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by Malcolm J Fraser Jr. and Paul D Shirk

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LETTER

# Transgenic Insects

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We read with interest Harvey Black's recent article on transgenic insects ("Scientists Refining Methods For Genetically Altering Insects," *The Scientist*, Oct. 13, 1997, page 1). While the report was timely and informative and included the majority of the major transposon systems being examined for this purpose, the highly promising results that have been obtained using the *piggyBac* transposon in diverse insect orders were overlooked.

This short, inverted-repeat transposon was originally isolated as an insertion within the genome of baculovirus mutants derived following replication in a lepidopteran cell line (M.J. Fraser et al., *Journal of Virology*, **47**:287-300, 1983; L.C. Cary et al., *Virology*, **172**:156-69, 1989). The capacity of *piggyBac* to function as a genetic vector for lepidopterans has been demonstrated in vitro (M.J. Fraser et al., *Virology*, **211**:397-407, 1995). More recently, an *in vivo* demonstration of transformation has been accomplished in the Mediterranean fruit fly using a *piggyBac* vector containing the white gene (A.M. Handler, S.D. McCombs, *2d International Workshop on Transgenesis of Invertebrate Organisms*, Asilomar Calif., May 9-13, 1997). This latter demonstration employed the same method of identifying transgenic flies previously used to confirm the movement of the minos transposon in Mediterranean fruit flies (T.G. Loukeris et al., *Science*, **270**:2002-5, 1995).

Our continuing research demonstrates the capacity of *piggyBac* to vector genes effectively into insects that span at least two important pest insect orders, a significant finding that has not been demonstrated with other transposons described in the article. The implicit thrust of this field is to provide a means to genetically alter insects to facilitate pest control, and *piggyBac* provides a potentially valuable molecular tool that can be used in a broad range of insects to accomplish this goal.

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