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# Olfaction in *Drosophila*: from Receptors to Behavior

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*Drosophila melanogaster* has long been appreciated as a powerful model system for genetic studies. The popularity of this model organism can be attributed to its short generation time, the small number of chromosomes with their well defined cytological map of 100 chromosomal bands, the existence of numerous genetic markers, the ease of chromosome substitution, its amenability to mutagenesis and transposon tagging of genes, and the relatively easy construction of transgenic animals. The recent release of the complete genomic sequence of *Drosophila* will further catalyze and facilitate research in this system. The power of *Drosophila*, however, goes beyond genetic applications. Fruit flies are ideally suited for multidisciplinary approaches, which combine genetics with behavioral studies, anatomical and physiological approaches, and molecular biology. *Drosophila melanogaster* truly has been a scientific goldmine which continues to generate a wealth of new discoveries, especially in neurobiology and developmental biology. Only recently has the full power of this system been exploited for studies on olfaction and, to no one's surprise, with exciting results. This symposium, held at AChemS XXVII in Sarasota, FL, on April 27, 2000, explored recent advances in our understanding of olfaction that have emerged from this model system. Dean Smith discussed the function of odorant binding proteins and described how mutations in the LUSH protein lead to impaired olfactory discrimination. John Carlson and Leslie Vosshall reported on their independent discoveries and characterization of the family of putative odorant receptors in *D. melanogaster*, the first insect odorant receptors identified. Robert Anholt described how *P*-element insertional mutagenesis can be exploited to mine the genome for genes that contribute to odor-guided behavior. Finally, Marla Sokolowski discussed the genetics of foraging behavior and showed that polymorphisms in a single gene can give rise to strikingly different strategies for food localization.

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