Draft Bibliometric Analysis

for the U.S. Environmental Protection Agency/Office of Research and Development's Fellowship Program (Fellowships Awarded in 1995 and 1996 Only)

This is a bibliometric analysis of the papers authored by the 244 individuals who received a Science To Achieve Results (STAR) or Greater Research Opportunity (GRO) Fellowship in 1995 or 1996 from the U.S. Environmental Protection Agency (EPA). For this analysis, 1,257 papers were reviewed, and they were published from 1996 to 2006. These publications were cited 16,280 times in the journals covered by Thomson's *Web of Science*[1] and Scopus[2]. Of these 1,257 publications, 1,019 (81.07%) have been cited at least once in a journal.

Searches of Thomson Scientific's *Web of Science* and Scopus were conducted to obtain times cited data for the fellows' journal publications. The analysis was completed using Thomson's *Essential Science Indicators (ESI)* and *Journal Citation Reports (JCR)* as benchmarks. *ESI* provides access to a unique and comprehensive compilation of essential science performance statistics and science trends data derived from Thomson's databases. For this analysis, the *ESI* highly cited papers thresholds as well as the hot papers thresholds were used to assess the influence and impact of the fellows' papers. *JCR* is a recognized authority for evaluating journals. It presents quantifiable statistical data that provide a systematic, objective way to evaluate the world's leading journals and their impact and influence in the global research community. The two key measures used in this analysis to assess the journals in which the EPA fellows' papers are published are the Impact Factor and Immediacy Index. The Impact Factor is a measure of the frequency with which the "average article" in a journal has been cited in a particular year. The Impact Factor helps evaluate a journal's relative importance, especially when compared to other journals in the same field. The Immediacy Index is a measure of how quickly the "average article" in a journal is cited. This index indicates how often articles published in a journal are cited within the same year and it is useful in comparing how quickly journals are cited.

The report includes a summary of the results of the analysis, an analysis of the 1,257 fellows' papers analyzed by *ESI* field (e.g., chemistry, environment/ecology, engineering), an analysis of the journals in which the fellows' papers were published, a table of the highly cited researchers who were in the fellowship program, and a list of the patents and patent applications for the former fellows.

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1 Thomson Scientific's *Web of Science* provides access to current and retrospective multidisciplinary information from approximately 8,830 of the most prestigious, high impact research journals in the world. *Web of Science* also provides cited reference searching.

2 Scopus is a large abstract and citation database of research literature and quality Web sources designed to support the literature research process. Scopus offers access to 15,000 titles from 4,000 different publishers, more than 12,850 academic journals (including coverage of 535 Open Access journals, 750 conference proceedings, and 600 trade publications), 27 million abstracts, 245 million references, 200 million scientific Web pages, and 13 million patent records.

SUMMARY OF RESULTS

1. **More than one-sixth of the fellows' publications are highly cited papers.** A review of the citations indicates that 217 (17.26%) of the fellows' papers qualify as highly cited when using the *ESI* criteria for the top 10% of highly cited publications. This is 1.7 times the number expected. Thirty-one (2.47%) of the fellows' papers qualify as highly cited when using the *ESI* criteria for the top 1%, which is 2.5 times the number expected. Seven (0.56%) of these papers qualify as very highly cited when using the criteria for the top 0.1%, which is 5.6 times the number anticipated. None of the papers actually meet the 0.01% threshold for the most highly cited papers, which is not surprising given that the expected number of papers that would meet this threshold for this analysis is 0.12.

2. **The fellows' papers are more highly cited than the average paper.** Using the *ESI* average citation rates for papers published by field as the benchmark, in 15 of the 22 fields in which the EPA fellows' papers were published, the ratio of actual to expected cites is greater than 1, indicating that the fellows' papers are more highly cited than the average papers in those fields. For all 22 fields combined, the ratio of total number of cites to the total number of expected cites (16,280 to 10,479.32) is 1.55, indicating that the fellows' papers are more highly cited than the average paper.

3. **One-third of the fellows' papers are published in high impact journals.** Four hundred seventy-seven (477) of the 1,257 papers were published in the top 10% of journals ranked by *JCR* Impact Factor, representing 37.95% of EPA fellows' papers. This number is 3.8 times higher than expected. Four hundred nineteen (419) of the 1,257 papers appear in the top 10% of journals ranked by *JCR* Immediacy Index, representing 33.33% of EPA fellows' papers. This number is 3.3 times higher than expected.

4. **Twenty of the fellows' papers qualify as hot papers.** Using the hot paper thresholds established by *ESI* as a benchmark, 20 hot papers, representing 1.59% of the fellows' papers, were identified in the analysis. Hot papers are papers that were highly cited shortly after they were published. The number of fellows' hot papers is 16 times higher than the 1.26 hot papers expected.

5. **The authors of the fellows' papers cite themselves much less than the average author.** Eight hundred forty-four (844) of the 16,280 cites are author self-cites. This 5.18% author self-citation rate is well below the accepted range of 10-30% author self-citation rate.

6. **None of the fellows are included in *ISIHighlyCited.com***, which is a database of the world's most influential researchers who have made key contributions to science and technology during the period from 1981 to 1999. This result is not surprising given that the 1995-1996 fellows probably began their careers in the late 1990s.

7. **There were 13 patents issued and 31 patent applications filed** by 1995-1996 EPA fellows. Ten (76.90%) of the 13 patents have been referenced by 22 other patents.

Highly Cited Fellows' Publications

All of the journals covered by ESI are assigned a field, and to compensate for varying citation rates across scientific fields, different thresholds are applied to each field. Thresholds are set to select highly cited papers to be listed in *ESI*. Different thresholds are set for both field and year of publication. Setting different thresholds for each year allows comparable representation for older and younger papers for each field.

The 1,257 fellows' research papers reviewed for this analysis were published in journals that were assigned to 22 of the 22 *ESI* fields. The distribution of the papers among these 22 fields and the number of citations by field are presented in Table 1.

Table 1. Fellows' Papers by *ESI* Fields

***ESI* Field**	**No. of Citations**	**No. of Fellows' Papers**	**Average Cites/Paper**
Agricultural Sciences	288	28	10.28
Biology & Biochemistry	1,528	95	16.08
Chemistry	897	58	15.46
Clinical Medicine	849	44	19.29
Computer Science	12	3	4.00
Economics & Business	131	25	5.24
Engineering	323	60	5.38
Environment/Ecology	4,573	358	12.77
Geosciences	1,838	170	10.81
Immunology	151	14	10.78
Materials Science	4	1	4.00
Mathematics	10	1	10.00
Microbiology	864	57	15.16
Molecular Biology & Genetics	328	22	14.91
Multidisciplinary	1,415	29	48.79
Neuroscience & Behavior	25	3	8.33
Pharmacology & Toxicology	394	38	10.34
Physics	108	14	7.71
Plant & Animal Science	2,343	181	12.94
Psychiatry/Psychology	16	4	4.00
Social Sciences, General	182	51	3.57

***ESI* Field**	**No. of Citations**	**No. of Fellows' Papers**	**Average Cites/Paper**
Space Science	1	1	1.00
	Total = 16,280	**Total = 1,257**	**12.95**

There are 217 (17.26% of the papers analyzed) highly cited EPA fellows' papers in 15 of the 22 fields—Agricultural Sciences, Biology & Biochemistry, Chemistry, Clinical Medicine, Computer Science, Economics & Business, Engineering, Environment/Ecology, Geosciences, Microbiology, Multidisciplinary, Pharmacology & Toxicology, Physics, Plant & Animal Science, and Social Sciences—when using the *ESI* criteria for the **top 10% of papers**. Table 2 shows the number of fellows' papers in those 15 fields that meet the **top 10% threshold in *ESI***.

Table 2. Number of Highly Cited Fellows' Papers by Field (top 10%)

***ESI* Field**	**Citations**	**No. of Papers**	**Average Cites/Paper**	**% of Fellows' Papers in Field**
Agricultural Sciences	77	2	38.50	7.14%
Biology & Biochemistry	815	12	67.92	12.63%
Chemistry	478	7	68.28	12.07%
Clinical Medicine	645	10	64.50	22.73%
Computer Science	12	2	6.00	66.67%
Economics & Business	82	3	27.33	12.00%
Engineering	191	12	15.92	20.00%
Environment/Ecology	2,531	54	46.87	15.08%
Geosciences	1,035	30	34.50	17.65%
Microbiology	241	7	34.43	12.28%
Multidisciplinary	1,390	21	66.19	72.41%
Pharmacology & Toxicology	28	1	28.00	2.63%
Physics	59	1	59.00	7.14%
Plant & Animal Science	1,640	49	33.47	27.07%

***ESI* Field**	**Citations**	**No. of Papers**	**Average Cites/Paper**	**% of Fellows' Papers in Field**
Social Sciences, general	57	6	9.50	11.76%
	Total = 9,281	**Total = 217**	**42.77**	**17.26%**

Thirty-one (2.47%) of the papers analyzed qualify as highly cited when using the *ESI* criteria for the **top 1% of papers**. These papers cover nine fields—Agricultural Sciences, Biology & Biochemistry, Chemistry, Clinical Medicine, Engineering, Environment/Ecology, Geosciences, Multidisciplinary, and Plant & Animal Science. Table 3 shows the 31 papers by field that meet the **top 1% threshold in *ESI***. The citations for these 31 papers are provided in Tables 4 through 12. There were 7 (0.56%) very highly cited fellows' papers in the fields of Environment/Ecology, Multidisciplinary, and Plant & Animal Science. These papers, which meet the **top 0.1% threshold in *ESI,*** are listed in Table 13. None of the fellows' papers actually meets the **top 0.01% threshold in *ESI,*** which is not surprising given that the expected number of papers to meet this threshold for this analysis is 0.12.

Table 3. Number of Highly Cited Fellows' Papers by Field (top 1%)

***ESI* Field**	**Citations**	**No. of Papers**	**Average Cites/Paper**	**% of Fellows' Papers in Field**
Agricultural Sciences	55	1	55.00	3.57%
Biology & Biochemistry	208	1	208.00	1.05%
Chemistry	311	2	155.50	3.45%
Clinical Medicine	265	1	265.00	2.27%
Engineering	55	1	55.00	1.67%
Environment/Ecology	994	8	124.25	2.23%
Geosciences	116	2	58.00	1.18%
Multidisciplinary	882	6	147.00	20.69%
Plant & Animal Science	685	9	76.11	4.97%
	Total = 3,571	**Total = 31**	**115.19**	**2.47%**

Table 4. Highly Cited Fellows' Paper in the Field of Agricultural Sciences (top 1%)

No. of Cites	First Author	Paper
55	Call DR	Detecting and genotyping Escherichia coli O157 : H7 using multiplexed PCR and nucleic acid microarrays. *International Journal of Food Microbiology* 2001;67(1-2):71-80.

Table 5. Highly Cited Fellows' Paper in the Field of Biology & Biochemistry (top 1%)

No. of Cites	First Author	Paper
208	Hanson PJ	Separating root and soil microbial contributions to soil respiration: a review of methods and observations. *Biogeochemistry* 2000;48(1):115-146.

Table 6. Highly Cited Fellows' Papers in the Field of Chemistry (top 1%)

No. of Cites	First Author	Paper
117	Zhou YF	Preparation of hyperbranched polymer films grafted on self-assembled monolayers. *Journal of the American Chemical Society* 1996;118(15):3773-3774.
194	Wells M	Interactions between organized, surface-confined monolayers and vapor-phase probe molecules .10. Preparation and properties of chemically sensitive dendrimer surfaces. *Journal of the American Chemical Society* 1996;118(16):3988-3989.

Table 7. Highly Cited Fellows' Paper in the Field of Clinical Medicine (top 1%)

No. of Cites	First Author	Paper
265	vom Saal FS	A physiologically based approach to the study of bisphenol A and other estrogenic chemicals on the size of reproductive organs, daily sperm production, and behavior. *Toxicology and Industrial Health* 1998;14(1-2):239-260.

Table 8. Highly Cited Fellows' Paper in the Field of Engineering (top 1%)

No. of Cites	First Author	Paper
55	Wiedensohlet A	Intercomparison study of the size-dependent counting efficiency of 26 condensation particle counters. *Aerosol Science and Technology* 1997;27(2):224-242.

Table 9. Highly Cited Fellows' Papers in the Field of Environment/Ecology (top 1%)

No. of Cites	First Author	Paper
253	Follmar LC	Vitellogenin induction and reduced serum testosterone concentrations in feral male carp (Cyprinus carpio) captured near a major metropolitan sewage treatment plant. *Environmental Health Perspectives* 1996;104(10):1096-1101.
384	Nagel SC	Relative binding affinity serum modified access (RBA-SMA) assay predicts the relative in vivo bioactivity of the xenoestrogens bisphenol A and octylphenol. *Environmental Health Perspectives* 1997;105(1):70-76.
76	Bowling DR	C-13 content of ecosystem respiration is linked to precipitation and vapor pressure deficit. *Oecologia* 2002;131(1):113-124.
85	Dunne JA	Network structure and biodiversity loss in food webs: robustness increases with connectance. *Ecology Letters* 2002;5(4):558-567.
48	Nathan R	Methods for estimating long-distance dispersal. *Oikos* 2003;103(2):261-273.
51	Welshons WV	Large effects from small exposures. I. Mechanisms for endocrine-disrupting chemicals with estrogenic activity. *Environmental Health Perspectives* 2003;111(8):994-1006.
92	Leibold MA	The metacommunity concept: a framework for multi-scale community ecology. *Ecology Letters* 2004;7(7):601-613.
5	Sidle RC	Erosion processes in steep terrain - Truths, myths, and uncertainties related to forest management in Southeast Asia. *Forest Ecology and Management* 2006;224(1-2):199-225.

Table 10. Highly Cited Fellows' Papers in the Field of Geosciences (top 1%)

No. of Cites	First Author	Paper
66	Andrews JA	Soil CO_2 dynamics, acidification, and chemical weathering in a temperate forest with experimental CO_2 enrichment. *Global Biogeochemical Cycles* 2001;15(1):149-162.

No. of Cites	First Author	Paper
50	Pataki DE	The application and interpretation of Keeling plots in terrestrial carbon cycle research. *Global Biogeochemical Cycles* 2003;17(1):Art. No. 1022.

Table 11. Highly Cited Fellows' Papers in the Field of Multidisciplinary (top 1%)

No. of Cites	First Author	Paper
271	vom Saal FS	Prostate enlargement in mice due to fetal exposure to low doses of estradiol or diethylstilbestrol and opposite effects at high doses. *Proceedings of the National Academy of Sciences of the United States of America* 1997;94(5):2056-2061.
94	Murphy DM	Influence of sea-salt on aerosol radiative properties in the Southern Ocean marine boundary layer. *Nature* 1998;392(6671):62-65.
193	DeLucia EH	Net primary production of a forest ecosystem with experimental CO_2 enrichment. *Science* 1999;284(5417):1177-1179.
212	Howdeshell KA	Environmental toxins - Exposure to bisphenol A advances puberty. *Nature* 1999;401(6755):763-764.
83	Dunne JA	Food-web structure and network theory: the role of connectance and size. *Proceedings of the National Academy of Sciences of the United States of America* 2002;99(20):12917-12922.
29	Pounds JA	Widespread amphibian extinctions from epidemic disease driven by global warming. *Nature* 2006;439(7073):161-167.

Table 12. Highly Cited Fellows' Papers in the Field of Plant & Animal Science (top 1%)

No. of Cites	First Author	Paper
163	DemmigAdams B	Using chlorophyll fluorescence to assess the fraction of absorbed light allocated to thermal dissipation of excess excitation. *Physiologia Plantarum* 1996;98(2):253-264.
95	Clark JS	Interpreting recruitment limitation in forests. *American Journal of Botany* 1999;86(1):1-16.
116	Rate DN	The gain-of-function Arabidopsis acd6 mutant reveals novel regulation and function of the salicylic acid signaling pathway in controlling cell death, defenses, and cell growth. *Plant Cell* 1999;11(9):1695-1708.
183	Cain ML	Long-distance seed dispersal in plant populations. *American Journal of Botany* 2000;87(9):1217-1227.

No. of Cites	First Author	Paper
93	Weller DM	Microbial populations responsible for specific soil suppressiveness to plant pathogens. *Annual Review of Phytopathology* 2002;40:309.
6	Savoye N	Th-234 sorption and export models in the water column: a review. *Marine Chemistry* 2006;100(3-4):234-249.
6	Santschi PH	Thorium speciation in seawater. *Marine Chemistry* 2006;100(3-4):250-268.
9	Van der Loeff MR	A review of present techniques and methodological advances in analyzing Th-234 in aquatic systems. *Marine Chemistry* 2006;100(3-4):190-212.
14	Buesseler KO	An assessment of particulate organic carbon to thorium-234 ratios in the ocean and their impact on the application of Th-234 as a POC flux proxy. *Marine Chemistry* 2006;100(3-4):213-233.

Table 13. Very Highly Cited Fellows' Papers (top 0.1%)

ESI Field	No. of Cites	First Author	Paper
Environment/ Ecology	384	Nagel SC	Relative binding affinity serum modified access (RBA-SMA) assay predicts the relative in vivo bioactivity of the xenoestrogens bisphenol A and octylphenol. *Environmental Health Perspectives* 1997;105(1):70-76.
	92	Leibold MA	The metacommunity concept: a framework for multi-scale community ecology. *Ecology Letters* 2004;7(7):601-613.
Multidisciplinary	271	vom Saal FS	Prostate enlargement in mice due to fetal exposure to low doses of estradiol or diethylstilbestrol and opposite effects at high doses. *Proceedings of the National Academy of Sciences of the United States of America* 1997;94(5):2056-2061.
	29	Pounds JA	Widespread amphibian extinctions from epidemic disease driven by global warming. *Nature* 2006;439(7073):161-167.
Plant & Animal Science	183	Cain ML	Long-distance seed dispersal in plant populations. *American Journal of Botany* 2000;87(9):1217-1227.
	9	Van der Loeff MR	A review of present techniques and methodological advances in analyzing Th-234 in aquatic systems. *Marine Chemistry* 2006;100(3-4):190-212.
	14	Buesseler KO	An assessment of particulate organic carbon to thorium-234 ratios in the ocean and their impact on the application of Th-234 as a POC flux proxy. *Marine Chemistry* 2006;100(3-4):213-233.

Ratio of Actual Cites to Expected Citation Rates

The expected citation rate is the average number of cites that a paper published in the same journal in the same year and of the same document type (article, review, editorial, etc.) has received from the year of publication to the present. Using the *ESI* average citation rates for papers published by field as the benchmark, in 15 of the 22 fields in which the EPA fellows' papers were published, the ratio of actual to expected cites is greater than 1, indicating that the fellows' papers are more highly cited than the average papers in those fields (see Table 14). For all 22 fields combined, the ratio of total number of cites to the total number of expected cites (16,280 to 10,479.32) is 1.55, indicating that the fellows' papers are more highly cited than the average paper.

Table 14. Ratio of Actual Cites to Expected Cites for Fellows' Papers by Field

ESI Field	Total Cites	Expected Cite Rate	Ratio
Agricultural Sciences	288	135.71	2.12
Biology & Biochemistry	1,528	1,380.47	1.11
Chemistry	897	610.08	1.47
Clinical Medicine	849	474.51	1.79
Computer Science	12	6.88	1.74
Economics & Business	131	112.65	1.16
Engineering	323	199.94	1.62
Environment/Ecology	4,573	3,022.58	1.51
Geosciences	1,838	1,104.98	1.66
Immunology	151	257.55	0.59
Materials Science	4	2.68	1.49
Mathematics	10	5.54	1.80
Microbiology	864	608.03	1.42
Molecular Biology & Genetics	328	459.47	0.71
Multidisciplinary	1,415	116.60	12.14
Neuroscience & Behavior	25	67.82	0.37
Pharmacology & Toxicology	394	414.40	0.95
Physics	108	121.94	0.88
Plant & Animal Science	2,343	1,142.08	2.05
Psychiatry/Psychology	16	50.96	0.31
Social Sciences, General	182	174.05	1.04

ESI Field	Total Cites	Expected Cite Rate	Ratio
Space Science	1	10.40	0.10
TOTAL	**16,280**	**10,479.32**	**1.55**

JCR Benchmarks

Impact Factor. The *JCR* Impact Factor is a well known metric in citation analysis. It is a measure of the frequency with which the "average article" in a journal has been cited in a particular year. The Impact Factor helps evaluate a journal's relative importance, especially when compared to others in the same field. The Impact Factor is calculated by dividing the number of citations in the current year to articles published in the 2 previous years by the total number of articles published in the 2 previous years.

Table 15 indicates the number of fellows' papers published in the top 10% of journals, based on the *JCR* Impact Factor. Four hundred seventy-seven (477) of 1,257 papers were published in the top 10% of journals, representing 37.95% of the fellows' papers. This indicates that more than one-third of the fellows' papers are published in the highest quality journals as determined by the *JCR* Impact Factor, which is 3.8 times higher than the expected percentage.

Table 15. Fellows' Papers in Top 10% of Journals by *JCR* Impact Factor

Fellows' Papers in that Journal	Journal	Impact Factor (IF)	*JCR* IF Rank
7	Science	30.927	6
9	Nature	29.273	11
1	JAMA-Journal of the American Medical Association	23.494	19
2	Trends in Ecology & Evolution	14.864	46
1	PLoS Biology	14.672	47
1	Trends in Genetics	12.047	68
2	Plant Cell	11.088	77
10	Proceedings of the National Academy of Sciences of the United States of America	10.231	88
1	EMBO Journal	10.053	94
1	Hepatology	9.792	101
1	Circulation Research	9.408	112
1	Current Opinion in Microbiology	8.005	141

Fellows' Papers in that Journal	Journal	Impact Factor (IF)	*JCR* IF Rank
1	Cancer Research	7.616	157
1	Annual Review of Phytopathology	7.605	158
1	Nucleic Acids Research	7.552	162
1	Journal of Neuroscience	7.506	165
4	Journal of the American Chemical Society	7.419	170
2	Molecular and Cellular Biology	7.093	180
17	FASEB Journal	7.064	181
2	Plant Journal	6.969	183
1	Current Opinion in Biotechnology	6.898	186
1	Nature Methods	6.741	191
1	Clinical Infectious Diseases	6.510	199
2	Journal of Immunology	6.387	205
1	Molecular Microbiology	6.203	213
1	Thorax	6.150	216
1	Proteomics	6.088	221
1	Bioinformatics	6.019	224
1	Journal of Biological Chemistry	5.854	232
1	American Journal of Clinical Nutrition	5.853	233
3	Analytical Chemistry	5.635	242
10	Environmental Health Perspectives	5.342	257
1	Endocrinology	5.313	261
1	Emerging Infectious Diseases	5.308	264
1	Developmental Biology	5.234	274
2	Drug Metabolism Reviews	5.153	281
2	Ecology Letters	5.151	282
3	Carcinogenesis	5.108	288
1	American Journal of Epidemiology	5.068	290
1	Philosophical Transactions of the Royal Society of London Series B-Biological Sciences	4.997	300

Fellows' Papers in that Journal	Journal	Impact Factor (IF)	*JCR* IF Rank
1	Free Radical Biology and Medicine	4.971	303
1	Journal of Infectious Diseases	4.953	307
3	Ecological Monographs	4.855	320
2	Cladistics-the International Journal of the Willi Hennig Society	4.783	331
1	Frontiers in Ecology and the Environment	4.745	334
1	Bioscience	4.708	336
7	Molecular Pharmacology	4.612	349
2	Journal of Applied Ecology	4.594	351
1	Earth-Science Reviews	4.581	353
1	Environmental Microbiology	4.559	355
9	Ecology	4.506	366
6	American Naturalist	4.464	376
3	Antimicrobial Agents and Chemotherapy	4.379	395
7	Molecular Ecology	4.301	414
3	Genetics	4.289	415
2	New Phytologist	4.285	417
1	Journal of Ecology	4.277	418
1	Advances in Colloid and Interface Science	4.198	437
3	Journal of Bacteriology	4.167	440
12	Evolution	4.155	444
3	Applied Physics Letters	4.127	450
12	Conservation Biology	4.110	455
10	Global Change Biology	4.075	464
52	Environmental Science & Technology	4.054	467
6	Epidemiology	4.043	471
1	Macromolecules	4.024	479
6	Drug Metabolism and Disposition	4.015	481
1	American Journal of Respiratory Cell and Molecular Biology	3.988	488

Fellows' Papers in that Journal	Journal	Impact Factor (IF)	*JCR* IF Rank
4	Infection and Immunity	3.933	506
12	Geochimica et Cosmochimica Acta	3.897	521
1	JAIDS-Journal of Acquired Immune Deficiency Syndromes	3.871	529
1	Laboratory Investigation	3.859	532
1	Inorganic Chemistry	3.851	535
1	Electrophoresis	3.850	536
2	Biochemistry	3.848	538
36	Applied and Environmental Microbiology	3.818	544
7	Ecological Applications	3.804	548
1	Journal of Computational Chemistry	3.786	551
3	Langmuir	3.705	569
4	Journal of Controlled Release	3.696	571
2	Journal of Nutrition	3.689	574
1	Journal of Materials Chemistry	3.688	575
1	Human Reproduction	3.669	581
1	Faraday Discussions	3.652	584
1	Journal of Analytical Atomic Spectrometry	3.640	591
3	Plant Cell and Environment	3.601	606
3	Optics Letters	3.599	608
1	Journal of Cellular Biochemistry	3.591	610
1	Biology of Reproduction	3.583	615
1	Global Ecology and Biogeography	3.576	617
2	Journal of Biomedical Optics	3.557	624
1	Clinical and Experimental Allergy	3.553	625
6	Journal of Clinical Microbiology	3.537	630
1	Proceedings of the Royal Society B-Biological Sciences	3.510	636
2	Atmospheric Chemistry and Physics	3.495	643
1	Critical Reviews in Plant Sciences	3.467	656
1	Biosensors & Bioelectronics	3.463	658

Fellows' Papers in that Journal	Journal	Impact Factor (IF)	*JCR* IF Rank
4	Ecosystems	3.455	661
2	Earth and Planetary Science Letters	3.434	666
3	Journal of Climate	3.402	681
19	Global Biogeochemical Cycles	3.373	687
2	Diversity and Distributions	3.345	696
1	Developmental Dynamics	3.333	702
3	Journal of Evolutionary Biology	3.332	704
3	Oikos	3.309	711
3	Developmental and Comparative Immunology	3.261	720
15	Limnology and Oceanography	3.249	725
2	Physical Review B	3.185	746
4	Archives of Biochemistry and Biophysics	3.152	762
4	Toxicology and Applied Pharmacology	3.148	765
4	Journal of Chemical Physics	3.138	767
4	Journal of Chromatography A	3.096	779
7	Toxicological Sciences	3.088	781
1	Rapid Communications in Mass Spectrometry	3.087	782
1	BMC Biotechnology	3.054	798
1	Cancer Letters	3.049	801
9	Oecologia	3.032	805
1	Journal of Polymer Science Part A-Polymer Chemistry	3.027	807
9	Water Research	3.019	810
1	Physical Review A	2.997	827
4	Geology	2.982	833
1	Quaternary Science Reviews	2.950	847
1	Behavioral Ecology	2.943	849
2	Chemical Geology	2.940	851
2	Journal of Physical Chemistry A	2.898	862

Fellows' Papers in that Journal	Journal	Impact Factor (IF)	*JCR* IF Rank
1	Tissue Engineering	2.887	864
1	Behavioural Brain Research	2.865	875
Total = 477			

Immediacy Index. The *JCR* Immediacy Index is a measure of how quickly the *average article* in a journal is cited. It indicates how often articles published in a journal are cited within the year they are published. The Immediacy Index is calculated by dividing the number of citations to articles published in a given year by the number of articles published in that year.

Table 16 indicates the number of fellows' papers published in the top 10% of journals, based on the *JCR* Immediacy Index. Four hundred nineteen (419) of the 1,257 papers appear in the top 10% of journals, representing 33.33% of the fellows' papers. This indicates that one-third of the fellows' papers are published in the highest quality journals as determined by the *JCR* Immediacy Index, which is 3.3 times higher than the expected percentage.

Table 16. Fellows' Papers in Top 10% of Journals by *JCR* Immediacy Index

Fellows' Papers in that Journal	Journal	Immediacy Index (II)	*JCR* II Rank
7	Science	6.398	6
9	Nature	5.825	11
1	JAMA-Journal of the American Medical Association	5.082	17
1	PLoS Biology	3.734	34
1	Nature Methods	3.305	41
1	EMBO Journal	2.198	78
2	Plant Cell	2.048	85
2	Trends in Ecology & Evolution	2.031	87
1	Fisheries Oceanography	1.980	94
1	Trends in Genetics	1.885	101
1	Faraday Discussions	1.786	112
1	Clinical Infectious Diseases	1.750	117
10	Proceedings of the National Academy of Sciences of the United States of America	1.746	121

Fellows' Papers in that Journal	Journal	Immediacy Index (II)	*JCR* II Rank
1	Philosophical Transactions of the Royal Society of London Series B-Biological Sciences	1.742	122
1	Circulation Research	1.702	126
1	Journal of Infectious Diseases	1.547	145
1	Hepatology	1.496	151
5	Journal of the Atmospheric Sciences	1.469	153
3	Ecological Monographs	1.448	158
4	Journal of the American Chemical Society	1.435	162
1	Molecular Microbiology	1.402	170
1	Nucleic Acids Research	1.391	173
2	Plant Journal	1.322	191
6	Epidemiology	1.298	198
1	Journal of Biological Chemistry	1.265	208
1	Endocrinology	1.260	210
1	Journal of Neuroscience	1.254	212
1	Global and Planetary Change	1.253	213
1	Ecology and Society	1.232	218
1	American Journal of Clinical Nutrition	1.200	227
2	Molecular and Cellular Biology	1.181	238
17	FASEB Journal	1.181	238
1	AMBIO	1.140	253
2	New Phytologist	1.125	257
1	American Journal of Epidemiology	1.099	271
1	Thorax	1.097	272
2	Atmospheric Chemistry and Physics	1.025	298
1	Cancer Research	1.001	310
10	Environmental Health Perspectives	0.955	346
3	Journal of Evolutionary Biology	0.955	346
2	Ecology Letters	0.950	350

Fellows' Papers in that Journal	Journal	Immediacy Index (II)	*JCR* II Rank
1	Bioinformatics	0.944	354
5	Fisheries	0.941	357
1	Current Opinion in Microbiology	0.939	358
1	Journal of Paleolimnology	0.938	359
3	Carcinogenesis	0.935	362
1	Developmental Biology	0.908	379
2	Journal of Immunology	0.906	381
1	Current Opinion in Biotechnology	0.902	382
1	International Journal of Mass Spectrometry	0.898	386
3	Plant Cell and Environment	0.891	397
3	Journal of Bacteriology	0.874	413
1	Journal of Molecular Microbiology and Biotechnology	0.857	423
1	Proteomics	0.855	426
1	Ecotoxicology	0.846	434
1	Emerging Infectious Diseases	0.840	440
19	Global Biogeochemical Cycles	0.838	443
1	Earth-Science Reviews	0.836	445
1	Laboratory Investigation	0.828	452
3	Genetics	0.825	453
3	Antimicrobial Agents and Chemotherapy	0.820	460
1	Heredity	0.817	462
2	Diversity and Distributions	0.814	466
1	Quaternary Science Reviews	0.806	474
2	Journal of the North American Benthological Society	0.797	479
1	Journal of Ecology	0.786	486
2	Biochemistry	0.777	494
4	Archives of Biochemistry and Biophysics	0.774	495
1	Macromolecules	0.767	497

Fellows' Papers in that Journal	Journal	Immediacy Index (II)	*JCR* II Rank
2	Cladistics-the International Journal of the Willi Hennig Society	0.765	499
1	Biology of Reproduction	0.755	507
1	American Journal of Respiratory Cell and Molecular Biology	0.745	517
1	Behavioral Ecology	0.741	521
6	Drug Metabolism and Disposition	0.733	534
1	Bioscience	0.731	538
1	Journal of Computational Chemistry	0.731	538
1	Science of the Total Environment	0.731	538
1	Journal of Materials Chemistry	0.728	545
2	Journal of Applied Ecology	0.726	551
2	International Journal of Wildland Fire	0.714	564
3	Analytical Chemistry	0.713	569
1	Inorganic Chemistry	0.713	569
4	Journal of Chemical Physics	0.710	572
2	Integrative and Comparative Biology	0.706	575
1	Free Radical Biology and Medicine	0.696	585
1	Physical Review A	0.696	585
1	Human Reproduction	0.693	596
6	American Naturalist	0.679	610
3	Chemical Geology	0.678	612
3	Developmental and Comparative Immunology	0.667	628
1	Ecological Engineering	0.663	640
1	Developmental Dynamics	0.651	658
4	Infection and Immunity	0.648	663
1	Biotropica	0.636	682
30	Journal of Geophysical Research-Atmospheres	0.630	695
2	Journal of Geophysical Research-Biogeosciences	0.630	695

Fellows' Papers in that Journal	Journal	Immediacy Index (II)	*JCR* II Rank
1	Journal of Geophysical Research-Oceans	0.630	695
2	Human and Ecological Risk Assessment	0.628	698
12	Geochimica et Cosmochimica Acta	0.622	707
9	Ecology	0.621	709
3	Optics Letters	0.621	709
1	Environmental Microbiology	0.620	713
7	Toxicological Sciences	0.617	715
3	Langmuir	0.610	723
2	Climatic Change	0.610	723
2	Physical Review B	0.609	725
1	JAIDS-Journal of Acquired Immune Deficiency Syndromes	0.602	734
1	Journal of the New York Entomological Society	0.600	735
7	Molecular Ecology	0.598	741
2	Journal of Nutrition	0.598	741
12	Evolution	0.597	745
1	Biosensors & Bioelectronics	0.597	745
2	Journal of Physical Chemistry A	0.595	749
1	Biological Conservation	0.589	761
1	Annual Review of Phytopathology	0.583	776
1	Plant Biology	0.568	810
15	Limnology and Oceanography	0.566	814
1	Journal of Polymer Science Part A-Polymer Chemistry	0.564	818
1	Behavioural Brain Research	0.564	818
3	Applied Physics Letters	0.551	847
2	Environmental Research	0.551	847
2	Drug Metabolism Reviews	0.550	852
1	Environment	0.550	852
7	Ecological Applications	0.543	869

Fellows' Papers in that Journal	Journal	Immediacy Index (II)	*JCR* II Rank
2	Journal of Soil and Water Conservation	0.543	869
52	Environmental Science & Technology	0.541	874
Total = 419			

Hot Papers

ESI establishes citation thresholds for hot papers, which are selected from the highly cited papers in different fields, but the time frame for citing and cited papers is much shorter—papers must be cited within 2 years of publication and the citations must occur in a 2-month time period. Papers are assigned to 2-month periods and thresholds are set for each period and field to select 0.1% of papers. There were no hot papers identified for the current 2-month period (i.e., March-April 2007), but there were a number of hot papers identified from previous periods.

Using the hot paper thresholds established by *ESI* as a benchmark, 20 hot papers, representing 1.59% of the fellows' papers, were identified in five fields—Agricultural Sciences, Engineering, Environment/Ecology, Geosciences, and Plant & Animal Science. The number of fellows' hot papers is 16 times higher than expected. The hot papers are listed in Table 17.

Table 17. Hot Papers Identified Using *ESI* Thresholds

Field	*ESI* Hot Papers Threshold	No. of Cites in 2-Month Period	Paper
Agricultural Sciences	5	6 cites in May-June 2003	Call DR, et al. Detecting and genotyping Escherichia coli O157 : H7 using multiplexed PCR and nucleic acid microarrays. *International Journal of Food Microbiology* 2001;67(1-2):71-80.
	2	2 cites in August-September 2005	Bowling DR, et al. Critical evaluation of micrometeorological methods for measuring ecosystem-atmosphere isotopic exchange of CO_2. *Agricultural and Forest Meteorology* 2003;116(3-4):159-179.
	5	5 cites in January-February 2005	Goldman R, Shields PG. Food mutagens. *Journal of Nutrition* 2003;133(3):965S-973S.
Engineering	5	8 cites in June-July 1998	Wiedensohlet A, et al. Intercomparison study of the size-dependent counting efficiency of 26 condensation particle counters. *Aerosol Science and Technology* 1997;27(2):224-242.

Field	*ESI* Hot Papers Threshold	No. of Cites in 2-Month Period	Paper
Engineering	5	6 cites in October-November 2006	Bendz D, et al. Occurrence and fate of pharmaceutically active compounds in the environment, a case study: Hoje River in Sweden. *Journal of Hazardous Materials* 2005;122(3):195-204.
	2	2 cites in August 2006	Sorooshian A, et al. Modeling and characterization of a particle-into-liquid sampler (PILS). *Aerosol Science and Technology* 2006;40(6):396-409.
Environment/ Ecology	6	6 cites in January-February 1998	Vonier PM, et al. Interaction of environmental chemicals with the estrogen and progesterone receptors from the oviduct of the American alligator. *Environmental Health Perspectives* 1996;104(12):1318-1322.
	3	3 cites in December 2002-January 2003	Lobell DB, et al. Satellite estimates of productivity and light use efficiency in United States agriculture, 1982-98. *Global Change Biology* 2002;8(8):722-735.
	5	6 cites in October-November 2004	Nathan R, et al. Methods for estimating long-distance dispersal. *Oikos* 2003;103(2):261-273.
	7	16 cites in May-June 2006	Leibold MA, et al. The metacommunity concept: a framework for multi-scale community ecology. *Ecology Letters* 2004;7(7):601-613.
	3	3 cites in March 2006	Ziegler AD, et al. Effective slope lengths for buffering hillslope surface runoff in fragmented landscapes in northern Vietnam. *Forest Ecology and Management* 2006;224(1-2):104-118.
	3	3 cites in March 2006	Sidle RC, et al. Erosion processes in steep terrain - Truths, myths, and uncertainties related to forest management in Southeast Asia. *Forest Ecology and Management* 2006;224(1-2):199-225.
Geosciences	4	4 cites in August-September 2003	Pataki DE, et al. The application and interpretation of Keeling plots in terrestrial carbon cycle research. *Global Biogeochemical Cycles* 2003;17(1):Art. No. 1022.
Plant & Animal Science	5	9 cites in September-October 2000	Rate DN, et al. The gain-of-function Arabidopsis acd6 mutant reveals novel regulation and function of the salicylic acid signaling pathway in controlling cell death, defenses, and cell growth. *Plant Cell* 1999;11(9):1695-1708.
	6	8 cites in July-August 2002	Cain ML, et al. Long-distance seed dispersal in plant populations. *American Journal of Botany* 2000;87(9):1217-1227.

Field	*ESI* Hot Papers Threshold	No. of Cites in 2-Month Period	Paper
Plant & Animal Science	3	3 cites in November 2004	Balcom PH, et al. Mercury sources and cycling in the Connecticut River and Long Island Sound. *Marine Chemistry* 2004;90(1-4):53-74.
	3	6 cites in August 2006	Savoye N, et al. Th-234 sorption and export models in the water column: a review. *Marine Chemistry* 2006;100(3-4):234-249.
	3	6 cites in August 2006	Santschi PH, et al. Thorium speciation in seawater. *Marine Chemistry* 2006;100(3-4):250-268.
	3	6 cites in August 2006	Van der Loeff, et al. A review of present techniques and methodological advances in analyzing Th-234 in aquatic systems. *Marine Chemistry* 2006;100(3-4):190-212.
	3	8 cites in August 2006	Buesseler KO, et al. An assessment of particulate organic carbon to thorium-234 ratios in the ocean and their impact on the application of Th-234 as a POC flux proxy. *Marine Chemistry* 2006;100(3-4):213-233.

Author Self-Citation

Self-citations are journal article references to articles from that same author (i.e., the first author). Because higher author self-citation rates can inflate the number of citations, the author self-citation rate was calculated for the fellows' papers. Of the 16,280 total cites, 844 are author self-cites—a 5.18% author self-citation rate. Garfield and Sher[3] found that authors working in research-based disciplines tend to cite themselves on the average of 20% of the time. MacRoberts and MacRoberts[4] claim that approximately 10% to 30% of all the citations listed fall into the category of author self-citation. Kovacic and Misak[5] recently reported a 20% author self-citation rate for medical literature. Therefore, the 5.18% self-cite rate for the fellows' papers is well below the range for author self-citation.

Highly Cited Researchers

A search of Thomson's *ISIHighlyCited.com* revealed that none of the former fellows are highly cited researchers, which is to be expected because most of these individuals began their careers in the late 1990s. *ISIHighlyCited.com* is a database of the world's most influential researchers who have made key contributions to science and technology during the period from 1981 to 1999.

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[3] Garfield E, Sher IH. New factors in the evaluation of scientific literature through citation indexing. *American Documentation* 1963;18(July):195-210.

[4] MacRoberts MH, MacRoberts BR. Problems of citation analysis: a critical review. *Journal of the American Society of Information Science* 1989;40(5):342-349.

[5] Kavaci N, Misak A. Author self-citation in medical literature. *Canadian Medical Association Journal* 2004;170(13):1929-1930.

Patents

There were 13 patents issued to and 31 patent applications filed by EPA 1995-1996 fellows. Ten (76.90%) of the 13 patents have been referenced by 22 other patents. These patents and patent applications, along with the patents that reference them, are listed in Table 18.

Table 18. Patents and Patent Applications from the 1995-1996 EPA Fellows

Patent No. or Application No.	Inventor(s)	Title	Issue Date or Application Date	No. of Patents that Referenced This Patent
6,951,598	Flugge, LA Branham KD Bunyard WC Shannon TG	Hydrophobically modified cationic acrylate copolymer/ polysiloxane blends and use in tissue	10/4/05	Referenced by 1 patent: (1) 7,101,460 Soft paper product including beneficial agents
5,951,875	Kanel, JS Guelcher SA	Adsorptive bubble separation methods and systems for dewatering suspensions of microalgae and extracting components therefrom	9/14/99	Referenced by 1 patent: (1) 6,524,486 Microalgae separator apparatus and method
6,000,551	Kanel JS Guelcher SA	Method for rupturing microalgae cells	12/14/99	Referenced by 3 patents: (1) 7,081,567 Transgenic *Dunaliella salina* as a bioreactor (2) 7,056,723 Method for the recovery and purification of poxviruses from infected cells (3) 6,337,020 Method and device for purifying waste water comprising an additional sludge treatment by ozonation
5,910,254	Guelcher SA Kanel JS	Method for dewatering microalgae with a bubble column	6/8/99	Referenced by 1 patent: (1) 6,156,561 System and method for culturing algae
5,776,349	Guelcher SA Kanel JS	Method for dewatering microalgae with a Jameson Cell	7/7/98	Referenced by 1 patent: (1) 6,936,459 Medium for the production of betacarotene and other carotenoids from *Dunaliella salina* (ARL 5) and a strain of *Dunaliella salina* for production of carotenes using the novel media

Patent No. or Application No.	Inventor(s)	Title	Issue Date or Applica-tion Date	No. of Patents that Referenced This Patent
7,179,882	Adkins RL Guelcher SA Charron JR Hayes JE	Low viscosity polymer polyols	2/20/07	Referenced by no patents.
7,160,975	Adkins RL Guelcher SA	Methacrylate stabilizers for polymer polyols	1/9/07	Referenced by no patents.
5,627,328	Sheridan DR Morrison GC	Gas sampling system and method	5/6/97	Referenced by 5 patents: (1) 7,055,364 Exhaust volume measurement device (2) 7,000,449 Exhaust volume measurement device (3) 6,973,818 Exhaust volume measurement device (4) 6,711,470 Method, system and apparatus for monitoring and adjusting the quality of indoor air (5) 6,592,827 Sampling system for fluidized bed gas phase polymerization reaction systems
6,789,032	Barbour TN Barnett TS Grady MS Purdy KG	Method of statistical binning for reliability selection	9/7/04	Referenced by 3 patents: (1) 7,194,366 System and method for estimating reliability of components for testing and quality optimization (2) 7,139,630 Allocating manufactured devices according to customer specifications (3) 6,856,939 Fault assessment using fractional failure rates
6,723,499	Dodson HS Marks JS McQuade TJ Santoro MF Santoro N	Method for identifying inhibitors of dual substrate enzymes	12/19/02	Referenced by no patents.
6,264,841	Tudor HE	Method for treating contaminated liquids	7/24/01	Referenced by 1 patent: (1) 7,138,059 Environmental bioremediation using shell as an electron donor

Patent No. or Application No.	Inventor(s)	Title	Issue Date or Applica-tion Date	No. of Patents that Referenced This Patent
6,312,809	Crooks RM Ricco AJ Wells M	Dendrimer monolayer films	11/6/01	Referenced by 5 patents: (1) 7,195,835 Proton conducting membrane for fuel cells (2) 6,977,122 Proton conducting membrane for fuel cells (3) 6,878,446 Semiconductor nanoparticles coated with electroactive polymers (4) 6,733,883 Fluorinated dendrons and self-organizing ultrahigh density nanocylinder compositions (5) 6,617,040 Chemoselective dendrimeric compounds for use in chemical sensors
6,365,048	Masten SJ Yavich AA	Method for treatment of organic matter contaminated drinking water	4/2/02	Referenced by 1 patent: (1) 6,893,559 System and method for removing organic compounds from waste water by oxidation
Application No. 2004/0084162	Shannon TG Branham KD Bunyard WC	Low slough tissue products and method for making same	5/6/04	
Application No. 2006/0003649	Runge RM Tanzer RW Branham KD Koenig DW Kroll LM Mitchell J Lostocco MR Lehman MR Bunyard WC	Dispersible alcohol cleaning wipes via topical or wet-end application of acrylamide or vinylamide/ amine polymers	1/5/06	
Application No. 2004/0086727	Flugge LA Branham KD Bunyard WC Shannon TG	Hydrophobicall y modified cationic acrylate copolymer/ polysiloxane blends and use in tissue	5/6/04	

Patent No. or Application No.	Inventor(s)	Title	Issue Date or Applica-tion Date	No. of Patents that Referenced This Patent
Application No. 2007/0092921	Pellegrini FL Carter SD	Monoclonal and polyclonal antibodies to equine albumin and hemoglobin and apparatus and methods using the antibodies in the identification and localization of ulcers and other digestive tract bleeding in equines	4/26/07	
Application No. 2002/0199156	Chess KL Heath DJ Michels WF	Hardware-adaptable data visualization tools for use in complex data analysis and engineering design	12/26/02	
Application No. 2007/0082387	Felder MS Felder J Diz HR	Method of hydrogen production combining a bioreactor with a nuclear reactor and associated apparatus	4/12/07	
Application No. 2007/0048851	Diz HR Felder MS Felder J	Method for sustained microbial production of hydrogen gas in a bioreactor using *Klebsiella oxytoca*	3/1/07	

Patent No. or Application No.	Inventor(s)	Title	Issue Date or Applica-tion Date	No. of Patents that Referenced This Patent
Application No. 2007/0048850	Diz HR Felder MS Felder J	System for sustained microbial production of hydrogen gas in a bioreactor using *Klebsiella oxytoca*	3/1/07	
Application No. 2007/0037268	Felder MS Diz HR Felder J	Hydrogen producing bioreactor with sand for the maintenance of a high biomass bacteria	2/15/07	
Application No. 2007/0036712	Felder MS Diz HR Felder J	Method of hydrogen production utilizing sand for the maintenance of a high biomass bacteria in a hydrogen bioreactor	2/15/07	
Application No. 2006/0292685	Diz HR Felder MS Felder J	Method of sustained microbial production of hydrogen gas in a bioreactor utilizing an equalization tank	12/28/06	
Application No. 2006/0286665	Diz HR Felder MS Felder J	System for sustained microbial production of hydrogen gas in a bioreactor utilizing an equalization tank	12/21/06	

Patent No. or Application No.	Inventor(s)	Title	Issue Date or Applica-tion Date	No. of Patents that Referenced This Patent
Application No. 2006/0281164	Diz HR Felder MS Felder J	System for sustained microbial production of hydrogen gas in a bioreactor utilizing a circulation system	12/14/06	
Application No. 2006/0281163	Diz HR Felder MS Felder J	Method of producing hydrogen gas in a bioreactor with substrates and associated apparatus	12/14/06	
Application No. 2006/0281162	Diz HR Felder MS Felder J	System for sustained microbial production of hydrogen gas in a bioreactor	12/14/06	
Application No. 2006/0281161	Felder MS Diz HR Felder J	Production of hydrogen gas in a bioreactor with a coated substrate	12/14/06	
Application No. 2006/0281160	Diz HR Felder MS Felder J	Method of hydrogen production in a bioreactor having a circulation system	12/14/06	
Application No. 2006/0281159	Diz HR Felder MS Felder J	Method for sustained microbial production of hydrogen gas in a bioreactor	12/14/06	

Patent No. or Application No.	Inventor(s)	Title	Issue Date or Applica-tion Date	No. of Patents that Referenced This Patent
Application No. 2006/0281158	Felder J Felder MS Diz HR	Production of hydrogen gas and isolation of hydrogen producing microorganisms using replenishing coated substrates	12/14/06	
Application No. 2006/0281144	Felder MS Diz HR Felder J	Method for utilizing nonparaffin-ophilic microorganisms for producing specific waste degradation	12/14/06	
Application No. 2006/0281141	Felder MS Diz HR Felder J	Method for isolating potential antibiotic microorganisms	12/14/06	
Application No. 2006/0275894	Felder MS Felder J Diz HR	Hydrogen producing apparatus utilizing excess heat from an industrial facility	12/7/06	
Application No. 2006/0275206	Felder MS Felder J Diz HR	Method of hydrogen production utilizing excess heat from an industrial facility	12/7/06	
Application No. 2006/0272956	Felder MS Felder J Diz HR	Dual hydrogen production apparatus	12/7/06	
Application No. 2006/0272955	Felder MS Felder J Diz HR	Dual method of hydrogen production	12/7/06	

Patent No. or Application No.	Inventor(s)	Title	Issue Date or Applica-tion Date	No. of Patents that Referenced This Patent
Application No. 2005/0085613	Adkins RL Guelcher S	Novel unsaturated macromers for preformed stabilizers and polymer polyols	4/21/05	
Application No. 2005/0013793	Beckman EJ Hollinger JO Doll BA Guelcher SA Zhang J	Biodegradable polyurethanes and use thereof	1/20/05	
Application No. 2006/0057027	Hudak AT Tierney DM Wang DD Grenz RL Rohrdanz RR Alejandro KC Galloway RK	Fluid collection and testing device	3/16/06	
Application No. 2003/0151422	Barnett TS Grady MS Purdy KG	Method for burn-in testing	8/14/03	
Application No. 2004/0076663	Boskey AL Tudor H	Complexed-acidic-phospholipid-collagen composites for bone induction	4/22/04	
Application No. 2002/0159980	Block DE Vandergheynst	Benomyl tolerant fusarium lateritium and uses thereof	10/31/02	

Papers Not Verified

Seven papers cited in this analysis as either a highly cited paper or hot paper (see Tables 19 and 20) have not yet been verified as a publication of the EPA fellow (i.e., the fellow has not replied to the inquiry asking if the publication is correctly attributed to the former EPA fellow).

Table 19. Highly Cited Fellows' Papers That Have Not Yet Been Verified

No. of Cites	First Author	Paper
117	Zhou YF	Preparation of hyperbranched polymer films grafted on self-assembled monolayers. *Journal of the American Chemical Society* 1996;118(15):3773-3774.
194	Wells M	Interactions between organized, surface-confined monolayers and vapor-phase probe molecules .10. Preparation and properties of chemically sensitive dendrimer surfaces. *Journal of the American Chemical Society* 1996;118(16):3988-3989.
253	Follmar LC	Vitellogenin induction and reduced serum testosterone concentrations in feral male carp (Cyprinus carpio) captured near a major metropolitan sewage treatment plant. *Environmental Health Perspectives* 1996;104(10):1096-1101.
95	Clark JS	Interpreting recruitment limitation in forests. *American Journal of Botany* 1999;86(1):1-16.
116	Rate DN	The gain-of-function Arabidopsis acd6 mutant reveals novel regulation and function of the salicylic acid signaling pathway in controlling cell death, defenses, and cell growth. *Plant Cell* 1999;11(9):1695-1708.
93	Weller DM	Microbial populations responsible for specific soil suppressiveness to plant pathogens. *Annual Review of Phytopathology* 2002;40:309.

Table 20. Hot Papers That Have Not Been Verified

No. of Cites	First Author	Paper
111	Vonier PM	Interaction of environmental chemicals with the estrogen and progesterone receptors from the oviduct of the American alligator. Environmental Health Perspectives 1996;104(12):1318-1322.
*116	Rate DN	The gain-of-function Arabidopsis acd6 mutant reveals novel regulation and function of the salicylic acid signaling pathway in controlling cell death, defenses, and cell growth. *Plant Cell* 1999;11(9):1695-1708.

* This paper was both highly cited and hot.