Sperm Biology

An Evolutionary Perspective

Edited by

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The evolution of spermatozoa is one of the most rapidly developing topics in biology. Sperm are the most variable of cells and show a remarkable morphological diversity given that they all have the same simple job – the fertilization of ova. This unexpected variation in size, overall form and detailed structure poses a wealth of evolutionary questions. This book represents the first analysis of the evolutionary significance of sperm phenotypes and derived sperm traits and the possible selection pressures driving sperm-egg coevolution.

Our growing understanding of sperm evolution promises to shed light on many topics from basic reproductive biology to the evolutionary process itself, as well as the sperm proteome, the sperm genome and the quantitative genetics of sperm.

The Editors have identified 15 topics of current interest and biological significance to cover all aspects of this bizarre, fascinating and important subject. This volume comprises the most comprehensive and up to date review of the evolution of sperm, and pointers for future research, written by experts in both sperm biology and evolutionary biology. The combination of evolution and sperm is a potent mix and this is the definitive account.

- The first review survey of this emerging field.
- Written by experts from a broad array of disciplines from the physiological and biomedical to the ecological and evolutionary.
- Sheds light on the intricacies of reproduction and the coevolution of sperm, egg and reproductive behaviour.

Cover Photo: A broken sperm bundle (spermatozeugma) of *Tubifex blanchardi* (Annelida: Clitellata: Tubificidae) as seen by confocal microscope. The diameter of the structure is about 100 μm. The eusperm, in the central region, are set free by the rupture of the parasperm sheath. The eusperm nuclei were stained with DAPI (blue), and the flagella with a green fluorescent antibody against tubulin. Actin is phalloidin stained and appears red. The tails of eusperm (top) are free, whereas those of the parasperm are tightly packed and show a large amount of actin (red). Unpublished micrograph by Roberto Marotta & Marco Ferraguti (Dipartimento di Biologia, Università degli Studi di Milano) and Umberto Fascio (CIMA, Università degli Studi di Milano).

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