

TABLE 9-4

## Biological and biomedical sciences research doctorate recipients, postgraduation plans by sex and major field of doctorate: 2023

(Number and percent)

Characteristic	All biological and biomedical sciences fields	Biochemistry, biophysics, and molecular biology	Bioinformatics, biostatistics, and computational biology	Biological and biomedical sciences, general	Cell/ cellular biology and anatomy	Ecology, evolutionary biology, and epidemiology	Genetics and genomics	Microbiology and immunology	Neurobiology and neurosciences	Pharmacology and toxicology	Physiology, oncology, and cancer biology	Biological and biomedical sciences, other
Doctorate recipients reporting postgraduation status (number)	9,035	1,414	693	764	715	1,089	446	1,040	1,132	371	760	611
Definite postdoctoral training plans	40.0	37.3	22.9	40.2	38.5	41.7	44.6	43.3	45.6	35.8	40.1	44.5
Definite employment plans	28.2	28.6	48.9	25.0	23.1	30.5	23.3	23.1	22.5	33.7	29.5	27.8
Seeking employment or study	26.1	30.1	24.4	30.0	30.6	22.5	27.6	25.9	22.7	24.8	23.9	24.7
Other status <sup>a</sup>	5.5	4.1	3.6	4.6	7.6	2.4	7.0	7.5	9.2	5.7	6.4	2.6
Definite postdoctoral training plans (%) <sup>b</sup>												
Postdoc fellowship or research associateship	94.6	95.6	95.0	93.8	94.2	97.1	96.2	91.1	94.6	94.0	92.8	95.6
Other training or unknown <sup>c</sup>	5.4	4.4	5.0	6.2	5.8	2.9	3.8	8.9	5.4	6.0	7.2	4.4
Definite employment plans (%) <sup>d</sup>												
Academe	23.1	16.8	16.5	24.6	29.1	31.6	D	20.0	D	8.0	31.3	37.1
In tenure track faculty position (%)	23.3	17.6	28.6	23.4	22.9	23.8	D	18.8	D	D	35.7	27.0
Not in tenure track position (%)	74.9	79.4	69.6	76.6	77.1	75.2	D	72.9	90.9	D	61.4	71.4
Government	7.2	D	5.0	5.8	3.0	25.3	5.8	4.6	D	4.8	3.1	12.9
Industry or business <sup>e</sup>	60.6	74.8	69.3	57.6	64.8	27.4	67.3	67.5	65.5	80.0	58.5	41.2
Nonprofit organization	7.2	D	8.6	10.5	3.0	12.7	D	6.3	8.2	5.6	5.8	7.1
Other or unknown <sup>f</sup>	1.9	2.2	0.6	1.6	0.0	3.0	3.8	1.7	3.1	1.6	1.3	1.8
Primary activity <sup>g</sup>												
Research and development	59.0	65.8	74.5	53.5	59.3	53.6	D	61.4	46.2	53.8	D	54.2
Teaching	11.9	10.0	5.1	15.7	14.2	16.9	5.0	10.7	10.5	4.2	17.4	20.5
Management or administration	3.7	3.3	0.0	5.9	3.1	6.3	D	2.6	5.7	5.9	D	4.8
Professional services and other	25.4	20.8	20.4	24.9	23.5	23.2	23.0	25.3	37.7	36.1	31.5	20.5
Secondary activity <sup>g</sup>												
Research and development	14.4	10.0	16.8	D	11.7	20.4	5.0	9.9	12.1	D	17.8	17.5
Teaching	3.1	1.8	4.8	D	4.3	3.8	D	D	2.0	D	4.2	6.0
Management or administration	18.4	18.0	7.8	21.1	21.6	22.9	13.0	18.9	21.1	20.2	19.7	21.1
Professional services and other	8.6	6.2	12.9	5.9	4.3	13.2	D	D	9.7	D	8.5	9.0
No secondary activity	55.5	64.0	57.7	54.6	58.0	39.8	70.0	62.7	55.1	58.8	49.8	46.4
Activity unknown	3.3	3.7	1.8	3.1	1.8	3.9	3.8	2.9	3.1	4.8	4.9	2.4
Postgraduation location (%) <sup>h</sup>												
United States <sup>i</sup>	95.3	96.3	95.6	95.2	96.1	92.7	94.1	96.1	96.2	97.3	96.4	92.8
Midwest	15.6	16.0	12.7	14.1	14.8	14.2	22.4	15.7	12.8	19.0	19.1	17.9
Northeast	28.5	28.9	34.7	27.9	34.5	18.7	26.6	30.4	34.4	31.4	26.5	21.5
South	25.6	19.5	22.3	30.9	22.3	28.1	21.4	29.9	24.5	27.1	27.4	29.4
West	25.1	31.3	25.3	21.9	24.3	31.1	23.1	19.9	23.7	19.4	22.7	23.5
Outside the United States	4.6	3.5	4.4	4.8	3.9	7.3	5.9	3.8	3.8	2.7	3.6	7.2

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(Number and percent)

Characteristic	All biological and biomedical sciences fields	Biochemistry, biophysics, and molecular biology	Bioinformatics, biostatistics, and computational biology	Biological and biomedical sciences, general	Cell/ cellular biology and anatomy	Ecology, evolutionary biology, and epidemiology	Genetics and genomics	Microbiology and immunology	Neurobiology and neurosciences	Pharmacology and toxicology	Physiology, oncology, and cancer biology	Biological and biomedical sciences, other
Location unknown	*	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Postgraduation location in same state as doctorate institution (%)	46.9	47.8	39.2	53.0	49.1	44.9	49.0	46.8	43.0	43.0	45.9	47.5
Male doctorate recipients reporting postgraduation status (number)	4,110	728	390	312	287	427	209	476	491	162	379	249
Definite postdoctoral training plans	40.2	39.1	24.9	42.3	37.6	44.7	37.8	44.7	44.4	37.0	40.6	47.0
Definite employment plans	27.4	27.4	19.9	22.4	19.9	28.8	23.0	28.8	21.0	37.0	28.5	27.3
Seeking employment or study	25.6	25.6	24.4	29.2	31.7	24.6	30.1	24.2	22.6	21.6	23.7	22.9
Other status <sup>a</sup>	6.7	6.7	3.8	5.4	10.8	1.9	9.1	10.1	12.0	7.4	7.1	2.8
Definite postdoctoral training plans (%) <sup>b</sup>												
Postdoc fellowship or research associateship	94.0	94.4	93.8	93.2	94.4	96.9	93.7	90.6	94.5	95.0	92.2	96.6
Other training or unknown <sup>c</sup>	6.0	5.6	6.2	6.8	5.6	3.1	6.3	9.4	5.5	5.0	7.8	3.4
Definite employment plans (%) <sup>d</sup>												
Academe	20.4	13.2	14.3	D	33.3	27.6	14.6	18.0	D	D	D	D
In tenure track faculty position (%)	27.4	21.4	30.8	D	D	32.4	D	D	D	D	D	D
Not in tenure track position (%)	69.6	71.4	65.4	80.0	D	64.7	D	D	91.7	D	56.8	66.7
Government	6.7	D	3.3	D	D	26.8	D	D	D	D	D	13.2
Industry or business <sup>e</sup>	65.5	80.2	75.3	54.3	59.6	34.1	68.8	73.0	73.8	76.4	57.4	45.6
Nonprofit organization	5.3	D	7.1	10.0	D	7.3	D	D	8.7	D	4.6	D
Other or unknown <sup>f</sup>	2.0	2.8	0.0	1.4	0.0	4.1	4.2	1.0	3.9	1.8	1.9	1.5
Primary activity <sup>g</sup>												
Research and development	63.6	71.7	D	55.2	53.6	56.8	D	64.9	D	51.0	D	D
Teaching	9.9	4.9	D	D	D	D	D	D	8.2	D	18.3	19.7
Management or administration	2.3	3.9	0.0	D	D	D	0.0	D	D	D	D	D
Professional services and other	24.2	19.5	20.1	23.9	26.8	23.7	13.3	26.8	35.1	37.3	28.8	19.7
Secondary activity <sup>g</sup>												
Research and development	14.4	11.2	11.7	25.4	D	22.0	D	8.2	D	D	D	16.7
Teaching	2.7	D	4.5	0.0	D	D	D	D	D	D	D	D
Management or administration	19.7	20.5	10.6	20.9	23.2	23.7	15.6	19.6	23.7	19.6	20.2	27.3
Professional services and other	9.3	D	12.3	9.0	D	D	D	D	8.2	D	5.8	D
No secondary activity	53.9	58.0	60.9	44.8	53.6	39.0	68.9	60.8	55.7	56.9	50.0	39.4
Activity unknown	3.6	3.3	1.6	4.3	1.8	4.1	6.3	3.0	5.8	7.3	3.7	2.9
Postgraduation location (%) <sup>h</sup>												
United States <sup>i</sup>	95.3	96.8	97.1	94.6	95.2	91.4	D	97.1	96.0	D	95.8	90.3
Midwest	15.1	15.5	11.8	14.4	11.5	15.9	18.9	15.7	14.0	14.8	17.6	17.3
Northeast	29.9	32.0	35.5	28.7	38.2	17.2	25.2	33.9	35.8	39.1	24.0	19.5
South	23.9	17.9	22.6	25.7	20.6	25.5	24.4	30.0	18.7	24.3	29.4	30.8

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Characteristic	All biological and biomedical sciences fields	Biochemistry, biophysics, and molecular biology	Bioinformatics, biostatistics, and computational biology	Biological and biomedical sciences, general	Cell/ cellular biology and anatomy	Ecology, evolutionary biology, and epidemiology	Genetics and genomics	Microbiology and immunology	Neurobiology and neurosciences	Pharmacology and toxicology	Physiology, oncology, and cancer biology	Biological and biomedical sciences, other
West	25.7	31.2	26.2	25.7	24.8	31.5	D	17.3	26.5	D	23.3	22.2
Outside the United States	4.7	3.2	2.9	5.4	4.8	8.6	D	2.9	4.0	D	4.2	9.7
Location unknown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Postgraduation location in same state as doctorate institution (%)	45.2	47.7	40.5	48.0	47.3	41.4	53.5	44.4	45.8	42.6	44.3	44.3
Female doctorate recipients reporting postgraduation status (number)	4,924	685	303	452	428	662	237	564	641	209	381	362
Definite postdoctoral training plans	39.8	35.3	20.5	38.7	39.0	44.6	45.1	42.0	46.5	34.9	39.6	42.8
Definite employment plans	28.9	28.0	51.8	26.8	25.2	31.6	23.6	24.8	23.7	33.5	30.4	28.2
Seeking employment or study	26.6	33.0	24.4	30.5	29.9	21.1	25.3	27.3	22.8	27.3	24.1	26.0
Other status <sup>a</sup>	4.5	3.6	3.3	4.0	5.4	2.7	5.1	5.3	7.0	4.3	5.8	2.5
Definite postdoctoral training plans (%) <sup>b</sup>												
Postdoc fellowship or research associateship	95.0	97.1	96.8	94.3	94.0	97.3	98.1	91.6	94.6	93.2	93.4	94.8
Other training or unknown <sup>c</sup>	5.0	2.9	3.2	5.7	6.0	2.7	1.9	8.4	5.4	6.8	6.6	5.2
Definite employment plans (%) <sup>d</sup>												
Academe	25.2	20.8	19.1	D	26.9	34.0	D	21.4	D	D	D	D
In tenure track faculty position (%)	20.6	15.0	26.7	D	D	19.7	D	D	D	D	D	D
Not in tenure track position (%)	78.3	85.0	73.3	74.1	D	80.3	75.0	D	90.7	D	66.7	74.4
Government	7.6	3.1	7.0	D	D	24.4	D	D	D	D	D	12.7
Industry or business <sup>e</sup>	56.7	68.8	62.4	59.5	67.6	23.4	66.1	63.6	59.9	82.9	59.5	38.2
Nonprofit organization	8.7	5.7	10.2	10.7	D	15.8	D	D	7.9	D	6.9	D
Other or unknown <sup>f</sup>	1.8	1.6	1.3	1.7	0.0	2.4	3.6	2.1	2.6	1.4	0.9	2.0
Primary activity <sup>g</sup>												
Research and development	55.3	59.2	D	52.5	62.3	51.7	58.2	58.8	D	55.9	D	D
Teaching	13.5	15.8	D	D	D	D	D	D	12.0	D	16.5	21.0
Management or administration	4.9	2.7	0.0	D	D	D	D	D	D	D	D	D
Professional services and other	26.3	22.3	20.8	25.4	21.7	22.9	30.9	24.3	39.3	35.3	33.9	21.0
Secondary activity <sup>g</sup>												
Research and development	14.5	8.7	22.7	D	D	19.4	D	11.0	D	D	D	18.0
Teaching	3.4	D	5.2	D	D	D	D	D	D	D	D	D
Management or administration	17.3	15.2	4.5	21.2	20.8	22.4	10.9	18.4	19.3	20.6	19.3	17.0
Professional services and other	8.1	D	13.6	4.2	D	D	D	D	10.7	D	11.0	D
No secondary activity	56.7	70.7	53.9	60.2	60.4	40.3	70.9	64.0	54.7	60.3	49.5	51.0
Activity unknown	3.0	4.2	1.9	2.5	1.9	3.8	1.8	2.9	1.3	2.9	6.0	2.0
Postgraduation location (%) <sup>h</sup>												
United States <sup>i</sup>	95.4	95.9	93.6	95.6	96.7	93.5	D	95.2	96.4	D	97.0	94.6
Midwest	16.0	16.6	13.7	13.9	16.7	13.1	25.2	15.6	12.0	22.4	20.6	18.3

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Characteristic	All biological and biomedical sciences fields	Biochemistry, biophysics, and molecular biology	Bioinformatics, biostatistics, and computational biology	Biological and biomedical sciences, general	Cell/ cellular biology and anatomy	Ecology, evolutionary biology, and epidemiology	Genetics and genomics	Microbiology and immunology	Neurobiology and neurosciences	Pharmacology and toxicology	Physiology, oncology, and cancer biology	Biological and biomedical sciences, other
Northeast	27.3	25.3	33.8	27.4	32.4	19.6	27.6	27.6	33.3	25.2	28.8	23.0
South	26.9	21.4	21.9	34.5	23.3	29.8	19.0	29.7	28.7	29.4	25.5	28.4
West	24.6	31.3	24.2	19.3	24.0	30.8	D	22.0	21.8	D	22.1	24.5
Outside the United States	4.6	3.9	6.4	4.4	3.3	6.5	D	4.5	3.6	D	3.0	5.4
Location unknown	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Postgraduation location in same state as doctorate institution (%)	48.3	47.9	37.4	56.4	50.2	47.0	45.4	48.8	50.9	43.4	47.6	49.8

\* = value between 0.00% and 0.05%; D = suppressed to avoid disclosure of confidential information.

<sup>a</sup> Other status includes doctorate recipients reporting: no plans to work or study, some other type of postgraduation plans, or definite plans for other full-time degree program.<sup>b</sup> Definite postdoctoral training plans excludes doctorate recipients reporting plans for other full-time degree program. Percentages are based on the number of doctorate recipients reporting definite postdoctoral plans for study.<sup>c</sup> Other training includes doctorate recipients who reported definite postdoctoral plans for traineeship, internship or clinical residency, or other study.<sup>d</sup> Percentages are based on the number of doctorate recipients reporting definite postgraduation plans for employment.<sup>e</sup> Industry or business includes doctorate recipients reporting self-employment.<sup>f</sup> Other is mainly composed of elementary and secondary schools.<sup>g</sup> Percentages are based on the number of doctorate recipients reporting definite postgraduation plans for employment and primary or secondary work activity.<sup>h</sup> Percentages are based on the number of doctorate recipients reporting definite postgraduation plans and type of plans.<sup>i</sup> United States includes doctorate recipients with an unknown U.S. region of employment after doctorate; thus, the percentages by regions will not sum to the value for United States. See the "Technical Notes" for states or territories included in regions.**Note(s):**

A definite postgraduation commitment includes accepting new employment or a postdoctoral study (postdoc) position or returning to predoctoral employment, while postgraduation employment includes accepting new employment or returning to predoctoral employment that is not a postdoctoral study (postdoc) position. Due to rounding, percentages may not sum to 100. Beginning in 2021, a modified version of the 2020 Classification of Instructional Programs (CIP) codes was used in the survey data collection, and new broad, major, and detailed fields are used in tables reporting data from 2021 to the present; see the field list in table A-4. Therefore, the field of doctorate data prior to 2021 may not be comparable to subsequent years. For more information about the 2021 taxonomy change, see the "Technical Notes."

**Source(s):**

National Center for Science and Engineering Statistics, Survey of Earned Doctorates.