

The 1974 Articles Most Cited in 1974

February 23, 1976

Number 8

Last week we published the 1973 articles most cited in 1973.¹ In this issue we are publishing the same data for 1974. It is a remarkable coincidence that each list contains exactly 34 articles, since the only criterion for inclusion is 14 or more citations.

Although the number of papers in the physical sciences was found to have increased from 1972 to 1973, the biological sciences regained predominance in 1974. In 1973, of 34 papers 21 were in physics, astronomy and chemistry. In 1974, of 34 papers 20 were in biological sciences. With only three exceptions, all articles on the 1974 list were cited more heavily in 1975 than in 1974.

The single most highly cited 1974 paper, a catalog of X-ray sources, was in fact a supplement to the *Astrophysical Journal* (1). Speaking of astronomy, the solar wind still seems to be in the air: the appearance of two papers on the subject, one on the 1973 list² and one on the present list (7) are evidence of a continuing high level of interest in this phenomenon.

It is interesting to see the name of John Bardeen, twice winner of the Nobel Prize in Physics in 1956 and 1972, on this most cited list for 1974 (14).

It is also significant that 2 separate papers by the same authors, P.Y. Chou and G.D. Fasman, appear on the list (16 and 20). Both papers were published in the same issue of the same journal, and both deal with proteins. While this is a good example of co-citation,³ the authors that cite the two papers are not identical.

Review journals were absent from the 1973 list, but one, *Advances in Immunology*, did appear in 1974 (8). This journal was not covered in the 1974 *Science Citation Index*[®], but was covered in the *Index to Scientific Reviews*. This oversight has now been corrected.

Science, which had only 3 most-cited papers in 1973, led the 1974 list with 6 most-cited papers. One wonders whether this impressive showing will reoccur in view of the recently announced reorganization of *Science*. As you may have read in the *ISI*[®] *Press Digest* (pd 0503),

1974 Articles Most Cited in 1974

A = times cited in 1974. B = times cited in 1975. C = times cited 1974-1975.
The number given for 1975 is an extrapolation from the first 9 months of the year.

A	B	C	Bibliographic Data	
1.	31	42	73	Giacconi R, Murray S, Gursky H, Kellogg E, Schreier E, Matilsky T, Koch D & Tanabaum H. Third Uhuru catalog of X-ray sources. <i>Astrophys. J.</i> 27(Supp. 237):37, 1974.
2.	29	40	69	Tarnopolsky G, Eshelman J, Law M E, Leong J, Newman H, Little R, Strauch K, & Wilson R. Hadron production by electron-positron annihilation at 5 GEV center-of-mass energy. <i>Phys. Rev. Letters</i> 32(8):432, 1974.
3.	24	30	54	Peterson P A, Raak L, Lindblom J B. Highly purified papain-solubilized HL-A antigens contain BETA2 microglobulin. <i>Proc. Nat. Acad. Sci. USA</i> 71(1):35, 1974.
4.	22	46	68	Benvenuti A, Cheng D C, Cline D, Ford W T, Imlay R, Ling T Y, Mann A K, Messing F, Piccioni R L, Pilcher J, Reeder D D, Rubba C, Stefanski R & Sulak L. Observations of muonless neutrino-induced inelastic interactions. <i>Phys. Rev. D</i> 9(4):980, 1974.
5.	21	34	55	Gross D J & Wilczek F. Asymptotically free gauge theories 2. <i>Phys. Rev. D</i> 9(4):980, 1974.
6.	21	33	54	Strand M, August J T. Structural proteins of mamalian oncogenic RNA viruses; multiple antigenic determinants of major internal protein and envelope glycoprotein. <i>J. Virology</i> 13(1):171, 1974.
7.	19	21	40	Smith E J, Davis L, Jones D E, Colburn D S, Coleman P J, Dyal P & Sonett C P. Magnetic field of Jupiter and its interaction with solar-wind. <i>Science</i> 183(4122):305, 1974.
8.	18	85	103	Cerottini J C & Brunner K T. Cell-mediated cytotoxicity, allograft rejection and tumor immunity. <i>Adv. Immunology</i> 18:67, 1974.
9.	18	25	43	Cuatrecasas P, Tell G P E, Sica V, Parikh I & Chang K J. Noradrenaline binding and search for catecholamine receptors. <i>Nature</i> 247(5436):92, 1974.
10.	18	25	43	Georgi H & Politzer H D. Electroproduction scaling in an asymptotically free theory of strong interactions. <i>Phys. Rev. D</i> 9(2):416, 1974.
11.	18	13	31	Inman W H W & Mushin W W. Jaundice after repeated exposure to halothane; analysis of reports to Committee on Safety of Medicines. <i>Brit. Med. J.</i> 1(5896):5, 1974.
12.	18	20	38	Nicolson G L, Blaustein J & Etzler M E. Characterization of 2 plant lectins from ricinus-communis and their quantitative interaction with a murine lymphoma. <i>Biochemistry</i> 13(1):196, 1974.
13.	18	64	82	O'Malley B W & Means A R. Female steroid-hormones and target-cell nuclei. <i>Science</i> 183(4125):610, 1974.
14.	16	23	39	Allender D, Bray J W & Bardeen J. Theory of fluctuation superconductivity from electron phonon interactions in pseudo-one-dimensional systems. <i>Phys. Rev. B.</i> 9(1):119, 1974.
15.	16	53	69	Bourne H R, Lichtenstein L M, Melmon K L, Henney C S, Weinstein V & Shearer G M. Modulation of inflammation and immunity by cyclic-AMP. <i>Science</i> 184(4132):19, 1974.
16.	16	31	47	Chou P Y & Fasman G C. Conformational parameters for amino-acids in helical, beta-sheet, and random coil regions calculated from proteins. <i>Biochemistry</i> 13(2):211, 1974.

17. 16 48 64 **Hamberg M, Svensson J, Wakabayashi T & Samuelsson B.** Isolation and structure of 2 prostaglandin endoperoxides that cause platelet aggregation. *Proc. Nat. Acad. Sci USA* 71(2):345, 1974.
18. 16 51 67 **New P F J, Scott W R, Schnur J A, Davis K R, Taveras J M.** Computerized axial tomography with EMI scanner. *Radiology* 110(1):109, 1974.
19. 16 12 28 **Nicolson G L & Singer S J.** Distribution and asymmetry of mammalian-cell surface saccharides utilizing ferritin-conjugated plant agglutinins as specific saccharide strains. *J. Cell Biol.* 60:236, 1974.
20. 15 48 63 **Chou P Y & Fasman G D.** Prediction of protein conformation. *Biochemistry* 13(2):222, 1974.
21. 15 49 64 **Hammerling G J, Deak B D, Mauve G, Hammerling U, McDevitt H O.** B-lymphocyte alloantigens controlled by I-region of major histocompatibility complex in mice. *Immunogenetics* 1(1):68, 1974.
22. 15 12 27 **Simpson J A, Hamilton D, Lentz G, McKibben R B, Mogrocampero A, Perkins M, Pyle K R, Tuzzolino A J & O'Gallagher J J.** Protons and electrons in Jupiter's magnetic field; results from University of Chicago experiment on Pioneer 10. *Science* 183(4122):306, 1974.
23. 15 13 28 **Suddath F L, Quigley G J, McPherson A, Snaeden D, Kim J J, Kim S H & Rich A.** 3-Dimensional structure of yeast phenylalanine transfer-RNA at 3.0A resolution. *Nature* 248(5443):20, 1974.
24. 15 5 20 **Thomas W J, McGreynolds J W, Mock C R & Bailey D W.** Ampicillin-resistant hemophilus-influenzae meningitis. *Lancet* 1(7852):313, 1974.
25. 14 25 39 **Biraben F, Cagnac B & Grynberg G.** Experimental evidence of 2-photon transition without doppler broadening. *Phys. Rev. Letters* 32(12):643, 1974.
26. 14 29 43 **Brazeau P, Rivier J, Vale W, Guillemin R.** Inhibition of growth-hormone secretion in rat by synthetic somatostain. *Endocrinology* 94(1):184, 1974.
27. 14 30 44 **Dickler H B, Adkinson N F & Terry W D.** Evidence for individual human peripheral-blood lymphocytes bearing both B and T cell markers. *Nature* 247(5438):213, 1974.
28. 14 26 40 **Kliore A, Cain D L, Fjeldbo G, Seidel B L & Rasool S I.** Preliminary results on atmospheres of 10 and Jupiter from Pioneer 10 S-band occultation experiment. *Science* 183(4122):323, 1974.
29. 14 52 66 **Koerker D J, Ruch W W, Chideckel E, Palmer J, Goodner C J, Ensinek J & Gale C C.** Somatostain, hypothalamic inhibitor of endocrine pancreas. *Science* 184(4135):482, 1974.
30. 14 29 43 **Levenson M D & Bloember N.** Observation of 2-photon absorption without doppler broadening on 35-55 transition in sodium vapor. *Phys. Rev. Letters* 32(12):645, 1974.
31. 14 22 36 **Levin W, Ryan D, West S & Lu A Y H.** Preparation of partially purified, lipid depleted cytochrome-P-450 and reduced nicotinamide adenine-dinucleotide phosphate-cytochrome-C reductase from rat-liver microsomes. *J. Biol. Chem.* 249(6):1747, 1974.
32. 14 17 31 **Melosh H J.** Quarks; currents and constituents. *Phys. Rev. D.* 9(4):1095, 1974.
33. 14 36 50 **Seifert W E & Rudland P S.** Possible involvement of cyclic GMP in growth-control of cultured mouse cells. *Nature* 248(5444):138, 1974.
34. 14 20 34 **Steigbigel R T, Johnson P K & Remington J S.** Nitroblue tetrazolium reduction test versus conventional hematology in diagnosis of bacterial infection. *New Engl. J. Med.* 290(5):235, 1974.

W.D. McElroy, the new AAAS President, is reported to favor an expansion of the "News and Comment" section and increased attention to science and government policy--at the expense of "pure research" papers, particularly in biology. The object is to increase the circulation of *Science* from 115,000 to more than 400,000. McElroy was quoted in the *New York Times* as saying that more specialized scientific journals handle the function of publishing pure science more efficiently than *Science*.⁴

Perhaps a journal like *Science* can't have it both ways. Most readers of *Science* might have preferred to read journalistic reports of the 6 highly-cited papers rather than the actual documents. But could the editors of *Science* have identified these papers in advance? I doubt that editors or referees can accurately predict the eventual impact of most papers they publish.

Physical Review Letters and *Nature* each published four of the most-cited papers; *Biochemistry* and *Physical Review D* had three each;

Proceedings of the National Academy of Sciences USA had 2; while the rest had one each.

Sadly, it seems that science journalists have almost totally ignored the developments reported in these most-cited papers. The notable exception was computerized axial tomography with EMI scanner (18), better known as the body scanner. This new piece of medical technology, which is now becoming available to hospitals, is capable of taking X-rays of cross-sections of the human body. The pictures, which are interpreted by computer and displayed on a cathode-ray tube, can be manipulated to give the viewer the impression of depth. It is interesting that this 1974 article in *Radiology* was already heavily cited in 1974 and even more so in early 1975. But even though the subject was discussed in the *British Medical Journal*, *Lancet* and *Science* in 1974, it was not until the last months of 1975 that articles on the body scanner began appearing in newspapers, magazines and Sunday supplements.

1. Garfield E. 1973 papers most cited in 1973. *Current Contents*[®] (CC[®]) No. 7, 11 February 1976, p. 5-8.
2. Davidson K & Ostriker J P. Neutron-star accretion in a stellar wind: model for a pulsed x-ray source. *Astrophysical Journal* 179(2):585, 1973.
3. Garfield E. ISI is studying the structure of science through co-citation analysis. CC No. 7, 13 February 1974, p. 5-10.
4. *New York Times*, 2 January 1976, p. 10.