

# Control gene for developmental timing discovered

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University of Alberta researchers have identified a key regulator that controls the speed of development in the fruit fly. When the researchers blocked the function of this regulator, animals sped up their rate of development and reached maturity much faster than normal.

The U of A research team, led by molecular geneticist Kirst King-Jones, noticed a peculiar behaviour of the protein they were studying, DHR4: The protein acted as a sentinel to either allow or prohibit the production of steroid hormones by moving periodically between the [cell nucleus](#) to the cytoplasm.

In insects, these steroid hormone pulses control the progression of the fruit fly's development through the various stages of their life cycle. When the researchers blocked the function of DHR4 in the steroid hormone-producing cells, the maturation stage was reached 20 per cent faster than normal. In human terms this would mean that [sexual maturity](#) would be reached years earlier than normal.

In humans, steroid hormones play fundamental roles in the development of bodies and the onset of disease. King-Jones says the U of A research defines a novel mechanism by which steroid hormone pulses are regulated.

[Fruit flies](#) are commonly used in genetic research labs to study fundamental biological processes important for human health. The genes in many human diseases have a recognizable match in the genome of the

fruit fly. For instance, the insect is used as a [genetic model](#) for diseases and neurodegenerative disorders such as Alzheimer's and Parkinson's disease. The fly is also a research tool for the study of obesity, diabetes and cancer.

Prior to the breakthrough by U of A researchers, little was known about the mechanism by which the timing of [steroid hormone](#) pulses, and thereby the onset of maturation, are controlled.

**More information:** The U of A team's research was published online Sept. 27 in the journal *PLoS Biology*.

Provided by University of Alberta

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