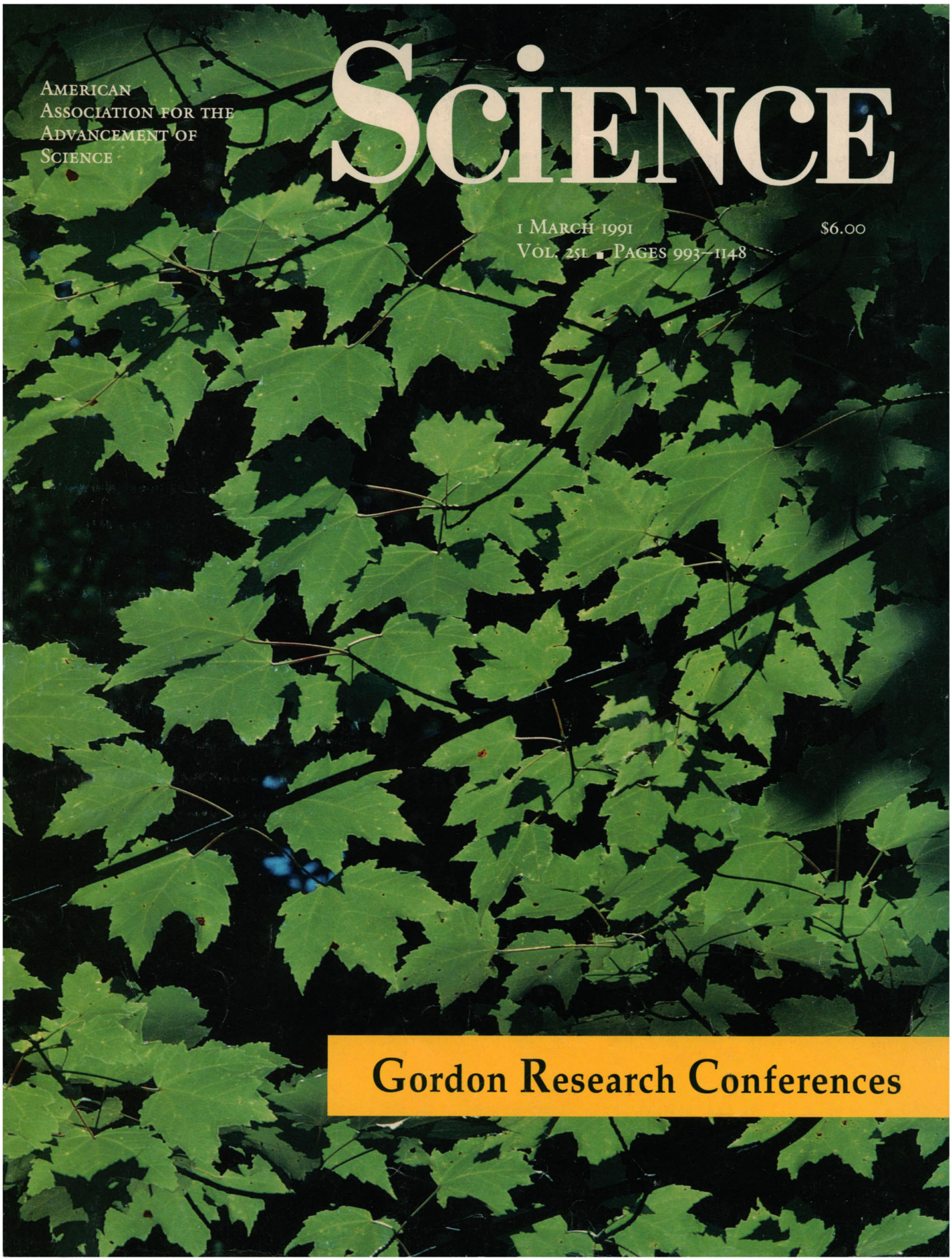
American Association for the Advancement of Science

SCIENCE

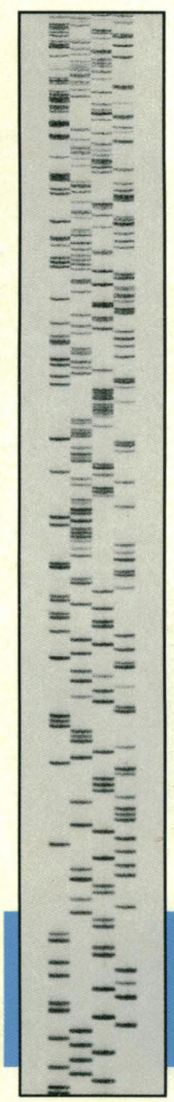
1 March 1991
Vol. 251 • Pages 993–1148
$6.00



Gordon Research Conferences

AS LIGHT AS A FEATHER

A Lightweight, Compact, Power Supply for High Voltage Vertical Gel Electrophoresis



The Stratagene FeatherVolt™ 2000 power supply is a compact, lightweight power supply designed specifically for high voltage vertical electrophoresis of sequencing gels. The power supply may be operated in any of three modes: constant power, constant voltage, or constant current, with automatic crossover among all three.

When Bench Space Is At A Premium-- Weighing in at 2.5 Kg., The FeatherVolt™ 2000 Power Supply offers an alternative to bulky, heavyweight high voltage power supplies and is easily portable within your lab setting. External dimensions are 20.3cm W X 24.8cm D X 6.4cm H.

Designed With Your Safety In Mind--The FeatherVolt™ 2000 incorporates state of the art short circuit detection technology to ensure complete safety at your workstation.

The FeatherVolt 500™ is also available and has been designed for: Laemmile (SDS), O'Farrel 2nd dimension (SDS) and Weber Osborn (native continuous) protein gels; vertical and horizontal DNA and RNA gels, electro-elution, and pulsed field electrophoresis.

Customized Power Supplies are also available. Please contact Stratagene for more information on Volume Pricing.

Catalog numbers:

FeatherVolt™ 2000 (110V)	# 400610
FeatherVolt™ 2000 (220V)	# 400612
FeatherVolt™ 500 (110V)	# 400620
FeatherVolt™ 500 (220V)	# 400622
BaseAce™ Sequencer	# 400120

For more information on our complete line of products contact Stratagene at 1-800-548-1113.

Figure Legend : Autoradiograph of sequencing gel using the BaseAce Sequencer and the FeatherVolt 2000 power supply. 1.0 µg M13 ssDNA was labeled with S-35 ATP and run for 3 hrs at 65 watts on a 6% acrylamide (7M Urea, 1X TBE) gel.

STRATAGENE®

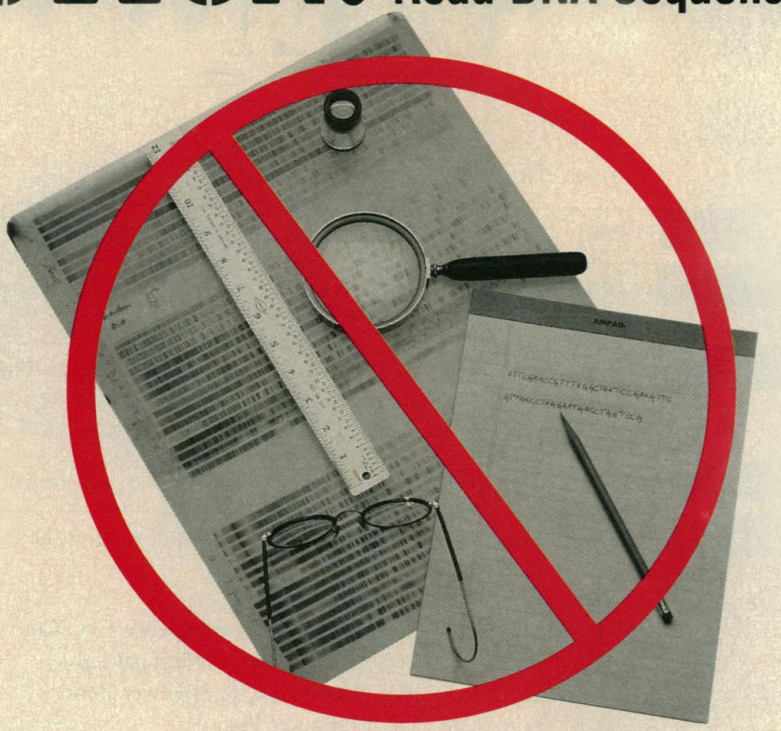
Corporate Headquarters:
11099 North Torrey Pines Rd.
La Jolla, CA 92037
Ordering: 800-424-5444
Tech. Services: 800-548-1113
FAX: 619-535-5430
TELEX: 9103809841

Stratagene GmbH
Postfach 105466
D-6900 Heidelberg
(Federal Republic of Germany)
Telephone: (06221) 40 06 34
Telefax: (06221) 40 06 39
Technical Services: (06221) 40 60 37

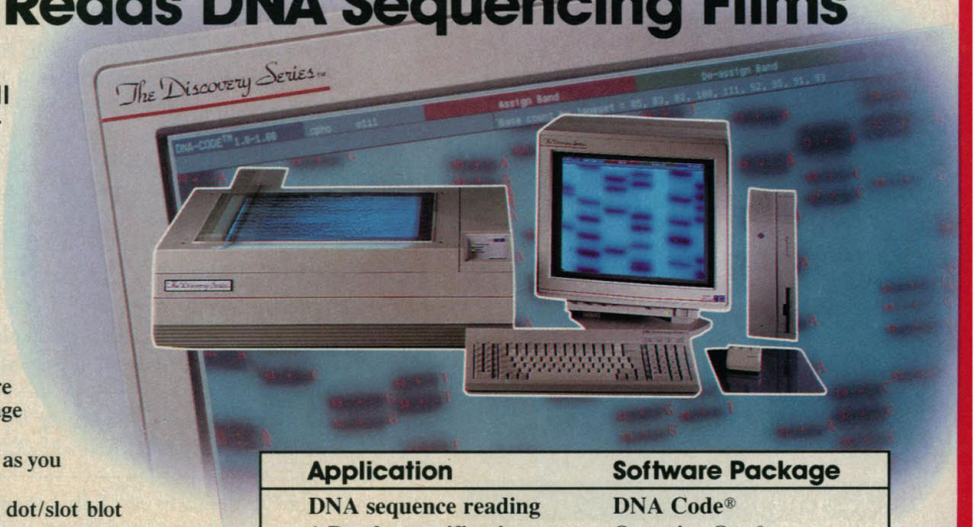
Stratagene Ltd.
Cambridge Innovation Center
Cambridge Science Park
Milton Road
Cambridge CB4 4GF
Telephone: (0223) 420955
Telefax: (0223) 420234
Telex: (81417) INNCEN G

Circle No. 114 on Readers' Service Card

CAUTION: This May Change The Way You Read DNA Sequencing Films



The Discovery Series™ Model DNA 35 Automatically Reads DNA Sequencing Films



Hardware, Software and how it will change the way you do DNA Sequencing Reading.

To compete in today's world, you can use the old tools...or...choose today's technology. The Discovery Series™ model DNA 35.

- It gives you the power to scan, read, edit and compare 3,000 bases in 30 minutes.
- It fits on a desktop or lab bench.
- The new DeskTop™ scanner provides the image to work with.
- DNA Code® v2.0. A new software release with more sequence reading performance to turn *your* image into data.
- New 16 MIPS UNIX® minicomputers work as fast as you want.
- It also comes with Quantity One®–1-D gel and dot/slot blot software.

Scan your film in seconds at 63.5 micron resolution and watch the digitized image flow onto your computer screen in real-time. The combination of our new DNA sequence reading software, a new high-resolution scanner, and UNIX® based computers gives you real-life, magnified graphics to work with. Automatic base-calling and interactive editing tools finish the task.

1-D gels, dot & slot blots? Yes, the model DNA 35 can quantitate all types of 1-D gels and films.

You're doing more than DNA Sequencing. That's why the DNA 35 also comes with Quantity One,® the software package for the quantification of all types of 1-D applications and dot/slot blots.

UNIX® is a trademark of AT&T Laboratories. Quantity One® and DNA Code® are trademarks of PDI, Inc.

Application	Software Package
DNA sequence reading	DNA Code®
1-D gel quantification	Quantity One®
Dot and slot blot analysis	Quantity One®

Call PDI toll-free today for more information.

Call **1-800-777-6834** (USA only) to set up a demonstration of The Discovery Series™ model DNA 35 sequencing DNA in *your* lab. We look forward to working with you to turn *your* data into results.

pdi formerly protein databases inc

protein + dna imageWare systems sm

405 Oakwood Road, Huntington Station, New York 11746
Phone: 516-673-3939, 1-800-777-6834, Fax: 516-673-4502

In the Benelux countries: DALTON, bv., PO Box 154, NL 5140 AD Waalwijk, The Netherlands, Tel: (0)4160-31225, Fax: (0)4160-41265
In Japan: Toyobo Co. Ltd., Osaka, Japan, Tel: 06-348-3786, Fax: 06-348-3322
In Germany, Austria, Switzerland and Eastern Europe: Sud-Laborbedarf, GMBH, D 8035, Gauting, FRG, Tel: 089 850 6527, Fax: 089 850 7646

Circle No. 108 on Readers' Service Card

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

SCIENCE

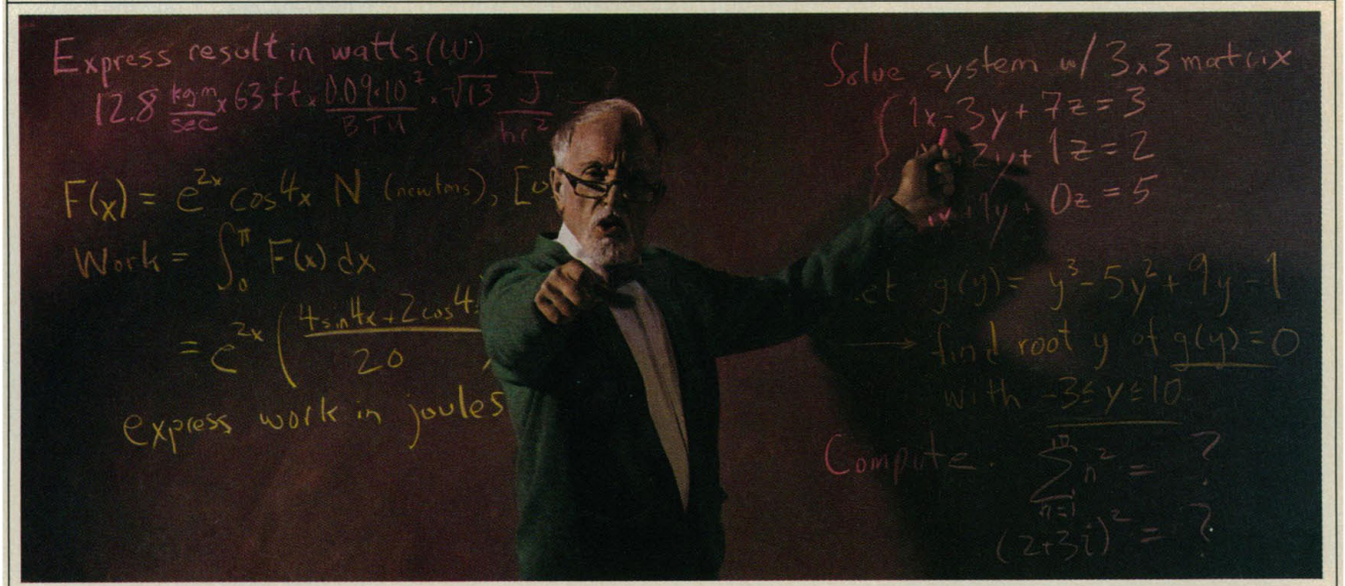
ISSN 0036-8075
1 MARCH 1991
VOLUME 251
NUMBER 4997

■ **SCIENCE (ISSN 0036-8075) is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1333 H Street, NW, Washington, DC 20005.** Second-class postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Domestic individual membership and subscription (51 issues): $82 ($50 allocated to subscription). Domestic institutional subscription (51 issues): $150. Foreign postage extra: Canada $46, other (surface mail) $46, air freight $90. First class, airmail, school-year, and student rates on request. Canadian GST Number: 125488122. **Change of address**: allow 6 weeks, giving old and new addresses and 11-digit account number. **Postmaster**: Send change of address to *Science*, P.O. Box 1723, Riverton, NJ 08077. **Single copy sales**: $6.00 per issue prepaid includes surface postage; Guide to Biotechnology Products and Instruments, $20. Bulk rates on request. **Authorization to photocopy** material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of $1 per copy plus $0.10 per page is paid directly to CCC, 27 Congress Street, Salem, Massachusetts 01970. The identification code for *Science* is 0036-8075/83 $1 + .10. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

■ The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objectives are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to improve the effectiveness of science in the promotion of human welfare, to advance education in science, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

COVER Sunlit New Hampshire foliage provides a serene setting for many of the Gordon Research Conferences. This year marks the 60th anniversary of the Gordon Research Conferences. See page 1086 for details of the conferences planned for 1991. [Photograph by Craig Blouin/New England Photography]

In college, you would have killed for MathCAD. So why aren't you calculating with it now?



100,000 engineers and scientists already let MathCAD do their calculations for them.

Now that college is far behind you, perhaps it's time you graduated from spreadsheets, calculators and programming.

Because in today's working world of engineering and science, there's no time for anything less than MathCAD. The software that lets you perform engineering and scientific calculations in a way that's faster, more natural, and less error-prone than any calculator, spreadsheet, or program you could write yourself.

Thanks to MathCAD's live document interface,™ you can enter equations anywhere on the screen, add text to support your work, and graph the results.

PC MAGAZINE EDITOR'S CHOICE
March 14, 1989 issue.
Best of '88
Best of '87

It also comes complete with over 120 commonly used functions built right in. Perfect for creating complex equations and formulas, as well as exponentials, differentials, cubic splines, FFTs and matrices.

You get three-dimensional plotting, vivid graphing, and the ability to import HPGL files from most popular CAD programs, including AutoCAD.®

Done calculating? MathCAD prints *all* your analyses in presentation-quality documents, even on PostScript® compatible printers.

All of which has made MathCAD far and away the best-selling math software in the world. In fact, it's used by over 100,000 engineers and scientists—just like you.

There's MathCAD for the PC. MathCAD for the Mac, written to take full advantage of the Macintosh® interface. And a Unix® version that utilizes the speed and unlimited memory of your Unix workstation.

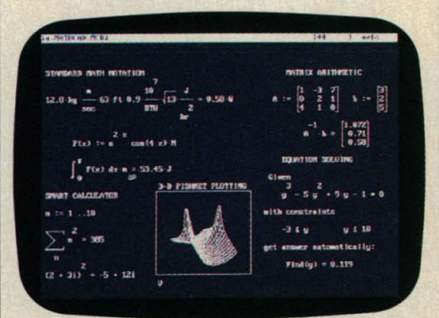
We also have Applications Packs for Advanced Math, Statistics, Mechanical, Chemical, and Electrical Engineering. Each is a collection of adaptable mathematical models, designed to let you start solving your real world problems right away.

For a free MathCAD demo disk, or upgrade information, dial 1-800-MATHCAD (in MA, 617-577-1017). Or see your software dealer.

Available for IBM® compatibles, Macintosh computers, and Unix workstations.

TM and ® signify manufacturer's trademark or registered trademark, respectively.

1-800-MATHCAD



MathCAD 2.5 includes 3-D plotting, HPGL sketch import, and PostScript output.

MathCAD®

MathSoft, Inc., 201 Broadway, Cambridge, MA 02139
#50

U.K.: Adept Scientific 0462-480055; France: ISECEGOS 1-46092768; Germany: Softline 07802-4036; Japan: CRC 03-665-9762; Finland: Zenex Oy 90-692-7677; Italy: Channel 02-4229441. *PSE*

Circle No. 87 on Readers' Service Card

Neutron star physics laboratories

MAGNETIC fields near neutron stars (superdense stars in the final stages of stellar evolution) are a million times stronger than the strongest magnetic fields that can be generated on the earth (page 1033). In such strong fields (with strengths that are upward of 10^{12} gauss) the standard rules of classical physics give way to quantum mechanics, and physical phenomena that do not occur or are forbidden in normal fields may be observed. Harding provides an overview of recent observations of the properties of radiation that is emitted by neutron stars and an assessment of how well theories of strong fields have held up under scrutiny. Instruments on various space-based balloons and satellites—Ginga from Japan and, after April, the gamma-ray observatory from the United States—are making new observations at x-ray and γ-ray energies that should further enhance understanding of these strong field effects.

Verification of greenhouse predictions

GREENHOUSE models predict that the earth's climate will grow warmer and drier. In the central part of North America, overall temperatures are expected to rise and precipitation is expected to increase somewhat in the winter but to decrease in the summer. Temperature and precipitation data that have been collected since the turn of the century have not yet borne out these predictions, and, on the basis of statistical analyses, Karl *et al.* suggest that it may take from 15 to 20 more years to document anticipated summer temperature increases, from 15 to 30 more years to verify predicted winter temperature changes, and up to 40 years to corroborate the expected changes in precipitation (page 1058). Policy makers thus may have to base their decisions and actions on projections that are not yet verified by available data.

Wabash Valley earthquakes

IN the past 200 years numerous small earthquakes as well as five larger ones (with body-wave magnitudes that ranged from 5.0 to 5.8) have been recorded in the lower Wabash River Valley of Indiana and Illinois. The question has been raised whether local tectonic sources were capable of producing these and stronger earthquakes or whether the recorded earthquakes were related to the New Madrid seismic zone to the southwest, which was responsible for the large earthquakes of 1811 and 1812. Obermeier *et al.* searched Holocene sediments in the Wabash Valley for evidence of strong earthquakes in the recent geologic past (page 1061). Remnants of earthquake-induced liquefaction—the large sand-filled dikes and the small mounds of sand at the surface (sand blows)—point to local sources for Wabash earthquakes and indicate that at least one stronger earthquake occurred sometime between 1500 and 7500 years ago. The body-wave magnitude of this large event is thought to have been greater than 6.2, which is the minimum size estimated for an earthquake that can produce liquefaction in the soils of the central United States.

New salt water seed crop

A seed-producing crop that grows in salt water has been developed from a wild halophyte (page 1065); its yields of high-quality oil (high in unsaturated fatty acids) and protein could make it a valuable agricultural crop in subtropical coastal deserts. Six years of field trials in the coastal desert environment of Sonora Mexico's northern Gulf of California have now been completed. Seed production by the succulent *Salicornia bigelovii* irrigated with salt water equaled or exceeded that of sunflower and soybean plants irrigated with fresh water. Both the oil and the meal from the seeds were suitable for use in chicken feed. Glenn *et al.* note that many areas of the world where the greatest demand exists for oilseeds are exactly those in which this plant is expected to thrive.

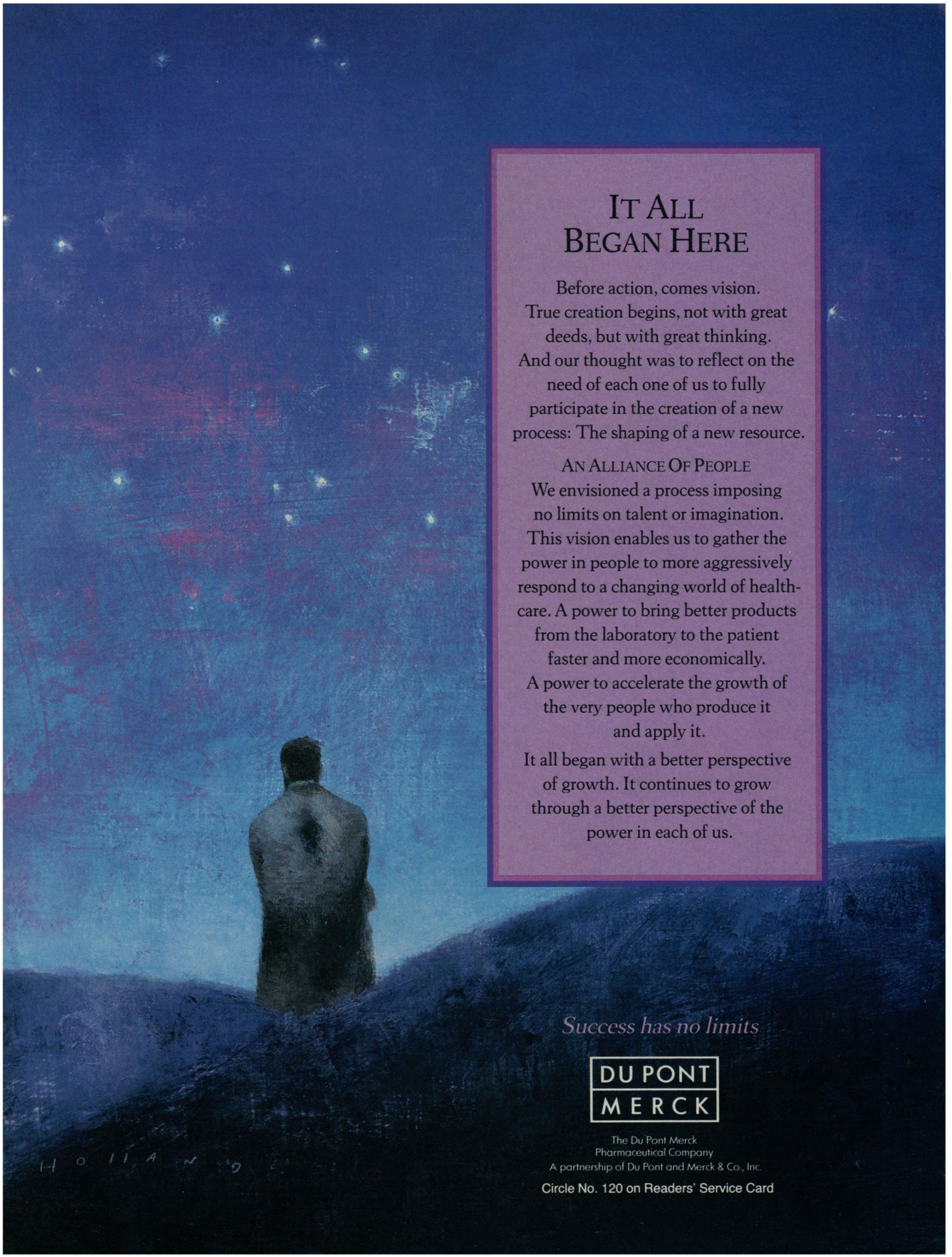
Mathematics of cell cycling

A mathematical model that considers the interplay of two biochemicals is sufficient to explain the behavior of developing embryonic cells as they cycle continuously between mitosis (division) and interphase (page 1076). Norel and Agur show that when data on changing concentrations of maturation-promoting factor and cyclin are plugged into simple equations, the cell's oscillatory behavior is aptly described. Furthermore, these same equations may prove to be adequate descriptors of how the cell cycles of mature somatic cells are controlled and of how fluctuations in cyclin and maturation-promoting factor cause aberrant (senescent and neoplastic) cells to take on new cycling properties or cease to cycle at all.

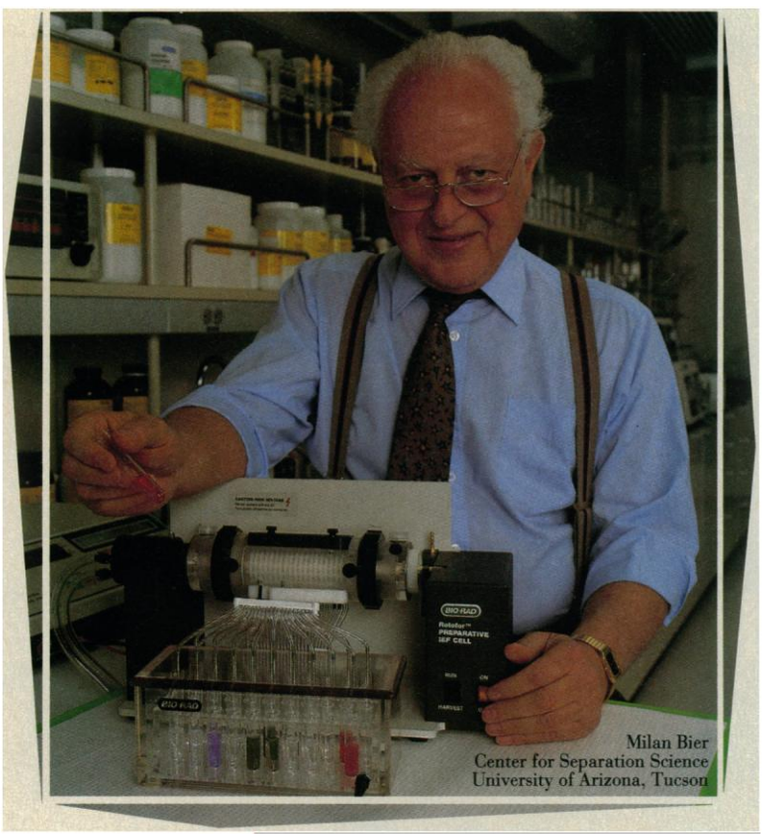
Molecular ethology

MALE fruit flies produce courtship songs by extending and vibrating their wings. Female fruit flies recognize the songs that are produced by males of their species because certain parameters of the song, such as the length of the interval between tone pulses, are species-specific. A genetic locus that has an influence on the rhythm of the male fruit fly's courtship song is contained in the *period* (*per*) gene of the X chromosome. When pieces of the *per* locus were moved to a different species of *Drosophila*, the recipient male flies changed their tune (page 1082); with such molecular transfer experiments, Wheeler *et al.* were able to show where within the *per* locus the song rhythm information is contained. The *per* locus is also known to exert some control over locomotor differences between species; that *per* has several important roles suggests that it may be a key player in *Drosophila* speciation.

■ RUTH LEVY GUYER


IT ALL
BEGAN HERE
Before action, comes vision.
True creation begins, not with great deeds, but with great thinking.
And our thought was to reflect on the need of each one of us to fully participate in the creation of a new process: The shaping of a new resource.
AN ALLIANCE OF PEOPLE
We envisioned a process imposing no limits on talent or imagination.
This vision enables us to gather the power in people to more aggressively respond to a changing world of health-care. A power to bring better products from the laboratory to the patient faster and more economically.
A power to accelerate the growth of the very people who produce it and apply it.
It all began with a better perspective of growth. It continues to grow through a better perspective of the power in each of us.
Success has no limits
DU PONT
MERCK
The Du Pont Merck
Pharmaceutical Company
A partnership of Du Pont and Merck & Co., Inc.
Circle No. 120 on Readers' Service Card

"Preparative Electrofocusing Is Finally a Reality"



With the Rotofor® IEF Cell—a Breakthrough in Separation Science Technology

Why waste time with lengthy, inefficient open column separations? Biologically active protein can be purified up to 500–fold from crude or partially purified extracts in less than 4 hours. In a single run, sufficient protein and purity can be obtained for detailed compositional analysis, production of antibodies, enzyme kinetics studies, and other *in vitro* and *in vivo* studies.

Our free applications guide, the Rotofor Review, contains a complete description of the Rotofor cell and detailed protocols for purification of antibodies, recombinant proteins, membrane proteins, enzymes, nuclear proteins, and glycoproteins. Contact your Bio-Rad representative now and ask for the Rotofor Review. In the USA call 1-800-4BIORAD.

BIO-RAD

Chemical Division

U.S. (800) 4BIORAD • California • Ph. (415) 232-7000 • Fx. (415) 232-4257; New York • Ph. (516) 764-2575 • Fx. (516) 764-2186; Canada • Ph. (416) 624-0713 • Fx. (416) 624-3019; Australia • Ph. 61-2-805-5000 • Fx. 61-2-805-1920; Austria • Ph. 43/222/82 89 010 • Fx. 43/222/82 85 629; Belgium • Ph. 32/2/91 85 55 11• Fx. 32/2/91 82 65 54; France • Ph. 33/1/49 60 68 34 • Fx. 33/1/46 71 24 67; Germany • Ph. 49/89/31 88 40 • Fx. 49/89/31 88 41 00; Kowloon • Ph. 852/789/3300 • Fx. 852/789/1257; Italy • Ph. 39/2/213 87 51 • Fx. 39/2/213 90 32; Spain • Ph. 34/1/661 7085 • Fx. 34/1/661 9698; Japan • Ph. 81-3-534-7240 • Fx. 81-3-534-8037; The Netherlands • Ph. 31/8385-40666 • Fx. 31/8385-42216; Switzerland • Ph. 41/1/810 16 77 • Fx. 41/1/810 19 33; England • Ph. 44/442/23 25 52 • Fx. 44/442/59118; New Zealand• Ph. 64/9/443/3099• Fx. 64/9/443/3097

Circle No. 50 on Readers' Service Card

Stephen Wolfram

principal architect of *Mathematica* will speak on

"Mathematica 2.0 and the New Paradigm for Technical Computing"

"The importance of [Mathematica] cannot be overlooked ... it so fundamentally alters the mechanics of mathematics."

New York Times

"Mathematica is a startlingly good tool. Research groups ... should acquire it."

Nature

"Mathematica ... has smashed the traditional boundaries of end-user programming, technical publishing and computer-aided education."

PC Week

Now used by over 100,000 scientists, engineers, students, and others, the *Mathematica* system has become a standard for technical computing. Announced in January 1991, *Mathematica 2.0* promises once again to make major changes in the way technical computing is done. This talk will describe some of the key ideas of *Mathematica 2.0*, and will show how the system is used to solve problems in science and technology. This talk will be accessible to a general audience.

Dr. Wolfram is a well-known scientist and MacArthur prize winner, and the founder of Wolfram Research, Inc. He is the author of the best-selling book, *Mathematica: A System for Doing Mathematics by Computer*, just published in its second edition.

Los Angeles, CA
- UCLA
  Tuesday March 5
  TBA*, 11:00 a.m.
- Caltech
  Tuesday March 5
  Ramo Auditorium, 4:00 p.m.

San Diego, CA
- University of California-San Diego
  Monday March 4
  Auditorium, 2:00 p.m.

San Francisco Bay Area, CA
- Stanford University
  Wednesday March 6
  Kresge Auditorium, 7:30 p.m.
- University of California-Berkeley
  Thursday March 7
  Evans Hall 10, 5:00 p.m.

Boulder, CO
- University of Colorado
  Thursday March 21
  Duane Physics G 030, 2:00 p.m.

Atlanta, GA
- Georgia Tech
  Monday March 18
  Student Center Ballroom, 3:30 p.m.

Chicago, IL
- University of Chicago
  Friday March 15
  TBA*

Boston, MA
- MIT
  Tuesday March 12
  Hall 10-250, 2:30 p.m.

College Park, MD
- University of Maryland
  Thursday March 14
  C&SS 2324, 10:30 a.m.

Minneapolis, MN
- University of Minnesota
  Thursday March 28
  Physics 150, 5:00 p.m.

Princeton, NJ
- Princeton University
  Tuesday March 26
  McCosh Hall 10, 3:00 p.m.

New York City, NY
- Columbia University
  Wednesday March 13
  Altschul Lecture Hall, 4:30 p.m.

New York State
- Rochester Institute of Technology
  Tuesday March 19
  Ingle Auditorium,10:00 a.m.
- Rensselaer Polytechnic Institute
  Tuesday March 19
  CC 318, 4:30 p.m.

North Carolina Research Triangle
- University of North Carolina
  Monday March 11
  Peabody 104, 4:00 p.m.

Pittsburgh, PA
- Carnegie-Mellon University
  Wednesday March 20
  Doherty Hall, Rm 2210, 4:00 p.m.

Houston, TX
- University of Houston-Clear Lake
  Monday March 25
  Auditorium, 7:00 p.m.

Seattle, WA
- University of Washington
  Friday March 8
  Kane Hall 130, 3:30 p.m.

Toronto, Canada
- University of Toronto
  Wednesday March 27
  Sanford Fleming 1105, 4:10 p.m.

For more information, contact:
Wolfram Research, Inc.
100 Trade Center Drive
Champaign, IL 61820
phone: 217-398-0700
fax: 217-398-0747
email: info@wri.com

**Contact Wolfram Research, Inc. for more details.*

THE NEW YORK ACADEMY OF SCIENCES

Call for Conference Proposals

The New York Academy of Sciences invites proposals for conferences in all fields of science, especially in biomedicine, psychology and neuroscience.

The Academy sponsors meetings all over the world, and provides the logistical, administrative and fund-raising support necessary for the successful presentation and discussion of research reports. Academy conferences typically are an interdisciplinary examination of a single topic, generally have 24-30 speakers and poster sessions, last three days, and have about 250 attendees. Proceedings of these conferences are published as volumes of the *Annals of the New York Academy of Sciences*, which are distributed internationally and widely cited.

The Academy encourages all interested scientists to submit preliminary conference proposals. Although the current focus is 1992, conference proposals for 1993 are also welcome. If you are interested in planning a meeting with the Academy, please prepare a two-page description of the meeting as you envision it, including title, focus, the primary topics to be covered, and the names of three or four key scientists who might be on the program. Send your preliminary proposal to:

Conference Director
The New York Academy of Sciences
2 East 63rd Street
New York, New York 10021.

Within a month after receipt of the preliminary proposal, the Academy will contact you and, if appropriate, invite you to submit a complete proposal. If you would like to see a typical conference program or have any questions at all, please call the Conference Department at 212-838-0230 or FAX 212-888-2894.

THE NEW YORK ACADEMY OF SCIENCES CONFERENCE SCHEDULE, APRIL-OCTOBER 1991

☐ *sce* **THE SECOND INTERNATIONAL CONFERENCE ON SODIUM/CALCIUM EXCHANGE**
APRIL 8-11, Baltimore Marriott Inner Harbor, Baltimore, MD
Co-Chairs: Mordecai P. Blaustein, University of Maryland School of Medicine; Reinaldo Dipolo, Instituto Venezolano de Investigaciones Cientificas (IVIC); John P. Reeves, Roche Institute of Molecular Biology

☐ *n* **NEUROTOXINS AND THEIR POTENTAL ROLE IN NEURODEGENERATION**
MAY 6-8, Adams Mark Hotel, Philadelphia, PA
Co-Chairs: Richard E. Heikkila, UMDNJ-Robert Wood Johnson Medical School; J. William Langston, California Parkinson Foundation; Anne Young, University of Michigan

☐ *mri* **BIOLOGICAL EFFECTS AND SAFETY ASPECTS OF NUCLEAR MAGNETIC RESONANCE IMAGING AND SPECTROSCOPY**
MAY 15-17, Hyatt Regency, Bethesda, MD
Co-Chairs: Richard L. Magin, University of Illinois at Urbana-Champaign; Robert P. Liburdy, University of California; Bertil Persson, University of Lund, Sweden

☐ *oxy* **OXYTOCIN IN MATERNAL, SEXUAL AND SOCIAL BEHAVIORS**
MAY 20-22, Crystal Gateway Marriott, Arlington, VA
Co-Chairs: Cort A. Pedersen and Jack D. Caldwell, University of North Carolina School of Medicine; Gustav Jirikowski, Scripps Clinic and Researach Foundation; Thomas R. Insel, National Institute of Mental Health/NIH

☐ *cd5* **CD5 B CELLS IN DEVELOPMENT AND DISEASE**
JUNE 3-6, PGA National Resort, Palm Beach Gardens, FL
Co-Chairs: Leonore A. Herzenberg, Stanford University School of Medicine; Geoffrey Haughton, University of North Carolina; Klaus Rajewsky, Universitat zu Koln, Federal Republic of Germany

☐ *scm* **SENSING AND CONTROLLING MOTION; VESTIBULAR AND SENSORIMOTOR FUNCTION**
JULY 7-11, NASA Ames Research Center At Moffett Field, Mountain View, CA
Co-Chairs: Bernard Cohen, Mount Sinai School of Medicine; David Tomko, NASA Ames Research Center; Fred Guedry, Naval Aerospace Medical Research Laboratory

☐ *nda* **THE NEUROBIOLOGY OF DRUG AND ALCOHOL ADDICTION**
JULY 23-26, Cavanaugh's Inn at the Park, Spokane, Washington
Co-Chairs: Peter W. Kalivas, Washington State University; Herman H. Samson, University of Washington

☐ *cgrp* **CALCITONIN GENE-RELATED PEPTIDE**
JULY 28-31, University of Graz, Graz, Austria
Co-Chairs: Yvette Tache, University of California, Los Angeles; Peter Holzer, University of Graz, Austria; M. Geoff Rosenfeld, University of California, San Diego

☐ *age* **AGING AND CELLULAR DEFENSE MECHANISMS**
SEPTEMBER 22-26, Grand Hotel Raffaello, Modena, Italy
Co-Chairs: Gaetano Crepaldi, University of Padova, Italy; Vincent Cristofalo, The Medical College of Pennsylvania; Claudio Franceschi, University of Modena Italy; Lanfranco Masotti, University of Bologna, Italy; Jan Vijg, Medscand Ingeny, The Netherlands

☐ *pla* **PLASMINOGEN ACTIVATION IN FIBRINOLYSIS AND TISSUE REMODELLING**
OCTOBER 22-25, Leiden, The Netherlands
Co-Chairs: Peter Brakman and Cornelis Kluft, TNO Graudius Institute, Leiden, The Netherlands

TO RECEIVE COMPLETE PROGRAMS AND REGISTRATION INFORMATION FOR ANY OF THESE CONFERENCES, CHECK THE ITEMS OF INTEREST AND SEND TO MARKETING, NYAS, 2 EAST 63RD ST., NY, NY 10021 OR CALL (212) 838-0230 OR FAX (212) 888-2894

NAME _____

MAILING ADDRESS _____

CITY _____ *STATE* _____ *ZIP* _____

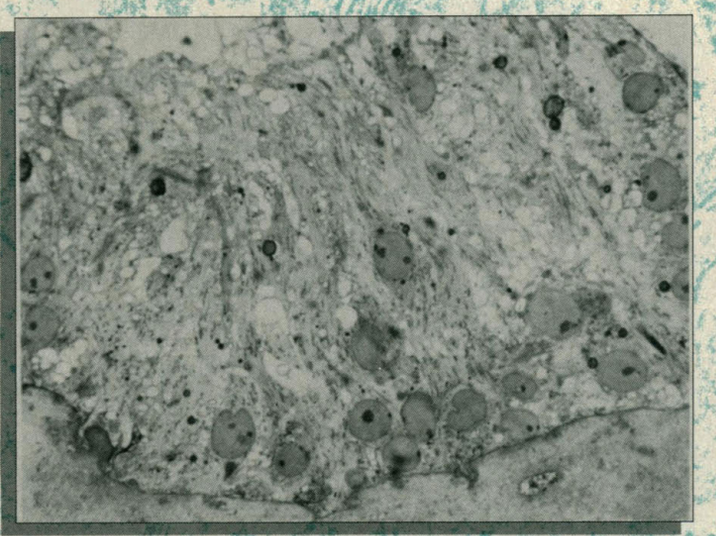
SCI391

Circle No. 129 on Readers' Service Card

BioCoat™ Cultureware

Adds a New Dimension to your cell cultures...

With BioCoat, *In Vitro* cell cultures look like this...



Cultured on MATRIGEL™, Sertoli cells are similar in appearance to Sertoli cells *In Vivo*, forming polarized monolayers about 40-60μm in height with oval basal nuclei.

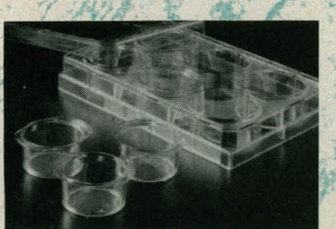
...instead of like this

Sertoli cells cultured on top of **uncoated plastic** are very low and squamous, about 2μm in height with flattened nuclei.

BioCoat, the unique, ECM-coated cultureware from Collaborative, can significantly broaden the scope of your In Vitro cell studies. With BioCoat:

- Cells attach and grow more efficiently
- Cells polarize readily into apical and basolateral regions
- Cells differentiate and exhibit true physiologic function

A variety of extracellular matrix proteins (Matrigel™, Laminin, Fibronectin and Collagens), pre-coated on tissue culture plates, membrane inserts and coverslips, offer the researcher a convenient, reliable, ready-to-use means of accurately simulating *In Vivo* cell environments. Correlation and reproducibility of results are enhanced by the consistency and uniformity of the coatings, which are applied by a specially-developed, proprietary process.



BioCoat™ Matrix-Coated Cultureware exclusively from Collaborative Research

Collaborative's BioCoat can add new dimensions to your work in:

■ Cell Differentiation ■ Cell-Matrix Interaction ■ *In Vitro* Toxicology ■ *In Vitro* Carcinogenesis ■ Primary Cell Culture ■ Neural Cell Culture ■ Tumor Invasion ■ Polarization Studies ■ Gene Expression

Exclusively from Collaborative Research Incorporated.
Your Source of Innovative Cell Culture Products.

Write or call today for complete information on Collaborative Research BioCoat Cultureware.

Biomedical Products Division

Collaborative Research Incorporated

2 Oak Park, Bedford, MA 01730 • (617) 275-0004 • (800) 343-2035

Circle No. 146 on Readers' Service Card

Gordon Research Conferences

Alexander M. Cruickshank

The 1991 Summer and Fall Gordon Research Conferences will be held in New Hampshire, Rhode Island, and Irsee, Germany. ATTENDANCE LIMITED—RECOMMEND APPLICANTS APPLY IMMEDIATELY FOR EARLY CONSIDERATION BY CHAIR.

Requests for applications to the Conferences, or for additional information, should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Gordon Research Center, University of Rhode Island, Kingston, RI 02881-0801. Telephone: 401-783-4011/3372 or FAX: 401-783-7644.

Mail for the office of the Director from 10 June to 23 August 1991 should be addressed to: Dr. Alexander M. Cruickshank, Director, Gordon Research Conferences, Colby-Sawyer College, New London, NH 03257. Telephone: 603-526-2870/2871 or FAX: 603-526-4717.

Science of Adhesion

New Hampton School

S. D. Senturia, chair; L. Penn, vice chair

12–16 August

A. J. Kinloch, discussion leader

A. Evans, "The fracture resistance of biomaterial interfaces."

N. Aravas, "The mechanics of adhesion testing of flexible films."

D. Huntson, discussion leader

J. Joannopoulos, "Prospects for ab initio studies of adhesion."

R. Ramharack, discussion leader

R. Nuzzo, "Molecular adsorption and adhesion."

G. Ferguson, "Composite structures on polymeric substrates: Organic monolayers and inorganic films."

T. St. Clair, discussion leader

C. W. Frank, "Spectroscopic characterization of charge transfer complex formation in polyimides and related model compounds."

C. S. P. Sung, "Intrinsic and extrinsic fluorescence for characterization of cure, water uptake and oxidation/degradation in polymers."

B. Ratner, discussion leader

D. Briggs, "The impact of recent developments in surface analysis in adhesion research."

J. Harrison, "Approaches to the adhesion of both monolayer and thick films on solid-state chemical sensors."

R. Draughn, discussion leader

S. Lynch, "The effects of natural biologic response modifiers on cell adhesion."

M. Fletcher, discussion leader

E. Evans, "Adhesion of biomembranes: From ideal 'wetting' to complex bonding and fracture."

J. A. Hubbell, "Cell-adhesive biomedical materials obtained by surface grafting of bioactive peptides."

M. Allen, discussion leader

M. Schmidt, "Wafer bonding technologies and their implications for microelectronic and micromechanical devices."

L. Sharpe, discussion leader

S. Buchwalter, "Surface modification of polyimides for microelectronic packaging applications: Characterization by multiple techniques."

K. Jensen, "FTIR characterization of plasma modified surfaces and polymer-metal interfaces."

Analytical Chemistry

New Hampton School

J. L. Galjch, chair; I. Warner, vice chair

5–9 August

J. F. Tyson, "Modern analytical chemistry: A judicious mixture of reaction chemistry and instrumentation."

M. J. Wirth, "Picosecond spectroscopic studies of monolayer/liquid interfaces."

L. Burgess, "Optical waveguides applied to chemical measurements."

R. Bredeweg, "Applications of membrane separation devices."

R. W. Giese, "HPCE-fluorescence/GC-ENCI-MS measurement of DNA adducts."

E. S. Yeung, "Challenges in detection in chromatography and electrophoresis."

B. S. Larsen, "Protein structure analysis by mass spectrometry."

R. Cotter, "Analysis of biological structures by desorption techniques."

F. Regnier, "Rapid analytical methods for confirming protein structure."

Poster session: I. Warner, coordinator

R. A. Keller, "The application of single molecule detection to the sequencing of DNA."

J. Shively, "Protein structural analysis."

D. B. Chase, "Multichannel and multiplex detection in Raman spectroscopy."

R. B. Bilhorn, "Charge coupled device (CCD) detection in analytical emission and Raman spectroscopy."

C. S. Ough, "The chemicals of wine—the good and the bad."

J. P. Foley, "The role of peak shape in chromatography and related methods: Quantitative and qualitative analysis."

R. Rodriguez, "Analytical approaches to odor-related and other ultra-trace problems."

Analytical Pyrolysis: The Thermal Processes of Materials

New Hampton School

K. J. Voorhees, chair; R. S. Lehrle, vice chair

24–28 June

K. J. Voorhees, discussion leader

R. S. Lehrle, "Understanding pyrolysis mechanisms helps to control thermal and oxidative degradation."

L. Carlson, "Pyrolysis processes: Mechanistic aspects."

P. Solomon, discussion leader

D. F. McMillen, "Mechanisms of bond cleavage and bond formation during the pyrolysis of coals and other polymers."

M. R. Hajaligol, "The significance of transport processes during rapid pyrolysis of softening coals."

W. J. van Ooij, discussion leader

D. M. Hercules, "Secondary ion mass spectrometry of polymers."

R. Odom, "Laser ionization mass spectrometry (LIMS) analysis of bulk polymers and applications of pattern recognition data."

To be announced, "Processing to spectral interpretation."

S. Israel, discussion leader

R. J. Cotter, "Thermal processes and selective desorption in FAB, PDMS and LD mass spectrometry."

R. E. Winans, "Elucidation of thermally stable, large coal molecules by soft ionization mass spectrometry techniques."

R. Lattimer, discussion leader

A. C. Tas, "Characterization of chemical markers of biomacromolecules by pyrolysis-tandem mass spectrometry."

G. Montaudo, "Pyrolysis-tandem mass spectrometry of polymers."

P. Snyder, discussion leader

J. J. Boon, "Identification of oligomeric polysaccharide pyrolytic fragments by hT-GC and SFC combined with mass spectrometry."

IMPORTANT—PLEASE NOTE

Tel: 401-783-4011/3372

FAX No. 401-783-7644; Bitnet Address: BCP101@URIACC

Fixed Conference Fees—1991

New Hampshire	
Conferee (double occupancy)	$400
($350 if postmarked 3 weeks prior to conference)	
Nonresident Conferee (meals, no room)	$360
($310 if postmarked 3 weeks prior to conference)	
Guest (room, meals)	$310
$260 if postmarked 3 weeks prior to conference)	
Rhode Island	
Conferee (double occupancy with bath)	$415
($365 if postmarked 3 weeks prior to conference)	
Nonresident Conferee (meals, no room)	$360
($310 if postmarked 3 weeks prior to conference)	
Guest (room with bath, meals)	$325
($275 if postmarked 3 weeks prior to conference)	
Irsee, Germany	
Conferee (double occupancy)	$600
Guest	$400

1) Full fixed fee charged regardless of time conferee attends conference. Please note details of fees.

2) Fixed fees cannot be prorated or reduced for anyone (speakers, discussion leaders, or conferees).

3) Children under 12 years of age are not permitted in the meeting rooms, dining rooms, or dormitories at any host sites.

4) Nonresident conferees are expected to eat all meals in the Conference dining room and therefore the fee for nonresidents includes the full meal charge.

5) Offsite accommodations (hotels, motels, etc.) near the host schools are available; however, early reservations are recommended. The office will send on request a list of outside housing for your information.

The author, director of the Gordon Research Conferences, is professor emeritus of chemistry, University of Rhode Island; Kingdom 02281–0801.

S. L. Morgan, "Chemical markers for microorganisms."

S. R. Larter, discussion leader

J. W. deLeeuw, "Analytical pyrolysis as a tool to recognize unknown resistant bio- and geomacromolecules."

T. Eglinton, "Isotope- and element-specific gas chromatographic detection of pyrolyzates: Applications in organic geochemistry."

D. Waples, discussion leader

N. Ryan-Gray, "Texture effects on oil expulsion from source rocks: New applications for pyrolysis."

C. Sutton, J. E. Zumberge, "PyGCMS of kerogens and asphaltenes: Application to petroleum exploration."

R. S. Lehrle, discussion leader

Four speakers will be selected from poster session presentations.

Animal Cells and Viruses

Tilton School

M. A. Martin, chair; J. K. Rose, vice chair

10–14 June

Viral assembly and structure: E. Hunter, discussion leader

E. Hunter, "Retrovirus assembly."

M. Rossmann, "Icosahedral RNA and DNA viruses."

S. Harrison, "Papovavirus structure."

Viral gene expression: P. Sharp, discussion leader

P. Sharp, "HIV Tat and Rev function."

T. Jeang, "HIV Tat."

M. Green, "Adenovirus gene regulation."

E. Kieff, "EBV transactivation and transformation."

Viral receptors and entry: P. Spear, discussion leader

P. Spear, "Herpes virus receptors."

K. Holmes, "Coronavirus receptor."

V. Racaniello, "Poliovirus receptor."

Intracellular transport: A. Helenius, discussion leader

A. Helenius, "Nuclear transport of influenza ribonucleoproteins."

H. Garoff, "Assembly and entry mechanisms of alphaviruses."

P. Peterson, "Antigen presentation and intracellular trafficking."

DNA virus replication: T. Kelly, discussion leader

T. Kelly, "SV40 DNA replication in vitro."

M. Challberg, "Herpes DNA replication."

N. Muzycka, "Adenovirus replication."

Viral oncogenes: J. M. Bishop, discussion leader

D. Livingston, "SV40 T antigen."

P. Soriano, "Transformation by src."

J. Downward, "Ras structure and function."

Retroviruses: S. Goff, discussion leader

S. Goff, "Replication."

R. Craigie, "Integration."

H. Temin, "Recombination."

B. Chesebro, "HIV replication."

RNA virus replication: B. Lamb, discussion leader

B. Lamb, "Paramyxovirus RNA editing."

P. Palese, "Genetic manipulation of influenza viruses."

G. Wertz, "Negative strand virus replication."

K. Kirkegaard, "RNA virus recombination mechanisms."

J. Taylor, "Hepatitis delta virus: Structure and replication of hepatitis delta virus."

Viral pathogenesis: M. Oldstone, discussion leader

B. Fields, "Tropism and spread of reovirus to the CNS."

M. Billeter, "Measles virus pathogenesis."

K. Hsaio, "Prions in animal and human disease."

Applied and Environmental Microbiology

Colby Sawyer College

D. Eveleigh, chair; C. Cerniglia, vice chair

22–26 July

The carbon cycle

Microbes mediating/mitigating global climate changes: D. Lewis, discussion leader

J. M. Melillo, "Response of soil microbes to climate change."

R. Geider, "Iron limitation in marine environments—The geritol effect."

R. Norby, "Carbon storage by forests in a CO_2-enriched atmosphere: Physiological and microbial feedbacks."

Cellulases—their action and evolution: J. Wiegel, discussion leader

C. P. Kubicek, "The *Trichoderma* system: How does cellulase initiate its action?"

J-P. Aubert, "The cellulase genes of *Clostridium thermocellum* and their products."

Applications of current methodologies

Novel approaches to monitoring the environment: F. Pfaender, discussion leader

G. Saylor, "Bioluminescent reporter technology in biodegradation monitoring."

D. Caldwell, "Laser microscopy—a tool for monitoring the environment."

J. Hogan, "The application of DNA probe technology to microbial ecology."

Industrial microbiology—physiologic and genetic concepts to enhancing synthesis: A. Demain, discussion leader

A. Macaluso, "Strategies for the overproduction of primary metabolites."

R. Baltz, "Development of transposons to manipulate antibiotic synthesis."

Environmental transformations

Environmental biotechnology—the field: L. Y. Young, discussion leader

R. Pritchard, "The Alaskan oil spill bioremediation project."

L. E. Hallas, "Innovative technologies for industrial waste biotreatment: Progression from laboratory to full-scale operation."

T. Vogel, "Dechlorination—Do microbes care?"

Environment biotechnology—the lab: C. Cerniglia, discussion leader

K. Hammel, "Mechanisms of aromatic pollutant degradation—Phanerochaete."

G. Zylstra, "Genetic manipulation of aromatic pathways to advantage."

Microbe/substrate interaction

Microbial consortia in environmental processes: J. Cooney, discussion leader

W. Costerton, "Bacteria, including microbial consortia in enhanced oil recovery operations."

M. Middleman, "Bacterial-substratum interactions: Effects of surfaces on bacterial activity and biofilm constituents."

E. Bock, "Disfigurement of national monuments by lithotrophic consortia utilizing industrial pollutants."

Special lecture: M. Coughlan, moderator

M. Schaechter, "Mushrooms through the ages."

Microbe/host interaction

Biological control: B. Ensley, discussion leader

S. Lindow, "The ecology of plant-associated bacteria with regard to biocontrol."

C. Schardl, "Mutualistic pathogens: Molecular evolution of the grass mycosymbiont epichloe typhina."

S. Evans, "Employing microbes as herbicides: Facts, fantasies and future."

Poster sessions will be held Monday, Tuesday, and Wednesday from 4:00 to 6:00 p.m., and after the evening session. Those wishing to submit posters should submit a brief abstract by 21 June 1991 to Dr. Carl Cerniglia, Microbiology Division, National Center for Toxicological Research, Food and Drug Administration, Jefferson, AR 72079 (Tel.: 501-541-4341/FAX: 501-541-4576).

Atherosclerosis

Kimball Union Academy

P. F. Davies, co-chair; G. S. Getz, co-chair

17–21 June

Gene activation/gene therapy: A. Fogelman, discussion leader

G. Nabel, "Gene transfer into the arterial wall."

A. J. Lusis, "Activation of arterial cell genes."

Regulation of cell proliferation: R. Ross, discussion leader

S. Coughlin, "Mechanism of action of the thrombin receptor."

M. Klagsbrun, "Heparin-binding EGF-like growth factor."

Flow transduction mechanisms at the vessel wall: C. F. Cornhill, discussion leader

S. Glagov, "Mechanical determinants of intimal thickening."

W. Schilling, "Mass transport mechanisms influencing endothelial transduction."

F. Sachs, "Stretch-activated and inactivated ion channels."

Cellular interactions: M. Gimbrone, discussion leader

M. Cybulsky, "Atherosclerotic lesion-specific endothelial activation."

G. Hansson, "T cells and the atherosclerotic lesion."

D. Harrison, "Mechanisms of compromised vasorelaxation in hypercholesterolemia and atherosclerosis."

Monocyte/macrophage receptors: R. Mahley, discussion leader

S. Silverstein, "What macrophages do other than accumulate cholesteryl esters."

M. Krieger, "Macrophage lipoprotein scavenger receptors."

D. Stern, "The macrophage advanced glycosylation end-product (AGE) receptor."

Mechanisms of foam cell formation: D. Steinberg, discussion leader

G. Chisolm, "Oxidized lipoproteins and cytotoxicity."

S. Parthasarathy, "Mechanisms of lipid peroxidation."

K. Weisgraber, "Three-dimensional structure of apo E."

C. Hopkins, "Receptor processing in a continuous endosomal reticulum.

Genes involved in cellular lipoprotein uptake and metabolism: J. Goldstein, discussion leader

W. Schneider, "Lipoprotein transport in egg-laying species."

D. Strickland, "α_2M-receptor/LRP."

J. MacCluer, "A population geneticist's approach to identification of major genes."

M. S. Brown, "Mevalonate metabolism and cell growth."

Lp(a) in atherosclerosis and hemostasis: A. Scanu, discussion leader

H. Hobbs, "Molecular genetics of Lp(a)."

K. Hajjar, "Lp(a) and coagulation mechanisms."

Atmospheric Chemistry

New Hampton School

M. J. Molina, co-chair; C. E. Kolb, co-chair

17–21 June

Global distributions and trends of atomspheric species: R. J. Cicerone, discussion leader

P. J. Fraser, "Distributions and trends of greenhouse gases and related tracers."

R. G. Prinn, "Distributions, trends, and analysis of atmospheric chlorine compounds."

J. Fishman, "Distributions and trends of tropospheric ozone."

J. W. Elkins, "Assessment of instrumentation requirements for stable gas trends and distribution studies."

Surface exchange fluxes of trace species: B. B. Hicks, discussion leader

R. C. Harris, "Trace gas exchange in tundra and boreal forests."

S. C. Wofsy, "Trace gas exchange in temperate forests."

P. J. Crutzen, "Trace gas emissions

from biomass burning."

P. S. Liss, "Oceanic trace gas sources and sinks."

D. N. Lenchow, "Micrometeorological techniques for surface exchange flux measurements."

Gas phase photochemistry: F. S. Rowland, discussion leader

F. C. Fehsenfeld, "Atmospheric NO_x and NO_y measurements and analysis."

D. H. Ehhalt, "Atmospheric HO_x measurements and analysis."

J. G. Anderson, "Atmospheric halogen radical measurements and analysis."

C. J. Howard, "Laboratory photochemical and kinetic measurements."

Heterogeneous and condensed phase processes: D. M. Golden, discussion leader

M. P. McCormick, "Measurement of stratospheric cloud and aerosol properties."

S. Solomon, "Heterogeneous chemistry and ozone depletion due to stratospheric cloud and aerosol particles."

R. A. Duce, "Tropospheric aerosols and their impact on ocean chemistry and productivity."

T. E. Graedel, "Composition and chemistry of clouds, fog, and rain."

D. R. Worsnop, "Laboratory measurements of heterogeneous processes."

Theoretical modeling and analysis: K. L. Demerjian, discussion leader

W. L. Chameides, "Accommodating heterogeneous processes in atmospheric models."

M. J. Prather, "Scaling atmospheric models from local to global."

Policy and perspective: J. G. Calvert, discussion leader

J. H. Seinfeld, "Perspective on urban and regional air quality."

M. B. McElroy, "Perspective on global change."

C. Tickell, "Science's role in environmental policy."

Atomic Physics

Brewster Academy

W. E. Cooke, chair; W. D. Phillips, vice chair

1–5 July

Above threshold ionization in molecules: D. Larson, discussion leader

P. Bucksbaum, G. Gibson; speakers

Fundamental symmetries: E. A. Hinds, discussion leader

E. D. Commins, B. R. Heckel; speakers

Intense optical fields: M. Gavrila, discussion leader

A. L'Huillier, R. Potvliege, J. Eberly; speakers

Microwave ionization of Rydberg atoms: H. Taylor, discussion leader

T. F. Gallagher, B. Christiansen-Dalsgaard; speakers

Cooling and trapping of ions: D. Wineland, discussion leader

D. Pritchard, R. Blatt, V. S. Letokhov; speakers

Cavity quantum electrodynamics: G. Gabrielse, discussion leader

T. W. Mossberg, S. Haroche; speakers

Cooling and trapping of neutral atoms: S. Chu, discussion leader

J. Doyle, P. Julienne, S. Kassner; speakers

Chaos in atomic systems: W. Schleich, discussion leader

D. Delande, R. DeVoe; speakers

Highly correlated states of atoms: C. Greene, discussion leader

S. Sandner, F. Meyer, H. Bryant; speakers

Barrier Function of Mammalian Skin

Plymouth State College

R. O. Potts, chair; G. L. Flynn, vice chair

12–16 August

SC lipid biophysics: R. Potts, discussion leader

D. Small, N. Kitson, J. Bouwstra; speakers

Membrane permeability: S. White, discussion leader

K. Dill; speaker

speaker to be announced

SC lipid permeability: M. Francoeur, discussion leader

W. Abraham, S. Friberg; speakers

Percutaneous absorption I: J. Hadgraft, discussion leader

J. Zatz, K. Sloan; speakers

Percutaneous absorption II: R. Brounaugh, discussion leader

J. Reviere, J. McDougal; speakers

Percutaneous absorption III: G. Flynn, discussion leader

T. Franz, N. Weiner; speakers

Iontophoresis: R. Guy, discussion leader

G. Kasting, B. Sage; speakers

Epidermal cell culture/permeability: M. Ponec, discussion leader

V. Mak, M. Regnier; speakers

Pore debate: H. Bodde, discussion leader

Bioanalytical Sensors

Salve Regina College

J. I. Peterson; chair; G. S. Wilson, vice chair

22–26 July

Electrode and bioprocess sensing: R. Durst, discussion leader

J. O. Noell, "A conducting polymer glucose sensor."

B. Y. Hin, "Electropolymerized enzyme films for amperometric biosensors."

T. Scheper, "Bioanalysis systems for biotechnology: Development and application."

Invasive physiological sensors: F. Ligler, discussion leader

G. Reach, "In vivo monitoring for the treatment of Diabetes Mellitus."

R. Eberhart, "Biocompatibility and biosensors."

C-S. O, "Sensors based on NADH fluorescence."

Non-invasive physiological sensors: M. Arnold, discussion leader

M. A. Arnold, "Bioanalytical sensors based on near-infrared spectroscopy."

H. M. Heise, "Potential infrared spectroscopic applications in clinical chemistry."

K. H. Norris, "Possible non-invasive analysis with spectroscopic techniques."

Piezo/SAW devices: G. G. Guilbault, discussion leader

G. G. Guilbault, "Mass sensitive biosensors."

J. Luong, "Applications of the piezoelectric crystal in immunoassay."

M. Thompson, "Mediation of acoustic energy transmission from acoustic wave sensors to the liquid phase as a biosensor mechanism."

Fiber optic sensors: M. Block, discussion leader

M. J. Block, "Instrumentation and methods for evanescent wave sensors."

M. Eldefrawi, "Pharmacological fiber optic biosensors."

F. S. Ligler, "Fiber optic biosensors using antibodies and DNA probes."

Whole cell biosensors: C. R. Keese, discussion leader

C. R. Keese, "An electrical biosensor based on cell-substrate-interactions."

B. J. van Wie, "Neuron-based sensing."

D. Holmes, "Luminescent bacterial system."

Molecular recognition: J. Jordan, discussion leader

W. Heinemann, "Ultra-sensitive electrochemical immunosensors."

L. J. Kricka, "Chemical light: Opportunities for sensor technology."

W. Simon, "Recognition of ionic and neutral analytes by membrane for bioanalytical sensors."

General session for presentation of short, unprogrammed talks and discussion: G. S. Wilson, discussion leader

Lipid membranes as transducers, and SPR: A. Plant, discussion leader

D. Cullen, "Surface plasmon immunosensors: A critical appraisal."

N. Tompson, "Dynamics of antibody on substrate-supported planar model membrane."

W. Muller, "Functional protein monolayers as a basis for biosensors? Specific interaction of streptavidin with monomeric and polymeric biotin derivatives."

A poster session will be concurrent with the conference, organized by the vice chair.

Biocompatibility and Biomaterials

Holderness School

D. E. Williams, chair; J. Brash, vice chair

22–26 July

J. Brash, discussion leader

J. A. Hubbell, "Immobilised cell-binding peptides in bioadhesive and bioactive materials."

S. L. Cooper, "Adsorption and biological activity of vitronectin and fibronectin on biomaterial surfaces."

J. Ramshaw, "Biocompatibility issues with collagen."

M. Jozefovicz, discussion leader

A. McNally, "Functional consequences of inflammatory cell interactions with biomaterials."

P. Christel, discussion leader

J. E. Davies, "Osteoblasts at interfaces."

A. Ohlin, "Osteoclasts and bone resorption."

H. J. Schmitz, "The interface between bone and biomaterials."

F. Schoen, discussion leader

D. Ingber, "The role of extracellular matrix in biomaterials—cell interactions."

L. K. Birinyi, "Gene transfer to endothelium."

R. M. Pilliar, discussion leader

R. Huiskes, "Stress distributions in bone-implant systems."

A. Meunier, "Acoustic imaging of bone-implant systems."

J. Lemons, discussion leader

L. Cima, "Interactions between degradable polymers and cells."

J. Dumbleton, "The interface between bioactive materials and bone."

D. Gibbons, discussion leader

P. Aebischer, "Biocompatibility issues in the nervous system."

P. Parks, "Biocompatibility problems with biosensors."

V. Trinkaus-Randall, "Interactions between biomaterials and the cornea."

M. Sefton, discussion leader

M. Nugent, "Polymer-based growth factor delivery systems."

H. Griesler, "Growth factors and vascular prostheses."

Bioenergetics

Holderness School

R. L. Cross, chair; R. B. Gennis, vice chair

8–12 July

Electron transport complexes I, II, III: W. Cramer, session chair

F. Daldal, "Functional sites of the Cyt bc_1 complex."

G. Cecchini, "Fumarate reductase: A model for assembly of the prosthetic groups of complex II."

H. Weiss, "Electron transport complex I: assembly, structure, and function."

Cytochrome *c* oxidase: G. Babcock, session chair

B. Trumpower, discussion of posters on electron transfer complexes.

M. Saraste, "Bacterial cytochrome oxidases: Genes, mutants, and the active sites."

P. Rich, "Ligand, electronation, and conformational states of cytochrome oxidase."

The mechanism and structure of F_0F_1-ATP synthases: J. Walker, session chair

Y. Hatefi, "Kinetics features of ATP synthesis by mitochondria."

R. Capaldi, "Mechanochemical cou-

pling in the ATP synthase."

M. Amzel, "X-ray studies of F_1-ATPase."

The proton channel through F_0F_1: H. Penefsky, session chair

B. Beechey, discussion of posters on ATPases and synthases.

R. Fillingame, "Essential components of and structural interactions in the F_0 sector of the *E. coli* ATP synthase."

G. Cox, "An assessment of the structure of the α-subunit of *E. coli* F_0F_1-ATPase and its role in proton translocation."

Workshops: Various topics of interest will be covered in two workshops.

Vacuolar and archaebacterial ATPases: R. Bowman, session chair

P. Hinkle, discussion of posters on membrane transport.

M. Forgac, "Structure and properties of the coated vesicle proton pump."

M. Futai, "Vacuolar ATPases and their coupled transport in synaptic vesicles."

The structure of adenine nucleotide binding sites: G. Schafer, session chair

A. Senior, "Catalytic site properties of *E. coli* ATP synthase."

B. Allison, "Probing the location and function of nucleotide binding sites in the F_1-ATPases with chemical modification reagents."

J. Wise, "Exploring the nucleotide binding sites of *E. coli* ATP synthase by site-directed mutagenesis."

Introduction: H. Lardy, session chair

P. D. Boyer, "ATP and bioenergetics: past, present, and a bit of future."

L. Ernster, final remarks.

Membrane transport processes: P. Hinkle, session chair

I. Pastan, "The multidrug transporter."

D. MacLennan, "Calcium pumps and channels in the sarcoplasmic reticulum."

Biological Regulatory Mechanisms

Holderness School

L. B. Rothman-Denes, co-chair; P. Nurse, co-chair

17–21 June

From genotype to phenotype I: Regulation of transcription: K. Struhl, discussion leader

S. Johnson, D. Hammer, W. Herr; speakers

Genome plasticity: M. Belfort, discussion leader

A. Landy, D. Prescott, J. Strathern; speakers

From genotype to phenotype II: Post-transcriptional regulation; L. Gold, discussion leader

T. Donahue, A. Hinnebush, D. Cleveland, A. Beyer; speakers

Molecular Machineries: P. Walter, discussion leader

J. Rothman, T. Kelly, M. Deutsher; speakers

Protein sorting and trafficking: C. Georgopoulos, discussion leader

W. Wickner, R. Sheckman, T. Silhavy; speakers

Cellular motors: J. Spudich, discussion leader

L. Goldstein, R. Vallee; speakers

Checkpoints and fidelity during cell cycle: L. Hartwell, discussion leader

P. Nurse, T. Weinert, W. Dunphy, A. Hoyt; speakers

Rhythms: M. Rosbash, discussion leader

U. Schibler, N. Chua; speakers

Cell-cell communications and interactions: L. Shapiro, discussion leader

D. Kaiser, W. Timberlake, R. Losick, S. Long, D. Portnoy; speakers

Biological Structure and Gene Expression

Plymouth State College

G. Stein, chair; M. Bissell, vice chair

22–26 July

Pattern formation, tissue organization, and development: D. McClay, discussion leader

M. Bernfield, G. Eichele, S. Penman; speakers

Cell shape, cell structure, and polarity: R. Goldman, discussion leader

D. Ingber, D. Mochly-Rosen, J. Nelson, T. Katsomoto; speakers

Cytoarchitecture, mRNA localization, and stability: R. Singer, discussion leader

D. Cleveland, A. Fulton, M. Solursh; speakers

Cell-extracellular matrix connections: C. Damsky, discussion leader

M. Schwartz, M. Stanley; speakers

Signal transduction by extracellular matrix: M. Bissell, discussion leader

R. Chiquet-Ehrismann, C. Streuli, F. Watt; speakers

Extracellular matrix and gene expression: Z. Werb, discussion leader

F. Ramirez, L. Reid; speakers

Cell matrices and regulation of growth-differentiation interrelationships: J. Lian, G. Stein, discussion leaders

D. Denhardt, S. Farmer; speakers

Nuclear architecture and chromatin structure: M. Bradbury, discussion leader

D. Coffey, G. Hager, D. Spector; speakers

Nuclear architecture: Gene localization and transcription: R. Berezney, discussion leader

J. Lawrence, A. Sippel, R. van Driel; speakers

Cell and Molecular Biology of Bone and Teeth

Kimball Union Academy

R. Baron, chair; J. Heersche, vice chair

8–12 July

Molecular basis of osteoinduction: H. Reddi, discussion leader

A. Roberts, "TGF beta's 1, 2, and 3; Role in the formation of bone and cartilage."

D. Melton, "Induction of mesoderm in xenopus."

J. Wozney, "The BMP family: Role in development and regulation of bone formation."

Cell and matrix adhesion molecules: M. Horton, discussion leader

H. Kleinman, "Functional domains of laminin."

M. Hemler, "VLA proteins in the integrin family."

W. Butler, "Bone attachment proteins."

Role of bone marrow in bone cell differentiation: G. Rodan, discussion leader

R. Stanley, "The biology and action of colony stimulating factor-1."

L. Rohrschneider, "Mechanisms of M-CSF receptor function."

T. Suda, "The role of stromal cells in osteoclast differentiation."

Growth factors and bone cells: E. Canalis, discussion leader

W. J. Pledger, "Growth factor modulated G_1 events regulate the cell cycle."

D. Clemmons, "Insulin-like growth factor binding proteins: Molecular mechanisms of action."

M. Klagsbrun, "Heparin binding members of the FGF and EGF family."

Ion transport in bone cells: R. Baron, discussion leader

N. Nelson, "Molecular biology of vacuolar proton pumps."

W. Boron, "Regulation of intracellular pH."

D. Ypey, "Ion channels in bone cell membranes."

K. Hruska, "Calcium transport in bone cells."

Estrogens and bone cell regulation: J. Heersche, discussion leader

J. Dorrington, "Actions of estradiol-17β mediated by growth factors."

E. Milgrom, "Progesterone and estrogen receptors."

S. Manolagas, "Estrogens and bone relevant cytokines."

M. Lieberherr, "Non-gene-mediated effects of steroid hormones."

Calciotropic hormones: Signal transduction and gene regulation: H. Kronenberg, discussion leader

J. Schlessinger, "Signal transduction by receptors with tyrosine kinase or phosphatase activities."

J. W. Pike, "Transcriptional regulation of osteocalcin gene expression by vitamin D_3."

D. Goltzman, "Studies of gene expression and action of members of the PTH/PLP gene family."

S. Goldring, "Cloning of the calcitonin receptor."

G. Segre, "Cloning of the PTH receptor."

L. Kaufman, "Biological diversity, animal models, and the essence of change in skeletal evolution."

New biphosphonates: Biology and clinical effects: H. Fleisch, discussion leader

G. Rodan, "Aminobutylidene biphosphonate action in vivo and in vitro."

C. W. G. M. Lowik, "Modulation of osteoclastic resorption in vitro by bisphosphonates."

J. Kanis, "Clinical use of biphosphonates in malignant disorders."

P. Delmas, "Clinical use of bisphosphonates in non-malignant bone diseases."

Calcium Oxalate

Plymouth State College

L. H. Smith, chair; H. T. Horner, vice chair

10–14 June

D. L. Purich, discussion leader

R. A. J. Conyers, "Pathways of oxalate formation: Implications for metabolic regulation and urolithiasis therapy."

F. Loewus, "Oxalate biosynthesis via ascorbate (plants) and ascorbyl analogs (fungi)."

C. J. Danpure, "Alanine: Glyoxylate aminotransferase intracellular targeting: Molecular evolution and disease."

W. C. Thomas, discussion leader

G. P. Kasidas, "The measurement of oxalate in biological fluids."

M. J. Allison, discussion leader

P. Maloney, "Oxalate transport in bacteria."

R. Hautmann, "Oxalate metabolism in the human gut."

Z. K. Punja, "Roles of oxalic acid during pathogenesis in fungal-plant interactions."

J. L. Meyer, discussion leader

D. White, "Dental calculus: formation mechanisms and strategies for prevention."

L. James, "Oxalate poisoning in livestock."

K. Whitney, discussion leader

V. Franceschi, "Regulation of calcium transport during calcium oxalate crystal formation."

M. Menon, "Oxalate transport in mammalian kidney cells."

M. Hatch, "Segmental differences in intestinal oxalate transport."

H. T. Horner, discussion leader

W. G. Robertson, "Calcium and oxalate interactions in urolithiasis revisted—the Arabian experience."

Highlights of the poster session

H. Arnott, discussion leader

M. A. Webb, "Analysis of organic matrices associated with calcium oxalate formation in plants."

R. Ryall, "Role of matrix proteins in calcium oxalate stone formation."

A. Cody, "Relationships of crystallization inhibitors to crystal habits of calcium oxalate hydrates in urine, stones, and certain plants."

L. H. Smith, discussion leader

H. Williams, "Splendor in the sour grass."

R. Hackett, discussion leader

N. Mandel, "Urinary tract crystal-membrane interaction."

E. Zindler-Frank, "Factors influencing the development of crystal cells in some legumes."

Cancer

Salve Regina College

R. Kerbel, chair; G. Brodeur, vice chair

The Molecular and Cellular Biology of Tumor-Host Tissue Interactions

12–16 August

Tumor angiogenesis and its inhibition: J. Folkman, discussion leader

B. Zetter, "Mast cells and angiogenesis."

N. Bouck, "Tumor suppression and angiogenesis."

J. Folkman, "Mechanisms of switching to the angiogenic phenotype."

Molecular and cellular basis of cell-cell interactions: G. Poste, discussion leader

A. Raz, "The role of tumor cell lectins: From function to gene."

I. Hart, "Role of CD44 expression in human melanoma metastasis."

H. Rubin, "High-frequency growth enhancement underlies low-frequency neoplastic cell transformation."

Growth factor and hormonal interactions: B. Zetter, discussion leader

M. Lippman, "Growth regulation of malignant mammary epithelium."

G. Nicolson, "Tissue-specific growth factors in cancer metastasis."

J. Massague, "TGFs as modulators of cell growth."

L. Reid, "Matrix-hormonal regulation of autocrine growth factor expression in hepatomas versus hepatocytes."

Cell-matrix interactions—I: L. Furcht, discussion leader

I. Vlodavsky, "Role of heparanase and matrix bound bFGF in tumor progression and angiogenesis."

M. Newman, "Role of ECM in cell growth regulation by TGF-β1."

S. Dedhar, "Integrin expression and the invasive phenotype of tumors."

Cell-matrix interactions—II: G. Martin, discussion leader

L. Liotta, "Proteases and their inhibitors in malignancy."

P. Chambon, "Novel metalloproteinase gene specifically expressed in stromal cells of breast carcinomas."

H. Dvorak, "Pathogenesis and significance of tumor stroma formation."

M. Bissell, "TGF-β and fibrosis as co-factors in viral carcinogenesis."

Immune interactions in tumor growth and development: M. Kripke, discussion leader

P. Frost, "Genetic manipulation of tumor cell immunogeneity."

R. Reisfeld, "New immunologic-based strategies for the treatment of cancer."

M. Feldman, "Immunotherapy of tumor metastasis via gene therapy."

Microenvironmental modulation of drug resistance: V. Ling, discussion leader

R. Jain, "Physiologic barriers in drug delivery."

B. Teicher, "In vivo alkylating agent resistance: Mechanisms and therapeutic strategies."

S. Thorgeirsson, "Microenvironmental modulation of drug resistance."

V. Ling, "The role of drug-resistant tumor cells in cancer chemotherapy."

Presentations from selected registered participants: B. Kerbel, discussion leader

Six participants selected on the basis of abstracts submitted will present 20-minute talks during this session.

The future: New directions: G. Brodeur, discussion leader

E. Ruoslahti, "Control of cellular properties by extracellular matrix."

J. Fidler, "Liposome-drug macrophage mediated therapy of cancer."

G. Klein, "Conference summary."

Carbohydrates

Tilton School

C. P. J. Glaudemans, chair; B. Fraser-Reid, vice chair

24–28 June

Synthesis and structure of polysaccharides: H. Jennings, discussion leader

L. Backinowsky, R. Carlson; speakers

Gycolipids and glycoproteins. Analysis and function: P. Stanley, M. Ferguson, R. Geyer; speakers

Synthetic carbohydrate chemistry: B. Fraser-Reid, discussion leader

H. Kunz, P. Kovac, K. Suzuki; speakers

Lipophyllic glycosides, synthesis and application: G. Jeffrey, discussion leader

H. van Doren, S. Regen; speakers

Interaction between carbohydrates and proteins: J. Lehmann, discussion leader

D. Ferro, E. Nashed, O. Hindsgaul; speakers

Naturally occurring carbohydrate determinants: G. Aspinall, discussion leader

J. Robbins, J. Magnani; speakers

Physico-analytical carbohydrate chemistry: K. Bock, discussion leader

L. Lerner, P. de Waard, A. Dell; speakers

Glycobiology: R. A. Dwek, discussion leader

Discussion leaders, participants, "Areas of future interest for carbohydrate research."

Some carbohydrate-aspects of the AIDS problem: W. Egan, discussion leader

M. Robins, T. Feizi; speakers

Poster information: Dr. Bert Fraser-Reid, Department of Chemistry, Duke University, Durham, NC 27706, Tel: 919-684-3628.

Catalysis

Colby Sawyer College

G. R. Lester, chair; D. W. Goodman, vice chair

17–21 June

M. White, "Synthesis of catalytically interesting species using electrons and protons."

K. Klier, "Observation of elementary steps in interactions of small molecules with sulfide/oxides by VHR/VHS valence band spectroscopy."

C. Vayenas, "Non-Faradiac electrochemical modification of catalytic activity."

A. Bell, "Sorption and diffusion in zeolites: Predicted and measured behaviors."

G. Haller, "The characterization of Pt/L-zeolite catalyst.

W. Sachtler, "Mono- and bi-functional Pd/zeolite catalysts."

V. Ponec, "Mechanism of the reforming reaction on platinum-bimetallic catalysts."

S. Oh, "Effects of Ce addition on the kinetic behavior of Rh/Al_2O_3 catalysts."

W. Goodman, "What can we really learn from model studies and is it really worth it?"

G. Somerjai, "The building of complex catalyst systems on single crystal surfaces."

S. Ceyer, "Breaking and making methane."

B. Davis, "Sex, lies, and videotapes: some catalytic retrospectives."

L. Schmidt, "Heterogeneous—homogeneous reactions: Thermal and chemical coupling."

G. Meitzner, "Studies with EXAFS of non-metals and metals in catalysts."

Cell Contact and Adhesion

Proctor Academy

C. Buck, chair; L. Reichardt, vice chair

1–5 July

Integrins and intercellular signaling: M. Hemler, discussion leader

F. Sanchez-Madrid, "Receptor modification and signal transduction."

Y. Shimizu, "Multiple functions of T-cell adhesion molecules."

G. Giancotti, "Molecular basis of integrin function."

Extracellular matrices as determinants of cell behavior and physiology: P. Ekblom, discussion leader

F. Watt, "Molecular basis of cell-matrix communication."

J. Schwarzbauer, "Molecular analysis of fibronectin functional domains."

Extracellular matrix and its receptors in developing systems: J.-P. Theiry, discussion leader

S. Zusman, "Integrins and *Drosophila* development."

R. Markwald, "ECM and its receptors in heart development."

D. DeSimone, "Fibronectin and patterning in the developing frog."

Adhesive interactions and the organization of the nervous system

L. Reichardt, "Integrins and nerve cell migration."

C. Goodman, "Molecules required for nervous system organization."

Receptor-cytoskeletal interactions: T. Springer, discussion leader

K. Burridge, "Cytoskeleton and integrin interactions."

M. Takeichi, "Cadherins-cytoskeletal interactions: The role of accessory molecules."

J. Nelson, "Cytoskeletal-membrane interactions: Determinants of cell shape and polarity."

Molecular basis of cell motility: A. F. Horwitz, discussion leader

M. Sheetz, "Dynamics of receptor distribution of the cell surface."

F. Maxfield, "Response of migrating leukocytes to specific extracellular matrices."

Molecular basis of endothelial/leukocyte interactions: E. Butcher, discussion leader

M. Bevilacque, "Lec CAMs and their ligands and relevance to leukocyte/endothelial cell interactions."

S. Albelda, "PECAM and the endothelial cell organization."

T. DeFougerolles, "The ICAMs and their function in lymphocyte-endothelial interactions."

Proteoglycans and laminins: Their structure, function and organization.

J. Hassell, "Proteoglycans in the developing cornea and other tissue."

A. Chung, "Molecular organization of the intactin/laminin complex."

Cell communication and development: D. McClay, discussion leader

E. Wieschaus, "Adhesive events during *Drosophila* development."

R. Horvitz, "Cell interactions of the neurogenic lineage in *C. elegans*."

There will be a poster session daily from 4:00 p.m. to 6:00 p.m.

Solid-State Studies in Ceramics

Holderness School

M. P. Harmer, chair; E. R. Fuller, Jr., vice chair

Ceramics with Super Electrical and Supermechanical Properties

29 July–2 August

Super electrical properties of ceramics and phase transformations: D. M. Smyth, discussion leader

L. E. Cross, "Possibilities for super-responses in ceramic materials."

J. Krumhansl, "Physics, phenomenology, and meso structures in displacive transformations."

Super mechanical properties of ceramics and phase transformations: R. Stevens, discussion leader

A. H. Heuer, "Supertough transformation toughened zirconia ceramics."

N. MacMillan, "Limits to the mechanical properties of solids."

Smart ceramics and actuators: R. E. Newnham, discussion leader

C. Rogers, "Intelligent material systems: Recent progress and research needs."

A. Bell, "Tailoring of materials for actuator applications."

Super sensors and fine-scale ferroelectrics: H. Tuller, discussion leader

R. W. Whatmore, "Ferroelectric ceramics for uncooled high-performance thermal imaging."

K. Uchino, "Ferroelectric properties of ultrafine particle/grain size ceramics."

Super dielectric thin films: D. A. Payne, discussion leader

J. F. Scott, "Ceramic ferroelectric thin film memories."

A. Kingon, "Multicomponent oxide thin films: The achievable and future possibilities."

Superconducting ceramics: T. M. Shaw, discussion leader

D. C. Larbalestier, "Critical issues for critical currents in high-temperature

superconductors."

N. Alford, "Microstructure-property relationships in high T_c superconductors."

Super properties by nanoscale processing: H. M. Chan, discussion leader

K. Niihara, "Superstrong ceramics by nanodispersion strengthening."

R. P. Averback, "Sintering and deformation properties of nanophase ceramics."

A. W. Pense, "Super surprises in engineering materials."

Phase transformations: R. M. Cannon, discussion leader

A. G. Khachaturyan, "Structure transformations during ordering and decomposition."

P. Clapp, "Nucleation of martensite in ceramic systems."

Chemical Oceanography

Kimball Union Academy

C. Lee, chair; P. Froelich, vice chair

Chemistry at Oceanic Interfaces—An Interdisciplinary Approach

12–16 August

Water column interfaces: E. Druffel, discussion leader

F. Azam, "Mechanisms in bacteria-organic matter interactions in the sea."

R. Sherrell, "Reaction at the solution/particle interface: Effects on oceanic trace element transport."

J. Goldman, "Potential impact of large diatom aggregation on water column chemistry and new production."

Discussion leader to be announced

I. Koike, "Character of non-living submicron particles in the ocean."

B. Anderson, "Chemical fluxes between continental shelves and the ocean interior."

Sediment-water interfaces: discussion leader to be announced

C. Reimers, "Oxygen utilization and CO_2 production at the interface of hemipelagic sediments."

L. Mayer, "Mineral-organic associations and sedimentary organic matter preservation."

S. Henrichs, "Amino acid adsorption processes in marine sediments."

Discussion leader to be announced

B. Martin, "Is dissolved organic carbon a significant component of the benthic carbon cyclic?"

B. Aller, "Diagenetic reaction rates and fluxes in Amazon shelf sediments."

Air-sea interface: discussion leader to be announced

D. Kieber, "Photochemistry of the air-sea interface: Unique aspects and potential impacts on chemical and biological processes."

J. Moffett, "Trace element geochemistry in surface waters: Role of aeolian deposition and in situ processes."

J. Cullen, "What does phytoplankton tell us about sea-surface slicks?"

River-ocean interface: discussion leader to be announced

J. Ertel, "Transformation of DOC to POC in estuaries."

W. Moore, "Elucidating river-ocean interactions using natural radionuclides."

Colloid-water interface: discussion leader to be announced

C. Lancelot, "Mucilaginous substances from *Phaeocystis:* Production, physiological role, and fate in the water column."

Oxic-anoxic interface: discussion leader to be announced

D. Repeta, "Pigments as tracers for anoxygenic photosynthesis in the Black Sea."

H. DeBaar, "Geochemistry of rare earths and other metals at oxic-anoxic interfaces."

J. Hedges, "Measurements of DOC—Where do we stand now?"

Chemotherapy of Experimental and Clinical Cancer

Colby Sawyer College

M. Colvin, chair; J. S. Lazo, vice chair

15–19 July

K. Kohn, discussion leader

A. E. Pegg, "06-alkylguanine-DNA alkyltransferase."

E. L. Loechler, "Repair of nitrogen mustard crosslinks."

J. M. Essigman, "Recognition and repair of cisplatin damaged DNA."

I. D. Goldman, discussion leader

F. M. Sirotnak, "Folate transport."

C. E. Cass, "Nucleoside transport."

A. B. Pardee, discussion leader

J. Pines, "Cyclin and the regulation of cell division."

D. Beach, "Regulation of the cell cycle."

J. Fridovich-Keil, Q-P. Bou, "Thymidine kinase as a marker of S-phase regulation."

P. H. Wiernik, discussion leader

S. B. Horwitz, "Taxol."

E. B. Rowinsky, "Clinical and pharmacologic studies of taxol."

P. W. Melera, discussion leader

E. R. Fearon, "Molecular evolution of colon cancer."

A. J. Levine, "Tumor suppressor gene."

S. M. Astrin, "Oncogenes in human cancer."

M. Colvin, discussion leader

Poster presentations

J. S. Lazo, discussion leader

M. M. Cornwell, "Regulation of mdr expression."

H. S. Friedman, "Glutathione resistance in human tumors."

V. Ling, "A membrane protein overexpressed in cisplatin resistance."

Perspectives in chemotherapy

J. A. Montgomery, "Approaches to selectivity of antitumor drugs."

E. Frei, III, "Clinical perspectives on selectivity of antitumor drugs."

R. C. Jackson, discussion leader

R. L. Seither, "Mechanisms of antifolate action."

G. Powis, "Inhibitors of inositol synthesis."

Chemistry and Physics of Coatings and Films

Colby Sawyer College

G. R. Pilcher, chair; A. K. St. Clair, vice chair

29 July–2 August

Opening remarks; G. Pilcher

C. E. Hoyle, discussion leader

C. Decker, "UV radiation curing of organic coatings: Kinetic analysis of ultrafast reactions."

E. Reichmanis, "Radiation-sensitive polymer coatings for microelectronic device applications."

P. W. Lenney, discussion leader

J. W. Holubka, "Theoretical modeling of polymer-surface interactions."

T. Nguyen, "Mechanisms and Models of the degradation of protective coatings on steel exposed to electrolytes."

J. O. Stoffer, discussion leader

F. Dowell, "Super-strong polymers: Films and coatings."

J. M. Vergnaud, "Plasticized PVC sheets with low matter transfer: Modeling of the process."

V. D. McGinniss, "Films in space."

F. N. Jones, discussion leader

J. M. Calvert, "Photochemistry and high-resolution patterning of self-assembling films."

R. A. Dickie, discussion leader

J. H. Bryson, "Corrosion response of organic coatings to strain."

P. J. Moreland, "Metal/polymer interfacial films of the pyroaurite type beneath coatings."

J. W. Martin, discussion leader

C. A. Brown, "Fractal analysis of engineering surface topographies."

B. H. Kaye, "Fractal analysis applied to pigments in coatings."

J. B. Saunby, discussion leader

A. J. Reuvers, "Rheology of waterborne dispersions as affected by associative thickeners."

M. Aldissi, "Conductive latices."

J. Ugelstad, "Investigations into magnetic, monodispersed particles, and miniemulsion polymerization."

R. J. Himics, discussion leader

F. L. Floyd, R. M. Holsworth, "Random clustering of dispersed systems."

A. K. St. Claire, discussion leader

W. J. Koros, "Structure property considerations in solution diffusion membrane and barrier applications."

P. R. Young, "Long duration exposure facility (LDEF) exposure of selected coatings and films."

Condensed Matter Physics

Brewster Academy

G. Thomas, chair; S. A. Kivelson, vice chair

10–14 June

Lightly doped quantum antiferromagnets

A. Auerbach, S. Chakravarty, S-W. Cheong, V. Emery, M. Kastner, B. Shraiman, G. Yu, A. J. Heeger; speakers

Metals with unusual excitations

P. W. Anderson, S. Barrett, C. P. Slichter, L. H. Greene, T. W. Jing, N. P. Ong; speakers

Collective fluctuations in superconductors

R. C. Dynes, M. P. A. Fisher, J. E. Lukens; speakers

Corrosion

Colby Sawyer College

N. Birks, chair; D. MacDonald, vice chair

15–19 July

New techniques of observation and measurements: D. MacDonald, session chair

Instrumental analysis topics to be arranged.

E. W. King, "Measurement of metal-scale interface bond strength."

Sources and effects of stress on oxide film formation: M. Schutze, session chair

D. A. Shores, "Interfacial stress generation using in situ x-ray techniques."

M. F. Stroosnijder, "Effect of externally applied stress on the high-temperature oxidation of metals."

Deterioration of ceramics in oxidizing environments: R. E. Tressler, session chair

Topic to be arranged.

K. Luthra, "Oxidation of SiC, Si_3N_4, and ceramic composites."

Volatility of oxides at high temperatures: M. J. Bennett, session chair

N. Jacobson, "Volatility of oxides at high temperature."

Related topic to be arranged.

Coatings and surface modifications: J. Smialek, session chair

R. Mevrel, "Influence of coatings on oxidation and mechanical properties of alloys."

R. A. Rapp, "Codeposition of diffusion coatings by pack cementation."

Effects of chlorine and chlorides on metal oxidation: P. Hancock, session chair

M. McNallen, "Effects of chlorine on the oxidation of metals."

H. J. Grabke, "Effects of chlorides on the oxidation of metals."

Oxidation of intermetallics: G. C. Wood, session chair

G. H. Meier, "Problems in the oxidation of intermetallic compounds."

L. Singheiser, "Mechanism in the oxidation of intermetallic compounds."

Oxidation of metals as a production route: D. J. Young, session chair

A. Nagelberg, "Production of ceramincs by the oxidation of liquid metals."

Oxidation of metals as a production route

K. Sandage, "Oxidation of solid alloys to form superconductors."

Future requirements: R. McCarron, session chair

J. Stringer, R. Perkins, "Future materials and the research directions required to evolve them."

Crystal Growth

Plymouth State College

M. A. DiGiuseppe, chair; M. E. Glicksman, vice chair

15–19 July

Electro-optic and non-linear crystalline structures: A. L. Gentile, discussion leader

P. Bennema, "Theories on crystal growth and morphology: Application to garnets, BGO, KTP, BBO, and other crystals."

T. Pollak, "$ZnGeP_2$: Crystal growth and non-linear optical properties."

N. B. Singh, "Recent advances in organic crystals for non-linear optical applications."

Electro-optic and non-linear crystal characterization: G. Blom, discussion leader

R. C. Powell, "Optical characterization of photorefractive and laser materials."

H. Klapper, "X-ray topographic characterization of electro-optic crystals."

Short verbal presentations of posters: E. A. Giess, discussion leader

New issues on bulk crystal growth: E. D. Bourret, discussion leader

H. Wenzl, "Thermodynamic analyses of GaAs crystal growth processes."

R. Triboulet, "Homosolvent and heterosolvent solution growth of bulk II–VI semiconductor crystals with emphasis on CdTe, ZnTe, and ZnSe."

Melt and solution growth fundamentals: S. R. Coriell, discussion leader

D. Hurle, "Twinning during the melt growth of zinc blende and diamond cubic crystals."

I. J. Alexander, "Modeling interface dynamics on different length scales."

S. J. Lipson, "Experiments on the surface kinetic contributions to the growth of crystals from solution."

Crystal structures for novel devices: M. Brown, discussion leader

W. A. Bonner, "Bulk ternary III–V single crystals for novel substrates and device structures: LEC growth and characterization."

J. Maserjian, "MBE engineering of novel semiconductor devices using abrupt doping profiles."

Crystal growth of nanostructures: H. Temkin, discussion leader

L. R. Harriott, "In situ nanostructure fabrication and overgrowth using finely focused ion beams and molecular beam epitaxy."

D. Dapkus, "Laser assisted atomic layer epitaxy."

L. T. Canham, "Si nanostructures that emit visible light at room temperature."

Reduced dimensional crystal growth: M. L. Steigerwald, discussion leader

M. Kanatzidis, "Chemical perspectives on the formation of old and new solid state chalcogenides."

M. F. Jarrold, "Silicon clusters: Chemistry and structure."

Characterization of crystalline microstructures: D. R. Myers, discussion leader

A. T. Macrander, "High resolution x-ray diffraction from compound semiconductor epitaxial layers and interfaces."

D. N. Seidman, "Atomic scale observation of chemical composition/structure relationships for internal interfaces."

E. D. Jones, "Magneto-luminescence for the characterization of quantum-well heterostructures."

Developmental Biology

Proctor Academy

T. Schupbach, co-chair; H. Weintraub, co-chair

24–28 June

Embryonic axis formation: C. Nusslein-Volhard, discussion leader

J. Kimble, C. Jurgens; speakers

Embryonic pattern formation: M. Kirschner, discussion leader

R. Kay, D. Melton, J. Smith, J. Priess, H. Weintraub: speakers

Receptors and cell signaling: G. Rubin, discussion leader

R. Axel, J. Goldstein, L. Zipursky, A. Spradling, S. Artavanis; speakers

Transcriptional regulatory elements in development: D. Baltimore, discussion leader

E. Davidson, T. Maniatis, M. Groudine, K. Yamamoto; speakers

Genetic pathways of development: I. Herskowitz, discussion leader

P. Marack, F. Banuet, V. Chandler, C. Georgeopolous; speakers

Cytoplasmic localization and the role of the cytoskeleton in development: B. Alberts, discussion leader

E. Weischaus, K. Mowry, T. Schupbach, R. Lehman; speakers

Mechanisms of cell fate determination: W. Wood, discussion leader

J. Posakony, T. Cline, P. Sternberg, J. McGhee; speakers

Cell type specification: S. Tilghman, discussion leader

J. Rossant, A. McMahon, N. Jenkins, R. Jaenisch, N. Copeland; speakers

Structural motifs and function: S. McKnight, discussion leader

D. Wiley, D. Koshland, M. Ptashne, P. Kim; speakers

Drug Metabolism

Holderness School

G. T. Miwa, chair; G. Wilkinson, vice chair

15–19 July

Activity and reactivity of phase II conjugates: L. Z. Benet, discussion leader

L. Z. Benet, "Acyl glucuronides: Potential toxicity mediators."

T. Baillie, "Glutathione conjugates as potential vehicles for the transport of reactive cytotoxic intermediates."

J. L. Stevens, "Nephrotoxic cysteine conjugates: Linking reactive metabolites to cellular and molecular responses."

Novel drug metabolism reactions: J. Parli, discussion leader

L. M. Tremaine, "Biotransformation of the secondary amine sertraline; evidence for the formation of a novel carbamic acid ester glucuronide."

K. P. Vyas, "Biotransformation of xenobiotics via dehydrogenation; a novel cytochrome P-450 catalyzed reaction."

Role of peroxidases in drug metabolism: J. A. Thompson, discussion leader

P. R. Ortiz de Montellano, "Structure and mechanism of peroxidases."

T. E. Eling, "Xenobiotic metabolism catalyzed by prostagladin H. synthase."

J. Uetrecht, "Involvement of myeloperoxidase in mechanisms of adverse drug reactions."

Flavoprotein monooxygenases: J. R. Cashman, discussion leader

D. E. Williams, "Regulation of the pulmonary flavin-containing monooxygenase."

J. R. Cashman, "Structural aspects of the hepatic flavin-containing monooxygenase."

Drug metabolism in autoimmune disease: L. R. Pohl, discussion leader

B. K. Park, "The chemical and biochemical basis of drug hypersensitivity."

L. R. Pohl, "Characterization of several endoplasmic reticulum neoantigens in autoimmune hepatitis produced by inhalation anesthetics."

E. F. Johnson, "Cytochromes P-450 as autoantigens in autoimmune liver disease."

The disposition of proteins and oligonucleotides: B. Ferraiolo, discussion leader

M. A. Mohler, "The metabolism of recombinant therapeutic proteins."

P. Iversen, "The disposition of phosphorothioate oligonucleotides."

Expression of drug metabolizing enzymes: Applications to the pharmaceutical industry: C. B. Pickett, discussion leader

F. P. Guengerich, "Expression of human cytochrome P-450 enzymes in yeast and bacteria."

S. Wrighton, "In vitro models of human drug metabolism."

R. Armstrong, "Expression and mutagenesis of conjugating enzymes."

Drug metabolism in industry, academia and clinical practice: Keynote speaker, R. Armstrong

New analytical approaches in drug disposition: G. R. Wilkinson, discussion leader

F. P. Abramson, "Stable isotopes or heteroatoms as tracers in drug metabolism studies using mass spectrometry."

J. K. Nicholson, "NMR-based strategies applied to drug metabolism and quantitative structure-metabolism relationships."

Dynamics of Gas Surface Interaction

Proctor Academy

P. J. Estrup, chair; H. Metiu, vice chair

5–9 August

M. Cardillo, discussion leader

D. Auerbach, "The activated adsorption of hydrogen on copper: 150 years of confusion."

J. Norskov, "Theoretical studies on molecule-surface interactions."

Y. Chabal, discussion leader

G. Ewing, "CO on NaCl: Model system for studying surface dynamics."

P. Guyot-Sionnest, "Dynamics of adsorbate-substrate vibration; H on Si (III)."

R. Cavanaugh, discussion leader

T. Heinz, "Femtosecond dynamics of desorption: Real time investigations."

W. Gadzuk, "Electron femtosecond chemistry at surfaces."

C. Harris, "Spectroscopy of electrons at metal-insulator interfaces."

J. Yates, discussion leader

D. A. King, "Direct measurements of adsorption heat on single crystals."

G. Ertl, "Nonlinear dynamics in surface reactions."

J. Doll, discussion leader

P. Toennies, "High-resolution He atom scattering studies of free and frustrated molecular motion."

P. Feibelman, "Co-valency in self diffusion on metals."

D. Eigler, "Atomic and molecular manipulation with an STM."

R. Gomer, discussion leader

J. Tully, "Chemistry at metal surfaces: Molecular dynamics with electronic transitions."

M. Weaver, "Dynamical processes at the solid-liquid interface."

S. Sibener, discussion leader

M. Legally, "STM studies of fundamental mechanisms in film growth."

G. Comsa, B. Poelsma, "Kinetic effects in homoepitaxy."

K. F. Jensen, "Fundamental processes in chemical vapor deposition."

S. Ceyer, discussion leader

R. Madix, "Adsorption and reactions on metal surfaces."

P. Norton, "Dissolution, segregation, and precipitation at surfaces."

Elastin

Kimball Union Academy

F. W. Keeley, chair; R. M. Senior, vice chair

29 July–2 August

Genes coding for elastin and elastin-associated proteins: J. Rosenbloom, C. D. Boyd, discussion leaders

J. Rosenbloom, "DNA sequence elements controlling transcription of the tropoelastin gene."

R. Pierce, C. D. Boyd, "Alternate splicing of tropoelastin mRNA."

L. Sandell, "Alternate exon usage in collagen genes—lessons for other matrix proteins."

J. Uitto, "Localization of the tropoelastin gene."

L. Peltonen, M. Godfrey, A. Christiano, J. Rosenbloom, "Defects of elastic fiber genes."

Proteins of the microfibrillar complex—fibrillin, MAGP, lysyl oxidase: L. Y. Saka, discussion leader

L. Y. Sakai, M. Gibson, H. Kagan; speakers

Extracellular assembly of elastin: R. P. Mecham, discussion leader

R. P. Mecham, "Receptor-mediated

assembly of elastin."

M. Rabinovitch, "Proteoglycans and elastic fiber assembly."

L. E. Grosso, "Recognition signals and receptor domains."

Regulation of elastin synthesis in development and disease: J. M. Davison, discussion leader

J. Uitto, V. M. Kahari, "Cis-acting elements."

W. C. Parks, J. M. Davidson, "Hormonal control."

L. Langille, G. Bressan, D. Quaglino, "Developmental Regulation."

F. W. Keeley, E. A. Perkett, K. Stenmark, D. Quaglino, "Pathological modulation."

Elastin degradation and repair: R. M. Senior, R. B. Rucker, discussion leaders

J. Hoidal, H. Chapman, S. Shapiro, "Newly recognized elastolytic proteinases."

C. Nathan, S. Weiss, "Interactions of inflammatory cells with the extracellular matrix."

J. Nadel, D. Perlmutter, "Physiological responses to elastolytic proteinases."

P. Stone, E. Campbell, "Elastic fiber repair and turnover."

Elastomers

Colby Sawyer College

G. Holden, chair, B. Gunesin, vice chair

8–12 July

Flow, miscibility, and diffusion:

A. I. Isayev, "Nonlinear viscoelastic plastic flow of rubber compounds."

C. M. Roland, "Polyisoprene-polybutadiene miscible blends."

J. M. Vergnaud, J. Bouzon, "Process of absorption and desorption of liquids by elastomers."

Toughening plastics:

R. Pierson, "Toughening epoxies by the use of elastomers."

C. B. Bucknall, "Role of elastomeric phase in toughening rigid polymers."

Synthesis:

T. C. Chung, "Functionalization of polyolefins using borane monomer and polymer approaches."

K. B. Wagener, "Acyclic diene metathesis polymerization."

J. E. Puskas, G. Kaszas, J. P. Kennedy, "New block copolymers by carbocationic techniques."

R. P. Quirk, "Applications of double diphenylethylene derivatives to prepare hydrocarbon-soluble dilithium initiators and to synthesize hetroarm star-branched block copolymers."

Synthesis:

Y. Gnanou, P. Rempp, N. Mougin, "Synthesis of a novel elastomer made of well-defined polydimethylsiloxane and polyamide sequences."

R. Stadler, "Supermolecular structure in statistical copolymers—a new concept for thermoplastic elastomers."

Networks:

V. Galiatsatos, "Transformation of the end-to-end vector of a network chain in response to macroscopic deformation."

R. F. T. Stepto, "Modeling the formation and properties of end-linked networks."

M. Gottlieb, "Ultrasonic methods in the study of network-forming reactions."

G. B. McKenna, "Mechanical and swelling behavior in rubbers—the crosslink dependence of the chi-parameter and the Frenkel-Flory-Rehner hypothesis."

Networks:

R. Jerome, "Telechelic polydienes as precursors of thermoreversibly crosslinked and reinforced rubbers."

B. J. Bauer, "Phase separation in crosslinked polymer networks by small-angle neutron scattering."

Thermoplastic elastomers:

L. Gilliom, "Solid-state hydrogenation of elastomers."

P. T. Hammond, H. W. Beckham, M. F. Rubner, "Recent advances in the investigation of diacetylene-functionalized elastomers."

S. Fakirov, "Phase and deformation behavior of polyetherester thermoplastic elastomers as revealed by small-angle x-ray scattering."

S. L. Cooper, "Morphology and crystallization kinetics in polyether-polyester thermoplastic elastomers."

History:

M. Morton, "The history of rubber."

Fillers and vulcanization:

D. S. Campbell, "Characterization of sulfur-cured networks using high field proton NMR."

A. G. Thomas, "Effect of carbon black filler on the tear strength of elastomers."

M. Gerspacher, "Advanced carbon black characterizations and their relations with elastomers reinforcement."

A. Coran, "Kinetics of carbon black dispersion in rubbers."

Enzymes, Coenzymes and Metabolic Pathways

Kimball Union Academy

R. N. Armstrong, co-chair; F. M. Raushel, co-chair

1–5 July

Radical reactions and oxidation mechanisms: R. G. Mathews, discussion leader

J. W. Kozarich, "Pyruvate formate-lyase: Probing a homolytic reaction."

P. Knowles, "Active site structures in copper-containing oxidases: Potential for novel catalysts."

J. P. Klinman, "Diooxygen activation in dopamine β-hydroxyase: New probes of intermediates and mechanism."

Models for molecular recognition and catalysis: R. Gandour, discussion leader

F. M. Menger, "On the mechanisms of enzyme action."

J. Rebek, "Recognition, replication, and catalysis in model systems."

W. L. Jorgensen, "Molecular recognition in solution: A computational view."

Enzyme structure and mechanism I: D. Julin, discussion leader

T. Steitz, "High resolution structure of the Rec A filament."

T. Begley, "Photoenzymes: A chemically novel class of biocatalysts."

R. H. Ables, "Enzymic reduction of amino acids."

Physical organic studies of reaction mechanisms: T. C. Bruice, discussion leader

A. J. Kresge, "Generation and study of enols and other reactive species; some systems of biological interest."

W. W. Cleland, "Mechanisms of phosphoryl transfer."

W. P. Jencks, "Reaction mechanisms—appearance and reality."

Protein folding: G. Farber, discussion leader

K. Dill, "On the origins of structure in globular proteins."

J. Moult, "Analysis of protein folding pathways."

C. R. Matthews, "The progressive development of structure and cooperativity in the folding of dihydrofolate reductase."

F. Schmid, "Mechanism and catalysis of slow steps in protein folding."

Biosynthesis and metabolism: G. D. Reinhart, discussion leader

E. K. Jaffee, "The biosynthesis of porphobilinogen; the fundamental pyrrole from which nature creates a spectrum of functional pigments."

A. I. Scott, "Mechanistic and evolutionary aspects of porphyrin and corrin biosynthesis: A survey of the last 4 billion years."

D. Abramowitz, "Aerobic and anaerobic PCB metabolism."

Enzyme structure and mechanism II: G. M. Carlson, discussion leader

C. T. Walsh, "Molecular studies on protein tyrosine kinases and protein tyrosine phosphatases."

S. J. Remington, "Structure and mechanisms of citrate synthase."

D. Ringe, "Genetic and structural approaches to molecular recognition."

B. Metcalf, "The HIV protease—its inhibitions and virological consequences."

Protein design: J. A. Gerlt, discussion leader

D. Hilvert, "Antibody catalysis: Recent developments."

B. L. Vallee, "The biochemistry of angiogenin."

Oligomeric enzymes: J. Sikorski, discussion leader

P. A. Frey, "UDP-galactose-4-epimerase from *E. coli:* The structure at 2.5 Å."

J. J. Villafranca, "Regulation and catalysis of glutamine synthetase."

T. O. Baldwin, "Folding of luciferase subunits and assembly of the active heterodimeric enzyme."

Epithelial Differentiation and Keratinization

Tilton School

B. A. Dale, chair; J. Rheinwald, vice chair

29 July–2 August

Regulation and function of keratin genes in development: D. Roop, discussion leader

R. Oshima, "Expression and function of K8 and K18 in development of epithelia."

B. Lane, "Possible functions for keratin 19: The tail-less keratin."

J. Schweizer, "Regulation and expression of murine keratin 13 in normal and transformed epithelia."

Epithelial differentiation in non-keratinizing tissues: T-T. Sun, discussion leader

T-T. Sun, "Bladder differentiation and expression of uroplakins."

M. Bissel, "The role of microenvironment and extracellular matrix on regulation of gene expression in the mammary gland."

Retinoids and stratified squamous epithelial differentiation: M. Blumenberg, discussion leader

V. Giguere, "Transduction of the retinoid signal."

G. Siegenthaler, "Transport and metabolism of retinoids in human epiderma cells."

J. Rheinwald, "Retinoid receptor regulation of programs of keratinocyte differentiation."

Poster session: Differentiation in epidermis and other epithelia: G. Rogers, R. Rice, discussion leaders

Keratinization: B. A. Dale, discussion leader

P. Steinert, "Loricrin and transglutaminases."

H. Green, "Involucrin: Genetic polymorphisms and evolution."

P. Fleckman, "Regulation of profilaggrin expression."

Cell adhesion molecules: J. Stanley, discussion leader

K. Green, "Desmoplakin."

W. W. Franke, "Desmoglein: A new cadherin."

Regulation of epithelial growth: F. Watt, discussion leader

R. Lavker, "Epithelial stem cells."

A. Jetten, "Markers of differentiation in tracheal epithelium."

H. Moses, "Transforming growth factor β."

Poster session: Growth regulation: J. McGuire, G. Shipley, discussion leaders

Molecular genetic approaches in studies of skin disorders: I. Freedberg, discussion leader

E. Epstein, "Identification of defective genes in epidermal disorders."

E. Fuchs, "Transgenic mice as animal models for human genetic skin disorders."

S. Yuspa, "Oncogenes in carcinogenesis."

Estuarine Processes

New Hampton School

Estuarine Processes at Solute-Particle Interfaces

R. Biggs, chair; J. Farrington, vice chair

24–28 June

J. McN. Seiburth, "Estuarine processes at solute-particle interface."

G. G. Geesey, "Interactions between metal ions and polymeric microbial exopolymers, humic substances, and clays."

H. W. Pearl, "N_2 fixation and denitrification at the solute-particle interface."

R. P. Kiene, "Osmotic solutes and microbal ecology of the solute-particle interface."

A. K. Hanson, "The oxic-anoxic transition zone; An expanded O/R scale for observing inorganic reactions."

N. S. Lewis, "Fabrication of nanometer-sized electrodes and their application to solute-particle interface problems."

S. Seitzinger, "The sediment-water gradient."

V. Klemas, "New remote sensing technologies for detecting air-sea processes."

M. Altalo, "Biological oceanographic processes at the air-sea interface."

Estuarine processes at pycnoclines and fronts: M. Bowman, discussion leader

R. Wilson, J. H. Simpson, P. Weible, W. Boicourt; speakers

D. A. Flemer, "Implications of strong gradients for estuarine ecology."

R. Coffin, "Tracing sources and fate of organic matter in estuarine systems."

J-C. Therriault, "Ergoclines and the implication for estuarine plankton production."

D. DiToro, "Incorporation of gradient information into mathematical models."

Extrachromosomal Elements

Plymouth State College

D. Bastia, chair; J. R. Broach, vice chair

1–5 July

Plasmid replication control by antisense RNA: S. N. Cohen, Chair K. Nordstrom, R. Novick, B. Polisky, S. L. Chao, D. Figurski, speakers

Plasmid replication control by iterons: D. Helinski, chair S. Khan, D. Helinski, D. Bastia, D. Chattoraj, A. Ables, R. Rownd, speakers

Plasmid and chromosome partitioning: S. Austin, chair R. Roberts, M. A. Davis, S. Hiraga, L. I. Rothfield, S. J. Austin, speakers

Viral replication: M. Botchan, chair

B. Sugden, M. Challberg, D. Clayton N. Muzyczka, speakers

DNA replication and amplification: J. Broach, chair

J. Campbell, P. Sadowsky, G. Wahl, M.-C. Yao, speakers

Chromosome organization and segregation: V. Zakian, chair

D. Koshland, L. Clarke, J. Williamson, speakers

Chromosome dynamics: M. Rose, chair

J. Widom, S. Hawley, P. Hieter, B. Oakley, speakers

Transposable elements/DNA amplification: J. Boeke, chair

N. Craig, J. Kinsey, B. Engles, D. Reo, speakers

Plasmids and pathogenesis: J. H. Crosa, chair

M. R. Silverman, S. D. Silver, E. W. Nester, speakers

Fertilization and Activation of Development

Holderness School

B. Storey, chair; L. Jaffe, vice chair

5–9 August

Levels of sperm plasma membrane mosaicism: D. Wolf, discussion leader

M. Edidin, "Defining, scaling, and characterizing membrane domains."

R. Cardullo, "Interaction of sperm plasma membrane sites with zona pellucida."

A. Cowan, "Biogenesis of sperm plasma membrane domains."

Mechanisms of sperm/egg fusion: D. Green, discussion leader

J. Boldt, "Mechanisms of sperm/egg plasma membrane fusion in mouse."

D. McCulloh, "Two physiologic controls of sperm entry in the sea urchin egg: Membrane potential and cytosolic calcium."

Cell cycle in fertilization: I. L. Meijer, discussion leader

K. Swenson, "Regulation of the cell cycle in early clam embryos."

B. Maro, "Microtubules and cell cycle control during mouse egg meiotic maturation and early cleavage."

K. Gould, "Cell cycle regulation of the *S. pombe* cdc2 protein kinase."

Cell cycle in fertilization II: Y. Masui, discussion leader

N. Sagata, "Meiotic arrest effector in oocytes."

M. Lohka, "Regulation of egg nuclear envelope assembly and disassembly in egg extracts."

Activation signaling in gametes I: G. Kopf, discussion leader

P. Saling, "Zona activation of sperm tyrosine kinase."

J. Bleil, "Sperm surface proteins having specific affinity for ZP3."

D. Hardy, "Expression of ZP3 in different cell systems."

Activation signaling in gametes II: L. Jaffe, discussion leader

J. Kurjan, "Cell-cell interactions in yeast mating: The role of a G protein."

M. Gould, "Urechis egg activation by purified sperm peptides."

Genetic models for the study of fertilization: The mouse t-complex: M. A. Handel, discussion leader

L. Silver, "The t-complex genes."

N. Hillman, "Transmission ratio distortion of t-haplotypes."

P. Olds-Clarke, "Consequences of the t-complex for sperm motility and fertilization."

A. Bartke: Introduction

H. Krzanowska, "Genetics of gametes and fertilization in mouse." Calcium movements in activated gametes: H. Florman, discussion leader

M. Terasaki, "Ca^{2+} in the endoplasmic reticulum of sea urchin eggs using fluo-3."

H. C. Lee, "Cyclic ADP-ribose as Ca^{2+} messenger in sea urchin egg activation."

General discussion: The uses and abuses of Ca^{2+} and H^+ probes.

Fiber Science

Colby Sawyer College

A. S. Abhiraman, chair; J. E. Spruiell, vice chair

1–5 July

R. Gilbert, discussion leader

J. O'Brien, "High strength cellulose-based fibers."

F. Mares, "Synthesis, fiber formation, structure, and properties of a new bioadsorbable polymer."

J. Southern, discussion leader

J. Smook, "Solution spinning of 'polar' flexible chain polymers."

L. Rebenfeld, discussion leader

M. Ito, "Drawing behavior of polyethylene 2,6 naphthalate."

S. Lombardi, "Formation, structure, and properties of spider silk."

J. Fellers, discussion leader

R. Ross, "Formation, structure, and properties of pitch-based carbon fibers."

A. J. Pennings, "Tensile behavior of polyethylene and poly(*p*-xylylene) fibers."

P. Schwartz, discussion leader

S. DeTeressa, "Compressive behavior of high-performance fibers and composites."

J. Hearle, discussion leader

J. Moulton, "Conducting polyolefins: coprocessing poly(3-alkyl-thiophenes) with UHMW-PE."

J. MacKenzie, "Solution-based formation, structure, and properties of ceramic fibers."

R. Fornes, discussion leader

S. Picken, "Orientation order in aramid solutions: Relation to fiber properties."

C. Galiotis, "Monitoring the molecular deformation of fibers using laser Raman spectroscopy."

B. Goswamy, discussion leader

E. Schollmeyer, "Textile finishing with super critical fluids."

R. Postle, discussion leader

M. Boyce, "On the translation of yarn properties to woven fabric behavior."

C. Wolff, "Modelization of geotextiles deformation and rupture."

S. Backer, discussion leader

M. C. Assad, A. G. Causa, "Mathematical modeling of elastic and viscoelastic behavior of synthetic fibers."

B. Briscoe, "The transverse ballistic capture efficiencies of surface modified aramid fabrics."

S. Batra, discussion leader

L. Hes, "New methods of measurements of water and water-vapor transmission through fabrics."

H. Zollinger, discussion leader

H. Mark, "Fiber science: Where have we been and where can we expect to wind up?"

R. Armstrong, discussion leader

D. Martin, "Ultrastructural studies of high-performance fibers."

H. George, discussion leader

T. Kikutani, "Fiber structure development through neck-like deformation in high-speed melt spinning."

P. Desai, "Towards prediction of process-morphology relations in melt spinning."

Free Radical Reactions

Colby Sawyer College

D. D. Tanner, chair; M. Newcomb, vice chair

22–26 July

K. U. Ingold, discussion leader

T. C. Bruice, "Radical intermediates in biological systems."

R. B. Silverman, "Free radical chemistry catalyzed by monoamine oxidase."

Poster session

D. A. Singleton, discussion leader

A. Ohno, "The importance of the electron-transfer process to control stereochemistry of the reactions with NAD-analogs."

M. L. Poutsma, discussion leader

Poster session

D. R. Arnold, "Radical ions in photochemistry—emphasis on the radical."

P. Maslak, "Mesolytic cleavage of C-C bonds."

G. A. Russell, discussion leader

G. L. Closs, "Chemistry of weak interactions."

A. L. J. Beckwith, discussion leader

T. V. Rajanbabu, "Carbohydrate radicals in the development of new synthetics methodology."

H. Sakurai, "Hetero radical reactions."

B. Giese, discussion leader

D. H. Barton, "The invention of new radical reaction."

S. F. Nelson, discussion leader

V. Parker, "Factors influencing the reactivity of cation radicals in solution."

E. Denisov, "Nonlinear correlations in kinetics of free radical reactions."

J. M. Tanko, "Radical ion probes. Cyclopropyl carbinyl rearrangements of aryl cyclopropyl ketyl anions."

N. A. Porter, discussion leader

J. M. McBride, "Early radical reactions in the decomposition of solid nitramines."

C. T. Walling, discussion leader

W. G. Bentrude, "The role of radical intermediates in the photochemistry of organophosphorus compounds."

D. M. Camaioni, "Reactions of aromatic radical cations: Mechanisms and kinetics."

Genetic Toxicology

Colby Sawyer College

R. J. Albertini, chair; C. S. Aaron, vice chair

10–14 June

Integrity of the genetic material: R. J. Preston, session chair

G. Holmquist, discussion leader

T. Kunkel, C. Holm, D. Coffee; speakers

Metabolism and tumor promotion: D. Nebert, discussion leader

F. Gonzales, H. Hennings; speakers

Cell proliferation in mutagenesis and carcinogenesis: J. Mirsalis, discussion leader

J. Mirsalis, S. Cohen, J. Popp; speakers

DNA repair, A. vanZeeland, session chair

A. Pegg, discussion leader

V. Bohr, J. Hall; speakers

Evaluation of genotoxic agents: F. Oleson, session chair

R. Tennant, discussion leader

F. Oleson, M. Shelby, J. Tucker; speakers

Reproductive risk assessments: S. Abrahamson, session chair

S. Lewis, H. Mohrenweiser; speakers

In vivo somatic mutations in humans: J. Heddle, session chair

J. Ashby, discussion leader

T. Skopek, A. Morley, J. Cole; speakers

The genetics of cancer: H. Malling, discussion leader

J. Loeb, speaker

Transgenic animals in mutation research: P. Stambrook, session chair

B. Glickman, discussion leader

T. Doetschman, J. Stringer, H. Malling, J. Vijg; speakers

Gravitational Effects in Physico-Chemical Systems

Plymouth State College

F. Rosenberger, chair; N. B. Singh, vice chair

17–21 June

Macromolecular crystallization: A. McPherson, D. A. Saville, discussion leaders

V. A. Erdmann, "Crystallization of ribosomal 5*S* RNAs and the elongation factor EF-Tu under microgravity conditions: A summary of five unmanned missions."

C. E. Bugg, "X-ray diffraction results obtained from protein crystals grown at normal and low gravity."

R. Hilgenfeld, "Crystallization of thermolysin and streptomyces in unmanned space missions."

D. A. Saville, "The role of diffusive-convective transport in protein crystal growth."

Possible mechanisms for structural improvements in protein crystals obtained at reduced gravity; a discussion session

Sedimentation and condensation: B. Feuerbacher, discussion leader

E. Herbolzheimer, "Sedimentation of non-Brownian particles."

L. Ratke, "Influence of sedimentation on coarsening in dispersions."

G. E. Morfill, "Coulomb plasmas in microgravity environments."

Solidification under increased gravity conditions: W. R. Wilcox, D. R. Larson, discussion leaders

R. S. Sokolowski, "Eutectic solidification in an ultracentrifuge."

G. Muller, "Effect of the Coriolis force on semiconductor solidification in a centrifuge."

Fluid dynamic instabilities: J. I. D. Alexander, S. Coriell, discussion leaders

A. Delgado, "Weissenberg effect on non-Newtonian liquids under reduced, modulated gravity; theory and parabolic flight experiments."

J. C. Legros, "Marangoni-Benard instabilities."

S. Biringen, "Parametric instability of Benard convection due to gravity modulation."

Combustion phenomena under reduced gravity conditions: K. Sacksteder, discussion leader

F. L. Dryer, "Combustion of isolated droplets."

P. D. Ronney, "New premixed gas combustion phenomena."

Experiments under short duration reduced gravity: C. Lundquist, J. Salzmann, discussion leaders

H. Rath, "Transport coefficient measurements in drop tower experiments."

J. E. Smith, "Liquid phase sintering in a sounding rocket."

F. J. Jelinek, "Microgravity processing of polymer membranes."

Dynamics of droplets and bubbles: R. H. Davis, D. Frazier, discussion leaders

J. M. Floryan, "Behavior of free polar droplets in electric fields; experimental study under reduced modulated gravity."

R. S. Subramanian, "Motion of bubbles and drops in liquids at reduced gravity."

Statics and dynamics of liquid surfaces: D. Langbein, discussion leader

P. Concus, R. Finn, "Fluid interface behavior under low gravity conditions."

J. Meseguer, "Stability limits and resonances of liquid bridges."

Hemostasis and Thrombosis

Proctor Academy

J. W. Suttie, chair; B. C. Furie, vice chair

10–14 June

D. M. Stern, discussion leader

D. M. Stern, "Endothelial cell receptors for advanced glycosylation end products."

D. B. Rifkin, "Plasminogen activator-growth factor interaction in the subendothelial matrix."

L. Bell, "Angiotensin regulation of vascular cell migration."

E. F. Plow, "Structural determinants of integrins mediating interaction with their ligands."

N. U. Bang, discussion leader

D. J. Loskutoff, "Regulation of PAI-1gene expression in vivo."

N. Pederson, "The receptor for urokinase plasminogen activators."

E. Madison, "Site-directed mutagenesis in the study of TPA and PAI-1 interactions."

N. W. Seeds, "Plasminogen activator and its inhibitors in neural development."

D. F. Mosher, discussion leader

K. T. Preissner, "Structure and function of vitronectin."

S. L. Cooper, "Adsorption of vitronectin to surfaces."

H. Pannekoek, "Modulation of serpin activity by vitronectin."

G. J. Broze, Jr., discussion leader

D. M. Tollefsen, "Interaction of glycosaminoglycans with heparin cofactor II."

D. H. Perlmutter, "Cell surface receptor for serpin-enzyme complexes."

G. P. Vlasuk, "Biochemical and pharmacological evaluation of specific factor Xa inhibitors from ticks and leeches."

G. J. Broze, Jr., "LACI: structure/function."

S. J. F. Degen, discussion leader

J. L. Degen, "Occurrence of neonatal bleeding and hepatocellular carcinoma in transgenic mice expressing urokinase-type plasminogen activator."

L. A. Erickson, "Mice transgenic for human plasminogen activator inhibitor-1 develop venous occlusions: Implications for the role of the fibrinolytic system in thrombogenesis."

K. M. Brinkhous, "Prospects for gene therapy: Animal models of the hemophilias."

S. Shattil, discussion leader

J. Ware, "Structural regulation of von Willebrand factor and platelet GpIb interaction."

P. J. Newman, "The role of PECAM-1 on vascular cell biology."

S. E. Rittenhouse, "Regulation of 3-phosphorylated phosphoinositide metabolism."

B. C. Furie, discussion leader

J. Lawson, "Cooperative activation of hFIX by the extrinsic pathway of coagulation."

P. Lollar, "Proteolytic control of the factor VIII–von Willebrand factor complex."

A. Celi, "The role of PADGEM in coagulation and inflammation."

Plenary lecture

New Horizons session

Deadline for receipt of applications is 30 April 1991. If you are interested in making an oral or poster presentation in the New Horizons session, please submit an abstract along with your application.

Heterocyclic Compounds

New Hampton School

D. J. Hart, chair; L. Jungheim, vice chair

8–12 July

H. Rapoport, "Chirospecific synthesis of heterocycles from amino acid educts."

P. Ornstein, "The preparation of 6-ketodecahydroisoquinoline-3-carboxylates as precursors to conformationally constrained NMDA receptor antagonists."

Speaker to be announced

M. Miller, "Microbial iron chelators as drug delivery agents: Design, synthesis, and study of siderophore-heterocyclic conjugates."

E. Kleinman, "Applications of the tandem claisen-cope rearrangement of 4-allyloxy-2-methylquinolines in the synthesis of quinolone antibacterial agents."

L. Hegedus, "Synthesis of heterocycles by photolytic reactions of chromium carbene complexes."

K. Parker, "Annelations."

S. McCombie, "Recent adventures in heterocyclic chemistry."

T. Mukaiyama, "New synthetic methodology directed toward the chemistry of carbohydrates."

Speaker to be announced

A. Padwa, "Heterocyclic synthesis via rhodium carbenoids."

T. Stevenson, "Insecticidal pyrazolines: Synthesis and structure proof."

W. Kleschick, "Derivatives of bicycle heterocycles containing bridgehead nitrogen atoms as inhibitors of acetolactate synthase."

A. DeCamp, "Stereocontrolled addition of propionate homoenolate equivalent to chiral α-amino aldehydes."

Y. Guindon, "New developments in acyclic stereoselection."

P. Hopkins, "Heterocyclic compounds which react covalently with DNA."

R. Armstrong, "Synthetic studies on the carzinophilin/azinomycin series of antitumor antibiotics."

Speaker to be announced

R. Grigg, "1,3-dipolar cycloaddition reactions of imines and oximes. Versatile methodology for complex heterocycles."

J. Gupton, "New applications of vinamidinium salts in heterocyclic synthesis."

D. Romero, "The synthesis and activity of heterocyclic HIV-1 reverse transcriptase inhibitors."

G. Fleet, "Some simple syntheses from sugars."

M. Kahn, "The design and synthesis of peptidomimetics to block viral receptors."

Holography and Optical Information Processing

Plymouth State College

J. F. Walkup, chair; F. T. S. Yu, vice chair

17–21 June

D. E. Pritchard, "Atom optics."

B. E. A. Saleh, "Optical processing with nonclassical light."

M. N. Islam, "Ultrafast optical logic using solitons."

S. A. Benton, "Synthetic 3-D holography."

J. Tsujiuchi, "Display holography in Japan."

U. P. Wild, "Spectral hole-burning: Applications to data storage and processing—the molecular computer."

C. M. Verber, "Massively parallel optical-to-electronic data transfer."

A. Korpel, "The sound field as a dynamic hologram for generating non-diffracting images."

J. H. Hong, "Adaptive optical neural networks."

B. K. Jenkins, "Optical interconnects for neural networks."

A. E. Chiou, "Reconfigurable optical interconnections using photorefractive holograms."

A. W. Lohmann, "What optics can and cannot do for the computer."

S. Ishihara, "Optical computing in Japan."

K. M. Johnson, "VLSI and liquid crystal spatial light modulators for optical computing architectures."

J. L. Horner, "Correlation with phase only filters."

Hormonal Carcinogenesis

Colby Sawyer College

G. M. Stancel, chair; S. Sukumar, vice chair

29 July–2 August

Prostate cancer: An overview of current progress and concepts: D. Coffey, discussion leader

Basic mechanisms regulating cell growth and function: G. Mueller, discussion leader

G. Todara, "Role of the TGF alpha/EGF family of ligands in autocrine growth."

J. Gorski, "Steroid hormone binding and receptor activation."

C. Daniel, "Negative regulation of mammary growth by TGF beta."

Preneoplastic states and cancer development: I. Russo, discussion leader

S. Sukumar, "Activation of *ras* oncogenes precedes neoplasia in NMU-induced carcinogenesis."

E. Fearon, "Genetic alterations underlying colorectal tumor progression."

Estrogen and progestin actions: D. Loose-Mitchell, discussion leader

S. Haslem, "Ontogeny of mammary responsiveness to steroids and the possible role of the stroma in mediating hormone actions."

L. Murphy, "Mechanisms associated with the development of endocrine resistance in human breast cancer."

K. Henrikson, "Estrogen-mediated uterine development: Role of tissue factor and thrombin."

Steroid actions in the prostate: J. Norris, discussion leader

M. Tenniswood, "Epithelial-stromal interactions and the androgen sensitivity of the prostate epithelium."

I. Leav, "The interaction of androgens and estrogens in the induction of proliferative prostate lesions."

Hormone production and biotransformation: D. Henderson, discussion leader

R. Brueggemeier, "Formation of estrogens and estrogen metabolites in normal and tumor cells."

R. Santen, "Autocrine and paracrine effects of estrogen synthesis by human breast tumors."

G. Gordon, "Possible mechanism for dehydroepiandrosterone inhibition of growth and differentiation."

Cellular targets for hormonal modification: K. Korach, discussion leader

J. Liehr, "Mechanisms of genotoxicity of estrogens."

M. Metzler, "Microtubule proteins as targets for carcinogenic estrogens."

Hormones and neoplastic transformation: J. Li, discussion leader

S. Nandi, "Mouse mammary carcinogenesis: Possible role of mitogens."

J. McLachlan, "Control of uterine growth and differentiation: Implications for estrogen-associated neoplasia."

S. Li, "Cytogenetic changes in the hamster kidney during estrogen carcinogenesis."

Keynote address; L. Jones

H. Bern, "Research approaches to mammary tumorigenesis and the human syndrome of intrauterine exposure to DES."

Recent approaches to hormonal carcinogenesis: G. Stancel, discussion leader

R. Coffey, "Mammary neoplasia in MMTV-TGF alpha transgenic mice."

T. Thompson, "Mechanisms of progression in oncogene-induced prostate cancer."

R. Dickson, "Growth factors and oncogenes in the regulation of normal and neoplastic growth."

Hormone Action

Kimball Union Academy

J. Rosen, co-chair; S. McKnight, co-chair

5–9 August

Regulation of genes that control cholesterol: M. Brown, speaker

Hormones and development

P. Devreotes, "Receptor/G-protein signaling pathway control development in dictyostelium."

G. Rubin, "Signal transduction during development of the *Drosophila* retina."

I. Dawid, "Molecular studies on embryonic induction."

B. Spiegelman, "Regulation of gene expression in adipocyte development."

Steroid receptor structure and function

J. A. Gustafsson, "Structure and function of the three domains of the glucocorticoid receptor."

W. Schrader, "Function of progesterone receptor phosphorylation."

B. Pratt, "Relationship of hsp90 to steroid receptor function."

L. Gudas, "Embryonic teratocarcinoma differentiation as a model for the analysis of retinoic acid action."

Steroid receptors and gene transcription

M. Beato, "Multiple levels of transcription control at the MMTV-promoter."

W. Wahli, "Analysis of hormone-dependent and liver-specific in vitro transcription from the vitellogenin promoter."

E. Milgrom, "The cellular traffic of the progesterone receptor."

E. Wilson, "Molecular analysis of androgen receptor function."

Neuroendocrine systems

R. Mauer, "Multihormonal regulation of prolactin gene transcription."

J. Nilson, "Hormonal regulation and tissue-specific expression of the genes encoding pituitary gonadotropins."

J. Drouin, "Cell-specific regulation of the POMC gene."

R. Steiner, "Regulation of neuropeptide gene expression in the brain."

Signal transduction I: Trans-membrane signaling

R. Reed, "G proteins, adenylyl cyclase, and ion channels in sensory transduction."

D. Garbers, "The guanylyl cyclase receptor family."

C. Strader, "Molecular analysis of β-adrenergic receptors."

E. Fischer, "Tyrosine phosphatases."

Signal transduction II: Second messengers and gene expression

A. Means, "Calmodulin regulation of cell growth and differentiation."

M. H. Cobb, "ERKs, a family of protein kinases regulated by phosphorylation."

H. Shulmann, "A protein kinase mediating effects of calcium-linked hormones."

S. McKnight, "Role of cAMP-dependent kinases in gene regulation."

Growth factors and oncogenes studied in transgenic mouse models

F. Grosveld, "Regulation of the globin genes during development."

D. C. Lee, "Expression of TGFα and related growth factors in transgenic mice."

L. Robertson, "Role of the IGF-II gene in vivo; consequences of germ line modification via gene targeting."

P. Mellon, "Immortalization of neural and neuroendocrine cells by targeted oncogenesis."

Special topics

M. Green, "Mechanisms of viral and cellular transcriptional activators."

H. Bourne, "G protein oncogenes."

Hematopoietin receptor gene family, structure, and function

P. Kelly, "The GH/PRL/cytokine receptor family: Analysis of domains involved in ligand binding and signal transduction."

A. D'Andrea, "Signal transduction by erythropoietin."

B. Groner, "EGF, glucocorticoid hormone, and prolactin action are sequentially required to induce the beta casein promoter in HC11 mammary epithelial cells."

Hydrogen-Metal Systems

Tilton School

R. M. Cotts, co-chair; R. Kirchheim, co-chair; P. Jena, vice chair

15–19 July

New materials

D. Noreus, "Synthesis and properties of ternary hydrides containing formal low valent transition metal-hydrogen complexes."

D. M. Cox, "Abnormally large hydrogen uptake on small metal clusters."

G. F. Giuliani, "Electron band structure of light metal hydrides."

Diffusion of low mass particles

A. Seeger, "Diffusion and location of light positively charged particles in metals."

E. B. Karlsson, "Tunneling of positive muons in normal and superconducting aluminum."

Hydrogen effects on materials behavior

H. K. Birnbaum, "Hydrogen effects on deformation and fracture."

H. Vehoff, "Hydrogen effects on interfacial fracture and on the dutile/brittle transition of metals."

S. M. Myers, "Interaction of hydrogen with defects in metals."

Hydrogen dynamics

T. J. Udovic, "Recent results of hydrogen dynamics in rare earth metals."

Hydrogen-induced effects

J-Y. Lee, "H-induced amorphization behavior of rare earth-transition Laves compounds and Zr-base alloys."

Hydride batteries

J. O. Strom-Olsen, "Rechargeable electrolyte cells using amorphous hydride electrodes."

Applications of electrochemistry

H. Zuchner, "Electrochemical techniques for studying diffusion, permeation and solubility of hydrogen in metals and intermetallic alloys."

H. Kaesche, "The role of hydrogen in stress corrosion cracking and corrosion fatigue."

Hydrogen diffusion

A. V. Skripov, "NMR studies of H motion in Laves phase hydrides."

H. Wipf, "Hydrogen diffusion in Ti- and Y-hydrides: Two examples for diffusion in a concentrated lattice gas."

N. M. Zimmerman, "Time-dependent ($1/f$) resistance noise due to motion of H in Pd and PdSi films."

Panel on hydrogen siting in disordered materials

R. C. Bowman, R. Hemplemann, R. Kirchheim, H. K. Mizubayashi, P. M. Richards, and J. O. Strom-Olsen; participants

Hydrological/Geochemical/Biological Processes in Forested Catchments

Holderness School

R.Church, chair; G. Hornberger, vice chair

1–5 July

A. Pearce, M. Sklash, discussion leaders

G. Likens, "Insights from integrated research on watersheds—prospects for the future."

K. Beven, "Models of processes or models of models?"

P. Germann, "Water flow in forest soils at the profile and hillslope scale."

C. Wilson, "Hydrologic processes—What information do we need to build the next generation of process-based models?"

Poster session

C. Driscoll, H. Hemond, discussion leaders

S. Schiff, "Carbon cycling in forested catchments: Clues or confusion from carbon isotopes?"

J. Mulder, "Streamwater chemistry at Birkenes: Linkages between the terrestrial and the aquatic environment."

B. Berner, "The role of plant-mediated weathering in the global carbon cycle."

E. Gorham, "Paleorecords of chemistry and hydrology in peatlands."

Poster session

K. Nadelhoffer, T. Fahey, discussion leaders

J. Pastor, "Chaos in the boreal forest."

P. Sollins, "Biology, chemistry, and physics of ecosystems: Combining some of the pieces."

H. Van Miegroet, "Have ecologists exhausted the topic of nitrogen cycling?"

M. Hornung, "Responses to perturbations in European forested watersheds: Do the results fit a general pattern?"

Poster session

Guided field trip to the Hubbard Brook Experimental Forest

C. Driscoll, trip leader

Poster session

Discussion session

R. Church, G. Hornberger, C. Driscoll, H. Hemond, A. Pearce, M. Sklash, T. Fahey, K. Nadelhoffer, and others; panel

Immunochemistry and Immunobiology

Colby-Sawyer College

J. P. Allison, chair, A. Kruisbeek, vice chair

1–5 July

Molecular basis of antigen receptor repertoire: C. Thompson, discussion leader

M. Oettinger, P. Gearhart, D. Mathis, speakers

Gene expression and lymphocyte development: P. Tucker, discussion leader

L. Eckhardt, J. Leiden, speakers

Antigen receptor mediated signal transduction: A. Weiss, discussion leader

L. Samelson, R. Perlmutter, speakers

Coreceptors and accessory molecules: D. Littman, discussion leader

P. Linsley, M. Thomas, speakers

Antigen processing and presentation: R. Germain, discussion leader

E. Unanue, H. G. Ramensee, speakers

Lymphokines and lymphocyte differentiation: W. Paul, discussion leader

P. Leder, M. Howard, speakers

Lymphocyte development: J. Allison, discussion leader

D. Raulet, T. Mak, speakers

Tolerance: A. Kruisbeek, discussion leader

K. Murphy, S. Webb, speakers

Super antigens: B. Huber, discussion leader

P. Marrack, E. Palmer, H. C. Morse, III, speakers

Inorganic Chemistry

Brewster Academy

R. D. Adams, chair; S. Harris, vice chair

29 July–2 August

Materials and the solid state: R. D. Adams, discussion leader

R. Haushalter, "Hydrothermal synthesis of microporous molybdenum phosphates."

A. Clearfield, "Synthesizing new inorganic structures from layered compounds."

J. Rouxel, "Design and chemical reactivity in low-dimensional solids."

Catalysis: R. D. Adams, discussion leader

E. Stiefel, "Transition metal sulfur chemistry."

D. Bryant, "Phosphite ligands in hydroformylation."

New chemistry of polymetallic complexes: P. Braunstein, discussion leader

M. Chisholm, "Metal-metal multiple bonds in ordered assemblies. Liquid crystals and polymers."

W. Evans, "The utility of protective cavities in lanthanide chemistry."

Y. Jeannin, "The role of the heteroatom lone pair on the structures of heteropolymetalates. How to synthesize large polymetalates."

Organometallic chemistry, P. Braunstein, discussion leader

G. Erker, "Stereochemistry and catalysis with zirconium complexes."

F. Mathey, "The chemistry of phosphorous-carbon double bonds in the coordination sphere of transition metals."

New directions in the chemistry of coordination complexes: B. Johnson, discussion leader

F. A. Cotton, "Unusual compounds of group IV and group V transition metals."

R. Poli, "New aspects of transition metal chemistry in the intermediate in the oxidation states."

K. Dunbar, "Unusual chemistry of mono-and binuclear metal cations stabilized by weakly coordinating ligands."

R. A. Walton, "Reactivity and structural aspects of mononuclear and dinuclear polyhydride complexes."

Bioinorganic chemistry: B. Johnson, discussion leader

G. Jaouen, "Suicide cluster approach in the study of proteins."

S. Lippard, "Recent progress in unraveling the mechanism of action of platinum antitumor drugs."

Chemistry surfaces: J. P. Fackler, discussion leader

P. Ellis, "Multinuclear solid-state NMR spectroscopy of systems of catalytic interest."

J-O. Bovin, "Atomic resolution microscopy studies of the dynamic structure of metal particles and clusters."

H. Abruna, "Scanning tunneling microscopy of redox active molecules."

General interest: J. P. Fackler, discussion leader

E. Stiefel, "The bioremediation of Prince William Sound."

A. Cowley, "The Gordon Research Conferences—history and future directions."

Mechanistic studies and ligand transformations; S. Harris discussion leader

I. Horvath, "Application of high-pressure NMR in mechanistic inorganic chemistry and catalysis."

R. Fish, "Organometallic models of the HDN reaction."

E. Rosenberg, "Recent studies of the chemistry of metal cluster complexes containing amine ligands."

Inorganic Interfaces and Thin Films

Plymouth State College

M. Olmstead, chair; R. Hull, vice chair

8–12 July

Growth initiation and surface effects: E. Williams, discussion leader

E. Kaxiras, "Strain and electronic energies in growth initiation."

J. Venables, "Nucleation, growth, and surface diffusion processes in heteroepitaxy."

M. Lagally, "Scanning tip microscopy of semiconductor growth surfaces."

Surface energetics: E. Carter, discussion leader

G. Gilmer, "Molecular dynamics simulations of surface kinetics."

M. Copel, "Structure and surfactants for group IV heteroepitaxy."

Growth kinetics: M. Zinke-Allmang, discussion leader

D. Aspnes, "A new look at OMCVD growth by reflectance difference spectroscopy."

P. Cohen, "Dynamics of MBE growth—the role of defects."

B. Dodson, "Strained-layer relaxation kinetics."

Exploiting kinetics and thermodynamics: S. Lilienthal-Weber, discussion leader

C. Palmstrom, "Growth of epitaxial metals on GaAs."

D. Eaglesham, "Low-temperature epitaxy."

Interface structure: M. Gibson, discussion leader

M. Hybertsen, "Interplay of interface strain and composition in lattice matched heterointerfaces."

M. Stobbs, "Electron microscopy techniques for interface structure."

A. Bourret, "Interface structure by x-ray diffraction."

Challenges in growth technology: G. Turner, discussion leader

R. Davis, "Initial stages of growth of silicon carbide and diamond."

A. Goosard, "Growth challenges based upon formation of new structures."

New views of interfaces: R. Bringans, discussion leader

L. Schowalter, "Ballistic electron spectromicroscopy of silicide interfaces."

B. Tonner, "Photoemission microscopy and holography of interface formation."

R. Godby, "Many-body effects at metal/semiconductor interfaces."

Science for future technologies: H. Kroemer, discussion leader

H. Craighead, "Microscopic devices and lithography."

J. Woodall, "Surface Fermi-level engineering."

Summary panel discussion: M. Olmstead, discussion leader

Ion-Containing Polymers

Colby Sawyer College

R. A. Weiss, chair

12–16 August

J. Higgins, discussion leader

C. Williams, "Influence of molecular architecture on aggregation in ionomers."

A. Eisenberg, "Two-dimensional micelles: A new morphology of block ionomers at interface."

A. Garton, "Ion-polymer chemical interactions at surfaces."

R. Storey, discussion leader

L. Fetters, "Preparation and evaluation of monofunctional associating polymers."

C. McCormick, "Microheterogenous association in aqueous solution: New directions."

B. Chu, discussion leader

K. Kaji, "Viscosity and chain conformation of polyelectrolyte solutions in the very dilute region."

D. Hoagland, "Using electrophoresis to study polyelectrolyte mobility in gels."

P. Ander, "Association and critical points of polyelectrolytes."

D. Schulz, discussion leader

W. MacKnight, "Ionomers in non-ionizing solvents: Fluorescence studies."

J. Puglia, "Molecular simulation of polyampholytes in aqueous solution."

R. Prud'homme, discussion leader

A. Khokhlov, "Phase transitions in ion-containing polymer systems."

P. Dubin, "Polyelectrolyte-micelle systems: Paradigms for polyion-colloid interactions."

L. Belfiore, "Transition metal coordination in polymer-ionomer blends."

R. Register, discussion leader

K. O'Connor, "Morphology of ionomer-containing latex coatings."

Poster session

M. Hara, discussion leader

M. Pineri, "Structure of perfluorinated ionomer solutions."

A. Cisar, "Effect of ionomer structure and preparation on fuel cell performance."

K. Mauritz, "Microstructural evolution of a silicon oxide phase in perfluorosulfonic acid membranes by an in situ sol-gel reaction."

J. Koberstein, discussion leader

J. Kelly, "Binding of ionic drugs by penicillin-target enzymes."

M. Sullivan, discussion leader

L. Salmen, "Ionic effect on the viscoelastic properties of wood polymer composites."

R. Statz, "New developments in ethylene-methacrylic acid ionomers."

Physics and Chemistry of Laser Diagnostics in Combustion

Plymouth State College

L. A. Rahn, chair; K. Smyth, vice chair

15–19 July

J-P. Taran, discussion leader

D. R. Crosley, "Collisional quenching and energy-transfer effects in combustion environments."

M. Alden, "Aspects of using high-laser intensity in combustion diagnostics."

B. Attal-Tretout, "Resonance CARS measurements on OH and CH in a high-pressure flame."

P. Andresen, discussion leader

N. Laurendeau, "Quantitative laser-saturated fluorescence in high-pressure flames."

K. Kohse-Hoinghaus, "From LIF signal to quantitative information."

A. Eckbreth, discussion leader

N. Koroteev, "Fundamentals of CARS and related nonlinear-optical diagnostics of atomic and ionic species in flames, discharges, and plasmas."

P. Ewart, "Principles of degenerate four-wave mixing for imaging of concentration and temperature fields."

D. Rakestraw, "DFWM: Where have we been, where should we go?"

D. Greenhalgh, discussion leader

R. J. Adrian, "Particle-imaging velocity measurements in combustion flowfields."

W. Lempert, "Molecular velocity measurements in unseeded flowfields."

K. Smyth, discussion leader

T. Cool, "Quantitative REMPI measurements of flame species profiles."

P. Varghese, "Absorption spectroscopy with tunable diode lasers: Prospects and pitfalls."

J. Silver, "Diode laser frequency modulation spectroscopy: Theory, experiment, and application to combustion measurements."

R. Pitz, discussion leader

R. S. Barlow, "Understanding turbulence—chemistry interactions: Recent progress and diagnostic challenges."

M. Pealat, "Simultaneous single-shot two-species CARS concentration measurements in turbulent flames: Performance and problems."

M. Long, discussion leader

P. Paul, "Quantitative recording of planar-image data."

P. Monkhouse, "2D-LIF imaging in flames and engines."

J. Seiztman, "Quantitative interpretation of planar-image data."

R. Chang, discussion leader

M. Golombok, "Development of nonlinear-Raman fuel-spray diagnostics."

L. Melton, "Fluorescent diagnostics for droplets in combustion."

J. Wolfrum, discussion leader

P. Felton, "The problems and challenges of applying optical diagnostics to I.C. engines."

M. S. Brown, "Spectroscopic diagnostics in a super-critical water reactor."

Lipid Metabolism

Kimball Union Academy

C. Kent, chair; Y. L. Marcel, vice chair

24–28 June

R. M. Bell, "Protein kinase C regulation by lipid cofactors and second messengers."

Signal Transduction I: D. Silbert, discussion leader

D. Silbert, "Chinese hamster lung mutants in phospholipid signal transduction."

W. H. Moolenar, "Mitogenic signaling by lysophosphatidic acid."

J. H. Exton, "Regulation of phospholipases by G proteins and role of lipid second messengers."

S. Prescott, "PAF: A choline phosphoglyceride intercellular messenger."

Signal transduction II: E. A. Dennis, discussion leader

E. A. Dennis, "Phospholipase A2 structure and function."

C. C. Leslie, "Properties of a high molecular weight, arachidonoyl-hydrolyzing phospholipase A2 from macrophages."

G. Carpenter, "Growth factor phosphorylation of phospholipase C-γ."

Covalent modification of proteins by lipids: J. Gordon, discussion leader

J. Gordon, "Genetic and biochemical approaches to understanding protein N-myristoylation."

Y. Reis, "Farnesylation of p21^{ras} proteins."

J. Rine, "Yeast genetics, cholesterol synthesis, and the ras oncoprotein."

P. T. Englund, "Glycosyl phosphatidylinositols as protein anchors."

Pulmonary surfactant: J. Whitsett, discussion leader

J. Whitsett, "Surfactant proteins—B and C structure and function."

H. P. Haagsman, "Structure and metabolism of surfactant lipoproteins."

J. R. Wright, "Recycling of lung surfactant."

Phosphatidylcholine metabolism: S. Yamashita, discussion leader

S. Yamashita, "Choline kinase from rat brain and yeast."

R. Cornell, "Structure and regulation of cytidylyltransferase."

R. Hjelmstad, "Yeast choline– and ethanolamine-phosphotransferases."

J. C. Lacal, "*ras* oncogenes: Modulators of phosphatidylcholine metabolism?"

Assorted phospholipids: R. Kolesnick, discussion leader

R. Kolesnick, "Sphingomyelin and derivatives as biomodulators."

C. R. H. Raetz, "Glucosamine-based phospholipids in the surface of *E. coli*."

M. Nishijima, "Genetic and molecular approaches to phosphatidylserine biosynthesis in cultured mammalian cells."

Neutral lipid metabolism: S. Smith, discussion leader

S. Smith, "Molecular studies on fatty acid synthase."

K-H. Kim, "Structural features of the acetyl-CoA carboxylase gene and its expression."

H. Kanoh, "Structure and action mechanisms of porcine diacylglycerol kinase."

J. Glomset, "A monoacylglycerol kinase-initiated pathway that preferentially forms phosphatidylinositol."

Lipid transport: D. Voelker, discussion leader

D. Voelker, "Phosphatidylserine synthesis, translocation and import into the mitochondria of eukaryotic cells."

P. F. Devaux, "Transmembrane phospholipid movements in eukaryotes."

L. Liscum, "Intracellular cholesterol transport."

Lipid binding proteins: G. Helmkamp, discussion leader

G. Helmkamp, "Structure and function of phosphatidylinositol transfer proteins in higher eukaryotes."

L. Banaszak, "Structure and amino acid sequence comparisons of fatty acid binding proteins."

V. A. Bankaitis, "Phospholipid transfer protein function in yeast."

D. A. Bernlohr, "Phosphorylation of the adipocyte lipid binding protein by the insulin receptor."

Afternoon posters sessions will be held. Abstracts for posters must be received before 1 May 1991.

Liquid Crystals

Brewster Academy

N. A. Clark, chair; W. Doane, vice chair

17–21 June

Polymer liquid crystals

F. Bates, "Order and disorder in block copolymer melts-fluctuations and broken intramolecular symmetry."

H. Coles, "Switching mechanisms in ferroelectric polymers and potential applications."

J. Selinger, "Statistical mechanics of polymer liquid crystals: Phase transitions and correlation functions."

Phase behavior

G. Sigaud, "Smectic A—smectic A phase separation."

C. W. Garland, "Phase transitions in frustrated smectics."

Microscopic structure

A. Pines, "Incoherent superposition of liquid crystals, NMR, and Berkeley."

S. H. White, "Joint refinement of fluid bilayer structure using x-ray and neutron diffraction."

I. G. Voigt-Martin, "Structure and defects in liquid crystalline polymers as revealed by electron diffraction and high-resolution imaging."

Lyotropic liquid crystals

J. Herzfeld, "Theory of ordered phases in reversibly assembling systems."

B. R. Ratna, "Novel structures in lyotropic liquid crystals."

Chiral liquid crystals I

H. Takezoe, "Novel phases in antiferroelectric liquid crystals."

S. R. Renn, "Grain boundary phases: A theory of chiral smectics."

P. H. Keyes, "Fluctation instabilities in the cholesteric blue phases."

Chiral liquid crystals II

G. Durand, "Field induced surface bifurcation in nematics."

C. Rosenblatt, "Electroclinic phenomena: Static, dynamic and pretransitional behavior."

New materials

K. Praefcke, "Mesophase induction by formation of charge transfer complexes."

J. Malthete, "Rods, discs, cones, rings arranged in mesomorphic phases."

Dynamics

B. Yurke, "A nematic liquid crystal undergoing coarsening—an evolving universe."

Films and interfaces

L. Sorensen, "Layer structure of thin smectic films."

C. C. Huang, "Calorimetry of freely suspended liquid crystal films."

H. Gruler, "Smectic Shubnikov phase."

Chemistry and Physics of Liquids

Holderness School

H. C. Andersen, chair; C. M. Knobler, vice chair

12–16 August

Molecular motion in liquids: discussion leader to be announced

K. Nelson, "Femtosecond time-resolved observation and computer simulation of elementary molecular dynamics in liquids."

J. Jones, "Dynamics in complex viscous liquids."

G. FLeming, "Ultrafast dynamics in liquids."

Liquids under negative pressure, discussion leader to be announced

C. A. Angell, "Liquids at large negative pressures."

Critical properties of electrolytes: discussion leader to be announced

K. Pitzer, "Critical properties of ionic fluids."

J. M. H. Levelt Sengers, "Critical behavior of ionic fluids; an experimental assessment."

A. Z. Panagiotopoulos, "Monte Carlo simulations of phase equilibria."

Computer simulations: discussion leader to be announced

P. Madden, "Ab initio molecular dynamics study of the expanded alkali fluids."

M. Klein, "Simulation studies of amphiphilic assemblies."

Chemical reactions in liquids: discussion leader to be announced

R. Hochstrasser, "Femtosecond studies of isomerization reactions in the condensed phase."

B. Ladanyi, "Solvation and charge transfer dynamics in hydrogen-bonding liquids."

Supercooled liquids and glasses: discussion leader to be announced

H. Cummings, "Light scattering studies of the liquid-glass transition."

J-L. Barrat, "Dynamical properties of supercooled liquids."

Monolayers: discussion leader to be announced

H. Mohwald, "The organization of al-

iphatic chains in self-assembled layers on the water surface."

S. Rice, "New aspects of our understanding of Langmuir monolayers."

M. Seul, "Shape and pattern instabilities."

Quantum effects in liquids: discussion leader to be announced

P. Rossky, "Quantum dynamics of the hydrated electron."

R. Stratt, "Excitation spectra of liquids."

M. Chan, "Critical phenomena of fluids in disordered media."

Poster sessions; C. M. Knobler, organizer

Those who wish to present posters at one of the two poster sessions should send their names and poster titles before 12 July to: Charles M.Knobler, Department of Chemistry, University of California, Los Angeles, 405 Hilgard Avenue, Los Angeles, CA 90024. Phone: 213-825-4330. FAX: 213-206-5381. BITNET: KNOBLER@UCLACH

Magnetic Resonance

Brewster Academy

R. G. Griffin, chair; M. Conradi, vice chair

15–19 July

S. J. Singel, discussion leader

C. P. Slichter, "NMR studies of surfaces and high-T_c superconductors."

G. Denninger, "Nuclear spins as probes for conduction electrons."

Speaker to be announced

J. Schmidt, discussion leader

J. Freed, "New developments in 2D-FT and far-infrared ESR."

R. R. Ernst, "NMR methodology for the study of dynamics in larger molecules."

G. P. Drobny, discussion leader

T. Wenckebach, "Dynamic nuclear polarization via the integrated solid state effect and NOVEL."

G. S. Harbison, "Solid state NMR studies of oriented DNA."

Speaker to be announced

Discussion leader to be announced

D. P. Weitekamp, "Time-sequenced optical NMR of GaAs semiconductors."

H. W. Spiess, "2D and 3D NMR methods for elucidating molecular structure, order, and dynamics of solid polymers."

R. Tycko, discussion leader

A. Schweiger, "Advanced pulsed EPR methods."

K. Zilm, "Rotational tunneling and quantum exchange in transition metal polyhydrides as studied by NMR."

Speaker to be announced

Discussion leader to be announced

A. Bax, "Potential and limitations of multidimensional, multinuclear NMR for structural studies of proteins."

S. Vega, "Floquet theory and NMR spectroscopy."

M. Mehring, discussion leader

J. Schaefer, "Chain dynamics of polymer interfaces by dynamic nuclear polarization."

G. Bodenhausen, "Made to measure NMR experiments by frequency, phase, and amplitude modulation."

Speaker to be announced

K. H. Hausser, discussion leader

J. S. Waugh, "Echoes of the past, present, and future."

S. Hartmann, "Hahn and optics."

A. Pines, "Hahn and Berkeley."

Discussion leader to be announced

H. Alloul, "^{89}Y NMR in $YBa_2Cu_3O_{6+x}$: From the antiferromagnetic to the superconducting state."

M. Conradi, "Diamond anvil cell NMR."

Speaker to be announced

Mammary Gland Biology

Colby-Sawyer College

D. Medina, chair; H. Farrell, vice chair

10–14 June

Growth factors in normal mammary development: B. K. Vonderhaar, discussion leader

B. Vonderhaar, "Interdependence of hormones and growth factors in mammary gland lobuloalveolar development."

S. M. Snedeker, "Expression of TGFa and EGF in mammary gland ductal morphogenesis."

C. G. Prosser, "IGF-1 modulation of mammary gland development and function."

Growth and inhibitory factors in neoplastic mammary development: M. Wicha, discussion leader

S. P. Ethier, "Growth factor independence in mammary neoplasia."

M. Wicha, "Mammostatin: A specific inhibitor of mammary tumor development."

R. B. Dickson, "MDGF1: A new growth factor-receptor system in normal and neoplastic human mammary epithelium."

Signal transduction in mammary function: R. A. Clegg, discussion leader

B. Marchetti, "β-adrenergic receptor expression, adenylate cyclase in growth and differentiation of the mammary gland."

R. A. Clegg, "cAMP-mediated protein phosphorylation in lactating mammary tissue."

M. Olivier-Bousquet, "Mechanisms of prolactin-induced casein secretion."

C. Aylsworth, "Protein kinase C activity in mammary cell growth and function."

Regulation of milk protein gene expression: J. Rosen, discussion leader

J. Rosen, "Analysis of milk protein gene expression in transgenic mice."

L. Henninghausen, "Mouse whey acid protein gene: Transcriptional regulation and biotechnology."

F. L. Schanbacher, "Bovine mammary lactoferrin: mRNA sequence, characterization, and expression in vivo and in vitro."

Regulatory properties of milk: A. Goldman, discussion leader

A. Goldman, "Significance of transfer of cytokines in breast milk."

P. L. Ogra, "Anti-idiotypic immunity via breast milk."

M. F. Piccano, "Biochemical and behavioral consequences of altered dietary tryptophan intake in infants."

M. A. Thiede, "PTHrP: A prolactin-regulated factor in milk."

Physiological strategies in lactation: M. C. Neville, discussion leader

K. R. Nicholas, "Control of the lactation cycle in a marsupial, the tammar wallaby."

O. Oftedal, "Strategy of lactation in pinnipeds."

M. C. Neville, "Adaptive strategies in human lactation."

Genetic changes of human breast cancer: R. Callahan, discussion leader

R. Callahan, "Mutations in primary human breast tumors."

D. P. Lane, "Altered expression and mutation of p53 in human breast cancer."

W. J. Gullick, "Role of *erbB* family of growth factor receptors in human breast cancer."

P. Steeg, "NM23: A gene affecting human breast cancer metastasis."

Mammary cell transformation: D. Medina, discussion leader

S. Nandi, "Mammary cell transformation in vitro: In vivo relevance."

Mammary specific protooncogenes: C. Dickson, discussion leader

D. Gallahan, "Expression and organization of mouse *int-3* gene."

J. Papkoff, "*Int-1* protooncogene: A secreted protein expressed during normal differentiation and mouse mammary tumorigenesis."

C. Dickson, "*Int-2*, a gene implicated in mouse mammary tumorigenesis and potential prognostic marker for human breast cancer."

Matrix Isolation Spectroscopy

Plymouth State College

V. E. Bondybey, chair; L. B. Knight, Jr., vice chair

8–12 July

The following will speak: A. Apkarian, H. Dubost, M. E. Fajardo, I. Y. Fugol, R. Gerber, M. Greenberg, M. C. Heaven, M. Jacox, S. G. Kazarian, K. J. Klabunde, Y.-P. Lee, G. E. Leroi, S. Leutwyler, J. P. Maier, T. A. Miller, M. Moskovits, O. M. Nefedev, J. Nesbitt, R. N. Perutz, M. Prisant, L. M. Raff, H. Schnockel, C. A. Wight.

Mechanisms of Membrane Transport

Plymouth State College

R. A. Frizzell, chair; H. R. Kaback, vice chair

12–16 August

Structure and dynamics of membrane proteins: H. R. Kaback, discussion leader

C. Manoil, "Use of gene fusions to analyze membrane protein topology."

C. Altenbach, "Determination of membrane protein structure and function by site-directed spin labeling."

J. Deisenhofer, "The high resolution 3-D structure of the photosynthetic reaction center from *Rhodopseudomonas viridis*."

D. Oesterhelt, "Alternative ion pumping by retinal proteins."

A. Karlin, "Functional domains of the nicotinic acetyl choline receptor."

Coupled transport mechanisms: P. C. Maloney, discussion leader

P. C. Maloney, "Microbes and membrane biology."

R. R. Kopito, "Functional differences among anion exchangers expressed in mammalian cells."

J. Pouyssegur, "Na/H exchange."

K. D. Philipson, "Molecular studies of cardiac Na/Ca exchange."

Ion pumps: G. E. Shull, discussion leader

R. A. Farley, "Studies of ion pump structure by heterologous expression in yeast."

D. M. Clarke, "Site-directed mutagenesis of the Ca ATPase of sarcoplasmic reticulum."

G. E. Shull, "Ca ATPase isoforms."

Ion channels: D. C. Eaton, discussion leader

R. L. Barchi, "Voltage-dependent Na channels."

K. DeJongh, "Molecular properties of the L-type Ca channel."

D. Ferris, "Purification and reconstitution IP_3-activated Ca channels."

T. J. Jentsch, "Molecular studies of C1 channels."

Structure-function studies of K channels: D. J. Benos, discussion leader

R. W. Aldrich, "Potassium channel gating mechanisms."

R. MacKinnon, "Ion conduction in a K channel."

E. Stefani, "Regulation of Ca-dependent K channels in smooth muscle."

Signal transduction mechanisms: I. B. Levitan, discussion leader

A. M. Brown, "K channels: Priors, posteriors, and pores."

I. B. Levitan, "Modulation and heterologous expression of Ca-dependent K channels."

D. R. Matteson, "Ionic channels in pancreatic beta cells."

E. Kranias, "Ca ATPase regulation by phospholamban."

Epithelial Na channels: R. A. Frizzell, discussion leader

D. J. Benos, "Structure and function of epithelial Na channels."

D. C. Eaton, "Regulation of epithelial Na channels."

Pathophysiology of membrane transport: R. L. Barchi, discussion leader

K. G. Beam, "Curing muscle dysgenesis with DHP receptor cDNA expression."

S. J. Currier, "Molecular analysis of the multidrug transporter."

W. H. Cliff, "Regulation of C1 channels in cystic fibrosis."

Mechanisms of Toxicity

Kimball Union Academy

W. O. Berndt, chair; M. McClain, vice chair

22–26 July

In vitro methods for studying devel-

opmental toxicity: R. K. Miller, discussion leader

E. Faustman, "Differentiation in micromass cultures."

B. Abbott, "Actions of teratogens: Role of growth factors and TCDD."

R. K. Miller, "In vitro human placental models."

R. K. Miller, discussion leader

M. Juchau, "Bioactivation of xenobiotics in whole embryo culture."

T. Sadler, "Fuel-mediated teratogenesis."

Molecular/cellular approaches to the study of embryology: Application to developmental toxicity: R. L. Brent, discussion leader

D. Rappolee, "Expression and function of growth factor ligands and receptors."

J. Lauder, "Neurotransmitters as morphogens."

R. L. Brent, "Yolk sac dysfunction and embryo toxicity and pathology: Nutritional perturbations."

R. L. Brent, discussion leader

D. Gasser, "Molecular analysis of susceptibility for teratogenic agents."

K. Sulik, "Role of apotosis in differentiation and teratogenesis."

Cell/cell communications: Influence of morphogens/teratogens: F. Welsch, discussion leader

K. Grossin, "CAMS and CADS in cell/cell communication in development

F. Welsch, "Cell/cell communications: Gap junction and teratogenicity."

R. Arceci, "Maternal/fetal communication at the molecular level."

F. Welsch, discussion leader

O. Sundin, "Retenoids as morphogens."

A. Levin, "Role of retenoic acid receptors in induction of teratogenesis."

Role of genetics in developmental toxicology: J. Grippo, discussion leader

J. Grippo, "Altering significant genes as targets for developmental toxicity."

W. O. Berndt, discussion leader

Special lecture to be arranged

Biomarkers of toxicity during pregnancy/development: M. McClain, discussion leader

S. Glasser, "Signal exchange between mother and fetus I."

L-J. W. Lu, "Signal exchange between mother and fetus II."

Medicinal Chemistry

Colby Sawyer College

P. Anderson, chair; J. Bristol, vice chair

5–9 August

J. Colca, discussion leader

D. Clarke, "Thiazolidenediones as novel hypoglycemic agents."

S. Tanis, "Aminosteroids as novel anti-hyperglycemic agents."

R. Howe, "Thermogenic B3 agonists as antiobesity agents."

A. Saltiel, "The insulin signaling mechanism as a possible target for antidiabetic drugs."

A. Stern, discussion leader

M. Yanagisawa, "Overview—molecular properties of endothelin/endothelin receptors family."

A. Doherty, "Endothelin structure and approaches to receptor antagonists."

Speaker to be announced, "Endothelin converting enzymes."

J. Plattner, discussion leader

R. Goldman, "Inhibition of fungal colonization and tissue penetration as targets for antifungal drug discovery."

C. Selitrennikoff, "(1-3)-β-glucan synthase as a target for antifungal drugs."

K. Joiner, "The specialized intracellular vacuole containing toxoplasma gondii as a potential barrier and target for chemotherapy."

R. Zahler, "Ribose surrogates and their application to antiviral chemotherapy."

J. Bristol, poster session

J. McCarthy, discussion leader

C. Walsh, "Molecular studies on the enzymes of the D-alanine path in bacterial cell wall biosynthesis."

D. Weiner, "Antibody-derived structures in antiviral design."

V. Hruby, "Peptide libraries: A new approach to the discovery of ligands for macromolecular receptors."

W. Greenlee, discussion leader

W. Greenlee, "Design and synthesis of non-peptidic antagonists of angiotensin II."

R. Keenan, "The development of potent AII-1 receptor antagonists using a model for a postulated bioactive conformation of AII."

D. Roberts, "Potent non-peptidic antagonists of angiotensin II."

J. Irvin, "Clinical assessment of all receptor antagonists."

J. Luly, discussion leader

D. Tracey, "Characterization of an interleukin-1 receptor antagonist protein."

R. Black, "IL-1β converting enzyme and its inhibition."

J. Luly, "Small peptide anaphylatoxin C5a receptor ligands."

E. Larson, discussion leader

G. Grindey, "Discovery of compounds with novel anticarcinoma activity."

M. Milburn, "Molecular switch of ras oncoprotein: Approaches to suppressing activation."

A. Matter, "Protein kinases as targets for novel pharmacology."

G. Powis, "Novel inositol analogs as antiproliferative agents."

Special session: P. Anderson, discussion leader

J. Bristol, discussion leader

Speakers and subjects to be announced.

Metal and Semiconductor Clusters

Brewster Academy

M. L. Mandich, chair; M. M. Kappes, vice chair

5–9 August

Magnetic properties of clusters: A. Khanna, discussion leader

P. P. Edwards, L. A. Bloomfield, B. I. Dunlap; speakers

Clusters in materials science, U. Kreibig, discussion leader

R. W. Siegel, R. P. Andres; speakers

Quantum size semiconductor clusters and dots, L. E. Brus, discussion leader

R. Itoh, S. Koch, P. Alivisatos; speakers

Clusters in catalysis: M. Moskovits, discussion leader

C. R. Henry, J. Bradley; speakers

Buckminsterfullerenes: C_{60} and friends: R. W. Smalley, A. Rosen, discussion leaders

W. Kratschmer, other speakers to be announced

Cluster structure and spectroscopy: V. Bonacic-Koutecky, discussion leader

D. M. Neumark, J. H. Weaver, J. H. Weare; speakers

Dynamics and phase transitions in clusters: R. L. Whetten, discussion leader

S. Leutwyler, K. B. Whaley, W. C. Lineberger; speakers

Properties of metallic clusters: C. Brechignac, discussion leader

L. J. de Jongh, T. P. Martin; speakers

Chemical reactions of clusters: P. A. Armentrout, discussion leader

M. F. Jarrold, A. E. DePristo, M. P. Irion; speakers

Concluding remarks: E. Recknagel, discussion leader

Molecular and Genetic Basis of Cell Proliferation

Kimball Union Academy

C. D. Stiles, chair; T. Curran, vice chair

15–19 July

J. Pledger, introductory remarks

Growth factor receptors: J. Schlessinger, discussion leader

A. Ulrich, H. Hanafusa, A. D'Andrea; speakers

Growth factor signal transduction: C. Sherr, discussion leader

T. Roberts, R. Erickson; speakers

Immediate response genes: T. Curran, discussion leader

E. Ziff, B. Cochran, R. Eisenman; speakers

G_1/S-phase: P. Raddy, discussion leader

H. Moses, D. Livingston; speakers

DNA replication: M. DePamphilis, discussion leader

W. Fangman, D. Kowalski, B. Stillman; speakers

G_2 phase, DNA repair, homologous recombination: R. Kolodner, discussion leader

R. Fishel, G. Wahl, speakers

Mitosis: E. Blackburn, discussion leader

R. Morrison, T. Mitchison; speakers

Tumor suppressor genes: D. Houseman, discussion leader

F. Li, speaker

Cell cycle and development: H. Moses, discussion leader

Speakers to be announced

Molecular Electronic Spectroscopy

Brewster Academy

D. H. Levy, chair; R. J. Silbey, vice chair

12–16 August

P. Barbara, "Femtosecond studies on electron transfer in inverted regime."

P. Bernath, "Laser and Fourier transform spectroscopy of transient molecules."

E. Bernstein, "Subtle rotamer and invertamer effects in non-rigid aromatic molecules: Toward a potential energy surface for internal molecular motion."

P. Brucat, "Optical spectroscopy of the electrostatic bond: Gas-phase models of ion-solvent behavior."

P. Brumer, "Developments in the control of chemical reactions with lasers."

P. Callis, "Two photon spectra of jet-cooled indoles: Unveiling the $^1L_2$ system."

M. Fayer, "Picosecond to kilosecond dynamics in glasses probed with optical non-linear experiments."

P. Felker, "High-resolution spectroscopy by time domain methods."

G. Fleming, "Applications of phase-locked femtosecond pulse sequences."

J. Hougen, "Relations between normal modes in different electronic states: Axis switching corrections to the Duschinsky effect."

M. Kappes, "Metal cluster optical response."

A. Knight, "Spectroscopy and structure of clusters and cluster ions."

J. Light, "Quantum dynamics of large amplitude motion in small molecules."

R. Loring, "Statistical mechanical studies of static and dynamic line broadening in liquids."

W. E. Moerner, "Observation of spectral diffusion with single pentacene molecules in crystals."

D. Newark, "Photodissociation of polyatomic free radicals."

D. Pratt, "High-resolution studies of organic molecules in the UV."

T. Rizzo, "Double-resonance studies of IVR and unimolecular dissociation dynamics."

P. Trommsdorf, "Rotational tunneling and nuclear spin conversion studied by optical spectroscopy."

S. Volker, to be announced

A. Wodtke, "Spectroscopy of highly vibrationally excited HCN up to 50 kcal/mole."

Molecular Genetics

Salve Regina College

F. Collins, chair; D. Cox, vice chair

29 July–2 August

Human genome technology: M. Olson, discussion leader

M. Olson, G. Evans, E. Lander; speakers

Mapping and disease genes I: F. Collins, discussion leader

F. Collins, L-C. Tsui, S. Warren; speakers

Mapping and disease genes II: D. Cox, discussion leader

D. Cox, D. Ledbetter, D. Wallace; speakers

Sex determination, X inactivation: P. Goodfellow, discussion leader

P. Goodfellow, D. Page, H. Willard; speakers

Transcriptional regulation: S. Orkin, discussion leader

S. Orkin, R. Evans, T. Maniatis; speakers

Insertion into the mouse germline: M. Capecchi, discussion leader

M. Capecchi, O. Smithies, speakers

Human gene therapy: T. Caskey, discussion leader

T. Caskey, M. Blaese, J. Wilson; speakers

Cancer genetics I: D. Housman, discussion leader

D. Housman, E. Harlow, R. White; speakers

Cancer genetics II: A. Levine, discussion leader

A. Levine, E. Fearon, S. Friend; speakers

Molecular Mechanisms of Microbial Adhesion

Salve Regina College

P. Kolenbrander, co-chair; C. Svanborg, co-chair

24–28 June

Specificity versus nonspecificity of adherence: J. London, discussion leader

H. Leffler, "Specific binding of bacteria to host glycoconjugates: Molecular basis and biological role."

E. Rosenberg, "Adsorption and desorption of bacteria from surfaces."

H. Krivan, "Glycosphingolipids and a novel common adhesion for many pathogenic microorganisms."

Advanced instrumentation for observations of adherence: H. Busscher, discussion leader

M. Mittelman, "On-line methods for evaluating bacterial adhesion and biofilm formation."

D. E. Caldwell, "Confocal laser microscopy and computer image analysis of microbial colonization."

Edwin H. Beachey memorial session. New developments in *E. coli* type 1 fimbriae: N. Sharon, discussion leader

I. Ofek, "Short tribute to the memory of Edwin H. Beachey."

P. Klemm, "Genetics and biogenesis of type 1 fimbriae."

S. Abraham, "Fim H proteins of type 1 fimbriae."

Adherence of protozoa: D. Mirelman, discussion leader

M. Galinski, "Malaria: The molecular and cellular biology of blood stage receptor-ligand interactions."

J. Blackwell, "The role of adhesion molecules in *Leishmania*: Macrophage interactions."

Adherence of oral bacteria: R. J. Gibbons, discussion leader

H. Kuramitsu, "The role of glucosyltransferases in *Streptococcus mutans* colonization."

N. Ganeshkumar, "Bifunctional adhesin from *Streptococcus sanguis*."

A. Progulske-Fox, "The molecular biology of hemagglutinins of Gram-negative oral bacteria."

Adhesin expression: J. Hacker, discussion leader

M. Brennan, "Multifactorial interactions of *Bordetella pertussis* with mammalian cells."

S. Lory, "Regulation of expression of *Pseudomonas aeruginosa* adhesins."

Functional consequences of adherence: S. Falkow, discussion leader

S. Falkow, "Molecular interactions leading to bacterial entry."

E. Tuomanen, "*Bordetella pertussis* adhesins as analogs of partners in leucocyte-endothelial cell interactions."

A. Camilli, "Entry into the cytoplasm and cell-to-cell spread of *Listeria monocytogenes*."

Epithelial cell activation: M. Neutra, discussion leader

V. Miller, "The *Yersinia enterocolitica* invasion factor Ail: Member of a family of proteins with no known common function."

R. Lindstet, "The globoseries glycolipids as receptors and determinants of epithelial cell activation."

Evolution of virulence: I. Orskov, discussion leader

B. Levin, "The population dynamics and evolution of adhesion in pathogenic bacteria."

E. Nester, "Early events in plant cell transformation by *Agrobacterium*."

J. Scott, "Evolution and regulation of M protein of group A streptococcus."

Molecular Membrane Biology

Proctor Academy

P. Walter, chair; I. Mellman, vice chair

8–12 July

Structure and folding of membrane and soluble proteins: A. Helenius, discussion leader

A. Horwich, D. Agard, C. Zuker, speakers

Protein translocation across membranes: P. Walter, discussion leader

T. Rapoport, W. Wickner, L. Gerace, speakers

Protein sorting in the secretory pathway: R. Klausner, discussion leader

P. Peterson, K. Simons, J. Semenza, speakers

Mechanism of vesicular membrane transport: W. Balch, discussion leader

R. Schekman, J. Rothman, S. Ferro-Novick, speakers

Receptors and endocytosis: I. Mellman, discussion leader

S. Kornfeld, J. Gruenberg, R. Anderson, speakers

Contributed 20-minute talks: I. Mellman, discussion leader

Six or seven speakers will be selected from one-page abstracts that all applicants are expected to provide with application.

Molecular mechanisms of host cell invasion and defense: L. Tilney, discussion leader

N. Andrews, R. Isberg, A. Townsend, speakers

Membranes and cytoskeleton: J. Nelson, discussion leader

A. Noegel, J. Heuser, J. Fernandez, speakers

Membrane channels and cytosolic signaling: H. Lodish, discussion leader

A. Stock, T. Claudio, speakers

Molecular Pharmacology

Tilton School

E. M. Ross, chair; L. E. Limbird, vice chair

17–21 June

Selectivity at the receptor–G protein interface: E. Ross, discussion leader

E. Ross, E. Peralta, L. Limbird, T. Higashijima; speakers

Regulation of phospholipase C's: K. Harden, discussion leader

K. Harden, P. Devreotes, R. Graham, speakers

Regulation of intercellular Ca^{2+}: D. Gill, discussion leader

D. Gill, K. Mikoshiba, J. Putney, R. Irvine, speakers

Mechanism of neurotransmitter release at synapses: W. Almers, discussion leader

R. Bookman, W. Roberts, W. Almers, S. Vogel, speakers

Regulation of synaptic activity: R. Tsien, discussion leader

R. Tsien, R. Miller, R. Zucker, J. Byrne, speakers

Regulation of G protein function: G. Johnson, discussion leader

G. Johnson, A. Wittinghofer, J. Gibbs, C. Landis; speakers

Structure and regulation of ion channels: R. Henderson, discussion leader

W. deGrado, P. Taylor, E. Dratz; speakers

High-resolution structure of bacteriorhodopsin: R. Henderson

Signaling via protein tyrosine phosphorylation: G. Carpenter, discussion leader

G. Carpenter, N. Tonks, P. Soriano, D. diMaio; speakers

Molten Salts and Liquid Metals

Tilton School

F. Hensel, chair; J. S. Wilkes, vice chair

5–9 August

Metal-molten salt solutions: S. C. Moss, discussion leader

M. Tosi, "Stability of local structure in molten salt and salt-metal mixtures."

D. L. Price, "Unusual melting processes in metallic and ionic compounds."

J. F. Jal, "Ionic clustering in metal-molten salt solutions: Its connection with critical phenomena and dynamics."

Molten salts: W. van der Lugt, discussion leader

J. Egan, "Electrons in molten salts."

K. G. Weil, "Self diffusion, momentum transfer, and charge transfer in highly ionic liquids."

Dynamic properties: L. Torell, discussion leader

K. Funke, "Dynamic properties of ionic alloys and molten salts—Hall coefficients and high-frequency conductivities."

G. N. Papatheodorou, "Light scattering and structural and dynamic properties of melts."

C. Morkel, "Single-particle motion in simple liquid metals: A neutron scattering study."

Invited poster papers.

Electrochemistry: N. J. Bjerrum, discussion leader

S. K. Ratkje, "The electric work method, with emphasis on applications to thermocells."

G. Mamantov, "Electrochemical and related studies of selected refractory metals in molten halides."

C. L. Hussey, "Electrodissolution and electrodeposition of metals in acidic room temperature chloroaluminate ionic liquids."

Surface phenomena: W. Freyland, discussion leader

J. W. M. Frenken, "Melting and roughening of crystal surfaces."

F. T. Wallenberger, "Melt spinning of structural and optical fibers from low viscosity alumina melts."

Metal-nonmetal transition: H. Endo, discussion leader

D. Logan, "Electrons in liquid melts and alloys: Some challenges to a theorist."

R. M. Stratt, "Band structure in liquids."

W. W. Warren, "Electron mass enhancements in expanded alkali metals."

Novel states of matter: J. E. Enderby, discussion leader

N. W. Ashcroft, "Hydrogen: The simplest (?) metal."

A. Angell, "Molten salts at negative pressures."

Simulations and theoretical interpretations: M.-L. Saboungi, discussion leader

A. Selloni, "First-principles simulations of liquid and amorphous GaAs."

M. Ross, "Shock compressed molten salts and metals."

A. Panagiotopoulos, "Gibbs-ensemble simulation of phase equilibria in ionic systems."

A poster session with invited posters will be held on Tuesday evening.

Muscle: Excitation and Contraction Coupling

Tilton School

E. Stefani, co-chair; G. Meissner, co-chair

8–12 July

Transverse tubule-sarcoplasmic reticulum communication: W. K. Chandler, E. Rios, discussion leaders

W. K. Chandler, "Q_{beta} and Q_{gamma} components of intramembranous

charge movement."

E. Rios, "Calcium release flux and a hump component of intramembranous charge movement determined simultaneously."

C. L-H. Huang, "Effects of nifedipine on the hump component of the intramembranous charge movement."

L. Csernoch, "Effects of caffeine on the hump component of intramembranous charge movement."

J. A. Heiny, "A surface potential change related to excitation-contraction coupling."

Mechanism(s) of Ca-release intact and skinned fibers, regulatory processes, and messengers: P. Best, M. Schneider, discussion leaders

M. Schneider, "Calcium control of calcium release in intact fibers."

B. Simon, "The use of caged calcium to study calcium-induced inactivation on calcium release and other processes in cut fibers."

J. Garcia, "Modulation of calcium release and charge movements in mammalian muscle fibers."

J. Ma, "Regulation of reconstituted calcium release channels."

P. Best, "Calcium-dependent phosphorylation affects gating of calcium release channels in native membrane."

DHP receptors, structure, and expression: Role E-C coupling: W. Catteral, K. Beam, discussion leaders

W. Catteral, "Introduction."

K. P. Campbell, "Subunit composition and biochemistry of the purified DHP receptor complex."

A. M. Brown, "Expressing the DHP receptor as a calcium channel."

T. Tanabe, "Expression of skeletal muscle, cardiac and chimeric DHP receptor cDNAs in dysgenic skeletal muscle."

B. Adams, "Intramembrane charge movement produced by expression of DHP receptors cDNAs."

K. Beam, "Concluding remarks."

Ryanodine receptors, recent developments in structure and functional studies: T. Caswell, A. Lai, discussion leaders

A. Lai, "Introduction. Properties of the isolated ryanodine receptor."

R. Penner, "Cloning and expression of the ryanodine receptor."

B. S. Islas, "The role of inositol phosphates in Ca^{2+} release from sarcoplasmic recitulum."

G. Salama, "A 106 K DA Ca^{2+} release channel of sarcoplasmic reticulum."

A. Caswell, "Triadin; a protein which connects the ryanodine receptor to the T tubular voltage sensor."

IP_3 receptors and their role in Ca homeostasis: S. Fleischer, S. Snyder, discussion leaders

S. Fleischer, "Overview and "IP_3 receptor from smooth muscle and comparison with ryanodine receptor."

J. Berridge, "Hormonal signaling via the IP_3 cascade."

J. Putney, "IP_3 signaling as studied in the intact or permeabilized cell."

T. Sudhoff, "Cloning and mutagenesis studies of the IP_3 receptor."

S. Snyder, "Characterization of the IP_3 receptor from brain."

Altered molecules of E-C coupling in muscle disease: D. MacLennan, C. Louis, discussion leaders

C. Louis, "Biochemical studies on normal and altered ryanodine receptor in malignant hyperthermia."

M. Fill, "Properties and regulation of calcium channels (DHP and ryanodine receptors) in malignant hyperthermia in humans."

K. Beam, "DHP receptors and Ca^{2+} channel expression in dysgenic mice."

L. Lehmann-Horn, "Physiological studies in muscle myotonia."

D. MacLennan, "Molecular biology of the normal and sick ryanodine receptor."

Molecular approaches to the regulation of the SR Ca transport: G. Inesi, M. Green, discussion leaders

G. Inesi, "The coupling mechanism of ATPase and Ca^{2+} transport in sarcoplasmic reticulum."

J. L. Rigauld, "Ca^{2+} and H^+ countertransport in sarcoplasmic reticulum."

D. Clarke, "Effects of site-directed mutagenesis on sarcoplasmic reticulum ATPase."

D. Bigelow, "Labeling and spectroscopy studies of sarcoplasmic reticulum ATPase."

M. Green, "Structural studies of the sarcoplasmic reticulum ATPase."

Molecular approaches to the regulation of muscle contraction: J. Potter, J. Putkey, discussion leaders

J. Potter, "Introduction. Ca^{2+} binding site and long helix mutations in skeletal TnC which affect function."

S. Hitchcock, "Site-directed mutagenesis in TnC and Tm."

J. Putkey, "Site-directed mutants of cardiac TnC."

Z. Grabarek, "Site-directed mutations of TnC. Structural considerations."

A. Szent-Gyorgyi, "Molecular approaches to the study of myosin-linked regulation."

Comparitive aspects of intracellular calcium regulation: A. P. Somlyo, A. Fabiato, discussion leaders

A. Somlyo, "Introduction. Ca^{2+} movements in smooth muscle cells."

E. Marban, "The regulation of the process of rise in intracellular Ca^{2+} in cardiac cells."

J. Connor, "Ca^{2+} imaging in neuronal cells: Intracellular Ca^{2+} gradients and neuronal function."

A. Fabiato, "Concluding remarks."

Mycotoxins and Phycotoxins

Plymouth State College

W. W. Carmichael, chair; P. Hart, co-vice chair; A. Visconti, co-vice chair

24–28 June

L. Trenholm, D. Prelusky, discussion leaders

P. Nelson, "Distribution of fumonisin-producing isolates of *Fusarium moniliforme*."

G. Codd, "Toxic cyanobacteria and their toxins."

S. Hall, "Studies on shellfish toxins—recent outbreaks and research results."

B. Yagen, discussion leader

P. Theil, "The detection of fumonisins in foods and feeds and the implications for human and animal health."

T. Wilson, "Pathology of fumonisin intoxication."

K-I, Harada, discussion leader

R. Plattner, "Analytical methodology for fumonisins."

T. Yasumoto, "Structure and detection research of marine phycotoxins."

M. Quilliam, "Recent developments in instrumental analytical methods for marine phycotoxins."

B. Jarvis, discussion leader

D. Bhatnagar, "Elucidation of molecular events in aflatoxin biosynthesis."

S. Passi, "Role of lipoperoxidation in aflatoxin biosynthesis."

L. Zamir, "Target-oriented inhibition of trichothecene biosynthesis."

M. Ploi, discussion leader

D. Baden, "Are there molecular characteristics of plyether phycotoxins important for potency?"

M. Namikoshi, "Isolation and structure studies on the hepatotoxins of cyanobacteria."

T. Kuiper-Goodman, "Risk assessment of carcinogenic mycotoxins."

I. Falconer, discussion leader

C. Mackinstosh, "Effects of microbial toxins and tumor promoters on intracellular protein phosphorylation."

H. Fujiki, "Inhibition of protein phosphates 1 and 2a by microcystins and nodularin associated with liver tumor promotion."

J. Richard, discussion leader

R. Riley, "Mode of action of the fumonisins."

J. Linz, "Molecular genetics of early pathway aflatoxin biosynthesis."

M. Beremand, "Molecular and genetic studies of trichothecene biosynthesis and regulation."

K. Sivonen, discussion leader

G. Patterson, "Cytotoxins and antineoplastic compounds of cyanobacteria."

W. Demott, "Ecological and evolutionary interactions between zooplankton and toxic cyanobacteria."

R. Marquardt, "Modification of the toxicity of ochratoxin as influenced by dietary treatments."

G. Payne, discussion leader

J. Wright, "Studies of the marine neurotoxin domoic acid: Synthesis of isomers and binding experiment results with kainate and AMPA receptor proteins."

C. Wild, "Aflatoxin albumin adduct levels: Relevance to the understanding of multifactorial etiology of liver cancer."

Natural Products

New Hampton School

R. P. Volante, chair; T. Hudlicky, vice chair

22–26 July

T. Fukuyama, "Synthetic studies on heterocyclic natural products."

K. Ogasawara, "Enantiocontrolled synthesis of physostigmine and related natural products."

S. Ley, "π allyl tricarbonyl iron lactone complexes in synthesis."

M. Kraft, "Organic reactions using transition metals."

P. Knochel, "Polyfunctional zinc and copper organometallics: Ideal intermediates in natural products synthesis."

B. Ganem, "Studies on the inhibition of carbohydrate metabolism."

B. Frasier-Reid, "Serendipity on the road from carbohydrates to natural products."

A. Klibanov, "Enzymatic transformations in organic solvents."

T. Takahashi, "Synthesis and transannular cyclization of neocarzinostatin-chromophore and esperamicin-calicheamicin analogs."

D. Kahne, "The calicheamicin oligosaccharide."

G. Dreyer, "HIV protease inhibition."

D. Askin, "HIV protease inhibitors: New synthetic routes to hydroxyethylene dipeptide isosteres."

M. Kahn, "Peptide secondary structure, mimetics, and molecular recognition."

D. Norbeck, to be announced

R. Armstrong, "Synthesis of DNA-alkylating natural products."

T. Begley, "Mechanistic studies on light-dependent enzymes: DNA photolyase and protochlorophyllide reductase."

D. Carini, "Discovery of a series of nonpeptide angiontensin II receptor antagonists."

M. Shibasaki, "Catalytic asymmetric synthesis of natural products."

P. Lansbury, "Synthetic and conformational studies on the amyloid protein of Alzheimers' disease."

K. C. Nicolaou, "Chemistry of the enediyne antibiotics."

D. Enders, "Development of enantioselective methods for natural product synthesis."

Neural Plasticity

Brewster Academy

R. Zigmond, chair; M. Kennedy, vice chair

8–12 July

Specification of cell fate during nervous system develompent: C. Shatz, discussion leader

L. Zipursky, D. Anderson, S. Landis; speakers

Computational neuroscience for the non-computational neuroscientist: S. Lisberger, discussion leader

R. Durbin, S. Kaufman, S. Lisberger; speakers

Steroid hormone mechanisms in the nervous system: Membrane actions and gene regulation: M. Bohn, discussion leader

S. Erulkar, M. Majewska, D. Pfaff; speakers

Keynote address: H. Blau, "Differentiation: an active on-going process."

Developmental plasticity of invertebrate synapses: R. Murphey, discussion leader

T. Carew, J. Weeks, R. Murphey; speakers

Modulation of ionic currents: D. Berg, discussion leader

S. Siegelbaum, N. Spitzer, S. Jones; speakers

Glutamate receptors: Biophysics and biochemistry: M. Kennedy, discussion leader

S. Heinemann, G. Westbrook, C. Stevens; speakers

What kinds of information does the hippocampus process?: T. Carew, discussion leader

L. Squire, N. McNaughton, J. McClelland; speakers

Neurotransmitter regulation of gene expression: M. Greenberg, discussion leader

M. Montminy, M. Greenberg, S. Bruden; speakers

Nonlinear Optics and Lasers

Brewster Academy

H. A. Haus, chair; D. Z. Anderson, vice chair

22–26 July

A. Weiner, discussion leader

D. Auston, "Terahertz radiation from photoconducting antennas."

D. Bloom, "Nonlinear electronics."

Y. Silberberg, "Spatial Solitons."

C. Rhodes, "Interaction of high intensity radiation with molecules and solids."

R. Falcone, discussion leader

G. Mourou, "Ultraintense lasers and nonlinear optics of free electrons."

S. Szatmari, "Up-scaling of TW-class KrF lasers."

E. Gobel, discussion leader

D. Steel, "High-resolution nonlinear spectroscopy and photon echoes of localized excitons."

T. Fukuzawa, "Luminescence of type-II excitons in coupled Q.W.s."

J. Shah, "Subpicosecond coherent spectroscopy of optical waveguides."

C. Rhodes, discussion leader

Murmane, "X-rays from short-pulse laser produced plasmas."

Poster session

D. Bloom, discussion leader

W. Sibett, "Frequency tunable fs near IR lasers."

J. Fujimoto, "Femtosecond pulse generation with APM."

To be announced

E. Hanamura, discussion leader

S. Harris, "Electromagnetically induced transparency."

Poster session

R. Slusher, discussion leader

Y. Yamamoto, "Quantum effects of microcavity semiconductor lasers."

J. Aimond, to be announced

W. Tomlinson, to be announced

D. Anderson, discussion leader

T. Tschudi, "Parallel optical processing networks with high space bandwidth product."

B. Zeldovich, to be announced

E. Garmire, "Photorefractive effect in InP."

Nuclear Chemistry

Colby-Sawyer College

J. D. Garrett, chair; D. Guerreau, vice chair

24–28 June

J. d'Auria, discussion leader

A. C. Mueller, "Secondary beam experiments at GANIL."

P. G. Hansen, to be announced

M. Huyse, to be announced

R. F. Casten, discussion leader

A. E. Champagne, "Nuclear structure astrophysics."

Dr. Rebel, "Cosmic gamma-ray showers."

M. A. Riley, discussion leader

M. Hass, "g-factor measurements at high spin."

C. Lister, "The development of collectivity in the A=80 mass region."

W. Urban, "High spin octupole states in Ba-Sm nuclei."

J. Simpson, "Band termination in Xe isotopes."

P. von Brentano, discussion leader

H. Borner, "The GRID technique for lifetime measurements and the collectivity of the two-phonon state in ^{168}Er."

W. Gelletly, "The structure of the heaviest self-conjugate nuclei."

R. V. Janssens, discussion leader

P. Fallon, "Recent experimental results for superdeformed rotational bands."

Panel discussion: Identical bands and aligned spins

F. S. Stephens, I. Ragnarsson, C. L. Wu, R. Wyss, discussants.

J. Draayer, discussion leader

H. Flocard, "Three-dimensional Hartree-Fock calculations of potential energy surfaces."

W. Nazarewicz, "Microscopic origins for superdeformation."

I. Hamamoto, discussion leader

S. Frauendorf, "Three-dimensional cranking."

Y. Alhassid, "Chaos in nuclear states."

D. Guerreau, discussion leader

G. T. Seaborg, "Reminiscences of the early days of the Nuclear Chemistry Gordon Conference."

B. Herskind, "Fluctuation analysis of the quasicontinum."

C. Baktash, "Nuclear structure studies at finite temperature."

W. Lynch, "Nuclear fragmentation for nuclear structure physicists."

QCD in Nuclear Physics

Tilton School

J. P. Vary, chair; R. McKeown, vice chair

22–26 July

G. Garvey, discussion leader

R. Arnold, "Nucleon form factors—Where is perturbative QCD valid?"

J. Moss, "Probing the nuclear antiquark sea via high mass muon pair production."

K. Rith, to be announced

L. Frankfurt, discussion leader

R. Jaffe, "Much ado about the spin of the proton."

W. Busza, "What is known about high-energy quark propagation in nuclear matter?"

H. J. Pirner, discussion leader

A. Bodek, "Deep inelastic electron scattering."

S. Heppelman, "Measurement of color transparency effects in hadronic exclusive scattering."

S. Brodsky, "Novel nuclear effects in QCD."

D. Beck, discussion leader

G. A. Miller, "The energy dependence of color transparency."

M. Strikman, "Color screening and color transparency effects."

A. B. Balantekin, discussion leader

J. Ralston, to be announced

R. Holt, "Photodisintegration of the deuteron at high energy."

G. Brown, "Restoration of scale invariance in nuclear physics."

Discussion leader to be announced

D. Von Harrach, to be announced

H. C. Pauli, "How many photons are in postronium? Structure functions for 3+1 dimensional QED at strong coupling."

G. Young, discussion leader

A. Zieminski, "Production of high P_t jets in nuclei."

S. Nagamiya, "Recent heavy ion results from Brookhaven AGS experiments."

B. Muller, "Parton cascade model."

Discussion leader to be announced

Selected papers from poster sessions

M. Gyulassy, "Jet-quenching e-A through A-A collisions."

Discussion leader to be announced

S. Garpman, "Probing EMU01 data for non-stochastic emission."

M. Rho, "The singlet axial charge of the nucleon as a cheshire cat phenomenon."

Nucleic Acids

New Hampton School

C. O. Pabo, co-chair, L. H. Shulman, co-chair

10–14 June

Nucleic acid structure: I. Tinoco, discussion leader

I. Tinoco, "Usually stable RNA hairpins."

C. Bustamante, "Scanning tunneling microscopy of DNA and *E. coli* RNA polymerase."

D. Wilson, "Thermodynamics and structures of G.A. mismatches."

R. Dickerson, "Sequence-structure relationships from recent high-resolution DNA crystal structures."

RNA structure and function: T. Cech, discussion leader

T. Cech, "Mechanisms of RNA catalysis."

K. Stuart, "RNA editing."

J. Szostak, "In vitro RNA evolution."

F. Michelle, "Catalytic RNA structure."

RNA-protein interactions: T. Steitz, discussion leader

T. Steitz, "Recognition of $tRNA^{Gln}$ by glutaminyl-tRNA synthetase."

S. Cusack, "Crystallographic studies of seryl-tRNA synthetase and its substrates."

I. Wool, "Protein-RNA interactions in ribosomes and mechanism of translocation."

M. Yarus, "Amino acid–RNA interaction."

RNP structure and function: J. Steitz, discussion leader

J. Steitz, "Probing snRNP structures and functions."

J. Abelson, "mRNA splicing in yeast."

J. Gall, "snRNPs in the amphibian Oocyte nucleus."

C. Guthrie, "Dynamic rearrangements in the spliceosome cycle."

Transcriptional regulation: R. Tijan, discussion leader

R. Tijan, "Promoter selective factors, coactivators, and basal components of the RNA pol II iniation complex."

Z. Cao, "Studies on the roles of three isoforms of C/EBP in the differentiation of cultured adipocytes."

W. Herr, "Mechanism of transcriptional regulation by POU homeodomain proteins."

J. Kadonaga, "Activation and antirepression by sequence-specific transcription factors."

DNA-protein interactions: P. Sigler, discussion leader

P. Sigler, "The mechanism of specificity in steroid-receptor–DNA interactions."

J. Rosenberg, "The Eco RI–DNA complex."

N. Pavletich, "Crystal structure of a zinc finger–DNA complex at 21 Å resolution."

K. Wuthrich, "NMR analysis of specific protein–nucleic acid interactions."

DNA replication: B. Alberts, discussion leader

B. Alberts, "Combining replication and recombination enzymes in translesion DNA synthesis."

B. Brewer, "Yeast DNA replication."

B. Blackburn, "Telomere DNA replication."

B. Stillman, "Human DNA replication."

Recombination and supercoiling: N. Cozzarelli, discussion leader

N. Cozzarelli, "The structure of DNA supercoils and catenanes and their activity in site-specific recombination."

A. Landy, "Dynamic and structural aspects of lambda site-specific recombination."

K. Mizuuchi, "Higher order protein-DNA complexes in mu transposition and the chemical mechanism of DNA strand transfer."

J. Wang, "State of intracellular DNA."

Chemistry, methods, and technology: P. Dervan, discussion leader

P. Dervan, "Chemical methods for single-site cleavage of chromosomes."

N. Seeman, "Designing nanostructures with nucleic acids."

J. Stubbe, "New approaches to the mechanistic studies of DNA cleav-

age."

Organic Photochemistry

Proctor Academy

D. F. Eaton, chair; R. A. Caldwell, vice chair

15–19 July

A. M. Trozzolo, discussion leader

D. DeKekuleire, "Tandem norrish type I photoreaction and arene-olefin meta cycloaddition: Direct stereocontrolled conversion of simple 2-norbornanones to complex polyquinanes."

J. H. Penn, "Insights into breaking chemical bonds using photochemical reactions."

O. Chapman, discussion leader

M. G. Kuzmin, "Photoinitiated chain reactions of aromatic compounds."

R. Srinivasan, discussion leader

S. Steeken, "Non-sensitized photochemical production of radical cations and their reactions in nucleophilic solvents."

R. Hochstrasser, "Stilbene photophysics and photochemistry on the femtosecond timescale."

N-C. Yang, discussion leader

F. Winnik, "Applications of fluorescence to the study of aqueous polymer solutions."

J-P. Fouassier, "Photoinduced polymerization reactions: Role of initiator."

P. J. Kropp, discussion leader

C. E. Hoyle, "Photopolymerization of liquid crystals: The effect of order and mobility."

N. J. Turro, discussion leader

H. Gafney, "A photochemical approach to integrated optics."

H. Masuhara, "Ablation and manipulation of molecular materials by intense optical excitation."

A. Lamola, discussion leader

J. Caspar, "Preparation and spectroscopic characterization of organic reactive intermediates included in zeolites."

A. Ellis, "Photoluminescence at the semiconductor-adsorbate interface."

D. Arnold, discussion leader

M. Lahav, "Structure and photochemistry of clusters at the air/water interface."

E. Chandross, discussion leader

J. Barton, "Transition metal complexes as photophysical and photochemical probes of nucleic acid sites."

A. Ueno, "Photochemistry in host-guest complexes."

F. C. Lewis, discussion leader

A. Maki, "Optically detected magnetic resonance as a tool in structural biology."

G. W. Robinson, "Organic photoprobe studies of interfacial and biological water."

S. Farid, discussion leader

R. S. H. Liu, "Protein (opsin, bacterioopsin, and BLG) directed regioselective photoisomerization of polyenes."

P. S. Wagner, discussion leader

G. C. Brainard, "Photic regulation of the neuroendocrine system."

H. G. Roth, discussion leader

D. Mauzerall, "Photogating of ionic currents across lipid bilayers."

F. Scandola, "Towards molecular photochemical devices: Intercomponent electron and energy transfer in polynuclear metal complexes."

R. A. Caldwell, discussion leader

R. G. Weiss, "Photochemistry of and in liquid crystals."

Organic Reactions and Processes

New Hampton School

T. V. RajanBabu, chair; B. H. Lipshutz, vice chair

15–19 July

H. Alper, "Metal catalyzed carbonylation processes."

N. Baine, "Enantioselective synthesis of SKF 93505—a key intermediate for cardiotonic agent."

D. A. Evans, "Studies in asymmetric synthesis."

G. W. J. Fleet, "Carbocycles and hetreocycles from sugar lactones."

T. Hayashi, "New catalytic asymmetric reactions."

D. L. Hughes, "Lipase-catalyzed asymmetric hydrolysis of esters having remote chiral centers."

E. N. Jacobsen, "Toward practical catalysts for asymmetric epoxidation of simple alkenes."

P. Knochel, "Zinc carbenoids and related organometallics as efficient reagents in organic synthesis."

R. D. Little, "Adventures in organic electrochemistry. Applications to synthesis."

J-L. Luche, "Organic sonochemistry—consequences of a new approach for the synthetic chemist."

K. Mullis, "The polymerase chain reaction."

L. Overman, "New reactions and strategies for ring formation."

A. V. Rama Rao, "New methods for the synthesis of biologically active compounds."

D. P. Riley, "Novel asymmetric ketone hydrosilylation catalysts."

W. R. Roush, "Recent studies in acyclic diasteroselective synthesis."

G. Stork, "Temporary silicon connections in organic synthesis."

J. M Stryker, "Toward new transition metal-mediated orgranic reactions."

J. M. Takacs, "Catalytic metal-mediated carbocyclizations."

J. Upesclasis, "Tumor targetting of calicheamicins with monoclonal antibodies."

F. Urban, "Syntheses of 2 (R)—benzylchromans for the diabetes development candidate englitazone."

Y. Yamamoto, "Imine activation—new synthesis of amines, amino acids, and dipeptides."

Organometallic Chemistry

Salve Regina College

A. P. Sattelberger, chair; J. E. Bercaw, vice chair

15–19 July

P. Jutzi, discussion leader

P. T. Wolczanski, "Recent advances in the chemistry of early transition metal nitrogen bonds."

L. Messerle, "Half-sandwich organometallics and organodimetallics of the early transition metals."

P. Harter, "Heterodinuclear complexes containing Bis (cyclopentadlenyl) methane bridges."

P. Legzdins, "$Cp^1M(NO)$ [M=Cr, Mo, W]—versatile sources of fourteen valence electrons."

R. K. Upmacis, discussion leader

M. D. Hopkins, "Conjugated transition-metal complexes and polymers."

D. L. Lichtenberger, "Principles of electronic structure in organometallic chemistry from PES and STM."

J. C. Green, "Electron localization—an experimental approach."

H. W. Turner, discussion leader

J. Okuda, "Coordination chemistry of a functionalized cyclopentadlenyl ligand."

D. E. Wigley, "Phenoxide and phenylimide complexes of group 5 transition metals in cycloaddition chemistry."

J. P. Selegue, "Metallacumulenes and carbide complexes: New chemistry of carbon-rich ligands."

J. L. Templeton, "Ligand-based reactions in group 6 d^4 monomers."

R. T. Baker, discussion leader

B. K. Carpenter, "Formation and cleavage of carbon-carbon bonds in dinuclear nickel compounds."

J. P. Fackler, Jr., "Oxidative addition to dinuclear and linear trinuclear organometallic compounds. Is there metal atom cooperativity in these reactions?"

R. G. Finke, "Bioorganometallic chemistry related to coenzyme B_{12}."

J. K. Money, discussion leader

J. M. Boncella, "Acyclic diene metathesis (ADMET) polymerization: Polymer synthesis and catalyst development."

R. M. Waymouth, "Stereospecific and enantiospecific catalysis with group 4 transition metals."

C. J. Curtis, "Development of systems for the electrochemical reduction of carbon monoxide."

R. J. Klingler, "Hydroformylation catalysis in supercritical media."

J. Stein, discussion leader

M. D. Curtis, "Reactions of molybdenum/cobalt/sulfur clusters relevant to HDS catalysis."

D. M. Hoffman, "Applications of inorganic and organometallic compounds in the chemical vapor deposition of metal nitride thin films."

W. L. Gladfelter, "Molecular routes to clusters, particles, and thin films."

J. D. Fellmann, discussion leader

W. D. Wulff, "Organomimetic regulatory processes in an organometallic reaction."

R. A. Andersen, "Does the organometallic chemistry of the f-block elements have anything new to teach us that cannot be obtained by studies on the d-block elements?"

W. Tumas, "Oxidation of d^0 organometallics."

B. E. Bursten, discussion leader

C. P. Casey, "New reactions of organorhenium compounds."

R. R. Schrock, "New high-oxidation state imido complexes."

G. S. Silverman, discussion leader

Contributed short papers.

Origins of Solar Systems

Colby Sawyer College

A. G. W. Cameron, chair; D. Black, vice chair

8–12 July

Comets and planetary volatiles; discussion leader to be announced

E. Shoemaker, "Evolution of the comet distribution."

R. Prinn, "Planetary volatiles and atmospheres."

Planetary accumulation: S. Weidenschilling, discussion leader

G. Wetherill, "Accumulation of the terrestrial planets."

D. Stevenson, "Accumulation of the giant planets."

Physical and chemical processes in the solar nebula: P. Cassen, discussion leader

F. Shu, "Physical processes driving solar nebula evolution."

W. Benz, "Numerical studies of accretion disks."

B. Fegley, "Chemical processes in the formation of the solar system."

Search for protostars and planetary systems: H. Abt, discussion leader

S. Strom, "Astronomical observations of protostellar disks."

D. Black, "Searching for unseen stellar companions."

Violent activity associated with young stars: discussion leader to be announced

C. Lada, "Energetic outflows from embedded young stellar objects."

S. Edwards, "Energetic winds from optically visible young stellar objects."

E. Levy, "Magnetic activity in the solar nebula."

Meteoritic components: J. Kerridge, discussion leader

H. Palme, "Calcium-aluminum inclusions: Implications for solar nebula conditions."

J. Wood, "Fractionation and melting of early condensates."

Star formation: P. Bodenheimer, discussion leader

P. Myers, "Molecular cloud cores and star formation."

A. Boss, "Interstellar gas collapse calculations."

Planetary evolution: discussion leader to be announced

W. Kaula, "Heat deposition during planetary accumulation."

M. Drake, "Early history of the earth."

Comparative planetology: discussion leader to be announced

J. Head, "Comparative planetology: Venus, Earth, Mars."

J. Lunine, "Icy bodies in the outer solar system."

Oscillations and Dynamic Instabilities in Chemical Systems

Salve Regina College

K. Showalter, chair; J. L. Hudson, R. Kapral, co-vice chairs

1–5 July

Temporal behavior: A. Zhabotinsky, discussion leader

E. Wasserman, "Comments from an industrial perspective."

R. J. Field, "Interpretations of aperiodicity in the BZ reaction."

M. Schell, "Electrochemical instabilities: Experiments and theory."

Spatial behavior: K. Kustin, discussion leader

P. De Kepper, "Experimental study of turing-like chemical patterns."

H. L. Swinney, "Observation of transitions in chemical spatial patterns."

J. P. LaPlante, "Instabilities in coupled CSTR's."

Modeling of spatiotemporal behavior: A. Mikhailov, discussion leader

J. J. Tyson, "Wave propagation in exictable media."

A. T. Winfree, "Vortex dynamics: A survey in parameter space."

D. Barkley, "Spatiotemporal patterns in excitable media."

Brief glimpses of recent developments: E. Koros, discussion leader

R. Larter, organizer

Thermodynamic and stochastic theory: W. Horsthemke, discussion leader

J. Ross, "Thermodynamics, relative stability, and experiments."

K. Hunt, "Thermodynamics and stochastic theory of multiple steady state systems."

G. Nicolis, "Chemical chaos and self-organization: A master equation description."

Biological systems: B. Hess, discussion leader

I. R. Epstein, "The crustacean stomatogastric ganglion: A simple oscillatory neural network."

J. D. Murray, "Complex pattern formation in embryology and the formulation of morphogenetic laws."

Gas phase and heterogeneous systems: P. Gray, discussion leader

S. K. Scott, "Oscillations and chaos in the gas phase oxidation of hydrogen and carbon monoxide."

L. Schmidt, "Spatial patterns in catalytic oscillators."

A. Arneodo, "Spatiotemporal chaos in diffusion limited growth phenomena."

Membranes and electric fields: A. Goldbeter, discussion leader

R. Larter, "Potential oscillations in a lipoid membrane."

R. D. Astumian, "Frequency response of catalytic reactions in an oscillating field."

Mechanisms—from micro to macro: J. F. Griffiths, discussion leader

R. Kapral, "Reactive lattice gas automata."

Z. Noszticzius, "Modeling the BZ reaction with the radicalator."

R. M. Noyes, "Whither oscillations, instabilities, and delayed feedbacks?"

Persons interested in contributing to the "Recent Developments" session should contact: R. Larter, Department of Chemistry, Indiana-Purdue University, 1125 East 38th Street, Indianapolis, IN 46205.

Molecular and Biochemical Aspects of Parasitism

Colby Sawyer College

D. Despommier, chair; D. McMahon-Pratt, vice chair

5–9 August

L. Simpson, discussion leader

S. Hajduk, "RNA editing in trypanosomes."

B. Sollner-Webb, "Partially edited mRNAs of trypanosomes."

K. Stuart, "Minicircles encoding gRNAs in *Trypanosoma brucei*."

L. Van de Ploeg, discussion leader

J. B. Lawrence, "RNA and DNA organization in interface nuclei."

A. J. Solari, "Fine structure and nuclear division in trypanosomes."

A. James, discussion leader

A. Raikhel, "Biochemical and molecular aspects of mosquito vitellogenesis."

P. Willadsen, "Concealed antigens and their use in vaccination against hematophagous parasites."

M. Raymond, "Evolution of insecticide resistance genes in the mosquito, *Culex pipiens:* From molecular biology to populations."

M. Selkirk, discussion leader

J. McKerrow, "Developmental regulation of nematode proteases."

R. Maizels, "Structure and function of secreted glycoconjugates from toxocara."

A. Sher, discussion leader

T. Mossman, "Immune regulation by T helper subsets and their cytokines."

F-Y. Liew, "T cell regulation of leishmaniasis."

T. Nutman, "Human T cell responses to helminth infection."

C. Long, discussion leader

R. Nussenzweig, "Sporozoite vaccines."

M. Patarroyo, "Development of the synthetic asexual blood stage malaria vaccine."

S. Beverly, discussion leader

C. Clayton, "Analysis of trypanosome promoters."

J. Ravetch, "Approaches toward DNA transfection in malaria."

A. Fire, "Transfection approaches and nematodes."

D. Harn, discussion leader

E. Pearce, "Cytokine responses in murine schistosomiasis."

E. Secor, "Lymphoproliferative and cytokine responses of human T cells to partially purified egg antigens."

D. Wirth, discussion leader

T. Wellems, "MDR genes are unlinked to chloroquine resistance to *Plasmodium falciparum*."

A. Common, "Evidence for MDR association with chloroquine resistance *Plasmodium falciparum*."

W. Milhouse, "Drug resistance in clinical *P. falciparum* malaria."

Periodontal Diseases

Plymouth State College

R. R. Ranney, chair; H. Birkedal-Hansen, vice chair

24–28 June

Heritable influences on periodontal diseases: R. R. Ranney, discussion leader

J. Boughman, "Family studies of early onset periodontitis."

B. Michalowicz, "Use of twin models to estimate genetic and environmental influences on periodontitis."

H. Schenkein, "Genetic contributions to factors associated with periodontitis."

Towards improved identification methods for oral bacteria: S. S. Socransky, discussion leader

B. Paster, "Nucleotide probes."

W. E. C. Moore, "Other systems for rapid indentification."

Virulence factors within periodontal bacterial species: J. Zambon, discussion leader

E. Lally, "Molecular biology of Aa leukotoxin."

R. Arnold, "Host-parasite relationships in virulence of *Porphyromonas gingivalis* and Aa."

G. Bedi, "Fimbriae as virulence factors for *Porphyromonas gingivalis*."

Potentials for immunization in the periodontal diseases: J. McGhee, discussion leader

W. Clark, "Effects of immunization on periodontal microbial flora."

J. Ebersole, "Immunological interference with virulence of periodontal pathogens."

Growth factors and cytokines in pathogenesis: R. C. Page, discussion leader

A. Allison, "Biological effects of the cytokines."

J. Reynolds, "Cytokines in periodontal destruction."

A. S. Narayanan, "Growth factor from cementum."

Bone biology: The BMPs and TGF-beta family: J. Aubin, discussion leader

V. Rosen, "The BMPs: Bone and cartilage development."

L. Bonewald, "TGF-beta and osteoblast-osteoclast coupling."

Metalloproteinases as effectors of degradation of connective tissues: H. Birkedal-Hansen, discussion leader

H. Welgus, "Metalloproteinase expression in macrophages."

N. Partridge, "Metalloproteinases in bone cells."

C. Overall, "Properties of 72- and 92-kD gelatinases."

Business and plenary session: R. Ranney, discussion leader

T. Bouchard, "Genetic determinants of human disease."

Diagnosis and evaluation in dental implantology: M. K. Jeffcoat, discussion leader

U. Bragger, "Subtraction radiography for the evaluation of dental implants."

M. Jeffcoat, "Quantitative radiology and tomography for pre- and post-treatment evaluation of implants."

Phagocytes

Holderness School

J. L. Gallin, chair; C. F. Nathan, vice chair

24–28 June

Receptors: S. Zigmond, discussion leader

D. T. Fearon, "Suppressing in vivo responses with soluble complement receptors."

M. Krieger, "The macrophage scavenger receptor."

S. Gordon, "Adhesion receptors of stromal macrophages in murine lymphohaemopoietic organs."

S. D. Wright, "LPS binding proteins of serum."

Adhesion: T. A. Springer, discussion leader

T. A. Springer, "Molecular basis of leukocyte-endothelial cell interactions."

J. Lowe, "Glycosyltransferase genes that determine expression of carbohydrate ligands for the selectin/LEC-CAM family of cell adhesion molecules."

Ions, pumps, transporters: E. K. Gallin, discussion leader

F. Maxfield, "Role of calcium in leukocyte adhesion and motility."

D.P. Lew, "Ca^{2+} imaging Ca^{2+} channels and calciosomes."

L. Simchowitz, "The role of Na^{2+}/Ca^{2+} exchange in human neutrophil function."

S. Grinstein, "Proton channels and pumps in the regulation of intracellular pH in phagocytes."

Cytoskeleton: T. P. Stossel, discussion leader

C. Cunningham, "Genetic approaches to cell motility."

J. Condeelis, "Testing cortical expansion model of pseudopod extension in *Dictyostelium* using molecular genetics."

Signal Transduction: R. Synderman, discussion leader

L. C. McPhail, "Lipid second messengers and NADPH oxidase activation."

C. N. Serhan, "Lipoxin biosynthetic circuits and their actions with human neutrophilis."

Phagocyte-induced tissue injury: S. Kelbanoff, discussion leader

G. J. Gleich, "Eosinophil-induced tissue damage."

S. J. Weiss, "Oxidation regulation of tissue-destructive proteases."

Oxidative processes: M. Karnovsky, discussion leader

J. T. Curnutte, "Structure-function relationships in phagocyte cytochrome b: New insights from chronic granulomatous disease."

T. Leto, "Molecular analysis of NADPH oxidase components."

E. Pick, "Cell-free assembly of the superoxide-forming NADPH oxidase—the missing links."

Degranulation: J. L. Gallin, discussion leader

H. Pollard, "Synexin, calcium, and

membrane fusion."

J. D. Ernst, "Annexins as effectors of membrane fusion in degranulation."

Cytokines and growth factors: C. F. Nathan, discussion leader

C. F. Nathan, "Modulation of phagocytic oxidase by cytokines."

M. Baggiolini, "NAP-1/interleukin-8 and related chemotactin cytokines."

D. W. Golde, "The colony-stimulating factors and mature myeloid cell function."

F. Cominelli, "IL-1 receptor antagonist."

B. N. Babior, P. Elsbach, D. Roos, S. C. Silverstein, poster discussants

Biophysical Aspects of Photosynthesis

Proctor Academy

R. Blankenship, chair; B. Diner, vice chair

29 July–2 August

G. Feher, session chair

W. Parson, H. Michel, discussion leaders

W. Zinth, "Ultrafast spectroscopy of the primary electron transfer in bacterial reaction centers."

D. Bocain, "Resonance Raman spectroscopy of bacterial reaction centers."

R. Friesner, "Theory of spectroscopy and electron transfer dynamics."

M. E. Michel-Beyerle, session chair

M. Gunner, J. Jortner, discussion leaders

L. Dutton, "Distance dependence of biological electron transfer."

B. Hoffman, "Mechanisms of electron transfer in metalloproteins."

Z. Fetistova or R. Cogdell, session chair

R. van Grondelle, M. Mimuro, discussion leaders

T. Owens, "Mechanism and dynamics of singlet energy transfer from carotenoid to chlorophyll."

A. Holzwarth, "Excitation energy flow in chlorosome antennas from green bacteria."

Speaker to be announced

D. Youvan, session chair

S. Boxer, M. Wasielewski, discussion leaders

T. Handel, "De novo design of proteins."

D. Gust, "Synthetic models for reaction centers."

J. Golbeck, session chair

P. Setif, R. Malkin, discussion leaders

A. Karplus, "X-ray structure of Fd-NADP reductase at high resolution."

G. Zanetti, "Electron transport on the acceptor side of photosystem I."

W. Nitschke, "Electron transfer components in green sulfur bacteria and heliobacteria: Comparisons to photosystem I."

P. Joliot, session chair

W. Haehnel, D. Knaff, discussion leaders

F. Millet, "Electrostatic control of electron transport specificity."

A. Vermeglio, "The role of supercomplexes in bacterial electron transport."

G. Brudvig, session leader

G. Babcock, discussion leader

W. Rutherford, "Photosystem II studied by EPR."

D. Britt, "EPR and pulsed EPR of the NM oxygen evolving complex."

J. Barber, session leader

Lord G. Porter, "The development of flash photolysis and its application to the study of photosynthesis."

W. Cramer, session chair

A. Crofts, P. Rich, discussion leaders

J. Lavergne, "Coupling of proton uptake and release to secondary electron transfer in photosystem II."

C. Wraight, "Proton translocation pathways in bacterial reaction centers."

D. Robertson, "Functional analysis of cytochrome bc_1 complexes from bacteria."

Physical Metallurgy

Plymouth State College

W. J. Boettinger, J. H. Perepezko, co-chairs

Foundations of Microstructure Development

29 July–2 August

Industrial perspective on advanced materials: A. Rosenstein, discussion leader

J. Staley, "Al alloy development."

M. Blackburn, "Advanced aerospace alloys."

R. Rosenberg, "Electronic materials."

Interface reactions: F. Spaepen, discussion leader

J. Cahn, "Heterogeneous nucleation."

U. Dahmen, "TEM study of the development of grain boundaries and precipitates."

Solidification microstructures: J. Hunt, discussion leader

R. Trivedi, "Solidification microstructures."

R. Brown, "Nonlinear dynamics and wavelength selection in cellular solidification."

J. Dantzig, "Macro/micromodelling of eutectic castings."

Crystal growth kinetics:

D. Oxtoby, "Diffuse interface theories of crystal growth."

A. Wheeler, "Phase field calculations of binary alloy solidification."

Diffusional transformations: B. Morris, discussion leader

J. Cohen, "Early stages of precipitation."

G. Purdy, "Precipitation in ternary systems."

L. Greer, "Solid-state amorphization."

Diffusion mechanisms: J. Morral, discussion leader

H. Bakker, "Diffusion mechanisms in ordered intermetallics."

F. Van Loo, "Kirkendall effect in multiphase diffusion."

Interfaces and domains:

J. Howe, "HRTEM of interfaces."

P. Voorhees, "Stress effects on precipitation and coarsening."

A. Roytburd, "Formation of polydomain structures."

Ordering transformations: B. Burton, discussion leader

G. Inden, "Phase diagram modeling."

S. Allen, "Diffuse interfaces in ordering systems."

Displacive transformations: L. Tanner, discussion leader

S. Banerjee, "Replacive/displacive ordering."

B. Johnson, "Thermodynamics of coupled displacive/diffusive transformations."

Physical Organic Chemistry

Holderness School

S. W. Staley, chair; M. C. Etter, vice chair

10–14 June

A. J. Arduengo, III, "Amidazoles: From solutions to surfaces and back (as carbenes)."

W. E. Billups, "Studies on the chemical and physical properties of C_{60}."

C. M. Breneman, "Conformational analysis from the viewpoint of electronic topology."

D. O. Cowan, "Progress on organic metals and superconductors."

D. C. Crans, "Thermodynamic, kinetic, and biological properties of organic vanadates."

F. N. Dieterich, "Recent advances in the chemistry of new carbon allotropes."

W. v. E. Doering, "Stabilization energies of polyenyl radicals."

D. A. Dougherty, "Spin control in organic molecules and materials. Toward an organic ferromagnet."

P. Dowd, "Model studies of biochemical catalysts."

G. Fraenkel, "Structure and dynamic behavior of organolithium compounds."

C. M. Friend, "Transformation of organic molecules on transition metal surfaces."

J. P. Glusker, "Directional preferences of binding to functional groups."

J. L. Goodman, "Listening to chemical reactions: Photoacoustic calorimetry of reactive intermediates."

J. J. Grabowski, "Gas-phase anion-molecule chemistry: The intrinsic reactivity of organic esters."

K. N. Houk, "Investigations of reaction mechanism with theoretical methods."

H. I. Kenttamaa, "Gas phase studies of organic cations."

F. M. Menger, "Systems research: Groups of organic molecules that operate collectively."

W. H. Okamura, "Thermal rearrangement of vinylallenes and related polyenes: Sigmatropic shifts and cistrans isomerization."

C. L. Perrin, "Amide rotation: Origin and quasi-primary isotope effects."

Pineal Cell Biology

Proctor Academy

M. Zatz, chair; R. J. Reiter, vice chair

12–16 August

Molecular regulation of receptors and trandsuction: T. Deguchi, discussion leader

J. Benovic, "Adrenergic receptors and G-proteins."

P. Hargrave, "Rhodopsin structure and function."

M. Applebury, "Molecular characterization of rods and cones."

Second and third messengers: D. C. Klein, discussion leader

T. Ho, "pH."

N. Schaad, "MEKA protein."

D. Carter, "Immediate-early genes."

Melatonin binding and cellular actions: M. Dubocovich, discussion leader

D. Weaver, "Localization."

J. Vanecek, "Anterior pituitary."

J. Saavedra, "SCN and arteries."

P. Morgan, "Ovine pars tuberalis."

Melanophores and melatonin mechanism: S. Reppert, discussion leader

M. Rollag, "The melanophore model system."

D. Sugden, "Melatonin structure-activity relationship."

Photic regulation of the pineal: M. Menaker, discussion leader

H. Meissl, "Photoreceptor function of the pineal."

R. Foster, "Non-visual photoreceptors."

J. Takahashi, "Chick pineal."

Retinal melatonin: H. Underwood: discussion leader

G. Cahill, "Retina not just another pineal."

M. Pierce, "Retinal cell culture."

Neural regulation of SCN and pineal: R. Zigmond, discussion leader

R. Y. Moore, "Mammals."

V. Cassone, "Birds."

J. Moffett, "NAAG."

C. Colwell, "NMDA."

J. Axelrod, "The pineal gland and signal transduction."

Photoperiodism; R. Reiter, discussion leader

E. Bittman, "Melatonin: Site and consequences."

M. Hastings, "Melatonin timing."

B. Goldman, "Multiple responses to melatonin."

M. Stetson, "Development and photoperiodism."

Cellular and Molecular Biology of the Plant and Fungal Cytoskeleton

Proctor Academy

C. Silflow, chair; D. Fosket, vice chair

22–26 July

D. Fosket, discussion leader

B. Gunning, "Role of the preprophase band in higher plant cell division."

R. Williamson, "The cytoskeleton and root morphogenesis in *Arabidopsis*."

M. Wada, "Preprophase band development and its control in *Adiantum*

protonema."

D. P. Snustad, discussion leader

D. P. Snustad, "Developmentally regulated expression of higher plant tubulin genes."

F. Solomon, "Yeast tubulin genes and interacting genes."

D. Fosket, "Regulation of expression of tubulin genes in soybean."

B. Palevitz, discussion leader

B. Palevitz, "To have and have not: A tale of plant cells with and without F-actin."

I. Lichtscheidl, "Function of endoplasmic reticulum in connecting actin filaments and organelles with the plasma membrane."

D. Menzel, "Dynamics of the microfilament cytoskeleton in *Acetabularia.*"

R. Meager, discussion leader

D. Drubin, "Molecular genetic analysis of yeast actin binding proteins."

A. Noegal, "Actin binding protein genes in *Dictyostelium.*"

R. Meager, "Correlating diverse actin genes with their functions in higher plants."

W. Z. Cande, discussion leader

A-M. Lambert, "MTOC activity and actin dynamics during mitosis in higher plants."

M. Yanagida, "Fission yeast mitotic motors and microtubule interacting proteins."

D. Zhang, "Visualization of the cytoskeleton in living plant cells."

W. Z. Cande, "Maize microsporogenesis: Model system for studying cytoskeletal function in mutant and wild-type meiosis."

B. Oakley, discussion leader

M. Rose, "Kinesin-related genes in yeast."

B. Oakley, "Gamma tubulin—a new member of the tubulin superfamily that is associated with MTOCs."

D. Mitchell, "Molecular analysis of the assembly and function of *Chlamydomonas* flagellar dyneins."

A. Hardham, discussion leader

H. Shibaoka, "Organization of the phragmoplast-microtubule array in tobacco BY-2 cells."

J. Hush, "Changes in microtubule orientation induced by wounding."

A. Cleary, "Microtubule organization and nucleation in stomatal complexes."

J. Pringle, discussion leader

J. Pringle, "Genetic analysis of genes involved in polarity determination in yeast."

D. Kropf, "Cytoskeletal changes during *Fucus* embryogenesis."

S. Scordilis, discussion leader

S. Shimmen, "Characterization of myosin in lily pollen tubes."

S. Scordilis, "Actin and myosin in plants and fungi."

Plant Cell and Tissue Culture

Plymouth State College

M. Crouch, chair; P. Maliga, vice chair

10–14 June

C. McDaniel, discussion leader

M. Marcotrigiano, "Use of synthesized chimeras to study shoot meristem formation."

D. Mohnen, "Thin cell layer morphogenesis and the effect of extracellular matrix components."

C. McDaniel, "Assessment of developmental states employing tissue culture."

J. Selker, discussion leader

N. Kerk, "Gene expression in root meristems in culture."

P. Christou, "Transformation via electric discharge microprojectile bombardment as a tool for studying developmental events in higher plants."

M. Marcotrigiano, discussion leader

J. L. Selker, "Studies of the mechanical properties of apices."

I. Sussex, "Chimeras and improvement of vegetatively propagated crops."

Panel discussion on meristem studies.

I. Sussex, discussion leader

D. Simmonds, "Cytoskeletal changes during induction of microspore embryogenesis in *Brassica napus.*"

J. Janick, "Desiccation resistance in synthetic seeds."

B. Ishida, discussion leader

V. Sawhney, "In vitro culture of normal and mutant floral buds."

R. Jorgensen, "Developmental control of pigment transgenes and homologues in *Petunia.*"

N. Kerk, discussion leader

D. Sjoland, "Phloem differentiation in plant tissue culture."

J. Weinstein, "Study of tracheary element differentiation at single cell resolution in isolated cells of *Zinnia.*"

D. Sjoland, discussion leader

B. Ishida, "Calyx ripening in in vitro ovary cultures of tomato."

M. Hawes, "Mechanisms of programmed release of cells from the root cap."

C. Nessler, "Cytodifferentiation and secondary product metabolite accumulation in transgenic plants."

P. Maliga, discussion leader

H. Goodman, "The *Arabidopsis* genome project and its impact on plant science."

M. Crouch, discussion leader

V. Bringi, "Enhancing secondary metabolite production in cultured cells."

K. Giles, "Industrial and agricultural opportunities from plant tissue culture."

P. Mooney, "Social and economic implications of plant tissue culture research."

Plant Molecular Biology

Proctor Academy

C. J. Lamb, chair; S. Howell, vice chair

17–21 June

B. Ryan, discussion leader

M. Hahn, "Fungal elicitor receptors."

D. Scheel, "Elicitor signal transduction mechanisms."

F. Ausubel, "Genetic dissection of arabidopsis: Bacterial pathogen interactions."

W. Briggs, discussion leader

J. Chory, "Genetic dissection of the photoregulation of development."

T. Cashmore, "*Cis-* and *trans*-factors for light regulation of gene expression."

S. Howell, discussion leader

A. Binns, "Cytokinin signal pathways."

A. Theologis, "Molecular regulation of ethylene production."

T. Bleecker, "Molecular cloning of a putative ethylene receptor."

P. Rubery, discussion leader

H. Klee, "Perturbation of hormone physiology by gene transfer."

K. Palme, "Auxin receptors."

D. McCarty, discussion leader

T. Sachs, "Molecular requirements for cellular pattern formation."

S. Hake, "Molecular cloning of knotted: Patterning in maize leaves."

G. Jurgens, "Genes for patterning in arabidopsis embryos."

P. Albersheim, discussion leader

J. Nasrallah, "Recognition and transduction mechanisms in self-imcompatibility."

D. Weigel, "Floral homeotic genes."

N. Federoff, discussion leader

R. Jorgensen, "Co-suppression and metastable patterning."

A. Harmon, "Novel calcium-dependent protein kinases."

R. Crain, "IP_3 signal systems."

S. Howell, discussion leader

I. Sussex, "Pattern formation in plant development."

C. Lamb, "Gene expression in meristems."

C. Lamb, discussion leader

T. Jacobs, "Maturation promoting factor protein kinase."

R. Meeks-Wagner, "Molecular transition from vegetative to floral meristems."

S. Long, "Signals in nodule morphogenesis."

Polyamines

Salve Regina College

C. W. Porter, co-chair; N. Seiler, co-chair; O. Heby, co-vice chair; G. D. Luk, co-vice chair

17–21 June

Gene structural and expression I: S. Cohen, I. Scheffler, discussion leaders

A. E. Pegg, "Structural studies of polyamine enzymes."

C. Kahana, "Regulation of ODC activity."

P. Coffino, "Gene expression in differentiation."

Gene structure and expression II: S. Hayashi, F. Berger, discussion leaders

L. Alhonen, "Transgenic mice expressing human ODC."

S. Boyle, "Enzyme regulation in bacteria."

Metabolism and homeostasis: R. David, M. Grillo, discussion leaders

A. Fairlamb, "Polyamine metabolism in trypanosomes."

K. Igarashi, "Polyamine transport genes in bacteria."

R. Casero, "Regulation of SSAT activity."

Regulatory mechanisms: O. Janne, R. Malmberg, discussion leaders

L. Persson, "Translational control of ODC."

R. Robins, "Regulatory mechanisms in plants."

Molecular interactions: U. Bachrach, T. Oshima, discussion leaders

L. Marton, "Polyamine-DNA interactions."

M. Topal, "Spermidine and restriction enzymes."

P. Molinoff, "Regulation of the NMDA receptor."

Signal transduction: J. Mitchell, E. Holtta, discussion leaders

J. Manzella, P. Blackshear, "Hormonal control of ODC."

E. Chambaz, "Protein kinase C."

Diagnosis and therapy: P. McCann, K. Nishioka, discussion leaders

F. Muskiet, "Polyamines as tumor markers."

C. Bacchi, "Treatment of African trypanosomiasis."

J. P. Moulinoux, "Exogenous polyamines in tumor therapy."

Special lecture: C. Porter, N. Seiler, discussion leaders

S. Baylin, "Methylation and gene expression."

Inhibitors and analogs: J. Coward, C. Byus, discussion leaders

R. Bergeron, "Analogs as antitumor agents."

J. P. Behr, "Selective targeting of nucleic acids."

U. Regenass, "New inhibitors as antitumor agents."

Polymer Colloids

Tilton School

M. S. El-Aasser, chair; D. R. Bassett, vice chair

1–5 July

M. S. El-Aasser, discussion leader

R. G. Gilbert, "Polymerization kinetics in microemulsion: The formation and properties of supercompressed polymer chains."

J. Asua, "Kinetics of high solids emulsion polymerization."

D. C. Sundberg, discussion leader

D. R. Bassett, "Emulsion copolymerization using vinyl ester monomers."

J. Guillott, "Fundamental investigation of acrolonitrile-butadiene-styrene copolymer latexes (ABS): Polyutadiene seed and grafting of S/An copolymerization."

P. R. Sperry, discussion leader

T. G. M. van de Ven, "Polymer bridging of latex particles."

R. Pelton, "Steric stabilization-minimum stabilizer chain length."

L. Schechtman, "Sterically stabilized polymer colloids prepared with polymerizable stabilizer."

T. G. M. van de Ven, discussion leader

N. E. Ise, "Recent topics of ionic polymers solutions."

C. F. Zukoski, "Flow of suspension near close packing."

R. H. Ottewill, discussion leader

C. A. Silebi, "Rheology of associative thickened latexes."

B. Richey, "The interactions of a fluorescently labeled associative thickener with paint components."

G. W. Poehlein, discussion leader

H. U. Moritz, "Reaction calorimetry of emulsion polymerization."

F. J. Schork, "On-line sensors for emulsion polymerization."

J. W. Vanderhoff, discussion leader

A. Klein, "Latex film formation and chain diffusion across particle interfaces."

A. Zosel, "The influence of crosslinking on structure, mechanical properties, and strength of latex films."

P. A. Lovell, "Toughening of poly(methyl methacrylate) with multiple-phase latex particles."

R. M. Fitch, R. H. Ottewill, R. L. Rowell, J. W. Vanderhoff, discussion leaders

Poster session

D. R. Bassett, discussion leader

A. German, "Polymer encapsulation of submicron TiO_2 particles in aqueous dispersion."

D. I. Lee, "The importance of electrokinetic measurements for understanding the colloidal phenomena occuring in paper coating formulations."

R. H. Ottewill, "Ellipsoidal polystyrene latex particles."

Polymers

Brewster Academy

H. J. Harwood, chair; N. D. Field, vice chair

24–28 June

S. Z. D. Cheng, "Gel/sol and liquid crystalline transitions in rigid rod polyimides."

D. R. Fagerburg, "A new melt preparation method for poly (phenylene sulfide)."

J. M. J. Frechet, "Hyperbranched polymers."

S. D. Goodrich, "Novel polymerizations based on copper chemistry."

T. N. Huckerby, "New aspects of initiation in radical polymerization."

M. Irie, "Photoresponsive polymers. Photostimulated volume change of polymer gels."

B. Ivan, "Synthesis and characterization of amphiphilic networks."

M. G. Kanatzidis, "Conductive polymers."

R. F. Kirchhoff, "Polybenzocyclobutenes: A new class of high performance polymers."

M. H. Litt, "Cross-linked liquid crystalline polymers from liquid crystalline monomers."

L. J. Mathias, "Crystallinity and motion by ^2H-and ^{15}N-solid state NMR: Nylon 11, nylon 12, and their copolymers."

D. C. Neckers, "Stereolithography."

O. F. Olaj, "New aspects and applications of pseudostationary radical polymerization."

S. Schlick, "Magnetic resonance studies on ionomer membranes and solutions."

M. V. Tirrell, "Adsorption of neutral and charged polymeric amphiphiles."

D. C. Walker, "Free radicals observed through Muons."

G. Wulff, "Polymer assisted molecular recognition. The current understanding of the molecular imprinting process."

To be announced, "Syndiotactic polystyrene."

W. H. Daly, N. D. Field, R. F. Turner, poster discussion leaders

Population Biology and Evolution of Microorganisms

Plymouth State College

A. Campbell, chair; D. Dykhuizen, vice chair

22–26 July

H. Ochman, discussion leader

N. Murray, "Evolution of type I restriction enzymes."

P. Dennis, "Gene duplication and divergence in archaebacteria."

M. Belfort, "Introns in prokaryotes."

S. Karlin, discussion leader

C. Kurland, "Evolution of codon usage."

G. Gutman, "Biases in codon nearest neighbors."

R. Milkman, discussion leader

J. M. Smith, "The role of transformation in the evolution of penicillin resistance."

D. A. Stahl, "Genetic isolation of catabolic traits relating to microbial speciation."

R. V. Miller, "Environmental and evolutionary significance of bacteriophage-mediated gene transfer."

B. Levin, discussion leader

R. Tauxe, "Plasmid transfer and epidemiology."

T. O'Brien, to be announced

P. Highton, discussion leader

J. Walker, "Defective lambdoid bacteriophages."

J. Barondess, "Virulence factors in bacteriophage lambda."

R. Weisberg, "Evolution of phage integrases."

D. Dykhuizen, discussion leader

F. Rosenzweig, "Stable polymorphism of chemostat-selected *Escherichia coli*."

M. Levinthal, "Evolution of metabolic complexity."

A. Skalka, discussion leader

W. Fitch, "Genetic drift and genetic shift in influenza virus."

L. Chao, "Population genetics of RNA viruses."

S. Wain-Hobson, "Evolution and selection pressures on HIV in vivo."

J. Shapiro, discussion leader

R. Lenski, John Mittler, to be announced

E. Selker, "RIP (repeat-induced point mutations)."

Review

J. Adams, to be announced

J. Drake, to be announced

Proteins

Colby Sawyer College

J. King, chair; A. Kossiakoff, vice chair

17–21 June

Sequence determinants of secondary structure

T. Alber, "X-ray structure of the leucine zipper peptides."

T. Handel, "Design and characterization of a metal-binding four-helix bundle."

D. Tirell, "Folding of repeating sequences into the solid state."

R. Sauer, "Pitfalls in extrapolating sequence effects in peptides to proteins."

Protein folding intermediates

C. R. Matthews, "Folding intermediates for beta-barrel proteins."

G. Elove, "Conformation of intermediates in cytochrome c refolding."

K. Kuwajima, "Molten globule intermediates."

Chaperonins

L. Randall, "The secB export chaperonins."

A. Gatenby, "Interactions of GroE chaperonins with folding intermediates."

F-U. Hartl, "Chaperonins in folding and import of mitochondrial proteins."

Modeling of protein folding and structure

G. D. Rose, "Protein secondary structure—analysis and prediction."

K. Dill, "Protein stability and compact denatured states."

F. Richards, "Some tests of structural dogma and design."

Engineering catalytic properties

R. M. Stroud, "Regulation of active site by phosphorylation; isocitrate dehydrogenase."

J. Robertus, "The mechanism of histidine decarboxylase deduced from site-directed mutagenesis and x-ray structure analysis."

S. Taylor, "Cyclic AMP dependent protein kinase; structural features of an enzyme family."

Molecular recognition

J. Wells, "Strategies for designing molecular recognition sites."

I. Wilson, "Structure of antigen: Antibody combining sites."

Y. Patterson, "Antigen: antibody interactions by NMR."

Membrane channels

B. Wallace, "Structure of the gramicidin channel."

W. Welte, "Porin- A beta barrel membrane channel."

A. Karlin, "Critical residues in acetylcholine receptor structure."

S. Fleischer, "Sarcoplasmic reticulum calcium release channels."

Protein biochemistry and National Science Policy

Gobind Khorana, "Rhodopsin function in the visual cycle."

L. Williams, "The training and funding of biochemical and biomedical scientists in the coming decade."

Protein defects and human diseases

C. T. Noguchi, "The mechanism of hemoglobin polymerization in sickle cell anemia."

M. Krieger, "The macrophage scavenger receptor and atherosclerosis."

Purines, Pyrimidines and Related Substances

Salve Regina College

M. J. Robins, chair; W. K. Plunkett, vice chair

8–12 July

Anti-AIDS agents: A. D. Broom, discussion leader

C. K. Chu, "Stereodirected synthesis of new anti-HIV nucleoside analogs."

R. F. Schinazi, "Biological effects of new anti-HIV nucleoside analogs."

J. Balzarini, E. De Clercq, "Antiretroviral activity and metabolism of acyclic phosphonate analogs."

Antiviral agents: J. Chattopadhyaya, discussion leader

D. Averette, "Synthesis and anti-VZV activity of 6-substituted purine Arabinonucleosides."

Poster session I.

Synthesis and biological activity of nucleoside analogs: M. MacCoss, discussion leader

V. Nair, "Methodologies for synthesis of novel purine nucleosides."

V. E. Marquez, "Synthesis and biological activity of carbocyclic and ring-modified nucleosides."

L. W. Hertel, "Synthesis and biological activity of purine 2′-deoxy-2′2′-difluoro nucleosides."

Biomedical applications of nucleoside analogs: M. Mansuri, discussion leader

D. L. J. Tyrrell, "Nucleosides as antihepatitis agents."

D. A. Carson, "Modification of cell function by purine nucleosides."

Mechanism studies with crucial enzymes: M. J. Robins, discussion leader

R. Wolfenden, "Adenosine and cytidine deaminases."

J. Stubbe, "Ribonucleotide reductase—amazing and still confusing."

D. A. Matthews, "Thymidylate synthase—mechanism and design of inhibitors."

Nucleoside analog as antitumor agents: L. B. Townsend, discussion leader

J. A. Secrist, W. B. Parker, "Synthesis and biological activity of thio, fluoro, and carbocyclic nucleoside analogs."

Poster session II.

Oligonucleotide chemistry, structure, function: J. C. Martin, discussion leader

R. A. Jones, "Synthetic approaches to nucleic acid structure."

J.-L. Imbach, "α-oligonucleotides—chemistry and biology."

D. A. Horne, P. B. Dervan, "A chemical approach to sequence-specific recognition of double helical DNA."

Multi-enzyme systems: W. K. Plunkett, discussion leader

C. K. Mathews, "Channeling of deoxynucleotides for DNA replication."

Passage of nucleosides/tides through cell membranes: J. D. Stoeckler, discussion leader

J. A. Belt, "Multiplicity of nucleoside transport systems in mammalian cells."

D. Farquhar, "Membrane-permeable anti-HIV nucleotides."

Quantitative Structure Activity Relationships

Tilton School

J. M. Blaney, chair; H. Kubinyi, vice chair

12–16 August

Lipophilicity and the role of membranes in drug activity: W. Dunn, discussion leader

L. G. Herbette, "Drug-membrane interactions: Molecular basis for drug design."

J. K. Seydel, "The importance of membrane interactions for drug design."

D. E. Leahy, "Predicting the effects of lipophilicity on drug absorption, distribution, and elimination."

The estimation of lipophilicity: A. Leo, discussion leader: Round-table discussion

QSAR and modeling applications; P. Magee, discussion leader

C. D. Selassie, "The QSAR of drug resistance."

A. Shusterman, "The use of MO parameters in QSAR."

B. A. Jameson, "Structure/activity functions of rationally designed synthetic analogs of CD4/CD8 proteins."

3D structures and 3D searches

P. A. Bartlett, "Structure-derived approaches to the design of biologically active molecules."

Round-table discussion: 3D structure and 3D searches; R. Pearlman, discussion leader

Protein structure-derived drug design: P. Goodford, discussion leader

T. R. Jones, "The design of enzyme inhibitors using iterative protein crystallographic analysis."

J. Erickson, "Structure-based design of C_2 symmetric inhibitors of HIV-1 protease."

V. Cody, "Crystal structure analysis of transthyretin complexes: Multiple inhibitor/substrate binding modes."

Conformation at the binding site and multiple binding modes

D. Ringe, "Turning vice into virtue: From multiple modes to 'hydra-headed' inhibitors."

Round table discussion: Conformation at the binding site and multiple binding modes; C. Wermuth, discussion leader

Molecular surface similarity methods, I. R. Cramer, discussion leader

G. R. Marshall, "Calibration of 3D-QSAR: Thermolysin and angiotensin converting enzyme."

G. Folkers, "Comparative molecular field analysis—scope and limitations."

A. Itai, "New methods for 3D structure-activity relationships and lead generation in computer drug design."

Molecular surface similarity methods, II

Y. Martin, "Perspectives on comparative molecular field analysis."

Round table discussion: Molecular surface similarity methods; Y. Martin, discussion leader

New concepts in QSAR: R. Franke, discussion leader

T. A. Andrea, "Neural networks: QSAR of sulfonylureas."

G. Klopman, "Computer automated structure-activity studies of noncongeneric data bases."

P. J. Lewi, "Spectral map analysis of drug selectivity."

Afternoon poster session on Monday: Parameters and QSAR applications.

Afternoon poster session on Wednesday: Modelling and new approaches.

Reactive Polymers: Ion Exchangers and Adsorbents

Salve Regina College

R. L. Albright, chair; C. Horvath, vice chair

19–23 August

Chiral separations by reactive polymers, discussion leader to be announced

W. Pirkle, "Separation of enantiomers with membrane systems."

J. Kinkel, "Optically active polyacrylamide/silica materials from chromatographic enantiomer separation."

B. Sellergren, "Molecular imprinting by non-covalent interactions: Highly crosslinked polymers for enantiomer separation and molecular recognition."

Clean resin technology, P. Yarnell, discussion leader

J. McNulty, "Characterization of leachable total organic carbon (TOC) from strong acid cation exchange resins."

W. Agui, "Anion and mixed bed leachables and their effect on mixed bed performance."

J. Stahlbush, "Factors affecting cation exchange resin stability."

Separation and purification of biomolecules on polymers, S. I. Sivakoff, discussion leader

R. A. Mashelkar, "Separation of macromolecules through swelling, super swelling, and shrinking polymers."

E. N. Lightfood, "Characterizing internal diffusional resistance of protein adsorption with NMR."

E. Sulkowski, "Immobilized metal affinity chromatography of proteins: Soft sorbent, hard solvent."

Environmental applications for reactive polymers, D. Clifford, discussion leader

A. Sengupta, "Specialty chelating polymers: Their properties and potentials in metal sorption and ligand exchange."

J. Symons, "Anion exchange resins for removing natural organic matter from native waters."

Polymer supports for specialized syntheses: Molecular synthesis within polymers; discussion leader to be announced

D. Sherrington, "Synthesis and characterization of novel polymer supports."

G. Wulff, "Molecular imprinting in crosslinked polymers using template molecules."

New Developments in pyrolized organic polymers, E. J. Langenmayr, discussion leader

M. R. Callstrom, "Doped glassy carbons."

S. G. Maroldo, "Ambersorb adsorbents: Synthetically tailored carbonaceous polymers."

Developments in vesicle formation and ordered polymeric structures: W. Ford, discussion leader

R. J. M. Nolte, "Supramolecular structures from polymeric liquid-crystalline phthalocyanines and crown-ether phthalocyanines."

D. A. Tirrell, "Ordered polymeric structures from artificial genes."

D. F. O'Brien, "Two-dimensional polymerizations."

H. Hamann, F. X. McGarvey, discussion leaders

Four poster presentations will be given by selection of the four most novel and interesting (to the attendees) poster presentations. The presentations will be about 20 minutes with about 10 minutes for discussion of each.

Interactions at polymer interfaces: discussion leader to be announced

G. Payne, "Exploiting specific mechanistic interactions to enhance adsorptive selectivities."

K. D. Caldwell, "Competitive interactions between proteins and poly (ethylene oxide)-containing polymers at polystyrene interfaces."

L. Cina, "Interactions of mammalian cells with polymers."

Red Cells

Plymouth State College

N. Mohandas, chair, J. D. Engel, vice chair

5–9 August

Molecular biology of membrane proteins: V. Bennett, discussion leader

S. Lux, B. Forget, C. Cohen; speakers

Membrane proteins: Organization and regulation: J. Morrow, discussion leader

J. A. Chasis, R. Waugh, P. Low; speakers

Transcription factors: D. Engel, discussion leader

S. Orkin, G. Felsenfeld, B. Emerson; speakers

Regulation of globin gene expression: Y. W. Kan, discussion leader

G. Stamatoyannopoulos, G. Dover; speakers

Role of membrane proteins in normal and pathologic red cells: R. Hebbel, discussion leader

R. Coppel, J. Palek, S. Schrier; speakers

Molecular analysis of red cell transport proteins, glycolytic enzymes and blood group antigens: J. Hoffman, discussion leader

R. Kopito, E. Beutler, M. Tanner; speakers

Hematopoiesis and gene transfer: A. Nienhuis, discussion leader

R. K. Humphries, I. Lemischka, S. Emerson; speakers

Minisymposium on the red cell: P. Agre, discussion leader

Cell-cell interactions and erythropoiesis: D. Williams, discussion leader

V. Patel, M. Tavassoli, L. Coulombel; speakers

Reverse Osmosis, Ultrafiltration and Gas Separation

Plymouth State College

L. A. Errede, chair; S. L. Matson, vice chair

29 July–2 August

Permeability and selectivity: H. Hopfenberg, discussion leader

W. Koros, "Structure/permeability relationships."

E. Sanders, "Gas permeation in penetrant plasticized systems."

G. Tanny, "Microporous membranes by radiation curing."

J. Beasley, discussion leader

S. Sundet, "Rejection layer morphology."

E. Cussler, "Design of improved membrane contactors."

Reactive membranes: J. Henis, discussion leader

W. Pusch, "Physicochemical characterization of synthetic membranes."

D. Minahan, "O_2-carriers for facilitated transport."

A. Allegrezza Jr., "Very selective ultrafiltration membranes for virus removal."

D. Lloyd, discussion leader

D. Hagen, "Reactive microporous composite membranes."

D. Friesen, "Composite metallic membranes of H_2 separation."

Theory and practice: L. Duda, discussion leader

J. Anderson, "Polymers and membranes: selectivity with large pores."

E. Mason, "Statistical mechanical theory of membrane transport."

J. Dickson, "A porous membrane transport interpretation of reverse osmosis."

S. Matson, discussion leader

L. Dahuron, "Membranes for the chemical industry, part 1: Problems from the user's point of view."

H. Zanapalidou, "Membranes for the chemical industry, part 2: Technology and process needs."

W. Eykamp, "Innovation in membrane technology."

Biological considerations: E. Klein, discussion leader

T. Fane, "Control of biofouling in membrane separations."

G. Belfort, "Protein/membrane interactions."

J. Burke, "Use of hollow fiber membranes in bio-applications."

Plenary lecture: E. Lee, discussion leader

H. Hopfenberg, "University and industry relationships."

Pervaporation: A. Korin, discussion leader

E. Lee, "Removal of EtOH from alcoholic beverages."

R. Noble, "MeOH-H_2 separation by capillary condensation."

T. Matsuura, "Concentration polarization effects in pervaporization."

Second Messengers and Protein Phosphorylation

Kimball Union Academy

R. Reed, chair; P. Roach, vice chair

10–14 June

P. Devreotes, discussion leader

S. Michaelis, "Processing and transport of yeast mating factors."

M. Whiteway, "Yeast mating factor signal transduction pathway."

J. Stock, "Protein phosphorylation cascades in bacterial chemotaxis."

J. Gibbs, discussion leader

F. Tamanoi, "GTPase-activating proteins."

Y. Kanjiro, "Functional and structural analysis of small GTP binding proteins."

M. Caron, discussion leader

J. Benovic, "Molecular mechanisms of receptor desensitization."

H. Hamm, "G protein/receptor interactions."

E. Peralta, "The specificity of receptor signaling pathways."

R. Reed, discussion leader

H. Breer, "Biochemical analysis of olfactory signal transduction."

W. Pak, "Visual signal transduction in *Drosophila*."

M. Cobb, discussion leader

P. Roach, "The role of phosphorylation in modulation of enzyme function."

M. Greenberg, "Ca^{2+} activation of specific transcription."

P. Sassone-Corsi, "Gene regulation by DNA-binding transcription factors."

E. Neer, discussion leader

G. Johnson, "Chimeric G-protein subunits define functional domains."

J. Hurley, "G proteins in *Drosophila melanogaster*."

S. G. Rhee, discussion leader

J. Exton, "Signal transduction via phospholipase pathways."

W. J. Tang, "Structure/function analysis of mammalian adenylyl cyclase."

D. Garbers, "Guanylyl cyclase."

H. Hamm, discussion leader

M. Simon, "Common themes in signal transduction pathways."

M. Forte, discussion leader

A. Speigel, "Analysis of mutations in human G_s."

C. Bargman, "Genetic approaches to sensory processes in *C. elegans*."

Solar Plasma and MHD Processes

Plymouth State College

R. N. Sudan, co-chair; R. Rosner, co-chair

5–9 August

Observation of solar convection: J. Toomre, discussion leader

A. Title, "Solar convection."

R. Stein, "Numerical studies on solar convection."

Theoretical and experimental aspects of convection: R. Rosner, discussion leader

F. Cattaneo, "Transport properties of three-dimensional compressible convection."

A. Libchaber, "Scaling in laboratory convection."

Dynamics of magnetic flux tubes: J. Hollweg, discussion leader

M. Sheeley, "Transport of solar magnetic fields."

A. Brandenberg, "Magnetic field evolution in compressible convection."

W. Mattheus, "MHD turbulence."

Dynamo theory: discussion leader to be announced

E. Ott, "Modern developments in dynamo theory."

E. DeLuca, "Current solar dynamo models."

Coronal observations: T. Holzer, discussion leader

L. Golub, "What are we learning from high-resolution coronal observations?"

A. Walker, "Advances in high-resolution x-ray imaging of the sun."

MHD equilibria and stability: R. N. Sudan, discussion leader

A. Boozer, "MHD equilibria and stability."

H. Strauss, "MHD equilibria and stability of coronal loop structures."

Reconnection and resistive MHD: R. Kulsrud, discussion leader

J. B. Taylor, "Reconnection in resistive MHD."

D. Biskamp, "Numerical simulations of reconnection in resistive MHD."

P. Diamond, "Turbulence in resistive MHD."

Coronal heating mechanisms and fine structure: E. Parker, discussion leader

A. Van Ballegooijen, "Coronal heating mechanisms."

P. Similon, "Heating in stochastic magnetic fields."

Particle acceleration in solar flares: D. Spicer, discussion leader

R. Ramaty, "High-energy flare physics."

R. Bingham, "Mechanisms for particle acceleration in flares."

Staphylococcal Disease

Salve Regina College

G. C. Stewart, chair; G. Peters, vice chair

5–9 August

Staphylococcal physiology: F. Gotz, discussion leader

P. White, B. Wilkinson, H. Zahner; speakers

Enterotoxins and superantigens: M. Betley, discussion leader

M. Jett, A. Herman, speakers

Penicillin-binding proteins and β-lactamase: A. Tomasz, discussion leader

H. Labishinski, K. G. H. Dyke, S. Projan, speakers

Antibiotic resistance: G. Archer, discussion leader

B. Berger-Bachi, D. Shlaes; speakers

Genetics of virulence: P. Pattee, discussion leader

R. Novick, S. Khan, S. Gatermann, speakers

Transfer of antibiotic resistance: S. Projan, discussion leader

R. Skurray, G. Archer; speakers

Staphylococcal capsules and slime: A. Fleer, discussion leader

G. Pier, G. Peters, G. Johnson; speakers

Toxins; J. Iandolo, discussion leader

S. Bhakdi, P. Schlievert, speakers

Molecular epidemiology: R. Goering, discussion leader

F. Schumascher-Perdreau, R. Goering, B. Kriesworth, speakers

Statistics in Chemistry and Chemical Engineering

New Hampton School

W. Q. Meeker, Jr., chair; R. D. De Veaux, vice chair

29 July–2 August

G. G. Vining, "Experimental designs for simultaneously estimating both mean and various functions."

W. J. Welch, discussant

S. Bailey, moderator

E. V. Thomas, D. Haaland, "Multivariate calibration with errors in variables."

C. H. Spiegelman, discussant

R. Hoerl, moderator

J. H. Freidman, I. Frank, "A statistical view of tools used in chemometrics."

D. S. Burdick, discussant

T. J. Hastie, moderator

W. T. Tucker, "Algorithmic statistical process control and continuous improvement."

S. B. Vardeman, discussant

W. H. Woodall, moderator

P. Clifford, "Stochastic modeling in physical chemistry."

G. Weiss, discussant

G. J. Hahn, moderator

P. Geladi, "Multivariate image analysis in chemical applications: Statistical and visual diagnostics."

D. M. Hawkins, discussant

A. J. Lawrance, moderator

D. Lambert, B. Peterson, "Nondetects, detection limits, and probability of detection with applications in environmental chemistry."

J. F. Lawless, discussant

R. D. De Veaux, moderator

W. DuMouchel, B. A. Jones, "Issues in the use of computers to design experiments."

J. Lucas, discussant

E. Ziegel, moderator

C. Weihs, "Multivariate exploratory analysis: A strategy for routine applications."

K. Kafadar, discussant

D. P. Strickert, moderator

Structural Macromolecules: Collagen

Colby Sawyer College

K. Kuhn, co-chair; F. Ramirez, co-chair

24–28 June

Regulation of collagen gene transcription: K. Kuhn, discussion leader

E. Poschl, "Coordinated bidirectional transcription of collagen IV genes."

Y. Yamada, "Regulation of collagens II and IV transcription."

B. de Crombrugghe, "Control of collagen I genes expression."

Collagen gene expression: S. Adams, discussion leader

K. Kratochwil, "Cell type–specific transcription of α1(I) collagen gene."

B. Olsen, "Short-chain and FACIT collagens."

Invertebrate collagens: F. Ramirez, discussion leader

J. Fessler, "Collagen IV and molecular neighbors in the developing drosophila."

J. Kramer, "Collagen mutants in *C. elegans*."

F. Gaill, "Collagens from worms at deep sea hydrothermal vents."

Extracellular matrix and morphogenesis: R. Mayne, discussion leader

M. Solursh, "Collagen biosynthesis during vertebrate development."

P. Ekbloom, "Basement membrane components in the development of epithelial cells."

Structure and pathogenesis of extracellular matrix: M. van der Rest, discussion leader

R. Burgeson, "Novel collagenous and non-collagenous molecules in the cutaneous matrix."

K. Triggvason, "Alport syndrome, a type IV collagen disease."

D. Hollister, "Microfibrillar-fiber system in Marfan syndrome."

Cell-matrix interactions: R. Timpl, discussion leader

R. Kramer, "Integrins binding to collagen and laminin."

K. Rubin, "Specificity of α1β1/collagen interaction; collagen gel contraction."

Extracellular matrix remodeling: S. Krane, discussion leader

G. Murphy, "Molecular studies on matrix metalloproteinase."

P. Herllich, "Regulation of collagenase transcription."

K. van der Mark, "Indentification of arthrigenic epitopes of collagen II."

C. Nusslein-Volhard, "Axis determination in the *Drosophila* embryo."

Transgenic mice and connective tissue disorders: D. Prockop, discussion leader

R. Jaenisch, "Collagen I gene mutations in transgenic mice."

S. Garofalo, E. Vuorio, "Transgenic collagen II mutations mimicking human chondrodysplasias."

K. Chada, "Transgenic murine analogs of human diseases."

Thermosetting High Performance Materials

Plymouth State College

J. E. McGrath, chair; R. R. Lagasse, vice chair

1–5 July

G. L. Wilkes, discussion leader

C. Macosko, "Modeling structure development in tightly crosslinked networks with applications to cyanates."

N. J. Johnston, discussion leader

F. McGarry, "Mechanical behavior of rigid rod reinforcing with emphasis on polymer fibers: Axial compressive and transverse tensile strengths."

Poster previews; R. R. Lagasse

C. Feger, discussion leader

D. Dwight, "Fundamental approaches to the adhesion of polymers for aerospace and microelectronics."

P. Hergenrother, discussion leader

B. Sillion, "New heat resistant semi IPNs."

I. Goldfarb, discussion leader

E. P. Woo, "Advances in benzocyclobutene-based networks."

W. Shultz, discussion leader

T. Inoue, "Structure development in thermoset-thermoplastic alloys."

Poster presentations, J. Brunier

H. Bair, discussion leader

A. Hamilec, "Synthesis kinetics and characterization of polymeric networks synthesized by free-radical polymerization."

J. K. Gillham, discussion leader

J. L. Hedrick, "Synthesis and toughening of styrenic networks."

H. Langer, discussion leader

Y. Chujo, "Sol-gel inorganic-organic hybrid networks."

D. Webster, discussion leader

J. Hilborn, "Vinyl ether based thermosets for powder coatings."

D. Wilson, discussion leader

S. P. Wolkinson, "Interface studies on toughened bismaleimides and their carbon fiber composites using indentation techniques."

G. Schornick, discussion leader

D. Kranbuehl, "Dynamic dielectric sensing and intelligent cure control."

I. Yilgor, discussion leader

G. George, "Interfacial adhesion in UHMPE composites."

J. Browne, discussion leader

K. L. Reifsnider, "Micromechanical foundations for performance predictions."

C. A. Arnold, discussion leader

H. Stuzt, "Influence of the structure on thermoset cure kinetics."

F. Kelly, discussion leader

A. T. Hale, "Glass transition temperature of thermosetting polymers."

N. Bikales, discussion leader

M. McCabe, "Advanced material requirements: Challenges for the future."

R. R. Lagasse, discussion leader

S. Eldin, "New self-crosslinking polyimides."

R. Bauer, discussion leader

C. K. Ober, "Liquid crystalline thermosets based on triazine and epoxy networks."

Three-Dimensional Electron Microscopy of Macromolecules

New Hampton School

J. Frank, chair; T. S. Baker, vice chair

1–5 July

Toward atomic resolution: B. Jap, discussion leader

W. Kuhlbrandt, "Three-dimensional structure of plant light-harvesting complex."

S. Subbiah, "Towards a solution to the phase problem of macromolecular crystallography."

Crystallization techniques: S. Darst, discussion leader

L. Kubalek, "Crystallization using lipid layers."

E. J. Boekema, "Progress in crystallizing photosystem I and II and ATP synthetase."

Biological particles in ice: New challenges: A. Steven, discussion leader

M. Schatz, "Lumbricus hemocyanin: Reference-free alignment and reconstruction."

P. Penczek, "*E. coli* ribosome: Alignment, classification, and merged reconstruction."

K. Leonard, "STEM of vitrified specimens."

Panel discussion: 3D reconstruction techniques: R. C. A. Crowther, discussion leader

J. Lepault, D. DeRosier, R. Smith; panelists

Next-generation microscopes: F. Zemlin, discussion leader

H. Rose, "New prospects for feasible subangstrom electron microscopy."

B. Koster, "Developments in the automation and control of the TEM."

D. Smith, "Ordered organic monolayers studied at molecular resolution by tunneling microscopy."

Tomography of cell components: Development of technology: B. McEwen, discussion leader

A. Olins, "Methods for the analysis of thick biological specimens."

U. Skoglund, "Visualization of the core of the HIV-1 virus in three."

Macromolecules: B. Carragher, discussion leader

T. Frey, "Structural study of both monomeric and dimeric cytochrome c oxidase."

F. Booy, "Localization of capsid proteins and visualization of DNA in herpes simplex virus."

D. Stokes, "Helical reconstruction of frozen-hydrated CaATPase from sacroplasmic reticulum."

K. Downing, discussion of selected posters.

Visualization and interpretations of 3D data: E. Egelman, discussion leader

E. Hoffman, "Display and analysis of dynamic volumetric image data."

J. Sedat, "New approaches to visualization and analysis of complex, closely packed, large biological structures."

D. Mastronarde, "Interactive 3D reconstructions from serial sections and serially tilted projections."

X-ray Physics

Colby Sawyer College

B. W. Batterman, chair; J. B. Hastings, vice chair

12–16 August

Resonance and polarization in x-ray scattering

D. B. McWhan, "X-ray resonant scattering: An overview."

U. Van Buerck, "Recent synchrotron radiation Mossbauer experiments."

D. P. Siddons, "X-ray polarimetry: Optical activity and the Faraday effect."

D. H. Templeton, "Chemically polarized dispersion in x-ray scattering."

F. Sette, "Circular magnetic dichroism studies with soft x-rays."

C. Vettier, "Magnet x-ray scattering: What can you learn?"

Scattering and coherency

E. Spiller, "Coherency effects from visible light to x-rays."

M. Sutton, "Exploitation of a coherent x-ray beam in diffraction."

D. Sayre, "Outlook for coherent scattering imaging of noncrystalline structures."

Inelastic scattering

E. Burkel, "Inelastic x-ray scattering with high-energy resolution; A new method for investigation of condensed matter."

W. Schuelke, "Inelastic standing wave scattering."

P. Platzman, "Elastic and inelastic x-ray scattering at relativistic energies."

X-rays in biology

S. Harrison, "Crystallography of large macromolecular complexes."

W. Hendrickson, "Macromolecular structures determined from multiwavelength anomalous diffraction."

S. Cramer, "Looking at mellalloproteins with soft x-rays electronic characterization of complex systems."

Diffraction from surfaces and interfaces

H. Dosch, "Evanescent x-ray scattering and phase transformations in semi-infinite solids."

E. Font, "2-D melting of semiconductor surfaces."

J. Als-Nielson, "Complementarity of neutron and x-ray reflectivity."

G. Materlik, "Photo-stimulated desorption using x-ray standing waves."

Sources and optics

D. Bilderback, "X-ray optics."

L. Berman, "High heat load x-ray optics."

S. Krinsky, "Accelerator-based coherent photon sources."

Chronobiology

Schwabisches Bildungs Zentrum, Irsee, Germany

J. W. Hastings, chair; W. Schwartz, vice chair

29 September–4 October

Clock control of genome expression: L. Rensing, discussion leader

S. Kay, "Circadian regulated transcription in a *Arabadopsis thaliana.*"

J. Loros, "Clock controlled genes in *Neurospora crassa.*"

K. Kloppstech, "Photomorphogenesis and circadian rhythmicity of gene expression: are they related?

Clock genes and clock expression: F. Nagy, discussion leader

J. Hall, "Dissection of spatial and temporal elements of the *period* genes expression within the *Drosophila* brain and within a given day."

J. Takahashi, "Macromolecular synthesis and the regulation of circadian rhythms."

M. Young, "New clock mutants in *Drosophila.*"

Nonphotic effects and clock organization: G. Fleissner, discussion leader

D. Edgar, "Activity-dependent feedback to the mouse circadian pacemaker: Assessment of exercise Zeitgeber strength."

V. Cassone, "Melatonin, the pineal gland and vertebrate circadian rhythms: From Zeitgeber to recursive feedback."

N. Mrosovsky, "Interactions between non-photic and photic phase shifting stimuli: double pulse and other experiments."

Non-circadian oscillations: T. Vanden, discussion leader

T. Hunt, "Cyclins and the cell cycle."

M. Kirshner, to be announced.

Vertebrate rhythms I: F. Davis, discussion leader

R. Silver, "What the SCN graft tells the host brain."

J. H. Meijer, "Physiological basis for photic entrainment."

M. Ralph, "Expression of the *tau* phenotypes following suprachiasmatic transplantatoin."

Vertebrate rhythms II: W. J. Rietveld, discussion leader

W. Schwartz, "Expression of AP-1 transcriptional regulatory proteins in the rat suprachiasmatic nucleus."

M. Gillette, "Analysis of phase-locked regulators of circadian rhythms in the SCN brain slice."

M. Mirmiram, "Electrophysiological and microiontophoretic studies of the long-term cultured suprachiasmatic nucleus."

Endocrine and neuroendocrine markers of human circadian clocks: A. Wirz-Justice, discussion leader

E. Van Cauter, "Rates and mechanisms of adaptation to shifts of the sleep-wake and dark-light cycles."

C. Czeisler, "The human circadian multioscillator system revisited: Multiple endocrine rhythms remain coupled to temperature following light-induced phase shifts."

J. Arendt, "Melatonin in human physiology and pathology."

Clocks and photoperiodism: C. S. Pittendrigh, discussion leader

D. Saunders, "Ovarian diapause regulation in *Drosophila melanogaster* is governed by a circadian photoperiod clock, but does not seem to involve the *period* gene."

Circannual and circalunar rhythms: B. K. Follett, discussion leader

E. Gwinner, "Avian circannual rhythms: Mechanisms and functions."

D. Neumann, "Circa-semilunar and circalunar programming of development in a marine insect."

R. Hudson, "Reproducive specializations in the female rabbit: Chronobiological consequences."

Organic Superconductors

Schwabisches Bildungs Zentrum, Irsee, Germany

P. Chaikin, co-chair; D. Jerome, co-chair

22–27 September

W. Little, discussion leader

D. Carlson, "Synthesis and properties of new organic superconductors."

E. B. Yagubskii, "Synthesis and properties of new organic superconductors."

G. Saito, "Recent advances on superconductivity of the (BEDT-TTF)$_2$ salts."

L. P. Gor'kov, discussion leader

M. Naughton, "The high field reentrant state of (TMTSF)$_2$ClO$_4$."

G. Montambaux, "Standard model of FISDW states."

F. Pesty, "The arborescent phase boundary of (TMTSF)$_2$ClO$_4$: Calorimetric studies of competing FISDW's"

I. Lauhkin, discussion leader

K. Yamaji, "Theory of magnetotransport oscillations in quasi–two-dimensional systems."

I. F. Schegolev, "Magneto-orientation-oscillations in (BEDT-TTF)$_2$X."

W. Kang, "Observation of giant oscillation in (BEDT-TTF)$_2$I$_3$."

T. Takahashi, discussion leader

F. Wudl, "Oxyfulvalenes."

C. Bourbonnais, "Normal state electronic properties of the Bechgaard salts."

P. Batial, "New organic materials."

K. Maki, discussion leader

A. Lebed, "Multiple order parameters and the FISDW phase boundary."

W. Kang, "The FISDW in the PF$_6$, ClO$_4$ and NO$_3$ Bechgaard salts."

V. Yakovenko, "Electron interaction model of the FISDW."

R. L. Greene, discussion leader

D. Harshman, "The penetration depth and pairing state in selected organic superconductors."

Y. Uemura, "μSR studies in organic materials."

K. Holczer, "The electrodynamics of the superconducting state of (BEDT-TTF)$_2$Cu(SCN)$_2$."

K. Murata, discussion leader

G. Kriza, "Nonlinear conductivity and coherent effects in Bechgaard salts."

G. Gruner, "Dynamics of the spin density wave state of (TMTSF)$_2$ salts."

W. Reiss, "CDW transport phenomena in (TMTSF)$_2$PF$_6$."

J-P. Ulmet, discussion leader

T. Osada, "Magnetotransport at commensurate fields in the Bechgaard salts."

J. S. Brooks, "Pulsed field, thermal and optical studies of organic solids."

J. Cooper, "Quantum Hall effect and FISDW states in (TMTSF)$_2$PF$_6$ and ReO$_4$."

J-P. Pouget, discussion leader

K. Andres, "Meissner and pressure studies of (BEDT-TTF)$_2$X."

K. Bechgaard, "New families of organic superconductors."

S. Tomic, "Influence of disorder on non-linear conductivity in SDW states of Bechgaard salts."

GORDON RESEARCH CONFERENCES

"FRONTIERS OF SCIENCE"

APPLICATION — MAIL EARLY

Please complete this application and mail **(in duplicate)** to the Director — **PLEASE PRINT.**

Deadline for Receipt of Applications Is 6 Weeks Prior to the Conference

IMPORTANT NOTE

Applications are required from all individuals participating in a Conference. This applies to the Chair, Co-Chairs, Vice Chair, Discussion Leaders, Speakers, Poster Participants and Potential Conferees.

Conference on _____ Date: _____
(Name of Conference — Please Print) Conference

Name: (Please Print) _____ Location: _____

Organization: _____ Fax No.: _____ Accommodations

Business Address: _____ _____ (Room & Meals) For:

(inc. dept., street & no.) _____ BITNET Address: Applicant _____

City and State _____ Zip Code _____ _____ Spouse _____

Child(ren) _____

Please check: I work in ☐ Academic/Education ☐ Government/Agencies ☐ Industrial/Corporations Total _____

IMPORTANT

Please check if you have applied to another 1991 Summer Conference _____

What type of position do you have? Graduate Student _____ Post-Doctoral _____ Research Scientist _____ University Professor _____

Research Director _____ Program Manager _____

Are you personally involved in research activities in subject area of Conference? _____ Yes _____ No

How many papers have you published during the past 3 years in the subject area of the Conference? _____

Indicate your particular activities (separate page if necessary) which justify favorable consideration of you as a participant in and contributor to this Conference (not required of speakers). You are invited to submit an abstract for a poster to be presented at the meeting; many Conference Chairs find abstracts very useful in making decisions concerning admission to their Conferences. Applications are referred to the Conference Chair for review in accordance with the established regulations. Following the chair's approval the registration card will be mailed to you for completion. Please return registration card immediately with either a wire or check for Fixed Fee (see Payment). GORDON RESEARCH CONFERENCES ADMITS SCIENTIFICALLY QUALIFIED CONFEREES OF ANY SEX, RACE, AGE, COLOR AND NATIONAL ORIGIN.

FIXED CONFERENCE FEES — Summer, 1991 — New Hampshire & Rhode Island

NEW HAMPSHIRE

Conferee (double occupancy-registration, room, meals)	**$400**
($350 if postmarked 3 weeks prior to Conference)	
Non-Resident Conferee (registration, meals, no room)	**$360**
($310 if postmarked 3 weeks prior to Conference)	
Guest (double occupancy-room, meals)	**$310**
($260 if postmarked 3 weeks prior to Conference)	

RHODE ISLAND

Conferee (double occupancy-registration, room, meals)	**$415**
($365 if postmarked 3 weeks prior to Conference)	
Non-Resident Conferee (registration, meals, no room)	**$360**
($310 if postmarked 3 weeks prior to Conference)	
Guest (double occupancy-room, meals)	**$325**
($275 if postmarked 3 weeks prior to Conference)	

1. **Single room, if available, will be an extra charge.**
2. **Full fixed fee charged regardless of time conferee attends Conference.**
3. **Fixed fee cannot be prorated or reduced for anyone (speakers, discussion leaders, conferees).**
4. **Non-resident conferees are expected to eat all meals in the Conference Dining Room and, therefore, the Fixed Fee for non-residents includes the full meal charge.**
5. **Off-site accommodations (hotel, motel, etc.) near the host schools are available; however, early reservations are recommended. The office will send on request a list of outside housing for your information and use.**
6. **Cancellations: All but $40 of the fixed fee will be refunded if an approved application is cancelled.**

Children under 12 years of age are not permitted in the meeting rooms, dining rooms, or dormitories at any host sites.

PAYMENT:
The full fixed fee will be required IN ADVANCE of *ALL* PARTICIPANTS AND GUESTS. Attendance and accommodations will NOT be reserved unless this fee is received in our office 3 weeks prior to the Conference. Foreign participants will also be required to pay Gordon Research Conferences in advance in U.S. dollars payable by wire only to a U.S. bank. Checks drawn on Canadian banks and foreign banks cannot be accepted and will be returned. Scientists in Canada must use a bank draft obtained from their bank payable in U.S. dollars and drawn on a U.S. bank. Remittance information on the transfer must include reference to Gordon Research Conferences, the conferee's name, conferee number and Conference title. Detailed information on payment, travel, etc. mailed with registration material.

The recording of lectures by tapes, etc. and the photography of slide material are prohibited. Printed reference to Gordon Research Conference papers and discussion is not permitted. Authors are requested to omit references to the Conference in any publication. Guests are not permitted to attend the conference lectures and discussion sessions. Each member of the Conference agrees to these regulations when registration is accepted.

Gordon Research Conferences FAX No. (401) 783-7644 / BITNET Address: BCP101@URIACC

Please return to:

Dr. Alexander M. Cruickshank
Gordon Research Conferences
Gordon Research Center
University of Rhode Island
Kingston, Rhode Island 02881-0801
Tel.: (401) 783-4011 or (401) 783-3372

Office — Summer Schedule
Colby-Sawyer College
New London, NH 03257
Tel.: (603) 526-2870
FAX: (603) 526-4717

Signature _____

Date _____

Telephone: Business _____

Home _____

RECEIPT OF THIS APPLICATION WILL BE ACKNOWLEDGED — PLEASE DO *NOT* SEND PAYMENT WITH THIS APPLICATION