



Public Opinion Research on Biotechnology

Canada-U.S. Tracking survey

Final Report

**Prepared for:
Biotechnology Assistant Deputy Minister Coordinating
Committee (BACC), Government of Canada**

March 2004

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Introduction

Decima Research is pleased to present this report on a public opinion research program conducted in March of 2004 for the Biotechnology Assistant Minister Coordinating Committee (BACC), Government of Canada.

This survey marks the second wave of research tracking attitudes among Canadians and Americans about biotechnology and related issues.

The research was comprised of a telephone survey of a random sample of 1559 respondents. In all, 778 Canadians and 781 Americans were interviewed, yielding a margin of error of 3.46% in each of the two countries.

The research was designed to accomplish three major objectives:

- Track levels of awareness, familiarity and interest in the biotechnology sector and key biotechnology issues
- Track perceptions of risks and benefits associated with key biotechnology issues, and key drivers of support and opposition
- Investigate emerging issues associated with the field of biotechnology.

Much of the survey has been tracked from the benchmark survey in March 2003. There are, however, three new areas that were investigated:

- Molecular farming
- Genomics
- Genetic Information and Privacy

The data collection work began on March 19, 2004, and ended on March 30, 2004.

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Highlights

On the whole, opinions on key issue areas that have been tracked year over year show only slight changes in this wave of research. Awareness, familiarity, and support for biotechnology all remain fairly consistent in the two countries. Americans tend to claim greater familiarity with the field as well as greater support for the field as a whole than Canadians do, by a margin of about 10% in both cases. Overall support for the field of biotechnology as a whole sits at 63% in Canada and at 73% in the U.S.

The benefits of biotechnology for health as well as for the economy, as seen today and even more so as perceived for the future, continue to outweigh the drawbacks, in both Canada and the U.S.

On applications of biotechnology, attitudes are extremely consistent in the two countries. Both Canadians and Americans demonstrate – almost equally – continued widespread support for applications in health and the environment. There is, however, less support for applications in other areas, such as GM food. Moreover, there is a notable gap between opinions in the two countries on the issue of GM food, both in applications as well as the field of research as a whole. Canadians tend to express higher levels of trepidation about GM food than Americans, and that trepidation in Canada is expressed more in this wave than in previous waves of research.

In fact, this wave of research suggests an increase in opposition to GM food in Canada. Now a clear majority of 53% in Canada says they are uncomfortable buying foods with GM ingredients.

One of the new areas investigated in this survey was molecular farming, in plants and animals.¹ The results suggest that there are some marked differences between Americans and Canadians on molecular farming. It also suggests that people in both countries view these two kinds of applications differently, and they scrutinize them carefully.

It is clear that plant-related applications tend to be more widely acceptable than animal-related applications, and that applications that have health benefits tend to be more widely acceptable than applications with industrial benefits. Canadians tend to be broadly supportive, but have more concerns than Americans about environmental applications. Overall the evidence suggests that like most applications, people employ the same case-by-case risk/benefit analysis for molecular farming applications as they do for other biotechnology ones.

¹ Crops (plant molecular farming) or animals (animal molecular farming) are genetically engineered to produce medical and industrial products, including human and veterinary drugs and biologics and industrial and research chemicals. At this time in Canada, no plants for molecular farming have been approved for commercial field production. Some organizations have been doing research on plants with novel traits (PNTs) for molecular farming in laboratories and greenhouses, as well as for a limited number of approved confined research field trials.



- 83% of Americans agree with the use of genetic modification of plants that produce interleukin, an enzyme used in health treatments, while 80% of Canadians have similar views.
- 85% of Americans agree with the use of fast growth plants to produce biodegradable plastic products; fewer Canadians (78%) hold this opinion.
- Americans (60%) are more supportive than Canadians (50%) of the use of genetically modified animals to produce higher quality industrial products.

While tested previously in Canada, a series of issues associated with genomics were investigated in both countries in this wave of research. Core perceptions regarding the field of genomics proved to be very similar in both Canada and the U.S. Indeed, misperceptions about the definition of genomics are similarly evident, and similarly pronounced in the two countries. It appears that residents of both countries confuse genomics and biotechnology, believing that biotechnology is the basic science, and genomics is the application of that science.

When provided with clarity on the definition of genomics, in both countries there is widespread support for this field of endeavour, with more than 70% support in Canada and more than 80% in the U.S.

Canadians and Americans both assign a high value to the potential of genetic information. They see it as essential to the future of health care. In total, more than 80% of both Americans and Canadians believe that genetic research will play a significant role in the future of health care, and more than 65% believe there are more benefits than drawbacks to studying genetic information.

Americans tend to be more willing to contribute their genetic information to research: 80% say they are very or somewhat willing to contribute their genetic information to research, compared to 74% among Canadians.

Moreover, tracking suggests that the willingness to contribute genetic information to research has decreased significantly in Canada over the past year. The number indicating they are “very willing” has fallen from 56% in March 2003 to 37% this year.

The softening in opinion on this issue in Canada is paralleled by the growing wish that the government give a higher level of focus to privacy issues (39% compared to 25% last year), rather than to issues of ensuring research takes place (26%, down from 30% last year).

Overall, the data in this area point to growing concerns about privacy issues associated with genetic information. While this has not affected views about the role and importance of this information to the future of health care, it may over time begin to affect views about how health research is done and how peoples’ personal genetic information is used in that research.



Main Findings

Familiarity, Awareness, Interest and Support

Familiarity with biotechnology in both Canada and the U.S. has remained relatively stable over the past year. Americans are still more familiar than Canadians are. Our tracking, however, shows that over time, there has been a slight increase in familiarity in Canada. Slightly more than half of Canadians, 57%, are familiar with biotechnology, which includes 7% who indicate they are very familiar. Although this number is unchanged from the last wave of research, this still represents the highest level of familiarity in this country since September of 2000, however, familiarity has shown a very slight upward trend over time in Canada.

In the U.S., familiarity is up 1% from the same time last year, to 68%. Here, 11% indicate they are very familiar.

This wave sees a narrowing of the gap in awareness of biotechnology between the two countries. In Canada, a one-point increase is seen – from 44% to 45% who say they are aware – while at the same time, awareness dropped by seven points to 46% in the U.S.

The majority of Canadians and Americans are interested in biotechnology, and equally so in each country: 17% of Canadians are very interested and another 54% are somewhat interested, while in the U.S. these numbers are 20% and 54%. Gender plays a slight role in levels of interest: more American men (22%) are “very interested” in biotechnology than Canadian men (16%), however women in both countries are equally “very interested” (18%).

Public opinion towards biotechnology continues to suggest that Americans are generally more supportive of biotechnology in general than Canadians. On the surface, this gap seems to be widening: Three quarters (74%) of Americans support biotechnology, up three points from last winter, while at the same time 61% of Canadians support biotechnology, down two points from last winter. Looking a little further to past waves reveals however that although numbers indicate a slight decrease in support among Canadians, support is up 10% from September 2000.

Genomics

Views regarding genomics are similar in Canada and the United States. The first key point on genomics is that it appears that residents of both countries confuse genomics and biotechnology. Individuals tend to think biotechnology is the basic science, and genomics is the application of that science. When provided with clarity on the definition, there is widespread support for genomics.



A slight majority, 55% of Canadians and 52% of Americans, believes genomics involves the use of genetic information to develop new products and processes, while 36% of Canadians and 38% of Americans think genomics is the study of genes and how genes work.

Familiarity with the field of genomics is higher among Americans (49%) than among Canadians (41%). One in five residents in each country indicate they are not at all familiar. Americans are also generally more supportive of genomics than Canadians. Support is, however, generally high: three quarters of Americans and seven in ten Canadians give some level of support for work in the field. The main difference is in the level of this support: While Canadians are only slightly more likely to say they somewhat support the technology (54% vs. 52% in the U.S.), Americans are more likely by six points to say they strongly support it (22% vs. 16% in Canada).

Applications

In this wave examples of “traditional” biotechnology applications were once again tested, namely health, environmental, agriculture or food, and industrial applications.

Americans tend to agree in higher numbers with the use of biotechnology applications in general. For the applications tested, support in the U.S. ranged from at par with support in Canada (for some health applications), to 12 points higher (for GM corn).

Most applications in health and environment are appealing to Americans and Canadians alike. On the health side, using biotechnology while helping to cure type 1 diabetes by inserting GM cells into the pancreas is an application that fully 86% of Canadians as well as Americans agree with. The genetic modification of stem cells from bone marrow that can treat certain forms of blindness is accepted by 84% of Canadians and Americans, while a slight variation to this, genetic cloning of stem cells to treat blindness, finds support with 80% of Canadians and 82% of Americans.

As for environmental applications, the use of genetically modified plants to break down pollutants and toxic waste is supported by 85% of Canadians and 88% of Americans. The development of trees that have been genetically modified in order to take on larger than normal amounts of carbon, which in turn may help reduce greenhouse gasses, finds support among three quarters (74%) of Canadians and 82% of Americans.

Using genetically modified enzymes that break down corn and turn it into a source of fuel, producing products like ethanol also finds a high level of support: 78% in Canada and a full 87% support in the U.S.

Although majorities in both countries still agree with using biotechnology for food applications, support here is lower than for applications in other fields, and most evidently so in Canada. Genetically modified wheat, modified to resist disease, is supported by 72% of Americans and by 61% of Canadians. The lowest level of support in both countries is for corn genetically



modified to resist pesticides: Only a slight majority (55%) of Canadians support this application, as well as two-thirds (67%) of Americans. A relatively high number of Canadians, 14%, say they strongly disagree with the use of biotechnology for this application.

Molecular Farming

One of the new areas investigated in this survey was molecular farming, both in plants and animals. The results suggest that there are some marked differences between Americans and Canadians on molecular farming. It also suggests that people view these two applications differently and scrutinize them carefully. It is clear that plant-related applications tend to be more widely acceptable than animal-related applications, and that applications that have health benefits tend to be more widely acceptable than applications with industrial benefits. Canadians tend to be broadly supportive, but have more concerns than Americans about environmental applications. Overall the evidence suggests that like with most applications, people employ the same case-by-case risk/benefit analysis when it comes to molecular farming.

Looking more closely to the specific applications tested in this wave of research, fully 83% of Americans agree with the genetic modification of plants that produce interleukin, an enzyme used in health treatments, while 80% of Canadians have similar views. The gap between the two countries is wider for the second plant molecular farming application, this one an environmental one: 85% of Americans agree with the use of fast growth plants to produce biodegradable plastic products; fewer Canadians (78%) hold this opinion.

The gap is even wider when it comes to molecular farming of animals for industrial purposes. While Canadians are divided, 50% are supportive and 47% are opposed, a small majority (60%) of Americans are supportive of the genetic modification of animals to produce products of a higher volume or of a higher quality. In the survey, respondents were given the example of goats that would produce milk containing spider silk that is stronger and lighter than any product currently in use, that can be used to make things like bulletproof vests or surgical thread.

Benefits and Drawbacks of Biotechnology

The benefits of biotechnology on health and the economy continue to outweigh the drawbacks, both as seen today and as expected for the future. This is true for both Canada and the U.S., although Americans are more optimistic about its impacts on both aspects of society.

However, Americans and Canadians alike believe that biotechnology offers more benefits to human health than to the economy. In the United States, four in ten (41%) believe biotechnology brings major benefits to health of Americans today, while another 41% believes it brings modest benefits to the current health of Americans. Over the longer term, 45% of Americans believe it will bring major benefits to their health and 38% believe it will bring modest benefits.



In Canada, while 32% of Canadians agree it brings major benefits to the health of Canadians today, more people see it being a major health benefit for the future (38%). Another 45% see it as a modest health benefit today and 37% for the longer term.

Turning now to the economy, both Americans (29%) and Canadians (29%) feel biotechnology will bring major benefits to the economy today. However, 38% of Americans feel that it will bring major benefits to the economy in the future compared to 29% of Canadians. Moreover, slightly less than half in each country believe in the modest benefits of biotechnology, both now and in the years ahead.

Even though the benefits of biotechnology seem to outweigh the drawbacks in both countries, that is not to say that individuals are not aware of the potential risks associated with such technologies.

Risks

Canadians tend to be more cautious about the risks associated with biotechnology than Americans. Canadians are more likely to suggest that the government should slow the use of biotechnology, and that genetically modified products provide more risks than benefits.

One in five (22%) Canadians strongly agree that government should slow the use of biotechnology until more is known about the risks. Only 14% of Americans feel the same way. Genetically modified foods still raise a cautionary flag: 60% of Canadians believe genetically modified food products provide fewer benefits and more risks, while 53% of Americans would agree with that. As well, 52% of Canadians and 48% of Americans feel that genetically modified health products provide fewer benefits and more risks.

Research is key to comfort with biotechnology products. Fully three quarters of Americans (76%) and Canadians (73%) agree that if ongoing long-term research were to be conducted on biotechnology products after they were approved for sale, it would make them feel more comfortable.

Although Canadians approach biotechnology with more caution, they realize that biotechnology is part of the future, so they acknowledge that the best way to address the situation is to make it as safe as possible. Three in ten (31%) Canadians strongly agree, and another 56% somewhat agree with the statement that biotechnology is part of the future so all one can do is make sure it is as safe as possible. About the same numbers of Americans agree (30% strongly and 58% somewhat.)

Furthermore, more than three quarters (78%) of Canadians and 84% of Americans agree that some risks need to be accepted in order to achieve benefits of biotechnology like new cures for serious illnesses. Slightly less, although still majorities in both countries, would be willing to



accept some risk to achieve benefits like new foods that contain vitamins and medicine: 63% of Canadians and 71% of Americans agree with taking risks to those ends.

One reason why Canadians indicate more caution towards biotechnology may be that they do not see Canada as a world leader in the field of biotechnology research. This perceived lack of involvement and subsequent lack of familiarity could explain why Canadians are more cautious than the Americans.

Government, Biotechnology and Regulations

Familiarity with ways in which biotechnology is regulated is low in both Canada and the U.S. However, a fairly strong majority of Canadians and Americans are confident in Health Canada and the FDA's abilities to ensure safety of biotechnology products. In fact, 57% of Canadians who are not familiar with the regulation of biotechnology were still confident in Health Canada's ability to regulate the field.

Only 2% of Canadians are very familiar and another 20% somewhat familiar with the ways in which biotechnology is regulated in Canada. Americans are only slightly more familiar: 2% are very familiar and 26% are somewhat familiar with ways in which biotechnology is regulated in the United States.

Governments of both countries are seen as not doing enough to study and monitor the impact of biotechnology by slight majorities in each country: 60% say so about the Government of Canada and 56% about the American government. The majority of Canadians and Americans also feel that their governments should work with other nations to develop international standards and regulations: 85% of Canadians feel that the Government of Canada should not go it alone, while 77% of Americans feel the same way about their government.

Even though residents of both countries want government involvement in biotechnology, almost all (93% of Canadians and 91% of Americans) feel that their government's role is to inform individuals about biotechnology, leaving the ultimate decision of whether or not to use these products to the individuals.

Canadians want the Government of Canada to have a role in biotechnology, and they believe that this should encompass more research into the area. Canadians are very confident in the abilities of the government and Health Canada to play a bigger role.



Genetically Modified Food

Not surprisingly, Canadians are more cautious about genetically modified food than Americans. Canadians are less comfortable with genetically modified food, are less likely to believe they have eaten a GM food product, and are less likely to indicate they would continue buying a product if it was to contain genetically modified ingredients. As a result of this vigilance, Canadians are more likely than Americans to say a new labeling system for genetically modified food is needed, and they are more likely to believe that this system should be mandatory.

Half (52%) of Americans are comfortable with buying genetically modified foods, compared to 45% of Canadians. The number of Canadians who are comfortable with buying genetically modified foods has decreased seven points March 2002.

Furthermore, a quarter of Americans would continue to buy a food product that contained genetically modified ingredients, while only 19% of Canadians would. About three in ten residents in both countries would buy it anyway, but plan to find out more, while a third in each country would not buy it until they found out more. In Canada, 17% say they would just not buy it again, while 11% of Americans would do the same.

Labeling is another issue that was touched upon in this survey, in relation to GM food. Fully 85% of Canadians believe a new labeling system is needed and 77% believe that system should be mandatory. In the U.S., 82% believe it is needed and 70% feel it should be mandatory.

This data indicate that Canadians are not yet at a point where they feel comfortable with genetically modified food. In fact, comfort levels have continually decreased since March 2002.

Driving Concern

In this study, Canadians and Americans were asked about their concerns about different products using biotechnology, genetically modified food, genetically modified health products, and genetically modified environmental products. For most Canadians and Americans, the primary concern they have when it comes to all GM foods and GM health products is the long-term risk to human health.

Two thirds (67%) of Canadians and 69% of Americans state long-term risks to human health as their primary concern with GM health products, while the same risk plays a role to 62% of Americans and 64% of Canadians when it comes to GM foods.

Health also plays a role with it comes to risks associated with genetically modified environmental products, however it is not the dominant concern for most. A third of Canadians and Americans chose long-term risk to human health as primary concern about GM environmental products. However, most are likely to state the long-term risk to the environment



as their primary concern with GM environmental products: 47% of Americans and 46% of Canadians hold this concern.

Genetic Information and Privacy

Canadians and Americans assign a high value to the potential of genetic information. They see it as the future of health care, and many want to learn more about their genetic characteristics. Yet while interest remains high, the willingness to contribute genetic information has decreased in the past year.

The number of Canadians interested in knowing more about their genetic characteristics has increased from 26% last year to 32% this year. However, the willingness to contribute genetic information has decreased significantly among Canadians from 56% to 37% this year in the same time period.

Americans are somewhat more willing to contribute: 45% are very willing to contribute their genetic information. They are also slightly more interested in their own genetic make-up (35% saying they are very interested.)

A plurality of Canadians (39%, up from 25% last year) feels that the government should put more emphasis on privacy than on research and development when it comes to genetic information. Still, a quarter believes R&D should be pursued with greater emphasis, and 31% believe the focus should be equally divided. These views are similar in the U.S.

Overall, the data in this area point to growing concerns about privacy issues associated with genetic information. While this has not affected views about the role and importance of this information to the future of health care, it may over time begin to affect views about how health research is done and how people's personal genetic information is used in that research.



Canada-US Biotechnology Tracking Survey 2004

Prepared for:

**The Government of Canada's Canadian Biotechnology Strategy
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Methodology

- Sample of 1559 respondents
 - 778 in Canada, 781 in U.S.
 - Margin of error 3.2%, 19 times out of 20
- Collected March 19-30, 2004
- Much of the survey is tracking from March 2003
- But there are some new areas that were investigated
 - Plant Molecular Farming
 - Genomics
 - Genetic Privacy



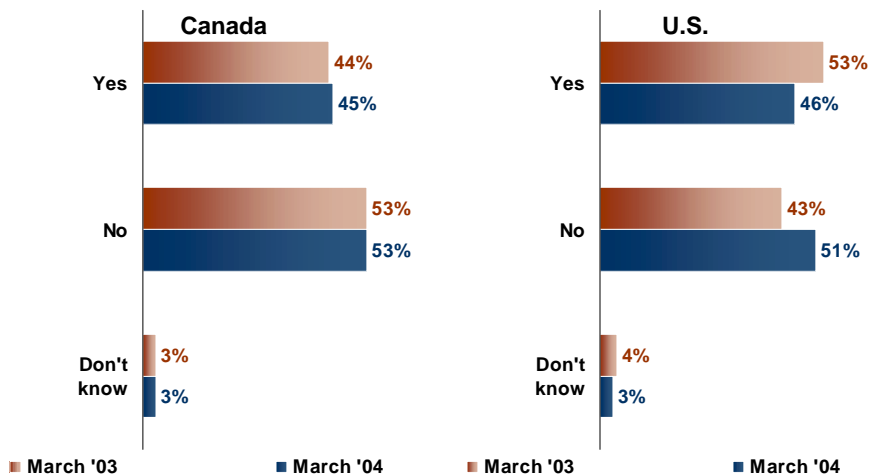
Awareness and Familiarity

- Awareness and familiarity have remained largely unchanged over the past year
 - Although familiarity has clearly shown a trend upward over time in Canada
- Support for biotechnology has similarly remained the same
 - A slight upturn in opposition this wave in Canada, but the shift is not outside the margin of error
- On both fronts, Americans tend to be slightly more familiar, supportive than Canadians
 - And those with higher levels of education, particularly in the US also more supportive



Awareness of Biotechnology Issues

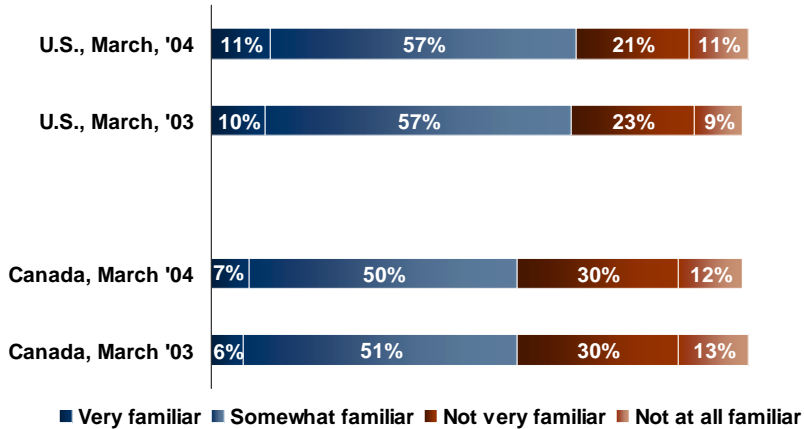
"Over the last three months, have you heard about any stories or issues involving biotechnology?"





Familiarity with Biotechnology

"Would you say you are very familiar, somewhat familiar, not very familiar, or not at all familiar with biotechnology?"



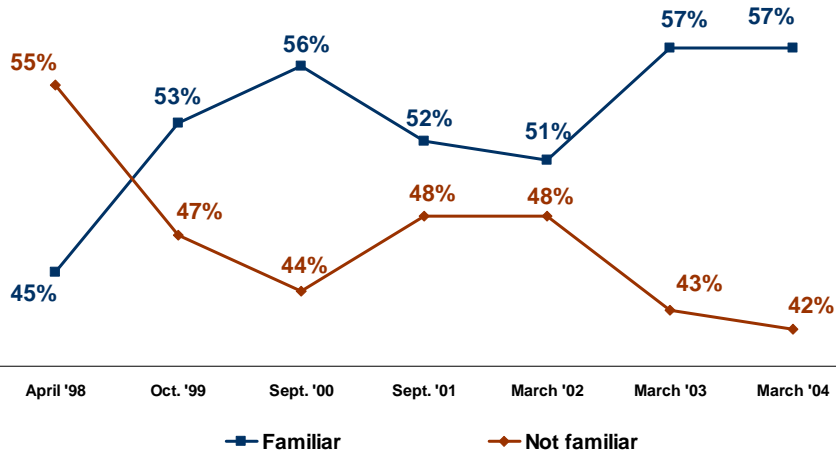
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Familiarity with Biotechnology: Canada

"Would you say you are very familiar, somewhat familiar, not very familiar, or not at all familiar with biotechnology?"



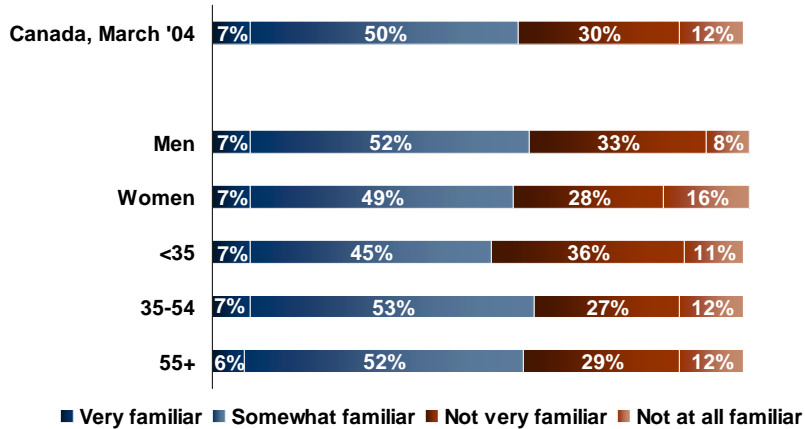
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Familiarity with Biotechnology: Canada Demographics

"Would you say you are very familiar, somewhat familiar, not very familiar, or not at all familiar with biotechnology?"



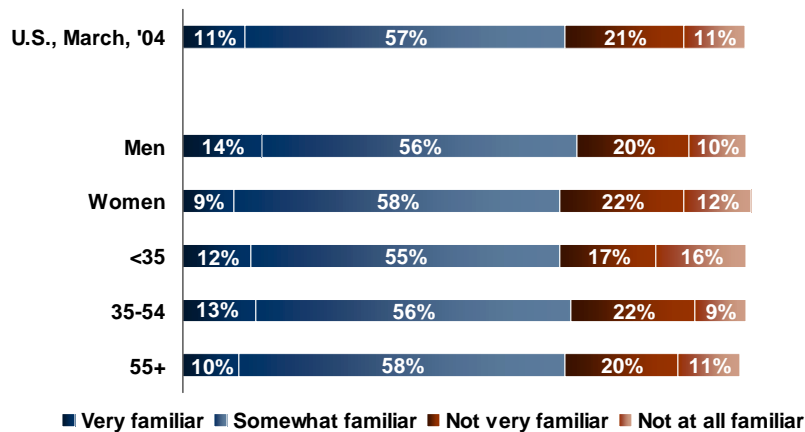
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Familiarity with Biotechnology: U.S.

"Would you say you are very familiar, somewhat familiar, not very familiar, or not at all familiar with biotechnology?"



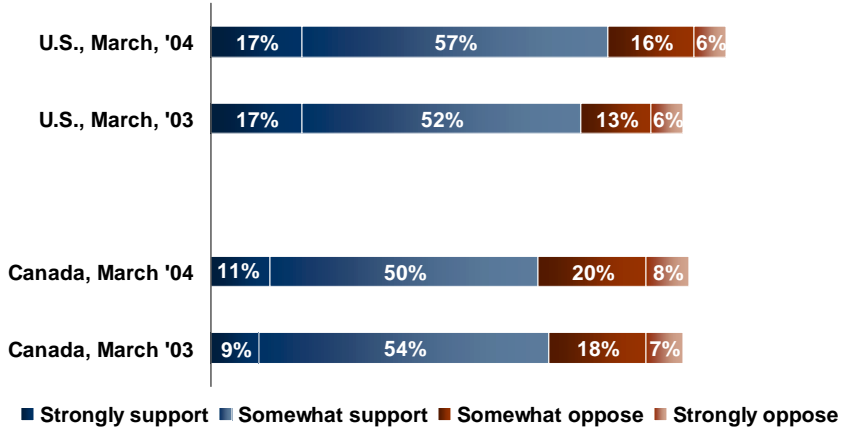
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Support for Biotechnology

"In general, would you say you strongly support, somewhat support, somewhat oppose or strongly oppose the use of products and processes that involve biotechnology?"



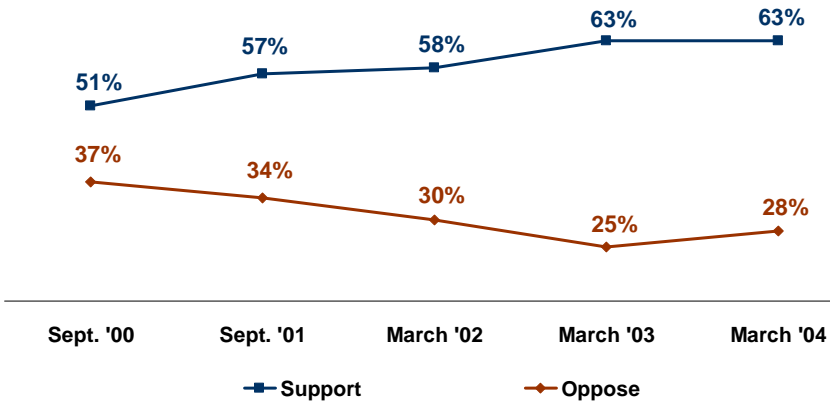
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Support for Biotechnology: Canada

"In general, would you say you strongly support, somewhat support, somewhat oppose or strongly oppose the use of products and processes that involve biotechnology?"



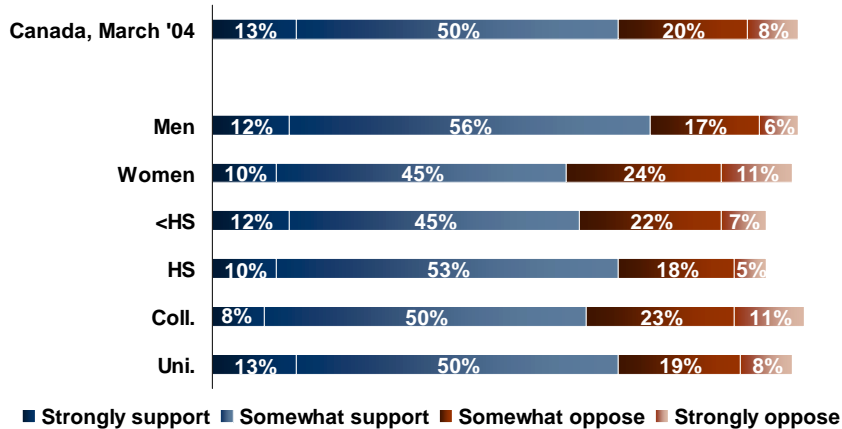
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Support for Biotechnology: Canada

"In general, would you say you strongly support, somewhat support, somewhat oppose or strongly oppose the use of products and processes that involve biotechnology?"



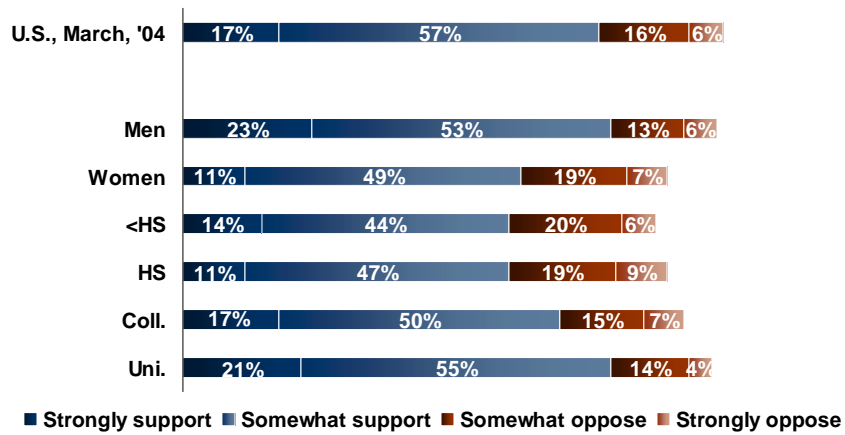
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Support for Biotechnology: U.S.

"In general, would you say you strongly support, somewhat support, somewhat oppose or strongly oppose the use of products and processes that involve biotechnology?"



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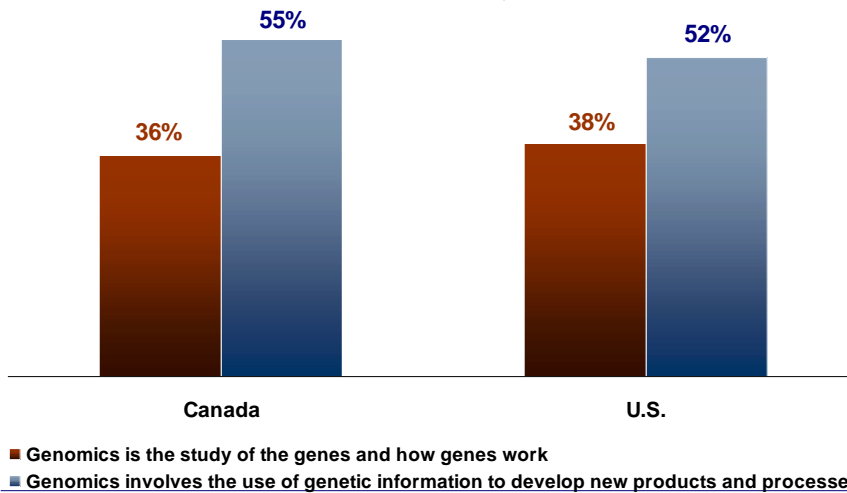
Genomics – Core Attitudes

- Canadians tend to confuse Genomics and Biotechnology
 - Thinking biotechnology is the basic science, and genomics is the application of that science
 - Americans and Canadians equally likely to do so
- When provided with clarity on the appropriate definition, there is widespread support for Genomics as a field of inquiry



Genomics

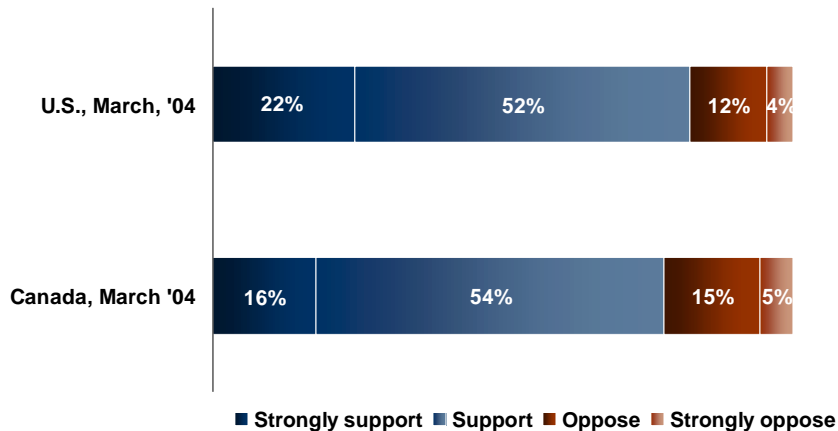
"I'm going to provide you with two definitions of GENOMICS, and I would like you to tell me which one is closest to your understanding of this field"





Support for Genomics

"In general, would you say you strongly support, support, oppose, or strongly oppose work in the field of Genomics?"



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Risks

- The major areas of concern about biotechnology remain consistent this year with last, and focus primarily on risks
 - Specifically the driver of concern in this field is long term risk, primarily to health and secondarily to the environment
- The hierarchy of concerns are highly consistent, regardless of whether the product is a health product or a food product
- One of the other major drivers of concern is the notion of irreversibility – previous research in Canada has indicated that this has been an underlying driver of concern, and this survey confirms that the same sentiment is found in the US, although not as pronounced as found in Canada
- Ultimately what people suggest is that while there are perceived risks, in many cases people are willing to take risks in order to obtain benefits, as long as the benefits are significant enough that the risk is worth taking

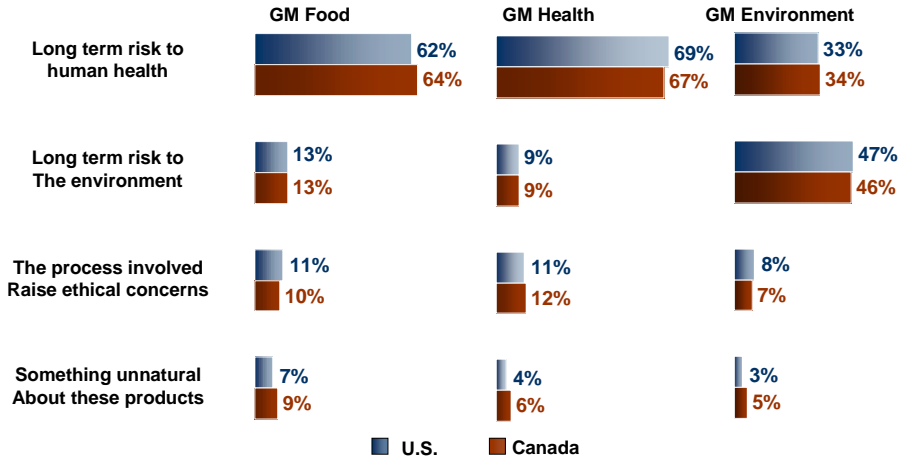
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Driving Concern

"People have suggested a number of different concerns about different products made using biotechnology. I'm going to read you some different categories of biotechnology products, and for each...tell me which of the following is the greatest concern to you?"



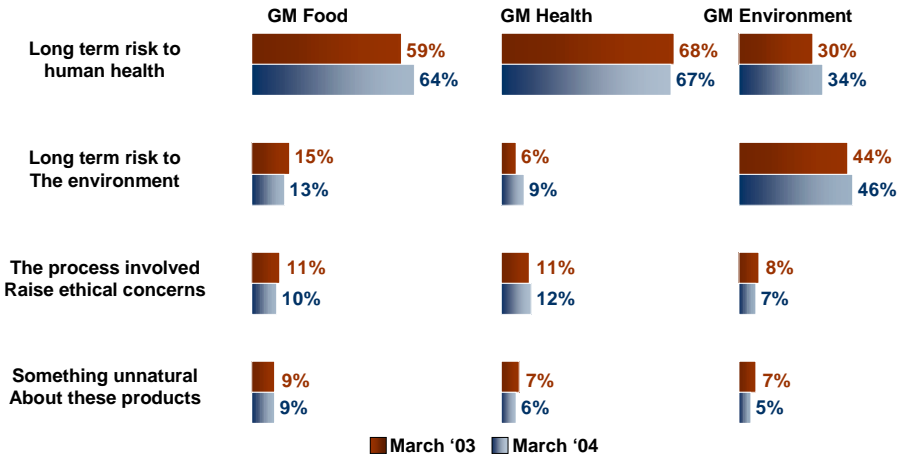
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Driving Concern

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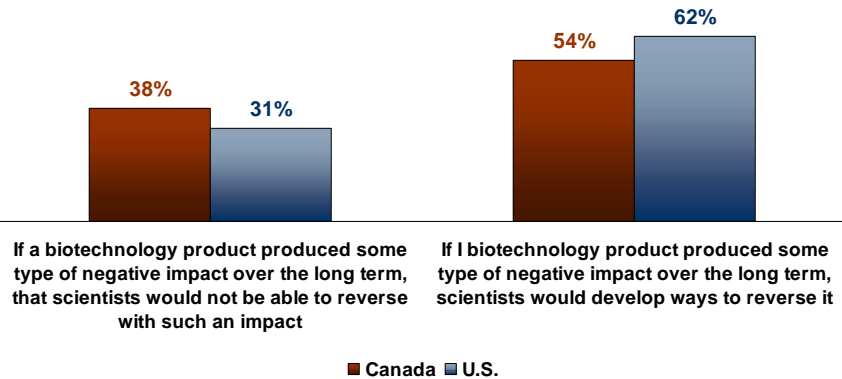
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Irreversibility

"I am going to read you a series of questions that ask you to indicate which of two basic positions your opinion is closest to...."



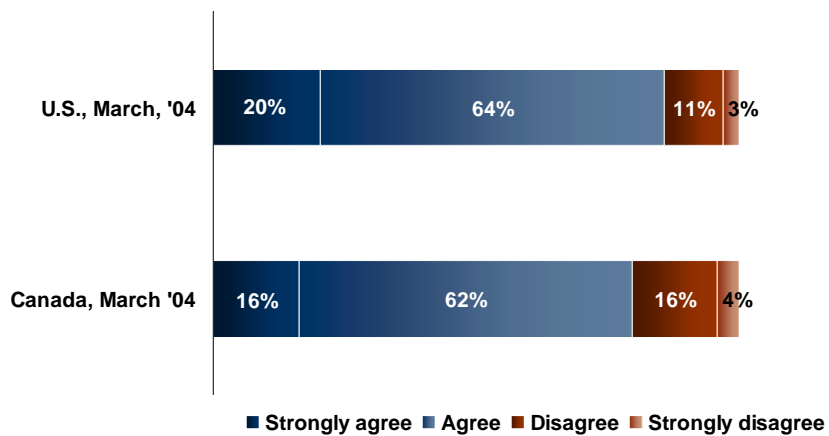
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Accept Some Risks for Health Benefits?

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?... We have to accept some risk to achieve the benefits of biotechnology like new discoveries and cure of serious illnesses."



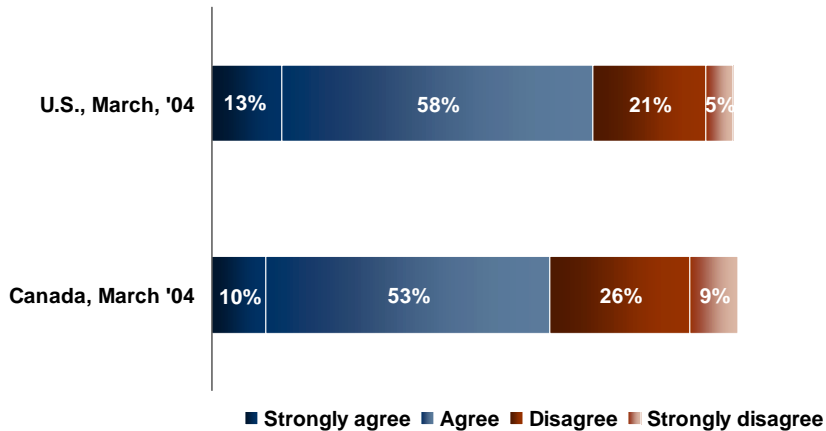
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Accept some Risk for Food benefits?

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?...We have to accept some risk to achieve the benefits of biotechnology like new foods that contain vitamins or medicine."



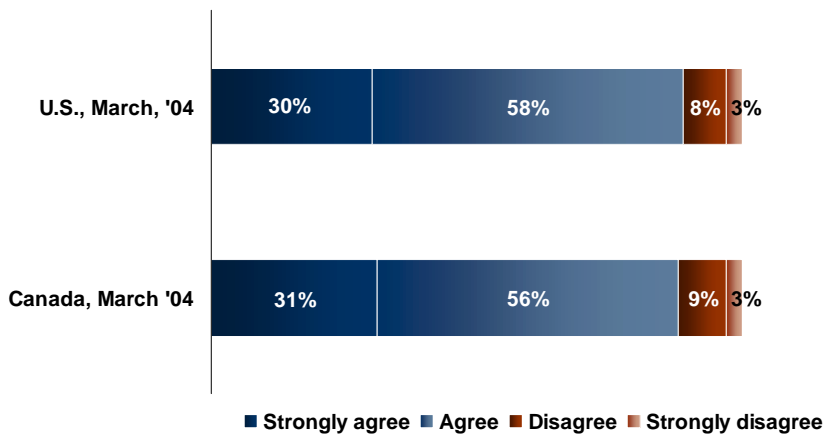
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Biotechnology: Part of the Future

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?...Although there may be some unknown risks, technologies like biotechnology are part of the future, so all we can do is make sure that its uses are as safe as possible."



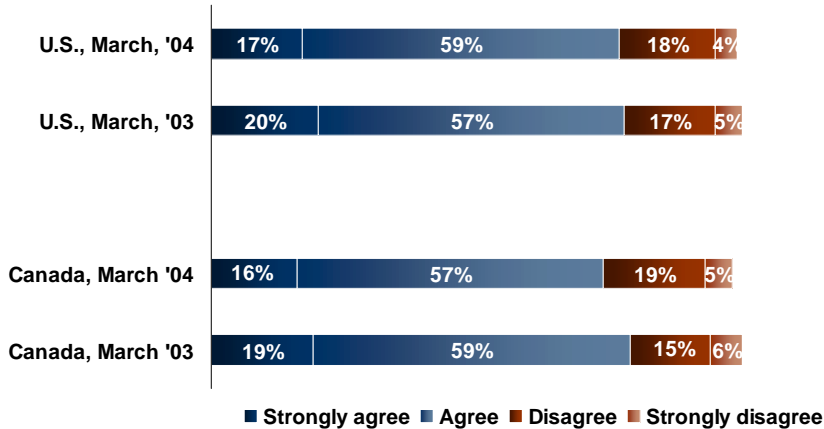
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Long Term Research

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?...If I knew that ongoing long term safety research was going to be conducted on biotechnology products after they were approved for sale in Canada/the U.S., it would make me feel comfortable enough to accept these products."



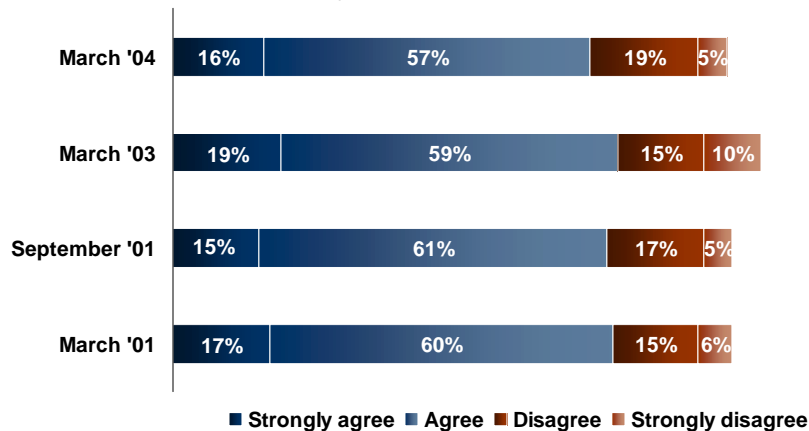
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Long Term Research: Canada

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?...If I knew that ongoing long term safety research was going to be conducted on biotechnology products after they were approved for sale in Canada, it would make me feel comfortable enough to accept these products."



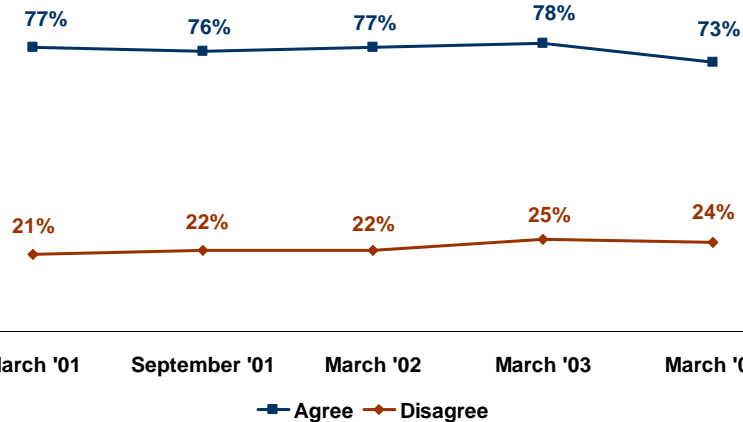
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Long Term Research: Canada

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?...If I knew that ongoing long term safety research was going to be conducted on biotechnology products after they were approved for sale in Canada, it would make me feel comfortable enough to accept these products."



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Benefits and Drawbacks

- Both Americans and Canadians indicate that the benefits of these technologies outweigh the risks by a fairly significant margin (ratios of 6:1 or better)
- However Americans are even more likely to believe in the benefits than Canadians
 - By a margin of about 10%, similar to the margin differences in overall familiarity and support for the technology
- While many in the two countries believe that the benefits outweigh the drawbacks today, they are even more likely to believe that they will do so in future
- The major reason is that they perceive that there will be major health benefits, that this is the next frontier of human endeavour
 - And most want their respective country to be a leader in this field

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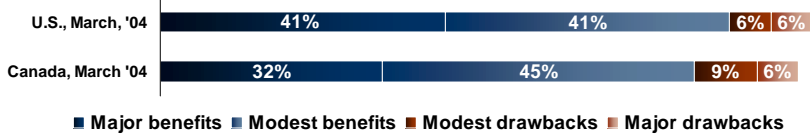
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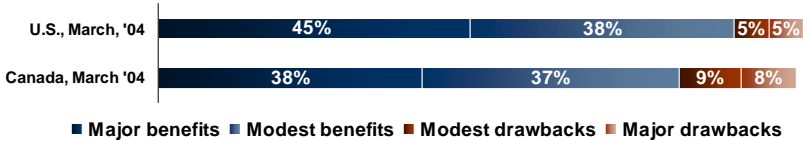
Benefits and Drawbacks – Health

"In your opinion does biotechnology bring major benefits, modest benefits, modest drawbacks, or major drawbacks in the following areas...Health?"

Health Today



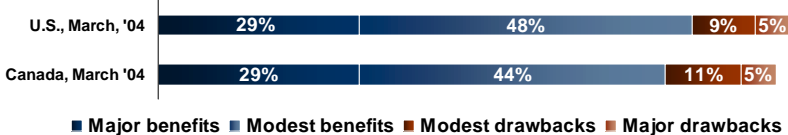
Health in the Future



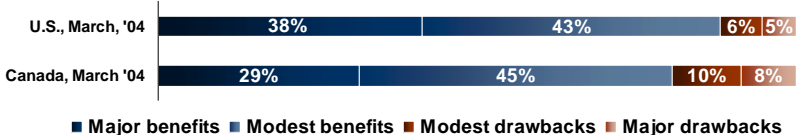
Benefits and Drawbacks – Economy

"In your opinion does biotechnology bring major benefits, modest benefits, modest drawbacks, or major drawbacks in the following areas...Economy?"

Economy Today



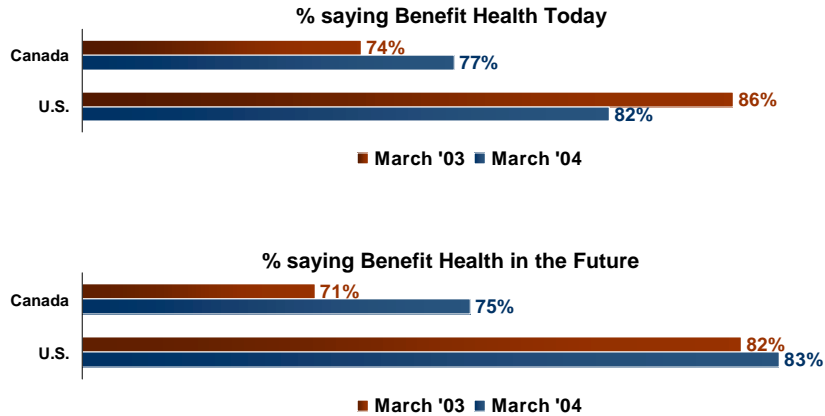
Economy in the Future





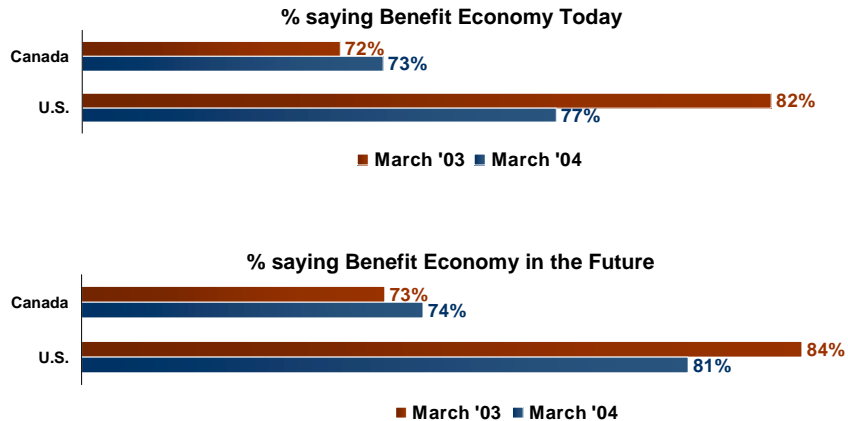
Benefits and Drawbacks – Health

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Benefits and Drawbacks – Economy

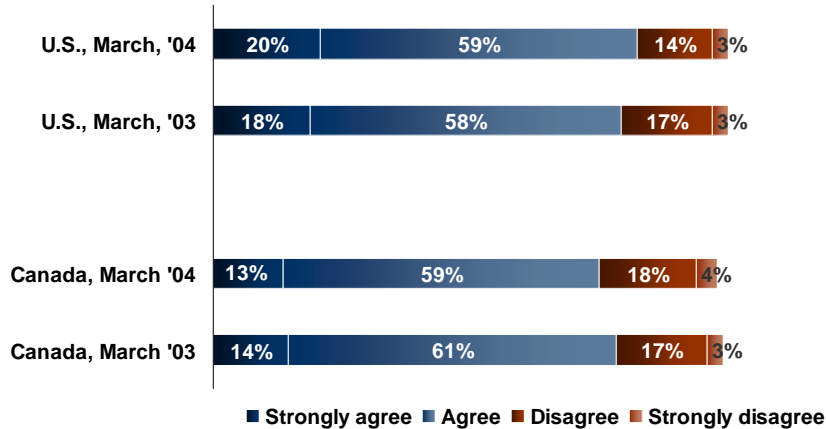
"In your opinion does biotechnology bring major benefits, modest benefits, modest drawbacks, or major drawbacks in the following areas...Economy?"





Biotechnology: The next Frontier

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?...Biotechnology research represents the next frontier of human endeavour, a frontier that will lead to significant quality of life benefits for all Canadians/Americans."



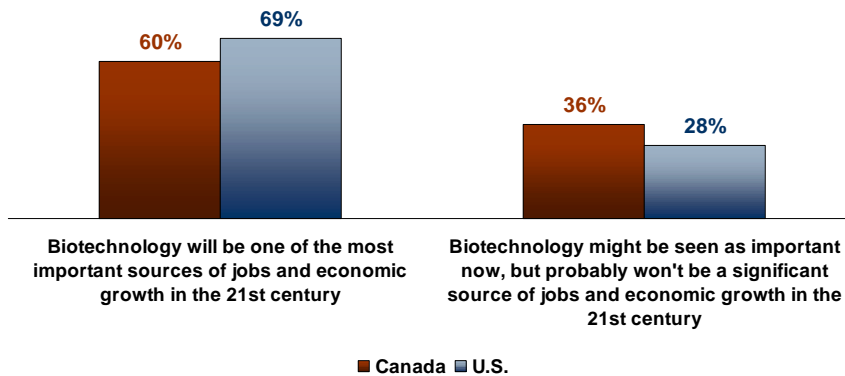
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Biotechnology and Economic Growth

"I am going to read you a series of questions that ask you to indicate which of two basic positions your opinion is closest to...."



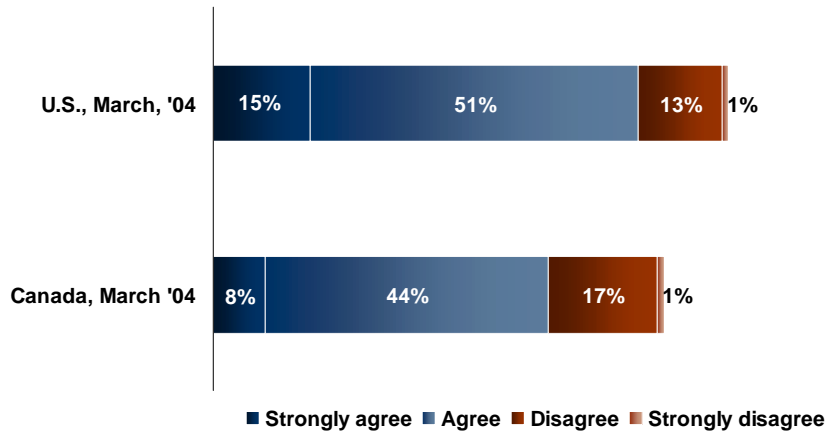
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Leaders in the Field of Biotechnology

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?...Canada/U.S. is among the world's leaders in the field of biotechnology research."



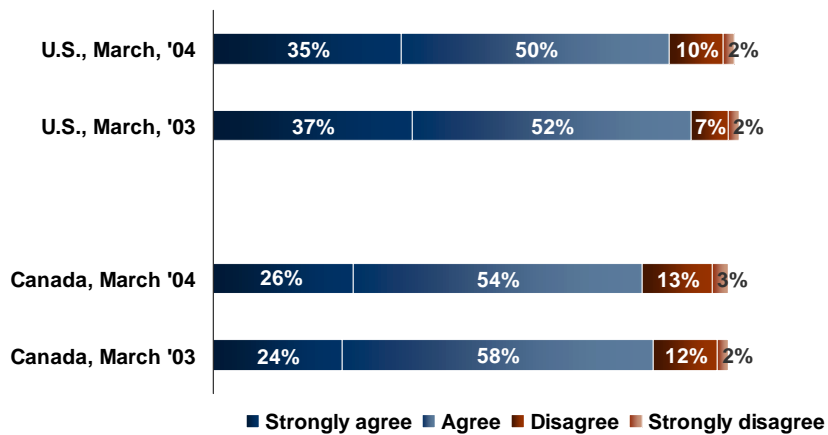
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Leaders in the Field of Biotechnology

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?...Canada/U.S. should be among the world's leaders in the field of biotechnology research."



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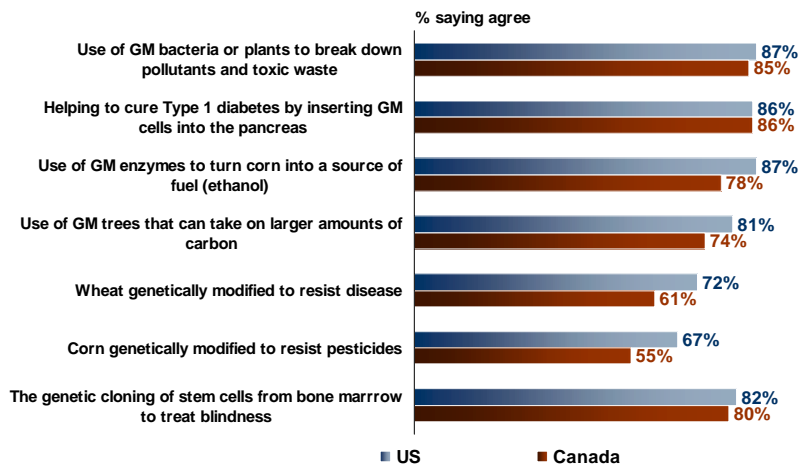
Applications

- Most applications in Health and Environment appealing to Americans and Canadians alike
 - There remains a broadly held sense that there will substantial health benefits to Canadians from this field
- The major gap is found and remains in the area of GM food
 - Where there are significant differences between the two societies, with Americans more supportive



Acceptability of Applications: Canada U.S. Comparison

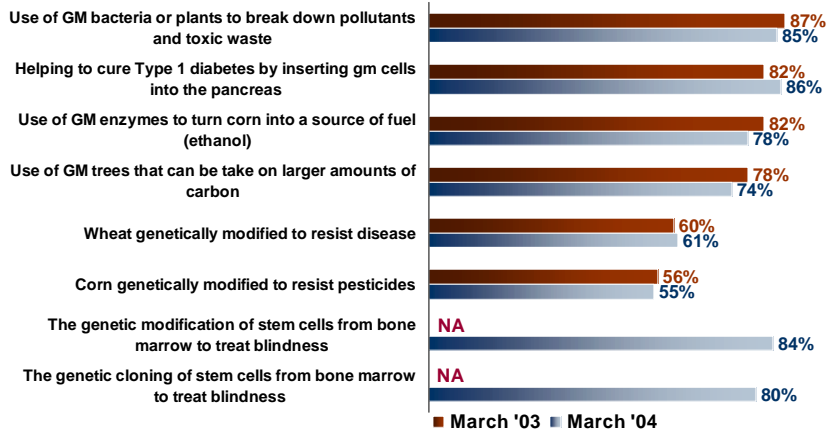
"There are many ways in which biotechnology research applications can be used. Please tell me if you strongly agree, agree, disagree or strongly disagree with the use of biotechnology in each of the following ways?"





Acceptability of Applications: Canada

"There are many ways in which biotechnology research applications can be used. Please tell me if you strongly agree, agree, disagree or strongly disagree with the use of biotechnology in each of the following ways?"



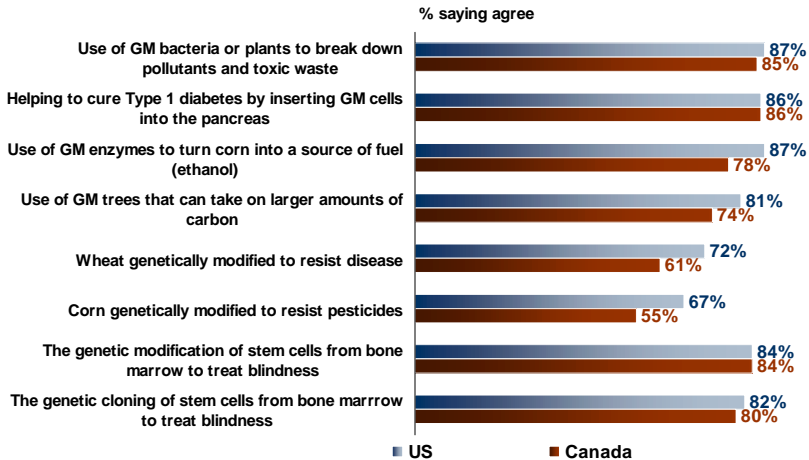
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Acceptability of Applications: Canada U.S. Comparison

"There are many ways in which biotechnology research applications can be used. Please tell me if you strongly agree, agree, disagree or strongly disagree with the use of biotechnology in each of the following ways?"



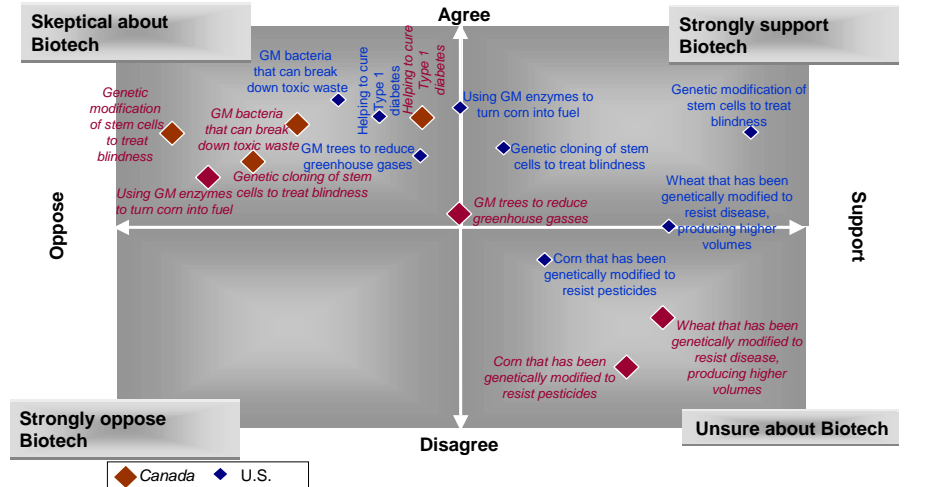
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Biotechnology Applications: Canada U.S. Comparison

"There are many ways in which biotechnology research applications can be used. Please tell me if you strongly agree, agree, disagree or strongly disagree with the use of biotechnology in each of the following ways?"



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Molecular Farming

- The new field of Molecular Farming proved to garner some appeal, particularly in plant applications
- More so than GM foods
 - But not all PMF applications treated the same way
 - Evidence that like most applications, a benefit/risk analysis is applied on a case by case basis
- Americans tend to be more supportive of this set of applications as well

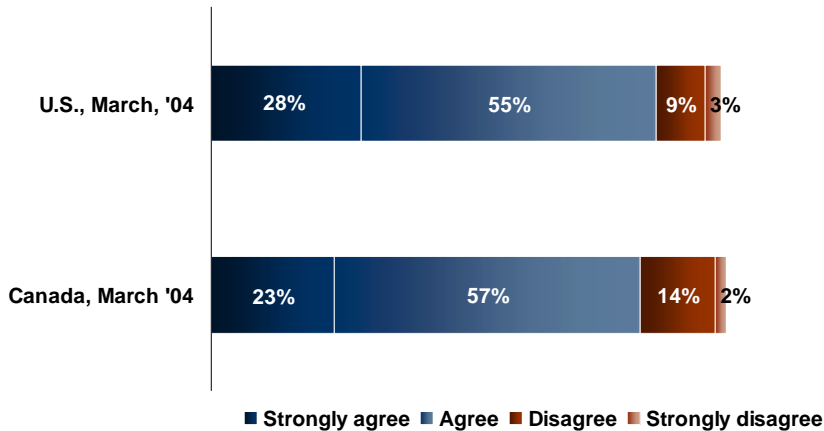
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Plant Molecular Farming: Interleukin

The genetic modification of certain fast growing plants to produce interleukin, which is an enzyme used in health treatments for diseases like crohn's disease. Fast-growing plants are used to grow interleukin because that allows interleukin to be produced in high volumes



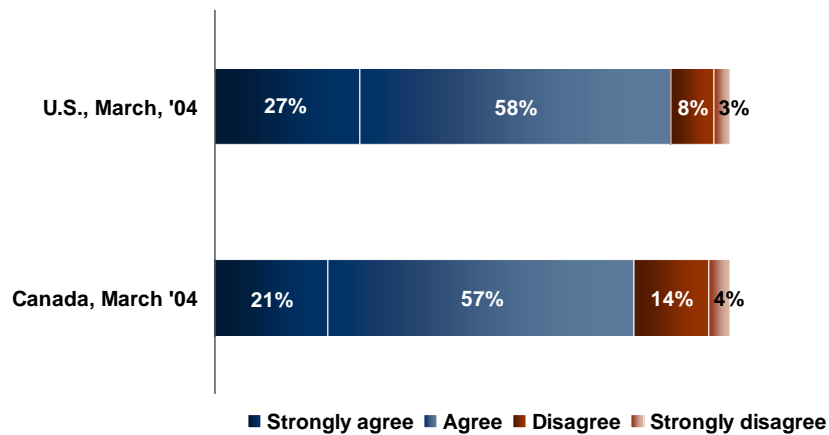
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Plant Molecular Farming: Bioplastics

The genetic modification of certain fast growing plants to produce bioplastics, which are biodegradable plastic products that come from certain proteins in those plants. This method is used to produce these bioplastic products on a scale to make it effective as a substitute for synthetic plastic products currently in use



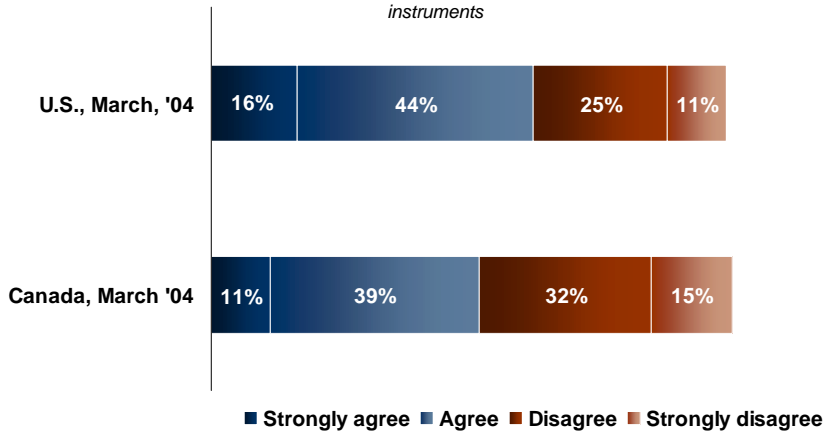
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Molecular Farming: Spider Silk

The genetic modification of certain animals to produce products of higher quality or higher volume. For example, some spiders produce very strong silk. By introducing a protein from spider cells into goats, the goats are able to produce milk that contains high volumes of spider silk that is stronger and lighter than any product currently in use, and can be used to make things like bulletproof vests or surgical instruments



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GM Food and Labeling

- As indicated earlier, discomfort with GM food is greater than with any other application of biotechnology
- And discomfort with GM food is somewhat greater in Canada than the US
- In fact, comfort with GM food in Canada is declining over time
 - More than half say they are uncomfortable now
- There are clear gender differences on GM food in both Canada and the US, with women expressing significantly higher levels of discomfort than men

- Americans and Canadians share views about labelling, believe a system is necessary
- Canadians show a growing preference for a mandatory labelling system
 - In parallel with growing discomfort with these applications

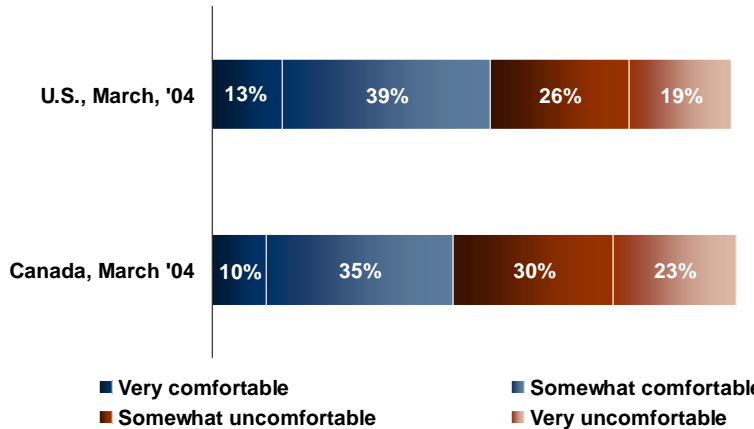
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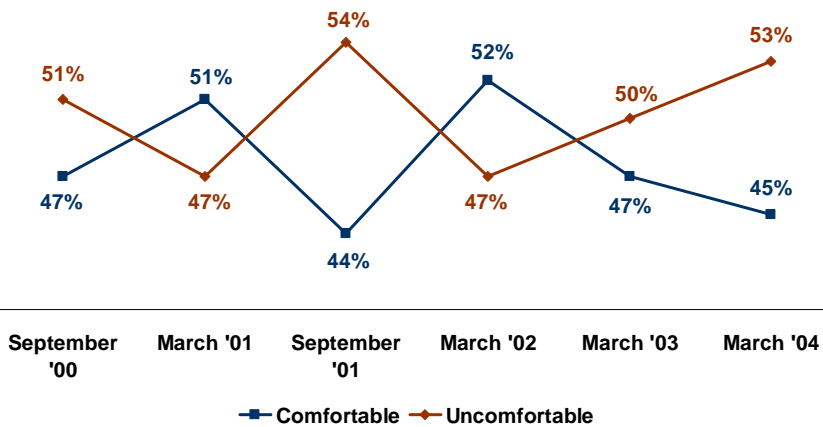
Comfort with GM Food

"In general, would you say you personally are very comfortable, somewhat comfortable, somewhat uncomfortable, or very uncomfortable with the idea of buying foods that contain genetically modified ingredients?"



Tracking Canada's Comfort With GM Food

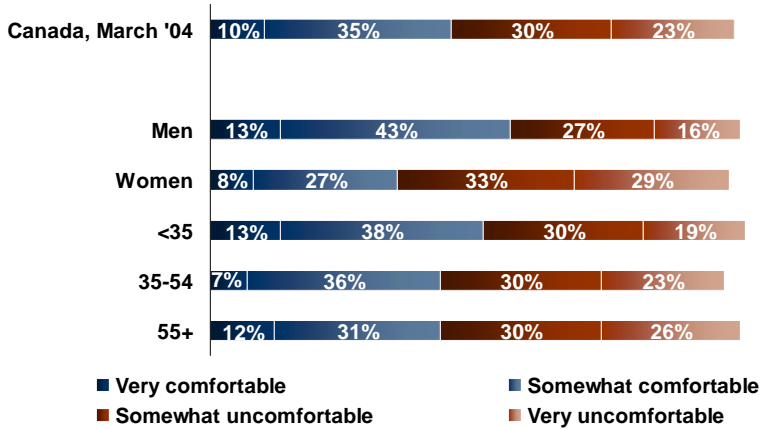
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Comfort with GM Food: Canada

"In general, would you say you personally are very comfortable, somewhat comfortable, somewhat uncomfortable, or very uncomfortable with the idea of buying foods that contain genetically modified ingredients?"



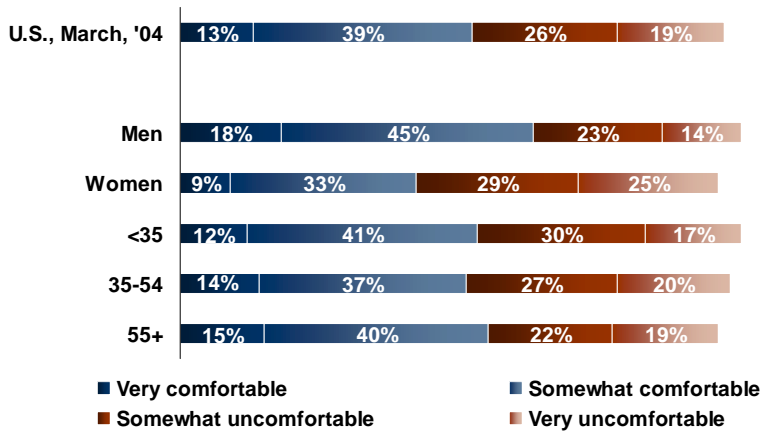
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Comfort with GM Food: U.S.

"In general, would you say you personally are very comfortable, somewhat comfortable, somewhat uncomfortable, or very uncomfortable with the idea of buying foods that contain genetically modified ingredients?"



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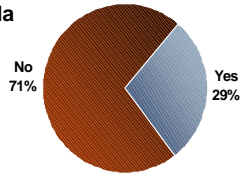


Knowledge/Comfort = GM Food

"To the best of your knowledge, in the last month have you eaten any food products which have been genetically modified?"

"In general, would you say you personally are very comfortable, somewhat comfortable, somewhat uncomfortable, or very uncomfortable with the idea of buying foods that contain genetically modified ingredients?"

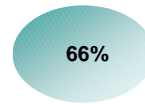
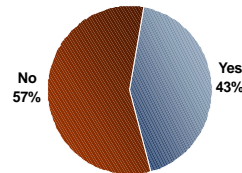
Canada



% of "Yes" saying comfortable



U.S.



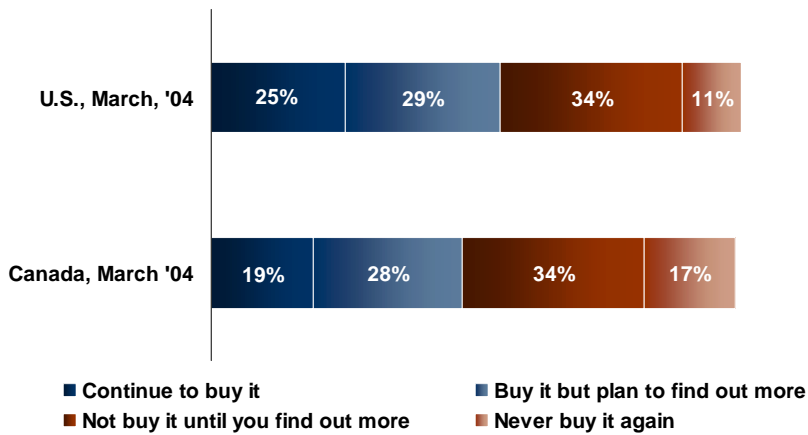
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Continue to Buy GM Food?

"If you were to find out that a food product that you have purchased in the past contained "genetically modified" ingredients, would you: continue to buy it but plan to find out more, not buy it until you found out more, or never buy it again?"



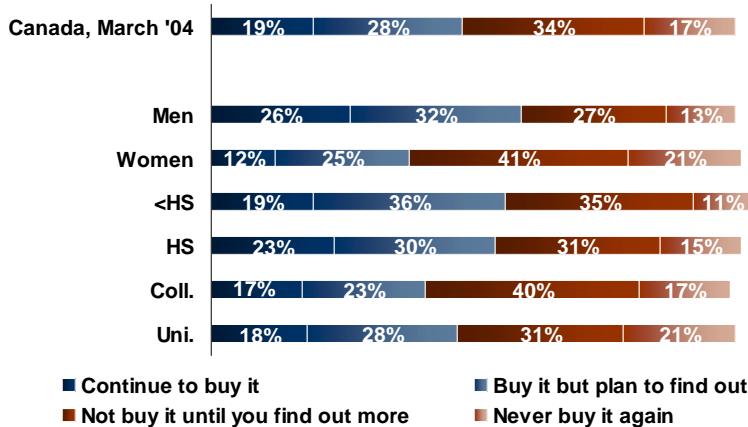
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Will Canadians Continue to Buy GM Food?

"If you were to find out that a food product that you have purchased in the past contained "genetically modified" ingredients, would you: continue to buy it but plan to find out more, not buy it until you found out more, or never buy it again?"



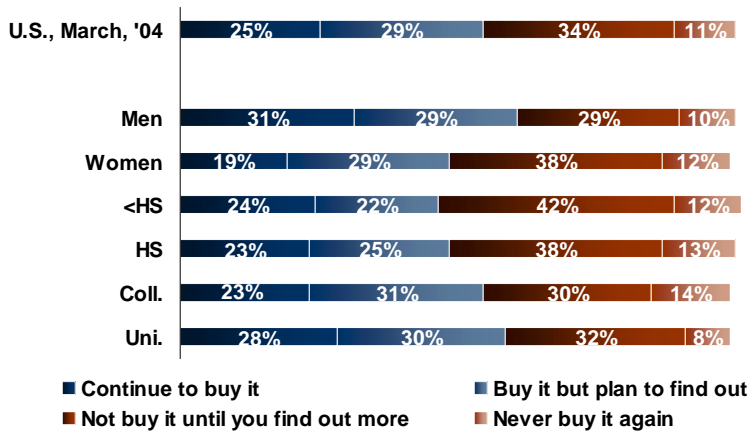
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Will Americans Continue to Buy GM Food?

"If you were to find out that a food product that you have purchased in the past contained "genetically modified" ingredients, would you: continue to buy it but plan to find out more, not buy it until you found out more, or never buy it again?"



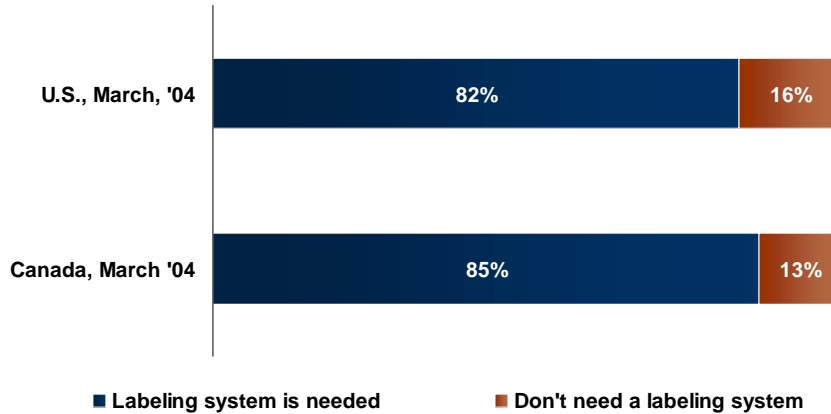
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GM Food: Labeling

"Some people say that Canada/The US should introduce a new labeling system for food products that contain genetically modified ingredients in Canada/The US, because they say GM food is not like other food, and people want to be more informed about it. Other people say that GM food is just like other food, food companies have tested it, and government has approved it, so we do not need to introduce a new GM food labeling system. Which of these views is closest to your own?"



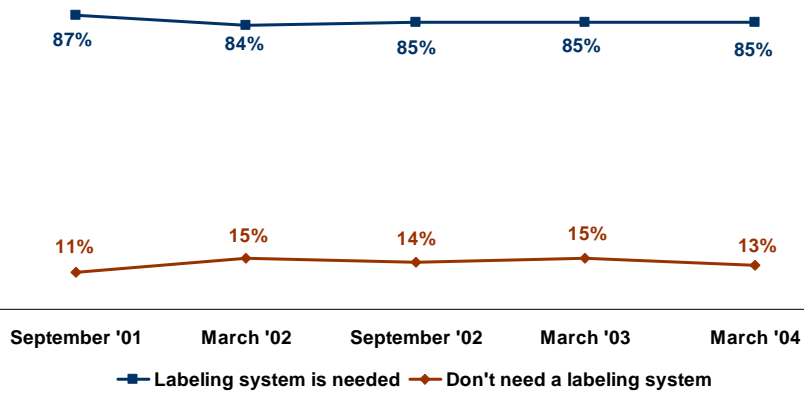
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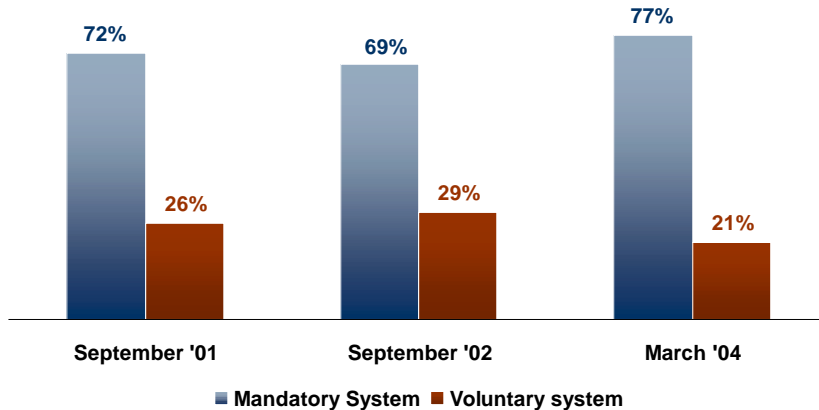
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Mandatory vs. Voluntary Labeling System: Tracking Canada

"Some people say the government should pass legislation that makes it mandatory for companies to label food products that contain genetically modified ingredients. Others say that there is no need to create a voluntary system for labeling of these products. Which of these alternatives do you think is most appropriate?"



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Genetic Information and Privacy

- Canadians and Americans alike assign a high value to the potential of genetic information
 - They see it as the future of health care
 - And many want to know more about their genetic characteristics
- These core sentiments have remained the same or deepened over the past year
- But the data suggests there has been some notable movement in the willingness to contribute genetic information to research among Canadians
 - While almost universal last year, more trepidation evident this year

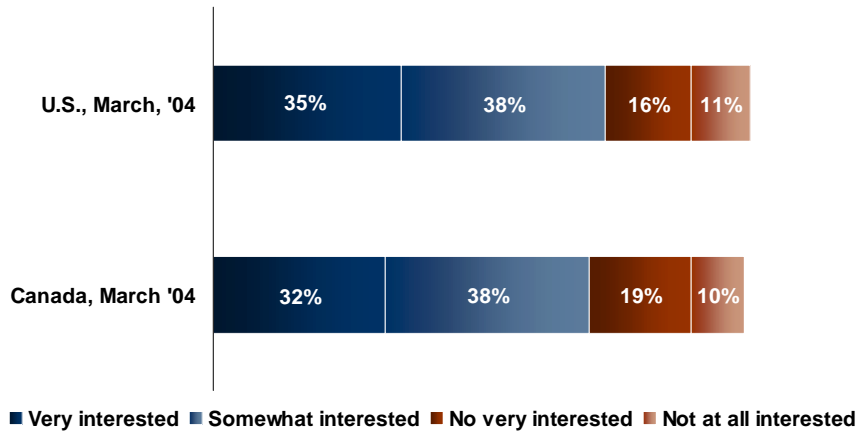
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Interest in Genetic Characteristics

"How interested are you in knowing more about your own genetic characteristics? Very, somewhat, not very, not at all?"



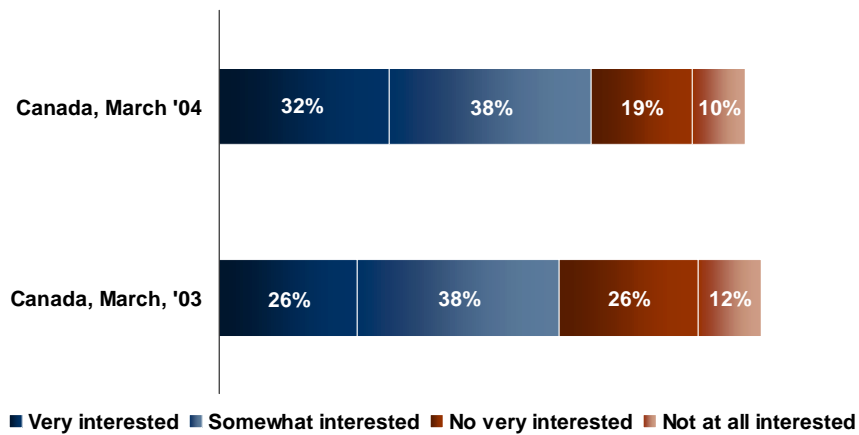
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Interest in Genetic Characteristics (Tracking Canada)

"How interested are you in knowing more about your own genetic characteristics? Very, somewhat, not very, not at all?"



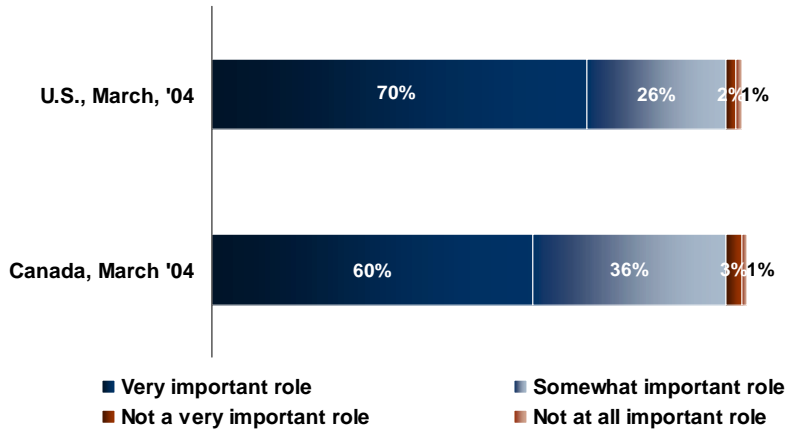
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Genetic Information and Health Research

"In the future, how important a role do you think genetic information will play in health research in Canada/U.S.: very, somewhat, not very, not at all?"



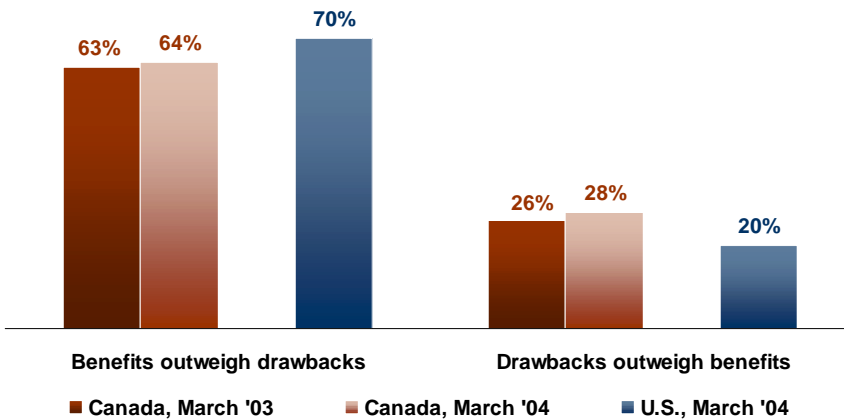
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Benefits vs. Drawbacks: Genetic information

"Is it your opinion that the benefits of knowing more about our genetic information outweigh the drawbacks, or do the drawbacks outweigh the benefits?"



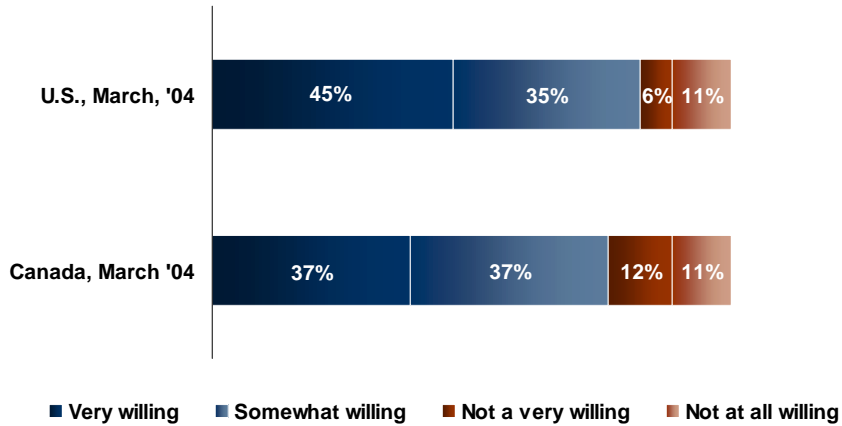
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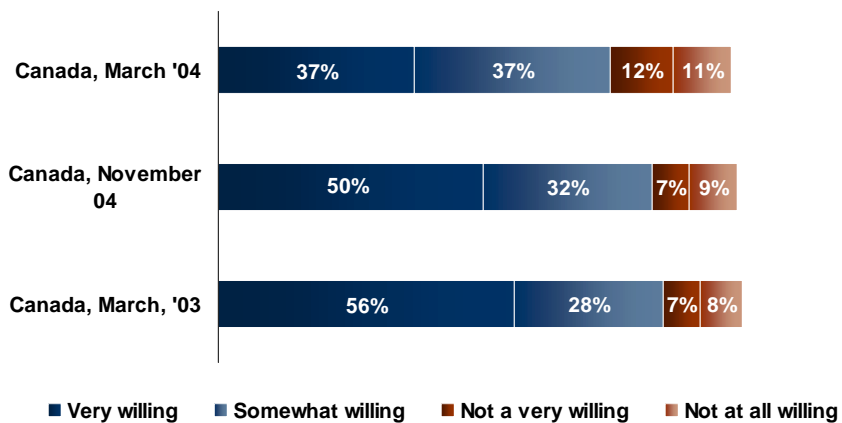
Willingness to Contribute to Research

"If you had a genetic test, would you be very, somewhat, not very or not at all willing to contribute the information to a database that would be used for health research if your identity was stripped from the database?"



Willingness to Contribute to Research (Tracking Canada)

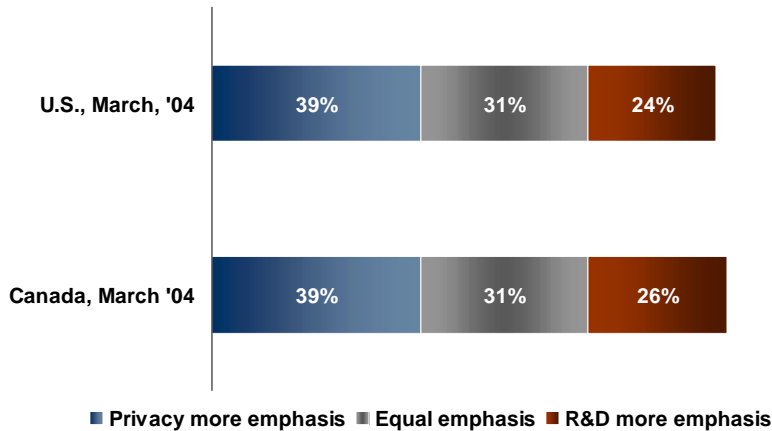
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Trade-off: Privacy vs. R&D

"The government has many roles. One is to ensure privacy of personal information. Another is to support research and development to improve health care and create jobs. In your view, should government pursue these roles with equal emphasis, should privacy be pursued with greater emphasis, or should research and development be pursued with greater emphasis?"



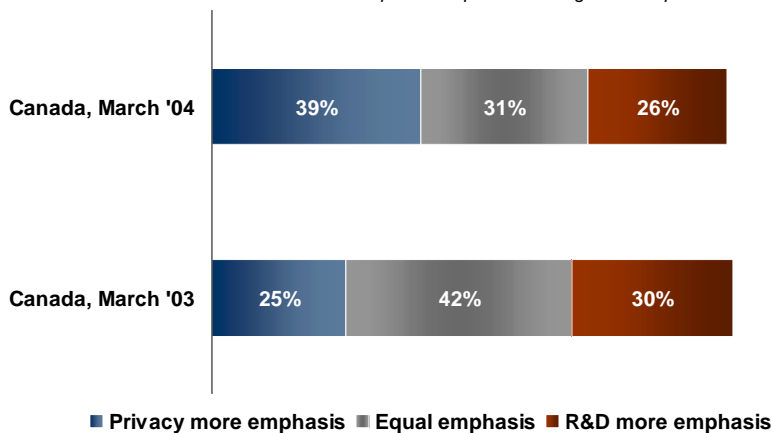
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Trade-off: Privacy vs. R&D (Tracking Canada)

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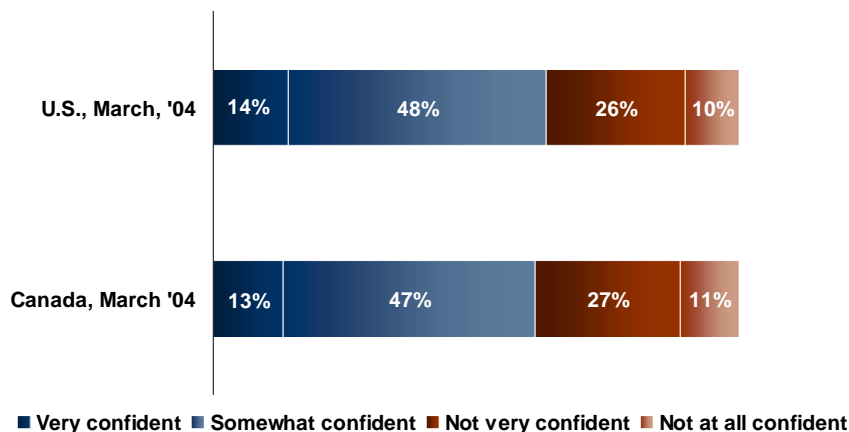
Government and Regulations

- Confidence in the regulatory system remains at a satisfactory level in Canada
 - Negatives remain relatively low, so no urgent pressure
- US confidence levels are very similar to Canadian confidence levels
- Cross tabular analysis suggests that confidence is borne of higher levels of familiarity
- But there remains a broad consensus, identified in previous waves as well, that believe more can be done by governments to manage the risks
 - Among Americans and Canadians alike



Confidence in Regulation of Biotechnology

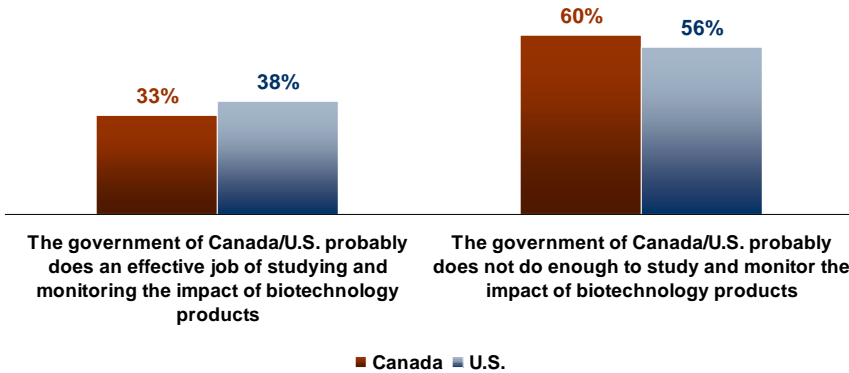
"Would you say you are very confident, somewhat confident, not very or not at all confident in our national regulatory agencies' ability to ensure the safety of these products, like (Health Canada and the Canadian Food Inspection Agency/FDA)?"





Government Monitoring of Biotechnology

"I am going to read you a series of questions that ask you to indicate which of two basic positions your opinion is closest to...."



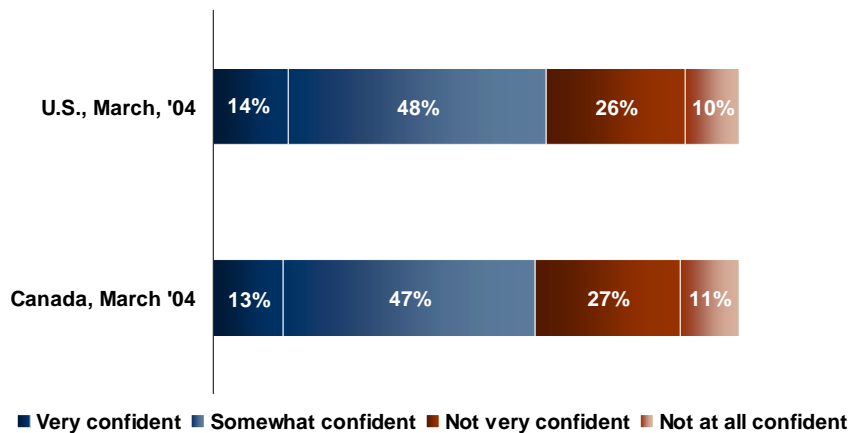
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Confidence in Regulation of Biotechnology

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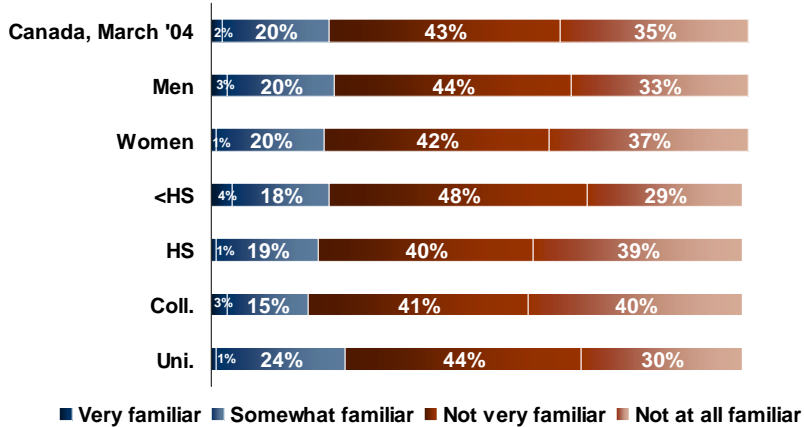
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Familiarity with Regulation of Biotechnology: Canada

"Would you say you are very familiar, somewhat familiar, not very familiar or not at all familiar with ways in which biotechnology is regulated in Canada/The United States?"



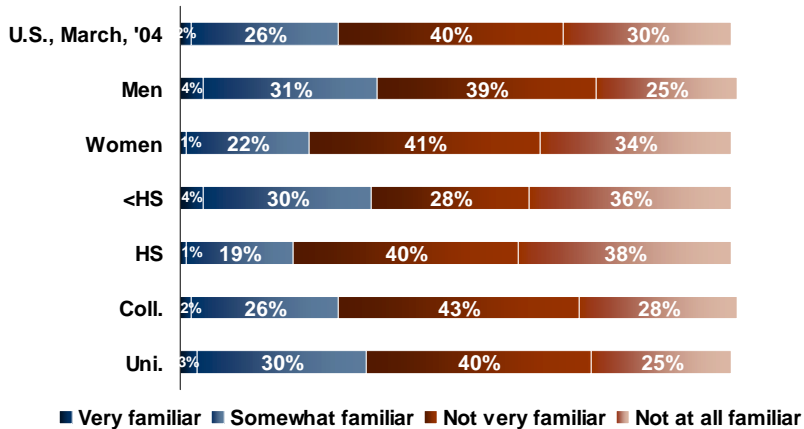
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Familiarity with Regulation of Biotechnology: U.S.

"Would you say you are very familiar, somewhat familiar, not very familiar or not at all familiar with ways in which biotechnology is regulated in Canada/The United States?"



Canada-U.S. Biotechnology Tracking Survey 2004

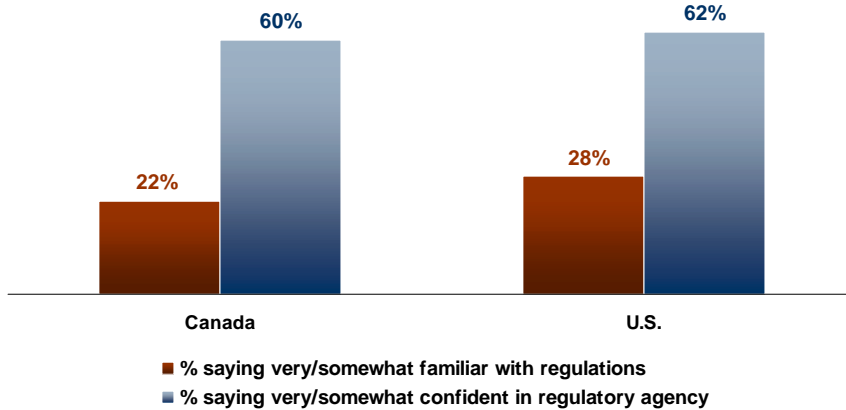
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Familiarity and Confidence with Regulation of Biotechnology

"Would you say you are very familiar, somewhat familiar, not very familiar or not at all familiar with ways in which biotechnology is regulated in Canada/The United States?"

"Would you say you are very confident, somewhat confident, not very or not at all confident in our national regulatory agencies' ability to ensure the safety of these products, like (Health Canada and the Canadian Food Inspection Agency/FDA)?"



Canada-U.S. Biotechnology Tracking Survey 2004

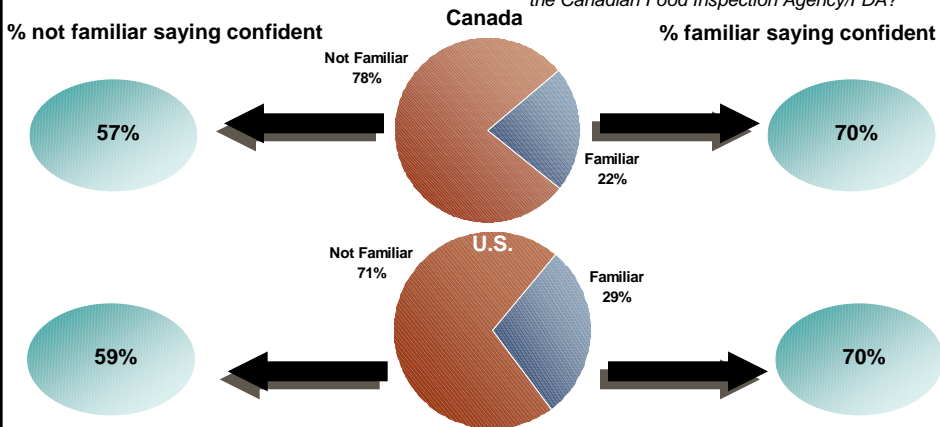
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Familiarity and Confidence with Regulation of Biotechnology

"Would you say you are very familiar, somewhat familiar, not very familiar or not at all familiar with ways in which biotechnology is regulated in Canada/The United States?"

"Would you say you are very confident, somewhat confident, not very or not at all confident in our national regulatory agencies' ability to ensure the safety of these products, like (Health Canada and the Canadian Food Inspection Agency/FDA)?"



Canada-U.S. Biotechnology Tracking Survey 2004

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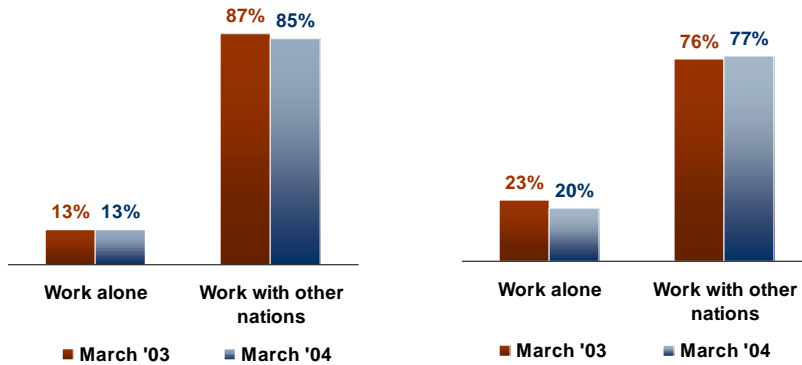


Regulation – Work Alone or With Others

"In terms of managing the issues associated with biotechnology, do you think it is better for Canada/the U.S. to develop its own standards and regulations or do you think it is better for Canada/the U.S. to work with other nations to develop standards and regulations?"

Canada

U.S.



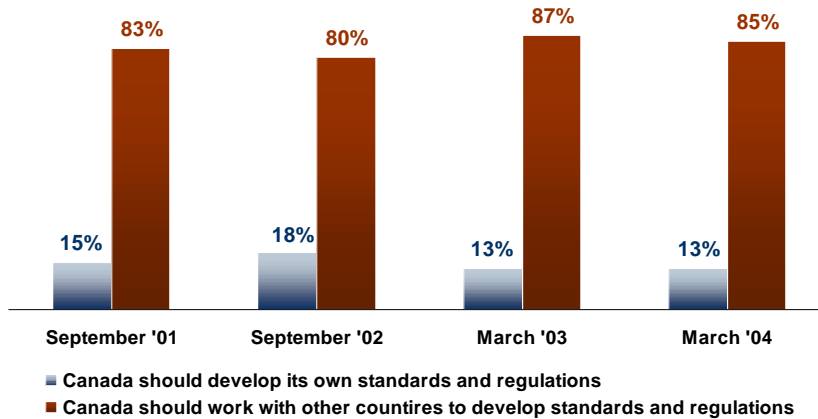
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Tracking Regulation – Work Alone or With Others: Canada

"In terms of managing the issues associated with biotechnology, do you think it is better for Canada/the U.S. to develop its own standards and regulations or do you think it is better for Canada/the U.S. to work with other nations to develop standards and regulations?"



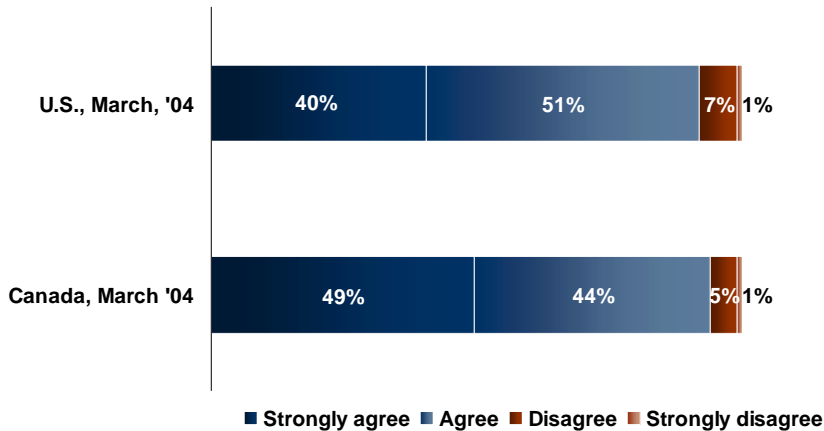
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Informed Choice

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?... Governments should inform people about biotechnology, and let them decide for themselves whether they want to use biotech products."



Canada-U.S. Biotechnology Tracking Survey 2004

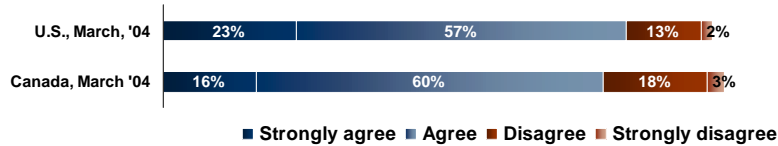
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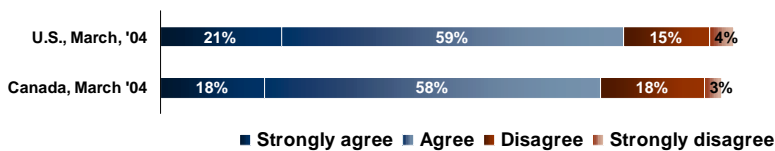
Importance of Science to Attitudes

"Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements?...."

"If MOST scientific evidence says that a particular use of biotechnology is safe, it should be allowed"



"If THE BEST AVAILABLE scientific evidence says that a particular use of biotechnology is safe, it should be allowed"



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Canada-U.S. Biotechnology Tracking Survey 2004 Interview Schedule

I'd like to conduct a survey to gather your opinions. Your participation is completely voluntary, and no one will try to sell you anything. All information collected is completely confidential. (sponsor identification at end of questionnaire)

When you hear the word technology, do you have a positive, neutral, or negative reaction?

	Canada	US
Positive Reaction	68	74
Neutral Reaction	27	22
Negative Reaction	4	4
Don't Know/Refused.....	1	1

When you hear the word biotechnology, do you have a positive, neutral, or negative reaction?

Positive Reaction	36	41
Neutral Reaction	41	42
Negative Reaction	17	13
Don't Know/Refused.....	5	4

Over the last three months, have you heard about any stories or issues involving biotechnology?

Yes	45	46
No.....	53	51
Don't know/Refused	3	3



Biotechnology is an umbrella term covering a broad spectrum of scientific applications used in many sectors, such as health, natural resources, and agriculture. It involves the use of living organisms, or parts of living organisms, to provide new methods of production and make new products. Biotechnology is sometimes referred to as life sciences, genetic modification, or genomics.

Would you say you are very familiar, somewhat familiar, not very familiar, or not at all familiar with biotechnology?

	Canada	US
Very Familiar	7	11
Somewhat Familiar	50	57
Not Very Familiar	30	21
Not At All Familiar	12	11
Don't know/Refused	1	0

Would you say you are very interested, somewhat interested, not very interested, or not at all interested in biotechnology?

Very Interested	17	20
Somewhat Interested	54	54
Not Very Interested	20	16
Not At All Interested	7	9
Don't know/Refused	1	1

In general, would you say you strongly support, somewhat support, somewhat oppose or strongly oppose the use of products and processes that involve biotechnology?

Strongly Support	13	17
Somewhat Support	50	51
Somewhat Oppose	20	16
Strongly Oppose	8	6
Don't know/Refused	9	10



When you hear the term “genomics”, do you have a positive, negative, or neutral reaction?

	Canada	US
Positive Reaction	11	15
Neutral Reaction	55	53
Negative Reaction	11	7
Don't Know/Refused.....	23	25

I'm going to provide you with two definitions of genomics, and I'd like you to tell me which one is closest to your understanding of this field.

Genomics is the study of the genes and how genes work36	38
Genomics involves the use of genetic information to develop new products and processes	55	52
Don't Know/Refused.....	9	9

Genomics is the study of genes and genetic characteristics of organisms like plants, animals, and humans. Genes carry information that determines many of the features and characteristics of organisms. A genome is all of the genes in an organism. The Human Genome Project is an example of research in Genomics.

Would you say you are very familiar, somewhat familiar, not very familiar or not at all familiar with the subject of Genomics?

Very Familiar	5	6
Somewhat Familiar.....	36	43
Not Very Familiar	38	29
Not At All Familiar.....	21	22
Don't know/Refused	0	0



In general, would you say you strongly support, support, oppose or strongly oppose work in the field of Genomics?

	Canada	US
Strongly Support	16	22
Somewhat Support.....	54	52
Somewhat Oppose.....	15	12
Strongly Oppose	5	4
Don't know/Refused	11	11

There are many ways in which biotechnology can be used. Please tell me if you strongly agree, agree, disagree with the use of biotechnology in each of the following ways. (ROTATE)

Using genetically modified enzymes that break down corn and turn it into a source of fuel, producing products like ethanol

Strongly Agree	23	35
Agree	55	52
Disagree	14	8
Strongly Disagree.....	4	3
Don't know/Refused	4	3

The development of genetically modified trees, that would be able to take on larger than normal amounts of carbon, which may help to reduce greenhouse gases

Strongly Agree	24	29
Agree	50	53
Disagree	16	12
Strongly Disagree.....	6	3
Don't know/Refused	4	4



Corn that has been genetically modified to resist pesticides, so it can be produced in higher volumes and cost less at the grocery store

	Canada	US
Strongly Agree	13	23
Agree	42	44
Disagree	28	21
Strongly Disagree.....	14	8
Don't know/Refused	4	4

The use of genetically modified bacteria or plants to break down pollutants like oil spills and toxic wastes

Strongly Agree	30	35
Agree	55	53
Disagree	9	7
Strongly Disagree.....	3	2
Don't know/Refused	3	3

Wheat that has been genetically modified to resist certain diseases in order to increase the volume of wheat grown

Strongly Agree	15	23
Agree	46	49
Disagree	25	17
Strongly Disagree.....	10	7
Don't know/Refused	4	4

Helping to cure type 1 diabetes by inserting a modified gene into the pancreas that stimulates the insulin production process in humans.

Strongly Agree	32	40
Agree	54	46
Disagree	7	8
Strongly Disagree.....	2	3
Don't know/Refused	5	4



The genetic modification of stem cells from bone marrow to develop cells that can treat certain forms of blindness.

	Canada	US
Strongly Agree	31	36
Agree	53	48
Disagree	9	9
Strongly Disagree.....	4	3
Don't know/Refused	4	5

The genetic cloning of stem cells from bone marrow to develop cells that can treat certain forms of blindness.

Strongly Agree	29	39
Agree	50	43
Disagree	11	8
Strongly Disagree.....	5	6
Don't know/Refused	5	5

There are a number of applications in the area of molecular farming, which involves the genetic modification of certain plant or animal species, in order to produce new health or industrial products in higher volumes or of higher quality than can currently be achieved. Again please tell me if you strongly agree, agree, disagree or strongly disagree with the use of biotechnology in each of the following ways. (ROTATE)

The genetic modification of certain fast growth plants to produce interleukin, which is an enzyme used in health treatments for diseases like Crohn's disease. Fast-growth plants are used to grow interleukin because that allows interleukin to be produced in high volumes.

Strongly Agree	23	28
Agree	57	55
Disagree	14	9
Strongly Disagree.....	2	3
Don't know/Refused	5	5



The genetic modification of certain fast growth plants to produce bioplastics, which are biodegradable plastic products that come from certain proteins in those plants. This method is used to produce these bioplastic products on a scale to make it effective as a substitute for synthetic plastic products currently in use

	Canada	US
Strongly Agree	21	27
Agree	58	58
Disagree	14	8
Strongly Disagree.....	4	3
Don't know/Refused	4	4

The genetic modification of certain animals to produce products of higher quality or higher volume. For example, some spiders produce very strong silk. By introducing a protein from spider cells into goats, the goats are to produce milk that contains high volumes of spider silk that is stronger and lighter than any product currently in use, and can be used to make things like bulletproof vests or surgical thread

Strongly Agree	11	16
Agree	40	44
Disagree	32	25
Strongly Disagree.....	15	11
Don't know/Refused	3	4

In your opinion, does biotechnology bring major benefits, modest benefits, modest drawbacks, or major drawbacks in each of the following areas. How about: (ROTATE)

The health of Canadians/Americans today

Major Benefits	32	41
Modest Benefits	45	41
Modest Drawbacks.....	10	6
Major Drawbacks	6	7
Don't Know/Refused.....	7	5



The health of Canadians/Americans over the longer term

	Canada	US
Major Benefits	38	45
Modest Benefits	37	38
Modest Drawbacks	9	5
Major Drawbacks	8	5
Don't Know/Refused	8	6

Canada's/America's economy today

Major Benefits	29	29
Modest Benefits	44	49
Modest Drawbacks	11	9
Major Drawbacks	5	5
Don't Know/Refused	11	9

Canada's/America's economy over the long term

Major Benefits	29	38
Modest Benefits	46	43
Modest Drawbacks	10	6
Major Drawbacks	8	5
Don't Know/Refused	8	8

Please tell me whether you strongly agree, agree, disagree, or strongly disagree with each of the following statements:

Until more is known about the risks, government should slow the use of biotechnology

Strongly Agree	22	14
Agree	51	48
Disagree	22	29
Strongly Disagree	4	6
Don't know/Refused	2	3



From what I know, genetically modified food presents me with few benefits over non-genetically modified food, but it presents many more risks

	Canada	US
Strongly Agree	14	12
Agree	46	41
Disagree	27	32
Strongly Disagree.....	4	5
Don't know/Refused	9	11

From what I know, genetically modified health products (like some pharmaceutical products) provide me with few benefits over non-genetically modified health products, but they provide many more risks

Strongly Agree	8	5
Agree	44	43
Disagree	28	30
Strongly Disagree.....	4	5
Don't know/Refused	16	17

Biotechnology research represents the next frontier of human endeavour, a frontier that will lead to significant quality of life benefits for all Canadians/Americans.

Strongly Agree	14	20
Agree	59	59
Disagree	18	14
Strongly Disagree.....	4	3
Don't know/Refused	6	5

Canada/The U.S. is among the world's leaders in the field of biotechnology research

Strongly Agree	8	15
Agree	44	51
Disagree	17	13
Strongly Disagree.....	1	1
Don't know/Refused	30	19



Canada/The U.S. should be among the world’s leaders in the field of biotechnology research

	Canada	US
Strongly Agree	26	35
Agree	54	50
Disagree	14	10
Strongly Disagree.....	3	2
Don’t know/Refused	5	4

If I knew that ongoing long term safety research was going to be conducted on biotechnology products after they were approved for sale in Canada/The U.S., it would make me feel comfortable enough to accept these products

Strongly Agree	16	17
Agree	57	59
Disagree	19	18
Strongly Disagree.....	5	4
Don’t know/Refused	3	2

Although there may be some unknown risks, technologies like biotechnology are part of the future, so all we can do is make sure that its uses are as safe as possible.

Strongly Agree	31	30
Agree	56	58
Disagree	9	8
Strongly Disagree.....	3	3
Don’t know/Refused	1	2

We have to accept some risk to achieve the benefits of biotechnology like new discoveries that improve the diagnosis and cure of serious illnesses.

Strongly Agree	16	20
Agree	62	64
Disagree	16	11
Strongly Disagree.....	4	3
Don’t know/Refused	2	3



We have to accept some risk to achieve the benefits of biotechnology like new foods that contain vitamins or medicine

	Canada	US
Strongly Agree	10	13
Agree	53	58
Disagree	27	21
Strongly Disagree.....	9	5
Don't know/Refused	2	3

Governments should inform people about biotechnology, and let them decide for themselves whether they want to use biotech products

Strongly Agree	49	40
Agree	44	51
Disagree	5	7
Strongly Disagree.....	1	1
Don't know/Refused	1	2

If most scientific evidence says that a particular use of biotechnology is safe, it should be allowed.

Strongly Agree	8	11
Agree	30	28
Disagree	9	6
Strongly Disagree.....	1	1
Don't know/Refused	2	3

If the best available scientific evidence says that a particular use of biotechnology is safe, it should be allowed.

Strongly Agree	9	11
Agree	29	30
Disagree	9	7
Strongly Disagree.....	2	2
Don't know/Refused	2	1



I'm going to read you a series of questions that ask you to indicate which of two basic positions your opinion is closest to. The first one is:

Biotechnology will be one of the most important sources of jobs and economic growth in the 21st century OR Biotechnology might be seen as important now, but probably won't be a significant source of jobs and economic growth in the 21st century. Which of those two positions is closest to your own?

	Canada	US
Biotechnology will be one of the most important sources.....	60	69
Biotechnology might be seen as important now, but probably won't be.....	36	28
Don't Know/Refused.....	4	4

Which of these two views is closest to your own: If a biotechnology product produced some type of negative impact over the long term, that scientists would not be able to reverse with such an impact OR if a biotechnology product produced some type of negative impact over the long term, scientists would develop ways to reverse it. Which of these two views is closest to your own?

Scientists would not be able to reverse with such an impact.....	38	31
Scientists would develop ways to reverse it	55	62
Don't Know/Refused.....	7	8

Would you say you are very familiar, somewhat familiar, not very familiar or not at all familiar with ways in which biotechnology is regulated in Canada/The U.S.?

Very familiar	2	2
Somewhat familiar	20	26
Not very familiar	43	40
Not at all familiar	35	30
Don't Know/Refused.....	1	1



Would you say you are very confident, somewhat confident, not very or not at all confident in our national regulatory agencies' ability to ensure the safety of these products, like (Health Canada and the Canadian Food Inspection Agency/FDA)

	Canada	US
Very confident	13	14
Somewhat confident.....	47	48
Not very confident	27	26
Not at all confident.....	11	10
Don't Know/Refused.....	2	2

Which of the following two statements most closely reflects your view: The government of Canada/U.S. probably an effective job of studying and monitoring the impact of biotechnology products OR The government of Canada/U.S. probably does not do enough to study and monitor the impact of biotechnology products

Government of Canada/U.S. probably an effective job of studying and monitoring the impact of biotechnology products.....	33	38
--	----	----

The government of Canada/U.S. probably does not do enough to study and monitor the impact of biotechnology products.....	60	56
Don't Know/Refused.....	7	7

In terms of managing the issues associated with biotechnology, do you think it is best that Canada/The United States work on its own to develop appropriate standards and regulations or do you think it is best that Canada/The United States work with other nations to develop international agreements on standards and regulations?

It is best that Canada/The United States work on its own to develop appropriate standards and regulations	13	20
---	----	----

It is best that Canada/The United States work with other nations to develop international agreements on standards and regulations	85	77
Don't Know/Refused.....	2	2



This part of the survey is about the subject of personal genetic information. Genetic information is the information contained in human DNA, which tells us about our genetic characteristics and inherited traits like eye colour or some inherited diseases that have been passed on through generations.

How interested are you in knowing more about your own genetic characteristics? Very, somewhat, not very, not at all?

	Canada	US
Very interested	32	35
Somewhat interested.....	38	38
Not very interested	19	16
Not at all interested	10	11
Don't Know/Refused.....	0	0

Is it your opinion that the benefits of knowing more about our genetic information outweigh the drawbacks, or do the drawbacks outweigh the benefits?

Benefits outweigh the drawbacks	64	70
Drawbacks outweigh the benefits	28	20
Don't Know/Refused.....	8	10

Increased scientific knowledge about our genetic characteristics has implications for health and medical research. Many health and medical researchers are dedicating themselves to learning more about the ways in which genetic information determines how and why certain people develop disorders and illnesses by studying genetic information from large groups of people.

In the future, how important a role do you think genetic information will play in health research in Canada/U.S.: very, somewhat, not very, not at all?

Very important.....	60	70
Somewhat important	36	26
Not very important	3	2
Not at all important	1	1
Don't Know/Refused.....	1	1



If you had a genetic test, would you be very, somewhat, not very or not at all willing to contribute the information to a database that would be used for health research if your identity was stripped from the database?

	Canada	US
Very willing	37	45
Somewhat willing	37	36
Not very willing	12	6
Not at all willing	11	11
Don't Know/Refused.....	3	2

The following questions are about the privacy rights in relation to genetic information. These rights involve the laws, regulations, and guidelines that govern confidentiality in the collection and use of genetic information. Privacy rights can restrict what people are allowed to know about you, and can also protect the confidentiality of your genetic information once it has been collected.

Do you think the rules governing access to genetic information should be more strictly regulated than other health information, or should it be regulated in the same way as health information?

Rules governing access to genetic information should be more strictly regulated	59	59
Regulated in the same way as health information	39	39
Don't Know/Refused.....	2	2

The government has many roles. One is to ensure the privacy of personal information. Another is to support research and development to improve health care and create jobs. In your view, should government pursue these roles with equal emphasis, should privacy be pursued with greater emphasis, or should research and development be pursued with greater emphasis?

Government pursue these roles with equal emphasis	31	31
Privacy be pursued with greater emphasis.....	39	39
Research and development be pursued with greater emphasis.....	26	25
Don't Know/Refused.....	5	6



To the best of your knowledge, in the last month have you eaten any food products which have been genetically modified?

	Canada	US
Yes	32	22
No.....	47	55
Don't Know/Refused.....	22	23

In general, would you say you personally are very comfortable, somewhat comfortable, somewhat uncomfortable, or very uncomfortable with the idea of buying foods that contain genetically modified ingredients?

Very comfortable	10	13
Somewhat comfortable.....	35	39
Not very comfortable	30	26
Not at all comfortable.....	23	20
Don't Know/Refused.....	2	3

If you were to find out that a food product that you have purchased in the past contained "genetically modified" ingredients, would you: continue to buy it, buy it but plan to find out more, not buy it until you found out more, or never buy it again?

Continue to buy it	19	25
Buy it but plan to find out more	28	29
Not buy it until found out more	34	34
Never buy it again	17	11
Don't know/Refused	1	1



Some people say that Canada/The U.S. should introduce a new labeling system for food products that contain genetically modified ingredients in Canada/the U.S., because they say GM food is not like other food, and people want to be more informed about it. Other people say that GM food is just like other food, food companies have tested it, and government has approved it, so we do not need to introduce a new GM food labeling system. Which of these views is closest to your own?

	Canada	US
Canada/The U.S. should introduce a new labeling system for food products that contain genetically modified ingredients	86	82
We do not need to introduce a new GM food labeling system	13	16
Don't Know/Refused.....	2	2

Some people say that the government should pass legislation that makes it mandatory for companies to label food products that contain genetically modified ingredients. Others say that there is no need to create more regulations, that government can work with the food industry to create a voluntary system for labeling of these products. Which of these alternatives do you think is most appropriate?

Government should pass legislation that makes it mandatory for companies to label food products that contain genetically modified ingredients	77	70
No need to create more regulations, that government can work with the food industry to create a voluntary system for labeling	22	28
Don't Know/Refused.....	2	2

People have suggested a number of different concerns about different products made using biotechnology. I'm going to ready you some different categories of biotechnology products, and for each what I would like to do is have to tell me which of the following is the greatest concern to you:

Genetically modified foods

The long term risks they might cause for the environment.....	13	13
The long term risks they might cause for human health.....	64	62
That there is something unnatural about these products	9	7
That the processes involved raise ethical concerns.....	10	11
Don't Know/Refused.....	5	7



Genetically modified health products, like bio-engineered drugs

	Canada	US
The long term risks they might cause for the environment.....	9	9
The long term risks they might cause for human health.....	67	69
That there is something unnatural about these products	6	4
That the processes involved raise ethical concerns.....	12	11
Don't Know/Refused.....	6	7

Genetically modified environmental products (like GM organisms that clean up toxic waste):

The long term risks they might cause for the environment.....	46	47
The long term risks they might cause for human health.....	34	33
That there is something unnatural about these products	5	3
That the processes involved raise ethical concerns.....	7	8
Don't Know/Refused.....	8	9



Sondage de suivi 2004 sur la biotechnologie au Canada-É.-U. Questionnaire

J'aimerais mener un sondage pour obtenir vos opinions. Votre participation est tout à fait volontaire et personne n'essaiera ne vous vendre quoi que ce soit. Toutes les informations recueillies demeureront strictement confidentielles. (Le commanditaire de l'étude est dévoilé à la fin du questionnaire)

1. Lorsque vous entendez le mot "technologie", avez-vous une réaction positive, une réaction neutre ou une réaction négative?
2. Lorsque vous entendez le mot "biotechnologie", avez-vous une réaction positive, une réaction neutre ou une réaction négative?
3. Au cours des trois derniers mois, avez-vous entendu des histoires ou quelque chose impliquant la biotechnologie?

La biotechnologie est un terme général qui couvre un large éventail d'applications scientifiques de plusieurs secteurs comme la santé, les ressources naturelles et l'agriculture. Elle implique l'utilisation d'organismes vivants, ou des parties d'organismes vivants, afin de fournir de nouvelles méthodes de production et de concevoir de nouveaux produits. Parfois, on appelle la biotechnologie les sciences biologiques, la modification génétique ou la génomique.

4. Diriez-vous que la biotechnologie vous est très familière, assez familière, pas très familière ou pas familière du tout?
5. Diriez-vous que vous êtes très intéressé, assez intéressé, pas très intéressé ou pas intéressé du tout par la biotechnologie?
6. En général, diriez-vous que vous soutenez vivement, que vous soutenez relativement, que vous vous opposez relativement ou que vous vous opposez vivement à l'utilisation de produits et processus faisant intervenir la biotechnologie?
7. Lorsque vous entendez le mot "génomique", avez-vous une réaction positive, une réaction neutre ou une réaction négative?
8. Je vais vous lire deux définitions du mot GÉNOMIQUE, et j'aimerais que vous me disiez quelle est celle qui se rapproche le plus de ce que vous comprenez de ce domaine.
 - a. La génomique est l'étude des gènes et de la façon dont les gènes fonctionnent.
 - b. La génomique implique l'utilisation de renseignements génétiques pour développer de nouveaux produits et processus.



La génomique est l'étude des gènes et des caractéristiques génétiques d'organismes comme les plantes, les animaux et les humains. Les gènes comportent des renseignements qui déterminent plusieurs fonctions et caractéristiques des organismes. Le génome est l'ensemble des gènes d'un organisme. Le Projet du génome humain est un exemple de recherche effectuée dans le domaine de la génomique.

9. Diriez-vous que la génomique vous est très familière, assez familière, pas très familière ou pas familière du tout?
10. En général, diriez-vous que vous soutenez vivement, que vous soutenez relativement, que vous vous opposez relativement ou que vous vous opposez vivement aux travaux effectués dans le domaine de la génomique?

Les applications de recherches en biotechnologie peuvent être utilisées de plusieurs façons. Veuillez me dire si vous êtes fortement en accord, en accord, en désaccord ou fortement en désaccord avec l'utilisation de la biotechnologie dans chacun des domaines suivants. (FAITES UNE ROTATION DES ÉNONCÉS)

11. L'utilisation d'enzymes génétiquement modifiés qui dégrade le maïs et le transforme en une source d'essence, ce qui permet de fabriquer des produits comme l'alcool éthylique.
12. Le développement d'arbres génétiquement modifiés qui seraient en mesure d'absorber de plus grandes quantités de carbone, ce qui permettrait de réduire les gaz à effet de serre.
13. Le maïs qui a été génétiquement modifié de manière à résister aux pesticides afin de pouvoir être produit en plus grandes quantités et de coûter moins cher en magasin.
14. L'utilisation de bactéries ou de plantes génétiquement modifiées pour dégrader les polluants comme déversements de pétrole et les déchets toxiques.
15. Le blé qui a été génétiquement modifié de manière à résister à certaines maladies afin d'augmenter le volume de blé produit.
16. Aider à guérir le diabète de type 1 en insérant un gène modifié dans le pancréas afin de stimuler le processus de production d'insuline chez l'humain.
17. (NOUVELLE) (Divisée) La modification génétique/le clonage de cellules souches à partir de moelle osseuse afin de développer des cellules qui peuvent traiter certaines formes de cécité.

Il existe un certain nombre d'applications dans le domaine de l'agriculture moléculaire qui implique la modification génétique de certaines espèces de plantes ou d'animaux afin de produire de nouveaux produits de santé ou de nouveaux produits industriels, et ce en plus grande quantité ou de meilleure qualité que ce qui est offert présentement. Une fois de plus, veuillez me dire si vous êtes fortement en accord, en accord, en désaccord ou fortement en désaccord avec l'utilisation de la biotechnologie dans chacun des domaines suivants. (FAITES UNE ROTATION)



18. (NOUVELLE) La modification génétique de certaines plantes à croissance rapide afin de produire de l'interleukine, un enzyme utilisé dans le traitement de maladies comme la maladie de Crohn. Les plantes à croissance rapide sont utilisées pour produire de l'interleukine puisqu'elles en produisent en grande quantité.
19. (NOUVELLE) La modification génétique de certaines plantes à croissance rapide afin de produire du plastique biologique, qui est des produits de plastique biodégradables provenant de certaines protéines de ces plantes. Cette méthode est utilisée pour produire ces produits de plastique biologique afin d'en faire une alternative efficace aux produits de plastique synthétiques qui sont présentement utilisés.
20. (NOUVELLE) La modification génétique de certains animaux afin de produire des produits de meilleure qualité ou en plus grande quantité. Par exemple, certaines araignées produisent de la soie très solide. En introduisant une protéine provenant de cellules d'araignées dans des chèvres, ces dernières produiront du lait contenant une grande quantité de soie d'araignée qui est plus forte et plus légère que n'importe quel produit utilisé en ce moment. Ainsi, il sera possible de fabriquer des choses comme des gilets pare-balles ou des fils chirurgicaux.

(FIN DE LA ROTATION)

Selon vous, la biotechnologie apporte-t-elle des bénéfices importants, des bénéfices modestes, des inconvénients modestes ou des inconvénients importants dans chacun des domaines suivants. Qu'en est-il pour le domaine suivant : (FAITES UNE ROTATION)

21. ÉCHANTILLON DIVISÉ : La santé des Canadiens/Américains aujourd'hui. / La santé des Canadiens/Américains à long terme.
22. ÉCHANTILLON DIVISÉ : L'économie d'aujourd'hui du Canada/des États-Unis. / L'économie à long terme du Canada.

(FIN DE LA ROTATION)

Veuillez me dire si vous êtes fortement en accord, en accord, en désaccord ou fortement en désaccord avec chacun des énoncés suivants : (FAITES UNE ROTATION)

23. Jusqu'à ce qu'on en sache plus à propos des risques, le gouvernement devrait ralentir l'utilisation de la biotechnologie.
24. D'après ce que je sais, les aliments génétiquement modifiés possèdent peu d'avantages comparativement aux aliments non-génétiquement modifiés, mais ils sont beaucoup plus risqués.
25. D'après ce que je sais, les produits de santé génétiquement modifiés (comme certains produits pharmaceutiques) possèdent peu d'avantages comparativement aux produits de santé non-génétiquement modifiés, mais ils sont beaucoup plus risqués.



26. La recherche en biotechnologie représente la prochaine limite de l'activité humaine, soit une limite qui apportera des avantages significatifs à la qualité de vie de l'ensemble des Canadiens/Américains.
27. Le Canada/Les É.-U. fait/ont partie des chefs de file mondiaux dans le domaine de la recherche en biotechnologie.
28. Le Canada/Les É.-U. devrait/devraient faire partie des chefs de file mondiaux dans le domaine de la recherche en biotechnologie.
29. Si je savais que des recherches à long terme sur la sécurité des produits de biotechnologie étaient effectuées sur une base continue, et ce après que leur vente au Canada/aux États-Unis ait été approuvée, cela me rendrait assez à l'aise pour accepter ces produits.
30. Même s'il peut y avoir quelques risques inconnus, les technologies comme la biotechnologie font partie de l'avenir, donc tout ce que nous pouvons faire c'est de s'assurer que leur utilisation est le plus sécuritaire possible.
31. Nous devons accepter certains risques pour tirer profit des avantages de la biotechnologie comme les nouvelles découvertes qui améliorent le diagnostic et le traitement de maladies graves.
32. Nous devons accepter certains risques pour tirer profit des avantages de la biotechnologie comme les nouveaux aliments qui contiennent des vitamines ou des médicaments.
33. Les gouvernements devraient informer les gens à propos de la biotechnologie, et ils devraient les laisser décider s'ils veulent utiliser ou non des produits de biotechnologie.
34. (ÉCHANTILLON DIVISÉ) S'il y avait plus de preuves scientifiques démontrant qu'une utilisation particulière de la biotechnologie est sécuritaire, cette utilisation devrait être permise. / Si la meilleure preuve scientifique démontrait qu'une utilisation particulière de la biotechnologie est sécuritaire, cette utilisation devrait être permise.(FIN DE LA

ROTATION)

Je vais maintenant vous poser une série de questions qui impliquent que vous indiquiez quelle est celle des deux positions qui se rapproche le plus de votre propre opinion. La première question est :

35. La biotechnologie sera l'une des plus importantes sources d'emploi et de croissance économique du 21^e siècle OU La biotechnologie peut sembler importante maintenant, mais elle ne sera probablement pas l'une des plus importantes sources d'emploi et de croissance économique du 21^e siècle. Lequel des deux énoncés reflète le mieux votre opinion?



36. Si un produit de biotechnologie entraînait un type d'impact négatif à long terme, les scientifiques ne seraient pas en mesure de faire marche arrière et d'éliminer cet impact OU si un produit de biotechnologie entraînait un type d'impact négatif à long terme, les scientifiques seraient en mesure de développer des façons de faire marche arrière et d'éliminer cet impact. Lequel des deux énoncés reflète le mieux votre opinion?
37. Diriez-vous que les règlements gouvernementaux qui s'appliquent au domaine de la biotechnologie au Canada/aux États-Unis vous sont très familiers, assez familiers, pas très familiers ou pas familiers du tout?
38. (NOUVELLE) Diriez-vous que vous faites très confiance, assez confiance, pas très confiance ou pas confiance du tout à la capacité de nos agences de réglementation nationales comme (Santé Canada et l'Agence canadienne d'inspection des aliments / la FDA) pour ce qui est d'assurer la sécurité de ces produits?
39. Lequel des deux énoncés reflète le mieux votre opinion : Le gouvernement du Canada/des États-Unis arrive efficacement à étudier et surveiller l'impact des produits de biotechnologie OU le gouvernement du Canada/des États-Unis n'en fait pas assez pour étudier et surveiller l'impact des produits de biotechnologie.
40. Pour ce qui est de gérer les enjeux associés à la biotechnologie, croyez-vous qu'il vaut mieux que le Canada/les États-Unis travaille(nt) seul(s) pour développer des normes et des règlements appropriés OU croyez-vous qu'il vaut mieux que le Canada/les États-Unis travaille(nt) avec d'autres nations pour développer des ententes internationales sur les normes et les règlements?

(Q 41-46 NOUVELLES QUESTIONS DE SUIVI POUR LE CANADA-LES ÉTATS-UNIS)

Cette partie de l'étude porte sur les renseignements génétiques personnels, c'est-à-dire l'information contenue dans l'ADN humain qui nous révèle nos caractéristiques génétiques et nos traits héréditaires, tels que la couleur de nos yeux ou certaines maladies héréditaires ayant été transmises de génération en génération.

41. Vous diriez-vous très intéressé, plutôt intéressé, pas très intéressé ou pas intéressé du tout à en savoir plus long à propos de vos propres caractéristiques génétiques?
42. Croyez-vous que les avantages d'en savoir plus long sur notre information génétique sont plus importants que les inconvénients, ou croyez-vous que les inconvénients sont plus importants que les avantages?

Le fait d'avoir des connaissances scientifiques accrues sur nos caractéristiques génétiques a des implications pour la recherche en santé et en médecine. De nombreux chercheurs dans le domaine de la santé et de la médecine se consacrent à en découvrir davantage sur les façons dont l'information génétique détermine comment et pourquoi certaines personnes développent des maladies et des affections en étudiant l'information génétique provenant d'importants groupes de personnes.



43. À l'avenir, dans quelle mesure croyez-vous que l'information génétique jouera un rôle important dans la recherche et le développement en matière de santé au Canada/aux États-Unis : très important, assez important, pas très important ou pas important du tout?
44. Si vous vous soumettiez à un test génétique, seriez-vous très disposé, plutôt disposé, pas très disposé ou pas disposé du tout à remettre l'information à une base de données qui serait utilisée pour la recherche en santé, si votre identité était retirée de la banque de données?

Les questions suivantes portent sur l'information génétique et les droits en matière de domaine privé. Ces droits ont trait aux lois, aux règlements et aux normes régissant la confidentialité dans la collecte et l'utilisation de l'information génétique. Les droits concernant le domaine privé peuvent restreindre ce que les gens ont le droit de savoir sur vous, et peuvent également protéger la confidentialité de votre information génétique une fois qu'elle est recueillie.

45. Croyez-vous que les règlements régissant l'accès à l'information génétique devraient être plus stricts que ceux régissant les autres renseignements sur la santé ou croyez-vous que l'information génétique devrait être réglementée de la même façon que les autres renseignements sur la santé?
46. Le gouvernement joue de nombreux rôles. La protection des renseignements personnels est l'un d'entre eux. Le soutien à la recherche et au développement pour améliorer la santé et créer de l'emploi en est un autre. D'après vous, le gouvernement devrait-il accorder autant d'importance à ces deux rôles, devrait-il accorder plus d'importance à la protection des renseignements personnels ou devrait-il accorder plus d'importance à la recherche et au développement?
47. J'aimerais maintenant discuter des aliments génétiquement modifiés. Au meilleur de vos connaissances, au cours du mois dernier, avez-vous mangé des aliments qui étaient génétiquement modifiés?
48. En général, diriez-vous que vous êtes personnellement très à l'aise, assez à l'aise, assez mal à l'aise ou très mal à l'aise avec l'idée d'acheter des aliments qui contiennent des ingrédients génétiquement modifiés?
49. Si vous découvriez qu'un produit alimentaire que vous avez acheté dans le passé contenait des ingrédients génétiquement modifiés, est-ce que : vous continueriez de l'acheter, vous l'achèteriez mais désireriez en savoir davantage, vous ne l'achèteriez plus jusqu'à ce que vous en sachiez davantage, ou vous ne l'achèteriez plus jamais?
50. Certaines personnes disent que le Canada/les États-Unis devrait/devraient introduire un nouveau système d'étiquetage pour les produits alimentaires qui contiennent des ingrédients génétiquement modifiés et qui sont vendus au Canada/aux É.-U., parce qu'ils disent que les aliments génétiquement modifiés ne sont pas comme les autres aliments et que les gens veulent obtenir plus d'informations à ce sujet. D'autres personnes disent plutôt que les aliments génétiquement modifiés sont comme les autres aliments, que les compagnies alimentaires les ont testés, que le gouvernement les a approuvés, et que, par conséquent, nous n'avons pas besoin d'introduire un nouveau système d'étiquetage des aliments génétiquement modifiés. Laquelle de ces positions se rapproche le plus de votre propre point de vue?



51. Certaines personnes disent que le gouvernement devrait adopter une loi afin que les entreprises soient obligées d'étiqueter les produits alimentaires qui contiennent des ingrédients génétiquement modifiés. D'autres personnes disent plutôt qu'il n'est pas nécessaire de créer plus de lois et que le gouvernement peut travailler avec l'industrie alimentaire pour créer un système d'étiquetage volontaire pour ces produits. Selon vous, laquelle de ces options est la plus appropriée?

Les gens ont mentionné un certain nombre de préoccupations à propos des différents produits utilisant la biotechnologie. Je vais vous lire des catégories de produits de biotechnologie différentes, et pour chacune d'elle, j'aimerais que vous me disiez qu'est-ce qui représente la plus grande préoccupation pour vous :

52. Les aliments génétiquement modifiés :

- a. Les risques à long terme qu'ils peuvent causer pour l'environnement
- b. Les risques à long terme qu'ils peuvent causer pour la santé des humains
- c. Il y a quelque chose de pas naturel par rapport à ces produits
- d. Les processus impliqués soulèvent des préoccupations d'ordre éthique

53. Les produits de santé génétiquement modifiés, comme les médicaments transgéniques :

- a. Les risques à long terme qu'ils peuvent causer pour l'environnement
- b. Les risques à long terme qu'ils peuvent causer pour la santé des humains
- c. Il y a quelque chose de pas naturel par rapport à ces produits
- d. Les processus impliqués soulèvent des préoccupations d'ordre éthique

54. Les produits environnementaux génétiquement modifiés (comme les organismes génétiquement modifiés qui nettoient les déchets toxiques) :

- a. Les risques à long terme qu'ils peuvent causer pour l'environnement
- b. Les risques à long terme qu'ils peuvent causer pour la santé des humains
- c. Il y a quelque chose de pas naturel par rapport à ces produits
- d. Les processus impliqués soulèvent des préoccupations d'ordre éthique

QUESTIONS DÉMOGRAPHIQUES

55. Quelle est votre année de naissance? (veuillez coder les âges : 18-24, 25-29, 30-34, 35-39, etc. (augmentation par tranches de cinq ans)

56. Quel est le plus haut niveau de scolarité que vous ayez complété?

57. Laquelle des catégories suivantes représente le mieux le revenu total de votre foyer, avant impôts? (augmentation par tranche de 10 000 \$)

58. Laquelle des catégories suivantes décrit le mieux votre foyer : (une personne, habite seul; marié ou conjoint de fait sans enfant; marié avec des enfants de moins de 18 ans à la maison; marié avec des enfants vivant à l'extérieur de la maison; habite avec un groupe de personnes n'étant pas des membres de la famille)

59. Situation d'emploi

60. Sexe (pré-codé)

61. Taille de la communauté (urbaine/rurale) (pré-codé)

62. Langue de l'entrevue (pré-codé)