Preface

This book is a compendium of research and review articles of some of the latest developments in genetic engineering. Here you will find reports of research, reviews of research, and calls for research, as well as discussion about risk assessment and risk management. Here you will discover the work of scientists from a broad range of disciplines including botany, entomology, plant pathology, microbial ecology, virology, fish and wildlife, evolutionary biology, genetics, public health, and environmental studies. Here too you will find a volume that has benefited from the insights and comments of the many people who have helped ensure that each chapter was peer reviewed.

Here you can read about pollen movement, spread of transgenes in natural communities, fitness effects, resistance development, and unpredicted impacts on target and nontarget organisms — topics explored in contexts ranging from *Bt*-corn events and viral resistant oats to transgenic salmon and altered malarial vectors.

This book was inspired by a symposium co-organized by the book's co-editors at the 1999 national meeting of the Ecological Society of America (ESA), held in Spokane, Washington. The symposium was entitled "Theoretical and Practical Considerations for Assessing Ecological and Human Health Effects of Genetically Engineered Organisms" and featured presentations by some of those who wrote chapters in this book (D. Andow, A. Kapuscinski, T. Klinger, A. Spielman).

The ESA symposium in turn had its roots in the creation of a *Manual for Assessing Ecological and Human Health Effects of Genetically Engineered Organisms* (Scientists' Working Group on Biosafety 1998). The Manual was the work of a group of scientists who, convened by the Edmonds Institute, a public interest organization following the biosafety deliberations of the Convention on Biological Diversity, undertook to help consumers and policymakers evaluate likely impacts of genetically engineered organisms in a variety of settings and applications.

What the Manual, the symposium, and this book have in common were these understandings on the part of the instigators of all three events:

- Genetic engineering, like other technologies, not only suggests new avenues for constructing useful products, but also poses hazards to the health of the environment and the public (see, e.g., Ellstrand 2001).
- Science can provide insight into the benefits and the risks of the products of genetic engineering. We need not argue about the ecological and human health effects of any event if we are willing to undertake the painstaking research necessary to identify and understand those effects.
- The pursuit of biosafety requires a wide "spectrum of expert knowledge consonant with the specific molecular biological, organismal, ecological, and applied dimensions of the proposed genetically engineered organism" (Scientists' Working Group 1998).

- Research, data, and analysis can and should be made understandable and accessible to the general reader; such accessibility benefits expert practitioners of other disciplines, as well as the general public.
- Science and other scholarly endeavors can and must inform public policy but the public is the ultimate decision maker about which problems are most pressing, which risks are most worth taking, and which technologies are most desirable, given all the available alternatives (see Liebhardt 1993, Raffensperger and Tickner 1999, Thornton 1999, O'Brien 2000).
- The pursuit of biosafety is necessarily a shared endeavor of science and the general public (see van Dommelen 1998, Wright 1998, Levidow and Carr 2000).
- Members of the scientific community and the public interest community can cooperate to the benefit of both science and the public interest, but such cooperation requires continuous exercise of patience, care, and respect, occasional adjustments in language and perspective, and initial positive judgments about the other party's good will and intelligence. A sense of humor is also essential.

Those understandings acknowledged, it is hoped that it will come as no jarring surprise to the reader that one of the editors of this volume is a scientist (Deborah Letourneau) and the other (Beth Burrows) is not.

I first met Deborah when the organization I headed invited a group of scientists that included Deborah to write a manual about biosafety. Since then, we have worked together on several occasions to bring broad-based thinking and cooperation to bear on questions raised about genetically engineered organisms. This book is the culmination of our efforts, as well as the work of many generous authors and peer reviewers. It is hoped that the collection is a useful contribution not only to science but also to the public interest.

Beth Elpern Burrows

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