

CMDB/BIOL 281F in Winter 2021

Seminar in Molecular Cell Biology

# Sensing the Environment

**Instructor: Dr. Sachiko Haga-Yamanaka**

**Department of Molecular, Cell and Systems Biology**

Any living organism senses environmental stimuli, such as light, sound, chemicals, temperature, and physical distortion, and changes their internal state as well as behaviors. Sensory receptor proteins are the primary and critical components for responding to the stimuli, which convert physical or chemical properties of the stimuli to signals that biological systems can perceive. Therefore, discoveries of sensory receptor genes have been the critical step to understand fundamental principles of the sensory systems.

In the past decades, many different types of sensory receptor genes have been identified in vertebrate and invertebrate animals, as well as in some plants and microorganisms. Interestingly, some sensory receptor genes for a given stimulus are highly conserved, whereas other stimuli are sensed by distinct receptor families in different organisms. Taking advantage of such features, some molecular tools, such as channelrhodopsin, were invented. In this course, we will read and discuss selected journal articles to learn molecular and physiological properties of sensory receptors. Students are expected to obtain knowledge about sensory receptors for multiple stimuli in various organisms, and to apply the knowledge for their own research project in the future.



**Introductory meeting on Thursday, 1/7/2021 at 10 AM via Zoom.** Please contact the instructor for more information.

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