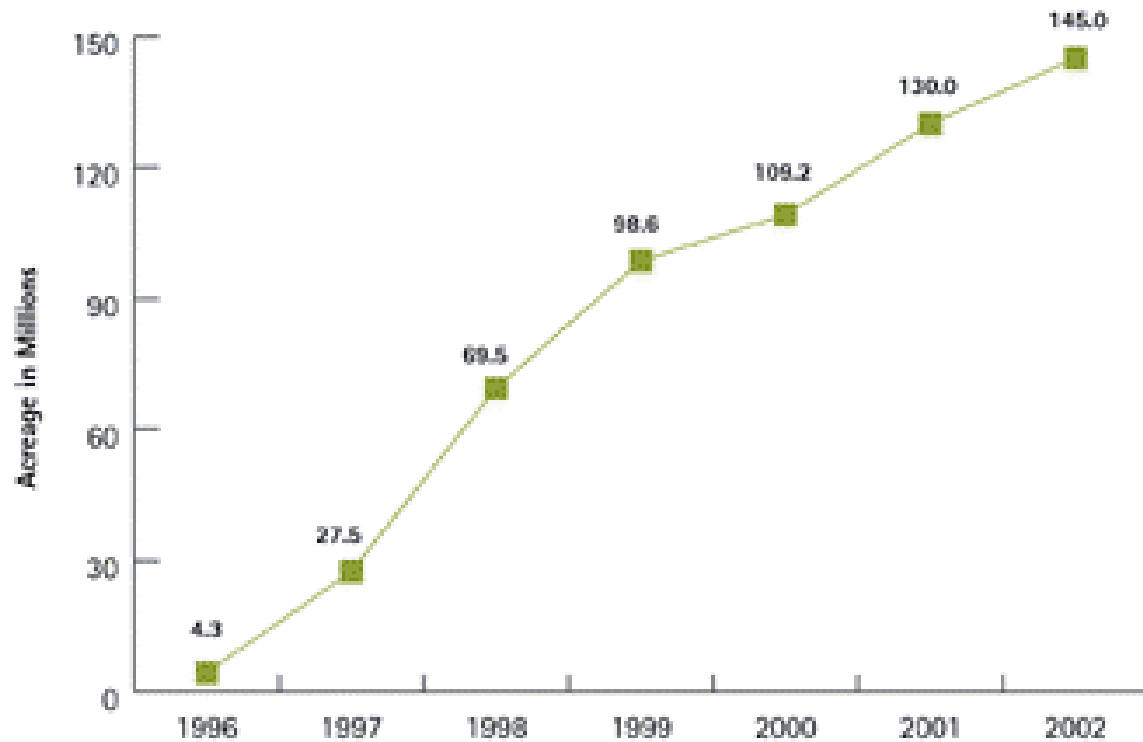


GMO and US Public Perception: Near Term Impacts

Martha Krebs
Pugwash Conference
Havana, Cuba
April 1-4, 2004

Is the Genie Out of the Bottle?

INCREASE IN GLOBAL AREA OF BIOTECHNOLOGY CROPS – 1996 TO 2002



Source: ISAAA Global Review of Transgenic Crops 2002.

22% of Global Cultivated Land was Devoted to GMO in 2002

US General Awareness of GM Remains Low

FIGURE 2: Amount Heard or Read About GM
(n = 1200)



Source: Food Policy Institute, Rutgers, 2003

Prevalence of GM Foods Remains Unnoticed

FIGURE 4: Awareness of GM Food in Supermarkets

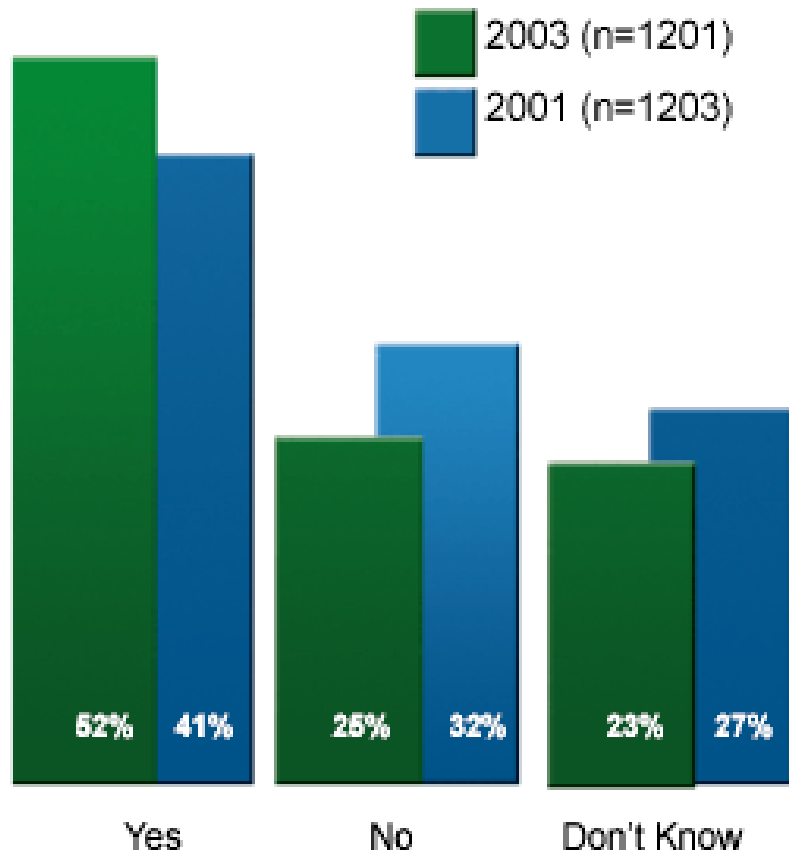
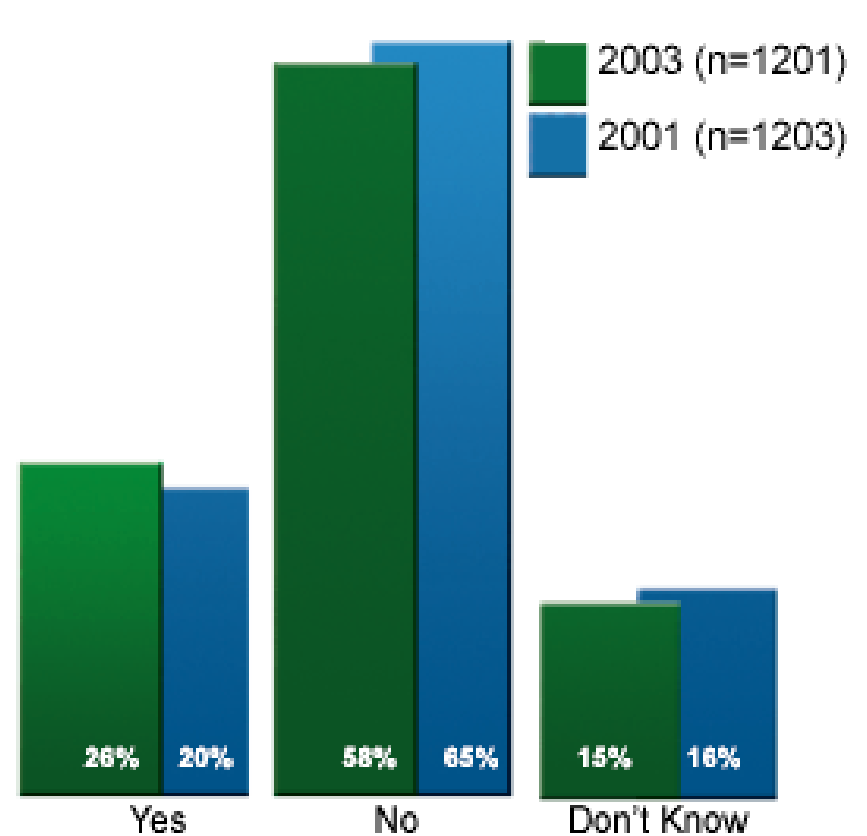
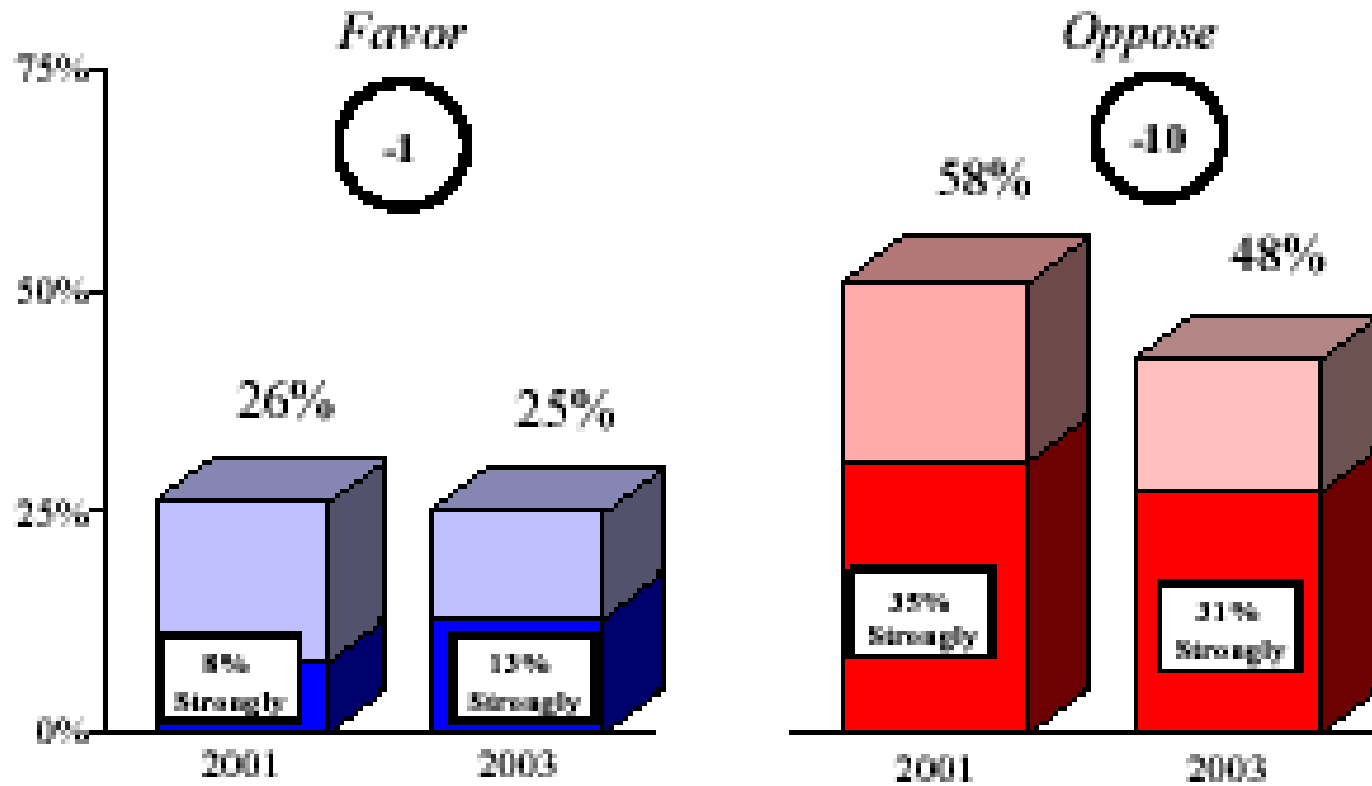


FIGURE 5: Awareness of Eating GM Food



Source: Food Policy Institute, Rutgers, 2003

Do you favor or oppose the introduction of genetically modified foods into the US food supply?

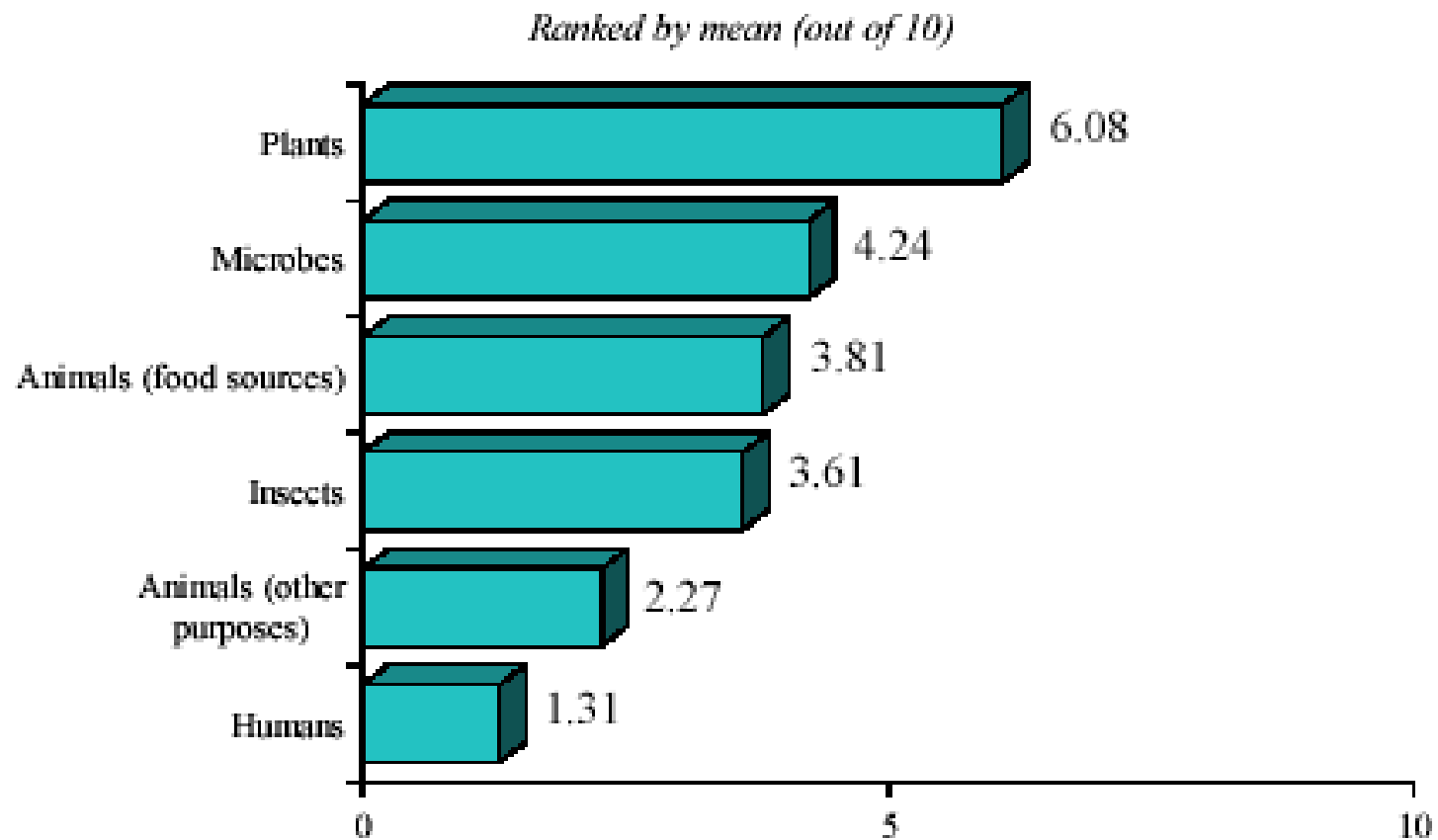


(darker shading=stronger intensity)

The Mellman Group and Public Opinion Strategies 8/03

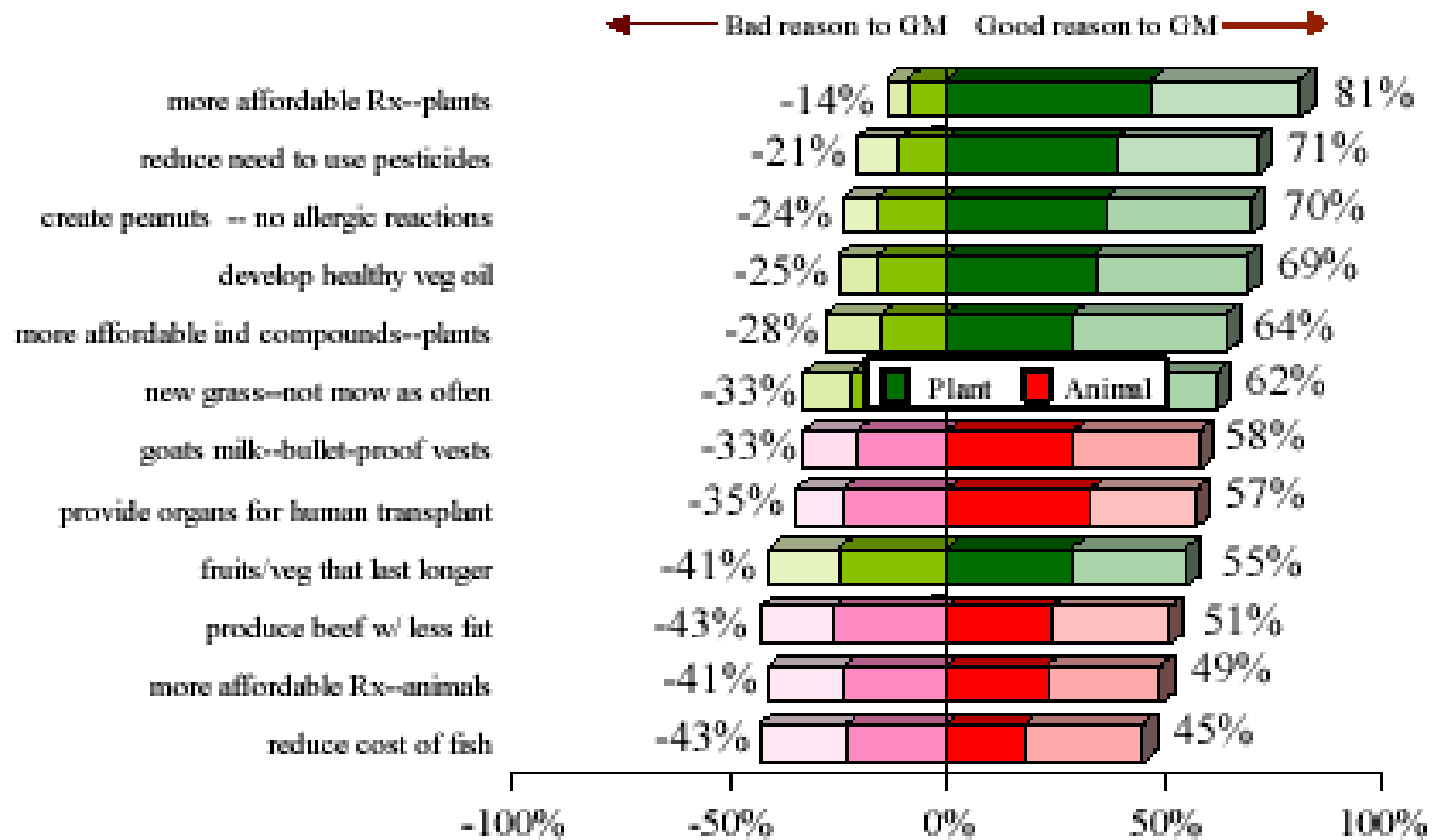
Pew GM Food Survey, August 2003

Americans Are Most Comfortable With The Genetic Modification Of Plants



Pew GM Food Survey, August 2003

Americans Are Much More Likely To Support The Genetic Modification Of Plants Than Animals



(darker shading--stronger intensity)

The Mellman Group and Public Opinion Strategies 8/03

Pew GM Food Survey, August 2003

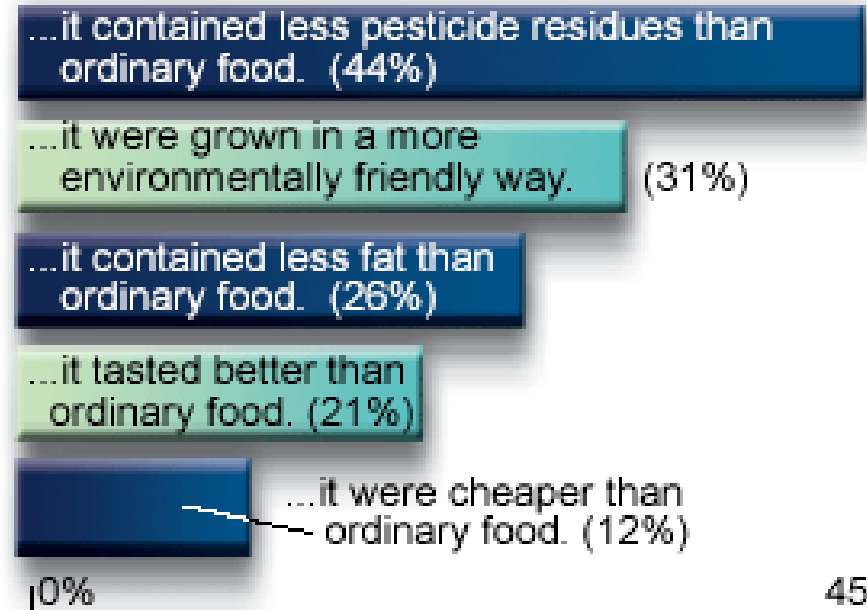
How do Americans Feel about GM Food?

TABLE 5: Percentage Approval of GM Products

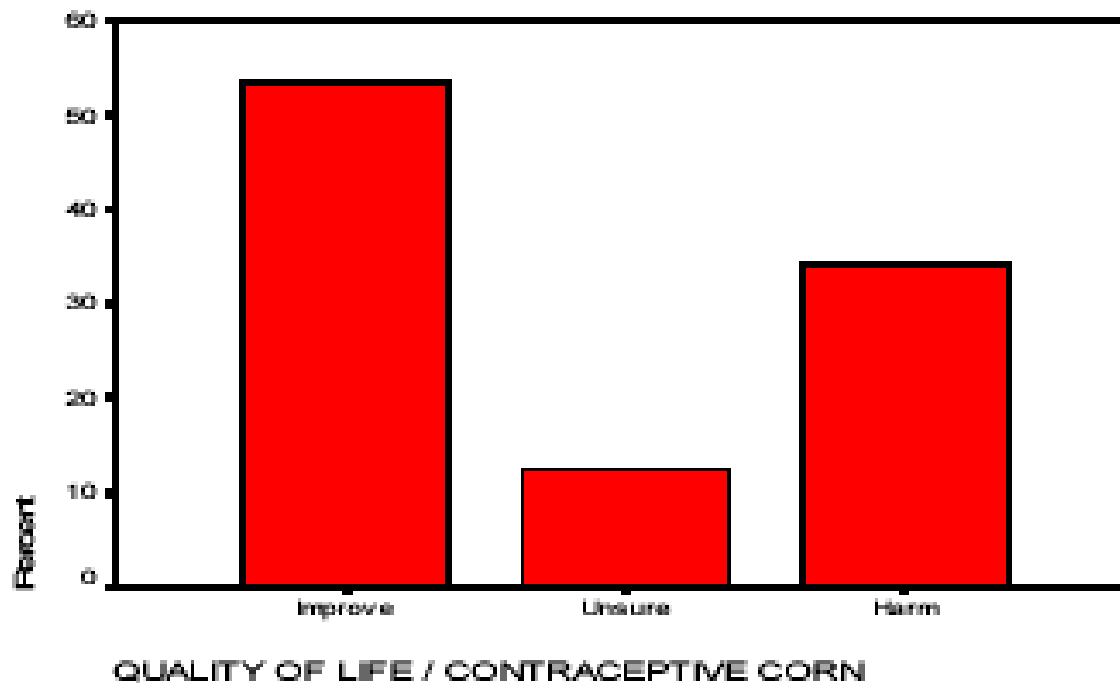
	Plant-based			Animal-based		
	2001	2003	Δ	2001	2003	Δ
Strongly Approve	16	12	-4	7	6	-1
Somewhat Approve	42	37	-5	21	21	0
Somewhat Disapprove	19	20	+1	25	21	-4
Strongly Disapprove	18	19	+1	43	45	+2
Don't Know	6	11	+5	5	8	+3

Source: Food Policy Institute, Rutgers, 2003

FIGURE 10: Percentage of those who disapproved of plant-based GM technology (n = 470) that would buy GM food if...

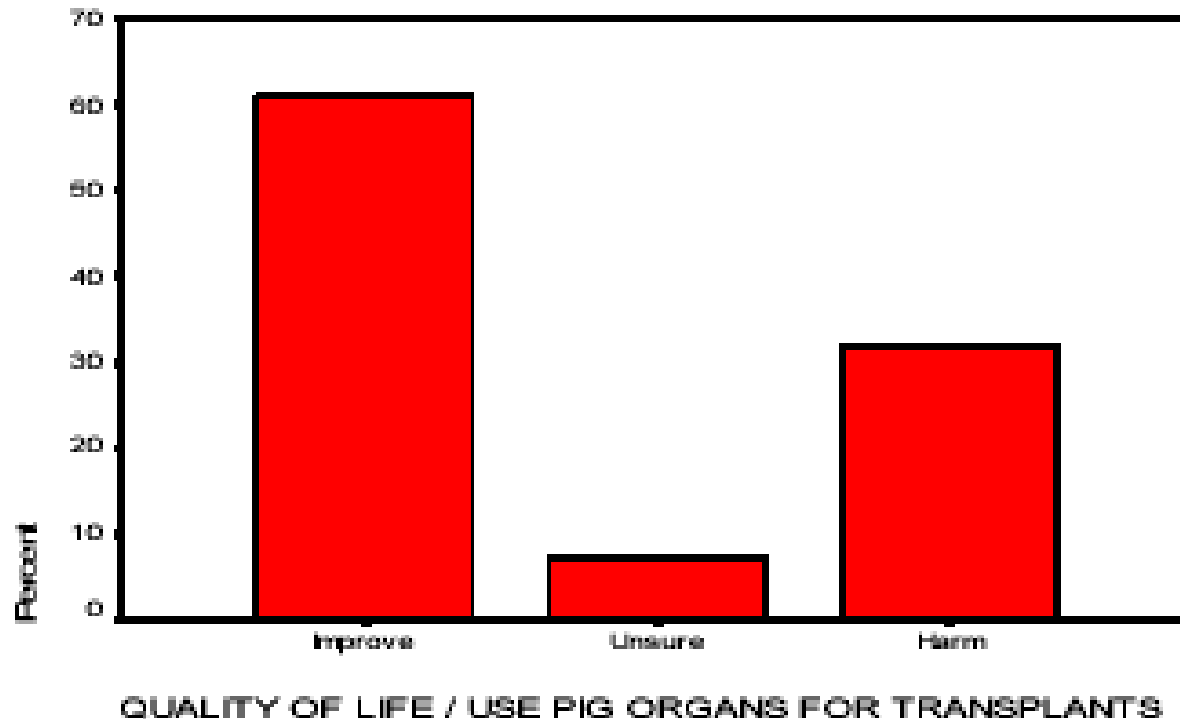


Contraceptive Corn

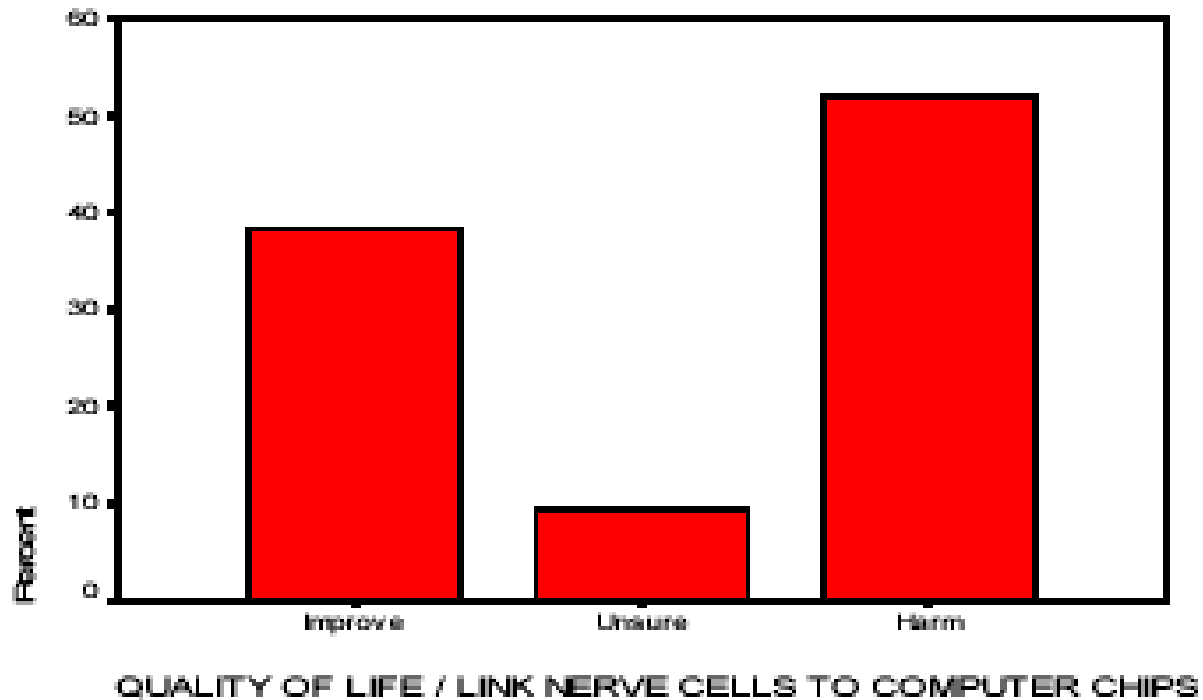


Poll, Center for Science, Policy and Outcomes – Feb. 2002

Human Compatible Pig Organs

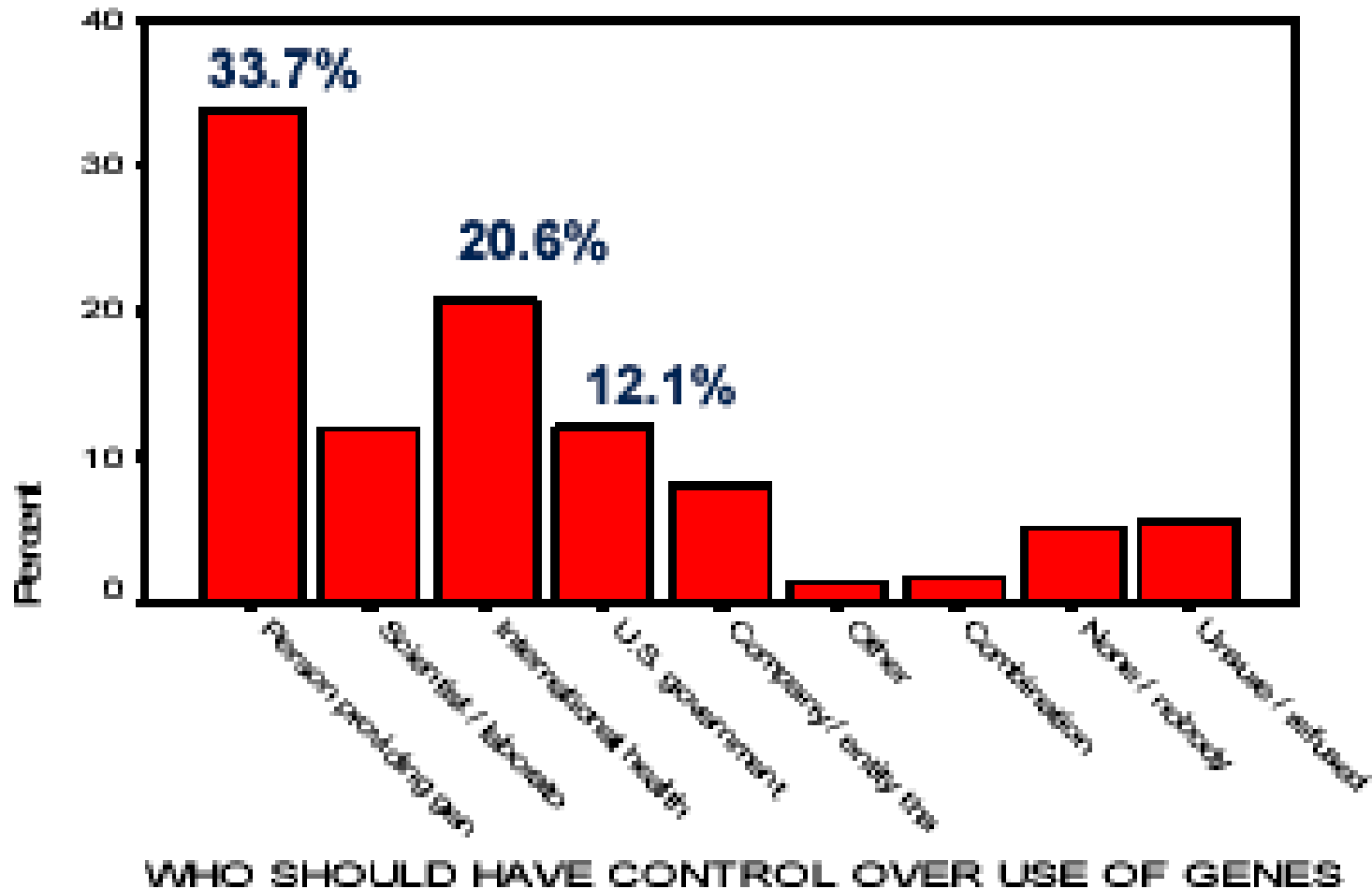


Human Nerve Cell - Computer Chip Living Circuits

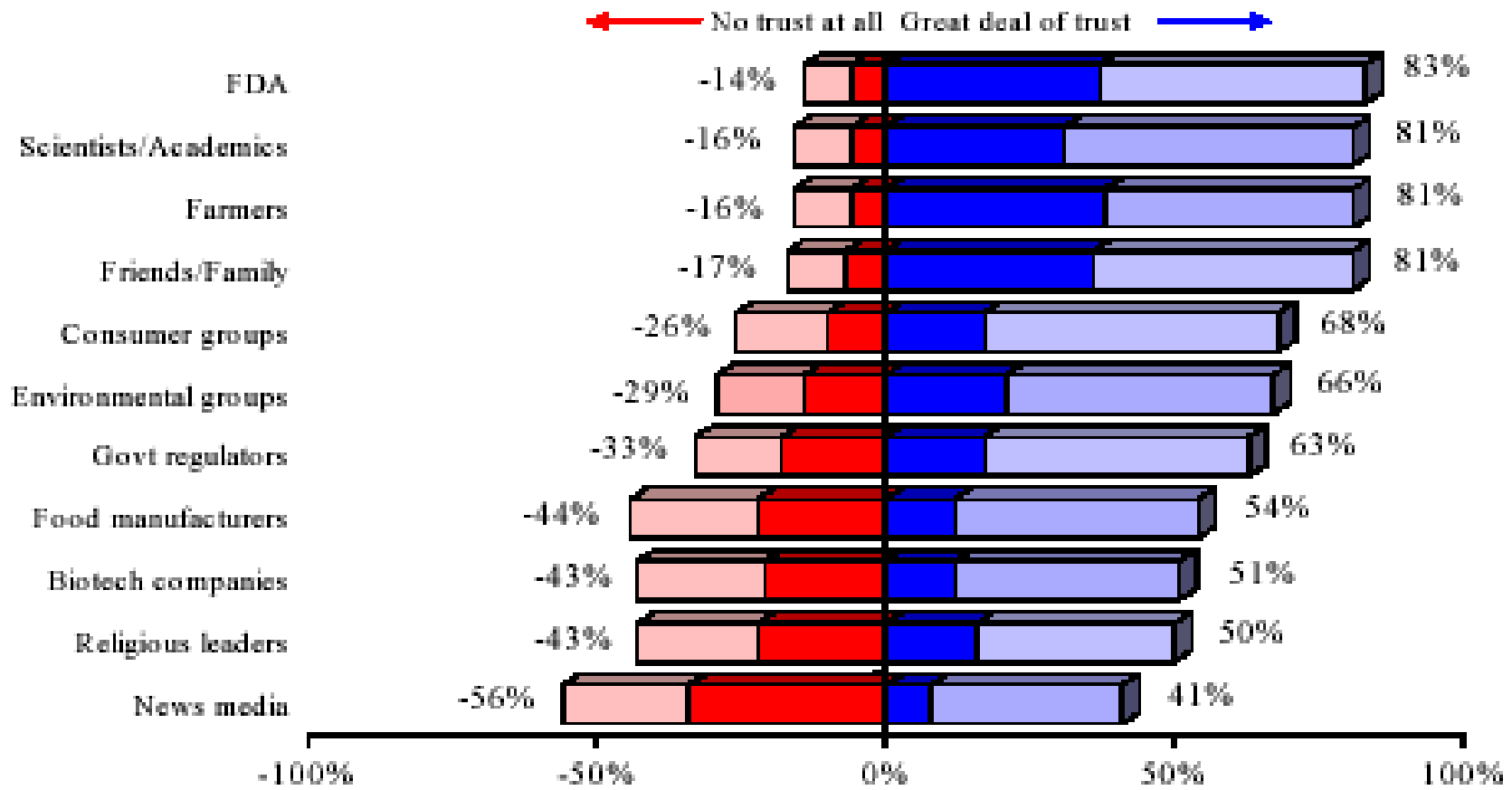


Poll, Center for Science, Policy and Outcomes – Feb. 2002

Who Should Have Control over Genes in Research?



Americans Trust the FDA, Scientists, Farmers and Friends on Information about GM Foods



(darker shading=stronger intensity)

The Mellman Group and Public Opinion Strategies 8/03

Pew GM Food Survey, August 2003

Americans Want Input on the Uses of New Technology

- 79% want the public to have a good deal of input on technological change
- More than 90% want the government to have a good deal or some input on technological change

Summing It Up

- “Americans’ knowledge of genetically modified foods and their presence in the marketplace remains low.
- Americans expect the public and some government agencies to have a role in oversight and regulation
- Genetically modified plants are more acceptable than genetically modified animals
- How questions are phrased is important to positive or negative response
- Demographics also has an impact on opinion

The Current Stance of the US Government

- The US has signed but not ratified the Convention on Biological Diversity
- The US has not signed or ratified the Cartagena Protocol on Biosafety
- The US Department of Commerce initiative promoting industry-based standards to the World Trade Organization – March 2003
 - In promoting the issue, Secretary Don Evans said that adoption of internationally accepted standards will ensure “we’re all playing by the same set rules”, and those rules should be industry-driven rather than government-driven. (“Commerce’s New Standards Initiative”, Washington Trade Daily (March 20, 2003), at p. 7.)
 - There is also a view that the EU has used a strict precautionary principle to avoid both science-based risk assessment and the entry of GMO’s and other US products into the EU markets (The National Foreign Trade Council, “Looking Behind the Curtain: The Growth of Trade Barriers that Ignore Sound Science”, 2003)

The Current Stance of the US Government - continued

- The US Department of Agriculture has taken a position of strong support on behalf of US agribusiness GMO trade with the rest of the world
- More broadly in the last 3 years, the United States has taken a position with respect to environmental and economic regulation that relaxes existing constraints
- With respect to international frameworks, it has opted out of long-standing agreements, e.g. the Kyoto Accord on Climate Change, the Anti Ballistic Missile Treaty

In the near future, it is unlikely that the US Government will engage in a collaborative way to resolve either domestic or international issues surrounding the commercial development and use of GMO's.

Overlapping Areas

- The science and technology that enable the utilization of GMO's increasingly overlaps two areas
 - Bioterrorism and biodefense
 - Nanotechnology
- The operational, ethical, economic and regulatory considerations for these three areas will also overlap as well
- More attention is needed to provide clarity
 - S&T overlaps vs. policy overlaps
 - Implications for scientific research & communication
 - Geopolitics

A Critical Role for NGO's

- Education at the State and Local Levels in the US
- Integrated Action and Funding
 - Comparable to the establishment of the Energy Foundation
- International Engagement on Science and Governance Principles
 - A 'conditional' Precautionary Principle that accommodates reasonable risk, new knowledge, and respect for ethical and cultural principles for judgment and action
 - Demonstrate the commitment of some Americans to the 'soft power' of our open S&T research community

The Precautionary Principle as proposed by Daniel Callahan

“When there is reasonable uncertainty about the possible risks of biomedical research – in the research process itself, or its outcome – full exploration of those risks should take place, if necessary by temporarily suspending or slowing the research, but *only* if there is a scientific understanding of the possible and plausible causal pathways of the projected harms. The more severe the possible harms, the more cautiously the research should go forward. If careful examination cannot reasonably substantiate these imagined harms, the research should proceed. Relatively minor possible harms should be acceptable. Contentions about the benefits of the research, ordinarily speculative as well, must not trump a full exploration of the possible risks. Situations of great urgency, such as rapidly spreading epidemics, should allow a shifting of the burden of proof onto those who perceive possible risks. Risk must encompass medical, sociocultural, moral and economic hazards. A primary obligation of the scientific community is to take the lead in projecting risks and benefits, and not to intimidate those colleagues who foresee and publicize possible risks that may thus slow the research.