Trends in biotech literature 2011

Wayne Peng

High-throughput omic technologies garnered the most citations in 2010; epigenetics and small RNAs are the fastest growing fields, with single-cell technology also on the rise. Research output continues the shift to Asia,

Historic trends in biotech fields

Epigenetics and small RNA research accelerated expansion; gene therapy and anti-sense rebounded.

Research article counts were obtained by search using the fields shown, except "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") and "Single-cell technology" ("single cell"). miRNA, microRNA. Source: National Center for Biotechnology Information, PubMed.

Top 25 institutions publishing in biotech in 2010

Asian institutions account for 4 of the top 25 in terms of biotech publication volume, but papers from US and UK are more highly cited.

We retrieved 21,443 records from the Web of Knowledge by searching the pre-defined keywords ("Historic trends in biotech fields") published in 2010. The corresponding author's affiliated institution was extracted from the data to calculate the number of publications and the median times of citation (from publication date to 5 September 2012, equivalent to 20–32 months after publication). Source: Web of Knowledge, ISI/Thomson-Reuters.

Biotech journal impact

Primary research journal	2011 Impact factor
<i>Cell Stem Cell</i>	25.4
<i>Nature Biotechnology</i>	23.3
<i>Nature Chemical Biology</i>	14.7
<i>Genome Research</i>	13.6
<i>PNAS</i>	9.9
<i>Molecular Systems Biology</i>	8.6
<i>Stem Cells</i>	7.8
Review journal	2011 Impact factor
<i>Nature Reviews Drug Discovery</i>	29.0
<i>Annual Review of Pharmacology</i>	21.6
<i>Pharmacological Reviews</i>	20.2
<i>Annual Review of Biomedical Engineering</i>	12.2
<i>Trends in Biotechnology</i>	9.2
<i>Current Opinion in Biotechnology</i>	7.7

PNAS: Proceedings of the National Academy of Sciences, USA
Source: ISI-Thomson Reuters, Journal Citation Report, 2011.

with the number of biotech papers published from the United States declining. Duke University and MD Anderson Cancer Center enter the list of institutions publishing highest-cited biotech-related research.

Number of biotech articles in 2011 by region

US output decreased, whereas Europe, China, India and South Korea continued rapid growth.

Counts were from the affiliation address indexed in PubMed. EU represents the aggregate number of all member countries. The numbers shown in the graph are 2011 publications. UK data exclude papers funded by the UK Biotechnology and Biological Science Research Council. Source: National Center for Biotechnology Information, PubMed.

Top cited papers published in 2010 by field

Field	Author	Title	Citation	Times cited
Sequencing	Durbin, R.M. <i>et al.</i>	A map of human genome variation from population-scale sequencing.	<i>Nature</i> 467 , 1061–1073 (2010)	779
Metagenomics	Qin, J.J. <i>et al.</i>	A human gut microbial gene catalogue established by metagenomic sequencing.	<i>Nature</i> 464 , 59–65 (2010)	579
microRNA	Guo, H.L. <i>et al.</i>	Mammalian microRNAs predominantly act to decrease target mRNA levels.	<i>Nature</i> 466 , 835–840 (2010)	419
Agricultural biotechnology	Schmutz, J. <i>et al.</i>	Genome sequence of the palaeopolyploid soybean.	<i>Nature</i> 463 , 178–183 (2010)	375
Stem cells	Vierbuchen, T. <i>et al.</i>	Direct conversion of fibroblasts to functional neurons by defined factors.	<i>Nature</i> 363 , 1035–1041 (2010)	363
Computational biology	Trapnell, C. <i>et al.</i>	Transcript assembly and quantification by RNA-Seq reveals unannotated transcripts and isoform switching during cell differentiation.	<i>Nat. Biotechnol.</i> 28 , 511–515 (2010)	334
Epigenetics	Kim, K. <i>et al.</i>	Epigenetic memory in induced pluripotent stem cells.	<i>Nature</i> 467 , 285–290 (2010)	301
Nano-biotechnology	Davis, M.E. <i>et al.</i>	Evidence of RNAi in humans from systematically administered siRNA via targeted nanoparticles.	<i>Nature</i> 464 , 1067–1070 (2010)	259
Drug delivery	Horcajada, P. <i>et al.</i>	Porous metal-organic framework nanoscale carriers as a potential platform for drug delivery and imaging.	<i>Nat. Mater.</i> 9 , 172–178 (2010)	238
Synthetic biology	Gibson, D.G. <i>et al.</i>	Creation of a bacterial cell controlled by a chemically synthesized genome.	<i>Science</i> 329 , 52–56 (2010)	235
Imaging	Li, J.F. <i>et al.</i>	Surface-enhanced nanoparticle-enhanced Raman spectroscopy.	<i>Nature</i> 464 , 392–395 (2010)	233
Single-cell technology	Taniguchi, Y. <i>et al.</i>	Quantifying <i>E. coli</i> proteome and transcriptome with single molecule sensitivity in single cells.	<i>Science</i> 329 , 533–538 (2010)	167
Bioenergy	Steen, E.J. <i>et al.</i>	Microbial production of fatty-acid-derived fuels and chemicals from plant biomass.	<i>Nature</i> 463 , 559–562 (2010)	166
Personalized medicine	Ashley, E.A. <i>et al.</i>	Clinical assessment incorporating a personal genome.	<i>Lancet</i> 375 , 1525–1535 (2010)	161
Microbial genomics	Harris, S.R. <i>et al.</i>	Evolution of MRSA during hospital transmission and intercontinental spread.	<i>Science</i> 327 , 469–474 (2010)	143

Source: ISI-Thomson Reuters Web of Science. Citation data as of 9/5/12.

Wayne Peng is former locum editor, *Nature*