

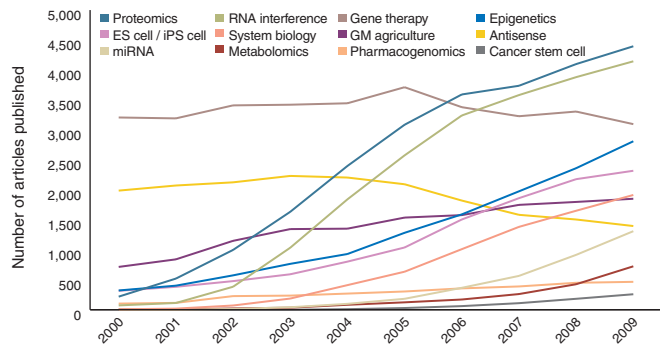
Trends in biotech literature 2009

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Proteomics, small RNA-related and stem cell research continue their rapid growth in the literature, with epigenetics and systems biology showing recent expansion. The past decade has witnessed a boom

Historic trends in biotech fields

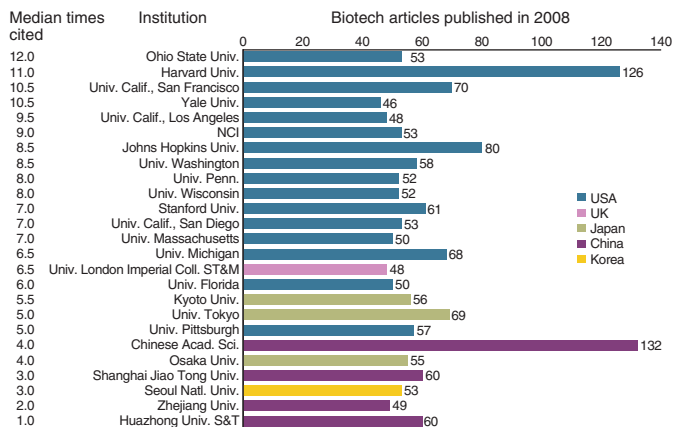
RNA interference, proteomics, microRNA and epigenetics are all expanding quickly.



GM, genetically modified; ES, embryonic stem; iPS, induced pluripotent stem; miRNA, microRNA. Source: National Center for Biotechnology Information, PubMed. Data obtained by using fields (e.g., "gene therapy") as search term. ES cell/iPS cell = ("ES cells" OR "iPS cells" OR "induced pluripotent stem cells" OR "embryonic stem cells") GM agriculture = ("genetically modified" OR "genetically engineered") AND ("food" OR "crop" OR "plant" OR "meat")

Top 25 institutions publishing in biotech

Some Chinese institutions publish a high volume, but papers from US institutions are most cited.



Data obtained by searching 12 predefined 'biotech' fields for articles published in 2008. Source: ISI-Thomson Reuters, Web of Science

Biotech journal impact

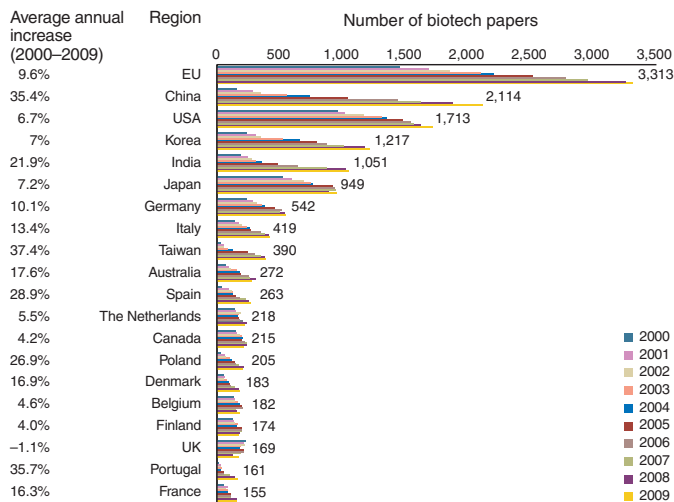
Primary research journal	2009 impact factor
Nature Biotechnology	29.495
Cell Stem Cell	23.563
Nature Chemical Biology	16.058
Molecular Systems Biology	12.125
Genome Research	11.342
PNAS	9.432
Molecular and Cellular Proteomics	8.791
Biotechnology Advances	8.250
Review journal	2009 impact factor
Nature Reviews Drug Discovery	29.059
Annual Review of Pharmacology	22.468
Pharmacological Reviews	17.000
Annual Review of Biomedical Engineering	11.235
Current Opinion in Biotechnology	7.820
Trends in Biotechnology	6.909

Source: ISI-Thomson Reuters, Journal Citation Report

in biotech publications from Asian countries, except for Japan, with Chinese authors now publishing more papers in the area than their US peers but accruing fewer citations.

Number of biotech articles by region

China now publishes more 'biotech' papers than the US.



Source: National Center for Biotechnology Information, PubMed. EU represents the aggregated number of all EU member countries.

Top cited papers by fields

Field	Author	Title	Citation	Number of times cited
iPS cells/ES cells	Takahashi, K. et al.	Induction of pluripotent stem cells from adult human fibroblasts by defined factors.	Cell 131, 861-872 (2008)	1,319
Genomic medicine	Zeggini, E. et al.	Meta-analysis of genome-wide association data and large-scale replication identifies additional susceptibility loci for type 2 diabetes.	Nat. Genet. 40, 638-645 (2008)	376
microRNA	Vasudevan, S., Tong, Y. & Steitz, J.A.	Switching from repression to activation: MicroRNAs can up-regulate translation.	Science 318, 1931-1934 (2008)	362
Next-generation sequencing	Parsons, D.W. et al.	An integrated genomic analysis of human glioblastoma Multiforme.	Science 321, 1807-1812 (2008)	350
Kinase	Karaman, M.W. et al.	A quantitative analysis of kinase inhibitor selectivity.	Nat. Biotechnol. 26, 127-132 (2008)	266
Nanobiotech	Poland, C.A. et al.	Carbon nanotubes introduced into the abdominal cavity of mice show asbestos-like pathogenicity in a pilot study.	Nat. Nanotechnol. 3, 423-428 (2008)	217
Epigenetics	Meissner, A. et al.	Genome-scale DNA methylation maps of pluripotent and differentiated cells.	Nature 454, 766-770 (2008)	211
Cancer stem cell	Quintana, E. et al.	Efficient tumor formation by single human melanoma cells.	Nature 456, 593-598 (2008)	196
Diagnostics	Nagrath, A.M. et al.	Isolation of rare circulating tumor cells in cancer patients by microchip technology.	Nature 450, 1235-1239 (2008)	196
Gene therapy	Maguire, A.M. et al.	Safety and efficacy of gene transfer for N. Engl. J. Med. 358, 2240-2248 (2008)	187	
Imaging	Qian, X. et al.	In vivo tumor targeting and spectroscopic detection with surface-enhanced Raman nanoparticle tags.	Nat. Biotechnol. 26, 83-90 (2008)	179
Food biotechnology	Besselink, M.G.H. et al.	Probiotic prophylaxis in predicted severe acute pancreatitis: a randomized, double-blind, placebo-controlled trial.	Lancet 371, 651-659 (2008)	151
Metabolic engineering	Atsumi, S., Hanai, T. & Liao, J.C.	Nonfermentative pathways for synthesis of branched-chain higher alcohols as biofuels.	Nature 451, 86-89 (2008)	115
Agricultural biotechnology	Ming, R. et al.	The draft genome of the transgenic tropical fruit tree papaya (Carica papaya Linnaeus)	Nature 452, 991-996 (2008)	86
Environmental biotechnology	Frias-Lopez, J. et al.	Microbial community gene expression in ocean surface waters.	Proc. Natl. Acad. Sci. USA 105, 3805-3810 (2008)	77
Synthetic biology	Stricker, J. et al.	A fast, robust and tunable synthetic gene oscillator.	Nature 456, 516-519 (2008)	64

Source: ISI-Thomson Reuters, Web of Science. Citation data as of 7/13/10.

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