

Pew Research Center's 2014 Survey of AAAS Members

Background

The survey was conducted online with a random sample of 3,748 U.S.-based members of the American Association for the Advancement of Science (AAAS) from Sept. 11, 2014, to Oct. 13, 2014. AAAS is the world's largest general scientific society, and includes members from all scientific fields. Founded in 1848, AAAS publishes *Science*, one of the most widely circulated peer-reviewed scientific journals in the world. Membership in AAAS is open to all. The survey was conducted under the direction of Princeton Survey Research Associates International.

The findings from this survey are detailed in multiple reports and FactTank posts, available on the Pew Research Center website including:

January 29, 2015 "Public and Scientists' Views on Science and Society"

<http://www.pewinternet.org/2015/01/29/public-and-scientists-views-on-science-and-society/>

July 23, 2015 "An Elaboration of AAAS Scientists' Views"

<http://www.pewinternet.org/2015/07/01/americans-politics-and-science-issues/>

Sampling design

A simple random sample of AAAS members was selected for participation by the staff of AAAS. Eligibility was limited to U.S. members, but otherwise used a broad definition of the scientific community. AAAS members of any discipline or background were eligible to participate, except for those whose membership type indicated that they were primary or secondary educators. AAAS staff and institutional members also were ineligible.

The sample was designed to replicate that used in the 2009 survey of AAAS members, and thus to maximize comparability of samples between the two time points. While it's possible that the composition of AAAS members could have changed in substantive ways over time, comparisons of population characteristics in the AAAS membership database for 2009 and 2014 as well as sample characteristics from survey respondents suggest that AAAS member characteristics have stayed about the same on a variety of demographic and professional characteristics.

Weighting

Survey-based estimates of the population of AAAS members could be biased if some members are more or less likely than others to participate in the survey. To help ensure sample representativeness, the data were weighted to match population characteristics of AAAS membership for three characteristics: membership category, fellowship status and email availability. Membership categories of the organization adjust for a somewhat lower response rate among student members and a somewhat higher response rate among other membership types, including emeritus and professional memberships. AAAS fellows also had somewhat higher response rates compared with non-fellow members and thus weighting adjusts for that differential response rate. As expected, those with no email availability responded at somewhat lower rates, perhaps due to the greater difficulties this group faces participating in an online survey. Weighting also included an adjustment for contact via email or mail-only. Post data collection statistical adjustments require procedures that reflect departures from simple random sampling. The total design effect for this survey is 1.10.

The margins of error table shows the unweighted sample sizes and the error attributable to sampling that would be expected at the 95% level of confidence for different subgroups. The survey’s margin of sampling error is the largest 95% confidence interval for any estimated proportion. For example, the margin of error for the entire sample is ± 1.7 percentage points. This means that in 95 out of every 100 samples drawn using the same methodology, estimated proportions based on the entire sample will be no more than 1.7 percentage points away from their true values in the population, in this case, U.S.-based scientists in the AAAS. Sampling errors and statistical tests of significance used in this report take into account the effect of weighting. In addition to sampling error, one should bear in mind that question wording and practical difficulties in conducting surveys can introduce error or bias into the findings of opinion polls.

Margins of Error

AAAS members in the U.S.

| | Sample size | Margin of error in percentage points |
|-----------------------------|--------------------|---|
| All AAAS members surveyed | 3,748 | +/- 1.7 |
| Working Ph.D. Scientist | 1,627 | +/- 2.5 |
| Active Research Scientist | 1,246 | +/- 2.9 |
| <i>Primary discipline</i> | | |
| Biomedical sciences | 1,802 | +/-2.4 |
| Chemistry | 429 | +/-5.0 |
| Earth sciences | 270 | +/-6.3 |
| Engineering | 243 | +/-6.6 |
| Math/Computer sciences | 182 | +/-7.6 |
| Physics and Astronomy | 328 | +/-5.7 |
| Social sciences and policy | 333 | +/-5.6 |
| Other | 158 | +/-8.2 |
| <i>Employment</i> | | |
| Employed full time | 2,301 | +/-2.1 |
| Employed part time | 452 | +/-4.8 |
| Not employed | 970 | +/-3.3 |
| <i>Employer</i> | | |
| University/college employer | 1,553 | +/-2.6 |
| Business/industry employer | 586 | +/-4.2 |
| Other employer | 611 | +/-4.2 |
| <i>Highest degree</i> | | |
| Doctorate degree | 2,885 | +/-1.9 |
| All others | 863 | +/-3.5 |

Estimates from this sample can be made to the full population of U.S.-based members of the AAAS within the survey’s margin of sampling error. The margins of error are reported at the 95% confidence level.

“Working Ph.D. Scientists” are those employed full time who have a doctorate degree in a medical, natural or physical science; “Active Research Scientists” are “Working Ph.D. Scientists” who also report having received a research grant within the past five years.

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Survey Administration

A total of 19,984 members were mailed a letter requesting participation in the survey. The bulk of selected members (n=18,682) had both an email address and a physical address in the membership database while some had only a physical address available (n=1,302). Multiple contacts via postal mail and email, if available, were made to encourage participation in the online survey.

The invitation letter described the nature and purpose of the survey and included the URL and other access information to the online survey, it used a letterhead showing both AAAS and the Pew Research Center logos, and was signed by the head of each organization. An initial email was also sent to those with email addresses containing information similar to that on the advance letter in addition to a hyperlink to the survey login. A postcard reminder was sent to all who had not yet responded to the survey about two weeks after the initial mailing. A follow up email or letter (if no email address) was sent to those who had not yet responded roughly three weeks after the initial mailing. The online survey was closed as of Oct 13, 2014.

A total of 3,748 members completed the survey for an overall response rate of 18.8%.

Respondent Contact

Dates of contact

For all selected in survey sample

| | |
|---|----------|
| Invitation letter | Sept. 3 |
| Postcard reminders to all who had not completed | Sept. 22 |

For members with email addresses

| | |
|--|----------|
| Email with hyperlink to login | Sept. 11 |
| Reminder email to those who had not completed survey | Sept. 23 |

For members with mail addresses only

| | |
|---|----------|
| Reminder letter to those who had not completed survey | Sept. 29 |
|---|----------|

AAAS survey Sept. 11 to Oct. 13, 2014.

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**PEW RESEARCH CENTER'S 2014 SURVEY OF AAAS MEMBERS
TOPLINE
SEPTEMBER 11 - OCTOBER 13, 2014
N=3,748**

NOTE: ALL NUMBERS ARE PERCENTAGES. ANY PERCENTAGES GREATER THAN ZERO BUT LESS THAN 0.5% ARE REPLACED BY AN ASTERISK (*). COLUMNS/ROWS MAY NOT TOTAL 100% DUE TO ROUNDING.

ALL TREND COMPARISONS TO PEW RESEARCH SURVEY OF AAAS MEMBERS CONDUCTED MAY 1 TO JUNE 14, 2009, N=2,533

In this survey we will be asking you both about issues pertaining to science in general and to your scientific field or specialty. Most questions will be about science in general, and we will specify when we are particularly interested in your views about your specialty.

ASK ALL:

Q1 Would you say that this is generally a good time or a bad time for science?

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------|-------------|
| 52 | Good time | 76 |
| 48 | Bad time | 23 |
| * | No answer | 1 |

ASK ALL:

Q2 Would you say this is generally a good time or a bad time for YOUR SCIENTIFIC SPECIALTY?

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------|-------------|
| 62 | Good time | 73 |
| 37 | Bad time | 25 |
| 1 | No answer | 2 |

ASK ALL:

Q3 Compared to other industrialized countries, how would you rate the United States with regard to its overall scientific achievements?

| <u>2014</u> | | <u>2009</u> |
|-------------|-------------------|-------------|
| 45 | Best in the world | 49 |
| 47 | Above average | 45 |
| 6 | Average | 5 |
| 1 | Below average | 1 |
| * | No answer | * |

[RANDOMIZE QUESTIONS Q4a TO Q4e]

ASK ALL:

Q4a Compared with other industrialized countries, how would you rate the United States in the following area ... medical treatment?

| | |
|-------------|-------------------|
| <u>2014</u> | |
| 25 | Best in the world |
| 39 | Above average |
| 22 | Average |
| 13 | Below average |
| * | No answer |

ASK ALL:

Q4b Compared with other industrialized countries, how would you rate the United States in the following area ... industry research & development (R&D) innovation?

| | |
|-------------|-------------------|
| <u>2014</u> | |
| 29 | Best in the world |
| 53 | Above average |
| 15 | Average |
| 3 | Below average |
| 1 | No answer |

ASK ALL:

Q4c Compared with other industrialized countries, how would you rate the United States in the following area ... doctoral training in science and technology?

| | |
|-------------|-------------------|
| <u>2014</u> | |
| 46 | Best in the world |
| 41 | Above average |
| 10 | Average |
| 2 | Below average |
| * | No answer |

ASK ALL:

Q4d Compared with other industrialized countries, how would you rate the United States in the following area ... science, technology, engineering and math education for grades K to 12?

| | |
|-------------|-------------------|
| <u>2014</u> | |
| 1 | Best in the world |
| 15 | Above average |
| 38 | Average |
| 46 | Below average |
| * | No answer |

ASK ALL:

Q4e Compared with other industrialized countries, how would you rate the United States in the following area ... cutting-edge basic research in science and technology?

| <u>2014</u> | |
|-------------|-------------------|
| 40 | Best in the world |
| 47 | Above average |
| 11 | Average |
| 2 | Below average |
| 1 | No answer |

[RANDOMIZE ITEMS Q5A TO Q5D]

ASK ALL:

Q5 How much of a problem, if at all, do you think each of the following are for science in general?

| | <u>Major problem</u> | <u>Minor problem</u> | <u>Not a problem</u> | <u>No answer</u> |
|---|--------------------------|--------------------------|--------------------------|----------------------|
| a. The public expects solutions to problems too quickly | 49 | 44 | 7 | * |
| Trend 2009 | 49 | 45 | 6 | * |
| b. The news media oversimplify scientific findings | 52 | 43 | 5 | * |
| Trend 2009 | 48 | 45 | 6 | * |
| c. News reports don't distinguish between well-founded and not well-founded scientific findings | 79 | 20 | 2 | * |
| Trend 2009 | 76 | 22 | 2 | * |
| d. The public does not know very much about science | 84 | 14 | 1 | * |
| Trend 2009 | 85 | 14 | 1 | * |

[RANDOMIZE ITEMS Q6A TO Q6D]

ASK ALL:

Q6 To what extent do you think each of the following are REASONS for the U.S. public having limited knowledge about science?

| | <u>Major reason</u> | <u>Minor reason</u> | <u>Not a reason</u> | <u>No answer</u> |
|---|-------------------------|-------------------------|-------------------------|----------------------|
| a. Not enough science, technology, engineering and math in grades K through 12 | 75 | 22 | 3 | * |
| b. Too few scientists who communicate their findings through the media and online | 40 | 49 | 11 | * |
| c. Lack of public interest and attention to science news | 57 | 35 | 7 | * |
| d. Lack of media interest and attention to scientific developments | 43 | 46 | 12 | * |

NO QUESTION 7

[RANDOMIZE ITEMS A TO G WITH ITEM H 'NONE OF THESE ARE SERIOUS PROBLEMS' ALWAYS LAST]

ASK ALL:

Q8 Which of the following, if any, are serious problems for conducting high quality scientific research today? *[Check all that apply.]*

| | <u>Selected</u> | NET Not selected/ No answer/ <u>None of these</u> |
|--|-----------------|---|
| a. The way Institutional Review Boards (IRBs) implement rules for research involving human subjects | 12 | 88 |
| b. Lack of funding for basic research | 88 | 12 |
| c. Visa and immigration problems facing foreign scientists or students who want to work or study in the U.S. | 32 | 68 |
| d. ITAR regulations on using American technology overseas | 6 | 94 |
| e. Regulations on animal research | 13 | 87 |
| f. Conflict of interest rules used by scientific publications | 8 | 92 |
| g. Not enough data replication of previous research studies | 48 | 52 |

[RANDOMIZE QUESTIONS Q9, Q10, Q11; RANDOMIZE RESPONSE OPTIONS 1 and 2 FOR Q9, Q10, Q11]

ASK ALL:

Q9 Compared with 5 years ago, would you say getting FEDERAL funding for research in your specialty area is...

2014

| | |
|----|----------------------------------|
| 83 | Harder today |
| 2 | Easier today |
| 13 | About the same as five years ago |
| 2 | No answer |

ASK ALL:

Q10 Compared with 5 years ago, would you say getting INDUSTRY funding for research in your specialty area is...

2014

| | |
|----|----------------------------------|
| 45 | Harder today |
| 9 | Easier today |
| 41 | About the same as five years ago |
| 5 | No answer |

ASK ALL:

Q11 Compared with 5 years ago, would you say getting PRIVATE FOUNDATION funding for research in your specialty area is...

| <u>2014</u> | |
|-------------|----------------------------------|
| 45 | Harder today |
| 8 | Easier today |
| 43 | About the same as five years ago |
| 5 | No answer |

[RANDOMIZE RESPONSE OPTIONS 1 AND 2]

ASK ALL:

Q12 When it comes to funding for research in your scientific specialty, which do most funders place greater emphasis on...

| <u>2014</u> | | <u>2009</u> |
|-------------|---|-------------|
| 56 | Projects expected to make incremental scientific progress that have lower risk of failure | 59 |
| 11 | Projects with the potential for scientific breakthroughs, but with higher risk of failure | 5 |
| 30 | Both types of projects about equally | 28 |
| 2 | No answer | 7 |

[RANDOMIZE ITEMS Q13A to Q13D]

ASK ALL:

Q13 Please indicate whether you think each of the following has too much influence, or not, on the direction of research in your scientific specialty.

| | <u>Yes, too much influence</u> | <u>No, not too much influence</u> | <u>No answer</u> |
|---|--------------------------------|-----------------------------------|------------------|
| a. The emphasis on developing marketable products | 47 | 51 | 2 |
| Trend 2009 | 40 | 56 | 4 |
| b. A focus on projects that will yield results quickly | 69 | 29 | 2 |
| Trend 2009 | 66 | 31 | 3 |
| c. The incentive to do research in areas where funding is readily available | 74 | 23 | 2 |
| Trend 2009 | 76 | 20 | 3 |
| d. Political groups or officials | 55 | 44 | 2 |
| Trend 2009 | 50 | 47 | 3 |

[RANDOMIZE QUESTIONS Q14A TO Q14D]

ASK ALL:

Q14a How often do you believe the best scientific information guides government regulations when it comes to ... food safety regulations?

| <u>2014</u> | |
|-------------|------------------|
| 3 | Always |
| 43 | Most of the time |
| 50 | Some of the time |
| 3 | Never |
| 1 | No answer |

ASK ALL:

Q14b How often do you believe the best scientific information guides government regulations when it comes to ... clean air and water regulations?

| <u>2014</u> | |
|-------------|------------------|
| 2 | Always |
| 26 | Most of the time |
| 66 | Some of the time |
| 6 | Never |
| 1 | No answer |

ASK ALL:

Q14c How often do you believe the best scientific information guides government regulations when it comes to ... new drug and medical treatment regulations?

| <u>2014</u> | |
|-------------|------------------|
| 4 | Always |
| 54 | Most of the time |
| 40 | Some of the time |
| 1 | Never |
| 1 | No answer |

ASK ALL:

Q14d How often do you believe the best scientific information guides government regulations when it comes to ... land use regulations?

| <u>2014</u> | |
|-------------|------------------|
| 1 | Always |
| 14 | Most of the time |
| 75 | Some of the time |
| 9 | Never |
| 1 | No answer |

[RANDOMIZE RESPONSE OPTIONS]

ASK ALL:

Q15 Which of these statements comes closer to your own view, even if neither is exactly right?

2014

- 87 Scientists should take an active role in public policy debates about issues related to science and technology
- 13 Scientists should focus on establishing sound scientific facts and stay out of public policy debates
- * No answer

[RANDOMIZE Q16-Q17 BLOCK WITH Q18-Q19 BLOCK]

[DISPLAY FOR ALL WITH FIRST QUESTION IN SET:]

Next, a few questions about issues being debated by the public.

ASK ALL:

Q16 Which comes closer to your view: [RANDOMIZE RESPONSE OPTIONS: Humans and other living things have evolved over time; Humans and other living things have existed in their present form since the beginning of time]

ASK IF EVOLVED (Q16=1): Q17 Do you think that... [RANDOMIZE RESPONSE OPTIONS: Humans and other living things have evolved due to natural processes such as natural selection; A supreme being guided the evolution of living things for the purpose of creating humans and other life in the form it exists today]

2014¹

| | | <u>2009</u> |
|----|---|-------------|
| 98 | Humans and other living things have evolved over time | 97 |
| 90 | Humans and other living things have evolved due to natural processes such as natural selection | 87 |
| 8 | A supreme being guided the evolution of living things for the purpose of creating humans and other life in the form it exists today | 8 |
| 1 | No answer Q17 | 2 |
| 2 | Humans and other living things have existed in their present form since the beginning of time | 2 |
| * | No answer Q16 | 1 |

¹ The nested Q17 responses do not sum to the net of 98% on Q16 due to rounding.

[RANDOMIZE Q16-Q17 BLOCK WITH Q18-Q19 BLOCK]

ASK ALL:

Q18 From what you've read and heard, do you think... [RANDOMIZE RESPONSE OPTIONS 1 AND 2]:

| <u>2014</u> | | <u>2009²</u> |
|-------------|---|-------------------------|
| 9 | The Earth is getting warmer mostly because of natural patterns in the Earth's environment | 10 |
| 87 | The Earth is getting warmer mostly because of human activity such as burning fossil fuels | 84 |
| 3 | There is no solid evidence that the Earth is getting warmer | 4 |
| 1 | No answer | 2 |

[RANDOMIZE Q16-Q17 BLOCK WITH Q18-Q19 BLOCK]

ASK ALL:

Q19 In your view, how serious a problem is climate change? Is it a...

| <u>2014</u> | | <u>2009³</u> |
|-------------|---------------------------|-------------------------|
| 77 | Very serious problem | 70 |
| 17 | Somewhat serious problem | 22 |
| 4 | Not too serious a problem | 4 |
| 2 | Not a problem | 2 |
| * | No answer | * |

NO QUESTIONS 20 THROUGH 21

[RANDOMIZE QUESTIONS Q22A THROUGH Q22E]

ASK ALL:

Q22a Do you favor or oppose the use of animals in scientific research?

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------|-------------|
| 89 | Favor | 93 |
| 9 | Oppose | 5 |
| 2 | No answer | 2 |

ASK ALL:

Q22b Do you favor or oppose building more nuclear power plants to generate electricity?

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------|-------------|
| 65 | Favor | 70 |
| 33 | Oppose | 27 |
| 2 | No answer | 3 |

²In the 2009 survey, one of the response options was worded differently. It read, "the Earth is getting warmer mostly because of natural changes in the atmosphere."

³In the 2009 survey, the question stem asked, "In your view, how serious a problem is global warming..."

ASK ALL:

Q22c Do you favor or oppose the increased use of fracking, a drilling method that uses high-pressure water and chemicals to extract oil and natural gas from underground rock formations?

| <u>2014</u> | |
|-------------|-----------|
| 31 | Favor |
| 66 | Oppose |
| 3 | No answer |

ASK ALL:

Q22d Do you favor or oppose the increased use of genetically engineered plants to create a liquid fuel replacement for gasoline?

| <u>2014</u> | |
|-------------|-----------|
| 78 | Favor |
| 21 | Oppose |
| 2 | No answer |

ASK ALL:

Q22e Do you favor or oppose allowing more offshore oil and gas drilling in U.S. waters?

| <u>2014</u> | |
|-------------|-----------|
| 32 | Favor |
| 66 | Oppose |
| 2 | No answer |

ASK ALL:

**Q23 Thinking about childhood diseases, such as measles, mumps, rubella and polio, do you think...
[RANDOMIZE RESPONSE OPTIONS]**

| <u>2014</u> | | <u>2009</u> |
|-------------|--|-------------|
| 13 | Parents should be able to decide NOT to vaccinate their children | 17 |
| 86 | All children should be required to be vaccinated | 82 |
| 1 | No answer | 1 |

ASK ALL:

Q24 Which of these statements comes closest to your point of view, even if neither is exactly right?

| <u>2014</u> | |
|-------------|--|
| 17 | The growing world population will NOT be a major problem because we will find a way to stretch our natural resources |
| 82 | The growing population WILL be a major problem because there won't be enough food and resources to go around |
| * | No answer |

ASK ALL:

Q25 Do you think the space station has been a good investment for this country, or don't you think so?

2014

| | |
|----|-----------------------|
| 68 | Good investment |
| 31 | Not a good investment |
| 2 | No answer |

ASK ALL:

Q26 The cost of sending human astronauts to space is considerably greater than the cost of using robotic machines for space exploration. As you think about the future of the U.S. space program, do you think it is essential or not essential to include the use of human astronauts in space?

2014

| | |
|----|---------------|
| 47 | Essential |
| 52 | Not essential |
| 1 | No answer |

ASK ALL:

Q27 Do you think it is generally safe or unsafe to eat foods grown with pesticides?

2014

| | |
|----|------------------|
| 68 | Generally safe |
| 31 | Generally unsafe |
| 1 | No answer |

ASK ALL:

Q28 Do you think it is generally safe or unsafe to eat genetically modified foods?

2014

| | |
|----|------------------|
| 88 | Generally safe |
| 11 | Generally unsafe |
| 1 | No answer |

[RANDOMIZE QUESTIONS Q29 TO Q31]

ASK ALL:

Q29 Which comes closer to your view: [RANDOMIZE RESPONSE OPTIONS]

2014

- | | |
|----|--|
| 89 | Immigrants today strengthen our country because of their hard work and talents |
| 9 | Immigrants today are a burden on our country because they take our jobs, housing and health care |
| 1 | No answer |

ASK ALL:

Q30 Which comes closer to your view: [RANDOMIZE RESPONSE OPTIONS]

2014

- | | |
|----|---|
| 87 | Government regulation of business is necessary to protect the public interest |
| 12 | Government regulation of business usually does more harm than good |
| 1 | No answer |

ASK ALL:

Q31 Which comes closer to your view: [RANDOMIZE RESPONSE OPTIONS]

2014

- | | |
|----|---|
| 90 | This country should do whatever it takes to protect the environment |
| 9 | This country has gone too far in its efforts to protect the environment |
| 1 | No answer |

ASK ALL:

Q32 In your opinion, generally do you think... [RANDOMIZE RESPONSE OPTIONS]

2014

- | | |
|----|--|
| 50 | Science and religion are often in conflict |
| 50 | Science and religion are mostly compatible |
| * | No answer |

NO QUESTION 33

[DISPLAY FOR ALL:]

A few questions about science as a career...

ASK ALL:

Q34 Overall, how would you characterize this as a time to begin a career in your scientific specialty area? Would you say it is a...

| <u>2014</u> | | <u>2009</u> |
|-------------|----------------|-------------|
| 15 | Very good time | 17 |
| 44 | Good time | 50 |
| 33 | Bad time | 27 |
| 7 | Very bad time | 5 |
| 1 | No answer | 1 |

ASK ALL:

Q35 Compared with five years ago, would you say attracting the best young people to a science career is...

| <u>2014</u> | |
|-------------|----------------------------------|
| 9 | Easier today |
| 58 | Harder today |
| 32 | About the same as five years ago |
| 1 | No answer |

[RANDOMIZE ITEMS A TO F WITH ITEM G 'NONE OF THESE ARE SERIOUS PROBLEMS FOR PEOPLE ENTERING A CAREER AS A RESEARCH SCIENTIST THESE DAYS' ALWAYS LAST]

ASK ALL:

Q36 Which of the following, if any, are serious problems for people entering a career as a research scientist these days? [Check all that apply.]

| | <u>Selected</u> | NET Not selected/ No answer/ <u>None of these</u> |
|--|-----------------|---|
| a. Lack of adequate funding for research needs | 85 | 15 |
| b. Salaries below market competition | 50 | 50 |
| c. Too few job openings for tenure-track positions | 73 | 27 |
| d. Graduate training that doesn't meet today's needs | 31 | 69 |
| e. The long hours needed to succeed in a research career | 46 | 54 |
| f. Too few job openings in industry research & development (R&D) positions | 54 | 46 |

ASK ALL:

Q37 How important for career advancement is it for scientists in your specialty area to get their research covered by the news media?

| <u>2014</u> | | <u>2009</u> |
|-------------|----------------------|-------------|
| 11 | Very important | 8 |
| 33 | Important | 29 |
| 43 | Not too important | 48 |
| 12 | Not at all important | 14 |
| 1 | No answer | 1 |

ASK ALL:

Q38 How important for career advancement is it for scientists in your specialty area to promote their findings on social media sites such as Twitter, LinkedIn or Facebook?

| <u>2014</u> | |
|-------------|----------------------|
| 4 | Very important |
| 18 | Important |
| 46 | Not too important |
| 30 | Not at all important |
| 1 | No answer |

ASK ALL:

Q39 Thinking about any scientific research that you have been involved with during the past five years, do you think of your work as PRIMARILY addressing... [RANDOMIZE RESPONSE OPTIONS]

| <u>2014</u> | | <u>2009</u> |
|-------------|----------------------------|-------------|
| 48 | Basic knowledge questions | 49 |
| 50 | Applied research questions | 46 |
| 2 | No answer | 5 |

NO QUESTION 40

ASK ALL:

Q41 What were the one or two most significant experiences influencing your decision to become a scientist? *[Please type your response in the box.]*

OPEN END RESPONSES CATEGORIZED AS FOLLOWS; MULTIPLE RESPONSES ALLOWED

2014

- 30 Intellectually challenging, lifelong curiosity, love of science or nature
- 8 To make a difference, contribute to society, help others, teach
- 4 Ability to do well, good at it

- 24 Mentors, Professors, Teachers (at any level)
- 6 High school or middle school courses, science magnet school
- 6 Other influential courses or teaching experience when it “clicked”

- 13 Lab experience, fieldwork, internships, science fairs
- 8 Other personal experiences mostly on jobs, including some leading to new direction
- 8 Childhood experiences with natural parks, science museums, star gazing, chemistry sets

- 12 Family encouragement or inspiration
- 1 Kindred spirit with scientists/students

- 7 Influence of books, movies, TV on science e.g., Cosmos/Sagan, biographies of scientists, and science fiction
- 1 Influence of specific scientists either personal experience or admired e.g., Curie, Goodall, Einstein, Ehrlich, Salk, Feynman

- 4 The space race, NASA, International Space programs
- 1 Other scientific discoveries e.g. Human Genome Project, Manhattan Project, Cloning, Gene Therapy
- * Environmental issues of the 1970s

- 4 Practical issues: funding, job availability

- 13 No answer

ASK ALL:

Q42 What is your primary field or scientific discipline?

| <u>2014</u> | | TREND FOR COMPARISON | <u>2009⁴</u> |
|-------------|--|-----------------------------|-------------------------|
| 50 | Agriculture, Biological & Medical Sciences | Biological & Medical | 51 |
| 11 | Chemistry | Chemistry | 14 |
| 7 | Earth Sciences | Geosciences | 6 |
| 7 | Engineering | Engineering | 6 |
| 5 | Mathematics & Computer science | Math & Computer science | 3 |
| 8 | Physics & Astronomy | Physics & Astronomy | 8 |
| 9 | Social & Behavioral Sciences | Social Sciences & Policy | 7 |
| 4 | Other [please specify] | Other | 3 |
| * | No answer | No answer | 2 |

ASK IF Q42=1-7:

Q43 Within the field or discipline of [INSERT Q42=1-7 CATEGORY], what is your primary scientific specialty area? LIST OF OPTIONS WITH OTHER SPECIFY FOR EACH CATEGORY NOT SHOWN

ASK IF Q42=8:

Q43b Within that field or discipline, what is your primary scientific specialty area? [Please type your response in the box.] [OPEN END]

RESPONSES TO Q43 NOT SHOWN

ASK ALL:

Q44 Would you describe your own work in your primary specialty area as CLINICAL OR TRANSLATIONAL research, or not?

| <u>2014</u> | | CLINICAL RESEARCH TREND FOR COMPARISON: | <u>2009⁵</u> |
|-------------|-----------|--|-------------------------|
| 27 | Yes | | 11 |
| 71 | No | | 88 |
| 2 | No answer | | 1 |

ASK ALL:

Q45 Would you describe your own work in your primary scientific specialty area as INTERDISCIPLINARY, or not?

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------|-------------|
| 82 | Yes | 81 |
| 17 | No | 18 |
| 1 | No answer | 1 |

⁴ In the 2009 survey, primary field or scientific discipline was categorized based on open-end responses and may not be directly comparable to 2014.

⁵ In the 2009 survey, the question stem did not include translational research. It asked, "would you describe your own work in your primary specialty area as clinical research, or not?"

[RANDOMIZE ITEMS A TO E WITH ITEM F 'NONE OF THESE' ALWAYS LAST]

ASK ALL:

Q46 Which, if any, of the following have you done? [Check all that apply.]

| | <u>Selected</u> | NET Not selected/ No answer/ <u>None of these</u> |
|---|-----------------|--|
| a. Completed graduate or postdoctoral training in TWO or more primary fields | 30 | 70 |
| b. Published a research study with a multidisciplinary team | 57 | 43 |
| c. Read a scientific journal article in fields outside of your primary specialty area in the past 12 months | 92 | 8 |
| d. Taught a course that drew material from TWO or more primary fields | 47 | 53 |
| e. Held a university research position in TWO or more disciplines | 20 | 80 |

[RANDOMIZE QUESTIONS Q47 AND Q48]

ASK ALL:

Q47 How much debate is there in the media over research findings in your primary scientific specialty area?

| <u>2014</u> | |
|-------------|--------------|
| 17 | A lot |
| 36 | Some |
| 32 | Not too much |
| 14 | None at all |
| 1 | No answer |

ASK ALL:

Q48 How much would you say non-expert citizens are interested in your primary scientific specialty area?

| <u>2014</u> | |
|-------------|--------------|
| 27 | A lot |
| 44 | Some |
| 23 | Not too much |
| 5 | None at all |
| * | No answer |

[RANDOMIZE ITEMS A TO G WITH ITEM H 'OTHER-SPECIFY' ALWAYS LAST]

ASK ALL:

Q49 Which of these do you do or use to stay up-to-date in your specialty area? *[Check all that apply.]*

| | <u>Selected</u> | NET Not selected/ <u>No answer</u> |
|---|-----------------|--|
| a. Get E-mail alerts from journals in your specialty area | 58 | 42 |
| b. Get E-mail alerts from general science journals | 56 | 44 |
| c. Read journal articles outside of your primary field or scientific discipline | 84 | 16 |
| d. Follow tweets or other social media by experts in your specialty area | 12 | 88 |
| e. Follow blogs by experts in your specialty area | 19 | 81 |
| f. Attend professional meetings, workshops or lectures | 79 | 21 |
| g. Belong to list-servs | 32 | 68 |
| h. Other (please specify) OPEN END | 10 | 90 |

[RANDOMIZE QUESTIONS Q50A TO Q50F]

ASK ALL:

Q50a How often, if ever, do you ... write for a blog about science?

| <u>2014</u> | | <u>2009</u> |
|-------------|--------------|-------------|
| 2 | Often | 2 |
| 6 | Occasionally | 5 |
| 12 | Rarely | 11 |
| 80 | Never | 82 |
| 1 | No answer | 1 |

ASK ALL:

Q50b How often, if ever, do you ... talk with reporters about new research findings?

| <u>2014</u> | | <u>2009</u> |
|-------------|--------------|-------------|
| 3 | Often | 3 |
| 18 | Occasionally | 20 |
| 30 | Rarely | 31 |
| 48 | Never | 45 |
| 1 | No answer | * |

ASK ALL:

Q50c How often, if ever, do you ... talk with non-scientists about science or research findings?

| <u>2014</u> | | <u>2009</u> |
|-------------|--------------|-------------|
| 37 | Often | 39 |
| 49 | Occasionally | 48 |
| 12 | Rarely | 11 |
| 1 | Never | 2 |
| * | No answer | * |

ASK ALL:

Q50d How often, if ever, do you ... use social media to talk about science (such as Twitter, Facebook, LinkedIn)?

| <u>2014</u> | |
|-------------|--------------|
| 7 | Often |
| 16 | Occasionally |
| 18 | Rarely |
| 57 | Never |
| 1 | No answer |

ASK ALL:

Q50e How often, if ever, do you ... follow tweets about research in your specialty area?

| <u>2014</u> | |
|-------------|--------------|
| 5 | Often |
| 8 | Occasionally |
| 13 | Rarely |
| 74 | Never |
| 1 | No answer |

ASK ALL:

Q50f How often, if ever, do you ... write a blog post that describes your research and specialty areas?

| <u>2014</u> | |
|-------------|--------------|
| 2 | Often |
| 6 | Occasionally |
| 12 | Rarely |
| 79 | Never |
| 1 | No answer |

COMBINED Q50a (How often, if ever, do you ... write for a blog about science?) and Q50f (How often, if ever, do you ... write a blog post that describes your research and specialty areas?)

2014

| | |
|----|-----------------------------------|
| 24 | Ever blog about science/research |
| 74 | Never blog about science/research |
| 1 | No answer |

COMBINED Q50d (How often, if ever, do you ... use social media to talk about science (such as Twitter, Facebook, LinkedIn)? And Q50e (How often, if ever, do you ... follow tweets about research in your specialty area?)

2014

| | |
|----|---|
| 47 | Ever use social media to talk/follow science |
| 52 | Never use social media to talk/follow science |
| 1 | No answer |

ASK IF USE SOCIAL MEDIA TO TALK ABOUT SCIENCE (Q50D=1,2,3)

Q51 When you talk about science on social media (such as Twitter, Facebook, LinkedIn), is your message intended...

BASED ON TOTAL

2014

| | |
|----|---|
| 42 | Ever use social media to talk about science Q50d |
| 7 | Primarily for science experts |
| 15 | Primarily for non-expert citizens |
| 18 | Both groups equally |
| 1 | No answer |
| 57 | Never use social media to talk about science Q50d |
| 1 | No answer Q50d |

BASED THOSE WHO EVER USE SOCIAL MEDIA TO TALK ABOUT SCIENCE N=1,472

2014

| | |
|----|-----------------------------------|
| 16 | Primarily for science experts |
| 37 | Primarily for non-expert citizens |
| 44 | Both groups equally |
| 4 | No answer |

NO QUESTIONS 52 THROUGH 54

ASK ALL:

Q55 Within the last five years, have you worked on a research project that used animals?

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------|-------------|
| 32 | Yes | 35 |
| 67 | No | 64 |
| 1 | No answer | 1 |

ASK ALL:

Q56 Within the last five years, have you worked on a research project that used human subjects?

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------|-------------|
| 29 | Yes | 24 |
| 70 | No | 74 |
| 1 | No answer | 2 |

ASK ALL:

Q57 Within the last five years, have you received any funding for a research project?

| <u>2014</u> | |
|-------------|-----------|
| 56 | Yes |
| 43 | No |
| 1 | No answer |

ASK IF YES, RECEIVED FUNDING WITH PAST 5 YEARS (Q57=1)

ITEMS IN ORDER WITH ITEM G 'NONE OF THESE' LAST

Q58 From which of the following sources did you receive research funding within the last five years? [Check all that apply.]

BASED ON THOSE WHO RECEIVED FUNDING WITHIN LAST FIVE YEARS N=2,077

| | <u>Selected</u> | NET Not selected/ No answer/ <u>None of these</u> |
|--|-----------------|---|
| a. Federal government | 78 | 22 |
| b. State government | 15 | 85 |
| c. Private foundations (non-profit) | 32 | 68 |
| d. Industry | 25 | 75 |
| e. Direct support from a university or college | 46 | 54 |
| f. Scientific professional association | 6 | 94 |

ASK ALL:

E1 Are you currently retired, or not?

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------------|-------------|
| 23 | Yes, retired | 19 |
| 76 | No, not retired | 79 |
| 1 | No answer | 1 |

ASK ALL:

E2 Are you now enrolled in school, either full or part-time, or not?

| <u>2014</u> | | <u>2009</u> |
|-------------|------------------------|-------------|
| 13 | Yes, full-time student | 14 |
| 3 | Yes, part-time | 2 |
| 83 | Not enrolled in school | 83 |
| 1 | No answer | 1 |

ASK ALL:

E3 Are you now employed full-time, part-time or not employed?

| <u>2014</u> | | <u>2009</u> |
|-------------|--------------|-------------|
| 62 | Full-time | 71 |
| 12 | Part-time | 10 |
| 25 | Not employed | 17 |
| 1 | No answer | 1 |

ASK IF EMPLOYED FULL OR PART-TIME (E3=1,2):
EMPORG. Which of these best describes your current employer?

BASED ON EMPLOYED FULL OR PART-TIME N=2,753

| <u>2014</u> | | <u>2009</u> |
|-------------|-------------------------|-------------|
| 10 | Government | 9 |
| 58 | University or college | 63 |
| 21 | Business or industry | 15 |
| 9 | Non-profit organization | 8 |
| 2 | Other (please specify) | 5 |
| * | No answer | * |

ASK ALL:

EDUC For each of the following, indicate if you currently hold this degree: *[Check all that apply.]*
Response options a. Master's Degree b. Doctor of Philosophy c. Doctor of Medicine d. Doctor of Dentistry e. Other advanced degree (s) (please specify)

| <u>2014</u> | HIGHEST DEGREE OBTAINED |
|-------------|--|
| 72 | Doctorate or medical-related doctorate |
| 16 | Master's degree |
| 12 | All others: includes those with B.S., degrees in progress, and unclear responses |

ASK ALL:

AGE What is your age? **OPEN-END**

| <u>2014</u> | | <u>2009</u> |
|-------------|----------------|-------------|
| 35 | 18 to 49 years | 38 |
| 29 | 50 to 64 years | 33 |
| 35 | 65 and older | 26 |
| 2 | No answer | 3 |
| 55 | Mean age | 53 |
| 59 | Median age | 55 |

ASK ALL:

RSEX Are you male or female?

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------|-------------|
| 71 | Male | 72 |
| 29 | Female | 26 |
| * | No answer | 2 |

ASK ALL:

RACE1 What is your race or origin? Select as many as apply. [Check all that apply.]

Response options: White; Hispanic, Latino or Spanish origin; Black or African American; Asian or Asian-American; American Indian or Alaska Native; Native Hawaiian or Other Pacific Islander; Some other race or origin (please specify)

| | |
|-------------|---------------------------------------|
| <u>2014</u> | SUMMARY OF RACE, ETHNICITY |
| 83 | White, non-Hispanic ⁶ |
| 1 | African American, non-Hispanic |
| 4 | Hispanic |
| 7 | Asian or Asian-American, non-Hispanic |
| 2 | Other, Mixed, non-Hispanic |
| 3 | No answer/Refused |

ASK ALL:

USBORN. Were you born in the United States, in Puerto Rico or another U.S. territory, or in another country?

| | |
|-------------|---|
| <u>2014</u> | |
| 83 | Born in the U.S. ⁷ |
| 1 | Born in Puerto Rico or a U.S. territory |
| 16 | Born in another country |
| * | No answer |

ASK IF USBORN=3 OR SKIP:

WHEREBORN. In what country were you born? *Response options with other specify not shown*

BASED ON THOSE BORN OUTSIDE THE U.S. N=604

| | |
|-------------|---|
| <u>2014</u> | |
| 36 | Europe (including Eastern Europe) |
| 32 | Asia & Pacific (including Australia and New Zealand) |
| 14 | South America & Caribbean (including Puerto Rico or U.S. territory) |
| 7 | Canada |
| 3 | Middle East and North Africa |
| 2 | Sub-saharan Africa |
| 6 | Other unclear/No answer |

⁶ For comparison, a similar question on the 2009 survey found 81% of AAAS scientists were non-Hispanic whites.

⁷ For comparison, a similar question on the 2009 survey found 81% of AAAS scientists were born in the U.S., 18% said they were not born in the U.S. Nine-in-ten were either born in the U.S. or naturalized citizens.

ASK IF USBORN=3 OR SKIP:

CITIZEN Are you a citizen of the United States?

Response options: Yes; No.

BASED ON TOTAL

| <u>2014</u> | |
|-------------|---------------------------------------|
| 92 | NET Citizen or Born in U.S |
| 83 | U.S. born |
| 9 | Citizen, foreign born |
| 1 | Born in Puerto Rico or U.S. territory |
| 7 | Foreign born, not a U.S. Citizen |
| 1 | No answer |

ASK ALL:

RELIG What is your present religion, if any? *Response options: Protestant; Roman Catholic; Mormon; Orthodox; Jewish; Muslim; Buddhist; Hindu; Atheist; Agnostic; Something else (please specify); Nothing in particular. Examples not shown for Protestant, Mormon, Orthodox.*

| <u>2014</u> | | <u>2009</u> |
|-------------|--|-------------|
| 46 | NET Affiliated | 48 |
| 21 | Protestant (includes Christian, vol.) | 20 |
| 10 | Catholic | 10 |
| 1 | Other Christian (includes Mormon, Orthodox, Jehovah's Witness, vol.) | 1 |
| 7 | Jewish | 8 |
| 7 | Other faiths (includes Muslim, Buddhist, Hindu, Unitarian, vol.) | 8 |
| 52 | NET Unaffiliated | 48 |
| 21 | Atheist | 17 |
| 12 | Agnostic | 11 |
| 18 | Nothing in particular | 20 |
| 2 | No answer/Refused | 4 |

ASK IF SOMETHING ELSE OR NO RESPONSE TO RELIG (RELIG=11 or SKIP)

CHR Do you think of yourself as a Christian or not?

RESPONSES NOT SHOWN

ASK IF CHRISTIAN (RELIG=1-4 OR CHR=1)

BORN Would you describe yourself as a born-again or evangelical Christian, or not?

Response options: Yes, born-again or evangelical Christian; No, not born-again or evangelical Christian.

BASED ON ALL PROTESTANTS N=794

| <u>2014</u> | | <u>2009</u> |
|-------------|-------------------------------|-------------|
| 18 | All Protestants | 17 |
| 67 | White evangelical Protestants | 69 |
| 15 | All other Protestants | 14 |

ASK ALL:

ATTEND Aside from weddings and funerals, how often do you attend religious services:

Response options: More than once a week; Once a week; Once or twice a month; A few times a year; Seldom; Never.

| <u>2014</u> | | <u>2009</u> |
|-------------|-----------------------|-------------|
| 15 | Weekly or more NET | 17 |
| 7 | Once or twice a month | 8 |
| 14 | A few times a year | 14 |
| 62 | Seldom/Never | 57 |
| 2 | No answer | 3 |

ASK ALL:

BELIEF Which of the following statements comes closest to your belief about God?

| <u>2014</u> | | <u>2009</u> |
|-------------|--|-------------|
| 32 | I believe in God | 33 |
| 17 | I don't believe in God, but I do believe in a universal spirit or higher power | 18 |
| 47 | I don't believe in either | 41 |
| 4 | No answer | 7 |

**ASK IF CITIZEN (CITIZEN=1) OR BORN IN THE U.S. (USBORN=1)
REGISTER. Which of these statements best describes you?**

BASED ON TOTAL

| <u>2014</u> | | TREND FOR COMPARISON <u>2009⁸</u> |
|-------------|--|--|
| 88 | I am absolutely certain that I am registered to vote in my precinct or election district | 86 |
| 2 | I'm not sure if I am registered to vote | 1 |
| 2 | I am not registered to vote | 2 |
| 2 | No answer, unclear ⁹ | 1 |
| 8 | <i>Not a citizen or unclear if citizen</i> | 10 |

ASK ALL:

PARTY In politics today, do you consider yourself a Republican, Democrat, or Independent?

Response options: Republican; Democrat; Independent; Something else (please specify)

ASK IF INDEPENDENT, SOMETHING ELSE OR SKIP IN PARTY (PARTY=3,4 OR SKIP):

PARTYLN. As of today do you lean more to the Republican Party or more to the Democratic Party?

| <u>2014</u> | | <u>2009</u> |
|-------------|----------------------------------|-------------|
| 15 | Republican/lean Republican Party | 12 |
| 81 | Democrat/lean Democratic Party | 81 |
| 4 | No lean/No answer | 7 |

ASK ALL:

IDEO In general, would you describe your political views as...

Response options: Very conservative; Conservative; Moderate; Liberal; Very liberal

| <u>2014</u> | | <u>2009</u> |
|-------------|--------------------------------|-------------|
| 9 | Conservative/very conservative | 9 |
| 32 | Moderate | 35 |
| 57 | Liberal/very liberal | 52 |
| 2 | No answer | 3 |

⁸ In the 2009 survey, the question wording about voter registration status differed somewhat in both question stem and response options and may not be directly comparable to 2014.

⁹ In the 2014 survey those who were born in Puerto Rico or other U.S. territories were not asked about voter registration status.

ASK ALL:

QC. What advice would you give to scientists and others who want to encourage societal support for scientific research today? Please mention any efforts you think would be especially effective.

[Please type your response in the box.]

2014

65 Gave response

35 No answer

OPEN END, MULTIPLE RESPONSES ALLOWED

BASED ON THOSE ANSWERING N=2,481

2014

- 21 Communicate (general)
- 21 Explain the impact of scientific research to our daily lives
- 20 Volunteer/teach in schools/focus on improving education, including STEM
- 16 Reach out to politicians/get involved in politics or policy/vote
- 14 Reach out to the media (all forms)/educate media on science news
- 8 Do not oversell research findings/make sure work is ethical/transparent
- 6 Treat lay audience as smart/don't talk down/listen to concerns
- 5 Communicate research more clearly, use less technical terms
- 4 Get involved with non-science community-based organizations
- 3 Talk with kids about science (outside of school)/be a mentor
- 3 Focus on future of science
- 3 Explain the necessity of scientific research to future innovation
- 2 Support or promote scientific TV shows
- 2 Talk with friends/family/neighbors about science
- 2 Support scientific organizations
- 2 Work hard/focus on high quality work
- 1 Speak out against scientific misconceptions
- 1 Reach out to U.S. and international business community
- 14 Other ideas and comments