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| ESRF | **Experiment title:**<br>**High resolution structure of HLA-A*0201 in complex with MAGE-A4 antigen** | **Experiment number**:<br>TC-73 |
| **Beamline**: | **Date of experiment**:<br>from: 20.02.2000 to: 21.02.2000 | **Date of report**:<br>8.12.2000 |
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## Report:

The structure of HLA-A*0201 in complex with a decameric MAGE-A4 peptide has been determined by X-ray crystallography. MAGE-A4 is a protein that is exclusively expressed in solid tumours. The derived MAGE-peptide is transported to the cell surface by the MHC class-I molecule HLA-A*0201 where it is presented to cytotoxic T lymphocytes. Since the reported antigenic complex should be strictly tumour specific, it is considered to be an ideal target for immunotherapy [1,2]. The structure determined here reveals the antigenic surface of the complex and uncovers those peptide residues that most probably determine T cell receptor recognition.

After seperate expression of heavy chain and $\beta_2$-microglobulin in inclusion bodies, the components of the complex were reconstituted in the presence of the MAGE-peptide. We succeeded in obtaining small crystals of the heterotrimeric complex using seeding techniques. Thus, the highly focused X-ray beam at ID13 microfocus beamline was particularly helpful to collect a high quality data set, complete to 1.4 Å resolution, from only one crystal. The structure was solved by molecular replacement. As refinement could be carried

out anisotropically, it was possible for the first time to describe the movements of the bound peptide in detail. Refinement and analysis of the structure are in progress.

[1] van Baren, N., Brasseur, F., Godelaine, D., Hames, G., Ferrant, A., Lehmann, F., Andre, M., Ravoet, C., Doyen, C., Spagnoli, G.C., Bakkus, M., Thielemans, K., and Boon, T. (1999). Genes encoding tumor-specific antigens are expressed in human myeloma cells. *Blood* **94,** 1156-64.

[2] Castelli, C., Rivoltini, L., Andreola, G., Carrabba, M., Renkvist, N., and Parmiani, G. (2000). T-cell recognition of melanoma-associated antigens. *J Cell Physiol* **182,** 323-31.