

# Long-Term vs. Short-Term Impact: Part II. Cumulative Impact Factors

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## Cumulative Impact Factors (Table)

In the February 2, 1998 issue of *The Scientist* (2[3]:11-12), we published the list of the 100 highest-impact journals for the period 1981-95. This study emphasized longterm cumulative impact rather than short-term or current impact. The main focus of these data were the articles published in 1981-82. We chose these two years so that 15 years of cumulative citations could be compiled. To many of our readers, these years must seem remote. But for some of our readers, our study did not go far enough. The editor of *Arthritis and Rheumatism* wondered why his journal was not included. The simple answer is that his journal was the 101st on our list. So we have rectified that "omission" by including below the next 100 journals in the ranked database.

All these data were extracted from the *Journals Performance Indicators* file of the Institute for Scientific Information in Philadelphia, which provides year-by-year cumulative information on thousands of journals in the social and natural sciences. This database can also tell you a great deal about citedness. In a separate Commentary for *The Scientist* (see page 8), I deal with the subject of "uncitedness." It is essential to note that almost all the articles and reviews published in the high-impact journals were cited one or more times. Clearly, the degree of citedness is strongly

correlated with impact. Low-impact journals account for most uncitedness. The journals listed below include titles familiar to most readers. Several large journals in the physical sciences, such as *Analytical Chemistry* and the *Journal of Chemical Physics*, are included. Although physics journals might be regarded as ancillary to the life sciences, the borderline is often hard to define. However, invidious comparisons between journals should be avoided and confined to disciplines and even sub-disciplines. Such comparisons will never be perfect.

Few journals have exactly the same mix of original articles, reviews, and other items. For those who need detailed comparisons, article-by-article audits are essential.

The tables we have provided for this second group from the top 200 journals (by cumulative impact) also include data for seven-year impacts. It may surprise some readers that the latter, covering 1989-90 source literature, are sometimes much higher than the 15-year impacts. The explanation is relatively simple. The number of articles published in 1981-82 was significantly lower than the number published in 1989-90. Overall, the literature continues to grow 3 percent to 4 percent per year. Thus, the cumulative seven-year impact for *Nature*

was 99.10 (rank 4), and that for Science was 106.07 (rank 3), in comparison to 78.97 and 70.84 for the 15-year impact.

A special note of caution concerns journals such as *Angewandte Chemie*, which appears in German but also in a cover-to-cover translation version. The data for *Angewandte Chemie International Edition* cannot be precise. On the one hand, this journal double-cites references to its own articles, while other journals may or may not cite the translated version. Since the volume and pagination for both versions is different, it would require inordinate effort to unify the data for both editions (T. Braun, "The sweet and sour of journal citation rates," *The Chemical Intelligencer*, 1:31-32, 1995). The same

may be true for other translation journals.

The case of *Arthritis and Rheumatism* shows that while its current impact factor rank did not change much from 1983 to 1991 (60 to 57), its 15-year cumulative impact factor rank of 101 is lower than its seven-year rank of 43. It is important to reiterate the skewing effects of one or two highly cited papers for either time period.

For information on *Journals Performance Indicators 1981-97*, contact David Pendlebury at the Institute for Scientific Information Tel:215-386-0100 Ext/ 1411 or [david.pendlebury@isinet.com](mailto:david.pendlebury@isinet.com)).

# Cumulative Impact Factors

## 15-YEAR (1981-1995) CUMULATIVE DATA

## 7-YEAR (1989-1995) CUMULATIVE DATA

### JOURNAL TITLE

'81-'82 Source Items

Citations '81-'95

15-Year IF\*

15-Year Rank

IF Rank in '83

'89-'90 Source Items

Citations '89-'95

7-Year IF

7-Year Rank

IF Rank in '91

| JOURNAL TITLE   | '81-'82 Source Items | Citations '81-'95 | 15-Year IF* | 15-Year Rank | IF Rank in '83 | '89-'90 Source Items | Citations '89-'95 | 7-Year IF | 7-Year Rank | IF Rank in '91 |
|---|----------------------|-------------------|-------------|--------------|----------------|----------------------|-------------------|-----------|-------------|----------------|
| <i>Arthritis and Rheumatism</i>                                 | 437                  | 13,112            | 30.0        | 101          | 60             | 444                  | 10,859            | 24.5      | 43          | 57             |
| <i>Marine Ecology-Progress Series</i>                           | 246                  | 7,375             | 30.0        | 102          | 253            | 544                  | 7,040             | 12.9      | 209         | 285            |
| <i>Prostaglandins</i>   | 369                  | 11,043            | 29.9        | 103          | 71             | 249                  | 2,135             | 8.6       | 476         | 388            |
| <i>Peptides</i>   | 314                  | 9,378             | 29.9        | 104          | 75             | 426                  | 5,282             | 12.4      | 229         | 283            |
| <i>Surface Science</i>  | 1,064                | 31,727            | 29.8        | 105          | 45             | 1,523                | 18,165            | 11.9      | 244         | 200            |
| <i>Journal of Molecular and Cellular Cardiology</i>             | 228                  | 6,762             | 29.7        | 106          | 121            | 308                  | 4,533             | 14.7      | 164         | 139            |
| <i>Infection and Immunity</i>                                   | 1,441                | 42,707            | 29.6        | 107          | 98             | 1,284                | 24,248            | 18.9      | 81          | 107            |
| <i>Reviews of Infectious Diseases</i>                           | 328                  | 9,680             | 29.5        | 108          | 190            | 525                  | 8,355             | 15.9      | 130         | 160            |
| <i>British Journal of Pharmacology</i>                          | 608                  | 17,904            | 29.4        | 109          | 27             | 971                  | 22,479            | 23.2      | 52          | 56             |
| <i>Annals of Physics NY</i>                                     | 246                  | 7,236             | 29.4        | 110          | 162            | 240                  | 2,873             | 12.0      | 242         | 249            |
| <i>Organometallics</i>  | 375                  | 11,008            | 29.4        | 111          | 113            | 1,096                | 15,999            | 14.6      | 168         | 143            |
| <i>Genetics</i>   | 343                  | 9,912             | 28.9        | 112          | 147            | 507                  | 12,303            | 24.3      | 45          | 82             |
| <i>Anesthesiology</i>   | 451                  | 13,001            | 28.8        | 113          | 62             | 704                  | 9,598             | 13.6      | 192         | 151            |
| <i>American Heart Journal</i>                                   | 705                  | 20,174            | 28.6        | 114          | 90             | 975                  | 9,361             | 9.6       | 376         | 365            |
| <i>Federation Proceedings</i>                                   | 449                  | 12,809            | 28.5        | 115          | 2,810          | 271                  | 17,731            | 65.4      | 7           | 5              |
| <i>Molecular and Cellular Endocrinology</i>                     | 249                  | 7,003             | 28.1        | 116          | 93             | 418                  | 6,418             | 15.4      | 146         | 168            |
| <i>Biology of Reproduction</i>                                  | 545                  | 15,268            | 28.0        | 117          | 130            | 563                  | 8,840             | 15.7      | 139         | 154            |
| <i>Journal of Chemical Physics</i>                              | 3,645                | 101,875           | 27.9        | 118          | 106            | 3,823                | 68,621            | 17.9      | 96          | 94             |
| <i>Philosophical Transactions of the Royal Society Series B</i> | 322                  | 8,988             | 27.9        | 119          | 292            | 308                  | 3,552             | 11.5      | 258         | 316            |
| <i>Transplantation</i>  | 486                  | 13,532            | 27.8        | 120          | 59             | 1,014                | 15,611            | 15.4      | 144         | 150            |
| <i>Marine Biology</i>   | 455                  | 12,576            | 27.6        | 121          | 496            | 484                  | 4,235             | 8.8       | 461         | 567            |
| <i>Biophysical Journal</i>                                      | 421                  | 11,597            | 27.5        | 122          | 34             | 515                  | 8,373             | 16.3      | 119         | 59             |
| <i>American Journal of Human Genetics</i>                       | 182                  | 5,006             | 27.5        | 123          | 44             | 452                  | 16,122            | 35.7      | 22          | 20             |
| <i>Plant Physiology</i>   | 1,193                | 32,784            | 27.5        | 124          | 116            | 1,517                | 24,229            | 16.0      | 126         | 162            |
| <i>Journal of Bacteriology</i>                                  | 1,420                | 38,967            | 27.4        | 125          | 107            | 2,001                | 41,182            | 20.6      | 66          | 87             |

\*IF=Impact Factor

# Journal Impact

## 15-YEAR (1981-1995) CUMULATIVE DATA

## 7-YEAR (1989-1995) CUMULATIVE DATA

| JOURNAL TITLE  | 15-YEAR (1981-1995) CUMULATIVE DATA |                   |            |              |                | 7-YEAR (1989-1995) CUMULATIVE DATA |                   |           |             |                |
|--|-------------------------------------|-------------------|------------|--------------|----------------|------------------------------------|-------------------|-----------|-------------|----------------|
|  | '81-'82 Source Items                | Citations '81-'95 | 15-Year IF | 15-Year Rank | IF Rank in '83 | '89-'90 Source Items               | Citations '89-'95 | 7-Year IF | 7-Year Rank | IF Rank in '91 |
| <i>Metabolism-Clinical and Experimental</i>                | 398                                 | 10,911            | 27.4       | 126          | 148            | 489                                | 6,351             | 13.0      | 207         | 281            |
| <i>Planta</i>  | 498                                 | 13,635            | 27.4       | 127          | 151            | 464                                | 7,541             | 16.3      | 121         | 156            |
| <i>Journal of Neurosurgery</i>                             | 595                                 | 16,270            | 27.3       | 128          | 313            | 598                                | 9,498             | 15.9      | 133         | 235            |
| <i>Journal of Immunological Methods</i>                    | 603                                 | 16,449            | 27.3       | 129          | 180            | 667                                | 7,777             | 11.7      | 254         | 334            |
| <i>Carcinogenesis</i>                                      | 486                                 | 13,144            | 27.0       | 130          | 95             | 728                                | 11,009            | 15.1      | 152         | 165            |
| <i>Physical Review B-Condensed Matter</i>                  | 3,429                               | 92,729            | 27.0       | 131          | 88             | 7,163                              | 121,922           | 17.0      | 107         | 96             |
| <i>Communications In Mathematical Physics</i>              | 300                                 | 8,085             | 27.0       | 132          | 152            | 439                                | 6,071             | 13.8      | 185         | 212            |
| <i>Journal of Nuclear Medicine</i>                         | 351                                 | 9,442             | 26.9       | 133          | 50             | 476                                | 8,787             | 18.5      | 88          | 58             |
| <i>Journal of the Atmospheric Sciences</i>                 | 464                                 | 12,430            | 26.8       | 134          | 96             | 433                                | 5,758             | 13.3      | 199         | 362            |
| <i>Journal of Pediatrics</i>                               | 903                                 | 24,034            | 26.6       | 135          | 132            | 771                                | 10,734            | 13.9      | 178         | 220            |
| <i>American Journal of Anatomy</i>                         | 205                                 | 5,449             | 26.6       | 136          | 312            | 207                                | 1,762             | 8.5       | 483         | 502            |
| <i>Journal of Cardiovascular Pharmacology</i>              | 369                                 | 9,791             | 26.5       | 137          | 163            | 1,003                              | 12,219            | 12.2      | 234         | 252            |
| <i>Surgery</i>   | 551                                 | 14,577            | 26.5       | 138          | 201            | 560                                | 6,237             | 11.1      | 271         | 384            |
| <i>Analytical Chemistry</i>                                | 1,333                               | 35,254            | 26.4       | 139          | 82             | 1,149                              | 21,541            | 18.7      | 83          | 92             |
| <i>Molecular and Cellular Biochemistry</i>                 | 270                                 | 7,138             | 26.4       | 140          | 175            | 337                                | 2,576             | 7.6       | 600         | over 560       |
| <i>Mayo Clinic Proceedings</i>                             | 224                                 | 5,887             | 26.3       | 141          | 157            | 267                                | 4,349             | 16.3      | 118         | 174            |
| <i>Journal of Thoracic and Cardiovascular Surgery</i>      | 505                                 | 13,256            | 26.2       | 142          | 176            | 486                                | 6,658             | 13.7      | 189         | 241            |
| <i>Macromolecules</i>                                      | 751                                 | 19,685            | 26.2       | 143          | 183            | 1,686                              | 25,106            | 14.9      | 158         | 61             |
| <i>Immunogenetics</i>                                      | 286                                 | 7,447             | 26.0       | 144          | 43             | 275                                | 4,350             | 15.8      | 134         | 95             |
| <i>Virology</i>  | 920                                 | 23,867            | 25.9       | 145          | 81             | 981                                | 19,643            | 20.0      | 71          | 65             |
| <i>Journal of Experimental Biology</i>                     | 347                                 | 8,969             | 25.8       | 146          | 321            | 445                                | 4,561             | 10.2      | 329         | 350            |
| <i>Acta Metallurgica</i>                                   | 444                                 | 11,464            | 25.8       | 147          | 232            | 341                                | 4,759             | 14.0      | 177         | 274            |
| <i>Journal of Laboratory and Clinical Medicine</i>         | 354                                 | 9,127             | 25.8       | 148          | 135            | 359                                | 3,865             | 10.8      | 291         | 331            |
| <i>Deep-Sea Research Part A-Oceanographic Research</i>     | 215                                 | 5,519             | 25.7       | 149          | 161            | 236                                | 3,563             | 15.1      | 153         | 276            |
| <i>Neuroscience Letters</i>                                | 717                                 | 18,243            | 25.4       | 150          | 126            | 1,603                              | 23,417            | 14.6      | 167         | 203            |
| <i>Journal of Cellular Physiology</i>                      | 479                                 | 12,181            | 25.4       | 151          | 120            | 584                                | 10,895            | 18.7      | 85          | 127            |
| <i>Experimental Cell Research</i>                          | 723                                 | 18,250            | 25.2       | 152          | 114            | 619                                | 8,584             | 13.9      | 182         | 197            |
| <i>Antimicrobial Agents and Chemotherapy</i>               | 835                                 | 20,939            | 25.1       | 153          | 83             | 968                                | 16,706            | 17.3      | 105         | 121            |
| <i>Pediatrics</i>  | 652                                 | 16,348            | 25.1       | 154          | 150            | 630                                | 8,530             | 13.5      | 194         | 176            |
| <i>IEEE Journal of Quantum Electronics</i>                 | 601                                 | 14,857            | 24.7       | 155          | 104            | 503                                | 6,143             | 12.2      | 233         | 235            |
| <i>Fertility and Sterility</i>                             | 530                                 | 13,099            | 24.7       | 156          | 187            | 778                                | 9,674             | 12.4      | 228         | 305            |
| <i>Astronomical Journal</i>                                | 412                                 | 10,174            | 24.7       | 157          | 311            | 695                                | 10,286            | 14.8      | 161         | 214            |
| <i>Animal Behaviour</i>                                    | 328                                 | 8,079             | 24.6       | 158          | 316            | 522                                | 5,496             | 10.5      | 307         | 403            |
| <i>Geology</i>   | 222                                 | 5,453             | 24.6       | 159          | 186            | 570                                | 7,166             | 12.6      | 220         | 185            |
| <i>Monthly Weather Review</i>                              | 391                                 | 9,587             | 24.5       | 160          | 143            | 336                                | 3,683             | 11.0      | 278         | 536            |
| <i>Oecologia</i>   | 546                                 | 13,343            | 24.4       | 161          | 346            | 645                                | 6,794             | 10.5      | 306         | 422            |
| <i>Chromosoma</i>  | 310                                 | 7,510             | 24.2       | 162          | 325            | 153                                | 2,716             | 17.8      | 99          | 187            |
| <i>Atherosclerosis</i>                                     | 315                                 | 7,624             | 24.2       | 163          | 32             | 301                                | 5,208             | 17.3      | 104         | 206            |
| <i>Biochemical and Biophysical Research Communications</i> | 2,663                               | 64,428            | 24.2       | 164          | 111            | 3,217                              | 66,748            | 20.7      | 63          | 85             |
| <i>Monthly Notices of the Royal Astronomical Society</i>   | 801                                 | 19,340            | 24.1       | 165          | 156            | 1,022                              | 14,212            | 13.9      | 179         | 183            |
| <i>FEBS Letters</i>  | 2,035                               | 49,065            | 24.1       | 166          | 117            | 2,530                              | 47,072            | 18.6      | 86          | 104            |
| <i>Molecular &amp; General Genetics</i>                    | 701                                 | 16,823            | 24.0       | 167          | 127            | 720                                | 13,063            | 18.1      | 91          | 123            |
| <i>Clinical Science</i>                                    | 745                                 | 17,878            | 24.0       | 168          | 140            | 381                                | 4,573             | 12.0      | 240         | 265            |
| <i>Psychopharmacology</i>                                  | 552                                 | 13,208            | 23.9       | 169          | 286            | 622                                | 9,884             | 15.9      | 132         | 193            |
| <i>JAMA-Journal of the American Medical Association</i>    | 1,124                               | 26,836            | 23.9       | 170          | 79             | 1,284                              | 31,097            | 24.2      | 46          | 45             |
| <i>Journal of Physical Oceanography</i>                    | 288                                 | 6,853             | 23.8       | 171          | 125            | 262                                | 2,690             | 10.3      | 328         | 352            |
| <i>Applied and Environmental Microbiology</i>              | 938                                 | 22,277            | 23.7       | 172          | 231            | 1,249                              | 18,671            | 14.9      | 156         | 191            |
| <i>Environmental Science &amp; Technology</i>              | 435                                 | 10,318            | 23.7       | 173          | 182            | 459                                | 7,492             | 16.3      | 117         | 161            |
| <i>Applied Physics Letters</i>                             | 1,698                               | 40,187            | 23.7       | 174          | 86             | 3,558                              | 61,777            | 17.4      | 103         | 84             |
| <i>Journal of Cell Science</i>                             | 302                                 | 7,139             | 23.6       | 175          | 174            | 497                                | 8,366             | 16.8      | 112         | 117            |
| <i>Brain Research Bulletin</i>                             | 351                                 | 8,292             | 23.6       | 176          | 322            | 516                                | 5,682             | 11.0      | 274         | 373            |
| <i>Radiology</i>   | 1,210                               | 28,567            | 23.6       | 177          | 128            | 1,373                              | 26,470            | 19.3      | 76          | 91             |
| <i>Journal of Physical Chemistry</i>                       | 1,640                               | 38,715            | 23.6       | 178          | 198            | 2,868                              | 40,909            | 14.3      | 174         | 136            |
| <i>Thrombosis and Haemostasis</i>                          | 260                                 | 6,134             | 23.6       | 179          | 74             | 378                                | 6,039             | 16.0      | 125         | 103            |
| <i>Clinical Chemistry</i>                                  | 801                                 | 18,838            | 23.5       | 180          | 100            | 961                                | 8,509             | 8.9       | 444         | 321            |
| <i>Journal of Bone and Joint Surgery-American Volume</i>   | 462                                 | 10,820            | 23.4       | 181          | over 500       | 459                                | -                 | -         | 2703        | over 560       |
| <i>Biochimica Et Biophysica Acta</i>                       | 4,469                               | 104,613           | 23.4       | 182          | 178            | 3,904                              | 54,813            | 14.0      | 176         | 208            |
| <i>Physics Letters B</i>                                   | 2,244                               | 52,493            | 23.4       | 183          | 49             | 3,323                              | 44,938            | 13.5      | 195         | 126            |
| <i>Clinical and Experimental Immunology</i>                | 721                                 | 16,823            | 23.3       | 184          | 108            | 708                                | 9,103             | 12.9      | 210         | 257            |
| <i>Clinical Endocrinology</i>                              | 294                                 | 6,781             | 23.1       | 185          | 217            | 313                                | 4,097             | 13.1      | 203         | 309            |
| <i>Biological Psychiatry</i>                               | 251                                 | 5,788             | 23.1       | 186          | 119            | 474                                | 5,697             | 12.0      | 238         | 233            |
| <i>Developmental Brain Research</i>                        | 281                                 | 6,477             | 23.0       | 187          | 154            | 449                                | 6,387             | 14.2      | 175         | 223            |
| <i>Neuropharmacology</i>                                   | 441                                 | 10,163            | 23.0       | 188          | 134            | 403                                | 4,740             | 11.8      | 251         | 256            |
| <i>Philosophical Magazine B</i>                            | 223                                 | 5,137             | 23.0       | 189          | 160            | 234                                | 2,192             | 9.4       | 398         | 314            |
| <i>Calcified Tissue International</i>                      | 193                                 | 4,443             | 23.0       | 190          | 243            | 231                                | 3,411             | 14.8      | 162         | 187            |
| <i>Inorganic Chemistry</i>                                 | 1,805                               | 41,520            | 23.0       | 191          | 131            | 2,063                              | 25,676            | 12.4      | 226         | 218            |
| <i>Electroencephalography and Clinical Neurophysiology</i> | 347                                 | 7,957             | 22.9       | 192          | 305            | 344                                | 4,213             | 12.2      | 231         | 260            |
| <i>Pure and Applied Chemistry</i>                          | 343                                 | 7,808             | 22.8       | 193          | 256            | 578                                | 4,711             | 8.2       | 532         | 546            |
| <i>Angewandte Chemie-International Edition In English</i>  | 833                                 | 18,908            | 22.7       | 194          | 51             | 829                                | 15,917            | 19.2      | 77          | 47             |
| <i>Physical Review A</i>                                   | 1,626                               | 36,890            | 22.7       | 195          | 142            | 3,611                              | 39,207            | 10.9      | 287         | 262            |
| <i>Archives of Biochemistry and Biophysics</i>             | 1,123                               | 25,342            | 22.6       | 196          | 172            | 1,066                              | 14,806            | 13.9      | 180         | 210            |
| <i>Journal of Fluid Mechanics</i>                          | 603                                 | 13,558            | 22.5       | 197          | 360            | 652                                | 7,345             | 11.3      | 265         | 383            |
| <i>Journals of Gerontology</i>                             | 214                                 | 4,799             | 22.4       | 198          | 415            | 241                                | 3,472             | 14.4      | 172         | 379            |
| <i>British Journal of Nutrition</i>                        | 249                                 | 5,574             | 22.4       | 199          | 330            | 283                                | 2,855             | 10.1      | 338         | 491            |
| <i>American Mineralogist</i>                               | 259.0                               | 5,780.0           | 22.3       | 200          | 228            | 307.0                              | 3,097.0           | 10.1      | 339         | 224            |