

## Scientists Finally Show How Your Thoughts Can Cause Specific Molecular Changes To Your Genes

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With evidence growing that training the mind or inducing certain modes of consciousness can have positive health effects, researchers have sought to understand how these practices physically affect the body. A new study by researchers in Wisconsin, Spain, and France reports the first evidence of specific molecular changes in the body following a period of intensive mindfulness practice.

The study investigated the effects of a day of intensive mindfulness practice in a group of experienced meditators, compared to a group of untrained control subjects who engaged in quiet non-meditative activities. After eight hours of mindfulness practice, the meditators showed a range of genetic and molecular differences, including altered levels of gene-regulating machinery and reduced levels of pro-inflammatory genes, which in turn correlated with faster physical recovery from a stressful situation.

“To the best of our knowledge, this is the first paper that shows rapid alterations in gene expression within subjects associated with mindfulness meditation practice,” says study author Richard J. Davidson, founder of the Center for Investigating Healthy Minds and the William James and Vilas Professor of Psychology and Psychiatry at the University of Wisconsin-Madison.

“Most interestingly, the changes were observed in genes that are the current targets of anti-inflammatory and analgesic drugs,” says Perla Kaliman, first author of the article and a researcher at the Institute of Biomedical Research of Barcelona, Spain (IIBB-CSIC-IDIBAPS), where the molecular analyses were conducted.

The study was published in the Journal Psychoneuroendocrinology.

Mindfulness-based trainings have shown beneficial effects on inflammatory disorders in prior clinical studies and are endorsed by the American Heart Association as a preventative intervention. The new results provide a possible biological mechanism for therapeutic effects.

### **Gene Activity Can Change According To Perception**

According to Dr. Bruce Lipton, gene activity can change on a daily basis. If the perception in your mind is reflected in the chemistry of your body, and if your nervous system reads and interprets the environment and then controls the blood's chemistry, then you can literally change the fate of your cells by altering your thoughts.

In fact, Dr. Lipton's research illustrates that by changing your perception, your mind can alter the activity of your genes and create over thirty thousand variations of products from each gene. He gives more detail by saying that the gene programs are contained within the nucleus of the cell, and you can rewrite those genetic programs through changing your blood chemistry.

In the simplest terms, this means that we need to change the way we think if we are to heal cancer. "The function of the mind is to create coherence between our beliefs and the reality we experience," Dr. Lipton said. "What that means is that your mind will adjust the body's biology and behavior to fit with your beliefs. If you've been told you'll die in six months and your mind believes it, you most likely will die in six months. That's called the nocebo effect, the result of a negative thought, which is the opposite of the placebo effect, where healing is mediated by a positive thought."

That dynamic points to a three-party system: there's the part of you that swears it doesn't want to die (the conscious mind), trumped by the part that believes you will (the doctor's prognosis mediated by the subconscious mind), which then throws into gear the chemical reaction (mediated by the brain's chemistry) to make sure the body conforms to the dominant belief. (Neuroscience has recognized that the subconscious controls 95 percent of our lives.)

Now what about the part that doesn't want to die—the conscious mind? Isn't it impacting the body's chemistry as well? Dr. Lipton said that it comes down to how the subconscious mind, which contains our deepest beliefs, has been programmed. It is these beliefs that ultimately cast the deciding vote.

"It's a complex situation," said Dr. Lipton. People have been programmed to believe that they're victims and that they have no control. We're programmed from the start with our mother and father's beliefs. So, for instance, when we got sick, we were told by our parents that we had to go to the doctor because the doctor is the authority concerning our health. We all got the message throughout childhood that doctors were the authority on health and that we were victims of bodily forces beyond our ability to control. The joke, however, is that people often get better while on the way to the doctor. That's when the innate ability for self-healing kicks in, another example of the placebo effect.

### **Mindfulness Practice Specifically Affects Regulatory Pathways**

The results of Davidson's study show a down-regulation of genes that have been implicated in inflammation. The affected genes include the pro-inflammatory genes RIPK2 and COX2 as well as several histone deacetylase (HDAC) genes, which regulate the activity of other genes epigenetically by removing a type of chemical tag. What's more, the extent to which some of those genes were downregulated was associated with faster cortisol recovery to a social stress test involving an impromptu speech and tasks requiring mental calculations performed in front of an audience and video camera.

Biologists have suspected for years that some kind of epigenetic inheritance occurs at the cellular level. The different kinds of cells in our bodies provide an example. Skin cells and brain cells have different forms and functions, despite having exactly the same DNA. There must be mechanisms—other than DNA—that make sure skin cells stay skin cells when they divide.

Perhaps surprisingly, the researchers say, there was no difference in the tested genes between the two groups of people at the start of the study. The observed effects were seen only in the meditators following mindfulness practice. In addition, several other DNA-modifying genes showed no differences between groups, suggesting that the mindfulness practice specifically affected certain regulatory pathways.

The key result is that meditators experienced genetic changes following mindfulness practice that were not seen in the non-meditating group after other quiet activities — an outcome providing proof of principle that mindfulness practice can lead to epigenetic alterations of the genome.

Previous studies in rodents and in people have shown dynamic epigenetic responses to physical stimuli such as stress, diet, or exercise within just a few hours.

“Our genes are quite dynamic in their expression and these results suggest that the calmness of our mind can actually have a potential influence on their expression,” Davidson says.

“The regulation of HDACs and inflammatory pathways may represent some of the mechanisms underlying the therapeutic potential of mindfulness-based interventions,” Kaliman says. “Our findings set the foundation for future studies to further assess meditation strategies for the treatment of chronic inflammatory conditions.”

### **Subconscious Beliefs Are Key**

Too many positive thinkers know that thinking good thoughts—and reciting affirmations for hours on end—doesn’t always bring about the results that feel-good books promise.

Dr. Lipton didn’t argue this point, because positive thoughts come from the conscious mind, while contradictory negative thoughts are usually programmed in the more powerful subconscious mind.

“The major problem is that people are aware of their conscious beliefs and behaviors, but not of subconscious beliefs and behaviors. Most people don’t even acknowledge that their subconscious mind is at play, when the fact is that the subconscious mind is a million times more powerful than the conscious mind and that we operate 95 to 99 percent of our lives from subconscious programs.

“Your subconscious beliefs are working either for you or against you, but the truth is that you are not controlling your life, because your subconscious mind supersedes all

conscious control. So when you are trying to heal from a conscious level—citing affirmations and telling yourself you're healthy—there may be an invisible subconscious program that's sabotaging you.”

The power of the subconscious mind is elegantly revealed in people expressing multiple personalities. While occupying the mind-set of one personality, the individual may be severely allergic to strawberries. Then, in experiencing the mind-set of another personality, he or she eats them without consequence.

The new science of epigenetics promises that every person on the planet has the opportunity to become who they really are, complete with unimaginable power and the ability to operate from, and go for, the highest possibilities, including healing our bodies and our culture and living in peace.

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