

# Cxs and Panx- hemichannels in peripheral and central chemosensing in mammals

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Connexins (Cxs) and Pannexins (Panx) form hemichannels at the plasma membrane of animals. Despite their low open probability under physiological conditions, these hemichannels release signaling molecules (i.e., ATP, Glutamate, PGE<sub>2</sub>) to the extracellular space, thus subserving several important physiological processes. Oxygen and CO<sub>2</sub> sensing are fundamental to the normal functioning of vertebrate organisms. Fluctuations in blood PO<sub>2</sub>, PCO<sub>2</sub> and pH are sensed at the carotid bifurcations of adult mammals by glomus cells of the carotid bodies. Likewise, changes in pH and/or PCO<sub>2</sub> of cerebrospinal fluid are sensed by central chemoreceptors, a group of specialized neurones distributed in the ventrolateral medulla (VLM), raphe nuclei, and some other brainstem areas. After many years of research, the molecular mechanisms involved in chemosensing process are not completely understood. This manuscript will review data regarding relationships between chemosensitive cells and the expression of channels formed by Cxs and Panx, with special emphasis on hemichannels. © 2014 Reyes, Cerpa, Corvalán and Retamal.

Astrocytes

Carotid body

Connexins

Gap junctions

Glomus cells

Hypercapnia

Hypoxia

adenosine triphosphate

carbon dioxide

gap junction protein

membrane protein

oxygen

pannexin

unclassified drug

astrocyte

carbon dioxide tension

cell communication

chemoreceptor

chemosensitivity

electrophysiology

extracellular calcium

gap junction

homeostasis

human

hypercapnia

hypoxia

nonhuman

oxygen tension

pH

review