

Potential PTSD treatments to focus on individual genetic differences

Most people gradually recover from trauma, but a small fraction of individuals develop post-traumatic stress disorder (PTSD) — prompting scientists to look for the biological underpinnings of this extreme response to traumatic situations such as warfare, car accidents and natural disasters.

Research published on August 11, 2014 in *Proceedings of the National Academy of Sciences* identifies up to 334 genes that may be involved in vulnerability to posttraumatic stress in rats.

Most animal studies of stress use intense stimuli such as electric shocks, designed to produce large, group differences between exposed and unexposed animals. But Nikolaos Daskalakis and his colleagues tried a subtler approach to elicit a wide range of individual responses in rats that had all experienced the same trauma — more closely mimicking the variability of human responses to disturbing events.

To probe the mechanisms that control trauma susceptibility, the researchers used DNA microarray technology to screen 22,000 genes in samples from the blood, and the amygdala and hippocampus — brain areas that are involved in fear and memory. In males and females, and across the different tissues, anywhere from 86 to 334 genes showed changes in expression levels that appeared to relate to extreme or minimal responsiveness.

Most genes seemed to be involved in conferring either vulnerability or resilience, but not both. Daskalakis says that the results suggest that at a genomic level, the balance of two different stress-response systems might control individual susceptibility to PTSD.

Read the full, original story: [Spread of genes implicated in post-traumatic stress disorder](#)