

Hormone Interconnections



Healthy
Hormones

Hormone Interconnections

- This is very hard to organize without going crazy
- There is so much back and forth between hormones that it makes it seem more complicated than it is
- It is due to the complex hormone balancing regulation system we have
- There is always a way to counter the production of the hormones and different stressors can make one hormone more prevalent than another



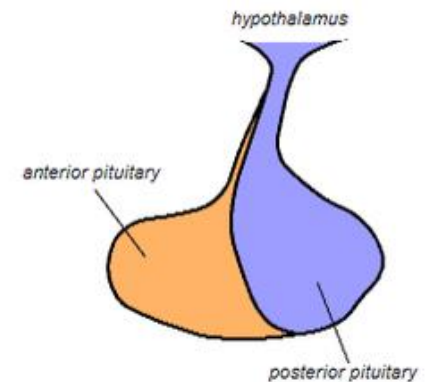
Let's Use The Adrenals To Explain

- Biggest player with so much power – let's look at the role of stress
- If they are prioritizing what they think they need – then all hormones are at risk of being out of balance: Insulin, thyroid hormones, digestive hormones, reproductive hormones, plus it affects gut health which in turn, affect all hormone systems
- Much of this is due to the HPA axis and the adrenal's relationship with the pituitary



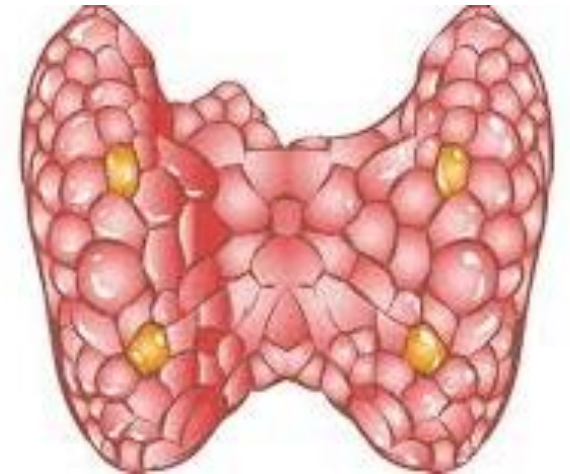
The Pituitary - 2 Scenarios

1. The adrenals hijack the function of the pituitary and it's resources for adrenal function – this leads to lower production of other hormones
 2. The adrenals put pressure on the pituitary to perform and it ends of making more of other hormones as well
- Scenario 1 needs plenty of nutrients to supply the pituitary with enough nutrients to do all functions despite being on call for the adrenals
 - Scenario 2 requires nutrient-rich diet, adaptagens and stress management



Thyroid

- When stressed, the thyroid can be over-stimulated to produce more thyroid hormones, putting more pressure on it and eventually leading to hypothyroidism
- Once hypothyroidism is present, stress now exacerbates it
- Hyperthyroidism can lead to Grave's disease
- Sleep, exercise and relaxation techniques along with nutrients for the thyroid can all be helpful at decreasing the effect of stress on the thyroid



Thyroid Autoimmunity

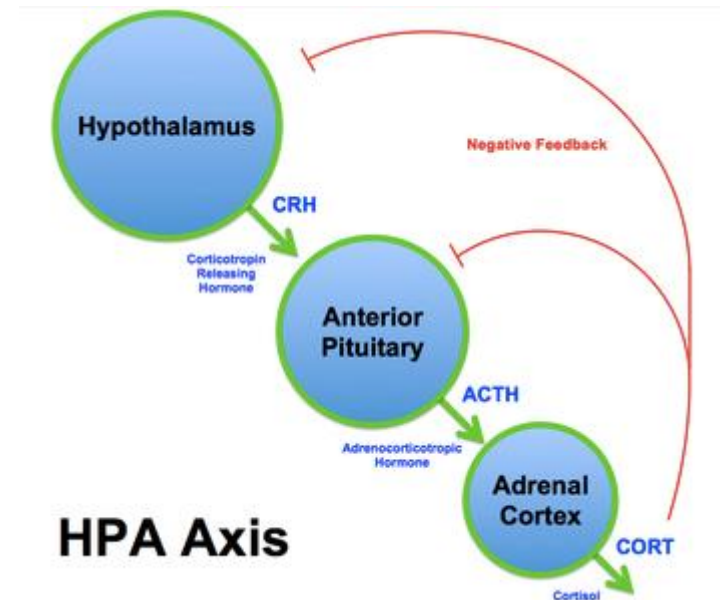
A 2004 research article published in the journal Thyroid found that stress is an environmental factor for both Grave's disease (hyperthyroidism) and Hashimoto's disease (hypothyroidism)

This is because of three connections

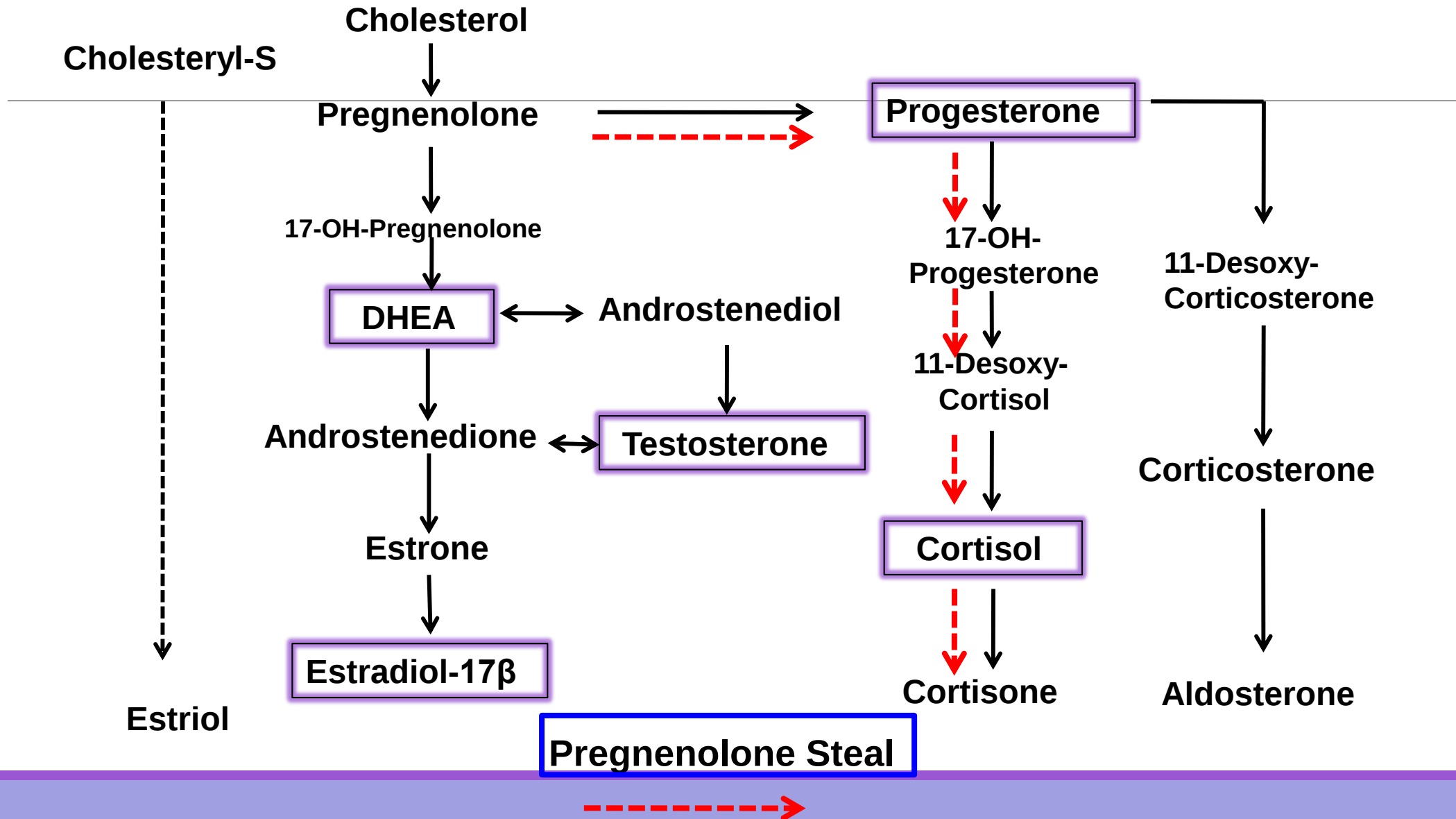
1. The connection of stress and the adrenals to thyroid function
2. The connection of stress and its effect on the immune system
3. The role of the gut on both the thyroid and autoimmunity

Adrenals and Reproductive Hormones

- Testosterone in women and estrogen in men primarily in adrenals
- Adrenals can talk to pituitary (through the hypothalamus)(HPA Axis) and downregulate or upregulate production of hormones in the gonads
- Priority is cortisol – high levels



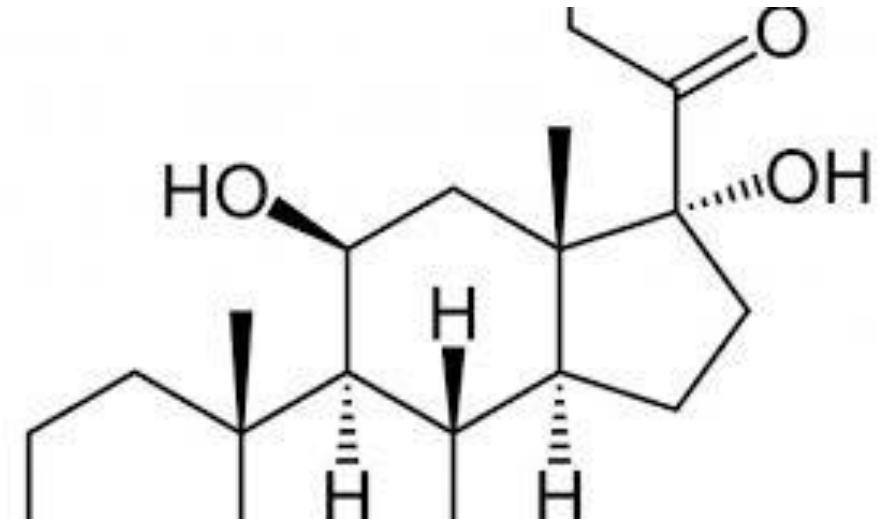
Principal Steroid Pathways



High Cortisol

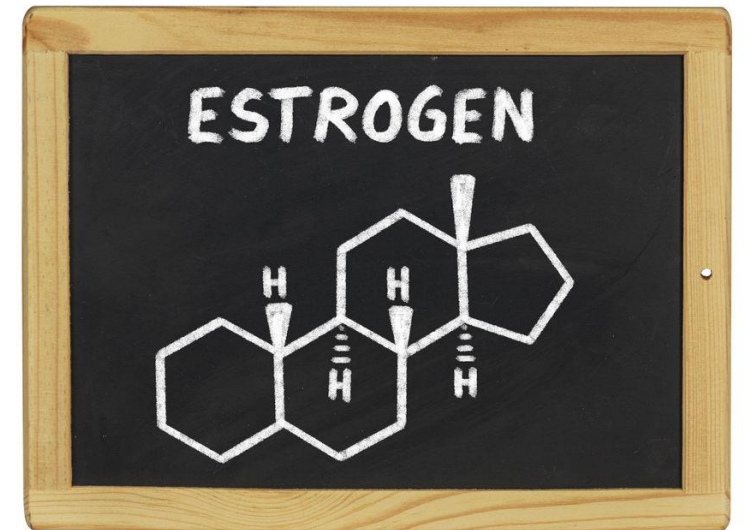
At First:

- High estrogen (aromatase activity)
- Low testosterone and progesterone
- Excess pressure on the liver to reduce excess estrogen and lower cortisol
- Eventually low cortisol
- Support liver, manage stress, look for digestive and intestinal issues and support the adrenal nutritionally



High Cortisol and Estrogen

- A defect in cortisol (including a deficiency) can lead to high estrogen
- It is interesting to note that progesterone and testosterone work together to regulate LH
- Both tend to be low when estrogen is high
- This could mean menstrual issues in women and sperm count issues in men
- We need to think of reproductive hormones working together – can't focus on just one



Liver and Excess Cortisol

The liver can send excess cortisol to fat cells
(when it decides not to detox)

Liver also converts cortisol to cortisone

Also can convert cortisone back to cortisol

Hormones are produced every four hours and then removed by the liver – this means that an excess of cortisol may not leave if liver function is not optimal



When Adrenals Are Weak

- Production of any or all of these hormones will be affected
- Hormones can be over-produced or under-produced
- Depends on the fatigue level of the adrenals
- The constitution of the person
- Fixing weak adrenals is a multi-step protocol that requires looking at digestive and intestinal function, liver function, stress management and nutrients for the adrenals



Digestion and Stress

- Gastrin, CCK, motilin, secretin, leptin, grehlin can be influenced by stress and can then effect either hypothalamus, pituitary and adrenal function
- For example, stress increases the production of secretin but in turn, the increase can inhibit ACTH
- Motilin can affect pituitary function and affect hormone release
- In a study of 50 women, stress was found to increase ghrelin and decrease leptin



Pancreas and Hormones

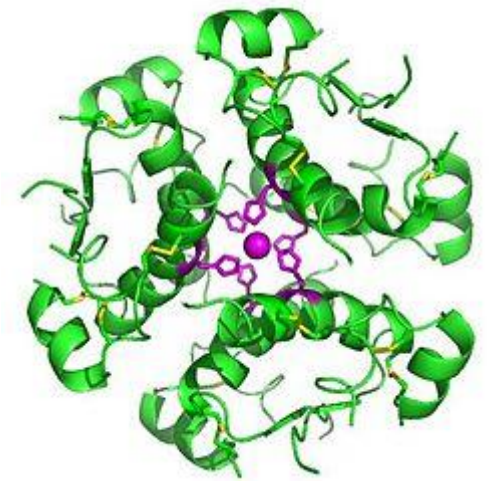
Chronic stress alters somatostatin receptors in the brain

High cortisol affects insulin levels (caused by high blood sugar)

Cortisone lowers insulin

Cortisol converts to cortisone which lowers insulin levels

Insulin is pro-inflammatory – so more cortisol is needed so it can be converted to cortisone to lower inflammation



The Players

Once the major systems are out of balance, they, in turn, start influencing each other and other systems

So it makes no sense to work on one, only

ie: Taking adrenal adaptagens will not work if other systems are out of balance

Doing a liver cleanse will not work long term if adrenals are still pumping too much cortisol

If blood sugar swings up and down, adrenals can't calm down, inflammation cannot be controlled



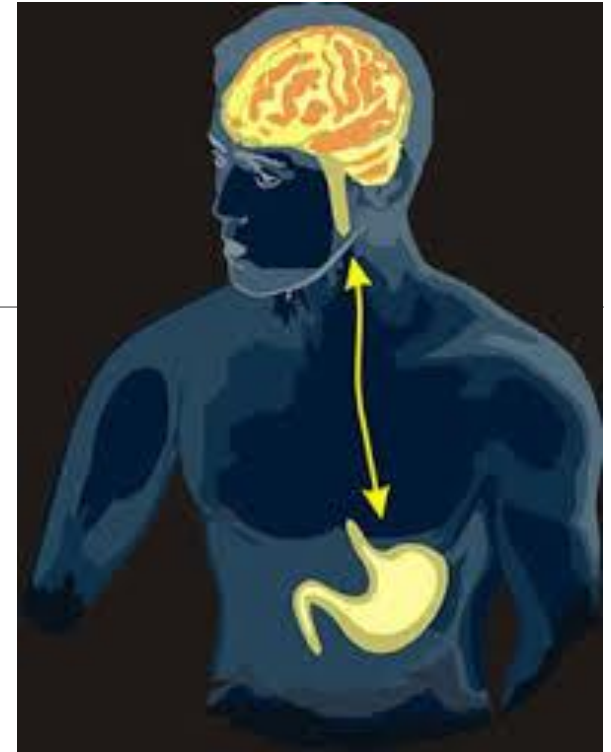
Gut Bacteria

- If the good gut bacteria is not sufficient , then the gut-brain connection will not work effectively putting more pressure on the nervous system, the thyroid and adrenals
- The gut can also effect the metabolism of estrogen – a diverse amount of gut bacteria is associated with a more favourable estrogen ratio for cancer prevention
- Recent research shows that gut bacteria may be a source of androgen hormones by converting cortisol and other glucocorticoids



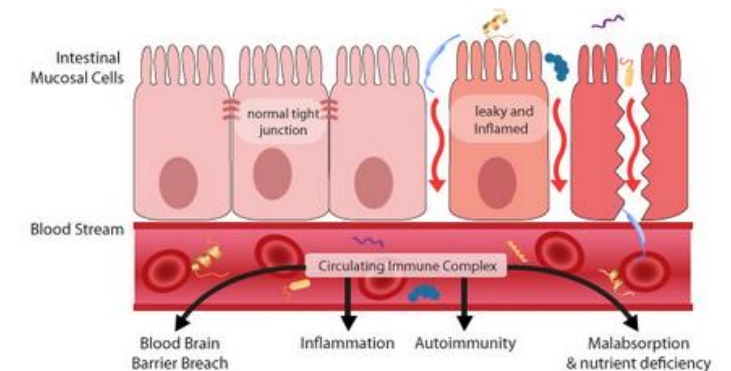
Conversely...

- The brain-gut connection affects levels of gut function
- Neurotransmitters made by the gut is one mechanism that the gut uses to communicate with the brain
- Excess cortisol depletes good gut bacteria and increases bad – exact relationship is not known – which means brain chemicals will not be made
- Gut bacteria regulates inflammation in the body and excess inflammation raises cortisol levels



Gut and Other Hormones

- Estrogen regulates gap junctions in the gut lining – too much estrogen can increase the gut lining to be open more (leaky gut)
- Progesterone protects the mucosa of the gut lining – too little and the gut lining is at risk of damage
- Testosterone helps the gut lining heal
- Thyroid hormones stimulate gastric and intestinal cells and a lack of thyroid hormones lead to ulcerations and leaky gut



In General...

Take pressure off and support the following:

- The Liver
 - The GI Tract
 - The Adrenals
 - The Pancreas
 - The Thyroid
- A well-crafted protocol is the key to doing all this at once – does not require a ton of supplements



How Simply Can We Do This?

- Steps to good digestion
- Small meals more often with fibre and/or protein for adrenals and pancreas
- Fermented foods for gut health
- Liver-friendly foods (which also help the thyroid and adrenals and pancreas)
- Sea vegetables for the thyroid
- Key strategic foods like maca or schizandra for the adrenals or Jerusalem artichokes for the liver, blood sugar and the gut



And Finally...

- Supplements can be added strategically
- This makes it easier to get the clients on board
- The key is helping the client understanding what is happening without overwhelming them
- It took time for their hormones to get out of balance and it will take time to help them function properly

