

## Sequencing Biology's Hottest, 2002-06

by Christopher King

To assess high-impact research in molecular biology & genetics over the last five years, *Science Watch* turned to an elite selection of papers: those ranking among the top 1% most cited in the field for their respective years of publication, among papers published and cited between 2002 and 2006. This benchmark, applied to a special five-year subset of reports collected in the "Highly Cited Papers" area of Thomson Scientific's [Essential Science Indicators](#)<sup>SM</sup> database, produced a file of some 1,300 papers published in Thomson-indexed journals of molecular biology & genetics.

The analysis included pertinent papers published in the multidisciplinary journals *Nature*, *Science*, and *PNAS*.

From this population of high-impact reports, *Science Watch* identified the institutions, authors, and journals most heavily represented.

[Table 1](#) (below) features institutions that fielded at least 10 high-impact reports over the five-year period. In the left-hand column, institutions are ranked by total citations, while the right column ranks institutions by impact, or cites per paper. Listings in [table 2](#) (below) specify individual researchers who each contributed to at least eight high-impact reports, along with journals (table to the [right](#)) that published 20 or more such papers.

As was the case when *Science Watch* last surveyed high-impact research in this field (11 [5]: 1-2, [September-October 2000](#)), the

### Journals Publishing High-Impact Research in Molecular Biology & Genetics, 2002-06

(Ranked by number of high-impact papers, among those that published  $\geq 20$ )

Rank	Journal	# of high-impact papers
1	Cell	258
2	Nature	154
3	Science	149
4	Nature Genetics	104
5	Nature Reviews Molecular Cell Biology	93
6	Genes & Development	61
7	Molecular Cell	58

Howard Hughes Medical Institute garnered the highest citation total of any institution, with nearly 38,000 collective cites. HHMI-affiliated authors, in fact, contributed to 199 high-impact reports, a total approached only by Harvard's 165 papers.



As the previous survey noted, HHMI employs and supports researchers who are based at numerous universities and institutions. In tallying citations to papers by Hughes investigators, *Science Watch* credited both HHMI and the investigators' home-base

institutions, since Hughes investigators usually list both affiliations in their papers, and since such papers often include the contributions of non-Hughes-supported coauthors at each institution.

In the cites-per-paper column, no institution surpassed the University of California, Santa Cruz, even though UCSC fielded only 13 high-impact molecular biology & genetics reports during the five-year period. One of these, however, was the most-cited paper in the survey, a 2002 *Nature* report on the mouse genome (Mouse Genome Sequencing Consortium, *Nature* 420[6915]: 520-62, 2002). This paper has now been cited more than 1,700 times.

Among the 200-plus coauthors on this blockbuster mouse-genome report was MIT's Eric S. Lander, who topped the researcher list with 22 high-impact reports. (The list is ranked by number of high-impact papers, with the subsequent order determined by total citations). Lander also contributed to highly cited genomic studies centered on yeast, the chimpanzee, and the domestic dog.

Table 1

**Molecular Biology & Genetics Research:  
Institutions Ranked by Citations and Citation Impact**  
(among those that published  $\geq 10$  high-impact papers, 2002-06)

<b>8</b>	Nature Reviews Genetics	35
	Nature Cell Biology	35
<b>9</b>	PNAS	29
<b>10</b>	American J. Human Genetics	24
	Ann. Rev. Cell/Devel. Biology	20
<b>11</b>	Ann. Rev. Genetics	20
	Journal of Cell Biology	20

SOURCE: Thomson Scientific  
[Essential Science Indicators<sup>SM</sup>](#)

Rank	Institution	#Citations 2002-06
1	Howard Hughes Medical Inst.	37,810
2	Harvard University	31,725
3	MIT	24,868
4	Whitehead Institute	11,326
5	Univ. Calif., San Diego	11,120
6	Cold Spring Harbor Lab	10,767
7	Univ. Calif., Berkeley	9,756
8	Baylor College of Medicine	9,754
9	University of Oxford	9,421
10	Max Planck Society	9,354
11	Johns Hopkins University	9,075
12	Stanford University	8,893
13	European Molec. Biology Lab	8,826
14	Yale University	8,808
15	Univ. Calif., San Francisco	8,692
16	Wellcome Trust Sanger Inst.	8,412
17	Washington University	8,358
18	Massachusetts General Hosp.	7,029
19	National Cancer Institute, NIH	6,408
20	University of Cambridge	6,060
21	University of Washington	5,878
22	Rockefeller University	5,850
23	Scripps Research Institute	5,803
24	Natl. Human Genome Res. Inst., NIH	5,737
25	Medical Research Council (U.K.)	5,662

Rank	Institution	Impact 2002-06
1	Univ. Calif., Santa Cruz	414.5
2	Natl. Human Genome Res. Inst., NIH	337.5
3	Cold Spring Harbor Lab	336.5
4	University of Utah	335.6
5	Medical Research Council (U.K.)	333.1
6	Inst. for Systems Biology, Seattle	329.8
7	European Molec. Biology Lab	326.9
8	University of Oxford	324.9
9	Wellcome Trust Sanger Inst.	311.6
10	Pennsylvania State Univ.	304.4
11	Whitehead Institute	290.4
12	University of Edinburgh	272.2
13	Washington University	269.6
14	MIT	267.4
15	Univ. Calif., Berkeley	256.7
16	Univ. Calif., San Diego	252.7
17	Massachusetts General Hosp.	251.0
18	Univ. Southern California	250.8
19	CNRS (France)	247.5
20	Mt. Sinai Hospital, Toronto	246.5
21	Max Planck Society	246.2
22	Baylor College of Medicine	243.9
23	Scripps Research Institute	241.8
24	Fred Hutchinson Cancer Res. Ctr.	232.8
25	Yale University	231.8

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SOURCE: Thomson Scientific [Essential Science Indicators](#)<sup>SM</sup>

Table 2

<b>Authors of High-Impact Papers in Molecular Biology &amp; Genetics, 2002-06</b> (Ranked by number of high-impact papers)					
Rank	Name	Affiliation	Number of high-impact papers	Citations	Citations per high-impact paper
1	Eric S. Lander MIT	Broad Institute	22	9,710	441.4
2	David P. Bartel	HHMI, MIT, Whitehead Institute	19	4,542	239.1
3	C. David Allis	Rockefeller University	13	1,986	152.8
4	W. James Kent	Univ. Calif., Santa Cruz	12	5,158	429.8
5	Gregory J. Hannon	HHMI, Cold Spring Harbor Lab	12	3,542	295.2
6	Thomas Jenuwein	Res. Inst. Molec. Pathology, Vienna	11	1,762	160.2
7	Yi Zhang	HHMI, University of North Carolina	11	1,249	113.6
8	Mark J. Daly	Harvard University	10	5,428	542.8
9	David Haussler	HHMI, Univ. Calif., Santa Cruz	10	4,196	419.6
10	David Altshuler	Harvard University	10	3,868	386.8
11	Matthias Mann	Max Planck Inst. Biochemistry	10	2,960	296.0
12	Richard A. Young	MIT, Whitehead Institute	10	2,579	257.9
13	V. Narry Kim	Seoul National University	9	1,493	165.9
14	Peer Bork	European Molecular Biology Lab	8	5,068	633.5
15	Ewan Birney	European Molecular Biology Lab	8	4,141	517.6
16	Richard A. Gibbs	Baylor College of Medicine	8	3,533	441.6
17	Mark Gerstein	Yale University	8	2,037	254.6
18	Phillip Zamore	University of Massachusetts	8	1,802	225.3
19	Douglas R. Green	Univ. Calif., San Diego	8	1,754	219.3
20	Kari Stefansson	deCODE genetics, Iceland	8	1,650	206.3

	Jeffrey R. Gulcher	deCODE genetics, Iceland	8	1,650	206.3
	Augustine Kong	deCODE genetics, Iceland	8	1,650	206.3
<b>21</b>	Thomas Tuschl	HHMI, Rockefeller University	8	1,619	202.4
<b>22</b>	Jack F. Greenblatt	University of Toronto	8	1,236	154.5
	Nevan J. Krogan	University of Toronto	8	1,236	154.5
<b>23</b>	Paul Tempst	Memorial Sloan-Kettering Cancer Ctr.	8	1,391	173.9
	Hediye Erdjument-Bromage	Memorial Sloan-Kettering Cancer Ctr.	8	1,391	173.9
<b>24</b>	Steven P. Gygi	Harvard University	8	1,350	168.8
<b>25</b>	Stephen P. Jackson	University of Cambridge	8	1,052	131.5

SOURCE: Thomson Scientific [Essential Science Indicators<sup>SM</sup>](#)

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