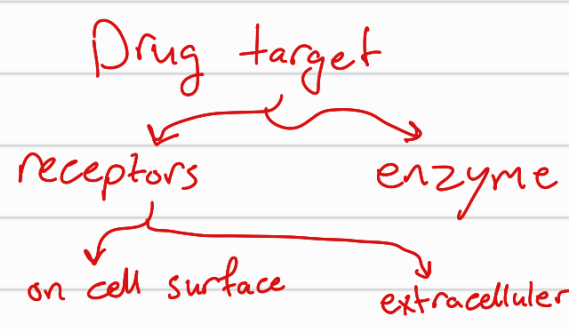
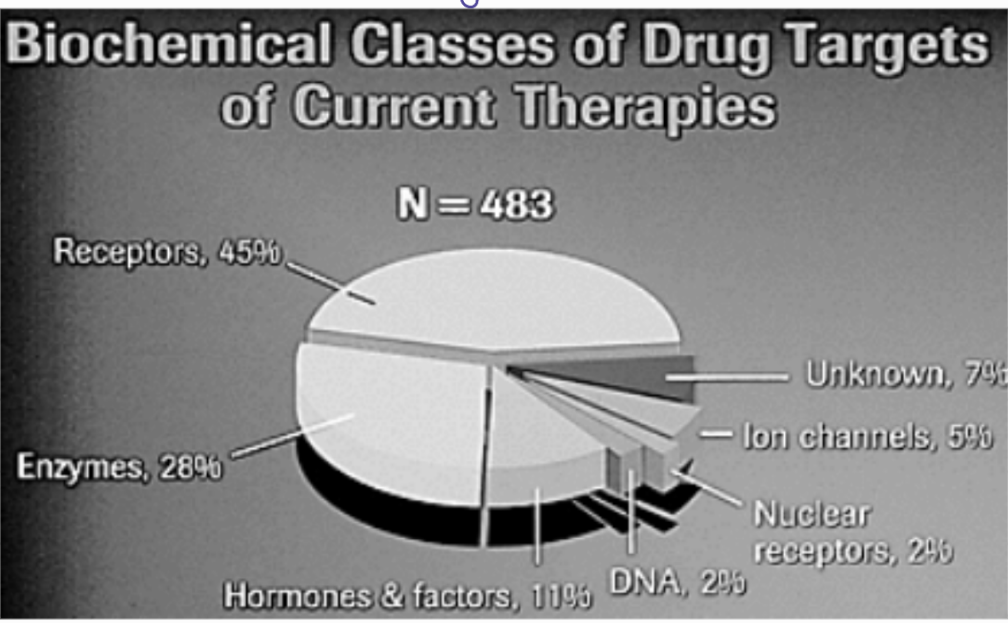


Pharmacodynamics: Study of Biochemical and physiological effect of the drug and their mechanism of action. or the study of relationship of drug conc. to drug effect

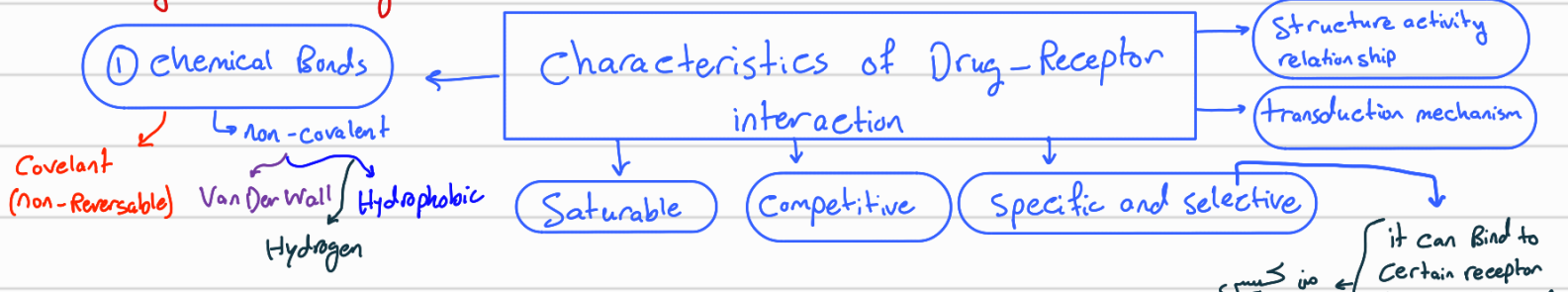
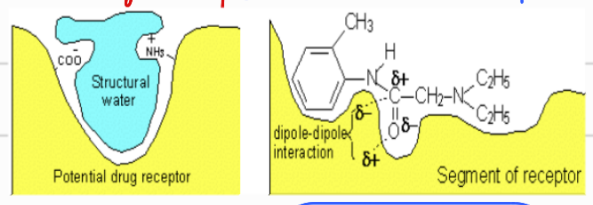


Receptor: large macromolecule with well-defined 3D shape and most are protein  
 \* most drug bind reversibly (non-covalent)  
 \* not All drug use receptor.  
 \* Receptors determine the specificity of the drug.

\* most drug exert their effect by interaction with specialized target macromolecule called receptor (in most cases) and the receptor will transduce the response by causing conformational changes or biochemical effect.

\* properties of underlying specificity in drug receptor interaction are Complementarity of shape between drug and receptor

\* lock and key model: so if I want to increase specific effect I will design a drug fit in the receptor and capable of inducing effect or if I want decrease it I will design one to fit and does not capable of inducing effect or signal.

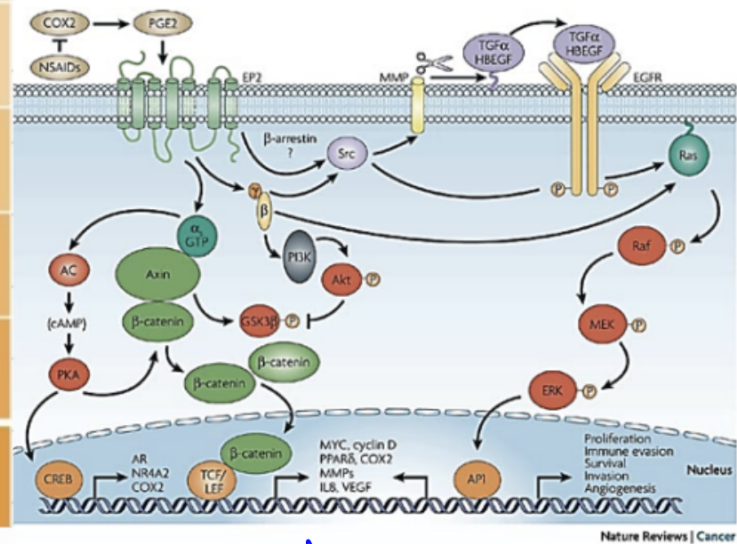


\* Activating drug directly or indirectly → regulate cellular Biochemical processes within or Between cells to change function

\* Recognition site is precise molecular region of receptor macromolecule of which ligand bind to it providing specificity, selectivity, sensitivity

(a) Signaling pathway	(b) Number of molecules activated
<b>RECEPTION</b> Binding of epinephrine to G protein-linked receptor	1 molecule
<b>TRANSDUCTION</b> Inactive G protein → Active G protein	10 <sup>2</sup> molecules
Inactive adenylyl cyclase → Active adenylyl cyclase	10 <sup>2</sup> molecules
ATP → Cyclic AMP	10 <sup>4</sup> molecules
Inactive protein kinase A → Active protein kinase A	10 <sup>4</sup> molecules
Inactive phosphorylase kinase → Active phosphorylase kinase	10 <sup>5</sup> molecules
Inactive glycogen phosphorylase → Active glycogen phosphorylase	10 <sup>6</sup> molecules
<b>RESPONSE</b> Glycogen → Glucose-1-phosphate	10 <sup>8</sup> molecules

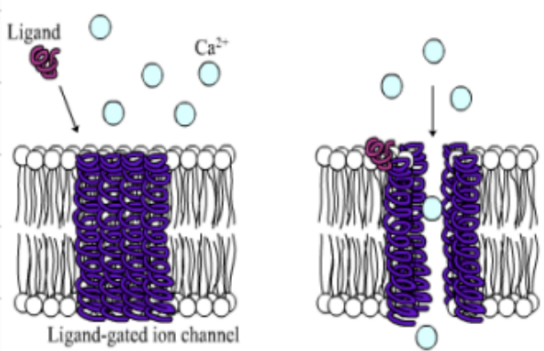
← This signal transduction and amplification increase sensitivity  
 1 molecule of epinephrine → 10<sup>8</sup> molecule of glucose transferred to glucose-1-P



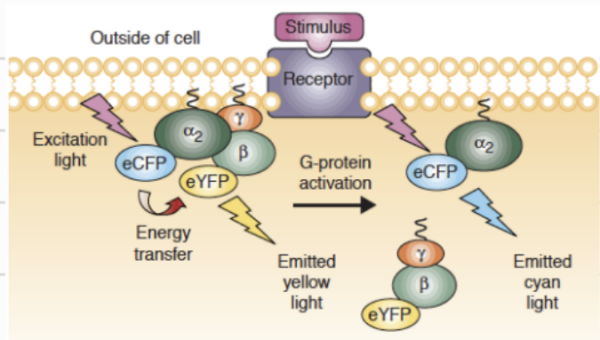
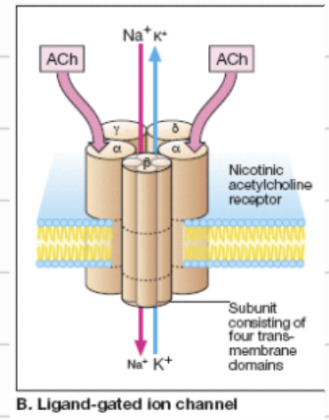
### Major receptor families

- Ligand-gated ion channels
- G protein coupled receptors
- enzyme link receptors
- intracellular receptors

Responsible of regulation ions flow across cell membrane  
 bind to ligand to work and best example is nicotinic receptor which bind to acetylcholine result in Sodium influx → contraction of muscles  
 Receptors on the inner surface of plasma membrane regulate effector protein thru group of Guanosine triphosphate (GTP) known as G protein  
 Example as Hormones peptid receptors and neurotransmitter receptors  
 As Adrenergic and Muscarinic receptors



← Ligand gated ion channel →



G protein-coupled receptors  
 (will talk about it later)

Done By: Abd Arrahman Dabbas