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NATIONAL SCIENCE FOUNDATION
ALEXANDRIA, VA 22314

**HIGHER EDUCATION RESEARCH AND DEVELOPMENT SURVEY
FY 2021**

Please submit your survey data by January 31, 2022.

Your participation in this survey provides important information on the national level of R&D activity. The National Science Foundation (NSF) is authorized to collect this information under the National Science Foundation Act of 1950, as amended. Your institution's response is entirely voluntary.

Response to this survey is estimated to require 64 hours. If you wish to comment on the time required to complete this survey, please contact Suzanne H. Plimpton of NSF at (703) 292-7556, or e-mail splimpto@nsf.gov.

The Web address for submitting your data:

<http://www.herdsurvey.org/>

Or mail this form to:

ICF
530 Gaither Road, Suite 500
Rockville, MD 20850

Questions?

Technical support:

Support@HERDSurvey.org
(866) 936-9376

General survey questions:

Michael Gibbons
National Center for Science and Engineering Statistics
National Science Foundation
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(703) 292-4590

Thank you for your participation.

What's New for FY 2021

Changes to Questions

- **Question 16** instructions were updated to clarify that FTEs are not expected to equal headcount reported in Question 15 and should reflect the working effort spent on research.
- Questions added to the FY 2020 survey about the impacts of the COVID-19 pandemic on R&D at your institution have been removed.

Survey Definitions and Instructions

This survey collects data on research and development (R&D) activities at higher education institutions. Please report R&D activities and expenditures for your institution's **2021** fiscal year.

Fiscal Year (FY)

Please report data for your institution's 2021 fiscal year.

Research and Development (R&D)

R&D activity is creative and systematic work undertaken in order to increase the stock of knowledge — including knowledge of humankind, culture, and society — and to devise new applications of available knowledge. R&D covers three activities defined below — basic research, applied research, and experimental development.

- **Basic research** is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.
- **Applied research** is original investigation undertaken in order to acquire new knowledge. It is directed primarily towards a specific, practical aim or objective.
- **Experimental development** is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

R&D Expenditures

Include all expenditures for R&D activities from your institution's current operating funds that are separately accounted for. For purposes of this survey, R&D includes expenditures for organized research as defined by 2 CFR Part 200 Appendix III and expenditures from funds designated for research.

R&D <i>includes</i> :	R&D does <i>not</i> include:
<ul style="list-style-type: none"> • Sponsored research (federal and nonfederal) • University research (institutional funds that are separately budgeted for individual R&D projects) • Startup, bridge, or seed funding provided to researchers within your institution • Other departmental funds designated for research • Recovered and unrecovered indirect costs (see definitions in Question 1) • Equipment purchased from R&D project accounts • R&D funds passed through to a subrecipient organization, educational or other • Clinical trials, Phases I, II, or III (see definition in Question 5) • Research training grants funding work on organized research projects • Tuition remission provided to students working on research 	<ul style="list-style-type: none"> • Public service grants or outreach programs • Curriculum development (unless included as part of an overall research project) • R&D conducted by university faculty or staff at outside institutions that is not accounted for in your financial records • Estimates of the proportion of time budgeted for instruction that is spent on research • Capital projects (i.e., construction or renovation of research facilities) • Non-research training grants • Unrecovered indirect costs that exceed your institution's federally negotiated Facilities and Administrative (F&A) rate

Reporting Units	
Please include these components of your institution:	Please do not include:
<ul style="list-style-type: none"> • All units of your institution included in or with your financial statements, such as: <ul style="list-style-type: none"> • Agricultural experiment stations • Branch campuses • Medical schools • Hospitals or clinics • Research centers and facilities • A university 501(c)3 foundation 	<ul style="list-style-type: none"> • Federally Funded R&D Centers (FFRDCs). This information is collected separately. See the list of FFRDCs: http://www.nsf.gov/statistics/ffrdc/. • Other organizations or institutions, such as teaching hospitals or research institutes, with which your institution has an affiliation or relationship, but which are not components of your institution. • Other campuses headed by their own president, chancellor, or equivalent within your university system. Each campus is asked to respond separately.

Question 1. How much of your total expenditures for research and development (R&D) came from the following sources in FY 2021? (See definition of R&D on the previous page.)

- In rows a, b, c, d, and f: Include both **direct** and **recovered indirect costs** (reimbursement of F&A costs from external sponsors).
- Report the **original source** of funds, when possible.
- Include **all** fields of R&D (e.g., sciences, engineering, humanities, education, law, arts). See full listing in Question 9.

Source of funds	R&D expenditures (Dollars in thousands) (for example, report \$25,342 as \$25)
<p>a. U.S. federal government Any agency of the United States government. Include federal funds passed through from another institution. Funds from FFRDCs should be treated as direct federal funding.</p>	\$ <u>7625</u>
<p>b. State and local government Any state, county, municipality, or other local government entity in the United States, including state health agencies. Include state funds that support R&D at agricultural and other experiment stations. <i>Public institutions</i> should report state appropriations restricted for R&D activities here rather than in row e, Institutional funds.</p>	\$ <u>4363</u>
<p>c. Business Domestic or foreign for-profit organizations. Report funds from a company's nonprofit foundation in row d.</p>	\$ <u>111</u>
<p>d. Nonprofit organizations Domestic or foreign nonprofit foundations and organizations, except universities and colleges. Report funds from your institution's 501(c)3 foundation in row e1. Funds from other universities and colleges should be reported in row f.</p>	\$ <u>76</u>
<p>e. Institutional funds</p>	
<p>1. Institutionally financed research All R&D funded by your institution from accounts that are only used for research. Exclude institution research administration and support (e.g., office of sponsored programs).</p>	\$ <u>979</u> (Confidential ¹)
<p>2. Cost sharing Include committed cost sharing other than unrecovered indirect costs.</p>	\$ <u>374</u> (Confidential ¹)
<p>3. Unrecovered indirect costs Calculate this amount as follows for your externally funded R&D only (preferably on a project-specific basis) using the appropriate cost rate—on-campus, off-campus, etc.</p> <ul style="list-style-type: none"> • First, multiply the <u>negotiated</u> rate by the corresponding base. • Second, subtract recovered indirect costs. 	\$ <u>1655</u> (Confidential ¹)
<p>4. Total institutional funds²</p>	\$ <u>3008</u>
<p>f. All other sources Other sources not reported above, such as funds from foreign governments, foreign or U.S. universities, and gifts designated by the donors for research.</p>	\$ <u>204</u>
<p>g. Total²</p>	\$ <u>15387</u>

¹ Information from confidential items is not published or released for individual institutions; only aggregate totals will appear in publications. In accordance with the National Science Foundation Act of 1950, as amended, and other applicable federal laws, your responses will not be disclosed in identifiable form to anyone other than agency employees or authorized persons. Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the federal information systems that transmit your data.

² Totals for rows e4 and g are automatically generated on the Web survey.

Question 1.1. Did you include the following types of funding in your responses to Question 1, row e1?

Included

a. Competitively awarded internal grants for research

Expenditures for organized research projects, involving a proposal or statement of work with expected research outcomes.



b. Startup packages/bridge funding/seed funding

Expenditures from funds provided to faculty members to begin or continue their research while seeking external sponsors.



c. Other departmental funds designated for research

Expenditures for research from other departmental or central accounts which do not match the descriptions provided in rows a or b.



d. Tuition assistance for student research personnel

University tuition assistance, waivers, or remission provided to students working on organized research. Please check "Included" even if these funds are reported as part of the expenditures included under rows a, b, or c.



Question 2. How much of the total R&D expenditures reported in Question 1, row g, came from the following foreign sources?

If you cannot break out expenditures for these categories, check here and enter total expenditures from foreign sources on row e.

Source of funds	R&D expenditures (Dollars in thousands)
a. Foreign government All levels of foreign government, including national, regional, municipality, or other local government.	\$ <u>0</u>
b. Business Foreign for-profit organizations. Projects sponsored by a U.S. location of a foreign company are not considered foreign. Report funds from a company's nonprofit foundation in row c.	\$ <u>7</u>
c. Nonprofit organizations Foreign nonprofit foundations and organizations, except higher education institutions. Funds from foreign universities should be reported in row d.	\$ <u>0</u>
d. Higher education Foreign colleges and universities and units owned, operated, and controlled by such institutions.	\$ <u>83</u>
e. All other sources Include international governmental organizations located in the U.S., such as the United Nations, the World Bank, and the International Monetary Fund and all other entities sending funds to the U.S. from a location outside the U.S. and its territories.	\$ <u>65</u>
f. Total¹	\$ <u>155</u>

¹ The column total is automatically generated on the Web survey.

Question 3. Of the total R&D expenditures that were externally funded (all sources other than the institutional funds reported in Question 1, row e4), how much was received under each of the following types of agreements?

	R&D expenditures (Dollars in thousands)
a. Contracts (including direct or prime contracts and subcontracts) Contracts are legal commitments in which a good or service is provided by your institution that benefits the sponsor. The sponsor specifies the deliverables and gains the rights to results.	\$ <u>5175</u>
b. Grants, reimbursements, and all other agreements Include all other agreements in which payments are received but no good or service other than periodic reporting is required in exchange.	\$ <u>7204</u>
c. Total¹ (Total should match Question 1, row g minus Question 1, row e4)	\$ <u>12379</u>

¹ The column total is automatically generated on the Web survey.

Question 4.

A. Did your institution have a medical school (that is, a school that awards the MD or DO degree) in FY 2021?

- Yes → Go to Question 4B.
 No → Go to Question 5.

B. Of the total R&D expenditures reported in Question 1, row g, how much was expended for R&D projects in your medical school?

Include projects that are assigned to the medical school or to research centers that are organizationally part of the medical school.

**R&D expenditures
(Dollars in thousands)**

Total R&D expenditures in the university's medical school

\$ 0

Question 5.

A. Did your institution conduct any clinical trials in FY 2021?

- Yes → Go to Question 5B.
 No → Go to Question 6.

Clinical trials are research studies designed to answer specific questions about the effects of drugs, vaccines, medical devices, tests, treatments, and other therapies for patients. Clinical trials are used to determine safety and effectiveness.

For reference, the National Institutes of Health (NIH) categorizes human clinical trials into the following four phases.

Please **include**:

- Phase I uses a small group of human patients (20–80) to evaluate safety and identify side effects.
- Phase II uses a larger group (100–300) to test effectiveness and further evaluate safety.
- Phase III uses a large group (1,000–3,000) to confirm effectiveness, monitor side effects, compare to commonly used treatments, and collect safety information.

Please **exclude**:

- Phase IV is a post-market study that collects more information on risks, benefits, and optimal use.

B. Of the total R&D expenditures reported in Question 1, row g, how much was expended for Phase I, Phase II, and Phase III clinical trials with human patients?

**R&D expenditures
(Dollars in thousands)**

	(1) Federal	(2) Nonfederal	(3) Total ¹
Human clinical trials	\$ <u> 0</u>	\$ <u> 0</u>	\$ <u> 0</u>
Trials with human patients			

¹ The row total is automatically generated on the Web survey.

Question 6. What amounts of your FY 2021 R&D expenditures were for basic research, applied research, and experimental development?

If possible, these categories defining the type of R&D should be coded at the individual project level by the principal investigator. Estimates are acceptable if necessary.

See the table below this question for examples.

	R&D expenditures (Dollars in thousands)		
	(1) Federal	(2) Nonfederal	(3) Total ¹
a. Basic research Experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.	\$ <u>4977</u>	\$ <u>4485</u>	\$ <u>9462</u>
b. Applied research Original investigation undertaken in order to acquire new knowledge. It is directed primarily towards a specific, practical aim or objective.	\$ <u>1757</u>	\$ <u>2016</u>	\$ <u>3773</u>
c. Experimental development Systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.	\$ <u>891</u>	\$ <u>1261</u>	\$ <u>2152</u>
d. Total¹ Column 1 total should match Question 1, row a. Column 3 total should match Question 1, row g.	\$ <u>7625</u>	\$ <u>7762</u>	\$ <u>15387</u>

¹ Row and column totals are automatically generated on the Web survey.

Examples		
Basic research	Applied research	Experimental development
A researcher is studying the properties of human blood to determine what affects coagulation.	A researcher is conducting research on how a new chicken pox vaccine affects blood coagulation.	A researcher is conducting clinical trials to test a newly developed chicken pox vaccine for young children.
A researcher is studying the properties of molecules under various heat and cold conditions.	A researcher is investigating the properties of particular substances under various heat and cold conditions with the objective of finding longer-lasting components for highway pavement.	A researcher is working with state transportation officials to conduct tests of a newly developed highway pavement under various types of heat and cold conditions.
A researcher is investigating the effect of different types of manipulatives on the way first graders learn mathematical strategy by changing manipulatives and then measuring what students have learned through standardized instruments.	A researcher is studying the implementation of a specific math curriculum to determine what teachers needed to know to implement the curriculum successfully.	A researcher is developing and testing software and support tools, based on fieldwork, to improve mathematics cognition for student special education.

Question 7. How much of your R&D expenditures reported in Question 1 did your institution receive as a subrecipient?

Please report the original source of funds in columns (1) and (2) and the pass-through source in rows a–d.

Funds received directly from an FFRDC should be treated as direct federal funding and not included on this question.

The **subrecipient** for an award carries out the work but receives the funds from a pass-through entity rather than directly from the original funding source. Subrecipients tend to be the co-authors of publications, writers of technical reports discussing findings, inventors, etc. Do **not** include contractor or vendor relationships. A contractor or vendor receives payment for goods and services provided. See 2 CFR Part 200 Subpart D Section 330.

Examples:

- A university receives federal funds from another university as a subaward (Row a, column 1).
- A university receives federal funds from a company as a subaward (Row b, column 1).

**Originating source of R&D expenditures
(Dollars in thousands)**

Entity passing funds to your institution	(1) Federal	(2) Nonfederal	(3) Total ¹
a. U.S. higher education institutions Colleges and universities and units owned, operated, and controlled by such institutions	\$ 1150	\$ 22	\$ 1172
b. Businesses For-profit organizations	\$ 412	\$ 111	\$ 523
c. Nonprofit organizations Nonprofit foundations and organizations	\$ 752	\$ 116	\$ 868
d. Other State and local governments, foreign institutions including foreign universities/colleges, and others	\$ 869	\$ 297	\$ 1166
e. Total¹	\$ 3183	\$ 546	\$ 3729

¹ Row and column totals are automatically generated on the Web survey.

Question 8. How much of the R&D expenditures reported in Question 1 did your institution pass through to subrecipients?

Please report the original source of funds in columns (1) and (2) and the entity receiving the funds in rows a–d.

Do **not** include contractor or vendor relationships. A contractor or vendor receives payment for goods and services provided. See 2 CFR Part 200 Subpart D Section 330.

Examples:

- Your institution passed through federal funds to another university (Row a, column 1).
- Your institution passed through funds from a company to another university (Row a, column 2).

**Originating source of R&D expenditures
(Dollars in thousands)**

Entity receiving funds from your institution	(1) Federal	(2) Nonfederal	(3) Total ¹
a. U.S. higher education institutions Colleges and universities and units owned, operated, and controlled by such institutions	\$ <u>333</u>	\$ <u>0</u>	\$ <u>333</u>
b. Businesses For-profit organizations	\$ <u>309</u>	\$ <u>0</u>	\$ <u>309</u>
c. Nonprofit organizations Nonprofit foundations and organizations	\$ <u>0</u>	\$ <u>0</u>	\$ <u>0</u>
d. Other State and local governments, foreign institutions including foreign universities/colleges, and others	\$ <u>146</u>	\$ <u>0</u>	\$ <u>146</u>
e. Total¹	\$ <u>788</u>	\$ <u>0</u>	\$ <u>788</u>

¹ Row and column totals are automatically generated on the Web survey.

Question 9A–B. What were your FY 2021 R&D expenditures in the computer and information sciences and engineering funded by the federal agency sources below? (R&D expenditures from nonfederal sources will be reported in Question 11.)

- Question 9 total (page 18, row K, column h) should match Question 1, row a.
- A list of federal departments, agencies and subagencies is included as a link on the web survey question.
- If an individual project involves more than one of the 40 fields of R&D, please prorate expenditures when possible and report the amount for each field involved.
- For subrecipient funding, report the agency that sponsored the original award.
- Funding from FFRDCs should be reported under the primary sponsoring agency for that center.

R&D expenditures from federal sources¹
(Dollars in thousands)

R&D Fields (Examples listed below)	(a) USDA	(b) DoD	(c) Energy	(d) HHS, includes NIH	(e) NASA	(f) NSF	(g) Other	(h) Total ²
A. Computer and Information Sciences	\$ 0	\$ 0	\$ 20	\$ 0	\$ 100	\$ 1423	\$ 0	\$ 1543
B. Engineering								
1. Aerospace, Aeronautical, and Astronautical Engineering	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Bioengineering and Biomedical Engineering	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
3. Chemical Engineering	\$ 0	\$ 0	\$ 29	\$ 0	\$ 0	\$ 67	\$ 0	\$ 96
4. Civil Engineering	\$ 117	\$ 26	\$ 77	\$ 0	\$ 0	\$ 45	\$ 126	\$ 391
5. Electrical, Electronic, and Communications Engineering	\$ 0	\$ 289	\$ 115	\$ 0	\$ 56	\$ 246	\$ 218	\$ 924
6. Industrial and Manufacturing Engineering	\$ 0	\$ 7	\$ 0	\$ 0	\$ 0	\$ 201	\$ 0	\$ 208
7. Mechanical Engineering	\$ 0	\$ 137	\$ 1305	\$ 0	\$ 22	\$ 178	\$ 100	\$ 1742
8. Metallurgical and Materials Engineering	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
9. Other Engineering	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 31	\$ 0	\$ 31
10. Total ²	\$ 117	\$ 459	\$ 1526	\$ 0	\$ 78	\$ 768	\$ 444	\$ 3392

¹ **Key:** USDA, Department of Agriculture; DoD, Department of Defense; Energy, Department of Energy; HHS, Department of Health and Human Services; NASA, National Aeronautics and Space Administration; NIH, National Institutes of Health; NSF, National Science Foundation. "Other" includes all other federal agencies.

² Row and column totals are automatically generated on the Web survey.

Examples of Disciplines: Computer and Information Sciences and Engineering Fields of R&D

A. Computer and Information Sciences

Artificial intelligence
Computer and information
technology administration and
management
Computer science

Computer software and media
applications
Computer systems analysis
Computer systems networking
and telecommunications

Data processing
Information sciences, studies
Information technology

B. Engineering

1. Aerospace, Aeronautical, and Astronautical Engineering

Aerodynamics
Aerospace engineering
Space technology

2. Bioengineering and Biomedical Engineering

Biological and biosystems
engineering
Biomaterials engineering
Biomedical technology
Medical engineering

3. Chemical Engineering

Biochemical engineering
Chemical and biomolecular
engineering
Engineering chemistry
Paper science
Petroleum refining process
Polymer, plastics engineering

4. Civil Engineering

Architectural engineering
Construction engineering
Engineering management,
administration
Environmental, environmental
health engineering
Geotechnical and
geoenvironmental engineering
Sanitary engineering
Structural engineering
Surveying engineering
Transportation and highway
engineering
Water resources engineering

5. Electrical, Electronic, and Communications Engineering

Communications engineering
Computer engineering
Computer hardware
engineering
Computer software engineering
Electrical and electronics
engineering
Laser and optical engineering
Power
Telecommunications
engineering

6. Industrial and Manufacturing Engineering

Industrial engineering
Manufacturing engineering
Operations research
Systems engineering

7. Mechanical Engineering

Electromechanical engineering
Mechatronics, robotics, and
automation engineering

8. Metallurgical and Materials Engineering

Ceramic sciences and
engineering
Geophysical, geological
engineering
Materials engineering
Metallurgical engineering
Mining and mineral engineering
Textile sciences and
engineering
Welding

9. Other Engineering

Agricultural engineering
Engineering design
Engineering mechanics,
physics, and science
Engineering physics
Engineering science
Forest engineering
Nanotechnology
Naval architecture and marine
engineering
Nuclear engineering
Ocean engineering
Petroleum engineering

Other engineering fields that
cannot be classified using the
fields listed above

Question 9C. What were your FY 2021 R&D expenditures in the geosciences, atmospheric sciences, and ocean sciences funded by the federal agency sources below? (R&D expenditures from nonfederal sources will be reported in Question 11.)

R&D expenditures from federal sources¹
(Dollars in thousands)

R&D Fields (Examples listed below)	(a) USDA	(b) DoD	(c) Energy	(d) HHS, includes NIH	(e) NASA	(f) NSF	(g) Other	(h) Total ²
C. Geosciences, Atmospheric Sciences, and Ocean Sciences								
1. Atmospheric Science and Meteorology	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Geological and Earth Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 21	\$ 0	\$ 0	\$ 21
3. Ocean Sciences and Marine Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
4. Other Geosciences, Atmospheric Sciences, and Ocean Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
5. Total²	\$ 0	\$ 0	\$ 0	\$ 0	\$ 21	\$ 0	\$ 0	\$ 21

¹ **Key:** USDA, Department of Agriculture; DoD, Department of Defense; Energy, Department of Energy; HHS, Department of Health and Human Services; NASA, National Aeronautics and Space Administration; NIH, National Institutes of Health; NSF, National Science Foundation. "Other" includes all other federal agencies.

² Row and column totals are automatically generated on the Web survey.

Examples of Disciplines: Geosciences, Atmospheric Sciences, and Ocean Sciences Fields of R&D

C. Geosciences, Atmospheric Sciences, and Ocean Sciences

1. Atmospheric Science and Meteorology

Aeronomy
Atmospheric chemistry and climatology
Atmospheric physics and dynamics
Extraterrestrial atmospheres
Meteorology
Solar
Weather modification

2. Geological and Earth Sciences

Earth and planetary sciences
Geochemistry
Geodesy and gravity
Geology
Geomagnetism
Geophysics and seismology
Hydrology and water resources
Minerology and petrology
Paleomagnetism
Paleontology
Physical geography
Stratigraphy and sedimentation
Surveying

3. Ocean Sciences and Marine Sciences

Biological oceanography
Geological oceanography
Marine biology
Marine oceanography
Marine sciences
Oceanography, chemical and physical

4. Other Geosciences, Atmospheric Sciences, and Ocean Sciences

Other fields that cannot be classified using the fields listed above

Question 9D. What were your FY 2021 R&D expenditures in the life sciences funded by the federal agency sources below? (R&D expenditures from nonfederal sources will be reported in Question 11.)

R&D expenditures from federal sources¹
(Dollars in thousands)

R&D Fields (Examples listed below)	(a) USDA	(b) DoD	(c) Energy	(d) HHS, includes NIH	(e) NASA	(f) NSF	(g) Other	(h) Total ²
D. Life Sciences								
1. Agricultural Sciences	\$ 73	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 73
2. Biological and Biomedical Sciences	\$ 381	\$ 3	\$ 0	\$ 39	\$ 0	\$ 22	\$ 565	\$ 1010
3. Health Sciences	\$ 0	\$ 0	\$ 0	\$ 78	\$ 0	\$ 0	\$ 0	\$ 78
4. Natural Resources and Conservation	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 460	\$ 460
5. Other Life Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
6. Total²	\$ 454	\$ 3	\$ 0	\$ 117	\$ 0	\$ 22	\$ 1025	\$ 1621

¹ **Key:** USDA, Department of Agriculture; DoD, Department of Defense; Energy, Department of Energy; HHS, Department of Health and Human Services; NASA, National Aeronautics and Space Administration; NIH, National Institutes of Health; NSF, National Science Foundation. "Other" includes all other federal agencies.

² Row and column totals are automatically generated on the Web survey.

Examples of Disciplines: Life Sciences Fields of R&D

D. Life Sciences

1. Agricultural Sciences

Agricultural business and management
Agricultural chemistry
Agricultural engineering—report in Engineering
Agricultural production operations
Animal sciences
Applied horticulture and horticultural business services
Aquaculture
Food science and technology
International agriculture
Plant sciences
Soil sciences
Veterinary biomedical and clinical sciences
Veterinary medicine
Wood science

2. Biological and Biomedical Sciences

Allergies and immunology
Biochemistry, biophysics, and molecular biology
Biogeography
Biology and biomedical sciences, general

Biomathematics, bioinformatics, and computational biology
Biotechnology
Botany and plant biology
Cell, cellular biology, and anatomical sciences
Epidemiology, ecology and population biology
Food, nutrition, and wellness studies
Genetics
Microbiological sciences and immunology
Molecular medicine
Neurobiology and neuroscience
Pharmacology and toxicology
Physiology, pathology and related sciences
Zoology, animal biology

3. Health Sciences

Advanced, graduate dentistry and oral sciences
Allied health and medical assisting services
Bioethics, medical ethics
Clinical medicine research
Clinical/medical laboratory science/research and allied professions

Communication disorders sciences and services
Dentistry
Dietetics and clinical nutrition services
Health and medical administrative services
Health, medical preparatory programs
Gerontology, health sciences
Kinesiology and exercise science
Medical clinical science, graduate medical studies
Medical illustration and informatics
Medicine
Mental health
Nursing
Optometry
Osteopathic medicine, osteopathy
Pharmacy, pharmaceutical sciences, and administration
Podiatric medicine, podiatry
Public health
Radiological science

Registered nursing, nursing administration, nursing research and clinical nursing
Rehabilitation and therapeutic professions
Zoology

4. Natural Resources and Conservation

Fishing and fisheries sciences and management
Forestry
Natural resources conservation and research
Natural resources management and policy
Renewable natural resources
Wildlife and wildlands science and management

5. Other Life Sciences

Other life sciences that cannot be classified using the fields listed above

Question 9E–G. What were your FY 2021 R&D expenditures in mathematics and statistics, the physical sciences, and psychology funded by the federal agency sources below? (R&D expenditures from nonfederal sources will be reported in Question 11.)

R&D expenditures from federal sources¹
(Dollars in thousands)

R&D Fields (Examples listed below)	(a) USDA	(b) DoD	(c) Energy	(d) HHS, includes NIH	(e) NASA	(f) NSF	(g) Other	(h) Total ²
E. Mathematics and Statistics	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
F. Physical Sciences								
1. Astronomy and Astrophysics	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Chemistry	\$ 0	\$ 0	\$ 65	\$ 0	\$ 0	\$ 205	\$ 0	\$ 270
3. Materials Science	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
4. Physics	\$ 0	\$ 0	\$ 98	\$ 0	\$ 0	\$ 304	\$ 0	\$ 402
5. Other Physical Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
6. Total ²	\$ 0	\$ 0	\$ 163	\$ 0	\$ 0	\$ 509	\$ 0	\$ 672
G. Psychology	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

¹ **Key:** USDA, Department of Agriculture; DoD, Department of Defense; Energy, Department of Energy; HHS, Department of Health and Human Services; NASA, National Aeronautics and Space Administration; NIH, National Institutes of Health; NSF, National Science Foundation. "Other" includes all other federal agencies.

² Row and column totals are automatically generated on the Web survey.

Examples of Disciplines: Mathematics and Statistics, Physical Sciences, and Psychology Fields of R&D

E. Mathematics and Statistics

Applied mathematics

Mathematics

Statistics

F. Physical Sciences

1. Astronomy and Astrophysics

Astronomy
Astrophysics
Planetary astronomy and science

2. Chemistry

(except Biochemistry—report in Biological and Biomedical Sciences)

Analytical chemistry
Chemical physics
Environmental chemistry
Forensic chemistry
Inorganic chemistry
Organic chemistry
Organo-metallic chemistry
Physical chemistry
Polymer chemistry
Theoretical chemistry

3. Materials Science

Materials chemistry
Materials science

4. Physics

Acoustics
Atomic, molecular physics
Condensed matter and materials physics
Elementary particle physics
Mathematical physics
Nuclear physics
Optics, optical sciences
Plasma, high-temperature physics
Theoretical physics

5. Other Physical Sciences

Other physical sciences that cannot be classified using the fields listed above

G. Psychology

Clinical psychology

Counseling and applied psychology

Human development

Research and experimental psychology

Question 9 continues on next page.

Question 9H–I. What were your FY 2021 R&D expenditures in the social sciences and other sciences funded by the federal agency sources below? (R&D expenditures from nonfederal sources will be reported in Question 11.)

R&D expenditures from federal sources¹
(Dollars in thousands)

R&D Fields (Examples listed below)	(a) USDA	(b) DoD	(c) Energy	(d) HHS, includes NIH	(e) NASA	(f) NSF	(g) Other	(h) Total ²
H. Social Sciences								
1. Anthropology	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Economics	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
3. Political Science and Government	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
4. Sociology, Demography, and Population Studies	\$ 0	\$ 0	\$ 0	\$ 12	\$ 0	\$ 0	\$ 0	\$ 12
5. Other Social Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
6. Total ²	\$ 0	\$ 0	\$ 0	\$ 12	\$ 0	\$ 0	\$ 0	\$ 12
I. Other Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

¹ **Key:** USDA, Department of Agriculture; DoD, Department of Defense; Energy, Department of Energy; HHS, Department of Health and Human Services; NASA, National Aeronautics and Space Administration; NIH, National Institutes of Health; NSF, National Science Foundation. "Other" includes all other federal agencies.

² Row and column totals are automatically generated on the Web survey.

Examples of Disciplines: Social Sciences and Other Sciences Fields of R&D

H. Social Sciences

1. Anthropology

Cultural anthropology
Medical anthropology
Physical and biological anthropology

2. Economics

Agricultural economics
Applied economics
Business development
Development economics and international development
Econometrics and quantitative economics
Industrial economics
International economics
Labor economics

Managerial economics
Natural resource economics
Public finance and fiscal policy

3. Political Science and Government

Comparative government
Government
Legal systems
Political economy
Political science
Political theory

4. Sociology, Demography, and Population Studies

Comparative and historical sociology
Complex organizations
Cultural and social structure
Demography and population studies
Group interactions
Rural sociology
Social problems and welfare theory
Sociology

5. Other Social Sciences

Archeology
Area, ethnic, cultural, gender, and group studies
Cartography
Criminal science and corrections
Criminology
Geography
Gerontology, social sciences
History and philosophy of science and technology
International relations and national security studies
Linguistics
Public policy analysis
Regional studies
Urban studies, affairs

I. Other Sciences

Use this category for R&D that involves at least one S&E field (rows A–H) if it is impossible to report multidisciplinary or interdisciplinary R&D expenditures in specific fields.

Question 9 continues on next page.

Question 9J–K. What were your FY 2021 R&D expenditures in the non-science and engineering (non-S&E) fields funded by the federal agency sources below? (R&D expenditures from nonfederal sources will be reported in Question 11.)

R&D expenditures from federal sources¹
(Dollars in thousands)

R&D Fields (Examples listed below)	(a) USDA	(b) DoD	(c) Energy	(d) HHS, includes NIH	(e) NASA	(f) NSF	(g) Other	(h) Total ²
J. Non-S&E Fields								
1. Business Management and Business Administration	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Communication and Communications Technologies	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
3. Education	\$ 0	\$ 196	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 196
4. Humanities	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 1	\$ 1
5. Law	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
6. Social Work	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
7. Visual and Performing Arts	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
8. Other Non-S&E Fields	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 167	\$ 167
9. Total ²	\$ 0	\$ 196	\$ 0	\$ 0	\$ 0	\$ 0	\$ 168	\$ 364
K. Total for All Fields of R&D²	\$ 571	\$ 658	\$ 1709	\$ 129	\$ 199	\$ 2722	\$ 1637	\$ 7625

Total for row K, column h should equal Total for Question 1, row a.

¹ **Key:** USDA, Department of Agriculture; DoD, Department of Defense; Energy, Department of Energy; HHS, Department of Health and Human Services; NASA, National Aeronautics and Space Administration; NIH, National Institutes of Health; NSF, National Science Foundation. "Other" includes all other federal agencies.

² Row and column totals are automatically generated on the Web survey.

Examples of Disciplines: Non-S&E Fields of R&D

J. Non-S&E Fields

1. Business Management and Business Administration

Business administration
Business management
Business, managerial economics
Management information systems and services
Marketing management and research

2. Communication and Communications Technologies

Communication and media studies
Communications technologies
Journalism
Radio, television, and digital communication

3. Education

Education administration and supervision
Education research
Teacher education, specific levels and methods
Teaching fields

4. Humanities

English language and literature, letters
Foreign languages and literatures
History
Humanities, general
Liberal arts and sciences
Philosophy and religious studies
Theology and religious vocations

5. Law

Law
Legal studies

6. Social Work

(no specific examples)

7. Visual and Performing Arts

Drama, theatre arts and stagecraft
Film, video, and photographic arts
Fine and studio arts
Music

8. Other Non-S&E Fields

Architecture
City, urban, community and regional planning
Family, consumer sciences and human sciences
Landscape architecture
Library science
Military technology and applied science
Parks, sports, recreation, leisure and fitness
Public administration and public affairs
Other non-S&E fields that cannot be classified using the fields listed above

Also, use this category for R&D that involves multiple non-S&E fields if it is impossible to report multidisciplinary or interdisciplinary R&D expenditures in specific fields.

Question 10. Of the amount reported for Other federal sources in Question 9 (row K, column g), which agencies funded this R&D and how much of the reported amount was from each agency?

If your institution reported \$0 in Question 9, row K, column g, skip this question and go to Question 11.

- Use rows a–j to list up to 10 agencies that funded the largest R&D expenditures.
- Use row k to report any remaining amount.
- For subrecipient funding in this question, list the sponsor of the original award.
- A list of federal departments, agencies and subagencies is included as a link on the web survey question.

Federal agencies (list up to 10)	R&D expenditures (Dollars in thousands)
a. <input type="text" value="Department of the Interior"/>	\$ <input type="text" value="886"/>
b. <input type="text" value="Tennessee Valley Authority (TVA)"/>	\$ <input type="text" value="260"/>
c. <input type="text" value="U.S. Geological Survey (USGS)"/>	\$ <input type="text" value="106"/>
d. <input type="text" value="Department of Commerce"/>	\$ <input type="text" value="166"/>
e. <input type="text" value="Appalachian Regional Commission (ARC)"/>	\$ <input type="text" value="50"/>
f. <input type="text" value="Department of Transportation (DOT)"/>	\$ <input type="text" value="53"/>
g. <input type="text" value="National Park Service (NPS)"/>	\$ <input type="text" value="29"/>
h. <input type="text" value="U.S. Fish and Wildlife Services (FWS)"/>	\$ <input type="text" value="53"/>
i. <input type="text" value="Department of State (DOS)"/>	\$ <input type="text" value="5"/>
j. <input type="text" value="Environmental Protection Agency (EPA)"/>	\$ <input type="text" value="27"/>
k. Other agencies included in Question 9, column g, but not listed above	\$ <input type="text" value="2"/>
l. Total (should match Question 9, row K, column g)¹	\$ <input type="text" value="1637"/>

¹ The column total is automatically generated on the Web survey.

Question 11A–B. What were your FY 2021 R&D expenditures in the computer and information sciences and engineering fields funded by the nonfederal sources below?

- The totals in row K, page 24 should match the corresponding sources in Question 1, rows b–f.
- If an individual project involves more than one of the 40 fields of R&D, please prorate expenditures when possible and report the amount for each field involved.

**R&D expenditures from nonfederal sources
(Dollars in thousands)**

R&D Fields (See Question 9, p. 13)	(a) State and local government	(b) Business	(c) Nonprofit organizations	(d) Institutional funds	(e) Other nonfederal sources	(f) Total¹
A. Computer and Information Sciences	\$ 489	\$ 0	\$ 0	\$ 533	\$ 16	\$ 1038
B. Engineering						
1. Aerospace, Aeronautical, and Astronautical Engineering	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Bioengineering and Biomedical Engineering	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
3. Chemical Engineering	\$ 0	\$ 0	\$ 8	\$ 17	\$ 0	\$ 25
4. Civil Engineering	\$ 1300	\$ 2	\$ 5	\$ 139	\$ 0	\$ 1446
5. Electrical, Electronic, and Communications Engineering	\$ 1136	\$ 29	\$ 0	\$ 207	\$ 130	\$ 1502
6. Industrial and Manufacturing Engineering	\$ 0	\$ 0	\$ 0	\$ 21	\$ 10	\$ 31
7. Mechanical Engineering	\$ 1289	\$ 55	\$ 39	\$ 511	\$ 0	\$ 1894
8. Metallurgical and Materials Engineering	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
9. Other Engineering	\$ 0	\$ 0	\$ 0	\$ 117	\$ 48	\$ 165
10. Total¹	\$ 3725	\$ 86	\$ 52	\$ 1012	\$ 188	\$ 5063

¹ Row and column totals are automatically generated on the Web survey.

Examples of disciplines for the above fields of R&D are listed on page 13.

Question 11C–D. What were your FY 2021 R&D expenditures in the R&D fields listed below funded by the nonfederal sources below?

**R&D expenditures from nonfederal sources
(Dollars in thousands)**

R&D Fields (See Question 9, pp. 14–15)	(a) State and local government	(b) Business	(c) Nonprofit organizations	(d) Institutional funds	(e) Other nonfederal sources	(f) Total¹
C. Geosciences, Atmospheric Sciences, and Ocean Sciences						
1. Atmospheric Science and Meteorology	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Geological and Earth Sciences	\$ 0	\$ 0	\$ 1	\$ 2	\$ 0	\$ 3
3. Ocean Sciences and Marine Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
4. Other Geosciences, Atmospheric Sciences, and Ocean Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
5. Total¹	\$ 0	\$ 0	\$ 1	\$ 2	\$ 0	\$ 3
D. Life Sciences						
1. Agricultural Sciences	\$ 0	\$ 1	\$ 3	\$ 151	\$ 0	\$ 155
2. Biological and Biomedical Sciences	\$ 0	\$ 0	\$ 2	\$ 313	\$ 0	\$ 315
3. Health Sciences	\$ 47	\$ 0	\$ 0	\$ 18	\$ 0	\$ 65
4. Natural Resources and Conservation	\$ 102	\$ 0	\$ 3	\$ 226	\$ 0	\$ 331
5. Other Life Sciences	\$ 0	\$ 0	\$ 0	\$ 23	\$ 0	\$ 23
6. Total¹	\$ 149	\$ 1	\$ 8	\$ 731	\$ 0	\$ 889

¹ Row and column totals are automatically generated on the Web survey.

Examples of disciplines for the above fields of R&D are listed on pages 14–15.

Question 11E-I. What were your FY 2021 R&D expenditures in the R&D fields listed below funded by the nonfederal sources below?

**R&D expenditures from nonfederal sources
(Dollars in thousands)**

R&D Fields (See Question 9, pp. 16–17)	(a) State and local government	(b) Business	(c) Nonprofit organizations	(d) Institutional funds	(e) Other nonfederal sources	(f) Total¹
E. Mathematics and Statistics	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
F. Physical Sciences						
1. Astronomy and Astrophysics	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Chemistry	\$ 0	\$ 0	\$ 0	\$ 104	\$ 0	\$ 104
3. Materials Science	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
4. Physics	\$ 0	\$ 0	\$ 0	\$ 102	\$ 0	\$ 102
5. Other Physical Sciences	\$ 0	\$ 0	\$ 0	\$ 1	\$ 0	\$ 1
6. Total¹	\$ 0	\$ 0	\$ 0	\$ 207	\$ 0	\$ 207
G. Psychology	\$ 0	\$ 0	\$ 0	\$ 80	\$ 0	\$ 80
H. Social Sciences						
1. Anthropology	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. Economics	\$ 0	\$ 24	\$ 0	\$ 10	\$ 0	\$ 34
3. Political Science and Government	\$ 0	\$ 0	\$ 15	\$ 23	\$ 0	\$ 38
4. Sociology, Demography, and Population Studies	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
5. Other Social Sciences	\$ 0	\$ 0	\$ 0	\$ 3	\$ 0	\$ 3
6. Total¹	\$ 0	\$ 24	\$ 15	\$ 36	\$ 0	\$ 75
I. Other Sciences	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

¹ Row and column totals are automatically generated on the Web survey.

Examples of disciplines for the above fields of R&D are listed on pages 16–17.

Question 11J–K. What were your FY 2021 R&D expenditures in the non-science and engineering (non-S&E) fields funded by the nonfederal sources below?

**R&D expenditures from nonfederal sources
(Dollars in thousands)**

R&D Fields (See Question 9, p. 19)	(a) State and local government	(b) Business	(c) Nonprofit organizations	(d) Institutional funds	(e) Other nonfederal sources	(f) Total¹
J. Non-S&E Fields						
1. Business Management and Business Administration	\$ 0	\$ 0	\$ 0	\$ 55	\$ 0	\$ 55
2. Communication and Communications Technologies	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
3. Education	\$ 0	\$ 0	\$ 0	\$ 86	\$ 0	\$ 86
4. Humanities	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
5. Law	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
6. Social Work	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
7. Visual and Performing Arts	\$ 0	\$ 0	\$ 0	\$ 3	\$ 0	\$ 3
8. Other Non-S&E Fields	\$ 0	\$ 0	\$ 0	\$ 263	\$ 0	\$ 263
9. Total¹	\$ 0	\$ 0	\$ 0	\$ 407	\$ 0	\$ 407
K. Total for All Fields of R&D¹	\$ 4363	\$ 111	\$ 76	\$ 3008	\$ 204	\$ 7762

Totals in row K, columns a–e should match corresponding sources in Question 1, rows b–f.

¹ Row and column totals are automatically generated on the Web survey.

Examples of disciplines for non-S&E fields of R&D are listed on page 19.

Question 12. Of the total amount of R&D expenditures reported in Question 1, row g, what were the amounts for the following types of costs?

- Please report only **direct costs** (including cost sharing) in rows a–e.
- Recovered and unrecovered **indirect costs** should be reported in rows f1 and f2.

		R&D expenditures (Dollars in thousands)
a. Salaries, wages, and fringe benefits		
Include compensation for all R&D personnel whether full-time or part-time, temporary or permanent. Include salaries, wages, and fringe benefits paid from your institution's funds and from external support.		\$ <u>6947</u>
b. Software purchases		
All payments for software. Include both purchases of software packages and license fees for systems.		
1. Noncapitalized software		\$ <u>55</u>
2. Capitalized software (If you are unable to distinguish capitalized software from capitalized equipment, report both in row c.)		\$ <u>0</u>
c. Capitalized equipment		
Payments for movable equipment exceeding your institution's capitalization threshold. Include ancillary costs such as delivery and setup.		\$ <u>686</u>
d. Pass-throughs to other universities or organizations		
(should match the total in Question 8, row e, column 3)		\$ <u>788</u>
e. Other direct costs		
Other costs that do not fit into one of the above categories, including (but not limited to) travel, tuition waivers, services such as consulting, computer usage fees, and supplies.		\$ <u>4141</u>
f. Indirect costs		
1. Recovered indirect costs		\$ <u>1115</u>
Reimbursement of Facilities and Administrative (F&A) costs from external sponsors		(Confidential ¹)
2. Unrecovered indirect costs		\$ <u>1655</u>
(should equal Question 1, row e3)		(Confidential ¹)
3. Total indirect costs²		\$ <u>2770</u>
g. Total²		\$ <u>15387</u>
(should match total from Question 1, row g)		

¹ Information from confidential items is not published or released for individual institutions; only aggregate totals will appear in publications. In accordance with the National Science Foundation Act of 1950, as amended, and other applicable federal laws, your responses will not be disclosed in identifiable form to anyone other than agency employees or authorized persons. Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the federal information systems that transmit your data.

² Totals are automatically generated on the Web survey.

Question 13. At the end of FY 2021, what were your institution's capitalization thresholds for software and equipment?

			(Dollars in thousands)	
			(1)	(2)
			Software	Equipment
Capitalization thresholds	\$	<u>100.0</u>	\$	<u>5.0</u>

Question 14A–C. For the R&D fields below, what portion of your FY 2021 R&D expenditures went for the purchase of capitalized R&D equipment?

- Question 14 total (row K, column c) should match Question 12, row c (Capitalized equipment).

**R&D equipment expenditures
(Dollars in thousands)**

R&D Fields (See Question 9, pp. 13–14)	(a) Federal	(b) Nonfederal	(c) Total¹
A. Computer and Information Sciences	\$ 190	\$ 0	\$ 190
B. Engineering			
1. Aerospace, Aeronautical, and Astronautical Engineering	\$ 0	\$ 0	\$ 0
2. Bioengineering and Biomedical Engineering	\$ 0	\$ 0	\$ 0
3. Chemical Engineering	\$ 0	\$ 0	\$ 0
4. Civil Engineering	\$ 0	\$ 127	\$ 127
5. Electrical, Electronic, and Communications Engineering	\$ 0	\$ 38	\$ 38
6. Industrial and Manufacturing Engineering	\$ 0	\$ 0	\$ 0
7. Mechanical Engineering	\$ 174	\$ 108	\$ 282
8. Metallurgical and Materials Engineering	\$ 0	\$ 0	\$ 0
9. Other Engineering	\$ 0	\$ 0	\$ 0
10. Total¹	\$ 174	\$ 273	\$ 447
C. Geosciences, Atmospheric Sciences, and Ocean Sciences			
1. Atmospheric Science and Meteorology	\$ 0	\$ 0	\$ 0
2. Geological and Earth Sciences	\$ 0	\$ 0	\$ 0
3. Ocean Sciences and Marine Sciences	\$ 0	\$ 0	\$ 0
4. Other Geosciences, Atmospheric Sciences, and Ocean Sciences	\$ 0	\$ 0	\$ 0
5. Total¹	\$ 0	\$ 0	\$ 0

¹ Row and column totals are automatically generated on the Web survey.

Examples of disciplines for the above fields of R&D are listed on pages 13–14.

Question 14D–I. For the R&D fields below, what portion of your FY 2021 R&D expenditures went for the purchase of capitalized R&D equipment?

**R&D equipment expenditures
(Dollars in thousands)**

R&D Fields (See Question 9, pp. 15–17)	(a) Federal	(b) Nonfederal	(c) Total ¹
D. Life Sciences			
1. Agricultural Sciences	\$ 0	\$ 0	\$ 0
2. Biological and Biomedical Sciences	\$ 0	\$ 0	\$ 0
3. Health Sciences	\$ 0	\$ 0	\$ 0
4. Natural Resources and Conservation	\$ 0	\$ 4	\$ 4
5. Other Life Sciences	\$ 0	\$ 0	\$ 0
6. Total¹	\$ 0	\$ 4	\$ 4
E. Mathematics and Statistics			
	\$ 0	\$ 0	\$ 0
F. Physical Sciences			
1. Astronomy and Astrophysics	\$ 0	\$ 0	\$ 0
2. Chemistry	\$ 0	\$ 0	\$ 0
3. Materials Science	\$ 0	\$ 0	\$ 0
4. Physics	\$ 45	\$ 0	\$ 45
5. Other Physical Sciences	\$ 0	\$ 0	\$ 0
6. Total¹	\$ 45	\$ 0	\$ 45
G. Psychology			
	\$ 0	\$ 0	\$ 0
H. Social Sciences			
1. Anthropology	\$ 0	\$ 0	\$ 0
2. Economics	\$ 0	\$ 0	\$ 0
3. Political Science and Government	\$ 0	\$ 0	\$ 0
4. Sociology, Demography, and Population Studies	\$ 0	\$ 0	\$ 0
5. Other Social Sciences	\$ 0	\$ 0	\$ 0
6. Total¹	\$ 0	\$ 0	\$ 0
I. Other Sciences			
	\$ 0	\$ 0	\$ 0

¹ Row and column totals are automatically generated on the Web survey.

Examples of disciplines for the above fields of R&D are listed on pages 15–17.

Question 14J–K. For the non-science and engineering (non-S&E) R&D fields below, what portion of your FY 2021 R&D expenditures went for the purchase of capitalized R&D equipment?

**R&D equipment expenditures
(Dollars in thousands)**

R&D Fields (See Question 9, p. 19)	(a) Federal	(b) Nonfederal	(c) Total¹
J. Non-S&E Fields			
1. Business Management and Business Administration	\$ 0	\$ 0	\$ 0
2. Communication and Communications Technologies	\$ 0	\$ 0	\$ 0
3. Education	\$ 0	\$ 0	\$ 0
4. Humanities	\$ 0	\$ 0	\$ 0
5. Law	\$ 0	\$ 0	\$ 0
6. Social Work	\$ 0	\$ 0	\$ 0
7. Visual and Performing Arts	\$ 0	\$ 0	\$ 0
8. Other Non-S&E Fields	\$ 0	\$ 0	\$ 0
9. Total¹	\$ 0	\$ 0	\$ 0
K. Total for All Fields of R&D¹	\$ 409	\$ 277	\$ 686

Total for row K, column c, should match Question 12, row c (Capitalized equipment).

¹ Row and column totals are automatically generated on the Web survey.

Examples of disciplines for non-S&E fields of R&D are listed on page 19.

Question 15. How many personnel (headcount) worked in the functions listed below in FY 2021, and in which demographic and educational categories would these personnel be placed?

- All items on this question are confidential¹.
- Count each person only once.
- Include all personnel and students paid from R&D accounts regardless of how much they were paid. Pay could be a salary, a stipend or tuition remission.
- Exclude personnel that would be considered indirect research support such as research administration and other personnel not paid for work on specific research projects.
- **Functions** are defined primarily by the nature of the employee's work, not the employee's level of education. Depending on the nature of their work, a student could be placed in any functional category. **See page 30 for a description of each R&D function.**

	(a) Researchers	(b) R&D technicians	(c) R&D support staff	(d) Total ²
A. Total R&D personnel	62	291	0	353
B. Sex				
1. Female	14	89	0	103
2. Male	48	202	0	250
3. Sex unknown or not stated	0	0	0	0
C. Citizenship				
1. U.S. citizens and permanent residents (non-U.S. citizens holding Green Cards)	62	291	0	353
2. Foreign nationals holding temporary visas	0	0	0	0
3. Citizenship or residency status unknown or not stated	0	0	0	0
D. Highest level of education completed	Researchers only			
1. Doctorate (e.g., PhD, DSc, EdD)	57			
2. Professional degree (e.g., JD, LLB, MD, DDS, DVM)	0			
3. Master's degree (e.g., MS, MA, MBA)	5			
4. Less than Master's	0			
5. Education level unknown or not stated	0			

Do not include highest level of education for R&D technicians or R&D support staff.

¹ Information from confidential items is not published or released for individual institutions; only aggregate totals will appear in publications. In accordance with the National Science Foundation Act of 1950, as amended, and other applicable federal laws, your responses will not be disclosed in identifiable form to anyone other than agency employees or authorized persons. Per the Federal Cybersecurity Enhancement Act of 2015, your data are protected from cybersecurity risks through screening of the federal information systems that transmit your data.

² Totals are automatically generated on the Web survey.

Description of R&D Functions

Researchers	R&D technicians	R&D support staff
Professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned. Include R&D managers in this category.	Persons whose main tasks require technical knowledge and experience in one or more fields of science or engineering, but who contribute to R&D by performing technical tasks such as computer programming, data analysis, ensuring accurate testing, operating lab equipment, and preparing and processing samples under the supervision of researchers.	Not directly involved with the conduct of a research project, but support the researchers and technicians. These employees might include clerical staff, financial and personnel administrators, report writers, patent agents, safety trainers, equipment specialists, and other related employees.

Researcher versus R&D technician

Researchers contribute more to the creative aspects of R&D whereas technicians provide technical support. For example, a researcher (scientist or engineer) would design an experiment and a technician would run the experiment and assist in analyzing results.

Question 16. How many full-time equivalents (FTEs) worked in the functions listed below in FY 2021?

- All personnel counted in Question 15 should be included in FTE calculations; however, we would NOT expect FTEs to equal headcounts.
- FTEs for this question are calculated as the total working effort **spent on research** during a specific period divided by the total effort representing a full-time schedule within the same period.
- An individual cannot be more than 1.0 FTE. An individual counted as 1.0 FTE for this question, would spend 100% of their working effort on research.
- See Question 15 for descriptions of each function.

The following examples of FTE calculations assume a 40-hour work week and 12-month year (52 weeks). However, you should use the hours per week and weeks per year that typically represent a full-time employee at your institution.

- 2 research support staff who each work on research full-time for 32 weeks: $2 * (32/52) = 1.2$ FTE
- 1 researcher who works on research 20% of the time for 20 weeks, 50% of the time for another 20 weeks, and full-time for 12 weeks: $((20\% * 20) + (50\% * 20) + 12) / 52 = 0.5$ FTE
- 10 researchers who each work on research 25% of the time for 20 weeks: $10 * 25\% * (20/52) = 1.0$ FTE
- 1 student who received a stipend for an assumed 200 hours of work: $200/2080 = 0.1$ FTE
- 1 researcher with a \$100,000 salary for a 12-month appointment, of which \$30,000 of salary came from R&D accounts: $30,000/100,000 = 0.3$ FTE
- 1 research support staff member with a \$60,000 salary for a 9-month appointment, of which \$40,000 came from R&D accounts: $(40,000/60,000) * (9/12) = 0.5$ FTE

FTEs
(round to 1 decimal place)

a. Researchers	<u>5.9</u>
b. R&D technicians	<u>66.9</u>
c. R&D support staff	<u>0.0</u>
d. Total¹	<u>72.8</u>

¹ Total is automatically generated on the Web survey.

Question 17.

In what month did your institution's 2021 fiscal year end?

June

Primary Contact Information. Please complete the contact information for the person responsible for the survey.

Name Gail Ligon

Job Title Director of Grant Accounting

Institution name Tennessee Technological University

Office/Department Business Office-Grant Accounting

Mailing address (line 1) Derryberry Hall, Room 126, Box 5037

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Other Contact Information. List individuals who should be copied on all e-mails about the survey or can create a login account. Job Title should include information about office/department as appropriate (e.g., VP of Sponsored Programs, Department of Finance Manager, Analyst II in Grants Management).

Other Contact 1

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Job Title

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