

Mixed Blessings

Science and opinion in a brave new world

By Carolyn L. Funk

This is a new age. Recent developments in the mapping of the human genome bring a promise to change forever our understanding of the possible in the world of science and medicine. Genetic testing is ready to give us a customized report on which diseases to monitor, and genetic research holds the key to new treatments for afflictions such as cancer, Alzheimer's, heart disease, Parkinson's and schizophrenia. Advances in stem cell research and cloning have given rise to moral dilemmas and soul-searching on the parts of both the public and policymakers.

In August and September 2001, a national survey conducted by Virginia Commonwealth University found a general ambivalence toward such developments. While Americans generally acknowledge the contributions that science has made to society and embrace continued progress in science and medicine, they are also aware of the potential downsides to new technologies (such as genetic discrimination), oppose some technologies (such as human cloning), and more generally report an inattention to moral values in science.

Respondents to the VCU survey clearly acknowledged the importance and achievements of science. Better than eight in ten (86%) endorsed the view that scientific developments had helped make society better. Further, 67% said it was very important for the country to encourage more young people to enter careers in science, with another 29% saying it was somewhat important.

At the same time respondents seemed quite positive about the benefits of science to society, a significant portion expressed concern about the level of attention scientific research pays to

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moral values, and any negative consequences it might have for society. Seventy-two percent either strongly or somewhat agreed with the statement that “scientific research these days doesn’t pay enough attention to moral values.” Similarly, 54% strongly or somewhat agreed that “scientific research has created as many problems for society as it has solutions.” Indeed, 44% of the public agreed with both of these statements.

This ambivalence toward science was also in evidence in evaluations of a cornerstone of the biotechnology revolution: genetic research and testing.

Respondents were optimistic about the ability of genetic research to lead to progress in science and medicine. Eighty-three percent were very or somewhat confident it would lead to major advances in the treatment of diseases during the next 15 years. Seventy-one percent believed the mortality rate from cancer was very or somewhat likely to be reduced by half.

In fact, people were more optimistic about reducing cancer mortality rates than they were toward addressing a variety of other problems facing soci-

ety, including raising voter turnout, reducing traffic fatalities, and cutting the crime rate.

This optimism for the potential benefits of genetic research spilled over into beliefs about genetic testing. More than three-quarters of Americans (77%) favored making genetic testing easily available. Six in ten said they would be either very or somewhat likely to get tested if testing were easily available.

However, respondents also acknowledged the potential downsides of genetic testing, such as discrimination by employers or health insurance companies. Eighty-four percent of Americans thought that insurers were very or somewhat likely to deny coverage because of genetic testing results, and 69% said employers were very or somewhat likely to refuse to hire based on the results of such testing. Americans were almost evenly split (46% to 43%) over whether it was even possible to prevent discrimination based on genetic testing. Despite these concerns, though, a 57% majority believed the benefits of conducting genetic research outweighed the risks.

This brave new world of biotechnology brings with it some special challenges for the measure-

ment of public opinion. The very nature of these rapidly changing and highly technical developments makes it difficult to assess what the public thinks—in many cases, people might not even know what biotechnology entails. Not surprising, then, are sizable discrepancies in public opinion, depending on interest and information level about new developments in science and medicine.

Four questions on the VCU survey tapped general interest and information levels of the public. Two were self-ratings of interest in new developments in either science or medicine. The other two provided a self-rating of information level in the same areas. I combined these responses, using the average rating across the four items, and then classified respondents by those with the highest and those with the lowest average ratings. This yielded a more reliable way to categorize respondents than would have been the case if a single item were used (see Figure 1).

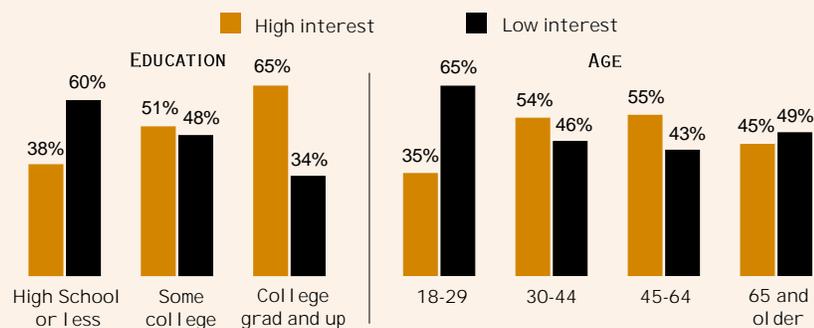
It is reassuring to note that this classification into more and less interest in science was highly related to more specific indicators of knowledge in the biotech arena. For example, 61% of those with more interest in science had heard of the Human Genome Project, compared to just 39% of those with less interest.

Those with greater interest and information were both more likely to embrace new developments in biotechnology and more optimistic about the benefits of genetic research. Forty-five percent of those with more interest strongly favored making genetic testing easily available to all who wanted it, compared with 32% of those less interested. Of course, more than seven in ten of all Americans (77%) favored making genetic testing easily available; those high on the interest index simply showed stronger support for this idea.

Forty percent of those with more interest in science and medicine were very confi-

Figure 1

Science Interest Varies by Education, Age



Note: Results of the following questions were combined to produce the index of interest in science and medicine: How much are you personally interested in new scientific discoveries—a lot, some, not much, or not at all?; How well informed are you about scientific discoveries—are you very informed, somewhat informed, not very informed, or not at all informed?; How much are you personally interested in new medical discoveries—a lot, some, not much, or not at all?; How well informed are you about medical discoveries—are you very informed, somewhat informed, not very informed, or not at all informed?

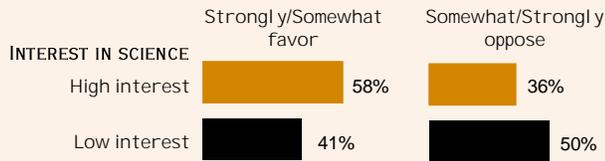
Source: Survey by Virginia Commonwealth University Life Sciences, August 23-September 2, 2001.

Figure 2

The More Interested, the Less Opposed

Question:

On the whole, how much do you favor or oppose medical research that uses stem cells from human embryos?



Note: See Figure 1 note for definition of interest index.

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

dent that genetic research would lead to major advances in the treatment of diseases, compared to just 23% of those with less interest. Again, most Americans (83%) expressed some confidence that genetic testing would lead to major advances; those high on the index appeared to do so with stronger conviction.

Greater interest in science and medicine doesn't mean turning a blind eye to potential problems stemming from new technologies. People with more interest were just as likely to think that genetic testing would result in discrimination by employers and health insurance companies as those with less.

However, those with more interest in science were a bit more optimistic (51% to 40%) than those with less interest that discrimination from genetic testing results could be prevented. Similarly, people with more interest were more likely (66% to 48%) to think the benefits of genetic research outweighed the risks.

Predictably, college education was associated with more interest and information on science and medicine. All the differences in opinion already noted, however, held across education levels. Thus, education differences did not explain away the findings.

The meteoric rise of stem cell research as a public issue provides a case in point for the challenges of measuring public opinion on newly emerging biotechnologies. In

July 2001, few had heard of stem cell research or knew of the complexities involved in different kinds and sources of stem cells for medical research. The issue catapulted onto the front page as the

Bush administration prepared to rule on the use of federal funds for research involving embryonic stem cells.

A number of polling organizations attempted to measure opinion on stem cell research by first providing enough information about the issue for the public to make a response. This approach led to paragraph-long questions full of rather technical distinctions. As Adam Clymer noted in his *New York Times* article of July 22, the subject was probably too new and too complicated to put much stock in poll results from this approach. A Gallup poll at this time found 57% of Americans making use of an explicit option acknowledging they had too little information to take a stand on whether the federal government should allow funds to be used for stem cell research.

The issue continued to hit the front pages and, not surprising given the connection to a longstanding social divide over issues involving embryos, stem cell research was rapidly politicized. By the time of the VCU survey in late August, a quarter of the public reported having heard a lot about stem cell research and another 45% had heard a little. Based on a straightforward question asking how much respondents favored medical research that used stem cells from human embryos, the public favored stem cell research by a 48% to 43% plurality.

While these results were consistent in direction with earlier polls, the margin of support was narrower than any previous finding. Contrary to the notion that

more information would lead to weaker overall levels of support, however, people who had heard the most were the most supportive of stem cell research. The same pattern was seen using the general index of interest in science and medicine. Those with a higher level of general interest were more supportive of stem cell research than those with less interest (see Figure 2).

What explains the weakening, overall, of support for stem cell research by late August 2001? The answer most likely lies in the rapid politicization of the issue by anti-abortion forces and the connection with more general religious beliefs. Those in the survey who thought abortion should be illegal in all cases showed the strongest opposition to stem cell research; two-thirds were either strongly or somewhat opposed (see Figure 3). A nearly equal proportion (69%) of those who thought abortion should be legal in all cases were strongly or somewhat in favor of the research.

Those who said religious beliefs had a great deal of influence in their lives were also more strongly opposed to stem cell research. The greatest support was found among those for whom religious beliefs were not important. Highly religious respondents were also more likely to consider the ethical concerns over embryonic stem cell research to be "very serious," compared to people for whom religion played a lesser role.

To some degree these two groups overlapped in the survey—that is, stronger religious guidance was associated with a greater likelihood to think abortion should be illegal. But while the results indicate abortion views are relevant to the stem cell issue, abortion, per se, will be less relevant to the full range of issues in biotechnology. Instead, more general religious and moral beliefs are likely to show divisions in public opinion on a wider range of issues in biotechnology.

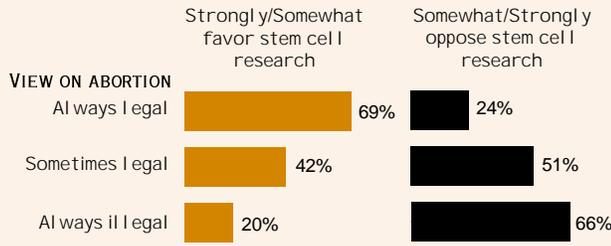
Figure 3

Keys to Politicization

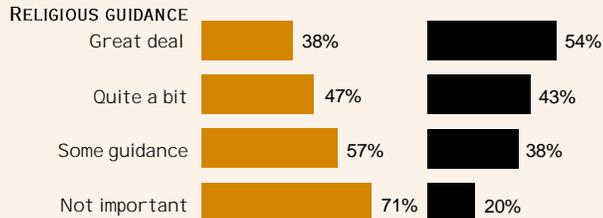
Questions:

On the whole, how much do you favor or oppose medical research that uses stem cells from human embryos?

Which of these comes closest to your view about abortion? A woman should be able to get an abortion if she decides she wants one, no matter what the reason. Abortion should only be legal in certain circumstances, such as when a woman's health is endangered or when the pregnancy results from rape or incest. Abortion should be illegal in all circumstances.



On the whole, how much do you favor or oppose medical research that uses stem cells from human embryos?



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

The survey found religious divisions also evident in views on human cloning. An overwhelming majority of Americans did not support cloning or genetically altering humans, but opposition was strongest among those with stronger religious beliefs. Three-quarters of respondents who said religion provided a great deal of guidance were strongly opposed to human cloning, compared to just four in ten people for whom religion was not important.

The moral implications of new developments in biotechnology clearly concern many Americans, especially those with stronger religious beliefs. Seventy-eight percent of those in the survey for whom religious beliefs provided a great deal of guidance either strongly or somewhat agreed that “sci-

ence doesn't pay enough attention to moral values of society.” This division is likely to persist, since biotechnology issues typically involve complex new technologies unfamiliar to the public at large. As the VCU survey showed, people with greater interest in science are more likely to support, and tend to be more optimistic about, the benefits of new scientific developments, compared to those with less interest.

ence doesn't pay enough attention to moral values of society.” This compares to 54% of those for whom religion was not important.

Stem cell research, then, ties in with a more general pattern of public opinion. Whether the issue is embryonic stem cells, human cloning, genetic research and testing or more general evaluations of new developments in science, two key divisions among Americans help explain differences in public opinion.

One split stems from differences in information and interest levels about science and medicine. This division is likely to persist, since biotechnology issues typically involve complex new technologies unfamiliar to the public at large.

The second division stems from differences in religiosity. While the American public tends to be quite religious, Americans are not uniformly so. People for whom religion plays a stronger role in their lives are more likely to oppose and express concern over new developments in biotechnology, particularly in terms of their moral implications for society. As biotechnology forces us to rethink what is possible in the world of science and medicine, and as the public tries to come to grips with these changes, the moral implications of these developments are likely to persist.

Interestingly, the importance of religious beliefs is almost wholly unrelated to levels of interest and information in science and medicine in general (see Figure 4). These two divisions in public opinion are particularly relevant for understanding public opinion about biotechnology, but they tap quite different groups of people. That suggests that a public ambivalence toward biotechnology—embracing and endorsing scientific progress while at the same time expressing concerns over the moral implications of these new developments for society—will also persist for some time to come.

Figure 4

Where Science Meets Faith

Questions:

Whether or not you attend services, do you consider religion to be an important part of your life, or not? [If yes] Would you say religious beliefs provide some guidance in your day-to-day living, quite a bit of guidance, or a great deal of guidance in your day-to-day living?



Note: See Figure 1 note for definition of interest index.

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