

	RESEARCH FIELDS	AUTHOR	INSTITUTION	JOURNAL	COUNTRY
ESI Thresholds	AGRICULTURAL SCIENCES	387	1,749	1,748	962
	BIOLOGY & BIOCHEMISTRY	852	5,239	6,426	674
Highly Cited Thresholds	CHEMISTRY	1,537	6,239	5,786	1,239
	CLINICAL MEDICINE	1,775	1,915	4,393	6,193
Hot Paper Thresholds	COMPUTER SCIENCE	320	2,959	1,205	332
	ECONOMICS & BUSINESS	342	3,628	1,268	241
	ENGINEERING	463	1,899	1,983	928
	ENVIRONMENT/ECOLOGY	684	3,417	2,825	1,809
	GEOSCIENCES	1,043	4,970	2,290	1,007
	IMMUNOLOGY	884	3,956	7,019	1,695
	MATERIALS SCIENCE	1,119	4,253	1,941	771
	MATHEMATICS	296	3,707	1,358	334
	MICROBIOLOGY	631	4,579	3,502	936
	MOLECULAR BIOLOGY & GENETICS	2,214	10,486	6,716	1,382
	MULTIDISCIPLINARY	509	2,128	162	164
	NEUROSCIENCE & BEHAVIOR	1,178	5,053	7,223	394
	PHARMACOLOGY & TOXICOLOGY	502	2,915	5,254	810
	PHYSICS	7,491	14,716	4,323	1,531
	PLANT & ANIMAL SCIENCE	562	2,292	2,190	1,462
	PSYCHIATRY/PSYCHOLOGY	692	3,540	2,425	285
	SOCIAL SCIENCES, GENERAL	340	1,178	840	1,099
	SPACE SCIENCE	5,207	29,870	1,464	664

Citation Thresholds

View the minimum number of citations required to be ranked as a top author, institution, journal, country, or paper in each of the 22 research fields in Essential Science Indicators

	RESEARCH FIELDS	2007	2008	2009	2010	2011	2012	2013	2014
Citation Rates	ALL FIELDS	23.43	21.26	19.41	17.34	14.68	12.14	9.44	6.74
	AGRICULTURAL SCIENCES	17.69	14.97	13.50	12.14	10.16	8.42	6.65	4.71
Percentiles	BIOLOGY & BIOCHEMISTRY	32.31	29.56	27.19	23.43	19.59	16.07	12.31	8.48
	CHEMISTRY	23.64	23.18	21.30	19.96	17.69	15.53	12.19	9.26
Field Rankings	CLINICAL MEDICINE	25.36	22.82	20.82	18.19	15.33	12.60	9.72	6.81
	COMPUTER SCIENCE	12.91	12.03	11.84	10.25	8.78	6.85	5.42	4.04
	ECONOMICS & BUSINESS	18.29	15.19	13.47	11.55	9.37	6.99	5.19	3.33
	ENGINEERING	12.79	11.77	11.75	10.67	9.28	7.68	6.27	4.56
	ENVIRONMENT/ECOLOGY	28.37	25.80	22.14	19.84	16.39	13.60	10.14	6.99
	GEOSCIENCES	23.46	22.10	20.57	17.62	15.47	12.35	9.52	6.48
	IMMUNOLOGY	38.29	34.89	31.50	27.16	22.78	17.93	14.17	9.85
	MATERIALS SCIENCE	20.59	18.77	17.98	17.45	15.43	13.37	10.80	8.41
	MATHEMATICS	8.53	7.91	7.09	6.33	5.14	4.00	2.97	2.06
	MICROBIOLOGY	31.00	27.65	25.42	22.60	17.67	14.30	11.46	8.12
	MOLECULAR BIOLOGY & GENETICS	53.09	46.11	41.79	36.24	30.26	23.42	18.10	12.05
	MULTIDISCIPLINARY	30.36	24.75	28.98	25.26	22.28	15.67	14.19	7.74
	NEUROSCIENCE & BEHAVIOR	36.93	32.43	29.56	25.77	21.44	17.23	13.03	8.91
	PHARMACOLOGY & TOXICOLOGY	25.58	23.38	20.56	18.28	15.01	12.55	9.89	6.95
	PHYSICS	17.99	17.80	16.52	15.04	12.87	11.53	8.98	6.71

Field Baselines

Baselines are annualized expected citation rates for papers in a research field. View baselines for Citation Rates, Percentiles, and Field Rankings (see the Glossary section for more info)

Glossary

Citation Rates

Average citation rates are calculated for each year of the 10-year period, based on accumulated citations from the year of publication to the most current bimonthly update. Averages are calculated by adding the citation counts of individual papers and dividing by the number of papers. An average for the full 10-year period is also given in All Years.

Field Rankings

Field Rankings displays total papers, total citations received, citations per paper, and Hot and Highly Cited papers in each field.

Percentiles

The term "percentile" designates a citation threshold at or above that at which a fixed fraction of the papers fall. This term is used to denote any fixed fraction of top papers ordered by citation count. The levels we have selected for listing by field and year are 0.01%, 0.1%, 1.0%, 10%, 20%, and 50%.

Research Fronts

A group of Highly Cited papers, referred to as "core papers," in a specialized topic defined by co-citation analysis. Since the assignment of papers to a Research Front is not based on the journal categories used in Essential Science Indicators, Research Fronts offer an alternative classification scheme for Highly Cited papers.

Thresholds required for an entity or paper's inclusion in Essential Science Indicators

	Citation percentile	Years of data examined
Scientists	1%	10
Institutions	1%	10
Countries	50%	10
Journals	50%	10
Highly Cited Papers	1%	10
Hot Papers	.1%	2

Top papers

- **Highly Cited Papers:** The top-cited papers over the last 10 years in 22 scientific fields. Rankings are based on meeting a threshold of the top 1% by field and year based on total citations received.
- **Hot Papers:** Papers published in the past two years that receive enough citations during the most recent bimonthly update to place them in the top 0.1% when compared to peer papers.

Getting help

Click the Help button on any page to get detailed help on features, as well as detailed examples.

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