

# Genetic Differences Affect How a Human Deals with Stress



By Jonas Paulauskas for Medical Exposé

Stress is an INTERNAL reaction to a set of EXTERNAL stimuli. One person's stress is another person's heaven. Prof Desire' Dubounet told me a joke once worth telling you now.

A farmer was looking for a good worker. A young man very muscular applied. The farmer said he would challenge him and give him impossible tasks to see how he would respond. He said use the plow without a horse and plow this acre of ground. This is impossible. But the young man did it in 3 hours. The farmer said load these 100 bales of hay into the loft of the barn. An hour later it was done. The farmer said this was indeed the worker he wanted. He said you're hired. Sit down here under this shade tree and drink some lemonade while you relax and just sort out these apples. Here is a bushel of apples sort out the bad ones.

30 minutes later the young man who had not sweat in the morning, now was sweating profusely and he was extremely nervous. The young man shaking, holding his head said

" I QUIT, THESE DECISIONS ARE KILLING ME"

Stress is an inside reaction to an external world. Each person has some differences in what they think is stressful and how they react to it. Here is a study that shows genetics is involved. Inherited genetic variations that affect an anxiety-reducing molecule help explain why some people can withstand stress better than others, according to a new study.

<b>Chronic Activation of the Stress Response Exacerbate Disease:</b>	
Cardiovascular	Heart disease, stroke
Immune	Autoimmune diseases
GI	Ulcers, irritable bowel syndrome, colitis, vomiting, diarrhea
Endocrine	Diabetes mellitus, metabolic syndrome
CNS	Fatigue, eating disorders, depression, insomnia, post-traumatic stress disorder



Mood and anxiety disorders have been found by previous studies to have a genetic component. A nationwide team of researchers led by Dr. David Goldman of NIH's National Institute on Alcohol Abuse and Alcoholism (NIAAA) set out to investigate genetic variants of a signaling molecule called neuropeptide Y (NPY), which is induced by stress. Found in the brain and other tissues, NPY's release helps to reduce anxiety. It affects appetite, weight control and emotional responses. The researchers suspected that NPY variants might contribute to maladaptive stress responses that often underlie mood and anxiety disorders. Analyses of human brain and other tissue samples allowed the research team to identify gene variants that affect the expression of NPY—that is, of how much of the protein is produced. The results were reported online in *Nature* on April 2, 2008.

To evaluate the gene variants' effects on brain responses to stress and emotion, the researchers used functional brain imaging to look at the amygdala, the brain's fear and anxiety center. They found that people with the variant yielding the lowest NPY levels reacted with heightened emotion to images of threatening facial expressions. "Metabolic activity in brain regions involved in emotional processing increased when these individuals were presented with the threatening images," Dr. Goldman said.

Previous studies showed that NPY exerts its effects through interactions with opioid compounds. Opioids are produced by the body to help suppress pain, stress and anxiety. In another set of experiments, the researchers found that people with the low-level NPY variant were less able to tolerate moderate levels of sustained muscular pain. Brain imaging showed that they released less opioid neurotransmitter in response to the muscle discomfort than people with higher levels of NPY.

"Their emotional response to pain was also higher," Dr. Goldman said, "showing the close tie between emotionality and resilience to pain and other negative stimuli."

In a preliminary finding, the low-level NPY gene variant seemed to be more common than other variants among a small sample of people with anxiety disorders. Low-level NPY expression was also linked to high levels of anxiety.

This research supports the idea that NPY plays a role in reducing anxiety. It also helps explain why people vary in their resiliency to stress.

"Stress response is an important variable in vulnerability to alcohol dependence and other addictions, as well as other psychiatric disorders," said NIAAA Director Dr. Ting-Kai Li. "This finding could help us understand individuals' initial vulnerability to these disorders."

