

Anxiety on a cellular level

Emotions and beliefs are stored not only in our subconscious but also in our cells. For 2,000 years, the concept of *cellular memory* has been an essential part of traditional Chinese medicine. Recently, cellular memory has also received greater recognition in allopathic medicine and Western science. The role of cellular memory was studied in heart-transplant recipients. In several documented cases, patients experienced puzzling changes in their tastes, preferences, behaviors, emotions, and habits after waking up from surgery; the new traits turned out to be distinctive characteristics of the organ donors. Strikingly, none of the recipients knew anything about the donors prior to noticing changes in themselves, which suggests that those traits were remembered and encoded by the cells of the transplanted organs.

The exact means by which cells store emotions and memories are still unknown. In his book *The Biology of Belief*, cell biologist Bruce Lipton provided evidence suggesting that the behavior and identity of a cell is to a large extent determined by the interactions between neurotransmitters and cell receptors, specialized proteins in the cell membrane. Neurotransmitters function as messengers between the nervous system and the rest of our body and are released by neurons and some glands, such as the adrenals and the pituitary gland. Fear and anxiety cause the secretion of stress hormones, a special group of neurotransmitters that includes adrenalin, noradrenalin, and cortisol into the bloodstream from where they are able to reach most cells in our bodies. As they bind to specific membrane receptors like keys fitting into their corresponding locks, they initiate distinctive responses and chemical changes within the cells.

Stress hormones mobilize the body's energy reserves and increase breathing, heart rate, and blood pressure, which allows oxygen-enriched blood to move more rapidly to the brain and muscles. The body is getting ready to manage the source of anxiety by fighting it, running away from it, or as a last resort, playing dead. Stress hormones also stimulate so-called transcription factors that migrate to the cell nucleus and activate specific genes. Gene activation leads to the increased production of certain proteins that are required for the cells to respond adequately to the ongoing stress. So when stress hormones travel through the body and activate the cells' stress responses over and over again, as they do in cases of chronic anxiety, the results can be long-term changes in metabolism, structure, and behavior of cells. The cells take on a new identity: "I am stressed and anxious."

These adaptations to stress and anxiety cannot be sustained without harming the delicate homeostasis of the individual cells and the balance of the entire body. For example, the resulting increase in oxidative stress leads to accumulation of free radicals, which cause stress-related cell damage. Free radicals can injure all components of a cell, including telomeres, which are specific DNA sequences on the end of chromosomes. Telomeres are designed to protect chromosomes from degradation and prevent them from fusing with each other. Research has shown that cells of people suffering from chronic stress have significantly shortened telomeres, which means that these people are at higher risk for accelerated aging, cancer, and autoimmune and heart diseases.

Another significant way anxiety can affect us on a cellular level is when our cells literally become addicted to it. As cells adapt to the constant stimulation caused by chronic stress, fear, and anxiety, they change their dietary habits. They become so used to being activated and fueled by stress hormones that they may crave these neurotransmitters after we've reverted to a calm and relaxed state of mind.

If you think it's impossible for the body to become addicted to its own hormones and their effects, consider self-proclaimed "stress junkies"—those people who love living on the edge and thrive on such activities as race-car driving, bungee jumping, rock climbing, and then relax with a few hours of "special ops" video gaming. These people often say they need adrenaline rushes to feel alive. Or take avid runners, of which I am one, who can become so dependent on the release of endorphins they experience while running (the "runner's high") that they'll start nervously tapping their feet on the days they can't get to their ten-mile fix.

If we can develop a physical addiction to drugs, such as alcohol, nicotine, and pain medication, or to the neurotransmitters that are released by thrill-seeking and running, why shouldn't it be possible for us to also become addicted to anxiety? It's perfectly conceivable that chronic fear and anxiety makes our cells demand their daily dose of stress hormones, as well as endorphins and opioids, which are also released in response to these emotions. There is no scientific proof for this hypothesis, but to my knowledge, it's never been thoroughly investigated either.

You may have experienced firsthand the effects of these cellular cravings. Everything is stable and peaceful in your life, and then an inner restlessness arises, causing you to search for something to worry about—the devastation of the rainforest or the little bump on your skin that you've had for years but now wonder if it might be cancer after all.

Releasing fear and anxiety in and of itself cannot create *permanent* change on a subconscious and cellular level. You might feel great for a while, but at some point, your subconscious and your cells might undergo an identity crisis or experience drastic withdrawal symptoms because they are still craving stress hormones. Both have been conditioned by fear and anxiety and, therefore, aren't comfortable without these emotions.

So it's important to replace the old anxiety-driven identity with a new foundation of self at the subconscious and cellular level. This new foundation needs to elicit powerful and positive emotions that prompt the release of other neurotransmitters, such as dopamine and serotonin, which stimulate and recondition your cells to a feeling of calmness and confidence. This way, you will transfer your new identity from your conscious mind to the subconscious and cellular levels and thus truly embody it.