

Biology of love at first sight: Study explains the mechanism of "Cupid's arrow"

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Waseda university researchers have identified certain chemicals in the brain which regulate downstream reproductive hormones of males.

A group led by Yasuko Tobari and Kazuyoshi Tsutsui, of Waseda University's Center for Advanced Biomedical Sciences (TWIns) , have published research outlining how the presence of the opposite sex triggers changes in animals' behavior.

It is known that the presence of a female causes rapid decreases in plasma testosterone levels in male Japanese quail, but little is known about the neural pathway linking social encounters to hormonal change.

The researchers identified certain chemicals in the brain which regulate downstream reproductive hormones of [males](#).

Major results:

- A female presence increases GnIH [hormone](#) precursor mRNA expression in the [brain](#) and decreases luteinizing hormone (LH) concentration in the plasma of males;
- A female presence increases norepinephrine (NE) release in the hypothalamus of males;
- NE stimulates the release of GnIH from the hypothalamus in vitro and inhibits plasma LH secretion;
- NE neurons project to GnIH neurons that express NE (noradrenergic α 2A subtype) receptor mRNA.

Since norepinephrine and GnIH are both found in humans, a similar neural mechanism may exist in us as well, meaning that the current research could help understand love at first sight.

More information: Yasuko Tobari, You Lee Son, Takayoshi Ubuka, Yoshihisa Hasegawa, and Kazuyoshi Tsutsui, "A new pathway mediating social effects on the endocrine system: Female presence acting via norepinephrine release stimulates gonadotropin-inhibitory hormone in the paraventricular nucleus and suppresses luteinizing hormone in quail", *Journal of Neuroscience*, July 17, 2014.
www.jneurosci.org/content/34/29/9803

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