ESRF	Experiment title: **Pyranose 2-oxidase** *BAG: Uppsala (II)*	**Experiment number**: LS-2187
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Shifts: 1.2	**Local contact(s)**: Raimond Ravelli	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

Christina Divne, Royal Institute of Technology, Stockholm, Sweden, divne@biotech.kth.se

* Martin Hällberg, Uppsala University, Sweden, martin-h@xray.bmc.uu.se

Report:

Pyranose 2-oxidase (P2O) catalyses the oxidation of D-glucose and other aldopyranoses specifically at the C-2 position yielding the corresponding carbonyl sugars, during which O_2 is reduced to H_2O_2. P2Os are widely distributed among wood-degrading basidiomycetes, and play they an important feedback role in lignin degradation. P2Os from *Trametes* spp. are flavin-dependent homotetrameric enzymes of 270 kDa. It has been proposed that the main metabolic function of P2O is to provide peroxidases with hydrogen peroxide, or to reduce toxic quinones formed during the mineralisation of lignin. There is no structure available for any P2O, and to in order to understand the function of the enzyme, crystal-structure analysis of P2O from *Trametes multicolor* is being undertaken.

P2O crystallizes in either two P21 crystal forms with different cell constants. In the present experiment, we have collected three data sets: one Pt-MAD data set and two heavy-atom derivatives (Ta-cluster and Hg). The MAD dataset is of poor quality and could not be used for initial phasing. For the derivatives, the signal-to-noise is low (probably due to the large protein content of the asymmetric unit (270 kDa for one crystal form and 540 kDa for the other), and we have not yet succeeded in obtaining phase information using these derivatives. Thus, continued screening for useful derivatives is needed.