What gets turned on when a female gets 'turned on'?

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(PhysOrg.com) -- Hearing the courtship songs of males, not only gets females in the mood for mating, but can also prepare for potential infection, according to the latest research.

Biologists at the University of St Andrews made the finding after stimulating female fruit flies with artificial courtship songs. They found increased activity in several genes, with the largest effects occurring for genes involved in immune function.

It is well-known that male animals often display elaborate signals during courtship like the peacock's tail or courtship songs.

Male fruit flies attempt to court females with a "song" created by vibrating their wings, and females are turned on more by the song of the right species.

The new research asks what happens within the female when she hears sexy song, especially what happens to the genes that are expressed within the female.

The research by Professor Michael Ritchie and Elina Immonen in the Centre for Biological Diversityat the university, examined the reaction to courtship song in the genes expressed by a female.

Genes involved in signalling and olfaction (smell) responded but the strongest responses were in genes involved in immunity.

The researchers believe the reaction could be in anticipation of mating.

Professor Ritchie said: “It seems that female preparation for mating may involve the rather unromantic anticipation of potential infection.”

The paper “The Genomic Response to Courtship Song” was published in *Proceedings of the Royal Society B* journal today.

Professor Ritchie added: “Our results provide novel insight into molecular changes in females in response to courtship stimulation.

“They suggest that changes thought to occur in response to mating, may begin during courtship and may represent an adaptive preparation for mating, including anticipation of deleterious interactions with male molecules or increased risk of pathogen infection.”

The researchers believe the discovery could provide insights into key evolutionary processes ranging from sexual selection and conflict to speciation.

Provided by University of St Andrews