

PREFACE: The Cal Poly Shared Reading Program 2007
What are “Genetically Modified Organisms?” (GMOs)

GM is a special set of technologies that alter the genetic makeup of such living organisms as animals, plants, or bacteria. Combining genes from different organisms is known as recombinant DNA technology, and the resulting organism is said to be "genetically modified," "genetically engineered," or "transgenic." GM products (current or in the pipeline) include medicines and vaccines, foods and food ingredients, feeds, and fibers.

Technologies for genetically modifying (GM) foods offer dramatic promise for meeting some areas of greatest challenge for the 21st century. Like all new technologies, they also pose some risks, both known and unknown. Controversies surrounding GM foods and crops commonly focus on human and environmental safety, labeling and consumer choice, intellectual property rights, ethics, food security, poverty reduction, and environmental conservation. See a summary of "GM Foods: Benefits and Controversies."

Benefits:

Crops

- Enhanced taste and quality
- Reduced maturation time
- Increased nutrients, yields, and stress tolerance
- Improved resistance to disease, pests, and herbicides
- New products and growing techniques

Environment

- "Friendly" bioherbicides and bioinsecticides
- Conservation of soil, water, and energy
- Bioprocessing for forestry products
- Better natural waste management
- More efficient processing

Society

- Increased food security for growing populations

Controversies

Safety

- Potential human health impact: allergens, transfer of antibiotic resistance markers, unknown effects. Potential environmental impact: unintended transfer of transgenes through cross-pollination, unknown effects on other organisms (e.g., soil microbes), and loss of flora and fauna biodiversity

Access and Intellectual Property

- Domination of world food production by a few companies
- Increasing dependence on industrialized nations by developing countries
- Biopiracy—foreign exploitation of natural resources

Ethics

- Violation of natural organisms' intrinsic values
- Tampering with nature by mixing genes among species
- Objections to consuming animal genes in plants and vice versa
- Stress for animals

Labeling

- Not mandatory in some countries (e.g., United States)
- Mixing GM crops with non-GM confounds labeling attempts

Society

- New advances may be skewed to interests of rich countries

Source: http://www.ornl.gov/sci/techresources/Human_Genome/elsi/gmfood.shtml