



	<b>Experiment title:</b> <i>Cerebratulus lacteus</i> hemoglobin mutants	<b>Experiment number:</b> MX394
<b>Beamline:</b> ID23-1	<b>Date of experiment:</b> from: 20/04/05 to: 21/04/05	<b>Date of report:</b> 26/07/05
<b>Shifts:</b> 3	<b>Local contact(s):</b> Dr. Laurent TERRADOT	<i>Received at ESRF:</i>
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## Report:

A very short hemoglobin (CerHb; 109 amino acids) binds cooperatively O<sub>2</sub> in the nerve tissue of the nemertean worm *Cerebratulus lacteus*, to sustain neural activity during anoxia. Sequence analysis suggests that CerHb tertiary structure may be unique among the known globin fold evolutionary variants. The X-ray structure of oxygenated (1.5 Å resolution) displays deletion of the globin *N*-terminal A-helix, an extended GH region, a very short H-helix, and heme solvent shielding based on specific aromatic residues. The heme-bound O<sub>2</sub> is stabilized by hydrogen bonds to the distal TyrB10-GlnE7 pair.

Here, we report the data collections on a Lys(E10)Trp mutant. The rationale of this mutation was to perturb the hydrogen bonding network, present between the heme and the protein, to investigate the gating role of GlnE7 for diatomic ligands. We collected one data set at 1.7 Å resolution for crystals in their deoxy form and one data set at 1.7 Å resolution for crystals in their oxy form. After data analysis, however, it resulted that the oxygenation of the crystals was not successful. The oxygenation experiment will be repeated soon.