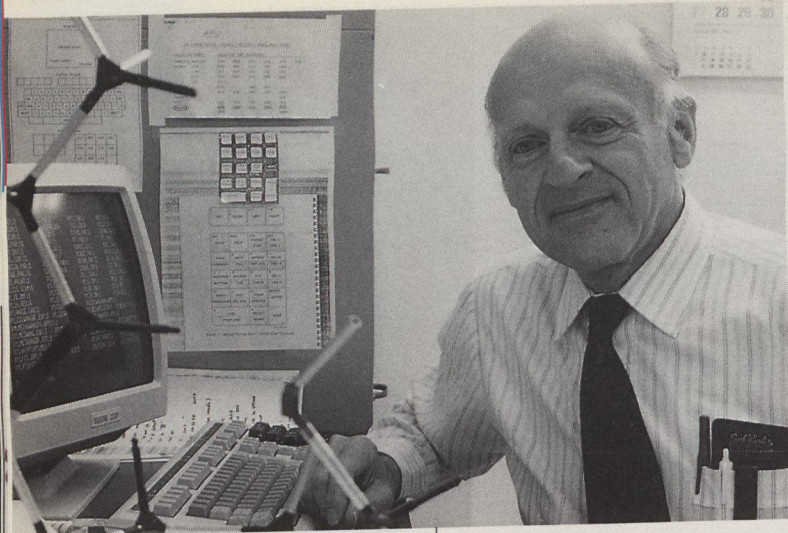




NRC scientist Dr. George Birnbaum has found a clue which may lead to a more effective drug against AIDS.

first game, Team Canada recovered from a three-goal deficit, only to lose 6-5 in overtime. In Game Two, after losing the lead twice, the Canadians stormed back to win 6-5 in the second overtime period. The first two matches set the stage for Lemieux's dramatic finish, in what commentators described as one of the best hockey series in the history of the sport.

By the end of the six-nation tournament, there was no doubt that Canada and the Soviet Union were the world's two leading hockey powers. "The offence of both teams was so tremendous that the defence couldn't shut everybody down," said Oilers' Mark Messier. "Three 6-5 games, it's just unbelievable." The next series between the two countries will likely take place in 1990, and will consist of four games in North America and four in the Soviet Union.

A Lock and Key Approach to AIDS Treatment

A more effective drug treatment for acquired immune deficiency syndrome

(AIDS) could be the end result of a study recently completed by Dr. George Birnbaum, a scientist with the National Research Council of Canada (NRC).

"I'm hoping the study will lead to the design of other drugs that have a higher therapeutic index, which means they will be more effective and have fewer side effects," says Dr. Birnbaum, who works at NRC's Division of Biological Sciences.

The key to Dr. Birnbaum's findings is the unusual molecular structure of AZT, or azidothymidine, a drug that was licensed for AIDS treatment in the United States in March 1987.

"AZT is not a cure for AIDS," Dr. Birnbaum explains. "But it stops the production of additional virus, so that many people are still alive after 18 months who presumably would have been dead by now. They're not being cured; but they're being kept alive." In his study, Dr. Birnbaum used X-ray crystallography to determine the three-dimensional structure of AZT, by pinpointing the relative positions of all the atoms in the molecule.

For Dr. Birnbaum, this "tailor-made approach" to the design of new drugs is something like fitting a key

to a lock. AZT works by attacking the enzyme that promotes production of the AIDS virus. For the drug to work, its molecular shape has to be just right. "If the fit is too loose, it may also fit somewhere else and this may produce side effects," he says. "What you want is an exact fit. . . . Once you have that, you know it will block that enzyme, but it will not attach itself to anything else which could cause undesirable side effects."

Dr. Birnbaum says his effort to refine an existing AIDS treatment differs from the more standard procedure, in which research agencies are "just preparing compounds by the thousands and testing everything" for possible anti-AIDS activity. "That's one way of doing it, but the chances of hitting something right are very small," he notes. "The other way is to start with a substance which is known to have some activity, modify it to something similar, and then test that. I think this is a more rational, more logical approach, because you're starting from something you already know about, rather than starting blind, more or less."

While Dr. Birnbaum's own work on AZT ended with the presentation of his research results this fall, he says his findings could be of use to the many research laboratories around the world that are searching for better AIDS treatments.

"GRASS" Will Put Criminals on Ice

A Canadian high-technology firm is hoping to infiltrate the international crime prevention community with a new computer system that enables police analysts to track crime patterns on an electronic map.

ACDS Graphic Systems Inc. of Hull, Quebec, hopes to interest American, Euro-

pean and Asian police forces in the new Geographic Resource Allocation Software System (GRASS). Ian Rogers, ACDS product manager, demonstrated the system in Toronto this October at a conference of the International Association of Chiefs of Police — the first such meeting ever held in Canada.

While other firms have developed software that is comparable to GRASS, Mr. Rogers says he doesn't know of any other system like it. Because ACDS specializes in cartography, the maps have an especially high resolution that makes the GRASS system unique. In a recent test run, local Canadian police were able to chart municipal boundaries on computerized maps, add the dates and addresses of recent crimes and the addresses of known offenders, and use the resulting database to trace patterns of criminal activity for specific neighbourhoods.

By electronically dividing cities, this system will replace the labour-intensive process of placing coloured pins by hand on a series of wall maps. This, in turn, will make it much easier for analysts to spot local crime waves and gauge the effectiveness of neighbourhood watch programs, where people keep an eye out for unusual or criminal activities in their own neighbourhoods.

No More Babels of Bits and Bytes

Gandalf Technologies, an Ottawa-based computer company, has developed a new product which it says will revolutionize the computer industry. It can be called a "bits and bytes translator" because it enables computers speaking different languages to work together; Gandalf Technologies calls it a huge money-maker.