Controlling a chain reaction

A selection of new products aimed at the DNA amplification market features PCR kits, and the paraphernalia needed to make use of them.

PCR Cloner kit

From Flowgen **www.flowgen.co.uk**

Designed to speed-up handling of PCR products

The Prime PCR Cloner kit from Flowgen is claimed to be 4–16 times faster than conventional T-vector kits. Using the kit it should be possible to purify, clone and transform any PCR product within 90 minutes and to obtain identifiable colonies within 12–14 hours. A novel ligation reagent is used in order to avoid the need for overnight ligation. The kit comes as a complete system with PCR purification spin columns and control reagents, in two forms with different sizes of cut-off. PCR Cloner is designed to be compatible with both blunt-ended fragments and those with T-A overhangs.
Reader Service No. 100

GeneRuler DNA Ladder

From Fermentas **www.fermentas.com**

Markers from 50 to 1,000 base pairs, in 50- and 100-base-pair steps

The GeneRuler 50 bp DNA Ladder yields the following 13 discrete fragments (in base pairs): 1,000, 900, 800, 700, 600, 500, 400, 300, 250, 200, 150, 100, 50. In the production process, pE-50 DNA is completely digested by *Eco*147I and *Pvu*I, phenol extracted, ethanol precipitated and dissolved in 10 mM Tris-HCl (pH 7.6), 1 mM EDTA. The 'ruler' is supplied with 6× loading dye solution (0.2% bromophenol blue, 0.2% xylene cyanol, 60% glycerol, 60 mM EDTA) and at a DNA concentration of 0.5 mg per ml. The bright bands at 500 bp, 200 bp and 100 bp serve as the reference.
Reader Service No. 101

pGEM-T vectors

From Promega UK **www.euro.promega.com/uk**

Kits for the isolation and cloning of PCR products

One hour is the time claimed for ligation of PCR products using the new pGEM-T vector systems. A single 3′ overhanging thymidine at each end of the vector is designed to improve the efficiency of ligation to PCR products made by most non-proof-reading thermostable polymerases. The Promega range of pGEM-T and pGEM-T Easy Vector Systems has now been re-configured to contain a new 2× rapid ligation buffer, reducing the time needed for the ligation reaction from overnight to 1 hour.
Reader Service No. 102

Say goodbye to overnight ligation: purify, clone and transform PCR products with change from 2 hours.

Pfu DNA polymerase

From Promega **www.promega.com**

A high-fidelity PCR enzyme tested for activity and contaminating nucleases

Pfu DNA polymerase is recommended for PCR applications requiring high fidelity — including cloning, DNA expression and mutation analysis. Native *Pfu* DNA polymerase is now available from Promega in two sizes, 100 and 500 µl, both including 10× reaction buffer containing $MgSO_4$.
Reader Service No. 103

TaKaRa Z-Taq DNA polymerase

From Takara Shuzo

A polymerase developed with speed in mind

TaKaRa Z-Taq is a novel DNA polymerase developed with a view to rapid PCR. *TaKaRa Z-Taq* is suitable for high-throughput multi-sample processing on a single cycler. In handling 10,000 samples of 1 kbp, for example, the enzyme completes amplification of 1 kbp in approximately 20 minutes compared to 1.5 hours with a conventional *Taq*. All the necessary PCR reactions should therefore be completed in about 1.5 days compared to 6.5 days with a general *Taq*.
Reader Service No. 104

REDTaq DNA polymerase

From Sigma **www.sigma-aldrich.com**

A new rendition of Taq *DNA polymerase with a dye to make it more visible*

Sigma's new enzyme, REDTaq, delivers the same performance as Sigma's standard *Taq*, but it is easier to use. Addition of REDTaq to a tube produces a thin red layer that is visible at the bottom. This colour coding eliminates the uncertainty that can occur with interruptions in pipetting: when the red colour is uniform, the solution is thoroughly mixed. REDTaq requires no loading buffers since the post-PCR samples are dense enough to be loaded directly onto an agarose gel. The red dye works as a tracking dye, migrating just faster than bromphenol blue. REDTaq is formulated at 1 unit per µl to help with accurate pipetting.
Reader Service No. 105

HotStarTaq

from Qiagen **www.qiagen.com**

A form of Taq DNA polymerase developed for hot-start PCR

HotStarTaq DNA polymerase is a modified form of Qiagen's *Taq* DNA polymerase designed to minimize nonspecific amplification, primer–dimer formation, and background, maximizing yield of the specific PCR product. The enzyme is active only after a 15-minute, 95 °C incubation, preventing extension of primers that anneal nonspecifically at low temperatures during reaction setup and the initial thermal-cycler heating phase. Thus all reaction components can be assembled at room temperature.
Reader Service No. 106

QuanToxBlunt cloning vector

From Quantum Biotechnologies
www.quantumbiotech.com

Positive discrimination, claimed to give efficient cloning and a low background

The introduction of new thermostable polymerases that produce blunt-ended PCR products has created the need for new PCR cloning methods. Rather than using rare restriction enzymes, special PCR strategies and/or expensive antibiotic selection, the GATA-1 gene present in the QuanToxBlunt vector codes for a toxic peptide that inhibits

the growth of bacterial cells when the expression is induced. Ligation of DNA fragments into the blunt cloning site disrupts the gene coding for the toxic peptide. Recombinant molecules are then non-toxic while vector molecules re-ligated on themselves are toxic.
Reader Service No. 107

PCR Master Mix
From Marsh Biomedical **www.biomar.com**

A ready-made mixture to reduce preparation time for PCR reactions

The Abgene PCR Master Mix is designed to increase the speed and accuracy of high-throughput PCR. Each mix contains *Taq* polymerase, dNTPs, buffer and $MgCl_2$. Just add template and primers to complete the reaction. The mixes are available with varying concentrations of $MgCl_2$ to suit any PCR protocol in vials containing 1.8 ml of 1.1 × Master Mix, or pre-aliquoted into individual tubes, strip tubes or 96-well plates. Suppliers are Marsh Biomedical, Rochester, NY, who can be called on (800) 445-2812.
Reader Service No. 108

Competitive RT-PCR
From Ambion **www.ambion.com**

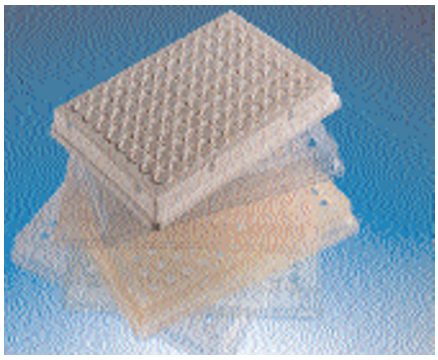
Kits to simplify mRNA quantitation

Ambion's Competitive Quantitative RT-PCR kits are designed for the competitive quantitation of mRNA using a synthetic exogenous RNA standard added to RT-PCR reactions. This RNase-proof standard acts as a control for variations in RNA isolation, reverse transcription, and amplification. Twelve kits are available, each containing a gene-specific RNA competitor and primers to amplify both the competitive and endogenous RNA species. Call (800) 888-8804 in the US.
Reader Service No. 109

Skirted Thermo-Fast 96
From Advanced Biotechnologies **www.adbio.co.uk**

Raised rims in 96-well plate form

The latest addition to the Advanced Biotechnologies Thermo-Fast PCR plate range is the Skirted Thermo-Fast 96 plate, an alternative to existing polycarbonate plates compatible with most 96-well thermal cyclers and robotic workstations. The new plates are injection-moulded in polypropylene. Injection moulding is claimed to give less well-to-well variation than the vacuum-forming used for polycarbonate plates. The raised rims around each tube are to ensure that contact is made with the chosen sealing medium and to reduce the problems associated with evaporation, thus giving the option of performing oil-free PCR. DNase- and RNase-free, the Skirted Thermo-Fast 96 comes in natural, blue, green, red and yellow.



Spot the difference: it's the rims that distinguish these 96 wells from the conventional kind.

For fluorescent or chemiluminescent studies, the plate comes in opaque black or white.
Reader Service No. 110

Calypso RT-PCR system
From Tetra Link **www.tetra-link.com**

A single-tube RT-PCR system using AMV reverse transcriptase

Calypso is a single-tube RT-PCR system combining AMV reverse transcriptase with Tetra Link's Accurase polymerase mix. The system offers sensitive, high-fidelity, reproducible RNA analysis. Tetra Link claim that, compared to RT-PCR systems using *Taq*, *Tfl* or *Tth* DNA polymerases, the combination of the three-enzyme Accurase mix and AMV RT allows amplification of longer products coupled with improved product yield, a threefold increase in fidelity and increased sensitivity due to the efficiency of the three-enzyme system. The system requires between 10 pg and 1 μg of total RNA or between 1 pg and 100 ng of poly $(A)^+$ RNA to obtain a visible band.
Reader Service No. 111

True*Sprinter* RT-PCR kit
From Hybaid **www.hybaid.co.uk**

A kit containing the reagents for RT-PCR, plus λ-DNA and primers

The True*Sprinter* kit is based on True*Script* reverse transcriptase (MMLV) which lacks RNase H activity and allows synthesis of cDNA molecules of up to 20 kb. cDNA products are amplified with the Proof*Sprinter* mixture of *Taq* and *Pwo*, included in the kit, for high yield of full-length PCR products.
Reader Service No. 112

TOPO XL kit
from Invitrogen **www.invitrogen.com**

A PCR cloning kit designed for use with large PCR fragments

The TOPO XL PCR cloning kit is designed specifically for high-efficiency cloning of long (3–10 kb) PCR products. The kit uses a topoisomerase I-activated positive selection vector, pCR-XL-TOPO, to achieve 5-minute efficient cloning and low background. With a 15-minute gel purification step 77–80% recombination can be obtained. The kit is claimed to achieve 80% recombinant for cloning a 7-kb PCR fragment.
Reader Service No. 113

RT-PCR primers
from Continental Lab Products **www.conlab.com**

A new range of RT-PCR primers

Designed specifically for PCR conducted from mRNA sources. Continental's range of RT-PCR primers are selected for efficient generation of PCR products across intron–exon boundaries, to ensure that the signal is derived from expressed genes. All sets are pre-tested on cDNA from cell lines or cultures known to express the appropriate analyte. The ready-to-use aliquots contain 2.5 nanomoles of each primer.
Reader Service No. 114

Dynabeads mRNA DIRECT
From Dynal **www.dynal.no**

mRNA isolation for RT-PCR amplification

The Dynabeads mRNA DIRECT Micro kit is a new microscale kit for isolation of mRNA directly from cells, plant and animal tissue for RT-PCR amplification. The kit combines poly$(A)^+$ RNA isolation and RT-PCR and is designed to isolate highly purified and intact mRNA from small numbers of cells and small tissue samples. The isolated mRNA can be used directly in RT-PCR amplification without eluting the mRNA from the beads. The direct isolation is performed in 15 minutes without having to prepare total RNA or perform any other purification steps. The oligo$(dT)_{25}$ bound to the Dynabeads surface is used both to capture the mRNA and as a primer for the reverse transcription of first-strand cDNA. Dynabeads solid-phase cDNA synthesis technology is compatible with various commercially available cDNA synthesis kits.
Reader Service No. 115

PCR-ready DNA
From Epicentre Technologies **www.epicentre.com**

A kit to prepare PCR-ready DNA from any source in under an hour

The Epicentre MasterPure kits come in three versions, for purification of DNA, RNA or both DNA and RNA. The kits can perform 200, 100 and 200 purifications respectively. All manipulations can be performed in 1.5-ml microcentrifuge tubes. The recovered nucleic acids are claimed to be highly pure, with the ratio of absorbance at 260 and 280 in the range 1.8–2.0.
Reader Service No. 116

Multiplex PCR kit

From Maxim Biotech **www.maximbio.com**

A PCR kit targeted at high-throughput applications

Multiplex PCR (MPCR) kits utilize a method of detecting multiple gene expression by the amplification of many genes under identical conditions in a single reaction tube. This technique offers an alternative to the traditional time-consuming northern blot and RNase protection assays (RPA) for determining the abundance of a specific mRNA in a total or poly(A) RNA sample. Multiplex PCR is offered as an economical, high-throughput method of monitoring gene expression. In the UK, the Maxim range is available from Bio-Stat Diagnostics.

Reader Service No. 117

PCR Clean-Up kit

From Mo Bio **www.mobio.com**

A PCR Clean-Up kit to eliminate the need for an agarose gel

The purpose of the UltraClean PCR Clean-Up kit is to allow researchers to purify PCR products directly from a PCR reaction without running an agarose gel first. A silica spin filter is used to selectively bind the PCR product, and unwanted reaction components are passed through the filter. The PCR product is then eluted from the spin filter into certified DNA-free water (supplied) or TE. This simple procedure takes only 3 minutes.

Reader Service No. 118

Quadruple-density microplates

From Porvair Sciences

www.porvair-science.com

Compact 384 deep-well plates for high-throughput screening assays

A quadruple-density microplate with double the sample capacity of standard plates has been added to the Porvair Sciences microplate range. The maximum capacity of each of its 384 wells is over 120 µl, but the system retains the same footprint as a 96-well plate, making it compatible with most scanners, analysers, liquid handling and automated sample processors. This makes the new plate suitable for sample transfer, high-throughput screening, most chemical assays and many other common applications in the pharmaceutical and life science markets. The polystyrene plate comes in three different forms clear, opaque white and solid black. The former is intended for luminescence- and scintillation-based assays, where maximum light reflection is required, while the latter provide the all-absorbing background needed for fluorescence techniques.

Reader Service No. 119

Apex PCR Certified Water

From Apex

Water, but water specially prepared for PCR applications

Produced specifically as a component for PCR reactions, Apex PCR-certified water is tested for PCR compatibility and certified to be free of all RNase, DNase, and DNA contamination. The water is useful for highly sensitive PCR reactions and comes in 4 × 1.25 ml and 1 × 8.0 ml package configurations, double-pouched for added protection.

Reader Service No. 120

PCR Express gradient block

From Hybaid **www.hybaid.com**

A new approach to gradient cycling

Hybaid has recently launched the new PCR Express gradient thermal cycler. The gradient block is interchangeable and complements the existing range of PCR Express blocks. The block is available in 0.2 ml or 0.5 ml formats and allows a temperature gradient of up to 15 °C to be set. Hybaid has introduced new software and 'Active Tube' temperature control with a view to increasing temperature and uniformity. Active Tube Control measures actual in-sample temperatures, ensuring samples achieve programmed temperatures and times.

Reader Service No. 121

GENESIS Workstation

From Tecan **www.tecan.ch**

A workstation suited for use in PCR

Tecan's GENESIS Workstation can be customized for molecular biology applications such as PCR, DNA extraction or sequencing reaction preparation. A new, low volume option allows users to pipette reliably to 0.5 µl, especially useful for PCR reactions where exotic reagents and DNA samples are used. The RoMa (robotic manipulator) arm moves microplates to systems such as magnetic holders, thermal cyclers or microplate storage hotels placed on or around the worktable. The GENESIS Workstation runs under a Windows NT-based operating system called Flexible Assay Composer and Task Scheduler (FACTS). This software allows users to run multiple batches of samples, because individual modules can be programmed to work simultaneously.

Reader Service No. 122

Let there be blue light: the GENESIS Workstation tackles volumes down to 0.5 µl.

Tgradient thermocycler

From Biometra **www.biometra.de**

A modular-block gradient thermocycler optimized for DNA amplification

Biometra's new thermocycler features a very wide temperature gradient of up to 40 °C temperature difference, high block uniformity courtesy of a gold-plated silver block, and fast temperature cycles. Ease of use is billed as an important advantage of the system as a result of its modular construction, adjustable heated lid with defined pressure, big display and intuitive programming to provide flexibility.

Reader Service No. 123

PCR poster

From Eppendorf **www.eppendorf.com**

A poster for the lab wall with tips for PCR

The latest edition of Eppendorf's publication *BioNews* (Issue 11) includes a PCR poster created to give newcomers to PCR an overview of the common rules, and an indication of the concentrations that should be used when designing experimental set-ups. *BioNews* is available free from Eppendorf. The company also invites users and readers to send suggestions for changes, or new features for the poster that might increase its usefulness.

Reader Service No. 124

PCR plastics

From Robbins Scientific **www.robsci.com**

A new brochure covers a range of PCR plastics products

An electronic copy of the new brochure for the Robbins Scientific range of disposable products for PCR is available from the company's website (see above), or via e-mail from custserv@robsci.com. A 4-colour paper version is available by post. Among the products described is the CyclePlate-ET PCR plate, a new range of thin-wall PCR plates designed for oil-free sample processing in high-performance thermal cycling.

Reader Service No. 125

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