



# Full wwPDB X-ray Structure Validation Report

Dec 18, 2017 – 03:27 PM EST

PDB ID : 5H62  
Title : Structure of Transferase mutant-C23S,C199S  
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Deposited on : 2016-11-10  
Resolution : 1.66 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the  symbol.

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The following versions of software and data (see [references](#) ) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.7.2 (RC1), CSD as538be (2017)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20030736  
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : rb-20030736

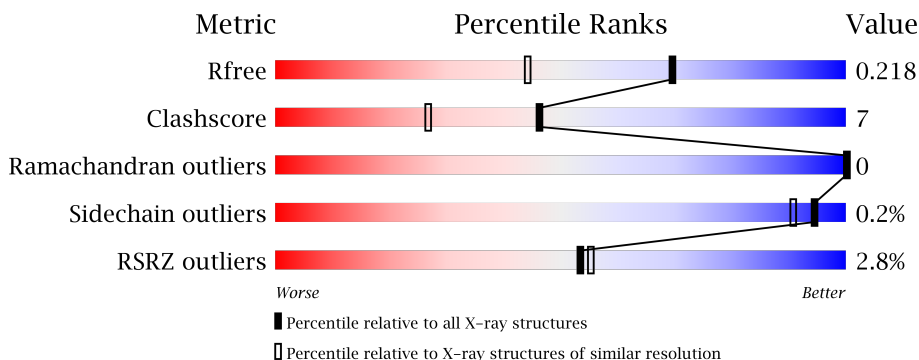
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.66 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	100719	1368 (1.66-1.66)
Clashscore	112137	1468 (1.66-1.66)
Ramachandran outliers	110173	1438 (1.66-1.66)
Sidechain outliers	110143	1438 (1.66-1.66)
RSRZ outliers	101464	1371 (1.66-1.66)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	348	 % 80% 7% • 12%
1	B	348	 3% 70% 16% • 14%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	EDO	A	401	-	-	-	X
2	EDO	A	402	-	-	-	X
2	EDO	B	401	-	-	X	X
3	MN	A	403	-	-	-	X

## 2 Entry composition [i](#)

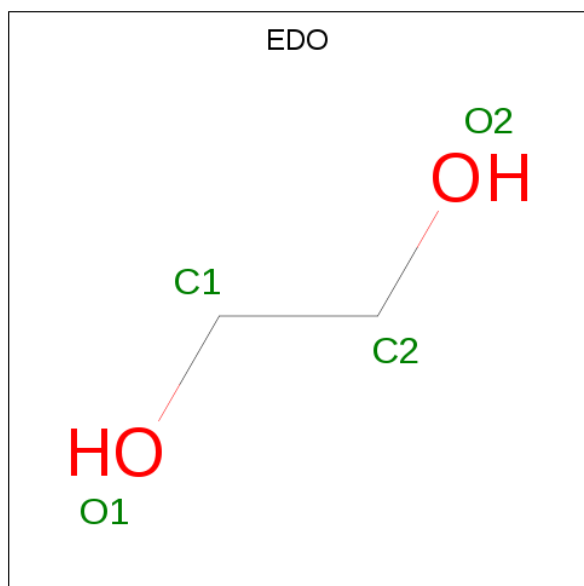
There are 5 unique types of molecules in this entry. The entry contains 5516 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Transferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	306	Total 2466	C 1576	N 422	O 461	S 7	0	0	0
1	B	301	Total 2428	C 1551	N 415	O 455	S 7	0	0	0

- Molecule 2 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).

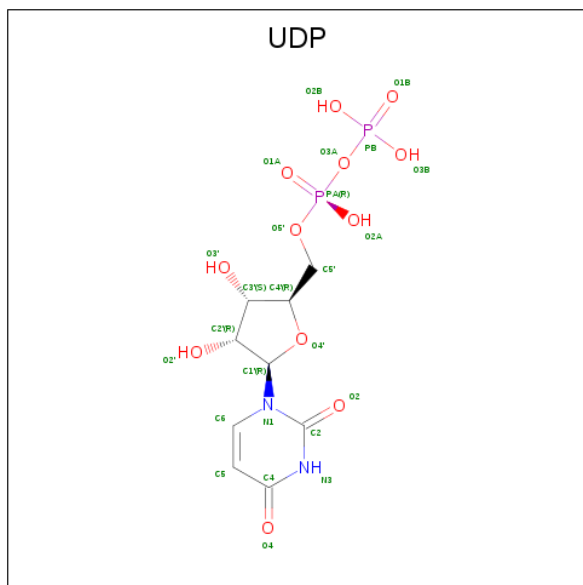


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
2	A	1	Total 4	C 2	O 2	0	0
2	A	1	Total 4	C 2	O 2	0	0
2	B	1	Total 4	C 2	O 2	0	0

- Molecule 3 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	1	Total Mn 1 1	0	0
3	A	2	Total Mn 2 2	0	0

- Molecule 4 is URIDINE-5'-DIPHOSPHATE (three-letter code: UDP) (formula: C<sub>9</sub>H<sub>14</sub>N<sub>2</sub>O<sub>12</sub>P<sub>2</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C N O P 25 9 2 12 2	0	0
4	B	1	Total C N O P 25 9 2 12 2	0	0

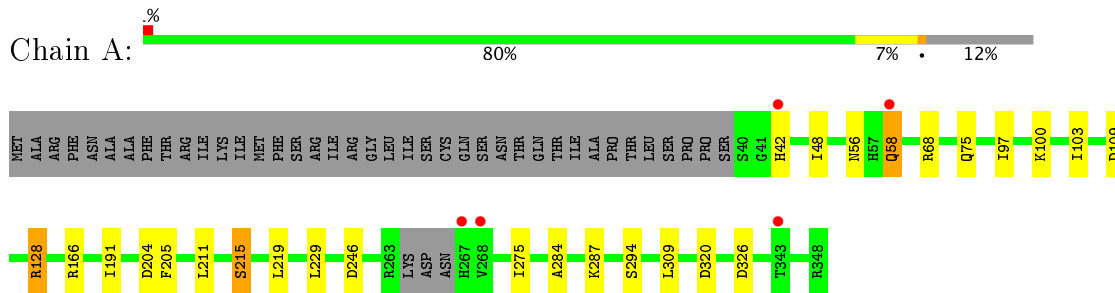
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	324	Total O 324 324	0	0
5	B	233	Total O 233 233	0	0

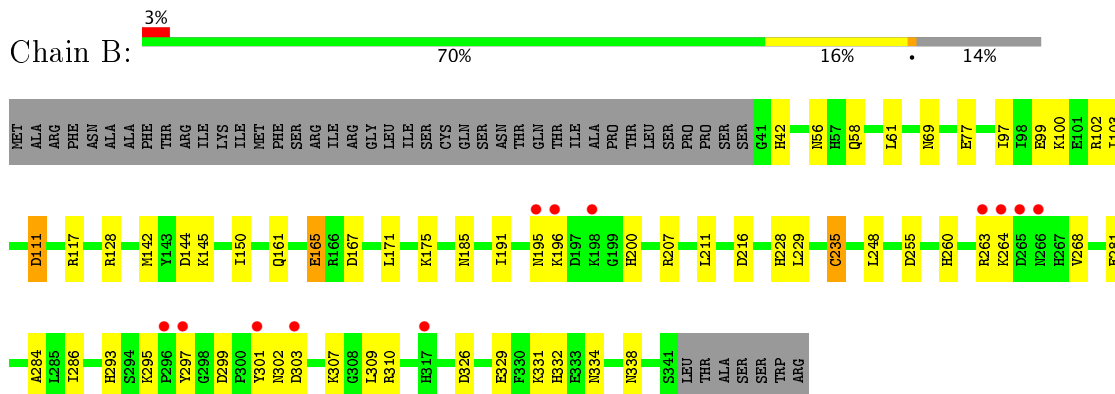
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Transferase



- Molecule 1: Transferase



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	49.59Å 143.63Å 52.73Å 90.00° 108.24° 90.00°	Depositor
Resolution (Å)	47.29 – 1.66 41.38 – 1.66	Depositor EDS
% Data completeness (in resolution range)	99.4 (47.29-1.66) 99.4 (41.38-1.66)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.24 (at 1.66Å)	Xtrriage
Refinement program	REFMAC 5.8.0189	Depositor
R, $R_{free}$	0.181 , 0.213 0.190 , 0.218	Depositor DCC
$R_{free}$ test set	4044 reflections (5.20%)	DCC
Wilson B-factor (Å <sup>2</sup> )	23.5	Xtrriage
Anisotropy	0.060	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 41.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	5516	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	29.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.94% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: UDP, MN, EDO

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	1.18	3/2526 (0.1%)	1.05	12/3417 (0.4%)
1	B	1.09	3/2487 (0.1%)	1.00	7/3364 (0.2%)
All	All	1.14	6/5013 (0.1%)	1.03	19/6781 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	B	0	1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	215	SER	CB-OG	-9.52	1.29	1.42
1	A	294	SER	CB-OG	-7.80	1.32	1.42
1	B	165	GLU	CD-OE1	6.94	1.33	1.25
1	B	235	CYS	CB-SG	-5.83	1.72	1.81
1	A	215	SER	CA-CB	5.73	1.61	1.52
1	B	99	GLU	CD-OE2	-5.60	1.19	1.25

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	166	ARG	NE-CZ-NH2	-9.98	115.31	120.30
1	A	204	ASP	CB-CG-OD2	-8.96	110.24	118.30
1	A	204	ASP	CB-CG-OD1	8.26	125.74	118.30
1	B	326	ASP	CB-CG-OD1	7.87	125.38	118.30
1	A	166	ARG	NE-CZ-NH1	7.67	124.13	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	320	ASP	CB-CG-OD1	7.16	124.74	118.30
1	A	246	ASP	CB-CG-OD2	-6.82	112.17	118.30
1	B	216	ASP	CB-CG-OD1	6.76	124.38	118.30
1	B	117	ARG	NE-CZ-NH1	6.67	123.64	120.30
1	A	58	GLN	CB-CA-C	-6.51	97.38	110.40
1	B	111	ASP	CB-CG-OD1	6.16	123.84	118.30
1	B	255	ASP	CB-CG-OD1	5.98	123.68	118.30
1	B	128	ARG	NE-CZ-NH1	5.66	123.13	120.30
1	B	77	GLU	OE1-CD-OE2	-5.57	116.62	123.30
1	A	68	ARG	NE-CZ-NH2	-5.49	117.55	120.30
1	A	128	ARG	NE-CZ-NH2	5.20	122.90	120.30
1	A	58	GLN	CA-CB-CG	5.17	124.78	113.40
1	A	246	ASP	CB-CG-OD1	5.13	122.91	118.30
1	A	75	GLN	N-CA-CB	5.02	119.63	110.60

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	264	LYS	Peptide

## 5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2466	0	2412	17	0
1	B	2428	0	2374	55	0
2	A	8	0	12	1	0
2	B	4	0	6	6	0
3	A	2	0	0	0	0
3	B	1	0	0	0	0
4	A	25	0	11	0	0
4	B	25	0	11	0	0
5	A	324	0	0	8	0
5	B	233	0	0	7	0
All	All	5516	0	4826	70	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (70) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:128:ARG:HD3	5:A:579:HOH:O	1.52	1.07
1:A:128:ARG:CD	5:A:579:HOH:O	2.07	1.00
1:B:103:ILE:HD11	1:B:228:HIS:CE1	2.00	0.97
1:B:207:ARG:NH1	2:B:401:EDO:H21	1.85	0.91
1:B:69:ASN:HB3	5:B:705:HOH:O	1.73	0.88
1:B:207:ARG:HH12	2:B:401:EDO:C2	1.87	0.87
1:B:207:ARG:HH12	2:B:401:EDO:H21	1.37	0.87
1:B:97:ILE:O	1:B:100:LYS:HG3	1.79	0.81
1:A:56:ASN:OD1	1:A:58:GLN:HB2	1.85	0.76
1:B:111:ASP:HB2	5:B:703:HOH:O	1.87	0.76
1:B:200:HIS:ND1	2:B:401:EDO:O1	1.90	0.74
1:B:103:ILE:HD12	1:B:229:LEU:HD21	1.69	0.74
1:B:145:LYS:HE2	1:B:150:ILE:HD13	1.72	0.70
1:B:211:LEU:HD23	1:B:235:CYS:SG	2.30	0.70
1:A:109:ASP:OD2	2:A:402:EDO:H22	1.97	0.65
1:B:195:ASN:O	1:B:196:LYS:HB2	1.97	0.65
1:B:56:ASN:OD1	1:B:58:GLN:HB2	1.99	0.62
1:B:200:HIS:CG	2:B:401:EDO:HO1	2.09	0.61
1:B:260:HIS:CE1	1:B:338:ASN:HD21	2.19	0.60
1:B:284:ALA:HB1	1:B:309:LEU:HD23	1.84	0.58
1:B:145:LYS:HD3	1:B:150:ILE:HD11	1.85	0.58
1:B:200:HIS:ND1	2:B:401:EDO:C1	2.68	0.57
1:A:97:ILE:O	1:A:100:LYS:HG3	2.04	0.56
1:B:144:ASP:CG	1:B:191:ILE:HG12	2.27	0.55
1:B:171:LEU:HD21	1:B:175:LYS:CE	2.36	0.55
1:B:103:ILE:CD1	1:B:228:HIS:CE1	2.83	0.55
1:B:211:LEU:CD2	1:B:235:CYS:SG	2.94	0.55
1:B:299:ASP:OD1	1:B:301:TYR:N	2.37	0.55
1:B:103:ILE:HD11	1:B:228:HIS:HE1	1.64	0.54
1:B:145:LYS:CE	1:B:150:ILE:HD13	2.37	0.54
1:B:171:LEU:HD21	1:B:175:LYS:HE3	1.90	0.54
1:B:150:ILE:HD12	1:B:293:HIS:O	2.09	0.53
1:B:61:LEU:HD21	1:B:248:LEU:HD12	1.91	0.53
1:B:171:LEU:HD21	1:B:175:LYS:NZ	2.24	0.52
1:B:260:HIS:HD2	5:B:539:HOH:O	1.93	0.52
1:B:42:HIS:HE1	5:B:706:HOH:O	1.92	0.52
5:A:746:HOH:O	1:B:310:ARG:HD2	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:281:GLU:HG2	1:B:286:ILE:HD11	1.92	0.51
1:B:103:ILE:CD1	1:B:229:LEU:HD21	2.39	0.49
1:A:191:ILE:HG12	1:A:205:PHE:HE1	1.77	0.49
1:A:211:LEU:HD13	1:A:275:ILE:HG21	1.95	0.49
1:B:111:ASP:CB	5:B:703:HOH:O	2.55	0.49
1:B:161:GLN:HB3	1:B:165:GLU:HG3	1.95	0.49
1:A:58:GLN:HG3	5:A:744:HOH:O	2.12	0.49
1:B:61:LEU:HD21	1:B:248:LEU:CD1	2.43	0.48
1:B:260:HIS:HE1	1:B:338:ASN:HD21	1.59	0.48
1:A:42:HIS:HD2	1:B:167:ASP:OD2	1.97	0.48
1:B:58:GLN:NE2	1:B:228:HIS:O	2.47	0.48
1:B:103:ILE:CD1	1:B:228:HIS:NE2	2.77	0.47
1:A:128:ARG:NH1	1:A:128:ARG:HG3	2.29	0.47
1:B:332:HIS:HE1	1:B:334:ASN:HD22	1.61	0.47
1:B:171:LEU:C	1:B:171:LEU:HD23	2.37	0.45
1:B:144:ASP:OD1	1:B:191:ILE:HG12	2.17	0.45
1:B:303:ASP:O	1:B:307:LYS:HB2	2.16	0.45
1:B:185:ASN:OD1	1:B:185:ASN:N	2.50	0.45
1:B:263:ARG:HG2	1:B:268:VAL:HG22	2.00	0.44
1:A:287:LYS:HD2	5:A:587:HOH:O	2.16	0.44
1:B:161:GLN:HB3	1:B:165:GLU:CG	2.47	0.44
1:A:103:ILE:HD12	1:A:229:LEU:HD21	1.99	0.44
1:B:329:GLU:HG2	1:B:331:LYS:HG3	2.00	0.44
1:B:69:ASN:CB	5:B:705:HOH:O	2.48	0.44
1:A:48:ILE:HD13	5:A:771:HOH:O	2.19	0.43
1:B:58:GLN:HB3	5:B:581:HOH:O	2.18	0.43
1:A:219:LEU:HD11	5:A:671:HOH:O	2.18	0.43
1:B:61:LEU:HG	1:B:102:ARG:HD2	1.99	0.43
1:A:326:ASP:OD2	1:B:302:ASN:OD1	2.37	0.42
1:B:145:LYS:HD3	1:B:150:ILE:CD1	2.48	0.42
1:B:295:LYS:HB2	1:B:297:TYR:O	2.21	0.41
1:A:284:ALA:HB1	1:A:309:LEU:HD23	2.03	0.41
1:A:215:SER:HB3	5:A:581:HOH:O	2.22	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	302/348 (87%)	296 (98%)	6 (2%)	0	100	100
1	B	299/348 (86%)	292 (98%)	7 (2%)	0	100	100
All	All	601/696 (86%)	588 (98%)	13 (2%)	0	100	100

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	270/307 (88%)	270 (100%)	0	100	100
1	B	266/307 (87%)	265 (100%)	1 (0%)	93	88
All	All	536/614 (87%)	535 (100%)	1 (0%)	94	91

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	142	MET

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	260	HIS
1	B	42	HIS

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Mol	Chain	Res	Type
1	B	260	HIS
1	B	334	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

### 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

### 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

### 5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 3 are monoatomic - leaving 5 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
2	EDO	A	401	-	3,3,3	0.27	0	2,2,2	0.47	0
2	EDO	A	402	-	3,3,3	1.32	1 (33%)	2,2,2	0.17	0
4	UDP	A	404	3	21,26,26	1.31	3 (14%)	22,40,40	1.87	2 (9%)
2	EDO	B	401	-	3,3,3	0.64	0	2,2,2	2.15	1 (50%)
4	UDP	B	402	3	21,26,26	1.30	2 (9%)	22,40,40	2.69	2 (9%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	EDO	A	401	-	-	0/1/1/1	0/0/0/0
2	EDO	A	402	-	-	0/1/1/1	0/0/0/0
4	UDP	A	404	3	-	0/12/32/32	0/2/2/2
2	EDO	B	401	-	-	0/1/1/1	0/0/0/0
4	UDP	B	402	3	-	0/12/32/32	0/2/2/2

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	404	UDP	C2-N3	-3.45	1.31	1.38
4	A	404	UDP	PA-O2A	-2.20	1.44	1.55
4	A	404	UDP	O4'-C1'	2.00	1.44	1.41
2	A	402	EDO	O2-C2	2.09	1.53	1.42
4	B	402	UDP	PB-O1B	2.28	1.58	1.50
4	B	402	UDP	PB-O3A	4.05	1.66	1.60

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	401	EDO	O1-C1-C2	-3.03	90.34	112.08
4	A	404	UDP	O2'-C2'-C1'	-2.06	105.16	111.61
4	B	402	UDP	O3B-PB-O2B	4.35	125.17	107.61
4	A	404	UDP	C4-N3-C2	7.23	120.34	114.13
4	B	402	UDP	C4-N3-C2	10.94	123.53	114.13

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	402	EDO	1	0
2	B	401	EDO	6	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	306/348 (87%)	-0.08	5 (1%) 72 76	15, 24, 40, 80	0
1	B	301/348 (86%)	0.11	12 (3%) 39 40	17, 27, 54, 101	0
All	All	607/696 (87%)	0.01	17 (2%) 53 55	15, 25, 48, 101	0

All (17) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	265	ASP	9.1
1	B	297	TYR	8.3
1	A	267	HIS	4.9
1	B	296	PRO	3.8
1	B	195	ASN	3.3
1	B	301	TYR	3.0
1	B	264	LYS	3.0
1	B	317	HIS	2.9
1	B	263	ARG	2.8
1	A	42	HIS	2.7
1	B	196	LYS	2.4
1	B	303	ASP	2.3
1	B	266	ASN	2.3
1	B	198	LYS	2.2
1	A	343	THR	2.1
1	A	268	VAL	2.1
1	A	58	GLN	2.1

### 6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.



### 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

### 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
2	EDO	A	402	4/4	0.86	0.15	8.29	33,35,38,46	0
2	EDO	A	401	4/4	0.85	0.20	6.11	34,35,40,40	0
2	EDO	B	401	4/4	0.64	0.22	5.99	33,39,41,49	0
3	MN	A	403	1/1	1.00	0.09	2.95	19,19,19,19	0
4	UDP	A	404	25/25	0.98	0.09	-0.42	15,16,21,26	0
3	MN	A	405	1/1	0.97	0.10	-0.49	39,39,39,39	0
4	UDP	B	402	25/25	0.97	0.07	-1.02	17,21,33,40	0
3	MN	B	403	1/1	0.99	0.04	-2.36	24,24,24,24	0

### 6.5 Other polymers [i](#)

There are no such residues in this entry.