

Description

Clarivate Analytics and the Chinese Academy of Sciences (CAS) collaborated and released their fourth annual global scientific report "*Research Fronts 2017*" on November 2, 2017, at a joint forum held at the Chinese Academy of Sciences, Beijing. The report, currently available online, identifies the 100 most significant and 43 emerging specialty areas in global scientific research. Spanning across 10 broad areas of sciences and social sciences, the overall report is based on 9,690 scientific literature metric analyses. The data sets obtained from the Essential Science Indicators (ESI) database, range from the period of 2011 to 2016. By definition, the *Research Fronts* is a specialized form of a report which has a number of highly cited papers reflecting a common theme (may be experimental or theoretical/conceptual). The *Research Fronts* 2016 report is also available online.

These organizations used ESI for compilations of scientific performance metrics on scholarly publications, and Web of Science for citation data. The joint-report contains 27 *Research Fronts* selected as specialty areas by the Institute of Science and Development of the CAS. For instance, two of the key *Research Fronts* this year include Nobel Prize-winning works in Chemistry and Physics.

What Do They Say?

Robert Lemmond, chief commercial officer of Clarivate Analytics, on behalf of the company, expressed his pleasure on collaborating with the CAS to release the *Research Fronts* 2017. He also said that the report aims to provide a solid foundation for key research trends and new areas of study, all over the world. This collaboration may thereby provide a robust platform that assists researchers, funding agencies, and policymakers to make informed decisions. In China, the report can provide insights into the country's present and potential performance as a leader in science. According to Professor Bai Chunli, President of the CAS, the report marks a milestone of continuous effort in China to engage the international scientific community. This also includes reaffirmation of the role of CAS as China's foremost think tank on global science and technology. Continued collaborations between Clarivate Analytics and CAS may transform the annual *Research Fronts* report into a global resource.

Other Reports Released by this Collaboration

To highlight national impact in global scientific research, these two organizations jointly published another analytical report. This report comparatively examines the national performance across the 143 *Research Fronts*

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to reflect China's contribution and global citation impact. Accordingly, USA is leading in the field of global research, followed by China in second place, ahead of UK and Germany. Prolific research areas in China include Chemistry, Materials Science, Mathematics, Engineering, and Computer Science. Analytics further indicate that China leads globally on research covering Mathematics, Engineering, and Computer Science.

Key Features of *Research Fronts* 2017

Of the delineated 100 *Research Fronts*, 20 noteworthy research areas include genome editing, DNA metabarcoding, and nanoarchitectonics. Similarly, of the 43 emerging areas, seven noteworthy topics include climate change, Zika virus prevention, and binary black hole formation. Incidentally, research on binary black holes relates to the work that received the 2017 Nobel Prize in Physics. Similarly, the research front on cryo-electron microscopy received the 2017 Nobel Prize in Chemistry. The full 2017 report is available online in Chinese and English for open access download. The key research topics (20 Hot *Research Fronts* and 7 Emerging *Research Fronts*) along with some of the research areas that appear on *Research Fronts* 2017 are listed below in Table 1. A comprehensive evaluation of the global impact of scientific research is available online for further reading.

Key Research Topics	Hot Research Front (Overview)	Emerging Research Front (C
1. Agricultural plant and animal sciences	Research on genome editing in plants and the utility in crops Regulation mechanism and function of DNA Methylation in plants	Analysis of tree rings and its in environment and climate c
2. Ecology and environmental sciences	The formation mechanism of east-central China's heavy haze pollution in January 2013 Monitoring of biodiversity using environmental DNA metabarcoding	
3. Geosciences	Precambrian geological evolution of the North China Craton Types and characterization of gas shale pore systems	Highly siderophile and strong chalcophile elements in high-geochemistry
4. Clinical Medicine	Radionuclides-labeled PSMA PET for diagnosis and treatment of prostate cancer Clinical whole-exome sequencing for the diagnosis of genetic diseases	Zika virus infections and prev
5. Biological Sciences	Application of cryo-electron microscopy in 3D Structure Analysis of Biological Macromolecules	Introgression of mosquito an phylogenetic patterns

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Application of chromatin conformation capture and its derivative technology based on high-throughput		
6. Chemistry and Materials Science	Cp*Co(III)-catalyzed C-H activation reactions	Non-noble metal-based bifun electrocatalysts for overall w
	Nanoarchitectonics	
7. Physics	Lepton-flavor-violating decays of the Higgs boson and B meson semileptonic decays	Standard Model Interpretatio GeV Diphoton
	Tetraquark and pentaquark states	
8. Astronomy and Astrophysics	Exoplanets detection and characterization with Kepler	Formation and merger of dou compact objects (e.g. binary
	SDO mission and performance and other heliophysics research	
9. Mathematics, Computer Science and Engineering	Second strain gradient theory and its application	
	Energy storage device based on advanced hybrid supercapacitor	
10. Economics, psychology and other social sciences	Genomics research on the origins, evolution, and migration of human beings	
	Social investigation of human papillomavirus (HPV) vaccination	

Do you think this annual global report is beneficial for the young researchers? If yes, then how? Please let us know your thoughts in the comments section below!

Category

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