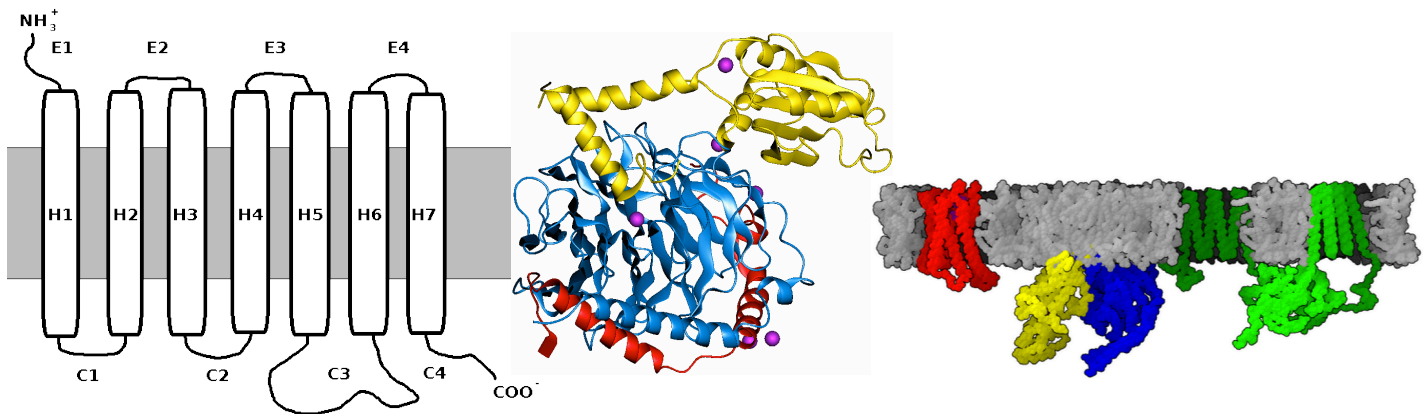


## CONCEPT: BIOSIGNALING

- Five features of signal transduction:
  - Specificity – specificity like any protein, signals usually chemical
  - Amplification – one molecule binding leads to enzymes amplifying the signal internally
  - Modularity – proteins are able to interact with multiple components of signaling pathway
  - Adaption – feedback modulates receptor presence, or activity
  - Integration – all signals are integrating into other signals to give appropriate response, signals don't exist alone
- G protein-coupled receptors – ligand binding makes receptor change conformation on cytosolic side, activating G



- G protein has a GDP bound to its α subunit, when activated by the receptor, GDP is exchanged for GTP
  - This reaction is catalyzed by several guanine exchange factors (GEFs)
- G with GTP bound travels to, and activates, adenylyl cyclase that converts ATP to cAMP
- G protein is also a GTPase, and will slowly breakdown its bound GTP to GDP, leaving the α subunit inactive
  - GTP Activator Proteins (GAPs) increase the reaction rate of GTP → GDP

