

	<b>Experiment title:</b> Structural studies of trypanosomal sialidases and trans-sialidases	<b>Experiment number:</b> LS-1685
<b>Beamline</b> ID-14.3 ID-14.4	<b>Date of experiment:</b> April 21 <sup>st</sup> and June 23 <sup>rd</sup> , 2000	<b>Date of report:</b> August 28 <sup>th</sup> <i>Received at ESRF:</i>
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### Report:

The human parasite *Trypanosoma cruzi* (the ethiological agent of Chagas' disease) expresses a trans-sialidase (TcTS) in its infective stage. TcTS is implicated in key aspects of parasite/host-cell interactions, thus providing an ideal target for the development of inhibitors with potential therapeutic applications. We have crystallized a closely related enzyme, namely the natural (glycosilated) sialidase from *T. rangeli* (TrSA, 70% identity) and determined its 3D structure at 2.3 Å resolution. Our objective is to undertake a comparative mutagenesis and crystallographic study of TcTS and TrSA in order to understand the molecular basis of glycosyl-transfer and to provide a framework for structure-based drug design.

We have not succeeded so far to grow diffraction-quality crystals of TcTS. However, we have crystallized the recombinant (non-glycosilated) form of TrSA and, during this period, we have collected data at high resolution of the protein in complex with three different ligands. Data collection statistics is summarized in the table below. The crystallographic refinement of the three TrSA-ligand complexes is currently in progress.

Crystal form	Beam-line	$\lambda$ (Å)	No. of images	Space group	a (Å)	b (Å)	c (Å)	Data resolution (Å)	Data complet. (%)	R merge (%)	Multiplicity
TrSA-beta-methyl-galactoside	ID-14.3	0.931	150	P2 <sub>1</sub> (beta=89.6°)	74.44	106.41	169.85	30-3 Å	80	6.2	1.7
TrSA- beta-methyl-galactoside and N-acetylneuraminic acid	ID-14.4	0.933	180	P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub>	76.02	93.97	105.45	50-1.6	90	4.7	10.6
TrSA- beta-methyl-galactoside and lactose		0.933	105	P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub>	76.3	94.1	107.15	50-2.8	76	8.3	10

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