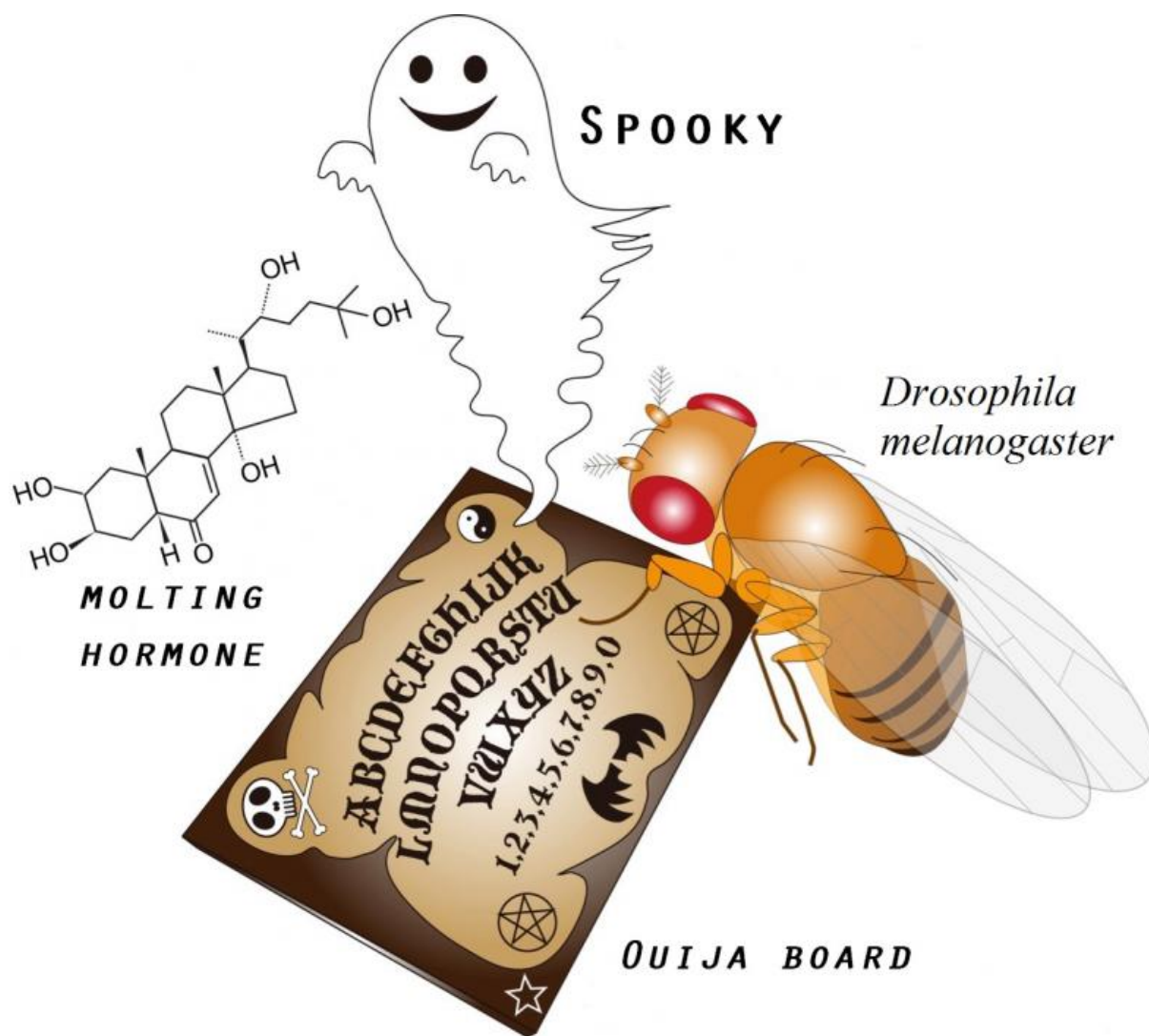


Expression of a "Ouija Board" protein that can summon "monster" genes

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“Ouija Board” plays an important role in the biosynthesis of the steroid hormones necessary for insect development.

Steroid hormones are biologically active substances that play important roles in the development and sexual maturation of individuals, as well as in maintaining homeostasis, regardless of species. Steroid hormones are biosynthesized from cholesterol in specific endocrine organs via multi-step enzymatic reactions. Consequently, it is important that the gene groups that provide instructions for those biosynthetic enzymes are expressed in limited forms in the organs where steroid hormone biosynthesis takes place. While progress has been made on research in vertebrates, the mechanism controlling limited gene expression in the steroidogenic organs of invertebrates is largely unknown.

A research group led by University of Tsukuba Faculty of Life and Environmental Sciences Associate Professor Ryusuke Niwa, in a joint study with the National Institute of Agrobiological Sciences, has studied *Drosophila melanogaster* flies to discover a new protein dubbed "Ouija Board," which plays an important role in the biosynthesis of the [steroid hormones](#) necessary for insect development.

This study has shown that "Ouija Board" regulates the expression of the enzyme [genes](#) required for biosynthesis of insect steroid hormones (molting hormones). Of particular interest is the fact that "Ouija Board" regulates only a single gene out of the many various biosynthetic enzyme genes. In addition, "Ouija Board" exists only in the fly family of insects. The above results strongly suggest that *Drosophila melanogaster* has a special regulatory mechanism for only a single enzyme gene. While this study has provided new knowledge about the mechanism for animal steroid hormone biosynthesis and its evolution, it could also lead to the development of ideas for the development of more "environmentally friendly" agrochemicals that act only on insects.

More information: Tatsuya Komura-Kawa et al. The *Drosophila* Zinc

Finger Transcription Factor Ouija Board Controls Ecdysteroid Biosynthesis through Specific Regulation of *spookier*, *PLOS Genetics* (2015). [DOI: 10.1371/journal.pgen.1005712](https://doi.org/10.1371/journal.pgen.1005712)

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