ESRF	Experiment title: Enzymes of ribose metabolism**.** Ribokinase from *E. coli*. **.** *BAG: Uppsala (II)*	**Experiment number**: LS-1804 1a
Beamline: ID14-EH4	**Date of experiment**: from: 04 Nov 2000 to: 6 Nov 2000	**Date of report**: 23 Aug 2002
Shifts: 6	**Local contact(s)**: Dr. Sigrid STUHRMANN	*Received at ESRF:*

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Report:

Ribose must be phosphorylated before it can be used for the synthesis of amino acids or nucleotides. Addition of a phosphoryl group at O5 by ribokinase (33 kDa) provides the only documented entry point for utilisation of exogenous ribose, as well as a means of recycling sugar produced by nucleotide breakdown. We have previously reported that *E.coli* RK is activated by monovalent cations, and have also identified it's binding site, and we now continue with structural studies of different complex structures to deepen our understanding of product release.

During this trip, a dataset of RK in complex with it's product, ribose-5-phosphate, and ADP was collected. Also present in the crystal, was manganese ions and cesium ions, the first crucial for catalysis and the latter important for achieving full activity of the enzyme. A dataset of these crystals could be collceted to 2.0 A resolution. The structure was solved but upon inspection of the fo-fc difference map after the inital round of refinement, no density for the phopshate group joined to ribose could be seen so, unfortunately, the data proved to

be useless for us. There must have been a small amount of ribose presence in the ribose-5-phosphate batch we were using at the time, and as the affinity of RK to ribose preumingly is higher than for ribose-5-phosphate, ribose was found in the active site.