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# Your environmental exposures might haunt your great-grandchildren

May 23, 2012  
Courtesy of Washington State University and World Science staff

Scientists have found increased stress sensitivity and differences in weight gain in rats whose ancestors were exposed to a hormone-disrupting chemical three generations earlier.

The researchers exposed pregnant rats to vinclozolin, a popular fruit and vegetable fungicide known to disrupt hormones. They then put the rodents' great-grandpups through various tests and found them more anxious, stress-sensitive and prone to greater activity in stress-related brain areas than unexposed rats' descendants.

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**“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,”** said David Crews of the University of Texas at Austin, one of the investigators. **“This is the animal model of that.”**

**The differences in weight gain seen in the study were intriguing but require further study, he added.**

**It seems clear that “the ancestral exposure of your great grandmother alters your brain development to then respond to stress differently,”** said Michael Skinner of Washington State University, who worked with Crews. **The findings are published in the latest issue of**

the journal *Proceedings of the National Academy of Sciences*.

The researchers had previously found vinclozolin exposure can affect subsequent generations by affecting how genes are turned on and off, a process called epigenet-

ics. In that case, the epigenetic inheritance altered how rats choose mates.

The new research goes further.

“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,” Skinner said. This could explain why some people suffer post-traumatic stress syndrome while others don’t, he added.

“We have been seeing real increases in mental disorders like autism and bipolar disorder,” said Crews. “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.”

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