**Reproduciblility Survey**

Welcome

Welcome to our survey exploring how reproducibility is viewed by the scientific community.The results from this survey will help us form the basis for a news feature article that will be published in Nature.  
The survey should take no longer than 15 minutes to complete and at the end of the survey you will have the chance to enter a prize draw to win a $500 American Express Gift Card, or an equivalent charitable donation of your choice. Prize draw terms and conditions   
We ensure the highest standards of professional research and privacy in using the information that our audience provides. Results will not be published or shared in association with any individual respondents.  
We are members of the Market Research Society (MRS) and ensure the highest standards of professional research and privacy in using the information that our audience provides, abiding by the MRS Code of Conduct.   
 Email us at audienceresearch@nature.com to report any problems.

Carry out research

In your current role do you carry out primary research?

* Yes
* No

Prize draw

Please tick any relevant boxes below.

* Nature may want to contact you again to ask for more information on the subjects discussed in this survey, or to ask you specific questions about your comments and answers. If you are happy to receive follow up requests, please tick this box and enter your details on the next page.
* If you would like to enter the prize draw for a $500 American Express Gift Card, please tick this box and enter your details on the next page.

Detail

Please enter your details below.

|  |  |
| --- | --- |
| First name: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Last name: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Email address: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| STOP | **Screened** –  *Thank you very much for your time. The rest of the questions in this survey are aimed at those who conduct primary research. If you would like to provide feedback please email us at audienceresearch@nature.com* |

Previously published

Have you published a manuscript in the past 3 years?

Please select all that apply

* Yes, in an NPG journal
* Yes, in a non-NPG journal
* No
* I would prefer not to say

Familiar with term

How familiar are you with the term reproducibility when referring to publishing scientific content.

* Very familiar
* Fairly familiar
* Somewhat familiar
* Not very familiar
* Not at all familiar

Your definition

Could you please briefly tell us what reproducibility means to you.

(Optional)

|  |
| --- |
|  |

How we define reproducibility

How we define reproducibility:  
For the purposes of this survey, we consider a study to be reproduced when its findings are confirmed in similar experimental systems (these may include slight variations in methods or materials.)    
By contrast, a study is replicated when it is repeated exactly, using the same reagents.  
This survey talks about the larger issue of reproducibility of results, not just replication.

Please click next to continue with the questions.

Crisis in reproducibility

Is a 'crisis of reproducibility' something you have heard of before, as an issue in science?

Please select all that apply

* Yes, from the mainstream media
* Yes, from scientific journals
* Yes, from discussions at conferences
* Yes, from discussions with my colleagues
* Yes, from elsewhere (please specify)\_\_\_\_\_\_\_\_\_\_\_\_
* No

Think there is crisis

Which of the following statement regarding a 'crisis or reproducibility' within the science community do you agree with?

* There is a significant crisis of reproducibility
* There is a slight crisis of reproducibility
* There is no crisis of reproducibility
* I don't know

Level of attention

To what extent do you feel that the crisis in reproducibility is suitably flagged?

* Too much
* A reasonable amount
* Not enough
* I am unsure

Proportion of published results

In your opinion, what proportion of published results in your field are reproducible? (i.e. the results of a given study could be replicated exactly or reproduced in multiple similar experimental systems with variations of experimental settings such as materials and experimental model)

Give your best estimate: Slide the button so that it appears below your estimate, or simply click on the number.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| * 0% | * 10% | * 20% | * 30% | * 40% | * 50% | * 60% | * 70% | * 80% | * 90% | * 100% |

How does your field stack up

Please complete the following sentence: "In my opinion, the level of reproducibility in my field is…

* ...better than for other scientific fields on average."
* ...about the same as for other scientific fields on average"
* ...worse than for other scientific fields on average."
* I am unsure

Failure of scientific studies statements

To what extent do you agree or disagree with the following statements?

|  | Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly disagree |
| --- | --- | --- | --- | --- | --- |
| "I think that the failure to reproduce scientific studies is a major problem in my field" |  |  |  |  |  |
| "I think that the failure to reproduce scientific studies is a major problem for all fields" |  |  |  |  |  |

Additional comment about statement 2

Please use the box below to tell us more about your answer:

(Optional)

|  |
| --- |
|  |

Often statement

How often do you do any of the following?

|  | Daily | Weekly | Monthly | Quarterly | Never |
| --- | --- | --- | --- | --- | --- |
| Think about reproducibility of your research |  |  |  |  |  |
| Speak to you colleagues about reproducibility |  |  |  |  |  |
| Question the reproducibility of other scientists' work |  |  |  |  |  |

Funder effort

Have you encountered efforts or directives from funding agencies designed to improve reproducibility of the work you do?

* Yes
* No
* Not applicable

Funder efforts

To what extent do you agree/disagree with the following statements?

|  | Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly disagree |
| --- | --- | --- | --- | --- | --- |
| "I have found efforts from funding agencies helpful for my work." |  |  |  |  |  |
| "Efforts from funding agencies will lead to positive changes in my field." |  |  |  |  |  |
| "Funding agencies should do more to encourage or enforce better reproducibility." |  |  |  |  |  |

Funder effort open end

Please use the box below to tell us more about existing efforts that you've encountered and why you think they do or do not help:

(Optional)

|  |
| --- |
|  |

Publisher efforts

Have you encountered efforts from journal publishers designed to enhance or ensure the reproducibility of your work (e.g. using checklists to ensure standards for describing research methods)?

* Yes
* No
* Not applicable

Publisher efforts

To what extent do you agree/disagree with the following statements?

|  | Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly disagree |
| --- | --- | --- | --- | --- | --- |
| "Efforts made by journal publishers have been helpful to my work." |  |  |  |  |  |
| "Efforts made by journal publishers have had a positive effect on my field." |  |  |  |  |  |
| "Journal publishers should do more to enforce or encourage reproducibility in my field." |  |  |  |  |  |

how or how not affect

Please use the box below to tell us more about existing efforts that you've encountered and why you think they do or do not help:

(Optional)

|  |
| --- |
|  |

Established procedure for reproducibility

Have you and/or your lab group established any procedures to ensure reproducibility in your work?

* Yes
* No

Steps taken

Use the box below to tell us about the steps that have been taken to ensure reproducibility in your work?

(Optional)

|  |
| --- |
|  |

When established steps

When did you and/or your lab group establish these procedures?

* Within the last year
* Within the last 2 years
* Within the last 5 years
* Within the last 10 years or longer
* The procedures have been in place since I started working in my lab

Quality of research changed

Do you think the quality of your research changed after these changes were introduced?

* Yes, the quality of my research has improved
* No, the quality of my research has not improved
* I don't know

Impact on lab

What kind of an impact, overall, have the changes you made to ensure reproducibility had on your lab?

* These changes have had a positive impact on my lab
* These changes have had a negative impact on my lab
* These changes have not affected my lab

Effects caused by change

Please tell us about any other positive or negative impacts these changes have had on your lab:

(Optional)

|  |
| --- |
|  |

Further changes

Do you think that you and/or your lab should implement any further changes?

* Yes
* No
* I am unsure

Additional changes

Please use the box below to tell us about what further changes you think should be implemented:

(Optional)

|  |
| --- |
|  |

Changes that would improve

Have you identified any barriers to implementing changes that would improve reproducibility of research in your lab?

* Yes
* No
* I don't know

Please tell us about the barriers that you have identified:

(Optional)

|  |
| --- |
|  |

Reproduce statements

To what extent do you agree or disagree with the following statements:

|  | Strongly agree | Agree | Neither agree nor disagree | Disagree | Strongly disagree |
| --- | --- | --- | --- | --- | --- |
| "I think that a failure to reproduce a result most often means that the original finding is wrong." |  |  |  |  |  |
| "I think that a failure to reproduce rarely detracts from the validity of the original finding." |  |  |  |  |  |

Contribute factors

Please use the scale below to indicate how much each of the following factors contributes to a failure to reproduce results:

|  | Always contributes | Very often contributes | Sometimes contributes | Rarely contributes | Never contributes | I don't know |
| --- | --- | --- | --- | --- | --- | --- |
| Fraud (i.e. fabricated or falsified results) |  |  |  |  |  |  |
| Pressure to publish for career advancement |  |  |  |  |  |  |
| Insufficient oversight/mentoring by lab principal investigator (e.g. reviewing raw data) |  |  |  |  |  |  |
| Insufficient peer review of research |  |  |  |  |  |  |
| Selective reporting of results |  |  |  |  |  |  |
| Original findings not robust enough because not replicated enough in the lab publishing the work |  |  |  |  |  |  |
| Original findings obtained with low statistical power/poor statistical analysis |  |  |  |  |  |  |
| Mistakes or inadequate expertise in reproduction efforts |  |  |  |  |  |  |
| Raw data not available from original lab |  |  |  |  |  |  |
| Protocols, computer code or reagent information insufficient or not available from original lab |  |  |  |  |  |  |
| Methods need 'green fingers' – particular technical expertise that is difficult for others to reproduce |  |  |  |  |  |  |
| Variability of standard reagents |  |  |  |  |  |  |
| Poor experimental design |  |  |  |  |  |  |
| Bad luck |  |  |  |  |  |  |

Missing factor

Please tell us about any other important factors you feel we may have missed that contribute to irreproducible results:

(Optional)

|  |
| --- |
|  |

Help improve reproducibility

Please use the scale below to indicate how likely you think the following factors would be to improve the reproducibility of research.

|  | Very likely | Likely | Not very likely | Not at all likely | I don't know |
| --- | --- | --- | --- | --- | --- |
| Professional incentives (e.g. funding or publications) for formally reproducing the work of others |  |  |  |  |  |
| Professional incentives (e.g. funding or credit towards tenure) for adopting practices that enhance reproducibility |  |  |  |  |  |
| Better teaching of science students |  |  |  |  |  |
| Better mentoring/supervision of students, postdocs and other trainees in the lab |  |  |  |  |  |
| Better understanding of statistics |  |  |  |  |  |
| More robust experimental design |  |  |  |  |  |
| More emphasis on independent validation within the lab |  |  |  |  |  |
| More emphasis on independent replication via outside labs |  |  |  |  |  |
| Journal editors enforcing standards to enhance reproducibility (e.g. through checklists) |  |  |  |  |  |
| More time to teach and mentor students and other workers in the lab |  |  |  |  |  |
| More time checking lab notebooks and raw data |  |  |  |  |  |

Missing improvement factors

Please tell us about any other important factors you feel we may have missed, and you think would improve reproducibility of research:

(Optional)

|  |
| --- |
|  |

Experiment statements

Which, if any, of the following have you done?

|  | Yes | No | I can't remember |
| --- | --- | --- | --- |
| Tried and failed to reproduce one of your own experiments |  |  |  |
| Tried and failed to reproduce someone else's experiment |  |  |  |
| Published a successful attempt to reproduce someone else's work |  |  |  |
| Published a failed attempt to reproduce someone else's work |  |  |  |
| Tried and failed to publish a successful reproduction |  |  |  |
| Tried and failed to publish an unsuccessful reproduction |  |  |  |

Someone could not replicate

Has anyone ever told you that they could not reproduce results from one of your own experiments?

* Yes
* No
* I can't remember

If yes- what

What did you do?

(Optional)

|  |
| --- |
|  |

Thank you for your answers so far - we would just like to ask a few more questions about you before we finish.

How many in lab

How many members are in your lab?

(including all relevant senior investigators, postdoctoral fellows, technicians and graduate and undergraduate students.)

* None
* 1-5 members
* 6-10 members
* 11-25 members
* 26-50 members
* More than 50 members

What is your age?

And finally a few questions to find out a little bit more about you.  
What is your age?

* Under 18
* 18 - 24
* 25 - 34
* 35 - 44
* 45 - 54
* 55 - 64
* 65 or over

Which of the following job titles best applies to you?

Which of the following job titles best applies to you?

* Associate professor/Lecturer
* Consultant/Fellow/Attending Physician
* Laboratory Director/Head
* Medical Professional/Doctor
* PhD Student
* Post-doctoral Fellow
* Principal Investigator
* Professor
* Research Director/VP of Research
* Research Scientist
* Resident/Registrar
* Senior Scientist
* Staff Scientist
* Student
* Technician/Research Assistant
* Other (please specify)\_\_\_\_\_\_\_\_\_\_\_\_

Area of interest

Which of the following best describes your area of interest?

* Astronomy and planetary science
* Biology
* Chemistry
* Earth and Environmental Science
* Engineering
* Materials Science
* Medicine
* Physics
* Other\_\_\_\_\_\_\_\_\_\_\_\_

Specialty within astronomy

What is your specialty within astronomy?

* Astronomy
* Cosmology
* Planetary Science
* Theoretical Astrophysics
* Other Astronomy and Planetary Science\_\_\_\_\_\_\_\_\_\_\_\_

Specialty within biology

What is your specialty within biology?

* Bioinformatics and Computational Biology
* Biophysics
* Chemical Biology
* Biotechnology
* Cancer Research
* Cardiovascular Biology
* Cell Biology
* Developmental Biology
* Drug Discovery
* Ecology
* Evolution
* Genetics
* Genomics
* Immunology
* Microbiology
* Molecular Biology
* Nanotechnology
* Neuroscience
* Parasitology
* Pharmacology
* Physiology
* Plant Science
* Proteomics
* Structural Biology
* Systems Biology
* Zoology
* Other Biology\_\_\_\_\_\_\_\_\_\_\_\_

Specialty within chemistry

What is your specialty within chemistry?

* Analytical Chemistry
* Catalysis
* Chemical Biology
* Theoretical/Computational Chemistry
* Environmental Biology
* Inorganic Chemistry
* Materials Chemistry
* Medicinal & Pharmaceutical Chemistry
* Nanotechnology
* Nuclear Chemistry
* Organic Chemistry
* Physical Chemistry
* Spectroscopy
* Computational Biology
* Other Chemistry\_\_\_\_\_\_\_\_\_\_\_\_

Specialty within earth and environmental science

What is your specialty within earth and environmental science?

* Climate sciences
* Ecology
* Environmental sciences
* Planetary science
* Social sciences of Earth and environment
* Solid Earth sciences
* Other earth and environmental sciences\_\_\_\_\_\_\_\_\_\_\_\_

Specialty within engineering

What is your specialty within engineering?

* Aeronautical Engineering
* Biomedical Engineering
* Chemical Engineering
* Electrical/Electronic Engineering
* Materials Engineering
* Mechanical Engineering
* Nanoengineering
* Nuclear Engineering
* Software Engineering
* Other Engineering\_\_\_\_\_\_\_\_\_\_\_\_

Specialty within material science

What is your specialty within materials science?

* Biomaterials
* Catalytic and Separation Materials
* Ceramics
* Characterisation Techniques
* Composites
* Computation, Modelling & Theory
* Electronic Materials
* Magnetic Materials
* Materials for Energy
* Metals and Alloys
* Nanoscale Materials
* Optical, Photonic and Optoelectronic Materials
* Polymers
* Superconductors
* Surfaces and Thin Films
* Other Materials Science\_\_\_\_\_\_\_\_\_\_\_\_

Specialty within medicine

What is your specialty within medicine?

* Anesthesiology
* Oncology
* Cardiology
* Clinical Genetics
* Allergy/Immunology
* Pharmacology
* Critical Care Medicine
* Dentistry
* Dermatology
* Emergency Medicine
* Endocrinology
* Epidemiology
* Gastroenterology
* General Practice/Family Medicine
* Geriatrics
* Hematology
* Infectious Diseases
* Internal Medicine
* Nephrology
* Neurology
* Nuclear Medicine
* Nutrition
* Obstetrics & Gynecology
* Ophthalmology
* Otorhinolaryngology
* Pain Medicine
* Palliative Medicine
* Pathology
* Pediatrics
* Psychiatry
* Physiology
* Preventative Medicine
* Psychology
* Public Health
* Respiratory medicine
* Radiology
* Rheumatology
* Surgery
* Urology
* Other Clinical Medicine\_\_\_\_\_\_\_\_\_\_\_\_

Specialty within physics

What is your specialty within physics?

* Atomic and Molecular Physics
* Biophysics
* Computational Physics
* Condensed-matter Physics
* High-energy Physics
* Materials Physics
* Nanoscale materials
* Nanotechnology
* Nuclear Physics
* Optics/Lasers
* Plasma and Fluids
* Other Physics\_\_\_\_\_\_\_\_\_\_\_\_

In which continent do you live?

In which continent do you live?

* Asia (including Middle East)
* Australasia
* Africa
* Europe
* North America (including Central America and the Caribbean)
* South America

Which country in Asia (including Middle East)?

Which country in Asia (including Middle East)?

* Afghanistan
* Armenia
* Azerbaijan
* Bahrain
* Bangladesh
* Bhutan
* Brunei
* Burma
* Cambodia
* China
* Georgia
* Hong Kong
* India
* Indonesia
* Iran
* Iraq
* Israel
* Japan
* Jordan
* Kazakhstan
* North Korea
* South Korea
* Kuwait
* Kyrgyzstan
* Laos
* Lebanon
* Malaysia
* Maldives
* Mongolia
* Nepal
* Oman
* Pakistan
* Philippines
* Qatar
* Russia
* Saudi Arabia
* Singapore
* Sri Lanka
* Syria
* Taiwan
* Tajikistan
* Thailand
* Turkey
* Turkmenistan
* United Arab Emirates
* Uzbekistan
* Vietnam
* Yemen

Which country in Australasia?

Which country in Australasia?

* Australia
* French Polynesia
* Niue
* Tonga
* Christmas Island
* Kiribati
* Papua New Guinea
* Tuvalu
* Cocos Keeling Island
* Nauru
* Pitcairn Island
* Vanuatu
* Cook Island
* New Caledonia
* Solomon Island
* Wallis Futuna
* Fiji
* New Zealand
* Tokelau
* Western Samoa

Which country in Africa?

Which country in Africa?

* Algeria
* Angola
* Benin
* Botswana
* Burkina Faso
* Burundi
* Cameroon
* Cape Verde
* Central African Republic
* Chad
* Comoros
* Congo, Republic of
* Congo, Democratic Republic of
* Cote d'Ivoire
* Djibouti
* Egypt
* Equatorial Guinea
* Eritrea
* Ethiopia
* Gabon
* The Gambia
* Ghana
* Guinea
* Guinea-Bissau
* Kenya
* Lesotho
* Liberia
* Libya
* Madagascar
* Malawi
* Mali
* Mauritania
* Mauritius
* Morocco
* Mozambique
* Namibia
* Niger
* Nigeria
* Rwanda
* Sao Tome and Principe
* Senegal
* Seychelles
* Sierra Leone
* Somalia
* South Africa
* South Sudan
* Sudan
* Swaziland
* Tanzania
* Togo
* Tunisia
* Uganda
* Zambia
* Zimbabwe

Which country in Europe?

Which country in Europe?

* Albania
* Andorra
* Austria
* Belarus
* Belgium
* Bosnia and Herzegovina
* Bulgaria
* Croatia
* Cyprus
* Czech Republic
* Denmark
* Estonia
* Finland
* France
* Germany
* Greece
* Hungary
* Iceland
* Ireland
* Italy
* Latvia
* Liechtenstein
* Lithuania
* Luxembourg
* Macedonia
* Malta
* Moldova
* Monaco
* Netherlands
* Norway
* Poland
* Portugal
* Romania
* Russia
* San Marino
* Serbia and Montenegro
* Slovakia
* Slovenia
* Spain
* Sweden
* Switzerland
* Turkey
* Ukraine
* United Kingdom
* Vatican City

Which country in North America (including Central America and the Caribbean)?

Which country in North America (including Central America and the Caribbean)?

* Anguilla
* Antigua and Barbuda
* Aruba
* Bahamas
* Barbados
* Belize
* Bermuda
* British Virgin Islands
* Canada
* Cayman Islands
* Clipperton Island
* Costa Rica
* Cuba
* Dominica
* Dominican Republic
* El Salvador
* Greenland
* Grenada
* Guadeloupe
* Guatemala
* Haiti
* Honduras
* Jamaica
* Martinique
* Mexico
* Montserrat
* Navassa Island
* Netherlands Antilles
* Nicaragua
* Panama
* Puerto Rico
* Saint Barthelemy
* Saint Kitts and Nevis
* Saint Lucia
* Saint Martin
* Saint Pierre and Miquelon
* Saint Vincent and the Grenadines
* Trinidad and Tobago
* Turks and Caicos Islands
* United States
* United States Virgin Islands

Which country in South America?

Which country in South America?

* Argentina
* Bolivia
* Brazil
* Chile
* Colombia
* Ecuador
* Falkland Islands
* French Guiana
* Guyana
* Paraguay
* Peru
* Suriname
* Uruguay
* Venezuela

Permission to contact

The survey is now complete.  Thank you for your time.  
  
Please tick any relevant boxes below.

* Nature Publishing Group may want to contact you again to ask for more information on the subjects discussed in this survey, or to ask you specific questions about your comments and answers. If you are happy to receive follow up requests, please tick this box and enter your details on the next page.
* If you would like to enter the prize draw for a $500 American Express Gift Card, please tick this box and enter your details on the next page.

Detail

Please enter your details below.

|  |  |
| --- | --- |
| First name: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Last name: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Email address: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |