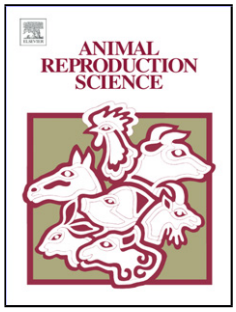

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The Sperm Mitochondrion: Organelle of Many Functions

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Highlights

- The mitochondrion is a key organelle crucial for normal sperm functions.
- Better understanding mitochondrial energy production may help improve ARTs.
- ROS production by the mitochondria indicates increased mitochondrial metabolism.
- Mitochondrial DNA has potential to be a biomarker of sperm quality and fertility.
- Advanced techniques to study sperm mitochondria are focusing on bioenergetics.

Abstract

This review summarizes current research in sperm mitochondrial function with specific emphasis on mitochondrial metabolism, reactive oxygen species production and mitochondrial genomics. This organelle is key in many crucial sperm functions including motility, hyperactivation, capacitation, acrosome reaction, and fertilization, thus its role in male fertility cannot be ignored. Recent studies have further elucidated sperm metabolism, placing greater emphasis on the importance of mitochondrial energy production for some species. Additionally, the dogma of mitochondrial reactive oxygen species production is changing and is being described by some as an indicator of increased mitochondrial function, potentially representing the most fertile sperm. Further, the mitochondrial genome, specifically mitochondrial DNA copy