



What's new at Hamburg?

When you enter EMBL's oldest Outstation these days, you're likely to bump into somebody carrying boxes from one end of the building to the other. To find the person you need you may have to cross the parking lot over to Siberia 1 or Siberia 2 – container complexes that have been set up to house people's offices as the EMBL building undergoes surgery.

The renovations have been necessary, says Head of Outstation MATTHIAS WILMANN, because of the growing need in biology for synchrotron radiation facilities. The number of protein crystallographers at the beamlines has swelled immensely over the last few years. New structural genomics initiatives such as "SPINE" will put even more demands on existing beamlines. And there are concrete plans to dramatically improve the facilities for biologists at the German Synchrotron Radiation Facility (DESY), the Outstation's host. The Director General of DESY, Albert Wagner, has announced that by 2007, the DESY's "Petra" ring – a 2.3-kilometer instrument built in the 1980's – will be exclusively devoted to producing synchrotron radiation. This means that

the Outstation will soon be sitting at the most powerful source in Europe.

"Synchrotron radiation is seen as one of the most significant methods of obtaining information about the three-dimensional structure of proteins," Matthias says. "This is critical information in understanding basic biological processes, but also in designing new drugs. A number of activities at the Outstation are devoted to making the beamlines more accessible, more user-friendly, and geared towards higher throughput."

EHMKE POHL and his colleagues, for example, have been working hard to create an easy-to use interface so that biologists with little experience at the beamlines can obtain the best possible measurements. "We're seeing a trend that more and more biologists – people who aren't even really structural biologists – are bringing crystals here," says Ehmke.

The ARP/wARP software package created by Deputy Outstation Head VICTOR LAMZIN and ANASTASSIS PERRAKIS (formerly of the Grenoble Outstation and now at the National Cancer Institute in the Netherlands) continues to grow in

popularity. The method has virtually revolutionized the process of determining molecular structures from diffraction patterns. What used to be a very labor-intensive step in refining structural pictures can now, in many cases, be rendered almost automatic thanks to the software. This has been a crucial bottleneck to remove as researchers enter a high-throughput mode of structure determination.

And last but not least, "small-angle" studies at the beamlines offer researchers the possibility of investigating molecules and complexes that can't be crystallized. While the pictures that are produced through this method are not at atomic-level resolution, scientists such as MICHEL KOCH can use them to obtain critical information about shapes or dynamic properties of molecules in solutions – a context much like their natural state in cells. DIMITRI SVERGUN and his colleagues have been working on new algorithms to tease higher-resolution information out of this method. "There is more data in the information," he says. "The question is whether we're clever enough to interpret it."