DNA technology

This round-up of molecular tools includes a thermal printer module, a PCR-product amplification detection system, plasmid purification kits, and a system for *in situ* hybridization, RT-PCR, PRINS and immunohistochemistry.

Millennium markers

From Ambion

Formulated to give accurate size determinations of single-stranded RNA molecules in northern blot analysis

This is a mixture of *in vitro* transcribed RNA — the transcripts include lengths of 0.5, 1, 1.5, 2, 2.5, 3, 4, 5, 6 and 9 kb. These markers may be stained with ethidium bromide during or after electrophoresis. After transfer to a membrane, the markers may be visualized with methylene blue or they may be probed with labelled λ sequence to generate a signal on film. The large number and even spacing of the Millennium Marker bands should allow the construction of accurate standard curves for determining the size of unknown mRNA species. Millennium Markers are also available in a biotinylated format for non-isotopic detection.

Reader Enquiry No. 100

UVIpro

From UVItec

A gel analysis and documentation system

This system acts as a fully integrated system for image acquisition, filing, printing and analysis, yet it retains a modular design that allows flexibility in specification and price. At the heart of the UVIpro system is a compact CCD camera, which is neatly interfaced to a Pentium PC via a single cable and a PCI acquisition card. From the user friendly image-acquisition software, the user controls parameters such as camera gain, offset and integration time, allowing optimization of the video image in 'real time'. For detection of very faint fluorescent bands, integration times of up to two minutes are possible. Once captured, the image may be enhanced by fine adjustment of brightness and contrast and may be annotated with text and symbols. The UVIphoto software also includes features such as good laboratory practice facilities, the ability to

The UVIpro gel analysis and documentation system from UVItec.

save and recall acquisition parameters and the option of automatic addition of the current date and time to an image. Captured images may be saved in a variety of file formats (for example, TIFF, JPEG and GIF) or printed directly to an analog thermal printer of which two models are available. These include a standard-quality thermal printer and one that produces superior, near-photographic quality images on plastic film.

Reader Enquiry No. 101

EPS 1000

From Hoefer Pharmacia Biotech

A versatile power supply for general applications

Pharmacia Biotech has introduced the EPS 1000 power supply, which has been designed for a wide range of polyacrylamide gel electrophoresis applications (mini and standard vertical slab gels, or ultrathin flatbed gels for Multiphor or GenePhor). The unit delivers 5–1,000 V, 1–400 mA, or 1–100 W at constant current, constant voltage, or constant power with automatic crossover. There is parameter increment resolution of 1 mA, 1 V and 1 W, and three timer options that provide precise settings for reproducible results. The voltage, current and elapsed time parameters are displayed simultaneously on a backlit 2 × 16-character LCD display. Two sets of 2-mm recessed power outlets are available for running two electrophoresis units in parallel. The instrument is compact (9.5 cm tall × 25 cm wide × 38.5 cm deep) and is stackable.

Reader Enquiry No. 102

Thermal printer

From Ultra-Lum

A 256-grayscale thermal printer that is said to be easy to use and saves on bench space, time and money

This printer produces publication-quality prints in about 3.9 s at a fraction of the cost when compared with film-based systems (a stated 10 cents (US) an image). This printer provides high resolution (8.9 dots mm⁻¹), ×1.5 and ×2 zoom capability, and portrait/landscape image orientation. The contrast and brightness dials can be set to control both the printer and video display simultaneously — so that what is seen is exactly what is printed. The thermal printer also complements Ultra-Lum's modular line of gel documentation systems. With the modular approach, multi-user laboratories can print and digitally document colour and

UltraLum's new high-resolution thermal printer.

fluorescent stains, autorads, blots and ELISAs. The printer automatically adjusts to the supplied voltage (115, 100, 220 or 240 V).

Reader Enquiry No. 103

Sunrise

From Oncor

A PCR product amplification detection system that permits the simultaneous amplification and detection of nucleic acids within the PCR tube

The method is based on the incorporation of energy-transfer-labelled hairpin 'primers' into the amplified DNA product. The Sunrise UniPrimer I is available for universal amplification of any target. It consists of a hairpin primer designed in such a way that a fluorescent signal is generated only when the primer is unfolded by incorporation into the amplification product. Unincorporated Sunrise UniPrimer I has virtually no fluorescent signal, eliminating the need to purify the PCR product before detection. The 'closed-tube' format of the Sunrise system should help eliminate PCR contamination, post-PCR sample manipulation (such as gel analysis) and should help accommodate high-throughput analysis of amplified material.

Reader Enquiry No. 104

CycleSeal

From Robbins Scientific

An easy and convenient way to seal PCR plates for thermal cycling

CycleSeal is a single pre-cut, silicon-like sheet with a removable plastic backing. The heat and pressure from the thermal cycler lid moulds the sealant around the well openings, providing an effective evaporative seal with no well-to-well contamination. It can be used on any 96-well thermal cycler, with a heated lid, including those from Perkin-Elmer and MJ Research, and is compatible with all Robbins' brands of CyclePlates, including the new CyclePlate-384 and CyclePlate-192 products.

Reader Enquiry No. 105

InViSorb

From InViTek

A new generation of spin column kits for plasmid purification

The new kits combine the company's batch method with the convenience, speed and high throughput of spin columns. There are said to be no toxic reagents involved, such as phenol, chloroform, CsCl or ethidium bromide. Depending on the plasmid copy number and the required amount of plasmid DNA, the manufacturer offers a choice between mini, midi and maxi kits. Each mini kit contains either 25 or 50 columns for small-scale preparations (700- μ l capacity). The midi and maxi kits have 3.5-ml and 15-ml capacities, respectively.

Reader Enquiry No. 106

Cleanaprep

From ICN

Two products that offer plasmid DNA purification (Cleanaprep) and DNA isolation (Cleanaprep II)

Cleanaprep has been formulated to be a rapid, inexpensive and simple way of producing high yields (up to 20 μ g) of purified plasmid DNA from as little as 2 ml of culture. The kit is safe to use as it contains no harmful or toxic reagents, such as phenol or phenol/chloroform. The spin filter contained in the kit binds plasmid DNA, whereas unbound genomic DNA and protein are removed by microcentrifugation and the bound plasmid DNA can then be eluted from the filter. The purified DNA is immediately ready for use in sequencing or transformations; it can also be ligated by restriction enzymes, when required. The kit is said to perform well for both high- and low-copy plasmids. Cleanaprep kits are available in 25, 100 or 250 preparation size packs. Cleanaprep II can be used for isolation of up to 15 μ g of plasmid, linear or any other DNA from contaminants such as proteins, oligonucleotides, RNA and double-stranded DNA (of less than 45 bp), nucleotides and primers.

Reader Enquiry No. 107

In situ system

From Hybaid

A system created for in situ hybridization, in situ reverse-transcription PCR, PRINS and immunohistochemistry

The system is based around a slide rack, which allows the simultaneous manipulation of 20 slides through the whole experimental protocol. Hybridization and thermal cycling are conducted on the OmniSlide thermal cycler and the subsequent wash steps in the wash module. For the scientist who does not want to make the commitment to the large-scale system, the company also supplies flat

Hybaid's *in situ* system is also available for small-scale operations using Touchdown.

blocks for the Touchdown thermal cycler, which has space for four slides.

Reader Enquiry No. 108

Thermo-Fast

From Advanced Biotechnologies

A 384-well plate with a well capacity of 40 μ l and a working volume of 25 μ l

The plates are made of virgin polypropylene and are skirted for compatibility with automated systems, providing an even surface for robotic arms to clamp onto and sufficient space for each plate to be labelled or barcoded for identification. In addition, the skirt has eight strategically placed holes to facilitate plate positioning and removal from the thermal cycler block. Though the plate is rigid, the wells have thin walls for rapid heat transfer in the thermal cycler. The wells have a raised rim to ensure contact is made with the sealing medium, avoiding problems associated with evaporation, a key consideration when dealing with such small volumes. It is possible to seal Thermo-Fast 384 with a variety of sealing methods, including adhesive seals, single piece mat devices. Other leading thermal cycler manufacturers, such as Hybaid, Techne and Stratagene, are also developing heating blocks for their new machines, which will accommodate the 384-well plate.

Reader Enquiry No. 109

Plasmid prep scale up

From Nucleon Biosciences

A kit for large-scale plasmid preparations suitable for anywhere between 30–500-ml overnight cultures

The kit makes use of a resin that partitions away the contaminating cell lysate, leaving pure DNA in aqueous solution, which is then precipitated in ethanol. Variable yields and overloading have been reported to be the problems associated with fixed-sized cartridges/columns that bind the DNA directly. This system compensates for fluctuations in cell culture densities and routinely provides yields of 2 mg from a 100-ml culture of high copy number plas-

mid and up to 16 mg from a 500-ml culture. According to the manufacturer, the kit will also give consistently high yields with higher molecular weight plasmids.

Reader Enquiry No. 110

HTS 7000

From Perkin-Elmer

A rapid, high-throughput bioassay reader for screening applications

The new reader has been designed to be a versatile, optimized system for rapid, high-throughput screening of a large array of small-volume samples, which are routinely performed in many molecular, cell biology and biochemistry laboratories. The HTS 7000 reader complements other industry leading systems from Perkin-Elmer, such as those for PCR and automated DNA sequencing and synthesis. Applications for the new HTS 7000 include DNA and protein quantification; drug screening and therapeutic monitoring; immunoassays; cell function studies; and DNA hybridization, gene expression, recombinant enzyme and reporter gene assays. The HTS 7000 includes applications software designed for processing and tracking up to hundreds or thousands of samples per day. Top or bottom reading of luminescence or through-well absorbance measurements is achieved automatically through simple software selection. Users with few samples can take advantage of the convenience of multichannel pipetting in strip wells and perform traditional cuvette-based analyses much more rapidly with the HTS 7000. Stored plate maps contain sample identification information and all the necessary details for use of standards, controls and replicates.

Reader Enquiry No. 111

These notes are compiled by Brendan Horton from information provided by the manufacturers. For more details, fill in the reader service card bound inside the journal.

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