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Current Comments®

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The New Biotechnology and Neuroscience Citation Indexes on CD-ROM Include Abstracts and Increased Coverage

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ABSTRACT

The *Science Citation Index*® (*SCI*®) now exceeds 20 printed volumes each year. Its electronic counterpart on compact disk includes on one CD more than 630,000 source items containing over 10,000,000 cited references. From this huge database, ISI® has created several new specialty citation indexes enhanced by additional journals not covered in the *SCI*. These new indexes—in Biotechnology, Neuroscience, and Chemistry—also contain searchable author abstracts, *KeyWords Plus*™, author keywords, and *Related Records*™ searching. Both the *Biotechnology Citation Index*™ and the *Neuroscience Citation Index*™ are discussed below. The *Chemistry Citation Index*™ will be discussed in a future issue.

The introduction of the *Science Citation Index*® (*SCI*®) in 1964 was motivated in part by the need for multidisciplinary coverage of the scientific literature.[1] This need, met by all-inclusive indexing of the core journals of science, was first demonstrated in 1963 by the creation of the experimental *Genetics Citation Index*™ (*GCI*™).[2] The discipline-oriented *GCI* thus had its origins in the larger *SCI* database which we first began to compile in 1961. The *SCI* now covers source literature from 1945 to the present.

In creating the *SCI*, which now exceeds 20 printed volumes each year, we anticipated that the large research and medical libraries of the world would be the prime users of this service. Today, about 1,000 major institutions are subscribers. An increasing number of these also receive the electronic counterpart of the *SCI* on compact disk. Each annual cumulation on CD-ROM covers more than 630,000 published articles, containing more than 10,000,000 cited references.

We anticipated that our central database would eventually be used to create derivative files covering specialities with reasonably identifiable boundaries. Our long series of citation studies identifying and mapping the core literature of every major discipline has provided confidence that our methods make this possible.

Another factor in the creation of specialty indexes was the introduction in 1991 of author abstracts to the main ISI® database. Abstracts enhance the value and searching power of the specialty indexes. There also was the possibility of adding journals to these specialty indexes that could not be accommodated in the primary ISI database. CD-ROM technology permits us to produce a more timely product, not delayed by printing and typesetting procedures. And, we could provide in-depth algorithmic indexing through *KeyWords Plus*™. Since personal computers are now almost universally available, the added small—and decreasing—cost of CD-ROM units is low when compared to the benefits involved.

Biotechnology Citation Index™

Recognizing the revolution that is taking place in biotechnology, and in view of our historical experience with molecular biology and genetics, we decided to launch the

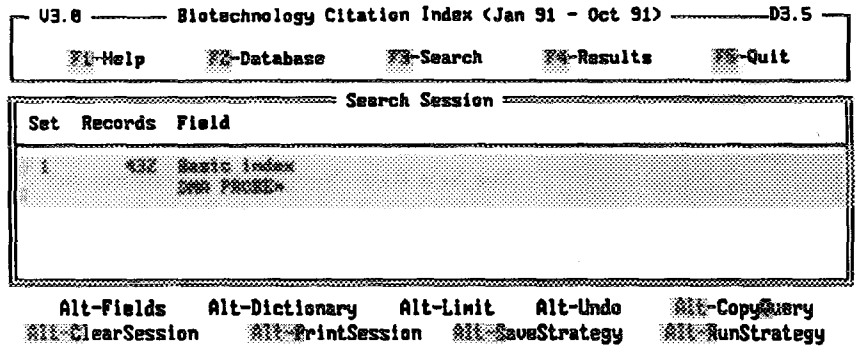

Figure 1A. Keyword search sample screen from the *Biotechnology Citation Index* showing the Basic Index field encompassing title words, *KeyWords Plus*, and author assigned terms. Here, 432 records are identified for DNA PROBE. (*)Asterisk indicates truncation.

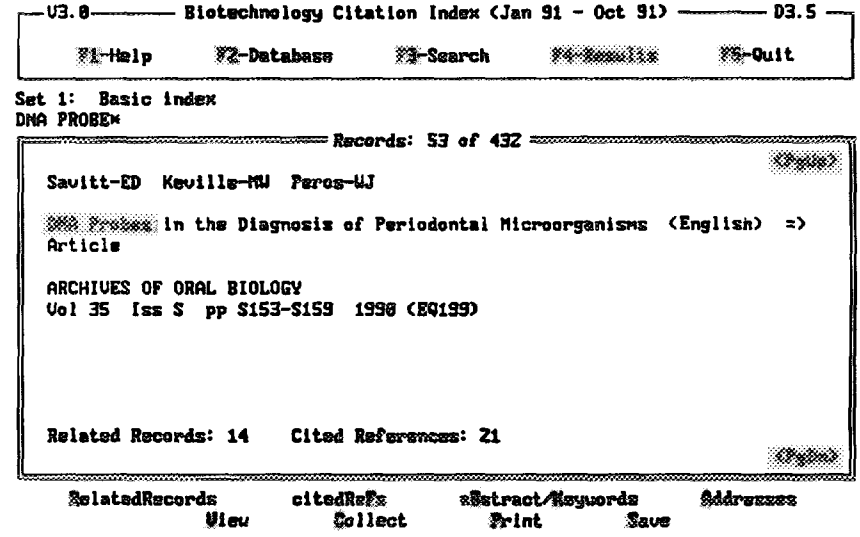

Figure 1B. Fifty-third of the 432 records concerning DNA PROBES. To find the address for Savitt et al., press the <A>key (next display); for the abstract, press <B>key.

Biotechnology Citation Index (*BCI*™). The *BCI* provides all-inclusive coverage of more than 170 core journals. Many of these journals are new to ISI and are not available in the *SCI*.

Using our experience in profiling specialities in our *Research Alert*® service, the *BCI* also provides selective coverage of some 4,300 additional journals in our database. For example, any article that cites any earlier published article in a core journal is selected. The occurrence of designated keywords also will pull in additional articles, as would the name of key researchers in the field. The candidate articles selected in this manner are then reviewed by an editor to make certain that only relevant articles are added to the database.

This combined algorithmic/human approach overcomes the subjectivity inherent

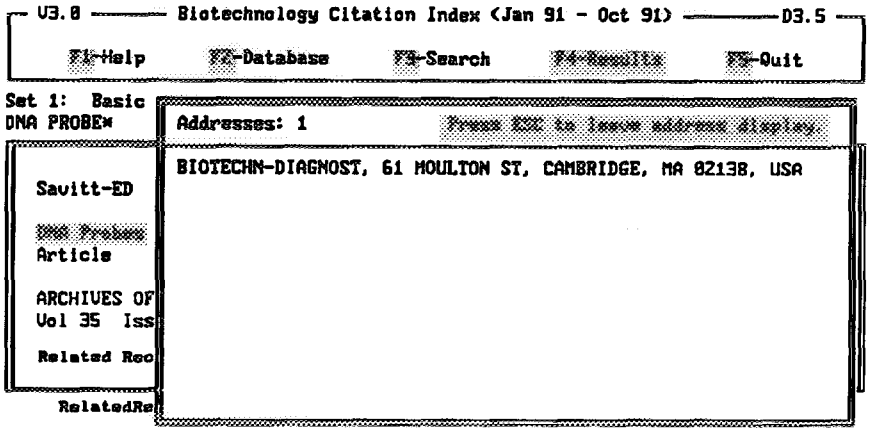

Figure 1C. Address screen.

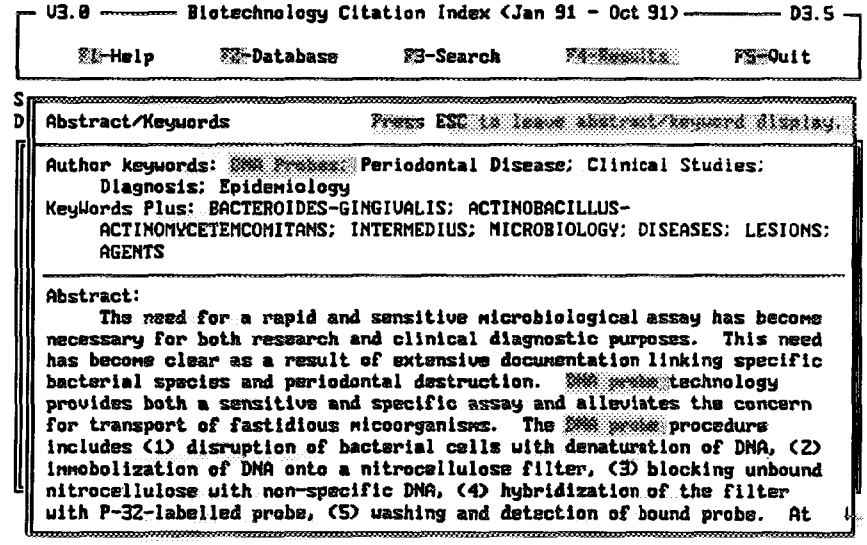

Figure 1D. Keyword DNA PROBES highlighted abstract display. Only part of abstract shows.

in traditional abstracting services, without delaying the work involved. Timeliness is a hallmark of ISI services. We expect that the *BCI* will provide 95 percent or more of the needs of those organizations and departments active in the fields covered by the term biotechnology, as, for example: molecular biology, genetics, applied microbiology, food science and technology, clinical medicine, agriculture, and industrial and environmental applications.

The *BCI* is issued every two months. Each subsequent issue cumulates the data for the year. The searching features of the *BCI* are similar to those for the *SCI* but also include searching by *KeyWords Plus* and through abstracts. This is best demonstrated showing the screens and results of a search (see Figure 1).

The five basic searching strategies are by keywords, author, address, journal, and cited reference. *Current Contents on Dis-*

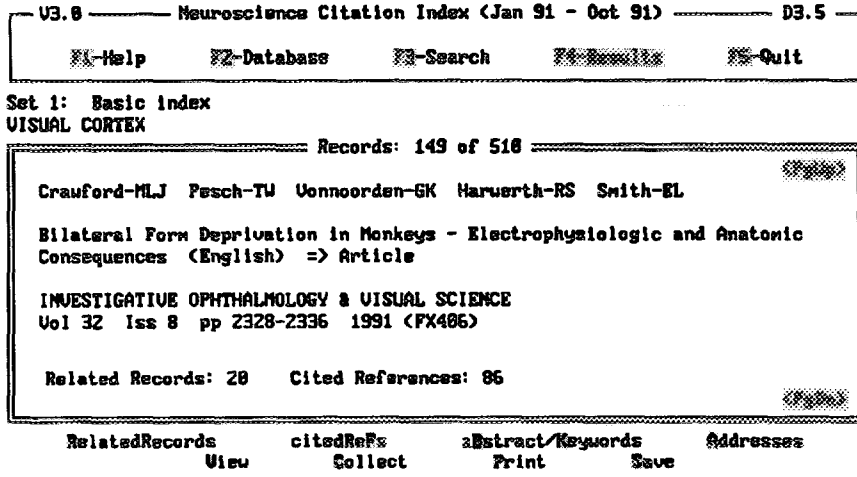

Figure 2A. *Neuroscience Citation Index* search of VISUAL CORTEX. The paper by Crawford et al. is 149th of 510 records on VISUAL CORTEX. By pressing <R>, display first related record of 20.

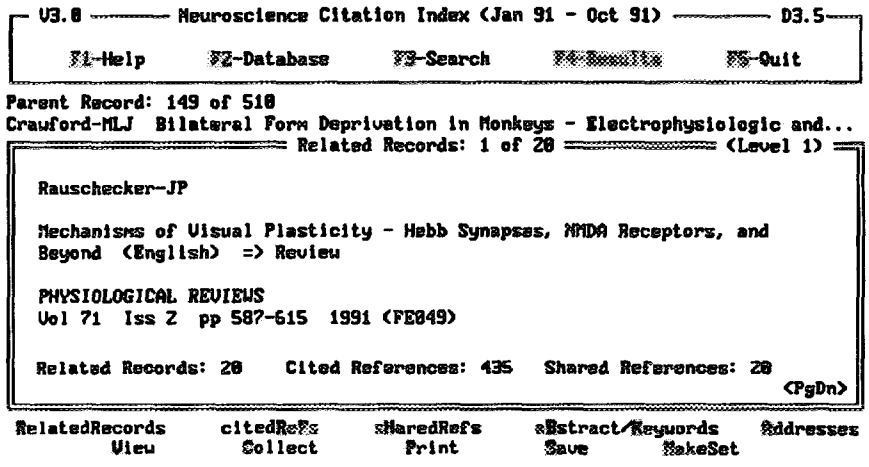

Figure 2B. First related record for the paper by Crawford et al. is the Rauschecker paper in *Physiological Reviews*.

kette® (*CCOD*) and *CCOD* with abstracts are two separate products. A search of the Basic Index field includes *KeyWords Plus*,[4,5] author-assigned keywords, abstract words, and title words. An author search permits you to locate papers published by any individual, regardless of his or her position in the byline. And, all institutions involved are searchable.

Using a combination of these basic search strategies, we could, for example, find a paper by a particular author published in a specific journal. Or, that same person may have published a paper on topic X. These are common but simple questions. Alternatively, you may wish to know what has been published recently by a given organization. Last but not least, you can find out who has subsequently cited any paper, book, or patent, as you would in the *SCI*.

As described in an earlier essay about *SCI* on CD-ROM,[6] the *BCI* also includes a

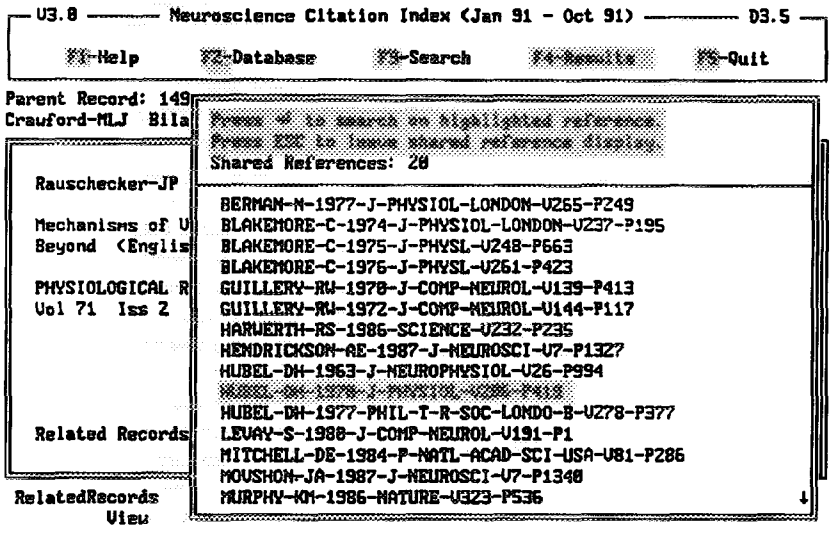

Figure 2C. Shared references for the Crawford et al. and Rauschecker papers. HUBEL—DH is highlighted.

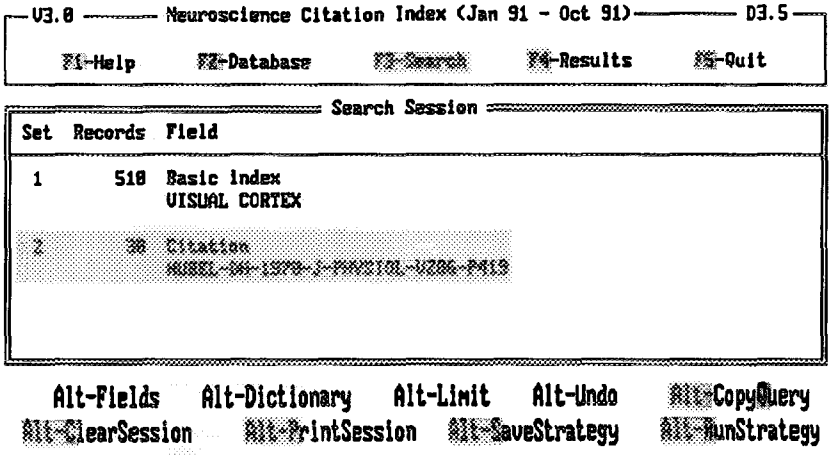

Figure 2D. Citation index search on the 1970 Hubel paper identifies 30 citing papers.

unique navigational tool called *Related Records*™ searching. This citational variant of a hypertext search is sometimes called bibliographic coupling. The software permits you to display for a given record its most related neighbor. This is determined by the number of common or shared references their respective authors have chosen. In the current version of the software, these shared references can be displayed as well (see Figure 2).

Years ago, in his preface to the *Genetics Citation Index*, Nobelist Joshua Lederberg, a member of the *GCI* Advisory Committee, stated that "Citation indexing can uncover unexpected correlations of scientific work that no other method could hope to find, and a successful match can often be located with great speed and assurance."[7] That statement is even more relevant today in light of the new CD-ROM technology.

We expect that the *BCI* will cover at least 50,000 articles in 1992. And the expected growth rate of this field is in excess of 10 percent a year.

Neuroscience Citation Index™

Like biotechnology, neuroscience has been growing at an exponential rate. Everything I've said above about the multidisciplinary needs of biotechnology applies to neuroscience as well. Indeed, the *Neuroscience Citation Index* (*NSCI*™) on CD-ROM also draws upon the *Social Sciences Citation Index*® (*SSCI*®)[8] coverage of psychology, etc.

Starting with more than 250 core journals, many of which are new to ISI coverage, it will cover more than 50,000 articles a year on all aspects of neuroscience, including neurology, neurosurgery, and experimental psychology. One indication of the growth of neuroscience is the membership of the Society for Neuroscience. In 1979, its membership was just over 6,000. By the end of 1991, it is expected to exceed 17,500. Indeed, more than 15,000 people attended the annual meeting in New Orleans in November. Another indicator is the allocation of NIH funds to neuroscience research—more than $1.5 billion per year.[9] Naturally, literature related to Alzheimer's disease and all other brain disorders will be covered, including both basic and applied clinical research (see Figure 2).

The *NSCI* provides a database useful and affordable for every neuroscience library, including psychiatric and neurological institutes and departments. In a few weeks, we will discuss the *Chemistry Citation Index* ™ on CD-ROM. It was launched at the same time as the *BCI* and *NSCI*.

Each of these indexes is priced at $1,950 per year. Free trials are available on request. At this time, the indexes must be used with IBM compatible PCs. In Japan, they can be used with NEC PCs, as well. For more information, write Institute for Scientific Information, 3501 Market Street, Philadelphia, PA 19104, or call 1-800-336-4474, or Fax (215) 386-6362.

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REFERENCES

1. **Garfield E.** Citation indexes for science. *Science* 122:108-11, 1955.
2. **Garfield E, Sher I H & Voytko C.** Citation index for genetics: a programme for research and evaluation. (Ranganathan S R & Neelameghan A, eds.) *Documentation periodicals.* Bangalore, India: Documentation Research and Training Centre, 1963. p. 181-5.
3. **Garfield E.** Announcing *Current Contents on Diskette with Abstracts. Current Contents* (19):5-9, 13 May 1991.
4. ----------. *KeyWords Plus*: ISI's breakthrough retrieval method. Part 1. Expanding your searching power on *Current Contents on Diskette. Current Contents* (32):5-9, 6 August 1990.
5. ----------. *KeyWords Plus* takes you beyond title words. Part 2. Expanded journal coverage for *Current Contents on Diskette* includes social and behavioral sciences. *Current Contents* (33):5-9, 13 August 1990.
6. ----------. Announcing the *SCI Compact Disc Edition*: CD-ROM gigabyte storage technology, novel software, and bibliographic coupling make desktop research and discovery a reality. *Current Contents* (22):3-13, 30 May 1988.
7. **Lederberg J.** Preface. (Garfield E & Sher I H, eds.) *Genetics Citation Index.* Philadelphia: Institute for Scientific Information, 1963. p. iii. (Reprinted in: *Current Contents* (50):6, 11 December 1974 and *Essays of an information scientist.* Philadelphia: ISI Press, 1977. Vol. 2. p. 189.)
8. **Garfield E.** Expanding the searching power of CD-ROM: ISI's new *Social Sciences Citation Index Compact Disc Edition* is compatible with the *Science Citation Index* on compact disc; new software streamlines searching. *Current Contents* (37):3-10, 11 September 1989.
9. **Eisner R.** Neuroscience: each breakthrough yields a fresh batch of dilemmas. *The Scientist* 5(22):1; 6-8, 11 November 1991.