

Biochemistry

Hormones

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2nd year undergraduate – Biology

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Classification of hormones

Hormones are classified according to:

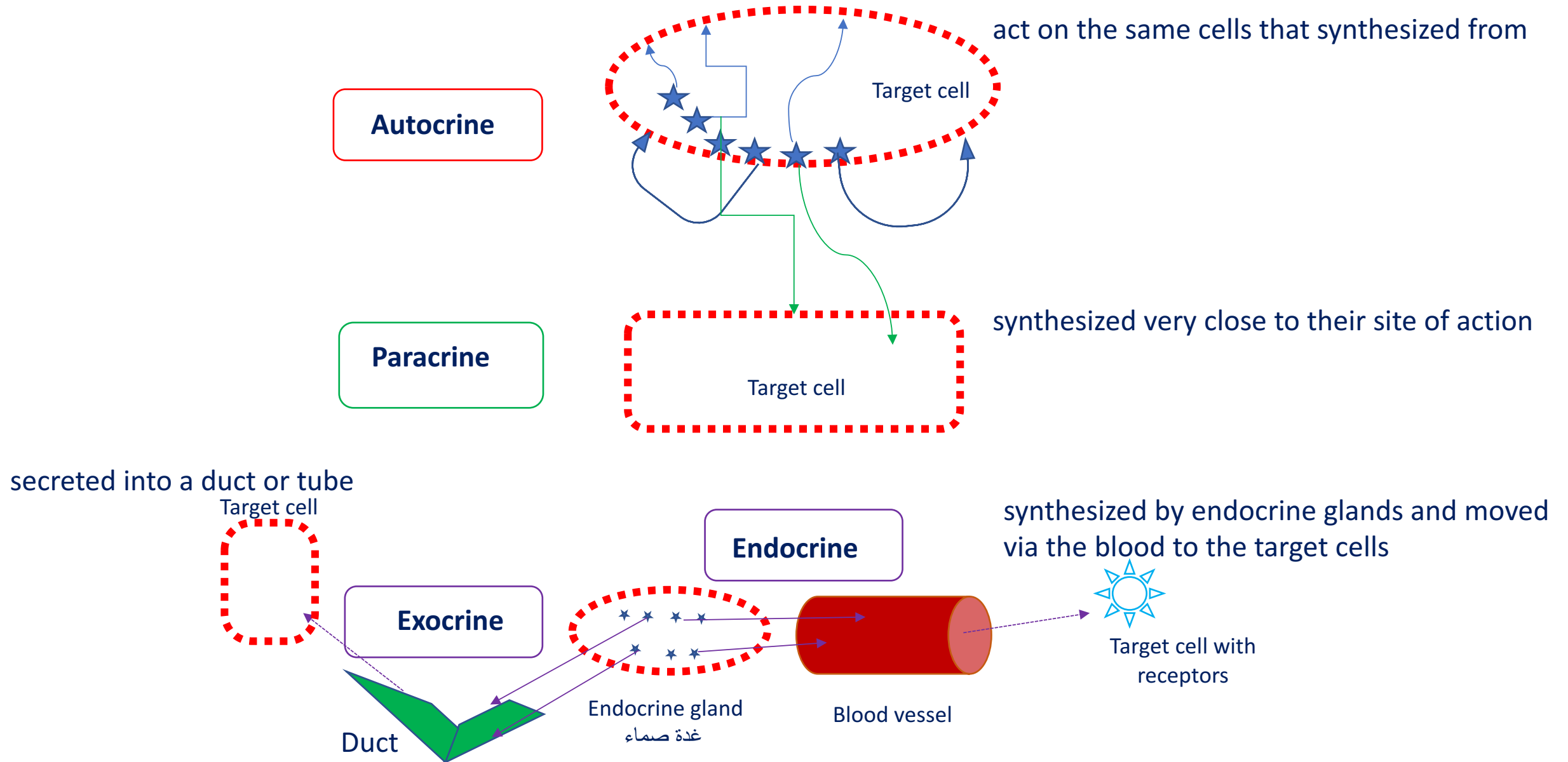
1. their site of synthesis / their site of action,
2. their chemical structure,
3. their degree of solubility in aqueous medium.

1. Classification of hormones according to the proximity of site of synthesis to site of action

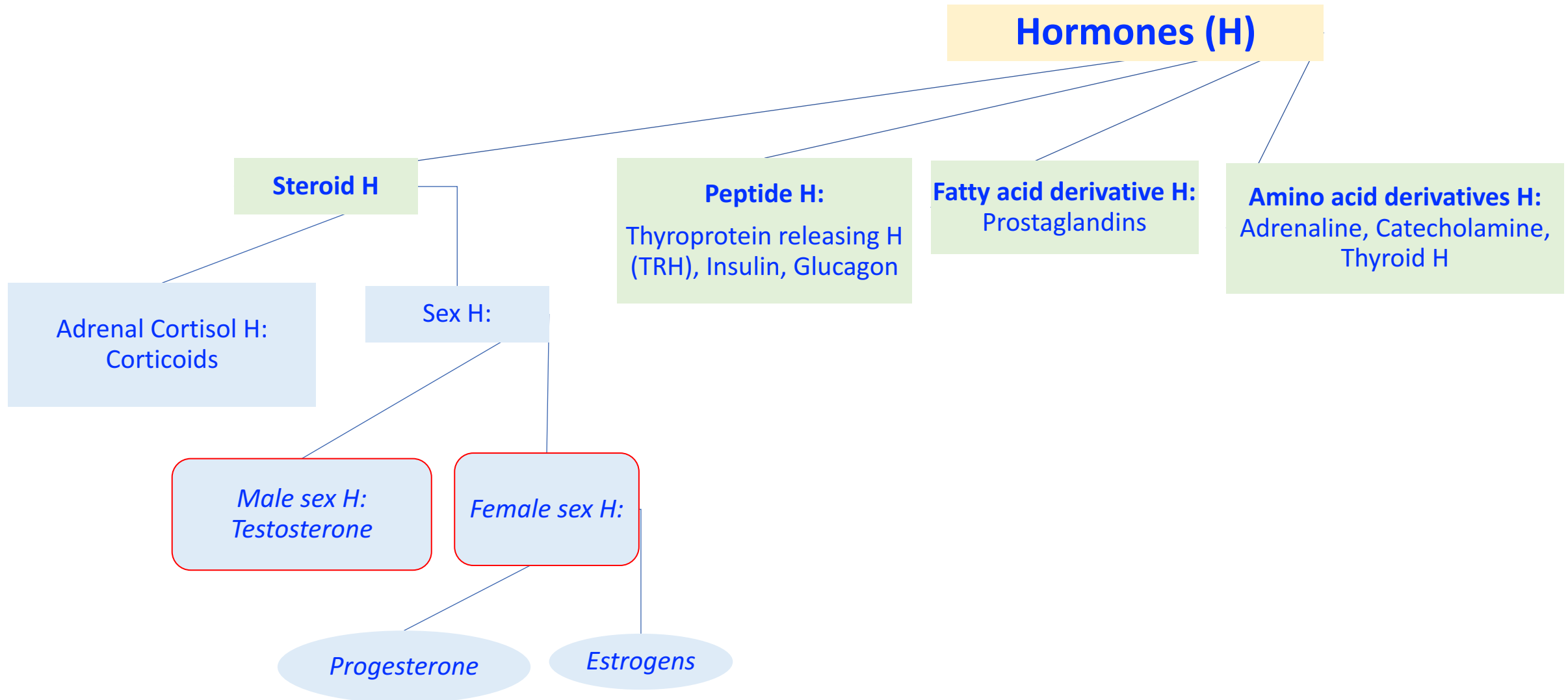
Hormones can be classified into 5 groups:

- **Autocrine Hormones:** which act on the same cells that synthesized from;
- **Paracrine Hormones:** those which are synthesized very close to their site of action;
- **Endocrine Hormones:** hormones are synthesized by endocrine glands and moved via the blood to the target cells that contain the appropriate receptors for this type of hormones;
- **Exocrine hormones:** secreted into a duct or tube not the blood;
- **Nurocrine Hormones:** hormones secreted from neurons into the blood, see Fig 1.

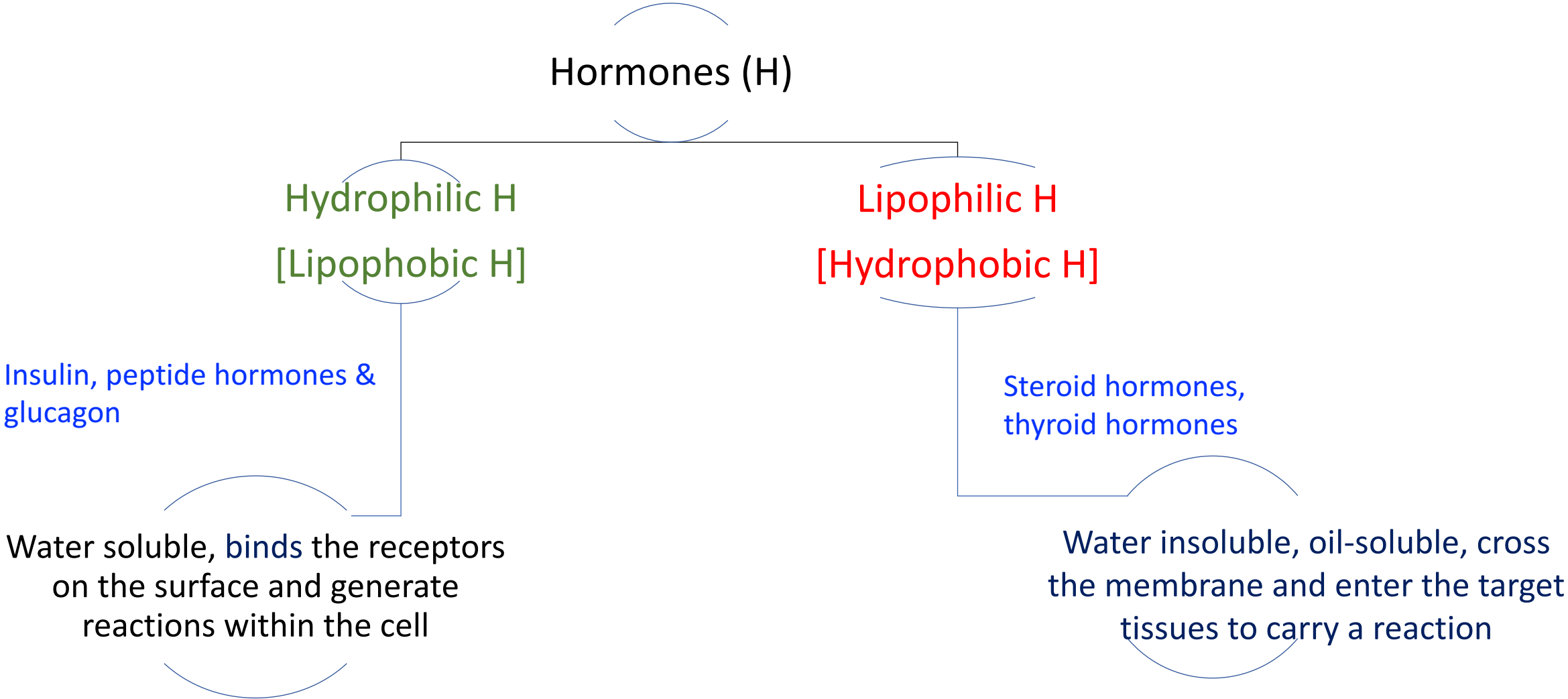
Figure 1. Classification of hormones according to the site of synthesis to the site of action



2. Classification of hormones according to their chemical structure:

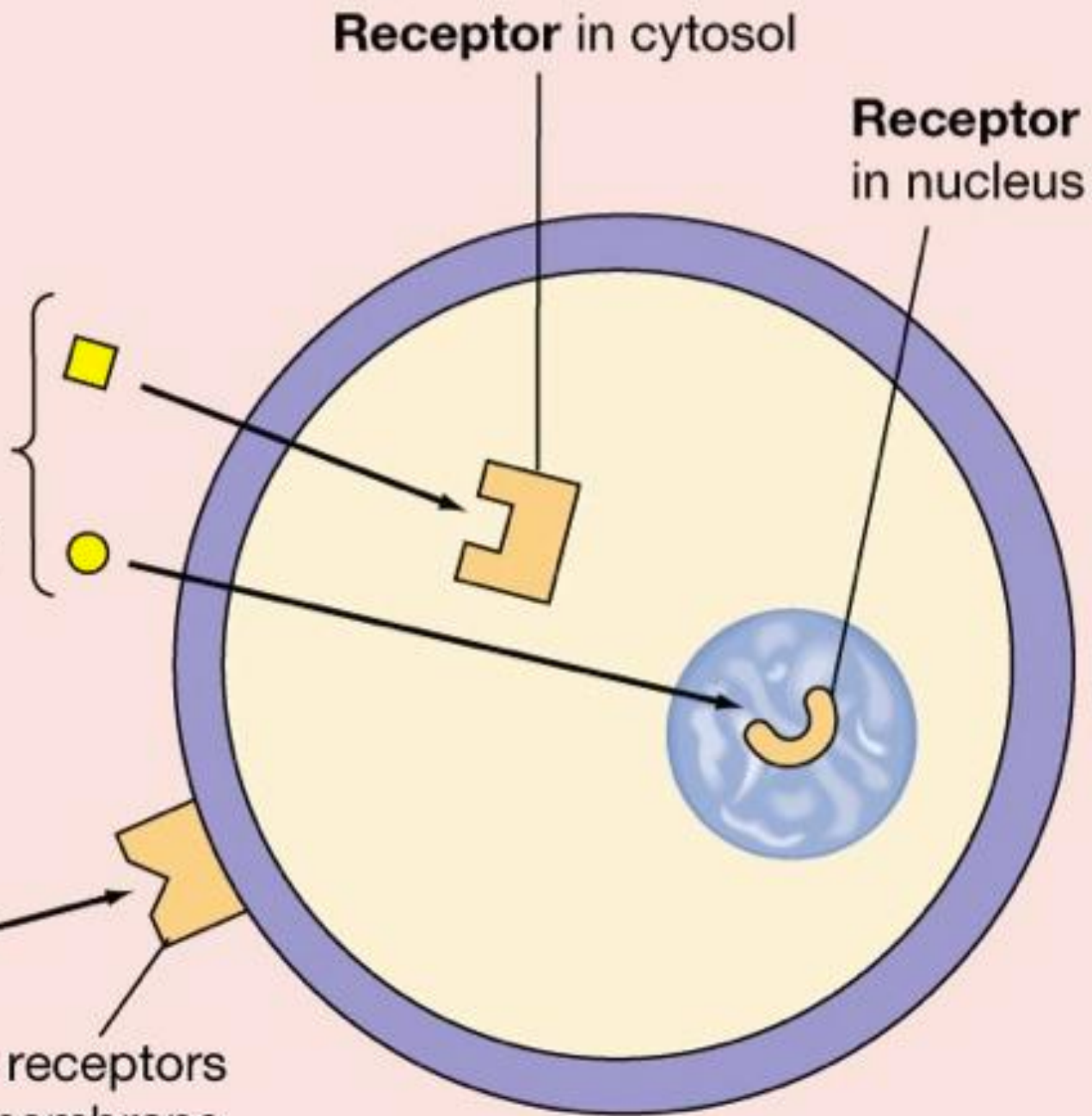


3. Classification of hormones according to solubility in aqueous medium



Lipophilic signal molecules diffuse through the cell membrane and bind to cytosolic or nuclear receptors.

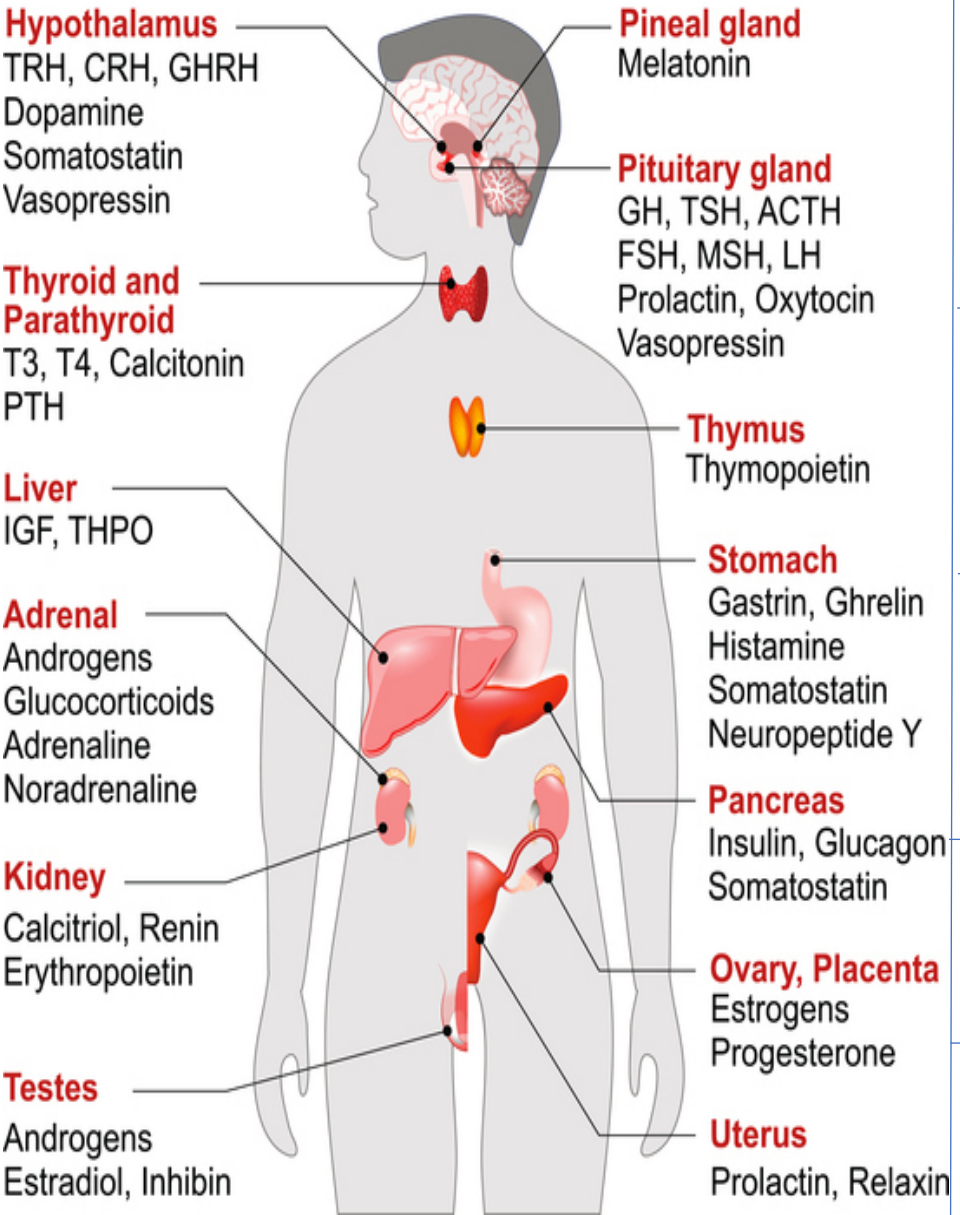
Lipophobic or lipophilic signal molecules bind to receptors on surface of cell membrane.



Receptor in cytosol

Receptor in nucleus

نظام الغدد الصم



Adrenal(endocrine)	الرغبة الجنسية التوتر القلق الكورتزول
Pituitary (Endocrine)	الغدة المنظمة الرئيسية تخلق هورمونات النمو
Ovaries (female)- Endocrine	الأستروجين البروجستيرون هورمونات الانوثة
Testes (male)- endocrine	التستوستيرون هورمونات الرجولة
Pineal (Thalamus)	انتاج السيروتونين (احد مشتقات الميلاتونين) و مسؤول عن السعادة

Hypothalamus	درجة حرارة الجسم الجوع المزاج العطش النوم الرغبة الجنسية
Parathyroid	تنظم كمية الكالسيوم بالجسم
Thyroid (endocrine)	تنتج الهورمونات المسؤولة عن حرق السعرت الحرارة و معدل ضربات القلب
Pancreas (exocrine)	تنتج هورمون الانسولين المسؤول عن تنظيم السكر بالدم
Thymus	وظائف الجهاز المناعي وإنتاج T-cells

Acronyms of some hormones

Hormones

	Acronym
AdrenoCorticoTrophic Hormone (Corticotrophin)	ACTH
Arginine Vasopressin (Anti-Diuretic Hormone)	AVP (ADH)
Corticotrophin Releasing Hormone	CRH
Follicular Stimulating Hormone	FSH
Gonadotrophin Releasing Hormone	GnRH
Growth Hormone	GH (HGH)
Growth Hormone Releasing Hormone	GHRH
Luteinizing Hormone	LH
Parathyroid Hormone	PTH
Thyroid Stimulating Hormone	TSH
Thyrotrophin Releasing Hormone	TRH
Tri-iodothyronine	T3
Thyroxine	T4