

## The Mechanosensory Lateral Line Neurobiology And Evolution

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Emergence

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Neuro Lec 3 9-15 FIU Wallace H. Coulter Foundation Seminar Series: October 2, 2020 | Dr. Sharmila Venugopal **A Celebration of Two Transformative Books** *Why wet feels wet? Identification of Feedback Controllers in Locomoting Animals* Claire Wyart's #WWNDev Forum on Sept 3, 2020 BCBT 2015 Leah Krubtizer ~~Kenneth C. Catania The Mechanosensory Lateral Line Neurobiology~~

This volume represents the published proceedings of an international conference on the Neurobiology and Evolution of the Mechanosensory Lateral Line System held August 31 to September 4, 1987, at the Center for Interdisciplinary Research at the University of Bielefeld, West Germany. The goal of...

~~The Mechanosensory Lateral Line: Neurobiology and ...~~

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~~The Mechanosensory Lateral Line : Sheryl Coombs ...~~

Get this from a library! *The Mechanosensory Lateral Line : Neurobiology and Evolution.* [S Coombs; P Görner; Heinrich Münz] -- The mechanosensory lateral line system of aquatic animals is now widely recognized as an important sensory system in its own right, with unique contributions to animal behavior. Major technological ...

~~The Mechanosensory Lateral Line : Neurobiology and ...~~

The mechanosensory lateral line system of aquatic animals is now widely recognized as an important sensory system in its own right, with unique contributions to animal behavior. Major technological advances in neuroanatomy, neurophysiology, and stimulus measurement have led to significant strides in the understanding of its organization and functional significance, but questions about its ...

~~The Mechanosensory lateral line: neurobiology and ...~~

The mechanosensory lateral line system of bony fishes is composed of a series of receptor organs called neuromasts, which are located on the epithelium or in lateral line canals on the head and trunk, and are innervated by several lateral line nerves, which project to the hindbrain. Neuromast receptor organs are

epithelial structures composed of a population of sensory hair cells and nonsensory supporting cells and mantle cells.

## ~~Mechanosensory Lateral Line: Microscopic Anatomy and ...~~

The mechanotactile, schooling, and mechanosensory parallel processing hypotheses are proposed as future directions to address the relationships between morphology and physiology of the mechanosensory lateral line system and behavior in elasmobranch fishes. batoid canal hair cell mechanotactile neuromast.

## ~~Morphology of the Mechanosensory Lateral Line System in ...~~

The mechanosensory lateral line sense organ is unique to aquatic vertebrates (fishes and the amphibians) (Dijkgraaf 1963). The lateral line consists of surface neuromasts located on the skin's surface that detect slow moving water and canal neuromasts that are embedded in the lateral line canals and sense rapidly moving water (Northcutt 1997).

## ~~Fish Lateral Line Innovation: Insights into the ...~~

The lateral line is located on the surface of the fish where hair cells, clustered into neuromasts, sense water movement (Coombs and Montgomery, 1999; Montgomery et al., 2003).

## ~~Feathers and Fins: Non mammalian models for hair cell ...~~

The teleost mechanosensory lateral line system allows fish to detect near flow water movements (Dijkgraaf, 1963), such as those created by water currents, approaching predators, or conspecifics during social interactions (reviewed in Montgomery et al., 2014).

## ~~Frontiers | The Mechanosensory Lateral Line System ...~~

The lateral line system of surface-feeding fish: anatomy, physiology and behaviour. In The mechanosensory lateral line: neurobiology and evolution (ed. S., Coombs et al.), pp. 501 - 526. New York: Springer Verlag.

## ~~Development of superficial and lateral line neuromasts in ...~~

The lateral line is a sensory system that allows fish and amphibians to perceive and localize movements in their vicinity (1). It is involved in important behaviors such as prey detection, predator avoidance, or swimming in schools.

## ~~Molecular basis of cell migration in the fish lateral line ...~~

Abstract We describe the organization of lateral line nerves and ganglia in the embryonic zebrafish, *Danio rerio*. Two lateral line nerves are found anterior to the otic vesicle: the anterodorsal ne...

## ~~Organization of the lateral line system in embryonic ...~~

Surface wave detection by animals is the process by which animals, such as surface-feeding fish are able to sense and localize prey and other objects on the surface of a body of water by analyzing features of the ripples generated by objects' movement at the surface. Features analyzed include waveform properties such as frequency, change in frequency, and amplitude, and the curvature of the ...

## ~~Surface wave detection by animals — Wikipedia~~

The vertebrate lateral line system comprises a mechanosensory division, with neuromasts containing hair cells that detect local water movement ("distant touch"); and an electrosensory division, with electrosensory organs that detect the weak, low-frequency electric fields surrounding other animals in water (primarily used for hunting).

## ~~Insights into Electrorceptor Development and Evolution ...~~

Specifically, we show that fish use their mechanosensory lateral line to first sense the curl (or vorticity) of the local velocity vector field to detect the presence of flow and, second, to...

## ~~A novel mechanism for mechanosensory-based rheotaxis in ...~~

The lateral line system is a sensory system found in fishes and aquatic amphibians. With the lateral line system, fishes measure the relative movements between their body and the surrounding water at each of up to several thousand sensory organs, the neuromasts (Dijkgraaf, 1952, 1963).

## ~~Sensory ecology of the fish lateral line system ...~~

Electrorceptors are modified hair cells, distributed in fields of "ampullary organs" on either side of the lateral lines of mechanosensory hair cells.