## Mitochondrial adaptations of oxygen fluctuations in hypoxia-tolerant organisms

## Inna Sokolova

## Marine Biology Department, University of Rostock, Germany

Oxygen ( $O_2$ ) is essential for most metazoan life due to its central role in mitochondrial oxidative phosphorylation (OXPHOS), which generates >90% of ATP.  $O_2$  fluctuations are an ultimate mitochondrial stressor resulting in mitochondrial damage, energy deficiency, and cell death, yet some organisms (such as intertidal marine bivalves) can tolerate frequent transitions between anoxia and hyperoxia with no apparent ill effects. This talk will discuss the known and putative mechanisms involved in mitochondrial tolerance to fluctuating  $O_2$  conditions and demonstrate some evolutionary solutions to the ubiquitous and metabolically severe problem of  $O_2$  deficiency using marine mollusks as a model.



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