

Table SINV-20

International patent families granted in biotechnology, by region, country, or economy: 1998–2020

(Number)

Region, country, or economy	Economy by income status	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	na	3,758	3,922	3,623	3,443	3,467	5,240	5,825	4,867	5,575	5,322	5,447	5,343	6,706	8,151	10,608	12,189	12,225	11,726	11,525	10,938	12,104	14,767	16,643
North America	na	1,420	1,411	1,144	1,178	1,125	1,301	1,128	772	965	984	1,072	1,181	1,326	1,359	1,593	1,674	1,835	1,865	1,840	1,938	1,834	1,771	1,585
Canada	High	67	79	61	74	63	69	68	39	58	57	66	63	77	84	97	104	96	110	85	97	102	79	59
Mexico	Upper middle	2	1	1	2	1	3	2	2	0	1	2	1	2	1	3	3	4	8	25	27	28	31	4
United States	High	1,351	1,331	1,081	1,103	1,060	1,229	1,058	731	907	926	1,005	1,117	1,247	1,274	1,494	1,567	1,736	1,746	1,729	1,814	1,705	1,661	1,522
Central America and Caribbean	na	4	3	2	2	4	3	4	3	7	3	4	3	3	2	2	5	4	5	4	2	1	2	3
Puerto Rico	High	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
South America	na	5	6	3	4	6	7	14	5	9	11	7	19	14	14	13	23	35	24	31	32	47	39	52
Argentina	Upper middle	1	1	0	1	0	1	2	0	3	4	3	5	2	2	1	3	2	4	4	5	6	5	3
Brazil	Upper middle	1	4	3	3	4	6	10	4	4	4	2	10	9	9	8	18	27	14	24	23	35	26	43
Europe	na	942	890	834	813	943	1,794	1,792	1,678	1,572	1,080	1,131	1,130	1,292	1,382	1,352	1,367	1,427	1,551	1,415	1,454	1,465	1,504	1,453
EU-27 + UK ^a	na	665	694	625	642	733	890	1,016	721	751	801	717	773	857	956	958	985	995	1,061	1,060	1,032	1,012	1,017	923
United Kingdom	High	114	105	90	100	103	130	153	88	93	88	83	75	80	81	62	56	52	43	47	50	48	50	56
EU-27 ^b	na	551	589	534	543	631	760	863	633	658	713	633	698	777	875	896	929	943	1,018	1,014	982	964	967	868
Austria	High	13	16	13	18	20	29	19	13	17	28	21	24	21	22	21	28	28	22	25	31	20	25	30
Belgium	High	21	19	14	13	23	28	35	17	23	27	29	29	18	30	25	39	28	35	39	48	33	32	39
Denmark	High	27	34	29	35	24	28	25	18	19	18	27	29	39	42	41	41	57	41	49	38	47	43	44
Finland	High	10	17	12	13	11	15	15	12	9	14	15	12	19	14	11	13	20	17	26	21	20	13	19
France	High	101	99	85	120	143	184	219	103	107	129	89	97	112	149	160	168	154	169	202	150	164	151	178
Germany	High	181	187	160	181	217	272	293	259	306	289	257	257	263	273	302	298	311	354	301	281	290	293	241
Hungary	High	6	3	2	4	7	6	3	2	3	3	3	4	5	8	4	3	3	8	12	7	4	4	2
Ireland	High	3	3	1	3	4	6	5	4	2	4	3	4	4	5	5	5	5	7	7	9	8	12	4
Italy	High	55	71	72	27	46	33	77	34	18	23	21	29	36	47	27	29	20	20	25	87	81	72	42
Netherlands	High	38	49	40	27	27	39	41	33	36	35	43	42	62	50	60	75	87	86	78	86	77	100	67
Spain	High	31	32	37	38	28	46	52	75	51	50	43	76	115	125	104	96	98	111	84	67	66	53	40
Sweden	High	20	24	23	29	36	42	31	23	20	33	29	22	21	23	28	29	28	27	24	29	29	28	28
Other Europe	na	277	196	209	170	210	904	776	957	821	279	414	357	435	426	395	381	432	490	355	422	453	487	530
Other Europe-2020 ^b	na	391	301	299	270	312	1,034	929	1,045	914	367	497	432	515	507	457	437	484	533	402	473	501	537	585
Belarus	Upper middle	3	2	0	1	1	1	1	0	1	1	0	2	3	2	3	2	0	1	0	3	2	1	4
Moldova	Lower middle	12	4	7	2	6	7	18	9	7	12	6	9	14	7	3	14	5	16	12	15	13	10	8
Norway	High	3	7	3	7	7	9	10	4	9	5	9	4	4	10	7	6	4	7	8	11	7	8	6
Russia	Upper middle	232	164	177	115	159	827	628	898	754	216	326	281	349	338	320	287	340	383	252	334	361	411	453
Switzerland	High	21	17	21	34	29	33	38	23	34	26	41	34	38	35	40	46	53	53	50	45	48	45	53

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Ukraine	Lower middle	4	2	1	9	6	26	77	20	13	13	28	25	23	32	19	23	24	27	29	13	17	10	2
Asia	na	1,205	1,322	1,330	1,070	944	1,273	2,015	2,043	2,666	2,948	2,967	2,772	3,876	5,251	7,498	8,968	8,760	8,134	8,097	7,390	8,634	11,346	13,428
China	Upper middle	35	32	123	157	86	289	570	629	921	1,000	1,069	1,207	1,924	2,928	4,811	5,990	5,641	5,292	5,272	4,503	5,843	8,593	10,606
India	Lower middle	4	6	8	9	20	31	26	21	25	29	32	27	34	23	34	35	34	34	49	47	44	41	35
Japan	High	891	840	918	659	470	567	706	631	822	867	970	1,023	1,165	1,319	1,291	1,326	1,258	1,254	1,244	1,015	1,072	1,047	1,007
Malaysia	Upper middle	0	0	0	1	0	1	0	1	3	11	2	4	17	13	14	10	25	20	22	22	12	0	3
Singapore	High	4	3	2	3	2	3	7	4	8	6	7	8	8	9	10	16	18	16	16	16	29	23	13
South Korea	High	255	418	256	207	335	351	658	708	818	949	824	430	626	864	1,192	1,383	1,596	1,343	1,296	1,600	1,474	1,470	1,658
Taiwan	High	16	21	21	33	30	29	45	48	66	82	59	71	96	92	138	201	177	161	188	170	144	163	100
Middle East	na	18	27	24	28	31	47	39	22	26	26	26	30	30	39	42	45	48	47	49	52	50	46	45
Israel	High	15	27	22	26	30	45	38	20	25	25	24	28	29	33	38	40	41	43	44	45	38	34	32
Africa	na	11	13	6	9	8	16	10	14	10	7	32	37	25	10	14	12	10	12	13	8	14	7	9
South Africa	Upper middle	10	10	6	8	5	12	7	10	9	5	24	25	20	6	10	6	2	6	5	3	4	4	5
Australia and Oceania	na	146	212	241	339	405	797	819	328	318	262	204	168	137	90	87	91	97	81	72	56	53	46	62
Australia	High	136	201	225	321	380	777	791	305	293	231	166	134	102	60	52	49	54	46	40	32	36	35	57
New Zealand	High	10	11	16	18	25	20	28	23	26	30	38	35	35	29	36	43	44	35	32	24	18	11	5
Unclassified	na	7	40	39	1	1	2	4	3	1	1	5	3	2	3	6	3	7	7	5	5	6	6	5

na = not applicable, metric not calculated at this level.

EU = European Union; UK = United Kingdom.

^a The United Kingdom was a part of the EU for data purposes from 1973 to 2019.^b Beginning in 2020, the United Kingdom was no longer a member of the EU.**Note(s):**

International Patent Documentation (INPADOC) patent families across all patent offices covered in the Worldwide Patent Statistical Database (PATSTAT) are counted according to the year of the first granted patent in the patent family. Patent families are allocated according to patent inventorship information found on the priority patent of the INPADOC patent families. To account for missing ownership information in PATSTAT for some offices, a method designed by de Rassenfosse et al. (2013) is used to fill missing information on priority patents using information in successive filings within the families. Priority patents not indexed in PATSTAT are replaced by the next utility patent(s) in the families according to filing dates. Patent families are fractionally allocated among regions, countries, or economies based on the proportion of residences of all named inventors. Patents are classified under the World Intellectual Property Organization (WIPO) classification of patents, which classifies International Patent Classification (IPC) codes under 35 technical fields. IPC reformed codes take into account changes that were made to the WIPO classification in 2006 under the eighth version of the classification and were used to prepare these data. China includes Hong Kong. Data were extracted in June 2021. Because of data coverage issues for some patent offices in PATSTAT, statistics for some countries may be underestimated partially for some years or across the whole trend. Countries with identified issues include India (missing data) and South Africa (no data for 2018). For Italy, because of data gaps regarding information on granted patents, patent applications are used instead, which slightly overestimates Italy's output and creates a small shift in year for which its output is accounted. As patent authorities become more involved with the European Patent Organisation, these gaps should disappear in the future, strengthening the robustness of statistics for these countries.

Source(s):

National Center for Science and Engineering Statistics; Science-Metrix; PATSTAT, accessed October 2021.