

Special Issue on
Sperm Energy Metabolism

CALL FOR PAPERS

One of the outstanding questions in reproduction concerns the mechanism by which spermatozoa manage their energy levels. This represents a crucial aspect of biology of this cell since spermatozoon requires huge amount of ATP to accomplish its main function: oocyte fertilization. As known, ATP synthesis can occur in mitochondria, *via* oxidative phosphorylation, but also in the cytosol *via* glycolysis. In sperm cell, due to its distinctive structure, these two main sources of ATP show a peculiar distribution: mitochondria are localized exclusively in the sperm midpiece, whereas multiple glycolytic enzymes are present along the sperm flagellum, with smaller quantities in the head. Thus, more than any other cells, the knowledge of glycolytic and mitochondrial pathways interplay in energy production has challenged researchers for decades. Notwithstanding that, sperm energy metabolism is far from being fully elucidated. To date, the ATP source is proposed to be species-specific in spermatozoa depending on the conditions in the oviduct of the conspecific female. In addition, sperm energy demand is subjected to remarkable variations due to particular circumstances, as in the case of sperm capacitation, a process in which more ATP is needed to sustain hyperactivation and protein tyrosine phosphorylation. On the contrary, a deficiency of energy production systems, due to either genetic or environmental factors, is associated with infertility or subfertility condition.

Aim of this special issue is to collect original research articles, as well as review articles, addressing recent advances on energy metabolism of both human and animal sperm, this latter not limited to mammals, but including other vertebrate and invertebrate animals. A special interest will be given to papers dealing with mitochondrial bioenergetics and mitochondria-cytosol interplay at different stages of sperm life. Submission of papers showing the impairment of energy production system as the cause of male infertility as well as articles addressing the effect of sperm treatments (storage, cryopreservation, etc.) on energy metabolism is also encouraged.

Potential topics include but are not limited to the following:

- ▶ Mitochondria-cytosol interplay (shuttles, cross-talk, etc.)
- ▶ Deficiency in mitochondrial and/or cytosolic pathways as a reason of infertility
- ▶ The role of metabolites transport in sperm energy metabolism
- ▶ Innovative biotechnologies aimed at improving sperm bioenergetics
- ▶ The effect of cryopreservation on sperm energy metabolism
- ▶ The effect of environmental factors on sperm bioenergetics

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/bmri/cell.biology/sem/>.

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Friday, 31 March 2017

First Round of Reviews

Friday, 23 June 2017

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