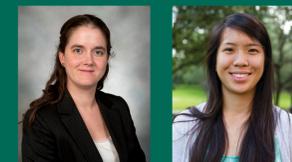


CONTRASTING VIEWS ON EMBRYO RESEARCH AND FUNDING: A SURVEY OF U.S. PHYSICISTS AND BIOLOGISTS

Kirstin R.W. Matthews, Ph.D., and Sharon Tsao

Baker Institute Center for Health and Biosciences, Rice University; 6100 Main Street, MS-40, Houston, TX 77005



Introduction

In the United States, the public and scientists are engaged in ongoing discussions related to embryo research, including the use of embryonic stem cells, the creation of embryos for research, and federal funding of embryo and embryonic stem cell research. While the public has been surveyed on the topic, scientists are rarely assessed. In this project, we surveyed 3,989 randomly selected physicists and biologists in the United States across 78 universities and research institutes on social and political factors impacting their work as scientists, achieving a 57% response rate. Participants were asked to agree or disagree with two statements related to embryo research: (1) "Scientists should be able to create human embryos for medical research purposes" and (2) "The government should support research using cells derived from lab-created human embryos."

Figure 1 — Percent of Scientists Who Agreed with the Creation of Embryos for Research and Federal Funding of the Research

Scientists were asked to agree or disagree with the statements: 1) "Scientists should be able to create human embryos for medical research purposes" (creation) and 2) "The government should support research using cells derived from lab-created human embryos" (funding).

Interestingly, more scientists supported the funding of the research than the research itself.

- Of the **1,908 scientists** who responded to these survey prompts:
- 52% supported the creation of human embryos for research (blue)
 - 60% supported its federal funding (green)

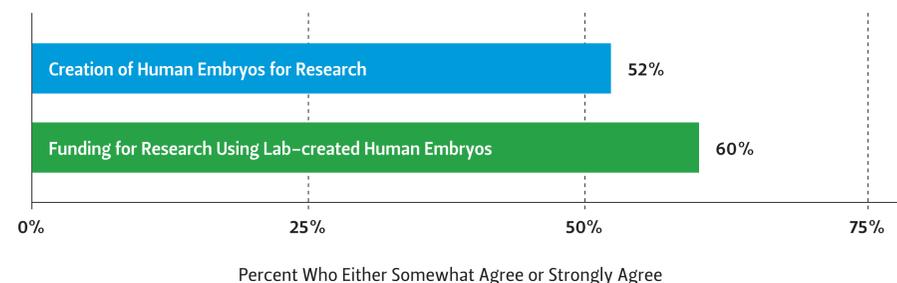


Figure 2 — Percent of Scientists Who Agreed with the Survey Statement, by Demographic Groups

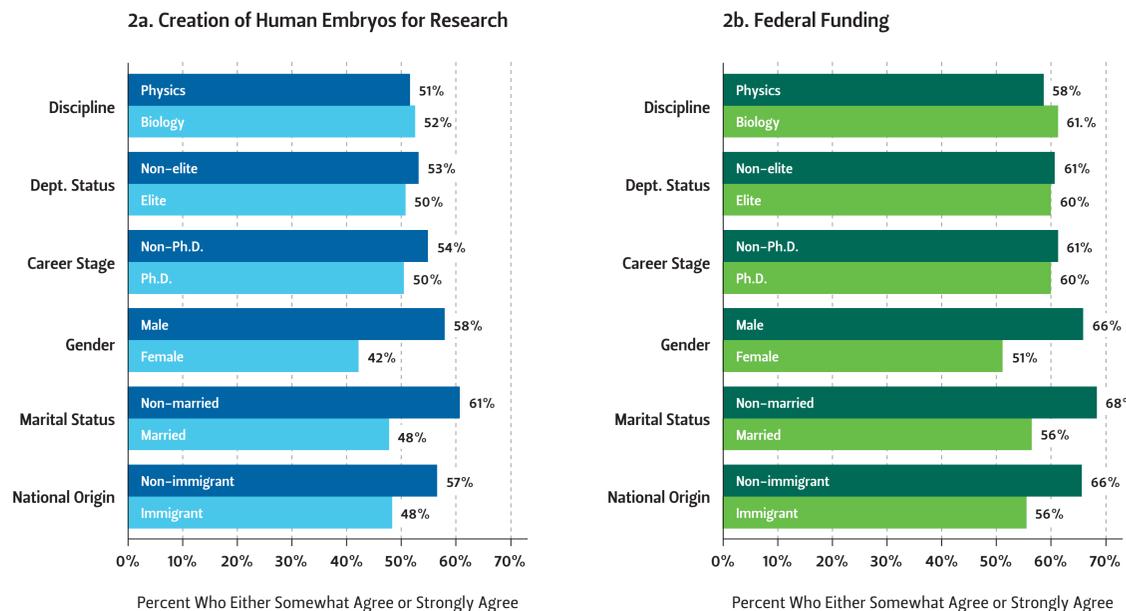
The sample was assessed to determine if responses were patterned by demographic characteristics.

There was **no significant difference** for either statement based on:

- Discipline — biology vs. physics
- Career Stage — Ph.D. vs. graduate student
- Departmental Status — "elite" vs. "non-elite"

Significant differences were observed ($p < 0.05$, two-tailed test) based on:

- Gender — males were more likely to agree
- Marital Status — non-married were more likely to agree
- National Origin — non-immigrants were more likely to agree



Conclusion

Overall, the data suggests that the scientific community generally responds favorably to controversial research areas related to stem cell research, both in terms of supporting the creation of human embryos for research purposes and the government support of such research. Importantly, while this research generally falls within the realm of biologists and physicists, there were no significant differences in the opinions between biologists and physicists.

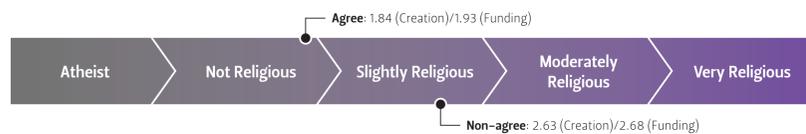
Unexpectedly, the data reveals differing opinions based on gender and marital status. A larger portion of male scientists supports the creation of human embryos and the federal funding for this research than female scientists. This might be because women are generally more religious than men and results found that respondents who disagree in general were more religious as well. More non-married scientists favor human embryo research than their married counterparts. Scientists that support human embryo creation are less religious and more liberal than scientists that disagree or have no opinion.

Interestingly, more scientists support the federal funding of embryo research than the actual research itself. In addition, a small subset specifically rejects the idea of embryo research while supporting its funding. This conflicting pattern seems to demonstrate that, like members of the general public, scientists make complex value judgments, weighing personal beliefs about areas of moral ambiguity separately from how they regard broader policy decisions in the field.

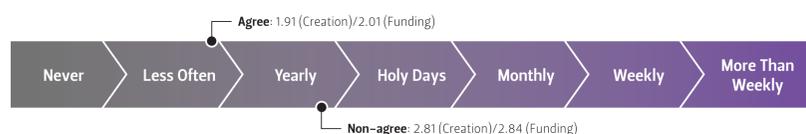
Figure 3 — Religiosity and Political Ideology of Scientists

Scientists were also asked to gauge their religiosity and political ideology on an ordinal scale. When this was compared to the scientists' responses to questions about the creation of human embryos for research and federal funding of embryo research, we saw significant differences between the groups. In comparison to those who disagree, have no opinion, or don't know (non-agree), scientists who agree with either question related to stem cell research: (a) were significantly **less religious**, (b) **attended religious services significantly less frequently**, and (c) were significantly **more liberal**. All values are weighted and statistically significant ($p < 0.001$, two-tailed test).

3a. Self-identified Religiosity (On an Ordinal Scale from 1-5)



3b. Attendance at Religious Services (On an Ordinal Scale from 1-7)



3c. Self-identified Political Ideology (On an Ordinal Scale from 1-10)



Figure 4 — Conflicting Responses

Interestingly, a group of **90 respondents (7% of total)** answered "strongly disagree" or "somewhat disagree" to the first statement on human embryo research while also giving a contradictory response that they either "strongly agree" or "somewhat agree" that the government should support such research. When compared against those who consistently reported that they either agree or disagree with both statements, no significant group differences in the proportion of respondents with conflicted answers were observed in terms of demographics including academic discipline, departmental status, gender, career stage, marital status or national origin.

Compared to those who consistently disagreed with both statements, those with conflicting responses were: (1) significantly less religious and (2) attended religious services significantly less frequently.

Demographics	Conflicted Response	Consistently Agree	Consistently Disagree
Biology	76%	67%	65%
Elite	49%	39%	38%
Female	41%	25%	39%
PhD	74%	61%	65%
Married	66%	53%	69%
Immigrant	38%	38%	47%
Religious person	2.27	1.84	2.92*
Attendance	2.45	1.91	3.35*
Political ideology	3.73	3.39	4.27

Notes: All values are weighted (mean); * $p < 0.05$, two-tailed test

Acknowledgements

We would like to acknowledge Bob Thomson (Baylor University), who helped with statistical analysis, as well as Baker Institute design staff (Rice University), who assisted with the poster development and design.

Research for the study was conducted with a major grant from the Templeton World Charitable Foundation (Grant TWCF0033/AB14) Elaine Howard Ecklund, PI; Kirstin R.W. Matthews and Steven W. Lewis, co-PIs. Additional support was provided by Rice University's Baker Institute Center for Health and Biosciences' International Stem Cell Policy program, which was endowed by the State of Qatar.



Further Information

Please contact Kirstin Matthews at krwm@rice.edu. More information on this and related projects can be obtained at the Baker Institute International Stem Cell Policy Program website: www.bakerinstitute.org/ISCP.

A PDF version of the poster is also available at www.bakerinstitute.org/isscr2016-embryo.