



	Experiment title: Progress in the structural studies of Mucins	Experiment number: MX-100 & MX-27
Beamline: ID14-1 ID-29	Date of experiment: 02/07/03, 06/03/03 & 28/09/02 30/06/03	Date of report: 29/08/03
Shifts: 4	Local contact(s): Dominique Bourgeois	<i>Received at ESRF:</i>
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Report:

Mucins are the major protein component of the mucous layers that protect the epithelial surfaces of our body. These proteins are very large and highly glycosylated. The most common mucin in the human intestine is MUC2 and we have recombinantly expressed the C- and N-terminal parts (885 and 1299 amino acids, respectively) of this protein for the purpose of crystallisation.

The crystals have suffered from small size and only given very weak diffraction to 3.6 Å at the very best (recorded at ID13, ESRF). Recent improvements in the crystallisation procedure have given us crystals of the same crystal-form that are slightly bigger, that is about 0.05 mm in size, and these were now screened at ID14-1. The resolution for these native N-terminal MUC2 crystals have improved to better than 2.6 Å. Two native data-sets were collected to 2.6 Å resolution. The space group is P4 with cell-parameters a=b=220 Å and c=150 Å.

No known structure with high sequence homology to any mucin have yet been published and further phase information is needed to solve the structure. Because of problems with ID29 (30/06/03 – 01/07/03) no MAD-data could be collected from the derivative crystals as planned. One single-wavelength gold-derivative dataset was instead collected at ID14-1, but

from the old-type small crystal giving weak data of poor quality to 3.6 Å resolution at the best.

As such this project is certainly going forward from twelve months ago – with an improved protein preparation yielding larger crystals with significantly better resolution. Since a number of crystals also survived heavy metal soaking, it looks promising that the project is maturing now and will be able to achieve experimental phases in the upcoming months. There were problems with ID29 last experiment and, as such, there was no possibility of collecting MAD diffraction data during the last experimental period.