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17:00, H 53



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Neuronal coordination of cilia in marine zooplankton in moving and sensing

Marine zooplankton include a large diversity of transparent animals freely swimming in open water. These organisms often use motile cilia instead of muscles for locomotion and show intricate control of complex ciliary fields. Given that cilia are evolutionary older than muscles, the first nervous systems may have evolved to control ciliary movement. I will discuss our work on how nervous systems in planktonic larvae control and coordinate cilia to regulate swimming and sensing. In the ciliated larvae of the annelid *Platynereis dumerilii*, a body-wide ciliomotor nervous system coordinates ciliary beat frequency and arrests. Sensory systems also alter the ongoing beating of the ciliary bands, eliciting turns during tactic responses. In larvae of the ctenophore *Mnemiopsis leidyi* a syncytial nerve net coordinates the activity of a ciliated balancer organ responsible for graviorientation. The nerve net has a coordinating rather than input-output function challenging reflex-arc-like models for the organisation of even the simplest non-centralised nervous systems. I will discuss how acting and sensing probably coevolved and were coupled through refference since the origin of nervous systems about 575 million years ago.

Host: RIGeL Graduate Colloquium
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