Structure of unconventional myosins

Aim of the experiment was to get a complete data sets of the unconventional myosin myosinD from D. discoideum which diffracted to only 4.5 Å at ID14-4.

Background:

Myosins I's were the first unconventional myosins to be purified and they remain the best characterized. Although their exact cellular functions are still unclear, they have been implicated in various motile processes, including organelle translocation, ion channel gating and cytoskeletal reorganization. All members of the myosin I family, from yeast to man, have three structural domains: a catalytic head domain that binds ATP and actin; a junction or neck domain that connects head and tail and interacts with light chains, and a tail domain believed to be involved in targeting the myosins to specific subcellular locations. In D.discoideum there are at least 6 myosin I's known (another one is proposed to be a myosin I but is not yet fully sequenced) which belong to two different subgroups. We recently solved the structure of myoE and are therefore focusing now on myoD, a member of a different subgroup.

The crystals of the motor domain of myoD have dimensions .05 x .05 x .05 mm.

Experiments done:

We screened a lot of the myoD crystals, some of which diffracted at ID14-4 to 4.5 Å, and also new ones. The diffraction quality improved to 4Å with some spots further out, but the crystals died quit fast so we could not collect a complete data set. The crystals have therefore to be improved in size and diffraction quality.

HSPCP Crystalform 2

Background:

Peridinin-Chlorophyll *a*-Proteins (PCPs) allow dinoflagellates (a form of eucaryotic algae) to efficiently use carotenoids for light harvesting. The HighSalt PCP from *Amphidiunium carterae* is expressed at a lower level in comparison to the Main Form PCP (MFPCP), of which the structure is known. It also binds 25% less peridinin molecules what becomes apparent in the spectroscopic behaviour. Sequence alignment indicates a very similar structure of both complexes. Recently two different initial crystallization conditions have been found, and crystals have been frozen.

Experiments done:
During this allocation one crystal of very small size (20x10x10μm^3) but of very regular shape has been tested. It showed diffraction to about 7-8Å at the microfocus beamline and is probably primitive orthorombic.

Outloock:
Crystals have to be improved in size.