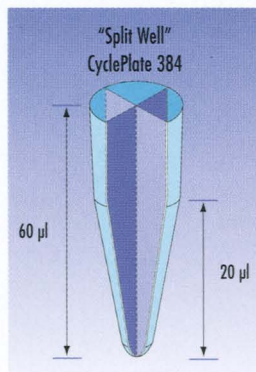


# Go *Fourth* and Multiply.

## Quadruple Your PCR Reactions With "Split Well" CyclePlates.™

**T**ake advantage of the simplest, most inexpensive method available to increase the sample processing capacity of your thermal cycler up to 4 times! Designed for high throughput PCR and cycle sequencing applications, new Split Well\* thin wall PCR CyclePlates are rigid, polypropylene 96 well plates with one (CyclePlate-192) or two (CyclePlate-384) dividers molded into each of the wells. This creates independent reaction chambers within the confines of a standard dimension, 0.2 ml "V-shaped" tube. Prepare reactions by hand or to really increase throughput, assemble and collect reactions with the Hydra-96 Microdispenser with special plate positioner for precise handling of microliter volumes of reagents within each set of 96 reaction chambers.



Each chamber in the CyclePlate-384 has a 20 µl working volume and a 60 µl total volume.

\* Patent Pending

### It's Like Cloning Your Thermal Cycler!

With CyclePlate-384 or CyclePlate-192, you can double or even *quadruple* the number of reactions performed in your existing thermal cyclers without buying additional hardware.

### Universal Fit

Split Well CyclePlates fit most standard 96 well thermal cyclers including the Perkin-Elmer 9600 and MJ Research PTC 100/200.

### Economical

The cost per reaction using CyclePlate-384 and -192 is up to 60% less than the cost of reactions performed in standard plates.

*Boost your PCR and sequencing capacity without buying another thermal cycler.*

*Call 1-800-752-8585 for more information.*



*The Hydra-96 and special plate positioner is used for quick dispensing of reagents into the reaction chambers of CyclePlate-384 and -192.*

**Robbins Scientific®**

Robbins Scientific Corporation, 814 San Aleso Ave., Sunnyvale, CA 94086-1411 (408) 734-8500 (800) 752-8585 FAX (408) 734-0300

e-mail: [custserv@robsci.com](mailto:custserv@robsci.com)

Reader Service No. 268

# GENOME RESEARCH

Volume 6 Number 11  
November 1996

## Editors

---

**Mark Boguski**  
National Center for Biotechnology  
Information, NIH  
**Aravinda Chakravarti**  
Case Western Reserve University  
**Richard Gibbs**  
Baylor College of Medicine

**Eric Green**  
National Center for Human Genome  
Research, NIH  
**Richard Myers**  
Stanford University School of Medicine

## Managing Editor

---

**Judy Cuddihy**  
Cold Spring Harbor Laboratory

## News and Reviews Editor

---

**Alison Stewart**  
Cambridge, U.K.

## Editorial Board

---

**Rakesh Anand**  
Zeneca Pharmaceuticals  
**Stylianos Antonarakis**  
University of Geneva  
**Charles Auffray**  
CNRS  
**Philip Avner**  
Institut Pasteur  
**Andrea Ballabio**  
Telethon Institute of Genetics and  
Medicine  
**David Bentley**  
The Sanger Centre  
**Bruce Birren**  
Whitehead Institute/MIT Center for  
Genome Research  
**Michael Boehnke**  
University of Michigan School of  
Public Health  
**Anne Bowcock**  
University of Texas Southwestern  
Medical Center  
**David Burke**  
University of Michigan Medical School  
**Jeffrey Chamberlain**  
University of Michigan Medical School  
**Ellson Chen**  
Perkin-Elmer Corporation  
**David R. Cox**  
Stanford University School of Medicine  
**Ronald W. Davis**  
Stanford University School of Medicine  
**Richard Durbin**  
Sanger Centre, UK  
**Joseph Ecker**  
University of Pennsylvania  
**Beverly S. Emanuel**  
Children's Hospital of Philadelphia  
**Raymond Fenwick**  
Biodale Laboratories  
**Chris Fields**  
National Center for Genome Resources  
**Simon Foote**  
Walter and Eliza Hall Institute of  
Medical Research

**Phil Green**  
University of Washington  
**Kenshi Hayashi**  
Kyushu University  
**Philip Hieter**  
The Johns Hopkins University School  
of Medicine  
**Clare Huxley**  
St. Mary's Hospital Medical School  
**Howard J. Jacob**  
Massachusetts General Hospital-East  
**Alec Jeffreys**  
University of Leicester  
**Mark Johnston**  
Washington University School of  
Medicine  
**Mary-Claire King**  
University of Washington  
**Ben Koop**  
University of Victoria  
**Pui-Yan Kwok**  
Washington University School of  
Medicine  
**Ulf Landegren**  
Uppsala Biomedical Center  
**Mark Lathrop**  
The Wellcome Trust Centre  
**Michael Lovett**  
University of Texas Southwestern  
Medical Center  
**Jen-i Mao**  
Genome Therapeutics Corporation  
**Douglas Marchuk**  
Duke University Medical Center  
**Thomas Marr**  
Cold Spring Harbor Laboratory  
**W. Richard McCombie**  
Cold Spring Harbor Laboratory  
**Susan Naylor**  
University of Texas Health Science  
Center  
**David Nelson**  
Baylor College of Medicine

**Maynard Olson**  
University of Washington  
**Svante Pääbo**  
University of Munich  
**Leena Peltonen**  
National Public Health Institute, Helsinki  
**David Porteous**  
MRC Human Genetics Unit  
Western General Hospital, Edinburgh  
**Roger Reeves**  
Johns Hopkins University School of  
Medicine  
**Bruce Roe**  
University of Oklahoma  
**Rodney Rothstein**  
Columbia University College of P&S  
**Gerald Rubin**  
University of California, Berkeley  
**Lloyd Smith**  
University of Wisconsin-Madison  
**Randall Smith**  
Baylor College of Medicine  
**Marcelo Bento Soares**  
Columbia University and the New  
York State Psychiatric Institute  
**William Studier**  
Brookhaven National Laboratory  
**Grant Sutherland**  
Women's and Children's Hospital,  
Adelaide  
**Barbara Trask**  
University of Washington  
**Gert-Jan B. van Ommen**  
Leiden University  
**Robert B. Weiss**  
University of Utah  
**Jean Weissenbach**  
Genethon, CNRS  
**Richard Wilson**  
Washington University School of  
Medicine  
**James Womack**  
Texas A&M University

## Editorial Office

---

Cold Spring Harbor Laboratory Press  
1 Bungtown Road  
Cold Spring Harbor, New York 11724  
Phone (516) 367-8492  
Fax (516) 367-8334  
<http://www.cshl.org>

## Editorial/Production

---

**Nadine Dumser**, Technical Editor  
**Kristin Kraus**, Production Editor  
**Cynthia Grimm**, Production Assistant  
**Doris Lawrence**, Editorial Secretary

## RESEARCH

---

- |  |   |      |
|--|---|------|
| Complete Genomic Sequence and Analysis of 117 kb of Human DNA Containing the Gene <i>BRCA1</i>             | Todd M. Smith, Ming K. Lee, Csilla I. Szabo, Nicole Jerome, Mark McEuen, Matthew Taylor, Leroy Hood, and Mary-Claire King       | 1029 |
| A Nonsense Mutation in the Cathepsin K Gene Observed in a Family with Pycnodysostosis                      | Maureen R. Johnson, Mihael H. Polymeropoulos, Hans L. Vos, Rosa Isela Ortiz de Luna, and Clair A. Francomano                    | 1050 |
| Long-range Map of a 3.5-Mb Region in Xp11.23-22 with a Sequence-ready Map from a 1.1-Mb Gene-rich Interval | Dirk Schindelhauer, Heide Hellebrand, Lena Grimm, Ingrid Bader, Thomas Meitinger, Manfred Wehnert, Mark Ross, and Alfons Meindl | 1056 |
| Novel Susceptibility Locus for Mouse Hepatomas: Evidence for a Conserved Tumor Suppressor Gene             | Jean C. Zenklusen, Lewis V. Rodriguez, Margaret LaCava, Zhi Wang, Lawrence S. Goldstein, and Claudio J. Conti                   | 1070 |

## LETTERS

---

- |  |  |      |
|--|--|------|
| The Exon Structure of the Mouse <i>Scf</i> Gene Is Very Similar to the Mouse <i>Sparc</i> Gene   | Peter J. McKinnon, Manuela Kapsetaki, and Robert F. Margolskee   | 1077 |
| Alu Fossil Relics—Distribution and Insertion Polymorphism  | Santosh S. Arcot, Aaron W. Adamson, Jane E. Lamerdin, Brian Kanagy, Prescott L. Deininger, Anthony V. Carrano, and Mark A. Batzer                              | 1084 |
| Mapping the <i>RP2</i> Locus for X-linked Retinitis Pigmentosa on Proximal Xp: A Genetically Defined 5-cM Critical Region and Exclusion of Candidate Genes by Physical Mapping | Dawn L. Thiselton, R. Mark Hampson, Manimekelei Nayudu, Lionel Van Maldergem, Mitchel L. Wolf, Bratin K. Saha, Shomi S. Bhattacharya, and Alison J. Hardcastle | 1093 |

(continued)

Isolation and Characterization of the Mouse Cystatin B Gene	Len A. Pennacchio and Richard M. Myers	1103
--	---	------

---

## GENOME METHODS

---

Lane Tracking Software for Four-color Fluorescence-based Electrophoretic Gel Images	Matthew L. Cooper, David R. Maffitt, Jeremy D. Parsons, LaDeana Hillier, and David J. States	1110
End Sequence Determination from Large Insert Clones Using Energy Transfer Fluorescent Primers	Marco Marra, Lori A. Weinstock, and Elaine R. Mardis	1118
A Simple and Efficient Method for Making Site-directed Mutants, Deletions, and Fusions of Large DNA Such as Pl and BAC Clones	Jan Borén, Isabelle Lee, Matthew J. Callow, Edward M. Rubin, and Thomas L. Innerarity	1123

---

Product News	1131
--------------	------

**COVER** Genomic sequence and analysis of 117 kb of human DNA containing the *BRCA1* gene. (For details, see Smith et al., p. 1029.)