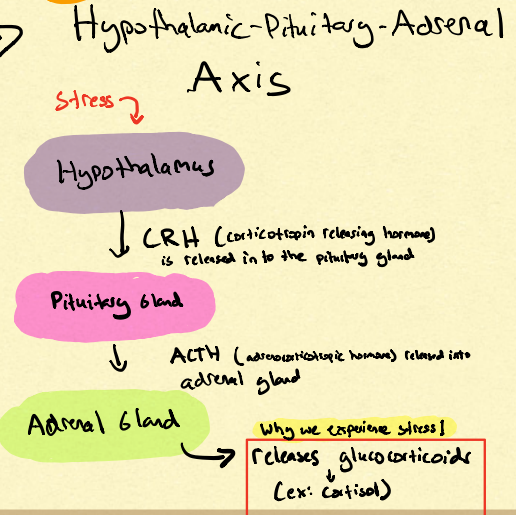


Cortisol Biosynthesis

Stress:

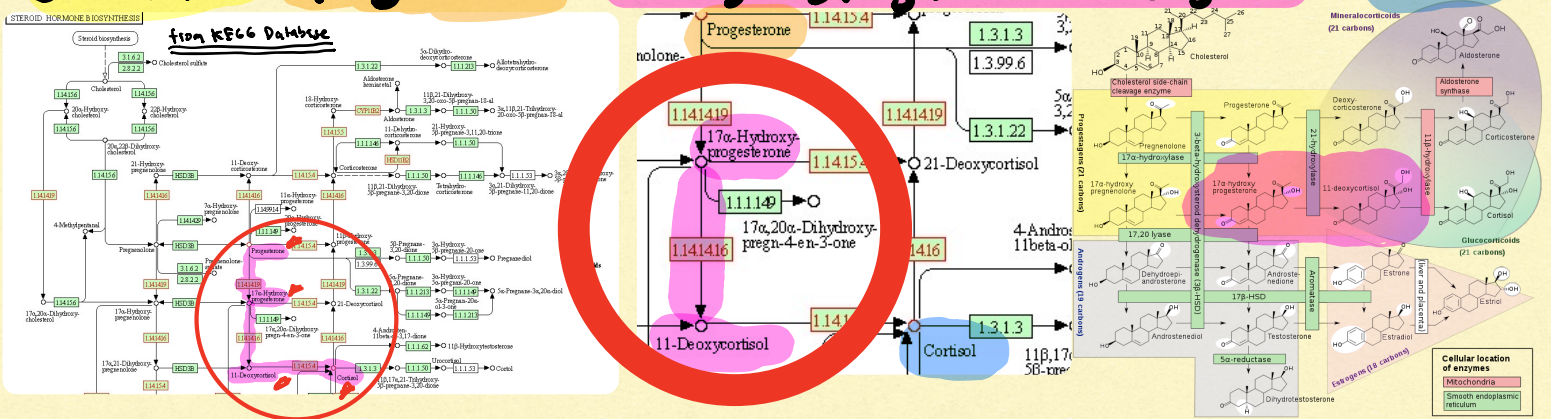
We all experience stress. When a stressor is experienced, humans respond by activating the sympathetic nervous system and **HPA-axis**



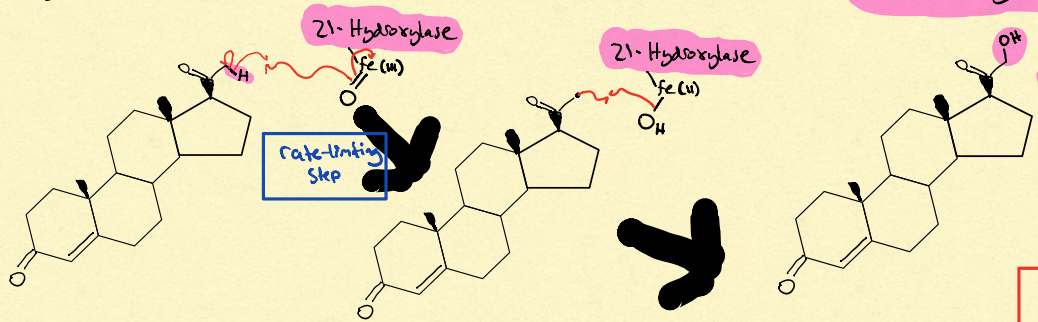
Certain diseases involve cortisol
 ↳ most commonly; anxiety is a result
 → **Congenital adrenal hyperplasia = too little**

Congenital Adrenal Hyperplasia (Information from wikipedia)
 - results from mutation in CYP21A2 (autosomal recessive)
 - affects 1 in 10000 births (globally)

Cholesterol → Progesterone → 17 α -hydroxyprogesterone → 11-deoxycortisol → Cortisol



Detailed Proposed Mechanism of 21-Hydroxylase



happens in adrenal cortex using cytochrome P450!
 continues in pathway to make cortisol
Super cool!

NADPH and NADPH-P450 reductase are also needed!!!

This enzyme (part of cytochrome P450 super family) is essential for producing cortisol!
 ↳ this enzyme is the most catalytically efficient of cytochrome P450 enzymes!
 Mutations in active site (heme group) are life threatening because cortisol is also involved in salt levels!