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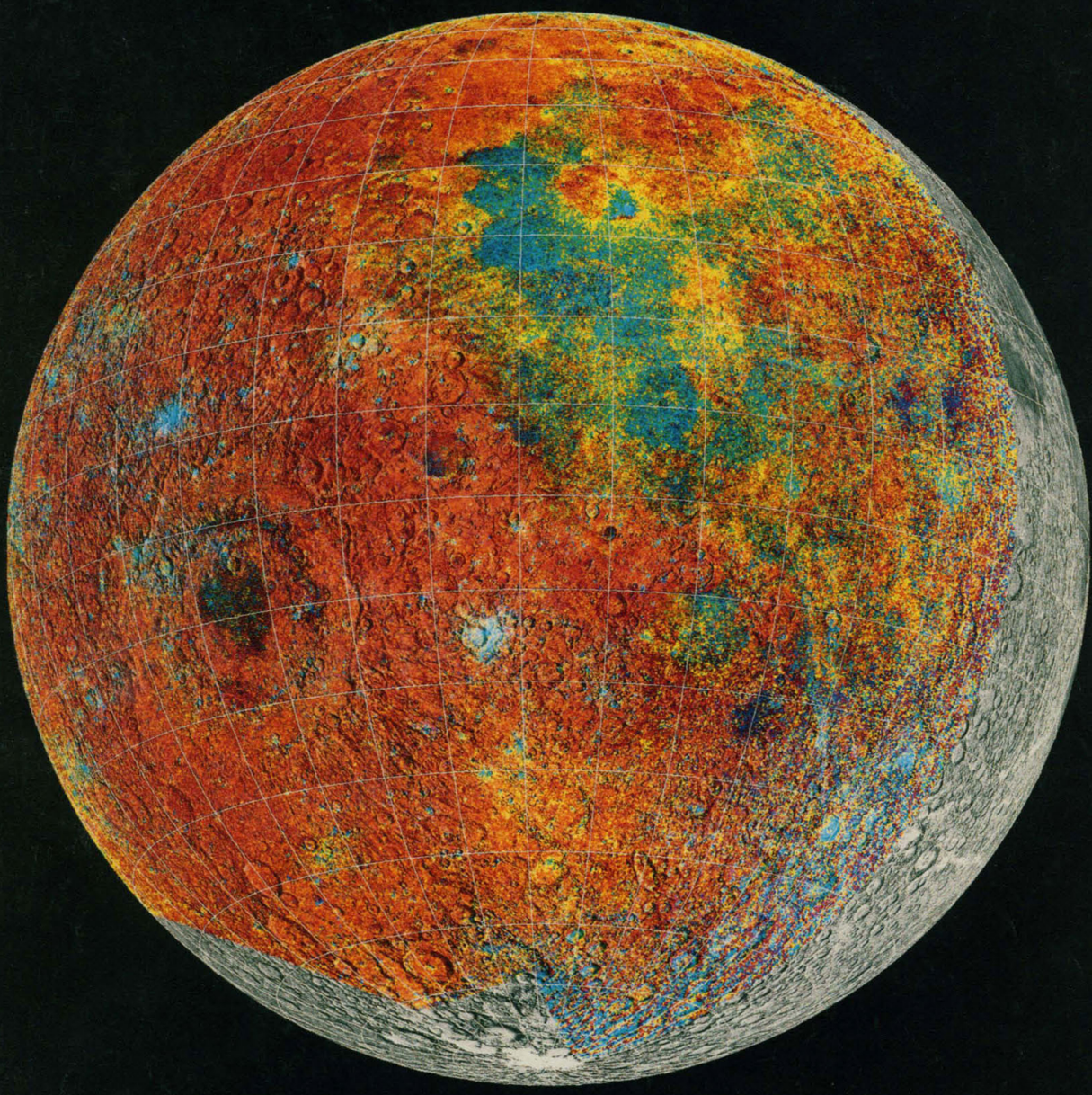

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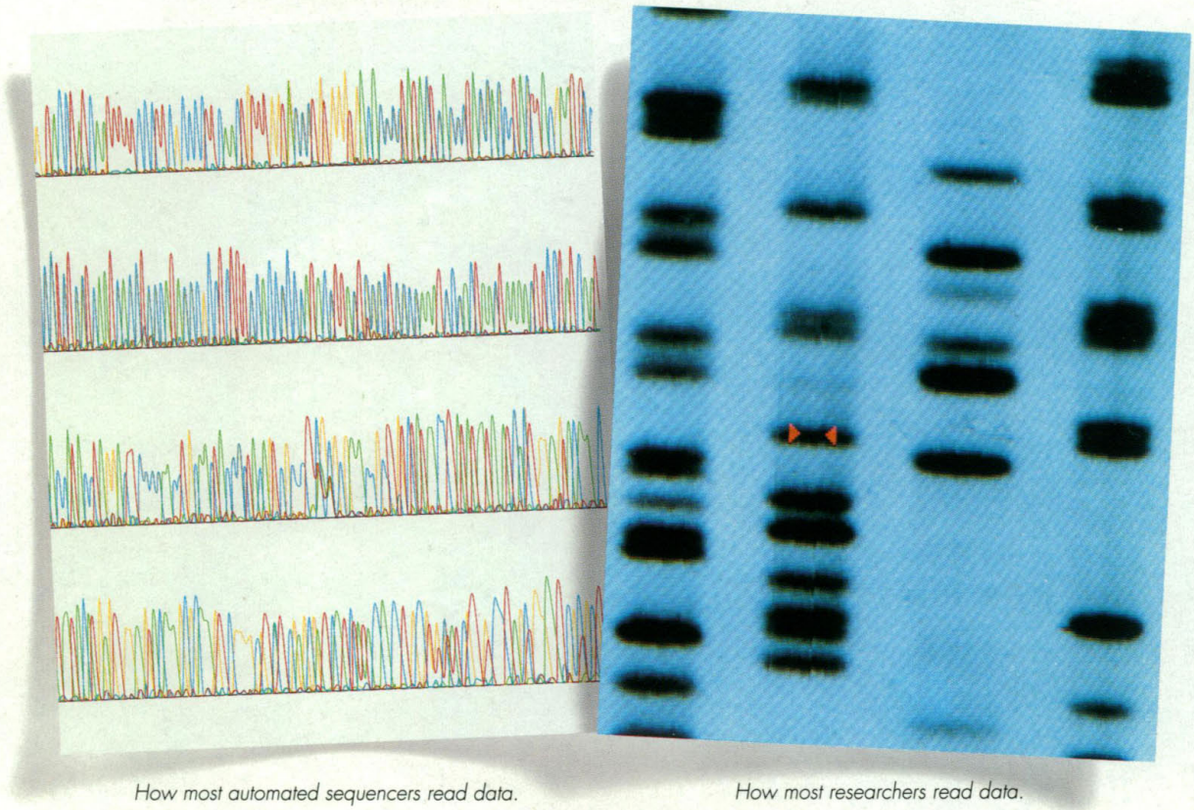

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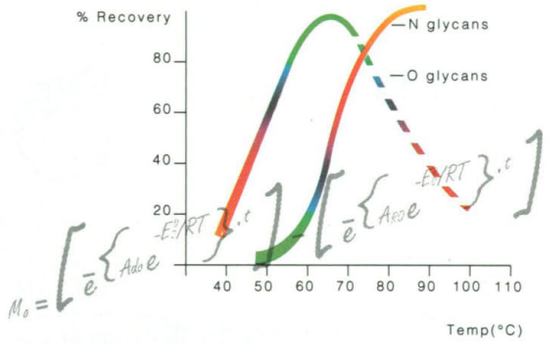

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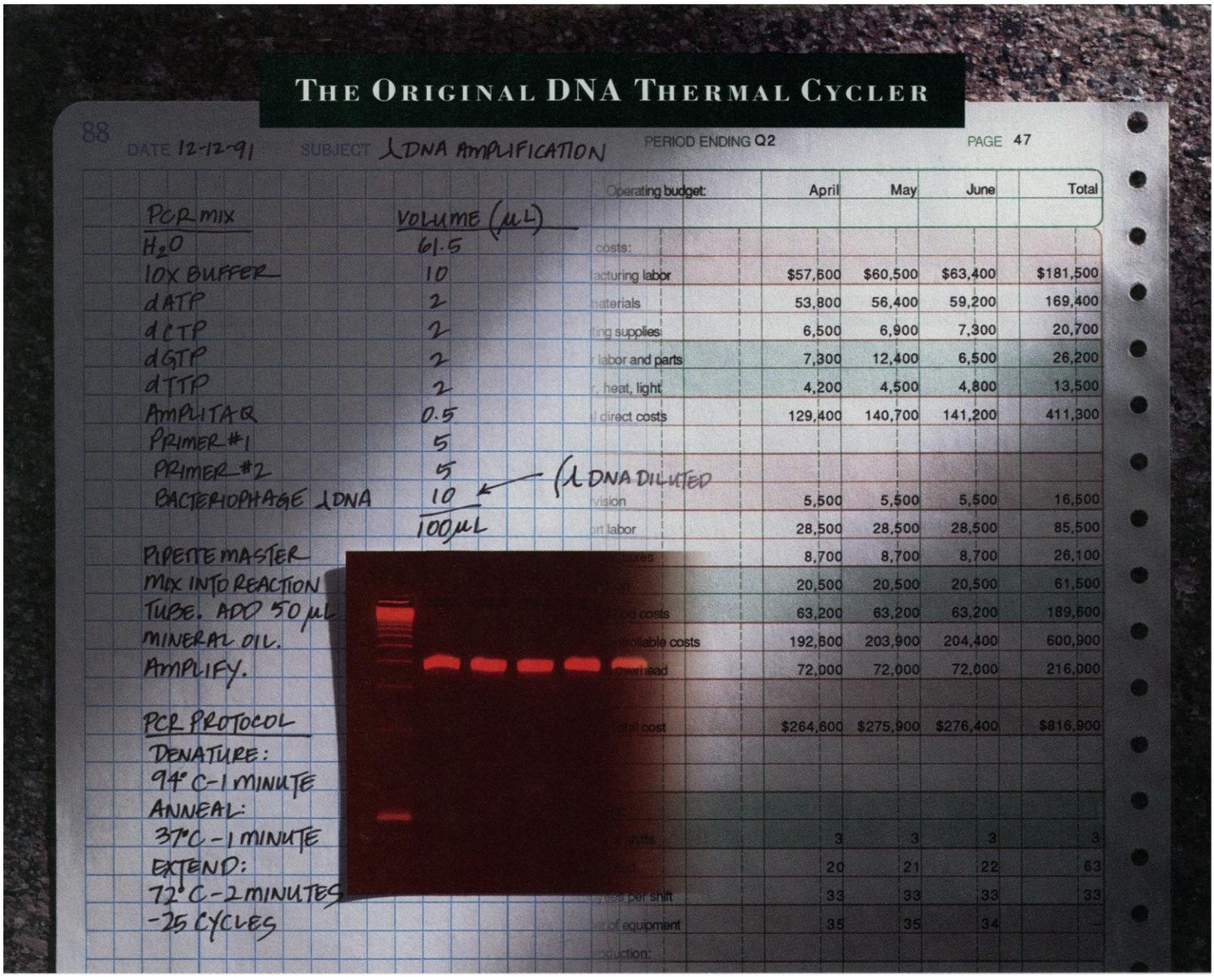
COVER Galileo color-ratio images of the moon, showing compositional variations. The Orientale basin, 900 kilometers in diameter, and portions of the far side highlands not seen from Earth (left: red) are similar in composition to soils collected at the Apollo 16 site. Several highland regions have enhanced iron content (yellow). The lowlands (upper right) consist of mare basalts with relatively high (blue) and low (orange) TiO_2 content. See page 570. [Courtesy of the National Aeronautics and Space Administration and the Jet Propulsion Laboratory]

Research Article

Reports

Book Reviews



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This Week in
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Spinning down

The cycles of glacial advances and retreats during the past 2 million years are commonly ascribed to long-term changes in solar radiation reaching the Earth induced by variations in its orbit and rotation. Cyclical features in much older sedimentary rocks have been cited as evidence that orbital variations also significantly affected climate for hundreds of millions of years. Berger *et al.* (p. 560) review the evidence for such a connection and calculate the effects that changes in orbital characteristics over geologic time, such as shortening of the Earth-moon distance in the past and chaotic motion in the solar system, have had on the predicted periodicities.

Turbulent flows

Turbulence, a mixture of ordered and chaotic motion that characterizes rapid fluid flows, occurs in fluids over a large range of dimensions, from tap water to global atmospheres, but a physical understanding of it remains elusive. The smallest fluctuations are governed by viscosity, whereas the largest motions are limited by flow geometry. In between, there should be a regime where the jets, wakes, and boundary layers that form during turbulence would exhibit universal properties. Nelkin (p. 566) reviews the ways in which physicists have approached the problem, including recent extension of Kolmogorov's scaling laws with multifractal analysis.

Moon mapping

On its way to Jupiter, the Galileo spacecraft circled the Earth-moon system and was able to probe the relatively unexplored far side of the moon with its spectrometers. The data obtained, described by Belton *et al.* (page 570; cover), provide clues to the composition, distribution, age, and origin of lunar crust. Identification of crust exposed in impact basins shows that large impacts, such as produced the 2000-kilometer-wide South Pole–Aitken basin, may have excavated the deep crust or lunar mantle and that the highland crust is compositionally variable both vertically and laterally.

Ammonia aloft

In the atmosphere, ammonia acts to neutralize acids, and thus knowledge of the distribution, sources, sinks, and concentration of ammonia are necessary for controlling acid deposition. The role of natural vegetation in affecting ammonia concentrations has been uncertain. Langford and Fehsenfeld (p. 581) investigated this role in a study of ammonia concentrations above a forest west of Denver that occasionally received air rich in ammonia from agricultural sources to the east. The forest has an ammonia compensation point such that ammonia is released from the forest to clean air from the mountains but consumed from agricultural air.

Magnetic STM

Atomic-scale imaging of the different magnetic cations Fe^{2+} and Fe^{3+} on the (001) surface of a magnetite (Fe_3O_4) single crystal has been achieved by Wiesendanger *et al.* (p. 583), who fitted a scanning tunneling microscope with a ferromagnetic iron tip. Comparison of these images with those obtained with a nonmagnetic tungsten tip allowed local ordering of Fe^{2+} and Fe^{3+} atoms to be observed. This ordered structure appears to correspond to the periodicity of iron B-sites in magnetite.

Known phylogeny

Methods to estimate or infer the phylogenetic history of organisms have been tested on a known phylogeny constructed with bacteriophage T7. Such estimation methods are widely used by biologists to construct broad outlines of evolutionary history, but because almost no known phylogenies exist, it has not been possible to assess directly the accuracy of these procedures. Hillis *et al.* (p. 589) generated such a phylogeny by serially propagating this phage through thousands of generations a year in the laboratory. They induced character changes by mutagenesis and then divided the lineages at predetermined intervals to produce a symmetric character tree. Reconstruction methods were able to predict the branching order correctly, but none of the methods predicted the actual branch length for every branch.

Some assembly required

Fragments of the *trp* aporepressor of *Escherichia coli* that were produced by chymotrypsin cleavage were found to reassemble in a defined order to produce dimers with nativelike structure. Tasayco and Carey (p. 594) used nuclear magnetic resonance and circular dichroism to follow the refolding process; the amino-terminal fragments appear to fold initially to form the dimer interface, and the helices of the carboxyl-terminal fragments bind and eventually adopt the native fold. These results support the idea that protein folding pathways are directed by secondary structures intermediates characteristic of the native state.

Adenylyl cyclase potassium channel

Adenylyl cyclase has structural similarity to ion channels. Schultz *et al.* (p. 600) now report that adenylyl cyclase purified from *Paramecium* functions as a voltage-independent K^+ channel when it is inserted into an artificial lipid bilayer. In vivo, the adenylyl cyclase is activated to produce adenosine 3',5'-monophosphate by increases in K^+ conductance. Coupling of adenylyl cyclase activity to changes in membrane potential thus appears to occur through a single molecule with two regulatory functions.

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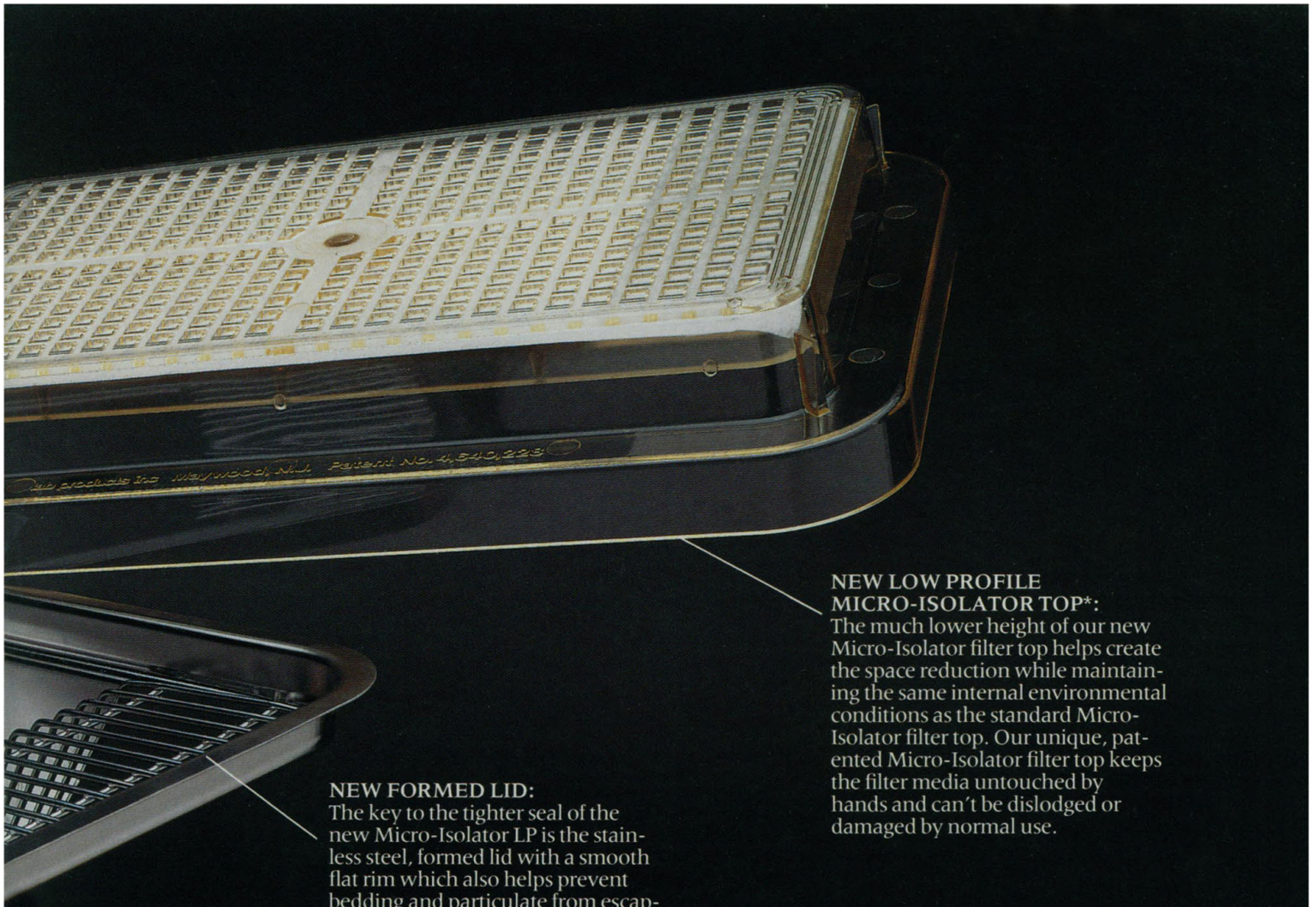

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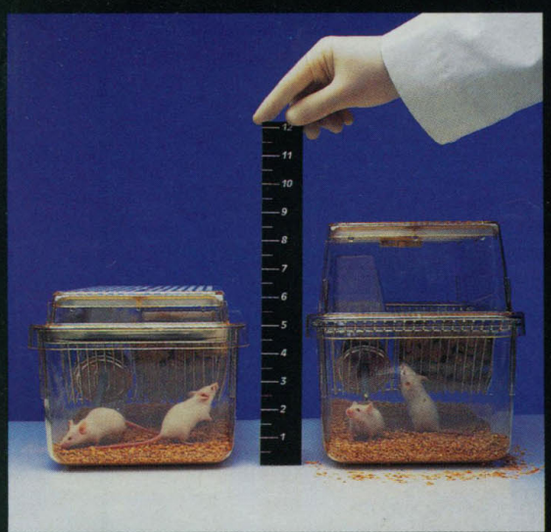

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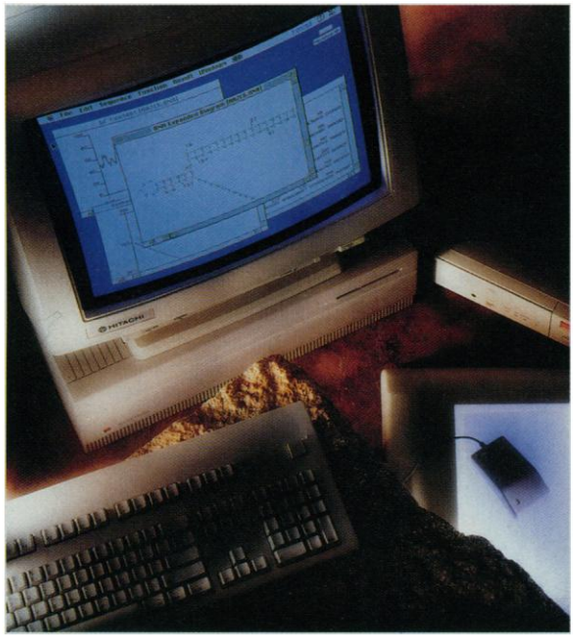

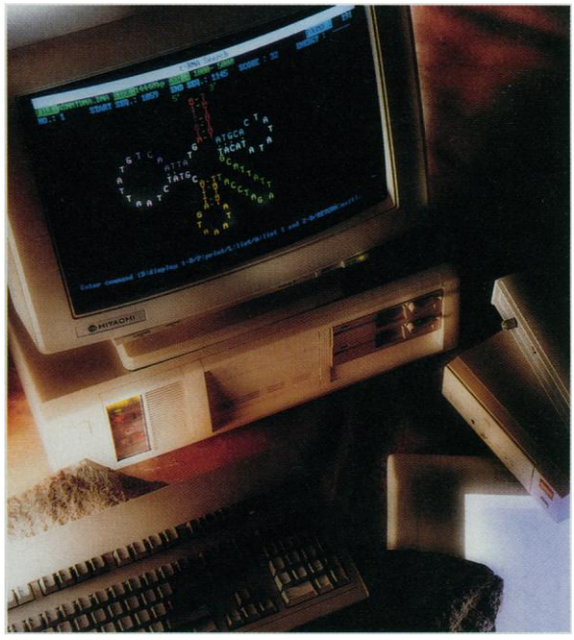

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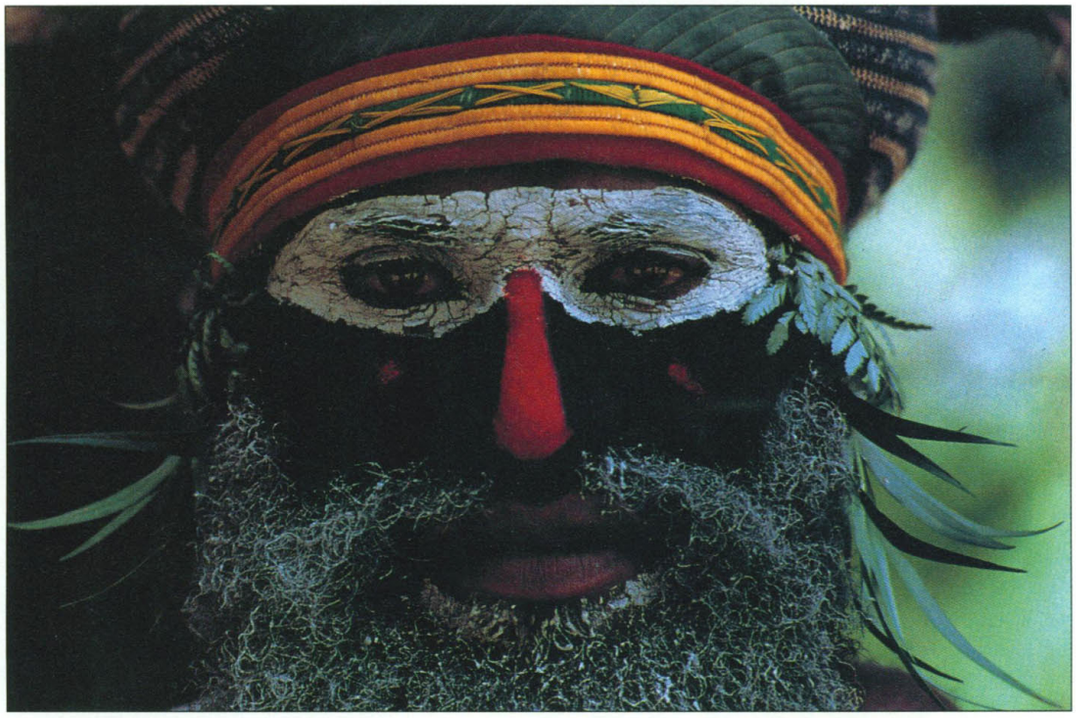
Native Expression



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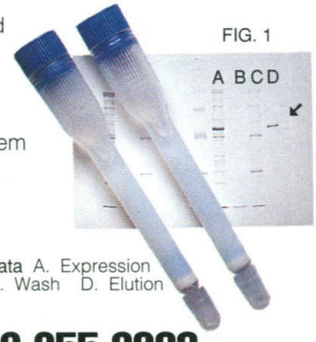

Figure 1: Expression Data A. Expression B. Flow Through C. Wash D. Elution

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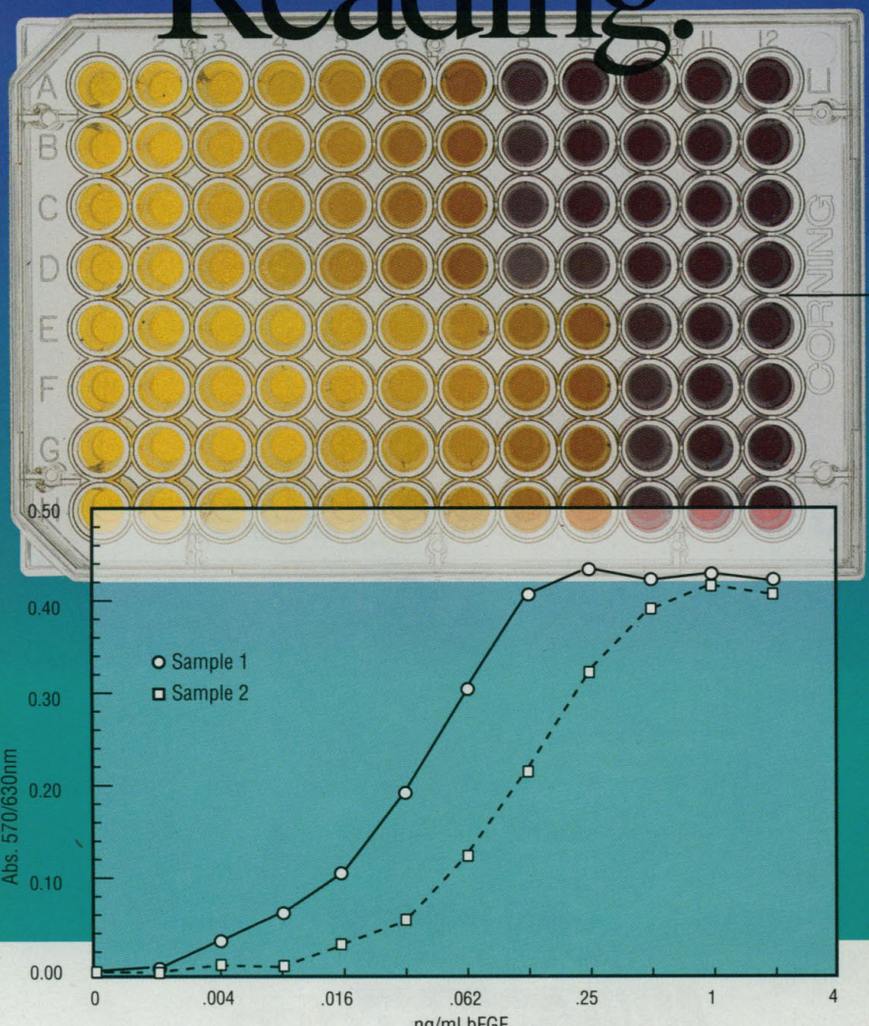

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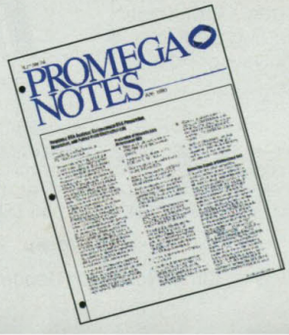

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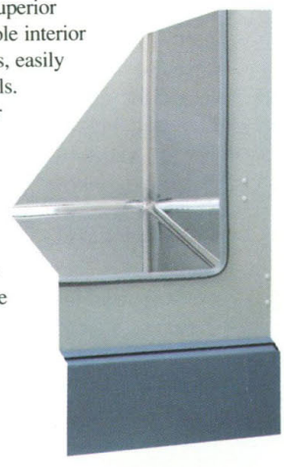

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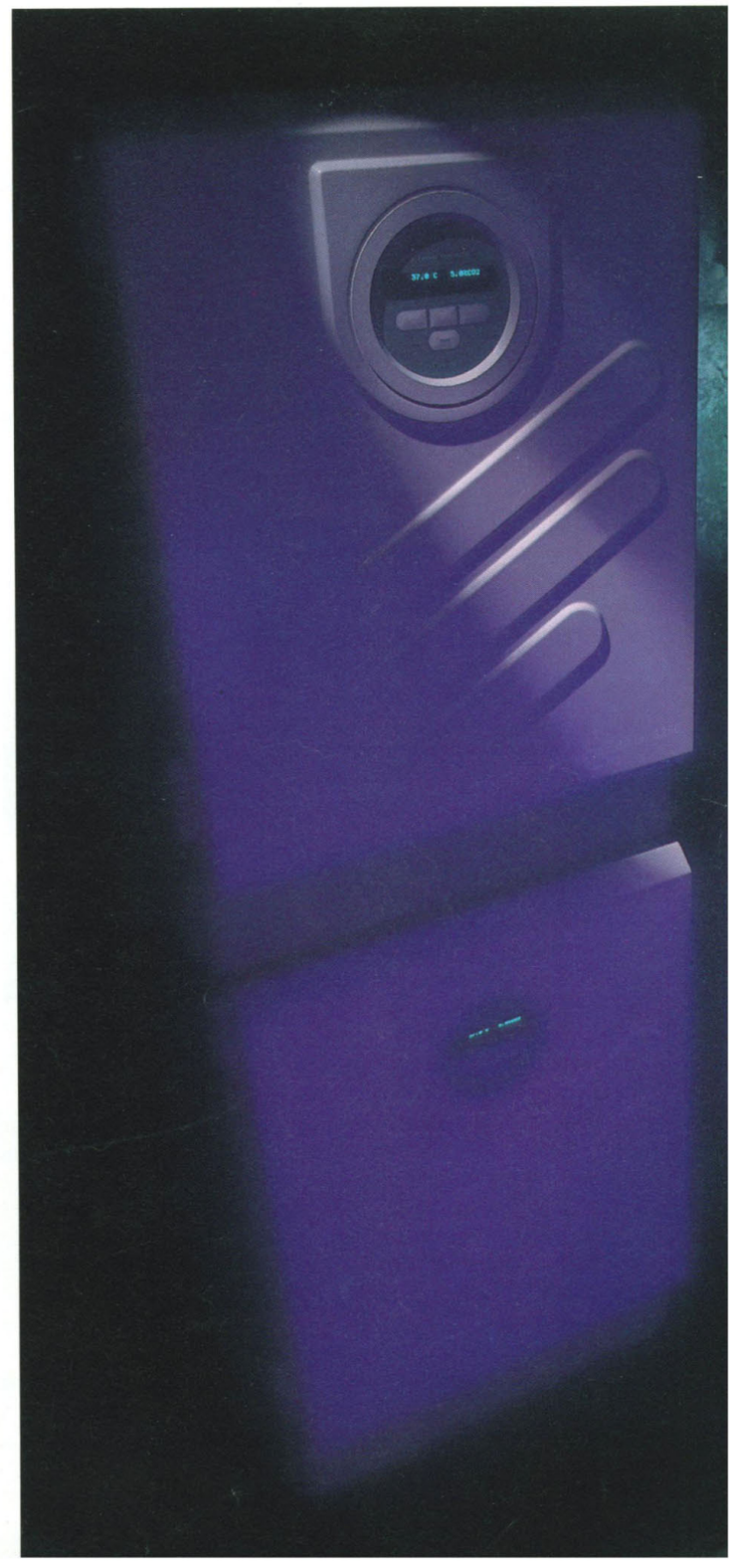

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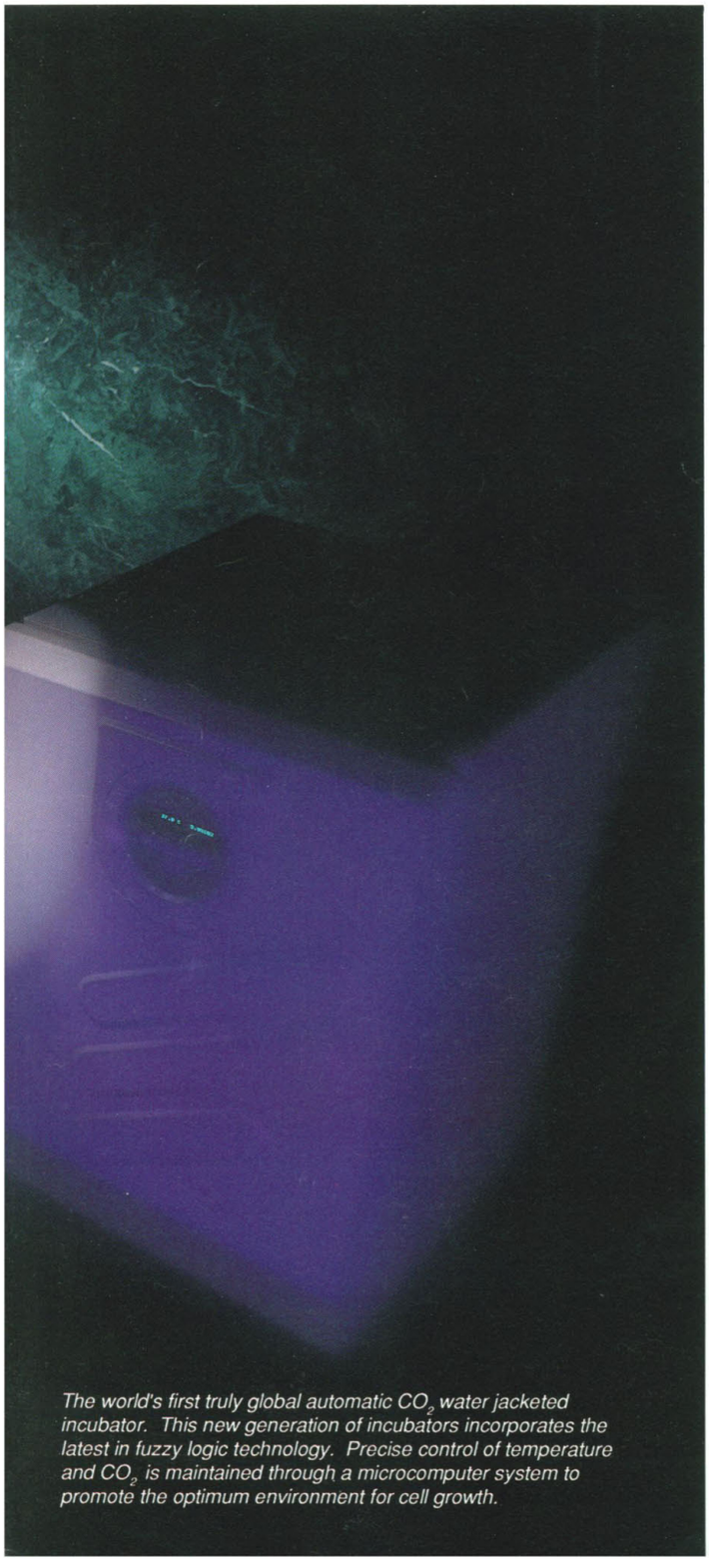

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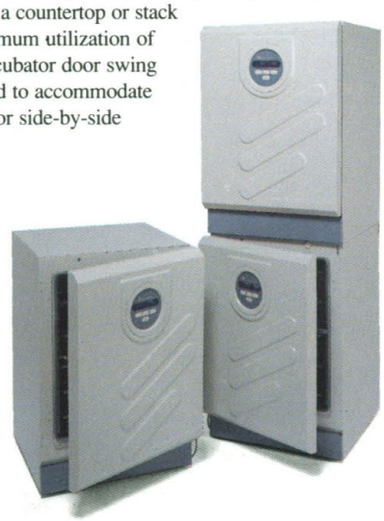

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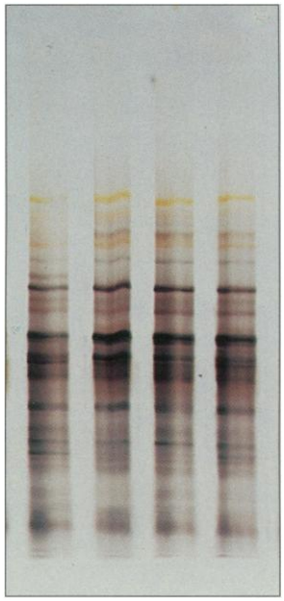
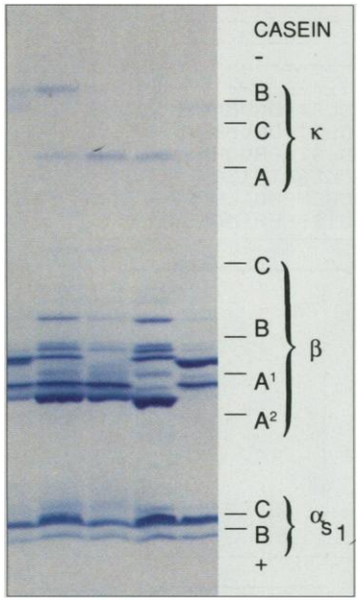


Wheat (*Triticum aestivum*) seed proteins separated on ExcelGel™ SDS, gradient 8-18 and silver stained.

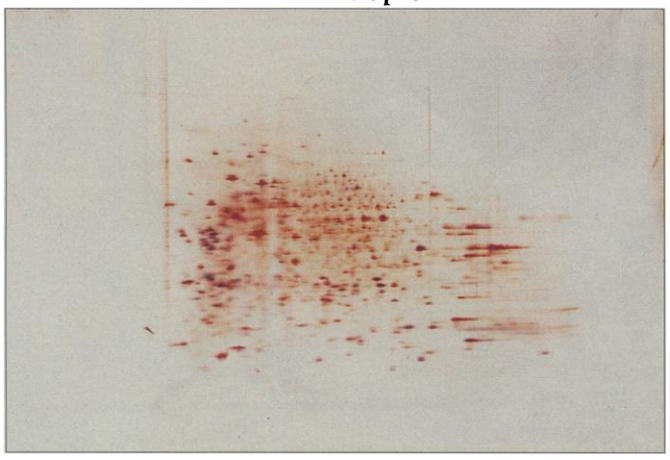
IEF with Multiphor II



Analysis of casein in cows milk, using pH interval 2.5-8 and Coomassie stained.

(These results are kindly donated by Dr. A. Görg, and Dr. I Krause, Freising-Weihenstephan, Germany.)

2-D with Multiphor II



2-D electrophoresis of breast tumour proteins using Immobiline® DryStrip™ pH 3-10.5 and ExcelGel SDS, gradient 8-18.

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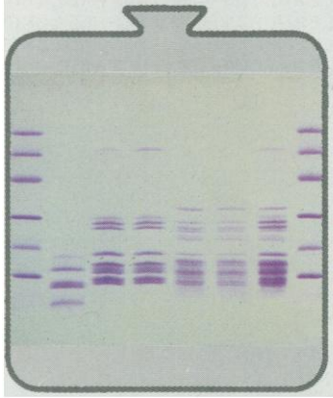

Ribosomal proteins separated on PhastGel gradient 8-25. Stained with PhastGel Blue R Coomassie stain.

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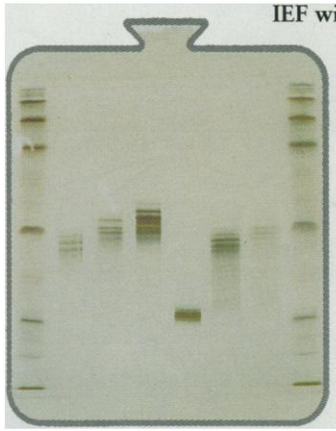
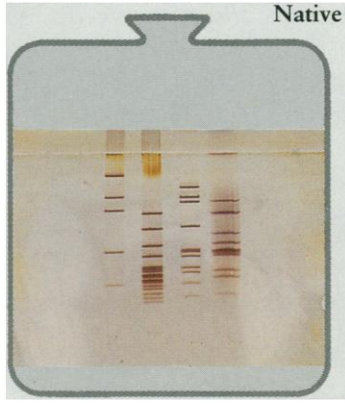


Characterization of murine monoclonal IgGs on PhastGel IEF 3-9. PhastGel silver kit was used for detection.

Native PAGE with PhastSystem



Different DNA digests run with native buffer strips on PhastGel gradient 10-15. Silver stained.

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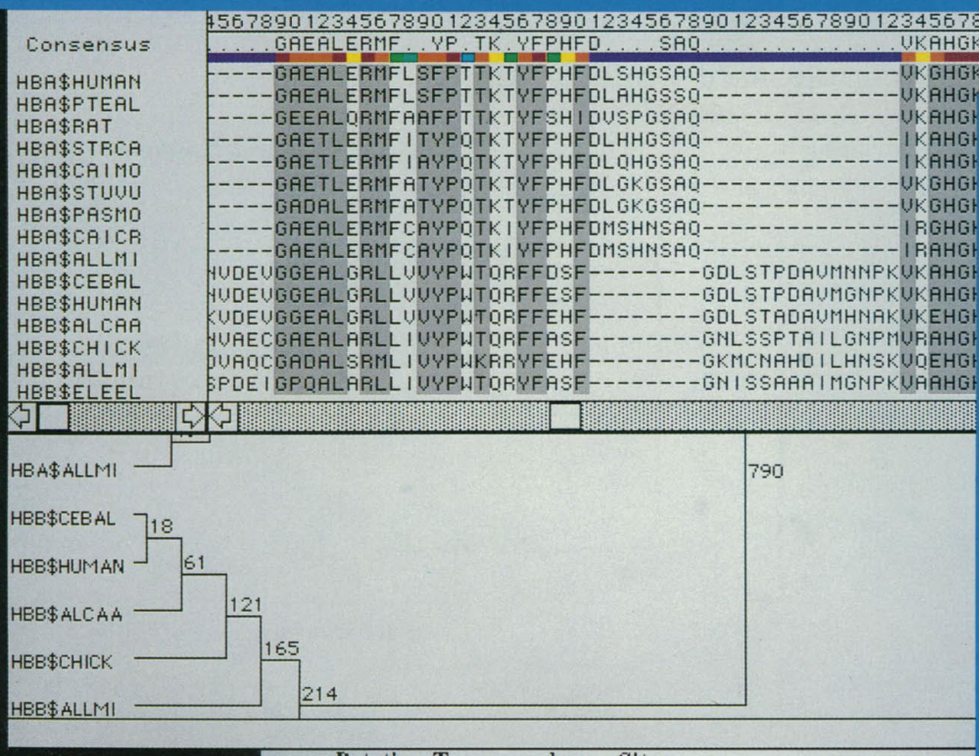

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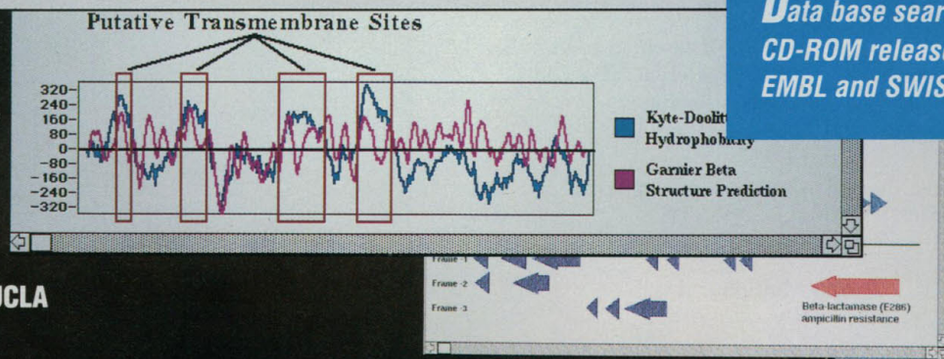

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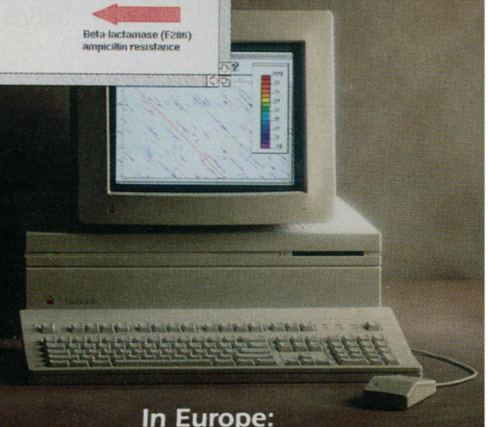

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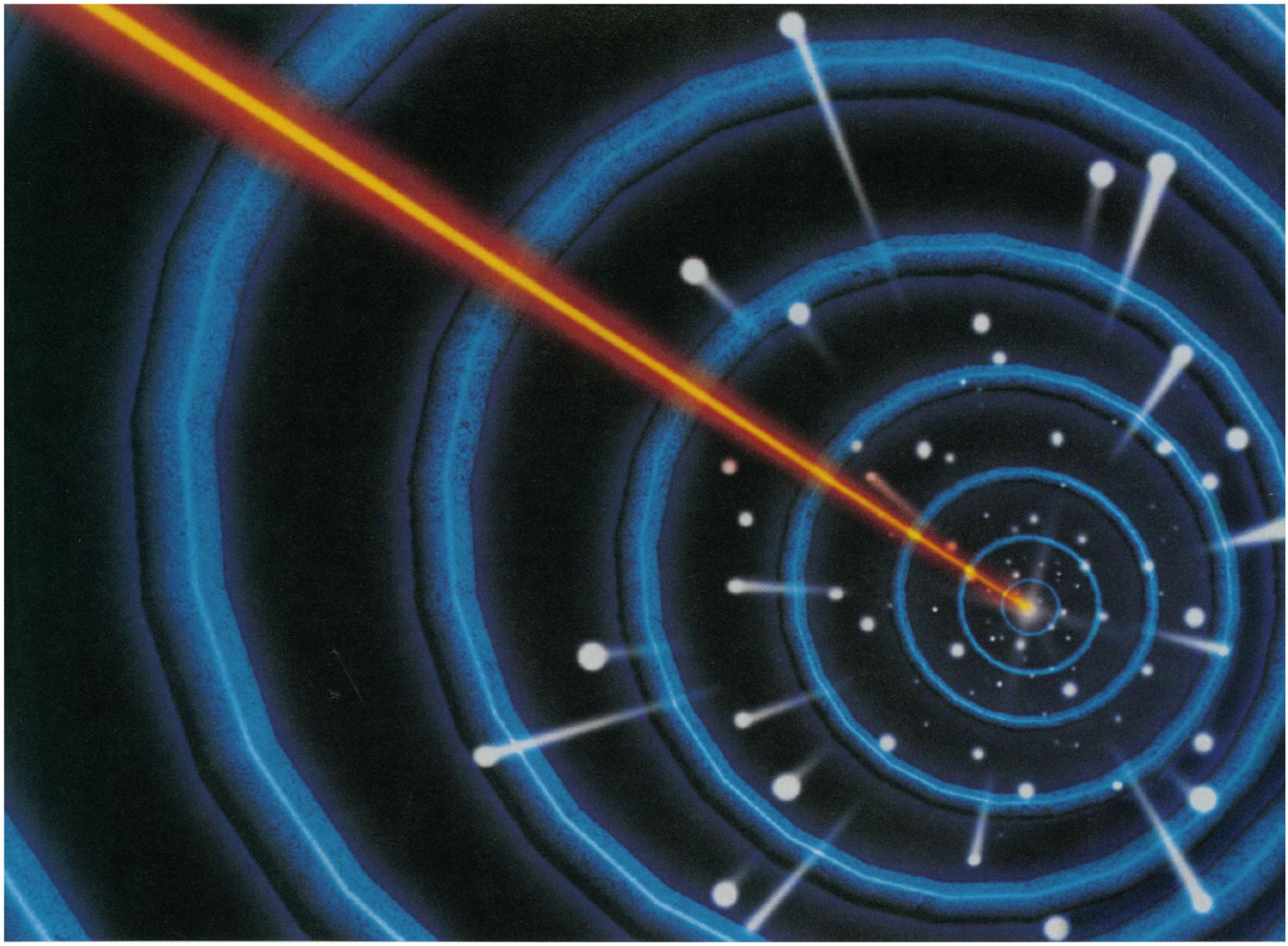

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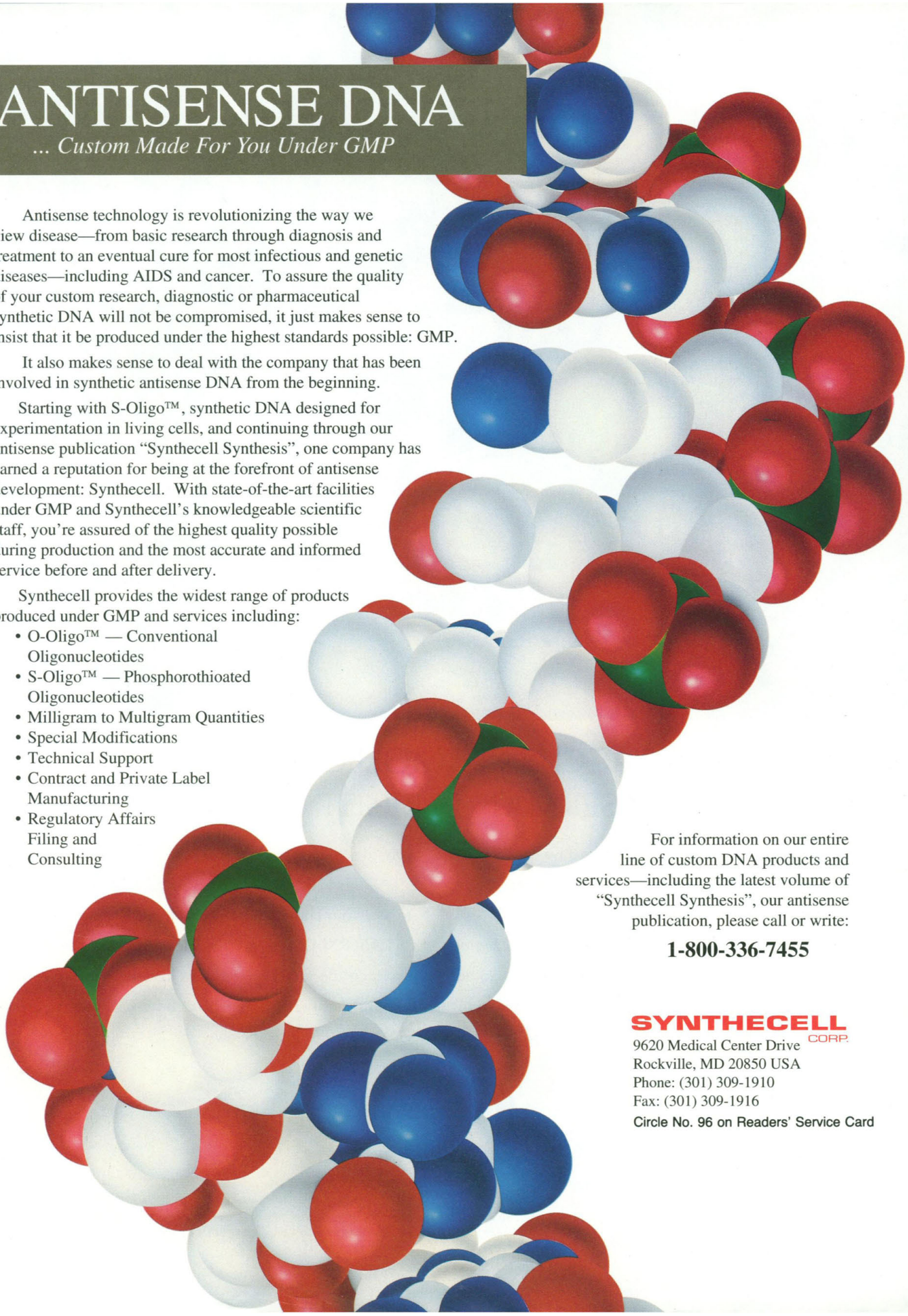

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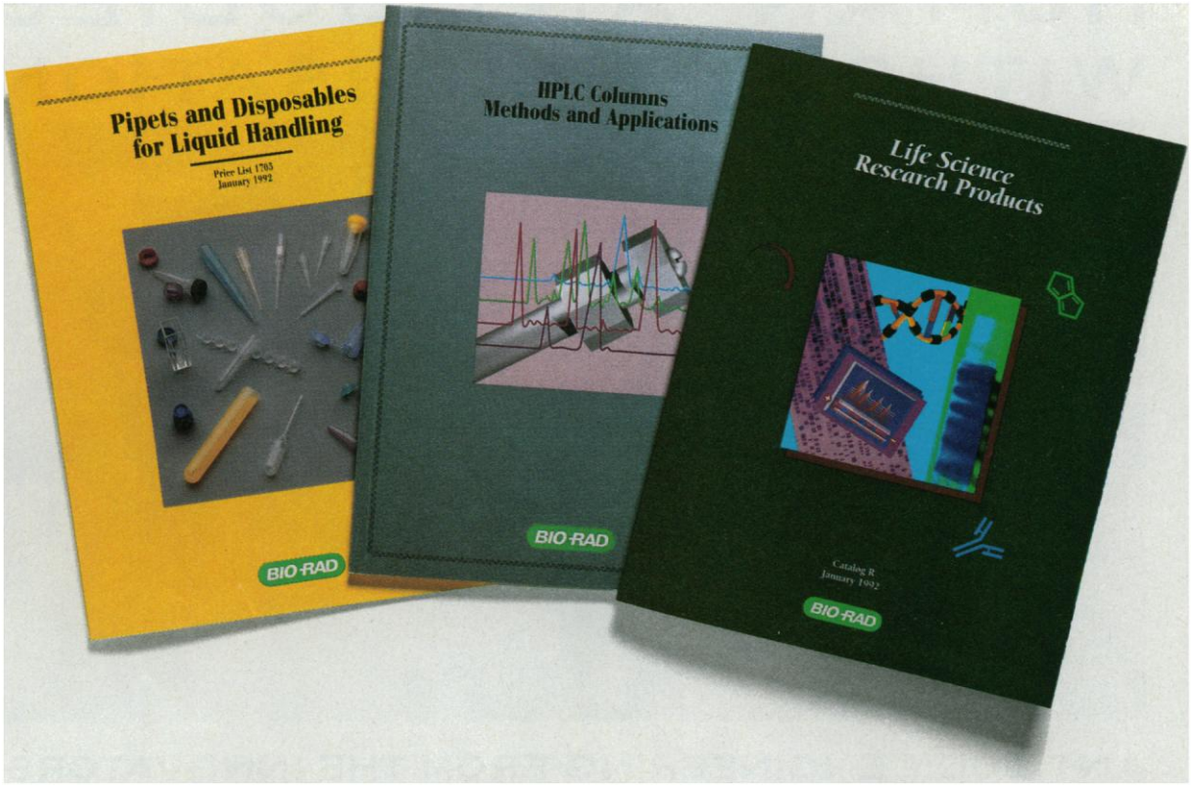

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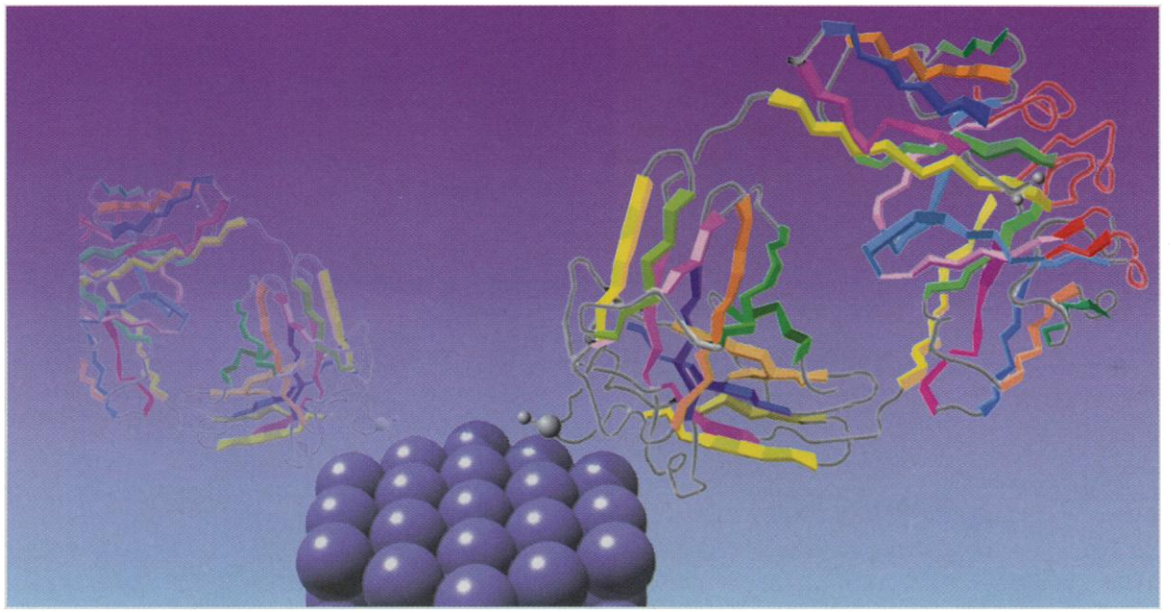

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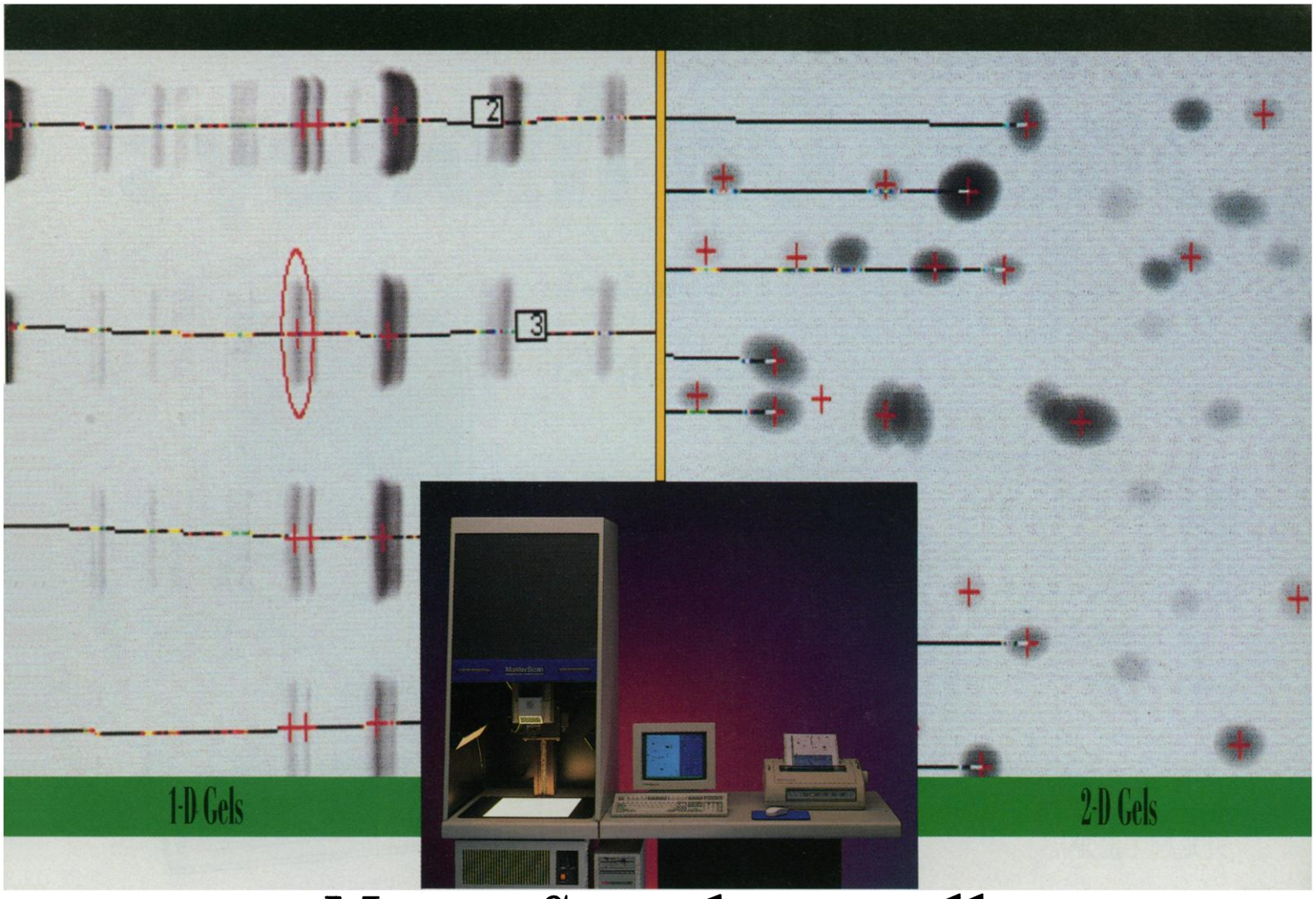
1. McCaffertyJ., Griffiths A. D., Winter G., and Chiswell D. J. (1990) Nature 348 pp 552-554. 2. Riechmann L., Clark M., Waldmann H. and Winter G., (1988) Nature 332 pp 323-327. 3. Orlandi R., Gussow D. H., Jones P. T., Winter G., (1989) PNAS 86 3833-3837. 4. Winter G. and Milstein C., (1991) Nature 349 pp293-299. 5. Gherardi E., Pannell R., and Milstein C.,(1990) J. Immunol Methods, 126 pp61-68. 6. Marks J., Hoogenboom H., McCafferty J., Bonnert T., Griffiths A., and Winter G., (1991), J. Mol. Biol. 222 pp581-597.



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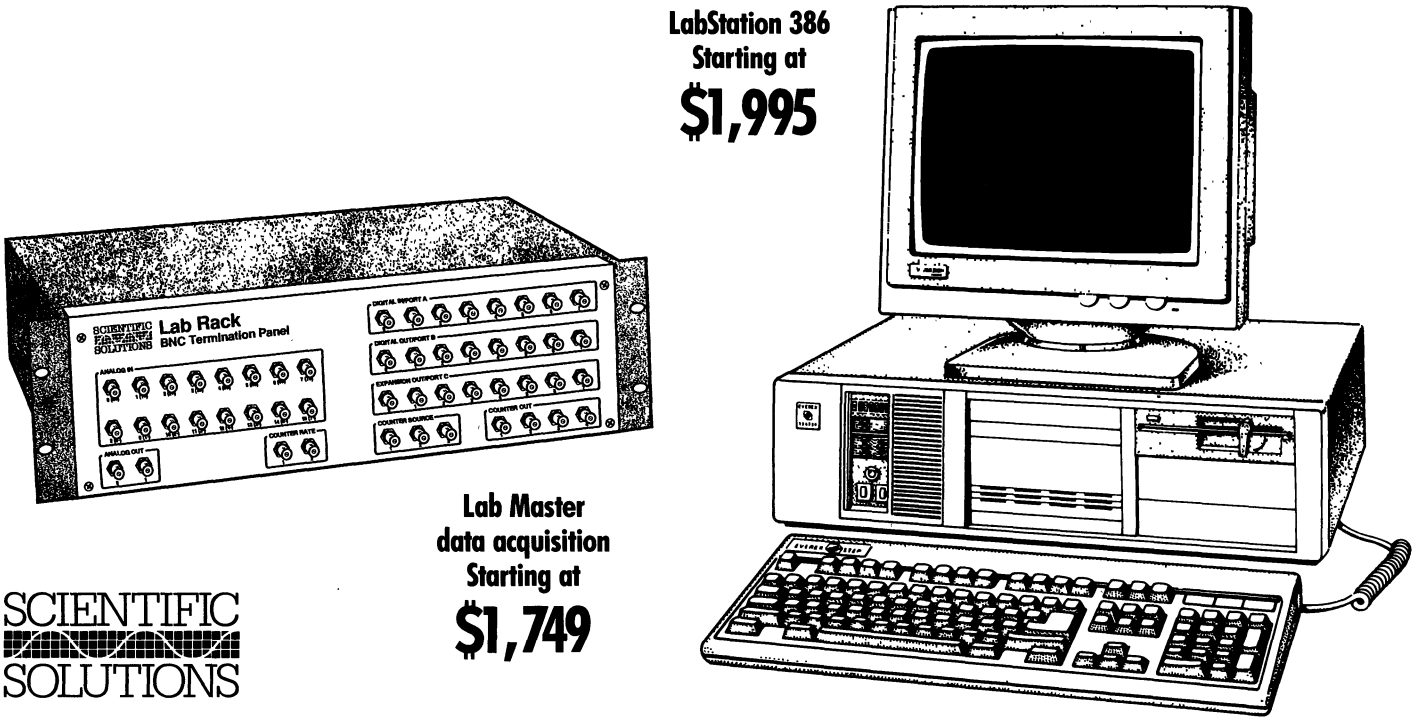

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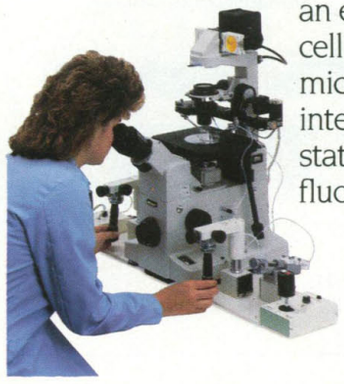

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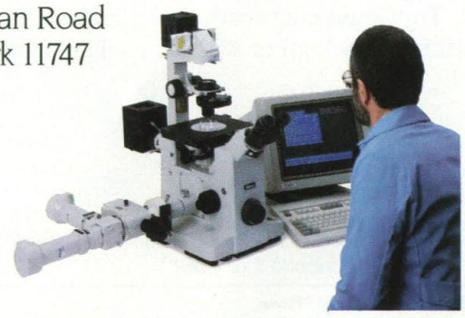

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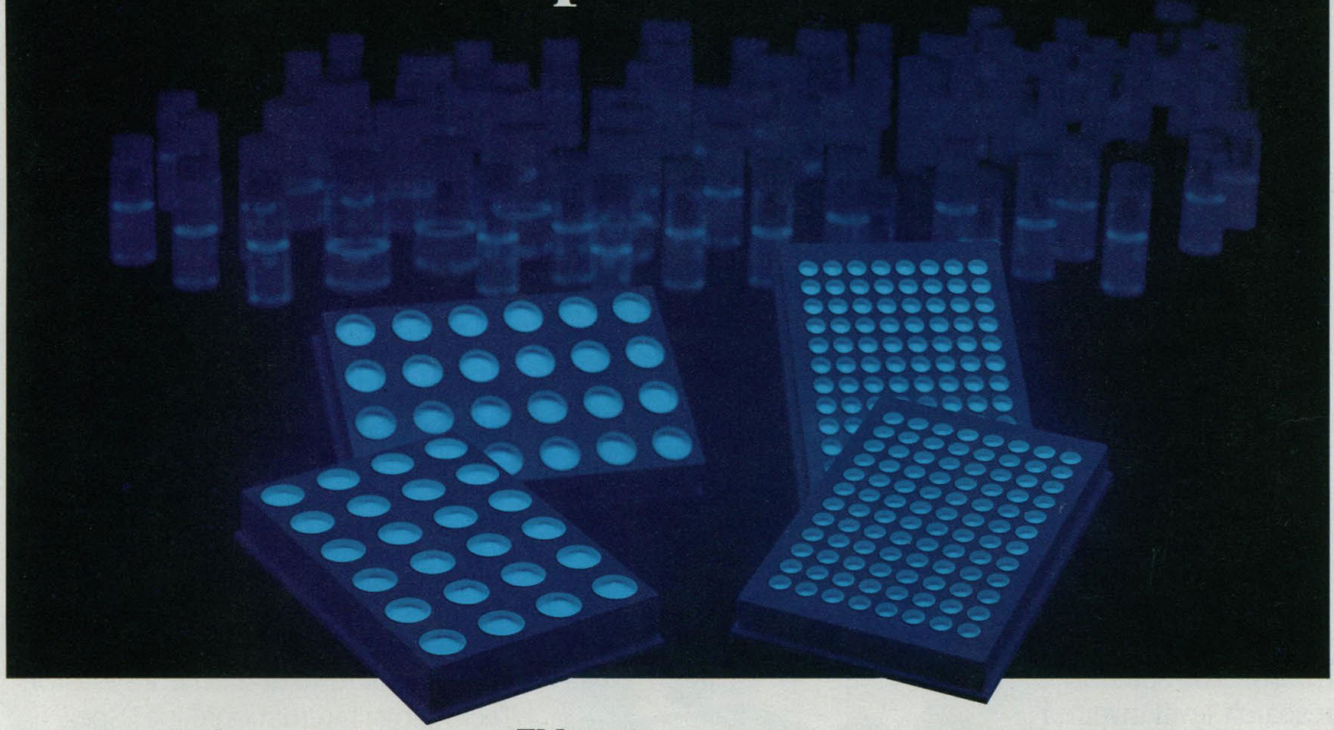

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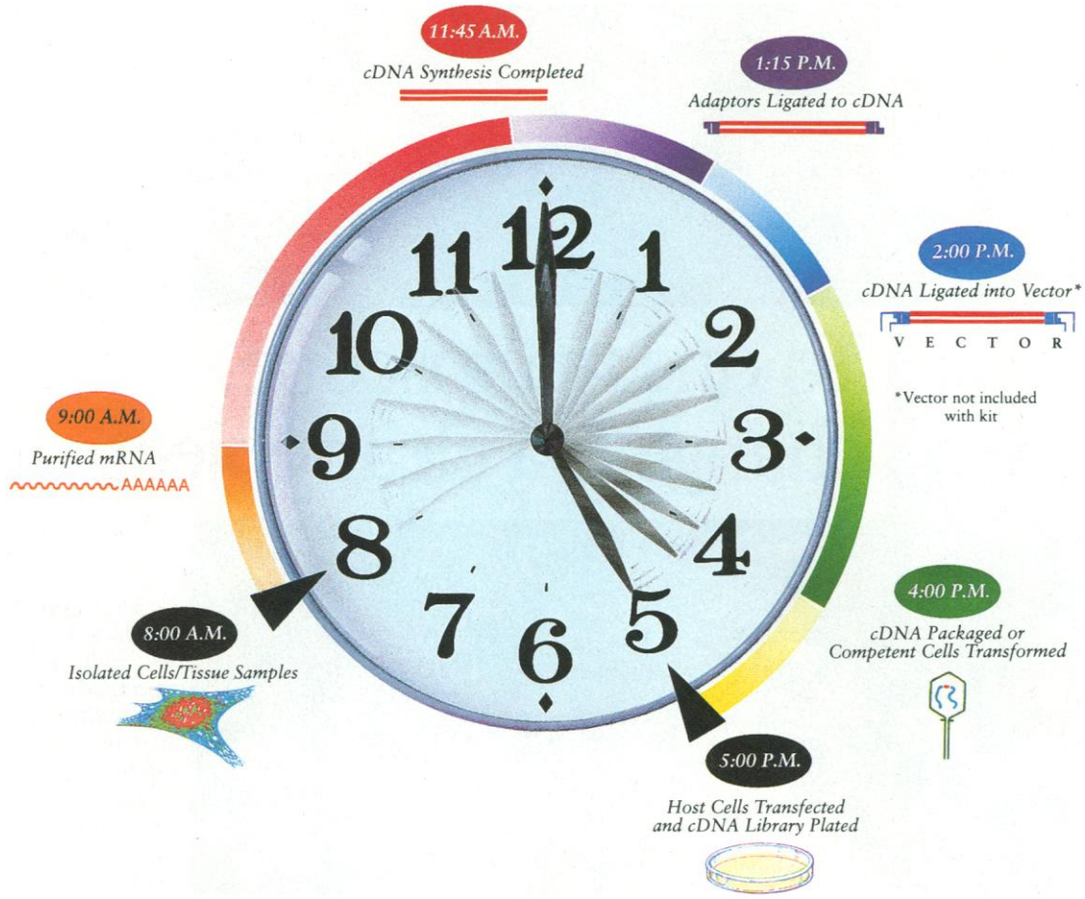

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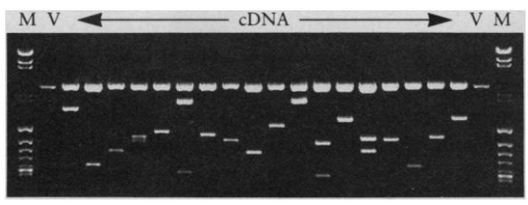

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immunofluorescence micrograph of actin cytoskeleton (rhodamine).
Filter set 20, objective Plan-Apochromat 63×/1.4 oil.

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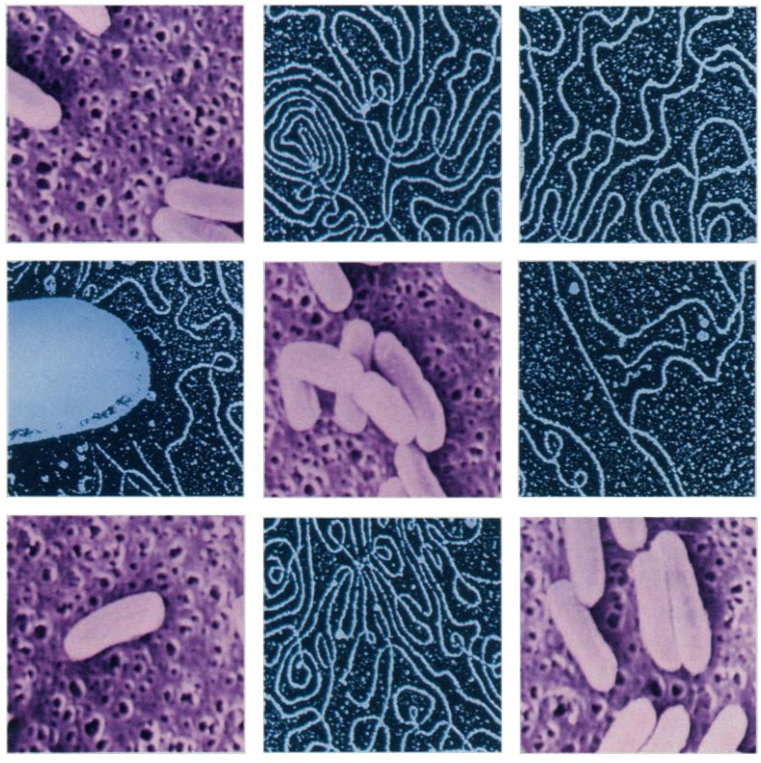

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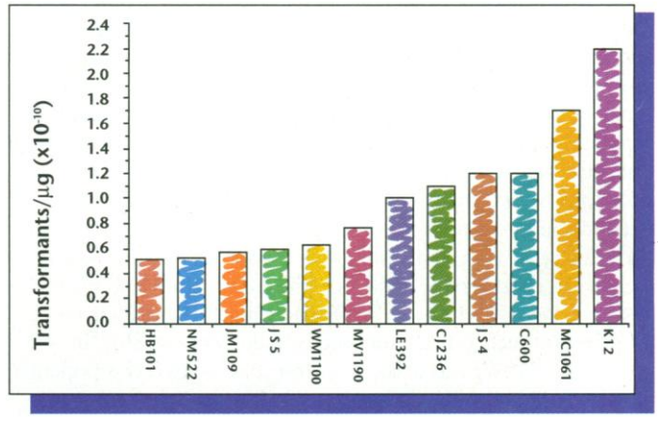

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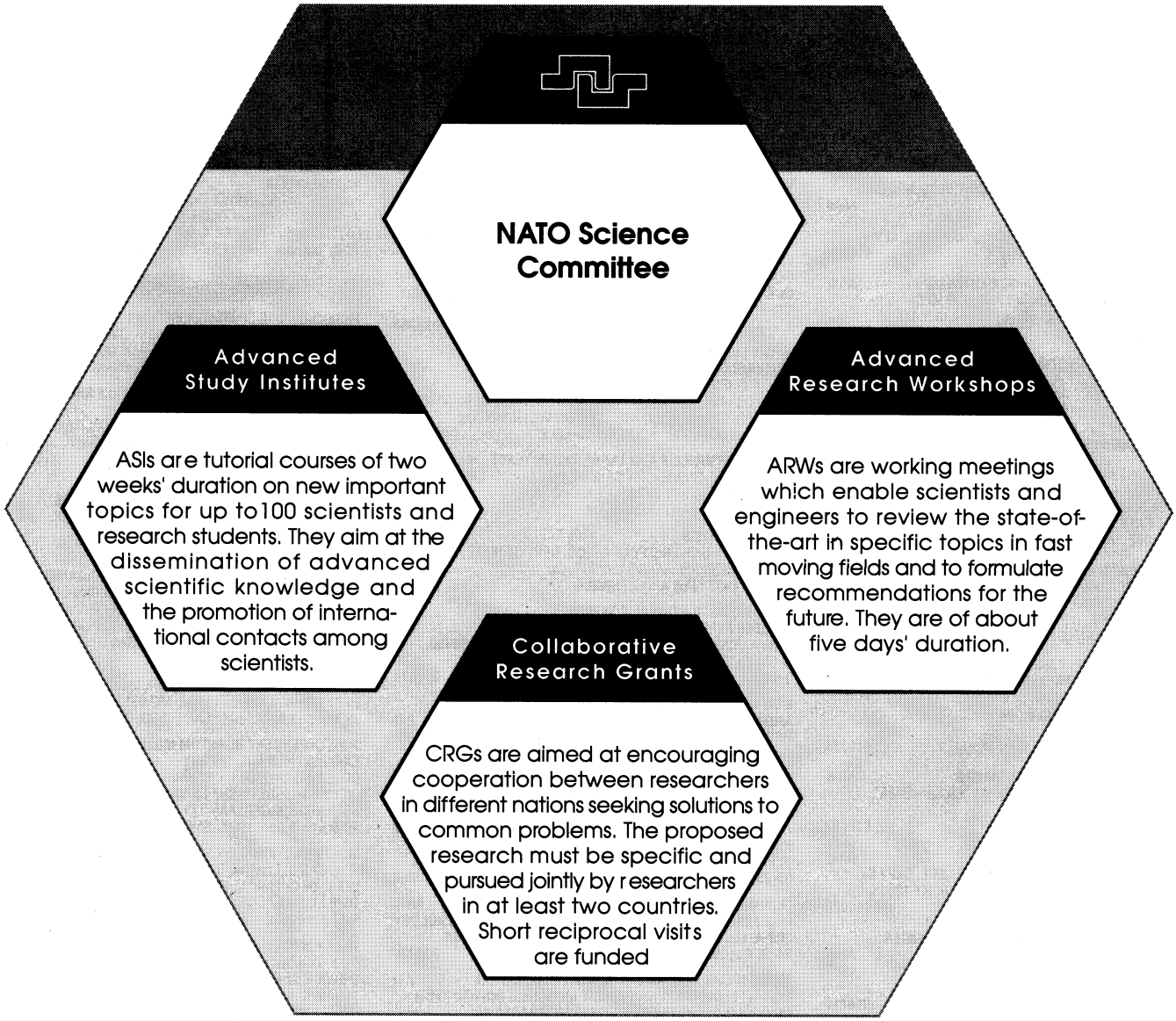

Participation in the ASIs and ARWs listed overleaf is open to all suitably-qualified scientists irrespective of nationality. Application for attendance should be addressed to the relevant meeting director.

Application to organize and direct an ASI or an ARW, or to participate in the Collaborative Research Grants Programme should be made to the NATO Scientific Affairs Division. Scientists resident in NATO countries may apply and may include scientists from Central and Eastern European countries in their applications. Further information and specific application forms available from:

Scientific Affairs Division, (Ref.1992-1), NATO, B-1110 Brussels, Belgium

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The code ASI or ARW indicates the type of meeting. Many meetings are interdisciplinary, and all subject areas should be consulted.

LIFE SCIENCES

MOLECULAR BIOLOGY AND ITS APPLICATION TO MEDICAL MYCOLOGY ARW
Prof. B MARESCA, CNR, INTERN. INST. OF GENETICS & BIOPHYSICS, VIA MARCONI 10, 80125 NAPLES, ITALY
6-8 January 1992 : STROMBOLI, ITALY **910039**

MICROBIAL REAGENTS IN ORGANIC SYNTHESIS ARW
Prof. S SERVI, POLITECNICO DI MILANO, DIPTO DI CHIMICA, PIAZZA L. DA VINCI 32,20133 MILANO, ITALY
March 1992 : LERICI, ITALY **910362**

CELL-FREE ANALYSIS OF THE FUNCTIONAL ORGANIZATION OF THE CYTOPLASM ARW
Dr. DJ MORRE, PURDUE UNIVERSITY, MEDICINAL CHEMISTRY DEPT, LIFE SCIENCES RESEARCH BUILDING, WEST LAFAYETTE, IN 47907, USA
11-14 March 1992 : VIRGINIA, USA **900411**

NEW DEVELOPMENTS IN FLOW CYTOMETRY ASI
Dr. A JACQUEMIN-SABLON, CNRS CTSRC, SERVICE DE CYTOFLUOROMETRIE ANALYTIQUE, BP 3, 94801 VILLEJUIF, FRANCE
6-10 April 1992 : VILLEJUIF, FRANCE **910384**

QUANTITATIVE ASSESSMENT IN EPILEPSY CARE ARW
Prof. H MEINARDI, UNIVERSITY OF NIJMEGEN, INST.VOOR EPILEPSIEBESTRIJDING, POSTBUS 21, 2100 AA HEEMSTEDE, THE NETHERLANDS
8-11 April 1992 : OPORTO, PORTUGAL **910795**

HUMAN APOLIPOPROTEIN MUTANTS : APOLIPOPROTEINS IN THE DIAGNOSIS AND TREATMENT OF DISEASE ARW
Prof. CR SIRTORI, UNIVERSITA DI MILANO, INSTITUTE OF PHARMACOLOGICAL SCIENCES, VIA BALZARETTI 9, 20133 MILANO, ITALY
12-15 April 1992 : LIMONE SUL GARDA, ITALY **910334**

DESMOPRESSIN IN BLEEDING DISORDERS ARW
Prof. G MARIANI, UNIVERSITY OF ROME "LA SAPIENZA", VIA CHIETI 7, 00161 ROME, ITALY
22-25 April 1992 : IL CIOCCO, ITALY **910783**

BIOLOGY OF SALMONELLA ARW
Prof. F CABELLO, NEW YORK MEDICAL COLLEGE, DEPT OF MICROBIOLOGY & IMMUNOLOGY, VALHALLA, NY 10595, USA,
11-15 May 1992 : PORTOROSA, ITALY **900926**

THE PHOTOSYNTHETIC BACTERIAL REACTION CENTER: STRUCTURE, SPECTROSCOPY AND DYNAMICS ARW
DR. J BRETON, CEN-SACLAY, DBCM/SBE, 91191 GIF-SUR-YVETTE, FRANCE
11-15 May 1992 : CADARACHE, FRANCE **910710**

ADVANCES IN THE BIOMECHANICS OF HAND AND WRIST ARW
Dr. F SCHUIND, CLINIQUES UNIVERSITAIRES DE BRUXELLES, DEPT. OF ORTHOPEDICS, 808 ROUTE DE LENNIK, 1070 BRUXELLES, BELGIUM
21-23 May 1992 : GENVAL, BELGIUM **910323**

ELECTRODERMAL ACTIVITY: FROM PHYSIOLOGY TO PSYCHOLOGY ARW
Prof. J-C ROY, UNIV. DE LILLE I (USTLFA), LAB. DE PSYCHOPHYSIOLOGIE, BAT. SN4, F-59655 VILLENEUVE D'ASCQ CEDEX, FRANCE
21-23 May 1992 : GRAND RULLECOURT, FRANCE **910880**

USE OF BIOMARKERS IN ASSESSING HEALTH AND ENVIRONMENTAL IMPACTS OF CHEMICAL POLLUTANTS ARW
Dr. C TRAVIS, OAK RIDGE NATIONAL LABORATORY, OFFICE OF RISK ANALYSIS, OAK RIDGE, TENNESSEE 37831-6109, USA
1-5 June 1992 : LUSO, PORTUGAL **910014**

REGULATION OF GENE EXPRESSION IN ANIMAL VIRUSES ASI
Prof. L CARRASCO, UNIVERSIDAD AUTONOMA, CENTRO DE BIOLOGIA MOLECULAR, CANTO BLANCO, 28049 MADRID, SPAIN
7-17 June 1992 : MAJORCA, SPAIN **910817**

BIOLOGY AND PHARMACOLOGY OF IMMUNOTOXINS ARW
Dr. AE FRANKEL, FLORIDA HOSPITAL, CANCER AND LEUKEMIA RESEARCH CENTER, 616 EAST ALTAMONTE DRIVE #100, ALTAMONTE SPRINGS, FL 32701, USA
18-20 June 1992 : ORLANDO, FLORIDA, USA **910444**

VASCULAR ENDOTHELIUM: PHYSIOLOGICAL BASIS OF CLINICAL PROBLEMS II ASI
PROF. JD CATRAVAS, MEDICAL COLLEGE OF GEORGIA, DEPT. OF PHARMACOLOGY & TOXICOLOGY, AUGUSTA, GA 30912-2300, USA
20-30 June 1992 : RHODES, GREECE **910862**

STANDARDIZATION OF EPIDEMIOLOGIC STUDIES OF HOST SUSCEPTIBILITY ARW
Prof. JS DORMAN, UNIVERSITY OF PITTSBURGH, DEPT OF EPIDEMIOLOGY, GRADUATE SCHOOL OF PUBLIC HEALTH, PITTSBURGH, PA 15261, USA
23-27 June 1992 : PITTSBURGH, USA **910369**

EPILEPSIES AND GENERALIZED EPILEPTIC SYNDROMES BEFORE THE AGE OF SIX ARW
Dr. C DRAVET, CENTRE SAINT-PAUL, 300 BD. SAINTE MARGUERITE, 13009 MARSEILLE, FRANCE,
23-26 June 1992 : MARSEILLE, FRANCE **910784**

NEW-GENERATION VACCINES: THE ROLE OF BASIC IMMUNOLOGY ASI
Prof. G GREGORIADIS, UNIVERSITY OF LONDON, CTRE. FOR DRUG DELIVERY RESEARCH, SCHOOL OF PHARMACY, 29-39 BRUNSWICK SQUARE, LONDON WC1N 1AX, UK
24 June-5 July 1992 : SOUNION, GREECE **910734**

PROTEIN SYNTHESIS AND TARGETING IN YEAST ARW
DR. MF TUITE, UNIVERSITY OF KENT, BIOLOGICAL LABORATORY, CANTERBURY, KENT CT2 7NJ, UK
1-8 July 1992 : CANTERBURY, UK **910687**

TOXOPLASMOSIS ARW
Dr. J SMITH, UNIVERSITY OF LEEDS, DEPT OF PURE AND APPLIED BIOLOGY, LEEDS LS2 9JT, UK
5-9 July 1992 : LES ARCS, FRANCE **910715**

POST-TRANSCRIPTIONAL CONTROL OF GENE EXPRESSION ASI
Prof. A VON GABAIN, KAROLINSKA INSTITUTE, BOX 60400, S-104 01 STOCKHOLM, SWEDEN
3-14 August 1992 : SPETSAI, GREECE **910679**

NEW DEVELOPMENTS IN LIPID-PROTEIN INTERACTIONS AND RECEPTOR FUNCTION ASI
PROF. KWA WIRTZ, STATE UNIVERSITY OF UTRECHT, CTRE. FOR BIOMEMBRANES & LIPID ENZYMOLOGY, P.O. BOX 80.054, 3508 TB UTRECHT, THE NETHERLANDS
16-27 August 1992 : SPETSAI, GREECE **910725**

SENSORY-MOTOR IMPAIRMENTS IN THE ELDERLY: ARE THEY REVERSIBLE? ARW
Prof. GE STELMACH, ARIZONA STATE UNIVERSITY, DEPT. OF EXERCISE SCIENCE & PHYSICAL ED., TEMPE, AZ 85287, USA
20-23 August 1992 : BAD WINDSHEIM, GERMANY **910860**

IMMUNOCHEMISTRY OF HUMAN GERM CELL TUMOURS ARW
Prof. I DAMJANOV, JEFFERSON MEDICAL COLLEGE, PATHOLOGY 203-A, MAIN BUILDING, PHILADELPHIA, PA 19107, USA
24-26 August 1992 : OXFORD, UK **910730**

MECHANISMS IN EUKARYOTIC GENE REGULATION ASI
Prof. H FELDMANN, UNIVERSITAT MUNCHEN, INSTITUT FUR PHYSIOLOGISCHE CHEMIE, SCHILLERSTRASSE 44, D-8000 MUNCHEN 2, GERMANY
31 August-10 Sept. 1992 : SPETSAI, GREECE **910696**

TYROSINE PHOSPHORYLATION/DEPHOSPHORYLATION AND DOWNSTREAM SIGNALING ASI
PROF. LMG HEILMEYER, RUHR-UNIVERSITAT BOCHUM, INSTITUT FUR PHYSIOLOGISCHE CHEMIE, UNIVERSITATSSTRASSE 150, D-4630 BOCHUM 1, GERMANY
1-12 September 1992 : MARATEA, ITALY **910790**

APPROACHES TO MOLECULAR BIOLOGY OF IN VITRO PLANT MORPHOGENESIS ASI
DR. KA ROUBELAKIS-ANGELAKIS, UNIVERSITY OF CRETE, DEPT OF BIOLOGY, PO BOX 1470, 71110 HERAKLION, GREECE
6-18 September 1992 : CRETE, GREECE **910329**

GENOME ORGANIZATION, FUNCTION AND EVOLUTION ARW
DR. G BERNARDI, CNRS, INSTITUT JACQUES MONOD, LAB. DE GENETIQUE MOLECULAIRE, 2 PLACE JUSSIEU, TOUR 43, 75005 PARIS, FRANCE
12-18 September 1992 : SPETSAI, GREECE **910836**

MOLECULAR BIOLOGY OF MITOCHONDRIAL TRANSPORT SYSTEMS ARW
Dr. M FORTE, OREGON HEALTH SCIENCES UNIVERSITY, VOLLUM INSTITUTE, 3181 S.W. SAM JACKSON PARK ROAD, PORTLAND, OR 97201-3098, USA
13-16 September 1992 : ROSA MARINA, ITALY **910847**

BIVALVE FILTER FEEDERS AND MARINE ECOSYSTEM PROCESSES ARW
Dr. RF DAME, UNIVERSITY OF SOUTH CAROLINA, MARINE SCIENCE DEPT, CAROLINA COLLEGE, CONWAY, SOUTH CAROLINA 29526, USA
6-9 October 1992 : RENESSE, THE NETHERLANDS **910832**

SPECIFIC APPROACHES IN CANCER THERAPY: DIFFERENTIATION, IMMUNOMODULATION AND ANGIOGENESIS ASI
Prof. N D'ALESSANDRO, UNIVERSITA DEGLI STUDI, ISTITUTO DI FARMACOLOGIA, FACOLTA DI MEDICINA, PIAZZA XX SETTEMBRE 4, 98100 MESSINA, ITALY
17-27 October 1992 : ERICE, ITALY **910355**

PHYSICS AND CHEMISTRY

TURBULENCE IN SPATIALLY EXTENDED SYSTEMS ASI
Dr. R BENZI, UNIVERSITA DI ROMA 'TOR VERGATA', DEPT. OF PHYSICS, VIA EMANUELE CARNEVALE, 00173 ROMA, ITALY
20-31 January 1992 : LES HOUCHES, FRANCE (COP) **900911**

INTERACTIVE DYNAMICS OF CONVECTION AND SOLIDIFICATION ARW
Prof. SH DAVIS, NORTHWESTERN UNIVERSITY, DEPT. OF ENGINEERING SCIENCE AND APPLIED MATH., EVANSTON, IL 60208, USA
7-14 March 1992 : CHAMONIX, FRANCE (COP) **910568**

OPTICAL PROPERTIES OF SEMICONDUCTORS ASI
Dr. G MARTINEZ, CNRS, SERVICE NATIONAL DES CHAMPS INTENSES, 25 AVE DES MARTYRS 166X, 38042 GRENOBLE CEDEX, FRANCE
9-20 March 1992 : ERICE, ITALY **910425**

MOLECULAR ELECTROCHEMISTRY OF INORGANIC, BIOINORGANIC AND ORGANOMETALLIC COMPOUNDS ARW
DR. AJL POMBEIRO, INSTITUTO SUPERIOR TECNICO, COMPLEXO I, AV. ROVISCO PAIS, 1096 LISBOA CODEX, PORTUGAL
25-29 March 1992 : SINTRA, PORTUGAL **910590**

STOCHASTIC RESONANCE ARW
PROF. FE MOSS, UNIVERSITY OF MISSOURI, ST LOUIS, DEPT OF PHYSICS, ST LOUIS, MO 63121, USA,
29 March-3 April 1992 : SAN DIEGO, CA, USA (COP) **910747**

TIME DEPENDENT QUANTUM MOLECULAR DYNAMICS: EXPERIMENTS AND THEORY ARW
DR. L LATHOUWERS, UNIVERSITY OF ANTWERP (RUCA), DIENST THEORETISCHE EN WISKUNDIGE NATUURKUNDE, GROENENBORGERLAAN 171, 2020 ANTWERPEN, BELGIUM
30 March-3 April 1992 : SNOWBIRD, UT, USA **910694**

MULTIFUNCTIONAL MESOPOROUS INORGANIC SOLIDS ASI
Prof. CAC SEQUEIRA, INSTITUTO SUPERIOR TECNICO, DEPT. OF CHEMICAL ENGINEERING, AV. ROVISCO PAIS, 1096 LISBOA CODEX, PORTUGAL
5-17 April 1992 : SINTRA, PORTUGAL **910709**

THE ORIGIN OF STRUCTURE IN THE UNIVERSE ARW
Dr. E GUNZIG, UNIVERSITE LIBRE DE BRUXELLES, SERVICE DE CHIMIE PHYSIQUE, CP 231, CAMPUS PLAINE, 1050 BRUXELLES, BELGIUM
21-25 April 1992 : PONT D'OYE, BELGIUM **910409**

DISSOCIATIVE RECOMBINATION: THEORY, EXPERIMENTS AND APPLICATIONS ARW
Dr. BR ROWE, UNIVERSITE DE RENNES 1, DEPT DE PHYSIQUE ATOMIQUE & MOLECULAIRE, CAMPUS DE BEAULIEU, 35042 RENNES CEDEX, FRANCE
3-8 May 1992 : SAINT-JACUT, FRANCE **910802**

MICROWAVE DISCHARGES: FUNDAMENTALS AND APPLICATIONS ARW
Prof. CM FERREIRA, UNIVERSIDADE TECNICA DE LISBOA, INSTITUTO SUPERIOR TECNICO, 1096 LISBOA CODEX, PORTUGAL,
11-15 May 1992 : VIMEIRO, PORTUGAL **910714**

LOCALIZATION AND PROPAGATION OF CLASSICAL WAVES IN RANDOM AND PERIODIC STRUCTURES ARW
Prof. CM SOUKOULIS, IOWA STATE UNIVERSITY, DEPT. OF PHYSICS, AMES, IOWA 50011, USA,
26-30 May 1992 : HERAKLION, CRETE, GREECE **910311**

MODERN PROSPECTIVES IN INORGANIC CRYSTAL CHEMISTRY ASI
Prof. E PARTHE, UNIVERSITE DE GENEVE, LABORATOIRE DE CRISTALLOGRAPHIE, 24 QUAI ERNEST-ANSERMET, 1211 GENEVE 4, SWITZERLAND
29 May-7 June 1992 : ERICE, ITALY **910318**

CELLULAR AUTOMATA AND COOPERATIVE SYSTEMS ASI
Dr. P PICCO, CENTRE DE PHYSIQUE THEORIQUE, CNRS, LUMINY CASE 907, 13288 MARSEILLE CEDEX 9, FRANCE,
June 1992 : LES HOUCHES, FRANCE **910820**

IONIZATION OF SOLIDS BY PARTICLES ARW
Pr. RA BARAGIOLA, UNIVERSITY OF VIRGINIA, DEPT. OF NUCLEAR ENGINEERING AND ENGINEERING PHYSICS, CHARLOTTESVILLE, VA 22901, USA
1-5 June 1992 : TAORMINA,ITALY **910839**

HIGH DENSITY DIGITAL RECORDING **ASI**
PROF. GJ LONG, UNIVERSITY OF MISSOURI-ROLLA, DEPT. OF CHEMISTRY, ROLLA, MO 65401, USA,
7-19 June 1992 : IL CIOCCO, ITALY **910335**

THE INTERFACIAL INTERACTIONS IN POLYMERIC COMPOSITES **ASI**
PROF. G AKOVALI, MIDDLE EAST TECHNICAL UNIVERSITY, DEPARTMENT OF CHEMISTRY, ANKARA 06531, TURKEY,
15-26 June 1992 : IZMIR, TURKEY **910822**

MAGNETISM AND STRUCTURE IN SYSTEMS OF REDUCED DIMENSION **ARW**
DR. RFC FARROW, IBM ALMADEN RESEARCH CENTRE, MAIL STOP K34/803D, 650 HARRY ROAD, SAN JOSE, CA 95120-6099, USA
15-19 June 1992 : CARGESE, FRANCE **910684**

RECENT PROBLEMS IN MATHEMATICAL PHYSICS **ASI**
DR. MA RODRIGUEZ, UNIVERSIDAD COMPLUTENSE, DEP. DE FISICA TEORICA, FACULTAD DE CC FISICAS, 28040 MADRID, SPAIN
17-27 June 1992 : SPAIN **910779**

NEW DIRECTIONS IN RESEARCH WITH THIRD-GENERATION SYNCHROTRON RADIATION SOURCES **ASI**
Dr. AS SCHLACHTER, UNIVERSITY OF CALIFORNIA, LAWRENCE BERKELEY LABORATORY, BERKELEY, CA 94720, USA,
28 June-10 July 1992 : MARATEA, ITALY **910677**

CHEMICAL PHYSICS OF INTERCALATION II **ASI**
PROF. JE FISCHER, UNIVERSITY OF PENNSYLVANIA, DEPT. OF MATERIALS SCIENCE, 3231 WALNUT STREET/409 LRSM, PHILADELPHIA, PA 19104-6272, USA
29 June-10 July 1992 : BONAS, FRANCE **910826**

APPLIED MAGNETISM **ASI**
DR. R GERBER, UNIVERSITY OF SALFORD, DEPT. OF PURE AND APPLIED PHYSICS, SALFORD M5 4WT, UK
1-12 July 1992 : ERICE, ITALY **910808**

GRAVITATION AND QUANTIZATIONS **ASI**
Dr. BL JULIA, ECOLE NORMALE SUPERIEURE, LAB. DE PHYSIQUE THEORIQUE, 24 RUE LHOMOND, 75231 PARIS CEDEX 05, FRANCE
6 July-1 August 1992 : LES HOUCHES, FRANCE **910379**

MANIPULATIONS OF ATOMS IN HIGH FIELDS AND TEMPERATURES: APPLICATIONS **ARW**
Prof. B VU THIEN, UNIVERSITE C. BERNARD LYON 1, DEPT. DE PHYSIQUE DES MATERIAUX, 43, BLVD DU 11 NOVEMBRE 1918, F-69622 VILLEURBANNE CEDEX, FRANCE
6-10 July 1992 : LYON, FRANCE (NANO) **911088**

PARTICLE PRODUCTION IN HIGHLY EXCITED MATTER **ASI**
Prof. HH GUTBROD, GESELLSCHAFT FUR SCHWERIONENFORSCHUNG, POSTFACH 110552, D-6100 DARMSTADT 11, GERMANY,
12-24 July 1992 : IL CIOCCO, ITALY **910819**

THE CALCULATION OF NMR SHIELDING CONSTANTS & THEIR USE IN THE DETERMINATION OF THE GEOMETRIC & ELECTRONIC STRUCTURES OF MOLECULES & SOLIDS **ARW**
Prof. JA TOSSELL, UNIVERSITY OF MARYLAND, DEPT. OF CHEMISTRY, COLLEGE PARK, MD 20742, USA,
15-18 July 1992 : COLLEGE PARK, MD, USA **910712**

TECHNIQUES AND CONCEPTS OF HIGH ENERGY PHYSICS **ASI**
PROF. T FERBEL, UNIVERSITY OF ROCHESTER, DEPT. OF PHYSICS, ROCHESTER, NY 14627, USA,
15-26 July 1992 : ST. CROIX, US VIRGIN ISLANDS **910445**

QUANTITATIVE PARTICLE PHYSICS **ASI**
Prof. M LEVY, UNIVERSITE P. & M. CURIE, LPTHE, BOITE 230, 4 PLACE JUSSIEU, 75230 PARIS CEDEX 05, FRANCE
20 July-1 August 1992 : CARGESE, FRANCE **910749**

FUTURE DIRECTIONS OF NONLINEAR DYNAMICS IN PHYSICAL AND BIOLOGICAL SYSTEMS **ASI**
PROF. PL CHRISTIANSEN, TECHNICAL UNIVERSITY OF DENMARK, LAB. OF APPLIED MATHEMATICAL PHYSICS, BUILDING 303, DK-2800 LYNGBY, DENMARK
27-31 July 1992 : LYNGBY, DENMARK (COP) **910728**

FRONTIERS OF OPTICAL PHENOMENA IN SEMICONDUCTOR STRUCTURES OF REDUCED DIMENSIONS **ARW**
DR. DJ LOCKWOOD, NATIONAL RESEARCH COUNCIL, DIVISION OF PHYSICS, OTTAWA, ONTARIO, CANADA K1A OR6,
27-31 July 1992 : YOUNTVILLE, CA, USA (NANO) **911032**

RELATIVISTIC AND ELECTRON CORRELATION EFFECTS IN MOLECULES AND SOLIDS **ASI**
PROF. GL MALLI, SIMON FRASER UNIVERSITY, DEPT. OF CHEMISTRY, BURNABY, BC, CANADA V5A 1S6,
10-21 August 1992 : VANCOUVER, CANADA **910849**

PROGRESS IN PICTURE PROCESSING **ASI**
Dr. J ZINN-JUSTIN, CEN SACLAY, SERVICE DE PHYSIQUE THEORIQUE, F-91191 GIF-SUR-YVETTE CEDEX, FRANCE,
10 August-4 Sept. 1992 : LES HOUCHES, FRANCE **910708**

QUANTITATIVE MICROBEAM ANALYSIS **ASI**
Dr. AG FITZGERALD, UNIVERSITY OF DUNDEE, DEPT. OF APPLIED PHYSICS AND ELECTRONIC & MANUFACTURING ENGINEERING, DUNDEE DD1 4HN, UK
16 August-4 Sept. 1992 : DUNDEE, UK **910315**

LASER INTERACTIONS WITH ATOMS, SOLIDS AND PLASMAS **ASI**
Dr. RM MORE, LAWRENCE LIVERMORE NATIONAL LABORATORY, L-321, LIVERMORE, CALIFORNIA 94550, USA,
17-29 August 1992 : CARGESE, CORSICA, FRANCE **910825**

NUCLEAR MAGNETIC RESONANCE IN MODERN TECHNOLOGY **ASI**
Prof. GE MACIEL, COLORADO STATE UNIVERSITY, DEPT OF CHEMISTRY, FORT COLLINS, CO 80523, USA,
23 August-4 Sept. 1992 : DALAMAN, TURKEY **900944**

NONLINEAR DYNAMICS AND SPATIAL COMPLEXITY IN OPTICAL SYSTEMS **ASI**
Prof. RG HARRISON, HERIOT-WATT UNIVERSITY, DEPT. OF PHYSICS, EDINBURGH EH14 4AS, UK,
24 August-4 Sept. 1992 : EDINBURGH, UK **910689**

MOLECULAR SPECTROSCOPY: RECENT EXPERIMENTAL AND COMPUTATIONAL ADVANCES **ASI**
Prof. R FAUSTO LOURENCO, THE UNIVERSITY OF COIMBRA, CHEMICAL DEPT, 3049 COIMBRA, PORTUGAL,
30 August-11 Sept. : AZORES, PORTUGAL **910326**

ULTRASHORT PROCESSES IN CONDENSED MATTER **ASI**
PROF. WE BRON, UNIVERSITY OF CALIFORNIA-IRVINE, DEPT. OF PHYSICS, IRVINE, CA 92717, USA,
30 August-11 Sept. 1992 : IL CIOCCO, ITALY **910592**

SOLID STATE LASERS: NEW DEVELOPMENTS AND APPLICATIONS **ASI**
PROF. M INGUSCIO, UNIVERSITY OF FLORENCE, DEPT OF PHYSICS, LARGO E. FERMI 2, 50125 FLORENCE, ITALY
31 August-11 Sept. 1992 : ELBA, ITALY **910374**

FROM STATISTICAL PHYSICS TO STATISTICAL INFERENCE AND BACK **ASI**
Dr. J-P NADAL, ECOLE NORMALE SUPERIEURE, LABORATOIRE DE PHYSIQUE STATISTIQUE, 24 RUE LHOMOND, 75231 PARIS CEDEX 05, FRANCE
31 August-12 Sept. 1992 : CARGESE, FRANCE **910752**

PHYSICAL PROPERTIES OF SEMICONDUCTOR INTERFACES AT SUB-NANOMETER SCALE **ARW**
Dr. HWM SALEMINK, IBM RESEARCH DIVISION, ZURICH RESEARCH LABORATORY, CH-8803 RUSCHLIKON, SWITZERLAND,
31 Aug.-2 Sept. 1992 : RIVA DI GARDA, ITALY (NANO) **911089**

STRUCTURES AND CONFORMATIONS OF NON-RIGID MOLECULES **ARW**
Prof. J LAANE, TEXAS A&M UNIVERSITY, DEPT OF CHEMISTRY, COLLEGE STATION, TEXAS 77843, USA
6-10 Sept. 1992 : REISENSBURG, GERMANY **910834**

LOW DIMENSIONAL TOPOLOGY AND QUANTUM FIELD THEORY **ARW**
Dr. H OSBORN, UNIVERSITY OF CAMBRIDGE, DAMPT, SILVER STREET, CAMBRIDGE CB3 9EW, UK
6-13 September 1992 : CAMBRIDGE, UK **910811**

NANOMAGNETISM **ARW**
Prof. A HERNANDO, UNIV. COMPLUTENSE, INSTITUTO DE MAGNETISMO APLICADO, P.BOX 155, 28230 (LAS ROZAS) MADRID, SPAIN
6-10 September 1992 : MADRID, SPAIN (NANO) **911087**

CRYSTALLIZATION OF POLYMERS **ARW**
Prof. M DOSIERE, UNIVERSITE DE MONS-HAINAUT, DEP. DES MATERIAUX ET PROCEDES, PLACE DU PARC, 20, B-7000 MONS, BELGIUM
7-11 September 1992 : MONS, BELGIUM **910695**

HIGH PRESSURE CHEMISTRY, BIOCHEMISTRY AND MATERIALS SCIENCE **ASI**
Dr. R WINTER, PHILIPPS-UNIVERSITY, INSTITUTE OF PHYSICAL CHEMISTRY, HANS-MEERWEINSTRASSE, 3550 MARBURG/LAHN, GERMANY
20 Sept-3 October 1992 : MARATEA, ITALY **910720**

THEORY OF SOLAR AND PLANETARY DYNAMOS **ASI**
Dr. MRE PROCTOR, UNIVERSITY OF CAMBRIDGE, DEPT OF APPLIED MATHEMATICS AND THEORICAL PHYSICS, SILVER STREET, CAMBRIDGE, CB3 9EW, UK
20 Sept-1 October 1992 : CAMBRIDGE, UK (COP) **910882**

TRANSITION METAL CARBYNE COMPLEXES **ARW**
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27 Sept-2 Oct. 1992 : WILDBAD KREUTH, GERMANY **910759**

ATOMIC NONOSCALE MODIFICATION OF MATERIALS: FUNDAMENTALS AND APPLICATIONS **ARW**
Dr. P AVOURIS, IBM RESEARCH DIVISION, T.J. WATSON RESEARCH CENTER, P.O. BOX 218, YORKTOWN HEIGHTS, NY 10598, USA
October 1992 : SANTA BARBARA, CA, USA (NANO) **911079**

NEAR FIELD OPTICS/ SNOM **ARW**
Dr. DW POHL, IBM RESEARCH DIVISION, ZURICH RESEARCH LABORATORY, NANOSTRUCTURES AND ULTRAMICROSCOPY, CH-8803 RUSCHLIKON, SWITZERLAND
26-28 October 1992 : BESANÇON, FRANCE (NANO) **911085**

ELEMENTARY REACTION STEPS IN HETEROGENEOUS CATALYSIS **ARW**
Prof. RA VAN SANTEN, TECHN. UNIVERSITEIT EINDHOVEN, FACULTY OF CHEMICAL ENGINEERING, PO BOX 513, 5600 MB EINDHOVEN, THE NETHERLANDS
1-6 November 1992 : VAUCLUSE, FRANCE **910768**

ASTRONOMY AND ASTROPHYSICS

PARTICLE ASTROPHYSICS AND COSMOLOGY **ASI**
Prof. MM SHAPIRO, 205 YOAKUM PKWY, APT. 1514, ALEXANDRIA, VA 22304, USA
20-30 June 1992 : ERICE, ITALY **910700**

GALAXY FORMATION AND LARGE SCALE STRUCTURES OF THE UNIVERSE **ASI**
Prof. N VITTORIO, UNIVERSITA DELL'AQUILA, DIPARTIMENTO DI FISICA, P.LE RIVERA 1, 67100 L'AQUILA, ITALY
21-31 July 1992 : VARENNA, ITALY **910838**

MATHEMATICS

ASYMPTOTIC-INDUCED NUMERICAL METHODS FOR PDEs, CRITICAL PARAMETERS AND DOMAIN DECOMPOSITION **ARW**
Dr. HG KAPER, ARGONNE NATIONAL LABORATORY, MATHEMATICS & COMPUTER SCIENCE DIVISION, 9700 S. CASS AVE., ARGONNE, IL 60439-4844, USA
25-28 May 1992 : NOLAY, FRANCE **901119**

SINGULARITIES IN FLUIDS, PLASMAS AND OPTICS **ARW**
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13-24 July 1992 : MONTREAL, CANADA **910697**

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16-29 August, 1992 : IL CIOCCO, ITALY **910782**

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DR. ME BOZHUYUK, ATATURK UNIVERSITESI, FEN-EDEBIYAT FAKULTESI, MATEMATIK BOLUMU, ERZURUM, TURKEY
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COMPUTER AND SYSTEMS SCIENCES

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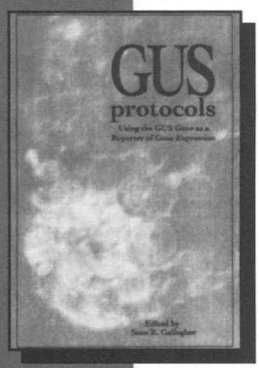

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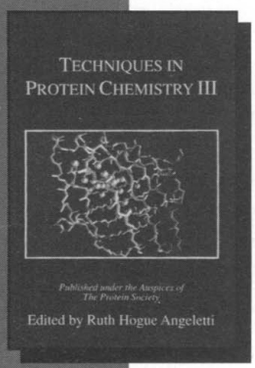

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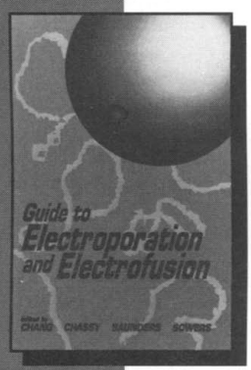

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