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FEATURED ANALYSIS, March/April 2009

The Hottest Research of 2007-08

 by *Christopher King, Editor*


It's time again for *Science Watch* from **Thomson Reuters** to take its annual look back at the hottest of recent research. The **first table** below lists the researchers who, during 2008, accounted for the the highest numbers of Hot Papers published over the preceding two years. The **second table** features the papers published during 2008 (aside from reviews) that were most cited by year's end.

Among the scientists, none fielded more Hot Papers during 2008 than **Kuo-Chen Chou** of the Gordon Life Sciences Institute and Shanghai Jiao Tong University. His 17 Hot Papers published since 2007 cover a variety of sequencing tools for predicting protein location (e.g., "Euk-mPloc: a fusion classifier for large-scale eukaryotic protein subcellular location prediction by incorporating multiple sites," *J. Proteome Res.*, 6[5]: 1728-34, 2007). Thirteen of these reports were coauthored with another of the featured scientists, Hong-Bin Shen.

Rudolf Jaenisch of the Whitehead Institute at MIT, who's interviewed in this issue, contributed to 13 Hot Papers, primarily on reprogramming fibroblast cells to a pluripotent state comparable to embryonic stem cells.

The list is also notable for the number of researchers previously interviewed in these pages or featured at the *ScienceWatch.com* site: Georgia Tech's **Zhong Lin Wang** (November/December 2008), whose Hot Papers report on nanogenerators and other materials; **Andre K. Geim** (July/August 2008), who, with Manchester colleague **Konstantin Novoselov**, has published recent Hot Papers on **graphene**; **Virginia M.-Y. Lee** (January/February 2007), who has contributed to nine Hot Papers on neurodegenerative disease, joined by coauthor and Penn colleague John Q. Trojanowski; and **Salim Yusuf** (September/October 1993) (**see also**), whose Hot Papers report on therapy in cardiovascular medicine.

Ji-Huan He (**see also**: 1 | 2) has written on the variational iteration method and other mathematical concepts. Chemist Benjamin List's Hot Papers focus chiefly on asymmetric catalysis. Donald P. Schneider has made the most of his contribution to highly cited reports from the Sloan Digital Sky Survey, with investigations of quasars and other phenomena. And Hiroaki Ohnishi, this year's sole high-energy physicist, is a member of the PHENIX Collaboration, studying quark-gluon plasma and other states of matter.

The list of 2008's most-cited papers is striking for the prominence of physical-sciences reports in the top spots—especially those on iron-based **superconductors**, a topic that accounts for the #1 paper and three others in the top ten (#5, #6, #7). Theoretical physics, and specifically string theory, also registers strongly, with several papers examining recent refinements to M-theory (#9, #12, #29, #34, #35, #40; **see also** Physics correspondent Simon Mitton's **Top Ten**

Read *ScienceWatch.com* Interviews with:

Kuo-Chen Chou



Andre K. Geim



Ji-Huan He
(**see also**:
1 | 2)



Rudolf Jaenisch



Virginia M.-Y. Lee



Konstantin Novoselov



Zhong Lin Wang



column in this issue).

Overall, the *New England Journal of Medicine* makes the same strong showing as in recent years, accounting for 12 of the 42 papers.

And one 2008 paper, although technically a review and therefore excluded from the list, certainly merits an honorable mention. "A short history of SHELX," from *Acta Crystallographica A* (G.M. Sheldrick, 64: 112-22, January 2008) was cited a whopping 3,000 times by December 2008, demonstrating that this system of programs for small-molecule determination is still finding wide application after more than 30 years in existence. ■

Salim
Yusuf
(see
also)



Christopher King is the Editor of the *Science Watch*® Newsletter, Thomson Reuters.

Scientists with Multiple Hot Papers

Name	Institution	Field	Number of Hot Papers
Kuo-Chen Chou	Gordon Life Sciences Institute	Biochemistry/Bioinformatics	17
Rudolf Jaenisch	Whitehead Institute, MIT	Biochemistry	13
Konstantin Novoselov	University of Manchester	Materials	13
Hong-Bin Shen	Shanghai Jiao Tong Univ.	Biochemistry/Bioinformatics	13
Andre K. Geim	University of Manchester	Materials	12
Ji-Huan He	Donghua University	Mathematics	10
Benjamin List	Max Planck Inst. Coal Res.	Chemistry	10
Salim Yusuf	McMaster University	Cardiology/Epidemiology	9
Donald P. Schneider	Pennsylvania State University	Space Science	9
Zhong Lin Wang	Georgia Institute of Technology	Materials	9
Virginia M.-Y. Lee	University of Pennsylvania	Neuroscience	9
John Q. Trojanowski	University of Pennsylvania	Neuroscience	9
Hiroaki Ohnishi	RIKEN Nishina Center	Physics	9

SOURCE: Thomson Reuters *Hot Papers Database*.

The Red-Hot Research Papers of 2008

Rank	Paper	Citations
1	Y. Kamihara, <i>et al.</i> , "Iron-based superconductor with La[O _{1-x} F _x]FeAs (x = 0.05-0.12) with T _c = 26 K," <i>J. Am. Chem. Soc.</i> , 130(11): 3296-7, 19 March 2008.	249
2	I.H. Park, <i>et al.</i> , "Reprogramming of human somatic cells to pluripotency with defined factors," <i>Nature</i> , 451(7175): 141-6, 10 January 2008.	116
3	F.M. Brunkhorst, <i>et al.</i> , "Intensive insulin therapy and pentastarch resuscitation in severe sepsis," <i>New Engl. J. Med.</i> , 358(2): 125-39, 10 January 2008.	112
4	M. Nakagawa, <i>et al.</i> , "Generation of induced pluripotent stem cells without Myc from mouse and human fibroblasts," <i>Nature Biotech.</i> , 26(1): 101-6, January 2008.	102
5	X.H. Chen, <i>et al.</i> , "Superconductivity at 43 K in SmFeAsO _{1-x} F _x ," <i>Nature</i> , 453(7196): 761-2, 5 June 2008.	97
6	C. de la Cruz, <i>et al.</i> , "Magnetic order close to superconductivity in the iron-based layered LaO _{1-x} F _x FeAs systems," <i>Nature</i> , 453(7197): 899-902, 12 June 2008.	91

7	Z.A. Ren, <i>et al.</i> , " Superconductivity at 55K in iron-based F-doped layered quaternary compound $\text{Sm}[\text{O}_{1-x}\text{F}_x]\text{FeAs}$, " <i>Chinese Phys. Lett.</i> , 25(6): 2215-6, June 2008.	85
8	S. Yusuf, <i>et al.</i> , " Telmisartan, ramipril, or both in patients at high risk for vascular events, " <i>New Engl. J. Med.</i> , 358(15): 1547-59, 10 April 2008.	84
9	J. Bagger, N. Lambert, " Gauge symmetry and supersymmetry of multiple M2-branes, " <i>Phys. Rev. D</i> , 77(6): no. 065008, 7 March 2008.	79
10	E.H. Turner, <i>et al.</i> , " Selective publication of antidepressant trials and its influence on apparent efficacy, " <i>New Engl. J. Med.</i> , 358(3): 252-60, 17 January 2008.	77
11	H. Takahashi, <i>et al.</i> , " Superconductivity at 43K in an iron-based layered compound $\text{LaO}_{1-x}\text{F}_x\text{FeAs}$, " <i>Nature</i> , 453(7193): 376-8, 15 April 2008.	76
12	J. Bagger, N. Lambert, " Comments on multiple M2 branes, " <i>J. High Energy Phys.</i> , 2: no. 105, February 2008.	72
13	J.K. Adelman-McCarthy, <i>et al.</i> , " The Sixth Data Release of the Sloan Digital Sky Survey, " <i>Astrophys. J. Suppl. Ser.</i> , 175(2): 297-313, April 2008.	71
14	J.J.P. Kastelein, <i>et al.</i> , " Simvastatin with or without ezetimibe in familial hypercholesterolemia, " <i>New Engl. J. Med.</i> , 358(14): 1431-3, 3 April 2008.	69
15	H.C. Gerstein, <i>et al.</i> , " Effects of intensive glucose lowering in type 2 diabetes, " <i>New Engl. J. Med.</i> , 358(24): 2545-59, 12 June 2008.	65
16	P. Gaede, <i>et al.</i> , " Effect of a multifactorial intervention on mortality in type 2 diabetes, " <i>New Engl. J. Med.</i> , 358(6): 580-91, 7 February 2008.	64
17	C.L. Sprung, <i>et al.</i> , " Hydrocortisone therapy for patients with septic shock, " <i>New Engl. J. Med.</i> , 358(2): 111-24, 10 January 2008.	64
18	A. Lievre, <i>et al.</i> , " KRAS mutations as an independent prognostic factor in patients with advanced colorectal cancer treated with cetuximab, " <i>J. Clin. Oncol.</i> , 26(3): 374-9, 20 January 2008.	55
19	A. Patel, <i>et al.</i> , " Intensive blood glucose control and vascular outcomes in patients with type 2 diabetes, " <i>New Engl. J. Med.</i> , 358(24): 2560-72, 12 June 2008.	52
20	J. Dong, <i>et al.</i> , " Competing orders and spin-density-wave instability in $\text{La}(\text{O}_{1-x}\text{F}_x)\text{FeAs}$, " <i>EPL-Europhys. Lett.</i> , 83(2): no. 27006, July 2008.	51
21	X.L. Li, <i>et al.</i> , " Chemically derived, ultrasmooth graphene nanoribbon semiconductors, " <i>Science</i> , 319(5867): 1229-32, 29 February 2008.	51
22	S.L. Hauser, <i>et al.</i> , " B-cell depletion with rituximab in relapsing-remitting multiple sclerosis, " <i>New Engl. J. Med.</i> , 358(7): 676-88, 14 February 2008.	51
23	A.I. Hochbaum, <i>et al.</i> , " Enhanced thermoelectric performance of rough silicon nanowires, " <i>Nature</i> , 451(7175): 163-7, 10 January 2008.	51
24	E. Zeggini, <i>et al.</i> , " Meta-analysis of genome-wide association data and large-scale replication identifies additional susceptibility loci for type 2 diabetes, " <i>Nature Genetics</i> , 40(5): 638-45, May 2008.	50
25	S. Kathiresan, <i>et al.</i> , " Six new loci associated with blood low-density lipoprotein cholesterol, high-density lipoprotein cholesterol or triglycerides in humans, " <i>Nature Genetics</i> , 40(2): 189-97, February 2008.	49
26	C.J. Willer, <i>et al.</i> , " Newly identified loci that influence lipid concentrations and risk of coronary artery disease, " <i>Nature Genetics</i> , 40(2): 161-9, February 2008.	49
27	S. Mallal, <i>et al.</i> , " HLA-B*5701 screening for hypersensitivity to abacavir, " <i>New Engl. J. Med.</i> , 358(6): 568-79, 7 February 2008.	49
28	N.S. Beckett, <i>et al.</i> , " Treatment of hypertension in patients 80 years of age or older, " <i>New Engl. J. Med.</i> , 358(18): 1887-98, 1 May 2008.	48
29	J. Distler, <i>et al.</i> , " M2-branes on M-folds, " <i>J. High Energy Phys.</i> , 5: no. 38, May 2008.	47
30	T.E. Thorgeirsson, <i>et al.</i> , " A variant associated with nicotine dependence, lung cancer and peripheral arterial disease, " <i>Nature</i> , 452(7187): 638-42, 3 April 2008.	47
31	S.F. Tavazoie, <i>et al.</i> , " Endogenous human microRNAs that suppress breast cancer metastasis, " <i>Nature</i> , 451(7175): 147-52, 10 January 2008.	47
32	Z.A. Ren, <i>et al.</i> , " Superconductivity and phase diagram in iron-based arsenic-oxides ReFeAsO_{1-d} (Re = rare-earth metal) without fluorine doping, " <i>EPL-Europhys. Lett.</i> , 83(1): no 17002, July 2008.	46

33	I. Kirsch, <i>et al.</i> , "Initial severity and antidepressant benefits: A meta-analysis of data submitted to the Food and Drug Administration," <i>PloS Med.</i> , 5(2): 260-8, February 2008.	46
34	M. Van Raamsdonk, "Comments on the Bagger-Lambert theory and multiple M2-branes," <i>J. High Energy Phys.</i> , 5: no. 105, May 2008.	45
35	A. Gustavsson, "Selfdual strings and loop space Nahm equations," <i>J. High Energy Phys.</i> , 4: no. 083, April 2008.	45
36	R.J. Hung, <i>et al.</i> , "A susceptibility locus for lung cancer maps to nicotinic acetylcholine receptor subunit genes on 15q25," <i>Nature</i> , 452(7187): 633-7, 3 April 2008.	45
37	J. Angle, <i>et al.</i> , "First results from the XENON10 dark matter experiment at the Gran Sasso National Laboratory," <i>Phys. Rev. Lett.</i> , 100(2): no. 021303, 18 January 2008.	45
38	T. Walsh, <i>et al.</i> , "Rare structural variants disrupt multiple genes in neurodevelopmental pathways in schizophrenia," <i>Science</i> , 320(5875): 539-43, 25 April 2008.	43
39	S.V. Morozov, <i>et al.</i> , "Giant intrinsic carrier mobilities in graphene and its bilayer," <i>Phys. Rev. Lett.</i> , 100(1): no. 016602, 11 January 2008.	43
40	P.M. Ho, "M2 to D2 revisited," <i>J. High Energy Phys.</i> , 7: no. 003, July 2008.	42
41	L.A. Weiss, <i>et al.</i> , "Association between microdeletion and microduplication at 16p11.2 and autism," <i>New Engl. J. Med.</i> , 358(7): 667-75, 14 February 2008.	42
42	X.X.O. Yang, <i>et al.</i> , "T helper 17 lineage differentiation is programmed by orphan nuclear receptors ROR α and ROR γ ," <i>Immunity</i> , 28(1): 29-39, January 2008.	42

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