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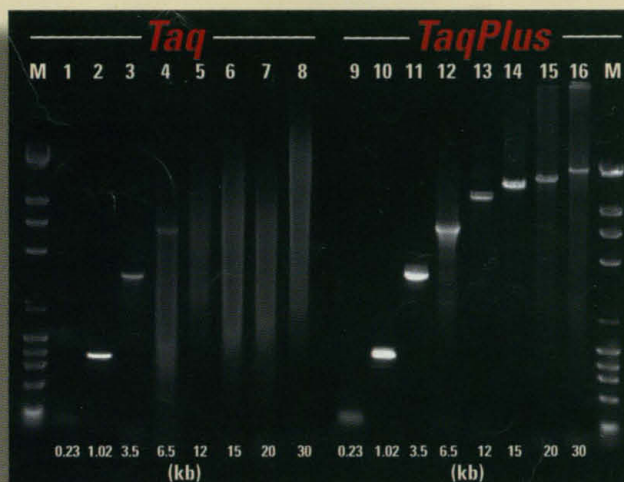
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REFERENCES:
1. Nielson, K.B., Scott, B., Bauer, J.C., and Kretz, K. (1994) *Strategies* 7: 64-65.
2. Nielson, K.B., Schoettlin, W., Bauer, J.C., and Mathur, E. (1994) *Strategies* 7: 27.

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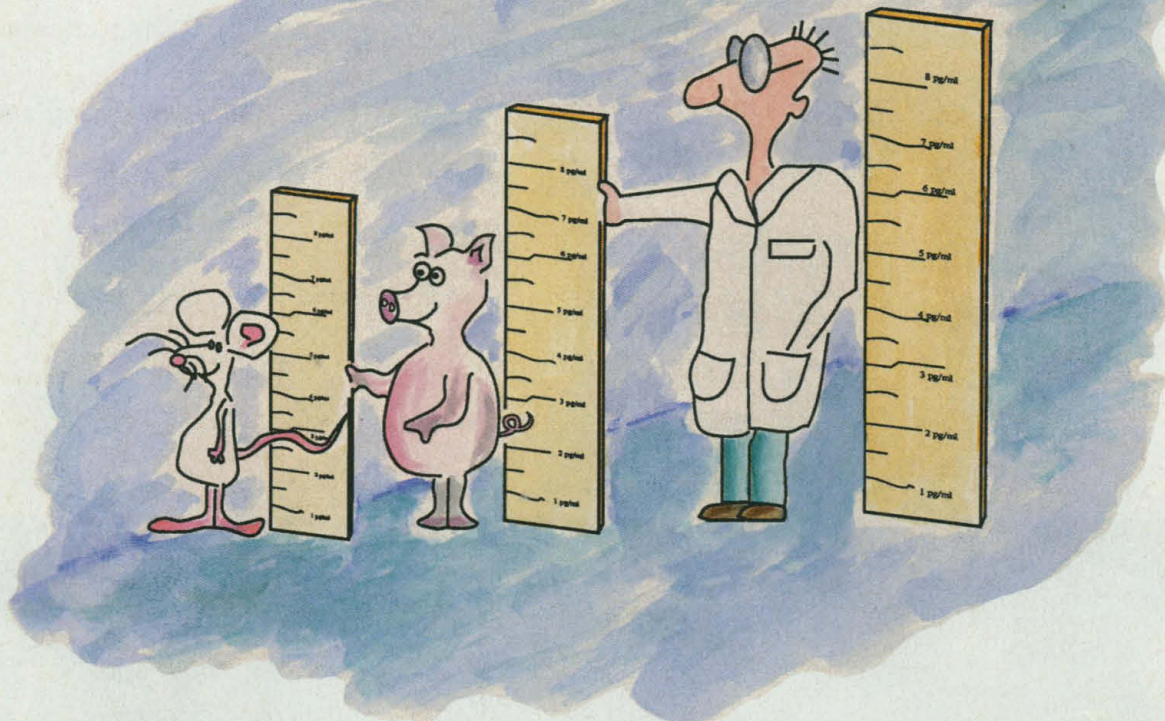
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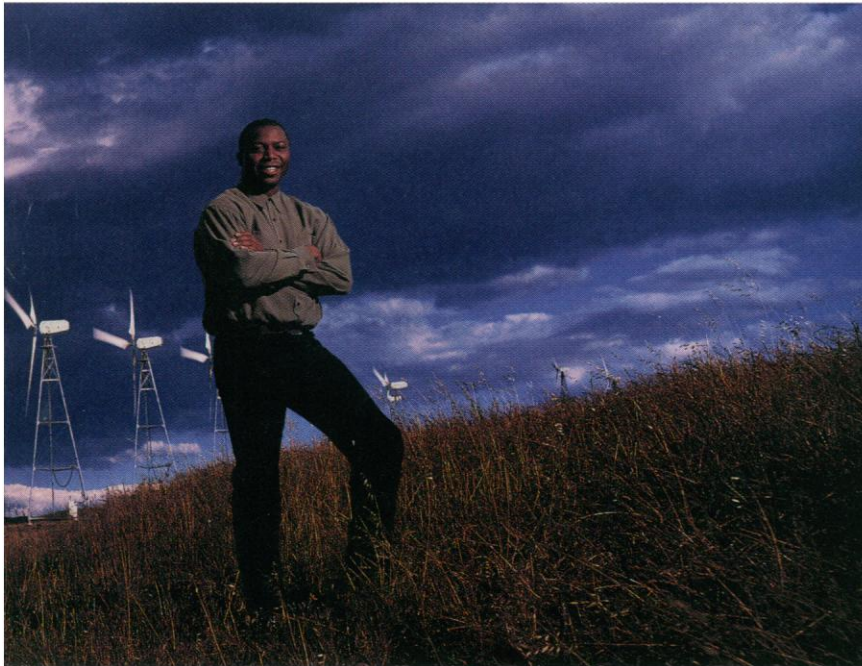
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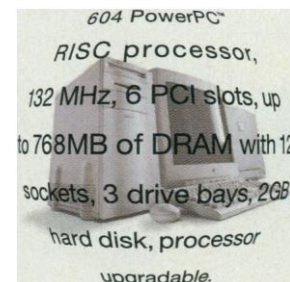
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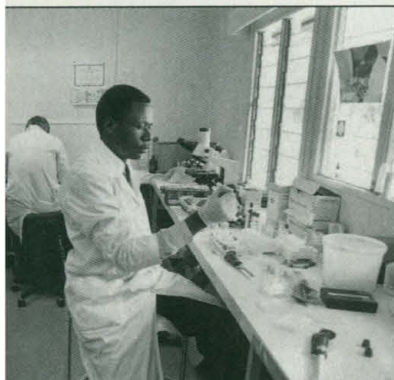
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Firing electrons through
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Simulation of highly turbulent compressible convection showing the vorticity (localized spin) of fluid motions concentrated into an evolving network of vortex tubes and rings near the upper surface. Such high-resolution fluid modeling of solar convection is now possible with

parallel computer systems. See page 1370 and the special section on computational fluid dynamics beginning on page 1353. [Simulation: D. Porter and P. Woodward on Cray T3D at Pittsburgh Supercomputing Center. Imaging: N. Brummell and D. Porter]



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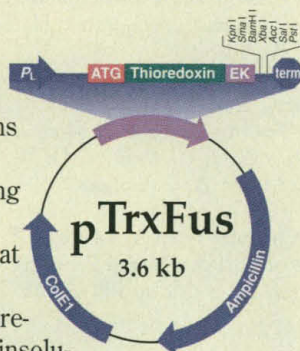
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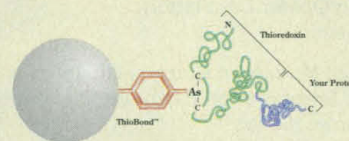


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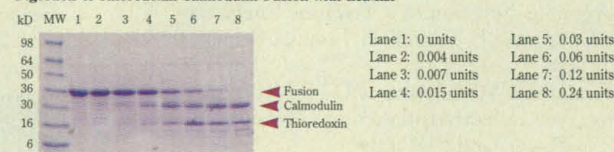
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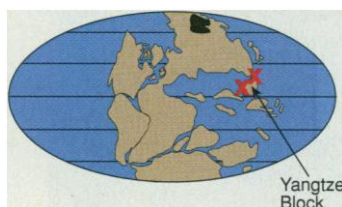
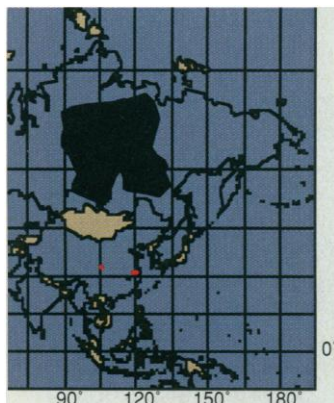
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Giving them the slip

What makes adhesive tape stick better to some surfaces and not to others? Peeling is normally thought to be the way in which an adhesive is separated from its substrate, so adhesion strength should be proportional to surface free energies. Newby *et al.* (p. 1407) found that a transparent tape peeled off of a fluorocarbon surface less readily than for a corresponding hydrocarbon surface, despite the lower surface free energy of the fluorocarbon surface. These surfaces were silanes bearing different functional groups that were grafted onto silicon substrates. They also observed a fingered pattern in the region of adhesive failure and suggest that interfacial slippage at the adhesive interface may govern adhesive strength.

Volcanic extinction?

The most severe extinction in Earth's history was at the Per-



mian-Triassic boundary, 250 million years ago. One of the most massive episodes of volca-

Tumor suppressor gives pause

Patients with von Hippel-Lindau (VHL) disease are predisposed to a variety of cancers, including kidney cancer, and have been shown to carry germ-line mutations in the VHL gene. The wild-type VHL protein is thought to function as a tumor suppressor, but its exact cellular role has remained elusive. Duan *et al.* (p. 1402), Aso *et al.* (p. 1439), and Kibel *et al.* (p. 1444; see the Perspective by Krumm and Groudine, p. 1400) show that wild-type VHL inhibits the activity of a transcription elongation factor, Elongin, which normally functions to prevent pausing by RNA polymerase II during transcription. VHL mediates this inhibition by binding to Elongin's two regulatory subunits. The binding site on VHL includes a region that is frequently mutated in kidney cancer, suggesting that this interaction is important for its tumor suppressor function.

nic activity in Earth's history also occurred then, the Siberian flood basalts. Renne *et al.* (p. 1413) now provide a tantalizing chronologic link between these two events. They used argon-40-argon-39 dating to show that the age of volcanic rocks from southern China that mark the paleontologic boundary is indistinguishable (errors of a few hundred thousand years) from ages obtained in the same laboratory for the inception of the massive flood volcanism.

Fully connected

Surfactants can form a variety of aggregates (micelles) depending on their concentration. The viscosity of dimeric or trimeric surfactants, with two or three chains, increases very rapidly at low surfactant concentrations, and this has been attributed to branching of the micelles leading to a three-dimensional network. Such branching has also been predicted by calculations, but direct experimental evidence for branched micelles has not so far been obtained. Danino *et al.* (p. 1420) present transmission electron micrographs which show that trimeric surfactants can form such a branched network.

Interacting GAPs

Guanosine triphosphatases (GTPases) can act as molecular switches in various intracellular reactions. Two GTPases in *Escherichia coli* are thought to control protein targeting to the plasma membrane. Powers and Walter (p. 1422) changed the nucleotide specificity of each of the proteins so that instead of hydrolyzing GTP, they could hydrolyze xanthosine triphosphate. They then showed that the two GTPases interact with one another such that each protein stimulates the GTPase activity of the other protein—thus they act as mutual GTPase activating proteins, or GAPs. This control of reaction cycles by GTPases physically and temporally links both the activity and the inactivation of a participant in a reaction cycle.

TRAF traffic

The activation of members of the tumor necrosis factor (TNF) superfamily of receptors initiates an inflammatory response. TRAF (TNF receptor-associated factor) proteins are putative effectors involved in TNF signaling. Rothe *et al.* (p. 1424) examined the requirement for several TRAF proteins in the

TNF-R2 and the CD40 signaling pathways that activate nuclear factor κ B (NF- κ B). They find that TRAF2 is a common mediator of both TNF-R2 and CD40 signaling.

A matter of timing

Gene inactivation in mice has been targeted to particular cell types with the Cre/loxP recombination system of bacteriophage P1. Kühn *et al.* (p. 1427) have now used the inducible promoter of the mouse *Mx1* to control the expression of a Cre recombinase transgene. The *Mx1* gene, which is activated in response to viral infections, can be activated at a particular time in development in differentiated cells by application of interferon (IFN) α , IFN- β , or an IFN inducer. They used this method to delete the DNA polymerase β gene in 8-week-old mice. Deletion was nearly complete in the liver and nearly complete in lymphocytes a few days after injections.

Critical for centromeres

In the fission yeast *Schizosaccharomyces pombe*, centromeres, telomeres, and silent mating-type loci are transcriptionally silent. The *swi6*⁺ gene encodes a chromodomain protein that represses transcription at these structures which make up heterochromatin in this yeast and that is required for proper chromosome segregation during cell division. Ekwall *et al.* (p. 1429) have now localized the Swi6 protein to centromeres, telomeres, and silent mating loci. They also show that mutations in *swi6* cause the centromeres to lag on the spindle at anaphase, which results in chromosome loss.

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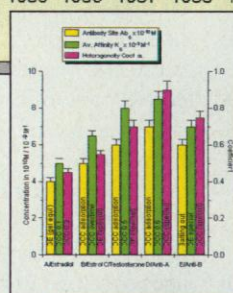
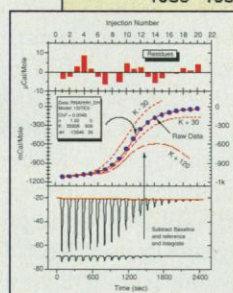
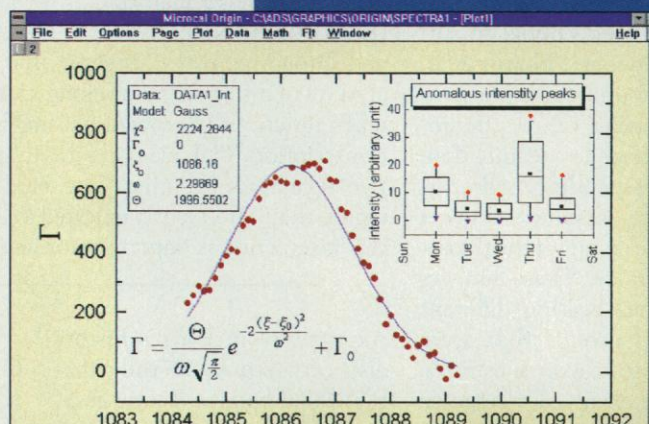
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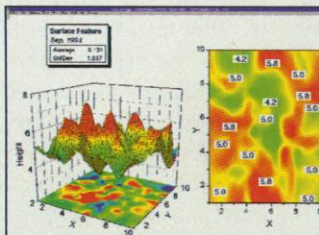
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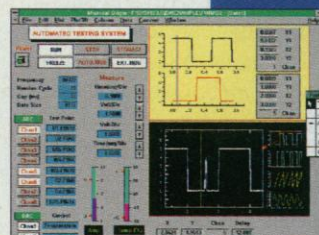


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600	600	600	600
700	700	700	700
800	800	800	800
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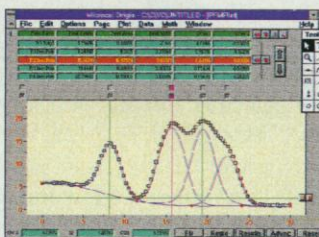
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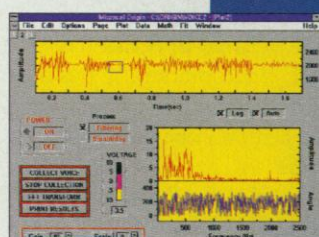
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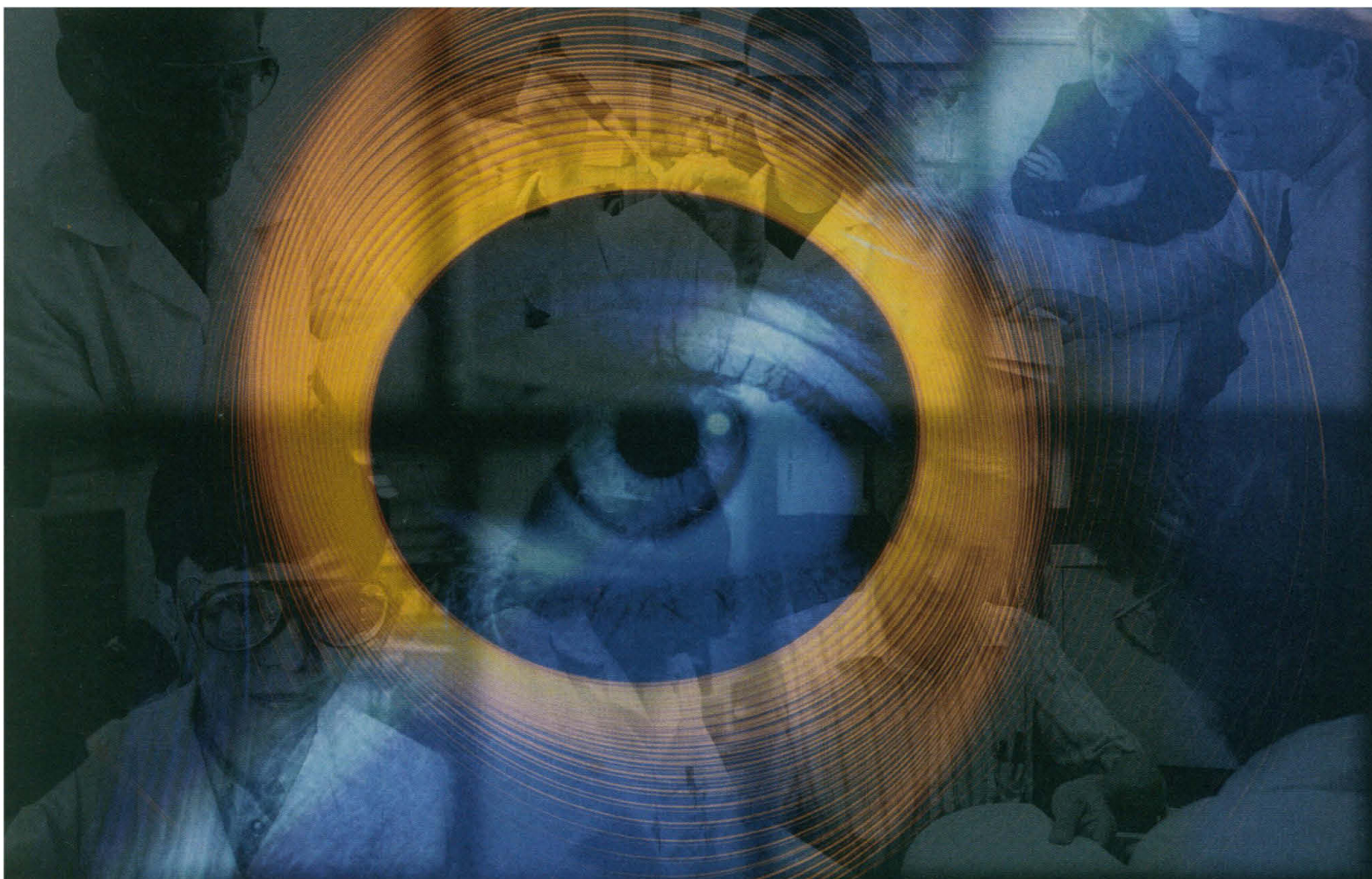
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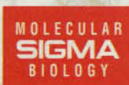


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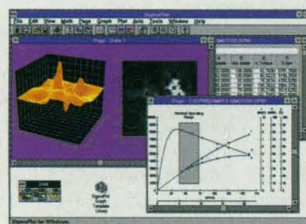
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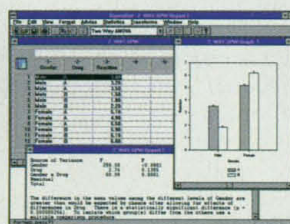
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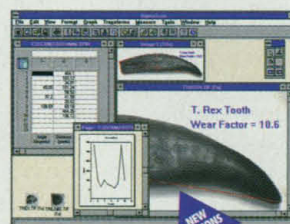
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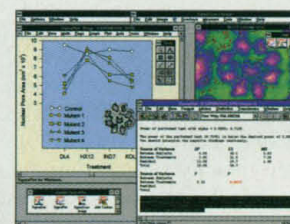
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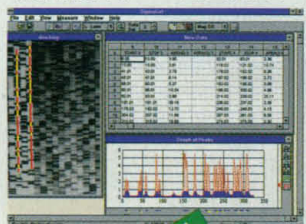
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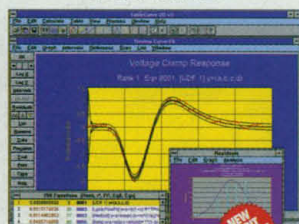
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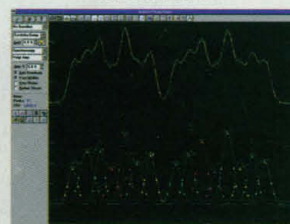
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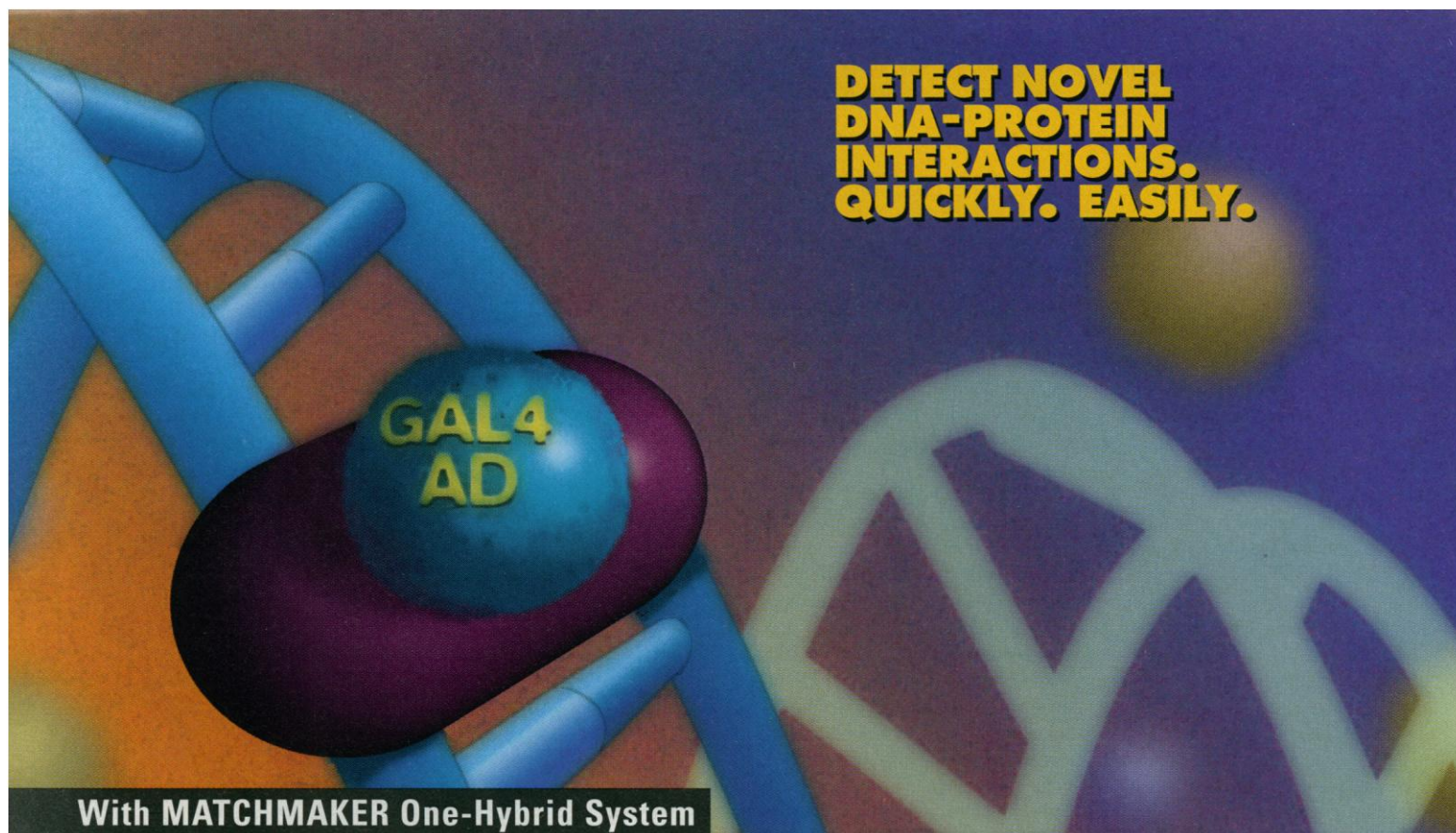
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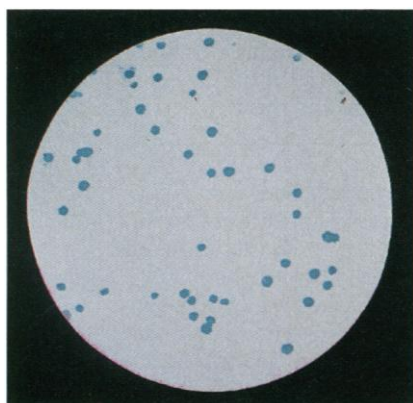
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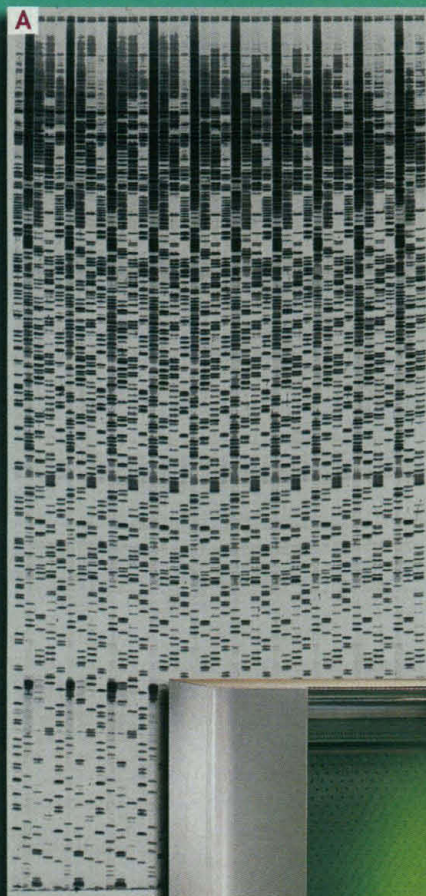
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62 x 33 cm
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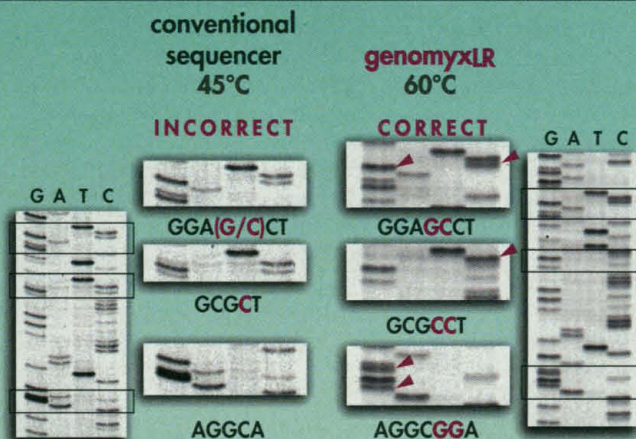
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Panel A: Long read, high resolution Differential Display data provided by Drs. Lidia Averboukh and Arthur Pardee, Division of Cell Growth & Regulation, Dana Farber Cancer Institute. Samples run on genomyxLR (2.5 hr, 100 W, 3 kV, 50°C, HR-1000™ 4.5% Denaturing gel). Data represent display patterns under different RT-PCR conditions using total cellular RNA from LNCaP-FGC prostate carcinoma cell line. All reactions performed with the GenHunter RNAimage™ Differential Display Kit.

Panel B: Long read, high resolution Differential Display patterns of total cellular RNA from HeLa and transformed rat fibroblast cells using GenHunter RNAimage Differential Display Kit. Samples run on genomyxLR (2.5 hr, 100 W, 2.7 kV, 50°C, HR-1000 6% Denaturing gel). Data provided by GENOMYX Corporation.

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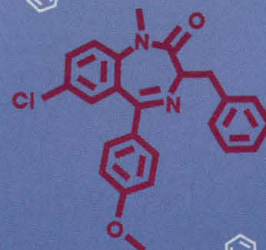
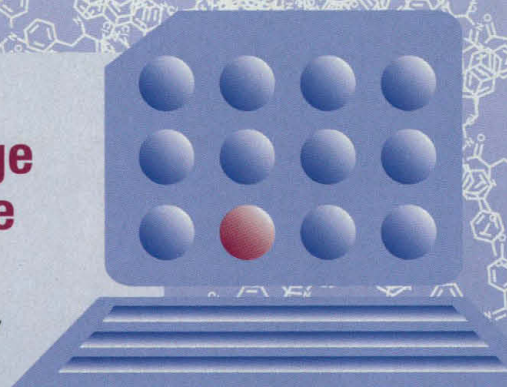
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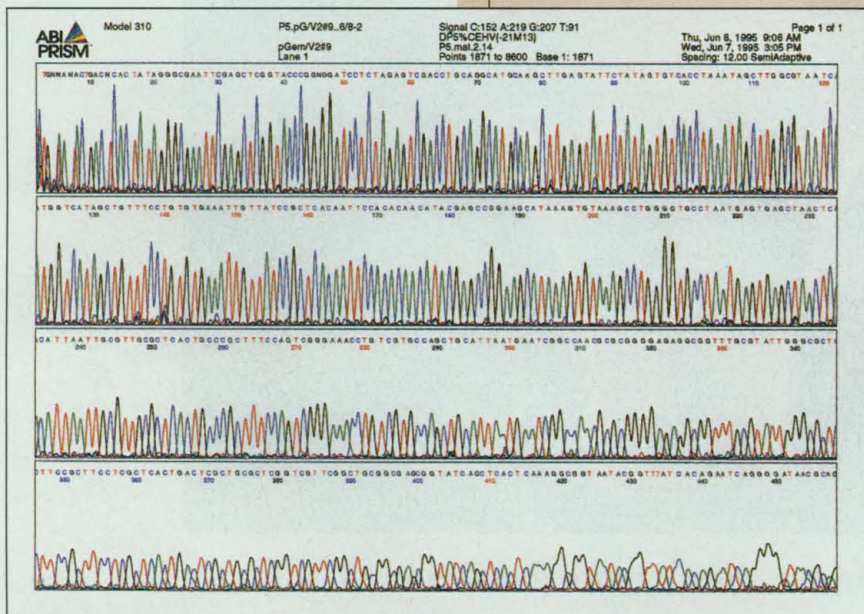
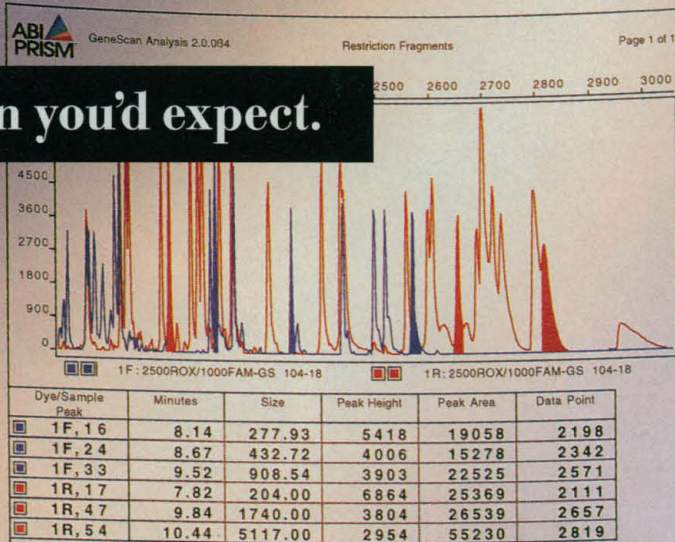
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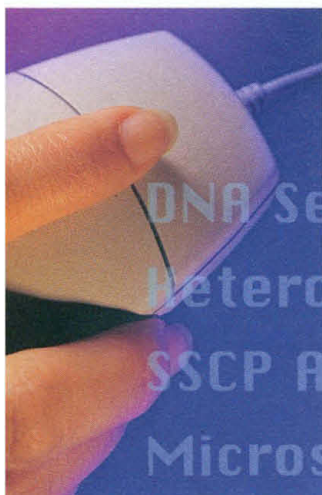
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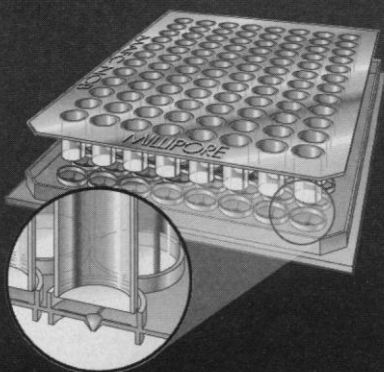
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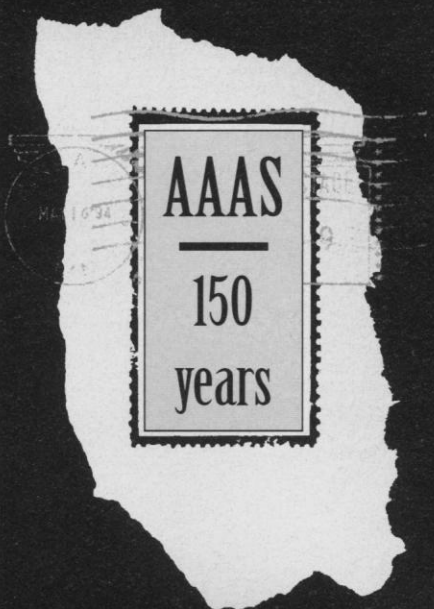
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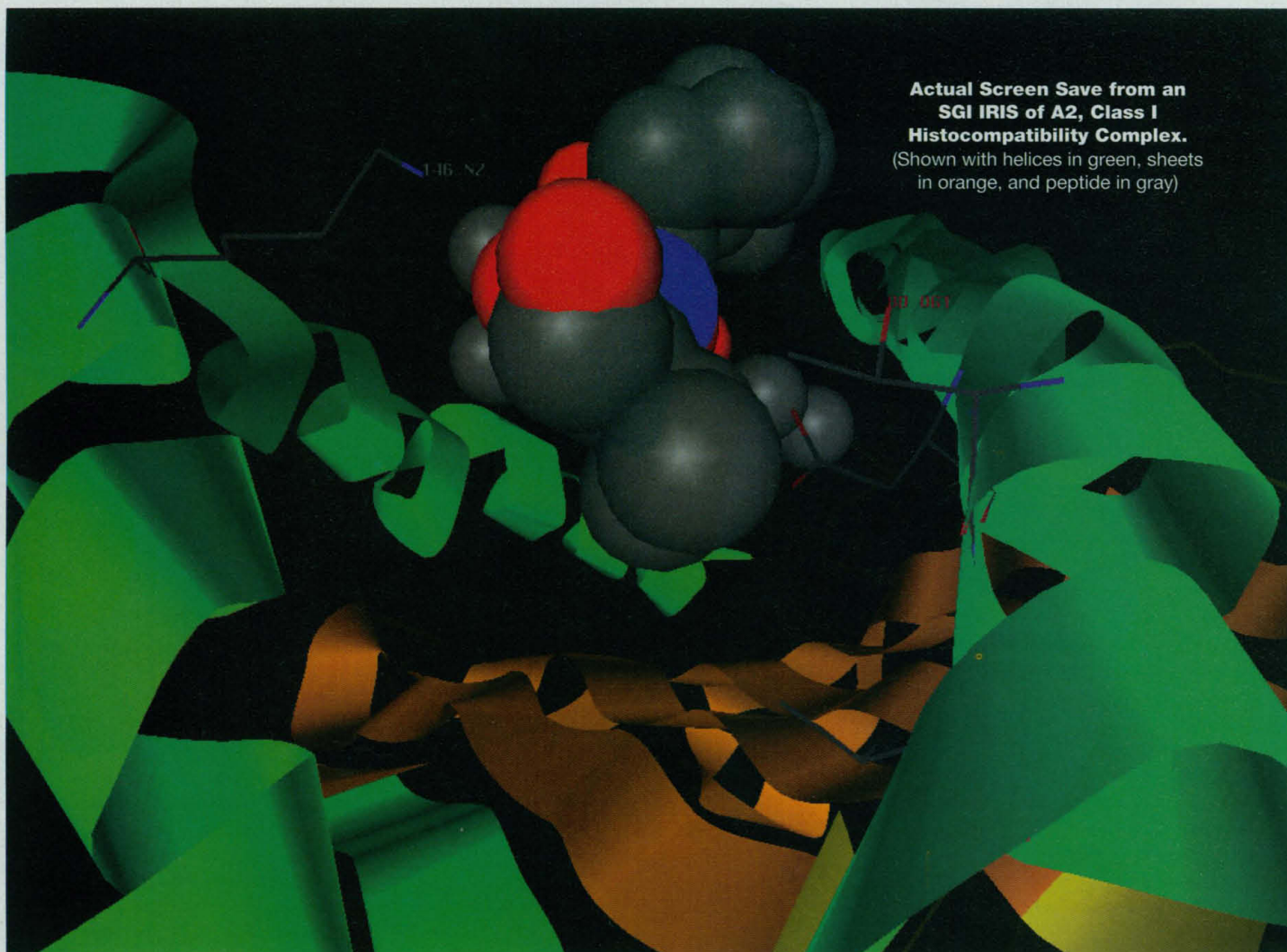
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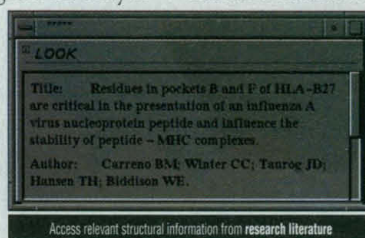
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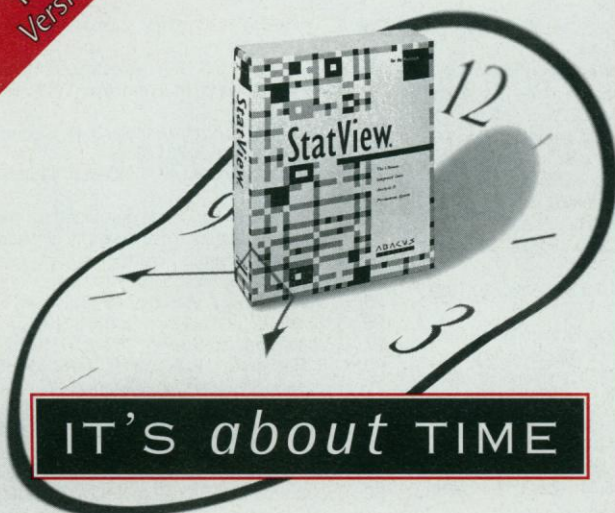
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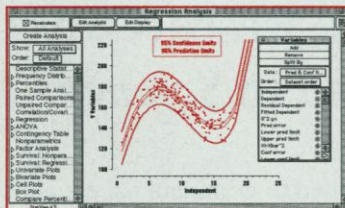
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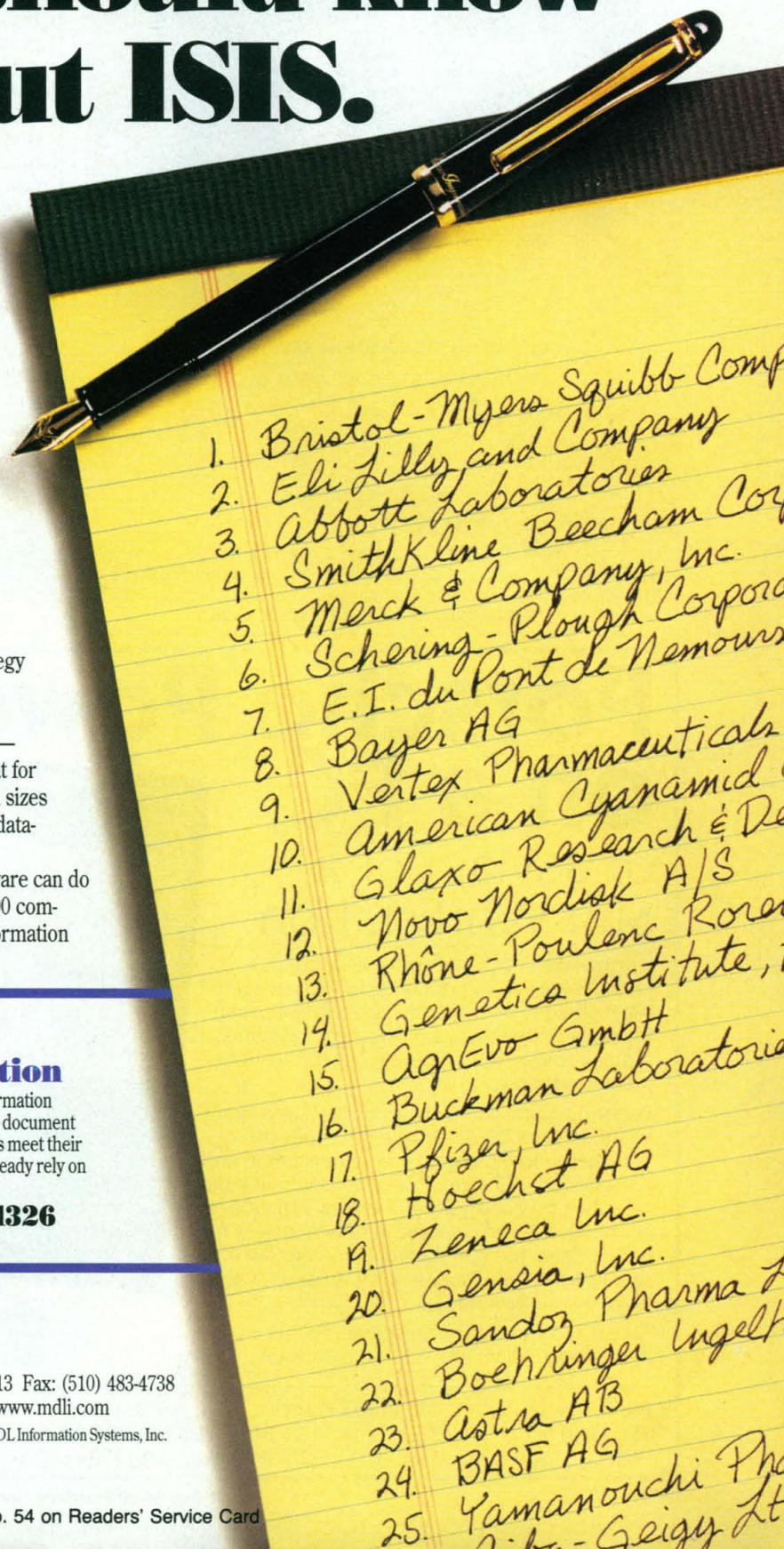
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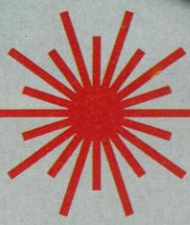
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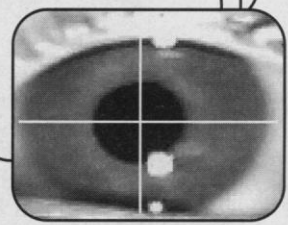


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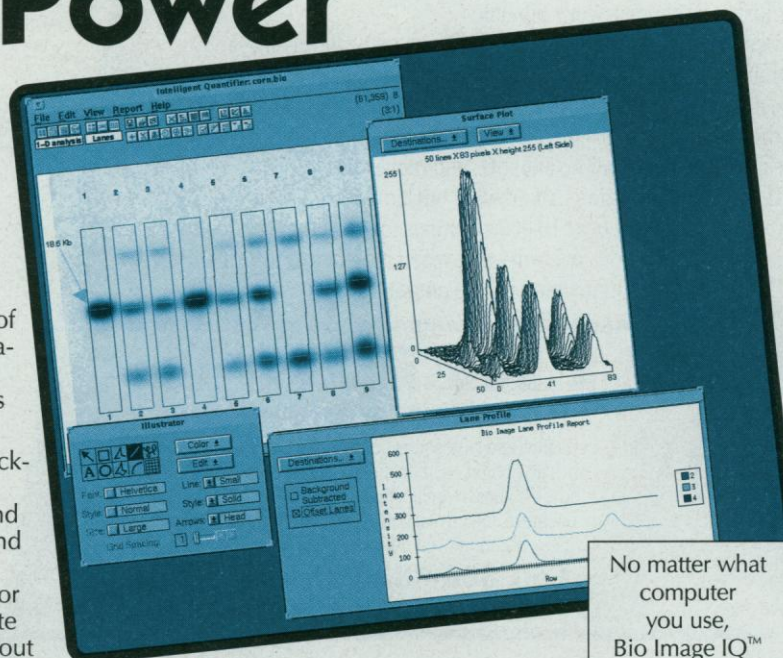
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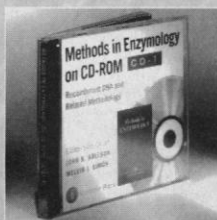
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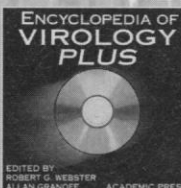
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