



OR: odorant receptor

BP: binding protein

GDP: guanosine diphosphate

AC: adenylyl cyclase

cAMP: cyclic adenosine monophosphate

CaM: calmodulin; decreases CNGC sensitivity

5'AMP: 5'-adenosine monophosphate

PLC: phospholipase C

PIP₂: phosphatidylinositol-4,5-bisphosphate

PKC: protein kinase C; increases sensitivity of AC and CNGC

There appears to be a 3rd pathway that utilizes a guanylyl cyclase (cGMP) receptor.

Odorant cells are one of the few cells where [Cl⁻] is greater inside than outside.

β-arrestin binds the phosphorylated receptor **AND** appears to recruit phosphodiesterase to degrade the cAMP signal

Kallmann syndrome

O: odorant

G_{olf}: G protein

GTP: guanosine triphosphate

ATP: adenosine triphosphate

CNGC: cyclic nucleotide-gated channel

PDE: phosphodiesterase

RK: receptor kinase

ER: endoplasmic reticulum

IP₃: inositol-1,4,5-trisphosphate

Review Questions

- **Which ions and ion channels are used for olfaction?**
- **Which signal transduction pathways are used for olfaction (enzymes, second messengers, receptors)?**