Endocrine System Hormones

Hormones are chemical messengers that allow the endocrine system to communicate with cells and organs and maintain homeostasis. Hormones are released into the circulatory system and affect target cells containing specific receptors that can bind to the hormone. Once the hormone binds to the receptor, changes occur within the cell: different proteins and enzymes can be synthesized, the rate of synthesis of existing proteins/enzymes can increase or decrease, and the shapes of existing proteins/enzymes can be altered. Compared to the nervous system, the endocrine system can act on a greater number of cells and their effects can be longer lasting.

The hormones of the endocrine system can be broken down into 3 classes based on their chemical structure:

1. **Amino acid derivatives** - made from the amino acids tyrosine or tryptophan
   - These include thyroid hormones (e.g. calcitonin, thyroxine, triiodothyronine), catecholamines (e.g. epinephrine, norepinephrine, and dopamine), and melatonin.

2. **Peptide hormones** - made from chains of amino acids joined together
   - These include thyroid-stimulating hormone, luteinizing hormone, follicle-stimulating hormone, antidiuretic hormone, oxytocin, growth hormone, insulin, and glucagon

3. **Lipid derivatives** - made from fatty acid chains or cholesterol
   - These include leukotrienes, prostaglandins, estrogen, progestins, androgens, and calcitrol

Note: The above is not a complete list of hormones found in the body

Complete the following chart:

<table>
<thead>
<tr>
<th>Hormone</th>
<th>Source</th>
<th>Conditions that cause hormone release</th>
<th>Target Organ/Cells</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxytocin</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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Author: Katherine Cheung

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Anatomy & Physiology
<table>
<thead>
<tr>
<th>Thyrotropin-releasing hormone (TRH)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Gonadotropin-releasing hormone (GnRH)</td>
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<tr>
<td>Corticotropin-releasing hormone (CRH)</td>
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<tr>
<td>Growth hormone-releasing hormone (GHRH)</td>
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<tr>
<td>Prolactin-inhibiting hormone (PIH)</td>
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<tr>
<td>Somatostatin</td>
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<td>Antidiuretic hormone (ADH)</td>
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<tr>
<td>Follicle-stimulating hormone (FSH)</td>
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<td>Luteinizing hormone (LH)</td>
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<tr>
<td>Hormone</td>
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<td>----------------------------------------------</td>
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<tr>
<td>Thyroid-stimulating hormone (TSH)</td>
<td></td>
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<tr>
<td>Adrenocorticotropic hormone (ACTH)</td>
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<tr>
<td>Prolactin (PRL)</td>
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<tr>
<td>Growth hormone</td>
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<tr>
<td>Estrogen</td>
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<tr>
<td>Progesterone</td>
<td></td>
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<tr>
<td>Testosterone</td>
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</tr>
<tr>
<td>Thyroxine (T\textsubscript{4}) and triiodothyronine (T\textsubscript{3})</td>
<td></td>
</tr>
<tr>
<td>Cortisol</td>
<td></td>
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<tr>
<td>Hormone</td>
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<td>-------------------------</td>
<td></td>
</tr>
<tr>
<td>Calcitonin</td>
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<tr>
<td>Parathyroid hormone (PTH)</td>
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<tr>
<td>Calcitrol</td>
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<tr>
<td>Epinephrine and Norepinephrine</td>
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<td>Insulin</td>
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<td>Glucagon</td>
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<tr>
<td>Erythropoietin (EPO)</td>
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<tr>
<td>Aldosterone</td>
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<tr>
<td>Natriuretic peptides</td>
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</table>