



## MEMORANDUM

**TO:** The Pew Initiative On Food And Biotechnology  
**FROM:** The Mellman Group, Inc.  
**DATE:** November 16, 2006  
**SUBJECT:** Review Of Public Opinion Research

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### SUMMARY

During the five years in which we have conducted polls on behalf of the Pew Initiative on Food and Biotechnology (PIFB), new developments in the world of agricultural biotechnology have raised both expectations and concerns. U.S. farmers continued to embrace the technology (for example, the percentage of genetically modified (GM) corn planted rose from 26% to 61% during this time), while technology developers brought new crop varieties to the marketplace. Innovations in the laboratory point to new applications on the horizon that may hold new kinds of benefits for farmers and consumers alike. At the same time, high profile examples of the accidental mixing of unapproved GM varieties in commercial chains have created real challenges for the food supply chain in the U.S. and around the world, and have called into question the oversight of new GM crop varieties. Cloning and genetic modification of new animal species have raised new kinds of ethical concerns for many consumers.

Despite the media attention that these developments have brought to GM foods, highlighting both the promise and the concerns, it is clear that public opinion remains largely up for grabs. How the next generation of biotech products is introduced – and their perceived benefits and risks – will be critical in solidifying U.S. consumer attitudes.

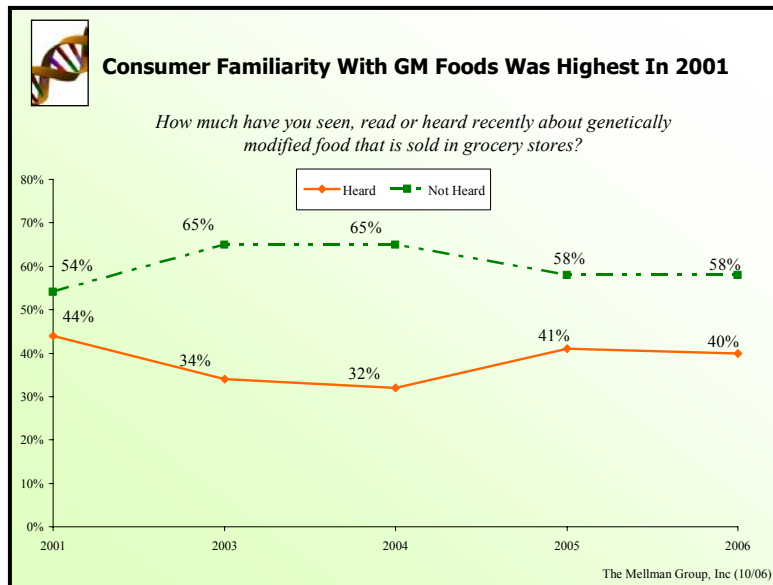
In this memo, we highlight the findings of our polls conducted for PIFB from 2001 to 2006. We have closely monitored public understanding of and support for different types of biotechnology. We detail changes in opinion over time, including relevant differences across demographic groups. A few key findings are clear from the data:

- 1) Public knowledge and understanding of biotechnology remains relatively low
- 2) Consumers know little about the extent to which their foods include genetically modified ingredients
- 3) While support for GM foods has been stable, opposition has softened and opinions on safety remain split
- 4) Animal cloning evinces much stronger opposition than does modifications of plants
- 5) Consumers look to those closest to them – especially friends and loved ones – as trusted sources of information on GM foods and biotechnology
- 6) While religious belief has some impact, it is not a key source of variation in public attitudes toward biotechnology

- 7) Overall, Americans' attitudes towards genetic modification remain fluid, and the opportunity to shape public opinion is ripe

### Awareness Of Genetically Modified Food Has Declined Over The Last Five Years

Overall, the public's familiarity with genetically modified food has dipped slightly and rebounded somewhat over the course of this project. The initial poll in this series – conducted in January, 2001 – came on the heels of the StarLink corn recall.



With complicated scientific issues, public attention to an issue is often driven by news stories with broad reach. By the start of our research, news coverage of genetically modified foods had reached a critical mass. In January of 2001, 45% of American consumers said they had heard “a great deal” (9%) or “some” (35%) about genetically modified foods or biotechnology sold in grocery stores. A slight majority (54%) claimed to have heard either “not too much” (29%) or nothing at all (25%). As it turned out,

information levels have never again hit that 2001 level.

After reaching a low point in 2004 (32%), public notice of GM foods increased to 41% in 2005 and remained stable in 2006. The 2005 increase may be attributable to news stories regarding FDA's potential approval of cloned animals for the food supply that appeared just before the poll was conducted. Coverage intensified again in the late summer and early fall of 2006, when news stories appeared on unapproved GM rice in the food supply, and our poll shows a sustained level of awareness of the issue.

Beyond professed awareness of GM foods, there is clearly very little in-depth knowledge of the topic among American consumers. Just 26% believe that they have eaten GM foods, while 60% believe they have not. This number has varied somewhat over the years, with no consistent pattern. Those who claim to have heard most about GM foods (have heard “a great deal” about them) are more likely to believe that they have eaten GM foods – 46% yes, 43% no. However, even that is a considerable underestimation, as most (if not nearly all) Americans have eaten GM foods in one form or another. As one might expect, those who know the least are also least likely to believe they have eaten them (12% yes, 75% no).

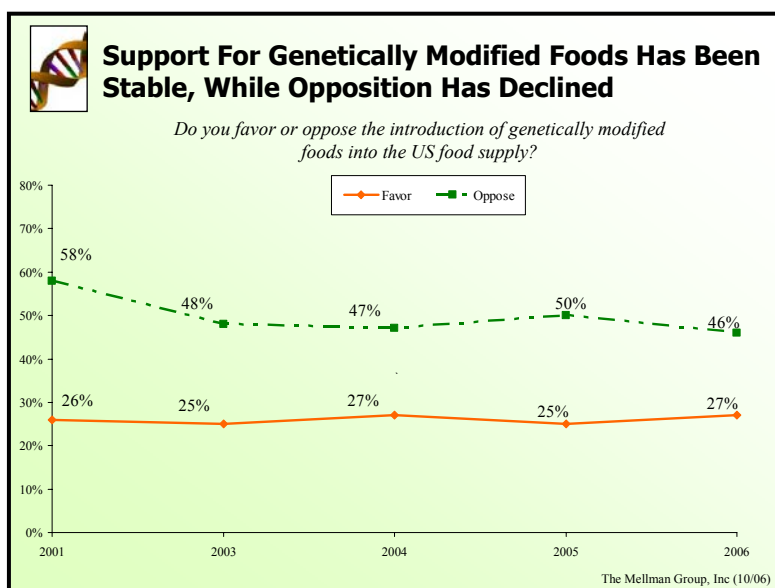
Those who are regular purchasers of organic foods – that is, purchase them more than once a week – are more likely to say they have eaten genetically modified foods. Thirty-eight percent of that population say they have eaten GM food, while 54% say they have not. By

contrast, just 17% of those who “never” purchase organic foods say they have eaten GM foods, while 68% say they have not.

Consumers are willing to admit that they know very little about government regulation of GM foods – just 18% say they know either a great deal (3%) or some (15%), while 74% know either not too much (32%) or nothing at all (42%). While there has been a slight increase in awareness (from 12% to 18%) over the last two years, the vast majority of Americans know little about GM food regulation. As with overall awareness of GM food, self-professed awareness of the regulation of GM food is somewhat higher among those with a college degree (22% heard, 70% haven’t heard) but nevertheless is very low across the board.

### Support For GM Foods Has Remained Fairly Consistent Over Time, While Opposition Has Shrunk

Support for GM foods has remained fairly flat since 2001, when just 26% of Americans favored the introduction of genetically modified foods into the U.S. food supply, and 58% opposed. Since 2001, opposition has declined from 58% to 46% - a net drop of 12 percentage points since we began tracking this question – while support has been stable, at 27% in 2006.



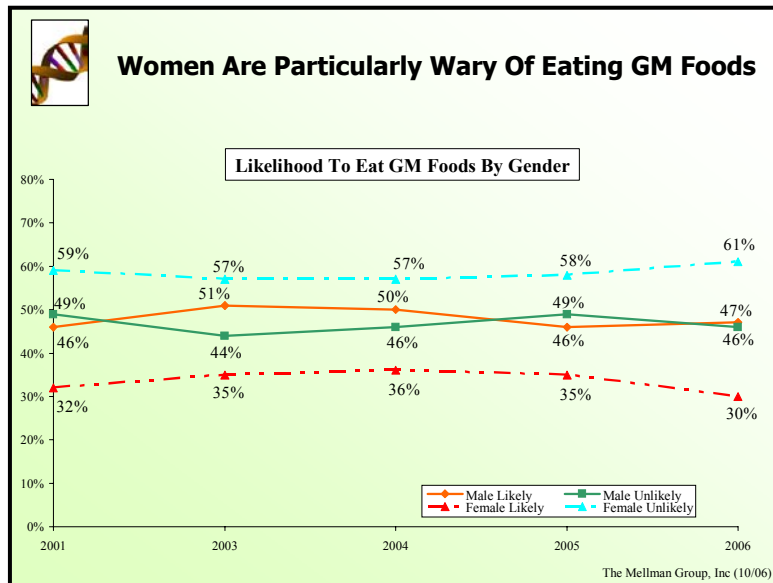
Women showed the greatest change in attitudes towards GM foods over time. Support increased incrementally among women over the five year study: in 2001, just 18% of women favored introducing GM foods into the U.S. food supply while 66% opposed. In the intervening years, support climbed very slightly, to 21% in 2006; over the same time, opposition dropped significantly, to just 48% in 2006, a net decline of 18%. Men, on the other hand, were more stable in their opinions towards introducing GM foods

into the US food supply, with 35% expressing support and 50% opposition in 2001, and 33% favoring and 44% opposing GM foods in 2006.

### Americans Are As Likely To Say They Will Eat GM Foods Today As They Were Five Years Ago, Though That Number Remains Well Below A Majority

Americans’ self-reported likelihood to eat genetically modified foods has not changed over the course of the study. In 2001, 38% said they were likely to eat GM foods, while 54% said they were unlikely. In the aftermath of the StarLink corn and monarch butterfly stories, the likelihood of eating GM foods bumped up slightly in 2003, when 43% reported that they were likely to eat GM foods, and 50% said they were unlikely to eat GM foods. However, over the

following years, likelihood to eat GM foods subsided: 42% reported being likely to eat GM foods in 2004 and 52% unlikely; in 2005, just 40% reported that they were likely to eat GM foods and 53% unlikely; and in 2006, we saw a return to 38% saying they are likely, and 54% unlikely.



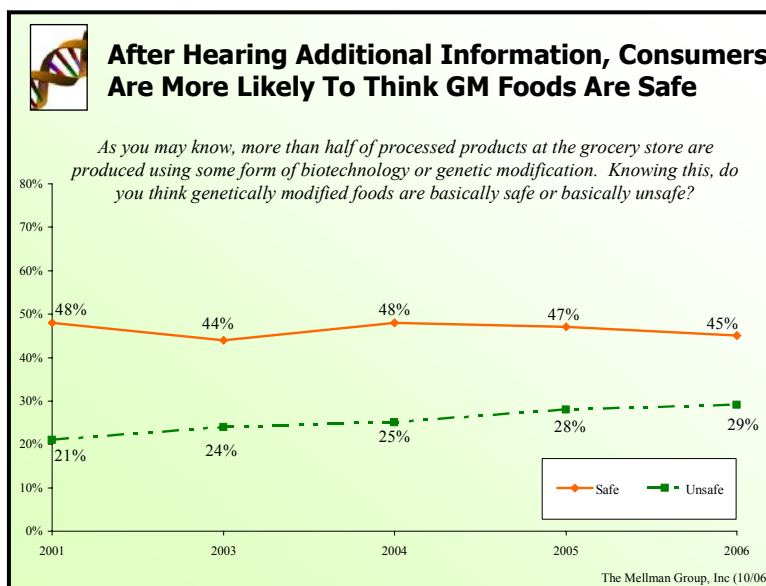
Again, there is a fairly large and persistent gender gap among those who believe they are likely to eat genetically modified foods. In 2001, 46% of men said they were likely to eat GM foods, compared to 49% who said they were unlikely to eat GM foods. Women, on the other hand, were far more skeptical of these foods: just 32% said they were likely, while 59% said they were unlikely, to eat genetically modified foods. This gender gap has endured over the five year of the study: in 2006, a nearly identical 47% of men say they are likely to eat GM foods and 46% unlikely, while 30% of women say they are likely and 61% unlikely to eat GM foods.

### Americans Remain Largely Uncertain About GM Foods' Safety

Americans hold mixed attitudes towards genetically modified foods and are generally uncertain about their safety. When we first asked this question, in 2001, 29% of Americans thought GM foods were basically safe and 25% thought they were basically unsafe, while 46% had no opinion. Over the course of the study, the number of Americans who believe GM foods are basically safe and unsafe has climbed slightly but steadily, while the number of Americans without an opinion has declined. In 2006, 34% believe GM foods are basically safe, 29% believe GM foods are basically unsafe, and 37% do not have an opinion.

Women and men have divergent opinions on the safety of GM foods, with men far more confident. In 2001, 39% of men felt GM foods were safe and just 19% felt they were unsafe, while women felt the opposite: 19% of women believed GM foods were safe and 30% said they were unsafe. This gender gap persists into 2006. Forty-three percent (43%) of men currently believe GM foods are safe and 23% believe they are unsafe, for a net increase of 4 percentage points among both safe and unsafe responses. By contrast, just 23% of women believe GM foods are safe and 34% unsafe, a 6 percentage point increase in perceived safety and 4 percentage point increase in the number who consider GM foods unsafe. Though both men and women are more likely to offer an opinion on the safety of GM foods in 2006, compared to 2001, the relative differences between the sexes is fairly constant.

Once we supply a small amount of information about GM foods, that “more than half of processed products at the grocery store are produced using some form of biotechnology or genetic modification”, Americans feel more comfortable about the safety of GM foods. In this context, 45% say GM foods are safe and 29% unsafe, a 10-percentage point increase in net perceptions of safety.



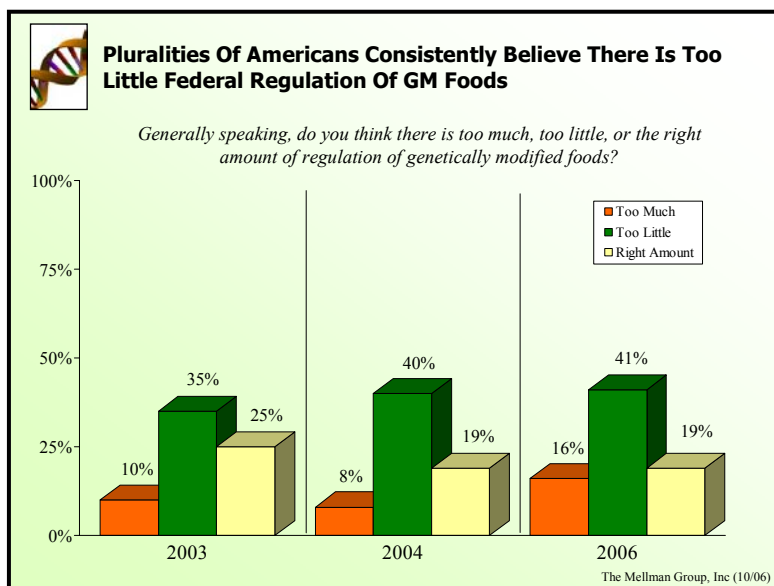
These numbers represent a shift in informed attitudes over time. When we asked this question in 2001, the difference was even larger: 48% felt that GM foods were safe and only 21% believed they were unsafe. This shift is particularly apparent along partisan lines: in 2001, Republicans were far more likely to feel GM foods were safe after hearing about their current use (57% safe and 18% unsafe), while Democrats (45% safe and 21% unsafe) and independents (41% safe and 25% unsafe) were more cautious about the safety of GM foods. In the intervening years, the partisan gap has narrowed, and now there are only minor differences by party affiliation. Republicans' beliefs that GM foods are safe have declined by 10 percentage points (to 48%) and their beliefs that GM foods are unsafe have increased by 10 percentage points (to 28%). In 2006, Democrats are just slightly less likely to think GM foods are safe (42%, a net drop of 3 percentage points) but are increasingly likely to think they are unsafe (29%, a net increase in 10 percentage points). Independents, though initially most skeptical about GM food safety, are actually slightly more confident about GM foods: 45% believe they are safe (net increase of 4 percentage points), while 30% believe they are unsafe (net increase of 5 percentage points).

After hearing more information about GM foods, the gender gap in attitudes about safety is muted. Men are still more likely to feel confident about GM foods, with 52% saying they are safe and 26% unsafe. However, women move closer towards men's attitudes, with 39% saying GM foods are safe and 32% unsafe.

### Americans Support Federal Regulation Of GM Foods

Though most consumers revealed that they knew little about federal regulation of GM foods, among those who claimed to have heard about biotech regulation, pluralities of voters favor increased regulation of GM foods. Asked about government regulation, 41% of consumers (who claim basic awareness of such regulation) say there is too little regulation, 19% say it is the right amount, and just 16% say there is too much regulation. This is a slight uptick since 2003 in both the number of Americans who believe there is too much regulation (10%) and too little regulation (35%).





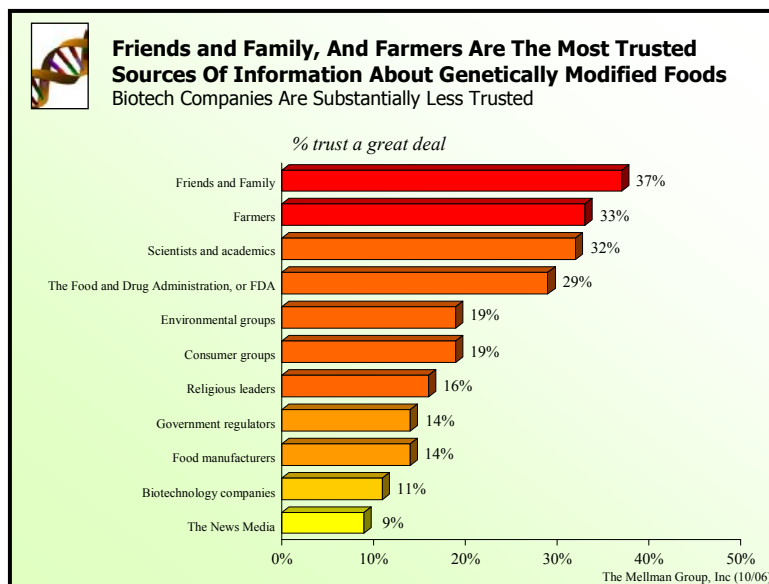
Americans say they would be more willing to eat GM foods, while just 14% are less willing, and 35% say it would make no difference.

This represents a slight decline (-5%) from 2003, when 48% were more willing to eat GM foods; the number less willing to eat GM foods has not moved substantially (+1%) since 2003, while those who say it would make no difference has inched up by 2 percentage points (from 33%). These trends were distributed fairly evenly across demographic subgroups.

In sum, our survey demonstrates that regulation may increase confidence in GM foods. At the same time, the results should not be interpreted to mean that there is inherent demand among consumers for more regulation, or that increased regulation will – on its own – increase confidence in GM foods in the marketplace.

### Consumers Trust Their Friends And Family Most, While They Trust Biotech Companies And The News Media Far Less

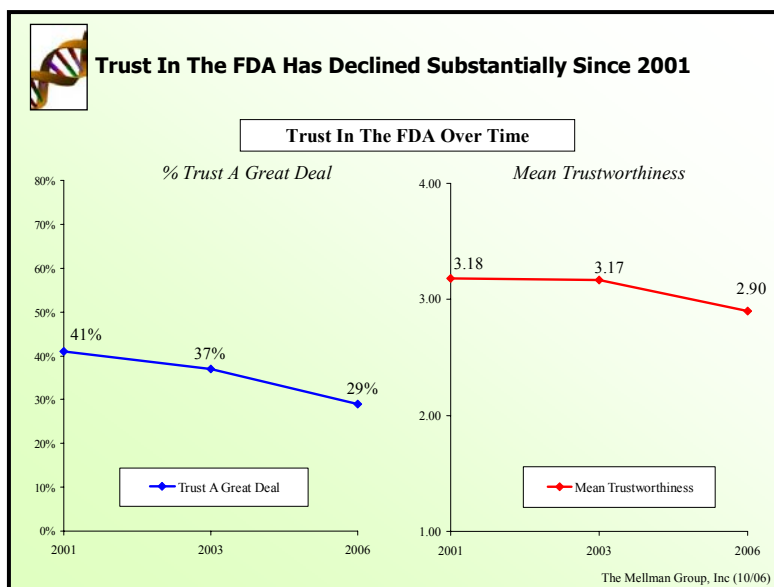
When it comes to information on genetically modified foods, consumers put their trust in those closest to them: their friends and family. Thirty-seven percent (37%) of consumers trust their friends and families “a great deal,” a higher percentage than for any of the groups or organizations tested. Farmers were next-most trusted (33% trust “a great deal”) followed by scientists and academics (32%).



Our survey reveals that regulation can increase confidence in GM foods, though not dramatically. We gave respondents the following additional information about government regulation: “currently the Food and Drug Administration reviews data regarding the safety of genetically modified foods that are voluntarily submitted by food companies.” Given this information, if the FDA was mandated to regulate genetically modified foods before they entered the marketplace, 43% of

At the bottom of the list are the news media (9% trust “a great deal,”) biotechnology companies (11%), food manufacturers (14%) and government regulators (14%).

The most dramatic changes in trust levels occurred with respect to the FDA: in 2001, 41% of consumers said they trust the FDA a great deal when it comes to information about genetically modified foods. At that time, it was the most trusted organization. Since then, their trustworthiness rating has declined substantially, and it now ranks 4<sup>th</sup> on the list of groups and organizations.

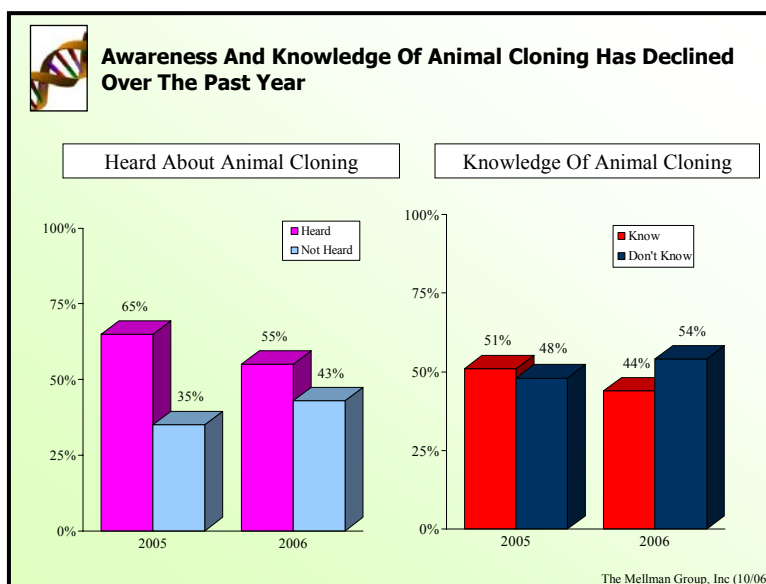


Religious leaders fall toward the bottom of the list, with just 16% of consumers saying they trust information on GM foods from religious leaders “a great deal.” Even among the most religiously involved, only 24% say they trust religious leaders “a great deal,” rating them below friends and family, farmers, scientists, and the FDA. As we saw with the factors that drive support for GM foods, religious issues play an important, though perhaps not decisive, role in informing these decisions.

It is important to note that the focus of this question was on genetically modified foods, rather than on broader issues of animal cloning. As we discuss below, the general comfort level with some of the cloning issues can vary by religious belief – indicating that religious factors may play a deeper role.

### Attention To Animal Cloning Is Higher Than To GM Foods, Though Consumers Admit They Know Very Little

American consumers claim to have heard more about animal cloning than about GM food and biotechnology. Today, 55% of Americans have heard either “a great deal” (12%) or some (43%) about animal cloning, while 43% have heard either “not too much” (28%) or “nothing at all” (15%). General attention to animal cloning has declined over the past year: in



2005, 65% had heard about animal cloning in the news, while 35% had not.

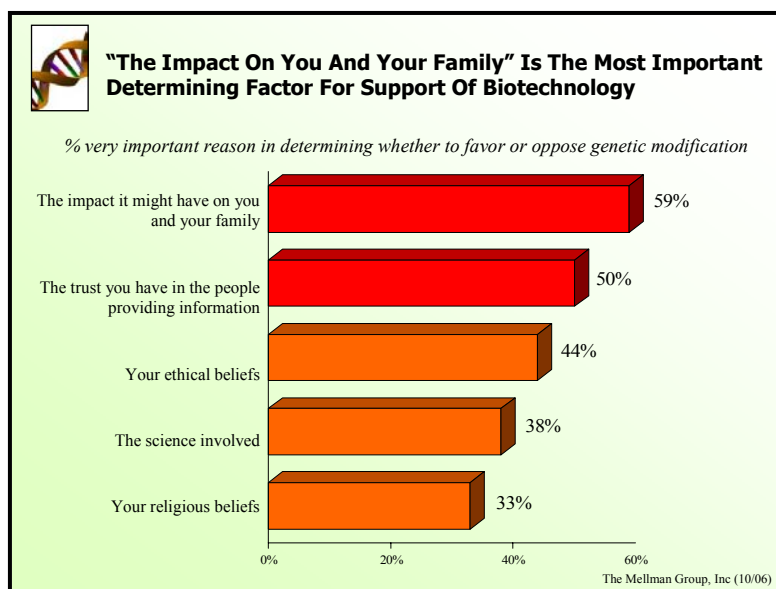
Awareness of animal cloning is substantially higher among the best educated consumers. Sixty three percent (63%) of those with a college degree have heard about animal cloning in the news (35% haven't heard), while just 47% of those with a high school degree or less have heard about it (51% have not heard). There is also a racial divide in awareness: 57% of white voters profess that they have heard about animal cloning (42% not heard), compared to 52% of Hispanic voters (45% not heard) and 42% of African-American voters (54% not heard).

### **In Assessing Biotechnology, Consumers Look Closely At The Impact That Genetic Modifications Will Have On Themselves And Their Family**

We have twice asked American consumers to identify the underlying factors that determine whether they favor genetic modifications of plants and animals (in 2003 and in our most recent survey). In both cases, more consumers judged "the impact it might have on you and your family" to be a "very important" factor in determining whether they support biotechnology than any of four other choices, including religious beliefs, science, ethical beliefs, and trust in those providing information.

In our most recent survey, 59% cited the impact on them and their family as a very important factor, followed by the trust they have in those providing information (50% very important), and their ethical beliefs (44% very important). Thirty-eight percent (38%) consider the science involved to be a "very important" factor, while 33% say that their religious beliefs are the most important factor.

As we would expect, those who attend services weekly are more likely to cite religious beliefs as a "very important" factor: 50%, as opposed to 12% among those who attend religious services once a year or less.



However, even among the most religiously active, religious beliefs trailed behind the impact that genetic modifications would have on them and their family – which was cited by 60% as "very important." Religiously active consumers also cite trust and ethical beliefs at a level equal to religious beliefs (50%). While religion is clearly important to these consumers as they evaluate genetic modifications, they are concerned about other factors as well.

Interestingly, these rank orders are fairly consistent across most demographic groups. The impact consumers perceive that genetic modifications will have on them and their families is the

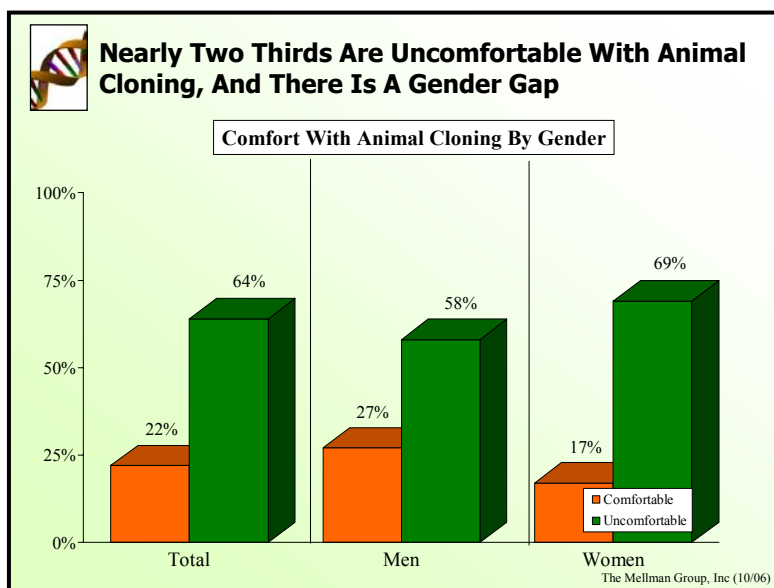


central factor in determining their support of those advances among most all segments of the population. In both 2003 and 2006, while intensity for each factor varied, the *rankings* for all five factors were precisely the same.

In 2005, we asked consumers about a variety of potential uses for genetic modification of animals. Consumers most strongly support GM uses that are designed to protect against widespread disease. Perhaps a reflection of last year's headlines about avian flu, developing heartier livestock was the most widely supported reasons to genetically modify animals, including to produce chickens resistant to avian flu (40% "very good reason") and to produce cattle resistant to mad cow disease (40% "very good reason"). At the other extreme, breeding novelty pets is considered a very good reason to genetically modify animals by only 4% of the public. To the extent that these modifications were seen as having a direct and positive impact on them and their families, consumers were more supportive.

### Animal Cloning Causes Great Discomfort Among American Consumers

Though Americans are not well informed about animal cloning, they are overwhelmingly uncomfortable with it. After hearing a brief explanation of the science, "animal cloning is a technique used by animal breeders to make genetically identical copies of an adult animal," 64% say that they are uncomfortable with animal cloning (46% "strongly uncomfortable"), compared to just 22% who say they are comfortable with animal cloning. These levels are nearly parallel to those from 2005, when 66% of Americans reported they were uncomfortable with animal cloning (48% strongly uncomfortable) and 24% were comfortable.



Discomfort with animal cloning is widespread—a majority (61%) of those who have heard about animal cloning are uncomfortable and just 27% express comfort. Those unfamiliar with animal cloning express greater reservations, with 68% uncomfortable and 16% comfortable. Even among Americans who say they are likely to eat genetically modified foods, just 34% are comfortable and 51% are uncomfortable with this technique. Animal clones provoke a gender gap as well, with 27% of men comfortable with animal

cloning and 58% uncomfortable, while just 17% of women are comfortable and 69% are uncomfortable. Bear in mind that there is substantial discomfort across gender.

Not surprisingly, education plays a significant role in comfort with animal cloning, as Americans with higher levels of education express greater, though still low, comfort with animal

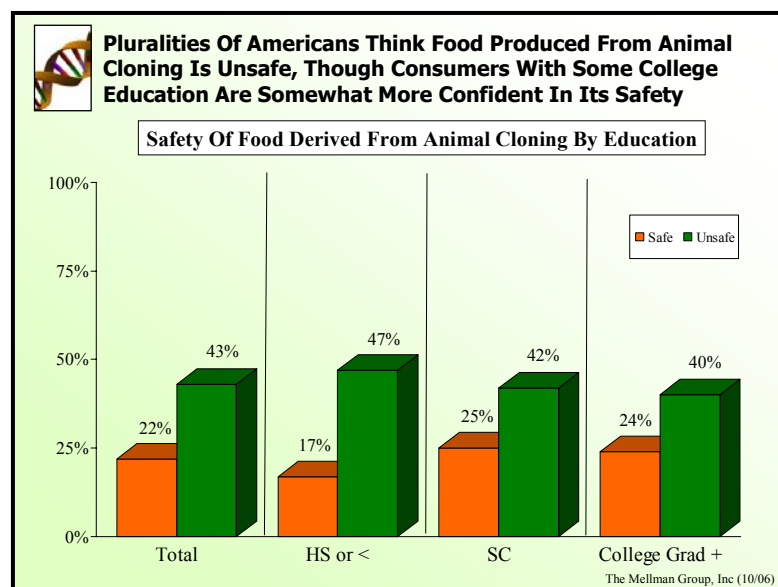
cloning. Those with high school or less education express the greatest concerns, with just 19% comfortable and 67% uncomfortable. Some college education appears to improve comfort with cloning, with 26% comfortable and 63% uncomfortable. College educated Americans show the least discomfort, with 22% comfortable and 61% uncomfortable.

Religious attendance also has a significant effect on comfort with animal cloning, with less religious Americans expressing greater comfort and more religious Americans harboring greater reservations. Nearly one third (30%) of those who attend religious services a few times a year or less are comfortable with animal cloning and just 54% are uncomfortable; those who attend once a month exhibit somewhat less comfort, at 21%, and great discomfort, at 64%; among somewhat frequent churchgoers, just 12% are comfortable while 76% are uncomfortable; and among weekly church attendees, 17% are comfortable with cloning and 70% are uncomfortable.

### GM Food Derived From Animal Clones Are Judged Differently Than Plant-Based Foods

Americans are far less certain that foods from animal clones are safe as compared to plant-based GM foods: just 22% feel they are safe while 43% believe they are unsafe, and 36% are unsure. This level has not budged from 2005, when 23% felt they were safe and 43% unsafe. A majority (52%) of the most regular organic food consumers believes this food is unsafe and just 21% believe it is safe.

Not surprisingly, women are more likely (47%) to think food from animal clones is unsafe than safe (15%), while men are more divided: 38% believe it is unsafe, and 29% believe it is safe.



Knowledge about animal clones does not have a large impact on evaluations of safety: among those who have heard about animal clones, 25% believe animal clone-based food is safe and 42% believe it is unsafe, while among those unfamiliar with animal clones, 18% believe it is safe and 44% unsafe. This contrasts with our earlier findings on transgenic animals, where information played a significant role in support of this technology. In 2005, we found that 27% supported the genetic modification

of animals, while 56% opposed it. In this case, increased knowledge of transgenic animals increased levels of support, where 38% of those who had heard “a great deal” and 39% of those who have heard “some” about genetically modified animals favoring scientific research into genetically modified animals.

Education appears to increase American's perceptions of the safety of food derived from animal clones, though a plurality consistently believes food from animal clones is unsafe. Just 17% of Americans with high school degrees or less feel food derived from animal clones is safe and 47% believe it is unsafe. Among those with some college, fears about safety subside slightly, and 25% feel it is safe and 42% unsafe. College educated Americans are also somewhat more confident in the safety of food from animal clones, with 24% believing it is safe and 40% unsafe.