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SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



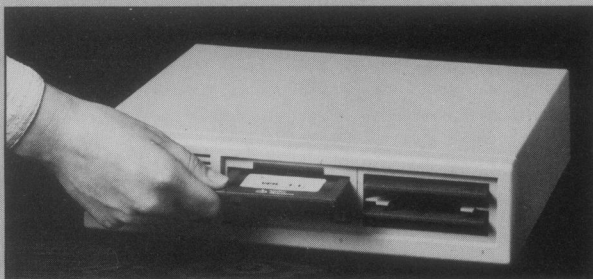
BIOSYSTEMS UPDATE

New Instrument for Multiple DNA Syntheses

Applied Biosystems has announced a new option for its Model 380A DNA Synthesizer which allows it to make three different oligonucleotides simultaneously. Syntheses can be started and stopped independently of one another so several users can share the same instrument. With this new option, the productivity of the 380A is tripled for less than one-fourth the original cost of the instrument. You also save bench space and minimize reagent consumption.



Three synthesis columns can be operated independently and simultaneously, tripling the productivity of the Applied Biosystems Model 380A DNA Synthesizer.

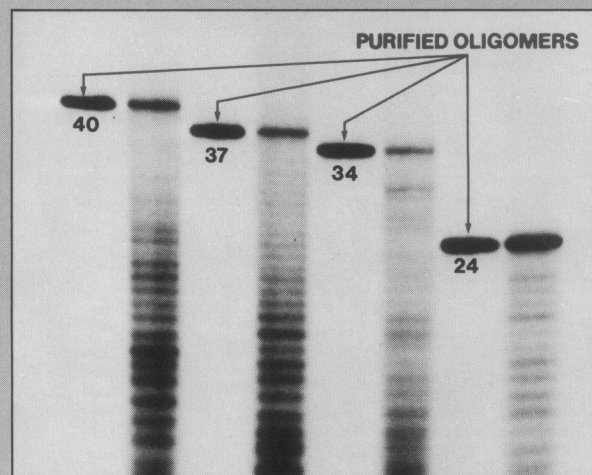


Disc drive for storage of your chemical methods.

This new option also includes hardware and software which allow you to use your own procedures. You can use other chemistries

and even make oligonucleotide analogues. All functions required for DNA synthesis are available and your methods are stored on a flexible disc. With 18 solvent/reagent reservoirs, the 380A offers flexibility unmatched by other synthesizers.

Applied Biosystems has the total solution for your DNA synthesis needs. We provide ultrapure, highly stable reagents, the key to successful syntheses. With our efficient phosphoramidite chemistry, you can make DNA with up to 50-60 bases without the use of the dimers, trimers or ligation required with other chemistries. This is the true test



Autoradiogram of ^{32}P labeled oligonucleotides up to 40 bases long. Efficient phosphoramidite chemistry allows direct synthesis of long oligonucleotides.

of coupling efficiency. Only the Applied Biosystems Model 380A DNA Synthesizer can synthesize long oligonucleotides quickly and with high product yields. And if your requirements for DNA are large, you can now synthesize three times as much with one instrument.

For more information, circle no. 283.

 **Applied Biosystems**

APPLIED BIOSYSTEMS, INC., 850 Lincoln Centre Drive, Foster City, CA 94404 • (415) 570-6667 • (800) 874-9868
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How one researcher keeps both eyes on experiments and records the results —all at the same time

Denise Hanley, Immunologist, talks about how the Microwriter has simplified her life: "The Microwriter sits on my bench when I'm conducting tests or experiments. To enter the results, I don't even have to look at the keys. When I'm ready for hard copy, all I do is just plug it into my printer. That's all there is to it."

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Tin dendrites grown from melt [photomicrograph by Kurt Nassau; courtesy of AT&T Technologies, New York City]. See page 941 for program of Gordon Research Conferences.

American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to promote the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

SECOND INTERNATIONAL CONGRESS ON COMPUTERS IN SCIENCE

CALL FOR PAPERS

The Second Conference on Computers in Science, sponsored by Science Magazine, in conjunction with Scherago Associates, will be held in Washington DC. from 28 October – 1 November 1984. The conference will emphasize the use of the workstation for the scientist. There will be invited talks in a number of areas including Biology Workstations, Computer Aided Molecular Design, Workstation Hardware, Artificial Intelligence, Databases, Laboratory Automation and Robotics, and Management of the Electronic Laboratory. In addition there will be submitted poster talks, workshops in a number of areas and a large vendor exhibition. Prospective authors should send for an abstract form, registration and hotel information to Ed Ruffing, Scherago Associates, 1515 Broadway, New York, New York 10036 (212) 730-1050. Completed abstracts should be sent to the conference chairman, Dr. Stephen R. Heller, EPA, PM-218, Washington DC 20460 (202) 382-2424.

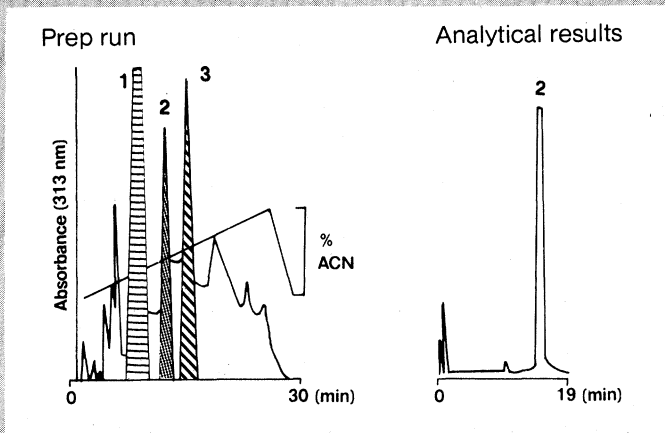
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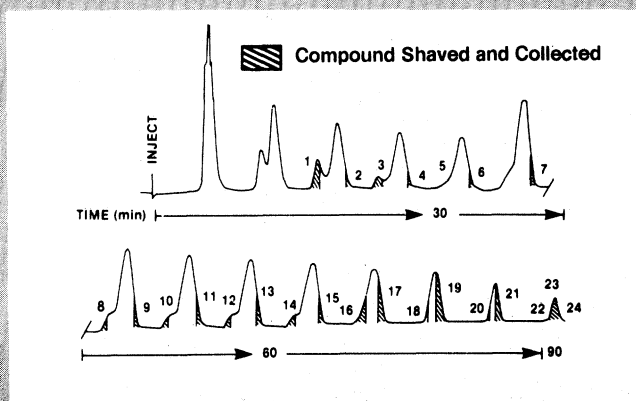


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Sample: 500 mg Peptide Hydrolysate
 Cartridge: PrepPAK® C₁₈, 57 mm x 30 cm (300Å pore, 30 µm particle)
 Solvent: A) 0.1% TFA in H₂O
 B) ACN: 0.1% TFA in H₂O, 40:60
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¹Journal of Liquid Chromatography 4(3) 525-532, (1981)

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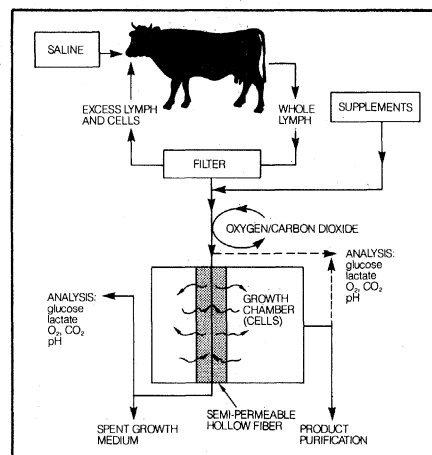
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Purity

Unlike conventional cell-culture methods, the MCT system is designed to insure purity without tedious processing. By directing the lymph across semi-permeable membranes, MCT provides both separation of media protein from desired cell products, and a continuous nutrient flow. The ability to add or withdraw from the chamber to maintain optimal cell density permits continuous harvest of a highly pure product.

Quality

Unlike conventional methods of production that attempt to create biologically active mammalian cell products, the MCT system provides a pure-mammalian product—an exact copy of the original protein and, in the case of non-antibody polypeptides, uncompromised by inappropriate glycosylation and disulfide bond formation. There is a growing consensus favoring products produced in a mammalian cell-culture system, such as the Bio-Response MCT system.

For further information, call Bio-Response, Inc. at (415) 786-9744.

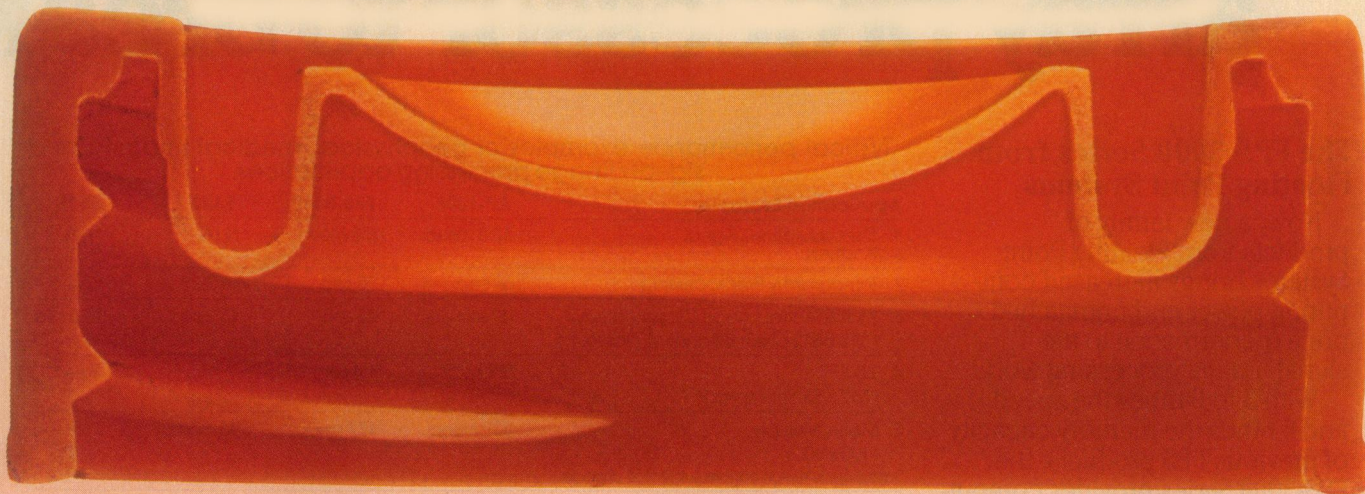
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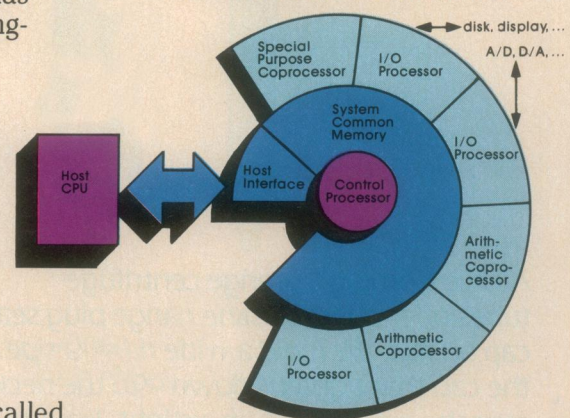
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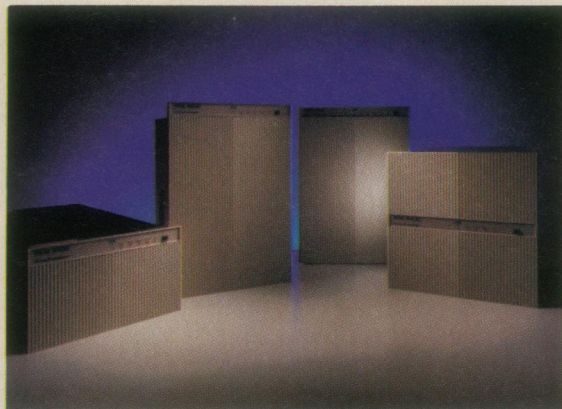
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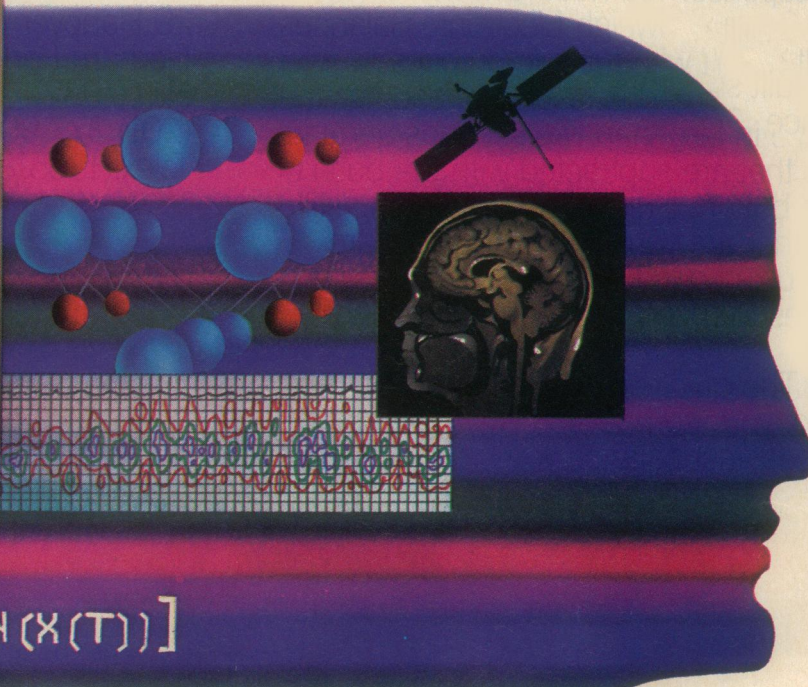
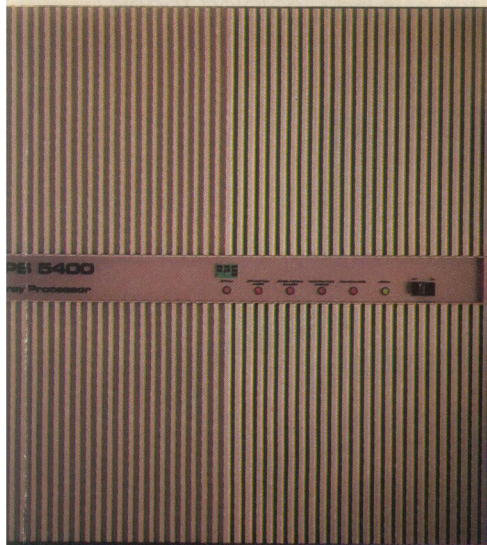
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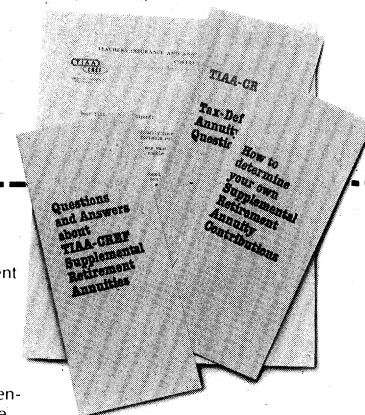
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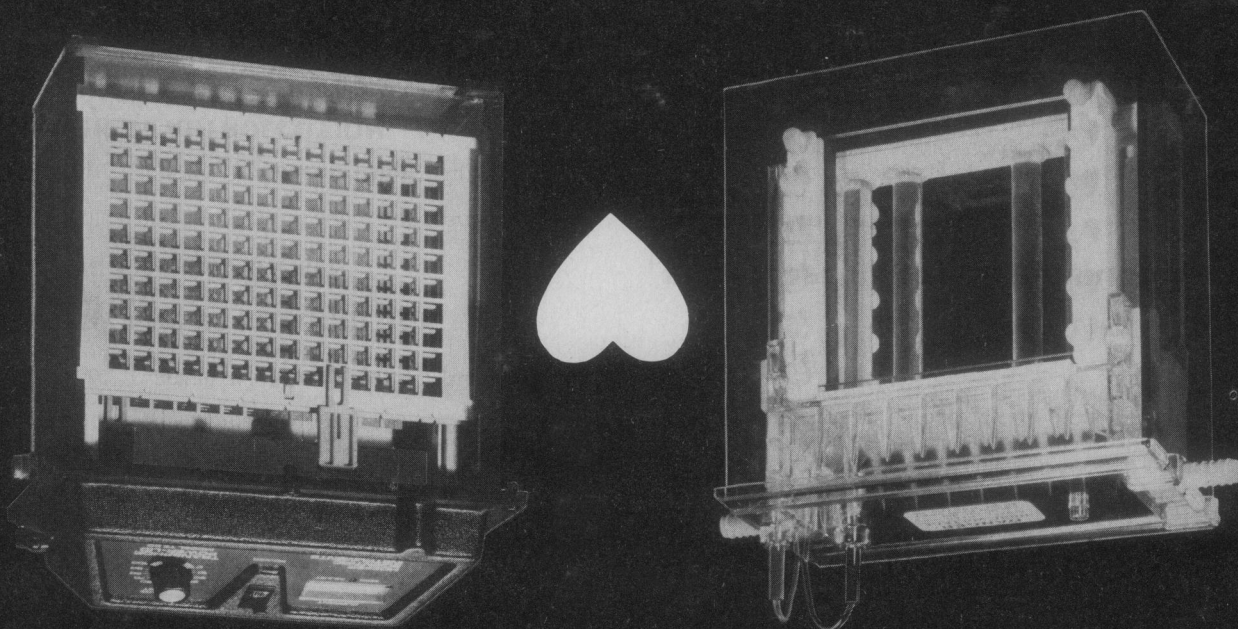
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Graduate Education: Signs of Trouble

Graduate education in the United States is in trouble. The nation's economy, its diplomatic and defense capabilities, and its social and cultural life rely heavily on men and women with graduate preparation. When our institutions of graduate education are endangered, so is our national well-being. Only effective action by the federal government will avert a crisis.

These are the principal findings and conclusion of a report approved unanimously by the National Commission on Student Financial Assistance. The commission was composed of 12 persons appointed, four each, by President Ronald Reagan, House Speaker Thomas P. O'Neill, Jr., and Senate President Pro Tempore Strom Thurmond.

The commission identified warning signs of erosion throughout the graduate enterprise. Two factors specifically endanger the future of graduate work in engineering and the sciences: the exodus from the campus to corporation of some of our best graduate students and teachers and the decay of the facilities and equipment essential to scholars working on the frontiers of knowledge.

Many college graduates who 30 years ago would have pursued advanced studies now avoid graduate preparation because they perceive little future in it alongside the opportunities they find in business and industry. In areas such as engineering, solid-state electronics, and digital systems, faculty vacancies threaten the nation's capacity to teach the next generation of scientists and engineers.

One recent survey found that university instrumentation inventories were nearly twice as old as those of leading commercial laboratories. A review of equipment for the sciences at 15 institutions revealed that the cost to meet their needs over the next 3 years would be nearly twice what they had spent in the preceding 4 years.

Although financing graduate education is not the sole responsibility of any one sector of our society, it is the special obligation of the federal government to ensure stable and continuing support of outstanding graduate research and training. Federal support for basic and applied research at colleges and universities should grow with the economy at a rate at least sufficient to keep pace with inflation. In addition, funds should be made available both to meet national needs in fields such as physical and computer sciences and to protect other areas, such as the humanities and social sciences, that have been hard hit by the current retrenchment.

Adequate student aid—through loans, fellowships, research and teaching assistantships, and college work study—must be provided, especially to minorities and women. Because graduate training is intimately connected to research, assistance to students cannot be reduced without diminishing the entire research endeavor. The federal government should substantially increase funds for modernizing university laboratories, equipment, and instrumentation. Business and industry should be encouraged, through appropriate tax incentives, to contribute equipment to universities. New support should be provided for promising young faculty in the natural sciences and engineering as well as in the humanities and social sciences. The government should establish a mechanism to produce "educational impact statements" to evaluate the effects of federal policies and programs—particularly budgetary decisions—on the supply of educated men and women.

The purpose of the actions recommended by the National Commission on Student Financial Assistance is not to increase the size of the graduate enterprise but rather to protect and enhance its research and training functions. In the judgment of all 12 members of this commission, our graduate schools urgently require federal support. Unless they receive it, they will not, by the year 2000, be able to produce the new knowledge and trained individuals necessary to the security, prosperity, and cultural life of the nation.—JOHN BRADEMAS, *President, New York University, New York 10012, and Chairman, Graduate Education Subcommittee, National Commission on Student Financial Assistance*

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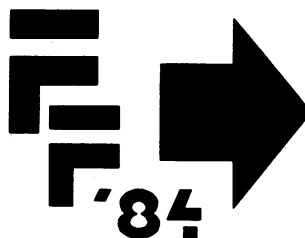
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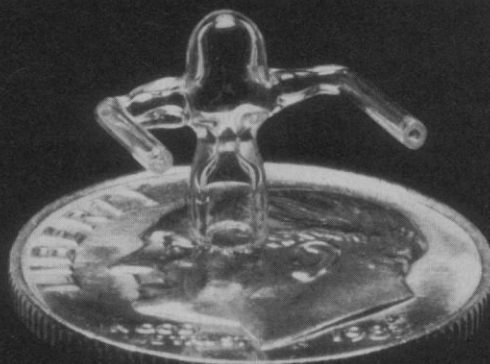


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