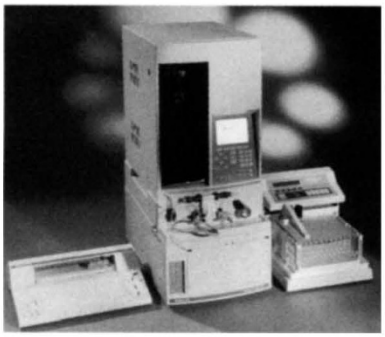
Purity and accuracy in 3D

Marketplace is regularly occurring section in *Nature Structural Biology* that highlights a selection 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.

Purity—of the material under study, of the reagents used in experimental protocols and so on—is of vital importance for the success of experiments in most all areas of scientific research. With this in mind **Beckman** now introduces a line of protein purification workstations—the BioSys™ 500 Series. Any number of experimental protocols require pure protein samples and these workstations aim to provide purification suitable for the initial stages of protein analysis. The system delivers buffer from microlitres to 30 ml min^{-1}, with an upper pressure limit of 2500 psi. Premature pump failure in the presence of very high strength aqueous buffers is prevented by a unique piston seal on each pump, it is claimed. The machine offers a wide range of operational modes and the selection valves offer up to four different buffers per pump.



Beckman's BioSys™ 500 protein purification workstations.

An important requirement of any purification process must be knowing the concentration of the of the material under study. **Promega** presents the Quantify™ protein assay system which provides lyophilized reagents in a 96-well format for fast, sensitive quantitation of proteins in a range of solutions. This is possible, the manufacturers say, because the assay shows decreased interference from reducing agents and detergents. Not only that but recombinant proteins expressed in inclusion bodies can be quantitated without the need for detergents or chaotropic agents. The assay can be carried out in less than 10 minutes and has an effective sample concentration range of 0.2–10 $\mu g/ml^{-1}$.

Of course, determining the concentration of a protein sample requires that the sample itself be delivered as accurately as possible. And where many samples have to processed and/or there are numerous steps in the experimental protocol efficiency in repetitive pipetting procedures is of considerable utility. **Bibby Sterlin Ltd** present their new range of ergonomically designed pipettors, including such features as: plunger action with minimal thumb movement; convenient tip ejection without the need to adjust hand grip; a volume adjustment dial set in the side of the barrel for easy visibility; and positive positioning at set volume increments. Both variable, fixed volume and multichannel (4, 8, or 12) pipettors are available (with capacities from 0.5 µl to 5 ml, 5 µl to 5 µl and 5–50/50–250 µl respectively)

'Accurate and ergonomic': the Bibby Sterlin range of pipettors.

and imprecision is reported to be below 0.3% for dispensing volumes of 100ul, and is under 0.8% for volumes down to 10 µl.

With protein in hand the next step—and the bottle-neck for X-ray crystallographers—is growing crystals that diffract well. The Surf detergent screening kit™ from **Hampton Research** allows the rapid and convenient evaluation of 24 detergents for their ability to influence the all-important process of crystallisation—for both soluble and membrane proteins. The kits are preformulated so that simple pipetting is all the is required for the screen, which uses less than 100 µl of sample.

Once the three-dimensional structure of the molecule of interest has been determined the ability to view the image in three dimensions is essential. While this is easy to achieve on the computer screen presenting such three-dimensional images to a larger audience presents a considerable logistic headache. And as knowledge of molecular systems becomes more advanced being able to present three-dimensional images that illustrate the dynamical behaviour of molecules, either in isolation or as complexes is ever on the increase. **Edric Audio Visual Ltd** provide an affordable large-screen, three-dimensional video projection system, embodied by the VRex 3-D range, for displaying either static or full motion three-dimensional video images. Rather than using the superimposed green and red images (so beloved of B-movies), the VRex 3-D system uses a single image which is polarized in alternate horizontal lines. The VR-1000 LCD projection panel, for example, offers 640 X 480 pixel resolution, a palette of over a million colours and is compatible with Apple Macintosh and PC-based computers (Sun, SGI and IMB workstation support is under development).

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