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Damage from Chemical Exposure Passed Down for Generations

by [NATHAN](#) on MAY 22, 2012

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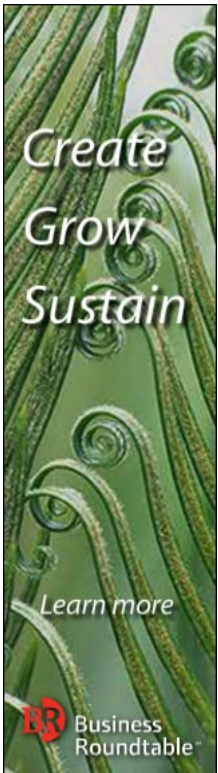


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New research has shown that exposure to commonly used chemicals causes changes in rats that are passed down through multiple generations.

"We are now in the third human generation since the start of the chemical revolution, since humans have been exposed to these kinds of toxins," says David Crews, co-author of the study and a researcher at the University of Texas. "This is the animal model of that."

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"The ancestral exposure of your great grandmother alters your brain development to then respond to stress differently," says Michael Skinner, co-author and a researcher at Washington State University. "We did not know a stress response could be programmed by your ancestors' environmental exposures."



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The researchers exposed gestating female rats to vinclozolin, a popular fruit and vegetable fungicide. They then put the rats' third generation of offspring through a variety of behavioral tests. They found that the rats were more sensitive to stress, and more anxious, and they had greater levels of activity in stress-related regions of the brain, than the descendants of the unexposed rats.

The researchers had already, in a previous study, shown that vinclozolin can affect how genes are turned on or off in an organism.

The study of how genes are turned on and off by environmental factors is called epigenetics. This new research deepens the understanding of the epigenetics of the brain and behavior.



"We did not know a stress response could be reprogrammed by your ancestors' environmental exposures," says Skinner, who focused on the epigenetic transgenerational inheritance and genomics aspects of the paper. "So how well you socialize or how your anxiety levels respond to stress may be as much your ancestral epigenetic inheritance as your individual early-life events."

"There is no doubt that we have been seeing real increases in mental disorders like autism and bipolar disorder," says Crews, who focused on the neuroscience, behavior and stress aspects of the paper. "It's more than just a change in diagnostics. The question is why? Is it because we are living in a more frantic world, or because we are living in a more frantic world and are responding to that in a different way because we have been exposed? I favor the latter."

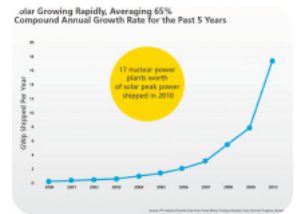
The study also found clear differences in weight gain between the exposed and unexposed groups, leaving room for further research on obesity.

Source: [Washington State University](#)

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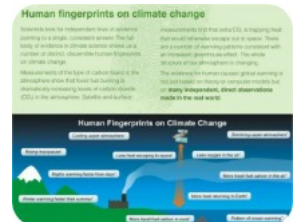
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