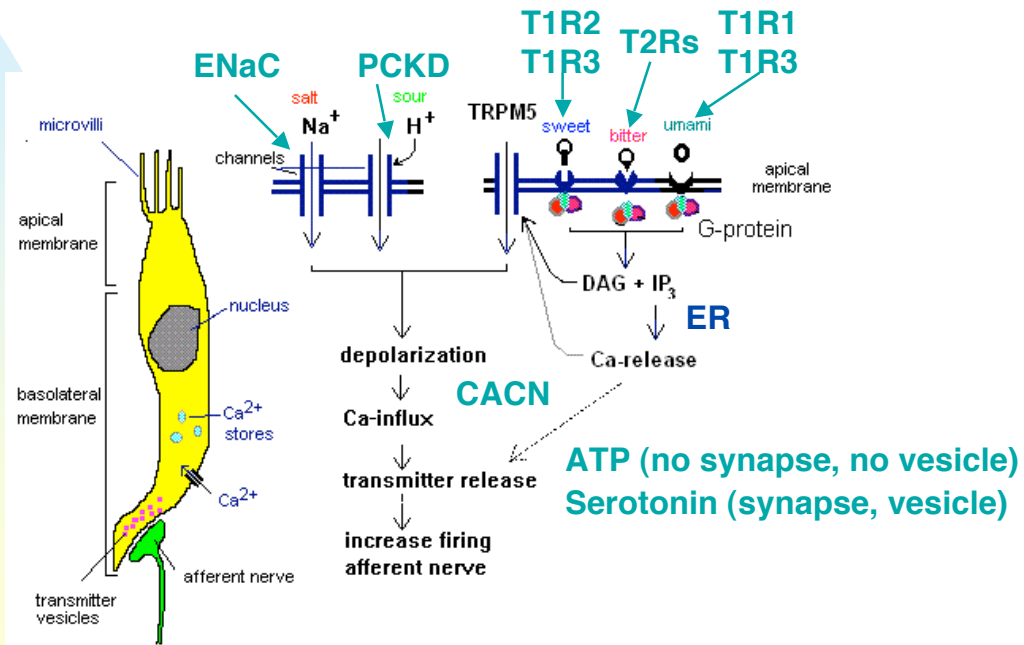


Gustation

- Gustation signaling overview - bitter, sweet, salty, sour, umami
- KEGG Map of gustation signaling
- Gustation (sweet)

Eric Niederhoffer
SIU-SOM

Gustation Signaling



<http://www.cf.ac.uk/biosi/staffinfo/jacob/teaching/sensory/taste.html>

Gusta = flavor

IP₃: inositol triphosphate

PCKD: polycystic kidney disease-like channel

TRP: transient receptor potential channel, a non-selective cation channel

Type I, II (ATP), and III (serotonin) taste cells

Type I familial dysautonomia (i.e., Riley-Day syndrome)

ENaC: epithelial Na⁺ channel

ER: endoplasmic reticulum

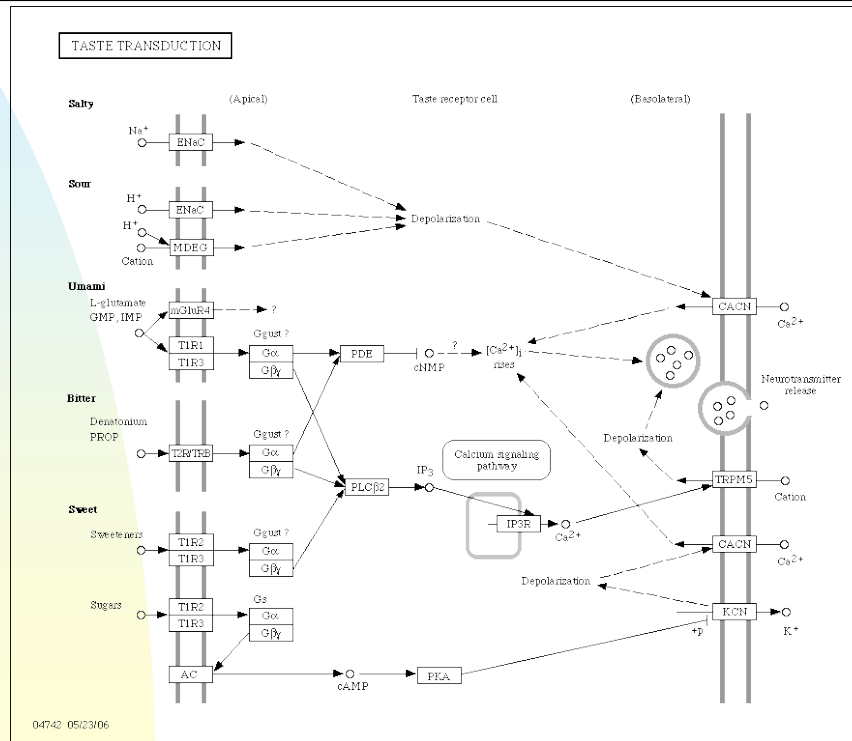
DAG: diacylglycerol

TR: taste receptors

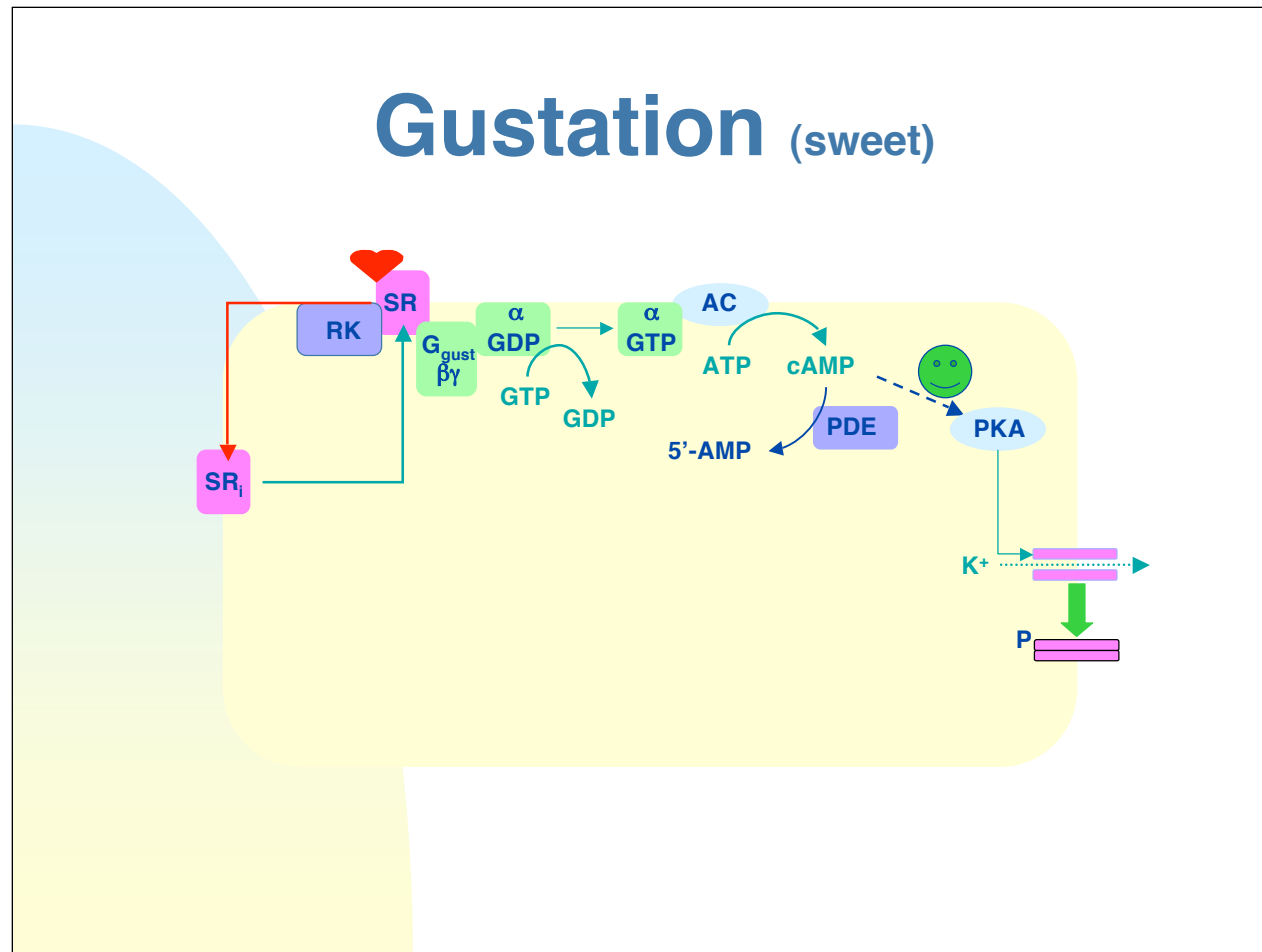
CACN: Ca²⁺ channel

KEGG Map of Gustation Signaling

<http://www.genome.jp/kegg/>



ENaC: epithelial Na⁺ channel **PLC:** phospholipase C **PDE:** phosphodiesterase **IP₃:** inositol triphosphate
TR: taste receptors **AC:** adenylyl cyclase **CACN:** Ca²⁺ channel **KCN:** K⁺ channel
cAMP: cyclic AMP **TRP:** transient receptor potential channel, non-selective cation channel **PKA:** protein kinase A
KEGG: Kyoto Encyclopedia of Genes and Genomes



G_{gust} : G protein gustducin

AC: adenylate cyclase

PKA: protein kinase A

5' AMP: 5'-adenosine monophosphate

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

GDP: guanosine diphosphate

ATP: adenosine triphosphate

P: phosphate

GTP: guanosine triphosphate

cAMP: cyclic adenosine monophosphate

RK: receptor kinase

PDE: phosphodiesterase

Review Questions

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