**Nucleic acid sequencing system**

Bio-Rad’s new Sequi-Gen™ nucleic acid sequencing system has been designed to make DNA sequencing electrophoresis a more convenient, safe and reliable process. The Sequi-Gen nucleic acid sequencer is a modular, vertical, slab gel electrophoresis instrument that incorporates a new type of upper buffer chamber — the integral plate/chamber (IPC). By allowing the upper buffer to act as a heat sink, the IPC ensures uniform heat distribution over the entire gel area during electrophoresis. Uniform heating prevents sample mobility artifacts such as ‘smiling’ in the gel, and greatly reduces cracking of plates. Six different sizes of integral plate/chambers are available, four of which are 21 cm wide (for half-width X-ray film) and two are 38 cm wide (for full-width X-ray film). A universal base forms the lower buffer chamber for all IPC sizes. Setting up the Sequi-Gen cell is rapid and simple, and gel casting can be accomplished without using tape. A comprehensive selection of combs and spacers is supplied with the system.

*Bio-Rad*

Circle no 1 on reader enquiry card

**Non-porous HPLC support for fast protein analysis**

Microanalyser MA7 cartridges are a new family of HPLC columns from Bio-Rad that provide extremely rapid analysis of proteins. When used in conjunction with Bio-Rad’s Protein Microanalyser system, the 30 x 4.6 mm cartridges are particularly well-suited for resolving mixtures of 1–300 µg of protein in less than 90 s. Recovery is usually quantitative, even when the amounts of individual proteins are in the sub-microgram range. The new cartridges are based on 7 µm non-porous, polymethacrylate beads that are stable over pH 2–12. Being hard and durable, the beads can withstand flow rates up to 5 ml min⁻¹ and do not deteriorate, even after hundreds of injections.

Two microanalyser cartridges are available: MA7P — a weak anion exchanger, and MA7C — a weak cationic exchanger. Beads within the MA7P cartridges have polyethyleneimine covalently coupled to their surface. Due to their non-porous nature, the beads have a pellicular coat of short, polycationic chains over the outer surface, with primary, secondary and tertiary amines extending outwards. Beads within the MA7C cartridges have carboxyl groups coupled to their surface. As there is no mass transfer in and out of pores, chromatography using these columns is fast and characterized by very narrow peaks. Bio-Rad say that, compared to similar supports such as porous silica, the new microanalyser MA7 cartridges show superior resolution, band width and sensitivity. The Bio-Rad Protein Microanalyser system is a complete chromatographic package that includes a methods controller, complete solvent delivery module and UV and conductivity monitors as well as data handling.

*Bio-Rad*

Circle no 2 on reader enquiry card

**Range of monoclonal antibodies**

A comprehensive range of 12 mouse monoclonal antibodies to human immunoglobulin sub-classes is now available from Unipath. Developed in association with Birmingham University, the monoclonal antibodies cover the complete range of IgG and IgA sub-classes and can be used to determine immunoglobulin levels by radial immunodiffusion or enzyme-linked immunoabsorbent assay. The full range of Unipath monoclonal antibodies is available ex-stock as ascitic fluid; purified immunoglobulins are prepared on special order.

Unipath have also introduced a new series of monoclonal antibodies developed specifically for studies of cell surface antigens and cancer markers. The new family of monoclonal antibodies consists of 13 products, each with well-defined clinical uses. The T&B cell panel, for the clinical diagnosis of lymphomas and leukaemias, has been extended with the addition of MABs which react specifically to human B and T lymphocytes: leukaemia-associated antigen p24; common acute lymphoblastic leukaemia antigen (CALLA); human transferrin receptor;
Myeloid cells; cell surface antigens expressed on B lymphocyte precursors; and a Pan B reagent which has the ability to identify and characterize leukaemias and lymphomas.

The range of MABs for T cell typing, including a Pan T reagent and a MAB which defines T-suppressor cells, has now been extended to include a T-cell marker useful in childhood ALL and an anti-T-helper antibody. The ratio of T suppressor:helper cells is an important index in various diseases, including autoimmune diseases and immune deficiencies such as AIDS and pre-AIDS syndrome. Three new tumour-associated markers have also been added to the range: prostate-specific antigen; melanoma-associated antigen p97a; and a monoclonal antibody which facilitates the diagnosis of prostatic carcinoma by reacting specifically with the tumour marker prostatic acid phosphatase. The anaplastic tumour marker panel is completed by the addition of MABs to epithelial keratin and common leukocyte antigen.

Unipath Ltd
Circle no 3 on reader enquiry card

Immobilized cell reactor
A new addition to the range of fermenters available from LH Fermentation is the immobilized cell reactor. It can be bench-top or floor standing and has a stainless steel-jacketed lower vessel, with five 25 mm ports. A standard in situ sterilizable glass section fits onto the base, so that the reactor can easily be converted to operate at total volumes of 16, 20, 24, or 28 l. The vessel, which may be either top- or bottom-stirred, is available with the choice of a flat or dished baseplate. The main application of the new cell reactor is in systems requiring immobilized enzyme, substrate or cells, although the reactor has been used for cell culturing where oxygen demand is low. It is compatible with the complete range of LH Fermentation control instrumentation from the basic 500 series to the microprocessor-based i3000.

LH Fermentation Ltd
Circle no 4 on reader enquiry card

Staphylococcal nuclease
High-purity staphylococcal nuclease, an S7 micrococcal endonuclease that cleaves both DNA and RNA to yield oligo- and mononucleotides with terminal 3' phosphate groups, is now available from Porton Products. This enzyme is particularly useful in the preparation of high-quality mRNA-dependent protein synthesis systems. The major advantage of such systems over those prepared by fractionation of the crude lysate is that high sensitivity and efficiency of utilization of added mRNA are preserved. Complete inactivation of staphylococcal nuclease, achieved by addition of EGTA, ensures high performance. Indeed, systems prepared using enzyme supplied by Porton Products have been demonstrated to be capable of translating numerous different species of mRNA into full-sized products of molecular weights up to at least 200K. Furthermore, this product can also be used to digest chromatin and is therefore valuable in the preparation of nucleosomes.

Prepared by the Centre for Applied Microbiological Research (CAMR), staphylococcal nuclease is marketed by Porton Products and supplied as a lyophilized powder with an activity of 8000 U mg⁻¹.

Porton Products Ltd
Circle no 5 on reader enquiry card

High-grade streptavidin in bulk quantities
High-grade streptavidin purified to x-ray crystallographic standard is also available from Porton Products, for use in a wide range of immunological and biochemical techniques.

Produced by the PHLS, CAMR, streptavidin is used in conjunction with biotin in techniques such as RIA, ELISA, immunocytochemistry and protein blotting that require a convenient, yet sensitive and specific detection system. The streptavidin amplification system provides a safe alternative to radio-isotope detection methods and is therefore likely to have further application in techniques such as DNA probe hybridization. Streptavidin has many advantages over avidin. As streptavidin does not possess carbohydrates moieties, background effects due to non-specific interactions are reduced. Additionally, at the neutral pH of most assay systems, there are fewer strongly charged groups on streptavidin to attract negatively charged molecules such as nucleic acids or phospholipids.

Porton Products Ltd
Circle no 6 on reader enquiry card

HPLC columns for separation of biopolymers
Technicol of Stockport, UK, now have available a new range of HPLC columns from Machery Nagel designed specifically for the separation of biopolymers in molecular biology and gene technology. The Nucleogen® series of stationary phases consists of three groups of columns that utilize an anion-exchanger based on silica gel with pore sizes of 60 nm, 500 nm and 400 nm respectively. Nucleogen columns can be used to separate compounds ranging from oligonucleotides to very large DNA molecules. The Nucleogen DEAE 60-7 column was developed specifically for the isolation of short nucleic acids chains with a molecular weight of 25 000 to 1 000 000 daltons (≥40-mer). The DEAE 4000-10 column
enables HPLC to be used for the first time to separate high-molecular-weight nucleic acids - 5 megadaltons, for example.

Suitable for operation at high flow rates and high pressures (≤300 bar), the Nucleogen columns can be used with aqueous buffers (pH range 2.5–8.0), denaturants, non-ionic detergents and most organic solvents. In addition to offering high performance, the columns are characterized by long life: 1000 repetitive HPLC runs can be carried out without loss of resolution.

Technicol Ltd

Circle no 7 on reader enquiry card

**HPLC column for nucleotide analysis**

Technicol also have available a new HPLC column brought out by the Separations Group for the rapid analysis of nucleotides. Consisting of a low-capacity ion-exchange material on a high-efficiency protected silica substrate, the new stationary phase offers a significant improvement on traditional HPLC methods. Instead of taking 30–45 min for each analysis, the Vydac Nucleotide Analysis Column can resolve the 12 major mono-, di and triphosphate nucleotides completely in 10 min. Measuring 5 cm in length with 4.6 mm internal diameter, the Vydac Nucleotide Analysis Column uses a flow rate of 2.0 ml min⁻¹.

*Technicol Ltd*

Circle no 8 on reader enquiry card

**Fluorescence probe**

Life Science Laboratories (LSL) have recently launched the Fluorosensor from Ingold. The new sensor is claimed to provide a wide range of new control and monitoring options for many important biotechnological processes.

Many biological compounds such as proteins, enzymes, coenzymes, pigments and primary or secondary metabolites, emit characteristic fluorescence light after excitation by light from the visible or near-UV region. All of these compounds could in principle be measured by the new Fluorosensor by selecting light of the correct excitation wavelength. The most important biogenic fluorophore for on-line measurement is NADH. The measurement of the NADH-dependent fluorescence with the Ingold Fluorosensor can be used to estimate the viable biomass concentration both on-line and in situ. This measurement, particularly when fed into the LSL Mentor process control computer system, can provide continuous data for sophisticated control of oxygen supply and substrate feed as well as providing important information on microbial metabolism.

The Fluorosensor fits into standard DN25 ports, is made

![The Ingold Fluorosensor from LSL](image)

... to the industrial standards expected from Ingold and can be steam-sterilized along with the bioreactor vessel, associated pipework and other Ingold probes for pH, redox, O₂ and CO₂ measurement.

*Life Science Laboratories Ltd*

Circle no 9 on reader enquiry card

**Turnkey molecular modelling system**

Chemical Design, European-based suppliers of molecular modelling software and hardware, have enhanced their range of packaged systems with the addition of a high-performance graphics terminal The MicroGRAF-4 combines a computer sub-system, graphics terminal and the Chem-X modelling software in a single package. It can operate as a stand-alone laboratory instrument or form part of a distributed modelling network. The computer sub-system is based on a Digital MicroVAX II running under the MicroVMS operating system. The graphics terminal is based on a Sigmex 6164 terminal. This terminal has an impressive 1448 × 1024 resolution and 8 memory planes giving 256 simultaneous colours. It combines ergonomic design with the functionality of GKS (Graphics Kernel System).

Packaged systems provide the scientist with a fully integrated solution to the problem of configuring and purchasing a modelling system. They are easy to operate and are designed to be the responsibility of the research worker rather than a computer specialist. After-sales services include hardware and software maintenance, applications support and consultancy. Chemical Design’s Chem-X applications software is used in a variety of modelling applications, ranging from small molecules to proteins, polymers and inorganic catalysts such as zeolites.

*Chemical Design Ltd*

Circle no 10 on reader enquiry card
**pH electronic paper**

The pHep pH indicator will measure accurately to 0.1 pH.

Just released by CP Instrument Co Ltd is the pHep pH indicator. This pocket-sized innovation provides a hi-tech alternative to pH-indicator paper. Designed to do the work of at least 300 rolls of conventional pH paper, the pHep costs just one quarter of the price of the pH paper rolls, say CP Instrument Co.

High-quality electronics ensure accurate measurement to 0.1 pH, which is far superior to any type of indicator paper. The pHep is very easy to use, even by untrained personnel, with the minimum of calibration required. It will be useful in many situations where basic pH measurement is needed, particularly in agriculture, hydroponics, water treatment, boiler condensates, aquariums and schools or colleges.

**CP Instrument Co Ltd**

Circle no 11 on reader enquiry card

**Fluorimeter for DNA quantitation**

The TKO is Hoefer Scientific’s new fluorimeter for the quantitation of DNA in dilute samples. Using a mercury lamp light source filtered to 365 nm and a photodetector filtered to read 460 nm emitted light, the TKO 100 can measure DNA concentrations down to 10 ng ml\(^{-1}\). It does so by measuring the fluorescence produced by DNA mixed with the fluorochrome Hoechst 33258. The unit is simple to use: first it must be set to zero against a dye blank in the cuvette; after a sample containing a known amount of DNA is added to the dye blank, the gain is adjusted so that the output reading equals the concentration of the sample; then, after the cuvette is emptied, an aliquot of solution whose concentration is not known is added to it and mixed with a second solution of the dye. The concentration of the sample will appear immediately on the digital LCD.

**Hoefer Scientific Instruments**

Circle no 12 on reader enquiry card

**Diacylglycerol kinase inhibitor**

The investigation of the role of inositol phospholipids in the cell membrane signal-transducing system is an area of active research. A phosphodiester cleavage of the phosphoinositides is assumed to be the primary event after receptor activation, since cellular diacylglycerol levels have been shown to rise. Diacylglycerol has been shown to stimulate protein kinase C, making this lipid a putative secondary messenger. In intact cells, diacylglycerol is rapidly phosphorylated to phosphatidic acid by diacylglycerol kinase and reverses the protein kinase C activity. R59022, a diacylglycerol kinase inhibitor, is now available from Janssen Life Sciences Products. They expect this to be valuable in the study of inositol lipid signal transduction and as a research tool in this field.

**Janssen Life Sciences Products**

Circle no 13 on reader enquiry card
**Monoclonal matrix column**

Promega Biotec have announced the addition of the ProtoSorb™ lacZ immunoaffinity column to their line of molecular biological and immunological products. ProtoSorb lacZ is an immunoaffinity adsorbent designed for the purification of β-galactosidase fusion proteins. The column matrix consists of a pure, specific mouse monoclonal anti-β-galactosidase antibody, covalently coupled to cross-linked agarose beads. This antibody has unique binding and release properties. Its affinity for β-galactosidase is high enough to allow for quantitative and specific binding of either N-terminal or C-terminal fusion proteins from crude cell extracts, yet low enough to allow efficient elution under relatively mild conditions. Promega say that, in a typical application, using a 1 ml column, 500 µg of fusion protein can be purified from crude material in less than two hours with yields of greater than 80%.

*Promega Biotec*

Circle no 14 on reader enquiry card

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**Mighty Small Deca-Probe™**

This is Hoefer Scientific’s new instrument for staining ten separate immunotransfers on a single, intact 8 x 8 cm membrane. There is no need to cut membranes into individual strips when using this unit. Two acrylic plates fit together with a transfer membrane between them. Parallel troughs milled into one of the plates become individual incubation chambers when plates are clamped together and sealed. Silicone rubber gaskets fit into recessed areas around the troughs, preventing leakage from one to another. When staining is complete, the intact membrane makes possible a side-by-side comparison of sample lanes. Small oval ports allow introduction and removal of reagents. Each trough requires only about 0.5 ml of solution.

*Hoefer Scientific Instruments*

Circle no 15 on reader enquiry card

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The Mighty Small Deca-Probe allows ten immunotransfers to be stained on a single membrane.