

The Large and Small of Australian Research

by Christopher King

For its latest survey of university and institutional research, *Science Watch* returns to Australia, last covered more than a decade ago (7[4]: 1-2, July/August 1996). In this update, Australian institutions are ranked according to two main measures: impact (average citations per paper) and total citations, based on papers published and cited in Thomson Scientific-indexed journals between 2002 and 2006. The first [table](#) below lists the top 3 finishers in each of 21 fields according to impact. Institutions are ranked according to total citations in the second [table](#) below. A third [table](#) provides two additional measures, listing the most-prolific Australian institutions in terms of paper output during the five-year period, as well as those that display the highest overall cites-per-paper scores.

These rankings are based on figures from the standard version of Thomson Scientific's [Australian University Indicators 1981-2006](#), a database containing publication and citation statistics for more than 50 universities and research institutes. This coverage represents an expansion over the initial edition of Thomson's Australian database (and the 1996 survey in these pages), which only reflected university research. The current figures include such facilities as the Howard Florey Institute and the Peter MacCallum Cancer Center. (Note: the research institutes in the database were all considered separately, and their papers and citations were not included with any of the universities with which they might be affiliated. For example, papers from the Howard Florey Institute were not included with those from the University of Melbourne, even in instances where the institutions appear together within a single author-address listing.)

The research institutes, as it happens, make a good showing in the impact tables, despite generally publishing fewer papers than powerhouses such as the University of Sydney and the University of Melbourne. In molecular biology & genetics, for example, the Walter and Eliza Hall Institute of Medical Research (WEHI), with its 164 Thomson-indexed papers in the field, and the Peter MacCallum Cancer Center, with 101, take the top two spots for impact, as they also do in the field of immunology. WEHI, in fact, as the third table shows, outscores all other universities and institutions in overall impact, with an average of nearly 20 citations per paper. WEHI also registers in the total-citations rankings, in molecular biology & genetics, immunology, and even mathematics—the latter thanks to a handful of papers that include highly cited bioinformatics reports from *Statistica Sinica* on statistical methods for identifying gene expression in microarray experiments.

In some of the fields ranked by impact, a few smaller-producing institutions lost out due to the varying thresholds of paper output set by *Science Watch* for each field (in order to account for differences in journal populations and citation patterns between specialty areas). In physics, for example, Griffith University scored a solid 5.65 cites per paper, but the university's paper count of 161 was below the threshold of 200 set for this survey. Similarly, the Institute of Advanced Studies registered an impact mark of 6.45 in chemistry, but its output of 128 chem papers was shy of the field's 200-paper threshold.

Output, needless to say, was no problem for the large, heavy-hitting universities that dominate the rankings here, as they did in the previous survey. The most-prolific schools, as shown in the third table—the universities of Sydney, Queensland, Melbourne, and New South Wales—each appear in at least 9 of the total-citations rankings and at least 5 of the impact listings. On this score, perhaps the University of Melbourne did best of all: 11 appearances by total citations, 10 by impact, and "Top 3" placements for both impact *and* total citations in 5 fields: physics, neurosciences, pharmacology, microbiology, and psychology/psychiatry.

Top 3 Australian Institutions in 21 Fields, 2002-06

Ranked by average citations per paper (in parentheses)

Field	1	2	3
Physics	U. Adelaide (5.97)	U. Melbourne (5.88)	U. Sydney (5.36)
Molec. Bio./Genetics	Walter & Eliza Hall Inst. (25.55)	Peter MacCallum Cancer Ctr. (18.85)	U. Queensland (14.37)
Chemistry	U. New South Wales (6.76)	U. Sydney (5.35)	U. Melbourne (5.26)
Biology & Biochemistry	Walter & Eliza Hall Inst. (19.64)	Garvan Inst. Med. Res. (14.26)	Howard Florey Inst. (12.16)
Materials Science	U. Melbourne (5.18)	U. Queensland (2.75)	U. Sydney (2.74)
Neurosciences	U. Melbourne (7.43)	U. Western Australia (7.20)	U. New South Wales (7.16)
Engineering	U. Melbourne (2.77)	U. Sydney (2.48)	Australian Natl. U. (2.34)
Geosciences	Curtin U. Technol. (6.18)	Australian Natl. U. (5.84)	Macquarie U. (5.19)
Pharmacology	Howard Florey Inst. (10.34)	U. Melbourne (7.21)	Flinders U. (6.74)
Space Science	U. New South Wales (15.65)	Australian Natl. U. (15.22)	U. Melbourne (10.12)
Clinical Medicine	Walter & Eliza Hall Inst. (23.51)	Garvan Inst. Med. Res. (13.39)	Baker Med. Res. Inst. (12.48)
Computer Science	Queensland U. Tech. (3.71)	U. Queensland (2.57)	Monash U. (2.38)
Microbiology	U. Melbourne (9.37)	Australian Natl. U. (8.21)	Queensland Inst. Med. (8.02)
Mathematics	U. Newcastle (2.27)	U. New South Wales (1.96)	U. Western Australia (1.72)
Ecology/Environment	Macquarie U. (9.24)	James Cook U. (6.63)	U. Queensland (5.67)
Agricultural Sciences	U. Sydney (4.60)	U. Adelaide (4.42)	U. Melbourne (3.05)
Immunology	Peter MacCallum Cancer Ctr. (25.33)	Walter & Eliza Hall Res. Inst. (22.51)	U. Western Australia (12.49)
Plant & Animal Science	Australian Natl. U. (5.37)	U. Western Australia (4.51)	U. Adelaide (4.21)
Psychology/Psychiatry	U. New South Wales (4.93)	U. Melbourne (4.81)	U. Newcastle (4.43)
Education	Curtin U. Technol. (1.86)	U. Queensland (1.38)	U. Sydney (1.35)
Economics & Business	Queensland U. Tech. (2.50)	U. Western Australia (2.47)	U. Tech. Sydney (2.11)
^top	SOURCE: Thomson Scientific Australian University Indicators		

Top 3 Australian Institutions in 21 Fields, 2002-06

Ranked by total citations (in parentheses)

Field	1	2	3
Physics	Australian Natl. U (6,934)	U. Sydney (6,383)	U. Melbourne (5,075)
Molec. Bio./Genetics	U. Queensland (6,091)	Walter & Eliza Hall Inst. (4,191)	U. Melbourne (2,843)
Chemistry	U. New South Wales (6,399)	U. Sydney (6,144)	Monash U. (5,150)
Biology & Biochemistry	U. Sydney (8,273)	U. Queensland (7,852)	U. Melbourne (7,321)
Materials Science	Monash U. (1,065)	U. Queensland (1,049)	U. Sydney (930)
Neurosciences	U. Melbourne (5,585)	U. New South Wales (4,530)	U. Sydney (4,147)
Engineering	U. New South Wales (1,798)	U. Sydney (1,786)	U. Melbourne (1,663)
Geosciences	Australian Natl. U. (5,518)	U. Western Australia (2,058)	Curtin U. Technol. (1,947)
Pharmacology	U. Queensland (1,609)	Monash U. (1,567)	U. Melbourne (1,507)
Space Science	Australian Natl. U. (8,689)	U. New South Wales (3,897)	U. Sydney (3,141)
Clinical Medicine	U. Sydney (32,420)	U. Melbourne (20,573)	U. New South Wales (17,848)
Computer Science	U. Melbourne (312)	U. New South Wales (281)	Queensland U. Tech. (278)
Microbiology	U. Melbourne (3,147)	U. Queensland (2,856)	U. New South Wales (1,856)
Mathematics	U. New South Wales (546)	Walter & Eliza Hall Inst. (506)	Australian Natl. U. (447)
Ecology/ Environment	U. Queensland (2,755)	Macquarie U. (1,719)	James Cook U. (1,637)
Agricultural Sciences	U. Adelaide (1,048)	U. Sydney (975)	U. Western Australia (918)
Immunology	Walter & Eliza Hall Res. Inst. (5,469)	Monash U. (2,651)	Peter MacCallum Canc. Ctr. (2,330)
Plant & Animal Science	U. Queensland (3,943)	Australian Natl. U. (3,728)	U. Western Australia (3,456)
Psychology/ Psychiatry	U. New South Wales (3,309)	U. Melbourne (3,128)	U. Queensland (2,546)
Education	U. Queensland (117)	Curtin U. Technol. (95)	U. Sydney (89)
Economics & Business	U. Melbourne (644)	U. New South Wales (567)	Australian Natl. U. (538)
^top	SOURCE: Thomson Scientific Australian University Indicators		

Overall: Highest in Output and Impact

Most Prolific			Highest Impact (All fields, >300 papers 2002-06)		
Rank	Institution	Papers 02-06	Rank	Institution	Papers 02-06
1	U. Sydney	13,325	1	Walter & Eliza Hall Inst.	19.52
2	U. Queensland	11,503	2	Garvan Inst. Med. Res.	13.73
3	U. Melbourne	11,220	3	P. MacCallum Cancer Ctr.	12.37
4	U. New South Wales	9,588	4	Baker Med. Res. Inst.	11.71
5	Monash	8,516	5	Queensland Inst. Med.	9.21
6	Australian Natl. U.	8,104	6	Howard Florey Inst.	8.95
7	U. Western Australia	7,093	7	Murdoch Child. Res. Inst.	6.96
8	U. Adelaide	6,201	8	Inst. Adv. Studies	6.61
9	U. Newcastle	2,847	9	Australian Natl.	5.71
10	Queensland U. Tech.	2,617	10	U. New South Wales	5.45

^top

SOURCE: Thomson Scientific [Australian University Indicators](#)

⇒ **Related links:** an interview with [Dr. Terry Speed](#). Quote from interview: "...the field of microarray data analysis is expanding rapidly, and many people like me are getting involved." ⇒

⇒ [Download this article](#) in a Adobe .PDF file.

Science Watch®, September/October 2007, Vol. 18, No. 5
Citing URL: http://www.sciencewatch.com/sept-oct2007/sw_sept-oct2007_page1.htm

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