	Experiment title:	Experiment number:
	Structure and Function of the primase RepB' of Plasmid RSF1010	MX-449
Beamline: ID 29	**Date of experiment**: from: 01/07/06 to: 03/07 /06	**Date of report**: 14.02.08
Shifts: 6	**Local contact(s)**: Dr. Petra PERNOT	*Received at ESRF:*

Names and affiliations of applicants (* indicates experimentalists):

Michael Engel*[,1], Sebastian Geibel[1], Erich Lanka[2] and Wolfram Saenger[1]

[1] Institut für Chemie/Kristallographie, Freie Universität Berlin, Takustr.6, D-14195 Berlin

[2] Max-Planck-Institut für Molekulare Genetik, Ihnestr. 73, D-14195 Berlin, Germany

Report:

The Plasmid RSF1010 is broadly distributed among gram-negative bacteria. It encodes for three essential replication proteins, RepC an initiator for opening the DNA double helix at the origin of replication (oriV), RepA a helicase that travels along a single strand of DNA and opens base pairs, and RpeB' a primase that follows the helicase and synthesizes RNA- or DNA-primers which are required by the DNA polymerase to produce new and identical DNA.

We expect to solve the structure of the primase in complex with DNA to understand the mechanism of the primer synthesis and the role of the primase in DNA replication and DNA repair. We were able to collect a dataset from the entire RepB' and one from its large domain in complex with a 27mer of its initiator DNA (GrDom+27mer), see table:

	RepB'	GrDom+27mer
Wavelength [Å]	0.931	0.9184
Space group	$P4_32_12$	$P4_32_12$
a,b,c [Å]	91.74, 91.74, 83.48	85.3, 85.3, 68.8
α=β=γ [°]	90	90
Resolution [Å]	50-1.98	19.0-2.7
I/σ(I)	19.5 (3.4)	16.5 (5.6)
Completeness [%]	99.8 (98.4)	97.5(95)
R_{sym} [%]	7.6 (53.3)	11.1 (39.4)
Reflections measured	209883	52296
Unique reflections	24819	7215
Multiplicity	8.5	7.2