizes for posters presented by young researchers, which were rewarded at the end of the 'Forward look session'. This was a difficult exercise, as many truly excellent posters were presented.

X I hereby authorize ESF – and the conference partners to use the information contained in the above section on 'Conference Highlights' in their communication on the scheme.

Scientific Report

Executive Summary

(2 pages max)

The keywords for this meeting were redox, thiols, iron-sulfur, cysteine, selenocysteine, dithiol-disulfide exchange reactions, free radicals and reactive oxygen species, peroxynitrite, S-nitrosylation, oxidative stress, antioxidant capacity, redox regulation, redox potential, reaction rates, gamma-glutamyl transferase, inflammation, NOX, redox signaling, reactive oxygen species, glutathione, glutathionylation, mycothiol, bacillithiol, trypanothione, peroxiredoxins, peroxidase, mycoredoxin, bacilliredoxin, thioredoxin and Trx-like CXXC proteins, nucleoredoxin, mammalian, plants, microbes, worms, yeast, bacteria, biotechnology, redox methodologies, redox protein structural features, detoxification, molecular biology, sulfenic/sulfinic acid, oxidative protein folding mechanisms and proteins, screening for drugs.

Scientific Content of the Conference

(1 page min.)

- *Summary of the conference sessions focusing on the scientific highlights*
- *Assessment of the results and their potential impact on future research or applications*

The aim of this conference was to discuss cutting-edge developments in our attempts to understand the emerging mechanisms associated with redox processes in living cells. In most instances, thiols formed the central theme.

Low molecular weight thiols and redoxins are ubiquitous molecules involved in response to stresses (oxidants, metals, xenobiotics, nutritional starvation, osmotic imbalance...), signal transduction, cell cycle (differentiation to apoptosis), cell organization, aggregation, bio-film formation and interaction between microorganisms, plants and animals. Next to glutathione and/or glutaredoxin dependent reactions, also the 'alternative' reductants, like mycothiol, bacillithiol and thioredoxin-like molecules were covered. Disciplines in this conference were numerous, going from microbiology to vegetal, over worm, zebra fish to mammal biology. Several presentations on the target proteins involved in these redox systems were recruited, and we covered extensively the aspects in the context of glutathionylation and deglutathionylation. In addition, the regenerating systems (thioredoxin reductases and glutathione reductases) and the link to peroxide detoxification via peroxiredoxins formed important themes. Another hot topic was the existence of iron/sulfur glutaredoxins documented in all kingdoms of life and their involvement in iron/sulfur assembly reactions. In the different fields, we learned methodologies useful for other fields. In the follow-up conference, the session on methodologies might be expanded, as this is very useful across the different fields. To sum, the conference was multidisciplinary, dealing with all aspects of redox biology, privileging the molecular aspects.

Forward Look

(1 page min.)

- *Assessment of the results*
- *Contribution to the future direction of the field – identification of issues in the 5-10 years & timeframe*
- *Identification of emerging topics*

Leopold Flohé gave a perfect entertaining history tour along redox biology over the last century 'Changing the paradigms in thiol redoxology'. He also gave a critical in depth analysis of current ideas of redox signaling and pointed out directions for future research. All attendees agreed that the organizing committee did a great job. It is important that a good mix of scientists of the different fields should form the organizing committee. The ESF officer of the meeting, Alessandra Piccolotto, is a fantastic and very talented officer. Everyone appreciated her expertise. We would like to keep her on board for the next meeting.

We reflected the conference in order to discuss the frequency, ESF-EMBO set-up, and the future

of this conference. All attendees would like to see a continuation of this conference. Also the venue should stay the same, and we decided to have the next meeting in two years. We have already a new chair for the next meeting: Johannes Herrmann. The full audience agreed and welcomes Hannes on board of the OC. The exact rules for the operation of the OC needs to be defined and the new OC applied for a new ESF grant application (deadline 15 September 2011 for a meeting in 2013).

- Is there a need for a foresight-type initiative?

We will organize a follow-up meeting, which preferably will be organized in the same venue. The new chair has been chosen and will take the lead for the preparation of the next ESF grant application. New candidates who would like to join the organizing committee are already lining-up. The organizing committee will have to evaluate their manner of working, and clear operating rules for the future needs to be defined.

Atmosphere and Infrastructure

- *The reaction of the participants to the location and the organization, including networking, and any other relevant comments*

The conference was held in a relaxing and friendly atmosphere. It had the feeling of a gathering together of scientific friends in a marvelous resort along the Costa Brava. The venue provided excellent infrastructure. Broken microphones were replaced. Coffee breaks were organized direct outdoor of the meeting room what made a smooth change between breaks and sessions possible.

One recommendation for the venue. For those who were sitting more to the back of the lecture room, but still in front of the second series of projector screens, it was hard to see the bottom of the slides. Repositioning of the beamer might help.

Sensitive and Confidential Information

This report will be submitted to the relevant ESF Standing Committees for review.

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