# Researchers Explain Why Hunger Triggers Infertility

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(PhysOrg.com) -- Scientists have long known that calorie restriction increases longevity in animals but at an evolutionary cost - the animals become infertile.

Yale University researchers report in the September 7 to 11 issue of the Proceedings of the National Academy of Sciences that they have discovered the molecular switch in the brain that turns off the reproductive system in times of severe hunger. The same molecule also may play a key role in obesity, drug addiction and depression.

The scientists found that a peptide active in the hypothalamus called melanin-concentrating hormone or MCH can inactivate the reproductive system in times of hunger.

"Brain neurons that make MCH are quiet most of the time, but when the body is in negative energy balance, MCH neurons become active and can shut down reproduction, said Meenakshi Alreja, senior author the paper and Associate Professor of Psychiatry and Neurobiology at the Yale School of Medicine.

The Yale team found that MCH prevents a key reproductive molecule called kisspeptin from acting. Kisspeptin triggers puberty and helps maintain fertility. Hunger or excessive exercise activates the MCH system and delays puberty by blocking kisspeptin.

Scientists and drug companies are interested in MCH for many other

reasons. MCH is implicated in depression and drug addiction as well. And mice bred without MCH remain lean - and fertile - which has made it a popular candidate for anti-obesity drugs as well.

In addition to fighting obesity and depression, MCH may now play a role in human fertility, Alreja said.
Other Yale authors in the study include Min Wu, Iryna Dumalska, Elena Morozova, and Anthony van den Pol of the Yale School of Medicine.

Provided by Yale University (news : web)