

## Resume: Fred Gould

### Professional Preparation

Queens College, City University of New York. Biology BS 1971  
State University of N.Y. at Stony Brook, N.Y. Ecology & Evolutionary Biology Ph.D. 1977

### Professional Positions

1977-78 Postdoctoral Fellow, National Science Foundation  
1978-79 Research Associate, Dept. Entomology, N.C. State Univ., Raleigh  
1979-85 Assistant Professor, Dept. Entomology, N.C. State Univ., Raleigh  
1985-89 Associate Professor, Dept. Entomology, N.C. State Univ., Raleigh  
1990-93 Professor, Dept. Entomology, N.C. State Univ., Raleigh  
1993-Present Reynolds Professor, Dept. Entomology, N.C. State Univ., Raleigh  
2002-Present Adjunct Professor, Dept. of Genetics, N.C. State Univ., Raleigh

### Honors, Awards, Committees: Past 5 years.

George Bugliarello Prize for American Scientist article on genetic manipulation of pests for control of human disease vectors 2007  
Alexander Von Humboldt Award --for most important agricultural research over a 5-year period, 2004  
NSF National Evolutionary Synthesis Center- Grants review panel 2004-present  
National Science Foundation Grants review panel member-population biology. 2004  
National Academy of Sciences—Selected as National Associate, 2003  
National Research Council- Report review coordinator, 2003  
Entomological Society of America—Selected as Fellow 2003  
Univ. Arizona, Dept. Entomology, External Reviewer, 2002  
National Academy of Sciences, National Research Council. Committee on Environmental Effects of Commercialization of Transgenic Plants, Chair, 2000-2002  
Conference of American Catholic Bishops, Scientific Consultant on Transgenic Crops, 2000  
National Academy of Sciences, National Research Council. Committee to develop recommendations on “Genetically Modified Pest Protected Crops” 1999-2000

### Peer reviewed publications: Past 2 years.

Sheck, A. L., A. T. Groot, C. M. Ward, C. Gemeno, J. Wang, C. Schal, & F. Gould. 2006. Genetics of sex pheromone blend differences between *Heliothis virescens* and *Heliothis subflexa*: A chromosome mapping approach. *J. Evol. Biol.* 19:600-617.  
Magori, K., and F. Gould. 2006. Genetically engineered underdominance for manipulation of pest populations: A deterministic model. *Genetics* 172:2613-2620.  
Groot A. T., Bennett J., J. Hamilton, R. G. Santangelo, C. Schal, and F. Gould. (2006) Experimental evidence for interspecific directional selection on moth pheromone communication. *Proc. Nat. Acad. Sci.* 103: 5858-5863.  
Sinkins, S. P., and F. Gould. 2006. Gene drive systems for insect disease vectors. *Nature Reviews Genetics.* 7:427-435.  
Gould, F., K. Magori, Y. X. Huang 2006 Genetic strategies for controlling mosquito-borne diseases. *American Scientist.* 94 (3): 238-246.  
Gould, F., Cohen M. B., J. S. Bentur, G. G. Kennedy, J. W. Van Duyn. 2006. Impact of small fitness costs on pest adaptation to crop varieties with multiple toxins: A heuristic model. *J. Econ. Entomol.* 99:2091-2099.  
Jackson, R.E., F. Gould, J. R. Bradley, J. W. Van Duyn. 2006. Genetic variation for resistance to *Bacillus thuringiensis* toxins in *Helicoverpa zea* (Lepidoptera : Noctuidae) in eastern North Carolina. *J. Econ. Entomol.* 99:1790-1797.  
Jackson, R. E., M. A. Marcus, F. Gould, J. R. Bradley, J. W. Van Duyn. 2007. Cross-resistance responses of Cry1Ac-selected *Heliothis virescens* (Lepidoptera : Noctuidae) to the

- Bacillus thuringiensis protein Vip3A. J. Econ. Entomol. 100:180-186.
- Gahan, L. J., F. Gould, J. D. Lopez, S. Micinski, D. G. Heckel . 2007. A polymerase chain reaction screen of field populations of *Heliothis virescens* for a retrotransposon insertion conferring resistance to Bacillus thuringiensis toxin. J. Econ. Entomol. 100:187-194.
- Groot, A. T., R. G. Santangelo, E. Ricci, C. Brownie, F. Gould, C. Schal. 2007. Differential attraction of *Heliothis subflexa* males to synthetic pheromone lures in eastern US and western Mexico. J. Chem Ecol. 33:353-368.
- Huang, Y., K. Magori, A. L. Lloyd, F. Gould. 2007. Introducing desirable transgenes into insect populations using Y-linked meiotic drive—a theoretical assessment. Evolution 61:717-726.
- Li, G. P., K. M. Wu, F. Gould, J. K. Wang, J. Miaoi, X. W. Gao, Y. Y. Guo. 2007. Increasing tolerance to Cry1Ac cotton from cotton bollworm, *Helicoverpa armigera*, was confirmed in Bt cotton farming area of China. Ecological Entomology 32:366-375.
- Heckel, D. G., L. J. Gahan, S.W. Baxter, J. Z. Zhou, A. M. Shelton, F. Gould, B. E. Tabashnik. 2007. The diversity of Bt resistance genes in species of Lepidoptera. J. Invert. Pathol. 95:192-197 Sp. Iss.
- Huang,, Y., K. Magori, A. L. Lloyd, F. Gould. 2007. Introducing transgenes into insect populations using combined gene-drive strategies: Modeling and analysis. Insect biochem. Mol. Biol. 37:1054-63.

**Graduate Students: Past 10 years. (\* denotes co-advised students)**

- Sumerford, Doug** Ph.D. 1997 Research Scientist, USDA  
Thesis: “Genetic analysis of adaptation to secondary plant compounds by *Heliothis virescens* (Lepidoptera: Noctuidae).”
- Sisterson, Mark** MS. 1997 USDA Research Scientist  
Thesis “Natural history of *Heliothis subflexa* in the Southeastern US”
- Peck, Steve** Ph.D.\* 1997 Associate Professor, Brigham Young University  
Thesis: “Spatial aspects of the evolution of pesticide resistance: models and recommendations.”
- Schliekelman, Paul** Ph.D.\* 2000 Associate Professor, University of Georgia  
Thesis: “Population genetic considerations in the development and release of transgenic insect pests”.
- Oppenheim, Sara** M.S. 2000 PhD. Student, North Carolina State University  
Thesis: “The role of enemy-free space in the evolution of specialized herbivores”
- Rennie, Traci** M.S 2003 Research technician NSF/NCSU CIPM  
Thesis “Use of stable isotopes for determination of larval origins of *Helicoverpa zea* adults”
- Cabrera, Juan** PhD\* 2002 Visiting Research Professor Lima, Peru  
Thesis “Tritrophic interactions of Bt-corn, *Spodoptera exigua*, and natural enemies”
- Bateman, Melanie** PhD 2006 Research analyst FAO Rome  
Thesis: “The potential and realized host range of a specialist herbivore, *Heliothis subflexa*”
- Benda, Nicole** PhD \* 2007 USDA Postdoc  
Thesis: “Patterns and mechanisms of specialized oviposition behavior in *Heliothis subflexa*”
- Puente, Molly** PhD\* 2007 Presidential Fellow--NIH  
Thesis: “The potential use of herbivore induced volatiles in crop protection: spatially explicit computer analyses”
- Ward, Michael** M.S. 2008  
Proposed Thesis: “Determination of candidate genes involved in evolutionary diversification of moth pheromone blends”

- Oppenheim, Sara** PhD 2009  
Proposed Thesis: “The genetic basis for the evolution of specialization in a lepidopteran species”
- Petzold, Jen** PhD 2009  
Proposed Thesis: “Ecology and genetic of host location and feeding in *Heliothis subflexa*.”
- Katz, Rachael** M.S. 2009  
Proposed Thesis “Competition and gene flow in *Aedes aegypti* in Tapachula, Mexico”
- Paa, Sandra** M.S. 2010  
Proposed Thesis: “Empirical test of the Killer-Rescue concept for temporally Limited gene-drive”