



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 7, 2024 – 05:13 pm BST

PDB ID : 8OS1  
Title : X-ray structure of the Peroxisomal Targeting Signal 1 (PTS1) of Trypanosoma Cruzi PEX5 in complex with the PTS1 peptide  
Authors : Napolitano, V.; Blat, A.; Popowicz, G.M.; Dubin, G.  
Deposited on : 2023-04-17  
Resolution : 2.10 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

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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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 : 1.8.4, CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.003 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

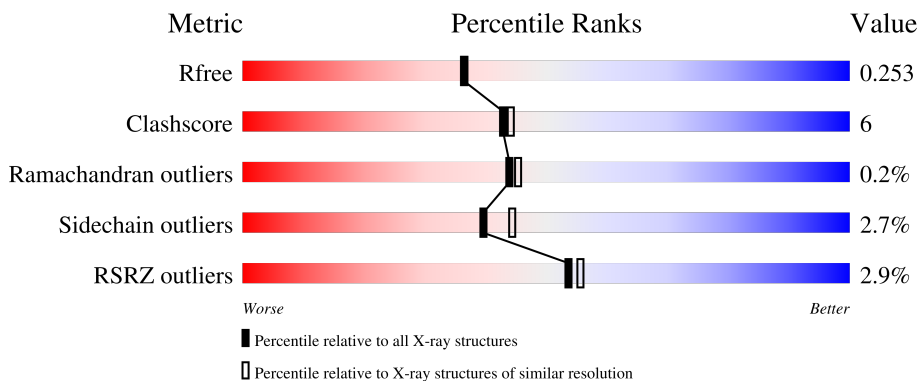
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.10 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))
$R_{free}$	164625	6234 (2.10-2.10)
Clashscore	180529	6893 (2.10-2.10)
Ramachandran outliers	177936	6839 (2.10-2.10)
Sidechain outliers	177891	6840 (2.10-2.10)
RSRZ outliers	164620	6234 (2.10-2.10)

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 of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. 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	B	323	 3% 82% 11% • 5%
2	A	323	 2% 82% 10% • 7%
3	C	5	 20% 100%
3	D	5	 20% 80% 20%

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
4	EDO	A	802	-	-	X	-
4	EDO	B	701	-	-	X	-
4	EDO	B	708	-	-	X	-

## 2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 5252 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 Peroxisome targeting signal 1 receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	B	306	2394	1496	428	453	17	0	2	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	346	MET	-	initiating methionine	UNP A0A7J6Y110

- Molecule 2 is a protein called Peroxisome targeting signal 1 receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	A	299	2408	1506	434	449	19	0	8	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	346	MET	-	initiating methionine	UNP A0A7J6Y110

- Molecule 3 is a protein called Peroxisomal targeting signal 1 (PTS1).

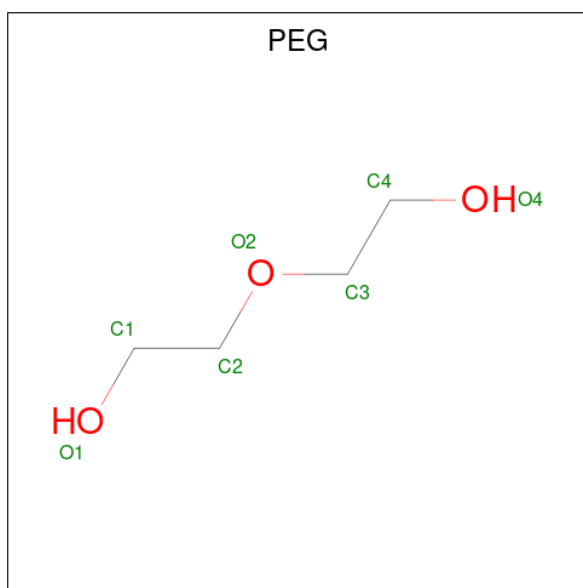
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	D	5	45	29	7	9	0	0	0
3	C	5	45	29	7	9	0	0	0

- Molecule 4 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
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0

- Molecule 5 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula:  $C_4H_{10}O_3$ ).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total C O 7 4 3	0	0

- Molecule 6 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total Mg 1 1	0	0

- Molecule 7 is 2-AMINO-2-HYDROXYMETHYL-PROPANE-1,3-DIOL (three-letter code: TRS) (formula:  $C_4H_{12}NO_3$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
7	A	1	8	4	1	3	0	0

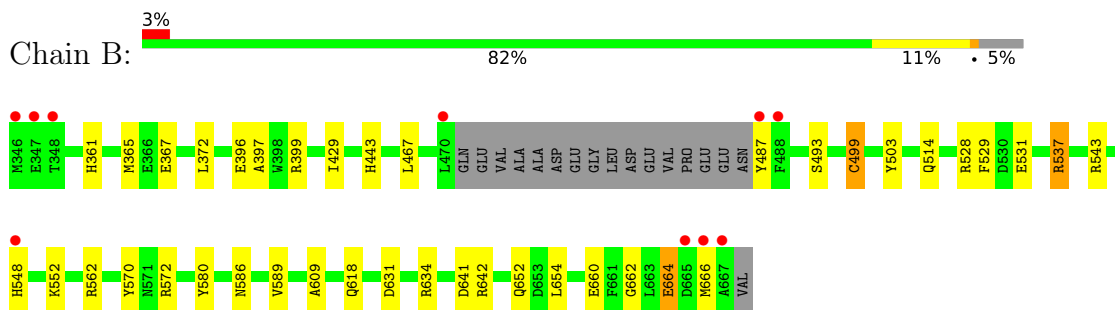
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	B	146	Total	O	0	0
			146	146		
8	A	131	Total	O	0	0
			131	131		
8	D	4	Total	O	0	0
			4	4		
8	C	7	Total	O	0	0
			7	7		

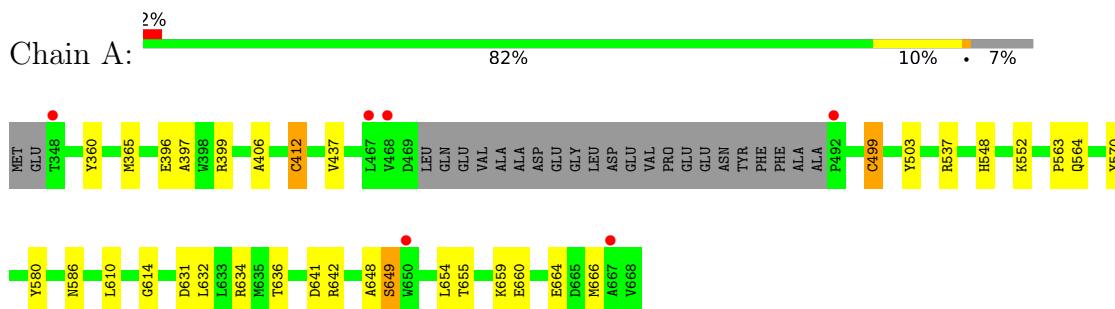
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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.

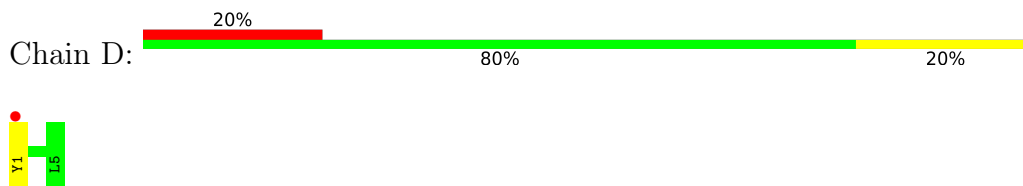
- Molecule 1: Peroxisome targeting signal 1 receptor



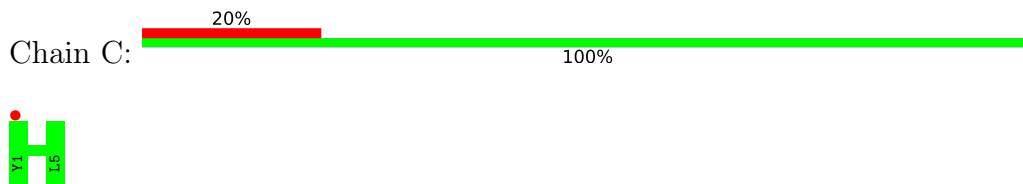
- Molecule 2: Peroxisome targeting signal 1 receptor



- Molecule 3: Peroxisomal targeting signal 1 (PTS1)



- Molecule 3: Peroxisomal targeting signal 1 (PTS1)





## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	129.33Å 69.94Å 71.11Å 90.00° 100.05° 90.00°	Depositor
Resolution (Å)	48.22 – 2.10 48.22 – 2.10	Depositor EDS
% Data completeness (in resolution range)	95.8 (48.22-2.10) 95.8 (48.22-2.10)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.63 (at 2.10Å)	Xtrriage
Refinement program	REFMAC 5.8.0258	Depositor
R, $R_{free}$	0.193 , 0.253 0.193 , 0.253	Depositor DCC
$R_{free}$ test set	1724 reflections (4.72%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	26.9	Xtrriage
Anisotropy	0.187	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.37 , 43.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	5252	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	31.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 12.43% 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

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PEG, TRS, MG, CME, 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	B	0.39	0/2439	0.70	0/3318
2	A	0.40	0/2447	0.71	0/3320
3	C	0.50	0/45	1.04	0/57
3	D	0.71	0/45	0.84	0/57
All	All	0.40	0/4976	0.71	0/6752

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
2	A	0	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	A	614	GLY	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	B	2394	0	2285	29	1
2	A	2408	0	2337	31	0
3	C	45	0	48	0	0
3	D	45	0	48	1	0
4	A	28	0	42	8	0
4	B	28	0	42	12	0
5	B	7	0	10	0	0
6	B	1	0	0	0	0
7	A	8	0	12	2	0
8	A	131	0	0	4	0
8	B	146	0	0	3	0
8	C	7	0	0	0	0
8	D	4	0	0	0	0
All	All	5252	0	4824	60	1

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 6.

All (60) 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)
2:A:365:MET:HE1	2:A:397:ALA:HB2	1.59	0.84
2:A:412:CME:H	2:A:412:CME:HZ3	1.47	0.80
1:B:365:MET:HE1	1:B:397:ALA:HB2	1.63	0.79
2:A:360:TYR:HE2	7:A:807:TRS:H22	1.48	0.78
1:B:528:ARG:C	4:B:708:EDO:H12	2.09	0.72
2:A:634:ARG:HB2	2:A:649:SER:OG	1.90	0.71
1:B:662:GLY:HA2	1:B:664:GLU:OE1	1.94	0.68
1:B:528:ARG:HH21	1:B:531:GLU:HG3	1.60	0.67
1:B:372:LEU:HD22	4:B:703:EDO:H22	1.78	0.66
2:A:548:HIS:CE1	4:A:802:EDO:H21	2.32	0.65
2:A:654:LEU:HD23	4:A:805:EDO:H22	1.80	0.64
2:A:642:ARG:NH2	2:A:660:GLU:OE2	2.30	0.64
2:A:552:LYS:HZ3	4:A:802:EDO:H11	1.63	0.63
1:B:642:ARG:NH2	1:B:660:GLU:OE2	2.34	0.61
2:A:548:HIS:HE1	4:A:802:EDO:H21	1.65	0.61
2:A:360:TYR:CE2	7:A:807:TRS:H22	2.33	0.61
2:A:537[B]:ARG:NE	8:A:902:HOH:O	2.34	0.60
1:B:528:ARG:HA	4:B:708:EDO:C1	2.32	0.59
1:B:529:PHE:N	4:B:708:EDO:H12	2.19	0.57
1:B:528:ARG:CA	4:B:708:EDO:H12	2.35	0.57
2:A:564[B]:GLN:H	2:A:564[B]:GLN:CD	2.10	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:499:CME:SD	2:A:503:TYR:HE2	2.32	0.53
1:B:609:ALA:HA	1:B:654:LEU:HD21	1.90	0.53
4:A:802:EDO:H21	4:A:810:EDO:H21	1.91	0.52
2:A:570:TYR:CZ	2:A:586:ASN:HB3	2.45	0.52
1:B:570:TYR:CZ	1:B:586:ASN:HB3	2.45	0.52
1:B:396:GLU:HG3	1:B:399:ARG:NH2	2.25	0.52
1:B:514:GLN:OE1	8:B:801:HOH:O	2.19	0.51
2:A:412:CME:HZ2	8:A:965:HOH:O	2.11	0.50
2:A:499:CME:CE	2:A:503:TYR:HE2	2.25	0.49
2:A:632:LEU:O	2:A:636:THR:HG23	2.13	0.48
2:A:396:GLU:HG3	2:A:399[A]:ARG:NH2	2.28	0.48
2:A:563:PRO:HD2	2:A:564[B]:GLN:OE1	2.13	0.48
1:B:487:TYR:O	2:A:499:CME:HZ3	2.14	0.48
2:A:537[B]:ARG:HG2	2:A:537[B]:ARG:HH11	1.78	0.48
1:B:443:HIS:HE1	4:B:701:EDO:C2	2.27	0.48
2:A:437:VAL:CG1	4:A:810:EDO:H11	2.43	0.48
1:B:443:HIS:HE1	4:B:701:EDO:O2	1.98	0.47
2:A:631:ASP:OD1	2:A:634:ARG:NH2	2.48	0.46
1:B:652:GLN:NE2	8:B:813:HOH:O	2.46	0.46
1:B:631:ASP:OD1	1:B:634:ARG:NH2	2.48	0.45
1:B:589:VAL:HG13	3:D:1:TYR:HB2	1.97	0.45
1:B:528:ARG:HA	4:B:708:EDO:H11	1.97	0.45
1:B:528:ARG:CA	4:B:708:EDO:C1	2.93	0.45
1:B:548:HIS:CE1	1:B:552:LYS:HE2	2.52	0.45
2:A:406:ALA:HB1	4:A:810:EDO:H12	1.98	0.44
1:B:443:HIS:CE1	4:B:701:EDO:H21	2.52	0.44
2:A:548:HIS:CE1	2:A:552:LYS:HE2	2.53	0.43
1:B:537:ARG:HH22	1:B:562:ARG:NH1	2.16	0.43
1:B:443:HIS:HE1	4:B:701:EDO:H21	1.85	0.42
2:A:537[A]:ARG:HA	2:A:537[A]:ARG:HD2	1.70	0.42
1:B:499:CME:SD	1:B:503:TYR:HE2	2.42	0.42
2:A:659:LYS:HA	2:A:664:GLU:OE2	2.20	0.41
2:A:399[B]:ARG:NH1	8:A:916:HOH:O	2.53	0.41
1:B:528:ARG:HA	4:B:708:EDO:H12	1.97	0.41
2:A:610:LEU:HG	2:A:666:MET:HE2	2.02	0.41
2:A:648:ALA:N	8:A:901:HOH:O	2.31	0.41
1:B:361:HIS:CE1	1:B:367:GLU:CG	3.05	0.40
1:B:399:ARG:NE	8:B:803:HOH:O	2.35	0.40
2:A:654:LEU:CD2	4:A:805:EDO:H22	2.51	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:618:GLN:OE1	1:B:618:GLN:OE1[2_555]	1.88	0.32

### 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	B	303/323 (94%)	295 (97%)	7 (2%)	1 (0%)	37	37
2	A	301/323 (93%)	293 (97%)	8 (3%)	0	100	100
3	C	3/5 (60%)	3 (100%)	0	0	100	100
3	D	3/5 (60%)	3 (100%)	0	0	100	100
All	All	610/656 (93%)	594 (97%)	15 (2%)	1 (0%)	44	45

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	666	MET

#### 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	B	243/263 (92%)	234 (96%)	9 (4%)	29	31
2	A	247/262 (94%)	243 (98%)	4 (2%)	58	65
3	C	5/5 (100%)	5 (100%)	0	100	100
3	D	5/5 (100%)	5 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	500/535 (94%)	487 (97%)	13 (3%)	40 46

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	429	ILE
1	B	467	LEU
1	B	493	SER
1	B	537	ARG
1	B	543	ARG
1	B	572	ARG
1	B	580	TYR
1	B	641	ASP
1	B	664	GLU
2	A	580	TYR
2	A	641	ASP
2	A	649	SER
2	A	655	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	443	HIS
1	B	616	ASN
2	A	461	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

3 non-standard protein/DNA/RNA residues are modelled in this entry.

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$
1	CME	B	499	1	8,9,10	0.48	0	5,9,11	3.60	2 (40%)
2	CME	A	412	2	8,9,10	0.38	0	5,9,11	1.37	2 (40%)
2	CME	A	499	2	8,9,10	0.53	0	5,9,11	3.60	2 (40%)

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
1	CME	B	499	1	-	1/5/8/10	-
2	CME	A	412	2	-	1/5/8/10	-
2	CME	A	499	2	-	0/5/8/10	-

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	499	CME	CE-SD-SG	7.23	136.75	103.45
2	A	499	CME	CE-SD-SG	6.77	134.66	103.45
2	A	499	CME	CB-SG-SD	-3.99	93.49	103.82
1	B	499	CME	CB-SG-SD	3.25	112.24	103.82
2	A	412	CME	CB-SG-SD	2.10	109.27	103.82
2	A	412	CME	CE-SD-SG	2.09	113.09	103.45

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	412	CME	SD-CE-CZ-OH
1	B	499	CME	SD-CE-CZ-OH

There are no ring outliers.

3 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	B	499	CME	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	412	CME	2	0
2	A	499	CME	3	0

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 17 ligands modelled in this entry, 1 is monoatomic - leaving 16 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	$\# Z  > 2$
4	EDO	B	704	-	3,3,3	0.37	0	2,2,2	0.18	0
4	EDO	A	808	-	3,3,3	0.15	0	2,2,2	0.02	0
4	EDO	B	707	-	3,3,3	0.11	0	2,2,2	0.16	0
4	EDO	A	809	-	3,3,3	0.10	0	2,2,2	0.18	0
4	EDO	B	703	-	3,3,3	0.10	0	2,2,2	0.09	0
4	EDO	B	701	-	3,3,3	0.20	0	2,2,2	0.44	0
4	EDO	A	801	-	3,3,3	0.15	0	2,2,2	0.36	0
5	PEG	B	702	-	6,6,6	0.14	0	5,5,5	0.05	0
7	TRS	A	807	-	7,7,7	0.15	0	9,9,9	0.33	0
4	EDO	A	805	-	3,3,3	0.16	0	2,2,2	0.08	0
4	EDO	A	802	-	3,3,3	0.37	0	2,2,2	0.59	0
4	EDO	A	810	-	3,3,3	0.31	0	2,2,2	0.66	0
4	EDO	B	709	-	3,3,3	0.11	0	2,2,2	0.12	0
4	EDO	B	710	-	3,3,3	0.08	0	2,2,2	0.07	0
4	EDO	B	708	-	3,3,3	0.23	0	2,2,2	0.32	0
4	EDO	A	803	-	3,3,3	0.16	0	2,2,2	0.36	0

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
4	EDO	B	704	-	-	1/1/1/1	-
4	EDO	A	808	-	-	1/1/1/1	-
4	EDO	B	707	-	-	1/1/1/1	-
4	EDO	A	809	-	-	0/1/1/1	-
4	EDO	B	703	-	-	1/1/1/1	-
4	EDO	B	701	-	-	1/1/1/1	-
4	EDO	A	801	-	-	0/1/1/1	-
5	PEG	B	702	-	-	2/4/4/4	-
7	TRS	A	807	-	-	9/9/9/9	-
4	EDO	A	805	-	-	1/1/1/1	-
4	EDO	A	802	-	-	1/1/1/1	-
4	EDO	A	810	-	-	1/1/1/1	-
4	EDO	B	709	-	-	1/1/1/1	-
4	EDO	B	710	-	-	1/1/1/1	-
4	EDO	B	708	-	-	1/1/1/1	-
4	EDO	A	803	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (23) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	A	807	TRS	C1-C-C3-O3
7	A	807	TRS	C2-C-C3-O3
7	A	807	TRS	N-C-C3-O3
5	B	702	PEG	O1-C1-C2-O2
5	B	702	PEG	O2-C3-C4-O4
4	B	708	EDO	O1-C1-C2-O2
4	B	709	EDO	O1-C1-C2-O2
4	A	805	EDO	O1-C1-C2-O2
7	A	807	TRS	N-C-C1-O1
7	A	807	TRS	C1-C-C2-O2
4	B	710	EDO	O1-C1-C2-O2
4	A	808	EDO	O1-C1-C2-O2
4	B	704	EDO	O1-C1-C2-O2
7	A	807	TRS	C2-C-C1-O1
7	A	807	TRS	C3-C-C1-O1
7	A	807	TRS	C3-C-C2-O2
4	B	703	EDO	O1-C1-C2-O2
4	A	802	EDO	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
4	B	701	EDO	O1-C1-C2-O2
4	B	707	EDO	O1-C1-C2-O2
4	A	810	EDO	O1-C1-C2-O2
7	A	807	TRS	N-C-C2-O2
4	A	803	EDO	O1-C1-C2-O2

There are no ring outliers.

7 monomers are involved in 22 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	703	EDO	1	0
4	B	701	EDO	4	0
7	A	807	TRS	2	0
4	A	805	EDO	2	0
4	A	802	EDO	4	0
4	A	810	EDO	3	0
4	B	708	EDO	7	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

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	B	305/323 (94%)	-0.06	10 (3%) 49 51	14, 29, 50, 90	2 (0%)
2	A	297/323 (91%)	-0.10	6 (2%) 64 66	12, 26, 51, 83	8 (2%)
3	C	5/5 (100%)	-0.09	1 (20%) 3 4	20, 22, 35, 48	0
3	D	5/5 (100%)	0.16	1 (20%) 3 4	24, 25, 37, 48	0
All	All	612/656 (93%)	-0.07	18 (2%) 54 55	12, 27, 51, 90	10 (1%)

All (18) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	488	PHE	4.9
2	A	492	PRO	4.1
1	B	470	LEU	4.0
1	B	487	TYR	3.9
2	A	667	ALA	3.7
1	B	666	MET	2.8
1	B	665	ASP	2.8
1	B	348	THR	2.7
1	B	346	MET	2.6
2	A	468	VAL	2.6
3	D	1	TYR	2.5
3	C	1	TYR	2.5
2	A	348	THR	2.5
1	B	667	ALA	2.3
1	B	347	GLU	2.3
2	A	650	TRP	2.1
2	A	467	LEU	2.0
1	B	548	HIS	2.0

## 6.2 Non-standard residues in protein, DNA, RNA chains [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. 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	B-factors(Å <sup>2</sup> )	Q<0.9
2	CME	A	499	10/11	0.81	0.16	36,45,63,63	0
1	CME	B	499	10/11	0.88	0.13	36,42,60,76	0
2	CME	A	412	10/11	0.93	0.12	21,27,51,60	0

## 6.3 Carbohydrates [i](#)

There are no monosaccharides 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. 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	B-factors(Å <sup>2</sup> )	Q<0.9
4	EDO	B	709	4/4	0.71	0.16	57,58,62,68	0
4	EDO	B	710	4/4	0.74	0.17	53,55,62,64	0
4	EDO	A	803	4/4	0.75	0.22	59,64,64,71	0
4	EDO	A	808	4/4	0.75	0.20	34,37,37,39	4
5	PEG	B	702	7/7	0.80	0.19	54,67,70,72	0
4	EDO	A	802	4/4	0.82	0.23	45,55,61,67	0
4	EDO	B	704	4/4	0.82	0.15	33,42,49,49	0
4	EDO	B	701	4/4	0.83	0.12	48,49,52,53	0
4	EDO	A	809	4/4	0.85	0.15	53,59,61,65	0
4	EDO	B	707	4/4	0.87	0.09	50,54,57,58	0
4	EDO	B	708	4/4	0.87	0.12	34,36,40,47	0
4	EDO	A	805	4/4	0.87	0.20	44,47,52,53	0
4	EDO	B	703	4/4	0.89	0.11	44,45,50,55	0
4	EDO	A	810	4/4	0.90	0.18	36,38,38,40	0
4	EDO	A	801	4/4	0.90	0.16	29,42,46,59	0
7	TRS	A	807	8/8	0.91	0.12	46,49,52,53	8
6	MG	B	706	1/1	0.95	0.05	31,31,31,31	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.