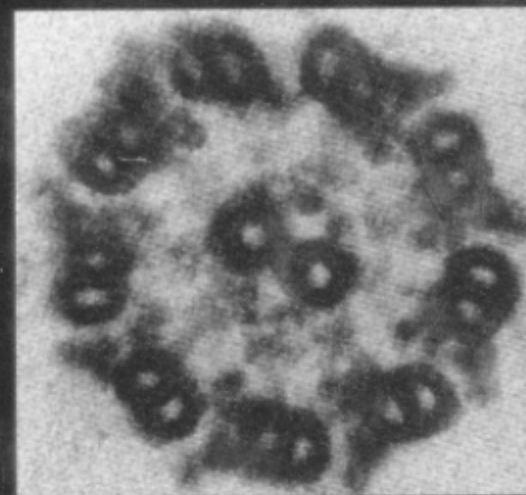


CILIA: MOTORS AND REGULATION



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Cilia are highly conserved organelles that serve motile and/or sensory functions. These organelles power cell movement, generate fluid flow in various organs, act as sensors of the extracellular environment and have been modified for various specialized tasks such as light reception and smell. Defects in these ubiquitous organelles lead to a broad array of human genetic disorders that range from polycystic kidney disease, retinal degeneration, epilepsy and infertility to developmental defects such as situs inversus and polydactyly. This volume is the second in a three-part series on cilia that focuses on methods to investigate the dynein molecular motors that power this organelle and the regulatory systems that control these motors to result in the initiation and propagation of a ciliary waveform.

KEY FEATURES

- Bioinformatic approaches to dynein composition
- Biochemical and biophysical methods for dynein purification and mechanistic analysis
- Regulation of dynein function in response to signaling pathways
- Approaches for analysis of radial spokes and the central pair microtubule complex

Cover image: Transverse thin section electron micrograph through a demembranated axoneme from *Chlamydomonas reinhardtii*. The structure is built around 9 outer doublet microtubules and a central pair of singlet microtubules. The inner and outer rows of dynein arms are permanently attached to the A tubule of the outer doublets and transiently interact with the B tubule of the adjacent doublet to generate force. This activity is controlled by other axonemal substructures including the central pair complex and radial spokes. This micrograph was prepared by Ken-ichi Wakabayashi (University of Tokyo).

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