wellness tips by **Vreni Gurd** **(view all archives)**

How hormones, steroids and neurotransmitters work

I owe you all another huge apology for not sending you Wellness Tips in a very long time. I am so sorry!

There are two major reasons I have been so silent. Mastering all of the course material to become an Osteopathic Manual Practitioner was much harder than I anticipated going in, and I was spending all my free time studying. I loved what I was learning but I certainly don't have the memory of a 20-something person anymore! Now I have completed the course material and just need to write a thesis, so hopefully I can write here more frequently again.

The second reason, to be honest, is I am running out of ideas on what to write about. I have covered so many topics over the years - my blog is a wealth of great health and wellness info. Maybe with your help I can make it better.

So, can I ask you a favour? Would you please hit reply to this email and tell me what the 2 most important health or wellness topics are, that you would like me to write about? I would be very grateful for the ideas, and thank you in advance.

And now, finally to your tip. You have probably heard of epigenetics, meaning that it is the environment which runs 98% of our biology and our genes only influence 2%. The great news about epigenetics, is that we as individuals have some control over the environment in which our cells live. You can choose to eat healthy food, drink adequate water, give your body enough sleep and exercise, which can improve the environment that your cells live in.

Genetics form the blueprint for the building, but you determine if you are going to turn on the lights in the living room, clean up the mess in the kitchen, and open the drapes. So you do not have to think of yourself as the victim of your genes.

The way epigenetics works is the receptor sites on the surface of the cells form a communication system telling the cells what to do.

It is the health of this communication system that determines the health of the cells, and therefore the systems, and therefore the organism which is you and I.

Our bodies are made up of various kinds of cells - blood cells, nerve cells, muscle cells, bone cells, skin cells etc, and every cell on its surface, has hundreds of thousands to millions of receptors, which are molecules made of proteins that act a bit like keyholes, by providing access to the cell when the proper key is inserted.

Different kinds of receptors need different kinds of keys. Depending on the kind of cell we are talking about, one cell may have 50,000 receptors of one kind, and 10,000 of another kind, while a different kind of cell may have a different proportion. Each cell has at least 70 different kinds of receptors on its surface, and more types of receptors may yet be discovered.

Candace Pert, a neuroscientist who did her PhD at Johns Hopkins, worked at the National Institute for Health in Washington DC for 12 years, and was made famous by her discovery of the opiate receptor in the early '70s, describes receptors as sensing or scanning molecules that wait to pick up messages from the much smaller chemical "keys" that diffuse through the fluids that surround the cells (the environment).

These chemical keys are called ligands, and they selectively bind to their particular receptor on the cell surface. They come in three forms: neurotransmitters such as histamine, serotonin, dopamine, norepinephrine, and they tend to carry information from one nerve cell to the next.

The second ligand category are steroids, which include estrogen, progesterone, testosterone and cortisol, and they are made from cholesterol. (See, we NEED

cholesterol!)

The third and by far the largest category of ligand are the peptides, made from amino acids (proteins), which form most of the hormones like insulin, glucagon, melatonin, growth hormone, and prolactin for example. This huge category of ligands is responsible for regulating almost all cell function and therefore system function in the body.

So, how does it all work? Candace Pert describes it this way in her most interesting book Molecules of Emotion "If the cell is the engine that drives all life, then the receptors are the buttons on the control panel of that engine, and a specific peptide (or other kind of ligand) is the finger that pushes the button and gets things started."

The ligand key fits into the keyhole of the receptor and delivers its message, and the receptor then transmits the message to the interior of the cell, and the cell carries out the action requested by the ligand. What the cell does depends on what type of cell it is, and which type of receptor was bound.

For example, when insulin binds to the insulin receptor on a fat cell, sugar is turned into fat. When insulin binds to the insulin receptor on a liver cell, sugar is converted to glycogen.

In addition to the nervous system, this chemical communication system of receptor and ligand can be accurately viewed as a basic network for communication, that connects every part of the body to every other part of the body, similar in nature to the internet.

Because our cells are constantly replacing themselves to keep us new and young, can you understand how critical it is to this communication system that the raw material from which our cells, receptors and ligands are made, is of the best quality possible? When we consume trans-fats, the body is tricked into thinking that we have eaten saturated fat, and it integrates the trans-fats into the cell membrane. But trans-fats are not saturated fats, (see, we NEED saturated fat!) and the cell messaging critical to our health doesn't work.

If we are under constant stress that just does not go away, our cells are swimming in the environment of the stress hormone cortisol which binds to the cortisol receptors causing a prolonged stress-response in all our cells. An organism, a person that is always stressed is unlikely to be as healthy as someone that is better able to manage their stress.

Sometimes one can't change the circumstances, but one can always change one's attitude towards those circumstances. Seeking out better feelings will improve the hormones and peptides in the cellular environment, which will improve one's overall health.

Please do keep the comments coming on my blog. If you want to share this article, scroll to the very bottom and click the "share" icon to post on Facebook, Twitter etc.

And please don't forget to reply to this email to give me your Wellness Tips topic ideas! I look forward to hearing from you.

Sincerely, Vreni Gurd

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Pert, Candace PhD, Molecules of Emotion Scribner, New York, NY, 1997.

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