

TABLE 1

**Business Enterprise Research and Development Survey aggregate estimates, by questionnaire reference: 2021**

(Millions of U.S. dollars and thousands of employees)

Question	Survey item	Aggregate amount
Company and financial information (US\$millions)		
1.12	Worldwide net sales and operating revenues	17,410,590
1.13	Net sales and operating revenues from domestic operations	13,097,756
	R&D paid for by the company and performed by the company and others	
2.1	Worldwide R&D paid for by the company (expense), total	755,069
2.3	Worldwide R&D paid for by the company (expense), adjustments	45,406
2.4/ 2.7c	Worldwide R&D paid for by the company and performed by the company and others	709,663
2.7a	Domestic R&D paid for by the company and performed by the company and others	577,661
2.7b	Foreign R&D paid for by the company and performed by the company and others	132,002
2.5	Indirect R&D charges to be recouped from the U.S. federal government (independent R&D [IR&D]) <sup>a</sup>	5,909
2.8m(1)	Domestic R&D paid for by the company and performed by the company and others	577,661
2.8a(1)	Salaries, wages, and fringe benefits	287,984
2.8b(1)	Stock-based compensation	60,491
2.8c(1)	Leased or temporary staffing, including on-site contractors, working on R&D	23,725
2.8d(1)	Expensed equipment (not capitalized)	8,605
2.8e(1)	Materials and supplies	32,925
2.8f(1)	Leased facilities and equipment	7,770
2.8g(1)	Depreciation and amortization on R&D property, plant, equipment, and intangible assets	18,433
2.8h(1)	Royalties and licensing fees	3,450
2.8i(1)	Collaborative R&D payments	14,091
2.8j(1)	Contract R&D	35,765
2.8k(1)	Other purchased services	15,319
2.8l(1)	All other costs	69,102
2.9(3)	Worldwide R&D paid for by the company and performed by others	61,588
2.9(1)	Domestic R&D paid for by the company and performed by others	49,856
2.9(2)	Foreign R&D paid for by the company and performed by others	11,732
2.10(3)	Worldwide R&D paid for and performed by the company	648,075
2.10(1)	Domestic R&D paid for and performed by the company	527,804
2.10(2)	Foreign R&D paid for and performed by the company	120,270
2.9(3) + 2.10(3) + 3.4(3) + 3.5(3)	Worldwide R&D paid for by the company and others and performed by the company and others	807,429
2.10(3) + 3.5(3)	Worldwide R&D paid for by the company and others and performed by the company	737,911
2.9(1) + 2.10(1) + 3.4(1) + 3.5(1)	Domestic R&D paid for by the company and others and performed by the company and others	659,458
2.10(1) + 3.5(1)	Domestic R&D paid for by the company and others and performed by the company	602,499
	Domestic R&D paid for and performed by the company	
2.14	Performed at largest domestic location	304,919
2.16	Performed at second-largest domestic location	44,689
2.18	Domestic R&D paid for by foreign operations or subsidiaries and performed by the company <sup>a</sup>	32,055
2.19	Foreign R&D paid for by domestic operations or subsidiaries and performed by the company <sup>a</sup>	26,188
2.9(1)/ 2.20i	Domestic R&D paid for by the company and performed by others	49,856
2.20a	Companies in United States	43,700
2.20b	Your company's foreign parent or owner	1,291
2.20c	Companies outside United States	3,620
2.20d	U.S. federal government agencies or laboratories	109
2.20e	U.S. state and local government agencies or laboratories	8
2.20f	U.S. universities, colleges, and academic researchers	574
2.20g	All other organizations in the United States	367 - 458
2.20h	All other organizations outside the United States	100 - 190
2.22	Monetary gifts made by the company to U.S. universities and colleges <sup>a</sup>	95

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	Projected worldwide R&D expense paid for and performed by the company in 2022	
2.23(3)	Worldwide R&D to be paid for and performed by the company	808,021
2.23(1)	Domestic R&D to be paid for and performed by the company	661,993
2.23(2)	Foreign R&D to be paid for and performed by the company	146,028
2.24	Projected R&D services and projected payments for collaborative R&D	56,078
3.1j/ 3.2c	Worldwide R&D paid for by others and performed by the company and others	97,766
3.1a	R&D reimbursed by the company's foreign parent or owner	19,585
3.1b	Collaborative R&D reimbursed by business partners	9,391
3.1c	R&D paid for by grants (government or private foundation)	7,015
3.1d	Defense R&D goods or services provided as a prime contractor or subcontractor to the federal government and/ or government contractors	17,803
3.1e	Medical clinical trial Phase I-III services provided to others not owned by the company	32,651 i
3.1f	Medical R&D services, other than clinical trials, provided to others not owned by the company	4,150
3.1g	Nondefense custom software development or computer systems designed for others not owned by the company	537
3.1h	Prototype development, production, and testing for customer's products	1,817
3.1i	All other R&D services provided to the federal government or to others not owned by the company	4,817
3.2c/ 3.1j	Worldwide R&D paid for by others and performed by the company and others	97,766
3.2a	Domestic R&D paid for by others and performed by the company and others	81,797
3.2b	Foreign R&D paid for by others and performed by the company and others	15,968 i
3.3m(1)	Domestic R&D paid for by others and performed by the company and others	81,797
3.3a(1)	Salaries, wages, and fringe benefits	41,653
3.3b(1)	Stock-based compensation	985
3.3c(1)	Leased or temporary staffing, including on-site contractors	3,197
3.3d(1)	Expensed equipment (not capitalized)	600 i
3.3e(1)	Materials and supplies	8,324 i
3.3f(1)	Leased facilities and equipment rental payments	1,140
3.3g(1)	Depreciation and amortization on R&D property, plant, equipment, and intangible assets	2,747
3.3h(1)	Royalties and licensing fees	281
3.3i(1)	Collaborative R&D payments	1,795
3.3j(1)	Contract R&D	5,308
3.3k(1)	Other purchased services	6,170 i
3.3l(1)	All other costs	9,597
3.4(3)	Worldwide R&D paid for and performed by others	7,929
3.4(1)	Domestic R&D paid for and performed by others	7,103
3.4(2)	Foreign R&D paid for and performed by others	826
3.5(3)	Worldwide R&D paid for by others and performed by the company	89,837
3.5(1)	Domestic R&D paid for by others and performed by the company	74,695
3.5(2)	Foreign R&D paid for by others and performed by the company	15,142 i
3.8a	Other companies in the United States	26,587 i
3.8b	Your company's foreign parent or owner	20,806
3.8c	Other companies outside the United States	2,450
3.8d/ 3.11j/ 3.12c	U.S. federal government agencies or laboratories	23,582
3.8e	U.S. state and local government agencies or laboratories	329
3.8f	Foreign government agencies or laboratories	155
3.8g	U.S. universities, colleges, and academic researchers	78
3.8h	Universities, colleges, and academic researchers outside the United States	1
3.8i	All other organizations in the United States	674
3.8j	All other organizations outside the United States	34
3.8d	Federally funded R&D performed by the company	23,582
3.9/ 3.8a + 3.8b + 3.8c	Domestic R&D paid for by other companies and performed by the company	49,842

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Question	Survey item	Aggregate amount
	Domestic R&D paid for by others and performed by the company	
3.11j/ 3.8d/ 3.12c	Federally funded R&D performed by the company	23,582
3.11a	Department of Defense	17,119
3.11b	Department of Energy	643
3.11c	National Aeronautics and Space Administration	2,834
3.11d	National Institutes of Health	697
3.11e	Department of Homeland Security	106
3.11f	Department of Transportation	18
3.11g	Environmental Protection Agency	7
3.11h	National Science Foundation	32
3.11i	Other U.S. federal agencies	2,125
3.12c/ 3.8d/ 3.11j	Federally funded R&D performed by the company by type of agreement	23,582
3.12a	Contracts	21,573
3.12b	Grants and all other agreements	2,008
3.13/ 3.8k - 3.8d	Domestic R&D paid for by nonfederal sources and performed by the company	51,113
3.16	Performed at largest domestic location	35,960
3.18	Performed at second-largest domestic location	6,876
3.19	Domestic R&D paid for by U.S. federal government agencies or laboratories and performed by others	1,769
	Projected R&D to be paid for by others and performed by the company in 2022	
3.20	Worldwide R&D to be paid for by others and performed by the company	105,528
3.21	Domestic R&D to be paid for by others and performed by the company	80,708
3.22	Domestic R&D to be paid for by the U.S. federal government and performed by the company	26,320
4.1d	Total value of assets owned or leased	14,154,190
4.1a	Property, plant, and equipment	6,626,256
4.1b	Goodwill	4,451,530
4.1c	Identifiable intangible assets	3,076,405
4.2c	Accumulated depreciation and amortization on owned or leased assets	8,613,792
4.2a	Property, plant, and equipment	6,064,256
4.2b	Identifiable intangible assets	2,549,536
4.3d	Reduction in asset value due to impairment, changes, disposal, or retirement	1,697,658
4.3a	Property, plant, and equipment	1,411,133
4.3b	Goodwill	41,028
4.3c	Identifiable intangible assets	245,497
4.4d	Book value of assets acquired through mergers and acquisitions	685,500
4.4a	Property, plant, and equipment	145,850
4.4b	Goodwill	320,727
4.4c	Identifiable intangible assets	218,923
4.5c	Worldwide expenditures for capitalized assets	981,447
4.5a	Property, plant, and equipment	852,787
4.5b	Identifiable intangible assets	128,661
4.6c(1)	Domestic expenditures for capitalized assets	793,263
4.6a(1)	Property, plant, and equipment	682,629
4.6b(1)	Identifiable intangible assets	110,634
4.6c(2)	Foreign expenditures for capitalized assets	188,184
4.6a(2)	Property, plant, and equipment	170,158
4.6b(2)	Identifiable intangible assets	18,026
4.7c/ 4.8g	Domestic capital expenditures for R&D	52,844
4.7a	Property, plant, and equipment	39,084
4.7b	Identifiable intangible assets	13,760
4.8a	Land acquisition	584

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Question	Survey item	Aggregate amount
4.8b	Buildings and land improvement	5,220
4.8c	Machinery and equipment	19,665
4.8d	Capitalized software	16,247 i
4.8e	Other intellectual property	5,711
4.8f	All other capital expenditures for R&D operations	5,417 i
5.1	Worldwide R&D paid for and performed by the company and others directed toward business areas or product lines new to the company	110,378
5.2/ 2.10(1)	Domestic R&D paid for and performed by the company	527,804
	Type of R&D (character of work)	
5.4b	Basic research	32,763
5.4a	Applied research	69,130
5.3b	Development	425,912
	Application areas	
5.5	Energy applications	31,632 i
5.6	Environmental protection applications, including pollution abatement	11,278 i
5.7	Defense applications	13,980 i
5.8	Health or medical applications	120,687
5.9	Agricultural applications	7,582 i
	Technology focus areas	
5.10	Software products and software embedded in other projects or products	243,879 i
5.11	Biotechnology	81,585
5.12	Nanotechnology	31,371 i
5.13	Artificial intelligence	25,267 i
5.15c/ 5.14	Foreign R&D paid for and performed by the company	120,270
5.15a	Research	19,940
5.15b	Development	100,330
5.16/ 3.5(1)	Domestic R&D paid for by others and performed by the company	74,695
	Type of R&D (character of work)	
5.18b	Basic research	7,367
5.18a	Applied research	17,355 i
5.17b	Development	49,972
	Application areas	
5.19	Energy applications	2,109 i
5.20	Environmental protection applications, including pollution abatement	1,098 i
5.21	Defense applications	20,988 i
5.22	Health or medical applications	35,506 i
5.23	Agricultural applications	684 i
	Technology focus areas	
5.24	Software products and software embedded in other projects or products	13,151 i
5.25	Biotechnology	20,928
5.26	Nanotechnology	1,347 i
5.27	Artificial intelligence	3,609 i
5.28/ 3.8d	Federally funded R&D performed by the company	23,582
	Type of R&D (character of work)	
5.30b	Basic research	2,344 i
5.30a	Applied research	3,250
5.29b	Development	17,987
	Technology focus areas	
5.31	Federally funded R&D performed by the company for software products and software embedded in other projects or products	5,468
5.33c/ 5.32	Foreign R&D paid for by others and performed by the company	15,142 i

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Question	Survey item	Aggregate amount	
5.33a	Research	4,537	i
5.33b	Development	10,605	i
Employees (thousands)			
	Worldwide		
1.8/ 1.9(3)/ 6.1c(3)	Total employees	35,574	
6.1b(3)	Non-R&D employees	32,413	
6.1a(3)	R&D employees	3,161	
6.4a(3)	Female	933	
6.4b(3)	Male	2,229	
6.5a(3)	Researchers	2,127	
6.5b(3)	Technicians	734	
6.5c(3)	Support staff	300	
	Domestic		
1.9(1)/ 6.1c(1)	Total employees	23,654	
6.1b(1)	Non-R&D employees	21,522	
6.1a(1)	R&D employees	2,132	
6.4a(1)	Female	596	
6.4b(1)	Male	1,536	
6.5a(1)	Researchers	1,426	
6.5b(1)	Technicians	501	
6.5c(1)	Support staff	205	
	Foreign		
1.9(2)/ 6.1c(2)	Total employees	11,920	
6.1b(2)	Non-R&D employees	10,891	
6.1a(2)	R&D employees	1,029	
6.4a(2)	Female	336	
6.4b(2)	Male	693	
6.5a(2)	Researchers	700	
6.5b(2)	Technicians	233	
6.5c(2)	Support staff	96	
	Researchers with PhD		
6.6(3)	Worldwide	169	
6.6(1)	Domestic	130	
6.6(2)	Foreign	38	
	Full-time equivalent		
6.7d	R&D employees	1,941	
6.7a	Full-time R&D employees	1,590	
6.7b	Full-time employees not solely working on R&D	327	
6.7c	Part-time employees working on R&D	24	
6.8d	Researchers	1,311	
6.8a	Full-time R&D employees	1,113	
6.8b	Full-time employees not solely working on R&D	187	
6.8c	Part-time employees working on R&D	10	i
6.9	Non-U.S. citizens employed as researchers under temporary visa <sup>a</sup>	70	
6.10d(1)	Total leased and temporary employees working on R&D	295	i
6.10a(1)	Researchers	174	i
6.10b(1)	Technicians	86	i
6.10c(1)	Support staff	35	i

i = more than 50% of the estimate is a combination of imputation and reweighting to account for nonresponse.

<sup>a</sup> Statistics are based on companies in the United States that reported to the survey. No systematic item imputation was applied. These statistics include an adjustment to the weight to account for unit nonresponse.

**Note(s):**

Detail may not add to total because of rounding. Statistics are representative of companies located in the United States that performed or funded \$50,000 or more of R&D and are not comparable with estimates published for years prior to 2018. An estimate range may be displayed in place of a single estimate to avoid disclosing operations of individual companies.

**Source(s):**

National Center for Science and Engineering Statistics and Census Bureau, Business Enterprise Research and Development Survey, 2021.