

Bands without Rock and Roll

Marketplace is a regularly occurring section in *Nature Structural Biology* that highlights a section of new and useful products of direct use to the broad sweep of scientists who are interested in structural biology. We also welcome suggestions for future features.

Electrophoresis has become an essential part of the armory of tools vital for the characterization, manipulation and purification of biomolecules. The fundamental importance of electrophoresis is underlined by the plethora of products available on the market that cater for the needs of the biologist trying to understand the structure and function of his/her favourite molecule(s). A selection of some of the newer innovations to appear on the market are featured in this month's Marketplace.

Understanding and characterizing the role of carbohydrates in biological systems¹ (where they often play a role in disease processes²) is becoming an ever more important arm of biological research. In response to this Oxford Glycosystems has further extended its range of products for supporting carbohydrate research. Their GlycoGel™ minigel system features an electrophoresis tank with a capacity for two pre-cast



Oxford Glycosystems' carbohydrate superhighway; the GlycoGel™ minigel system with the Signal™ 2-AA carbohydrate detection system.

gels and a choice of three different running buffers to optimize analysis of particular carbohydrate samples. The fluorescent label Signal™ 2-AA has, the company says, been developed to maximize the resolution between closely related polysaccharides and can be used in conjunction with the GlycoGel™ system. Indeed, the company offers a range of precast polyacrylamide gels for carbohydrate, DNA and protein applications and claims that smile-free, high resolution, and increased accuracy in separations can be obtained in less than 30 minutes using their new Tris-Tricine gel chemistries, optimized buffers and special glass gel cassette design. They also offer a specially formulat-

ed acrylamide—Duracryl™—with high mechanical strength (important for running extra thin gels) and high purity.

The new Burst-Pak™ gels and Otter™ gel caster from Owl Scientific, Inc. are designed to make pouring sequencing gels easier—yielding uniform and consistent results in as little as three minutes with minimal exposure to hazardous chemicals. The gel is distributed across the plate by capillary action, and surface tension—not tape—keeps the plates from leaking and the gels bubble free. Owl has also redesigned some of its existing electrophoresis systems. The single-sided vertical gel system, the Puffin™, now has a simplified setup, leak-proof sealing and enhanced heat dissipation. An optional built-in cooling chamber reduces run time and yields smile-free gels for accurate interpretation of results, the manufacturers claim. The Easy-Cast™ minigel and Gator standard horizontal systems now come with optional quick-disconnect buffer port fittings which allow buffer recirculation (thereby preventing ionic depletion and pH gradients) as well as stopping buffer leakage.

Being able to detect that valuable sample you just ran on the gel is as important as the gel technology itself. The Fastsilver™ reagent kit for protein and nucleic acids from Geno Technology, Inc. is capable of detecting as little as 1 ng of protein the manufacturers claim (using a 60–90 minute detection protocol), as well as leaving the background clear and producing sharper protein and nucleic acid bands.

The new separation medium—TreviGel™—from Cambio has, the company says, a number of advantages over agarose and acrylamide gels: it is capable of resolving DNA fragments ranging from 50–25,000 bp (TreviGel is available in two formulations, 500 and 5000, for increased sensitivity); the gel has

great strength, making it resistant to ripping and tearing; it is almost completely clear further increasing the sensitivity of detection; and it is non-toxic.



The Mini prep cell from Bio Rad provides for continuous elution preparative electrophoresis of proteins and nucleic acids.

Along with identification and quantitation, preparation and purification are also important functions of electrophoresis-based techniques. With this in mind Bio Rad have introduced the Mini Prep cell—a smaller version of their Model 491 system—which is suitable for purifying proteins and nucleic acids for sequence analysis, X-ray crystallography and antibody production. Individual ring-shaped bands migrate off the bottom of the gel column straight into the elution chamber, from where the protein is removed from the tank by a peristaltic pump. The Mini prep cell can isolate molecules that differ in molecular weight by as little as 2%, the manufacturers claim.

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