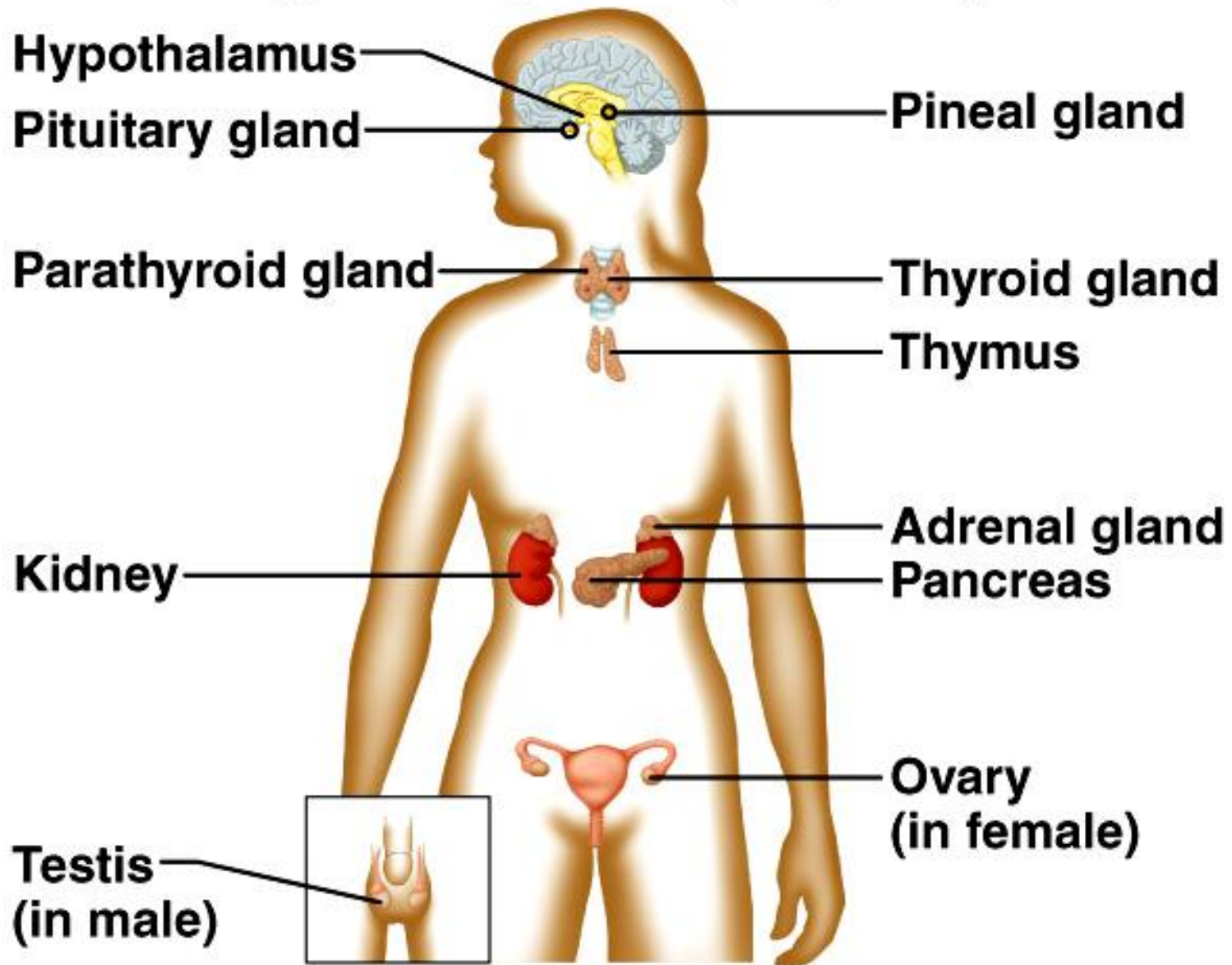


Endocrine System

6.5.7


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Review of Glands

6.5.7

- A **gland** is an organ in an animal's body that synthesizes a substance for release
- **EXOCRINE** glands are different than **ENDOCRINE** glands



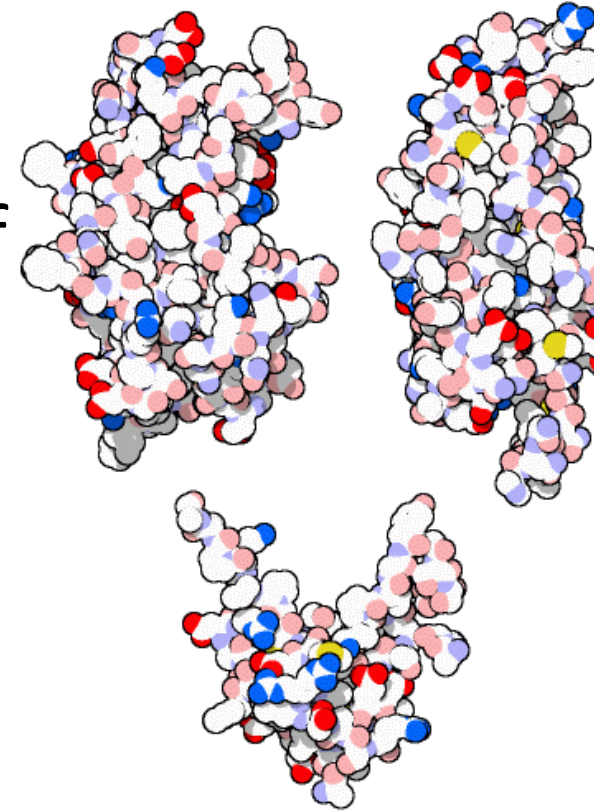
Secrete **other stuff** (sweat, oil, wax, enzymes etc) into **ducts** (a pipe or tube)



Secrete **hormones** directly into the **blood stream**

• Hormones

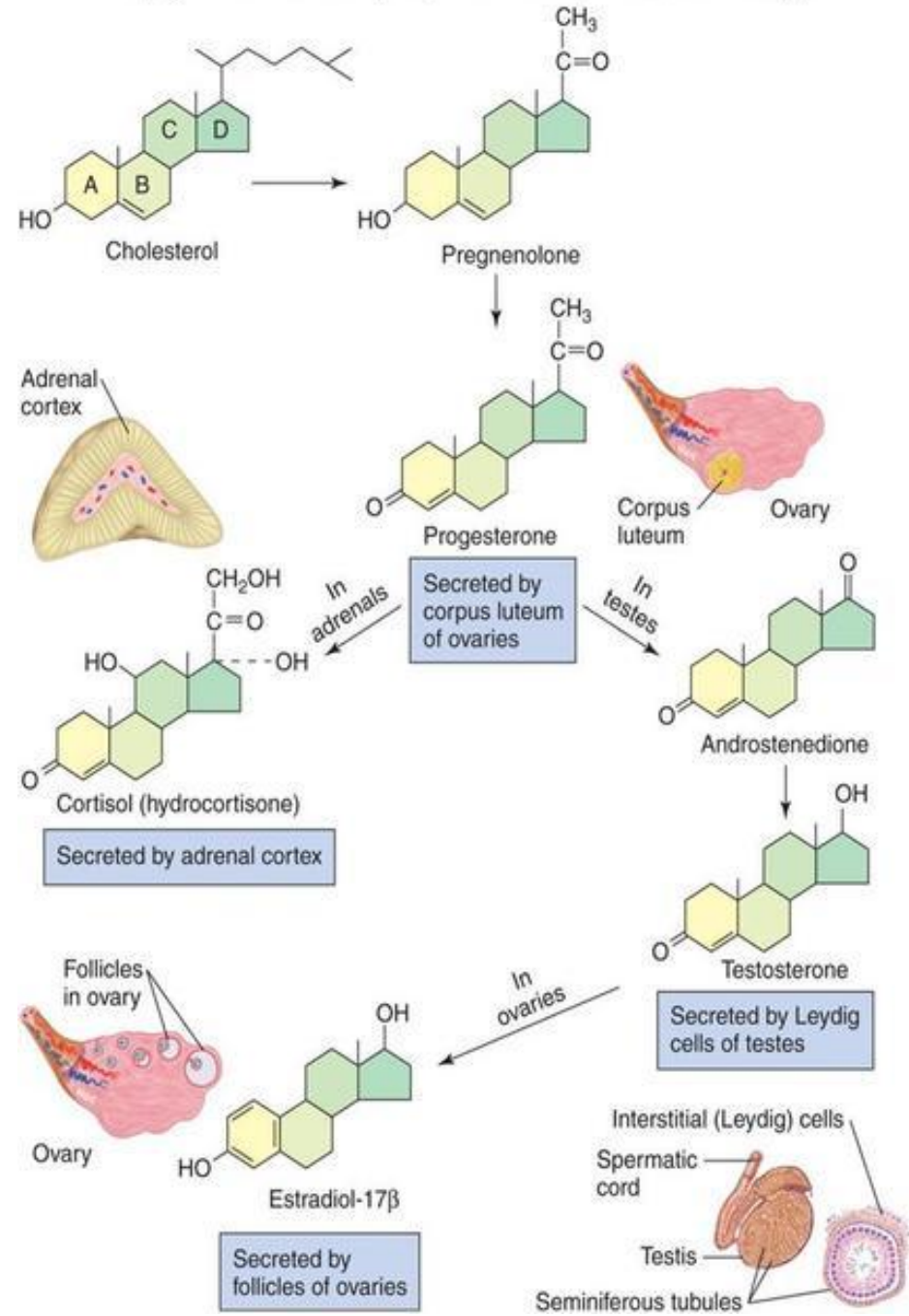
- chemical messages sent from one body part to another
- communication needed to coordinate whole body
- daily homeostasis & regulation of large scale changes
 - solute levels in blood
 - metabolism
 - growth
 - development
 - maturation
 - reproduction



growth hormones

Classes of Hormones

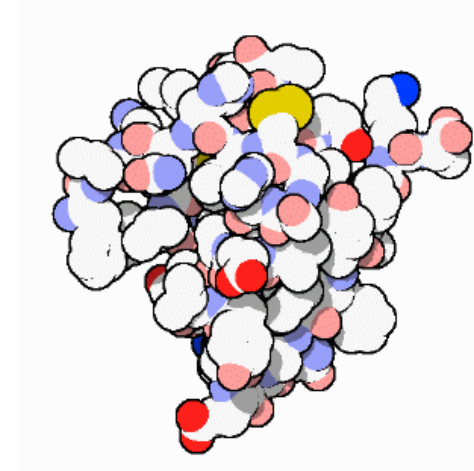
- **Steroids: lipid-based hormones**
 - modified cholesterol
 - Ex: testosterone, aldosterone



Classes of Hormones

- **Protein-based hormones**
 - polypeptides
 - small proteins: **insulin, ADH**
 - glycoproteins
 - large proteins + carbohydrate: **FSH, LH**
 - amines
 - modified amino acids: **epinephrine, melatonin**

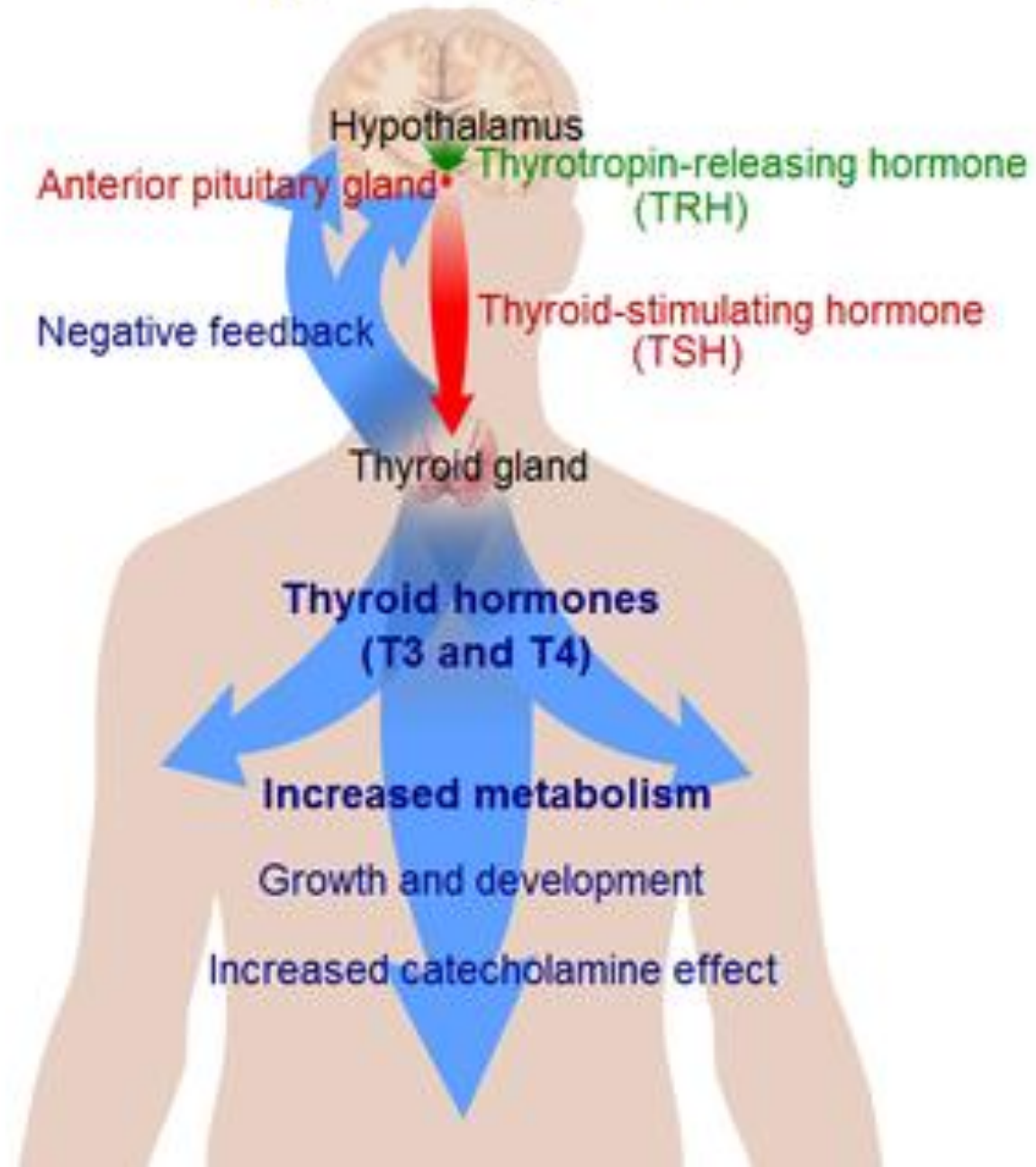
insulin



Classes of Hormones

- **Tyrosine derived hormones**
 - Modified tyrosine amino acid
 - Ex: T3 and T4

Thyroid system



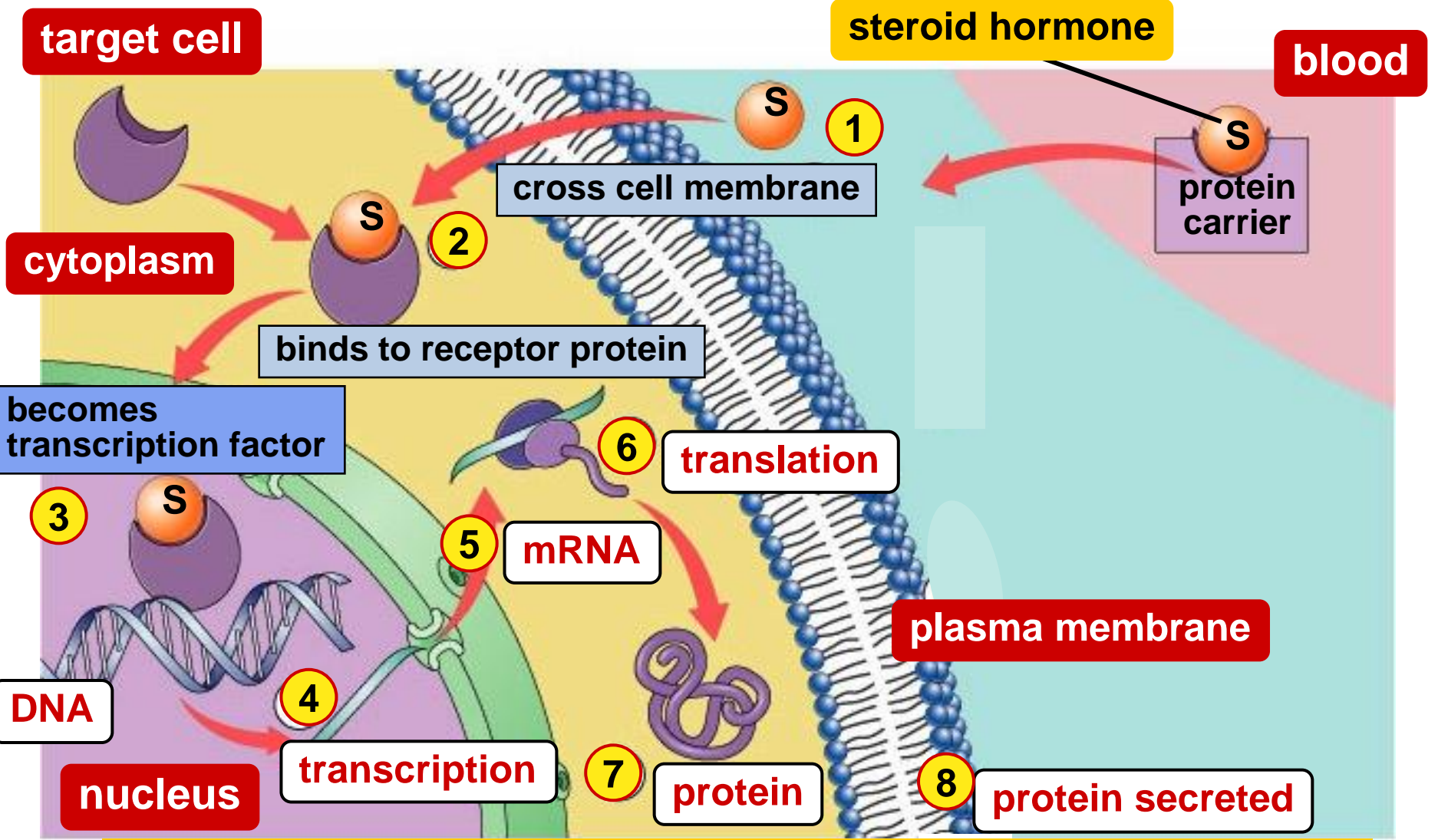
How do hormones act on target cells

- **Lipid-based hormones**

- **hydrophobic** & lipid-soluble

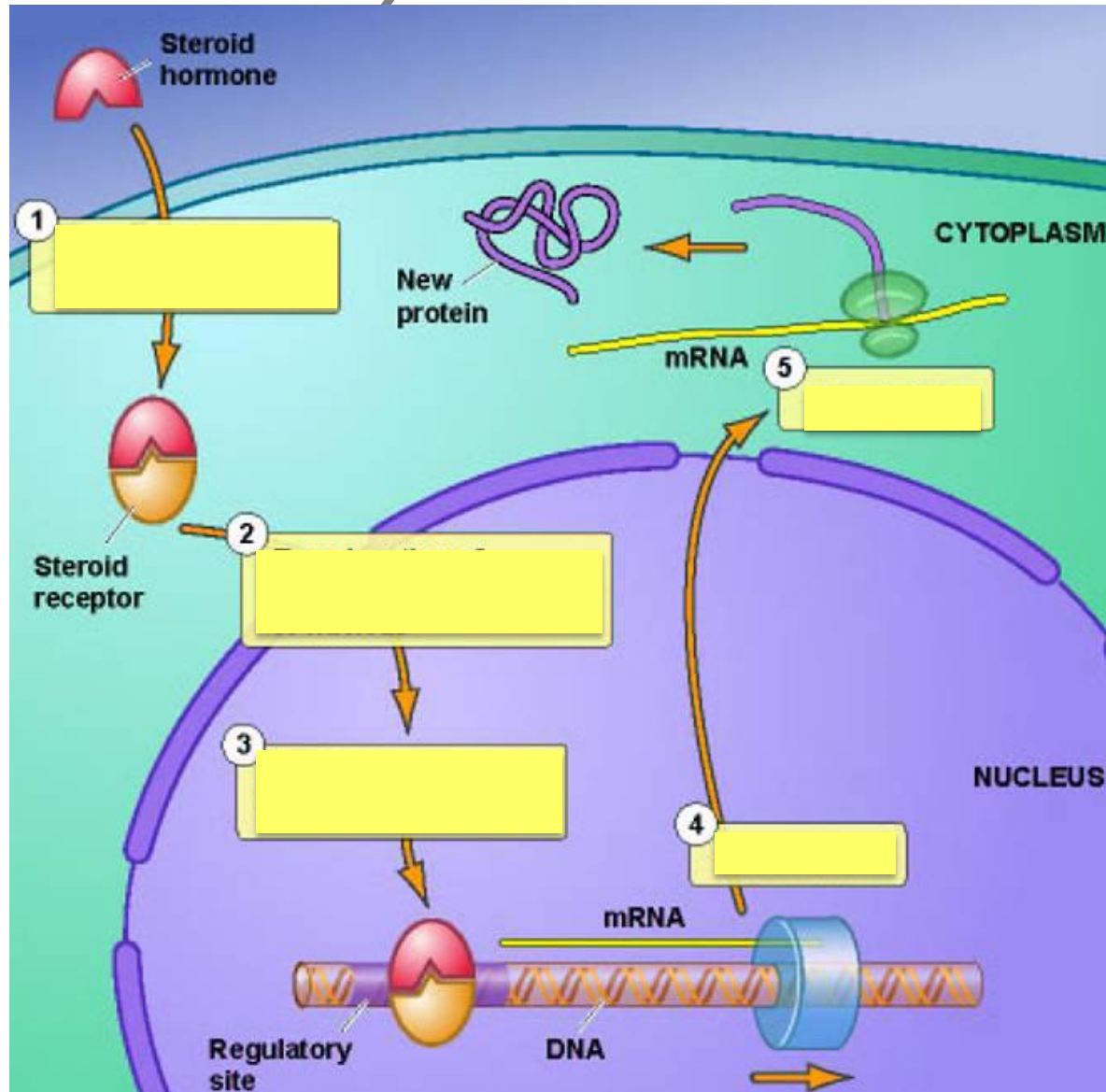
- diffuse across cell membrane & enter cells
- bind to **receptor proteins in cytoplasm & nucleus**
- bind to DNA as **transcription factors**
 - **turn on genes**

Action of lipid (steroid) hormones



ex: secreted protein = growth factor (hair, bone, muscle, gametes)

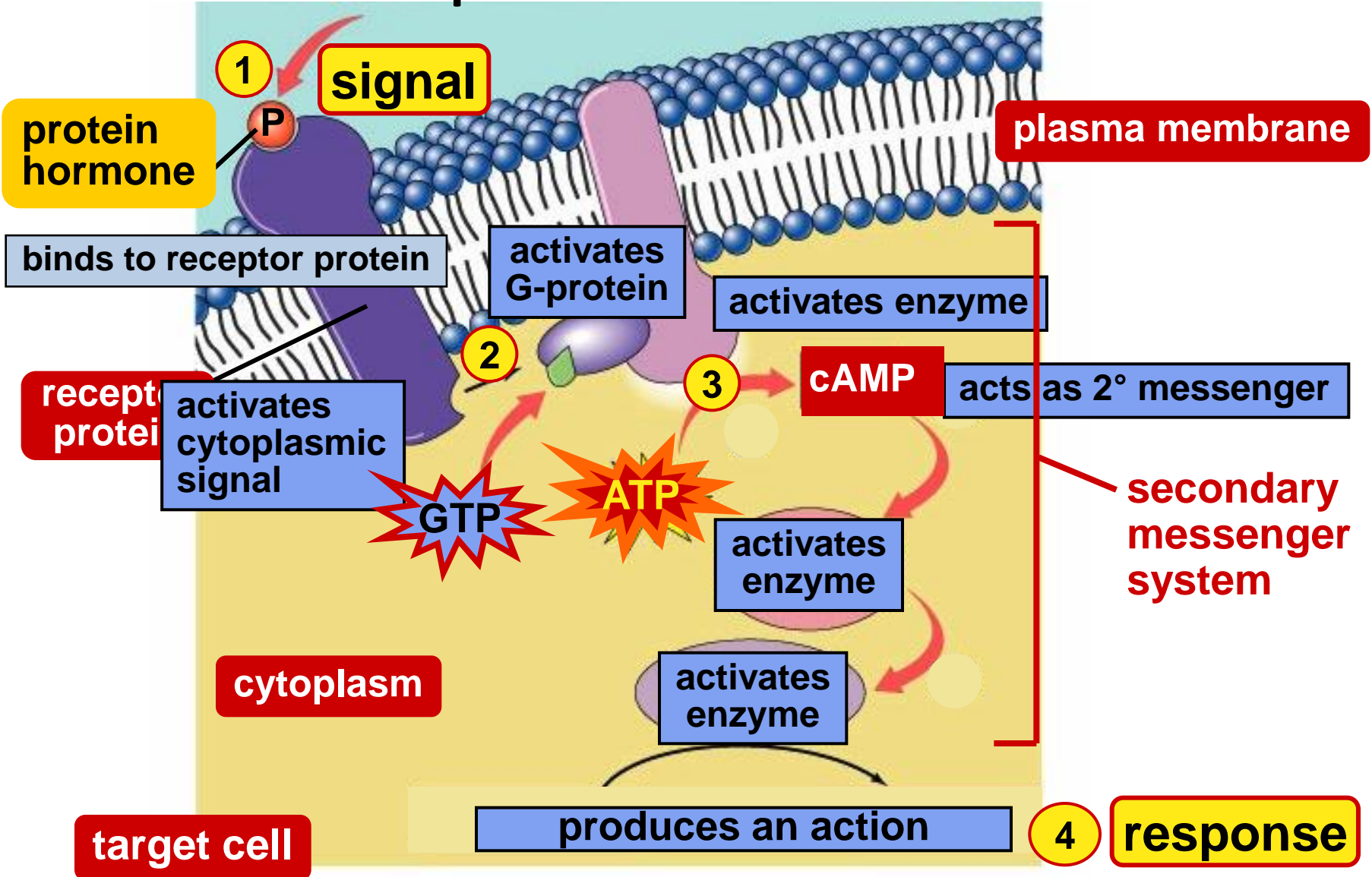
BILL: Explain what is happening at each numbered box. *Try to do this without notes!*

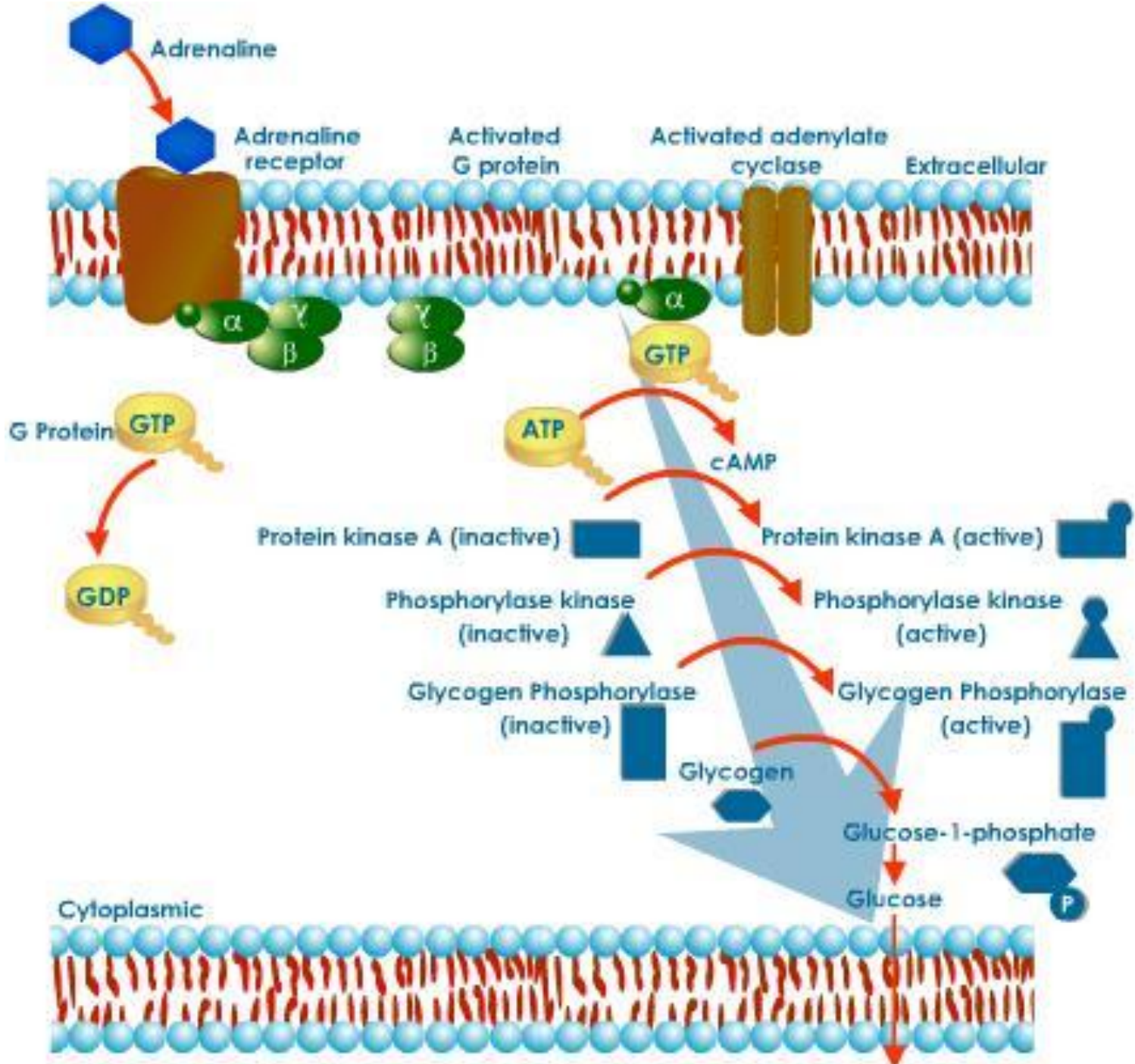


How do hormones act on target cells

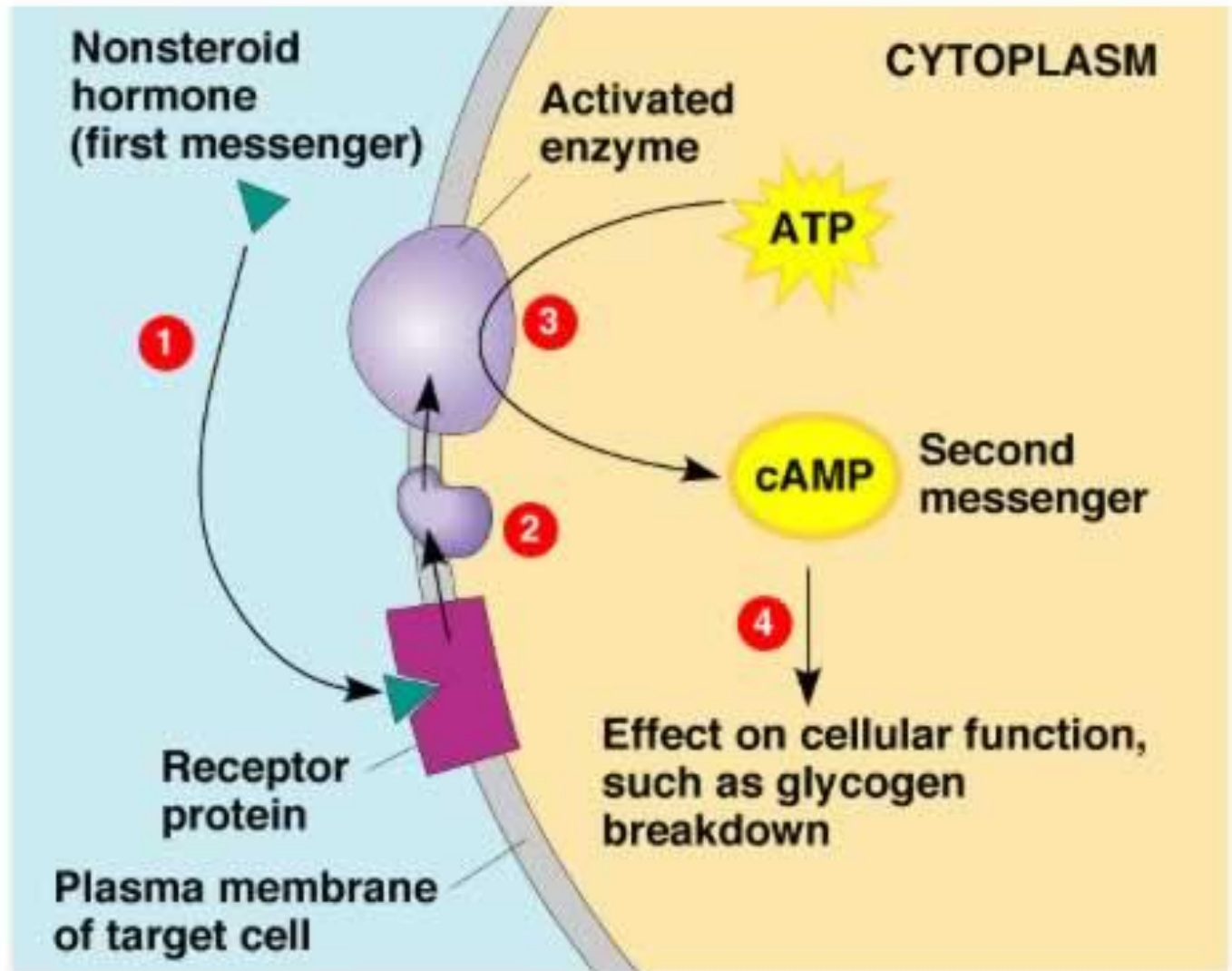
- **Protein-based hormones**
 - **hydrophilic** & not lipid soluble
 - can't diffuse across cell membrane
 - bind to **receptor proteins in cell membrane**
 - trigger **secondary messenger pathway**
 - activate internal cellular response
 - enzyme action, uptake or secretion of molecules...

Action of protein hormones



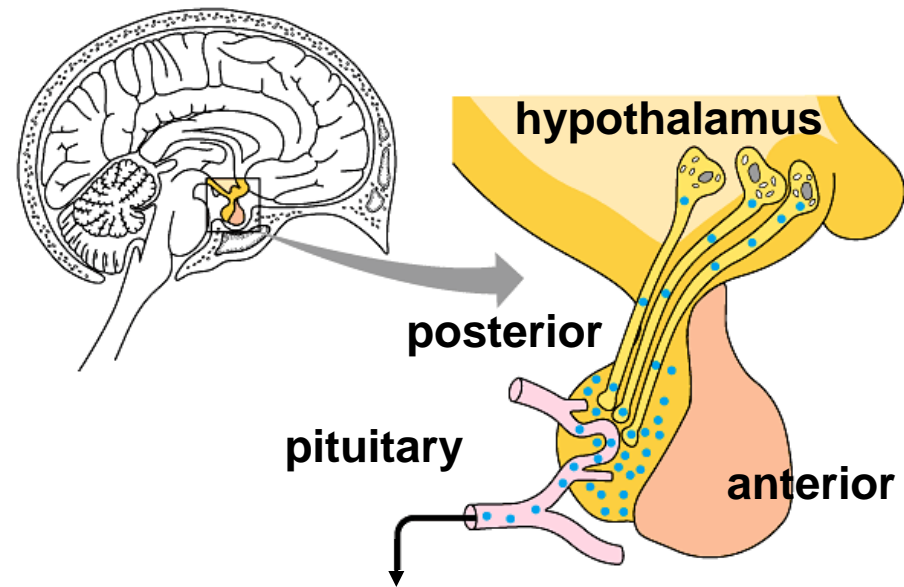


BILL: Explain what is happening at each number. *Try to do this without notes!*

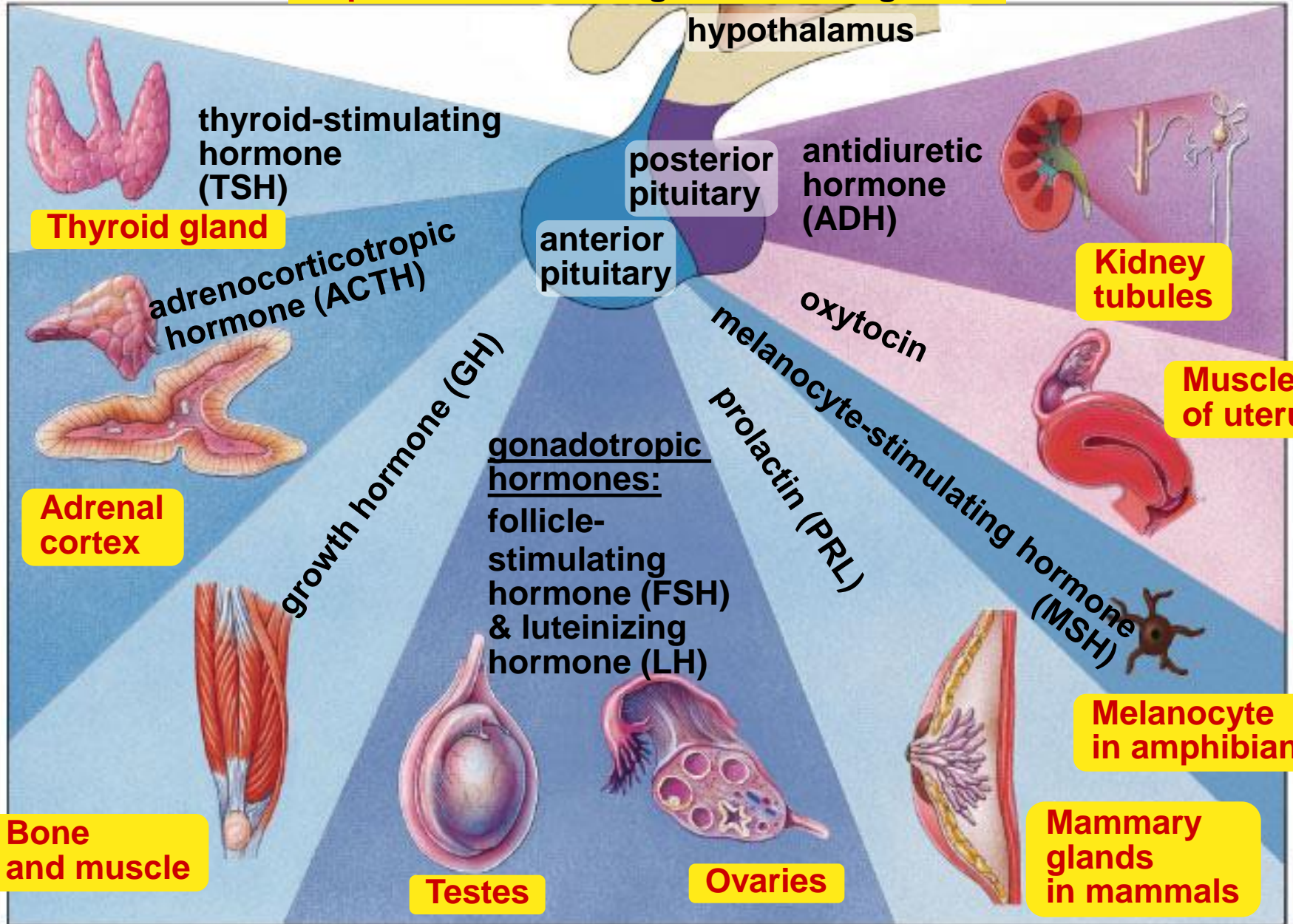


Nervous & Endocrine systems linked

- **Hypothalamus** = “master nerve control center”
 - nervous system
 - receives information from nerves around body about internal conditions
 - releasing hormones: regulates release of hormones from pituitary
- **Pituitary gland** = “master gland”
 - endocrine system
 - secretes broad range of “tropic” hormones regulating other glands in body



tropic hormones = target endocrine glands



As of now...

1. Antidiuretic hormone
2. Thyroid stimulating hormone
3. Growth hormone
4. Adrenocorticotrophic hormone