Ligand gated ion channel – membrane bound protein that will bind the ligand (first messenger). There is a conformational change in protein shape which will open up a pore (channel) and allow specific ions to move into or out of the cell. Can lead to changes in membrane potential.

G-protein linked receptors

The conversion of a chemical signal to a functional response is more complicated. G-proteins (also known as GTP binding proteins) are often associated on the inner aspect of the cell membrane.

- In their inactive or 'off' state, G-proteins preferentially bind to GDP (guanosine diphosphate).
- When an agonist binds with the appropriate membrane receptor, the G-protein shows an increased affinity for GTP (guanosine triphosphate).
- Binding to GTP activates the G-protein and causes it to dissociate from the receptor inside the cell.
- The G-protein can now associate with other membrane bound signal transduction molecules, ion channels or effect enzymes, which can change the concentration of intracellular chemicals called second messengers.
- After its interaction, the G-protein is turned off to 53 hydrolysis of GTP back to GDP by GTP as wivity.

Second messenpe

G-protitins often act as intermediates between receptor and membrane bound enzyme responsible for synthesis of a second messenger.

It's the second messengers which trigger the preprogrammed series of biochemical events in a cell and lead to the correct response.

- Some G-proteins are excitatory causing an increase in second messenger levels.
- Some G-proteins are inhibitory causing a reduction in second messenger levels.

Important second messengers include:

- Cyclic adenosine monophosphate (cAMP)
- Cyclic guanosine monophosphate (cGMP)
- Inositol 1,4,5-triphosphate (IP₃)
- Free calcium (Ca²⁺)



