

Field Of Genes

Biotechnology is not new. In the Neolithic Age, people began saving seeds from their best crops to improve subsequent plantings. Around 1750 BC the Sumerians used bacteria to brew beer, and in 500 BC the Chinese used moldy soybean curds to treat boils.

What is new is the dizzying speed with which centuries of research and discovery in the field of biotechnology lately seem to be culminating in a cascade of revolutionary developments. They force us to rethink the ways in which we view life, death, the biological integrity of the individual—even Creation, with a capital C, itself.

We see so much potential in these advances, in the possibilities of producing more and better food, of treating illnesses previously thought of as untreatable, of saving endangered species from extinction. But we are also faced with questions and choices that test our capacities for moral, philosophical and practical judgements as they have never been tested before.

Do we really want to know if we—or our children—are predestined to contract hereditary diseases, especially if the diseases are incurable? Do we want our insurance coverage or our employment prospects determined by the results of the genetic tests that give us such information? Do we want to diminish the enchantment of childbearing by programming the sex, intelligence, and eye color of our offspring?

Should we make perfect genetic copies of plants? Of animals? Of humans? Should we be allowed to use such cloned beings for experimentation, to save the lives of the originals, or even

for spare parts? If we permit stem cell research, do we risk sacrificing some human lives to save others? If we don't, are we failing to save human lives for the sake of organisms that might not yet nor ever be human? Are we coming perilously close to playing God?

Because such questions are so elemental to our very notions of Creation, we tend to have strong opinions even when we don't really know what we're talking about. In a July 2001 Gallup poll, for instance, 60% of Americans said they had been following the debate over government funding of stem cell research either not too closely or not closely at all; 57% said they did not know enough to say whether or not the research should be funded. Yet when asked by ABC News/ *Washington Post* less than two weeks later whether they supported such funding, only 3% offered no opinion.

Our views of biotechnology are a muddle of knowledge and ignorance, science and religion, hope and fear. We hope that its advancement will lead to less suffering for many and a better quality of life for all; we fear that we are crossing lines that should not be crossed, going places we weren't meant to go, perhaps even delving into mysteries that weren't meant to be revealed. As the wizard Gandalf says in *The Lord of the Rings*, "He who breaks a thing to find out what it is has left the path of wisdom."

And we can't break the essence of who and what we are much more than down to our genes.

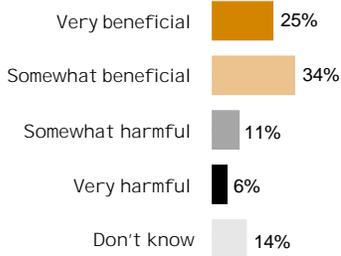
—Lisa Ferraro Parmelee, Editor



Matter(s) of Life

Question:

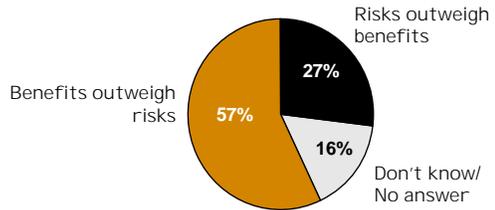
...Two groups of scientists... announced that they have created a nearly complete map of the human genetic code, which provides a kind of road map of all the physical traits of the human body. Are you more inclined to think that this research will ultimately be beneficial or harmful to you and your family?



Source: Survey by the *Los Angeles Times*, July 27-29, 2000.

Question:

Overall, would you say the benefits of conducting genetic research outweigh the risks, or do the risks outweigh the benefits?

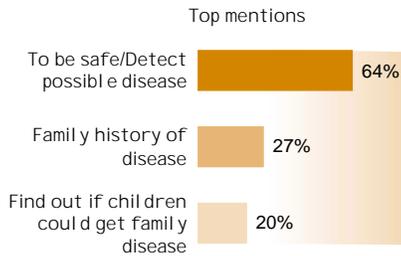


Source: Survey by Virginia Commonwealth University Life Sciences, August 23-September 2, 2001.

Deoxyribonucleic Acid Tests

Question:

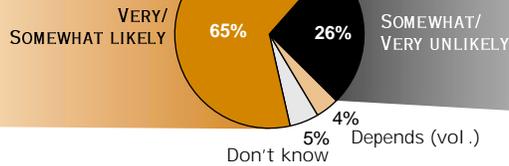
Why would you be likely to take such a genetic test...?



Note: Multiple responses were allowed.

Question:

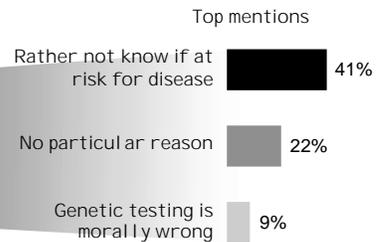
If a test could tell you whether or not you were at risk of contracting a genetic disease, would you be likely to take a test or not?



Source: Survey by the *Los Angeles Times*, July 27-29, 2000.

Question:

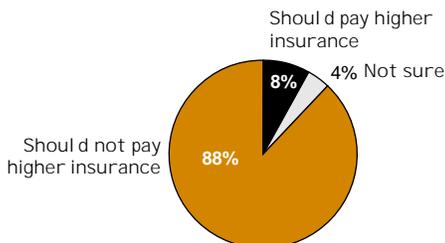
Why would you be unlikely to take such a genetic test...?



Note: Multiple responses were allowed.

Question:

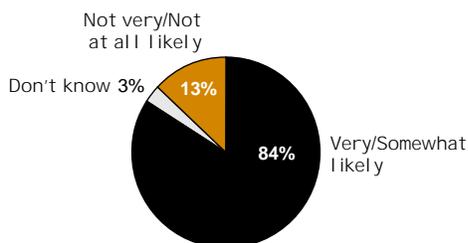
Do you think a person whose genetic profile shows potential problems should pay higher health insurance rates than a person whose profile does not show potential problems, or don't you feel that way?



Source: Survey by Yankelovich/Time/CNN, December 17-18, 1998.

Question:

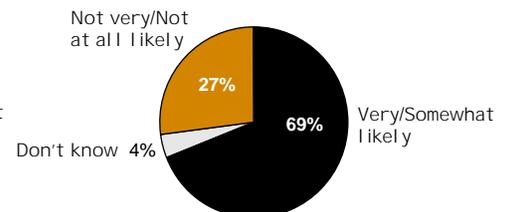
How likely do you think health insurance companies are to deny people coverage because of genetic testing results—very likely, somewhat likely, not very likely, or not at all likely?



Source: Survey by Virginia Commonwealth University Life Sciences, August 23-September 2, 2001.

Question:

...How likely do you think employers are to deny people jobs because of genetic testing results—very likely, somewhat likely, not very likely, or not at all likely?

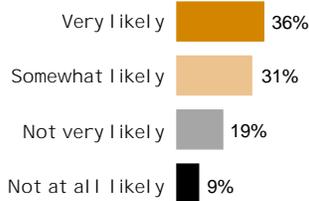


Source: Survey by Virginia Commonwealth University Life Sciences, August 23-September 2, 2001.

Que Sera, Sera?

Question:

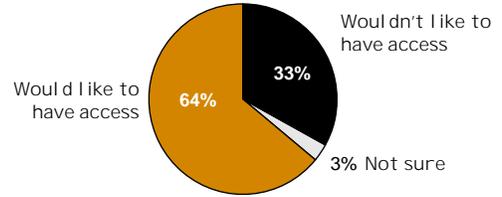
...[A]ssuming that you had a young child and genetic testing was easily available, how likely would you be to get your child tested—very likely, somewhat likely, not very likely, or not at all likely?



Source: Survey by Virginia Commonwealth University Life Sciences, August 23-September 2, 2001.

Question:

...If you could, would you like to have access to your children's genetic profiles that would tell you which diseases they are likely to suffer, or wouldn't you like to have access to their profiles?

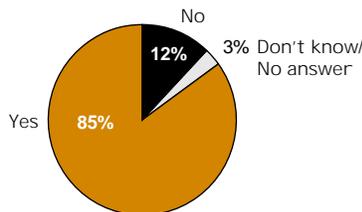


Source: Survey by Yankelovich/Time/CNN, December 17-18, 1998.

Custom Kids

Question:

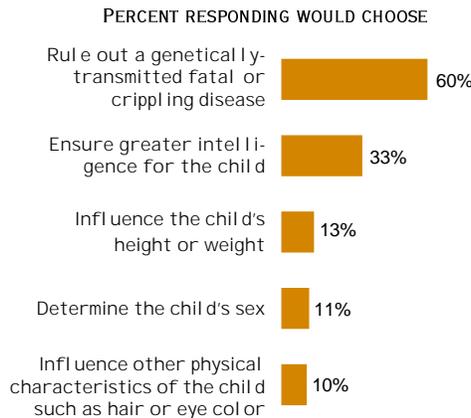
As you may know, genetic engineering is a process through which doctors can alter the genetic makeup of a human being and change the person's characteristics, such as hair color, or even whether that person is at risk for certain diseases. In the next century, do you think it will be possible to genetically engineer babies, that is, to use science to predetermine babies' genetic makeups?



Source: Survey by CBS News, December 17-19, 1999.

Question:

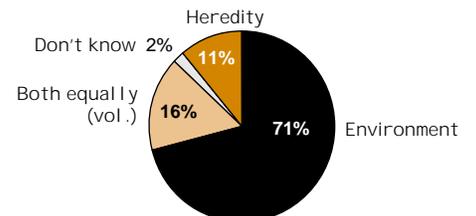
If you were planning to have a child and could choose various traits your baby would have, do you think you would or would not choose to...?



Source: Survey by Yankelovich/Time/CNN, December 17-18, 1998.

Question:

Some people say that the home environment a child grows up in is more important than heredity or genetic makeup in determining the future health and happiness of that child. Others say heredity is the most important factor. How about you? Would you say environment or heredity is more important to a person's ultimate health and happiness?

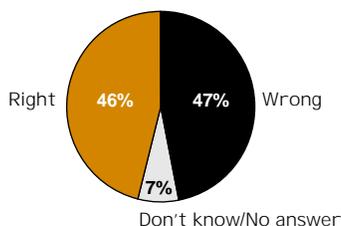


Source: Survey by the Los Angeles Times, July 27-29, 2000.

Can vs. Should

Question:

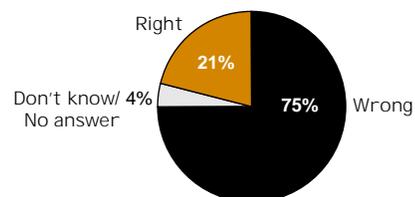
In general, do you think it's right or wrong to use scientific techniques to try and alter people's genes to limit their risk of developing certain genetic diseases?



Source: Survey by CBS News, December 17-19, 1999.

Questions:

In general, do you think it's right or wrong to use scientific techniques to try and have a child of a specific sex?



Source: Survey by CBS News, December 17-19, 1999.

genolDCloning

Question:

As you may know, scientists have made advances in cloning, where they can reproduce a whole animal from a single cell. Do you think it is acceptable to use cloning to...?

PERCENT RESPONDING NOT ACCEPTABLE

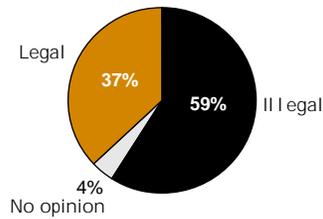


Note: Asked of registered voters.

Source: Survey by Opinion Dynamics/Fox News, February 12-13, 2002.

Question:

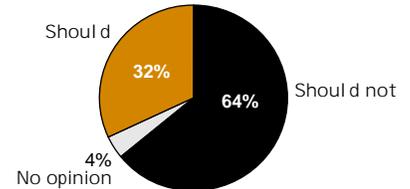
...Supporters [of cloning animals] say [it] can lead to advances in medicine and agriculture. Opponents say cloning animals is morally wrong and may produce offspring with genetic abnormalities. Do you think it should be legal or illegal to clone animals in the United States?



Source: Survey by ABC News/Beliefnet, August 8-12, 2001.

Question:

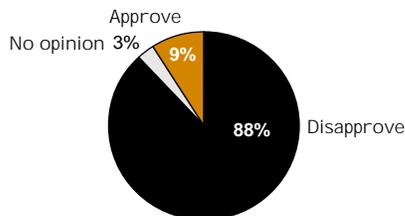
...Do you think the cloning of animals should or should not be allowed?



Source: Survey by the Gallup Organization, May 10-14, 2001.

Question:

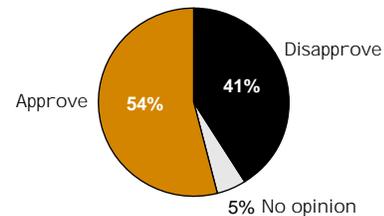
Do you approve or disapprove of cloning that is designed specifically to result in the birth of a human being?



Source: Survey by Gallup/CNN/USA Today, November 26-27, 2001.

Question:

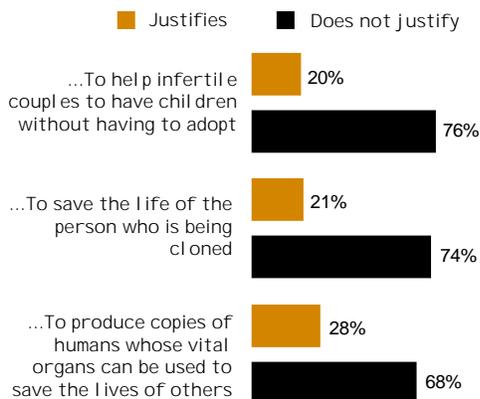
Do you approve or disapprove of cloning that is not designed specifically to result in the birth of a human being, but is designed to aid medical research that might find treatments for certain diseases?



Source: Survey by Gallup/CNN/USA Today, November 26-27, 2001.

Question:

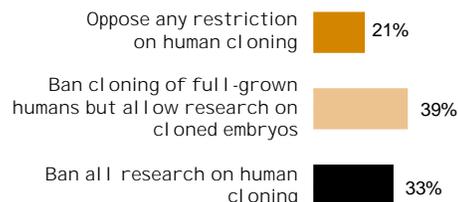
Do you think each of the following justifies creating a human clone or don't you think so?



Source: Survey by Yankelovich/Time/CNN, February 7-8, 2001.

Question:

If you had to choose, which comes closest to your preference—a complete ban on all research into human cloning without exception; a ban on human cloning of full-grown humans, while still allowing research on cloned embryos, to learn more about certain diseases; or oppose any law that restricts research into human cloning?



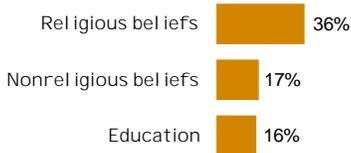
Source: Survey by IPSOS-Reid, November 30-December 2, 2001.

Deciding Factors

Question:

What's had the most influence on your opinion on the issue of cloning—the views of your family and friends, things you've seen or read in the news, your education, your personal experience, your religious beliefs, your personal nonreligious beliefs, or something else?

TOP MENTIONS

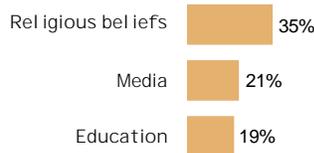


Source: Survey by ABC News/Beliefnet, August 8-12, 2001.

Question:

[Which of the following has had the biggest influence on your thinking on this issue—a personal experience, the views of your friends and family, what you have seen or read in the media, your religious beliefs, your education, or something else?] ...Allowing unrestricted scientific research related to human cloning.

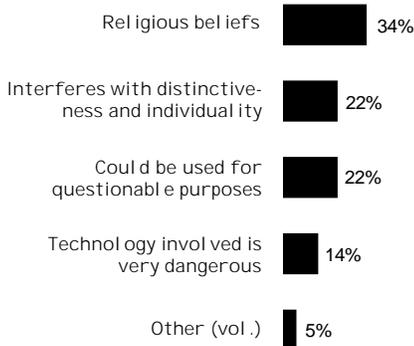
TOP MENTIONS



Source: Survey by Princeton Survey Research Associates/Pew Research Center, March 5-18, 2001.

Question:

What is the main reason you are against the cloning of human beings? Because of your religious beliefs, because cloning interferes with human distinctiveness and individuality, because cloning could be used for questionable purposes like breeding a superior race or clone armies, because the technology involved is dangerous.

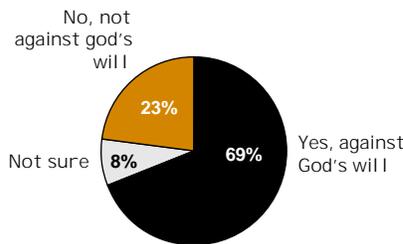


Note: Asked of those who said it is a bad idea to clone human beings.

Source: Survey by Yankelovich/Time/CNN, February 7-8, 2001.

Question:

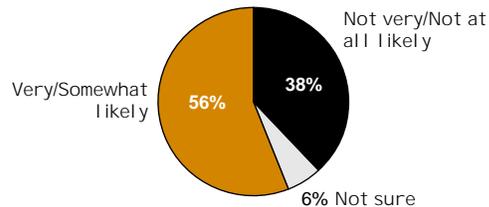
Do you think it is against God's will to clone human beings or don't you feel this way?



Source: Survey by Yankelovich/Time/CNN, February 7-8, 2001.

Question:

How likely do you think it is that somewhere in the world a human has already been secretly cloned—Very likely, somewhat likely, not very likely, not at all likely?



Note: Asked of registered voters.

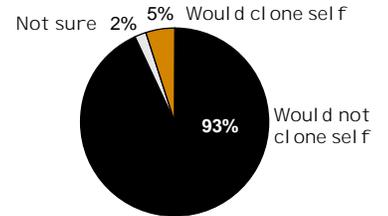
Source: Survey by Opinion Dynamics/Fox News, February 12-13, 2002.

Clone For

A Day

Question:

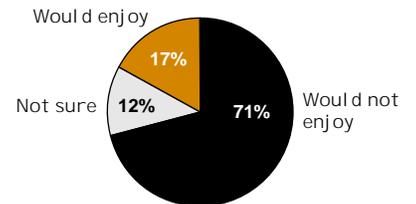
If you had a chance, would you clone yourself or wouldn't you do that?



Source: Survey by Yankelovich/Time/CNN, February 7-8, 2001.

Question:

If you were cloned, do you think you would enjoy spending time with that copy of yourself?



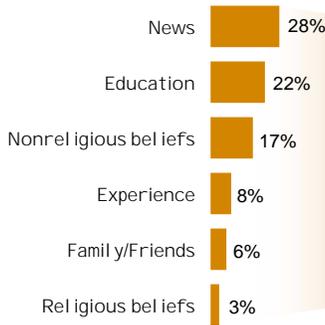
Note: Asked of registered voters.

Source: Survey by Opinion Dynamics/Fox News, April 18-19, 2001.

Stem Cell Research

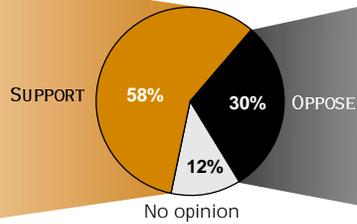
Question:

What's had the most influence on [your support for]... stem cell research... the opinions of your family and friends, things you've seen or read in the news, your education, your personal experience, your religious beliefs, your personal nonreligious beliefs, or something else?



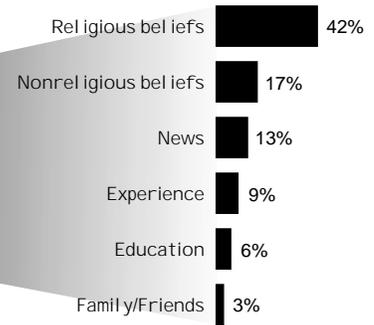
Question:

...Some people support stem cell research, saying it's an important way to find treatments for many diseases. Other people oppose stem cell research, saying it's wrong to use any human embryos for research purposes. What about you—do you support or oppose stem cell research?



Question:

What's had the most influence on [your opposition to]... stem cell research... the opinions of your family and friends, things you've seen or read in the news, your education, your personal experience, your religious beliefs, your personal nonreligious beliefs, or something else?



Source: Survey by ABC News/Beliefnet, June 20-24, 2001.

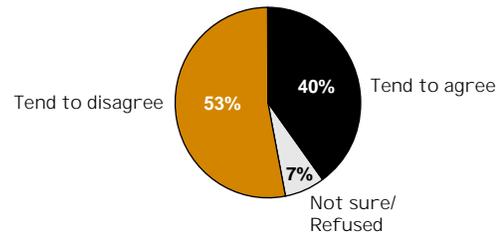
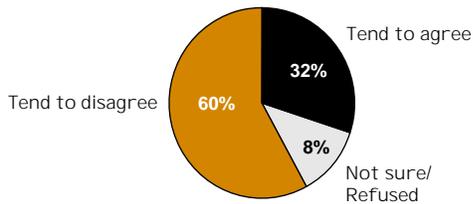
Moral Quandaries

Questions:

Please indicate whether you tend to agree or disagree with the following statements...

...Allowing any medical research using stem cells from human embryos should be forbidden because it is unethical and immoral.

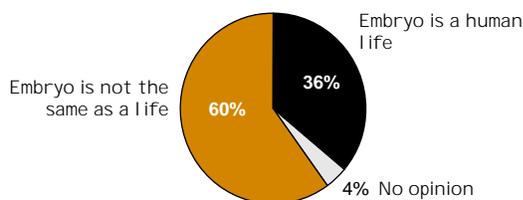
...Using cells from human embryos for research comes too close to allowing scientists to play God.



Source: Survey by Harris Interactive, July 12-16, 2001.

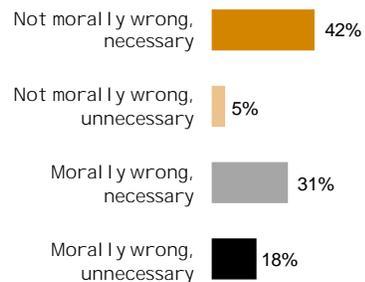
Question:

...[W]hich comes closer to your view about [embryos that have been created in a laboratory by fertilizing a woman's egg outside the womb and have not been implanted in a woman's womb]—the embryo is a human life that should be given the same protection as all other human lives, or the embryo has the potential for life, but is not the same as a life, because it cannot develop on its own?



Question:

...Which comes closest to your view of this kind of stem cell research—it is morally wrong and is unnecessary, it is morally wrong but may be necessary, it is not morally wrong and may be necessary, or it is not morally wrong but is unnecessary?



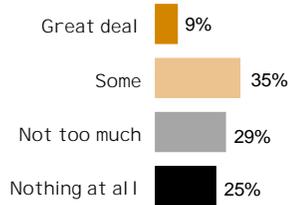
Source: Survey by Gallup/CNN/USA Today, August 10-12, 2001.

Source: Survey by Gallup/CNN/USA Today, August 10-12, 2001.

Fiddling With Food

Question:

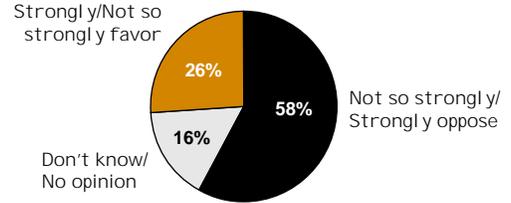
How much have you seen, read or heard recently regarding genetically modified food that is sold in grocery stores? Have you read, seen or heard a great deal, some, not too much, or nothing at all...?



Source: Survey by Mellman Group/Public Opinion Strategies for the Pew Initiative on Food and Biotechnology, January 22-26, 2001.

Question:

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

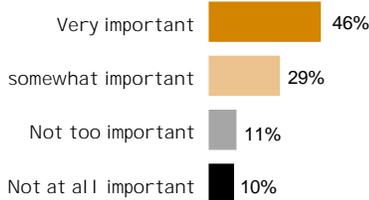


Note: Asked of those who have heard a great deal, some, or not too much recently about the use of biotechnology in the production of food that is sold in grocery stores.

Source: Survey by Mellman Group/Public Opinion Strategies for the Pew Initiative on Food and Biotechnology, January 22-26, 2001.

Question:

When you go to the grocery store how important is it to you to know whether a product contains genetically modified agricultural products?



Source: Survey by Mellman Group/Public Opinion Strategies for the Pew Initiative on Food and Biotechnology, January 22-26, 2001.

Question:

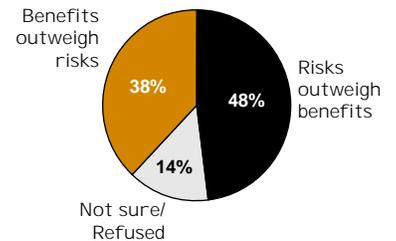
If you saw a label on food at your market saying... it had been genetically modified or bioengineered... would you be more likely to buy it, less likely to buy it, or would it make no difference in your buying decision?



Source: Survey by ABC News, June 13-17, 2001.

Question:

Overall, do you think the benefits of developing and growing [genetically modified] plants and crops outweigh the risks of doing this, or do you think the risks outweigh the benefits?

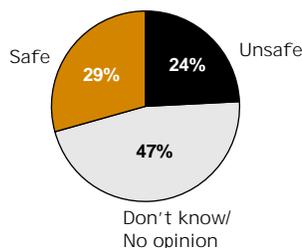


Source: Survey by Harris Interactive, June 8-12, 2000.

Are GM Foods Safe?

Question:

Do you think genetically modified foods are basically safe, basically unsafe, or don't you have an opinion on this?

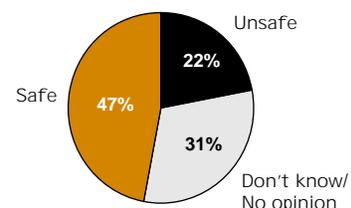


Source: Survey by Mellman Group/Public Opinion Strategies for the Pew Initiative on Food and Biotechnology, January 22-26, 2001.

Must Be If I'm Buying

Question:

Now, as you may know, more than half of products at the grocery store are produced using some form of biotechnology or genetic modification. Knowing this, do you think genetically modified foods are basically safe, basically unsafe, or don't you have an opinion on this?



Source: Survey by Mellman Group/Public Opinion Strategies for the Pew Initiative on Food and Biotechnology, January 22-26, 2001.