

Curious female rats survive tumors longer

March 7 2005

Curious female rats, more willing to step out and explore their environment, survive breast and pituitary tumors longer than their more cautious sisters, said a Penn State researcher.

Sonia Cavigelli, assistant professor of biobehavioral health, said that her study of 80 female rats from birth to death shows that the curious ones with tumors lived, on average, an additional six months, or 25 percent longer lives, than the cautious ones.

"It's difficult to extrapolate from rats to people," she noted. "However, there have been studies that show that shy elderly people report more health symptoms than their more outgoing age-mates. Our new results with rats are consistent with those findings and support the notion that personality traits may have a significant impact on health and resilience to disease."

Cavigelli, who joined the Penn State faculty in August, detailed the results at the American Psychosomatic Society meeting in Vancouver, Canada, in a paper, "Exploratory Tendency During Infancy and Survival in Female Rats with Spontaneous Tumors." She conducted the study while she was a postdoctoral researcher at the University of Chicago. Her co-authors are J.R. Yee, graduate student in human development, and Martha McClintock, professor of psychology, both at the University of Chicago.

The rats used in the study spontaneously develop breast or pituitary tumors near the end of their lives. In the study, 93 percent of the rats developed these tumors.

"Tumor progression is a lengthy process and, therefore, may be particularly prone to subtle effects of personality on disease resilience," Cavigelli said.

The rats were tested in infancy and as adults to see how curious or cautious they were by placing them in a "playground" filled with unfamiliar objects likely to intrigue rodents, including tunnels, bricks, stones and a small box. Some of the rats, from infancy, readily explored the environment and were designated "curious." Those that hesitated to emerge from the bowl used to introduce them into the environment were designated "cautious."

The cautious and curious rats developed equal numbers of breast and pituitary tumors over their lifespan but those identified as more curious during infancy/early childhood lived longer than the cautious ones. The difference in life span was comparable to several human years.

The same rats' stress hormones also were measured after the rats were placed briefly in a new tunnel. The cautious females had lower stress hormone responses than the curious ones. This finding in female rats is the opposite of the result Cavigelli saw in an earlier study with male rats. The males' stress hormones were lower in the curious rodents.

"These results suggest that both elevated and dampened stress hormone production may be associated with disease resilience or accelerated aging," said the Penn State researcher.

The study was supported by grants from the National Institute of Mental Health, the National Institute of Aging, and the National Institute of Child and Human Development.

Source: Penn State

Citation: Curious female rats survive tumors longer (2005, March 7) retrieved 27 April 2024 from <https://phys.org/news/2005-03-curious-female-rats-survive-tumors.html>

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