

Hormone Interconnections



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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

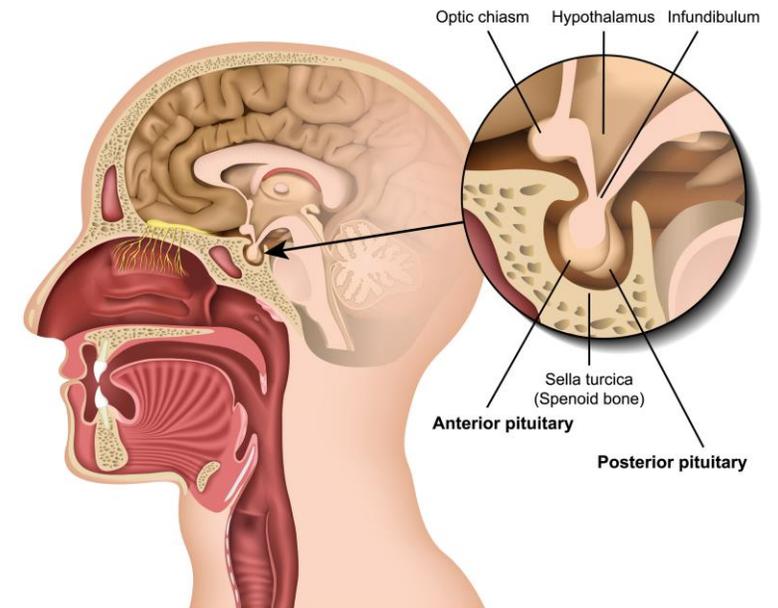


The Pituitary - 2 Scenarios

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 up 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, adaptogens and stress management



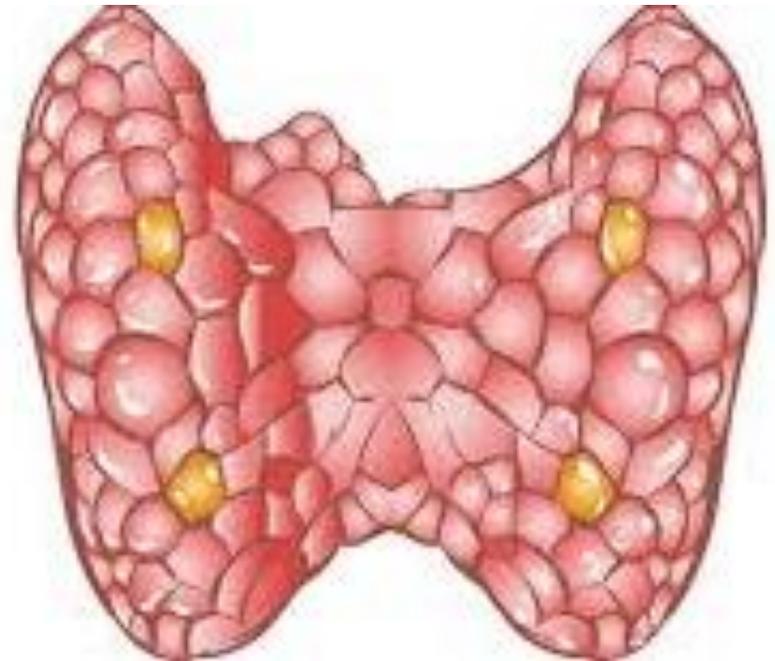
Thyroid

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

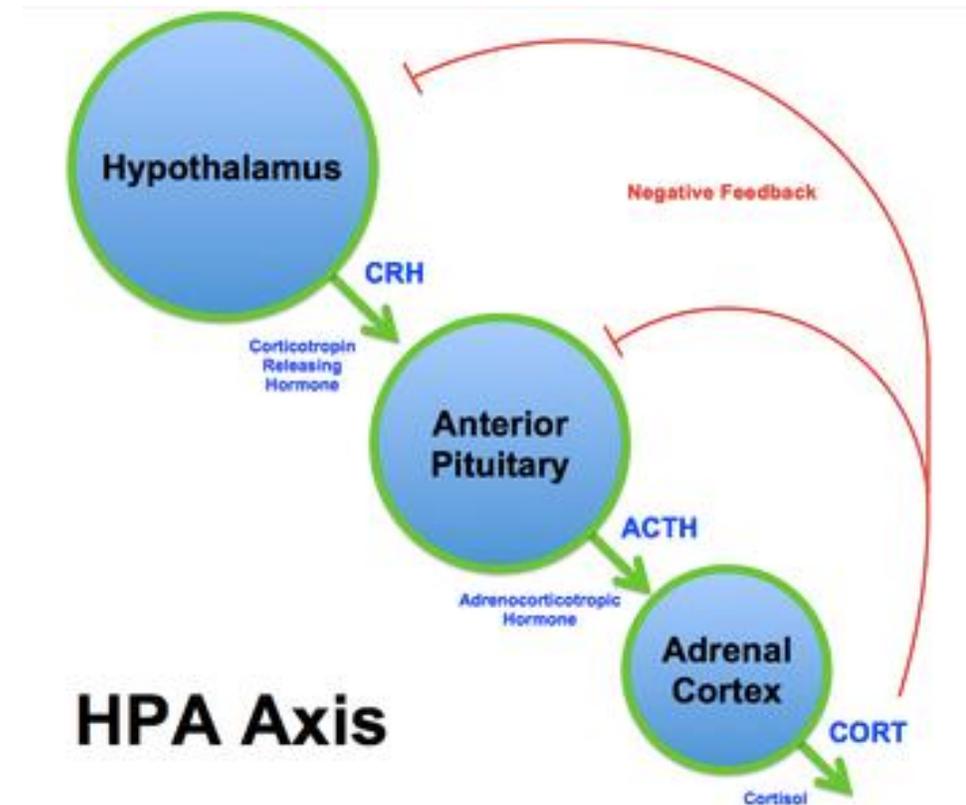
1. The connection of stress and the adrenals to thyroid function
2. The connection of stress and its effect on the immune system
3. The role of the gut on both the thyroid and autoimmunity

Adrenals and Reproductive Hormones

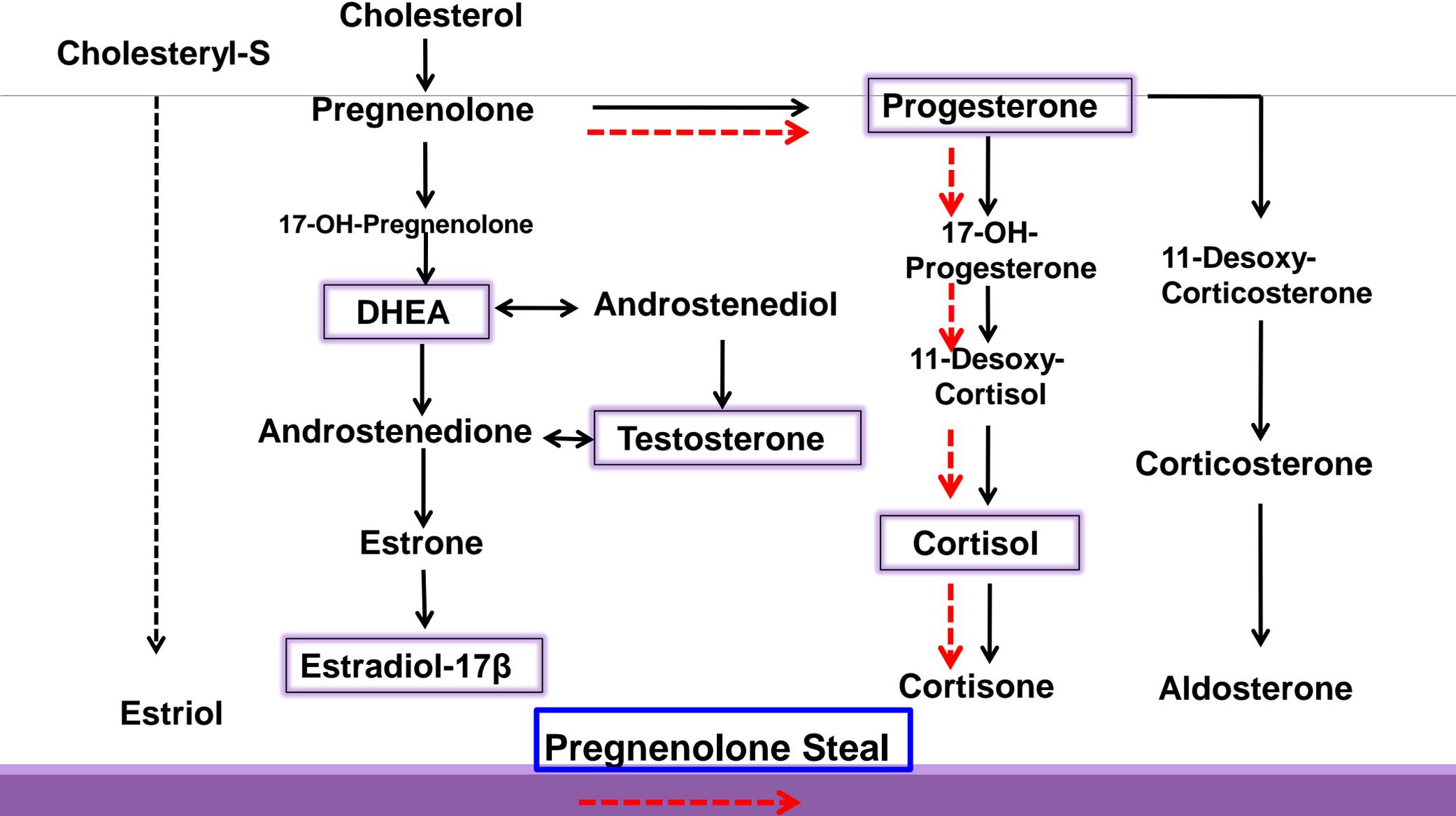
Testosterone in women and estrogen/progesterone in men is primarily in the adrenals

Adrenals can talk to pituitary (through the hypothalamus)(HPA Axis) and downregulate or upregulate production of hormones in the gonads and thyroid

Priority is cortisol – high levels



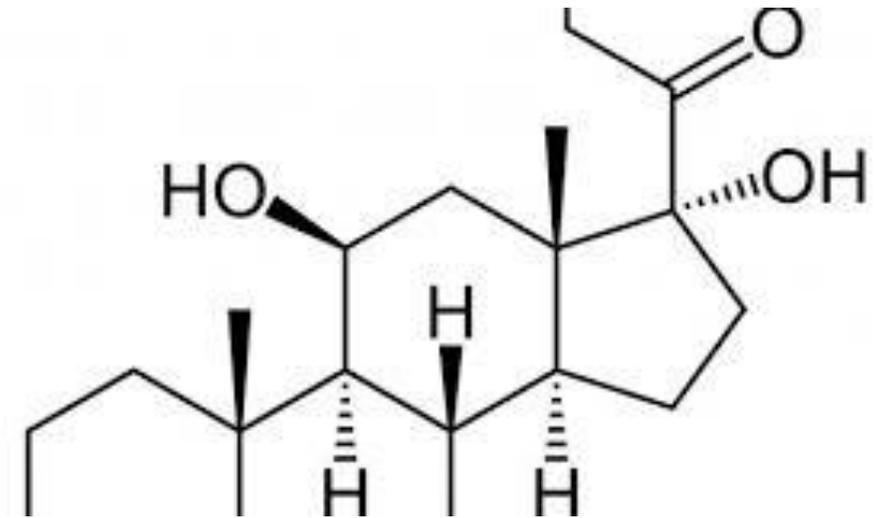
Principal Steroid Pathways



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

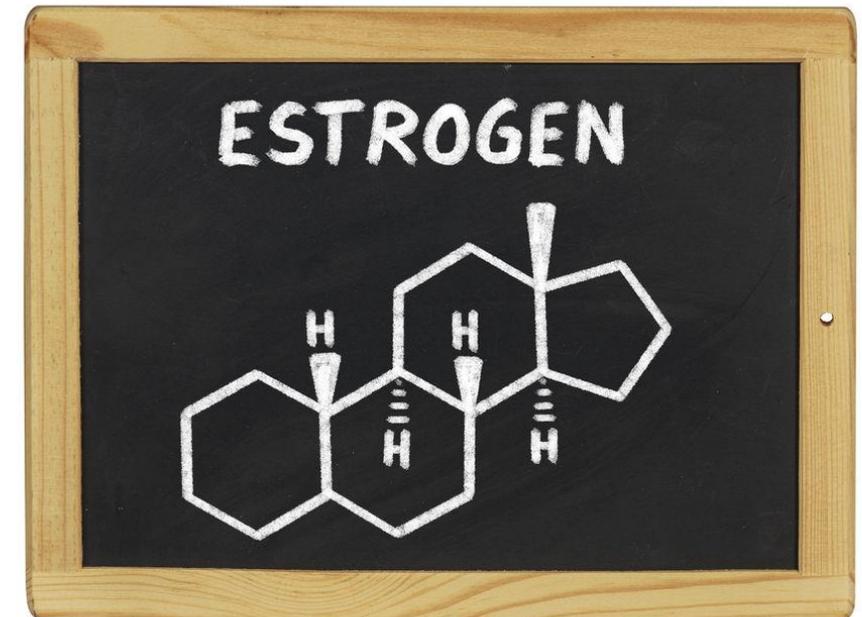
A defect in cortisol (including a deficiency) can lead to high estrogen

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



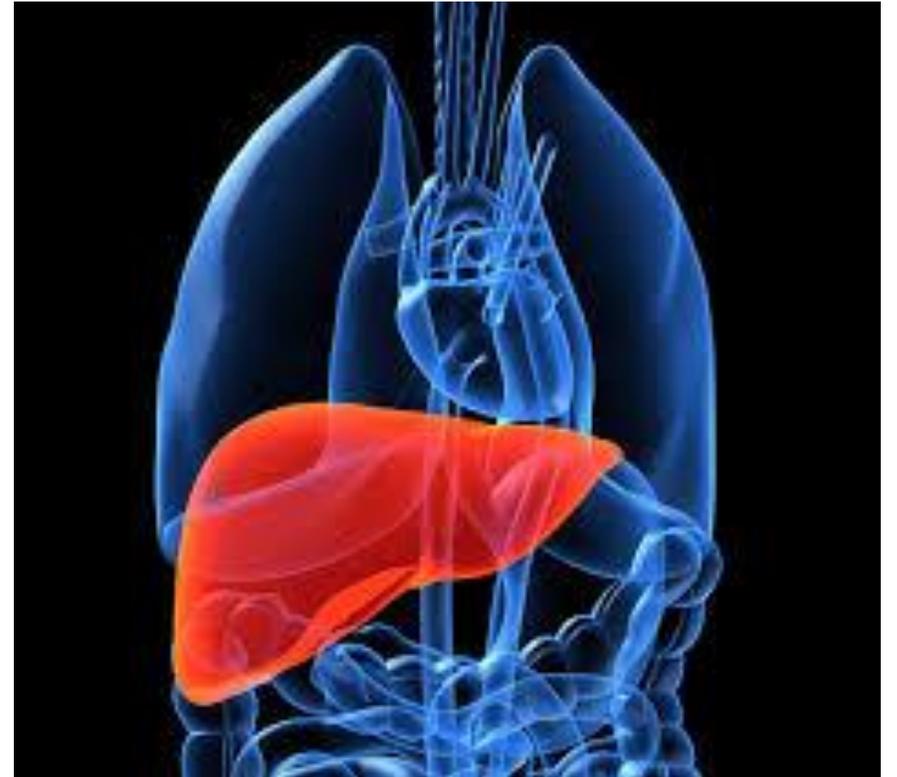
Liver and Excess Cortisol

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, ghrelin 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

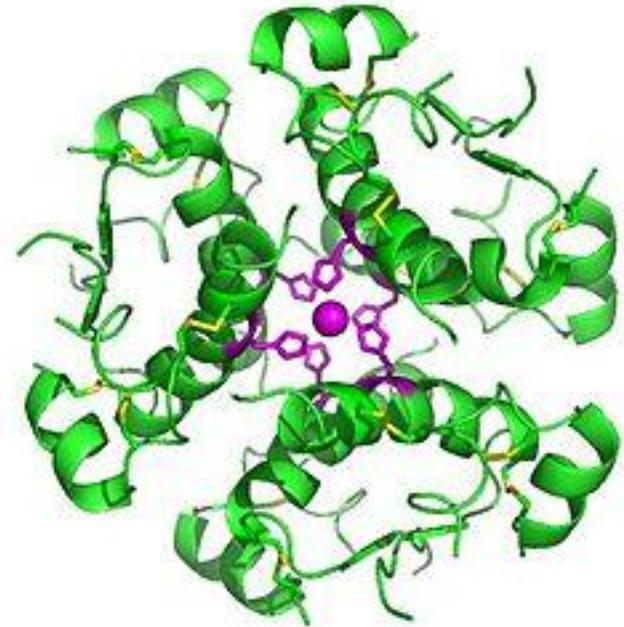
Chronic stress alters somatostatin receptors in the brain

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 adaptogens 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



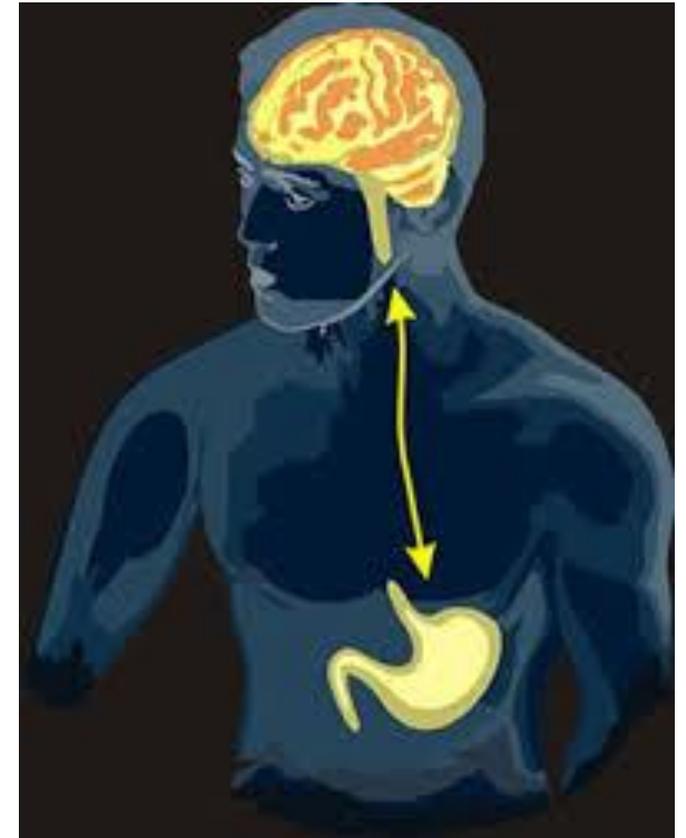
Conversely...

The brain-gut connection affect 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 increase bad – exact relationship is not known – which mean brain chemicals will not be made

Gut bacteria regulates inflammation in the body and excess inflammation raises cortisol levels



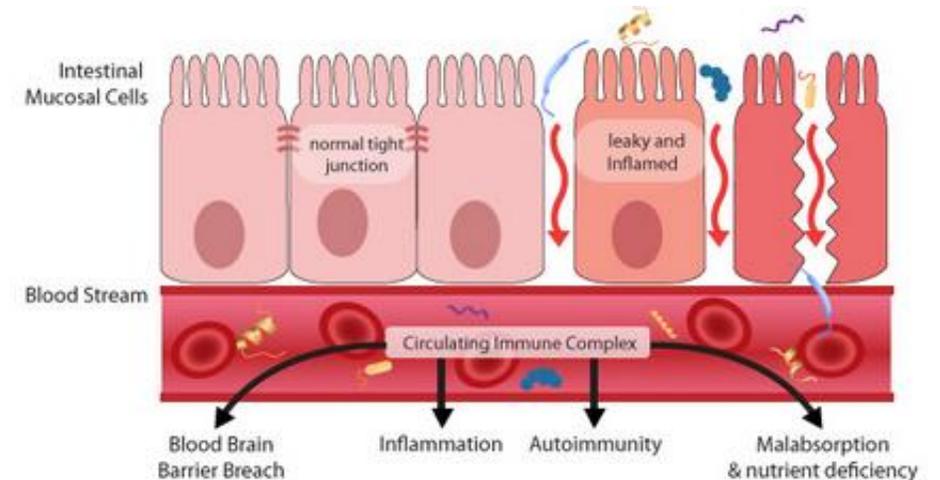
Gut and Other Hormones

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



This may seem complicated but it's not

We will go over this more in protocol module

Essentially, you're balancing all the hormones by making suggestions for each

How this plays out will vary from client to client

The following is an example of how it could look



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

