

Introduction to Public Lecture by Dr. Ingo Potrykus at Oregon State University on October 12, 2005
“Golden Rice – Humanitarian Vision and Political Obstacles”
Professor S.H. Strauss, Oregon State University

Good evening. Please turn the ringers on all cell phones off.

My name is Steve Strauss, I am a Professor in the Department of Forest Science and the Genetics Program at OSU, and Director of the OSU Program in Biotechnology Outreach. Along with Kirsten Carroll, Executive Director of our Outreach Program, it is our pleasure to introduce the first in a series of lectures called “Food for Thought.” The series explores the scientific and social responses to the new agricultural technologies variously called genetic engineering or genetic modification, frequently abbreviated as GE, GM, or GMO. The goal of this series is to help educate and promote dialogue about what the science and technology is about; what it has done, or could do, for agricultural sustainability and human health; and how societies are responding to them and why. In short, to explore their benefits and risks, including the risks of choosing to live without them.

The lecture series is supported by the Wait and Lois Rising Lectureship Fund, the Center for Gene Research and Biotechnology, the Linus Pauling Institute, and the Colleges of Agricultural Sciences and Forestry.

Today’s public lecture by Dr. Potrykus will be followed by a reception with refreshments for those interested in meeting him. Tomorrow he will deliver a lecture intended for a biological science audience entitled *Genetic engineering of pro-vitamin A production in rice*. It will be held on the OSU campus in Peavy Hall Auditorium, Rm. 130, from 4:00 to 5:00 pm.

The next public lecture in the series will be given on Nov 15th by Dr. Nina Fedoroff from Penn State University. She is a member of the National Academy of Sciences and author of the recent popular book called “*Mendel in the Kitchen*.” She will speak on “*Genetically modified foods: Myths and Realities*.”

Dr. LaReesa Wolfenbarger will speak on November 29th. She is a wildlife biologist and agro-ecologist from the University of Nebraska who has served on US government and Ecological Society of America review panels on the

environmental effects of GE crops. She will speak on *Environmental impacts and social responses to genetically engineered crops*.

PAUSE / As you probably know, crop domestication—the process of genetically modifying crops to better suit human needs—began more than 10,000 years ago and continues in an intensive manner today. As a consequence, most of our major food crops, and many domesticated animals, differ markedly from their wild ancestors. For example, there is nothing that looks like the corn and broccoli that we eat today growing in the wild. Prior to the advent of molecular biology and GE, we did not know—nor could we directly modify—the genes that caused the changes in traits we observed. The GE method of domestication is similar in its aims to previous methods, but differs in that genes are isolated, directly studied in the laboratory, and then modified according to scientific principles. We are no longer forced to work only with what nature, or random mutation, provided us. After appropriate tailoring, modified genes can then be re-inserted back into the same or different species.

Due to the “genomics revolution” that is influencing all of the biological sciences and associated industries, agricultural biotechnologies, responsibly employed, are clearly among the most powerful technological options before us. Humanitarian and former President Jimmy Carter has said “responsible biotechnology is not the enemy; starvation is.” Gordon Conway, an ecologist and former head of the Rockefeller Foundation, when discussing the enormous pressures on ecosystem health and human welfare that the growing world population faces, has said 21st century farmers will have to draw on every arrow in their agricultural quiver, including genetic engineering. A global economic and environmental audit of the first decade of use of GE crops, published this month in the peer reviewed journal *AgBioForum*, estimated that the extraordinarily rapid adoption of GE crops in countries that allowed their cultivation gave economic benefits to farmers of 27 billion dollars, reductions in total pesticide use of 172 million kg, reductions in the environmental impacts of pesticides of 14%, and reductions in greenhouse gas emissions equivalent to removal of 5 million cars from roads. While there is room for arguing over the precision of these numbers, and this study did not account for all of the economic or environmental impacts, it is abundantly clear that GE methods can produce some substantial economic, environmental, and health improvements.

Nonetheless, societies around the world are in a state of profound confusion because many cannot agree on when, or even whether, to accommodate the many different kinds of products GE methods can produce—some very familiar in type and benefit, and some very novel. Europe has all but banned the cultivation of new kinds of GE crops, and has set very low or zero tolerances for all of their trade partners—effectively dictating the agricultural biotechnology policies of many developing countries. As a European who has been at the forefront of plant biotechnology and outreach to the public, no one is better equipped to help us understand this controversy than Ingo Potrykus.

PAUSE / Dr. Potrykus may be the best known agricultural biotechnologist and plant scientist in the world today. With his cover picture in Time Magazine in July of 2000, he achieved rock star status—something scientists seem to both wish for and also dread. As a result, his work, both its technical merit and its rationale, have received extraordinary scrutiny. And true to the rigor with which he has conducted his science over the years leading up to his fame, it has stood up beautifully.

Ingo Potrkus was born in 1933 in Hershchberg/Schlesien, Germany, earned his PhD at the Max Planck Institute for Plant Breeding Research, and eventually becoming a group leader at the Max Plank Institute for Plant Genetics. In 1976, nearly a decade before the first GE plant was produced, he moved to Basel, Switzerland to initiate work on GE methods. In 1985 he became a full professor and leader of a major group at the Swiss Federal Institute of Technology in Zurich that focused on developing solutions to problems of food crops affecting the poor in the developing world. For the next two decades he focused on iron and Vitamin A enhancement in rice, wheat, millet, and cassava.

He has authored an incredible 320 publications in peer reviewed journals and holds, or has been involved as a co-inventor, on 30 patents. He has received a number of awards in recent years, including the Kumho International Science Award, the American Society of Plant Physiologists Leadership in Science Public Service Award, the Crop Science Society Presidents Award, and the European Culture Award in Science.

Back in the early 1990s when he first proposed his nutrition enhancement ideas to the Rockefeller Foundation, they were regarded as highly unlikely to succeed. At that time researchers and companies were struggling to deal

with traits caused by single genes. Dr. Potrykus wanted to insert new biochemical pathways that required the coordinated function of many genes, and he wanted to do it in cereal crops that were notorious for their difficulty. His success was called a “Herculean feat of gene transfer” in Science magazine in 1999.

A serious problem with GE forms of biotechnology is that national and international legal systems have made it easy for companies and universities to patent even little pieces of the genetic commons—impeding public sector release of GE varieties. Dr. Potrykus has labored for years, and continues to do so in his retirement as Chairman of the International Humanitarian Golden Rice Board, to ensure that all of the several dozen patent and other licenses relevant to Golden Rice do not interfere with giving it, without restrictions, to the poor.

Yet, especially in Europe, Dr. Potrykus’ work has been shunned by many. Despite the humanitarian goals his group has focused on for nearly two decades, he has been ridiculed in public lectures, received death threats, and required a greenhouse that the New York Times called “grenade-proof” in the title to an article about him in November of 2000. The major environmental organizations active against GMOs in Europe, particularly Greenpeace, have attacked Golden Rice, as I am sure you will hear more about tonight.

Despite the hostile climate surrounding biotechnology, especially in the heart of Europe where he works, Dr. Potrykus has continued to speak out. He is committed to getting scientific truth before the public. As he wrote in 2001 in the journal *Plant Physiology*, “...we [scientists] have a moral obligation to enlighten the public concerning the dangerous and immoral game the GMO opposition is playing.”

As also pointed out by the NY Times “[Dr. Potrykus’] calling has its roots in his childhood, when he was an 11-year old refugee from eastern Germany after World War II. His father, a doctor, died in the last days of the war. He and his brothers had to beg, steal, and scrounge for food. “I have experienced myself what it means to be hungry,” he said.

For a number of reasons, producing better food is not just an academic pursuit for Ingo Potrykus.

We are honored that Dr. Potrykus has traveled from Switzerland to Oregon to deliver this lecture. Please help me in welcoming him.