In This Issue...

- Oak Ridge Conference Proceedings
- Laboratory Information Highway
- Micromachined Devices
- Applications of PCR
- PSA Reference Material
- Early Markers of Myocardial Injury
Join AACC.

How the Greatest Minds in Clinical Chemistry Stay That Way

Join today and receive the newest Government Affairs Report FREE!

Whether you're a medical technologist, chemist, pathologist, lab technician, director or researcher...if your profession touches the world of clinical chemistry, you need to be a member of the American Association of Clinical Chemistry! AACC gives you a forum to exchange ideas, and solutions -- to share problems -- to keep up-to-date on late-breaking new developments -- to meet new colleagues -- and build crucial professional relationships.

Only AACC membership offers you the opportunity to:
- Receive Clinical Chemistry journal -- FREE*;
- Attend the AACC National Meeting at a 25% discount;
- Meet and network with professional colleagues;
- Be a part of the most dynamic organization for professionals in the clinical chemistry field.

AACC. How the greatest minds in clinical chemistry stay that way.

*Full Members and Student Associates only.

---

**MEMBERSHIP APPLICATION**

<table>
<thead>
<tr>
<th>Category of Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEMBER $120. (Open to persons holding an earned baccalaureate or higher degree in science, medicine, or academic equivalent and engaged in professional activities commonly associated with clinical chemistry. Includes subscription to Clinical Chemistry.)</td>
</tr>
<tr>
<td>AFFILIATE $60. (Open to persons with an interest in the clinical chemistry field who do not desire or qualify for other membership categories. Affiliates do not receive Clinical Chemistry journal.)</td>
</tr>
<tr>
<td>STUDENT ASSOCIATE $25. I certify I am enrolled full-time:</td>
</tr>
</tbody>
</table>

---

**APPLICATION**

<table>
<thead>
<tr>
<th>Name: First</th>
<th>Middle Initial</th>
<th>Last</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Address:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>City</th>
<th>State</th>
<th>Zip</th>
<th>Country</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Professional Position</th>
<th>Specialty</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Employer Type</th>
<th>(i.e., hospital, independent laboratory, industry, government, etc.)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>This address is (check one)</th>
<th>Home</th>
<th>Work</th>
<th>Date of Birth</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Home Phone</th>
<th>Work Phone</th>
<th>Fax</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Degree Held</th>
<th>Certification</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>PAYMENT</th>
</tr>
</thead>
</table>

☑ Check payable in U.S. dollars to AACC.) Amount $ | VISA # | Exp. Date |

☑ Mastercard # | Exp. Date |

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

---

FOR OFFICE USE:

Appl. Source: 0313 | Dept. Paid: | Chk. #: | Date: |

---

Circle No. 240 on Reader Service Card
Introducing
the most
specific
marker
available
to measureone loss.

No other marker is more specific for the collagen lost from bone.
Only Osteomark® quantifies cross-linked N-telopeptides (NTx), a unique biochemical marker specific to the type I collagen found in bone. As such, it provides valuable information about the rate of bone resorption—simply and efficiently. So you can identify patients who are experiencing excessive bone loss. And at the same time help physicians monitor the effectiveness of therapies aimed at preventing or treating osteoporosis—a growing concern for an aging population.

NTx is a direct degradation product of the bone resorption process. Diet and other connective tissues do not contribute to the urinary pool of NTx. What's more, NTx is excreted in urine in a form that cannot be broken down further—so that urinary NTx levels directly reflect the amount of bone collagen resorbed. No other bone marker offers this degree of specificity and sensitivity.

The speed and simplicity of ELISA technology.
And specificity is only part of the story. Osteomark is also easy and convenient to run—right in your laboratory—with your personnel and equipment. The test is formatted as a microwell ELISA and utilizes an enzyme-labeled monoclonal antibody to quantify NTx in urine. No specimen pretreatment is necessary. Nor is there the need for time-consuming acid hydrolysis, extraction, or high-performance liquid chromatography. Reliable results are obtainable in as little as 2 hours—start to finish.

For more information, call 1-800-99 OSTEX.

NEW
OSTEOMARK®
The NTx Assay
Simply specific.

OSTEX
OSTEX International, Inc., 2203 Airport Way South, Suite 301,
Seattle, WA 98134 Tel. (206) 282-8062 Fax. (206) 292-8025
Looking for the ultimate with the...

For HbA1c measurement, even with haemoglobinopathy patients, a new reality!

- CAP PIERCING SYSTEM
- THE ONLY TRUE WALK-AWAY SYSTEM FOR HbA1c
- AUTOMATIC REMOVAL OF THE LABILE FRACTION
Information for Contributors

Clinical Chemistry welcomes manuscripts containing original information, experimental or theoretical, that advances the science of clinical chemistry. Such information may concern analytical and molecular diagnostic techniques, instrumentation, data processing, statistical analyses of data, clinical investigations in which chemistry has played a major role, and laboratory animal studies of chemically oriented problems of human disease. Equal consideration is given to manuscripts in English from any country, whether or not the authors are members of the AACC. Manuscripts are usually evaluated by two reviewers who may or may not be members of the Editorial Board. Manuscripts found by the editors to be inappropriate for the journal may be returned to authors without peer review. Prospective authors of Editorials and Reviews should submit, for review by the Editor, a brief outline of the proposed manuscript before preparing it in final form. Authors are usually notified of the disposition of a manuscript within 6 weeks of the date of its receipt by the Editor.

Editorial Policies. Manuscripts are considered for publication with the understanding that (a) each author has participated significantly in the work and assumes responsibility for the manuscript’s content; (b) the authors have disclosed any commercial associations that might pose a conflict of interest with the work submitted; (c) no paper presenting the same information — other than an abstract or preliminary report or poster (cited in the manuscript) — has been or will be published elsewhere; (d) unique materials necessary to reproduce the results reported are available for use by qualified investigators; and (e), if the paper is accepted, copyright is transferred to the publisher. These agreements must be conveyed by completing the Author’s Assurances and Assignment of Copyright form, which can be copied from page 6 of the Information for Contributors published in the January issue of the journal, or obtained from the Washington editorial office. All authors must sign the form, and original signatures are required; the form should be sent by mail, not fax.

Authors citing unpublished work by individuals other than themselves should include with their manuscript a letter from the individuals concerned giving permission to cite the work. For studies conducted with humans, a statement in the text should indicate whether the procedures used were in accordance with the ethical standards of their institution’s responsible committee or with the Helsinki Declaration of 1975, as revised in 1983.

Submission of Manuscripts. Submit four copies of the manuscript to Dr. David E. Bruus, Editor, Clinical Chemistry. For regular mail: Box 3757, University Station, Charlottesville, VA 22903-0757. For express delivery: Suite 609, 1224 West Main Street, Charlottesville, VA 22903. Include a covering letter stating (a) the title of the paper; (b) the paper’s main point; and (c) the name, address, telephone and fax numbers, and E-mail address of the corresponding author.

Manuscript Preparation. Use double (typewriter) or triple (word processor) spacing throughout the manuscript. Type or print on one side of each page. For most manuscripts, include the following sections: an abstract, introduction, materials and methods, results, discussion, and references. For Reviews and Case Reports, use headings appropriate to the text. After tentative acceptance, revised version of manuscripts should be submitted on disk.

Illustrations. Submit four copies of each figure on high-quality coated glossy or laser-printer paper. Photocopies on absorbent or bond paper are not acceptable. Verify that symbols and lettering will be legible when the figures are reduced to publication size. Final version of figures should be supplied on disk as well as on hard copy.

The complete Information for Contributors is published in the January issue.

©1995 The American Association for Clinical Chemistry, Inc.

Subscriptions and Reprints:
Telephone: 1-800-892-1400; Fax: 1-202-887-5093

Reprints: Reprint order forms are mailed to authors with proofs of their manuscripts and can also be obtained at the numbers shown above. Minimum order is 100 copies.

Missing Copies: Claims will not be allowed (a) unless we are notified within 3 months after the issue date for domestic and Canadian subscribers, or 6 months after the issue date for foreign subscribers; (b) if notice of a recent change of address has not been received; or (c) if the reason for claim is “missing from files.” For claims to be processed, the subscriber’s number and exact name and address as they appear on the mailing list must be included in correspondence.

Back Issues: Single copies of current and back-volume issues: $15.00 ($20.00 CC;R); ask for current prices on Special Issues. Microfilm/microfiche versions available by volume from University Microfilms International, 300 North Zeeb Rd., Ann Arbor, MI 48106; contact UMI directly for prices.

Indexing Services: Clinical Chemistry is covered by the major indexing and abstracting services, including the following: Abstracts Express, Analytical Abstracts, Biological Abstracts, BIOSIS, Chemical Abstracts Service, Current Awareness in Biological Sciences, Current Clinical Cancer, Current Contents/Life Sciences, Excerpta Medica/EMBASE, Index Medicus, MEDLINE, Reference Update, Research Alert, Science Citation Index, and SciSearch. The full text of Clinical Chemistry, starting with Vol. 38, No. 1, is available online through BRS Colleagues.

Copyright Permission: Reprographic copying beyond that permitted by Sections 107 or 108 of the US Copyright Law is authorized by the American Association for Clinical Chemistry, Inc., for internal or personal use, provided that (a) the base fee of $2.50 per copy is paid directly to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, or (b) a photocopy license has been granted by the CCC. Fees are subject to change. This consent does not extend to other kinds of copying, such as for general or external distribution, resale, advertising, or promotional purposes or for creating new collective works; for these purposes, contact AACC Inc., 2101 L Street, NW, Suite 202, Washington, DC 20037-1556.

Disclaimer: Manuscripts published in Clinical Chemistry reflect the individual views of their authors and, in the absence of a statement to the contrary, not the views of the institutions with which the authors are affiliated. The contents of advertisements or articles are not to be construed as official statements, evaluations, or endorsements by the Board of Editors or the American Association for Clinical Chemistry, Inc.


Clinical Chemistry is printed with organic-based inks.
Changing the face of allergy and inflammation diagnostics.
Report on
LAB AUTOMATION
from the 1995 AACC Annual Meeting!

The CD-ROM includes:
- A review of the workshops, presentations and posters on lab automation;
- Interviews with key automation thought leaders;
- Review of products displayed in the exposition;
- Case studies of labs ready to implement lab automation.

If you are considering automation for your laboratory, this CD-ROM will help you explain lab automation to your colleagues in your lab, to your administration and to others involved in the planning and decisions.

Special Pre-Introduction Pricing: Order today and save $100!
Order by October 1, 1995 $250
Price after October 1, 1995 $350
Use the order form below to reserve your Lab Automation CD-ROM!

Reserve my Lab Automation CD-ROM  ___  WINDOWS®  ___  Macintosh®

Name ____________________________  Title ____________________________
Organization ______________________  Department ______________________
Address ____________________________
City/State/Postal Code ____________________________
Telephone ____________________________  Fax ____________________________
Internet Address ____________________________

By check: Make checks payable to AACC

By Credit Card:  ___  Visa  ___  MasterCard
Card Number ____________________________  Exp. Date __________
Name on Credit Card ____________________________
Signature ____________________________

Fax this form to 1-202-887-5093, or
Mail to AACC/CD-ROM, 2101 L Street NW, Suite 202, Washington, D.C. 20037
Overview

Toxicity has countless presentations, but in most situations, the clinical chemist can make a crucial contribution to patient management. The 1996 Arnold O. Beckman Conference will present a comprehensive overview of the four most important clinical settings in which xenobiotics become the cause of pathologic change. First, toxic side effects of therapeutically administered drugs will be reviewed, using selected drugs with a narrow therapeutic range as examples to illustrate the general principles of therapeutic drug monitoring. Second, the medical and legal aspects of illicit and addictive drugs will be discussed, emphasizing epidemiological information and the complexities of relating analytical technology to the demands of the courtroom or to other evidentiary needs. Third, the impact of toxicity associated with the long-term use of drugs as it may develop in the clinic will be presented. Finally, the role of toxicities in differential diagnosis and emergency room patients will be addressed. Case studies illustrating these topics will be presented in a series of sessions, where attendees can participate in developing management.

Key Topics

- Toxic Side Effects in Therapy
- Toxicity of immunosuppression
- Toxicity of antineoplastic drugs
- Titrating cardiovascular drugs

Epidemiological and Legal Aspects of Drugs of Abuse
- Epidemiology of illicit and abused drugs
- The role of the clinical toxicologist in court

Chronic Toxicity
- Long-term exposure to therapeutic drugs
- Low-level exposure to environmental toxins

Emergency Toxicology
- Toxic syndromes
- Intentional intoxications
- Pediatric poisonings

Continuing Education

AAEC is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor Continuing Medical Education for physicians. Each program must be evaluated and application will be submitted for this program. Please verify the number of CME credits to this program. The program is Category 1 approved by the ACCME for 10 CME credit hours.

For additional information contact:

AACC Customer Service: 2101 L Street, NW, Suite 202, Washington, DC 20037-1526
202-357-0713 • 800-692-1400 • FAX: 202-333-4576

Please print

Name
Degree Certification Title
Institution
Mailing Address
City/State/Zip
Business Phone
Internet Address

REGISTRATION FEES (Circle One)
Advance Discount Fee AACC Member $350 Non-Member $450
Regular Fee (After 1/16/96) $400 $450

Make Checks payable to: AACC
VISA MasterCard

Account Number

Account in the Name of
Exp. Date MC Interbank 

Signature

Refund Policy: Cancellations must be received in writing by January 16 for a full refund. Between January 17 and January 20, cancellations received will be subject to a $50.00 administrative fee. After January 20 there will be NO Refunds.

Return this form with your check, MasterCard or VISA number to:
Meetings Department
American Association for Clinical Chemistry, Inc.
2101 L Street, NW, Suite 202, Washington, DC 20037-1526

REGISTER EARLY—ENROLLMENT LIMITED — Registrations postmarked after January 16 will be charged the regular registration fee

9CG1
When your lab results don’t make sense—Look for effects

Recommended for clinical chemists, internists, family practitioners, pathologists, pharmacists, manufacturers, and clinical laboratory staffs.

Your easy references to explain unexpected test results

<table>
<thead>
<tr>
<th>Order Now!</th>
<th>AACC Member</th>
<th>Non Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEW! Effects of Preanalytical Variables on Clinical Laboratory Tests</td>
<td>$ 75</td>
<td>$ 95</td>
</tr>
<tr>
<td>Effects of Drugs on Clinical Laboratory Tests, Third Edition</td>
<td>$ 80</td>
<td>$100</td>
</tr>
<tr>
<td>1991 Supplement to the Effects of Drugs</td>
<td>$ 50</td>
<td>$ 60</td>
</tr>
<tr>
<td>Effects of Disease on Clinical Laboratory Tests, Second Edition</td>
<td>$ 50</td>
<td>$ 60</td>
</tr>
</tbody>
</table>

**Big Savings with combination orders!**

<table>
<thead>
<tr>
<th></th>
<th>AACC Member</th>
<th>Non Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects of Drugs on Clinical Laboratory Tests, Third Edition &amp; 1991 Supplement to the Effects of Drugs</td>
<td>$110</td>
<td>$140</td>
</tr>
</tbody>
</table>

*For non-member European orders contact: Clarke Associates–Europe Limited, Fourth Floor, The Rackhay, Queen Charlotte Street, Bristol BS1 4UJ, England, Telephone (0272) 268864, Fax: (0272) 226437*

**For non-member European orders contact: Clarke Associates–Europe Limited, Fourth Floor, The Rackhay, Queen Charlotte Street, Bristol BS1 4UJ, England, Telephone (0272) 268864, Fax: (0272) 226437**

**Order by phone by calling AACC Press at:**
1-800-892-1400 /202-857-0717 (have your credit card ready)
Or send checks to:

**AACC PRESS**
2101 L Street, NW, Suite 202, Washington, DC 20037-1526 USA
1-800-892-1400 • 202-857-0717 • Fax 202-887-5093

Remember to add shipping and handling, $4.00 for first item and $3.00 each additional item for domestic and $6.00 per item and $4.00 each additional item for international. All domestic orders under $120 must be prepaid. All international orders must be prepaid in US dollars drawn on a US bank.

*Try them, use them, then decide...*

Order these practical directories and use them for 30 days at no risk. If you’re not 100% convinced of their value, return the books for a full refund.

Circle No. 236 on Reader Service Card
'95 AACC Audioconferences
1:00-2:00 pm Eastern Time • $119 per site

Laboratory Test Series

Hormone Receptors and Related Oncogene Products
THURSDAY, MARCH 2
James L. Wiltiff, PhD, Hormone Receptor Laboratory, University of Louisville, Kentucky
▶ Learn what the major new prognostic factors are for breast, endometrial and ovarian cancers.
▶ Each site with participants completing the pre and post test for this program will receive a complimentary vial of QC material.

Hereditary Hemochromatosis
THURSDAY, MARCH 23
David L. Witten, MD, Laboratory Control, LTD, Otsewka, IA
▶ Help reduce morbidity and mortality by designing an effective laboratory case finding program for hereditary hemochromatosis.

Clinical Diagnosis of Ectopic Pregnancy
THURSDAY, APRIL 27
Bert Towle, PhD, University of Washington, Seattle
▶ Learn how to use HCG and progesterone in the diagnosis of ectopic pregnancy.

When and When Not to Do Endocrine Testing
THURSDAY, MAY 4
D. Robert Dufner, MD, VA Medical Center, Washington, DC
William E. Winer, MD, University of Florida, Gainesville, FL
▶ Identify situations in which endocrine testing may produce erroneous results and learn what steps laboratorians can take to minimize these errors. Presented through case studies.

Monitoring Glycemia in Diabetes Mellitus: Optimal Patient and Laboratory Testing
THURSDAY, MAY 25
David E. Goldstein, MD, Univ. of Missouri, Columbia
▶ Learn current concepts of monitoring glycemia in diabetes mellitus in both acute and chronic care situations.

Drug Screening for Clinical Toxicology: Is Confirmation Required?
THURSDAY, SEPTEMBER 21
Alphonse Polnis, PhD, Medical College of Virginia, Richmond
Vina Speckler, PhD, Newport Beach, CA
▶ Learn the pros and cons of confirming results of drug screens in the clinical environment.
▶ Developed in cooperation with AAC's TDM/Tox LIP Committee and the TDM/Tox Division.

Laboratory Tests for Diagnosing Myocardial Injury
THURSDAY, OCTOBER 19
Fred S. Apple, PhD, Hennepin County Medical Center, Minneapolis, MN
▶ Identify the characteristics of five cardiac markers for detection of acute myocardial infarction and learn the pros and cons of each in diagnosing AMI.

Cancer Testing: Screening, Monitoring, Diagnosis
THURSDAY, NOVEMBER 2
Bernard E. Steward, MD, National Reference Laboratory, Nashville, TN
▶ Learn about the potential and limitations of laboratory testing in cancer.

Oxygen Saturation, Content and Hemoglobin Levels
NOVEMBER 30, 1995
Robert F. Moran, PhD, Ciba Corning Diagnostics, Methuen, MA
▶ Learn what the clinical implications of laboratory measurement versus bedside monitoring of oxygen saturation. Identify clinical situations where each may be best applied.

Laboratory Management Series

Time Management
THURSDAY, FEBRUARY 16
Christopher S. Frings, PhD, Speaker and Consultant, Birmingham, AL
▶ Learn how to free up two hours a day by controlling your top five time wasters. Manage them by working smarter, not harder.

Laboratory-Based Nutritional Assessment: Maximizing Patient Outcome and Controlling Health Costs in a Managed Care System
THURSDAY, APRIL 6
Gary E. Seiler, PhD, Diversified Laboratory Service, Pasadena, CA
▶ Learn how assessing patient nutritional status can minimize length of stay and use of hospital resources, maximize reimbursement, and provide patient outcome measurement for accreditation.

How to Establish a Molecular Diagnostics Laboratory
THURSDAY, JUNE 8
Daniel H. Farkas, PhD, William Beaumont Hospital, Royal Oak, MI
▶ Understand the economic and medical factors that influence the decision to establish a molecular diagnostics laboratory.

Surviving a CAP Molecular Pathology Inspection
THURSDAY, JUNE 22
Daniel H. Farkas, PhD, William Beaumont Hospital, Royal Oak, MI
Karen Kaul, MD, PhD, Evanston Hospital, Evanston, IL
▶ Understand the issues investigated by College of American Pathology inspectors. Based on the CAP inspection checklist.

So You Think You're Not Doing Forensic Testing!
FRIDAY, SEPTEMBER 29
Richard Fendel, MD, Consultant, Tucson, AZ
▶ Learn the different ways that routine and special laboratory analyses may be used in tort and criminal actions.

Laboratory-Wide Quality Assurance Plans
THURSDAY, NOVEMBER 16
Ronald H. Laszeg, PhD & Sharen Ehrmayer, PhD, University of Wisconsin, Madison.
▶ Learn how laboratory-wide quality assurance plans fit into laboratory management and CLIA-mandated QA requirements.

Reengineering the Clinical Laboratory in Response to Managed Care Pressures
THURSDAY, DECEMBER 7
Jocelyn M. Hicks, PhD, Children's Hospital, Washington, DC
▶ Practical advice on how to maintain quality while reducing overall system costs.

Audioconference Registration Form

Name ____________________________
Institution _________________________
Address __________________________
City/State/Zip _______________________
Program (Use additional paper if needed.) ____________________________
Cost ____________________________

Deduct $100 if ordering 4 or more programs TOTAL ____________________________
All programs ____________________________
Payment □ Check (make payable to AACC) □ VISA □ MasterCard □
Card no. ____________________________
Exp. Date ____________________________
FAX 202-887-1093 • Phone 800-892-1900 or 202-887-2011
Mail AACC Education Department • 2101 L St, NW #202 • Washington, DC 20037

You get one copy of handout materials and step-by-step guidelines for organizing the conference, including the phone number to call on the day of the program. Time is allowed for Q & A. Invite as many people as you like. Earn 1 hour ACCET continuing education credits. Application is pending for CME credit for physicians.
FORMATION IN IMMUNOASSAY DATA PROCESSING

RIA AID

RIA AID for data from both isotopic and non-isotopic assays.

ELISA AID

ELISA AID tailored to give great flexibility of sample placement on the plate.

Software systems for the acquisition, analysis and archiving of immunoassay data.

SYSTEM FEATURES

- Direct connection to your beta or gamma counter or plate reader
- Handles data from all assay types: RIA, IRMA, EIA, FIA, ELISA
- Can be configured to service up to 15 counters running simultaneously
- Built-in worklist system
- Results can be offloaded to other software systems (spreadsheet, database)
- Thorough user documentation in plain English
- OEM versions available

Robert Maciel Associates, Inc.
870 Massachusetts Avenue
Post Office Box 212
Arlington, Massachusetts 02174-0212
Tel: 617-646-3627  Fax: 617-647-7607
Contact: Robert J. Maciel, PhD

Order Reprints From clinical chemistry

For...

✓ Education and Training
✓ Increasing Marketing Visibility

CALL
1-800-892-1400

Advertising Representatives
Scherago International, Inc.

Director: HERBERT L. BURKLUND
Traffic Manager: GWEN CANTER
Advertising Sales Manager: JACK RYAN
Marketing Manager: STEVEN HAMBURGER
ADVERTISING CORRESPONDENCE: 11 Penn Plaza
Suite 1003
New York, N.Y. 10001
Tel (212) 643-1750
Fax (212) 643-1757

ADVERTISER PAGE NO

A. Menarini Diagnostics 5E
Diagnostic Systems Laboratories, Inc. 6E
Ostex International, Inc. 2E
Pharmacia Diagnostics 7E
Robert Maciel Associates, Inc. 12E

ABROAD ONLY

Beckman Instruments, Inc. 12E
Behringwerke AG 12E
Pharmacia Diagnostics 12E