

**Stem Cell Research and the 2004 Election**

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Paper prepared for “A Matter of Faith?: Religion in the 2004 Election,” Notre Dame University, Notre Dame, Indiana, December 2 – 3, 2005.

## **Stem Cell Research and the 2004 Election**

At the 2004 Democratic convention, Ron Reagan, the son of the former president, took the podium to call for increased federal funding of stem cell research. Nancy Reagan also publicly supported stem cell research in hopes that some day this research could help cure the Alzheimer's disease that had stricken her husband. Meanwhile in California, Republican governor Arnold Schwarzenegger supported Proposition 71, which would provide \$3 billion in state aid to stem cell research in the state. Yet despite support from some prominent Republicans, President George Bush generally opposed stem cell research due to ethical concerns over the destruction of human embryos. In August 2001 the President had limited federal funding for such research to an existing 60 cell lines. In contrast, Democratic presidential nominee John Kerry promised to increase federal funding by four fold.

The question remains whether stem cell research would become a decisive issue in the 2004 election. Various reasons exist to suspect that it would not. As a relatively new issue, voters may be less aware of this issue than other more long standing or common issues, such as the state of the economy. Voters also received mixed signals as to the partisan content of the issue. Voters' opinions on the stem cell issue also might overlap with other moral issues, such as abortion, to the extent that stem-cell opinions would supplement, but not change, existing patterns of political preferences. On the other hand, stem cell research was a debated topic during the campaign, and positions on the issue might not line up directly with attitudes on other moral issues.

## **The Science of Stem Cell Research**

The cells which comprise the various tissues and organs of the body have specific structures and functions. For example, cardiac muscle cells have little structural or functional similarity to liver cells. The cells which carry out the functions of our tissues and organs are said to be specialized or differentiated cells. These cells express only a specific subset of their genes, resulting in a cell that is tailored made to carry out the tasks required for the normal functioning of the tissue or organ in which they reside.

Stem cells are unspecialized, undifferentiated cells that are capable of cell division and therefore able to renew themselves. They are also capable of differentiating to form various specialized cell types. All specialized cells arise from the differentiation of stem cells. Which specialized cell type a stem cell will ultimately become depends on the physiological conditions to which the stem cell is exposed. Exposure to these factors causes a stem cell to become 'committed' to becoming a specialized cell type. Most functional cells of the body are terminally differentiated, and as such are not normally capable of becoming a different cell type. For example, a cardiac muscle cells does not decide one day to become a liver cell.

Human stem cells can be grown *in vitro* and induced to differentiate into specialized cell types. Potential uses for this technology include studies aimed at better understanding the molecular processes involved in cell division, differentiation and development; cancer cells are an example of uncontrolled, abnormal cell division and many birth defects arise from errors occurring early in development. Stem cells could also be used to provide specialized cell types for drug and toxicity testing. But the most widely publicized application for stem cells is their potential use in cell-based therapies. Some specialized cells, such as cardiac muscle cells, are incapable of cell division. As a result, cardiac muscle damaged or lost due to myocardial infarction is never replaced. Newly formed cardiac muscle cells, produced *in vitro* or *in vivo* from stem cells, could potentially be used to repair such tissue damage. Other possible targets of cell-based therapies include treatments for Parkinson's disease, diabetes, and paralysis due to spinal cord injuries. Obstacles which will need to be overcome include insuring that the transplanted cells survive and are not attacked by the immune system. In addition, the transplanted cells must become properly incorporated into the patient's tissues and be able to function normally.

There are three classes of stem cells, totipotent, pluripotent, and multipotent. A totipotent stem cell has the ability to give rise to all the cell types; an example of a totipotent stem cell is a fertilized egg. Pluripotent stem cells can give rise to all cell types except those required to develop a fetus; embryonic stem cells are pluripotent. Multipotent stem cells can give rise to some, but not all cell types in the body; adult stem cells are thought to be multipotent.

Most controversy arises from the use of embryonic stem cells. Embryonic stem cells are isolated from embryos arising from human eggs that have undergone *in vitro* fertilization as part of fertility treatments. Since typically many more embryos result from this procedure than are required for implantation, unused embryos may be donated for research purposes with the informed consent of the egg and sperm donors. Four to five days after fertilization, cells can be removed from the embryos and grown in laboratory culture dishes.

Under specific conditions, human embryonic stem cells proliferate but remain undifferentiated *in vitro*. If these conditions are not maintained, the stem cells will spontaneously differentiate into specialized cell types. To make embryonic stem cells useful for cell-based therapies, it is necessary to control which specialized cell type they will form, a process called directed differentiation. Directed differentiation has been achieved by the addition of growth factors and other substances into the culture medium.

Adult stem cells are undifferentiated cells present in low numbers in many adult tissues and organs. It is believed that these stem cells can remain dormant for years and are only induced to divide and differentiate when needed to replace lost or damaged cells. Adult stem cells are generally thought to be multipotent and only differentiate into the cell types present in the tissue where they reside. To date, no pluripotent adult stem cells have been identified. However, recent experiments have suggested that some adult stem cells isolated from one tissue may be able to differentiate into specialized cells of a different

tissue, a process known as transdifferentiation or plasticity. Plasticity of adult stem cells would greatly increase their usefulness in cell-based therapies.

Blood forming (hematopoietic) adult stem cells, isolated from the bone marrow, are currently the only stem cells routinely used in the treatment of disease. These cells have been used to treat diseases such as leukemia and lymphoma. There is some evidence to support the efficacy of adult stem cells to treat other human diseases, including diabetes and kidney cancer, but these studies are in the early stages.

While the use of adult stem cells is less controversial than embryonic stem cells, there are some aspects of adult stem cells which may make them less valuable. The isolation and purification of adult stem cells is complicated by the fact that they are only present in tissues in very small quantities. There is evidence to suggest that some may not proliferate *in vitro* as readily as embryonic stem cells and therefore may not provide the numbers necessary for many therapeutic uses. There is also the possibility that the DNA of these 'older' cells will contain mutations. One advantage to using adult stem cells is the potential for the stem cell donor to also be the specialized cell type recipient, eliminating the problem of transplant rejection.

Whether embryonic or adult stem cells will be the most useful for research and therapeutic applications will ultimately be determined by fostering both lines of inquiry. Federal funds for human embryonic stem cell research have only been available since August 9, 2001, and this funding is limited to the use of cell lines developed prior to that date. Thus, the development of new embryonic stem cell lines requires the procurement of private funding or funding by individual states. The use of private funds for embryonic stem cell research limits the capacity for governmental oversight. The restrictions on federal funding also may have the undesirable effect of losing economic benefits resulting from new discoveries as well as the migration of top researchers to countries with more flexible policies.

### **The Political Debates over Stem Cell Research**

The most dominant political argument in support of further funding for stem cell research is the potential for finding cures to diseases such as Alzheimer's disease, Parkinson's disease, and spinal cord injuries. Celebrities making the case for additional funding included Christopher Reeve, paralyzed after falling from a horse in 1995, and Michael J. Fox, who suffers from Parkinson's disease. Advocates argue that more than 100 million Americans could benefit as stem cell research could produce therapies for combating heart disease, autoimmune disease, diabetes, osteoporosis, cancer and severe burns.<sup>1</sup> While recognizing the existence of an ethical concern, supporters of stem cell research argue for a balance between concerns over potential life and cures for human disease. They also note that in nature many embryos do not develop into fetuses (Hansen 2004).

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<sup>1</sup> The 100 million figure, used by Kerry in his campaign, came from the Coalition for the Advancement of Medical Research. They computed the number based on number of Americans suffering from a host of diseases and chronic conditions (Rosenbaum, 2004).

While not a dominant argument among the general public, some state officials include an economic component to their argument for government funding of stem cell research. Arnold Schwarzenegger's supported Proposition 71 on this basis (Ritter 2004). New Jersey previously provided \$6.5 million of state funds as seed money for stem cell research, expecting to benefit from an additional \$20 million in grants (Hansen 2004). Additionally, some American scientists feared that without increased funding for stem cell research that they would not remain competitive with scientists in other countries.

Political opposition to stem cell research focuses on the destruction of the potential life, the view that therapeutic cloning will lead to reproductive cloning, and a link to pro-life abortion attitudes. Opponents to stem cell research also challenge the potential benefits of stem cell research, arguing that advocates inflate the likelihood that such research will produce the desired medical benefits. Still other opponents argue that stem cell research could endanger and exploit women, with risks involved in the removal of eggs from women and concerns that poor women would be encouraged to sell their eggs.

Ethical concerns over the destruction of potential human life, however, are the most frequently cited reasons for opposition to stem cell research. President Bush's 2001 primetime television address expressed such concerns: "Research on embryonic stem cells raises profound ethical concerns, because extracting the stem cell destroys the embryo, and thus destroys its potential for life."<sup>2</sup> Arguments against stem cell research often are intertwined with concerns over abortion. Both are elements of a "culture of life" advocacy. For some, the stem cell issue also is seen as the first step toward human cloning for reproductive purposes.

Religious groups adopted various positions on the stem cell issue. Evangelical Christian and Catholic Church leaders oppose stem cell research on ethical grounds. The Catholic Church argued that an embryo from the moment of fertilization is a human life that must be protected.<sup>3</sup> Many evangelical leaders even were upset with President Bush for his support of research on existing stem cell lines (Masci 2001). Other denominations, such as the Episcopal Church, support stem cell research using donated embryos that otherwise would be discarded after in vitro fertilization efforts.<sup>4</sup> With denominations taking different stances on the issue, highly religious individuals may be divided in their support of or opposition to stem cell research.

The public's understanding and awareness of the stem cell debate prior to the 2004 election showed varying levels of attention to the issue and a grasp of some of the major political arguments (Nisbet 2004). Most survey polls date only from 2001. A slim majority (51

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<sup>2</sup> Quote from White House transcript, <http://www.whitehouse.gov/news/releases/2001/08/20010809-2.html>.

<sup>3</sup> "Declaration on the Production and the Scientific and Therapeutic Use of Human Embryonic Stem Cells." [http://www.vatican.va/roman\\_curia/pontifical\\_academies/acdlife/documents/rc\\_pa\\_acdlife\\_doc\\_20000824\\_cellule-staminali\\_en.html](http://www.vatican.va/roman_curia/pontifical_academies/acdlife/documents/rc_pa_acdlife_doc_20000824_cellule-staminali_en.html)

<sup>4</sup> "Genetics: Approve Research on Stem Cells," Episcopal Church, [http://www.episcopalchurch.org/19021\\_40459\\_ENG\\_Print.html](http://www.episcopalchurch.org/19021_40459_ENG_Print.html).

percent) of respondents to a 2001 Kaiser poll knew that the destruction of human embryos was a major source of the controversy. In that year, the public appeared to understand the complexity of balancing ethical concerns versus medical necessity, with about one-third of respondents in a Gallup poll viewing stem cell research as morally wrong but necessary, another third not viewing the research as morally wrong, and one in five viewing such research as morally wrong and unnecessary. Public support for stem cell research varies with the source of the embryos, with higher support given when a survey question indicates surplus embryos from fertility clinics as the source. While Americans' viewpoints on therapeutic cloning are variable and complex, their opinions on reproductive cloning are consistent and negative. Overwhelming majorities reject cloning for human reproduction.

### **Stem Cell Research and Voters in the 2004 Presidential Election**

The media interpreted the 2004 presidential election exit polls to indicate that moral issues dominated voters' concerns. Twenty-two percent of poll respondents selected moral values as the major reason for their presidential vote choice, and almost all of these individuals voted for Bush. Yet, nearly as many respondents selected the economy, 20 percent, or terrorism, 19 percent. Most of those citing the economy voted for Kerry, while those citing terrorism were even more likely than those citing moral values to vote for Bush. All together 78 percent of voters chose an issue other than moral values as their primary concern. Results from other surveys confirm that moral values were not at the top of most voters' lists of concerns.

In a pre-election Pew Research Center poll, respondents were asked how important a variety of issues would be to their presidential vote. Table 1 lists the percent of respondents who answered "very important" for each issue. The economy, terrorism, education, Iraq and health care were judged to be the most important issues. Moral values ranked eighth out of sixteen issues. Stem cell research had the second lowest ranking, with 43 percent responding that this issue would be very important to their vote choice. However, stem cell research did out rank the other widely debated moral issue of 2004 -- gay marriages. In a post-election Pew Research Center survey, respondents were asked in an open-ended question: "What one issue mattered most to you in deciding how you voted for president?" Table 1 also lists these results and shows that once again, the Iraq war and the economy topped the list of concerns. Moral values fell in a second tier of concerns, along with terrorism and candidate honesty. Stem cell research was mentioned by only 1 percent of the respondents.<sup>5</sup>

\*\*\* Table 1 about here \*\*\*

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<sup>5</sup> For the pre-election survey report and questionnaire see Pew Research Center, "Race Tightens Again, Kerry's Image Improves," released October 20, 2004, <http://www.people-press.org/reports/display.php3?ReportID=229>. For the post-election survey see "Voters Liked Campaign 2004, But Too Much 'Mud-Slinging,'" released November 10, 2004, <http://www.people-press.org/reports/display.php3?ReportID=233>.

Similar results were found in other surveys. An October 2004 Newsweek poll found 14 percent indicating that stem cell research would be a very important determinant of their presidential vote. A Kaiser Foundation poll from October 2004 indicated stem cell research was not even the most frequently cited medical concern for the American electorate. While almost one-third of respondents were extremely concerned about the cost of health care, lack of health insurance or the cost of prescription drugs, only 17 percent cited stem cell research as extremely important to their voting decision (Blendon et al 2005).

Even though stem cell research was not cited as a dominant issue in the 2004 presidential election, the public's awareness of the two presidential candidates' positions was fairly high. In an October 2004 Pew Research Center poll, 59 percent identified Kerry as favoring federal funding of stem cell research, while 8 percent named Bush, 11 percent said either both or neither, and 22 percent indicated they did not know.<sup>6</sup> Across four different polls, on average half the public selected Kerry as better able to handle the issue of stem cell research, while one-third named Bush.<sup>7</sup> Stem cell research was an issue that most American voters correctly identified as being more strongly supported by Kerry and an issue on which more Americans favored Kerry over Bush. Thus, stem cell research could be an issue that advantaged Kerry in the 2004 presidential vote.

Neither the National Election Pool national exit poll nor the American National Election Survey contained a stem cell question in their 2004 questionnaires. Thus, a Pew Foundation poll from August 2004 will be used to judge the influence of this issue on presidential preferences, as this is the Pew survey closest to the election that elicited respondents' positions on the stem cell issue.<sup>8</sup> The question wording read: "All in all, which is more important...Conducting stem cell research that might results in new medical cures [OR] Not destroying the potential life of human embryos involved in this research." Overall responses indicated that 61 percent of respondents selected the option of conducting research for medical cures while 40 percent selected not destroying potential human life.

Table 2 shows how a variety of measures of religion and religiosity influenced public attitudes on stem cell research. Jews were the most supportive of stem cell research for potential medical cures. Jewish beliefs on the importance of curing the sick would lead to support for stem cell research (Rosin 2005). Those with no religion also heavily supported using stem cells for medical research. Protestants were divided into two categories based on their responses to a second survey question asking about a born-again

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<sup>6</sup> Pew Research Center, "Swing Voters Slow to Decide, Still Cross-Pressured," released October 27, 2004, <http://people-press.org/reports/display.php3?ReportID=231>.

<sup>7</sup> The polls were July 31, 2004 Newsweek; August 30, 2004 ABC News/Washington Post; October 8, 2004 ABC News; and October 11, 2004 CNN/USA Today/Gallup Poll.

<sup>8</sup> Pew Research Center, "GOP the Religion-Friendly Party: But Stem Cell Issue May Help Democrats," released August 24, 2004, <http://people-press.org/reports/display.php3?ReportID=223>.

experience. Protestants indicating a born-again experience were the most conservative on the stem cell issue, while other Protestants supported stem cell research for medical progress. Catholics more closely resembled these other Protestants than the more conservative Protestants, despite the Vatican's position in opposition to stem cell research. Mormons were the group closest to born-again Protestants in opposition to stem cell research.

\*\*\* Table 2 about here \*\*\*

Both measures of religiosity produced similar results. Attendance at religious services was associated with support or opposition for stem cell research. Only 28 percent of those who attended religious services more than once a week supported stem cell research, compared to over three-quarters of those who never or infrequently attended services. Yet, those who attend religious services weekly were equally divided on the issue, with half supporting and half opposing stem cell research. Turning to the question on the importance of religion to ones life, three-quarters of those for whom religion was not a very important or only fairly important supported stem cell research, while less than half who asserted religion was very important to their life did so.

A variety of other attitudes and characteristics are related to people's views on stem cell research (results not shown). Those with higher levels of education and higher incomes are more supportive of stem cell research. No differences existed between men and woman nor across different racial or ethnic groups. Democrats and liberals are more likely to support stem cell research, while Republicans and conservatives are more likely to oppose it. Attitudes on stem cell research overlap with other moral issues, such as support for or opposition to gay marriages. Finally, those who have heard more about the stem cell issue are more likely to support research for medical purposes.

Table 3 provides results from logit analyses of presidential preferences leading up to the 2004 election. Opinions on stem cell research are added along with traditional demographic and attitudinal explanatory variables. Religious values are included by using the survey question on worship service attendance. It also is possible that religious and stem cell beliefs might interact. One might expect that highly religious evangelical Christians would be the most opposed to stem cell research and strongly favor Bush on this and other issues. Yet, given the diversity of opinions accross various denominations, other highly religious individuals may support stem cell research and be more inclined to vote for Kerry.

\*\*\* Table 3 about here \*\*\*

The logit models are set up to predict a vote to reelect President Bush. Attitudinal variables are coded so that higher values indicate more conservative or Republican positions. The economy variable runs from a low value for a worsening economy to a high value for a better economy. Religiosity is coded so that higher values indicate greater attendance. The stem-cell research question has a higher code to indicate opposition. Model A in Table 3 includes stem cell attitudes and religiosity as separate

independent variables. Model B includes an interaction term between these two variables.

As one would expect, partisanship and opinions on the Iraq war influenced preferences for the 2004 presidential candidates. Partisanship had a particularly strong effect, moving from the weak Democratic to weak Republican category changed the probability of voting for Bush by .68.<sup>9</sup> Moving from a strong Democrat to a strong Republican changes the probability of voting for Bush by .88. Switching from disapproval of the Iraq war to approval increases the probability of support for the President's reelection by .50. In addition, opinions on gay marriages also played a role, though the effect is smaller with a switch from strong approval to strong disapproval changing the probability of supporting Bush by .29. Only a few demographic factors had independent effects on voters' choices, beyond what is subsumed under differences in issue positions across groups. Those with higher incomes were more likely to support Bush, and union members were more likely to support Kerry.

The effects of stem cells beliefs and religiosity is best expressed in the interaction effect given in Model B. Neither religiosity nor worship attendance are significant on their own. Rather, the effects of one depend on the value of the other. Figure 1 illustrates this interaction. Among those who favor stem cell research, as religiosity increases support for Bush decreases. Among those who oppose stem cell research, those who attend worship services more frequently become more likely to support Bush's reelection. Among those who attend religious services more than once a week (category 6), those who oppose stem cell research are 21 percent less likely than those who favor stem cell research to support Bush. While stem cell beliefs did influence presidential candidate preferences, the effects are considerably smaller than those of partisanship or evaluations of the Iraqi war.

### **Voters and California's Proposition 71**

California voters in 2004 decided on Proposition 71, which provides \$3 billion in state aid over a 10-year period to stem cell research. The proposition passed with 59 percent of the vote. The initiative creates the California Institute for Regenerative Medicine, which will be the largest source of money for stem cell research in the U.S. Backers of the proposition touted the potential for such research to provide medical breakthroughs for a number of diseases. They also argued for an economic benefit to California as the research money would create jobs and eventually lead to profits for the state from patent royalties (Pollack 2004). Proponents of the proposition spent \$34 million and conducted

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<sup>9</sup> Changes in probabilities are calculated on the basis of Model B, which includes the interaction component. The values of the independent variables were set as: female, neither Black nor Hispanic, neither a veteran nor a labor union member, high school graduate (3 on a 7-point scale), income of \$40,000 to \$50,000 (5 on a 9-point scale), independent (4 on a 7-point scale), moderate (3 on a 5-point scale), "only fair" economy (2 on a 4-point scale), Iraq war was the "right decision" (versus "wrong decision"), oppose gay marriage (3 on a 4-point scale), attend religious services a few times a year (3 on a 6-point scale), oppose stem cell research, and with the interaction term set to 0 (value for those who oppose stem cell research). Probabilities calculated through the use of CLARIFY (King, Tomz, and Wittenberg 2000; Tomz, Wittenberg, and King 2003)

an extensive campaign. Opponent of the proposition cited ethical concerns and especially toward the end of the campaign, concerns over the costs to the state budget. Opponents to the proposition raised less than a million in campaign funds, limiting their campaign efforts (Hall 2004; Mendel 2004).<sup>10</sup>

California's Republican governor, Arnold Schwarzenegger supported the ballot measure, though the California Republican party opposed it. In the California Senate race, incumbent Democratic Barbara Boxer supported Proposition 71. Republican challenger Bill Jones, while supporting stem cell research, opposed the measure as too costly to the California state budget (Bluth and Mecoy 2004). The Catholic Church opposed Proposition 71 and contributed \$50,000 to a group opposing the initiative. Supporting passage of the proposition was the California Council of Churches through its political advocacy group, California Church Impact. Some of the denominations represented by this latter group include the Episcopal Church, Evangelical Lutheran Church in America, Greek Orthodox, Presbyterian, United Church of Christ, and United Methodist.<sup>11</sup>

Proposition 71 received considerable attention from politicians and the media, and the advertising campaign in support of the measure was extensive. Thus, voters should have developed specific opinions on the measure as campaign spending affects voters' awareness of ballot propositions (Bowler and Donovan 1998; Nicholson 2003). Significant expenditures also reduce the likelihood that voters simply will not vote on an initiative (i.e., voter fatigue or drop off) (Bowler, Donovan and Happ, 1992). Beyond awareness, voters' preferences on ballot measures are often matched to their partisanship (Bowler and Donovan 1998; Citrin et al 1990; Donovan and Snipp 1994; Smith and Tolbert 2001). On ballot measures involving moral issues, in addition to partisanship, voters' ideology matters. Also shown to be significant predictors of positions on moral issue propositions are education and age. Voters with higher levels of education tend to cast ballots in the liberal direction, while older voters tend to support the more conservative position. Gender and income tend to have inconsistent effects on moral-issue ballot measures (Branton 2003).

Table 4 looks at two measures of religion and voters' positions on Proposition 71. As was the case with the Pew poll on national attitudes toward stem cell research, for Californians and Proposition 71 religious denominations were associated with voters' positions. Once again, Jews and those with no religious orientation were the most likely to approve of stem cell research, while Mormons were the least likely to approve. The media exit poll for California has no question that can distinguish between more liberal and conservative Protestant denominations, but Protestants as a whole approved of Proposition 71 by only the slimmest of margins. Catholics showed greater approval of Proposition 71 than did Protestants. Religiosity also mirrored the national trends. In the California exit poll approval of Proposition 71 varied from 34 percent for those who

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<sup>10</sup> Campaign expenditures on Proposition 71 from California Secretary of State, Cal-Access webpages, <http://cal-access.ss.ca.gov/Campaign/Measures/Detail.aspx?id=1265692&session=2003>.

<sup>11</sup> California Church Impact, [http://www.speakfromtheheart.net/impact/impact\\_about.htm/](http://www.speakfromtheheart.net/impact/impact_about.htm/).

attended religious services more than once a week to 70 percent for those who never attended or attended only a few times a year.

\*\*\* Table 4 about here \*\*\*

A logit analysis of support for Proposition 71 is found in Table 5. Model A includes various demographic and attitudinal variables that may explain support for the proposition. Model B includes an evaluation of Governor Schwarzenegger to evaluate whether he served as a voting cue on the measure. A separate model is included for this voting cue, as only half of the exit poll respondents gave an answer to the question on support for Schwarzenegger. The coefficient for this variable does not meet traditional rules of thumb for statistical significance, so it appears that Schwarzenegger did not serve as a voting cue on the measure.

\*\*\* Table 5 about here \*\*\*

Results from Model A in Table 5 suggest that basic political orientations (partisanship and ideology), educational attainment, personal financial status, and religiosity affected Californians' voting on the stem cell research proposition. Democrats and liberals were more likely to vote in favor of the proposition. A Democrat's probability of supporting Proposition 71 was .21 higher than that of a Republican.<sup>12</sup> Ideology was slightly more important as a liberal's probability of voting in favor of the stem cell research measure was .35 greater than that of a conservative. Those with higher levels of education also were more supportive, with those with advanced degrees having a probability of voting yes that was .14 higher than that of a person without a high school diploma. Those who saw their own economic position as worsening had a .08 greater probability of voting in favor of the ballot measure than those who viewed their family's economic situation as better. Finally, the more frequently a person attended religious services the less likely they were to support the California measure to fund stem cell research. Those who never attend religious services had a .76 probability of supporting Proposition 71, those who attend a few times a month a .68 probability and those who attend more than once a week a .40 probability. The change in probability (.36) from never attending religious services to attending twice a week is about the same as the difference between a liberal and a conservative.

### **The Effects of Proposition 71 on the Vote for Electoral Offices**

Propositions can contribute to the overall agenda of an election year, and in some cases, ballot measures influence the factors that voters use in making candidate choices (Nicholson 2005). In addition, California politicians frequently use propositions to further their electoral fortunes. Some candidates apparently have been helped by their

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<sup>12</sup> For support of Proposition 71, the values of the independent variables were set as follows: party identification = independent (2 on 1-3 scale), ideology = moderate (2 on 1-3 scale), female, not a minority (Black, Latino, Asian set to 0), income = \$50,000 to \$74,999 (4 on 1-8 scale), education = some college (3 on 1-5 scale), not a union member, family economy = same (2 on 1-3 scale), attend = a few times a year (2 on 1-5 scale), support Arnold Schwarzenegger.

support of specific ballot propositions (e.g., Pete Wilson and Proposition 187 which denied benefits to illegal aliens), while other gubernatorial candidates failed to win their elections when using this strategy. In 2004, Governor Schwarzenegger was not up for reelection, though he endorsed Proposition 71. The two presidential candidates had distinctive positions on stem cell research, and in the California Senate race the two candidates took opposite positions on the ballot measure.

Whether Californians' positions on Proposition 71 were reflected in the presidential vote is investigated in Table 6. The models predict a vote to reelect President Bush. Model A contains separate indicators of religiosity and the vote on Proposition 71, while Model B includes an interaction term between the two. In the 2004 presidential vote in California, there appears to be no interaction between the two variables, so results of Model A best explain the presidential vote in that state. Californians' votes on Proposition 71 were moderately linked to their presidential votes. Opposition to Proposition 71 increased the probability of a vote for Bush by .33. Religiosity did not have a separate effect on the presidential vote.<sup>13</sup>

\*\*\* Table 6 about here \*\*\*

The 2004 presidential election was a highly partisan election with evaluations of Bush's presidential performance strongly influencing how people voted. A Republican's probability of voting for Bush was .58 greater than that of a Democrat. Evaluations of the Iraq war had a large effect on the vote. Approval of "the U.S. decision to go to war with Iraq" increased the probability of a vote for Bush by .35 over disapproval. Strong approval of the Iraq war increased the probability of a vote for Bush by .80 over strong disapproval. The California electorate was highly divided over the Iraq war. Thirty-seven percent of California voters strongly disapproved of the Iraq war while 28 percent strongly approved, leaving 35 percent in the middle two categories of approve or disapprove. Evaluations of the economy also mattered, with those who felt that their family's economic position had improved showing an increased of .32 in the probability of voting to reelect Bush over those who felt their economic situation had worsen.

Additional factors affecting the presidential vote in California were ideology, income, education, Latino ethnicity, and gender. Ideology had approximately the same influence as stem cell research. Liberals had a probability of voting for Bush that was .29 less than that of conservatives. Those with higher incomes were more likely to vote for Bush, with each category of the 8-point income scale associated with a change in probability of .04 to .05. The effects of education were in the opposite direction, with the highly educated being less likely to vote for Bush's reelection. The effects across each of the five education categories varied from .09 to .14. Latinos had a decrease in probability of voting for Bush of .15. The gender gap in the 2004 California presidential race, after accounting for partisanship, was in the opposite direction than expected. Men had a probability of .11 less than women in voting for Bush.

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<sup>13</sup> For purposes of calculating probabilities, independent variables were set to the same values as used in the Proposition 71 models. Additional independent variables were set as: Iraq war = disapprove (2 on 4-point scale) and Proposition 71 = voted yes.

The other high elective office on the 2004 California ballot was the Senate race between incumbent Democrat Barbara Boxer and Republican challenger, Secretary of State Bill Jones. Table 7 provides the same type of analysis for the senatorial vote as was used for the presidential vote. The model once again predicts a vote for the Republican candidate, in this case Mr. Jones. Model B provides some support for an interaction effect between religiosity and voting on Proposition 71. Among those who voted against Proposition 71, the probability of voting for Jones increased from .46 for those who never attended religious services to .61 for those who attend services more than once a week. Among those who voted for Proposition 71, the effect of religiosity is in the other direction. Those who never attend religious services had a .25 probability of voting for Jones while those who attend services more than once a week had a .15 probability. The effects of religiosity within each of the positions on Proposition 71 were relatively small, a change in probability of .15 for those opposed to stem cell research and .10 for those in favor. The effects across the two viewpoints on stem cell research, however, are quite strong. Among the least religious, the effects of support or opposition to Proposition 71 alter the probability of a Republican vote by .21. Among the most religious, the differing positions on Proposition 71 alter the probability of Republican vote by .46. The one-third of the highly religious who support stem cell research are quite different from the two-thirds who oppose Proposition 71.

Other factors contributing to the reelection of Senator Boxer were partisanship, ideology, family economic position and opinions toward the Iraq war. Senator Boxer also received greater support from minority voters (Black, Latino and Asian) and less support from wealthier voters. No gender gap occurred in support of Senator Boxer beyond that which could be explained by partisanship. Once again, evaluations of the Iraq war had a large effect, with strong approval increasing the probability of voting for Jones by .47 over those who strongly disapproved.<sup>14</sup> Partisanship and ideology had approximately equal effects, with movement from one camp to the other changing the probability of a Jones vote by .39 (partisanship) and .38 (ideology). Evaluations of one's family's economic position only changed the probability of a Republican vote by .10. Changes in income across eight categories resulted in changes in probabilities of .03 to .06 across adjacent categories. Latinos had a probability of .15 less; Asians of .14 less and Blacks of .07 less of supporting Jones.

## Conclusions

Stem cell research was not the dominant issue of the 2004 elections. Traditional concerns over the economy and split public opinion over the course of the Iraq war were the most important short-term factors shaping the vote in these elections. The 2004 elections, as was true for the 2000 election, also were highly partisan events. Democrats overwhelmingly voted for Kerry and Republicans overwhelmingly voted for Bush. With partisanship, the Iraq war and the economy at the forefront of voters' decision making,

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<sup>14</sup> For purposes of calculating probabilities, the same values were used as for the presidential vote model. The interaction term between Proposition 71 and religiosity was set at 2 (yes on Prop 71 and attend a few times a year).

other issues vied for an also-ran spot. Yet, stem cell research did contribute to a comprehensive explanation of candidate preferences in the presidential contest. In California, Proposition 71, which allocates state funds toward stem cell research, was part of the political agenda and influenced voters' choices for the presidential and senate contests.

Religious beliefs and practices are one explanation for voters' opinions on stem cell research. Not all voters follow the edict of their faith's religious leaders. In particular, Catholics were not generally much more opposed to stem cell research than other Christians. Born-again Protestants and Mormons were the most likely to oppose stem cell research. Jews and those with no religion were the most supportive. Yet, religiosity produced the most intriguing pattern. It was among the highly religious that the battle lines were most fiercely drawn. Those who attended religious services more than once a week disapproved of stem cell research by 3 to 1, but the pro and anti forces were sharply divided in their voting patterns. Those who attended religious services once a week, however, were evenly divided in their support of stem cell research. For these voters as well, their opinions on stem cell research were more strongly linked to their voting preferences than were these attitudes for the less religious.

While stem cell research did not turn out to be a dominant issue for most Americans in the 2004 presidential election, some, such as Newsweek columnist Jonathan Alter, expect the debate to play a more predominant role in the 2006 congressional elections (Alter 2005). Alter argues the issue will be framed as a "pro-cure movement," attracting the support of those stricken by the illnesses with potential new therapies from stem cell research or who have relatives with such ailments. Stem cell research already is being debated at the state level. In 2005, 14 states legislatures tackled the question of stem cell research, with approval of further spending the topic in some states and bans considered in others (Associated Press 2005; Fineman and Lipper 2005). Potential presidential candidates for 2008 already are positioning themselves on the issue. Bill Frist and John McCain recently changed their stated positions to ones in support of further research (Fineman and Lipper 2005). Whether a particular issue will influence a future electoral contest is always a problematic judgment. Perennial issues, such as the economy, or new or worsening domestic or international crises always have the potential to dominant any election.

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Table 1: Importance of Various Issues to 2004 Presidential Vote

Pre-Election, Sequential Questions		Post-Election, Open-Ended	
Issue	Percent Very Important	Issue	Percent mention
Economy	78	Iraq/War	27
Terrorism	77	Economy/Jobs	14
Jobs	76	Moral values	9
Education	75	Terrorism	9
Iraq	74	Honesty	5
Health Care	73	Health care	3
Social Security	65	Abortion	3
Moral values	63	Direction of Country	2
Taxes	59	Candidate Religion	2
Budget Deficit	57	Leadership	2
Energy	54	Foreign Policy	2
Environment	53	Gay marriage	2
Abortion	47	Status quo	2
Gun control	45	Social Security	1
Stem cell research	43	Taxes	1
Gay marriage	32	Environment	1
		Stem cell	1
		Supreme Court	1
		Gun control	1
		Education	1

Sources: Pew Research Center, October 20, 2004 and November 11, 2004 surveys.

Table 2: Effects of Religion on Support for Stem Cell Research

A: Religious denominations

Denomination	Percent Support	Number of Cases
Jew	82	45
No religion	79	316
Other religion	76	63
Other Protestant	72	682
Catholic	61	676
Mormon	51	63
Born-Again Protestant	41	903

F = 14.42                      Significance = .00

B: Attendance at religious services

Level of Attendance	Percent Support	Number of Cases
Never	78	315
Seldom	79	415
A few times a year	69	582
Once or twice a month	64	425
Once a week	50	721
More than once a week	29	386

F = 23.92                      Significance = .00

C: Importance of religion in life

Level of importance	Percent Support	Number of Cases
Not very important	79	467
Fairly important	74	780
Very important	49	1626

F = 41.81                      Significance = .00

Source: Pew Research Center, August 2004 survey

Table 3: Explaining Presidential Candidate Preferences

	Model A		Model B	
	Coefficient (Std. Err.)	Significance Level	Coefficient (Std. Err.)	Significance Level
Female	.46 (.39)	.24	.47 (.39)	.22
Black	-1.15 (.78)	.14	-1.23 (.81)	.13
Hispanic	-1.05 (.82)	.20	-1.09 (.80)	.17
Age	-.01 (.01)	.31	-.01 (.01)	.29
Education	-.22 (.13)	.10	-.22 (.14)	.11
Income	.21 (.10)	.03	.22 (.10)	.03
Veteran	.51 (.47)	.28	.57 (.46)	.21
Labor union	-.96 (.50)	.05	-.97 (.48)	.04
Partisanship	1.22 (.11)	.00	1.25 (.11)	.00
Ideology	.01 (.26)	.97	-.04 (.25)	.89
Economy	.31 (.29)	.28	.35 (.29)	.24
Iraq war	2.44 (.42)	.00	2.39 (.41)	.00
Gay marriage	.61 (.21)	.00	.60 (.22)	.01
Religiosity	.01 (.14)	.92	-.17 (.16)	.26
Stem Cell	.59 (.43)	.18	-1.29 (1.00)	.20
Rel. * Stem Cell			.52 (.27)	.06
Constant				
Wald chi2	246.64	.00	239.57	.00
Pseudo R2	.76		.77	
N of Cases	875		875	

Source: Pew Research Center, August 2004 survey

Table 4: Effects of Religion on Support for California's Proposition 71 on Stem Cell Research

A: Religious denominations

Denomination	Percent Support	Number of Cases
Jew	86	83
Something else	73	130
None	68	294
Catholic	63	546
Muslim	52	24
Protestant	51	443
Other Christian	51	368
Mormon	22	24

F = 10.03      Significance = .00

B: Attendance at religious services

Level of Attendance	Percent Support	Number of Cases
Never	70	436
A few times a year	70	592
Few times a month	60	264
Once a week	45	401
More than once a week	34	223

F = 27.47      Significance = .00

Source: National Election Pool 2004 California Exit Poll

Table 5: Explaining Support for California's Proposition 71

	Model A		Model B	
	Coefficient (Std. Err.)	Significance Level	Coefficient (Std. Err.)	Significance Level
Female	.11 (.15)	.47	.10 (.17)	.57
Black	.04 (.35)	.92	.13 (.41)	.74
Latino	.18 (.19)	.36	.28 (.24)	.24
Asian	.03 (.35)	.93	.09 (.46)	.84
Income	-.04 (.05)	.32	.00 (.06)	.94
Education	.16 (.07)	.03	.17 (.09)	.07
Union	-.17 (.16)	.29	-.21 (.19)	.28
Family Econ.	-.19 (.10)	.06	-.33 (.12)	.01
Partisanship	-.48 (.10)	.00	-.40 (.12)	.00
Ideology	-.86 (.13)	.00	-.75 (.15)	.00
Religiosity	-.40 (.06)	.00	-.34 (.07)	.00
Schwarzenegger			.36 (.25)	.16
Constant	4.22 (.45)	.00	3.50 (.57)	.00
Wald chi2	203.56	.00	100.92	.00
Pseudo R2	.20		.16	
N of Cases	1313		856	

Notes: Entries are from a logit analysis.

Source: National Election Pool 2004 California Exit Poll

Table 6: Explaining Presidential Vote for Bush in California

	Model A		Model B	
	Coefficient (Std. Err.)	Significance Level	Coefficient (Std. Err.)	Significance Level
Female	.53 (.27)	.05	.54 (.27)	.05
Black	-.58 (.79)	.46	-.59 (.78)	.45
Latino	-.79 (.38)	.04	-.80 (.38)	.03
Asian	-.16 (.67)	.81	-.22 (.70)	.76
Income	.21 (.09)	.02	.21 (.09)	.02
Education	-.58 (.14)	.00	-.58 (.14)	.00
Union	-.29 (.30)	.32	-.28 (.29)	.34
Family Econ.	.71 (.16)	.00	.71 (.16)	.00
Iraq War	1.50 (.14)	.00	1.50 (.14)	.00
Partisanship	1.43 (.17)	.00	1.43 (.17)	.00
Ideology	.66 (.26)	.01	.66 (.26)	.01
Religiosity	-.08 (.12)	.49	-.01 (.16)	.95
Prop. 71	-1.42 (.28)	.00	-1.07 (.64)	.09
Rel * Prop 71			-.13 (.21)	.55
Constant	-7.19 (.90)	.00	-7.41 (.98)	.00
Wald chi2	260.06	.00	268.08	
Pseudo R2	.70		.70	
N of Cases	1286		1286	

Notes: Entries are from a logit analysis.

Source: National Election Pool 2004 California Exit Poll

Table 7: Explaining Senatorial Vote for Jones (Republican) in California

	Model A		Model B	
	Coefficient (Std. Err.)	Significance Level	Coefficient (Std. Err.)	Significance Level
Female	-.32 (.23)	.16	-.31 (.23)	.18
Black	-.87 (.54)	.11	-.89 (.53)	.10
Latino	-1.27 (.35)	.00	-1.31 (.35)	.00
Asian	-2.09 (.56)	.00	-2.21 (.58)	.00
Income	.27 (.08)	.00	.27 (.08)	.00
Education	-.20 (.13)	.11	-.19 (.13)	.13
Union	-.24 (.27)	.39	-.21 (.27)	.44
Family Econ.	.43 (.15)	.01	.43 (.15)	.01
Iraq War	.85 (.12)	.00	.85 (.12)	.00
Partisanship	1.22 (.15)	.00	1.23 (.15)	.00
Ideology	1.08 (.22)	.00	1.10 (.22)	.00
Religiosity	-.00 (.10)	.98	.15 (.14)	.28
Prop. 71	-1.49 (.24)	.00	-.67 (.53)	.21
Rel * Prop 71			-.31 (.18)	.08
Constant	-7.29 (.88)	.00	-7.88 (.98)	.00
Wald chi2	340.72	.00	344.15	.00
Pseudo R2	.63		.63	
N of Cases	1232		1232	

Notes: Entries are from a logit analysis.

Source: National Election Pool 2004 California Exit Poll

**Figure 1: Effects of Religiosity and Stem Cell Opinions on Presidential Candidate Preferences**

