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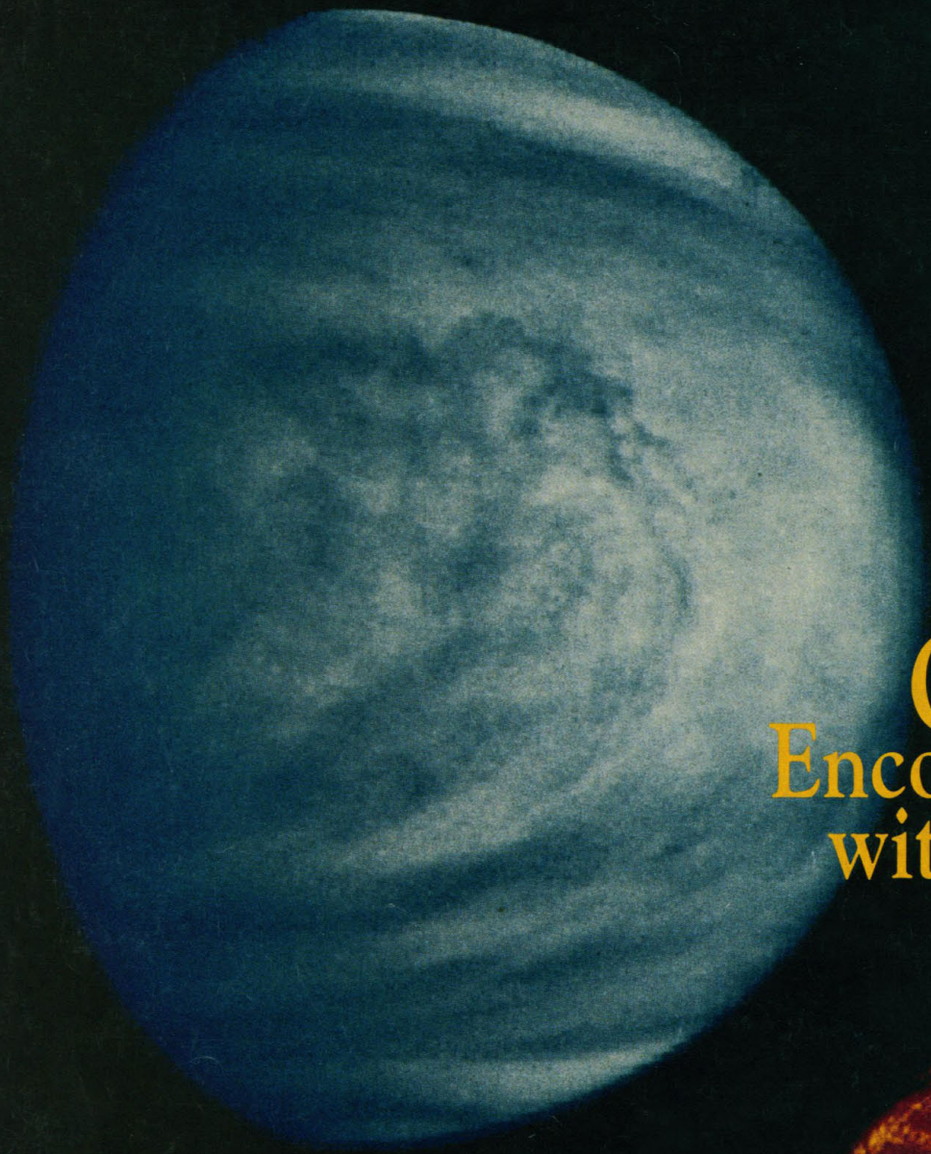
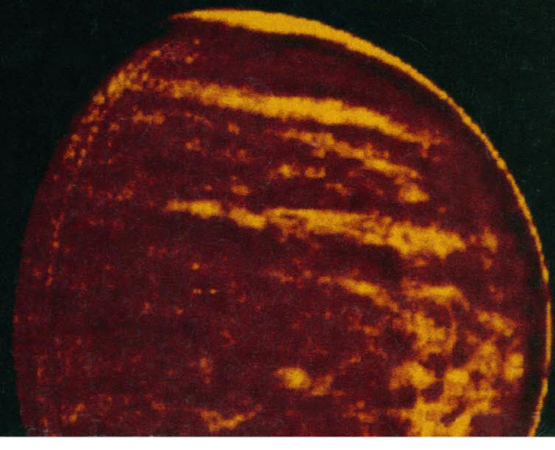


Galileo's Encounter with Venus



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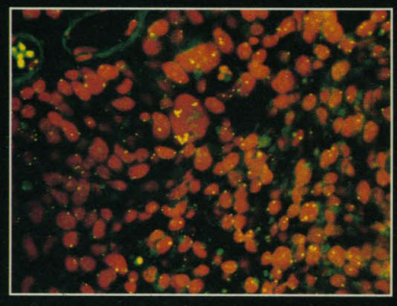

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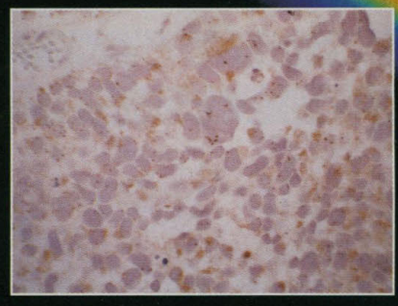
Human X Alpha Satellite Probe



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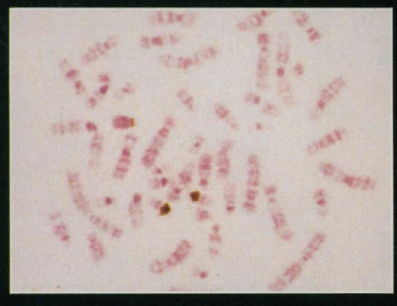

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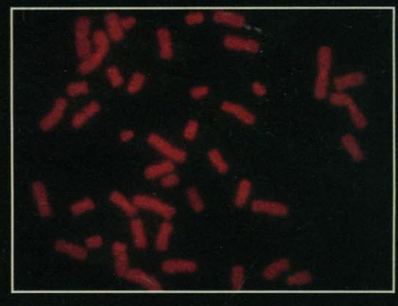

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COVER Galileo images of Venus showing the global structure of cloud patterns at two different depths in the upper cloud layers. Cloud patterns at the top of the main sulfuric acid haze layer of Venus and downwind of the subsolar region are seen in the violet region of the spectrum (top). The atmospheric flow is from right to left. An infrared image (bottom) shows cloud patterns at lower altitude. Pseudocolor has been used to enhance contrast. See page 1531. Other Galileo reports pages 1516 to 1550. [Photographs courtesy of the National Aeronautics and Space Administration and the National Optical Astronomy Observatories]

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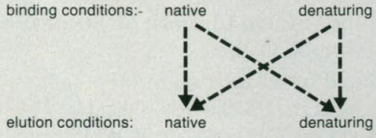

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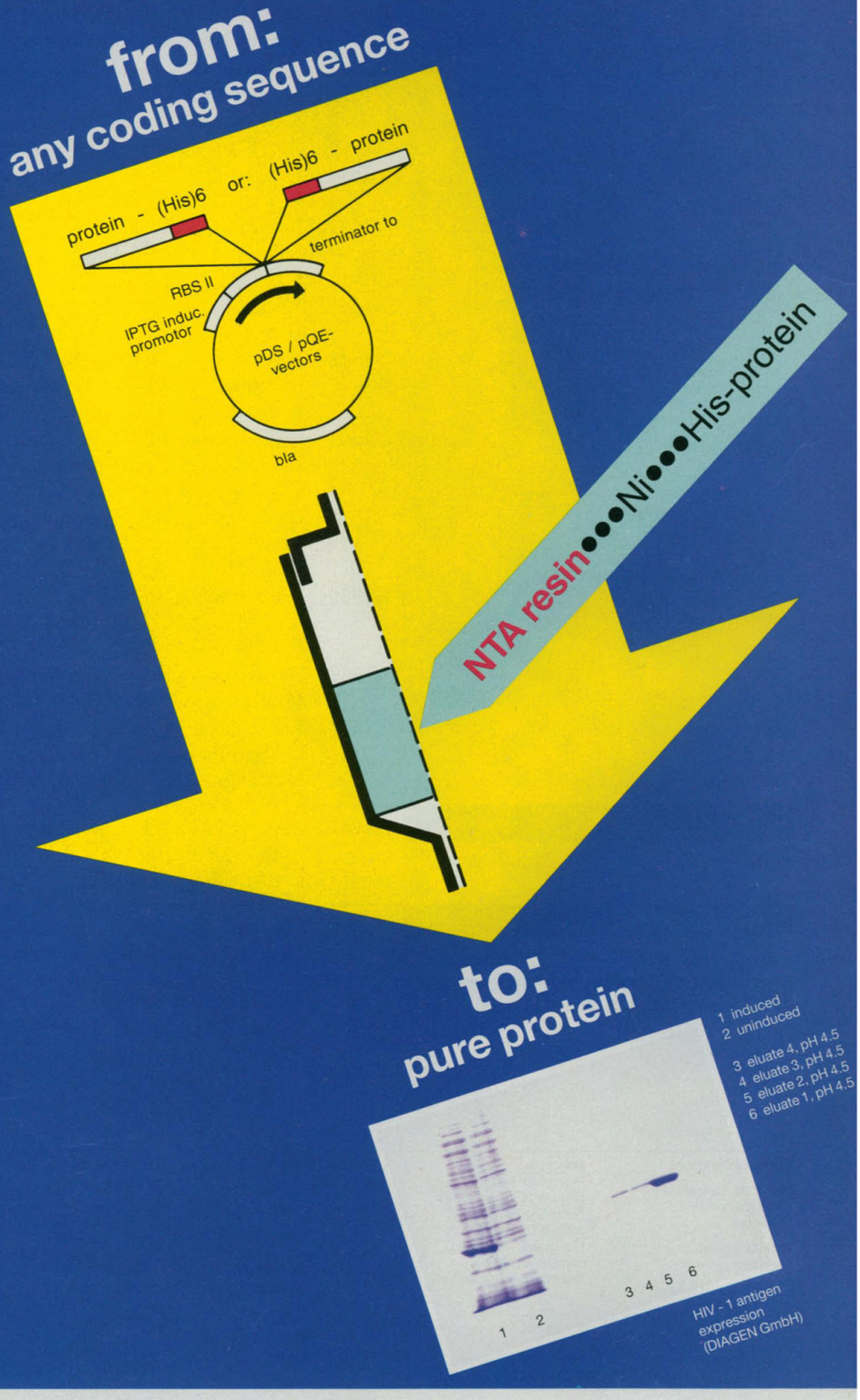

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African origins

Mitochondrial DNA evolves fast (faster than nuclear DNA) and is inherited only from the mother. These properties make it a valuable tool for tracing and dating the origin of human DNA. A study by Vigilant *et al.* of mitochondrial DNA from 189 individuals strengthens the hypothesis that the mitochondrial DNA found in modern humans originated in Africa. (page 1503). Samples of mitochondrial DNA were taken from 121 native Africans and 68 individuals from other parts of the world; two hypervariable segments of the mitochondrial DNA were sequenced. The sequence data were used in the construction of a genealogic tree in which all of the mitochondrial DNA types were linked in a way that minimized mutations. The common ancestral mitochondrial DNA to all extant human mitochondrial DNA is calculated to have been present in Africa 166,000 to 249,000 years ago.

Radar images of Mars

Radar scans made from Earth reveal some fascinating new information about physical features of the planet Mars (page 1508). Signals were transmitted from the Jet Propulsion Laboratory's Deep Space Network 70-meter antenna in California, and the reflections from Mars were detected with New Mexico's Very Large Array; images were obtained for about 80% of the planet's surface. The Tharsis volcanic region of Mars reflected radar strongly, but in this region a massive structure was found to give no radar returns. The area has thus been named Stealth. Stealth extends along the equator for some 2000 kilometers. Its radar invisibility suggests that it is free of rocks larger than 1 centimeter in diameter. Muhleman *et al.* propose that Stealth is a massive deposit 1 to 3 meters deep or deeper of ashy volcanic materials blown there from the Tharsis volcanoes. The most strongly reflecting region of Mars was the ice cap at the south pole. Its scattering properties suggested that it may be 2 to 5 meters deep (it was observed during the southern summer when its size is small) and that its carbon dioxide or water ice is relatively free of martian dust.

Galileo flyby of Venus

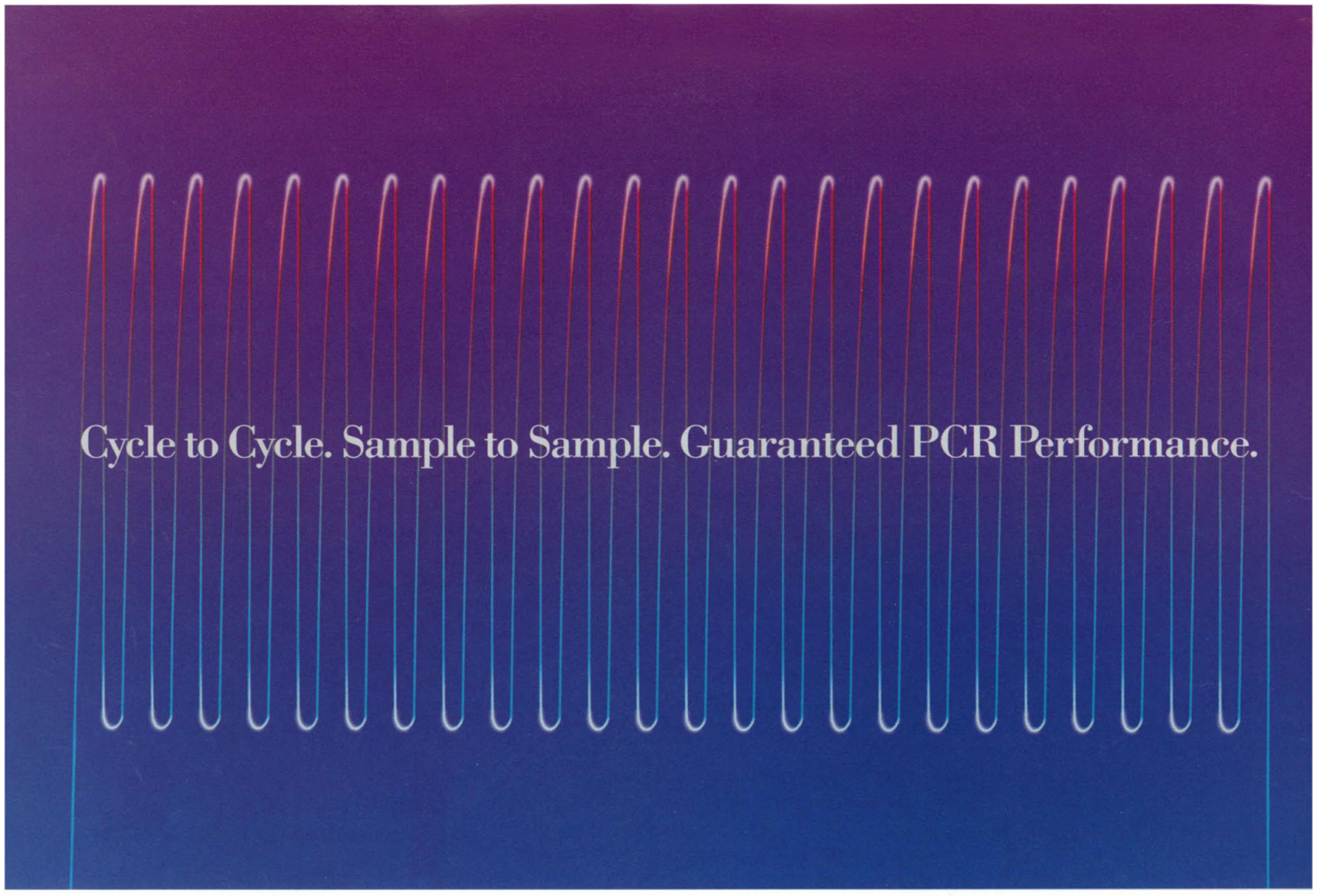
One of the most striking observations made by the Galileo spacecraft during its flyby of Venus was evidence of lightning. Galileo was launched 18 October 1989 and is due at Jupiter late in 1995. It flew by Venus on 10 February 1990 (cover). Ironically, the flyby was made possible because of delays in the launch of the spacecraft. As reported by Gurnett *et al.* the plasma wave instrument on the spacecraft detected impulsive radio signals in the frequency range of 100 kilohertz to 5.6 megahertz; lightning is the only known generator of signals in this range (page 1522). Earlier landers and orbiters at Venus had obtained data suggestive of bolts of lightning on Venus, but other explanations for those signals could not be ruled out. The source of the lightning on Venus—convective storms or volcanic activity—remains uncertain. The lightning data and their significance are discussed further by Kerr on page 1492. This paper is one of ten that describe the Galileo mission and observations of Venus. The reports include an overview of the mission, descriptions of the nature of the solar wind plasma, studies of the morphology and dynamics of the sulfuric acid cloud deck above Venus, and observations of Venus made from Earth at the time of the flyby (pages 1516 to 1550).

Repression by Wilms tumor gene product

A molecular function has been identified for the Wilms tumor gene product WT1 (page 1550). WT1 is thought to be a tumor suppressor gene on the basis of its pattern of expression: it is made during normal kidney differentiation and is missing or mutated in some Wilms tumors. Experiments by Madden *et al.* show that WT1 binds to DNA and then blocks gene transcription. With chimeric molecules, the site of the repressor activity of WT1 was found to reside in the molecule's amino-terminal domain. This domain is rich in proline and glutamine. In WT1 the proline-rich and glutamine-rich domain represses gene transcription, whereas in other DNA-binding proteins similar domains activate transcription. Some DNA-binding proteins also share structural motifs called zinc fingers (WT1 has four of them) that mediate the binding to DNA. It will be of interest to determine the nature of the molecular interactions in the transcriptional machinery that turn genes on or turn them off.

Combination chemotherapy for AIDS

Some patients with AIDS respond well for a time to the drug AZT but then deteriorate clinically; they are then taken off AZT and may begin taking another drug, such as ddI. Can specific changes in the HIV viruses be identified as drug resistance grows? Do the viruses eventually develop resistance to the second drug? Do they ever regain sensitivity to AZT? St. Clair *et al.* examined HIV viruses isolated from peripheral blood mononuclear cells of patients who had taken AZT for at least 1 year but were currently taking only ddI (page 1557). As the therapy with ddI continued for many months, the viruses grew increasingly resistant to ddI, but their sensitivity to AZT was restored. A search for mutations associated with ddI resistance turned up a change in residue 74 of the virus's enzyme reverse transcriptase. The switch (from a leucine to a valine) not only lessened the sensitivity of the viruses to ddI but also compensated for (but did not correct) those mutations in the reverse transcriptase gene that bring about AZT resistance. These experiments argue for use of combination chemotherapy for controlling HIV and maintaining the sensitivity of this virus to antiviral drugs. ■ RUTH LEVY GUYER



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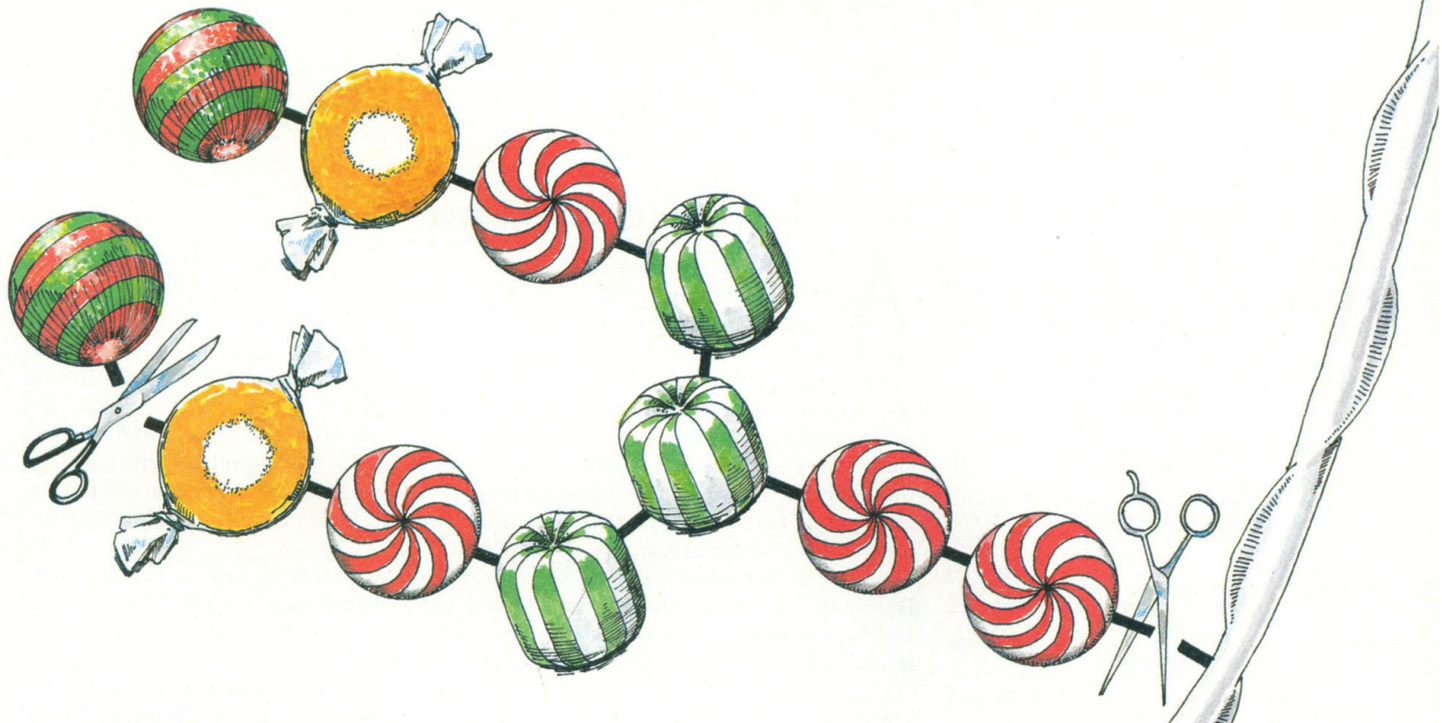

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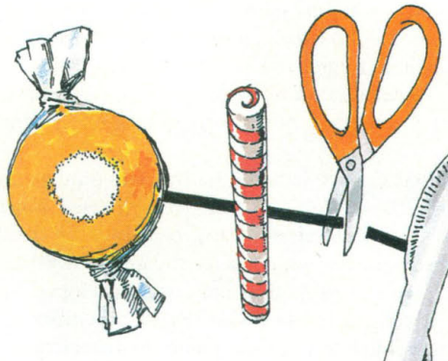

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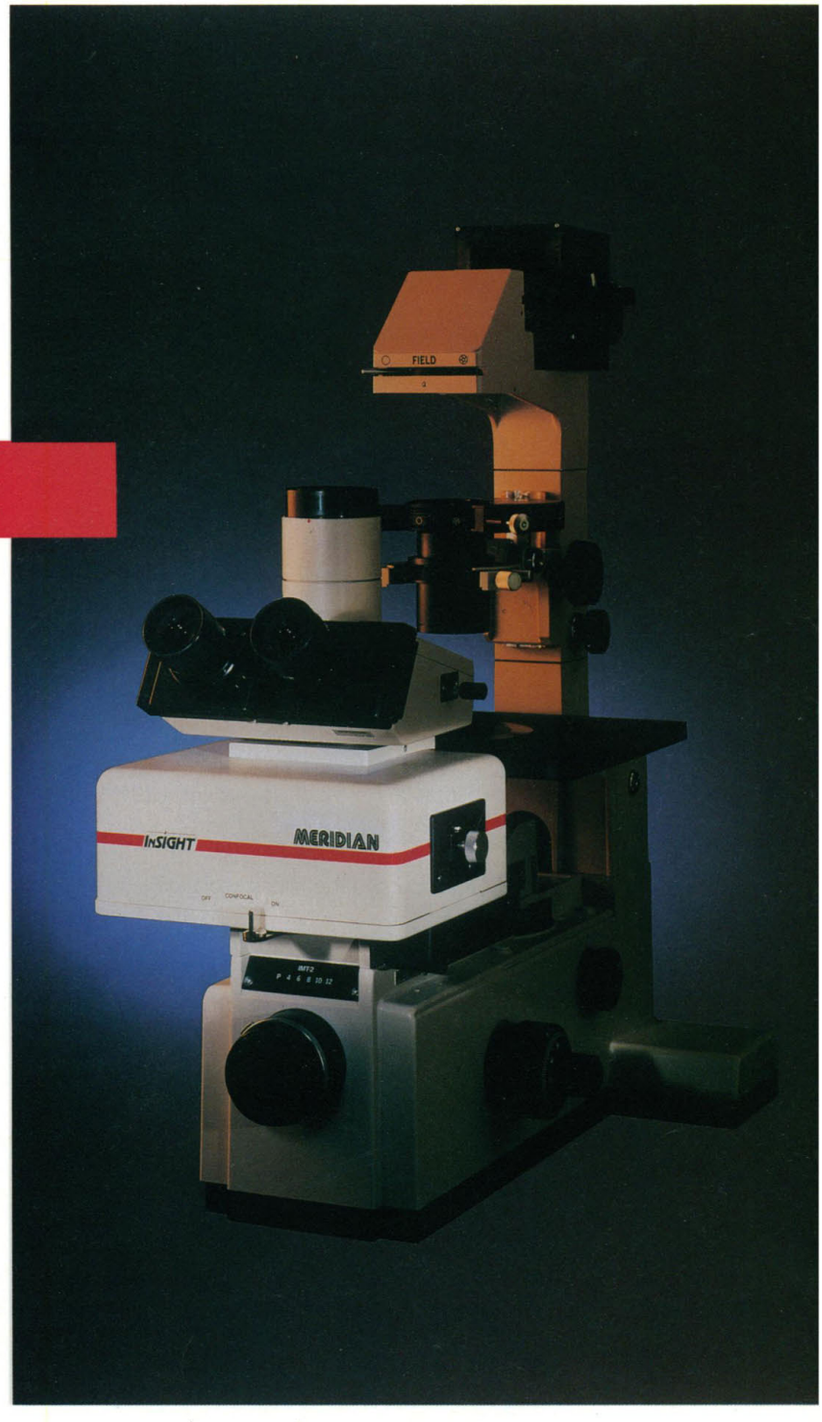

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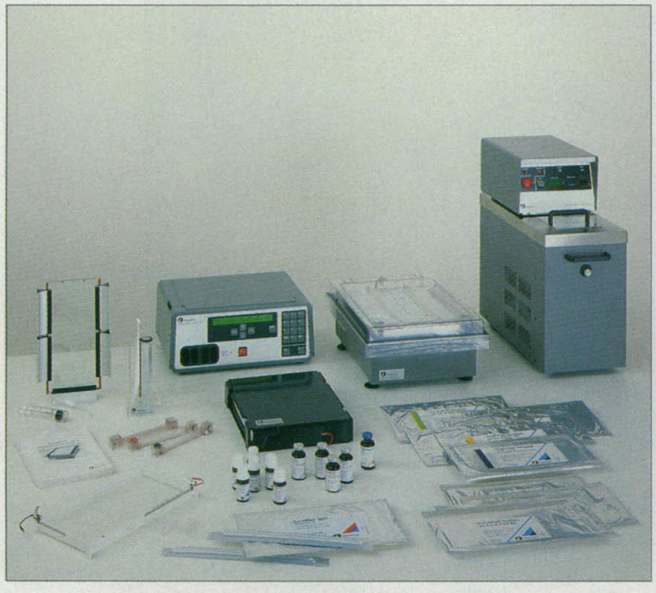
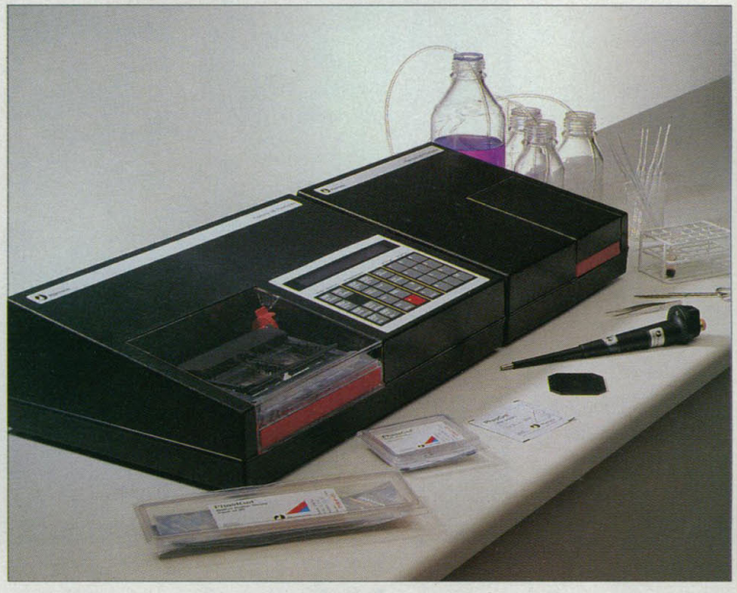


Multiphor II is more than a basic electrophoresis unit. It's a fully modular system for highly efficient performance of most electrophoretic techniques. Its unique flatbed design and cooling system are a pre-requisite for rapid, high resolution separation. Moveable electrodes simplify adjustments and increase sample capacity.

Another major feature of the system is the wide range of media: a precast gel and buffer strips for SDS-PAGE, several ready-made gels for isoelectric focusing, and 2-D electrophoresis kits. Multiphor II is also available with gel casting kits to facilitate reproducible production of your own analytical and preparative gels.
Ask for the brochure.

One is automated. It's PhastSystem™ ...



Designed for fast, accurate and reproducible electrophoresis and gel staining, PhastSystem is the only automated work-station of its kind. The convenience and reproducibility of PhastSystem can be attributed to the use of a built-in microprocessor to control all separation and staining parameters, coupled with the use of thin precast PhastGel® media and innovative buffer strips.

No other electrophoresis system gives you results so fast. No other gels are so easy to work with - to run, to stain, to evaluate and to store. And no other gels are so versatile. Included in the wide range of high quality PhastGel media are gradient, homogeneous and isoelectric focusing gels.
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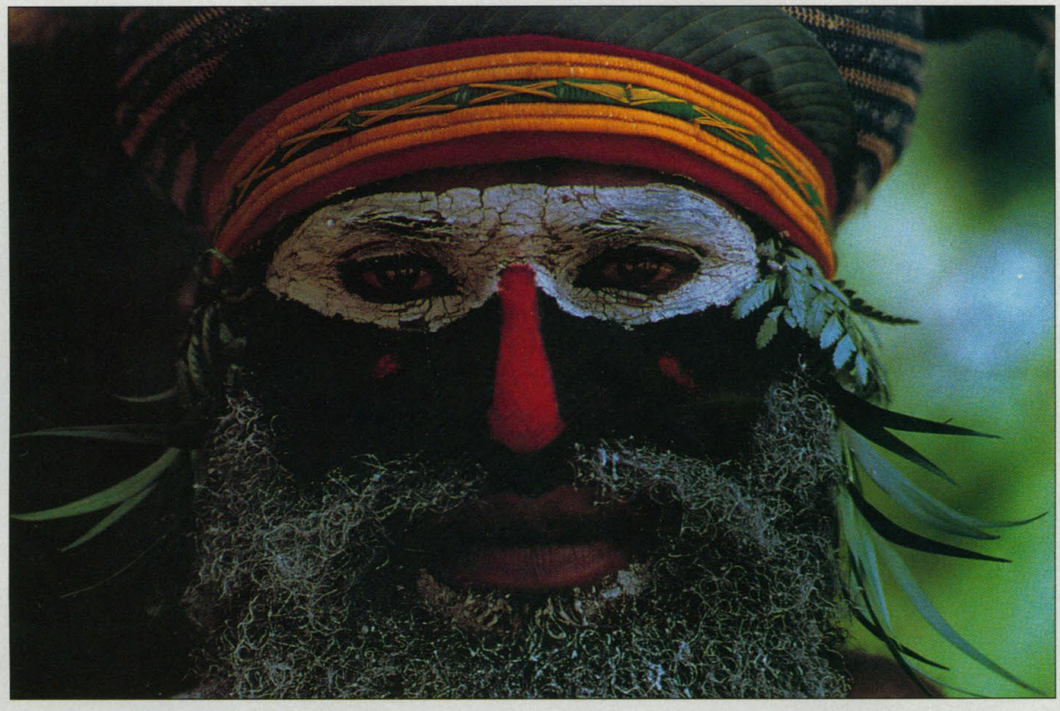
Native Expression



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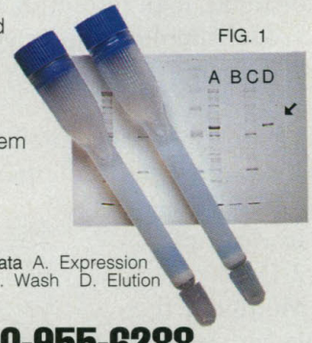

Figure 1: Expression Data A. Expression B. Flow Through C. Wash D. Elution

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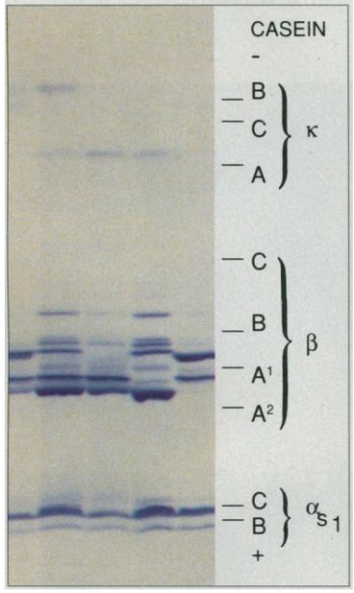
SDS-PAGE with Multiphor II

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

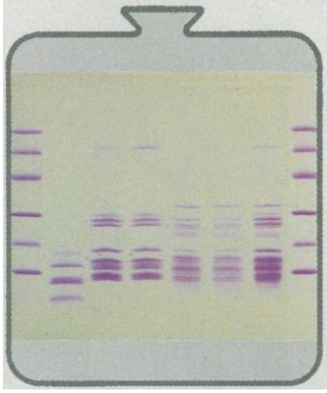
IEF with Multiphor II



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

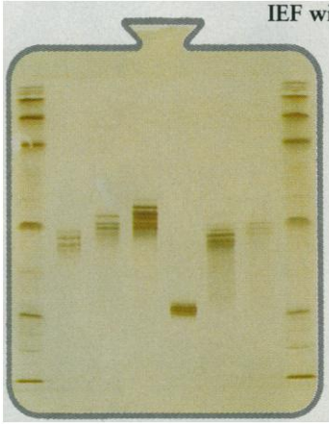
(These results are kindly donated by Dr. A. Görg, and Dr. I Krause, Freising-Weihenstephan, Germany.)

SDS-PAGE with PhastSystem



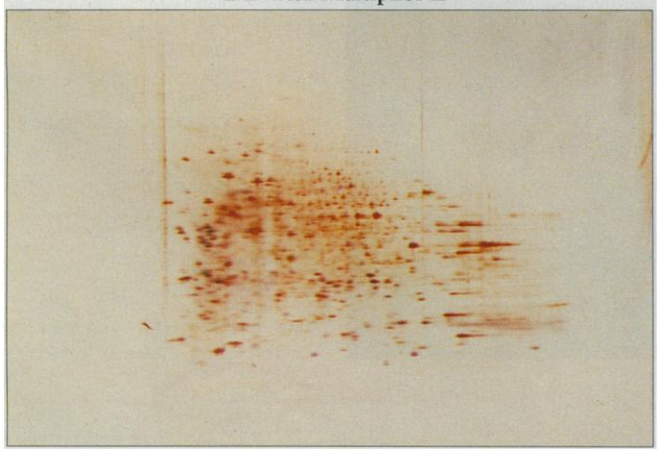
Ribosomal proteins separated on PhastGel gradient 8-25. Stained with PhastGel Blue R Coomassie stain.

IEF with PhastSystem



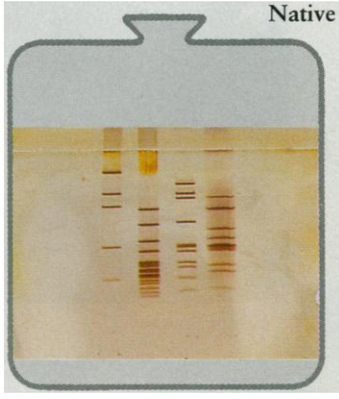
Characterization of murine monoclonal IgGs on PhastGel IEF 3-9. PhastGel silver kit was used for detection.

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.

Native PAGE with PhastSystem



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

1206

...naturally they are horizontal

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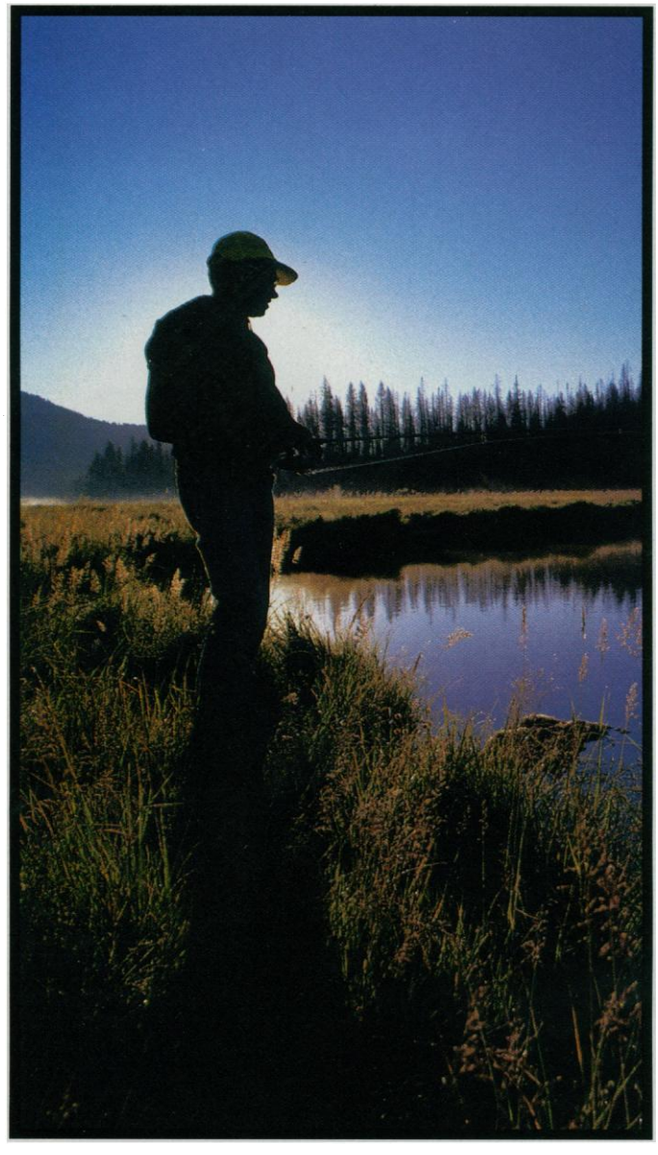
Two New 8-Base Cutters

Enzyme	Site	Cat. #
Asc I	GG/CGCGCC CCGCGC/GG (internal *Bss*H II site)	558
Pme I	GTTT/AAAC CAAA/TTTG (internal *Dra* I site)	560



20 New Restriction Enzymes

Enzyme	Site	Cat. #
*Acc*65 I (*Asp* 718)*	G/GTACC CCATG/G	ER0901
Aci I	C/CGC GGC/G	551
Age I	A/CCGGT TGGCC/A	552
Bpm I (*Gsu* I)	CTGGAG (16/14) GACCTC	565
*Bpu*1102 I (*Esp* I)	GC/TNAGC CGANT/CG	ER0091
*Bsa*H I (*Aha* II)	GPu/CGPyC CPyGC/PuG	556
Bsg I	GTGCAG (16/14) CACGTC	559
Bsi E I (*Mcr* I)	CGPuPy/CG GC/PyPuGC	554
Bsi W I (*Spl* I)	C/GTACG GCATG/C	553
Bsl I (*BsiY* I)	CCN_5/NNGG GGNN/N_5CC	555
*Bsp*D I (*Cla* I)	AT/CGAT TAGC/TA	557
Bsr F I (*Cfr*10 I)	Pu/CCGGPy PyGGCC/Pu	562
*Bst*1107 I (*Sna* I)	GTA/TAC CAT/ATG	ER0701
*Eam*1105 I	GACNNN/NNGTC CTGNN/NNNCAG	ER0241
*Ecl*136 II (*Sac* I)**	GAG/CTC CTC/GAG	ER0251
*Eco*47 III	AGC/GCT TCG/CGA	ER0321
*Eco*57 I	CTGAAG (16/14) GACTTC	ER0341
*Esp*3 I	CGTCTC (1/5) GCAGAG	ER0451
Mun I (*Mfe* I)	C/AATTG GTTAA/C	ER0751
Sfc I (*Sfe* I)	C/TPuPyAG GAPyPuT/C	561

*Kpn isochizomer generating a 4-base 5' overhang
** Sac I isochizomer generating blunt ends

Additional New Products

Modified Vent™ DNA Polymerase (exo⁻) Thermostable Polymerase for DNA sequencing	257
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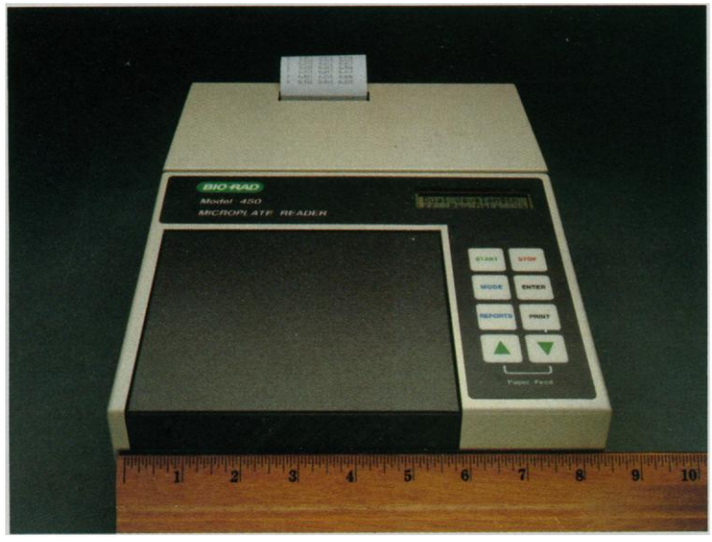

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(ELAMS™) Electronic Laboratory Animal Monitoring System

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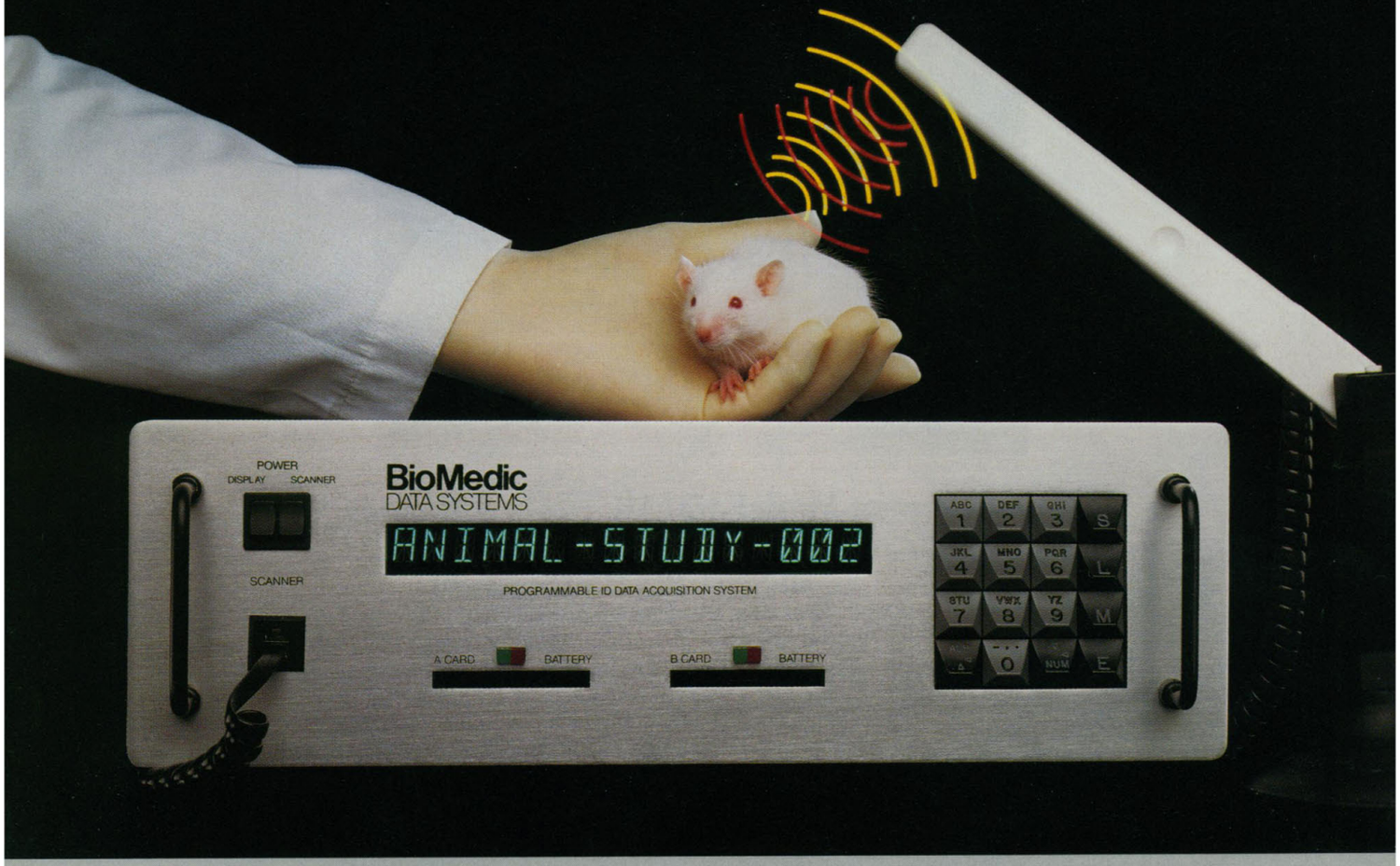

Our new Electronic Notebook is added proof that ELAMS is more than a superior animal identification process.

ELAMS is dramatically impacting data collection efficiency, accuracy, quantity and use. The new Bio Medic Data Systems DAS4002, an entirely portable variation and complement to the DAS4001, underscores the acceptance of ELAMS by the research field.

So, what began as a big step ahead in animal identification is turning into a great leap forward in lab animal monitoring and information management.

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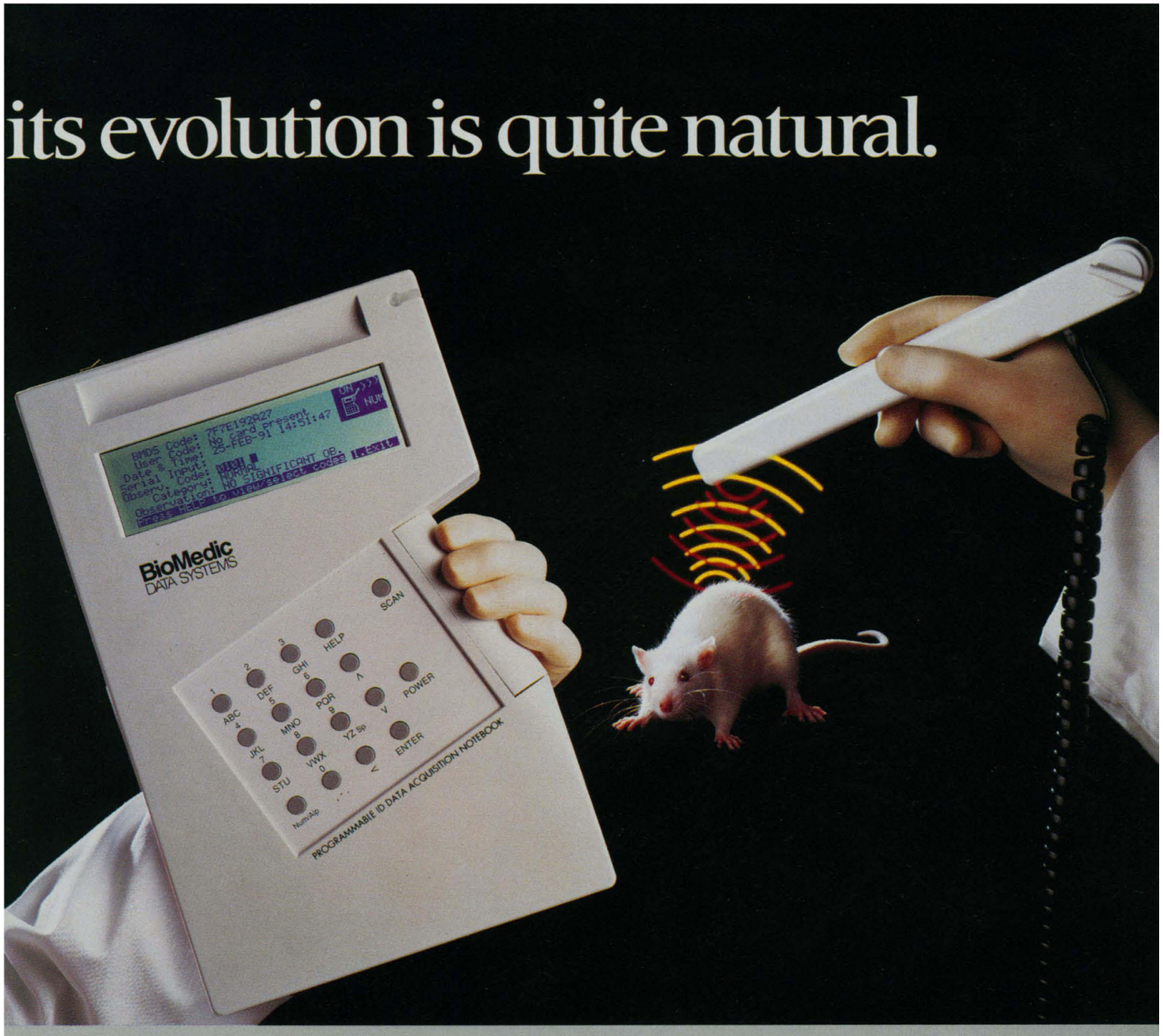
Invaluable Positive Identification

Start with the identification process. Using encoded, subcutaneously implanted microchips (transponders) that are 'read' by an interrogating scanner, ELAMS positive identification renders obsolete the hit-and-miss of tagging, clipping, tattooing, etc. And you can keep and use your present animal codes and read about 100 animals in 20 minutes. It works for all animal species. ELAMS uses patented bio-compatible glass-encased transponders, pre-encoded and conveniently packaged within individual sterile needles, inside an insertion device. Studies and customer usage confirm that animal tissue response is completely non adverse. ELAMS exceeds GLP guidelines.

Secondly, ELAMS provides you with transportable, programmable memory, extending up to 15,000 ID codes on a credit-card sized device. Data can be copied from card to card, or downloaded

its evolution is quite natural.



to your computer or printer. Conversely, you can update these SRAM cards with ID data from your computer.

The New DAS4002

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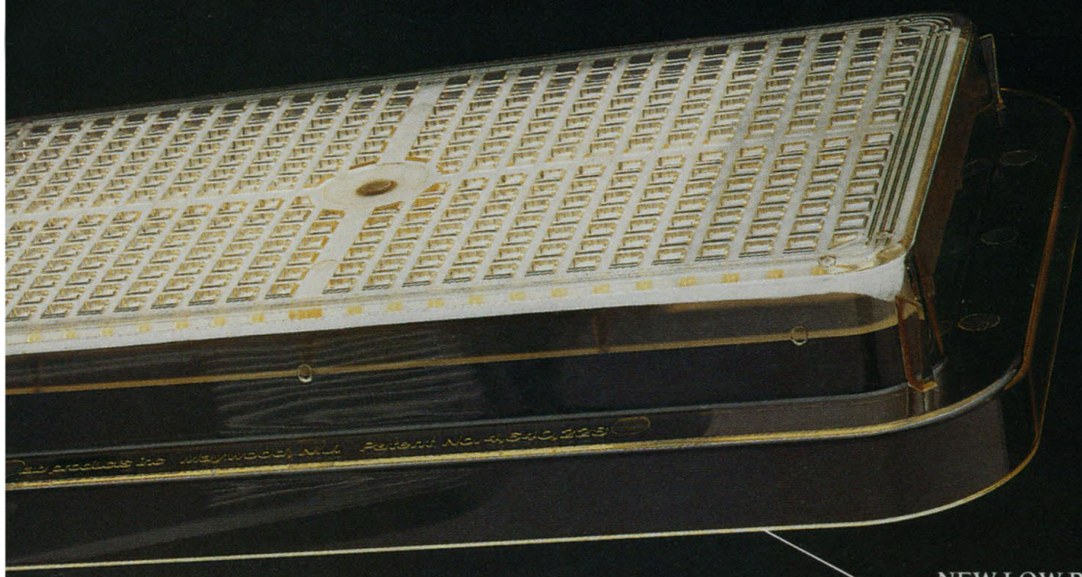

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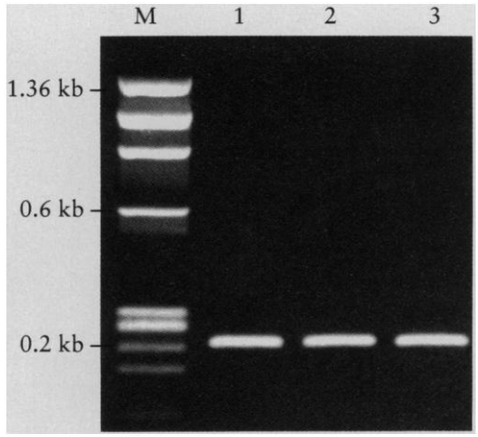
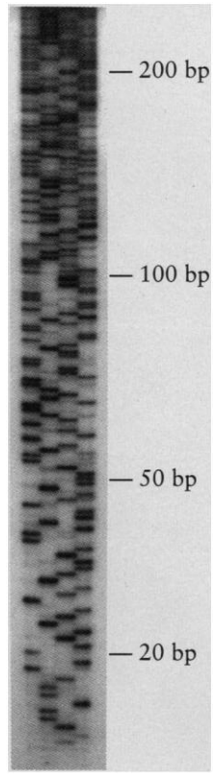
High-Quality PCR Sequencing



PCR† testing of stability of DNA Polymerization Mix. A target sequence in human genomic DNA was amplified using DNA Polymerization Mix which had been stored under various conditions. Lane 1, storage at -20°C for three months; lane 2, after 50 freeze/thaw cycles (-20°C to 37°C); and lane 3, stored at 37°C for three months. The marker (M) is φX-174 RF DNA-*Hae* III (27-4044-01).



Sequencing results obtained with column-purified PCR† products. A Miniprep Spun Column (27-5101-01, -02) was used to remove primers and unincorporated nucleotides from the amplified DNA prior to sequencing. The figures in the margin denote distance from the 5'-end of the sequencing primer.

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†PCR (polymerase chain reaction) is covered by U.S. Patents issued to Cetus Corporation. A license for the use of PCR for research and testing purposes may be obtained by purchase of Perkin-Elmer Cetus GeneAmp™ PCR Reagent Kits. Nothing in this advertisement should be construed as an authorization or implicit license to practice PCR under any patents held by Cetus Corporation.

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- Selective — uses Ab-3 to identify mutant p53 in a broad range of sample types, including cell extracts and sera
- Wide Linear Range — quantitative from 0.25 to 4 ng/ml — minimizes reanalysis
- Specific — no known cross reactivity
- Convenient — precoated, removable 96-well format allows groups of samples to be analyzed at different times
- Catalog number QIA03

Immunohistochemistry System

- Useable with formalin-fixed paraffin-embedded tissue sections.
- Catalog number HCS19

All of these p53 products are for research use only.

For additional information, send in the reply card or call us at ***1-800-662-2616.*** *In NY and outside the US, call 1-516-222-0023.*

Oncogene Science

Monoclonal Antibodies and DNA Probes

Five monoclonal antibodies detect and characterize both wild-type and mutant p53 of human, rat, and mouse origin.

Northern and Southern hybridizations of either human or mouse samples with our DNA probes provide additional genetic or post-transcriptional information with maximum convenience and ease-of-use.

	Ab-1			Ab-2			Ab-3			Ab-4			Ab-5		
Species	Immuno-precipitation	Cellular Staining	Western Blotting	Immuno-precipitation	Cellular Staining	Western Blotting	Immuno-precipitation	Cellular Staining	Western Blotting	Immuno-precipitation	Cellular Staining	Western Blotting	Immuno-precipitation	Cellular Staining	Western Blotting
Human Wild-Type	+	+	–	+	+	+	–	–	+	–	–	–	+	+	–
Human Mutant	+	+	–	+	+	+	+	+	+	–	–	–	+/–	+/–	–
Mouse Wild-Type	+	+	–	–	–	–	–	–	+	+	+	–	ND	ND	–
Mouse Mutant	+	+	–	–	–	–	+	+	+	–	–	–	–	–	–
Other Mammalian Wild-Type	+	+	–	–	–	–	–	–	+	–	–	–	ND	ND	ND
Other Mammalian Mutant	+	+	–	–	–	–	+	+	+	–	–	–	ND	ND	ND
Clone	PAb421			PAb1801			PAb240			PAb246			PAb1620		
Catalog #	OP03			OP09			OP29			OP32			OP33		

ND = Not Determined

YES! Please send more information on **p53** products

- ☐ **ELISAssay**
- ☐ **IMMUNOHISTOCHEMISTRY SYSTEM**
- ☐ **p53 ANTIBODIES**
- ☐ **DNA PROBES**
- ☐ **OTHER ANTIBODY PRODUCTS (ras, jun, etc.)**

  _____

  _____
- ☐ **COMPLETE PRODUCT CATALOG**

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☐ I have ☐ have not used Oncogene Science products. $

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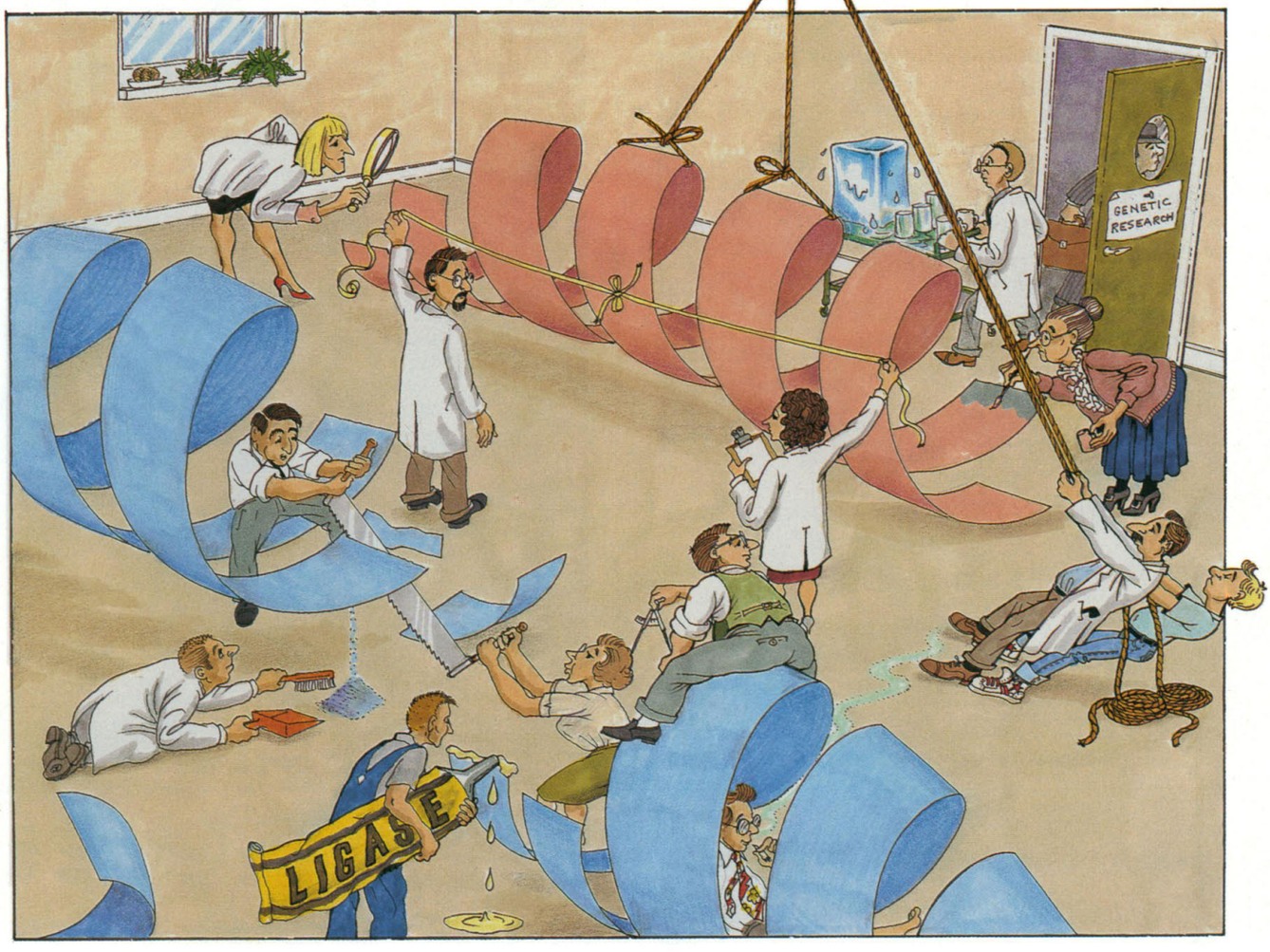
☐ Molecular Biology (1) ☐ Hematology (3) ☐ Oncology (5) ☐ Neurobiology (7)

☐ Immunology (2) ☐ Pathology (4) ☐ Cell Biology (6) ☐ Other (8) _____

Molecular Biology made simpler



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American Society of Zoologists
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