

## ***HORMONE HALL OF FAME***

Grouped more or less by synergistic or antagonistic functions.

<u>Hormone</u>	<u>Source</u>	<u>Effect on target tissue</u>	<u>Stimulus for release</u>
ACTH (Adrenocorticotropic H.)	Ant. Pituitary	<ul style="list-style-type: none"> <li>Stimulates adrenal cortex to release aldosterone and cortisol especially during prolonged stress.</li> </ul>	<ul style="list-style-type: none"> <li>various sources of stress...both physical and psychological</li> </ul>
ADH (Antidiuretic H.)	Post. Pituitary	<ul style="list-style-type: none"> <li>Directly causes kidneys to reabsorb more water back into the blood and produce a smaller amount of more conc. urine.</li> <li>Water retention leads to increased BP.</li> </ul>	<ul style="list-style-type: none"> <li>high osmolality of body fluids or</li> <li>decreasing BP</li> </ul>
Aldosterone	Adrenal cortex	<ul style="list-style-type: none"> <li>↑ Retention (reabsorption) of Na<sup>+</sup> and ↑ excretion of K<sup>+</sup> (&amp; H<sup>+</sup>) at kidneys. Water follows sodium so water is conserved indirectly. Water retention leads to increased BP.</li> <li>Levels are low in Addison's disease.</li> <li>Levels are high in Cushing's syndrome.</li> </ul>	<ul style="list-style-type: none"> <li>low blood Na<sup>+</sup> which usually corresponds with ↑ K<sup>+</sup></li> <li>low BP.</li> <li>Stress may also stimulate release of aldosterone via ACTH.</li> </ul>
Calcitonin	Thyroid	<ul style="list-style-type: none"> <li>Lowers blood Ca<sup>++</sup> by stimulating osteoblasts to absorb and kidneys to excrete Ca<sup>++</sup>. "... tones down calcium levels."</li> <li>Is rarely used by the adult body to control blood calcium levels...Only used when Ca<sup>++</sup> is excessively high.</li> </ul>	<ul style="list-style-type: none"> <li><u>excessively</u> high blood Ca<sup>++</sup></li> </ul>
PTH - (Parathyroid H.)	Parathyroid	<ul style="list-style-type: none"> <li>Increases blood calcium levels by:               <ol style="list-style-type: none"> <li>stimulates osteoclasts to release Ca<sup>++</sup> from bone</li> <li>stimulates kidneys to retain Ca<sup>++</sup> in blood</li> <li>stimulates absorption of Ca<sup>++</sup> at small intestine</li> </ol> </li> <li>Blood calcium levels are normally adjusted ↑ or ↓ by adjusting the amount of PTH.</li> </ul>	<ul style="list-style-type: none"> <li>low blood calcium</li> </ul>
Glucagon	Pancreas	<ul style="list-style-type: none"> <li>↑ blood glucose levels by stimulating glycogenolysis at liver thereby releasing glucose to the blood.</li> </ul>	<ul style="list-style-type: none"> <li>Low blood glucose levels</li> </ul>
Insulin	Pancreas	<ul style="list-style-type: none"> <li>Lowers blood glucose by facilitating the transport of glucose (and AA's) from blood into tissue cells, especially into skeletal muscle and fat.</li> <li>Stimulates protein synthesis.</li> <li>Type II diabetes mellitus (the most common type) results from target tissue receptors that do not respond to insulin.</li> <li>Type I diabetes mellitus results from a pancreas that does not produce and/or release correct amounts of insulin.</li> </ul>	<ul style="list-style-type: none"> <li>high blood glucose levels</li> </ul>
Thymosin	Thymus	<ul style="list-style-type: none"> <li>Influences development of lymphocytes involved in immunity. Is most active when we are young.</li> </ul>	-
Epinephrine (adrenaline) and Norepinephrine (NE)	Adrenal medulla	<ul style="list-style-type: none"> <li>Same as general sympathetic stimulation (F/F)...↑ HR, ↑ vasoconstriction, ↑ BP, bronchodilation, etc.</li> <li>these effects are short lived (minutes)</li> </ul>	<ul style="list-style-type: none"> <li>sympathetic nerve impulses due to stressful "fight or flight" situations.</li> </ul>

Melatonin	Pineal gland	<ul style="list-style-type: none"> <li>• Has a calming or sedating effect... “makes you mellow” by encouraging the onset and depth of sleep.</li> <li>• Excess melatonin causes some people to become depressed during winter months... a condition known as S.A.D. (Seasonal Affective Disorder)</li> </ul>	darkness or lack of bright sunlight
Cortisol (a.k.a. hydrocortisone)	Adrenal cortex	<ul style="list-style-type: none"> <li>• Helps keep blood glucose up to its normal level between meals by 1) causing cells to make glucose from lipids and proteins and 2) causing cells to burn more FAs and less glucose.</li> <li>• Is anti-inflammatory. Cortisol depresses the normal functioning of your immune system.</li> <li>• Levels are low in Addison’s disease.</li> <li>• Levels are high in Cushing’s syndrome.</li> </ul>	<ul style="list-style-type: none"> <li>• Stress or hypoglycemia causes the release of ACTH from ant. pituitary. This, in turn, stimulates the adrenal cortex to release cortisol and aldosterone</li> </ul>
Estrogen and Progesterone	Ovaries	<ul style="list-style-type: none"> <li>• Controls changes of the endometrium during the monthly uterine (menstrual) cycle.</li> <li>• also inhibits the ability to: drive a stick shift, parallel park, and to have an argument without taking it personally.</li> </ul>	<ul style="list-style-type: none"> <li>• fluctuating levels of FSH and LH from ant. pituitary.</li> </ul>
PRL Prolactin	Ant. Pituitary	<ul style="list-style-type: none"> <li>• Stimulates production of milk in breasts but not the release or “let down” of milk during a feeding.</li> </ul>	<ul style="list-style-type: none"> <li>• pregnancy and</li> <li>• infant nursing at breast</li> </ul>
Oxytocin	Post. Pituitary	<ul style="list-style-type: none"> <li>• Stimulates uterine contractions associated with childbirth</li> <li>• causes contraction of milk glands and the flow of milk “let down” during breast feeding.</li> </ul>	<ul style="list-style-type: none"> <li>• stretch of uterine cervix or</li> <li>• infant nursing at breast</li> </ul>
FSH - Follicle Stim. H.	Ant. Pituitary	<ul style="list-style-type: none"> <li>• Stimulates growth of ovarian follicles containing eggs.</li> </ul>	-
LH - Luteinizing H.	Ant. Pituitary	<ul style="list-style-type: none"> <li>• Stimulates ovulation and formation of a corpus luteum.</li> </ul>	-
Testosterone	Testes	<ul style="list-style-type: none"> <li>• Stimulates anabolic metabolism (protein synthesis), sperm production, growth of chest and facial hair, deep voice, etc.</li> <li>• ↑ aggressiveness and “territorial” tendencies sometimes causing an otherwise polite man to behave like a total ass.</li> <li>• Also causes men to believe they have the God-given responsibility to control the TV remote.</li> </ul>	<ul style="list-style-type: none"> <li>• watching sports on TV, hunting, fishing, being around “babes”, and having a beer “with the guys”</li> </ul>
GH - Growth H.	Ant. Pituitary	<ul style="list-style-type: none"> <li>• ↑ anabolic metabolism (protein synthesis) and cartilage growth at epiphyseal plates (bone growth).</li> <li>• Potentiates (enhances) the effects of T3 and T4.</li> </ul>	-
TSH - Thyrotropin or Thyroid stimulating H.	Ant. Pituitary	<ul style="list-style-type: none"> <li>• Stimulates thyroid gland to release T3 and T4.</li> </ul>	-
TH - Thyroid H. a.k.a. Thyroxine (includes T <sub>3</sub> & T <sub>4</sub> )	Thyroid gland	<ul style="list-style-type: none"> <li>• ↑ overall metabolism (especially protein synthesis) thereby ↑ body temperature and energy consumption.</li> <li>• Enhances the effects of GH such as protein synthesis.</li> </ul>	<ul style="list-style-type: none"> <li>• TSH</li> </ul>