

A single VSOP can do a 'proton' magic!

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International research group led by Yasushi Okamura, a professor in Japanese National Institute for Physiological Sciences, Okazaki, and Peter Larsson, a professor in Oregon Health & Science University, Oregon, US, found that a single protein of VSOP, Voltage Sensor Only Protein/ Hv1, can carry protons even without making a multimeric complex.

Since VSOP is known to be expressed in phagocytes such as macrophage and neutrophil that remove infected pathogens, this finding may help to design new medications for enhancing the activities of innate immunity. They report this work in *Proceeding National Academy of Sciences* (published online on the week of June 16, 2008).

Usually, ion channels on cell membrane form a multimeric complex to make an assembling hole to carry ions through it. Surprisingly, the research group found that this VSOP protein forms a dimer but each single subunit can carry proton without any assembling hole. They concluded it by using the techniques of FRET (Fluorescence Resonance Energy Transfer) and biochemistry,

The VSOP keeps cell inside alkaline condition. This finding helps to understand how VSOP regulates pH condition during the process of removing pathogens such as fungi, bacteria and virus.

"It is still not clear that how proton can go through a single VSOP protein, but here we clearly showed that a single subunit of VSOP can carry protons without making any assembling hole. This finding may

help to design new medications for promoting activities of innate immunity or prevention of abnormal state of immunity such as asthma", said Professor Okamura.

Source: National Institute for Physiological Sciences

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