

# Drosophila Female Mating Rhythm is Governed by Clock Gene

Mating rhythms of flies are abolished in circadian clock mutant flies. The mating rhythms were lost when circadian rhythm mutant females were paired with wild-type males, demonstrating that female mating activity is governed by clock genes (PNAS 98,9221-9225,2001).

An anti-phasic relationship in the circadian rhythms of mating activity was detected between *D.melanogaster* and their sibling species *D.simulans*, both of which are from Ogasawara Island. The data suggested that female- and species-specific circadian rhythms in the mating activity of *Drosophila* cause reproductive isolation which is an important factor

in evolution and reproduction.



Mating behavior of male fly (lower is male)  
Wing vibration behavior is called a courtship song

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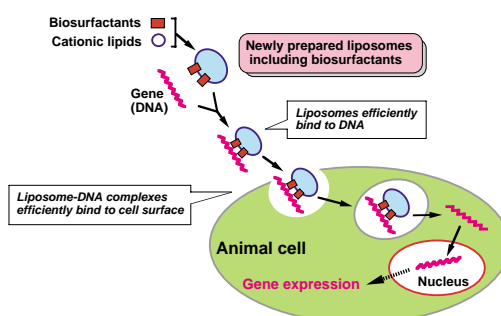
# Dramatic Increase in Efficiency of Gene Transfer into Cells

- Potential to greatly accelerate research into gene functions and cancer gene therapy -

The Research Institute for Green Technology in collaboration with Prof. M. Nakanishi of Nagoya City University have achieved a dramatic increase in the efficiency of gene transfer into cells using a new type of liposome.

We have developed a liposome that contains "biosurfactants," functional lipids produced by yeast. Compared to previous commercially available liposomes, the new method enables a 50- to 70-fold increase in the rate of gene transfer into a range of cultured mammalian cells. The biosurfactants are extremely practical to use because they are not toxic to cells at concentrations used and can be mass-pro-

duced from plant oils through a yeast fermentation reaction.



Gene delivery system by liposomes including biosurfactants

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