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Significantly Different

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Emerging Technologies Tracking Research

Industry Canada

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Table of Contents

Introduction	1
Executive Summary	3
Detailed Findings	7
A. Orientation Toward Technology.....	7
B. Awareness and Support/Opposition to Biotechnology	9
C. Regulation and Ethics.....	11
D. Biotechnology Issue Modules.....	13
Introduction	13
Bio-Products.....	14
Genetic Modification of Fish	16
Genetic Modification of Animals	19
Nanotechnology	21
Stem Cell Research	23
Study Methodology	27

Appendices:

- A: Survey Questionnaire (English and French)
- B: Recruitment Screener (English and French)
- C: Discussion Guide (English and French)

Introduction

Decima Research is pleased to present the following public opinion research report to Industry Canada related to the biotechnology research program.

This research was undertaken in support of efforts to examine public attitudes toward emerging technologies such as biotechnology and nanotechnology, with specific areas of investigation in associated aspects of these technologies, including: stem cell research; bio-products, Genetically Modified (GM) fish; GM animals; and nanotechnology.

The overall objectives of the research were to:

- Understand the level of familiarity, interest, and impressions of emerging technologies;
- Gather information on interest in and support for these emerging technologies, in several key areas of application;
- Obtain information on concerns and considerations associated with these emerging technologies;
- Gauge how important Canadians believe these technologies are for the future and health of the economy and society;
- Understand perceptions of regulatory systems and preferred approaches to regulating these technologies in future; and
- Gather qualitative and quantitative data on the level of acceptability of various applications of research.

This report presents the findings of quantitative and qualitative research conducted in the spring of 2006. Telephone interviews were conducted with 2,000 Canadians (18 years and older) across the country between May 1 and May 25, 2006. A sample of this size can be expected to be accurate to the full population to within plus or minus 2.1 percent in 19 out of 20 samples. The margin of error will be larger for subsamples and these are presented in the survey methodology section of this report.

In addition to the telephone survey, ten focus groups, two in each city, were conducted during this period. Sessions were held in:

Halifax
Montreal
Ottawa
Edmonton
Vancouver

One session in each city consisted of a segment called “involved Canadians”. This segment of the population is considered to be key opinion leaders on issues.

This report begins with an executive summary followed by a summary analysis of the research results. Appended to this report is the survey questionnaire as well as the moderation guide (English and French).

All questions regarding this research are welcome and may be directed to:

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Executive Summary

This project explored public opinion on a series of emerging technologies in the spheres of biotechnology and nanotechnology.

The first section of the report presents an overview on Canadians' opinion of technology in general, and their general orientation toward technology in various fields.

The report then outlines Canadians' level of support for biotechnology and their confidence in safety and regulatory approval systems.

The final sections of the report explore each of the key modules or issue areas within biotechnology that were investigated in the research: bio-products, GM fish, GM animals, nanotechnology and stem cell research.

At a high level, Canadians tend to embrace most, but not all types of new technology. Some technologies are widely seen as having significant benefits for their lives. Some of the technologies that Canadians tend to believe will improve their lives most over the next 20 years include hybrid cars (87%), computers and IT (84%), new bio-fuels (79%) and stem cell research (75%).

Nonetheless, Canadians express reticence about the impact of some applications of technology over this period. Some examples include GM animals (where 58% believe it will make life worse over the next 20 years), GM fish (54%), and GM foods (50%). These are all seen to have a more negative than positive effect.

Consistent with those trends, reported level of familiarity with biotechnology among the Canadian populace is unchanged from recent waves of the research. Indeed, just over half of Canadians report being very (8%) or somewhat (48%) familiar with biotechnology. The remainder are not very (31%) or not at all (13%) familiar with the subject.

Nonetheless, in focus groups, Canadians reveal a reasonably high level of knowledge and sophistication about biotechnology applications. Most people know one or two applications, usually in the food or health spheres. Discussions reveal that in many cases, people tend to underestimate their level of familiarity because they perceive that the field is moving forward very rapidly and that they couldn't possibly keep up with trends in this new field of technology.

While previous waves of research carried out by the Canadian Biotechnology Secretariat (CBSec) have clearly shown that people prefer to assess biotechnology on an application by application basis, the research program has tracked overall directional support for the technology over time, in order to provide a “big picture” sense of public orientation.

This year's data reveals that trends in opinion continue, with opposition declining by 4% from last year, and support growing. Sixty five percent indicate that they support biotechnology, and 24% indicate they oppose it. However, the data, and the focus group findings reveal a clear gender gap on these issues. Females express higher levels of concern than men, by about 10 per cent, which is a significant difference.

Past research in this sphere has revealed that the key drivers of support or opposition to advancing in areas of technology like biotechnology have to do with perceptions of risk and benefit, and perceptions of regulatory and ethical oversight. In each of the issue areas, the research explored the issue of risk, and found that risk/benefit perceptions differ somewhat across areas of emerging technology, and this has a marked impact on overall acceptability of these applications.

In this wave of research, we also explored perceptions of the areas of regulation in general, as well as within specific areas of biotechnology. The results reveal a continuing level of concern about the efficacy of regulatory systems.

In Canada, four in ten believe the regulatory system is probably either somewhat or very lax, and another 20% say they are uncertain about these systems, which reveals a fairly significant level of concern.

Issue Modules

In general, the research reveals that while Canadians support some aspects of emerging technology, their level of familiarity and comfort varies with the specific category or application. Overall, the areas that were investigated in this year's research demonstrated just how varied opinion can be. These issue areas included:

- Bio-products
- Nanotechnology
- Stem Cell research
- GM Fish
- GM Animals

The "issue modules" in the study explore a range of key issues associated with a new technology, including perceptions of various specific applications within the category, as well as risk and benefit, moral acceptability, efficacy of safety systems, and confidence in the scientists that do the work.

At the conclusion of each issue module (in the survey and in focus groups), we ask respondents a "ballot question" that asks them to provide a sense of the overall level of acceptability they have about a certain area of biotechnology. The graph below provides a snapshot of the quantitative survey results of the ballot questions asked of each of the various aspects of biotechnology that were investigated in the survey component of this research program, as well as in last year's research program. The results were largely reinforced in focus group findings as well.

The results reveal that Canadians generally approve of many key areas of emerging technology, particularly nanotechnology, stem cell research, and bio-products. In contrast, there is more resistance to development of applications in the spheres of GM food, and GM animals.

Our research found that the factor that is most directly related to the level of approval and disapproval of these areas of inquiry are the perceived benefits and risks of these applications. Indeed, for each of these biotechnology applications, we are able to produce a risk-benefit index, which is essentially when a net score between the number of respondents that score the area a 4 or 5 on a 5 point scale on benefits, as well as the 4-5 score on risks. The “index” is essentially the difference between the number that rate the benefits high minus those who rate the risks high.

These factors, coupled with perceptions of safety and ethical governance, are the main drivers of acceptability of most applications of emerging technology.

However, it is important to note that in some cases, applications within these categories can be found to be much more acceptable, or much less acceptable, than the category as a whole. For example, applications of GM fish and GM animals that are oriented toward developing treatments for health and medicine are quite widely supported, whereas some other applications in those areas engender more resistance.

A. Orientation Toward Technology

Canadians' collective opinion about the idea of technology has remained very high, and has remained consistent over the past three years. Overall, close to two in three Canadians have a positive reaction when they hear the term *technology*. Only four percent say they have a negative reaction.

The emerging technologies likely to have a significant impact on our lives that were most consistently raised in open-ended discussions were computers and information technology (IT), new environmental technologies, cell phones, nanotechnology, and monitoring/military applications like retinal scanning and biotechnology.

Of these, all were met with a high level of interest and enthusiasm, with the exception of cellular telephones. Unlike IT, where people almost universally see it as “empowering” technology, cell phones appear to be as well known for being an irritant as a benefit.

While Canadians generally have a favourable opinion of technology in general, they do not have a universally favourable opinion of all types of technology. Some technologies are widely seen as having significant benefits for their lives, while others are seen as having more drawbacks. Some of the technologies that Canadians tend to believe will improve their lives most over the next 20 years include hybrid cars (87%), computers and IT (84%), new bio-fuels (79%) and stem cell research (75%).

Nonetheless, Canadians express reticence about the impact of some applications of technology over this period. Some examples include GM animals (where 58% believe it will make life worse over the next 20 years), GM fish (54%), and GM foods (50%). These are all seen to have a more negative than positive effect.

The main aspect of biotechnology that engenders concern is GM food. Overall attitudes toward GM food tend to be more negative than positive. The criticism derives from two areas of concern: the first is about the risks that

might be involved in consuming these foods, and the second revolves around the motivations and actions of producers of GM food. In almost every focus group, the Schmeiser case and Monsanto come up as examples of concerns about GM food.

With regard to nanotechnology, a significant proportion of Canadians still do not know enough about this technology to offer a view about its likely impact. However, the focus groups and the detailed quantitative questioning about this area of technology provide a window into where attitudes are going. The overall data makes it clear that awareness is rapidly growing, and that most people who hold an opinion view it in a very favourable light.

Awareness of nanotechnology was particularly high in the focus groups that were held in Edmonton, which is likely due to the fact that the newly opened National Institute of Nanotechnology is located at the University of Alberta in Edmonton. Those discussions were highly informative in that they help to provide a sense of the kinds of issues and considerations that other Canadians will likely raise about this area of technology as they learn more about it.

B. Awareness and Support/Opposition to Biotechnology

As the Cormex media analysis conducted for the Canadian Biotechnology Secretariat has identified, the level of media attention toward the field of biotechnology has waned over the past year or two.

Consistent with that trend, the reported level of familiarity with biotechnology among the Canadian populace is unchanged from recent waves of the research. Indeed, just over half of Canadians report being very (8%) or somewhat (48%) familiar with biotechnology. The remainder are not very (31%) or not at all (13%) familiar with the subject.

Nonetheless, in focus groups, Canadians reveal a reasonably high level of knowledge and sophistication about biotechnology applications. Most people know one or two applications, usually in the food or health spheres. Discussions reveal that in many cases, people tend to underestimate their level of familiarity because they perceive that the field is moving forward very rapidly and that they couldn't possibly keep up with trends in this new field of technology.

While previous waves of research carried out by CBSec have clearly shown that people prefer to assess biotechnology on an application by application basis, the research program has tracked overall directional support for the technology over time, in order to provide a “big picture” sense of public orientation.

This year's data reveals that trends in opinion continue, with opposition declining by 4% from last year, and support growing. Nonetheless, the data, and the focus group findings reveal a clear gender gap on these issues. Women express higher levels of concern than men, by about 10 per cent, which is a significant difference.

Also worth noting is the gap between BC and the rest of Canada on these issues. BC residents are more likely than other Canadians to express

opposition to biotechnology, and focus groups reveal that most of this opposition revolves around resistance to GM food.

Ultimately, the majority of Canadians continue to support the use of products or processes that involve biotechnology. In fact, two in three Canadians strongly support (14%) or somewhat support (52%) its use.

C. Regulations and Ethics

Past research in this sphere has revealed that one of the key drivers of support or opposition to advancing in areas of technology like biotechnology has to do with perceptions of regulatory and ethical oversight. In this wave of research, we explored perceptions of these areas in general, as well as within specific areas of biotechnology. The results reveal a continuing level of concern about the efficacy of regulatory systems.

In Canada, four in ten (38%) believe the regulatory system is probably either somewhat or very lax, and another 20% say they are uncertain about these systems, which reveals a fairly significant level of concern.

On questions involving moral and ethical oversight in general regarding these technologies, results were quite similar. Just under half of Canadians believe the oversight is strict (46% very or somewhat strict) whereas 37% consider them to be very or somewhat lax.

Focus groups reveal that there are several key reasons why these views are prevalent.

- Concerns about the fact that they do not know very much about these systems, and in the absence of knowledge, there is a tendency to default to a sense that systems are probably not working very well;
- Concerns that people who work in regulatory systems are not able to “keep up” with new technologies;
- Concerns that corporate influence can have undue influence on decisions made by regulatory bodies;
- Concerns that not enough resources are dedicated to this function within government;

- Cases like the pullback of Vioxx and Celebrex, undermining the overall level of confidence in the abilities of regulatory agencies; and
- Concerns that privately funded research taking place is largely absent of moral and ethical oversight.

All of this makes it more difficult for people to be comfortable with where some of these technologies are heading, and causing many people who are broadly supportive of the technology to ask for more controls, and more stringent regulations on new innovations. In focus groups, many people indicated that even though they are positively disposed toward these technologies and want them to go forward, these concerns lead them to ask for more stringent oversight mechanisms on both risk as well as ethical issues. Of note, they tend not to see the downside of introducing more stringent mechanisms, in terms of cost or access to products, although when those downsides are given, most respondents will express a sense that those drawbacks are necessary in order to ensure safety.

On a question about whether government is doing enough to study and manage these issues, a 2:1 majority of Canadians (60%) believe their government probably doesn't do enough to study and manage the risks associated with biotechnology. In focus groups, it is revealed that this lack of confidence manifests itself in the widespread number of people who are only willing to approve of various emerging technologies with the proviso that there will be tighter regulatory controls.

In spite of these views, the majority of Canadians believe that Canada needs to work with other nations to develop standards and systems to regulate biotechnology. People view these technologies as global in nature, and from a Canadian perspective, it is seen to make sense for Canadian authorities to work with those from other jurisdictions to develop appropriate systems and plans to address safety issues.

D. Biotechnology Issue Modules

Introduction

As discussed earlier in this report, in general, the research reveals that while Canadians support some aspects of biotechnology, their level of familiarity and comfort varies with the specific category or application of biotechnology. Overall, the areas that were investigated in this year's research demonstrated just how varied opinion can be about different aspects of biotechnology. This section of the report provides a summary of findings for each of the issue areas that we explored in detail. These issue areas included:

- Nanotechnology
- Stem Cell research
- Bio-products
- GM Fish
- GM Animals

The "issue modules" explore a range of key issues associated with a new technology, including perceptions of various specific applications within the category, as well as risk and benefit, moral acceptability, efficacy of safety systems, and confidence in the scientists that do the work.

At the conclusion of each issue module section, we ask respondents a "ballot question" that asks them to provide a sense of the overall level of acceptability they have about a certain area of biotechnology. The following graph provides a snapshot of the results of the ballot questions asked of each of the various aspects of biotechnology that were investigated in this research program.

Our research found that the factor that is most directly related to the level of approval and disapproval of these areas of inquiry are the perceived benefits and risks of these applications. Indeed, for each of these areas, we are able

to produce a risk-benefit index. This is a net score between the number of respondents that score in the area of a 4 or 5 on a 5 point scale on benefits, as well as the 4-5 score on risks. The "index" is essentially the difference between the number that rate the benefits high minus those who rate the risks high.

The results reveal that Canadians believe that the benefits largely outweigh the risks when looking at stem cell research, nanotechnology, and bio-products. In contrast, there is a clear belief that the risks outweigh the benefits with respect to GM fish, GM food, and GM animals.

Bio-Products

This section explores perceptions of bio-products. To ensure that all participants had a clear understanding of what bio-products are, they were read the following description at the beginning of the section:

Bio-products primarily involve the use of plants for non-food uses, uses that range from development of new forms of energy, like ethanol, to new types of industrial materials like product packaging.

In the survey, about half of the respondents claimed familiarity with bio-products after hearing the above description, but in focus groups, familiarity was revealed to be far higher. The survey results also reveal that Canadians are generally supportive of the applications tested for biotechnology products. Indeed, about nine in ten are supportive of each of the biotechnology applications tested in the bio-products section. In focus groups, the prevailing view was that these were very positive developments in the sphere of biotechnology. *It is important to note that the survey only tested non-GM applications of bio-products, and only the focus groups explored GM versions of these products. The focus groups revealed that GM versions of the same bio-products were met with somewhat more concern than non-GM versions, which were embraced wholeheartedly.*

These high levels of support are related to the fact that a large majority of Canadians see a clear benefit to society with the use of bio-products. In addition, the risks associated with this form of biotechnology were largely perceived to be moderate to low.

There does not appear to be a substantial moral or ethical dilemma related to bio-products. Indeed, about half (45%) of Canadians consider this kind of research acceptable and an additional one in three (35%) believe it is morally neutral. Only one in five believe that bio-products are unacceptable.

For the most part Canadians are supportive of this aspect of biotechnology and its various applications, although half would prefer that their approval be tied to the field being more tightly regulated. Focus groups reveal that many want to predicate support for these kinds of new technologies based on the idea that more stringent regulations be established for them. This sentiment relates directly to the results found in the section on regulation earlier in this report – in the absence of knowing more about systems, many people tend to assume that regulatory systems are either lax or are having difficulty “keeping up” with these new technologies, so even in an area like bio-products where there is widespread support for the technology, there is still a prevailing sense that regulatory authorities should take extra measures to ensure its safety for health and the environment.

When bio-products were explored in the focus groups, differences emerged between GM and non-GM production of these products. The main difference that was observed is that participants are likely to approve of this application, but with stricter regulations. Primarily, this desire for tighter controls is driven by the fear that participants have about cross-contamination and a permanent change in species. Some ask that once a product has been genetically modified if this becomes its new permanent state, and question whether there is the ability for the application to revert back to its original form.

The qualitative findings suggest that participants are more apt to err on the side of more controls because there is a lack of awareness of how these products are currently regulated. Therefore, they believe that it is better to

have tighter controls rather than the current ones, because they are not aware of what currently exists.

Genetic Modification of Fish

This section explores Canadians' perceptions of the genetic modification of fish (or GM fish). GM fish was explored in some detail in this research, both in qualitative and quantitative aspects of the research program. The following description of GM fish was read to participants prior to exploration of key issues and considerations:

Biotechnology applications are being explored in fish. Fish are being genetically modified for a number of reasons, such as to improve the growth rate of fish, or for production of drugs or cells for the treatment of human disease. These fish are created by taking DNA from one source – a different kind of fish, a different animal, a plant, or a bacterium – and putting it into a fish to give it a new characteristic or trait. In most cases, these applications are carried out in contained facilities or laboratories.

Familiarity with this application of biotechnology is low. Only three in ten Canadians say they are very or somewhat familiar with this application. Focus groups confirm that this is not an area of biotechnology that many Canadians are aware of.

First impressions of this field tend to be more negative than for other areas of biotechnology, and at a high level, willingness to explore it is much lower than the others in this study. In focus groups, significant initial concerns about risk were raised, the main issues being containment and importation from other countries.

In focus groups, it was revealed that people tend to initially connect fish farming with GM fish, and fish farming has many negative connotations associated with it. They also tend to initially connect GM fish with introduction

of GM fish to natural populations, and almost entirely with the idea of making GM fish for food purposes – this is seen to carry with it a high degree of risk (indeed, an unacceptable level of risk).

However, when some of the actual applications of GM fish were explored in focus group discussions and in the quantitative research, results reveal that there is some significant support for certain applications. Those applications that are focused on health and medical benefits for humans are seen as being more acceptable, although some are not clear about the reasons why these methods might be used in order to yield certain health products, so the applications do not necessarily make intuitive sense as appropriate ways of developing health products.

The results also reveal that there is a great deal of skepticism around certain applications of GM fish. Only one in five support the genetic modification of tropical fish for the pet industry.

When assessing the risks and benefits of GM fish, Canadians are likely to believe that this field will have moderate benefits, and moderate risks.

There is no consensus on the morality of GM fish nor on the confidence in the systems in place to ensure safety. Most have no real sense of what these systems are like, and tend to draw analogies from perceptions of how well fish stocks have been managed by government.

When provided with some information about the proposed new regulatory system for GM fish, some red flags were raised. Specifically, respondents raised concerns about the proposed 120 day review period for GM fish applications. People were very concerned that this was too short a period to appropriately review these products, so it engendered a heightened level of concern.

Overall, while there is a range of opinion on Canadians' approval of GM fish, there is fair support for some applications. While six in ten (62%) approve of

this type of research, 39% approve with tighter control and regulations. Meanwhile, over one in three are opposed to the genetic modification of fish.

The fact that some applications of GM fish were found acceptable should not be taken to suggest that Canadians would be accepting of other GM fish applications, particularly those associated with food, or those that would involve introducing GM fish to natural populations.

Production in contained facilities is essential to acceptability. Focus groups clearly revealed **no** appetite for exploring applications without contained facilities for production.

Moreover, there are very strong concerns in evidence about the idea of GM fish being imported to Canada, particularly if those kinds of applications cannot be employed in Canada. Focus group respondents in every city expressed a high level of resistance to the idea of GM fish products imported from other countries that would not be approved for development in Canada.

Genetic Modification of Animals

This section explores Canadians' perceptions of the genetic modification of animals (or GM animals). The research conducted in this wave was an initial piece of quantitative work only; it did not involve any qualitative element and the results should be taken only as broad guidance of first impressions.

There is slightly more awareness of GM animals than GM fish, in that people are more likely to have heard of cloned cows or of "Dolly the sheep" than they are to have heard of an application of GM fish, but generally very few have heard of some of the actual applications that have the potential to be developed in Canada.

Like GM fish, support for GM animals is largely dependent on the specific application, although overall support for these types of applications tends to be relatively low overall. Canadians are most supportive of applications where there is a direct benefit to them personally. This includes: the development of GM animals resistant to disease (i.e. avian flu), cloned animals for bio-medical research, and GM animals with increased enzyme levels for the production of health products. Canadians are less accepting of applications for non-health applications, such as applications for uniform quality of meat or dairy.

One of the main reasons why Canadians tend to express higher levels of concern about GM animal applications is that they are more likely to see risks than benefits with the genetic modification of animals. Almost half (45%) believe that there will be some or substantial risks with GM animals and an additional 38% think there will be moderate risks. Meanwhile, almost four in ten (39%) do not believe there will be much or any benefit, and the same proportion think there will be a moderate benefit (38%).

The risks of GM animals are seen as outweighing the potential benefits by a 2:1 margin. Twenty-two percent perceive there to be substantial or some benefit, while 45% perceive there to be substantial or some risk.

In addition, there was a notable lack of confidence revealed about the safety and regulatory mechanisms in place governing GM animals. Indeed, they are most likely (41%) to have little or no confidence in the current systems in place, whereas only one in five (18%) are confident in the current regulatory approval systems. These levels of confidence were lower than for any of the other areas of biotechnology investigated in this research.

Some of the focus group discussions helped to illuminate this issue. It appears that GM animals are seen by many as being closely associated with GM foods, where there are high levels of concern that remain prevalent among large segments of the population. This association unfortunately tends to lead people to draw analogies from what they perceive about GM food and apply it to GM animals.

Moreover, it was also revealed in this research that there are significant moral concerns associated with GM animals. There are relatively high levels of resistance to the development of GM animals on moral grounds (40% somewhat or wholly unacceptable), unlike other areas of biotechnology where moral opposition tends to be significantly lower.

Given the uncertainty Canadians have about GM animals, the “ballot question” in the study revealed that Canadians are decidedly split on GM animals. Just over four in ten (44%) approve of their use, including 30 percent who approve but with tighter regulations. Meanwhile, the remaining 55% of the sample indicated that they do not approve of the genetic modification of animals.

Nanotechnology

Familiarity with nanotechnology has increased this year, by a significant margin over 2005. About half of Canadians claim they are familiar with nanotechnology and this proportion has increased since last year (47% versus 35% in 2005). This may be attributed to the fact that more Canadians in 2006 say they have heard at least a little about nanotechnology (49% versus 38%).

This increased familiarity may be connected to a accompanying increase in the perceived benefits of nanotechnology, and a decrease in perceived risks. Indeed, more Canadians in 2006 believe there is substantial or some benefit (60% versus 50%) to nanotechnology instead of moderate benefits (27% versus 36%). In addition, when looking at the perceived risks with nanotechnology, more Canadians this year see not much or no risk as compared to last year (36% versus 26%).

Overall, this field of technology is viewed to bring significant benefits, with relatively few risks. In this way, it stands in some contrast to biotechnology, where there are clear benefits but a recognition that there are also significant risks involved.

The perception of the role government plays in funding nanotechnology research has increased since last year. Almost half of Canadians now believe that the government is actively involved in funding this research (46% versus 38%), and slightly fewer believe they are moderately involved (37% versus 45%).

There has also been a moderate increase in the confidence Canadians have in the safety and regulatory processes governing nanotechnology. Indeed, over one quarter (26%) are now confident in these systems as compared to 2005 (17%). However, there has also been an increase from 2005 in the proportion who are unsure of the regulatory systems in place (11% versus 5%).

Given the fact that Canadians see a lot of benefits with few risks, it is not surprising that a large majority of Canadians approve of this area of inquiry. On the survey's core "ballot question" over eight in ten indicated that they approve of nanotechnology, with either the current regulations, or tighter ones in place.

In general, there is a sense that this is a field that has significant upside, and relatively little downside, in terms of risk or moral issues. This stands in some contrast to some of the applications of biotechnology that were tested in this wave of research.

Stem Cell Research

This section presents the results of Canadians views on stem cells. Stem cell research is an area of biotechnology that is very well known among Canadians, although overall familiarity has declined somewhat from last year.

Canadians were less likely in 2006 than in 2005 to have seen information about stem cell research in the media in the past three months. This appears to correlate with a dampening effect on perceptions of benefit. Nonetheless, the index of benefit to risk is more than 3:1, indicating that people continue to see stem cell research as an area that promises significant benefits, and moderate risks.

Focus groups reveal that there is a very high level of awareness about stem cell research. Some have heard of the multiple ways of gathering stem cells, from laboratories to umbilical cords. More have heard about the fact that there is controversy around it, or that certain high profile individuals are supportive or opposed to it.

There are many people who are very passionate about the potential for stem cell research – many of these people have had personal contact with someone who is involved with this research, or have family members or friends that have the potential to benefit from breakthroughs in this field. These people have in many cases spent time looking up related topics on the internet, and have developed a fairly high level of knowledge. As a reflection of this knowledge, a remarkably high number of people know about the potential use of umbilical cords as a source of stem cells, and would not normally be something people in the general population would know about.

Our research reveals that the main set of concerns associated with stem cell research is moral issues, specifically moral issues associated with how stem cells are obtained. Survey data reveals that this concern is

almost entirely about where stem cells derive from, and focus groups reinforce this sense.

However, these discussions also reveal that some of these moral concerns are premised on a misunderstanding of a key issue regarding how stem cells are obtained - that is, whether or not aborted fetuses are used to harvest stem cells. Many people mistakenly believe that stem cells are mostly taken from aborted fetuses. When they are informed that stem cells do not come from aborted fetuses and that the main source comes from fertility clinics (embryos that are not going to be used for in vitro fertilization and would therefore be destroyed), many peoples' moral concerns recede.

While many see a lot of promise associated with stem cell research, that isn't to say people wish to give stem cell research a green light. The prevailing view is that the issue of stem cell research should be viewed with an open mind, but not totally embraced, because in the words of one respondent, "it depends on how it's used".

In that light, the groups tested the different ways of obtaining stem cells, to help determine the level of comfort with a new way of obtaining stem cells, specifically the somatic cell nuclear transfer (or laboratory) method.

Four methods of obtaining stem cells were discussed in detail, and subsequent to this discussion, our "ballot question" was tabled with participants, again asking them whether they found each of the methods of obtaining stem cells acceptable or not.

Method 1: Embryonic Stem Cells from Fertility Clinics. When this method was explained, the response from the vast majority of participants was that they were supportive of this method of getting stem cells. Many were surprised at the level of controversy that has been assigned to stem cell research, based on the fact that this is the main method of obtaining stem

cells. To many, this does not seem to be a method that should engender the level of controversy that it does. There were people who expressed resistance to this method, but this was very much the minority position.

While there was almost universal support for this method in Canada, a sizeable number of participants indicated that there are two crucial provisos necessary in order for them to be comfortable with this method of using embryos left over from fertility clinics:

- First, that there is consent from the parents;
- Second, that no money is involved in the process of gaining access to stem cells.

Method 2: Somatic Cell Nuclear Transfer. This method involves creating embryos in a lab for the purpose of extracting stem cells. This method proved to be more controversial than the other methods tested in groups. The creation of embryos in a lab to create stem cells was by a significant margin the *least* acceptable of the methods tested in this research program, in both Canada and the US. Of note, women and Involved Canadians¹ were significantly more likely to oppose this method of creating/obtaining stem cells than the other methods.

The primary reason was that with this method of obtaining stem cells, the explicit purpose of the creation of each embryo is to destroy it. In other words, the “purpose” that motivated the method was seen as being unacceptable to some respondents, again particularly women. This method was also viewed as problematic from the perspective of concerns about “rogue elements” taking research too far. For some, these factors resulted in them being opposed to this method of obtaining stem cells, even though the same people were comfortable with the method of obtaining embryonic stem cells from fertility clinics.

¹ Decima has developed a very useful segmentation of opinion, one we call Involved Canadians. This group represents roughly 30% of Canadians and our research has shown conclusively that this group is heavily involved in setting and altering the media and issue agendas of the country, using a variety of means to participate in debates about contemporary issues.

Method 3: Stem Cells from Umbilical Cords Post-Birth. Another approach that was tested in the groups involved extracting stem cells from umbilical cords post-birth. This method of obtaining stem cells is gaining awareness, especially as the number of cord blood banks increases, and the ability of parents to “freeze” umbilical cords when they have children, grows.

This method of obtaining stem cells for the most part dissipated all opposition that was raised about stem cell research.

The benefits of this method of obtaining stem cells from umbilical cords primarily revolves around the ability of the research to avoid the controversy associated with other forms of obtaining stem cells. The idea of being able to “freeze” stem cells for future potential use by the family was very appealing to many people, and was seen as a better source for research than adult stem cells.

Ultimately, upon hearing about this method of obtaining stem cells, most of those who disapproved of stem cell research initially, changed to approving of such research in this scenario, as it alleviated other ethical concern (as long as the mother consented to her umbilical cord being used for research).

Method 4: Adult Stem Cells. There was virtually no opposition to the use of adult stem cells for research, which reinforced one of the main conclusions of this research: Opposition to stem cell research is about the method of obtaining stem cells rather than the research itself.

Ultimately, the survey and the groups revealed a high level of overall support for stem cell research, because of the benefits it may yield. In the quantitative results, this level of support has fallen slightly on a year-over-year basis, but remains very high overall. Based on past research and discussions this year, we believe that this slight erosion in support is primarily because stem cell research is less top of mind, and secondarily that people have not observed as many personal benefits as the “hype” has promised.

Study Methodology

Quantitative Research

Questionnaire Design

The questionnaire for this survey was developed by Decima Research, in close consultation with the Canadian Biotechnology Secretariat. The questionnaire was largely based on the instrument from previous waves of the research, with the addition of several new modules in 2006. The questionnaire was translated by Decima's in-house translation team. Prior to being finalized, the survey was pre-tested in English and French.

Sample Design and Selection

The sample for this study was designed to complete interviews with a representative sample of 2,000 adult Canadians from households selected randomly across the country. The sample was stratified by region and province to ensure adequate sub-samples for meaningful regional analysis. In the analysis stage, the data were weighted so that the national results are fully representative of the population according to its true distribution across the country.

The sample was drawn using Canada SurveySampler (CSS) technology. CSS is a proprietary selection engine specifically designed to generate a random sample of telephone numbers to be dialled, which ensures that all residential listings in Canada have an equal opportunity to be selected for inclusion in the survey. Within those households selected, respondents 18 years or older were screened for random selection using the "last birthday" method, which provides an efficient means of ensuring the sample approximates the population according to gender and age level.

Survey Administration

This survey was conducted in English and French by telephone using computer-assisted-telephone-interviewing (CATI) technology, from Decima's

facilities in Ottawa and Montreal, in May 2006. The survey averaged 20 minutes in length.

All interviewing was conducted by fully trained and supervised interviewers, and a minimum of 10 percent of all completed interviews were independently monitored and validated in real time.

All qualified respondents were informed of their rights under the Privacy and Access to Information Acts, with those rights respected throughout the interview process. Specifically, respondents were informed of the purpose of the research, of the identities of both the sponsoring department and the research supplier, that their participation in the study is voluntary, and that the information they provide would remain confidential and would only be reported in aggregate. The survey was also registered with the National Survey Registration System.

Sample Characteristics

The table below presents the completions and the associated margin of error by region.

Region	Unweighted Sample	Margin of Error ¹
Atlantic Canada	169	± 7.6%
Quebec	494	± 4.4%
Ontario	762	± 3.6%
Manitoba/Saskatchewan	145	± 8.2%
Alberta	201	± 6.9%
British Columbia	273	± 5.9%
Total	2,044	± 2.2%

¹At the 95% confidence level.

Sample Disposition

A total of 42,202 numbers were dialled from which 2,045 households were qualified and completed the survey. The overall response rate for this survey was 6%. The final disposition of all contacts is presented in the following table.

A (1-14)	Total Attempted	42202
1	Not in service (disp 4,44,47)	4435
2	Fax (disp 10,46)	795
3	Invalid #/Wrong# (disp 9,12,13,43,77,88)	1024
B (4-14)	Total Eligible	35948
4	Busy (disp 2,42)	320
5	Answering machine (disp 3,8,45)	4859
6	No answer (disp 1,41,48)	4445
7	Language barrier (disp 11)	936
8	Ill/Incapable (disp 14)	189
9	Eligible not available/Callback (disp 6,7)	2967
C (10-14)	Total Asked	22232
10	Household/Company Refusal (disp 15,21)	7757
11	Respondent Refusal (disp 22,23,26,27,89)	12022
12	Qualified Termination (disp 24,28,29)	408
D (13-14)	Co-operative Contact	2045
13	Not Qualified (disp 3X,25)	0
14	Completed Interview (disp 20)	2045
	REFUSAL RATE	90.80
	(10+11+12) / C	
	RESPONSE RATE	5.69
	D (13-14) / B (4-14)	
	INCIDENCE*	100.00
	[(14+12) / (13+14+12)]*100	
	[(CI+QualTM)/(NQ+CI+QualTM)]*100	

Appendix A : Survey Questionnaire

Biotechnology Survey Spring 2006

I'd like to conduct a survey to gather your opinions about some new technologies. 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 survey).

Note: dk is an available answer category on all questions but is unread.

1. (T) When you hear the word technology, do you have a positive reaction, neutral reaction, or a negative reaction?
2. (T) When you hear the word biotechnology, do you have a positive reaction, neutral reaction, or negative reaction?
3. (T) Over the last three months, have you heard about any stories or issues involving biotechnology?

4a (T) Biotechnology is a term that encompasses 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. Related to biotechnology are the areas of life sciences, genetic modification and genomics.

4ab (T) Would you say you are very familiar, somewhat familiar, not very familiar, or not at all familiar with biotechnology?

5. (T) In general, would you say you strongly support, somewhat support, somewhat oppose or strongly oppose the use of products and processes that involve biotechnology?
6. (T) In terms of safety and regulatory approval processes for biotechnology products, do you tend to think that rules and systems in place here in Canada are very strict, somewhat strict, somewhat lax or very lax?
7. (T) In terms of moral or ethical oversight, do you tend to think that rules and systems in place here in Canada for biotechnology research are very strict, somewhat strict, somewhat lax or very lax?
8. (NEW) On a scale of 1-5, where 1 is not at all confident and 5 is extremely confident, where the mid point 3 is moderately confident, how confident would you say you are in the safety and regulatory approval systems governing biotechnology?

(E) I am going to read a list of areas in which new technologies are currently developing. For each of these areas, do you think it will improve our way of life in the next twenty years, it will have no effect, or it will make things worse? (Randomize)

Question Stem for
10-20

10. New "hybrid" car engine technologies
11. (E) Computers and information technology
12. (E) Biotechnology
13. (E) Stem cell research
14. (E) Nuclear energy
15. (E) Cellular phones
16. (E) Nanotechnology
17. (E) Genetically modified foods
18. New "bio-fuels" like ethanol, or biomass energy
19. Genetically modified animals
20. Genetically modified fish

(END OF RANDOMIZATION)

THE STEM CELL (Q21-Q33) AND BIO-PRODUCTS (Q34-44) SECTIONS BELOW WILL BE SPLIT SAMPLE

The next part of this survey focuses on one of these areas, stem cell research.

(SPLIT SAMPLE DESCRIPTION AND BATTERY FOLLOWING ON STEM CELLS)

Stem cell research involves the use of special human cells to study diseases and their cures. Stem cells have the unique ability to grow into any type of cell in the human body. Stem cell research has led to breakthroughs in our understanding of diabetes, MS, and Parkinson's disease that offer the potential for new treatments and cures. However, to conduct this research, scientists have to get stem cells. They have been getting them from human embryos that are less than 2 weeks old and have been frozen and stored in fertility clinics. The process of getting stem cells destroys the embryos. However, these embryos will only be used for research if they are not going to be used for fertility treatments.

Stem cell research involves the use of special human cells to study diseases and their cures. Stem cells have the unique ability to grow into any type of cell in the human body. Stem cell research has led to breakthroughs in our understanding of diabetes, MS, and Parkinson's disease that offer the potential for new treatments and cures. However, to conduct this research, scientists have to get stem cells. One of the ways scientists are able to produce stem cells is in a laboratory, through a process where scientists are able to develop an egg that has the ability to produce stem cells, that can . Stem cells will then be grown and used for research.

21. (T) Would you say you are very, somewhat, not very or not at all familiar with stem cell research?
22. (NEW) Would you say you are very, somewhat, not very or not at all familiar with this way of obtaining stem cells?
23. (T) Over the last three months, have you read, seen or heard a lot, a little, or nothing about issues involving stem cell research?
24. (T) Before this interview, have you ever discussed stem cell research with anyone?
25. (If yes) Would you say you have discussed this issue frequently, occasionally, or once or twice?

ROTATE THE NEXT TWO QUESTIONS, ON RISK AND BENEFIT

26. (T) I would like to understand the extent to which you think stem cell research might benefit our society. Using a scale of 1-5, where 1 is no benefit and 5 is substantial benefit, and the mid-point 3 is moderate benefit, how beneficial do you think stem cell research will be to our society?
27. (T) Using the same scale, where 1 is no risk and 5 is substantial risk, with the mid point 3 being moderate risk, how much risk does stem cell research pose for our society?
28. (T) In terms of the moral or ethical aspect of this research, again using the 1-5 scale, where 1 means that stem cell research is morally acceptable and 5 means it is morally unacceptable, and the mid point 3 means it is morally neutral, how do you view this kind of research?
29. (T) In terms of economic benefits to Canada, would you say that stem cell research will provide major benefits, modest benefits, or no significant benefits?
30. (T) And how involved should government be in funding this area of research, using a 1-5 scale where 1 means government should not be involved at all, 5 means government should be actively involved, and the mid-point 3 means that it should moderately involved?
- 31^{ab} (T) (SPLIT SAMPLE), On a scale of 1-5, where 1 is not at all confident and 5 is extremely confident, where the mid point 3 is moderately confident, how confident would you say you are in the safety and regulatory approval systems governing stem cell research? /In terms of the scientists who are involved in research of these technologies, on a scale of 1-5, where 1 is not at all confident and 5 is extremely confident, where the mid point 3 is moderately confident, how confident would you say you are that stem cell research is in safe hands? ^{31a} _{31b}
32. (T) Overall, which of the following best captures your views about stem cell research?
- a. I approve the use of stem cell research, as long as the usual levels of government regulation and control are in place
- b. I approve of stem cell research if it is more tightly controlled and regulated
- c. I do not approve of stem cell research except under very special circumstances.
- d. I do not approve of stem cell research under any circumstances

answer
choices

- 33^{ab} (NEW) One emerging issue associated with stem cell research has to do with in gene therapy. Using gene therapy, scientists are now able to replace faulty genes that cause certain diseases with "healthy" copies that were developed using stem cells. New research in this area demonstrates that it may be possible to enable the "healthy" copy of the gene to be passed to the next generation as well. ^{33a} Some people say that this is a good thing, because it will stop some serious diseases from being passed on to future generations. Other people say that it is not a good thing, because it involves changing the genetic makeup of future generations. Which of those two views is closest to your own? _{33b}

[SECTION ON BIO-PRODUCTS – SPLIT WITH STEM CELLS]

34^{ab} The next part of this survey focuses on one of these areas, biotechnology-based products, or bio-products. Bio-products primarily involve the use of plants for non-food uses, uses that range from development of new forms of energy, like ethanol, to new types of industrial materials like product packaging. _{34a}

34. *b* (NEW) Would you say you are very, somewhat, not very or not at all familiar with bio-products?

There are numerous ways in which bio-products be used. Please tell me if you strongly support, support, oppose or strongly oppose the following potential applications of these technologies. (Randomize)

- 35. (NEW) *The development of alternative forms of transportation fuel, such as ethanol or bio-diesel, from genetically modified crops like corn or barley. These crops would be modified to yield higher levels of sugar and be grown in higher volumes than conventional crops, increasing the economic viability of using this form of energy.*
- 36. (NEW) *The development of new forms of plastics developed using starches found in flax, soy, or corn, that would be used in the construction and renovation sector, as a substitute for petroleum that is used in current plastic products*
- 37. (NEW) *The development of new forms of plastics developed using starches found in flax, soy, or corn that would be used to produce food packaging like bio-degradable cups, instead of petroleum that is used in current plastic products*
- 38. (NEW) *The use of plants to detoxify and restore contaminated and polluted areas. Certain plants, like sunflowers, possess enzymes that enable the plant to extract and detoxify small amounts of heavy metals and other pollutants from soil, water and air. GM applications of these plants could increase the ability of the plant to detoxify highly contaminated areas.*
- 39. (NEW) *The use of plants to help reduce the impact of greenhouse gases. In the future, certain plants or trees could be genetically modified to take on higher levels of carbon than conventional plants or trees, thereby reducing the volume of greenhouse gases in the atmosphere.*

ROTATE THE NEXT TWO QUESTIONS, ON RISK AND BENEFIT

- 40. (NEW) I would like to understand the extent to which you think bio-products might benefit our society. Using a scale of 1-5, where 1 is no benefit and 5 is substantial benefit, and the mid-point 3 is moderate benefit, how beneficial do you think bio-products will be to our society?
- 41. (NEW) Using the same scale, where 1 is no risk and 5 is substantial risk, with the mid point 3 being moderate risk, how much risk do bio-products pose for our society?
- 42. (NEW) In terms of the moral or ethical aspect of this research, again using the 1-5 scale, where 1 means that bio-products research is morally acceptable and 5 means it is morally unacceptable, and the mid point 3 means it is morally neutral, how do you view this kind of research?
- 43. (NEW) On a scale of 1-5, where 1 is not at all confident and 5 is extremely confident, where the mid point 3 is moderately confident, how confident would you say you are in the safety and regulatory approval systems governing bio-products?
- 44. (NEW) Overall, which of the following best captures your views about bio-products?

- a. I approve the use of these products, as long as current levels of government regulation and control are in place
- b. I approve of these products if they are more tightly controlled and regulated
- c. I do not approve of these products except under very special circumstances
- d. I do not approve of these products under any circumstances

Answer choices

(THE GM FISH/GM ANIMAL SECTIONS BELOW WILL BE SPLIT SAMPLE)

The next part of this survey focuses on another aspect of biotechnology, genetically modified fish.

Biotechnology applications are being explored in fish. Fish are being genetically modified for a number of reasons, such as to improve the growth rate of fish, or for production of drugs or cells for the treatment of human disease. These fish are created by taking DNA from one source – a different kind of fish, a different animal, a plant, or a bacterium – and putting it into a fish to give it a new characteristic or trait. In most cases, these applications are carried out in contained facilities or laboratories.

45. *b* (NEW) Would you say you are very, somewhat, not very or not at all familiar with genetic modification of fish?

There are numerous ways in which genetic modification of fish can be used. Please tell me if you strongly agree, agree, disagree or strongly disagree with the following potential applications of these technologies. (Randomize)

46. (NEW) *The development of genetically modified fish that can produce human insulin to treat diabetes. Conventional injection of insulin by type I diabetics can produce circulatory problems over time. The use of genetically engineered Tilapia cells for transplants could relieve the symptoms of diabetes without the need for insulin injection. These fish would be grown in contained laboratory facilities.*

47. (NEW) *The development of genetically modified algae for the production of pharmaceutical drugs or dietary applications. One example of this is GM algae, producing a human protein to protect against infection by a variant of the herpes simplex virus. These algae are grown in contained land based manufacturing facilities.*

48. (NEW) *The development of genetically modified tropical fish for use in the aquarium and retail pet industry. Zebra fish, genetically modified by adding a fluorescence gene so that the fish absorb light and then re-emit it, creating the perception that they are glowing. These fish would be developed in other countries and imported into Canada.*

49. (NEW) *The development of genetically modified Atlantic salmon, for the purpose of research, to assess the potential environmental impact of GM fish on each other and on the water in a contained ecosystem. These fish would be kept in contained land-based research facilities, and would not be for commercial use or sale.*

ROTATE THE NEXT TWO QUESTIONS, ON RISK AND BENEFIT

50. (NEW) I would like to understand the extent to which you think genetic modification of fish might benefit our society. Using a scale of 1-5, where 1 is no benefit and 5 is substantial benefit, and the mid-point 3 is moderate benefit, how beneficial do you think gm fish will be to our society?

51. (NEW) Using the same scale, where 1 is no risk and 5 is substantial risk, with the mid point 3 being moderate risk, how much risk do gm fish pose for our society?

52. (NEW) In terms of the moral or ethical aspect of this research, again using the 1-5 scale, where 1 means that gm fish research is morally acceptable and 5 means it is morally unacceptable, and the mid point 3 means it is morally neutral, how do you view this kind of research?
53. (NEW) On a scale of 1-5, where 1 is not at all confident and 5 is extremely confident, where the mid point 3 is moderately confident, how confident would you say you are in the safety and regulatory approval systems governing gm fish?
54. (NEW) Overall, which of the following best captures your views about the genetic modification of fish
- Answers*
- a. I approve the use of gm fish, as long as the usual levels of government regulation and control are in place
 - b. I approve of gm fish if they are more tightly controlled and regulated
 - c. I do not approve of gm fish except under very special circumstances
 - d. I do not approve of gm fish under any circumstances

(END OF RANDOMIZATION)

[GM ANIMALS]

The next part of this survey focuses on another aspect of biotechnology, genetically modified animals. Biotechnology applications are being explored in animals for a range of purposes.

55. (NEW) Would you say you are very, somewhat, not very or not at all familiar with genetic modification of animals?

8 items for 56b to 60

There are numerous ways in which genetic modification of animals can be used. Please tell me if you strongly agree, agree, disagree or strongly disagree with the following potential applications of these technologies. (Randomize)

- 56a*
56. *ab* (NEW) (SPLIT) The development of cows that would be genetically modified to produce less fat, thereby reducing the negative health impacts of conventional beef products. / The development of cows that would be genetically modified to grow faster and larger than non-gm cows, thereby potentially reducing the cost of production and costs of meat products to consumers *56b*
- 57a*
57. *ab* (NEW) (SPLIT) The development of cloned cows for use in biomedical research, to allow scientists to better understand diseases and how they spread among animals. / The development of cloned cows as a source of uniform, better quality meat and milk for human consumption. *57b*
- 58a*
58. *ab* (NEW) (SPLIT) The development of genetically modified animals to grow organs for transplant to humans. These animals would be modified in such a way that their organs would be more similar to human organs, and thereby more likely to be able to achieve successful transplantation. / The development of animals that would be genetically modified to produce higher than normal levels of certain enzymes, that could be extracted and used in the production of health products such as drugs. *58b*
59. (NEW) The development of chickens that would have genetic resistance to diseases like the avian flu (or bird flu).

60. *04* (NEW) (SPLIT) *160a* The development of genetically modified fish that grow faster and larger than non-GM fish, thereby potentially reducing the cost of production and costs of fish products to consumers. These fish would be grown in contained, land-based facilities. / The development of genetically modified fish that grow faster and larger than non-GM fish, thereby potentially reducing the cost of production and costs of fish products to consumers. These fish would be grown in net pens, located in Canadian coastal waters. *160b*

ROTATE THE NEXT TWO QUESTIONS, ON RISK AND BENEFIT

61. (NEW) I would like to understand the extent to which you think genetic modification of animals might benefit our society. Using a scale of 1-5, where 1 is no benefit and 5 is substantial benefit, and the mid-point 3 is moderate benefit, how beneficial do you think gm animals will be to our society?
62. (NEW) Using the same scale, where 1 is no risk and 5 is substantial risk, with the mid point 3 being moderate risk, how much risk do gm animals pose for our society?
63. (NEW) In terms of the moral or ethical aspect of this research, again using the 1-5 scale, where 1 means that genetic modification of animals is morally acceptable and 5 means it is morally unacceptable, and the mid point 3 means it is morally neutral, how do you view this kind of research?
64. (NEW) On a scale of 1-5, where 1 is not at all confident and 5 is extremely confident, where the mid point 3 is moderately confident, how confident would you say you are in the safety and regulatory approval systems governing the genetic modification of animals?
65. (NEW) Overall, which of the following best captures your views about the genetic modification of animals
- Answers*
- a. I approve the use of gm animals, as long as the usual levels of government regulation and control are in place
 - b. I approve of gm animals if they are more tightly controlled and regulated
 - c. I do not approve of gm animals except under very special circumstances
 - d. I do not approve of gm animals under any circumstances
66. *qb* (NEW) As you may know, some producers in foreign countries are interested in exporting foods derived from genetically modified animals and plants into the Canadian market. Do you favour or oppose the importation of food derived from genetically modified animals and plants from other countries, or don't you have an opinion on this? (if favour or oppose) Do you feel that way strongly or not so strongly? *160a* *160b*
67. (NEW) If a foreign producer wanted to sell a food product in Canada that was derived from a genetically modified animal that was not currently allowed to be produced within Canada, would you favour, oppose, or be indifferent to them selling that food product?

(END OF RANDOMIZATION)

The next part of this survey focuses on a DIFFERENT ASPECT OF NEW TECHNOLOGY, called nanotechnology.

68a Nanotechnology involves the application of science and engineering at the atomic scale. It involves the construction of tiny structures and devices by manipulating individual molecules and atoms, which have unique and powerful properties. These structures can be used in medicine and biotechnology, in energy and the environment, and in telecommunications. Some examples of nanotechnology include the use of tiny cameras that are used in diagnostic testing, the use of implantable devices that can measure things like blood pressure on a continuous basis, or the use of special nano-molecules in fabrics like wrinkle resistant pants.

- 68b (T) Would you say you are very, somewhat, not very or not at all familiar with nanotechnology?
69. (T) Over the last three months, have you read, seen or heard a lot, a little, or nothing about issues involving nanotechnology research?
70. (T) Before this interview, have you ever discussed nanotechnology with anyone?
71. (T) (If yes) Would you say you have discussed this issue frequently, occasionally, or once or twice?

ROTATE THE NEXT TWO QUESTIONS, ON RISK AND BENEFIT

72. (T) I would like to understand the extent to which you think nanotechnology might benefit our society. Using a scale of 1-5, where 1 is no benefit and 5 is substantial benefit, and the mid-point 3 is moderate benefit, how beneficial do you think nanotechnology research will be to our society?
73. (T) Using the same scale, where 1 is no risk and 5 is substantial risk, with the mid point 3 being moderate risk, how much risk does nanotechnology pose for our society?
74. (T) In terms of the moral or ethical aspect of nanotechnology, again using the 1-5 scale, where 1 means that nanotechnology is morally acceptable and 5 means it is morally unacceptable, and the mid point 3 means it is morally neutral, how do you view this kind of research?
75. (T) In terms of economic benefits to Canada, would you say that nanotechnology will provide major benefits, modest benefits, or no significant benefits?
76. (T) And how involved should government be in funding nanotechnology research, using a 1-5 scale where 1 means government should not be involved at all, 5 means government should be actively involved, and the mid-point 3 means that it should moderately involved?
77. (T) On a scale of 1-5, where 1 is not at all confident and 5 is extremely confident, where the mid point 3 is moderately confident, how confident would you say you are in the safety and regulatory approval systems governing nanotechnology?
78. (T) In terms of the people who are involved in research of these technologies, on a scale of 1-5, where 1 is not at all confident and 5 is extremely confident, where the mid point 3 is moderately confident, how confident would you say you are that nanotechnology is in safe hands?
79. (T) Overall, which of the following best captures your views about nanotechnology research?
- a. I approve of nanotechnology, as long as the usual levels of government regulation and control are in place
 - b. I approve of nanotechnology if it is more tightly controlled and regulated

- c. I do not approve of nanotechnology except under very special circumstances.
 - d. I do not approve of nanotechnology under any circumstances
80. (T) (SPLIT) In the field of biotechnology/nanotechnology, one role for the federal government is to regulate the products that are being developed, to ensure that they are safe for our health and environment; another role is to support the development of the industry, which helps create investment and jobs. With respect to biotechnology/nanotechnology, which role do you think the federal government is putting more emphasis on today, or is it putting equal emphasis on both?
81. (T) (SPLIT – STAY CONSISTENT WITH Q 80 SPLIT) Which role do you think the federal government should emphasize in future, or should it put equal emphasis on both?
82. (T) Some people say that it is impossible for the federal government to regulate industry and to support industry at the same time. Other people say that government can and should be involved in both of these activities, as long as the two functions are separated (between departments). Which of these two views is closest to your own?

(RUN THE FOLLOWING TWO BATTERIES (QUESTIONS 83-94) AS SPLIT SAMPLES, ONE ON BIO AND ONE ON NANO)

83. (T) (Which of the following two statements most closely reflects your view: The government of Canada probably does an effective job of studying and monitoring the impact of biotechnology/nanotechnology products OR The government of Canada probably does not do enough to study and monitor the impact of biotechnology/nanotechnology products?
84. (T) In terms of managing the issues associated with biotechnology/nanotechnology, do you think it is better for Canada to develop its own standards and regulations or do you think it is better for Canada to work with other nations to develop standards and regulations?
85. (T) Some people say that the government of Canada should take measures to try to ensure that Canadian based discoveries in biotechnology/nanotechnology are developed within Canada, because Canadian researchers often can't get the financial backing they need from the financial sector. Others say that the government already does enough to support research and development, and may end up wasting taxpayers money if it tried to do more, so it would be best for government not to get involved. Which of those two views is closest to your own?
86. (T) I believe that biotechnology/nanotechnology research has been carried out in consideration of my interests, values and beliefs OR I believe that these types of technologies have not been developed in consideration of my interests, values, and beliefs?
87. (T) I trust those in authority to ensure that biotechnology/nanotechnology research that takes place in Canada will follow -strict ethical guidelines OR I do not trust those in authority to ensure that this kind of research that takes place in Canada will follow strict ethical guidelines.
88. (T) I think that I would accept the use of most of these biotechnology/nanotechnology products as long as the safety and regulatory process for them was more stringent, and longer, than the normal regulatory process OR As long as these products pass the same tests as every other product and are tested for the same amount of time, I think most of these kinds of biotechnology/nanotechnology products should be accepted in Canada.

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

- 89. (T) Authorities should inform people about biotechnology/nanotechnology, and let them decide for themselves whether they want to use products developed using these techniques
- 90. (T) Biotechnology/nanotechnology research represents the next frontier of human endeavour, a frontier that will lead to significant quality of life benefits for all Canadians
- 91. (T) Canada is among the world's leaders in the field of biotechnology/nanotechnology research
- 92. (T) Canada should be among the world's leaders in the field of biotechnology/nanotechnology research
- 93. (SPLIT) These technologies are going to be developed somewhere in the world, so it is better that they be developed in Canada than somewhere else/I would rather these technologies be developed somewhere else in the world, so we can dedicate our resources to other things and get the benefits of the technologies when others discover them.
- 94. (T) Although there may be some unknown risks, technologies like biotechnology/nanotechnology are an inevitable part of the future, so all we can do is make sure that its uses are as safe as possible.

(END OF ROTATION)

DEMOGRAPHICS

- 95. Over the past week, how many days did you...? [RANDOMIZE]
 - a. Watch the national news on television?
 - b. Watch the local news on television?
 - c. Listen to talk radio about news issues
 - d. Read the front section of a national newspaper, like [CANADA: "The Globe and Mail" or the National Post]
 - e. Read the front section of a local newspaper?
 - f. Read a newsmagazine?
 - g. Read the news on the Internet?
- 96. *note Q* Involved Canadians battery (8 questions) — *missing Qs.*
- 97. In what year were you born?
- 98. What is the highest level of education you have completed?
- 99. In which of the following categories does your total household income, before taxes, fit? (10k increments)
- 100. In which of the following categories does your total household income, before taxes, fit? (10k increments)

- 101. In the past year, how often have you attended a service at a place of worship?
- 102. Which of the following descriptions best describes your household: (one person, living alone; married or common law, no children; married with children under 18 living at home, married with children that have moved out of the home; living with a group of unrelated individuals)
- 103. Employment Status
- 104. Gender (pre-coded)
- 105. Postal Code
- 106. Community Size (urban/rural) pre-coded
- 107. Language of interview pre-coded

Sondage sur les technologies en émergence Printemps 2006

Nous effectuons présentement 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 sera dévoilé à la fin du sondage.)

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. 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?
6. (T) Croyez-vous, que la réglementation et les systèmes en place au Canada concernant les processus d'approbation réglementaire et de sécurité sont très stricts, plutôt stricts, plutôt laxistes ou très laxistes?
7. (T) Croyez-vous que la réglementation et les systèmes en place au Canada concernant les normes d'éthique qui gouvernent la recherche en biotechnologie sont très stricts, plutôt stricts, plutôt laxistes ou très laxistes?
8. (NOUVELLE) Sur une échelle de 1 à 5 où 1 correspond à « pas du tout confiance », 5 à « très confiance » et 3 à « plus ou moins confiance », quelle confiance avez-vous dans les systèmes d'approbation réglementaire et de sécurité auxquels est assujettie la biotechnologie?
9. (E) Je vais vous lire une liste de domaines dans lesquels on assiste à l'émergence de nouvelles technologies. Dans chacun de ces domaines, veuillez me dire si vous croyez que

les technologies en émergence auront un effet positif, aucun effet ou un effet négatif sur notre mode de vie au cours des 20 prochaines années. (Présentez de façon aléatoire)

10. Les nouvelles technologies de moteurs hybrides
11. (E) L'informatique et les technologies de l'information
12. (E) La biotechnologie
13. (E) La recherche sur les cellules souches
14. (E) L'énergie nucléaire
15. (E) La téléphonie cellulaire
16. (E) La nanotechnologie
17. (E) Les aliments génétiquement modifiés
18. Les nouveaux biocarburants comme l'éthanol et l'énergie de biomasse
19. Les animaux génétiquement modifiés
20. Les poissons génétiquement modifiés

(FIN DE LA PRÉSENTATION ALÉATOIRE)

DIVISEZ L'ÉCHANTILLON ENTRE LA SECTION SUR LES CELLULES SOUCHES (Q21-Q33) ET CELLE SUR LES PRODUITS BIOTECHNOLOGIQUES (Q34-44).

La prochaine partie du sondage porte sur l'un de ces domaines : la recherche sur les cellules souches.

(DIVISEZ L'ÉCHANTILLON POUR LA DESCRIPTION ET LES QUESTIONS SUR LES CELLULES SOUCHES)

La recherche sur les cellules souches implique l'utilisation de cellules humaines particulières afin d'étudier les maladies et leurs traitements. Les cellules souches ont la capacité unique de se développer en n'importe quel type de cellules du corps humain. La recherche sur les cellules souches a permis des percées importantes dans notre compréhension du diabète, de la sclérose en plaques et de la maladie de Parkinson. Ces percées ouvrent la porte à de nouvelles façons de traiter et de guérir ces maladies. Toutefois, pour effectuer ces recherches, les scientifiques doivent se procurer des cellules souches. La méthode la plus courante pour obtenir des cellules souches consiste à les prélever d'embryons humains de moins de 2 semaines qui ont été congelés et stockés dans des cliniques de fertilité. Le prélèvement de cellules souches détruit l'embryon. Seuls les embryons non utilisés pour des traitements de fertilité sont utilisés à des fins de recherche.

La recherche sur les cellules souches implique l'utilisation de cellules humaines particulières afin d'étudier les maladies et leurs traitements. Les cellules souches ont la capacité unique de se développer en n'importe quel type de cellules du corps humain. La recherche sur les cellules souches a permis des percées importantes dans notre compréhension du diabète, de la sclérose en plaques et de la maladie de Parkinson. Ces percées ouvrent la porte à de nouvelles façons de traiter et de guérir ces maladies. Toutefois, pour effectuer ces recherches, les scientifiques doivent se procurer des cellules souches. L'une des méthodes qui permet aux scientifiques de produire des cellules souches consiste à créer un œuf en laboratoire pour en prélever les cellules souches qui se développeront et qui pourront être utilisées dans le cadre de la recherche.

21. (T) Diriez-vous que la recherche sur les cellules souches vous est très familière, plutôt familière, pas très familière ou pas du tout familière?

22. (NOUVELLE) Diriez-vous que cette méthode d'obtention de cellules souches vous est très familière, plutôt familière, pas très familière ou pas du tout familière?
23. (T) Au cours des trois derniers mois, avez-vous lu, vu ou entendu beaucoup de choses, peu de choses ou rien du tout sur la recherche sur les cellules souches?
24. (T) Avant ce sondage, aviez-vous déjà discuté de la recherche sur les cellules souches?
25. (Si oui) En avez-vous discuté souvent, à l'occasion ou seulement une ou deux fois?

ALTERNEZ LES DEUX PROCHAINES QUESTIONS SUR LES RISQUES ET LES AVANTAGES

26. (T) Sur une échelle de 1 à 5, où 1 correspond à « aucunement avantageuse », 5 à « très avantageuse » et 3 à « assez avantageuse », dans quelle mesure, selon vous, la recherche sur les cellules souches serait-elle avantageuse pour la société?
27. (T) Toujours sur une échelle de 1 à 5, où 1 correspond à « aucun risque », 5 à « un risque important » et 3 à « un risque modéré », quels risques la recherche sur les cellules souches représente-t-elle selon vous pour la société?
28. (T) Passons maintenant à l'aspect moral ou éthique de la recherche sur les cellules souches. Toujours sur une échelle de 1 à 5, où 1 correspond à « moralement acceptable », 5 à « moralement inacceptable » et 3 à « neutre », quel est votre point de vue à l'égard de ce type de recherche?
29. (T) Selon vous, croyez-vous que la recherche sur les cellules souches génèrera un avantage économique important, un avantage économique modéré ou qu'elle ne génèrera aucun avantage économique pour le Canada?
30. (T) Selon vous, sur une échelle de 1 à 5, où 1 signifie que le gouvernement ne devrait pas participer financièrement, 5 qu'il devrait y participer activement et 3 qu'il devrait y participer de façon modérée, dans quelle mesure le gouvernement devrait-il financer ce type de recherche?
31. (T) (DIVISEZ L'ÉCHANTILLON) Sur une échelle de 1 à 5 où 1 correspond à « pas du tout confiance », 5 à « très confiance » et 3 à « plus ou moins confiance », quelle confiance avez-vous dans les systèmes d'approbation réglementaire et de sécurité auxquels est assujettie la recherche sur les cellules souches?/Sur une échelle de 1 à 5 où 1 correspond à « pas du tout confiance », 5 à « très confiance » et 3 à « moyennement confiance », dans quelle mesure faites-vous confiance aux scientifiques qui œuvrent dans le domaine de la recherche sur les cellules souches?
32. (T) De façon générale, lequel de ces énoncés correspond le mieux à votre point de vue à l'égard de la recherche sur les cellules souches?
 - a. J'approuve l'utilisation de cellules souches pour autant que la réglementation et les contrôles gouvernementaux usuels soient en place.
 - b. J'approuve la recherche sur les cellules souches pour autant qu'elle soit mieux contrôlée et réglementée.
 - c. Je n'approuve pas la recherche sur les cellules souches à moins de circonstances très particulières.
 - d. Je n'approuve la recherche sur les cellules souches sous aucun prétexte.
33. (NOUVELLE) L'un des enjeux associés à la recherche sur les cellules souches porte sur la thérapie génique. Grâce à la thérapie génique, les scientifiques peuvent remplacer un gène déficient qui cause certaines maladies par une copie « en santé » développée à partir de cellules souches. De

nouvelles études démontrent qu'il serait possible de transmettre la copie de ce nouveau gène « en santé » aux prochaines générations. Certaines personnes croient qu'il s'agit d'une bonne chose parce que cela empêcherait la transmission de maladies héréditaires graves. Toutefois, d'autres croient que ce n'est pas une bonne chose parce que cela se traduirait par une modification du code génétique des générations futures. Lequel de ces deux points de vue se rapproche le plus au vôtre?

[SECTION SUR LES BIOPRODUITS – DIVISEZ AVEC LA SECTION SUR LES CELLULAIRES SOUCHES]

La prochaine section du sondage porte sur l'un de ces domaines : les produits biotechnologiques ou bioproduits. Les bioproduits consistent principalement en l'utilisation de plantes à des fins non alimentaires, notamment pour le développement de nouvelles formes d'énergie comme l'éthanol et de nouveaux types de matériaux industriels comme des produits d'emballage.

34. (NOUVELLE) Diriez-vous que les bioproduits vous sont très familiers, plutôt familiers, pas très familiers ou pas du tout familiers?

Il existe de nombreux débouchés pour les bioproduits. Veuillez me dire si vous êtes fortement en accord, plutôt en accord, plutôt en désaccord ou fortement en désaccord avec ces utilisations éventuelles. (Présentez de façon aléatoire)

35. (NOUVELLE) *Le développement de nouvelles formes d'essence, comme l'éthanol ou le biodiésel, à partir de maïs ou d'orge génétiquement modifiés. Ces cultures pourraient être modifiées pour produire un taux plus élevé de sucre ou obtenir une récolte plus importante que la culture conventionnelle, ce qui augmenterait la viabilité économique de cette forme d'énergie.*
36. (NOUVELLE) *Le développement de nouvelles formes de plastique à partir de l'amidon du lin, du soya ou du maïs, qui pourraient être utilisés dans le secteur de la construction ou de la rénovation comme substitut aux produits actuels à base de pétrole.*
37. (NOUVELLE) *Le développement de nouvelles formes de plastique à partir de l'amidon du lin, du soya ou du maïs, qui pourraient être utilisés comme produit d'emballage alimentaire, par exemple des gobelets biodégradables, plutôt que les produits actuels à base de pétrole.*
38. (NOUVELLE) *L'utilisation de plantes pour la décontamination de terrains. Certaines plantes, comme le tournesol, possèdent des enzymes qui permettent à la plante d'extraire du sol, de l'eau ou de l'air de petites quantités de métaux lourds et d'autres polluants. La modification génétique de ces plantes permettrait d'en augmenter le potentiel décontaminant.*
39. (NOUVELLE) *L'utilisation de plantes pour réduire l'impact des gaz à effets de serre. Éventuellement, certaines plantes ou certains arbres pourraient être génétiquement modifiés pour absorber de plus grandes concentrations de carbone que les plantes conventionnelles, ce qui permettrait de réduire les émissions de gaz à effet de serre.*

ALTERNEZ LES DEUX PROCHAINES QUESTIONS SUR LES RISQUES ET LES AVANTAGES

40. (NOUVELLE) Sur une échelle de 1 à 5, où 1 correspond à « aucunement avantageux », 5 à « très avantageux » et 3 à « assez avantageux », dans quelle mesure, selon vous, les bioproduits seraient-ils avantageux pour la société?

41. (NOUVELLE) Toujours sur une échelle de 1 à 5, où 1 correspond à « aucun risque », 5 à « un risque important » et 3 à « un risque modéré », quels risques les bioproduits représentent-ils, selon vous, pour la société?
42. (NOUVELLE) Passons maintenant à l'aspect moral ou éthique des bioproduits. Toujours sur une échelle de 1 à 5, où 1 correspond à « moralement acceptable », 5 à « moralement inacceptable » et 3 à « neutre », quel est votre point de vue à l'égard de ce type de produits?
43. (NOUVELLE) Sur une échelle de 1 à 5 où 1 correspond à « pas du tout confiance », 5 à « très confiance » et 3 à « plus ou moins confiance », quelle confiance avez-vous dans les systèmes d'approbation réglementaire et de sécurité auxquels sont assujettis les bioproduits?
44. (NOUVELLE) Dans l'ensemble, lequel de ces énoncés correspond le mieux à votre point de vue à l'égard des bioproduits?
 - a. J'approuve l'utilisation de tels produits pour autant que la réglementation et les contrôles gouvernementaux usuels soient en place.
 - b. J'approuve de tels produits pour autant qu'ils soient mieux contrôlés et réglementés.
 - c. Je n'approuve pas de tels produits à moins de circonstances très particulières.
 - d. Je n'approuve de tels produits sous aucun prétexte.

(DIVISEZ L'ÉCHANTILLON ENTRE LES SECTIONS POISSONS GÉNÉTIQUEMENT MODIFIÉS ET ANIMAUX GÉNÉTIQUEMENT MODIFIÉS.)

La prochaine section du sondage porte sur un autre aspect de la biotechnologie : le poisson génétiquement modifié.

La biotechnologie a de nombreuses applications possibles, notamment dans l'élevage de poissons. Il existe de nombreuses raisons pour génétiquement modifier les poissons, notamment l'amélioration du taux de croissance des poissons et la production de médicaments ou de cellules utilisés dans le traitement de maladies humaines. Ces poissons sont créés en insérant un gène d'une autre variété de poissons, d'un autre animal, d'une plante ou d'une bactérie dans l'ADN du poisson pour lui donner une nouvelle caractéristique ou un nouveau trait. Dans la plupart des cas, ces applications se déroulent en environnement contrôlé ou en laboratoire.

45. (NOUVELLE) Diriez-vous que la modification génétique des poissons vous est très familière, plutôt familière, pas très familière ou pas du tout familière?

Il existe de nombreux débouchés pour la modification génétique de poissons. Veuillez me dire si vous êtes fortement en accord, plutôt en accord, plutôt en désaccord ou fortement en désaccord avec ces applications éventuelles. (Présentez de façon aléatoire)

46. (NOUVELLE) *Le développement de poissons génétiquement modifiés dans le but de produire de l'insuline pour traiter le diabète. L'injection conventionnelle d'insuline chez les personnes souffrant de diabète de type I peut entraîner des problèmes circulatoires. La transplantation de cellules de tilapia génétiquement modifiées pourrait contrôler les symptômes du diabète sans nécessiter l'injection d'insuline. Ces poissons seraient élevés en environnement contrôlé ou en laboratoire.*
47. (NOUVELLE) *Le développement d'une algue génétiquement modifiée pour la production de médicaments et de produits diététiques. Par exemple, une algue génétiquement modifiée produit une protéine humaine qui protège contre les infections d'une variante du virus de l'herpès simplex. Cette variété d'algues est produite dans un site terrestre contrôlé.*

48. (NOUVELLE) Le développement de poissons d'aquarium tropicaux génétiquement modifiés pour l'industrie de la vente au détail. Des poissons-zèbres sont génétiquement modifiés en leur ajoutant un gène de fluorescence qui confère au poisson la capacité d'absorber de la lumière pour ensuite la réémettre, donnant ainsi l'illusion que le poisson brille. Ces poissons seraient élevés dans d'autres pays et importés au Canada.
49. (NOUVELLE) Le développement de saumons de l'Atlantique génétiquement modifiés, aux fins de recherche, pour évaluer dans un écosystème clos l'impact environnemental potentiel de poissons génétiquement modifiés les uns sur les autres ainsi que sur l'eau. Ces poissons seraient élevés dans des sites terrestres contrôlés et ne seraient ni utilisés à des fins commerciales, ni vendus.

ALTERNEZ LES DEUX PROCHAINES QUESTIONS SUR LES RISQUES ET LES AVANTAGES

50. (NOUVELLE) Sur une échelle de 1 à 5, où 1 correspond à « aucunement avantageux », 5 à « très avantageux » et 3 à « assez avantageux », dans quelle mesure, selon vous, les poissons génétiquement modifiés seraient-ils avantageux pour la société?
51. (NOUVELLE) Toujours sur une échelle de 1 à 5, où 1 correspond à « aucun risque », 5 à « un risque important » et 3 à « un risque modéré », quels risques les poissons génétiquement modifiés représentent-ils, selon vous, pour la société?
52. (NOUVELLE) Passons maintenant à l'aspect moral ou éthique des poissons génétiquement modifiés. Toujours sur une échelle de 1 à 5, où 1 correspond à « moralement acceptable », 5 à « moralement inacceptable » et 3 à « neutre », quel est votre point de vue à l'égard de ce type de poissons?
53. (NOUVELLE) Sur une échelle de 1 à 5 où 1 correspond à « pas du tout confiance », 5 à « très confiance » et 3 à « plus ou moins confiance », quelle confiance avez-vous dans les systèmes d'approbation réglementaire et de sécurité auxquels sont assujetties les modifications génétiques de poissons?
54. (NOUVELLE) Dans l'ensemble, lequel de ces énoncés correspond le mieux à votre point de vue à l'égard des poissons génétiquement modifiés?
- a. J'approuve la modification génétique de poissons pour autant que la réglementation et les contrôles gouvernementaux usuels soient en place.
 - b. J'approuve la modification génétique de poissons pour autant qu'il soit mieux contrôlé et réglementé.
 - c. Je n'approuve pas la modification génétique de poissons à moins de circonstances très particulières.
 - d. Je n'approuve la modification génétique de poissons sous aucun prétexte.

(FIN DE LA PRÉSENTATION ALÉATOIRE)

[ANIMAUX GÉNÉTIQUEMENT MODIFIÉS]

La prochaine section du sondage porte sur un autre aspect de la biotechnologie : les animaux génétiquement modifiés. La modification génétique d'animaux pourrait avoir de nombreuses applications.

55. (NOUVELLE) Diriez-vous que la modification génétique d'animaux vous est très familière, plutôt familière, pas très familière ou pas du tout familière?

Il existe de nombreux débouchés pour la modification génétique d'animaux. Veuillez me dire si vous êtes fortement en accord, plutôt en accord, plutôt en désaccord ou fortement en désaccord avec ces applications éventuelles. (Présentez de façon aléatoire)

56. (NOUVELLE) (DIVISEZ L'ÉCHANTILLON) *L'élevage de vaches génétiquement modifiées dont le taux de gras serait plus faible, ce qui réduirait l'impact négatif sur la santé des produits du bœuf conventionnel./L'élevage de vaches génétiquement modifiées dont le taux de croissance serait plus rapide et qui seraient plus grosses que les vaches conventionnelles, ce qui réduirait probablement les coûts de production et le coût de la viande pour le consommateur.*
57. (NOUVELLE) (DIVISEZ L'ÉCHANTILLON) *L'élevage de vaches clonées aux fins de recherche biomédicale, ce qui permettrait aux scientifiques de mieux comprendre les maladies et leur propagation chez les animaux./L'élevage de vaches clonées dans le but d'obtenir une source uniforme de viande de meilleure qualité et de lait pour la consommation humaine.*
58. (NOUVELLE) (DIVISEZ L'ÉCHANTILLON) *L'élevage d'animaux génétiquement modifiés pour la croissance d'organes aux fins de transplantation humaine. Ces animaux seraient modifiés de telle sorte que leurs organes seraient similaires à ceux des êtres humains ce qui augmenterait les chances de transplantations réussies./L'élevage d'animaux génétiquement modifiés qui produiraient des concentrations d'enzymes plus élevées que la normale. Ces enzymes seraient par la suite extraites et utilisées dans la production de produits de santé, par exemple des médicaments.*
59. (NOUVELLE) *L'élevage de poulets génétiquement modifiés résistants aux maladies comme la grippe aviaire.*
60. (NOUVELLE) (DIVISEZ L'ÉCHANTILLON) *L'élevage de poissons génétiquement modifiés qui grossiraient plus rapidement que les poissons non génétiquement modifiés, ce qui réduirait probablement les coûts de production et le coût du poisson pour le consommateur. Ces poissons seraient élevés dans des sites terrestres./L'élevage de poissons génétiquement modifiés qui grossiraient plus rapidement que les poissons non génétiquement modifiés, ce qui réduirait probablement les coûts de production et le coût du poisson pour le consommateur. Ces poissons seraient élevés dans des enclos de filet, situés dans les eaux côtières canadiennes.*

ALTERNEZ LES DEUX PROCHAINES QUESTIONS SUR LES RISQUES ET LES AVANTAGES

61. (NOUVELLE) Sur une échelle de 1 à 5; où 1 correspond à « aucunement avantageux », 5 à « très avantageux » et 3 à « assez avantageux », dans quelle mesure, selon vous, les animaux génétiquement modifiés seraient-ils avantageux pour la société?
62. (NOUVELLE) Toujours sur une échelle de 1 à 5, où 1 correspond à « aucun risque », 5 à « un risque important » et 3 à « un risque modéré », quels risques les animaux génétiquement modifiés représentant-ils, selon vous, pour la société?

63. (NOUVELLE) Passons maintenant à l'aspect moral ou éthique des animaux génétiquement modifiés. Toujours sur une échelle de 1 à 5, où 1 correspond à « moralement acceptable », 5 à « moralement inacceptable » et 3 à « neutre », quel est votre point de vue à l'égard de ce type d'animaux?
64. (NOUVELLE) Sur une échelle de 1 à 5 où 1 correspond à « pas du tout confiance », 5 à « très confiance » et 3 à « plus ou moins confiance », quelle confiance avez-vous dans les systèmes d'approbation réglementaire et de sécurité auxquels sont assujetties les modifications génétiques d'animaux?
65. (NOUVELLE) Dans l'ensemble, lequel de ces énoncés correspond le mieux à votre point de vue à l'égard des animaux génétiquement modifiés?
- a. J'approuve la modification génétique d'animaux pour autant que la réglementation et les contrôles gouvernementaux usuels soient en place.
 - b. J'approuve la modification génétique d'animaux pour autant qu'il soit mieux contrôlé et réglementé.
 - c. Je n'approuve pas la modification génétique d'animaux à moins de circonstances très particulières.
 - d. Je n'approuve la modification génétique d'animaux sous aucun prétexte.
66. (NOUVELLE) Comme vous le savez peut-être, certains producteurs étrangers désireraient exporter au Canada des aliments élaborés à partir d'animaux ou de plantes génétiquement modifiés. Êtes-vous pour ou contre l'importation d'aliments élaborés à partir d'animaux ou de plantes génétiquement modifiés ou si vous n'avez pas d'opinion à ce sujet? (Si pour ou contre) Êtes-vous fortement pour/contre ou passablement pour/contre l'importation de tels produits?
67. (NOUVELLE) Si un producteur étranger voulait vendre au Canada un aliment élaborés à partir d'animaux génétiquement modifiés et dont l'élevage n'était pas permis au Canada, seriez-vous pour ou contre l'idée qu'il puisse vendre ce produit alimentaire ou si vous n'avez pas d'opinion à ce sujet?

(FIN DE LA PRÉSENTATION ALÉATOIRE)

La prochaine partie du sondage porte sur un AUTRE ASPECT DE LA NOUVELLE TECHNOLOGIE que l'on nomme : la nanotechnologie.

La nanotechnologie est l'application de la science et de l'ingénierie au niveau de l'atome. C'est la construction de structures et de dispositifs minuscules par la manipulation de molécules et d'atomes qui ont des propriétés uniques et puissantes. Ces structures peuvent être utilisées en médecine et en biotechnologie, dans le domaine de l'énergie et de l'environnement, ainsi qu'en télécommunications. Voici quelques exemples d'applications de la nanotechnologie : l'utilisation de caméras miniatures pour effectuer des tests diagnostics, l'utilisation de dispositifs implantables qui peuvent mesurer la pression artérielle de façon continue ou encore, l'utilisation de nanomolécules dans les tissus pour la fabrication de pantalons infroissables.

68. (T) Diriez-vous que la nanotechnologie vous est très familière, assez familière, pas très familière ou pas familière du tout?
69. (T) Au cours des trois derniers mois, avez-vous lu, vu ou entendu, beaucoup de choses, peu de choses ou rien du tout à propos de la recherche en nanotechnologie?
70. (T) Avant ce sondage, aviez-vous déjà discuté de nanotechnologie?
71. (T) (Si oui) En avez-vous discuté souvent, à l'occasion ou seulement une ou deux fois?

ALTERNEZ LES DEUX PROCHAINES QUESTIONS, SUR LES RISQUES ET LES AVANTAGES

72. (T) Sur une échelle de 1 à 5, où 1 correspond à « aucunement avantageuse », 5 à « très avantageuse » et 3 à « assez avantageuse », dans quelle mesure, selon vous, la nanotechnologie serait-elle avantageuse pour la société?
73. (T) Toujours sur une échelle de 1 à 5, où 1 correspond à « aucun risque », 5 à « un risque important » et 3 à « un risque modéré », quels risques la nanotechnologie représente-t-elle, selon vous, pour la société?
74. (T) Passons maintenant à l'aspect moral ou éthique de la nanotechnologie. Toujours sur une échelle de 1 à 5, où 1 correspond à « moralement acceptable », 5 à « moralement inacceptable » et 3 à « neutre », quel est votre point de vue à l'égard de ce type de recherche?
75. (T) Selon vous, croyez-vous que la nanotechnologie génèrera un avantage économique important, un avantage économique modéré ou qu'elle ne génèrera aucun avantage économique pour le Canada?
76. (T) Selon vous, sur une échelle de 1 à 5, où 1 signifie que le gouvernement ne devrait pas participer financièrement, 5 qu'il devrait y participer activement et 3 qu'il devrait y participer de façon modérée, dans quelle mesure le gouvernement devrait-il financer la recherche en nanotechnologie?
77. (T) Sur une échelle de 1 à 5 où 1 correspond à « pas du tout confiance », 5 à « très confiance » et 3 à « plus ou moins confiance », quelle confiance avez-vous dans les systèmes d'approbation réglementaire et de sécurité auxquels est assujettie la nanotechnologie?
78. (T) Et sur une échelle de 1 à 5 où 1 correspond à « pas du tout confiance », 5 à « très confiance » et 3 à « plus ou moins confiance », dans quelle mesure faites-vous confiance aux scientifiques qui œuvrent dans le domaine de la nanotechnologie?
79. (T) Dans l'ensemble, lequel de ces énoncés correspond le mieux à votre point de vue à l'égard de la recherche en nanotechnologie?
- e. J'approuve la nanotechnologie, pour autant que la réglementation et les contrôles gouvernementaux usuels soient en place.
 - f. Je suis d'accord avec la nanotechnologie pour autant qu'elle soit mieux contrôlée et réglementée.
 - g. Je n'approuve pas la nanotechnologie à moins de circonstances très particulières.
 - h. Je n'approuve la nanotechnologie sous aucun prétexte.
80. (T) (DIVISEZ L'ÉCHANTILLON) Dans le domaine de la biotechnologie/nanotechnologie, le gouvernement a comme rôle la réglementation des produits développés afin d'assurer leur sécurité pour notre santé et l'environnement. Il a également comme rôle la stimulation de l'industrie, ce qui engendre des investissements et une création d'emplois. Concernant la biotechnologie/nanotechnologie, quel rôle le gouvernement fédéral devrait-il privilégier en ce moment ou croyez-vous qu'il devrait accorder la même importance à ces deux rôles?
81. (T) (DIVISEZ L'ÉCHANTILLON – SUIVEZ LA DIVISION FAITE À Q 80) Quel rôle le gouvernement fédéral devrait-il privilégier le plus à l'avenir ou croyez-vous qu'il devrait accorder la même importance à ces deux rôles?

82. (T) Certaines personnes disent qu'il n'est pas possible pour le gouvernement d'à la fois stimuler et réglementer l'industrie. D'autres personnes disent que c'est possible et que le gouvernement devrait participer à ces deux activités pour autant qu'elles soient distinctes (relèvent de ministères différents). Lequel de ces deux points de vue se rapproche le plus du vôtre?

(POUR LA SÉRIE DE QUESTIONS SUIVANTES (83 à 94), DIVISEZ L'ÉCHANTILLON : BIOTECHNOLOGIE OU NANOTECHNOLOGIE)

83. (T) (Lequel de ces deux énoncés correspond le mieux à votre point de vue : Le gouvernement du Canada fait probablement du bon travail dans l'étude et le contrôle de l'impact des produits de la biotechnologie/nanotechnologie OU Le gouvernement du Canada n'en fait probablement pas assez pour l'étude et le contrôle de l'impact des produits de la biotechnologie/nanotechnologie.
84. (T) Afin de gérer les enjeux reliés à la biotechnologie/nanotechnologie, croyez-vous que le Canada devrait élaborer ses propres normes et sa propre réglementation ou croyez-vous que le Canada devrait collaborer avec d'autres pays pour élaborer des normes et une réglementation?
85. (T) Certaines personnes disent que le gouvernement du Canada devrait prendre des mesures pour faire en sorte que les découvertes faites au Canada en matière de biotechnologie/nanotechnologie soient développées au Canada, puisque les chercheurs canadiens n'obtiennent généralement pas le financement nécessaire du secteur financier. D'autres disent que le gouvernement du Canada en fait déjà assez pour favoriser la recherche et le développement et gaspillerait peut-être l'argent des contribuables s'il essayait d'en faire plus, il vaut donc mieux que le gouvernement ne s'implique pas. Lequel des deux énoncés suivants correspond le mieux à votre point de vue?
86. (T) Je crois que la recherche en biotechnologie/nanotechnologie a été effectuée en respectant mes intérêts, mes valeurs et mes croyances OU Je crois que cette recherche n'a pas été effectuée en respectant mes intérêts, mes valeurs et mes croyances?
87. (T) Je crois que les autorités en place s'assurent que la recherche en biotechnologie/nanotechnologie qui s'effectue au Canada est conforme à des lignes directrices strictes en matière d'éthique OU Je ne crois pas que les autorités en place s'assurent que la recherche en biotechnologie/nanotechnologie qui s'effectue au Canada est conforme à des lignes directrices strictes en matière d'éthique.
88. (T) Je crois que j'accepterais l'utilisation de la plupart des produits de biotechnologie/nanotechnologie si le processus de sécurité et de réglementation était plus sévère et plus long que le processus usuel OU Dans la mesure où ces produits sont soumis aux mêmes tests pour une même période de temps, je crois que la plupart des produits de biotechnologie/nanotechnologie devraient être acceptés au Canada.

Veuillez me dire si vous êtes fortement en accord, en accord, en désaccord ou fortement en désaccord avec les énoncés suivants : (PRÉSENTEZ DE FAÇON ALÉATOIRE)

89. (T) Les autorités devraient informer le public à propos de la biotechnologie/nanotechnologie et laisser les gens libres d'utiliser ou non les produits issus de ces technologies.
90. (T) La recherche en biotechnologie/nanotechnologie représente une nouvelle perspective pour l'homme, une étape qui mènera à l'amélioration significative de la qualité de vie des Canadiens.
91. (T) Le Canada est parmi les chefs de file mondiaux en recherche biotechnologique/nanotechnologique.

92. (T) Le Canada devrait être parmi les chefs de file mondiaux en recherche biotechnologique/nanotechnologique.
93. (DIVISEZ L'ÉCHANTILLON) Ces technologies seront développées de toute façon, mieux vaut qu'elles le soient au Canada qu'ailleurs/J'aimerais mieux voir ces technologies développées ailleurs dans le monde afin que nous puissions investir nos ressources dans autre chose et en profiter lorsqu'elles auront été mises au point par d'autres.
94. (T) Bien qu'elles comportent des risques inconnus, les technologies comme la biotechnologie/nanotechnologie font partie intégrante de l'avenir, tout ce que nous pouvons faire est de nous assurer que leur utilisation soit aussi sécuritaire que possible

QUESTIONS DÉMOGRAPHIQUES

Au cours de la dernière semaine, combien de jours avez-vous

- a. Regardé les nouvelles nationales à la télévision?
 - b. Regardé les nouvelles régionales à la télévision?
 - c. Écouté l'actualité à la radio?
 - d. Lu le premier cahier d'un journal national tel [CANADA : « le Globe and Mail » ou « le National Post »]?
 - e. Lu le premier cahier d'un journal régional?
 - f. Lu un magazine?
 - g. Lu les nouvelles sur Internet?
96. En quelle année êtes-vous né(e)?
97. Quel est le plus haut niveau de scolarité que vous avez atteint?
- Études primaires
 - Études secondaires non terminées
 - Études secondaires terminées
 - Études collégiales ou techniques non terminées
 - Études collégiales ou techniques terminées
 - Études universitaires non terminées
 - Études universitaires terminées
 - Études supérieures
 - Pas d'éducation
 - NE LISEZ PAS : refuse de répondre

98. Quel est le revenu annuel total de votre foyer avant impôts?
99. Au cours de la dernière année, combien de fois avez-vous assisté à un service dans un lieu de culte?

100. Lequel de ces énoncés décrit le mieux votre foyer :

Habite seul(e)
Marié(e) ou en union libre, sans d'enfant
Marié(e) avec enfants de moins de 18 ans à la maison
Marié(e) avec enfants qui n'habitent plus à la maison
Habite avec des personnes sans lien de parenté
NE LISEZ PAS : Ne sait pas/Refuse de répondre

101. Lequel des énoncés suivant vous décrit le mieux? Êtes-vous...

Étudiant(e)
Travailleur(euse) à plein temps, c'est-à-dire 35 heures ou plus par semaine
Travailleur(euse) à temps partiel, c'est-à-dire moins de 35 heures par semaine
Présentement sans emploi
Dans l'incapacité de travailler
Une personne au foyer Retraité(e)
NE LISEZ PAS : Ne sait pas/Refuse de répondre

Pouvez-vous me donner votre code postal?

INDIQUEZ LA LANGUE DE L'ENTREVUE***

Appendix B : Recruitment Screener

DECIMA (BIOTECH TRACKING SPRING 2006 GROUPS)

QUESTIONNAIRE # _____				DATE OF LAST GROUP # OF PREVIOUS GROUPS _____	
City: Ottawa (English)				Rec. 10	
Wednesday, May 10, 2006				Honorarium: \$65.00	
Group #1: Gen Pop	@5:30pm	1	\$65.00	Study # 90035 LD Code:	
Group #2: Involved Canadians	@7:30pm	2	\$65.00		
City: Montreal (French)				Groups#1 through to #10 Recruit 10	
Thursday, May 18, 2006				Group #11 through to #13 Recruit 16	
Group #3: Gen Pop	@5:30pm	3	\$65.00		
Group #4: Involved Canadians	@7:30pm	4	\$65.00		
City: Halifax (English)					
Wednesday, May 24, 2006					
Group #5: Gen Pop	@5:30pm	5	\$65.00		
Group #6: Involved Canadians	@7:30pm	6	\$65.00		
City: Vancouver (English)					
Thursday, June 1, 2006					
Group #7: Gen Pop	@5:30pm	7	\$65.00		
Group #8: Involved Canadians	@7:30pm	8	\$65.00		
City: Edmonton (English)					
Monday, June 5, 2006					
Group #9: Gen Pop	@5:30pm	9	\$65.00		
Group #10: Involved Canadians	@7:30pm	10	\$65.00		

Respondent's name: _____	Interviewer: _____
Respondent's phone #: _____ (home)	Date: _____
Respondent's phone #: _____ (work)	Validated: _____
Respondent's fax #: _____ sent? _____ or	Quality Central: _____
Respondent's e-mail : _____ sent? _____	On List: _____
Sample source (circle): random referral	On Quotas: _____

Hello, my name is _____. I'm calling from OSI Focus Search, a national public opinion research firm. We're organizing a couple of discussion groups among residents to explore public opinions regarding current issues. **EXPLAIN FOCUS GROUPS.** About ten people like yourself will be taking part, all of them randomly recruited by telephone just like you. But before we invite you to attend, we need to ask you a few questions to ensure that we get a good mix and variety of people. May I ask you a few questions?

Yes **CONTINUE**

No **ASK IF ANYONE ELSE IN THE HOUSEHOLD MIGHT BE INTERESTED**

If NOT THANK AND TERMINATE

Participation is voluntary. We are interested in hearing your opinions, no attempt will be made to sell you anything or change your point of view. The format is a "round table" discussion lead by a research professional.

1a) Do you or any member of your household work for....

The federal or provincial government 1

A media outlet, like a newspaper, radio or TV station 3

An advertising, public relations or market research firm 4

IF "YES" TO ANY OF THE ABOVE, THANK AND TERMINATE

1b) Are you a Canadian citizen at least 18 years old?

Yes 1 **CONTINUE**

No 2 **THANK & TERMINATE**

1c) **DO NOT ASK – NOTE GENDER (target a 50/50 split in all groups)**

Male 1

Female 2

- 2) I'd like to ask you some questions about your level of involvement in current issues, if you don't mind. For each of the following, I'd like you to tell me, with a yes or no response, whether you have done this in the last year.

	Yes	No
a. Made a speech to a public audience.....	1	2
b. Written an article for a publication.....	1	2
c. Served as an officer of a club or organization.....	1	2
d. Written a letter to the editor.....	1	2
e. Called a television or radio talk show.....	1	2
f. served as an officer of a non-governmental organization?	1	2
g. written to an elected representative?.....	1	2
h. been a member of or worked for a political party?.....	1	2
i. expressed your views on an important issue through a website or blog?.....	1	2

- Involved Canadians will say yes to at least 3 of the nine questions
- Those who yes to 1 or less of the 9 should be recruited for the gen pop groups
- Take those who say 2 on hold for the Involved groups

- 3) And how old are you? Are you**READ LIST**

Under 18	0	THANK & TERMINATE
18-24	1	
25-34 years	2	
35-44 years	3	WE NEED A MIX
45-54	4	OF AGES IN
55-64	5	EACH GROUP
65 years and older	6	
Refuse	9	

- 3b) Could you please tell me what is the last level of education that you have completed?
- | | | |
|---------------------------------|---|--------------------------|
| Some high school only..... | 1 | |
| Completed high school..... | 2 | |
| Some College/University..... | 3 | MIX IN EACH GROUP |
| Completed College/University... | 4 | |

4a) Are you currently....

Married/common-law.....1 **MIX IN EACH GROUP**
Single/div/separated/widowed....2

4b) And what is your occupation? _____

TERMINATE IF OCCUPATION IN Q1a

IF MARRIED ASK Q4C)

4c) What is your spouses occupation? _____

TERMINATE IF OCCUPATION IN Q1a

5) And is your total family income... **MIX IN EACH GROUP**

Below \$30K	1
Between \$30 – 49,999K	2
\$50K-100K	3
Over \$100K	4
RF/DK	9

6a) The next couple of questions deal with your imagination. Have a little fun with these questions and feel free to answer in any way, as there are no incorrect answers.

Please give me three things you can do with a paper clip besides the obvious.

If you could meet anyone in the past or present, who would you like to meet and why?

ANSWERS SPONTANEOUSLY

_____ VERY SURE OF HIMSELF/HERSELF
_____ ENTHUSIASTIC
_____ CARRIES ON A GOOD CONVERSATION

NOTE: PAY EXTRA ATTENTION TO RESPONDENTS ANSWERS-LOOK FOR A COMPLEX ANSWER. ANSWERS SHOULD ALSO BE CREATIVE AND NOT JUST ANSWERS. LOOK FOR IMAGINATION AND A SENSE OF CREATIVITY/PARTICIPATION.

- 7a) Participants in group discussions are asked to voice their opinions and thoughts, how comfortable are you in voicing your opinions in front of others? Are you (read list)

Very comfortable.....1-min. 4 per group

Fairly comfortable.....2

Comfortable.....3

Not very comfortable..4}terminate

Very uncomfortable....5}terminate

- 7b) Have you participated in a focus group? A focus group brings together a few people in order to know their opinion about a given subject.

Yes 1 **ASK Q7C AND Q7D**

No 2 **SKIP TO Q8**

DNK / DNA 9 **THANK AND TERMINATE**

- 7c) When did you last attend one of these discussions?

_____ terminate if within the last 6 months

- 7d) Would you please tell me which topics you discussed when you attended the focus group or interviews?

IF MENTIONS ANYTHING RELATED TO BIOTECHNOLOGY – THANK AND TERMINATE

- 7e) And how many of these sessions have you attended?

IF Q7E>3 THANK AND TERMINATE. OTHERWISE CONTINUE

As I mentioned earlier, the group discussion will take place the evening of, **Day, Month, Date @ Time for 2 hours** and participants will receive **\$65** for their time. Would you be willing to attend?

Yes 1 CONTINUE

No 2 THANK AND TERMINATE

That's great! Do you have a pen or pencil; I will provide you with some additional information.

City: Ottawa (English)
Wednesday, May 10, 2006

Group #1: Gen Pop	@5:30pm	1	\$65.00
Group #2: Involved Canadians	@7:30pm	2	\$65.00

City: Montreal (French)
Thursday, May 18, 2006

Group #3: Gen Pop	@5:30pm	3	\$65.00
Group #4: Involved Canadians	@7:30pm	4	\$65.00

City: Halifax (English)
Wednesday, May 24, 2006

Group #5: Gen Pop	@5:30pm	5	\$65.00
Group #6: Involved Canadians	@7:30pm	6	\$65.00

City: Vancouver (English)
Thursday, June 1, 2006

Group #7: Gen Pop	@5:30pm	7	\$65.00
Group #8: Involved Canadians	@7:30pm	8	\$65.00

City: Edmonton (English)
Monday, June 5, 2006

Group #9: Gen Pop	@5:30pm	9	\$65.00
Group #10: Involved Canadians	@7:30pm	10	\$65.00

Invitation:

Do you have a pen handy so that I can give you the address where the group will be held? It will be held at:

Ottawa: Downtown Location <u>Address:</u> TBD <u>Directions:</u> Info will be given to them during confirmation calls. WE may use our facility or go to another one just down the street if ours isn't ready <u>Parking:</u> TBD	Montreal: OSI FocusSearch <u>Address:</u> 1080 Beaver Hall Hill, Suite400, Montreal <u>Directions:</u> Located on Beaver Hall Hill between Blvd. René Levesque O. and De La Gauchetière streets. Take Blvd. René Levesque O. street eastbound until you hit Côte du Beaver Hall. Turn right onto Côte du Beaver Hall. <u>Parking:</u> Street, municipal and attached parking.
Halifax: Omnifacts Bristol Research <u>Address:</u> 2000 Barrington Street, Cogswell Towers, Ground (G) Level, Halifax <u>Directions:</u> Cogswell Tower is adjacent to Delta Halifax (Downtown) <u>Parking:</u> Parking is accessible from Barrington St. or from Market Street.	Vancouver: PFI Research Inc. <u>Address:</u> 1550 Alberni Street, Suite 420, Vancouver <u>Directions:</u> Travelling north on Granville, take the Seymour ramp coming off the Granville Bridge, turn left on Robson. Turn right on Cardero. Drive 1 block to Alberni (at Cardero) and park in lot on corner. We are located at Cardero and Alberni. <u>Parking:</u> Street, municipal and attached parking.
Edmonton: Trend Research Inc <u>Address:</u> 2nd Floor, 10304 – 108 Street, Edmonton <u>Directions:</u> Situated in the heart of downtown Edmonton, Trend is located on the corner of 108 Street and 103 Avenue. <u>Parking:</u> Street parking, attached parking, municipal parking.	

We ask that you arrive fifteen minutes early to be sure you find parking, locate the facility and have time to check-in with the hosts. The hosts may be checking respondent's identification prior to the group, so please be sure to bring some personal identification with you (i.e. driver's license). Also, if

your require glasses for reading, please bring them with you. The group will last no more than **2 hours** and for your time you will receive a cash honorarium of **\$65.00**.

As we are only inviting a small number of people, your participation is very important to us. If for some reason you are unable to attend, please call so that we may get someone to replace you. Please **do not** send someone in your place. You can reach us at **1-800-363-4229 ext 5068** at our office. Please ask for **Carol Smith**. Someone will call you the day before to remind you about the discussion.

So that we can call you to remind you about the focus group or contact you should there be any changes,
can you please confirm your name and contact information for me? **[READ INFO WE HAVE AND CHANGE AS NECESSARY.]**

First name _____

Last Name _____

Email: _____

Day time phone number _____

Night time phone number _____

If the respondent refused to give his/her first or last name or phone number please assure them that this information will be kept strictly confidential in accordance to the privacy law and that it is used strictly to contact them to confirm their attendance and to inform them of any changes to the focus group. If they still refuse THANK & TERMINATE

DÉCIMA (BIOTECH)

QUESTIONNAIRE N° _____ DATE DU DERNIER GROUPE _____
NOMBRE DE GROUPEs ANTÉRIEURS _____

<u>Ville : Montréal (en français)</u> Le jeudi 18 mai 2006 Groupe 3 : Grand public @ 17 h 30 3 65.00 \$ Groupe 4 : Canadien(ne)s impliqué(e)s @ 19 h 30 4 65.00 \$	Prime : 65,00 \$ Étude n° 90035 Code d'interurbain : _____ recrutez 10 personnes
Nom du répondant : _____ N° de téléphone du répondant : _____ (maison) N° de téléphone du répondant : _____ (bureau) N° de télécopieur du répondant : _____ envoyé? ou Courriel du répondant : _____ envoyé? Source de l'échantillon (encerclez) : eVox aléatoire client référence	Intervieweur : _____ Date : _____ Validé : _____ Fichiers centraux : _____ Listes : _____ Quotas : _____

Bonjour, je m'appelle _____ et je vous téléphone d'OSI FocusSearch, une firme nationale d'études de marché. Nous organisons quelques groupes de discussion composés de citoyens dans le but de sonder l'opinion publique concernant des enjeux d'actualité. **EXPLIQUEZ LES GROUPEs DE DISCUSSION.** Environ **X** personnes prendront part à la discussion, toutes ayant été recrutées au hasard par téléphone tout comme vous. En guise de remerciement pour leur temps, nous remettrons aux participants une prime en argent de **65 \$**. Toutefois, avant de vous inviter à participer, nous devons vous poser quelques questions pour nous assurer d'avoir une bonne variété de gens. Puis-je vous poser quelques questions?

Oui	1	CONTINUEZ
Non	2	REMERCIEZ ET TERMINEZ

Votre participation est volontaire. Toutes vos réponses demeureront strictement confidentielles et seront uniquement utilisées à des fins de recherche. Nous sommes uniquement intéressés à connaître vos opinions. Nous ne tenterons pas de vous vendre quoi que ce soit. La discussion se déroulera sous forme de « table ronde » et sera dirigée par un professionnel de la recherche.

- 1a) Est-ce que vous ou un autre membre de votre foyer travaillez pour...
- | | |
|--|---|
| Le gouvernement fédéral ou provincial | 1 |
| Les médias, par exemple un journal, une station de radio ou de télévision | 2 |
| Une agence de publicité, une agence de relations publiques ou une firme d'études de marché | 3 |

SI « OUI » À L'UNE OU L'AUTRE DES RÉPONSES, REMERCIEZ ET TERMINEZ

1b) Êtes-vous citoyen canadien et âgé d'au moins 18 ans?

Oui	1	CONTINUEZ
Non	2	REMERCIEZ ET TERMINEZ

1c) **NE PAS DEMANDER – NOTEZ LE SEXE (Ciblez un mélange de 50/50 pour tous les groupes.)**

Homme	1
Femme	2

3) Si vous le permettez, j'aimerais vous poser quelques questions à propos de votre degré d'implication dans les enjeux actuels. Pour chacune des activités suivantes, j'aimerais que vous me disiez, en répondant par un oui ou par un non, si vous l'avez faite au cours de la dernière année.

Oui Non

a. Prononcé un discours en public	1	2
b. Écrit un article pour publication	1	2
c. Été administrateur(rice) d'une association ou d'un organisme.....	1	2
d. Écrit une lettre à une tribune libre	1	2
e. Téléphoné lors d'une ligne ouverte à la télévision ou à la radio	1	2
f. Été administrateur(trice) d'une organisation non gouvernementale.....	1	2
g. Écrit à un(e) élu(e).....	1	2
h. Été membre d'un parti politique ou avez travaillé pour un parti politique.....	1	2
i. Exprimé votre point de vue concernant des enjeux importants sur un site Web ou un blogue.	1	2

- | |
|--|
| <ul style="list-style-type: none"> – Les Canadien(ne)s impliqué(e) répondront oui à au moins 3 des 9 questions – Ceux qui répondent oui à 1 question ou moins seront recrutés pour les groupes grand public – Ceux qui répondent oui à 2 questions seront recrutés comme substituts (backups) |
|--|

3) Quel âge avez-vous? Avez-vous... **LISEZ LA LISTE**

Moins de 18 ans	0	REMERCIEZ ET TERMINEZ
De 18 à 24 ans	1	
De 25 à 34 ans	2	
De 35 à 44 ans	3	NOUS AVONS BESOIN D'UNE VARIÉTÉ
De 45 à 54 ans	4	D'ÂGES DANS CHAQUE GROUPE
De 55 à 64 ans	5	
65 ans ou plus	6	
Refuse	9	

3b) Pouvez-vous me dire quel est le plus haut niveau de scolarité que vous ayez atteint?

Études secondaires en partie 1

Études secondaires terminées..... 2

Études collégiales/universitaires en partie..... 3

Études collégiales/universitaires terminées..... 4

**VARIÉTÉ DANS CHAQUE
GROUPE**

4a) Êtes-vous...

Marié(e) / Conjoint(e) de fait 1

Célibataire/divorcé(e)/séparé(e)/Veuf(ve) 2

VARIÉTÉ POUR CHAQUE GROUPE

4b) Quelle est votre occupation? _____

TERMINEZ SI EMPLOI CORRESPOND À Q1a

SI MARIÉ(E), DEMANDEZ Q4C)

4c) Quelle est l'occupation de votre conjoint(e)? _____

TERMINEZ SI EMPLOI CORRESPOND À Q1a

5) Quel est votre revenu familial total?

Moins de 30 000 \$ 1

Entre 30 000 \$ et 49 999 \$ 2

50 000 \$-100,000\$ 3

Plus de 100,000\$ 4

RF/NSP 9

6a) Les prochaines questions feront appel à votre imagination. Amusez-vous et sentez-vous à l'aise de répondre comme bon vous semble. Il n'y a pas de bonnes ou de mauvaises réponses.

Pouvez-vous me donner trois autres choses qu'on peut faire avec un trombone, à part de s'en servir pour retenir des feuilles ensemble?

Si vous aviez la chance de rencontrer toute personne, qu'elle soit morte ou vivante, qui serait cette personne et pourquoi?

RÉPOND SPONTANÉMENT

_____ TRÈS SÛR(E) DE LUI-MÊME/D'ELLE-MÊME

_____ ENTHOUSIASTE

_____ A UNE CONVERSATION INTÉRESSANTE

NOTE : PORTEZ UNE ATTENTION SPÉCIALE AUX RÉPONSES DES RÉPONDANTS. RECHERCHEZ DES RÉPONSES COMPLEXES. LES RÉPONSES DEVRAIENT ÊTRE CRÉATIVES ET NON SEULEMENT PRATIQUES. RECHERCHEZ DES RÉPONDANTS QUI FONT PREUVE D'IMAGINATION ET DE CRÉATIVITÉ, DES GENS QUI PARTICIPENT.

- 7a) Nous demandons aux participants des groupes de discussion d'exprimer leurs opinions et de verbaliser leurs pensées. Dans quelle mesure êtes-vous à l'aise à l'idée d'exprimer votre opinion devant les autres? Diriez-vous que vous êtes... (Lisez la liste)

Très à l'aise 1 Minimum de 4 par groupe

Assez à l'aise 2

À l'aise 3

Pas très à l'aise 4} **Terminez**

Pas du tout à l'aise 5} **Terminez**

- 7b) Avez-vous déjà participé à un groupe de discussion? Un groupe de discussion réunit diverses personnes dans le but d'obtenir leurs opinions sur un sujet donné.

Oui 1

Non 2

NSP / PDR 9 **REMERCIEZ ET TERMINEZ**

SI oui à q7b, demandez q7c et 7d

- 7c) QUAND AVEZ-VOUS PARTICIPÉ À UN GROUPE DE DISCUSSION LA DERNIÈRE FOIS?

_____ **TERMINEZ SI AU COURS DES 6 DERNIERS MOIS**

- 7d) Pouvez-vous me dire sur quoi portait l'entrevue ou le groupe de discussion auquel vous avez participé?

_____ **SI ELLE PORTAIT SUR BIOTECHNOLOGIE, TERMINEZ**

- 7e) A combien de groupe de discussion avez-vous participé auparavant?

_____ **SI Q7E>3 Remerciez et Terminez. Autrement Continuez**

- 7f) Avez-vous été invité à un groupe de discussion dans les quelques semaines qui suivent?

Yes **REMERCIEZ ET TERMINEZ**

No **CONTINUEZ**

Invitation:

Comme je vous l'ai mentionné plus tôt, le groupe de discussion aura lieu en soirée le **jour, mois, année à heure et durera 2 heures**. Les participants recevront une prime de 65 \$ en guise de remerciement pour le temps qu'ils nous auront consacré. Êtes-vous intéressé(e) à assister à ce groupe?

Oui	1	CONTINUEZ
Non	2	REMERCIEZ ET TERMINEZ

Ville : Montréal (en français) : Le jeudi 18 mai 2006

Groupe 3 : Grand public	@ 17 h 30	3	65,00 \$
Groupe 4 : Canadien(ne)s impliqué(e)s	@ 19 h 30	4	65,00 \$

INVITATION

Avez-vous un crayon à portée de la main pour prendre en note l'adresse de l'endroit où se tiendra le groupe de discussion? Il aura lieu :

Montréal : OSI FocusSearch

Adresse : 1080, côte du Beaver Hall, bureau 400, Montréal

Directions : Les bureaux sont situés sur la côte du Beaver Hall, entre le boulevard René-Lévesque Ouest et la rue de la Gauchetière. Prenez le boulevard René-Lévesque Ouest, en direction Est, jusqu'à côte du Beaver Hall. Tournez à droite sur Côte du Beaver Hall.

Stationnement : sur la rue, stationnement municipal et garage sous l'édifice.

La discussion durera environ **2 heures** et vous recevrez une prime de 65 \$ en guise de remerciement pour le temps que vous nous aurez accordé.

Nous vous demandons d'arriver quinze minutes avant l'heure prévue pour vous permettre de stationner votre voiture, de trouver nos bureaux et de vous présenter à nos hôtes. Il est possible qu'on vous demande de vous identifier avant la tenue du groupe. Par conséquent, assurez-vous d'avoir une pièce d'identité avec vous. (ex. permis de conduire). De plus, si vous avez besoin de lunettes de lecture, veuillez les apporter avec vous.

Comme nous n'invitons qu'un petit nombre de personnes, votre participation est très importante pour nous. Si, pour une raison ou une autre vous ne pouvez pas vous présenter, veuillez nous en aviser pour que nous puissions vous remplacer. Vous pouvez nous joindre au 1 800 363-4229, poste 5068.

Demandez à parler à **Carol Smith**. Quelqu'un communiquera avec vous la veille du groupe de discussion pour confirmer votre présence.

Afin que nous puissions vous appeler pour confirmer votre présence ou pour vous informer si des changements survenaient, pourriez-vous me confirmer votre nom et vos coordonnées? **[LISEZ LES COORDONNÉES QUE NOUS AVONS ET MODIFIEZ AU BESOIN.]**

Prénom _____
Nom de famille _____
Courriel _____
N° de téléphone de jour _____
N° de téléphone en soirée _____

Si le répondant refuse de donner son prénom, son nom ou son numéro de téléphone, (1 n° de téléphone c'est bien, 2 c'est mieux) veuillez lui dire que ces renseignements demeureront strictement confidentiels en vertu de la loi sur le respect de la vie privée et que ceux-ci seront uniquement utilisés pour le contacter afin de confirmer sa présence et pour l'informer de tout changement concernant le groupe de discussion. S'il refuse toujours, **REMERCIEZ ET TERMINEZ.**

Merci beaucoup de votre collaboration!

Appendix C: Moderator's Guide

2006 Biotechnology Research

Focus Group Moderator's Guide

Warm-up

The moderator will take a few minutes to go around the table and ask respondents to introduce themselves, and outline a few ground rules: want to ensure that people share their views openly, let everyone participate, want people to talk about their views, not “other people’s views”, ensure that we don’t want people to “debate” each other – everyone’s views are valid, there are no right or wrong answers.

The moderator will also point out that there is a one-way mirror, observers in the back, and audio and video taping, but ensure that all discussion is confidential.

Introduction

Tonight we are going to talk about new technologies. What are some of the newest technologies that are changing our world, the things we do, the treatments for our health, the products we use?

2. Have you heard of the word biotechnology?
- 3ab What does it mean? What does it encompass?

4. Is it a subject you know a lot about, a little about, or not much about?

Definition: Biotechnology is a term that encompasses 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. Related to biotechnology are the areas of life sciences, genetic modification and genomics.

Biotechnology has applications in a number of fields. Can you recall any that you have heard of?

Have you heard of the word nanotechnology? What does it mean? What does it encompass?

7. Is it a subject you know a lot about, a little about, or not much about?

Tonight we are going to discuss a number of specific aspects of these emerging technologies.

Module: Bio-products

transition I would like to talk to you for a few minutes about a topic called bio-products.

8a-7d Have you heard of something called bio-products? Bio-Environmental Products? As it relates to new forms of Energy? What do you know about it?

Definition 9a ***Bio-products primarily involve the use of plants for non-food uses, uses that range from development of new forms of energy, like ethanol and biodiesel, to new types of industrial materials like product packaging.***

9ab This kind of technology is evolving in many different ways.

9b Would you say you are very, somewhat, not very or not at all familiar with bio-products?

Skim for 10-14 [There are numerous ways in which bio-products can be developed and used. Please tell me if you strongly agree, agree, disagree or strongly disagree with the following potential applications of these technologies, and why you express that point of view.

- 10 • The development of alternative forms of transportation fuel, such as ethanol or biodiesel, from genetically modified crops like corn or barley. These crops would be modified to yield higher levels of sugar and be grown in higher volumes than conventional crops, increasing the economic viability of using this form of energy.
- 11 • The development of new forms of plastics developed using starches found in flax, soy, or corn, that would be used in the construction and renovation sector, as a substitute for petroleum that is used in current plastic products
- 12 • The development of new forms of plastics developed using starches found in flax, soy, or corn that would be used to produce food packaging like biodegradable cups, instead of petroleum that is used in current plastic products
- 13 • The use of plants to detoxify and restore contaminated and polluted areas. Certain plants, like sunflowers, possess enzymes that enable the plant to extract and detoxify small amounts of heavy metals and other pollutants from soil, water and air. GM applications of these plants could increase the ability of the plant to detoxify highly contaminated areas.
- 14 • The use of plants to help reduce the impact of greenhouse gases. In the future, certain plants or trees could be genetically modified to take on higher levels of carbon than conventional plants or trees, thereby reducing the volume of greenhouse gases in the atmosphere.

15- I would like to understand the extent to which you think bio-products might benefit our society. What are the benefits of this kind of research?

16 And what do you see as the major risks involved?

17a
17b In terms of the moral or ethical aspect of this research, what are your views? Do your moral concerns lead you to believe we should not go forward in this area of technology?

18a
18b How confident would you say you are in the safety and regulatory approval systems governing bio-products in Canada? Why do you say that?

19a
19b And what about in terms of the scientists who are involved in research of these technologies? How confident would you say you are that bio-products is in safe hands? Why do you say that?

20. Would you say it is a good thing or a bad thing for Canada to be a world leader in research into bioproduct applications?

21. And would you say it is a good thing or a bad thing for the government of Canada to be involved in supporting this type of research?

22. Overall, which of the following best captures your views about bio-products? (Hand-out)

- Answers {
- e. I approve the use of this kind of bio-products, as long as the usual levels of government regulation and control are in place
 - f. I approve of the development of bio-products if it is more tightly controlled and regulated
 - g. I do not approve of bio-products except under very special circumstances.
 - h. I do not approve of bio-products under any circumstances

Module: GM Fish

Transition. I'd like to talk about an area of biotechnology you may or may not have heard of, genetically modified fish.

preamble / definition
23a Biotechnology applications are being explored in fish. Fish are being genetically modified for a number of reasons, such as to improve the growth rate of fish, or for production of drugs or cells for the treatment of human disease. These fish are created by taking DNA from one source – a different kind of fish, a different animal, a plant, or a bacterium – and putting it into a fish to give it a new characteristic or trait. In most cases, these applications are carried out in contained facilities or laboratories.

Some of these applications involve the genetic modification of fish, where single genes are inserted or modified to obtain desired traits such as improved growth or disease tolerance.

Other applications involve genetic selection, where fish that have certain traits are identified, selected and reproduced using conventional breeding techniques.

23b Work in this area remains at the early research stage, no such applications have been approved for use in Canada at this time. Do you have any familiarity with this area of work?

24. In your view, what are there differences between these?

25. Would you say you are very, somewhat, not very or not at all familiar with genetic modification of fish?

stem for 26-29 There are numerous ways in which genetic modification of fish can be used. Please tell me if you strongly agree, agree, disagree or strongly disagree with the following potential applications of these technologies, and why you express that point of view.

- 26 1. The development of genetically modified fish that can produce human insulin to treat diabetes. Conventional injection of insulin by type I diabetics can produce circulatory problems over time. The use of genetically engineered Tilapia cells for transplants could relieve the symptoms of diabetes without the need for insulin injection. These fish would be grown in contained laboratory facilities.
- 27 2. The development of genetically modified algae for the production of pharmaceutical drugs or dietary applications. One example of this is GM algae, producing a human protein to protect against infection by a variant of the herpes simplex virus. These algae are grown in contained land based manufacturing facilities.
- 28 3. The development of genetically modified tropical fish for use in the aquarium and retail pet industry. Zebra fish, genetically modified by adding a fluorescence gene so that the fish absorb light and then re-emit it, creating the perception that they are glowing. These fish would be developed in other countries and imported into Canada.
- 29 4. The development of genetically modified Atlantic salmon, for the purpose of research, to assess the potential environmental impact of GM fish on each other and on the water in a contained ecosystem. These fish would be kept in contained land-based research facilities, and would not be for commercial use or sale.

30 I would like to understand the extent to which you think GM fish might benefit our society. What are the benefits of this kind of research?

31 And what do you see as the major risks involved?

32ab In terms of the moral or ethical aspect of this research, what are your views? Do your moral concerns lead you to believe we should not go forward in this area of technology? 32a 32b

33ab How confident would you say you are in the safety and regulatory approval systems governing these technologies in Canada? Why do you say that? 33a 33b

39ab And what about in terms of the scientists who are involved in research of these technologies? How confident would you say you are that these applications are in safe hands? Why do you say that? 34a 34b 34c

35 Would you say it is a good thing or a bad thing for Canada to be a world leader in research in this area?

36 And would you say it is a good thing or a bad thing for the government of Canada to be involved in supporting this type of research?

37ab Overall, which of the following best captures your views about GM fish? (Hand-out) 37a

- annex
- I approve the use of GM fish, as long as the usual levels of government regulation and control are in place
 - I approve of GM fish if it is more tightly controlled and regulated
 - I do not approve of GM fish except under very special circumstances
 - I do not approve of GM fish under any circumstances

Moderator Instruction Each respondent will be asked to provide their answer to the above question, and to engage in a discussion about why they feel as they do. 38a 38b

38ab Overall, what are the main differences/similarities that you see between these areas? Are you more/less likely to be comfortable with research and applications developed in one of these but not the other? 38a 38b

Module: Stem Cell Research

transation I would like to talk to you for a few minutes about stem cell research.

39^{ab} Have you heard of stem cell research? What do you know about it? ^{39a} ^{39b}

40 Can you think of any specific applications of stem cell research you have heard of?

41 Have you heard much lately?

42^{ab} Before this interview, had you ever discussed stem cell research with anyone? What was the specific topic of that/those discussions? ^{42a} ^{42b}

Common definition/explanation 43^a Stem cell research involves the use of special human cells to study diseases and their cures. Stem cells have the unique ability to grow into any type of cell in the human body. Stem cell research has led to breakthroughs in our understanding of diabetes, MS, and Parkinson's disease that offer the potential for new treatments and cures. However, to conduct this research, scientists have to get stem cells.

43^{ab} The most common method of getting stem cells is to obtain them from human embryos that are less than 2 weeks old and have been frozen and stored in fertility clinics. The process of getting stem cells destroys the embryos. However, these embryos are only be used for research if they are not going to be used for fertility treatments. I would like to understand the extent to which you think stem cell research might benefit our society. What are the benefits of this kind of research? ^{43b}

44 And what do you see as the major risks involved?

45 In terms of the moral or ethical aspect of this research, what are your views?

stem for 46-47 { In terms of obtaining stem cells, there are actually two different ways to get them right now.. I would like to get your reaction to these two approaches, in order to understand which one is of greater or lesser (or equal) concern to you.

46 • Using embryos frozen in fertility clinics that will not be used in fertilization

47 • Creating embryos in a lab, which are used only for stem cells, with no intent of creating life.

48 How confident would you say you are in the safety and regulatory approval systems governing stem cell research in Canada?

49^{ab} And what about in terms of the scientists who are involved in research of these technologies? How confident would you say you are that stem cell research is in safe hands? ^{49a} ^{49b}

50 How do you compare the confidence you have in these two groups of organizations/scientists?

51 Would you say it is a good thing or a bad thing for (Canada/the US) to be a world leader in research into stem cell research applications?

52 And would you say it is a good thing or a bad thing for the government of (Canada/the US) to be involved in supporting this type of research?

53^{ab} Overall, which of the following best captures your views about stem cell research? (Hand-out) ^{53a}

- answers {
- I approve the use of stem cell research, as long as the usual levels of government regulation and control are in place
 - I approve of stem cell research if it is more tightly controlled and regulated
 - I do not approve of stem cell research except under very special circumstances

- I do not approve of stem cell research under any circumstances

Moderator
Instruction
Probe

Each respondent will be asked to provide their answer to the above question, and to engage in a detailed discussion about why they feel as they do.

Question
Stem for

54

Now I would like to ask you the same question under a different scenario. Suppose scientists were able to get all the stem cells they need for research from umbilical cords and no longer had to get them from embryos that were not going to be used in fertility treatments. While not available now, research is evolving that may make it possible to use blood cells from umbilical cords for what is referred to as “cellular therapy”. Which of the following would best capture your view about this type of stem cell research?

Overall, which of the following best captures your views about this kind of stem cell research? (Hand-out)

Answer
choices

- I approve the use of stem cell research, as long as the usual levels of government regulation and control are in place
- I approve of stem cell research if it is more tightly controlled and regulated
- I do not approve of stem cell research except under very special circumstances
- I do not approve of stem cell research under any circumstances

Moderator
Instruction
Probe

Each respondent will be asked to provide their answer to the above question, and to engage in a detailed discussion about why they feel as they do.

Module: Pharmacogenetics/Personalized Medicine

Transition

I would like to talk to you for a few minutes about a topic called pharmacogenetics, which is often referred to as personalized medicine.

550b

Have you heard of personalized medicine as it relates to biotechnology? What do you know about it?

This kind of technology is evolving in a couple of different ways,

Common
definition/
explanation

Personalized medicine, or pharmacogenetics, involves the study of how the genetic make-up of a group of people who are similar such as an ethnic group affects responses to drug treatments. It involves the development of drugs based on a group's genetic profile. Understanding the genetic profile of groups of people is thought by many scientific researchers to be a key to creating more tailored drugs with greater effectiveness.

The next “wave” of this technology involves the study of how an individual's genetic makeup affects the body's response to drug treatments. It involves the development of drugs based on an individual's genetic profile. Understanding an individual's genetic makeup is thought by many scientific researchers to be the key to creating personalized drugs with greater effectiveness.

56b

Would you say you are very, somewhat, not very or not at all familiar with personalized medicine involving genetics?

57b

Before this discussion, had you ever discussed personalized medicine with anyone? What was the specific topic of that/those discussions?

58

I would like to understand the extent to which you think personalized medicine might benefit our society. What are the benefits of this kind of research?

59

And what do you see as the major risks involved?

60a In terms of the moral or ethical aspect of this research, what are your views? Do your moral concerns lead you to believe we should not go forward in this area of technology? 60b

61a How confident would you say you are in the safety and regulatory approval systems governing personalized medicine in Canada? Why do you say that? 61b

62a And what about in terms of the scientists who are involved in research of these technologies? How confident would you say you are that personalized medicine is in safe hands? Why do you say that? 62b 62c

63 Would you say it is a good thing or a bad thing for (Canada/the US) to be a world leader in research into personalized medicine applications?

64 And would you say it is a good thing or a bad thing for the government of (Canada/the US) to be involved in supporting this type of research?

65 Overall, which of the following best captures your views about personalized medicine? (Hand-out)

- Answers {
- i. I approve the use of this kind of personalized medicine, as long as the usual levels of government regulation and control are in place
 - j. I approve of personalized medicine if it is more tightly controlled and regulated
 - k. I do not approve of personalized medicine except under very special circumstances.
 - l. I do not approve of personalized medicine under any circumstances

Module: Nanotechnology

Transition I would like to talk to you for a few minutes about nanotechnology.

66a 66b 66c Have you heard of nanotechnology? What do you know about it? Where do you recall hearing about that?

67 Can you think of any specific applications of nanotechnology you have heard of?

68a 68b Before this interview, had you ever discussed nanotechnology with anyone? What was the specific topic of that/those discussions?

69 Does it seem like mostly "science fiction" to you, or is it something scientific/real?

Common definition 70a Nanotechnology involves the application of science and engineering at the atomic scale. It involves the construction of tiny structures and devices by manipulating individual molecules and atoms, which have unique properties at that scale. These structures can be used in medicine and biotechnology, in energy and the environment, and in telecommunications. Some of them have genetic elements, others are not. I'd like to get your reaction to some examples of nanotechnology, and get your sense as to whether you support or oppose the development of such technologies. Start with wrinkle free fabric and cosmetics

70b The use of special nano-molecules in fabrics like wrinkle/stain resistant pants

70c The use of molecules that enable the production of drinking water by extracting salt from seawater

70d The use of implantable /ingestible devices that can measure things like blood pressure or blood sugar on a continuous basis

70e The use of molecules that have magnetic properties to extract heavy metals in water treatment facilities.

70^x The use of light-sensitive molecules that have the ability to detect pollutants in water and air, by the amount of light they emit. The use of “nanocatalysts” in oil sands development, which are molecules that separate the sand from the oil, that substitute for the energy intensive separation processes that are currently used. 70g

71 I would like to understand the extent to which you think nanotechnology might benefit our society. What are the benefits of this kind of research?

72 And what do you see as the major risks involved?

73a-7c ***In terms of the moral or ethical aspect of this research, what are your views? Do your moral concerns differ at all depending on the application involved? Which ones? Why? 73a 73b 73c 73d 74a

74a-7b What is your understanding about how regulatory systems for nanotechnology applications work? Would you expect that these systems are similar to the ones that govern things like biotechnology, or pharmaceuticals, for example? 74b

75ab ****How confident would you say you are in the safety and regulatory approval systems governing nanotechnology in Canada? Why is that? 75a 75b

76ab And what about in terms of the scientists who are involved in research of these technologies? How confident would you say you are that nanotechnology is in safe hands? 76a 76b

77 How do you compare the confidence you have in these two groups of organizations/scientists?

78 Would you say it is a good thing or a bad thing for (Canada/the US) to be a world leader in research into nanotechnology?

79 And would you say it is a good thing or a bad thing for the government of (Canada/the US) to be involved in supporting this type of research?

80 Were you aware there is a national institute of nanotechnology in Alberta, at the U of A?

81a Overall, which of the following best captures your views about nanotechnology? (Hand-out) 81a

- Answers:
- I approve the use of nanotechnology, as long as the usual levels of government regulation and control are in place
 - I approve of nanotechnology if it is more tightly controlled and regulated
 - I do not approve of nanotechnology except under very special circumstances
 - I do not approve of nanotechnology under any circumstances

Each respondent will be asked to provide their answer to the above question, and to engage in a detailed discussion about why they feel as they do. 81b

Moderator
Instruction
Discussion probe

Recherche sur la biotechnologie 2006

Guide de modération

Réchauffement

Le modérateur prendra quelques minutes pour faire un tour de table et demander aux participants de se présenter. Il expliquera par la suite quelques règles à suivre : faire en sorte que tous puissent exprimer leurs points de vue ouvertement et en toute honnêteté, laisser la chance à tous de participer, chacun exprime son point de vue personnel et non celui « des autres », débattre de la question et non des réponses des autres, tous les points de vue sont valables, il n'y a pas de bonne, ni de mauvaise réponse.

Le modérateur informera ensuite les participants qu'il y a un miroir d'observation derrière lequel se trouvent des gens et que l'on fera un enregistrement audio-visuel de la discussion, mais les assurera également que toute la discussion demeurera confidentielle.

Introduction

Ce soir, nous discuterons de nouvelles technologies. Quelles nouvelles technologies contribuent à changer le monde, notre façon de faire, le traitement des maladies et les produits d'utilisation courante?

- Avez-vous déjà entendu le mot biotechnologie?
 - Pouvez-vous m'en donner une définition? Qu'est-ce que la biotechnologie englobe?
 - Est-ce un sujet que vous connaissez bien, que vous connaissez peu ou que vous ne connaissez pas?

La biotechnologie comprend un vaste éventail d'applications scientifiques utilisées dans de nombreux domaines comme la santé, les ressources naturelles et l'agriculture. La biotechnologie fait appel à l'utilisation d'organismes vivants, ou de certaines parties de ces organismes, dans le but de mettre au point de nouveaux procédés et de créer de nouveaux produits. La biotechnologie regroupe notamment les sciences de la vie, la génétique et la génomique.

La biotechnologie a des applications dans de nombreux secteurs d'activité.

- Vous souvenez-vous avoir entendu parler de certaines de ces applications? Lesquelles?

Ce soir, nous discuterons de certains aspects précis de ces technologies en émergence.

Module : Recherche sur les cellules souches

J'aimerais vous parler de la recherche sur les cellules souches durant quelques minutes.

- Avez-vous déjà entendu parler de la recherche sur les cellules souches? Que connaissez-vous sur ce sujet?
- Vous souvenez-vous d'avoir entendu parler d'applications précises de la recherche sur les cellules souches?
- En avez-vous entendu parler plus qu'à l'habitude récemment?
- Avant ce soir, aviez-vous déjà discuté de la recherche sur les cellules souches?
 - Sur quoi avaient porté ces discussions précisément?

La recherche sur les cellules souches implique l'utilisation de cellules humaines particulières afin d'étudier les maladies et leurs traitements. Les cellules souches ont la capacité unique de se développer en n'importe quel type de cellules du corps humain. La recherche sur les cellules souches a permis des percées importantes dans notre compréhension du diabète, de la sclérose en plaques et de la maladie de Parkinson. Ces percées ouvrent la porte à de nouvelles façons de traiter et de guérir ces maladies. Toutefois, pour effectuer ces recherches, les scientifiques doivent se procurer des cellules souches.

La méthode la plus courante pour obtenir des cellules souches consiste à les prélever d'embryons humains de moins de 2 semaines qui ont été congelés et stockés dans des cliniques de fertilité. Le prélèvement de cellules souches détruit l'embryon. Seuls les embryons non utilisés pour des traitements de fertilité sont utilisés à des fins de recherche. J'aimerais savoir dans quelle mesure, selon vous, la recherche sur les cellules souches serait-elle avantageuse pour la société.

- Quels sont les avantages de ce type de recherche?
- Selon vous, quels sont les principaux risques associés à ce type de recherche?
- Que pensez-vous de l'aspect moral ou éthique de ce type de recherche?

En fait, il existe actuellement deux méthodes pour obtenir des cellules souches :

1. Le recours à des embryons congelés et stockés dans des cliniques de fertilité et non utilisés pour des traitements de fertilité.
2. La création d'embryons en laboratoire, qui ne seront utilisés que pour la recherche sur les cellules souches, sans aucune intention de procréation.

J'aimerais connaître votre réaction à l'égard de ces deux approches pour déterminer laquelle vous préoccupe le plus ou le moins (ou autant).

- Quelle confiance avez-vous dans les systèmes de sécurité et d'approbation réglementaire auxquels est assujettie la recherche sur les cellules souches au Canada?
- Et dans quelle mesure faites-vous confiance aux chercheurs qui œuvrent dans le domaine des cellules souches?
- Comment se compare votre niveau de confiance à l'égard des organisations/chercheurs qui utilisent ces deux méthodes?

- Selon vous, est-ce une bonne ou une mauvaise chose pour le Canada d'être un chef de file dans le domaine des applications de la recherche sur les cellules souches?
- Et est-ce une bonne ou une mauvaise chose pour le gouvernement du Canada de financer ce type de recherche?
- Dans l'ensemble, lequel de ces énoncés correspond le mieux à votre opinion de la recherche sur les cellules souches? (Document)
 - J'approuve l'utilisation de cellules souches pour autant que la réglementation et les contrôles gouvernementaux usuels soient en place.
 - J'approuve la recherche sur les cellules souches pour autant qu'elle soit mieux contrôlée et réglementée.
 - Je n'approuve pas la recherche sur les cellules souches à moins de circonstances très particulières.
 - Je n'approuve pas la recherche sur les cellules souches sous aucun prétexte.

Chaque répondant offre sa réponse, puis est invité à discuter en détail des raisons qui expliquent son opinion.

J'aimerais maintenant vous poser la même question, mais sous un angle différent. L'une des méthodes qui permet aux scientifiques de produire des cellules souches consiste à créer un œuf en laboratoire pour en prélever les cellules souches qui se développeront et qui pourront être utilisées dans le cadre de la recherche.

- Que pensez-vous de cette méthode pour obtenir des cellules souches et effectuer la recherche?
- Dans l'ensemble, lequel de ces énoncés correspond le mieux à votre opinion de ce type de recherche sur les cellules souches?
 - J'approuve l'utilisation de cellules souches pour autant que la réglementation et les contrôles gouvernementaux usuels soient en place.
 - J'approuve la recherche sur les cellules souches pour autant qu'elle soit mieux contrôlée et réglementée.
 - Je n'approuve pas la recherche sur les cellules souches à moins de circonstances très particulières.
 - Je n'approuve pas la recherche sur les cellules souches sous aucun prétexte.

Chaque répondant offre sa réponse, puis est invité à discuter en détail des raisons qui expliquent son opinion.

Module : Nanotechnologie

J'aimerais vous parler de la nanotechnologie durant quelques minutes.

- Avez-vous déjà entendu parler de la nanotechnologie? Que connaissez-vous sur ce sujet? Où en avez-vous entendu parler?
- Vous souvenez-vous d'avoir entendu parler d'applications précises de la nanotechnologie?
- Avant ce soir, aviez-vous déjà discuté de la recherche sur la nanotechnologie? Sur quoi avaient porté ces discussions précisément?
- Cela vous semble-t-il du domaine de la science-fiction ou du domaine de la science et du possible?

La nanotechnologie est l'application de la science et de l'ingénierie au niveau de l'atome. C'est la construction de structures et de dispositifs minuscules par la manipulation de molécules et d'atomes qui ont des propriétés uniques et puissantes. Ces structures peuvent être utilisées en médecine et en biotechnologie, dans le domaine de l'énergie et de l'environnement, ainsi qu'en télécommunications. Certaines comportent des éléments génétiques d'autres non.

J'aimerais savoir dans quelle mesure la nanotechnologie serait avantageuse pour la société selon vous.

- Quels sont les avantages de ce type de recherche?
- Selon vous, quels sont les principaux risques associés à ce type de recherche?

J'aimerais connaître votre opinion à l'égard de quelques exemples d'applications de la nanotechnologie et savoir si vous êtes pour ou contre le développement de telles technologies. Commençons par...

- L'utilisation de nanomolécules dans les tissus pour la fabrication de pantalons infroissables et antitaches.
- L'utilisation de molécules pour extraire le sel de l'eau de mer et la transformer en eau potable.
- L'utilisation de dispositifs implantables ou ingestibles pour mesure la pression artérielle et la glycémie de façon continue.
- L'utilisation de molécules aux propriétés magnétiques pour extraire les métaux lourds dans les usines d'épuration des eaux.
- L'utilisation de molécules photosensibles ayant la capacité de détecter des polluants dans l'eau et dans l'air en fonction de la lumière qu'ils émettent.
- L'utilisation de nanocatalyseurs dans les sables bitumineux, c'est-à-dire de molécules qui extraient le pétrole du sable, pour remplacer le procédé énergivore actuel.

- Le développement de bactéries e-coli génétiquement modifiées pour cibler et traiter certains problèmes physiques (par exemple, des virus ou des caillots de sang).
- Êtes-vous pour ou contre le développement de telles technologies?
- *** Que pensez-vous de l'aspect moral ou éthique de ce type de recherche? Vos préoccupations morales diffèrent-elles selon les applications? Lesquelles? Pourquoi?
- Comprenez-vous bien le fonctionnement des systèmes de réglementation des applications nanotechnologiques?
- Vous attendez-vous à ce que ces systèmes soient similaires à ceux auxquels sont assujettis la biotechnologie ou les produits pharmaceutiques par exemple?
- **** Quelle confiance avez-vous dans les systèmes d'approbation et de sécurité réglementaire auxquels est assujettie la nanotechnologie au Canada?
 - Pourquoi dites-vous cela?
- Et dans quelle mesure faites-vous confiance aux chercheurs qui œuvrent dans le domaine de la nanotechnologie?
- Comment se compare votre niveau de confiance à l'égard des organisations et des chercheurs qui utilisent la nanotechnologie?
- Selon vous, est-ce une bonne ou une mauvaise chose pour le Canada d'être un chef de file dans le domaine de la nanotechnologie?
- Et est-ce une bonne ou une mauvaise chose pour le gouvernement du Canada de financer ce type de recherche?
- Savez-vous qu'il existe un Institut national de la nanotechnologie (INN) établi à l'Université de l'Alberta?
- Dans l'ensemble, lequel de ces énoncés correspond le mieux à votre opinion de la nanotechnologie? (Document)
 - J'approuve l'utilisation de la nanotechnologie pour autant que la réglementation et les contrôles gouvernementaux usuels soient en place.
 - J'approuve la nanotechnologie pour autant qu'elle soit mieux contrôlée et réglementée.
 - Je n'approuve pas la nanotechnologie à moins de circonstances très particulières.
 - Je n'approuve pas la nanotechnologie sous aucun prétexte.

Chaque répondant offre sa réponse, puis est invité à discuter en détail des raisons qui expliquent son opinion.