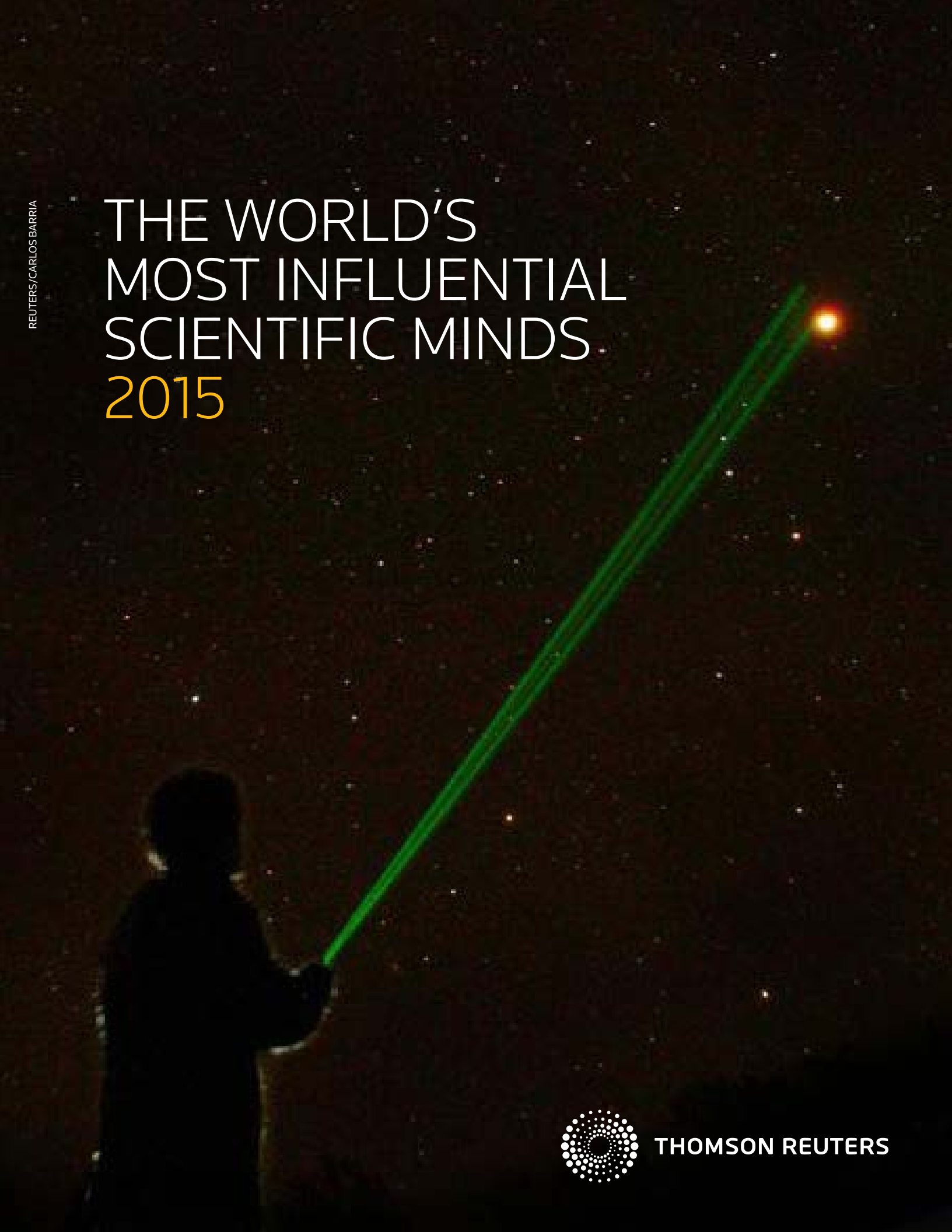


REUTERS/CARLOS BARRIA

THE WORLD'S MOST INFLUENTIAL SCIENTIFIC MINDS 2015

THOMSON REUTERS

"Science is a way of life. Science is a perspective. Science is the process that takes us from confusion to understanding in a manner that's precise, predictive, and reliable – a transformation, for those lucky enough to experience it, that is empowering and emotional."

— Brian Greene (1963–)
Theoretical physicist and author

Cover Image:
A Chilean projects a laser during a moon eclipse at Mamayuta Observatory in Chile.

A MEASURE OF SUCCESS

It's estimated there are about nine million researchers in the world today who produce upwards of two million reports each year. That's an enormous volume of material that creates a dilemma when trying to identify the scientists whose work has earned distinction in the eyes of the scientific community.

One measure for this is culling the authors whose work has consistently wielded outsized influence in the form of citations from fellow scientists. When peers read and cite the work they find the most useful and significant, it is a concrete, quantifiable marker of esteem. One measure of scientific eminence is to identify authors who have been prolific in the production of highly cited reports, according to the unique store of statistics maintained by Thomson Reuters.

This report is an updated listing of the elite authors officially designated as Highly Cited Researchers, based on their respective output of top-cited papers in their fields. Covering an 11-year period (and presenting a special subset of "hot" researchers whose very recent work has won distinction in the form of citations), it features the scientists who have won acclaim and approval within a key population: their peers.

Emmanuel Thiveaud

Vice-President
Head of Government Solutions
& Research Analytics
Thomson Reuters IP & Science Business

INTRODUCTION

Who are some of the best and brightest scientific minds of our time?

Thomson Reuters answers this question, as it has in the past, by analyzing data from its Web of Science and InCites platforms to determine which researchers have produced published works that are most cited by their peers.

The some 3,000 highly cited researchers listed in this report were selected by analyzing citation data over a recent 11-year period (2003-2013) and identifying those who published the greatest number of highly cited papers. We also identified hot researchers, authors of papers published in a recent two-year period (2013-2014) that were cited immediately after publication at extraordinarily high levels. Highly cited papers rank in the top 1% and hot papers rank in the top .1% of the citation distributions of comparable papers, those matched for field and age.

Both hot papers and highly cited papers are featured in the Essential Science Indicators database of Thomson Reuters, presented within the InCites platform.

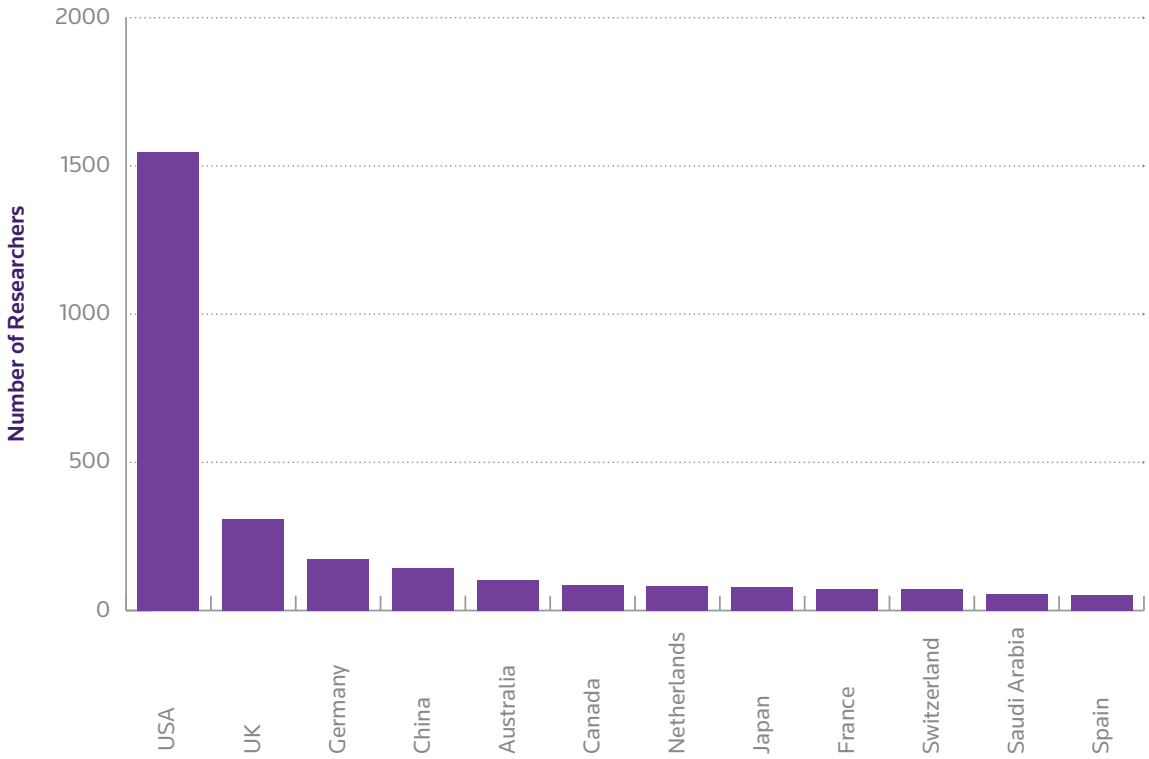
It is precisely this type of recognition—by peers in the form of citations given—that makes highly cited or hot researcher status meaningful. The identification of these individuals is rooted in the collective, objective opinions of field experts within the scientific community.

For time to time certain arguments appear, sometimes voiced by scientists themselves, on the negative or corrosive effects in the research community of drawing attention to specific persons through awards or special designations such as being a highly cited or hot researcher. Such social conventions, however, reflect a reality that is indisputable: human talent is unequally distributed in research just as in the arts or athletics. In fact, Diana Hicks and J. Sylvan Katz, science policy analysts and scientometricians, have argued that lack of recognition and relative underfunding of elite scientists likely result in "the suppression of incentives for the very best scientists." They add: "The consequences for the performance of a national research system may be substantial" (D. Hicks, J.S. Katz, "Equity and Excellence in Research Funding," Minerva, 49 (2): 137-151, June 2011). Also, it should be understood that elite status is continually changing as researchers rise and fall in their influence throughout the years. Monitoring such changes, even annually, has an interest all its own.

Everyone acknowledged in this book is a person of influence in the sciences and social sciences. They are often the researchers now on the cutting edge of their specialties. They are performing and publishing work that their peers recognize as central to the advancement of their science. **These researchers are, thus, among the most influential scientific minds of our time.**

National Representation

Highly Cited Researchers: Most-Represented Countries

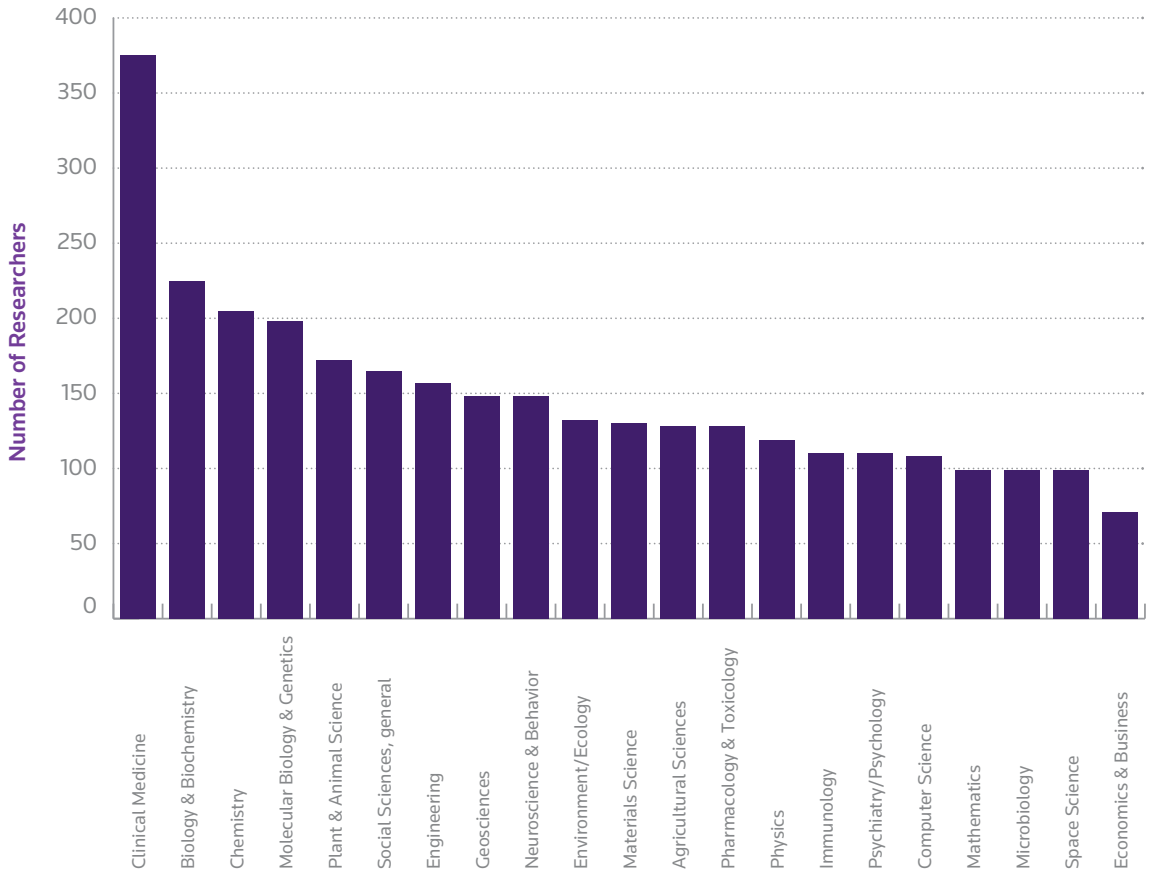


Source: Thomson Reuters Web of Science & InCites

The most-represented nations among the 3,126 Highly Cited Researchers, according to the authors' primary affiliations as listed on their Highly Cited Papers published between 2003 and 2013. Nearly half of the researchers, as the graph shows, are affiliated with US-based institutions. This far outstrips the representation of the other nations shown, including the UK, Germany and China. Subsequent graphs treat the authors' specialty areas as well as the most-represented institutions.

Specialty Areas

Highly Cited Researchers: Breakdown by Field

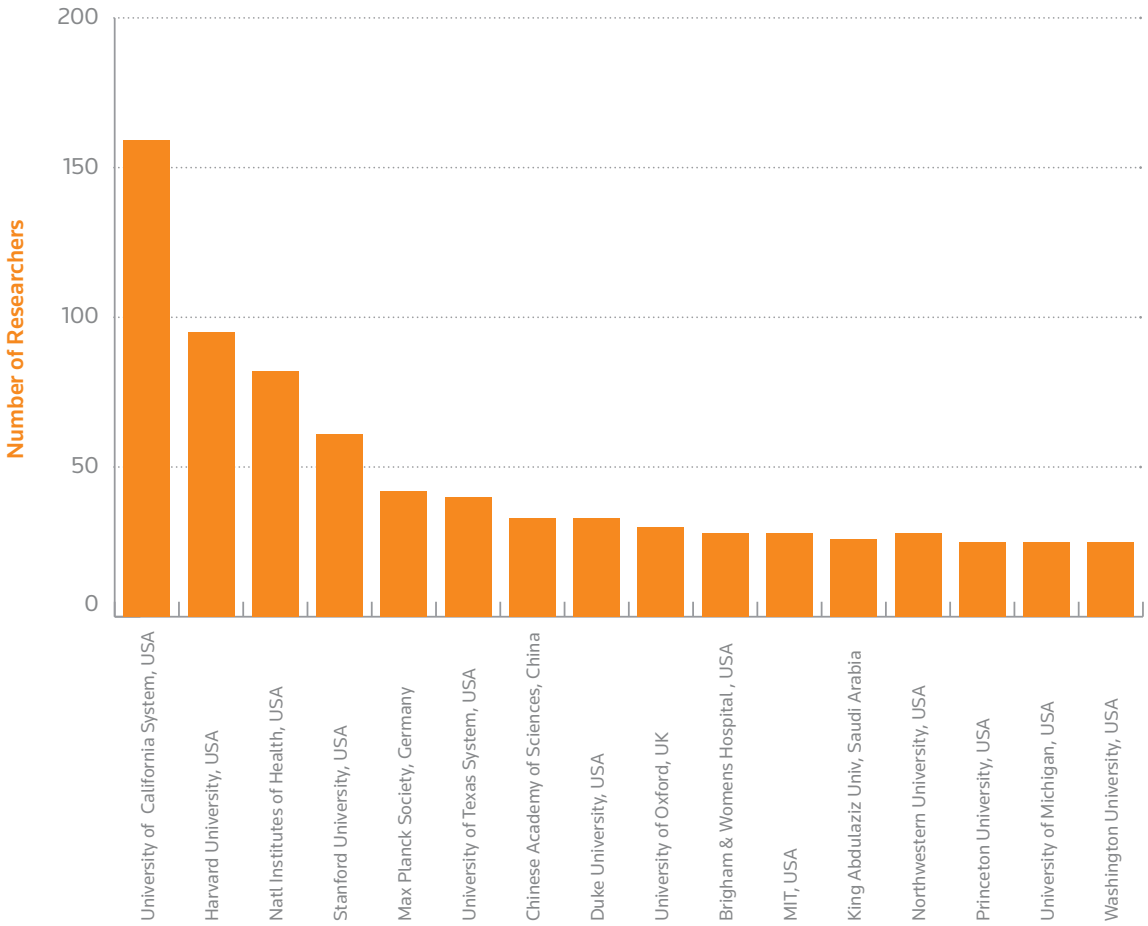


Source: Thomson Reuters Web of Science & InCites

The number of Highly Cited Researchers respectively assigned to each of 21 main specialty areas, based on a preponderance of the specific journals in which the authors published their Highly Cited Papers between 2003 and 2013 (each author was assigned to only one category). As might be expected, the large, populous and active life-sciences fields of Clinical Medicine, Biology & Biochemistry, and Molecular Biology & Genetics were notably prolific in producing Highly Cited Researchers. By contrast, smaller fields such as Computer Science, Mathematics and Economics & Business, with their comparatively lower numbers of researchers and journals, produced proportionally fewer such authors.

Predominant Institutions

Highly Cited Researchers: Most-Represented Institutions



Source: Thomson Reuters Web of Science & InCites

Institutions with the highest numbers of Highly Cited Researchers, based on the authors' primary affiliations as listed on their Highly Cited Papers published between 2003 and 2013. The University of California System is most prolific in this regard, with upwards of 160 highly cited authors. Treating each of the system's component institutions separately would produce a significantly different picture from the other large groupings such as the University of Texas System, the US National Institutes of Health, the Max Planck Society, etc. Meanwhile, even in the face of competition from these large, combined entities, the single institutions of Harvard and Stanford registered strongly in their representation.

Methodology

Thomson Reuters Web of Science and InCites include an array of publication and citation-based data sets for monitoring research performance. One resource within InCites is Essential Science Indicators, which presents exclusive data on Hot Papers, which are recently published papers that are accruing citations at a clip markedly above those of comparable type and age, and Highly Cited Papers, which are papers ranked in the top 1% by citations for their field and year of publication.

The Thomson Reuters Highly Cited Researchers are selected based on the number of highly cited papers they produced over the 11 year period, 2003—2013, in each of some 21 broad fields used in Essential Science Indicators. Some researchers appear in more than one field. The hottest researchers are identified based on number of Hot Papers produced over the last two years, 2013—2014.

Analysts from Thomson Reuters used the company's Web of Science platform, the premier search and discovery environment for the sciences, social sciences, and arts and humanities, alongside InCites, its leading web-based scientific evaluation and benchmarking platform, to identify some of the most influential scientific minds of 2015.

Further information on the background to generating this list and a detailed explanation of the methodology used may be found at: highlycited.com/purpose/ and highlycited.com/methodology/

LAST NAME	FIRST NAME	PRIMARY AFFILIATION	COUNTRY/REGION
Alivisatos	A Paul	Univ Calif Berkeley	USA
Atwater	Harry A	Caltech	USA
Avouris	Phaedon	IBM	USA
Awschalom	David D	Univ Chicago	USA
Balandin	Alexander A	Univ Calif Riverside	USA
Berger	Claire	Georgia Inst Technol	USA
Blake	Peter	Univ Manchester	UK
Blatt	Rainer	Austrian Acad Sci	Austria
Bloch	Immanuel	Univ Munich	Germany
Bud'ko	Sergey L	Ames Natl Lab	USA
Canfield	Paul C	Iowa State Univ	USA
Castro-Neto	Antonio H	Natl Univ Singapore	Singapore
Cava	Robert J	Princeton Univ	USA
Chen	Gen-Fu	Chinese Acad Sci	China
Chin	Cheng	Univ Chicago	USA
Christodoulides	Demetrios N	Univ Cent Florida	USA
Chu	Jiun-Haw	Stanford Univ	USA
Cirac	Juan Ignacio	Max Planck Inst Quantum Opt	Germany
Cui	Yi	Stanford Univ	USA
Dai	Hongjie	Stanford Univ	USA
Dai	Xi	Chinese Acad Sci	China
Das Sarma	Sankar	Univ Sys Maryland	USA
De Heer	Walter A	Georgia Inst Technol	USA
Dekker	Cees	Delft Univ Technol	Netherlands
Deng	Fu-Guo	Beijing Normal Univ	China
Dresselhaus	Mildred S	MIT	USA
Ebbesen	Thomas W	Univ Strasbourg	France
Eisaki	Hiroshi	Natl Inst Adv Ind Sci & Technol	Japan
Esslinger	Tilman	ETH Zurich	Switzerland
Falko	Vladimir I	Univ Manchester	UK
Fan	Shanhui	Stanford Univ	USA
Fang	Zhong	Chinese Acad Sci	China
Ferrari	Andrea C	Univ Cambridge	UK
Fisher	Ian R	Stanford Univ	USA
Forrest	Stephen R	Univ Michigan	USA
Friend	Richard H	Univ Cambridge	UK
Garcia de Abajo	F Javier	ICFO Institute of Photonic Sciences	Spain
Garcia-Vidal	Francisco J	Univ Autonoma Madrid	Spain
Geim	Andre K	Univ Manchester	UK
Girvin	Steven M	Yale Univ	USA
Gossard	Arthur C	Univ Calif Santa Barbara	USA
Graetzel	Michael	Swiss Fed Inst Technol Zurich	Switzerland
Grimm	Rudolf	Univ Innsbruck	Austria
Guinea	Francisco	IMDEA Nanoscience Inst	Spain
Halas	Naomi J	Rice Univ	USA

LAST NAME	FIRST NAME	PRIMARY AFFILIATION	COUNTRY/REGION
Hansch	Theodor W	Univ Munich	Germany
Hasan	M Zahid	Princeton Univ	USA
Heinz	Tony F	Stanford Univ	USA
Hone	James	Columbia Univ	USA
Hor	Yew San	Missouri Univ Sci & Technol	USA
Hussain	Zahid	Univ Calif Berkeley	USA
Javey	Ali	Univ Calif Berkeley	USA
Jelezko	Fedor	Univ Ulm	Germany
Jin	Deborah S	Univ Colorado System	USA
Jorio	Ado	Univ Fed Minas Gerais	Brazil
Katsnelson	Mikhail I	Radboud Univ Nijmegen	Netherlands
Ketterle	Wolfgang	MIT	USA
Kim	Philip	Harvard Univ	USA
Kimble	H Jeff	Caltech	USA
Kippenberg	Tobias J	Ecole Polytech Fed Lausanne	Switzerland
Kong	Jing	MIT	USA
Koschny	Thomas	Ames Natl Lab	USA
Kouwenhoven	Leo P	Delft Univ Technol	Netherlands
Krausz	Ferenc	Max Planck Inst Quantum Opt	Germany
Kresse	Georg	Univ Vienna	Austria
Lee	Dung-Hai	Univ Calif Berkeley	USA
Lewenstein	Maciej	ICFO Inst Ciencies Foton	Spain
Lieber	Charles M	Harvard Univ	USA
Lipson	Michal	Cornell Univ	USA
Louie	Steven G	Univ Calif Berkeley	USA
Lukin	Mikhail D	Harvard Univ	USA
Luo	Jian-Lin	Chinese Acad Sci	China
MacDonald	Allan H	Univ Texas Austin	USA
Majumdar	Arun	Stanford Univ	USA
Maldacena	Juan	Inst Adv Study	USA
Marcus	Charles M	Niels Bohr Inst	Denmark
McEuen	Paul	Cornell Univ	USA
Meyer	Jannik C	Univ Vienna	Austria
Morozov	Sergey V	Russian Acad Sci, Russia	Russia
Myers	Robert C	Perimeter Inst Theoret Phys	Canada
Nagaosa	Naoto	RIKEN	Japan
Ni	Ni	Univ Calif Los Angeles	USA
Nojiri	Shin'Ichi	Nagoya Univ	Japan
Nordlander	Peter	Rice Univ	USA
Novoselov	Konstantin S	Univ Manchester	UK
Odintsov	Sergei D	ICREA and ICE(CSIC)	Spain
Ong	Nai Phuan	Princeton Univ	USA
Pendry	John B	Imperial Coll London	UK
Peres	Nuno MR	Univ Minho	Portugal
Qi	Xiao-Liang	Stanford Univ	USA

LAST NAME	FIRST NAME	PRIMARY AFFILIATION	COUNTRY/REGION
Ralph	Daniel C	Cornell Univ	USA
Ramesh	Ramamoorthy	Univ Calif Berkeley	USA
Robertson	John	Univ Cambridge	UK
Rogers	John A	Univ Illinois	USA
Ruoff	Rodney S	Ulsan Natl Inst Sci Tech	South Korea
Schatz	George C	Northwestern Univ	USA
Schedin	Fredrik	Univ Manchester	UK
Schoelkopf	Robert J	Yale Univ	USA
Scuseria	Gustavo E.	Rice Univ	USA
Segev	Mordechai	Technion Israel Inst Technol	Israel
Shen	Zhi-Xun	Stanford Univ	USA
Smith	David R	Duke Univ	USA
Soukoulis	Costas M	Iowa State Univ	USA
Spaldin	Nicola A	ETH Zurich	Switzerland
Tokura	Yoshinori	RIKEN Ctr Emergent Matter Sci CEMS	Japan
Uchida	Shin-ichi	Univ Tokyo	Japan
Vahala	Kerry J	Caltech	USA
Wang	Nan-Lin	Peking Univ	China
Wang	Zhong Lin	Georgia Inst Technol	USA
Wegener	Martin	Karlsruhe Inst Technol	Germany
Xia	Younan	Georgia Inst Technol	USA
Yacoby	Amir	Harvard Univ	USA
Yang	Peidong	Univ Calif Berkeley	USA
Ye	Jun	Univ Colorado System	USA
Zettl	Alex	Univ Calif Berkeley	USA
Zhang	Shoucheng	Stanford Univ	USA
Zhang	Xiang	Univ Calif Berkeley	USA
Zoller	Peter	Austrian Acad Sci	Austria
Zwierlein	Martin W	MIT	USA