

## THE NINE MAJOR ENDOCRINE GLANDS

| Glands and Glandular Organs |  |   |  |
|-----------------------------|--|---|--|
| Gland                       | Location                                     | Functions   | Hormones Produced  |
| <b>Adrenal glands</b>       | Above kidneys                                | Stress response<br>Part of HPA axis   | <ul style="list-style-type: none"> <li>● <i>Cortisol</i> (stress)</li> <li>● <i>Norepinephrine and epinephrine/adrenaline</i> (“fight or flight”)</li> <li>● <i>Aldosterone</i> (blood pressure, pH, electrolytes)</li> <li>● Small amounts of sex hormones</li> </ul>   |
| <b>Hypothalamus</b>         | Brain (above pituitary)                      | Part of several signaling pathways, including HPA, HPT, and HPG<br>Hormone “conductor”<br>“Liaison” between nervous and endocrine systems<br>Signals pituitary to secrete hormones<br>Homeostasis (body’s internal balance) | <ul style="list-style-type: none"> <li>● <i>Neurohormones</i> (signal pituitary to secrete hormones)               <ul style="list-style-type: none"> <li>● <i>Thyrotropin-releasing hormone</i></li> <li>● <i>Growth hormone-releasing hormone</i></li> <li>● <i>Growth hormone-inhibiting hormone (somatostatin)</i></li> <li>● <i>Gonadotropin-releasing hormone</i></li> <li>● <i>Corticotropin-releasing hormone</i></li> </ul> </li> <li>● <i>Oxytocin</i></li> <li>● <i>Dopamine</i></li> <li>● <i>Vasopressin</i></li> </ul> |
| <b>Ovaries</b>              | *Glandular organs<br>In pelvis, above uterus | Produce sex hormones in response to messages from pituitary gland   | <ul style="list-style-type: none"> <li>● <i>Estrogen</i></li> <li>● <i>Progesterone</i></li> </ul>   |

|                               |   |  |  |
|-------------------------------|---|--|--|
| <b>Pancreas</b>               | *Glandular organ<br>In abdomen, below stomach   | Blood sugar levels   | <ul style="list-style-type: none"> <li>● <i>Insulin</i> (lowers blood sugar)</li> <li>● <i>Glucagon</i> (raises blood sugar)</li> </ul>  |
| <b>Parathyroid glands (4)</b> | Behind thyroid in the neck                      | Blood calcium levels<br>Bone health, muscle contraction, nerves  | <ul style="list-style-type: none"> <li>● <i>Parathyroid hormone (PTH)</i></li> </ul>   |
| <b>Pineal gland</b>           | Brain   | Converts signals from the nervous system into hormones<br>Sexual development   | <ul style="list-style-type: none"> <li>● <i>Melatonin</i> (primary sleep hormone)</li> </ul>   |
| <b>Pituitary gland</b>        | Brain (under hypothalamus)                      | Part of several signaling pathways, including: <ul style="list-style-type: none"> <li>● HPA</li> <li>● HPT</li> <li>● HPG</li> </ul> Hormone “orchestra”<br>“Master gland”: produces hormones that control other parts of endocrine system <ul style="list-style-type: none"> <li>● <i>Anterior lobe</i> produces and releases hormones.</li> <li>● <i>Posterior lobe</i> releases hypothalamus-derived hormones.</li> </ul> | <ul style="list-style-type: none"> <li>● <i>Adrenocorticotropic hormone (ACTH)</i> (adrenal function)</li> <li>● <i>Follicle-stimulating hormone (FSH)</i> (sex organ function)</li> <li>● <i>Luteinizing hormone (LH)</i> (sex organ function)</li> <li>● <i>Growth hormone</i> (body composition)</li> <li>● <i>Prolactin</i> (breast milk production)</li> <li>● <i>Thyroid-stimulating hormone (TSH)</i> (thyroid function)</li> <li>● <i>Antidiuretic hormone</i> (water balance)</li> <li>● <i>Oxytocin</i> (breast milk production, bonding)</li> </ul> |
| <b>Thyroid gland</b>          | Front of neck                                   | Every aspect of cell metabolism  | <ul style="list-style-type: none"> <li>● <i>Thyroxine (T4)</i></li> <li>● <i>Triiodothyronine (T3)</i></li> </ul> *Requires iodine   |
| <b>Thymus gland</b>           | Behind sternum                                  | Part of immune system<br>*Only active until puberty  | <ul style="list-style-type: none"> <li>● <i>Thymosin</i> (stimulates white blood T cells)</li> </ul>   |
| <b>Testes</b>                 | *Glandular organs<br>In external male genitalia | Produce sex hormones in response to messages from pituitary gland  | <ul style="list-style-type: none"> <li>● <i>Androgens</i>, such as <i>testosterone</i></li> </ul>  |