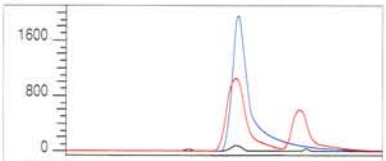
PCR Quantitation

CONTROL TRANSCRIPT

Internal Controls. Unrivaled Precision.

VARIABLE TRANSCRIPT

Gene expression. Mutation detection and screening. Genetic disease assay development. Researchers in these and other areas need efficient fragment quantitation techniques that ensure reliable data. The ideal solution combines PCR amplification and Applied Biosystems' four-color fluorescent dye technology. Our Model 373 DNA Analysis System and GENESCAN™ 672 software give you fast, precise results in an easy-to-use, automated system.



	Min.	Size	Peak Height	
12B, 3	140	286.06	2059	19

Precise Quantitation

Only with our four-dye, one-lane technology can you run experimental controls in the same lanes with samples to determine fragment size and amount. You can use one dye to label a size standard for precise sizing, and another to label a PCR control for precise quantitation.

As one researcher says, "Applied Biosystems' four fluorescent labels allow us to measure both an estrogen receptor (ER) variant and wild-type ER at the same time, and we can independently label an in-lane standard, such as a housekeeping gene, to verify that the amount of sample in each lane is the same."*

Innovative dye incorporation methods and turnkey reagent kits make this labeling simple and efficient while giving you many options. You can even order many popular PCR primers already labeled.

High Throughput

Our technology also lets you combine samples for fewer runs and higher throughput. And the runs are flexible. The Model 373 supports three gel lengths, so that you can choose the appropriate speed and resolution. For instance, mRNA transcripts can be analyzed in as little as one hour.

The resulting data is not only precise, but also easily interpreted and managed. Our Macintosh-based GENESCAN software automatically collects, reports and analyzes data from the Model 373. GENESCAN's digitized information also streamlines subsequent data handling.

With this proven system, you can automate quantitation and sizing, as well as sequencing. At Applied Biosystems, we're committed to providing fundamental technologies to support a full spectrum of applications for genetic analysis–now and in the future.

To receive literature on the Model 373, GENESCAN, and PCR fragment quantitation, phone Applied Biosystems at: **U.S.** (800) 345-5224, **Canada** (800) 668-6913.

*Dr. Suzanne Fuqua, University of Texas Health Science Center at San Antonio

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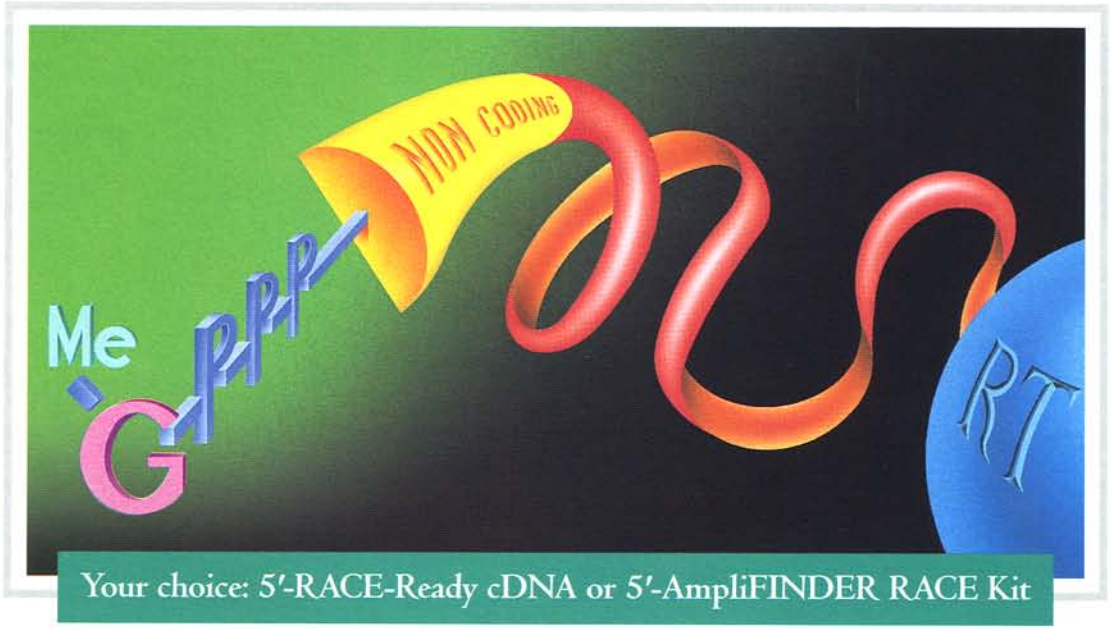
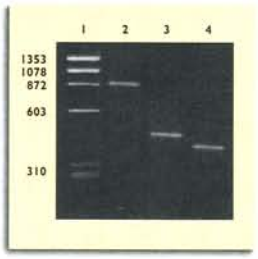


Your choice: 5′-RACE-Ready cDNA or 5′-AmpliFINDER RACE Kit

PCR amplification of the 5′ ends of gene transcripts using Human Kidney 5′-RACE-Ready cDNA. Lane 2: tumor necrosis factor. Lane 3: tissue-type plasminogen activator. Lane 4: interleukin-1α.

Obtaining the 5′-end of your cDNA can fray your wits. Put an end to it. Introducing 5′-RACE-Ready™ cDNA, a convenient, high-quality template for amplifying unknown sequences at the 5′-end of gene transcripts. These single-stranded cDNAs from specific tissues have a unique PCR anchor already ligated to the 3′-end. We start with high-purity poly A^+ RNA, use random hexamer priming to generate a representative mixture of cDNAs, then ligate a specially-designed anchor oligonucleotide. When your RACE-Ready cDNA arrives, you go straight to PCR—using the provided 5′ anchor primer and your nested, gene-specific 3′ primers—and obtain the 5′-end easily. Alternatively, you can use any RNA source of your choice, and get the 5′-end with the convenient 5′-AmpliFINDER™ RACE Kit. Either way, your 5′-ends are covered. Call **1-800-662-CLON** or contact your local distributor for more information and a list of 5′-RACE-Ready cDNAs.



PCR amplification of the 5′ ends of gene transcripts using the 5′-AmpliFINDER RACE Kit. Lanes 2 & 3: human transferrin receptor. Lane 4: tissue-type plasminogen activator.

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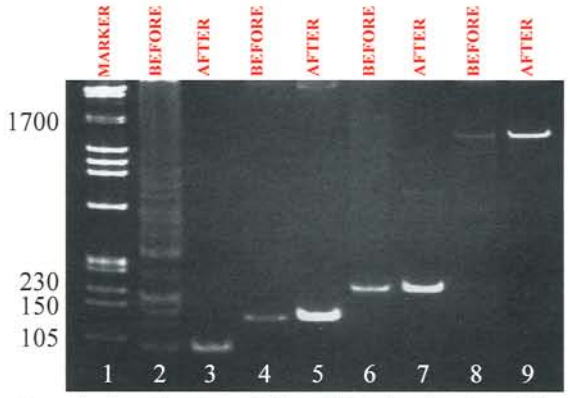
Stratagene Introduces the Opti-Prime™ PCR+ Optimization Kit

PCR primers and DNA templates vary in purity, GC content and amount of secondary structure. In addition, DNA may have chemical modifications, nucleic acid analogs or other characteristics that can inhibit amplification efficiency. To improve the yield and specificity of the desired PCR products, the buffer components of a specific amplification reaction can be modified. But the process is tedious and time-consuming.

Stratagene's Opti-Prime™ PCR optimization kit does it for you. This unique matrix of carefully designed buffers and PCR additives can greatly enhance the quality of PCR amplification reactions. Our Perfect Match® PCR Enhancer is included as one of the six PCR additives known to improve the specificity and overall vigor of PCR.

Order now and let Stratagene's Opti-Prime Kit add music to your amplifications.

PCR OPTIMIZATION



Four primer/template sets were PCR-amplified using either standard *Taq* polymerase buffer (10mM Tris, 50mM KCl and 1.5mM $MgCl_2$) or individually optimized Opti-Prime™ buffer systems. Lane 1: 1 ug of lambda Hind III/phi x 174 Hae III marker. Lanes 2&3: 105- bp PCR product of a human Gaucher's disease gene. Lanes 4&5: 150-bp PCR product of Bluescript® vector MCS. Lanes 6&7: 230-bp PCR product of an Epstein Barr viral nuclear antigen gene. Lanes 8&9: 1700-bp PCR product of a *lacI* target gene from a transgenic mouse. Lanes 2,4,6 and 8 are of primer/template sets amplified using standard *Taq* polymerase buffer. Lanes 3,5,7 and 9 are of primer/template sets amplified using individually optimized Opti-Prime kit buffers.

*The PCR process is covered by patents owned by Hoffmann-La Roche Inc. Use of the PCR process requires a license.

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Product news. . . .

Ultra-low-cost instant electronic photography

Thousands of dollars can be saved every year without sacrifice of high quality in gel photographs. The MiniVisionary Gel Documentation System is compatible with most existing Fotodyne and Polaroid hoods and costs <10 cents per photograph to operate. Photographs are digitally produced by use of state-of-the-art CCD technology and output to a video printer for outstanding quality. Low light EtBr-stained gels are easily imaged by use of the camera's integration capability. MiniVisionary is ideal for research and education applications where photographic quality is required and tight budgets are a reality.
Contact: Fotodyne Inc., 950 Walnut Ridge Drive, Hartland, Wisconsin 53029. Reader Service No. 369.

Isothermal electrophoresis system

The new Polar Bear system from Owl Scientific, Inc. allows researchers to run sequencing, SSCP, mobility shift assays, and other applications with precise temperature control. This 20×45 cm system is affordable and can be used with constant temperature water or coolant systems over a wide temperature range for high resolution detection of genetic mutations, polymorphisms, DNA-binding proteins, dinucleotide repeats, and point mutations of PCR products. High-resolution, smile-free, reproducible results can be achieved without adjustment of voltage or extension of run time. Control is ensured by the system's unique temperature exchange system, which incorporates an alumina ceramic interface for optimal heat transfer. Maximum contact between the temperature control chamber and the gel plate ensures temperature uniformity across the gel. The Polar Bear eliminates the necessity to run gels for days, to use specialized gel matrices or toxic chemicals, fans, dry ice, or a cold room. The system features a safety interlocking lid and is easy to use, set-up, and clean. The system is supplied complete with gel plates, spacers, a 39-tooth shark-tooth comb, tubing, and stopcocks. Owl also offers a wide range of additional accessories including well and microtiter combs, wedge spacers, gel fixing tanks, and a full line of programmable Peltier effect thermal cyclers for precise sample amplification.
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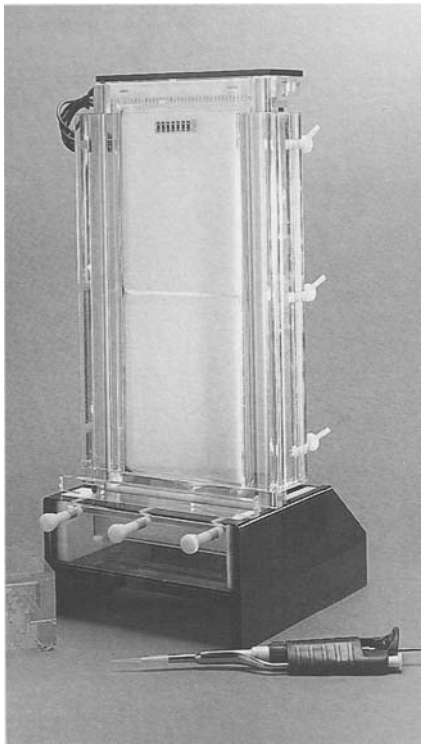

Quantitative PCR booklet

CLONTECH Laboratories, Inc. had published a new booklet entitled *Quantitative PCR: Methods & Applications*. The booklet will be free on request. The new Quantitative PCR booklet provides an overview of quantitative PCR theory and applications and a comprehensive review of a variety of methods currently used to quantitate relative or absolute levels of specific mRNAs in tissue or cell samples. The booklet also gives details on the use of CLONTECH's PCR MIMICS—nonhomologous internal standards that have proven useful in obtaining quantitative data on mRNA or cDNA by use of competitive PCR. Experimental quantitative PCR data and an extensive reference list are included. The new booklet is the third in CLONTECH's series of Methods & Applications monographs that focus on specific topics in molecular biology. The other booklets focus on RT–PCR and Nucleic acid purification.
Contact: CLONTECH Laboratories,

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Blood cell agglutination reagent

Red-Out is a new blood cell agglutination reagent that removes human red cells from centrifugally separated lymphocytes. The technique is easy and quantitative. Human blood is incubated at room temperature for 5 min with Red-Out, then centrifuged in Robbins Scientific IsoPrep isolation medium or other Ficoll-Isopaque type medium. Red cell aggregates that form settle easily to the bottom of the tube. The high specificity of Red-Out is based on a murine mAb that binds to a universally present antigen on erythrocyte membranes. Red-Out is effective in the removal of red cells, including immature nucleated erythrocytes, which interfere in a number of applications including HLA tissue typing tests and microscopic and fluorescence-activated cell sorting. Two sizes of Red-Out are available: 250 tests or 1000 tests per bottle.
Contact: Robbins Scientific, 814 San Aleso Avenue, Sunnyvale, California 94086. Reader Service No. 372.

New Opti-Prime PCR optimization kit

Stratagene has replaced random, time-consuming procedures for PCR optimization with the Opti-Prime PCR optimization kit, a newly designed testing matrix of 12 buffers and six adjuncts for enhancing PCR. This structured framework simplifies determination of the best buffer/adjunct combination for a specific PCR template and primer set. Each of the 12 PCR buffers has a pH of 8.3, 8.8, or 9.2, $MgCl_2$ concentration of 1.5 or 3.5 mM, and KCl concentration of 25 or 75 mM. Included as the six PCR-improving adjuncts or cosolvents are DMSO, formamide, bovine serum albumin, glycerol, ammonium sulfate, and Stratagene's Perfect Match DNA polymerase enhancer. The Opti-Prime kit's two-step protocol is used to first determine the optimum buffers, based on pH and $MgCl_2$ and KCl concentrations, then to combine these selected buffers with specific adjuncts to increase yield and/or decrease nonspecific amplification products. Sufficient reagents and buffers are included in the kit to perform a total of 1200 individual amplifiaction reactions, allowing 50 or 100 optimizations, depending on the need to perform the second adjunct-testing step.
Contact: Stratagene, 11011 North Torrey Pines Road, La Jolla, California 92037; 1-(800)424-5444; (619)535-5400. Reader Service No. 373.

New AmpliTaq DNA polymerase

Perkin-Elmer has introduced AmpliTaq DNA Polymerase, LD (low DNA)—the purest enzyme for PCR amplifications, which is especially useful for amplification of bacterial targets and for low copy number amplification. Low copy number applications include infectious disease research of viruses and PCR amplification of rare genes. AmpliTaq DNA Polymerase, LD is the same enzyme as AmpliTaq DNA Polymerase, however, it is purified through a proprietary separation process to ensure that contaminating bacterial DNA sequences are substantially reduced. This purification process ensures that nonspecific, false positive PCR products are effectively minimized when amplifying bacterial targets. It is quality control tested to verify that less than 10 copies of bacterial 16S ribosomal RNA gene sequences (less than one bacterial genome) are present in a standard 2.5-unit aliquot.
Contact: The Perkin-Elmer Corporation, 761 Main Avenue, Norwalk, Connecticut 06859-0310; (203)761-2574. Reader Service No. 374.

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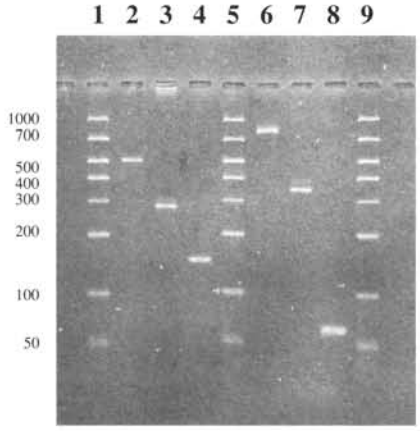

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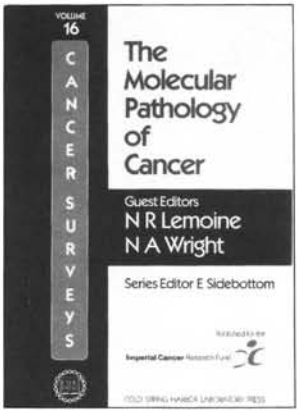

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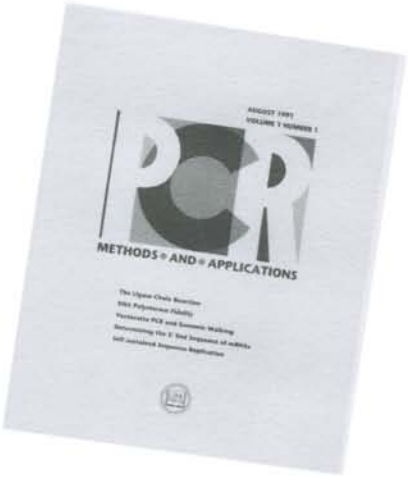

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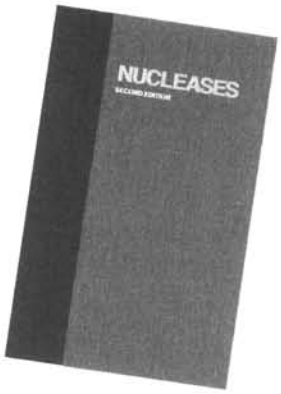

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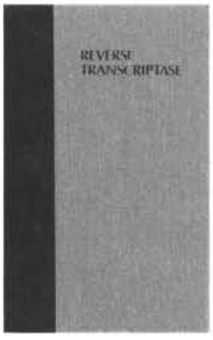

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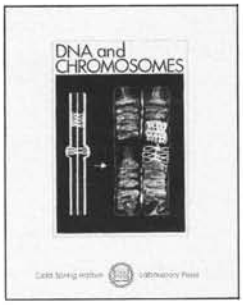

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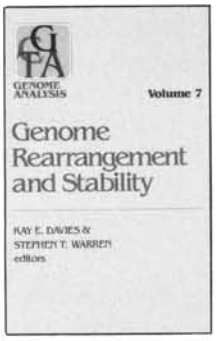

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