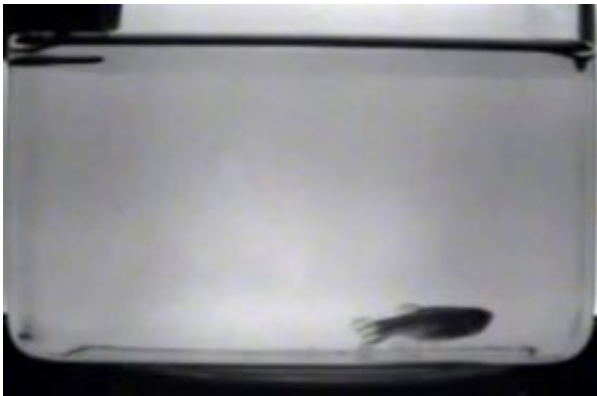


Insomniac fish shed light on the molecular basis of sleep disorders

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Infrared picture of an adult zebrafish (*Danio rerio*) sleeping at the bottom of its aquarium. Credit: Mignot et al.

Sleep disorders are common and poorly understood. In humans, narcolepsy is a sleep disorder associated with sleepiness, abnormal dreaming, paralysis and insomnia. Neuropeptides called hypocretins are implicated in this disorder.

A new study by Yokogawa and colleagues at Stanford University now reveals that fish, like mammals, sleep, and their hypocretin receptor plays an important role. Their work is published online this week in the open-access journal *PLoS Biology*.

The authors first generated a mutant fish in which the hypocretin system

was disrupted. Intriguingly, this first fish sleep mutant did not display sleepiness or paralysis but showed a 30% reduction of its sleep time at night and a 60% decrease in sleep bout length compared with non-mutant fish.

They also studied the relationships between the hypocretin system and other sleep regulatory brain systems in zebrafish and found differences in expression patterns in the brain that may explain the differences in behavioral effects. Their study illustrates how a sleep regulatory system may have evolved across vertebrate phylogeny. Zebrafish, a powerful genetic model that has the advantage of transparency to study neuronal networks in vivo, can be used to study sleep.

Citation: Yokogawa T, Marin W, Faraco J, Pe'zeron G, Appelbaum L, et al. (2007) Characterization of sleep in zebrafish and insomnia in hypocretin receptor mutants. *PLoS Biol* 5(10): e277.
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