

Eye lens and nose cells for smelling have same origin

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A team of researchers at Umeå University in Sweden have discovered a unique mechanism by which the same signal molecule determines the formation of the both the lens of the eye and the olfactory cells of the nose.

Smell and sight are two sensory systems that are crucial to our ability to perceive the world around us. The ability to sense smells is established by the development of the olfactory mucous membrane. The ability to see is similarly dependent on the formation of the lens in the eyes.

Both the mucous membrane for smelling and the lens develop early in the fetal stage, but it has not been known until now precisely what signals govern their formation. A research team at Umeå University can now show that the same signal molecule regulates the formation of both the olfactory cells and the lens cells.

The findings show moreover that cells exposed to the signal for short periods become olfactory cells, while long periods of exposure give rise to lens cells. Otherwise it is a common mechanism for differing concentrations of a signal molecule to lead to different cell types.

This discovery, that differences in the length of exposure but not the concentration of the same signal determine the formation of two fundamentally different sensory organs, is of key importance to our understanding of how different types of cells are formed during the fetal period.

The findings have been published in the journal *Developmental Cell*.

Citation: M Sjödal, T Edlund, L Gunhaga: Time of Exposure to BMP Signals Plays a Key Role in the Specification of the Olfactory and Lens Placodes Ex Vivo, *Developmental Cell*, Volume 13, 141-149, 2007.

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