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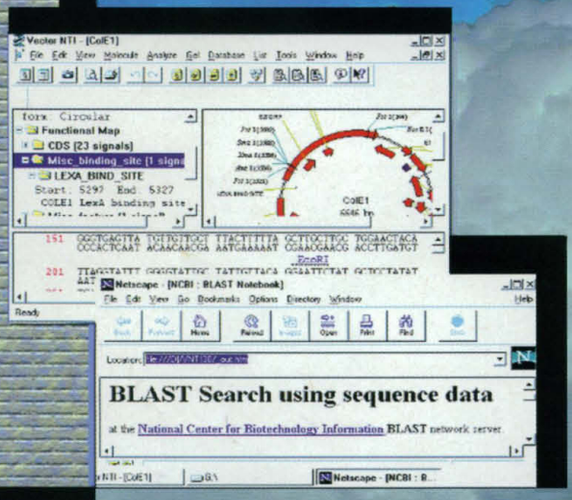

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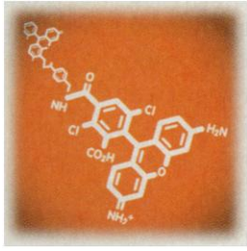

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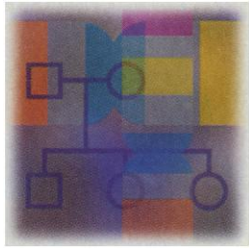

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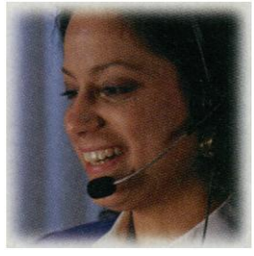

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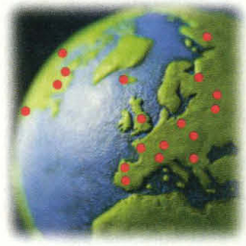

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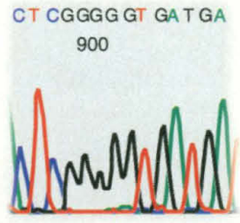

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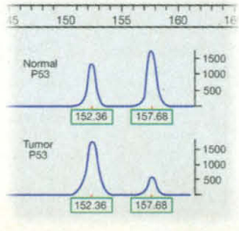

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ISSN 0036-8075
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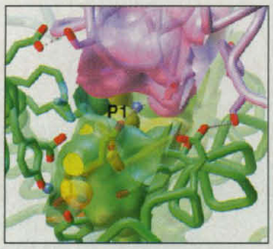
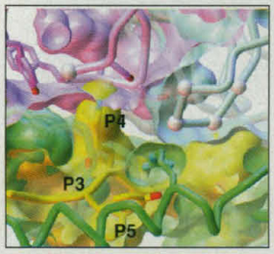
1129
Ins and outs of the nucleus





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T cell receptor plasticity

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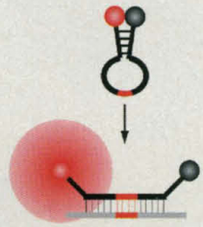
COVER

In a range of plants, herbivory can induce responses that defend against subsequent herbivore attack. Wild radish plants that were exposed to early-season herbivory by a caterpillar larva showed induced resistance that protected them from subsequent herbivory by phloem-feeding green peach aphids (on the cover), earwigs, and flea beetles. These plants also had reduced mortality and increased seed-set compared with uninduced control plants. See page 1201. [Image: Jack Kelly Clark; courtesy of the University of California Statewide IPM Project]

REPORTS

TECHNICAL COMMENTS



1228
Tech.Sight: molecular beacons

1132
After the deluge

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edited by PHIL SZUROMI

Underlying T cell receptor recognition

Unlike B cells, which can directly bind to antigen through antibodies, T cells need to have the antigen broken up and inserted into a pocket on major histocompatibility complex (MHC) antigens, which are borne on the surface of "antigen presenting cells." Garcia *et al.* (p. 1166) have resolved an MHC–self peptide–T cell antigen receptor (TCR) complex. They compare it to previous structures of the same MHC and peptide complexes without the TCR and of a MHC-foreign peptide-TCR structure. This structure gives us insight into alloreactivity, mechanisms for TCR bias toward class I or class II recognition, and models for how the limited contacts of the peptide with the TCR could affect T cell maturation and activation.

■

Pop records

The rare gas budget and chemistry of the mantle provides key information on Earth's degassing and early accretion history. Atmospheric contamination, however, has hampered efforts to measure rare gases in mantle samples. One important sample is the so-called "popping rock," a sample of ocean ridge basalt that evidently trapped mantle gases and elevated pressures in vesicles sealed from atmospheric contamination. Moreira *et al.* (p. 1178) analyzed neon, argon, and xenon abundances and isotopes in this rock and found that the rare gases abundances in Earth's mantle are like those found in chondrites, rather than solar values, and that Earth's atmosphere can be largely explained by mantle degassing.

■

Extracting sulfur from Shoemaker-Levy 9

When comet Shoemaker-Levy 9 fragmented and then collided with Jupiter, observers noted the unexpected and so far unexplained production of organosulfur compounds in the jovian atmosphere. Kaiser *et al.* (p. 1181) performed molecular cross beams experiments and ab initio calculations to understand the reaction sequence that starts with carbon and hydrogen sulfide and ends with organosulfur components. They identified some intermediate reactions that might account for some of the observed organosulfur compounds formed during the impact, thus shedding some light on the dark, sulfur-rich blotches that were created in the jovian atmosphere.

Cross antagonism by malaria strains

The complexity of the interaction between the malaria parasite and the immune system reaches a new level in a study combining laboratory experiments, field study, and mathematical modeling. Gilbert *et al.* (p. 1173; see the news story by Williamson, p. 1136) describe a pair of variants of *Plasmodium falciparum* (the parasite that causes malaria) that differ at a single amino acid in a key immunogenic epitope: These variants inhibit the immune response to each other in vitro, a process known as cross antagonism. Consistent with this being of biological importance, the distribution of parasite variants in African children is radically different from that predicted under conditions where strains are randomly mixed. Tying together these empirical findings, the authors have developed a mathematical model that illustrates how antagonism can alter parasite population structure. Such findings are also important for vaccine development.

■

Vesicle inventory

Although the contents of single vesicles in cells may elicit a biological response, identifying the contents of single vesicles is a daunting analytical challenge. Chiu *et al.* (p. 1190) report that single vesicles with attoliter volumes (10^{-18} liters) can be manipulated by optical trapping into a capillary electrophoresis separation column, and then lysed and labeled so that compounds can be identified by laser-induced fluorescence (peaks were identified with know standards and by analyzing the contents of populations of vesicles with mass spectrometry). Variations in the contents of vesicles from the atrial gland of the mollusk *Aplysia californica* were observed, such as large changes in their taurine content.

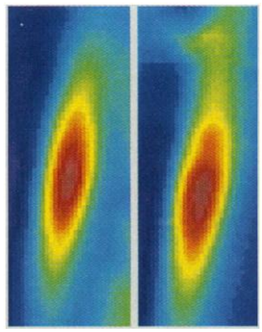
Pushing back carbon-14 dating

The radiocarbon time scale (and thus carbon-14 dates) must be calibrated in order to obtain accurate calendar ages. Trees rings provide a good calibration to about 10,000 years ago. The calibration curve also provides information on ventilation of the oceans (a main carbon reservoir) and the strength of Earth's magnetic field and the cosmic ray flux (both of which affect carbon-14 production in Earth's upper atmosphere). Kitagawa and van der Plicht (p. 1187) dated fossils in an annually varved lake in Japan to obtain a calibration back to 45,000 years ago. The results are consistent with some other attempts at calibrating the record in less detail and indicate several episodes of ocean ventilation and two large spikes, perhaps indicating a high flux of cosmic rays, nearby supernova, or collapse of the geomagnetic field.

■

Interlayer tunneling and superconductivity

Electron motion in layered cuprate superconductors, when they are in their normal state, is incoherent in the direction normal to the planes. The interlayer tunneling (ILT) model for high-temperature superconductivity argues that the driving force for forming superconducting electron pairs is the coherent transport



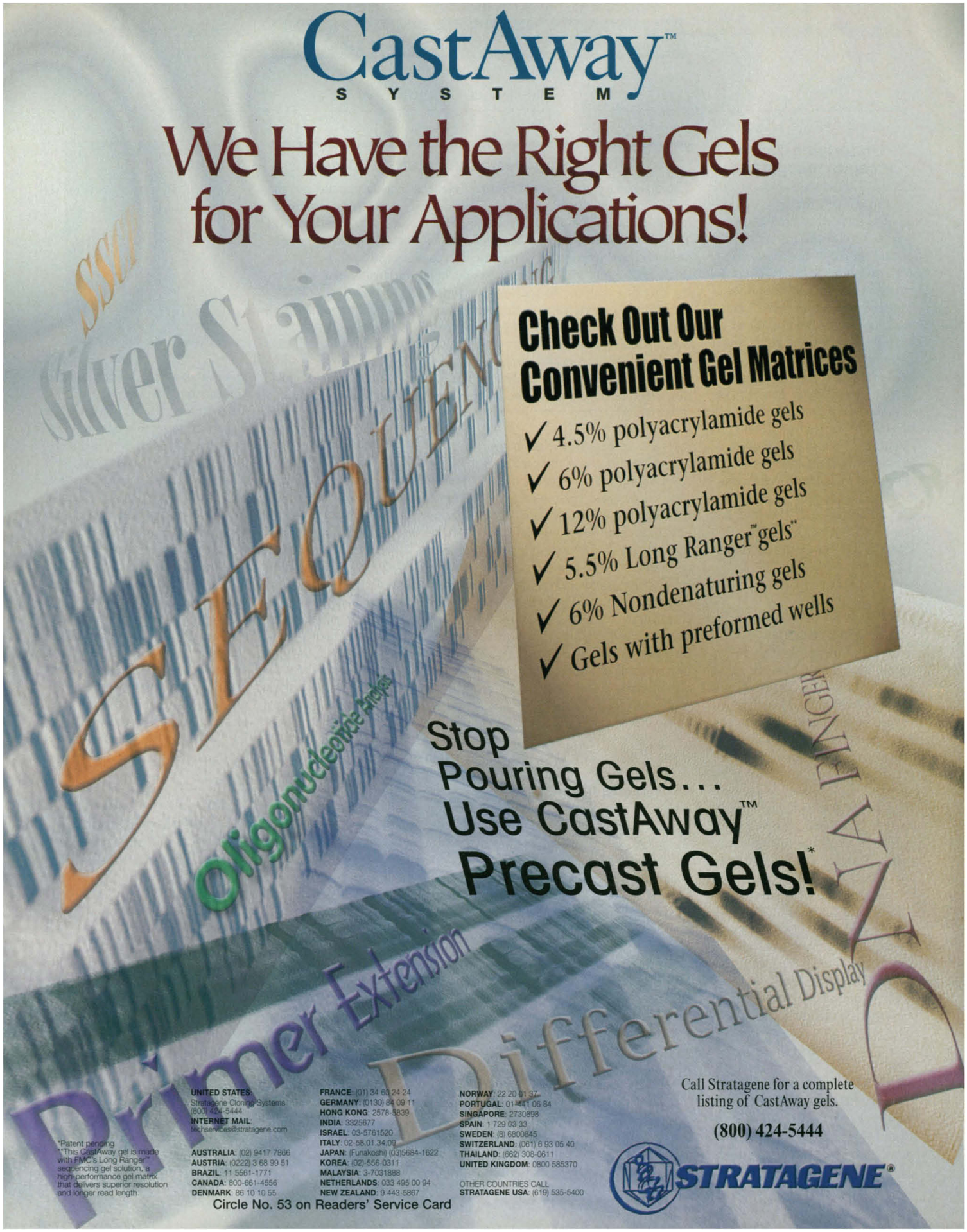
brought about by pairing (see the commentary by Leggett, p. 1157). The strength of interlayer Josephson tunneling between layers, especially in one-layer materials such as $Tl_2Ba_2CuO_{6+\delta}$, is a stringent test of the ILT model. Moler *et al.* (p. 1193) imaged interlayer Josephson vortices in this material and measured an interlayer penetration depth of ~20 micrometers, which implies that the ILT mechanism can provide only 1/1000 of the condensation energy need to form the superconducting state. Anderson (p. 1196) discusses these results in light of other experimental studies more supportive of the ILT model and suggests that difficulties associated with preparing $Tl_2Ba_2CuO_{6+\delta}$ may mean that is it not a true one-layer material.

■

Keeping secrets

One way to encrypt a message is to introduce it into a noisy circuit in such a way that it can be retrieved, with appropriate circuitry, at another location. Such methods have been demonstrated in electronic circuits, but the low bandwidths in these systems make them less practical for high-speed communications. VanWiggeren and Roy (p. 1198; see the commentary by Gauthier, p. 1156) show in a microwave optical system (1.53-micrometer wavelength) that a 10-megahertz message can be buried and retrieved in larger amplitude chaotic carrier. Recovery of the

(Continued on page 1107)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(Continued from page 1105)

message cannot be achieved by filtering but requires a receiver that replicates the transmitter.

■

Altered speech

The planning and execution of motor commands can be perturbed by altering sensory input, for instance, by wearing prism glasses that shift the visual field. Houde and Jordan (p. 1213) used this approach to demonstrate that the production of vowels can be altered by shifting the acoustic feedback, that this alteration is stable for at least tens of minutes, and that this adaptation generalizes to production of the same vowel sounds in different contexts and different vowel sounds in the same contexts. It may thus become feasible to examine the basic units of motor speech production (such as phonemes and syllables) and the relative contributions of internal representations and contextual influence.

■

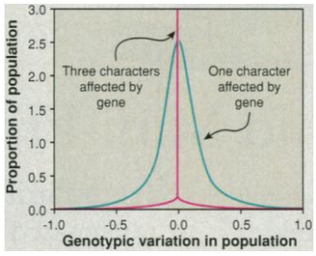
Seeing somatic mutations

During the development of the immune response, B cell immunoglobulin genes acquire mutations, which change the resultant antibody's specificity or affinity for particular antigens. This process of somatic mutation is one of the ways that the immune system has developed to recognize the multitude of viral and bacterial proteins. To determine what genes may be involved in somatic mutation, Cascalho *et al.* (p. 1207; see the commentary by Shannon, p. 1159) have used a mouse with quasi-monoclonal immunoglobulin genes that lacks the usual hundreds of immunoglobulin gene segments that can be recombined by the cell into a myriad of antibodies. This system enabled them to easily detect any mutations that were the result of somatic mutation. When they crossed these mice with mice defective in their ability to repair mismatches in their DNA, they found that *Pms2*, a gene required for the repair of mismatches, instead seems to aid in the retention of mutations.

■

Surviving mutations

A theoretical model of genetics is developed to show that the effect a mutation can have on the distribution of genotypes within a population is markedly dependent on whether the mutation produces multiple phenotypes, that is, it exerts pleiotropic effects. Waxman and Peck (p. 1210; see the commentary by Wagner, p. 1158) show that when they analyze a mutation that can affect three or more traits, the predicted distribution of genotypes in a natural population of organisms begins to be heavily weighted toward optimal genotypes. Nonpleitropic mutations generate a population with a variety of suboptimal genotypes and very few individuals with the optimal genotype. Thus, even in the presence of a high rate of mutations, optimal genotypes survive and flourish as long as mutations are pleiotropic.



■

Complex underpinnings

In dividing cells, separation of sister chromatids is regulated by a proteolytic mechanism under control of the anaphase-promoting complex (APC). The APC is a large complex of at least 12 subunits that mediates ubiquitin-dependent degradation of key proteins that participate in cell cycle control. Zachariae *et al.* (p. 1216) and Yu *et al.* (p. 1219) describe cloning and analysis of subunits of the APCs from humans and budding yeast, respectively. One of the common subunits from both organisms, Apc2, is similar to a protein, Cdc53p, that participates in a different complex, the SPC or S phase–promoting complex, that also mediates ubiquitination of proteins but controls initiation of DNA synthesis. Thus, although the APC and SPC are distinct complexes with different modes of regulation, the similarity of Apc2 and Cdc53p may indicate that there are shared mechanisms operating in both complexes.

■

Tracking viral infection

Efforts to understand the dynamics of killing and replacement of T lymphocytes have been central to recent advances in analyzing prognosis and therapy of human immunodeficiency virus–type 1 infection and AIDS. To follow the changes in lymphocyte turnover more precisely in vivo, Mohri *et al.* (p. 1223) have followed the incorporation of bromodeoxyuridine into lymphocytes of rhesus macaques. Infection with simian immunodeficiency virus was associated with increases in the rates of turnover in memory and naïve T cells as well as natural killer and B cell populations, which suggest a general state of activation.

■

Neurotransmitter release kinetics

The role of *N*-ethylmaleimide–sensitive factor (NSF) in membrane fusion events has been the subject of much research. Schweizer *et al.* (p. 1203) now show that NSF acts to regulate not just the extent but also the kinetics of neurotransmitter release at the synapse.

Technical Comment Summaries

ABCR Gene and Age-Related Macular Degeneration

R. Allikmets *et al.* performed a genetic study (Reports, 19 Sept., p. 1805) of 167 elderly patients with age-related macular degeneration (ADM). They screened the gene *ABCR*, which "encodes a retinal rod photoreceptor protein and is defective in Stargardt disease, a common hereditary form of macular dystrophy" that arises in young adults. Allikmets *et al.* found 13 alterations in one allele of *ABCR* in 26 patients with ADM, and these alterations appeared to be associated with ADM.

T. P. Dryja *et al.* "point out methodological deficiencies that call into question" how Allikmets *et al.* interpreted their results. They describe possible biases in sampling and analysis in the study as well as inconsistencies in "the projection of the incidence of Stargardt-gene mutations in ADM." C. C. W. Klaver *et al.* also point to "a flaw in the interpretation of the data" and question aspects of diagnosis of ADM in the study.

In response, Allikmets and his colleagues (M. Dean *et al.*) discuss the criticisms point by point and provide a table showing the "completed typing of all variants [in the *ABCR* gene] on 220 control [normal] individuals." They state that their results show that *ABCR* mutations "may confer an increased risk to ADM" and conclude that they "look forward to the dissemination of data relevant to [their] hypotheses."

The full text of these comments can be seen at www.sciencemag.org/cgi/content/full/279/5354/1107a

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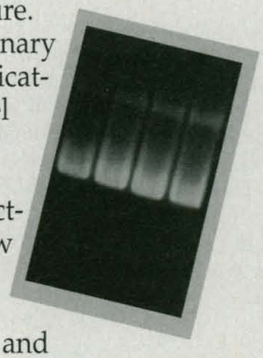

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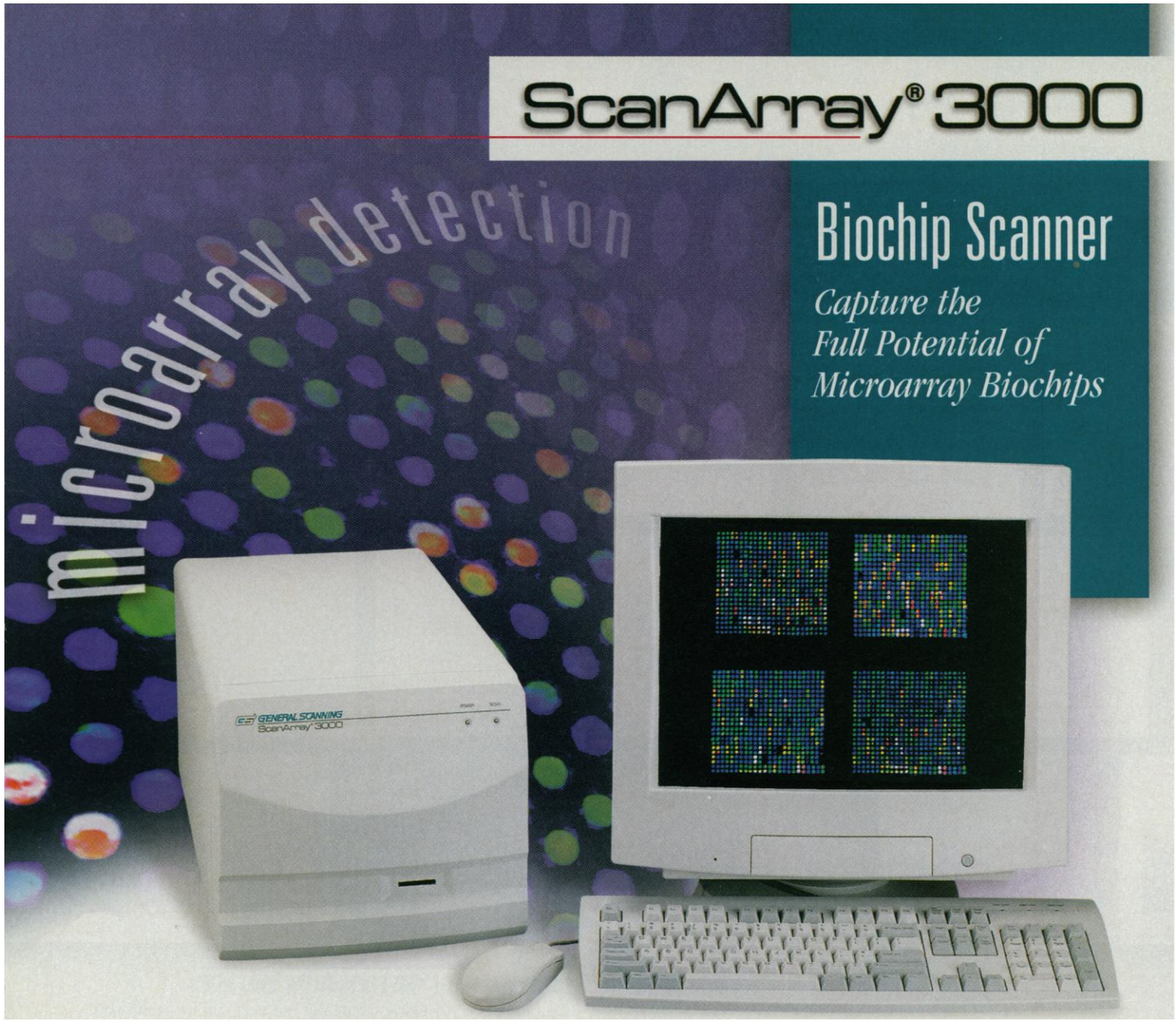

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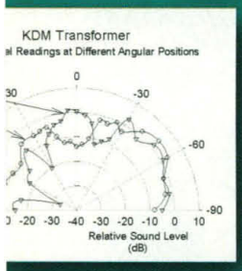

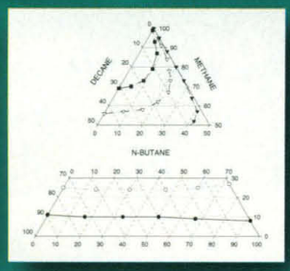

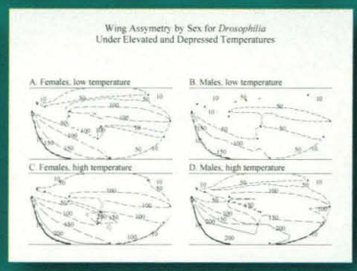

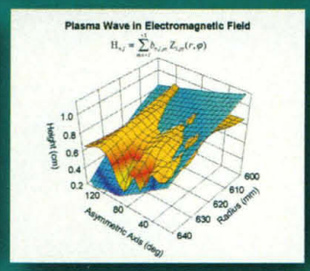

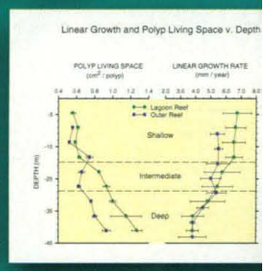

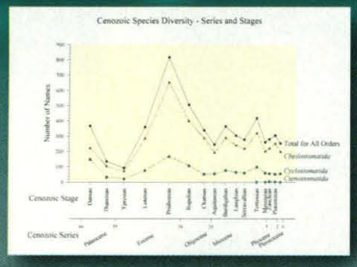

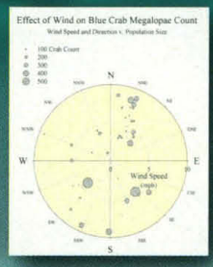

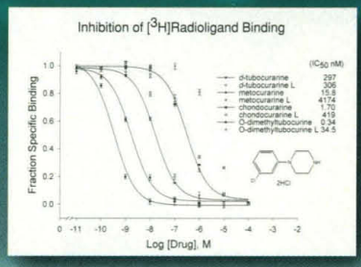

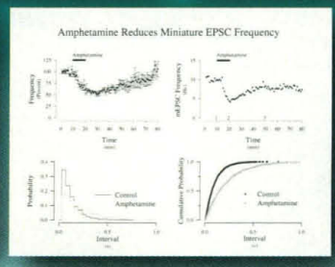

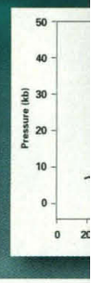

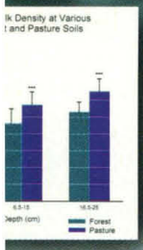

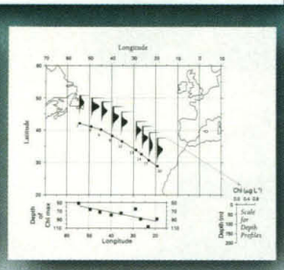

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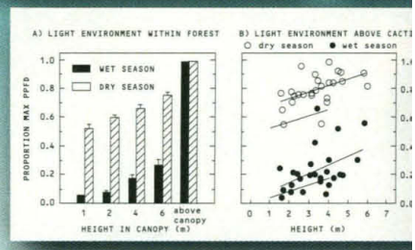

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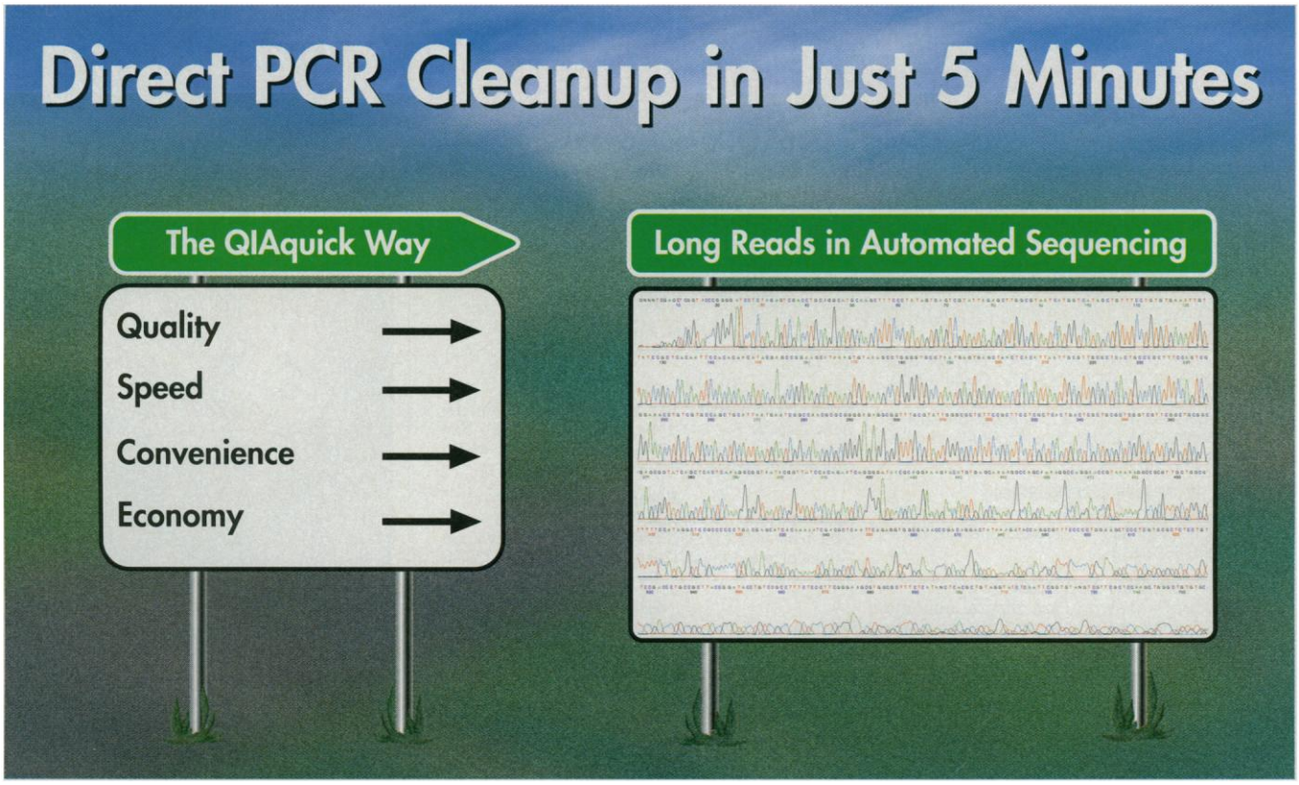

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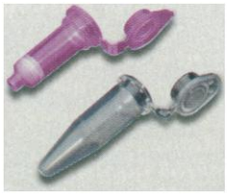

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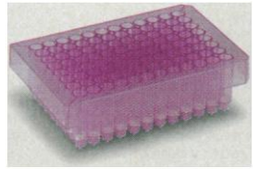

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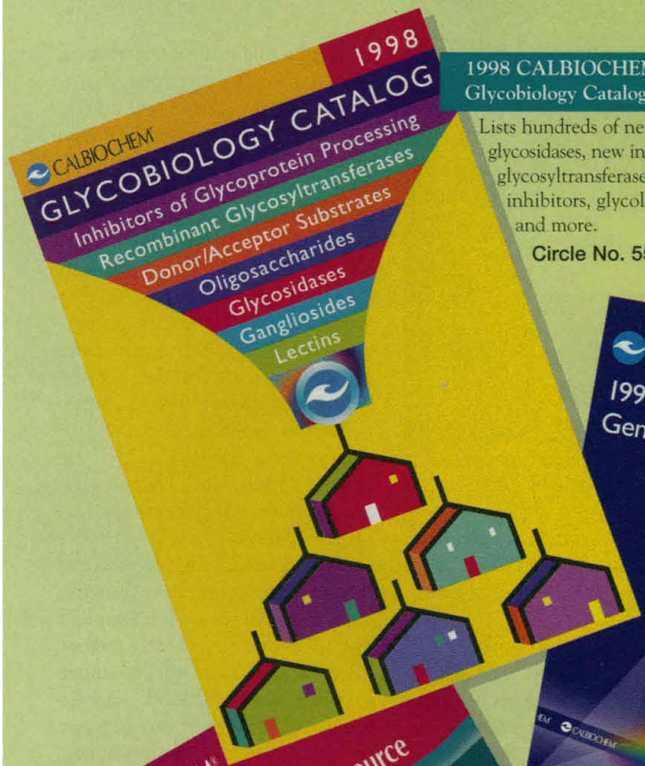

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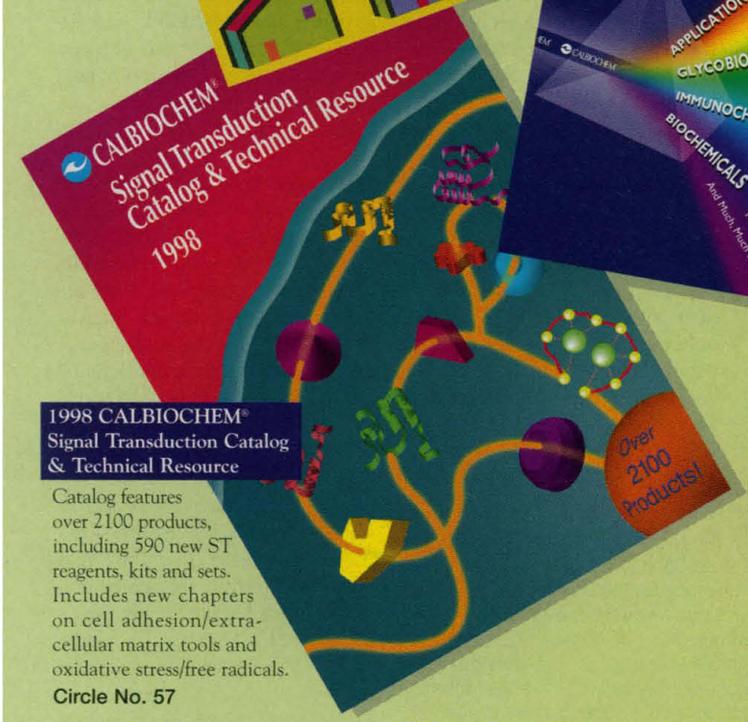

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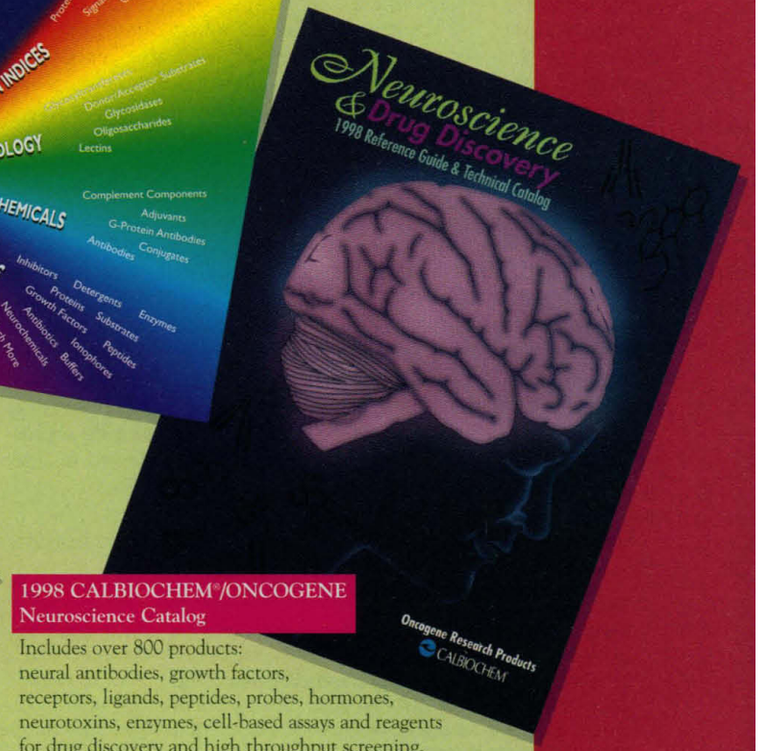

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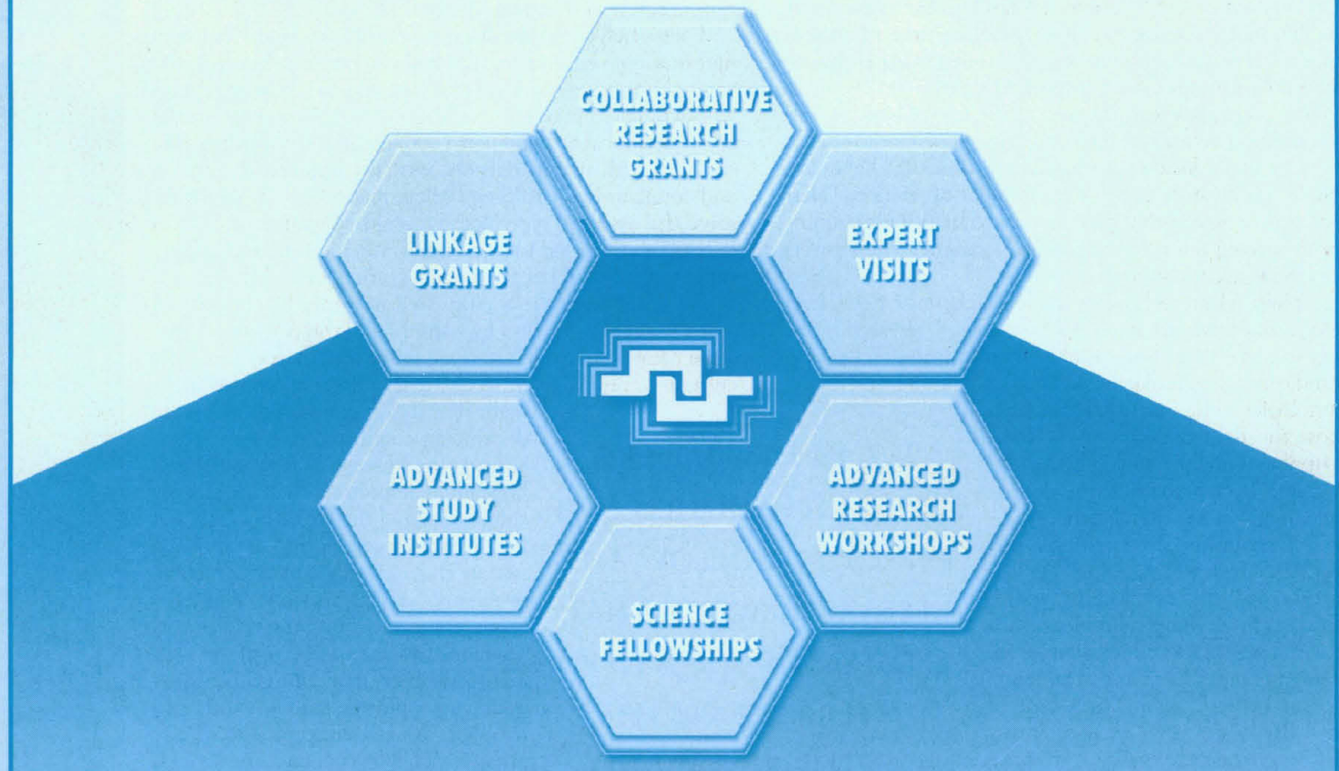
NATO SCIENCE PROGRAMME
1998 CALENDAR OF MEETINGS

The NATO Science Programme will in the coming years provide assistance primarily for scientific collaboration between NATO-country scientists and scientists in NATO's Partner countries. That part of the Programme previously devoted to supporting collaboration between scientists in NATO countries will be progressively transformed to support collaboration between scientists in Partner and NATO countries. The activities affected include Intra-Alliance Advanced Study Institutes, Collaborative Research Grants and Fellowships.

This process of transformation of the Programme is undergoing continuing discussions in the NATO Science Committee, and supplementary information will be provided as changes in the Programme are made. An additional announcement will be made in the Spring.

The Programme continues currently to offer possibilities of support for Collaborative Research Grants, Linkage Grants, Expert Visits, Fellowships, Advanced Research Workshops and Advanced Study Institutes involving linkages between NATO and Partner countries. Further information and/or application forms for all these activities are available at the NATO Science web site, or from the Scientific Affairs Division



A list of the Advanced Study Institutes (ASIs) and Advanced Research Workshops (ARWs) to be held in 1998 is given in the following pages. **Each ASI and ARW is held under the responsibility of its director(s): all requests for information, attendance or support should be addressed to the contact person listed.** Locations and Dates may change. Participation or tuition fees are not required from participants; some participants from NATO countries or Partner countries may obtain grants from the meeting director(s) to assist with travel and living expenses.

This Calendar of Meetings is also posted at the web site, and will be continuously updated as further meetings are selected for support.

Web address: **http://www.nato.int/science**

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1998 ADVANCED RESEARCH WORKSHOPS

Advanced Research Workshops (ARWs) are working meetings of about four days' duration, where scientists and engineers researching at the frontiers of a subject are able to engage in an intense but informal exchange of views, aiming at a critical assessment of existing knowledge and identification of directions for future action. Attendance at ARWs is mainly by invitation, but a few places are available for particularly well-qualified scientists of all nationalities upon application to the contact person listed below.

JOINT NATO - PARTNER MEETINGS

ENVIRONMENTAL SECURITY

The Eastern Mediterranean as a Laboratory Basin for the Assessment of Contrasting Ecosystems
23 Mar 98 - 27 Mar 98 : Kyiv, Ukraine
Contact: Prof. P. Malanotte-Rizzoli, Massachusetts Institute of Technology, 54-1416 Dept. of Earth Sciences, Cambridge, MA 02139, USA
(Fax: 1-617 253 4464 E-mail: rizzoli@ocean.mit.edu)
Co-Director: Dr. V.N. Eremeev, Marine Hydrophysical Institute, Sevastopol Ukraine 970323

Remote Sensing Environmental Data in Albania - A Strategy for Integrated Management
20 Apr 98 - 24 Apr 98 : Tirana, Albania
Contact: Prof. R.S. Arthurton, British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham NG12 5GG UK
(Fax: 44 115 936 3460 E-mail: r.arthurton@bgs.ac.uk)
Co-Director: Dr. E. Samimi, Samimi Alb Euro Consulting, Tirana Albania 971678

Permafrost Response on Economic Development, Environmental Security and Natural Resource Potential
21 Apr 98 - 25 Apr 98 : Novosibirsk, Russia
Contact: Prof. R.R. Paepe, Belgian Geological Survey, Jennerstraat 13, 1000 Bruxelles, Belgium
(Fax: 32-2-647-73-59 E-mail: roland.paepe@pophost.eunet.be)
Co-Director: Prof. V. Melnikov, Siberian Branch of Russian Academy of Sciences, Tyumen Russia 971752

The Freshwater Budget of the Arctic Ocean
25 Apr 98 - 2 May 98 : Tallin, Estonia
Contact: Dr. E. Lewis, Institute of Ocean Sciences, P.O. Box 6000, Sidney, British Columbia V8L 4B2 Canada
(Fax: 250 477 3209 E-mail: ellewis@ios.bc.ca)
Co-Director: Prof. I. Shiklomanov, State Hydrological Institute, St. Petersburg Russia 971307

Security of Public Water Supplies
30 May 98 - 4 Jun 98 : Tihany, Hungary
Contact: Dr. R. Deininger, The University of Michigan, School of Public Health, Ann Arbor, MI 48109, USA
(Fax: 1-313 764 9424 E-mail: rad@umich.edu)
Co-Director: Dr. P. Literathy, Water Resources Research Centre, Budapest Hungary ***URL***: http://www.umich.edu/~rad 971787

Responding to Environmental Conflicts: Implications for Theory and Practice
11 Jun 98 - 13 Jun 98 : Budapest, Hungary
Contact: Mr. A. Carius, Ecologic Gmbh, Friedrichstrasse 165, 10117 Berlin, Germany
(Fax: 49 30 2265 1136 E-mail: carius@ecologic.de)
Co-Director: Mr. C. Kiss, Environmental Security Centre for Armed Forces, Budapest Hungary 971760

Contaminated Forests : Recent Developments in Risk Identification and Future Perspectives
24 Jun 98 - 28 Jun 98 : Zhitomir, Ukraine
Contact: Dr. I. Linkov, Harvard University, Physics Department, Cambridge, MA 02138, USA
(Fax: 1-617 495 0416 E-mail: linkov@huhep1.harvard.edu)
Co-Director: Dr. Y. Kutlahmedov, National University of Ukraine, Kyiv, Ukraine ***URL***: http://phys4.harvard.edu/~belinkai/forest 971758

Large Scale Computations in Air Pollution Modelling
6 Jul 98 - 10 Jul 98 : Sofia, Bulgaria
Contact: Dr. Z. Zlatev, National Environmental Research Inst., Frederiksborgvej 399, P.O. Box 358, DK-4000 Roskilde Denmark
(Fax: 45 46 30 12 14 E-mail: luzz@sun2.dmu.dk)
Co-Director: Dr. G. Marchuk, Russian Academy of Sciences, Moscow, Russia ***URL***: http://www.dmu.dk/atmosphericenvironment/NATOARW 971731

Prevention and Remediation of Landslide Related Disasters in the Black Sea Region
3 Aug 98 - 7 Aug 98 : Mangalia, Romania
Contact: Prof. A. Onalp, Sakarya Universitesi, Muhendislik Fakultesi, 54040 Esentepe Kampusu, Adapazari Turkey
(Fax: 90-264-343-14.50)
Co-Director: Prof. M.E. Popescu, Civil Engineering University, Bucharest Romania 971300

Tools and Methods for Pollution Prevention
12 Oct 98 - 14 Oct 98 : Prague, Czech Republic
Contact: Dr. S.K. Sikdar, U.S. Environmental Protection Agency, Sustainable Technology Division, 26 W. M.L.King Dr., Cincinnati, OH 45268 USA
(Fax: 513 569 7787 E-mail: sikdar.subhas@epamail.epa.gov)
Co-Director: Dr. J. Drahos, Academy of Sciences of the Czech Republic, Prague, Czech Republic 970515

HIGH TECHNOLOGY

Chemistry & Technology of High-Temperature Superconductors (HTSC) and Related Advanced Materials
24 Mar 98 - 29 Mar 98 : Moscow, Russia
Contact: Prof. G. Van Tendeloo, University of Antwerp, RUCA, EMAT, Groenenborgerlaan 171, B-2020 Antwerp Belgium
(Fax: 32 3 218 0257 E-mail: gvt@ruca.ua.ac.be)
Co-Director: Dr. E.V. Antipov, Moscow State University, Russia 970623

Symmetry and Pairing in Superconductors
28 Apr 98 - 2 May 98 : Yalta, Ukraine
Contact: Dr. M. Ausloos, Universite de Liege, Institut de Physique, S.U.P.R.A.S., B5, Sart Tilman, 4000 Liege Belgium
(Fax: 32 4 366 29 90 E-mail: ausloos@gw.unipc.ulg.ac.be)
Co-Director: Dr. S.P. Kruchinin, Bogolyubov Inst. of Theoretical Physics, Kyiv, Ukraine 971843

Structural Approaches to Functional Genomics
4 May 98 - 9 May 98 : Trieste, Italy
Contact: Prof. E.M. Bradbury, Los Alamos National Laboratory, Division of Life Sciences, Los Alamos, New Mexico USA
(Fax: 1-505 667 2891 E-mail: bradbury@telomere.lanl.gov)
Co-Director: Dr. S. Pongor, Agricultural Biotechnology Center, Godollo, Hungary 971328

Smart Structures - Requirements and Potential Applications in Mechanical and Civil Engineering
16 Jun 98 - 19 Jun 98 : Warsaw, Poland
Contact: Prof. J. Rodellar, University of Catalunya, Dept. of Applied Mathematics Iii, Gran Capitan S/N, 08034 Barcelona Spain
(Fax: 34 3 401 65 04 E-mail: rodellar@etseccpb.upc.es)
Co-Director: Prof. J. Holnicki-Szulc, Institute of Fundamental Technological Research, Warsaw Poland 970090

New Trends in Biosensor Development
6 Jul 98 - 9 Jul 98 : Kyiv (Vorzel), Ukraine
Contact: Prof. A.P.F. Turner, Cranfield University, Cranfield Biotechnology Centre, Cranfield, Bedfordshire MK43 0AL UK
(Fax: 44 1234 752401 E-mail: a.p.turner@cranfield.ac.uk)
Co-Director: Prof. A.V. El'Skaya, The Ukrainian Center on Biosensors, Kyiv, Ukraine 961233

The Chloroplast - From Molecular Biology to Biotechnology
10 Aug 98 - 15 Aug 98 : Kolymbari-Chania, Crete, Greece
Contact: Dr. J.H. Argyroudi-Akoyunoglou, NCSR Demokritos, Institute of Biology, Aghia Paraskevi Attikis, Athens Greece
(Fax: 301 6511767 E-mail: akoyu@cyclades.nrcps.ariadne-t.gr)
Co-Director: Prof. N. Karapetyan, Russian Academy of Sciences, Moscow Russia 971802

Self Propagating High-Temperature Synthesis of Advanced Materials
5 Sep 98 - 9 Sep 98 : Chastapapierniska, Slovakia
Contact: Prof. Z.A. Munir, University of California at Davis, Dept. of Chemical Eng. & Mathematical Science, Davis, CA 95616, USA
(Fax: 1-916 752 8240 E-mail: zamunir@ucdavis.edu)
Co-Director: Dr. A.G. Merzhanov, Russian Academy of Science, Moscow, Russia 971654

Perspectives, Science and Technologies for Novel Silicon on Insulator Devices
12 Oct 98 - 15 Oct 98 : Kyiv, Ukraine
Contact: Prof. P. Hemment, University of Surrey, School of Electronic Engineering, Information Technology & Mathematics, Guildford, Surrey, GU2 5XH UK
(Fax: 44-1483 53 41 39 E-mail: P.hemment@surrey.ac.uk)
Co-Director: Prof. V.S. Lysenko, Institute of Semiconductor Physics, Kyiv, Ukraine
URL: http://www.ee.surrey.ac.uk/Research/SCRIBA/Nato.html 971329

DISARMAMENT TECHNOLOGIES

Decontamination: the Basis for Chemical Agent Neutralization
Spring 1998 : Bucharest, Romania
Contact: Dr. J.A. Baker, Chemical Research Development & Engineering Ctr., Aberdeen Proving Ground, Edgewood, MD 21010-5032, USA
(Fax: 1-410 671 2649 E-mail: jabaker@cbdcom.apgea.army)
Co-Director: Dr. O. Ciobanu, Military Inst. for Scientific Res. in Chemistry, Bucharest Romania 970362

Nuclear Materials Safety Management
20 April 98 - 23 April 98 : St. Petersburg, Russia
Contact: Dr. L.J. Jardine, Lawrence Livermore National Laboratory, P.O. Box 808, L-166, Livermore, CA 94550, USA
(Fax: 1-510 423 1989 E-mail: jardine1@llnl.gov)
Co-Director: Mr. M.M. Moshkov, Khlopin Radium Institute, St. Petersburg Russia 970483

A New Generation of Antidotes, Protectors and Decorporators for Biological and Chemical Hazards
20 Apr 98 - 25 Apr 98 : Bucharest, Romania
Contact: Dr. T. Sohns, Federal Armed Forces, Central Medical Office, H5, Platanenweg 29, D-53225 Bonn Germany
(Fax: 49-228-942 2406)
Co-Director: Prof. C. Katzarov, Innovation Centre Elprom, Sofia, Bulgaria 971202

Transfer to Civil Applications of Military Experiences on Prevention of Hazardous Fires and Explosions
12 May 98 - 16 May 98 : Novosibirsk, Russia
Contact: Dr. N. Eisenreich, Fraunhofer Inst. f. Chemische Technol., Joseph-von-Fraunhofer-Str. 7, D-76327 Pfinztal, Germany
(Fax: 49 7214640-111 E-mail: ei@ict.fhg.de)
Co-Director: Prof. V.E. Zarko, Russian Academy of Science, Novosibirsk Russia 972050

COMPUTER NETWORKING

Promoting High-Speed Networks
18 May 98 - 22 May 98 : Kaunas, Lithuania
Contact: Mr. J. Martin, TERENA, Singel 466-468, NL-1017 AW Amsterdam, the Netherlands
(Fax: 31-20-639-32-89 E-mail: martin@terena.nl)
Co-Director: Dr. V. Reklaitis, Kaunus University of Technology, Lithuania 971722

OTHER AREAS

Early Intervention in Psychiatric Disorders
5 May 98 - 10 May 98 : Prague, Czech Republic
Contact: Dr. S. Mednick, University of Southern California, Social Science Research Institute, University Park, Los Angeles, California 90089-0375 USA
(Fax: 1-213 740 7778 E-mail: smednick@almaak.usc.edu)
Co-Director: Prof. J. Libiger, Charles University, Bohnice Czech Republic 971427

Statistical Physics Applied to Practical Problems
9 May 98 - 13 May 98 : Budapest, Hungary
Contact: Prof. H.E. Stanley, Boston University, Ctr for Polymer Studies, Dept. of Physics, 590 Commonwealth Avenue, Boston, MA 02215 USA
(Fax: 1-617 353 9393 E-mail: hes@buphyk.bu.edu)
Co-Director: Prof. J. Kertesz, Technical University of Budapest, Hungary 971423

The Structure of Mesons, Baryons and Nuclei
21 May 98 - 24 May 98 : Crakow, Poland
Contact: Prof. G.E. Brown, State University New York at Stony Brook, Dept of Physics, Stony Brook, NY 11794-3800, USA
(Fax: 1-516 632 8176 E-mail: gbrown@insti.physics.sunysb.edu)
Co-Director: Prof. S. Drozdz, Institute of Nuclear Physics, Cracow, Poland 970114

Modern Aquaculture in the Coastal Zone - Lessons and Opportunities
14 Sep 98 - 17 Sep 98 : Porto, Portugal
Contact: Prof. J. Coimbra, ICBAS, Institute of Biomedical Sciences 'Abel Salazar', Largo Prof Abel Salazar 2, 4050 Porto Portugal
(Fax: 35-122001918 E-mail: jcoimbra@icbas.up.pt)
Co-Director: Dr. L. Varadi, Aquaculture Research Station, Szarvas Hungary 972065

GENERAL MEETINGS

CHEMISTRY AND MATERIALS

Supramolecular Engineering of Synthetic Metallic Materials : Conductors and Magnets
10 Jan 98 - 14 Jan 98 : Barcelona, Spain
Contact: Prof. J. Veciana, C.S.I.C., Inst. de Ciencia de Mater. de Barcelona, Campus de la U.A.B., 08193 Bellaterra Spain
(Fax: 34-3 5805729 E-mail: vecianaj@icmab.es) 961342

Applications of NMR to the Study of Structure and Dynamics of Supramolecular Complexes
5 May 98 - 9 May 98 : Sitges, Spain
Contact: Prof. M. Pons, Universitat de Barcelona, Dept. Quimica Organica, Marti I Franques 1, 08028 Barcelona Spain
(Fax: 34-339 78 78 E-mail: miquel@guille.qo.ub.es) 961335

Supramolecular Science: Where We Are and Where We Are Going
4 Sep 98 - 7 Sep 98 : Lerici (La Spezia), Italy
Contact: Prof. R. Ungaro, Universita di Parma, Dip. Chimica Organica e Industriale, Viale delle Scienze, 43100 Parma Italy
(Fax: 39-521 905 472)
URL: http://www.unipr.it/~natoarw 961380

1998 ADVANCED STUDY INSTITUTES

Advanced Study Institutes (ASIs) are high-level tutorial courses of two weeks' duration where a subject is treated in depth by lecturers of international standing. Presentations are made to about 100 scientists or research students already specialised in the field, or who have an advanced general scientific background. Attendance at ASIs is open to all suitably-qualified applicants irrespective of nationality, upon application to the contact person listed below.

JOINT NATO-PARTNER MEETINGS

ENVIRONMENTAL SECURITY

Chemical Separation Technologies and Related Methods of Nuclear Waste Management: Applications, Problems & Research Needs
18 May 98 - 28 May 98 : Dubna, Russia
Contact: Prof. G.R. Choppin, Florida State University, Department of Chemistry, 2035 East Paul Dirac Dr., 226 Morgan Bldg Tallahassee, FL 32310-2780 USA
(Fax: 1-850 574 6704 E-mail: choppin@chem.fsu.edu)
Co-Director: Dr. M.K. Khankhasayev, Joint Inst. for Nuclear Research, Dubna, Russia
URL: http://zx.res.fsu.edu/natoasidubna/ 961307

Deposit and Geoenvironmental Models for Resource Exploitation and Environmental Security
6 Sep 98 - 19 Sep 98 : Matrahaza, Hungary
Contact: Dr. A.G. Fabbri, Intern. Inst. for Aerospace Survey & Earth Science, (ITC), Hengelosestr 99, PO Box 6, 7500 AA Enschede The Netherlands
(Fax: 31-53-487-4336 E-mail: fabbri@itc.nl)
Co-Director: Dr. G. Gaal, Hungarian Geological Survey, Budapest Hungary 971295

HIGH TECHNOLOGY

Materials Science, Fundamental Properties and Future Electronic Applications of High-Tc Superconductors
14 Sep 98 - 25 Sep 98 : Albena, Bulgaria
Contact: Dr. S.L. Drechsler, Institute Dresden, Festkorper- und Werkstofforschung, Postfach 270016, D-01171 Dresden Germany
(Fax: 49 351 465 9537 E-mail: drechsler@ifw.dresden)
Co-Director: Dr. T.M. Mishonov, University of Sofia, Bulgaria 970554

Advanced Technologies Based on Wave and Beam Generated Plasmas
24 May 98 - 3 Jun 98 : Sozopol, Bulgaria
Contact: Prof. H.W. Schluter, Ruhr-University Bochum, Institute Experimental Physics II, NB 5/132, D-44780 Bochum Germany
(Fax: 49 234 7094643 E-mail: hs@plasma.ep2.ruhr-uni-bochum.de)
Co-Director: Prof. A.P. Shivarova, Sofia University, Bulgaria 961359

Thermodynamics and the Optimization of Complex Energy Systems
13 Jul 98 - 24 Jul 98 : Neptun, Romania
Contact: Prof. A. Bejan, Duke University, Dept of Mechanical Engineering, Durham, NC 27708-0300, USA
(Fax: 1-919-660-8963 E-mail: dalford@acpub.duke.edu)
Co-Director: Prof. E. Mamut, Ovidius University of Constantza, Romania 971491

Materials Science of Carbides, Nitrides and Borides
12 Aug 98 - 22 Aug 98 : St-Petersburg, Russia
Contact: Prof. Y. Gogotsi, University of Illinois, Dept of Mechanical Engineering, 842 W. Taylor St. (M/C 251), Chicago, IL 60607 US
(Fax: 1-312-4130447 E-mail: YGogotsi@uic.edu)
Co-Director: Prof. R.A. Andrievski, Russian Acad. of Sciences, Chernogolovka, Russia 971585

SCIENCE AND TECHNOLOGY POLICY

Management of Chemical Research, Development and Innovations
31 Aug 98 - 11 Sep 98 : Budapest, Hungary
Contact: Dr. I.T. Horvath, Exxon Research and Engineering Co., Rt 22 East, Annandale, NJ 08801, USA
(Fax: 1-908 730 3042 E-mail: ithorva@erenj.com)
Co-Director: Dr. A. Vas, Gedeon Richter Ltd, Budapest, Hungary
URL: http://szerves.chem.elte.hu/natoasi.htm 971676

GENERAL MEETINGS

LIFE SCIENCES

Advances in Molecular Ecology
20 Mar 98 - 31 Mar 98 : Erice, Sicily, Italy
Contact: Dr. G. Carvalho, University of Hull, Molec. Ecology & Fisheries Genetic Lab., Dept. of Biological Sciences, Hull HU6 7RX UK
(Fax: 44 1482 465458 E-mail: g.r.carvalho@biosci.hull.ac.uk)
URL: http://www.hull.ac.uk/molecol/nato-asi.htm 970493

Hydration Processes in Biology : Theoretical and Experimental Approaches
4 May 98 - 15 May 98 : Les Houches, France
Contact: Dr. M.C. Bellissent-Funel, Laboratoire Leon Brillouin, CEA-Saclay, 91191 Gif-Sur-Yvette Cedex, France
(Fax: 33 1 69331487 E-mail: mcbel@bali.saclay.cea.fr) 971414

Peptidergic G-Protein Coupled Receptors : From Basic Research to Clinical Applications
14 May 98 - 24 May 98 : Erice, Sicily, Italy
Contact: Prof. P. Geppetti, University of Ferrara, Dept. of Experim. & Clinical Medicine, Via Fossato Di Mortara 19, I-44100 Ferrara Italy
(Fax: 39 532 291 205 E-mail: p.geppetti@ifeuniv.unife.it) 970509

Vascular Endothelium : Mechanisms of Cell Signalling
20 Jun 98 - 29 Jun 98 : Limin Hersonissou,Crete,Greece
Contact: Prof. J.D. Catravas, Medical College of Georgia, Vascular Biology Center, Augusta, GA 30912-2500, USA
(Fax: 1-706 721 9799 E-mail: jcatrava@mail.mcg.edu)
URL: http://158.93.100.239 971410

Computational Hearing
29 Jun 98 - 10 Jul 98 : Il Ciocco, Italy
Contact: Dr. S. Greenberg, Internaitonal Computer Science Institute, 1947 Center Street, Berkeley, CA 94704, USA
(Fax: 1-510 643 7684 E-mail: steveng@icsi.berkeley.edu)
URL: http://www.icsi.berkeley.edu/real/comhear98/ 970471

Intermolecular Cross-Talk in Tumour Metastasis
24 Jul 98 - 3 Aug 98 : Vouliagmeni-Athens, Greece
Contact: Dr. G.G. Skouteris, University College London Medical School, Institute of Hepatology, Laboratory of Molecular and Cellular Biology, 69-75 Chenies Mews London WC1E 6HX, UK
(Fax: 44-171 380 0405) 970441

Molecular Mechanisms of Transcellular Signalling - From Membrane Receptors to Transcription Factors
16 Aug 98 - 28 Aug 98 : Island of Spetsai, Greece
Contact: Dr. J.P. Thiery, CNRS et Institut Curie, Section de Recherche, UMR 144, 26 Rue d'Ulm, 75248 Paris Cedex 05 France
(Fax: 33 1 42 34 6344 E-mail: jpthiery@curie.fr) 970501

Genes, Fossils and Behaviour: An Integrated Approach to Human Evolution
7 Sep 98 - 17 Sep 98 : Cambridge, UK
Contact: Prof. P. Donnelly, University of Oxford, Dept of Statistics, 1 South Parks Road, Oxford OX1 3TG UK
(Fax: 44 1865 272 595 E-mail: donnelly@stats.ox.ac.uk) 970562

MATHEMATICS, PHYSICS AND ASTRONOMY

Diffuse Waves in Complex Media
17 Mar 98 - 27 Mar 98 : Les Houches, France
Contact: Dr. J.P. Fouque, Ecole Polytechnique, Centre de Mathematiques Appliquees, 91128 Palaiseau Cedex, France
(Fax: 33 1 69 33 3011 E-mail: fouque@paris.polytechnique.fr)
URL: http://www.poan.polytechnique.fr/Houches/houches.html 970486

Planets Outside the Solar System : Theory and Observations
5 May 98 - 15 May 98 : Cargese, Corsica, France
Contact: Dr. J.M. Mariotti, European Southern Observatory, Karl-Schwarzschild-Strasse 2, D-85748 Garching bei Muenchen, Germany
(Fax: 49 89 320 06 358 E-mail: jmariott@eso.org)
URL: http://www.eso.org/asi9805 970474

Statistical Methods for Genetic Studies
11 May 98 - 22 May 98 : Leuven, Belgium
Contact: Prof. R. Vlietinck, Katholieke Universiteit Leuven, University Hospital Gasthuisberg, Center of Human Genetics, Herestraat 49 B-3000 Leuven, Belgium
(Fax: 32-16 34 59 94 E-mail: robert.vlietinck@med.kuleuven.ac.be) 970482

Physics of Star Formation and Early Stellar Evolution
24 May 98 - 5 Jun 98 : Heraklion, Crete, Greece
Contact: Prof. N.D. Kylafis, University of Crete, Dept. of Physics, PO Box 2208, 710 03 Heraklion, Crete Greece
(Fax: 30-81 394201 E-mail: kylafis@physics.uch.gr) 971433

The Arithmetic and Geometry of Algebraic Cycles
7 Jun 98 - 19 Jun 98 : Banff, Alberta, Canada
Contact: Prof. J.D. Lewis, University of Alberta, Department of Mathematics, Edmonton, Alberta, Canada
(Fax: 1-403 492 6826 E-mail: jale@oscar.math.ualberta.ca)
URL:http://www.CRM.UMontreal.CA ActivitesEcole_d_ete_1998_Eng.html 970366

Quantum Field Theory : Perspective and Prospective
15 Jun 98 - 27 Jun 98 : Les Houches, France
Contact: Prof. C. Dewitt-Morette, University of Texas at Austin, Physics Department, Center for Relativity, Austin, TX 78712-1081 USA
(Fax:1-512 471 0890 E-mail: cdewitt@physics.utexas.edu) 970436

Techniques and Concepts of High Energy Physics
18 Jun 98 - 29 Jun 98 : St. Croix, USA
Contact: Prof. T. Ferbel, University of Rochester, Physics Department, Rochester, NY 14627-0171, USA
(Fax: 1-716 275 8527 E-mail: ferbel@pas.rochester.edu)
URL: http://server-mac.pas.rochester.edu/Asiinfo.html 970461

Semiconductor Quantum Optoelectronics : From Quantum Physics to Smart Devices
21 Jun 98 - 4 Jul 98 : St. Andrews, United Kingdom
Contact: Prof. A. Miller, University of St Andrews, School of Physics and Astronomy, North Haugh, St Andrews, Fife KY16 9SS UK
(Fax: 44 1334 463104 E-mail: a.miller@st-and.ac.uk) 970459

Topological Aspects of Low Dimensional Systems
7 Jul 98 - 31 Jul 98 : Les Houches, France
Contact: Dr. F. David, Centre d'Etude de Saclay, Service de Physique Theorique, 91191 Gif-sur-Yvette Cedex, France
(Fax: 33 1 69088120 E-mail: david@spht.saclay.cea.fr) 970434

New Approaches to Old and New Problems in Liquid State Theory - Inhomogeneities and phase separation in simple, complex and quantum fluids
7 Jul 98 - 17 Jul 98 : Messina, Italy
Contact: Dr. C. Caccamo, Universita di Messina, Dipartmento di Fisica, Sez. Teorica, C.P. 50, 98166 S. Agata di Messina Italy
(Fax: 39 90 676 5505 E-mail: caccamo@vulcano.unime.it)
URL: http://www.unime.it/congressi/nato-asi.html 970455

Quantum Monte Carlo Methods in Physics and Chemistry
13 Jul 98 - 24 Jul 98 : Ithaca, USA
Contact: Dr. C.J. Umrigar, Cornell University, Dept of Physics, Clark Hall, Ithaca, NY 14853 USA
(Fax: 1-607 254 8888 E-mail: qmc-nato-request@tc.cornell.edu)
URL: http://www.tc.cornell.edu/Edu/QMC-NATO/ 970499

Gauge and Flavour Hierarchies
20 Jul 98 - 1 Aug 98 : Cargese, Corsica, France
Contact: Prof. P. Binetruy, Universite Paris-Sud, LPTHE, Bat. 210, F-91405 Orsay Cedex France
(Fax: 33 1 69 158287 E-mail: binetruy @ qcd.th.u-psud.fr) 970492

Physics and Materials Science of Vortex State Dynamics and Flux Pinning
26 Jul 98 - 8 Aug 98 : Kusadasi,Turkey
Contact: Dr. R. Kossowsky, Emerging Technologies Inc., Materials Engineering and Systems Div., 6327 Burchfield Avenue, Pittsburgh, PA 15217 USA
(Fax: 1 412 421 4342 E-mail: ramkoss@mindspring.com) 971282

ADVANCED STUDY INSTITUTES *(continued)*

Nonlinear Analysis, Differential Equations and Control
27 Jul 98 - 7 Aug 98 : Montreal, Canada
Contact: Prof. A. Daigneault, Universite de Montreal, Dep. de Mathematiques & de Statistique, C.P. 6128, Succ. Centre-Ville, Montreal H3C 3J7 Canada
(Fax: 1-514 343 5700 E-mail: daigneau@dms.umontreal.ca) 970457

Dynamics : Models and Kinetic Methods for Nonequilibrium Many-Body Systems
27 Jul 98 - 7 Aug 98 : Leiden, the Netherlands
Contact: Dr. H. Van Beijeren, Utrecht University, Institute for Theoretical Physics, Princetonplein 5, 3584 CC Utrecht The Netherlands
(Fax: 31 30 2531137 E-mail: h.vanbeijeren@fys.ruu.nl) 971437

Difference Sets, Sequences and Their Correlation Properties
2 Aug 98 - 14 Aug 98 : Bad Windsheim, Germany
Contact: Prof. A. Pott, Universitaet Augsburg, Institut fuer Mathematik, D-86135 Ausburg, Germany
(Fax: 49-821 598 2200
E-mail: alexander.pott@math.uni-augsburg.de) 970001

Infrared Space Astronomy, Today and Tomorrow
4 Aug 98 - 28 Aug 98 : Les Houches, France
Contact: Mr. J. Lequeux, Observatoire de Paris, 61 Avenue de l'Observatoire, 75014 Paris, France
(Fax: 33 1 40512002 E-mail: lequeux@mesioa.obspm.fr) 970372

Error Control and Adaptivity in Scientific Computing
19 Aug 98 - 21 Aug 98 : Antalya, Turkey
Contact: Prof. Haydar Bulgak, Selcuk University, Research Center of Applied Mathematics, Campus, Konya, Turkey
(Fax: 90-332-2410604 E-mail: bulgk@karatay.cc.selcuk.edu.tr) 971420

Cosmology : The Universe at Large Scale
17 Aug 98 - 29 Aug 98 : Cargese, Corsica, France
Contact: Dr. M. Lachieze-Rey, Centre d'Etudes de Saclay, Service d'Astrophysique, 91191 Gif-sur-Yvette, France
(Fax: 33-169089266) 970491

Muon Science
17 Aug 98 - 28 Aug 98 : St Andrews, Scotland, UK
Contact: Prof. R. Cywinski, University of St Andrews, School of Physics and Astronomy, St Andrews, Fife KY16 9SS, UK
(Fax: 44-1334 463104 E-mail: RC@isie.rl.ac.uk) 971428

Variable Stars as Important Astrophysical Tools
31 Aug 98 - 11 Sep 98 : Izmir, Turkey
Contact: Prof. C. Ibanoglu, Ege University, Dept. of Astronomy & Space Science, Faculty of Science, 35100 Bornova, Izmir Turkey
(Fax: 90 232 388 1036 E-mail: ibanoglu@bornova.ege.edu.tr) 971351

CHEMISTRY AND MATERIALS

Impact of Electron and Scanning Probe Microscopy on Materials Research
14 Apr 98 - 25 Apr 98 : Erice, Sicily
Contact: Prof. U. Valdre, University of Bologna, Physics Department, Via Irnerio 46, I-40126 Bologna Italy
(Fax: 39 51 247244 E-mail: valdre@df.unibo.it) 971438

Implications of Molecular and Materials Structure for New Technologies
28 May 98 - 7 Jun 98 : Erice, Italy
Contact: Dr. J.A. Howard, University of Durham, Department of Chemistry, Durham DH1 3LE, UK
(Fax: 44 191 374 3745 E-mail: j.a.k.howard@durham.ac.uk) 970425

Advances in the Computer Simulations of Liquid Crystals
11 Jun 98 - 21 Jun 98 : Erice, Italy
Contact: Prof. C. Zannoni, Universita di Bologna, Dipartimento di Chimica Fisica, Viale Risorgimento 4, 40136 Bologna Italy
(E-mail: vz3bod7a@sirio.cineca.it) 970484

Energetics of Stable Molecules and Reactive Intermediates
14 Jul 98 - 24 Jul 98 : Castelo Branco, Portugal
Contact: Prof. Manuel Minas Da Piedade, Instituto Superior Tecnico, Centro de Quimica Estrutural, Complexo I, 1096 Lisboa Codex Portugal
(Fax: 351-1-3536985 E-mail: Pcmemp@Alfa.Ist.utl.pt)
URL: http://webnt.ist.utl.pt/nato_asi/main.htm 971405

Cationic Polymerizations and Related Processes
9 Aug 98 - 21 Aug 98 : London, Ontario, Canada
Contact: Prof. J.E. Puskas, The Univ. of Western Ontario, Macromolecular Engin. Research Ctr - MERC, Dept. of Chemistry & Biochem. Engineering, London, Ontario N6A 5B9 Canada
(Fax: 1-519 661 3498 E-mail: jpuskas@uwo.ca) 970452

Metal-Ligand Interactions in Chemistry, Physics and Biology
1 Sep 98 - 12 Sep 98 : Cetraro, Italy
Contact: Prof. N. Russo, Universita Calabria, Dipto di Chimica, 87030 Arcavacata di Rende (CS), Italy
(Fax: 39-984 492044 E-mail: russo@fis.unical.it)
URL: http://www.unical.it/scuole/nato-asi-mli 971305

Pollutants from Combustion - Formation and Impact on Atmospheric Chemistry
13 Sep 98 - 26 Sep 98 : Maratea, Italy
Contact: Prof. C. Vovelle, CNRS, Labo de Combustion et Systemes Reactifs, 1C Avenue de la Recherche Scientifique, 45071 Orleans Cedex 5 France
(Fax: 33 2 38 69 60 04 E-mail: vovel@cnrs-orleans.fr) 971430

High Pressure Molecular Science
27 Sep 98 - 11 Oct 98 : Il Ciocco, Italy
Contact: Prof. R. Winter, University of Dortmund, Institute of Physical Chemistry, Otto-Hahn-Str. 6, 44227 Dortmund Germany
(Fax: 49 231 755 3901
E-mail: winter@steak.chemie.uni-dortmund.de) 970430

EARTH SCIENCES

Ocean Modelling and Parametrization
20 Jan 98 - 30 Jan 98 : Les Houches, France
Contact: Dr. J. Verron, Universite de Grenoble, Inst. de Mecanique, Lab. des Ecoulements Geophys. & Industriels, B.P. 53, 38041 Grenoble Cedex 9 France
(Fax: 33 4 76825271 E-mail: verron@hmg.inpg.fr)
URL: http://mpo.rsmas.miami.edu/leshouches 970419

Microscopic Properties and Processes in Minerals
7 Sep 98 - 19 Sep 98 : Il Ciocco, Italy
Contact: Dr. K. Wright, University of Manchester, Dept of Earth Sciences, Manchester, M13 9PL, UK
(Fax: 44-161-275-3947 E-mail: kwright@fsl.ge.man.ac.uk)
URL: http://www.esc.cam.ac.uk/NATO 971421

APPLIED SCIENCES AND ENGINEERING

Modal Analysis and Testing
2 May 98 - 15 May 98 : Sesimbra, Portugal
Contact: Prof. J. Montalvao E Silva, Instituto Superior Tecnico, Av. Rovisco Pais, 1096 Lisboa Codex, Portugal
(Fax: 351-1-8417915 E-mail: d569@beta.ist.utl.pt)
URL: http://www.lemac.ist.utl.pt/ASI.modal/ 971415

Design and Control of Structure of Advanced Carbon Materials for Enhanced Performance
10 May 98 - 21 May 98 : Antalya, Turkey
Contact: Prof. B. Rand, University of Leeds, School of Materials, Ceramics Division, Leeds LS2 9JT UK
(Fax: 44 113 233 2384 E-mail: b.rand@leeds.ac.uk) 970487

Energy Conservation Through Heat Transfer Enhancement of Heat Exchangers
25 May 98 - 5 Jun 98 : Cesme, Izmir, Turkey
Contact: Prof. S. Kakac, University of Miami, Dept. of Mechanical Engineering, PO BOX 248294, Coral Gables, FL 33124 USA
(Fax: 1-305 284 2580 E-mail: skakac@eng.miami.edu) 960080

Numerical Modelling of the Global Atmosphere
25 May 98 - 5 Jun 98 : Il Ciocco, Italy
Contact: Prof. A. O'Neill, University of Reading, C G A M, Dept. of Meteorology, 2 Earley Gate, Reading RG6 6BB UK
(Fax: 44 118 931 8316 E-mail: alan@met.reading.ac,uk)
URL: http://www.nwra.com/ASI 970478

Signal Processing for Multimedia
5 Jul 98 - 18 Jul 98 : Tuscany, Italy
Contact: Dr. J.S. Byrnes, Prometheus Inc., 21 Arnold Avenue, Newport, RI 02840, USA
(Fax: 1 401 848 7293 E-mail: asi@cs.umb.edu)
URL: http://www.cs.umb.edu/~asi 971426

Mechanics of Composite Materials and Structures
12 Jul 98 - 24 Jul 98 : Troia, Portugal
Contact: Prof. C.A. Mota Soares, IDMEC - Instituto Superior Technico, Av. Rovisco Pais, 1096 Lisboa Codex, Portugal
(Fax: 351 1 841 7915 E-mail: nato-asi@lemac.ist.utl.pt)
URL: http://www.lemac.ist.utl.pt/NATO-ASI 970469

Supercritical Fluids- Fundamentals and Applications
12 Jul 98 - 24 Jul 98 : Kemer, Turkey
Contact: Prof. E. Kiran, University of Maine, Dept. of Chemical Engineering, Orono, ME 04469-5737, USA
(Fax: 1-207 581 2323 E-mail: kiran@maine.maine.edu) 970470

Calculational System Design
28 Jul 98 - 9 Aug 98 : Marktoberdorf, Germany
Contact: Prof. M. Broy, Technische Universitaet Muenchen, Institut fuer Informatik, 80290 Muenchen, Germany
(Fax: 49-89 289 28183
E-mail: broy@informatik.tu-muenchen.de) 971486

System Level Synthesis for Electronic Design
11 Aug 98 - 21 Aug 98 : Lucca, Italy
Contact: Dr. J. Mermet, ECSI, Parc Equation, 2 Avenue de Vignate, 38610 Gieres France
(E-mail: mermet@imag.fr) 970467

Further information on a particular ASI or ARW should be obtained from the contact person listed above.

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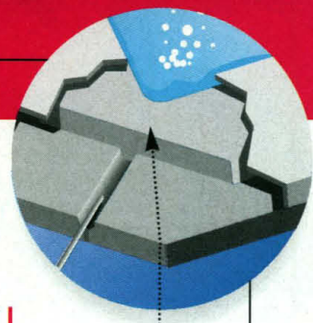

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U.S. Patent No. 5,503,741.

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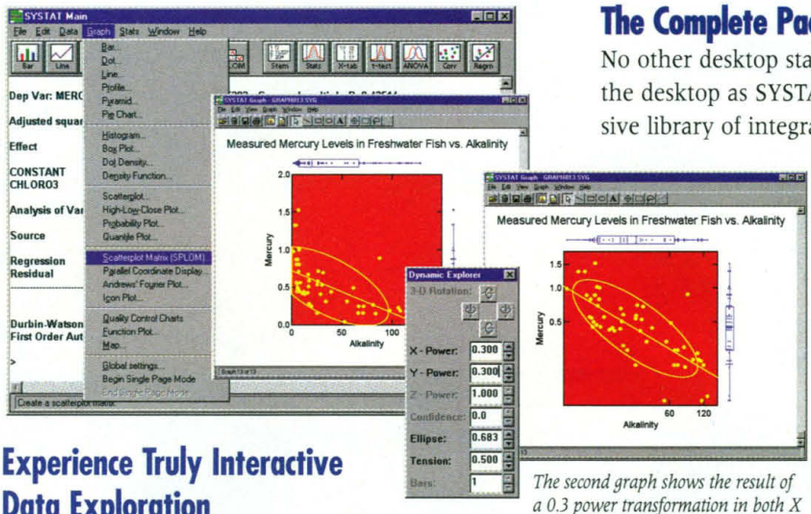

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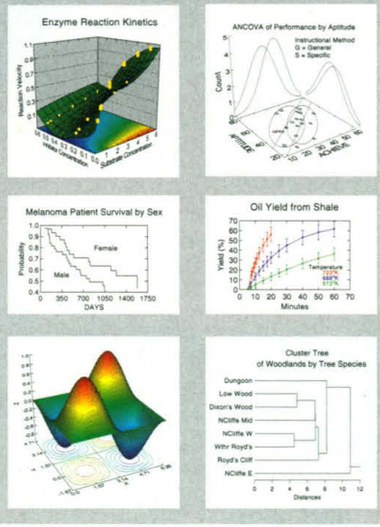

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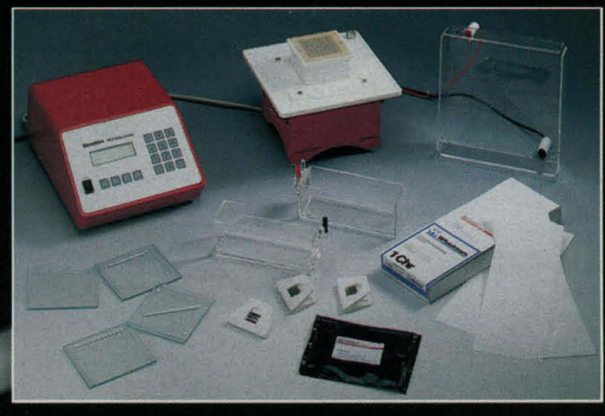

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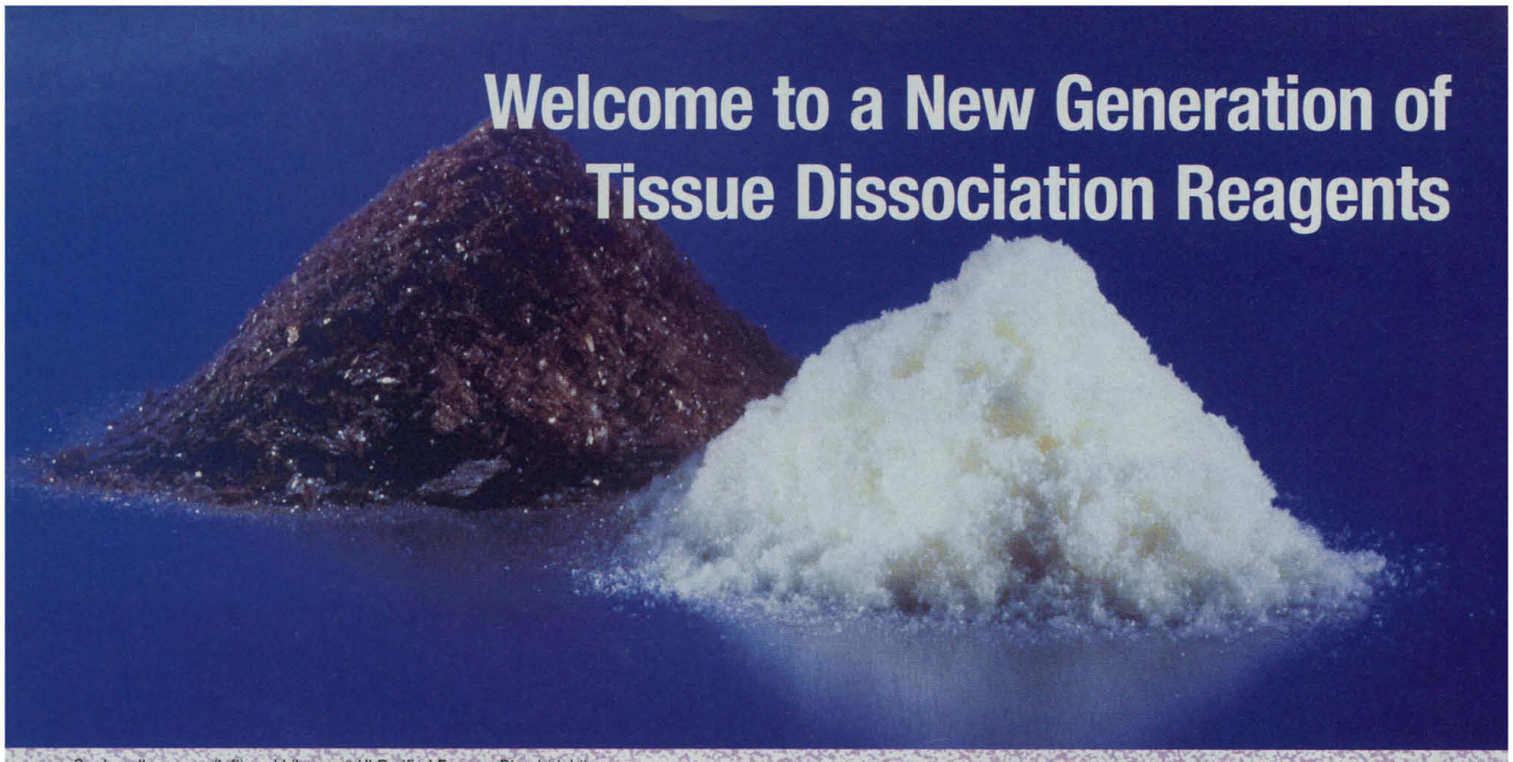

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