Study Suggests Cancer May Have Played a Role in Evolution of Sex

Research into Tasmanian devils provides new insights into how and why we reproduce as a species.

June 16, 2019 By Casey Halter

New research on Tasmanian devils, sexual reproduction and certain forms of transmissible cancer may help answer one of evolutionary biology's greatest mysteries: Why do so many species reproduce sexually as opposed to asexually as they did for billions of years? Cancer may be the answer, ABC Science reports.

The study, published in PLOS Biology, points out that plants and a few animals that reproduce asexually get the job done much faster and more efficiently than other species. Sexual reproduction, however, does a better job of mixing up genes, thus reducing the potential buildup of harmful mutations in a species and introducing exciting new combinations to be tested via natural selection.

What's more, cancer has been present in the animal kingdom for more than a billion years, making a huge impact on our evolutionary history as a planet. In fact, the oldest cell line known in biology is a transmissible cancer found in dogs, which passed from animal to animal as far back as 10,000 years ago.

But what does this have to do with the evolution of sex and cancer? Researchers say the study of transmissible cancers in animals such as Tasmanian devils, whiptail lizards and other species is offering new insights into what life on earth might be like if sex were not the norm and individual animals were genetically very similar as a result.

For example, although Tasmanian devils do not reproduce asexually, inbreeding due to lack of available mates has taken a major toll on the species' immune system, making them highly susceptible to a form of cancer that causes tumors and growths in the mouths and faces of affected animals. Without the variation new mates offer, it's easy to see how perilous life could become.

"Just by studying transmissible cancers we can start making assumptions and then refine our hypothesis about the evolution of sex," said Rodrigo Hamede of the University of Tasmania, a coauthor of the recent study. "Our research is the tip of the iceberg. The more we learn about

cancer and how it has shaped wildlife, the more we learn about cancer biology in general. And that also has implications for treatments for novel therapies for improving the way we treat people living with cancer."

To learn more about what animals can teach us about cancer, click here.

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