

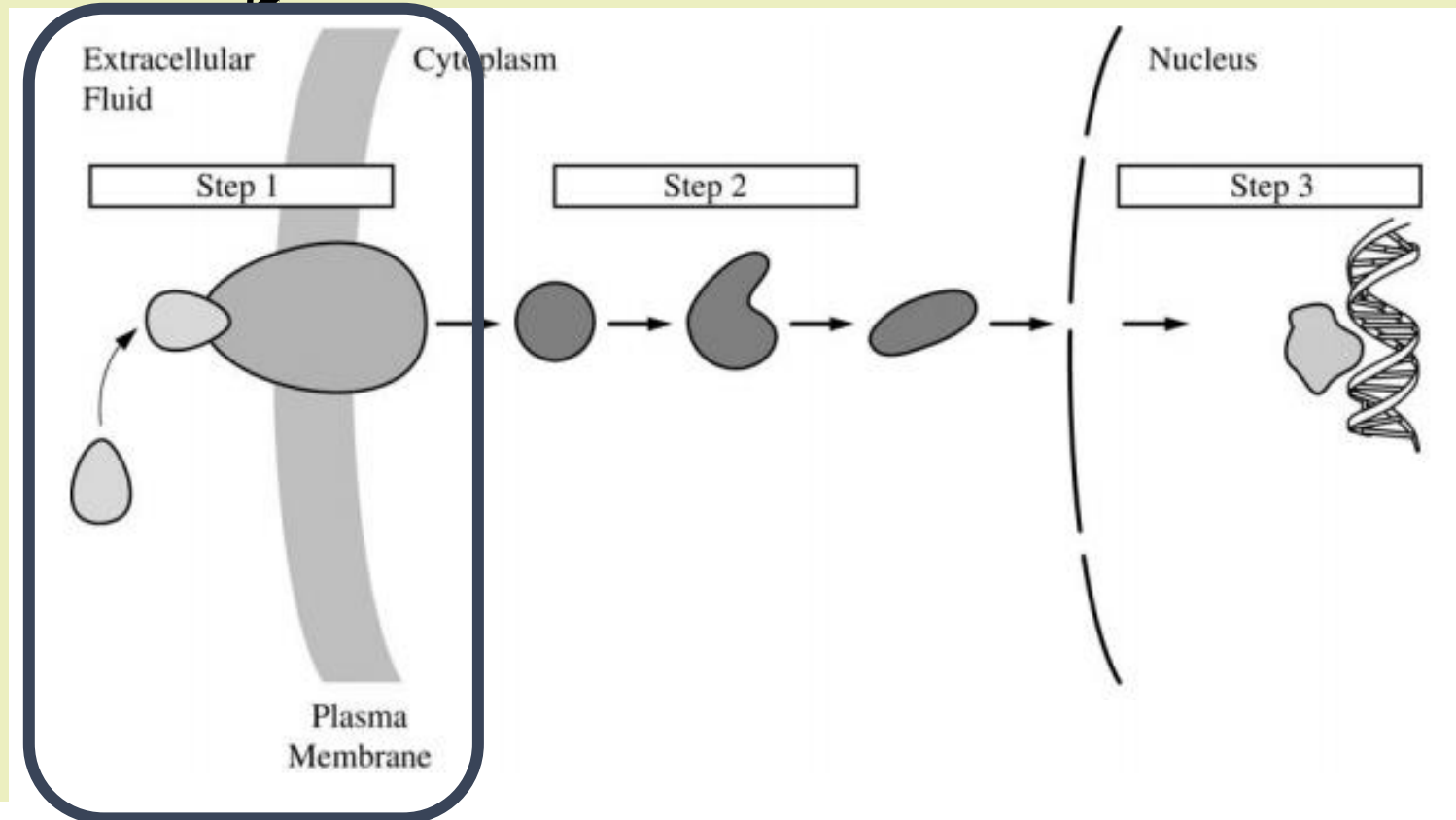
AP Bio FRQ Fridays

2013 #8
Signal Transduction Pathway



FRQ Friday #18

2013 #18

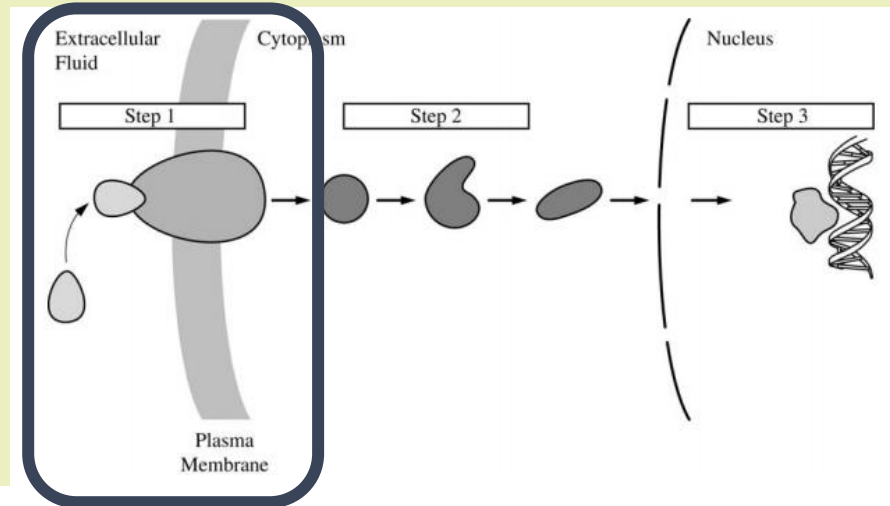


Step 1 = hormone/ligand binding to receptor to initiate/trigger/induce signaling OR signal reception



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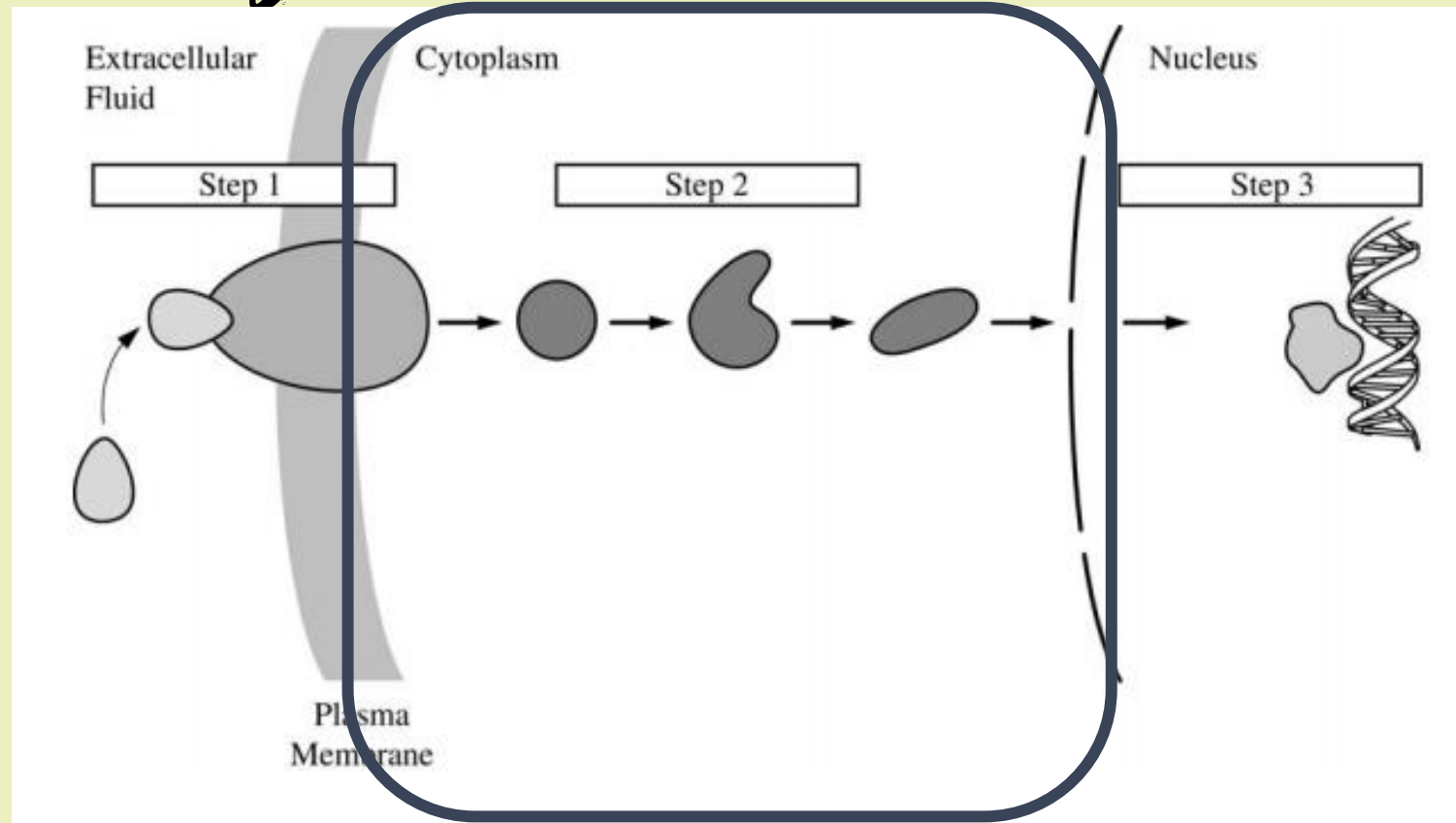
Step 1 = hormone/ligand binding to receptor to initiate/trigger/induce signaling OR signal reception

Step 1: Ligand binds to membrane bound receptor (which goes through cell membrane). Receptor will alter its shape, inducing a signal response. If there are fewer ligands the response will decrease. If the receptor is not functioning the ^{cellular} response will not occur (ex. diabetes mellitus).



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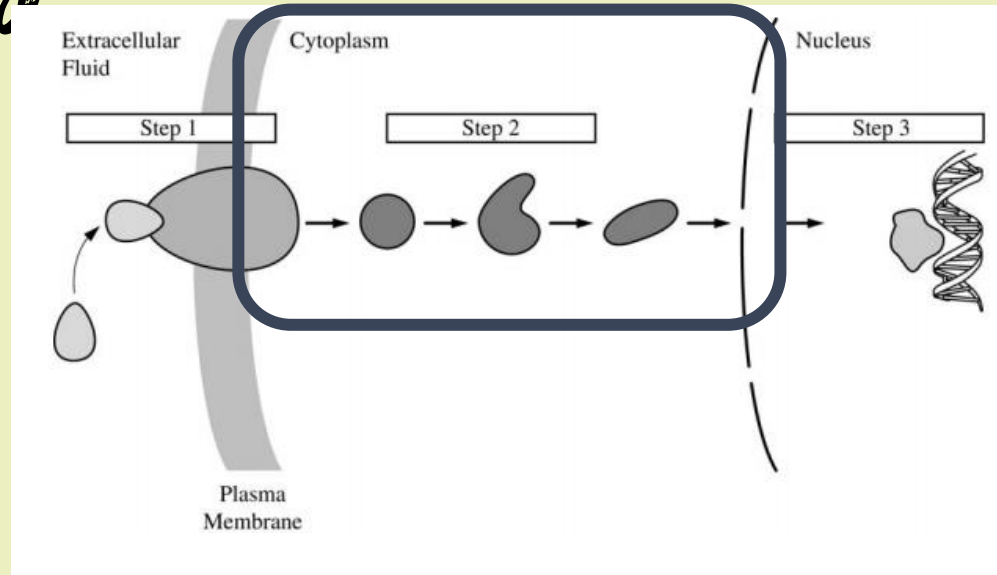


Step 2 = an intracellular cascade that transduces/amplifies/transfers the signal from plasma membrane to nucleus (or other cellular effectors)



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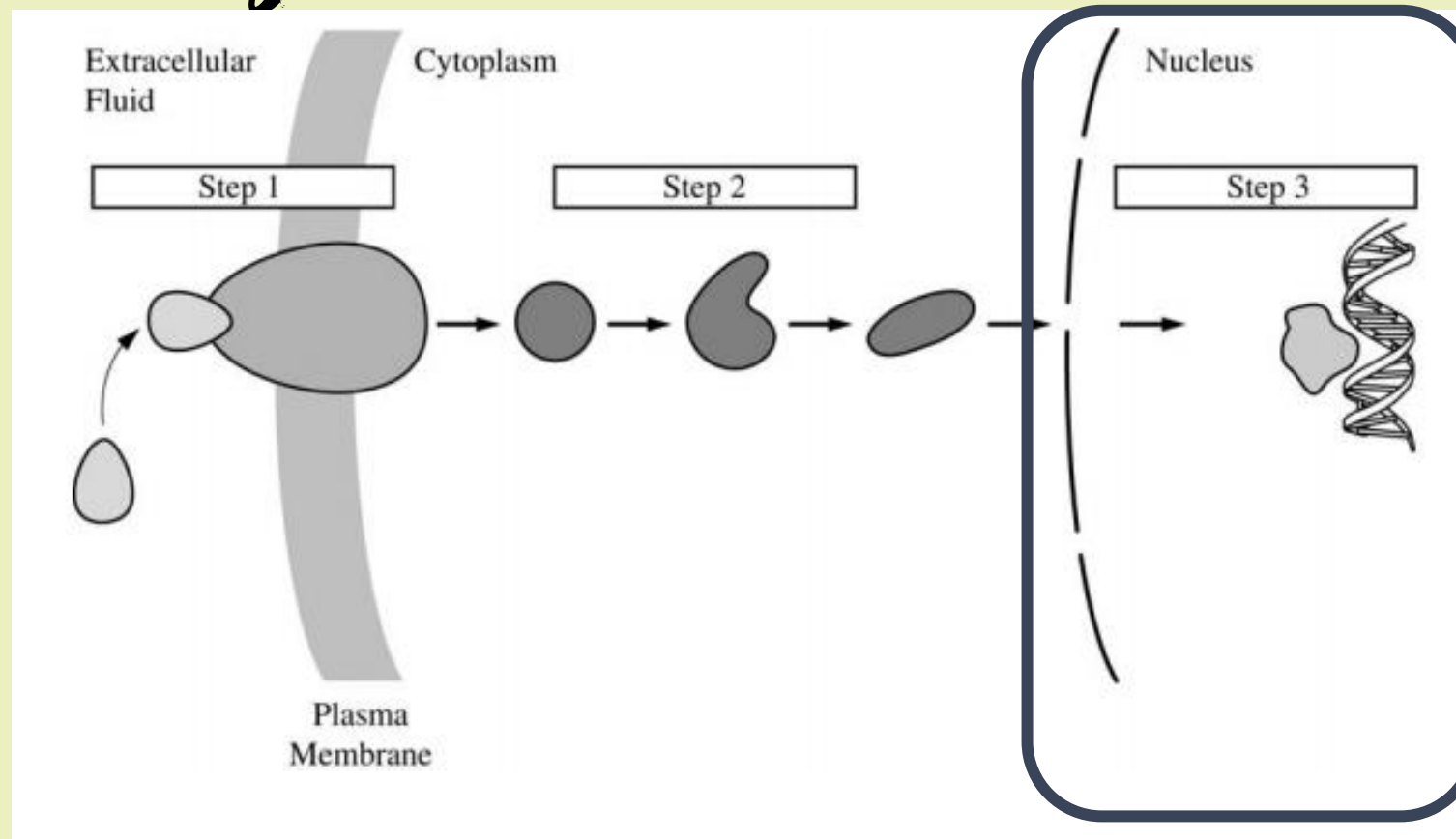
Step 2 = an intracellular cascade that transduces/amplifies/transfers the signal from plasma membrane to nucleus (or other cellular effectors)

Step 2: The transduction pathway goes through a few messengers until one nonprotein messenger passes through nuclear envelope. This pathway amplifies the signal, controls the signal, and functions as a way to induce many cellular responses (if the pathway can continue in divergent directions)



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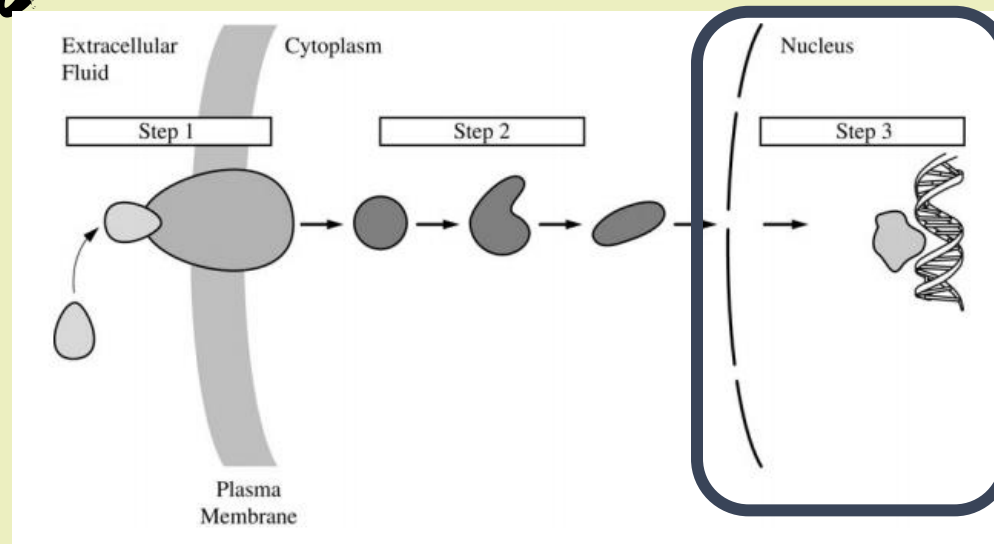


Step 3 = transcription/expression of target genes is stimulated/repressed



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Step 3 = transcription/expression of target genes is stimulated/repressed

Step 3: The messenger will either act as an inducer, allowing RNA polymerase to transcribe the gene, or as an inhibitor, to stop the transcription. This is critical in negative feedback, where signals control the on/off times of the ~~gene~~ mRNA production.

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