

# SOUTHWESTERN NEWS

Contact: Heather Stieglitz  
(214) 648-3404

or e-mail: hstieg@mednet.swmed.edu

EMBARGOED FOR RELEASE, 5 P.M. EASTERN, DEC. 12, 1996

## SCIENTISTS IDENTIFY GENE FOR SEXUAL BEHAVIOR IN MALE FLIES

DALLAS – December 13, 1996 – A team of scientists from four universities has isolated the gene that controls all aspects of sexual behavior in male fruit flies. Their research is the first to pinpoint a single gene that works in the brain to control a complex behavior in adult animals.

The scientists from The University of Texas Southwestern Medical Center at Dallas, Stanford University, Brandeis University and Oregon State University report their findings in the Dec. 13 issue of the journal *Cell*.

"We have identified, cloned and characterized a single gene that controls a complex pattern of behaviors," said Dr. Steven Wasserman, associate professor of molecular biology and oncology at UT Southwestern. "This says there is a genetic basis to complex behavior and that genetic basis can reside in a single gene." Geneticists have known for years that the gene, called *fruitless* and nicknamed *fru*, influences sexual orientation. Male flies with some mutations in the *fru* gene cannot tell male flies from female flies when courting.

The investigators showed that the *fru* gene controls much more than the male fruit fly's choice of partners. They showed that the gene *fru* is:

- A master gene that controls not only sexual orientation but all, or nearly all, aspects of the male fly's elaborate courtship ritual -- from its first interest in a female through its rhythmic courtship song and its attempts to mate.

- Part of a group of genes that work together to govern all aspects of sex in these flies, including development of male and female organs.

(MORE)

## MALE FLIES – 2

– Activated, or expressed, in a very small fraction of the cells in the fly's brain. The properties of these neurons suggest that they carry out command and control functions to coordinate the complex events of male courtship.

"We would all be rather stunned if complex human behaviors turned out to have as simple a genetic basis as is the case in fruit flies," said Wasserman.

In the collaborative study, Wasserman and colleagues at UT Southwestern provided the molecular expertise that set up the molecular framework, or roadmap, for identifying the *fru* gene and looking at its properties; the Stanford group, led by Dr. Bruce Baker, professor of biology, contributed the genetic mastery that placed the gene on the roadmap and characterized its product; Brandeis professor of biology Dr. Jeffrey Hall and coworkers supplied the proficiency in behavioral biology; and Dr. Barbara Taylor, professor of biology at Oregon State, was the neurobiology expert who described the expression pattern of *fru* in the brain.

Other investigators involved in the study were Dr. Diego H. Castrillon, a former M.D./Ph.D. student at UT Southwestern at Dallas, now a resident in pathology at Brigham and Women's Hospital and Harvard University Medical School; research associate Dr. Lisa Ryner and postdoctoral fellow Dr. Anuranjan Anand at Stanford; and postdoctoral research fellow Dr. Stephen F. Goodwin and research associate Adriana Villella of Brandeis.

###