Ask Weber

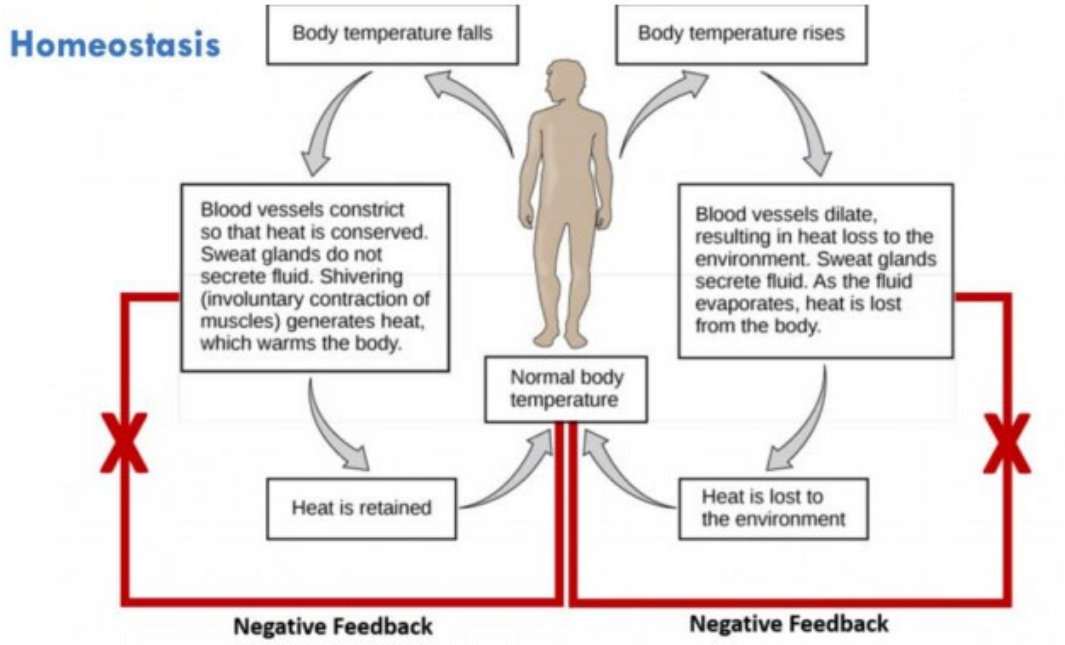
Session 2

Topic 4

https://askweber.github.io/

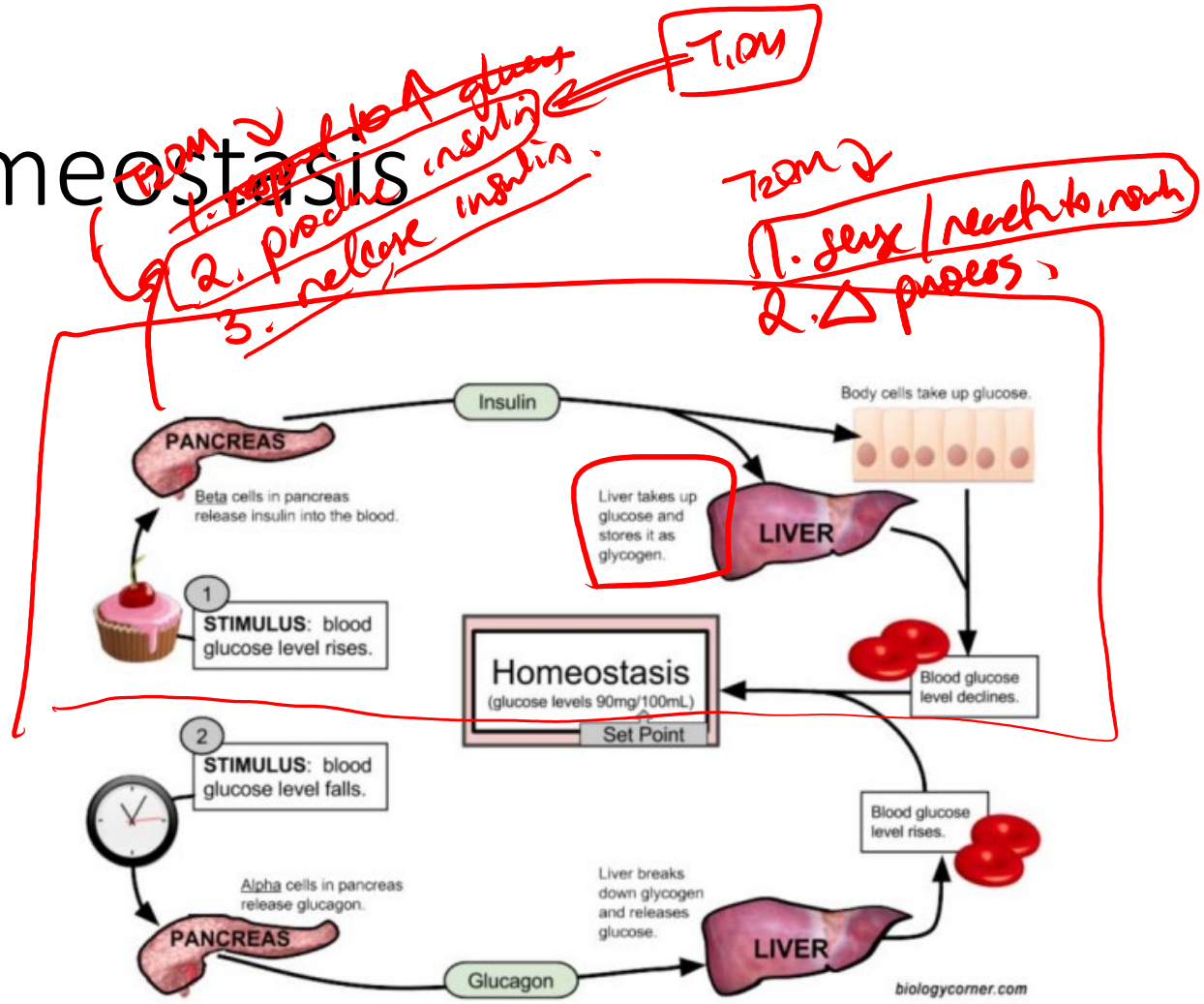
Lecture 4 - Homeostasis

1. Explain the homeostatic mechanisms the body implements to prevent hyperthermia.
2. Colloquially, we use ‘physiology’ to describe when systems implement negative feedback loops (i.e. homeostatic mechanisms). What are 2 situations which are physiological positive feedback loops?



Lecture 4 – glucose homeostasis

1. In response to eating (and elevated glucose levels in the blood), the pancreatic beta cells tend to activate. Describe the function of the pancreatic beta cells in the maintenance of blood glucose homeostasis.
2. In diabetes, the homeostatic mechanism of insulin breaks down. Describe some mechanisms through which this could occur.



Lecture 4 – Cell signalling

1. Within certain cells, there are a series of proteins/enzymes named MAP Kinase Kinase Kinase, MAP Kinase Kinase, MAP Kinase. One example is RAS/RAF/MEK/ERK (I learnt this when I did 3rd year physiology in undergrad). The function of these proteins are to phosphorylate each other in order to move a signal from outside of the cell to the inside (Note that kinases work by phosphorylation). What is this part of the cell signalling process called?

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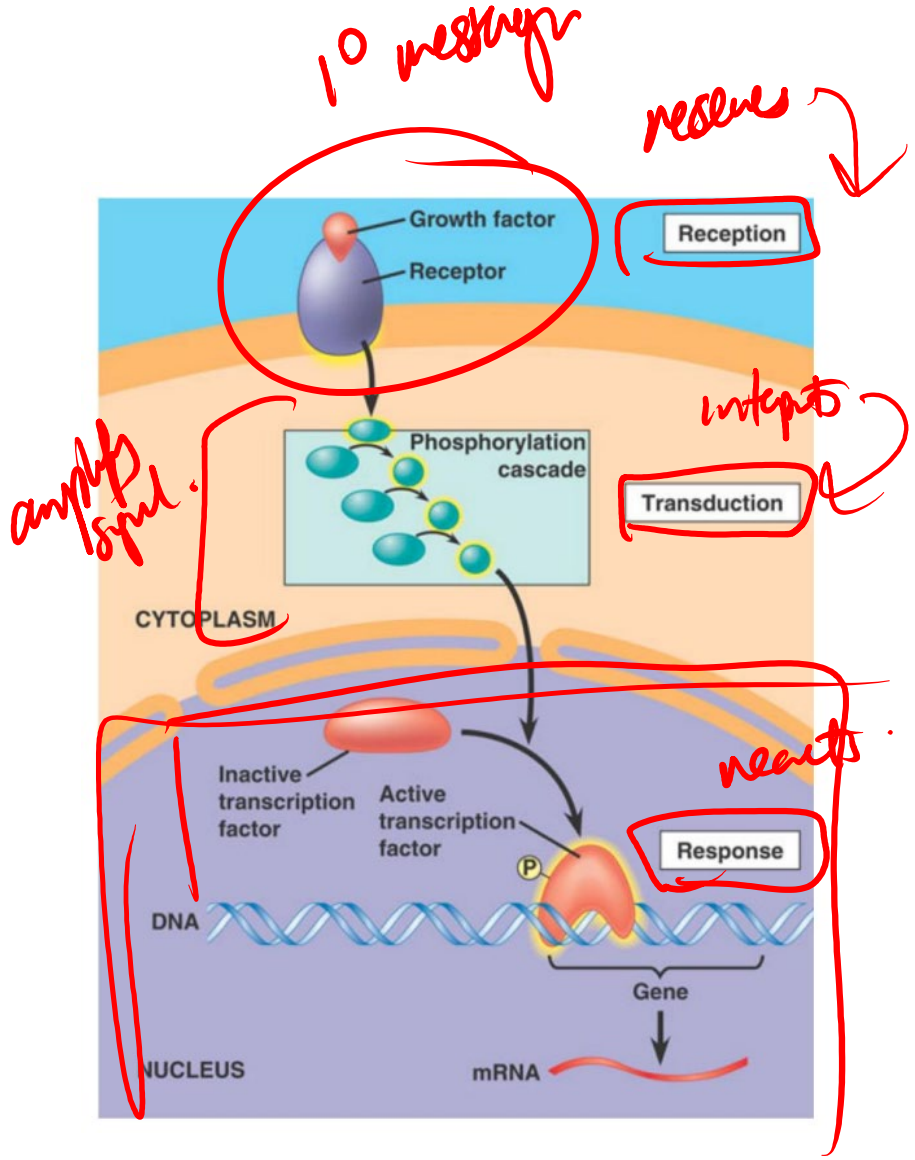
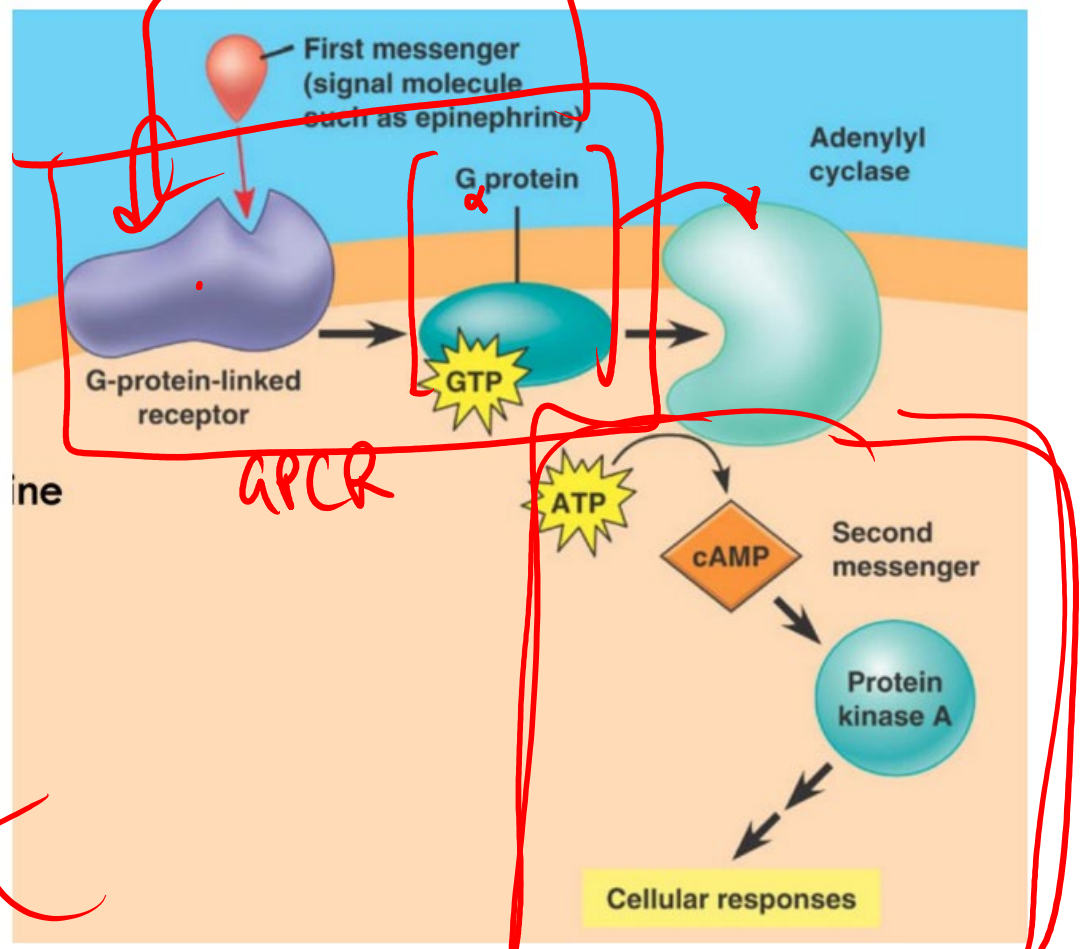


Lecture 4 – Cell signalling

1. Describe 4 features of a 2nd messenger.
2. Give 2 examples of secondary messengers.
3. Explain the mechanism of action of $\boldsymbol{G\alpha}$-Protein coupled receptor ($\boldsymbol{G\alpha sPCR}$)



Lecture 4 - Hormones

1. Describe the differences in signalling mechanisms between a protein hormone (give an example) and a steroid hormone (give an example).