

Themed issue by COST Action BM1203 (EU-ROS)

„Redox biology and oxidative stress in health and disease“

EU-ROS is a COST Action within the Biomedicine and Molecular Biosciences Domain that covers all areas of medicine as practiced in Europe and basic, preclinical and clinical medical research developed to materialise the “bench to bedside” concept, supported by the European Cooperation in Science and Technology (COST). The mission of EU-ROS is to advance the important field of redox biology and oxidative stress research and to bring together multi-disciplinary experts from chemistry, biology, physics and medicine (see for further details including membership applications: www.eu-ros.eu or www.cost.eu/COST_Actions/bmbs/Actions/BM1203). The editors of the current Themed Issue are happy to accept submission of review papers as well as original contributions. Submission is restricted for registered members of the EU-ROS action in the following topic:

Many diseases and drug-induced complications are associated with – or even caused by – an imbalance between the formation of reactive oxygen and nitrogen species (RONS) and antioxidant enzymes catalyzing the breakdown of these harmful oxidants leading to a deviation from the steady state. More recent evidence suggests that the nature and subcellular localization of these reactive species largely determines the pathogenesis of the above mentioned processes. During the last two decades, our understanding of redox biology and oxidative stress in health and disease was considerably extended. The dogma that RONS only play a detrimental role was replaced by new concepts of redox biology, based on important physiological functions of RONS in immune response and fundamental cellular processes (e.g. differentiation, proliferation, migration and apoptosis) as well as activation of endogenous protective pathways such as ischemic preconditioning. Physiological requirement for redox biological processes may be one of the reasons for the rather disappointing outcome of antioxidant therapies so far.

The present themed issue is a forum for opinions of interdisciplinary experts in the field of redox biology and oxidative stress research. The contributions cover sources, pathways and targets of RONS in physiology and disease as well as the most recent developments in the

development of tools for redox biology and oxidative stress research (e.g. RONS imaging, biomarker and drug development).

Guest Editors:

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