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PRESS RELEASE

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Ecological Impacts of Genetically Engineered Plants May Be Severe

Harm Possibly Greater than From Toxic Chemicals

New Report Finds Vast Uncertainty in Estimating Ecosystem Impacts of Engineered Species

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Washington, D.C., June 4: A report, *Ecology and Genetics: An Essay on the Nature of Life and the Problem of Genetic Engineering*, issued today concludes that some genetically engineered life forms might have profound impacts on the environment because genome-ecosystem interactions are not being taken into account in the creation of new organisms. The report, issued as a monograph by Apex Press, presents a new framework for understanding interactions between the genetic structures of living beings and the ecosystems in which they live

"The genetic structures of living beings are expressions of the ecosystems they need to survive and also help to reproduce those ecosystems," explained Dr. Arjun Makhijani, president of the Institute for Energy and Environmental Research and author of the report. "Inter-species genetic engineering creates new types of living beings which could not arise naturally. They will impact the environment in new and unpredictable ways. We should expect nasty surprises."

The report on the relationship between genomes and the ecosystems in which they evolved comes at a time of rising skepticism about the one-gene-one-protein model, known as the "central dogma" of genetics. The traditional theory is being questioned in part because of the surprising finding of the Human Genome Project that human beings may have far fewer genes than anticipated - only about twice as many as roundworms.

"Our approach to the nature-nurture problem has been hopelessly simplified in most areas of biology, which are dominated by the machine metaphor for life. This is illustrated by the impasse now reached in the Human Genome Project," said Dr. Richard Strohman, Professor emeritus of molecular and cell biology at the University of California, Berkeley. "In reading this new report I am reminded of that old truth that really new insights in science or math often come from someone young or from someone looking at a field for the first time. From a basic science point of view there can be no more important discussion than the one provided in this monograph."

"One way to think about the interaction between ecosystems and genetic structures is that it is like a complex piece of music in which the notes work together to create the whole," said Makhijani. "Genetic engineers have set out to do the equivalent of rewriting bits of Beethoven's violin concerto without understanding how the existing notes and themes relate to each other."

Ecology and Genetics goes far beyond the food safety arguments that have been made in regard to the risks of genetically engineered plants. "This work calls into question the very nature of the agricultural biotech experiment now underway," said Dr. Brent Blackwelder, President of Friends of the Earth. "Parts of the planet are contaminated and permanently damaged by chemical waste that was never supposed to leak out. This book provides a grim warning that we could face far worse with genetically engineered plants."

"If physicians on a hospital human subjects committee were presented with a proposal to plant hundreds of millions of acres with genetically engineered seeds and feed the resulting food products to the general public unlabeled, the experiment would never be approved," said Dr. Martha Herbert, a pediatric neurologist at Harvard Medical School. "Where is the pre-clinical testing or the control subjects or the health and ecological monitoring? If we don't allow medicines to be marketed without procedures such as these, why do we allow questionable organisms in our fields and our oceans?"

The report warns that even laboratory work must be carefully thought through because genetic engineering may increase the risks of accidental or deliberate release of new versions of biological warfare agents that are more virulent than natural ones. " The pursuit of genetic engineering should take into account the risk that it may make the problem even worse by enabling the creation of warfare agents resistant to drugs and vaccinations," said Dr. Makhijani. "Even without that added risk, biological warfare facilities are far harder to detect than nuclear ones such as plutonium."

Ecology and Genetics also recommends an end to the commercial use of genetically engineered plants at least until there is a sound understanding of genome-ecosystem interaction. "We continue to pursue a narrow and wrongheaded view of the gene-environment relationship in the agricultural area," said Dr. Strohman. "Biogenetic engineering where unanticipated results could cause damage to individuals or to millions of acres of cropland should cease except under tightly controlled laboratory conditions and until the time when the complexities are understood and the dangers eliminated."

The report points to the recall of StarLink, a genetically engineered variety of corn approved only for animal consumption that wound up in human food supplies. "This points to a potential problem in food security that genetic engineering might create," said Makhijani. "Were a recall of the same magnitude, 430 million bushels, to affect cereals actually destined for human consumption, it could result in a terrible increase in grain prices or in a decision to allow consumption of contaminated food."