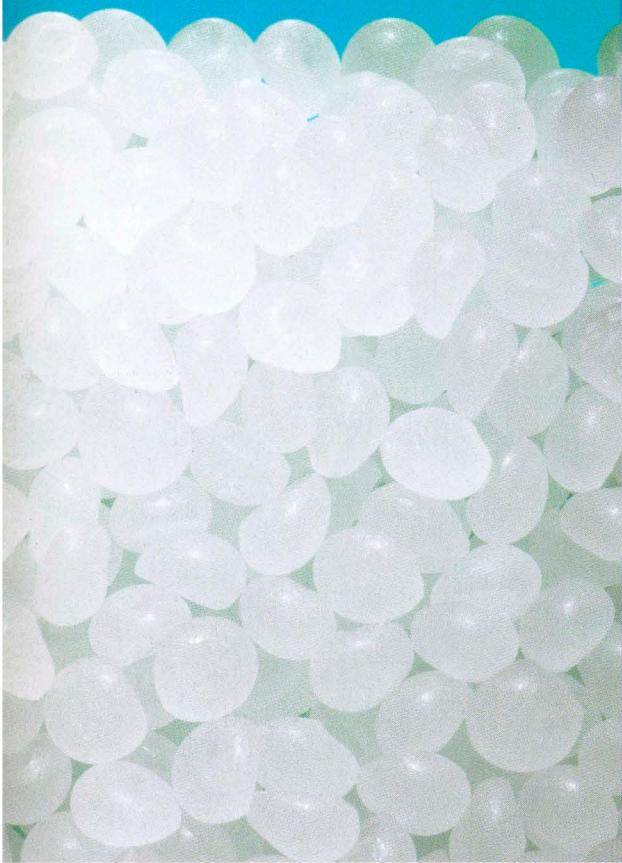
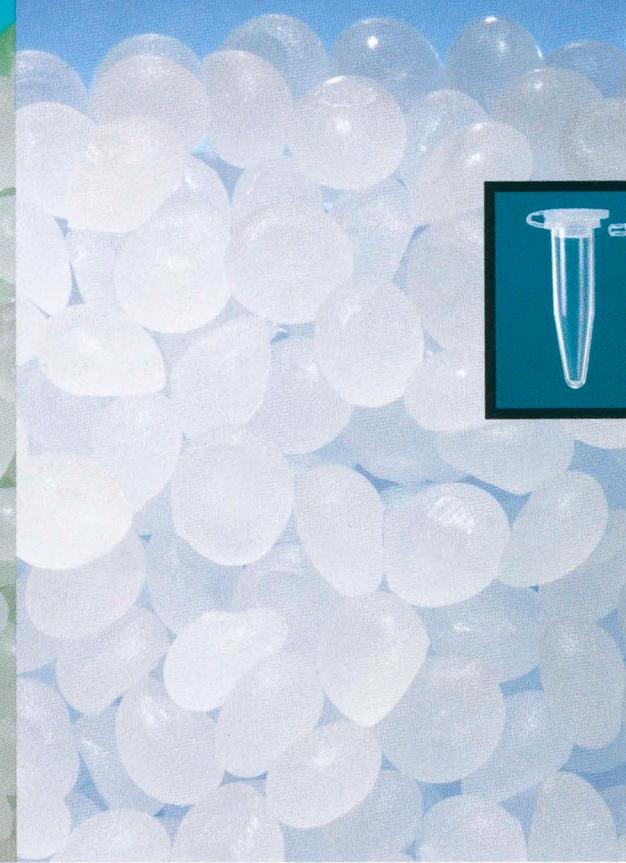


## AMPLIWAX PCR GEMS 50



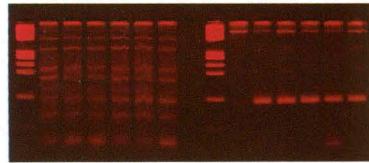
## AMPLIWAX PCR GEMS 100



AMPLIWAX PCR GEMS 50  
CAN BE USED FOR  
REACTIONS RANGING  
FROM 20 TO 50  $\mu$ L.  
AMPLIWAX PCR GEMS 100  
ARE DESIGNED FOR 50 TO  
100  $\mu$ L REACTIONS.  
BOTH ARE SPECIALLY  
FORMULATED, PRECISELY  
SIZED WAX BEADS.

## High Precision. Low-Copy Targets. 20 to 100 $\mu$ L Reaction Volumes.

**More than a vapor barrier.** AmpliWax™ PCR Gems keep reaction components separate prior to heating, providing for synchronous Hot Starts. PCR specificity is enhanced as pre-PCR mispriming and primer oligomerization are eliminated. As a uniform vapor barrier, AmpliWax PCR Gems are convenient



ficiency, uniformity and yield are evident in the amplification of the same 10-copy HIV-1 target using AmpliWax PCR Gems (right) in contrast to mineral oil (left).

**Lower cost, too.** Order AmpliWax PCR Gems at new reduced prices, backed by our PCR Performance Guarantee. The integrated resources of

our new Applied Biosystems Division now give you access to the most comprehensive range of systems, technologies and support in PCR, nucleic acid synthesis, genetic analysis and protein research. In the U.S., call 1-800-327-3002 to order. For a copy of *Guide to PCR Enzymes*, call 1-800-345-5224. Outside the U.S., contact your Perkin-Elmer sales representative.

**PERKIN ELMER**

Europe Weiterstadt, Germany Tel: 49-6150-101-00 Fax: 49-6150-101-101  
Canada Mississauga, Canada Tel: 800-668-6913 Fax: 905-821-8246  
Japan Tokyo, Japan Tel: 81-4-7380-8500 Fax: 81-4-7380-8505  
Latin America Mexico City, Mexico Tel: 52-5-651-7077 Fax: 52-5-593-6223  
Australia Melbourne, Australia Tel: 61-3-212-8585 Fax: 61-3-212-8502

Perkin-Elmer PCR reagents are developed and manufactured by Roche Molecular Systems, Inc., Branchburg, New Jersey, U.S.A.



Perkin-Elmer is a registered trademark of The Perkin-Elmer Corporation. AmpliWax is a trademark of Roche Molecular Systems, Inc. The GeneAmp PCR process is covered by U.S. patents owned by Hoffmann-La Roche Inc. and F.Hoffmann-La Roche Ltd.

**Editors**

David Bentley

*Sanger Centre*

Richard Gibbs

*Baylor College of Medicine*

Eric Green

*Washington University School of Medicine*

Richard Myers

*Stanford University School of Medicine*
**Editorial Board**

Rakesh Anand

*Zeneca Pharmaceuticals*

Johannes Bos

*University of Utrecht*

Anne Bowcock

*University of Texas Southwestern Medical*
*Center*

Jeff Chamberlain

*University of Michigan Medical School*

Nicholas Dracopoli

*National Center for Human Genome, NIH*
*Research*

Joe Ecker

*University of Pennsylvania*

Ray Fenwick

*Dianon Systems, Inc.*

Kenshi Hayashi

*National Cancer Center Research Institute,*
*Tokyo*

Bernhard Horsthemke

*University of Essen*

Pieter de Jong

*Lawrence Livermore National Laboratory*

David Kemp

*Menzies School of Health Research*

Mary-Claire King

*University of California, Berkeley*

Ulf Landegren

*University of Uppsala Medical Center*

Doug Marchuk

*Duke University Medical School*

Chris Mathew

*UMDS Guy's & St. Thomas' Medical and*
*Dental School*

David Nelson

*Baylor College of Medicine*

Debbie Nickerson

*University of Washington School of Medicine*

Svante Pääbo

*University of Munich*

Lena Peltonen

*University of Helsinki*

Eric Spitzer

*SUNY at Stony Brook*

Lap-Chee Tsui

*Hospital for Sick Children, Toronto*

Rick Wilson

*Washington University School of Medicine*

Steven Wolinsky

*Northwestern University School of Medicine*

Maria Zapp

*University of Massachusetts Medical Center*
**Managing Editor**

Judy Cuddihy

*Cold Spring Harbor Laboratory Press*
**April, 1994**  
**Volume 3, Number 5**
**REVIEW**

**263** **Overview of International PCR Standardization Efforts**  
 Larry E. Bockstahler

**RESEARCH**

**268** **Mutation Detection by Fluorescent Chemical Cleavage: Application to Hemophilia B**  
 I.I. Haris, P.M. Green, D.R. Bentley, and F. Giannelli

**272** **RNA Associated with a Heterodimeric Protein that Activates a Meiotic Homologous Recombination Hot Spot: RL/RT/PCR Strategy for Cloning any Unknown RNA or DNA**  
 Wayne P. Wahls

**278** **Quantitative Analysis of CD34<sup>+</sup> Cells Using RT-PCR on Whole Cells**  
 David A. Molesh and Jeff M. Hall

**285** **The Use of Phosphorothioate Primers and Exonuclease Hydrolysis for the Preparation of Single-stranded PCR Products and their Detection by Solid-phase Hybridization**  
 Theo T. Nikiforov, Robert B. Rendle, Michael L. Kotewicz, and Yu-Hui Rogers

**TECHNICAL TIPS**

**292** Comparison of the Enzyme-Linked Oligonucleotide Sorbent Assay to the [<sup>32</sup>P]PCR/Southern Blotting Technique in Quantitative Analysis of Human and Rat mRNA  
*Joseph A. Carcillo, Robert A. Parise, and Marjorie Romkes-Sparks*

**298** Optimized PCR Using Vent Polymerase  
*Kemp B. Cease, Caroline A. Potcova, Cortland J. Lohff, and Mary E. Zeigler*

**301** Different Methods of Sample Preparation Influence Sensitivity of *Mycobacterium tuberculosis* and *Borrelia Burgdorferi* PCR  
*Wolfgang Liedtke, Bertram Opalka, Christoph W. Zimmermann, and Ernst Schmid*

**305** Low-stringency PCR Provides an Internal Control for Negative Results in PCR-based Diagnosis  
*Otávia Luisa S. Damas de Caballero, Emmanuel Dias Neto, Matilde Cota Koury, Alvaro J. Romanha, and Andrew J.G. Simpson*

*(continued)*

*Editorial Staff*  
Nadine Dumser, Technical Editor  
Valerie Nicolette, Production Editor  
Doris Lawrence, Secretary  
Jim Suddaby, Design

*Advertising*  
Nancy Kuhle

**308** A Simplified Method for PCR Detection of Hepatitis C Virus RNA from Human Serum  
*Jianping Lai, Alfred M. Prince, Larry Wolfe, and Linda Andrus*

**310** **Product News**

**313** **MANUAL SUPPLEMENT**

**313** **Getting Started: A PCR Primer**

**315** **Contents**