

**Experiment title:**

X-ray crystallographic studies on the extracellular regions of cell surface receptors.

**Experiment number:**

LS-296(prelim)

**Beamline:**

D14-BL19

**Date of Experiment:**

from: 20-Oct-95 to: 22-Oct-95

**Date of Report:**

27-Feb-96

**Shifts:**

6

**Local contact(s):**

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*Received at ESRF:*

04 MAR 1996

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|                 |  |
|-----------------|--|
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**Report:**

The full structure/function implications of a MAD structure determination of a functional fragment of sialoadhesin are still being assessed, however, a preliminary abstract has been submitted to the IUCr XVII Congress and General Assembly in Seattle.

The structure of the amino-terminal Ig-like sialic acid binding domain of sialoadhesin.

A. May, R. C. Robinson, P. Bradfield, M. Vinson, P. R. Crocker, E. Y. Jones.

A functional fragment of Sialoadhesin, which recognises oligosaccharides terminating in NeuAc $\alpha$ 2-3Gal in N- and O-linked glycans, has been crystallised, and its structure has been solved to 2.6 Å resolution using MAD. Sialoadhesin is a microphage-restricted receptor containing 17 Immunoglobulin(Ig) -like domains, of which the N-terminal domain is necessary and sufficient to mediate sialic-acid dependent binding (1). The structure consists of a single V-set Ig domain, containing 115 amino acids. The characteristic Ig inter sheet disulphide bridge is replaced by an intra-sheet disulphide between the B and E strands. The structure most closely resembles a monomer of CD8 $\alpha$ , with loops surrounding the binding site identified by site-directed mutagenesis (2). Residues implicated in sialic acid binding are found on the G-F-C'-C'' face. This face also forms the interactive surface in CD2 and VCAM- 1, other cell surface members of the IgSF. For MAD phasing, data sets were collected at three wavelengths from a single crystal flash-frozen at 104K. The crystals belong to space group P3 121 with unit cell dimensions of a = b = 38.9, c = 152.6,  $\alpha = \beta = 90^\circ$ ,  $\gamma = 120^\circ$ , with one molecule in the crystallographic asymmetric unit.

(1) Nath., D., van der Merwe, P. A., Kelm, S., Bradfield, P. and Crocker, P.R. (1995) *J. Biol. Chem.* 270:26184-26191

(2) Vinson, M., van der Merwe, P.A., Kelm, S., May, A., Jones, E. Y., and Crocker, P.R. (1996) *J. Biol.Chem.* (In the press)