



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 3, 2021 – 09:09 AM EDT

PDB ID : 3I3D  
Title : E. COLI (lacZ) BETA-GALACTOSIDASE (M542A) IN COMPLEX WITH IPTG  
Authors : Dugdale, M.L.; Dymianiw, D.; Minhas, B.; Huber, R.E.  
Deposited on : 2009-06-30  
Resolution : 2.20 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.

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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	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.23.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.23.2

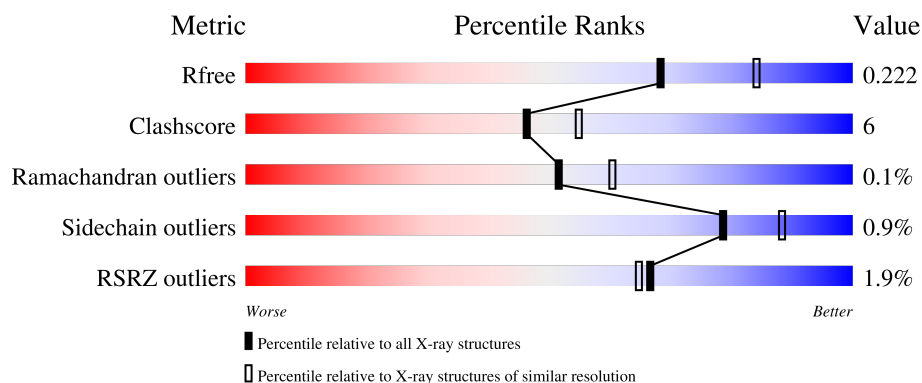
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.20 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))
$R_{free}$	130704	4898 (2.20-2.20)
Clashscore	141614	5594 (2.20-2.20)
Ramachandran outliers	138981	5503 (2.20-2.20)
Sidechain outliers	138945	5504 (2.20-2.20)
RSRZ outliers	127900	4800 (2.20-2.20)

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	A	1023	<div> <div>2%</div> <div>83%</div> <div>15%</div> <div>.</div> </div>
1	B	1023	<div> <div>2%</div> <div>85%</div> <div>14%</div> <div>.</div> </div>
1	C	1023	<div> <div>%</div> <div>82%</div> <div>16%</div> <div>.</div> </div>
1	D	1023	<div> <div>2%</div> <div>82%</div> <div>16%</div> <div>.</div> </div>

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
5	DMS	B	9020	-	-	-	X
5	DMS	C	9030	-	-	X	-

## 2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 36737 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 Beta-galactosidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	1011	Total	C	N	O	S	0	0	0
			8122	5136	1440	1509	37			
1	B	1011	Total	C	N	O	S	0	0	0
			8122	5136	1440	1509	37			
1	C	1011	Total	C	N	O	S	0	0	0
			8122	5136	1440	1509	37			
1	D	1011	Total	C	N	O	S	0	0	0
			8122	5136	1440	1509	37			

There are 36 discrepancies between the modelled and reference sequences:

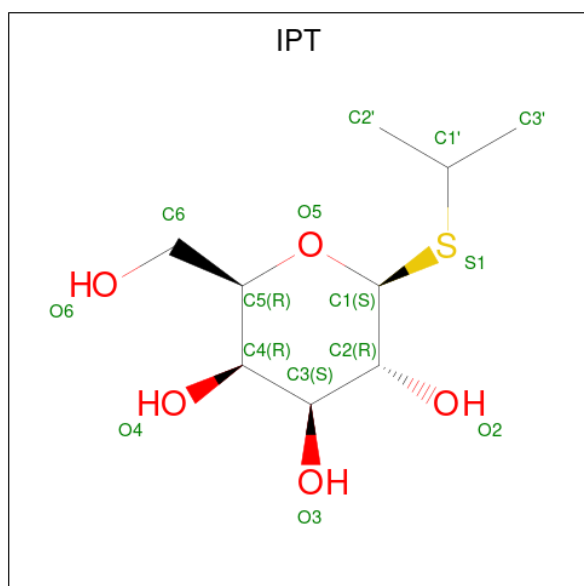
Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	-	expression tag	UNP B8LFD6
A	2	SER	-	expression tag	UNP B8LFD6
A	3	HIS	-	expression tag	UNP B8LFD6
A	4	MET	-	expression tag	UNP B8LFD6
A	5	LEU	-	expression tag	UNP B8LFD6
A	6	GLU	-	expression tag	UNP B8LFD6
A	7	ASP	-	expression tag	UNP B8LFD6
A	8	PRO	-	expression tag	UNP B8LFD6
A	542	ALA	MET	engineered mutation	UNP B8LFD6
B	1	GLY	-	expression tag	UNP B8LFD6
B	2	SER	-	expression tag	UNP B8LFD6
B	3	HIS	-	expression tag	UNP B8LFD6
B	4	MET	-	expression tag	UNP B8LFD6
B	5	LEU	-	expression tag	UNP B8LFD6
B	6	GLU	-	expression tag	UNP B8LFD6
B	7	ASP	-	expression tag	UNP B8LFD6
B	8	PRO	-	expression tag	UNP B8LFD6
B	542	ALA	MET	engineered mutation	UNP B8LFD6
C	1	GLY	-	expression tag	UNP B8LFD6
C	2	SER	-	expression tag	UNP B8LFD6
C	3	HIS	-	expression tag	UNP B8LFD6

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Chain	Residue	Modelled	Actual	Comment	Reference
C	4	MET	-	expression tag	UNP B8LFD6
C	5	LEU	-	expression tag	UNP B8LFD6
C	6	GLU	-	expression tag	UNP B8LFD6
C	7	ASP	-	expression tag	UNP B8LFD6
C	8	PRO	-	expression tag	UNP B8LFD6
C	542	ALA	MET	engineered mutation	UNP B8LFD6
D	1	GLY	-	expression tag	UNP B8LFD6
D	2	SER	-	expression tag	UNP B8LFD6
D	3	HIS	-	expression tag	UNP B8LFD6
D	4	MET	-	expression tag	UNP B8LFD6
D	5	LEU	-	expression tag	UNP B8LFD6
D	6	GLU	-	expression tag	UNP B8LFD6
D	7	ASP	-	expression tag	UNP B8LFD6
D	8	PRO	-	expression tag	UNP B8LFD6
D	542	ALA	MET	engineered mutation	UNP B8LFD6

- Molecule 2 is 1-methylethyl 1-thio-beta-D-galactopyranoside (three-letter code: IPT) (formula: C<sub>9</sub>H<sub>18</sub>O<sub>5</sub>S).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	O	S	0	0
			15	9	5	1		
2	A	1	Total	C	O	S	0	0
			15	9	5	1		
2	B	1	Total	C	O	S	0	0
			15	9	5	1		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	C	1	Total	C	O	S	0	0
			15	9	5	1		
2	D	1	Total	C	O	S	0	0
			15	9	5	1		
2	D	1	Total	C	O	S	0	0
			15	9	5	1		

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	3	Total	Mg	0	0
			3	3		
3	B	4	Total	Mg	0	0
			4	4		
3	C	3	Total	Mg	0	0
			3	3		
3	D	3	Total	Mg	0	0
			3	3		

- Molecule 4 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	4	Total	Na	0	0
			4	4		
4	B	5	Total	Na	0	0
			5	5		
4	C	4	Total	Na	0	0
			4	4		
4	D	4	Total	Na	0	0
			4	4		

- Molecule 5 is DIMETHYL SULFOXIDE (three-letter code: DMS) (formula: C<sub>2</sub>H<sub>6</sub>OS).



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

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

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

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

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	C	1	Total 4	C 2	O 1	S 1	0	0
5	D	1	Total 4	C 2	O 1	S 1	0	0
5	D	1	Total 4	C 2	O 1	S 1	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	D	1	Total C O S 4 2 1 1	0	0
5	D	1	Total C O S 4 2 1 1	0	0
5	D	1	Total C O S 4 2 1 1	0	0
5	D	1	Total C O S 4 2 1 1	0	0
5	D	1	Total C O S 4 2 1 1	0	0
5	D	1	Total C O S 4 2 1 1	0	0
5	D	1	Total C O S 4 2 1 1	0	0
5	D	1	Total C O S 4 2 1 1	0	0
5	D	1	Total C O S 4 2 1 1	0	0

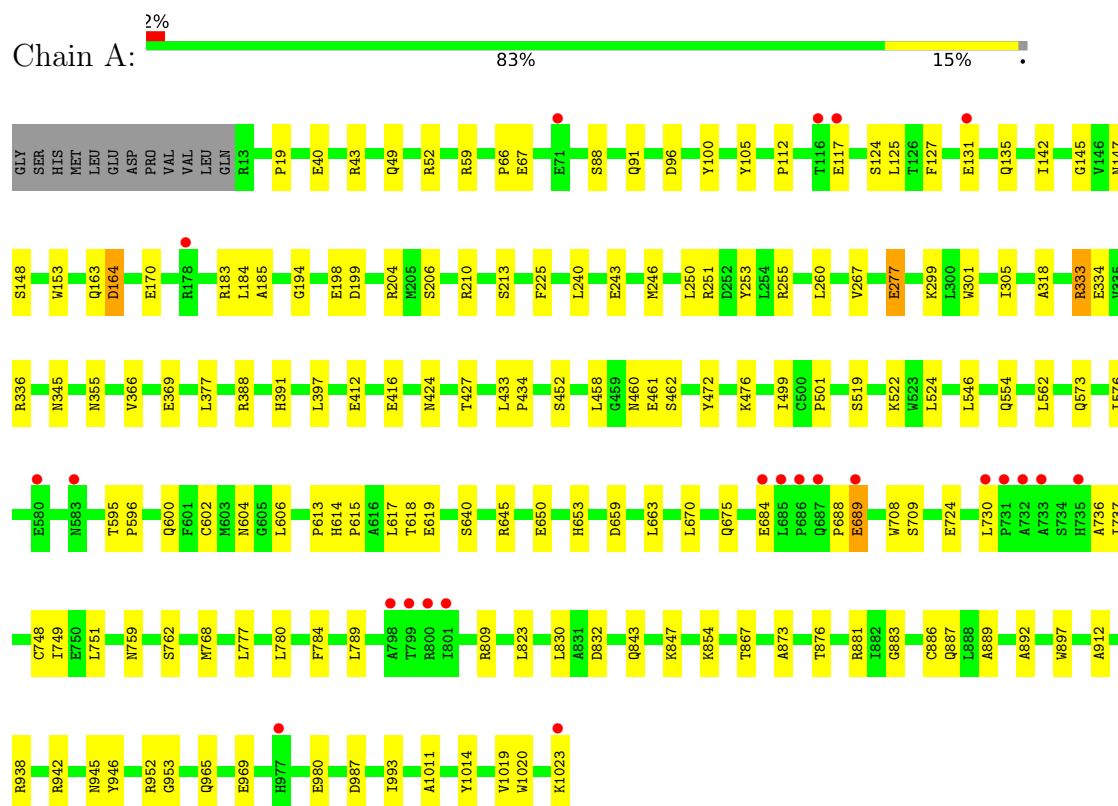
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	862	Total O 862 862	0	0
6	B	987	Total O 987 987	0	0
6	C	828	Total O 828 828	0	0
6	D	856	Total O 856 856	0	0

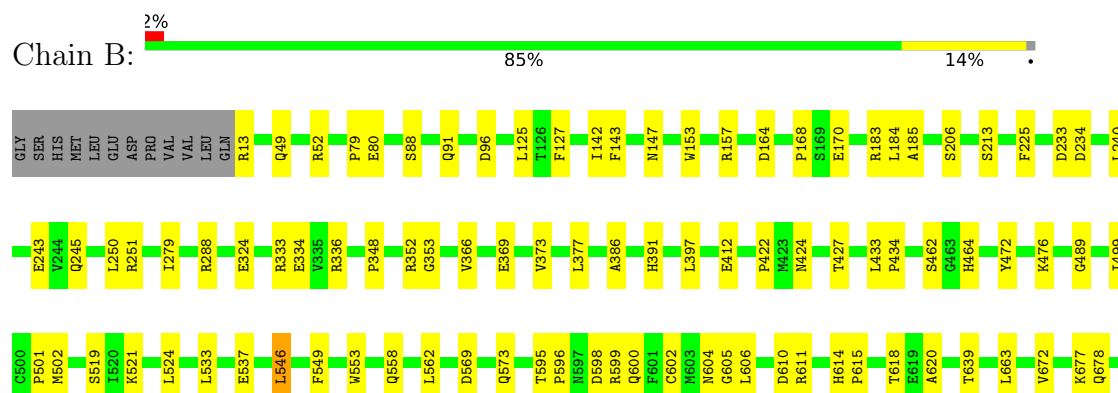
### 3 Residue-property plots

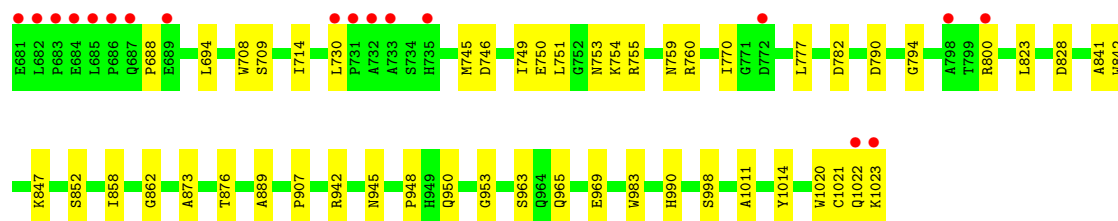
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Beta-galactosidase

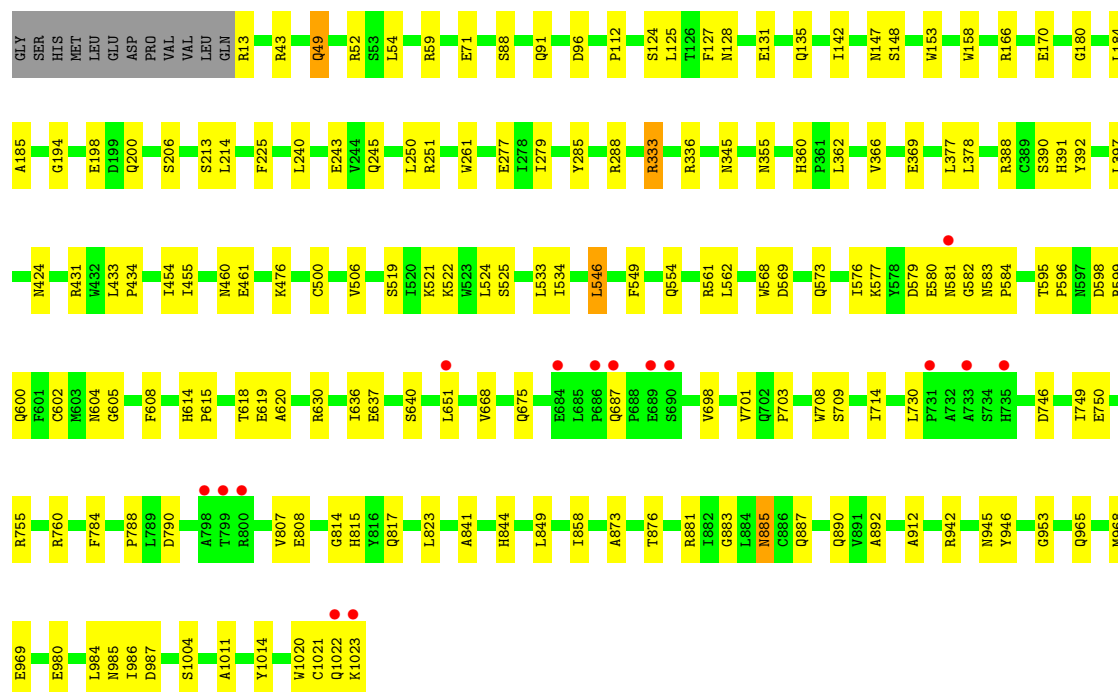
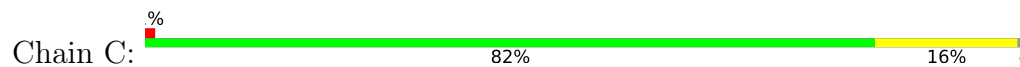


#### • Molecule 1: Beta-galactosidase

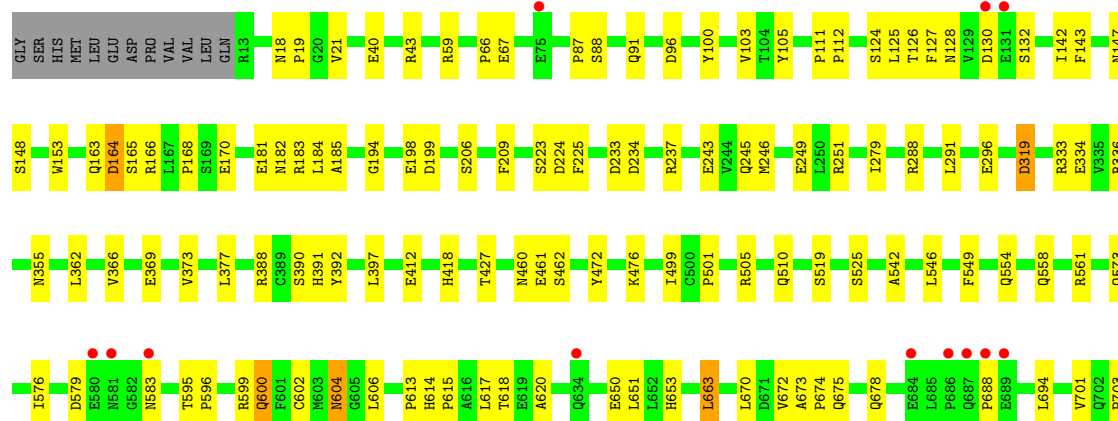
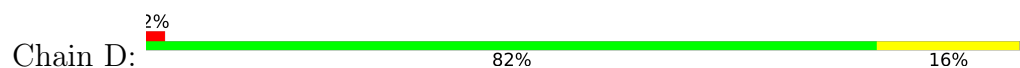




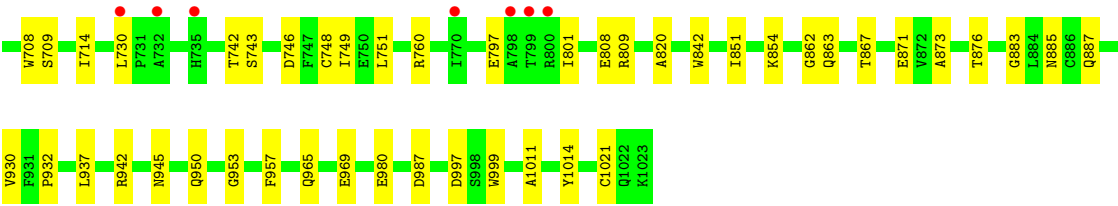
• Molecule 1: Beta-galactosidase



• Molecule 1: Beta-galactosidase







## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	151.54Å 162.39Å 203.73Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	61.97 – 2.20 61.97 – 2.20	Depositor EDS
% Data completeness (in resolution range)	99.9 (61.97-2.20) 99.9 (61.97-2.20)	Depositor EDS
$R_{merge}$	0.15	Depositor
$R_{sym}$	0.18	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.76 (at 2.20Å)	Xtriage
Refinement program	CNS 1.2	Depositor
R, $R_{free}$	0.185 , 0.232 0.178 , 0.222	Depositor DCC
$R_{free}$ test set	3625 reflections (1.43%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	18.8	Xtriage
Anisotropy	0.106	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 53.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	36737	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	20.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 40.68 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 2.6394e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<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: MG, NA, IPT, DMS

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	0.31	0/8364	0.61	0/11412
1	B	0.33	0/8364	0.62	0/11412
1	C	0.33	0/8364	0.62	0/11412
1	D	0.31	0/8364	0.61	0/11412
All	All	0.32	0/33456	0.61	0/45648

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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	8122	0	7711	103	0
1	B	8122	0	7711	95	0
1	C	8122	0	7710	110	0
1	D	8122	0	7712	114	0
2	A	30	0	35	0	0
2	B	15	0	17	0	0
2	C	15	0	17	0	0
2	D	30	0	35	0	0
3	A	3	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	4	0	0	0	0
3	C	3	0	0	0	0
3	D	3	0	0	0	0
4	A	4	0	0	0	0
4	B	5	0	0	0	0
4	C	4	0	0	0	0
4	D	4	0	0	0	0
5	A	136	0	204	0	0
5	B	164	0	246	3	0
5	C	168	0	252	7	0
5	D	128	0	192	1	0
6	A	862	0	0	13	0
6	B	987	0	0	7	0
6	C	828	0	0	9	0
6	D	856	0	0	6	0
All	All	36737	0	31842	409	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 6.

All (409) 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:D:142:ILE:HG12	1:D:170:GLU:HG2	1.50	0.92
1:B:770:ILE:HG21	1:B:1022:GLN:HE22	1.34	0.91
1:C:599:ARG:NH2	1:C:600:GLN:HE22	1.75	0.84
1:A:142:ILE:HG12	1:A:170:GLU:HG2	1.59	0.83
1:B:245:GLN:HG2	1:B:288:ARG:HG2	1.58	0.82
1:B:599:ARG:NH1	1:B:600:GLN:HE22	1.76	0.82
1:B:770:ILE:HD13	1:B:1022:GLN:NE2	1.98	0.79
1:D:714:ILE:HB	5:D:9027:DMS:H21	1.66	0.77
1:C:142:ILE:HG12	1:C:170:GLU:HG2	1.68	0.76
1:D:245:GLN:HG2	1:D:288:ARG:HG2	1.67	0.74
1:B:142:ILE:HG12	1:B:170:GLU:HG2	1.70	0.73
1:C:245:GLN:HG2	1:C:288:ARG:HG2	1.71	0.73
1:A:131:GLU:O	1:A:135:GLN:HG3	1.89	0.72
1:C:59:ARG:HG2	5:C:9030:DMS:H23	1.73	0.70
1:D:246:MET:HG2	6:D:4582:HOH:O	1.89	0.70
1:A:127:PHE:HE2	1:A:184:LEU:HG	1.55	0.70
1:A:737:ILE:HD13	1:A:832:ASP:HA	1.73	0.70
1:C:377:LEU:HD22	1:C:708:TRP:HA	1.73	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:689:GLU:CD	1:A:689:GLU:H	1.96	0.69
1:A:377:LEU:HD22	1:A:708:TRP:HA	1.75	0.69
1:C:749:ILE:HD12	1:C:858:ILE:HD12	1.74	0.69
1:D:88:SER:HA	1:D:366:VAL:HG21	1.75	0.69
1:D:965:GLN:O	1:D:969:GLU:HG3	1.93	0.69
1:C:88:SER:HA	1:C:366:VAL:HG21	1.76	0.68
1:D:651:LEU:HD23	1:D:653:HIS:HE2	1.57	0.68
1:B:615:PRO:O	1:B:618:THR:HG22	1.93	0.67
1:C:615:PRO:O	1:C:618:THR:HG22	1.95	0.67
1:D:599:ARG:HH11	1:D:797:GLU:CG	2.08	0.67
1:D:600:GLN:H	1:D:600:GLN:NE2	1.93	0.67
1:D:748:CYS:HB2	6:D:4906:HOH:O	1.94	0.66
1:A:59:ARG:HB2	1:A:124:SER:OG	1.96	0.66
1:B:770:ILE:HG21	1:B:1022:GLN:NE2	2.07	0.66
1:B:88:SER:HA	1:B:366:VAL:HG21	1.78	0.65
1:C:127:PHE:CE2	1:C:184:LEU:HG	2.32	0.64
1:C:573:GLN:HB2	1:C:602:CYS:O	1.97	0.64
1:D:147:ASN:HB3	1:D:206:SER:HA	1.80	0.64
1:A:965:GLN:O	1:A:969:GLU:HG3	1.97	0.64
1:B:127:PHE:HE2	1:B:184:LEU:HG	1.63	0.64
1:D:18:ASN:ND2	1:D:21:VAL:HG23	2.13	0.64
1:B:79:PRO:HG2	1:B:80:GLU:OE2	1.97	0.64
1:A:88:SER:HA	1:A:366:VAL:HG21	1.80	0.63
1:A:127:PHE:CE2	1:A:184:LEU:HG	2.34	0.63
1:B:663:LEU:HD21	1:B:688:PRO:HB3	1.80	0.63
1:C:788:PRO:HD2	1:C:968:MET:HG3	1.79	0.63
1:C:431:ARG:HB2	6:C:4908:HOH:O	1.99	0.63
1:D:355:ASN:OD1	1:D:388:ARG:HD3	1.99	0.63
1:B:751:LEU:HD23	1:B:862:GLY:HA2	1.81	0.62
1:A:91:GLN:HG3	1:A:96:ASP:OD1	2.00	0.62
1:D:91:GLN:HG3	1:D:96:ASP:OD1	1.99	0.62
1:C:131:GLU:O	1:C:135:GLN:HG3	1.99	0.62
1:C:568:TRP:HE1	1:C:604:ASN:HD22	1.48	0.61
1:D:333:ARG:HG3	1:D:333:ARG:HH11	1.65	0.61
1:B:157:ARG:HD3	6:B:5057:HOH:O	2.00	0.61
1:B:965:GLN:O	1:B:969:GLU:HG3	2.02	0.60
1:C:91:GLN:HG3	1:C:96:ASP:OD1	2.01	0.60
1:D:615:PRO:O	1:D:618:THR:HG22	2.01	0.60
1:A:777:LEU:HG	1:A:889:ALA:HA	1.84	0.60
1:D:127:PHE:CE2	1:D:184:LEU:HG	2.37	0.60
1:D:377:LEU:HD22	1:D:708:TRP:HA	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:823:LEU:O	1:B:730:LEU:HD21	2.01	0.59
1:C:749:ILE:CD1	1:C:858:ILE:HD12	2.32	0.59
1:D:153:TRP:HB2	1:D:185:ALA:HB3	1.85	0.59
1:A:730:LEU:HD12	1:A:730:LEU:N	2.17	0.58
1:A:369:GLU:HG3	1:A:397:LEU:HD21	1.85	0.58
1:D:225:PHE:HA	1:D:243:GLU:O	2.05	0.57
1:D:749:ILE:HD12	1:D:749:ILE:N	2.19	0.57
1:D:127:PHE:HE2	1:D:184:LEU:HG	1.68	0.56
1:B:250:LEU:O	1:B:251:ARG:HD2	2.04	0.56
1:C:128:ASN:HA	1:C:180:GLY:O	2.05	0.56
1:C:369:GLU:HG3	1:C:397:LEU:HD21	1.87	0.56
1:A:749:ILE:HD12	1:A:749:ILE:N	2.21	0.56
1:C:250:LEU:O	1:C:251:ARG:HD2	2.05	0.56
1:A:117:GLU:HG2	6:A:4260:HOH:O	2.06	0.56
1:C:714:ILE:HG21	5:C:9041:DMS:C1	2.36	0.56
1:C:1023:LYS:HE3	6:C:4959:HOH:O	2.05	0.56
1:A:277:GLU:H	1:A:277:GLU:CD	2.08	0.56
1:B:533:LEU:HD23	1:B:533:LEU:C	2.27	0.55
1:A:619:GLU:HA	1:A:912:ALA:HB2	1.87	0.55
1:B:433:LEU:HB3	1:B:434:PRO:HD3	1.88	0.55
1:C:746:ASP:HA	1:C:760:ARG:HG3	1.88	0.55
1:D:499:ILE:HG22	1:D:501:PRO:HD3	1.89	0.55
1:B:153:TRP:HB2	1:B:185:ALA:HB3	1.87	0.55
1:C:823:LEU:HD11	1:C:841:ALA:HB2	1.88	0.55
1:A:615:PRO:O	1:A:618:THR:HG22	2.07	0.55
1:B:599:ARG:NH1	1:B:600:GLN:NE2	2.52	0.55
1:D:66:PRO:HG2	1:D:67:GLU:OE1	2.07	0.55
1:D:246:MET:SD	1:D:246:MET:C	2.86	0.55
1:A:684:GLU:HG2	6:A:4957:HOH:O	2.07	0.54
1:C:887:GLN:NE2	1:C:980:GLU:O	2.41	0.54
1:C:580:GLU:C	1:C:582:GLY:H	2.11	0.54
1:C:476:LYS:HA	6:C:4199:HOH:O	2.07	0.54
1:A:830:LEU:HD22	1:B:828:ASP:HB3	1.90	0.54
1:B:746:ASP:OD1	1:B:759:ASN:HA	2.07	0.54
1:A:730:LEU:HD12	1:A:730:LEU:H	1.72	0.54
1:C:750:GLU:HG3	1:C:755:ARG:HG2	1.89	0.54
1:B:745:MET:HE3	6:B:5037:HOH:O	2.07	0.54
1:B:749:ILE:HD12	1:B:858:ILE:HD12	1.89	0.54
1:B:945:ASN:OD1	1:B:950:GLN:HG3	2.08	0.54
1:B:91:GLN:HG3	1:B:96:ASP:OD1	2.06	0.54
1:C:892:ALA:HB3	1:C:946:TYR:CE1	2.43	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:984:LEU:HD21	1:C:986:ILE:HD11	1.89	0.53
1:D:863:GLN:HG2	1:D:1021:CYS:HB3	1.91	0.53
1:B:127:PHE:CE2	1:B:184:LEU:HG	2.41	0.53
1:A:40:GLU:OE2	1:A:43:ARG:NH2	2.42	0.53
1:C:965:GLN:O	1:C:969:GLU:HG3	2.08	0.53
1:B:746:ASP:HA	1:B:760:ARG:HG3	1.89	0.53
1:C:730:LEU:HD12	1:C:730:LEU:N	2.23	0.53
1:A:246:MET:HG3	6:A:4958:HOH:O	2.09	0.52
1:B:688:PRO:HD3	1:B:694:LEU:HD11	1.89	0.52
1:D:599:ARG:HH11	1:D:797:GLU:HG3	1.75	0.52
1:C:568:TRP:HE1	1:C:604:ASN:ND2	2.07	0.52
1:D:362:LEU:HD13	1:D:576:ILE:HD12	1.90	0.52
1:B:573:GLN:HB2	1:B:602:CYS:O	2.10	0.52
1:C:714:ILE:HG21	5:C:9041:DMS:H13	1.91	0.52
1:B:1011:ALA:HB3	1:B:1014:TYR:CZ	2.45	0.51
1:B:942:ARG:HA	1:B:953:GLY:O	2.10	0.51
1:D:613:PRO:HB3	1:D:617:LEU:HD23	1.92	0.51
1:D:801:ILE:HG23	1:D:808:GLU:HG3	1.93	0.51
1:B:873:ALA:O	1:B:876:THR:HG22	2.09	0.51
1:A:472:TYR:O	1:A:476:LYS:HG2	2.10	0.51
1:B:595:THR:HA	1:B:596:PRO:C	2.30	0.51
1:C:362:LEU:CD2	1:C:576:ILE:HD12	2.40	0.51
1:A:554:GLN:HG2	6:A:4411:HOH:O	2.10	0.51
1:D:391:HIS:HD2	1:D:412:GLU:OE2	1.93	0.51
1:D:748:CYS:C	1:D:749:ILE:HD12	2.31	0.51
1:C:355:ASN:OD1	1:C:388:ARG:HD3	2.10	0.51
1:A:595:THR:HA	1:A:596:PRO:C	2.30	0.51
1:D:333:ARG:HG3	1:D:333:ARG:NH1	2.25	0.51
1:D:887:GLN:NE2	1:D:980:GLU:O	2.42	0.51
1:D:809:ARG:HD2	6:D:4569:HOH:O	2.10	0.51
1:C:127:PHE:HE2	1:C:184:LEU:HG	1.76	0.51
1:D:573:GLN:HB2	1:D:602:CYS:O	2.11	0.51
1:A:334:GLU:OE1	1:A:336:ARG:NH1	2.44	0.50
1:A:573:GLN:HB2	1:A:602:CYS:O	2.11	0.50
1:A:736:ALA:HB1	1:A:751:LEU:HD11	1.93	0.50
1:A:433:LEU:HB3	1:A:434:PRO:HD3	1.93	0.50
1:D:166:ARG:HG3	1:D:392:TYR:HB2	1.92	0.50
1:D:675:GLN:HG3	6:D:4699:HOH:O	2.12	0.50
1:B:749:ILE:CD1	1:B:858:ILE:HD12	2.41	0.50
1:C:194:GLY:O	1:C:198:GLU:HG3	2.10	0.50
1:D:59:ARG:HB2	1:D:124:SER:OG	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:653:HIS:HB3	6:A:4887:HOH:O	2.10	0.50
1:B:13:ARG:CZ	1:C:13:ARG:HG3	2.42	0.50
1:D:128:ASN:OD1	1:D:181:GLU:HG2	2.11	0.50
1:D:334:GLU:OE1	1:D:336:ARG:NH1	2.42	0.50
1:A:153:TRP:HB2	1:A:185:ALA:HB3	1.94	0.50
1:D:701:VAL:O	1:D:703:PRO:HD3	2.11	0.50
1:C:687:GLN:OE1	1:C:687:GLN:HA	2.11	0.50
1:A:147:ASN:HB3	1:A:206:SER:HA	1.94	0.49
1:D:672:VAL:HG22	1:D:678:GLN:HB2	1.93	0.49
1:B:147:ASN:HB3	1:B:206:SER:HA	1.94	0.49
1:B:397:LEU:HD11	5:B:9021:DMS:H12	1.94	0.49
1:C:599:ARG:NH2	1:C:600:GLN:NE2	2.52	0.49
1:A:873:ALA:O	1:A:876:THR:HG22	2.12	0.49
1:B:549:PHE:CE2	1:B:620:ALA:HA	2.46	0.49
1:B:948:PRO:HB2	1:B:1022:GLN:HE21	1.78	0.49
1:C:336:ARG:HB2	5:C:9037:DMS:H12	1.93	0.49
1:C:873:ALA:O	1:C:876:THR:HG22	2.13	0.49
1:D:708:TRP:CE3	1:D:709:SER:HB3	2.48	0.49
1:C:153:TRP:HB2	1:C:185:ALA:HB3	1.95	0.49
1:C:525:SER:O	1:D:561:ARG:HD3	2.13	0.49
1:C:125:LEU:HA	5:C:9030:DMS:C2	2.43	0.49
1:C:1011:ALA:HB3	1:C:1014:TYR:CZ	2.48	0.49
1:A:145:GLY:N	1:A:210:ARG:HB2	2.27	0.49
1:B:639:THR:OG1	1:B:677:LYS:HE2	2.11	0.49
1:D:599:ARG:HH21	1:D:599:ARG:HG3	1.78	0.49
1:C:378:LEU:HG	6:C:4885:HOH:O	2.13	0.49
1:C:630:ARG:NH1	1:C:637:GLU:OE1	2.46	0.49
1:D:505:ARG:HG3	1:D:510:GLN:NE2	2.28	0.49
1:D:930:VAL:O	1:D:932:PRO:HD3	2.13	0.49
1:C:533:LEU:C	1:C:533:LEU:HD23	2.33	0.48
1:A:105:TYR:CE2	1:A:199:ASP:HB2	2.48	0.48
1:A:748:CYS:C	1:A:749:ILE:HD12	2.33	0.48
1:B:233:ASP:OD1	1:B:234:ASP:N	2.46	0.48
1:B:730:LEU:N	1:B:730:LEU:HD12	2.29	0.48
1:D:942:ARG:HA	1:D:953:GLY:O	2.13	0.48
1:A:427:THR:HG21	1:A:462:SER:HB3	1.94	0.48
1:A:689:GLU:CD	1:A:689:GLU:N	2.65	0.48
1:B:13:ARG:HG3	1:C:13:ARG:CZ	2.43	0.48
1:B:245:GLN:HG2	1:B:288:ARG:CG	2.36	0.48
1:C:52:ARG:O	1:C:213:SER:HB2	2.13	0.48
1:C:598:ASP:C	1:C:599:ARG:HG2	2.33	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:472:TYR:O	1:D:476:LYS:HG2	2.12	0.48
1:D:100:TYR:CE1	1:D:602:CYS:HB3	2.49	0.48
1:C:942:ARG:HA	1:C:953:GLY:O	2.14	0.48
1:D:249:GLU:OE2	1:D:251:ARG:HD3	2.14	0.48
1:D:579:ASP:OD2	1:D:583:ASN:HB2	2.13	0.48
1:D:673:ALA:HB1	1:D:674:PRO:HD2	1.95	0.48
1:B:143:PHE:O	1:B:168:PRO:HA	2.14	0.47
1:B:391:HIS:HD2	1:B:412:GLU:OE2	1.97	0.47
1:D:742:THR:HG22	1:D:743:SER:N	2.28	0.47
1:A:789:LEU:HD11	1:A:993:ILE:HG22	1.96	0.47
1:C:147:ASN:HB3	1:C:206:SER:HA	1.97	0.47
1:B:598:ASP:C	1:B:599:ARG:HG2	2.33	0.47
1:D:600:GLN:H	1:D:600:GLN:HE21	1.62	0.47
1:A:225:PHE:HA	1:A:243:GLU:O	2.15	0.47
1:C:433:LEU:HB3	1:C:434:PRO:HD3	1.96	0.47
1:A:52:ARG:O	1:A:213:SER:HB2	2.15	0.47
1:C:125:LEU:HA	5:C:9030:DMS:H21	1.95	0.47
1:C:200:GLN:HG2	1:C:391:HIS:HB2	1.97	0.47
1:D:40:GLU:OE2	1:D:43:ARG:NH2	2.46	0.47
1:D:369:GLU:O	1:D:373:VAL:HG23	2.15	0.47
1:A:460:ASN:ND2	1:A:461:GLU:HG3	2.29	0.47
1:A:892:ALA:HB3	1:A:946:TYR:CE1	2.50	0.47
1:B:225:PHE:HA	1:B:243:GLU:O	2.15	0.47
1:B:422:PRO:HG3	1:C:285:TYR:CE1	2.50	0.47
1:A:708:TRP:CE3	1:A:709:SER:HB3	2.49	0.47
1:D:124:SER:HA	1:D:184:LEU:O	2.15	0.46
1:A:768:MET:HE3	1:A:1020:TRP:CZ2	2.50	0.46
1:C:125:LEU:HD12	5:C:9030:DMS:H21	1.97	0.46
1:B:499:ILE:HG22	1:B:501:PRO:HD3	1.97	0.46
1:D:997:ASP:HB2	1:D:999:TRP:CZ2	2.51	0.46
1:A:204:ARG:HB3	6:A:4190:HOH:O	2.15	0.46
1:A:724:GLU:O	1:B:847:LYS:NZ	2.48	0.46
1:A:780:LEU:HA	1:A:886:CYS:HB3	1.98	0.46
1:D:291:LEU:HD22	1:D:291:LEU:N	2.30	0.46
1:D:883:GLY:HA3	1:D:987:ASP:HA	1.98	0.46
1:D:945:ASN:OD1	1:D:950:GLN:HG3	2.16	0.46
1:C:549:PHE:CE2	1:C:620:ALA:HA	2.50	0.46
1:D:103:VAL:HG22	1:D:418:HIS:CE1	2.51	0.46
1:A:809:ARG:HD2	6:A:4560:HOH:O	2.15	0.46
1:C:166:ARG:HG3	1:C:392:TYR:HB2	1.97	0.46
1:D:223:SER:O	1:D:224:ASP:HB2	2.14	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:369:GLU:HG3	1:D:397:LEU:HD21	1.98	0.46
1:A:299:LYS:HD2	6:A:4789:HOH:O	2.15	0.46
1:D:554:GLN:HG2	6:D:4923:HOH:O	2.16	0.46
1:C:454:ILE:HG13	1:C:455:ILE:HG13	1.98	0.45
1:C:640:SER:O	1:C:675:GLN:HA	2.16	0.45
1:A:897:TRP:CZ2	1:A:938:ARG:HG2	2.51	0.45
1:A:945:ASN:HB3	1:A:1023:LYS:CE	2.46	0.45
1:B:546:LEU:HA	6:B:4127:HOH:O	2.17	0.45
1:C:524:LEU:HD11	1:C:562:LEU:HG	1.98	0.45
1:C:579:ASP:OD2	1:C:583:ASN:HB3	2.17	0.45
1:A:606:LEU:O	1:A:614:HIS:HB2	2.17	0.45
1:C:945:ASN:CG	1:C:1023:LYS:HE2	2.37	0.45
1:B:52:ARG:O	1:B:213:SER:HB2	2.17	0.45
1:D:595:THR:HA	1:D:596:PRO:C	2.37	0.45
1:B:714:ILE:HG21	5:B:9043:DMS:H13	1.97	0.45
1:D:1011:ALA:HB3	1:D:1014:TYR:CZ	2.51	0.45
1:A:391:HIS:HD2	1:A:412:GLU:OE2	2.00	0.45
1:A:768:MET:HB3	6:A:4985:HOH:O	2.16	0.45
1:B:334:GLU:OE1	1:B:336:ARG:NH1	2.48	0.45
1:B:427:THR:HG21	1:B:462:SER:HB3	1.98	0.45
1:C:54:LEU:HD11	1:C:214:LEU:HG	1.99	0.45
1:C:546:LEU:HA	6:C:4128:HOH:O	2.17	0.45
1:D:851:ILE:HB	1:D:871:GLU:HB2	1.99	0.45
1:C:59:ARG:HB2	1:C:124:SER:OG	2.17	0.45
1:B:464:HIS:HB2	1:B:489:GLY:HA3	1.99	0.44
1:C:522:LYS:HD2	1:D:558:GLN:HG2	1.99	0.44
1:C:1020:TRP:HD1	1:C:1021:CYS:N	2.15	0.44
1:A:147:ASN:HA	1:A:148:SER:HA	1.60	0.44
1:B:125:LEU:HD12	5:B:9040:DMS:S	2.56	0.44
1:D:549:PHE:CE2	1:D:620:ALA:HA	2.52	0.44
1:D:125:LEU:O	1:D:183:ARG:HA	2.18	0.44
1:D:373:VAL:O	1:D:377:LEU:HG	2.17	0.44
1:D:427:THR:HG21	1:D:462:SER:HB3	1.99	0.44
1:A:663:LEU:HD21	1:A:688:PRO:HB3	1.98	0.44
1:A:945:ASN:OD1	1:A:1023:LYS:HE2	2.17	0.44
1:B:279:ILE:HD11	1:C:424:ASN:OD1	2.17	0.44
1:C:561:ARG:HD3	1:D:525:SER:O	2.18	0.44
1:C:701:VAL:O	1:C:703:PRO:HD3	2.18	0.44
1:A:301:TRP:CH2	1:A:452:SER:HA	2.53	0.44
1:A:784:PHE:HA	1:A:881:ARG:O	2.17	0.44
1:C:890:GLN:HB2	6:C:4427:HOH:O	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:391:HIS:CD2	1:D:412:GLU:OE2	2.71	0.44
1:B:907:PRO:HG2	1:B:990:HIS:O	2.18	0.44
1:C:49:GLN:H	1:C:49:GLN:HG2	1.64	0.44
1:D:663:LEU:HD21	1:D:688:PRO:HB3	1.98	0.44
1:A:524:LEU:HD11	1:A:562:LEU:HG	1.99	0.44
1:A:883:GLY:HA3	1:A:987:ASP:HA	2.00	0.44
1:D:674:PRO:O	1:D:675:GLN:HB2	2.17	0.44
1:A:942:ARG:HA	1:A:953:GLY:O	2.17	0.44
1:D:19:PRO:HD3	1:D:112:PRO:CB	2.48	0.44
1:D:688:PRO:HD3	1:D:694:LEU:HD11	1.99	0.44
1:B:424:ASN:OD1	1:C:279:ILE:HD11	2.18	0.44
1:C:619:GLU:HA	1:C:912:ALA:HB2	2.00	0.44
1:D:163:GLN:O	1:D:164:ASP:HB3	2.18	0.44
1:A:424:ASN:OD1	1:D:279:ILE:HD11	2.18	0.43
1:D:606:LEU:O	1:D:614:HIS:HB2	2.18	0.43
1:A:100:TYR:CZ	1:A:602:CYS:HB3	2.53	0.43
1:B:348:PRO:HG2	6:B:4322:HOH:O	2.18	0.43
1:B:753:ASN:OD1	1:B:754:LYS:HG3	2.19	0.43
1:B:945:ASN:HB3	1:B:1023:LYS:HE2	1.99	0.43
1:C:883:GLY:HA3	1:C:987:ASP:HA	2.00	0.43
1:A:377:LEU:CD2	1:A:708:TRP:HA	2.46	0.43
1:C:277:GLU:HG2	6:C:4755:HOH:O	2.19	0.43
1:C:708:TRP:CE3	1:C:709:SER:HB3	2.54	0.43
1:A:250:LEU:O	1:A:251:ARG:HD3	2.19	0.43
1:A:576:ILE:HD11	6:A:4214:HOH:O	2.18	0.43
1:B:672:VAL:HG22	1:B:678:GLN:HB2	1.99	0.43
1:C:784:PHE:HA	1:C:881:ARG:O	2.18	0.43
1:A:194:GLY:O	1:A:198:GLU:HG3	2.19	0.43
1:A:499:ILE:HG22	1:A:501:PRO:HD3	2.00	0.43
1:B:377:LEU:HD22	1:B:708:TRP:HA	2.00	0.43
1:B:391:HIS:CD2	1:B:412:GLU:OE2	2.71	0.43
1:A:355:ASN:OD1	1:A:388:ARG:HD3	2.18	0.43
1:C:147:ASN:HA	1:C:148:SER:HA	1.64	0.43
1:C:225:PHE:HA	1:C:243:GLU:O	2.18	0.43
1:D:194:GLY:O	1:D:198:GLU:HG3	2.19	0.43
1:A:163:GLN:O	1:A:164:ASP:HB3	2.19	0.43
1:C:333:ARG:HA	1:C:345:ASN:OD1	2.18	0.43
1:D:67:GLU:OE1	1:D:67:GLU:N	2.51	0.43
1:A:613:PRO:HB3	1:A:617:LEU:HD23	2.01	0.43
1:B:794:GLY:HA2	1:B:998:SER:O	2.19	0.43
1:C:360:HIS:CE1	1:C:362:LEU:HB2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:390:SER:HA	1:C:391:HIS:HA	1.79	0.43
1:D:663:LEU:CD2	1:D:688:PRO:HB3	2.49	0.43
1:A:240:LEU:C	1:A:240:LEU:HD23	2.40	0.42
1:C:460:ASN:ND2	1:C:461:GLU:HG3	2.34	0.42
1:D:730:LEU:N	1:D:730:LEU:HD12	2.34	0.42
1:A:19:PRO:HD3	1:A:112:PRO:CB	2.49	0.42
1:A:391:HIS:HE1	6:A:4865:HOH:O	2.02	0.42
1:A:600:GLN:CD	1:A:600:GLN:H	2.22	0.42
1:A:650:GLU:HB3	1:A:670:LEU:HD12	2.02	0.42
1:A:945:ASN:HB3	1:A:1023:LYS:NZ	2.34	0.42
1:C:153:TRP:CD1	1:C:158:TRP:HA	2.55	0.42
1:C:651:LEU:HD12	1:C:668:VAL:O	2.19	0.42
1:C:885:ASN:HB2	1:C:985:ASN:OD1	2.20	0.42
1:D:390:SER:HA	1:D:391:HIS:HA	1.75	0.42
1:A:49:GLN:HG2	6:A:4609:HOH:O	2.18	0.42
1:A:1011:ALA:HB3	1:A:1014:TYR:CZ	2.54	0.42
1:D:319:ASP:OD1	1:D:319:ASP:N	2.39	0.42
1:D:854:LYS:HA	1:D:867:THR:O	2.19	0.42
1:A:305:ILE:HD11	1:A:645:ARG:HB3	2.01	0.42
1:C:506:VAL:HG12	1:C:521:LYS:HE3	2.00	0.42
1:D:751:LEU:HD23	1:D:862:GLY:HA2	2.01	0.42
1:A:251:ARG:HG3	1:A:253:TYR:CZ	2.54	0.42
1:C:569:ASP:O	1:C:605:GLY:HA2	2.20	0.42
1:D:111:PRO:HA	1:D:112:PRO:HA	1.77	0.42
1:A:333:ARG:HA	1:A:345:ASN:OD1	2.20	0.42
1:B:708:TRP:CE3	1:B:709:SER:HB3	2.54	0.42
1:B:823:LEU:HD11	1:B:841:ALA:HB2	2.02	0.42
1:B:1023:LYS:HA	6:B:4995:HOH:O	2.19	0.42
1:D:147:ASN:HA	1:D:148:SER:HA	1.62	0.42
1:A:260:LEU:O	1:A:267:VAL:HG22	2.20	0.42
1:B:125:LEU:O	1:B:183:ARG:HA	2.20	0.42
1:B:472:TYR:O	1:B:476:LYS:HG2	2.20	0.42
1:B:606:LEU:O	1:B:614:HIS:HB2	2.19	0.42
1:B:1020:TRP:HD1	1:B:1021:CYS:N	2.16	0.42
1:A:640:SER:O	1:A:675:GLN:HA	2.20	0.42
1:A:759:ASN:HB3	1:A:762:SER:OG	2.19	0.42
1:D:100:TYR:CZ	1:D:602:CYS:HB3	2.55	0.42
1:A:843:GLN:HA	1:A:847:LYS:O	2.19	0.41
1:B:782:ASP:HB2	1:B:842:TRP:CH2	2.55	0.41
1:B:963:SER:HB3	1:B:983:TRP:CE2	2.55	0.41
1:D:126:THR:HA	1:D:182:ASN:O	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:650:GLU:HB3	1:D:670:LEU:HD12	2.02	0.41
1:B:610:ASP:O	1:B:611:ARG:HB2	2.20	0.41
1:D:87:PRO:HB2	1:D:209:PHE:C	2.41	0.41
1:D:937:LEU:HA	1:D:957:PHE:O	2.19	0.41
1:A:125:LEU:O	1:A:183:ARG:HA	2.19	0.41
1:A:255:ARG:HG3	1:A:318:ALA:HA	2.01	0.41
1:B:373:VAL:O	1:B:377:LEU:HG	2.19	0.41
1:C:43:ARG:HD2	1:C:261:TRP:CE3	2.55	0.41
1:A:522:LYS:HD2	1:B:558:GLN:HG2	2.01	0.41
1:A:854:LYS:HA	1:A:867:THR:O	2.21	0.41
1:B:49:GLN:HG3	6:B:4927:HOH:O	2.21	0.41
1:C:814:GLY:HA3	1:C:844:HIS:CG	2.56	0.41
1:D:143:PHE:O	1:D:168:PRO:HA	2.20	0.41
1:D:873:ALA:O	1:D:876:THR:HG22	2.21	0.41
1:A:887:GLN:NE2	1:A:980:GLU:O	2.53	0.41
1:C:433:LEU:N	1:C:434:PRO:CD	2.84	0.41
1:B:569:ASP:O	1:B:605:GLY:HA2	2.21	0.41
1:B:800:ARG:HH11	1:B:800:ARG:HG3	1.86	0.41
1:C:124:SER:HA	1:C:184:LEU:O	2.20	0.41
1:C:521:LYS:HE2	6:C:4418:HOH:O	2.19	0.41
1:D:233:ASP:OD1	1:D:234:ASP:N	2.54	0.41
1:B:353:GLY:HA2	1:B:386:ALA:O	2.21	0.41
1:B:502:MET:HB2	1:B:537:GLU:HB2	2.03	0.41
1:C:71:GLU:H	1:C:71:GLU:CD	2.24	0.41
1:C:636:ILE:HD13	1:C:698:VAL:HG11	2.01	0.41
1:D:863:GLN:HG2	1:D:1021:CYS:CB	2.50	0.41
1:A:66:PRO:HG2	1:A:67:GLU:OE1	2.21	0.41
1:A:246:MET:HE2	6:A:4958:HOH:O	2.21	0.41
1:B:777:LEU:HG	1:B:889:ALA:HA	2.02	0.41
1:C:500:CYS:HA	1:C:534:ILE:O	2.21	0.41
1:C:568:TRP:HA	1:C:569:ASP:HA	1.81	0.41
1:C:240:LEU:C	1:C:240:LEU:HD23	2.41	0.41
1:C:815:HIS:CD2	1:C:849:LEU:HD13	2.56	0.41
1:D:148:SER:HA	1:D:165:SER:OG	2.21	0.41
1:D:801:ILE:HD12	1:D:801:ILE:N	2.36	0.41
1:A:737:ILE:HG23	1:A:737:ILE:O	2.21	0.40
1:B:240:LEU:HD23	1:B:240:LEU:C	2.42	0.40
1:C:577:LYS:O	1:C:584:PRO:HA	2.21	0.40
1:C:608:PHE:CE1	1:C:614:HIS:HD2	2.38	0.40
1:D:460:ASN:ND2	1:D:461:GLU:HG3	2.37	0.40
1:D:746:ASP:HA	1:D:760:ARG:HG3	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:100:TYR:CE1	1:A:602:CYS:HB3	2.56	0.40
1:A:952:ARG:NH2	1:A:1019:VAL:HG11	2.36	0.40
1:B:521:LYS:HE2	6:B:4415:HOH:O	2.21	0.40
1:B:770:ILE:HD13	1:B:1022:GLN:CD	2.40	0.40
1:D:130:ASP:OD2	1:D:132:SER:OG	2.34	0.40
1:D:237:ARG:HD2	1:D:296:GLU:OE1	2.20	0.40
1:A:458:LEU:HD11	1:A:472:TYR:HB2	2.03	0.40
1:B:352:ARG:HG2	1:B:553:TRP:CH2	2.56	0.40
1:B:750:GLU:HG3	1:B:755:ARG:HG2	2.02	0.40
1:B:842:TRP:HZ3	1:B:852:SER:HB3	1.86	0.40
1:D:742:THR:CG2	1:D:743:SER:N	2.84	0.40
1:B:524:LEU:HD11	1:B:562:LEU:HG	2.03	0.40
1:C:595:THR:HA	1:C:596:PRO:C	2.41	0.40
1:C:749:ILE:O	1:C:755:ARG:HA	2.22	0.40
1:C:817:GLN:HG2	6:C:4333:HOH:O	2.20	0.40
1:D:105:TYR:CE2	1:D:199:ASP:HB2	2.57	0.40
1:D:246:MET:HE3	6:D:4582:HOH:O	2.21	0.40
1:A:199:ASP:C	1:A:416:GLU:HG2	2.42	0.40
1:B:369:GLU:HG3	1:B:397:LEU:HD21	2.04	0.40
1:C:807:VAL:HG13	1:C:808:GLU:N	2.37	0.40
1:D:542:ALA:HA	1:D:604:ASN:HA	2.03	0.40
1:D:820:ALA:HB2	1:D:842:TRP:CE2	2.56	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	1009/1023 (99%)	966 (96%)	42 (4%)	1 (0%)	51 60
1	B	1009/1023 (99%)	966 (96%)	42 (4%)	1 (0%)	51 60
1	C	1009/1023 (99%)	970 (96%)	38 (4%)	1 (0%)	51 60

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	1009/1023 (99%)	968 (96%)	40 (4%)	1 (0%)	51	60
All	All	4036/4092 (99%)	3870 (96%)	162 (4%)	4 (0%)	51	60

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	581	ASN
1	A	164	ASP
1	B	164	ASP
1	D	164	ASP

### 5.3.2 Protein sidechains ⓘ

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	863/874 (99%)	856 (99%)	7 (1%)	81	90
1	B	863/874 (99%)	857 (99%)	6 (1%)	84	91
1	C	863/874 (99%)	853 (99%)	10 (1%)	71	83
1	D	863/874 (99%)	856 (99%)	7 (1%)	81	90
All	All	3452/3496 (99%)	3422 (99%)	30 (1%)	78	88

All (30) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	277	GLU
1	A	333	ARG
1	A	519	SER
1	A	546	LEU
1	A	604	ASN
1	A	659	ASP
1	A	689	GLU
1	B	324	GLU
1	B	333	ARG
1	B	519	SER

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Mol	Chain	Res	Type
1	B	546	LEU
1	B	604	ASN
1	B	790	ASP
1	C	49	GLN
1	C	112	PRO
1	C	333	ARG
1	C	519	SER
1	C	546	LEU
1	C	554	GLN
1	C	790	ASP
1	C	885	ASN
1	C	1004	SER
1	C	1022	GLN
1	D	319	ASP
1	D	519	SER
1	D	546	LEU
1	D	600	GLN
1	D	604	ASN
1	D	663	LEU
1	D	885	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	50	GLN
1	A	245	GLN
1	A	391	HIS
1	A	583	ASN
1	A	1017	GLN
1	B	262	GLN
1	B	391	HIS
1	B	554	GLN
1	B	863	GLN
1	B	1017	GLN
1	B	1022	GLN
1	C	554	GLN
1	C	600	GLN
1	C	725	ASN
1	C	1022	GLN
1	D	18	ASN
1	D	163	GLN
1	D	391	HIS

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Mol	Chain	Res	Type
1	D	583	ASN
1	D	600	GLN
1	D	757	GLN
1	D	804	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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 185 ligands modelled in this entry, 30 are monoatomic - leaving 155 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	$\# Z  > 2$
5	DMS	B	9003	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	C	9019	-	3,3,3	0.20	0	3,3,3	0.59	0
5	DMS	D	9022	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	A	9005	-	3,3,3	0.24	0	3,3,3	0.61	0
5	DMS	A	9033	-	3,3,3	0.26	0	3,3,3	0.64	0
5	DMS	B	9014	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	A	9010	-	3,3,3	0.22	0	3,3,3	0.59	0
5	DMS	C	9008	-	3,3,3	0.26	0	3,3,3	0.60	0
5	DMS	D	9019	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	B	9033	-	3,3,3	0.24	0	3,3,3	0.63	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
5	DMS	B	9021	-	3,3,3	0.25	0	3,3,3	0.63	0
5	DMS	A	9012	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	B	9019	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	B	9026	-	3,3,3	0.25	0	3,3,3	0.63	0
5	DMS	A	9024	-	3,3,3	0.25	0	3,3,3	0.62	0
5	DMS	C	9038	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	C	9020	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	D	5028	-	3,3,3	0.27	0	3,3,3	0.64	0
5	DMS	B	9035	-	3,3,3	0.28	0	3,3,3	0.65	0
5	DMS	C	9025	-	3,3,3	0.24	0	3,3,3	0.61	0
5	DMS	B	9023	-	3,3,3	0.24	0	3,3,3	0.60	0
5	DMS	B	9029	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	C	9037	-	3,3,3	0.21	0	3,3,3	0.65	0
5	DMS	A	9016	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	B	9011	-	3,3,3	0.26	0	3,3,3	0.63	0
5	DMS	B	9006	-	3,3,3	0.27	0	3,3,3	0.65	0
5	DMS	A	9009	-	3,3,3	0.25	0	3,3,3	0.60	0
5	DMS	A	9023	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	D	9013	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	B	9022	-	3,3,3	0.22	0	3,3,3	0.60	0
5	DMS	A	9001	-	3,3,3	0.22	0	3,3,3	0.63	0
5	DMS	C	9043	-	3,3,3	0.24	0	3,3,3	0.63	0
5	DMS	D	9004	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	C	9029	-	3,3,3	0.26	0	3,3,3	0.63	0
5	DMS	C	9036	-	3,3,3	0.22	0	3,3,3	0.62	0
5	DMS	C	9044	-	3,3,3	0.22	0	3,3,3	0.61	0
5	DMS	B	9018	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	A	9035	-	3,3,3	0.24	0	3,3,3	0.60	0
5	DMS	B	9040	-	3,3,3	0.23	0	3,3,3	0.63	0
5	DMS	C	9032	-	3,3,3	0.22	0	3,3,3	0.63	0
5	DMS	C	9015	-	3,3,3	0.22	0	3,3,3	0.61	0
5	DMS	C	9041	-	3,3,3	0.25	0	3,3,3	0.63	0
5	DMS	B	9027	-	3,3,3	0.28	0	3,3,3	0.57	0
5	DMS	C	9010	-	3,3,3	0.23	0	3,3,3	0.60	0
5	DMS	B	9002	-	3,3,3	0.22	0	3,3,3	0.58	0
5	DMS	C	9031	-	3,3,3	0.22	0	3,3,3	0.61	0
5	DMS	D	9023	-	3,3,3	0.23	0	3,3,3	0.60	0
5	DMS	B	9012	-	3,3,3	0.23	0	3,3,3	0.63	0
5	DMS	C	9011	-	3,3,3	0.22	0	3,3,3	0.63	0
5	DMS	D	9010	-	3,3,3	0.24	0	3,3,3	0.61	0
5	DMS	B	9042	-	3,3,3	0.26	0	3,3,3	0.63	0
5	DMS	C	9023	-	3,3,3	0.22	0	3,3,3	0.60	0
5	DMS	C	9001	-	3,3,3	0.23	0	3,3,3	0.65	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
5	DMS	A	9003	-	3,3,3	0.23	0	3,3,3	0.59	0
5	DMS	B	9043	-	3,3,3	0.24	0	3,3,3	0.60	0
5	DMS	A	9015	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	D	9014	-	3,3,3	0.25	0	3,3,3	0.63	0
5	DMS	B	9004	-	3,3,3	0.23	0	3,3,3	0.63	0
5	DMS	C	9024	-	3,3,3	0.26	0	3,3,3	0.61	0
5	DMS	C	9035	-	3,3,3	0.21	0	3,3,3	0.63	0
5	DMS	B	9007	-	3,3,3	0.20	0	3,3,3	0.59	0
5	DMS	B	9001	-	3,3,3	0.20	0	3,3,3	0.60	0
5	DMS	D	5027	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	C	9030	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	A	9034	-	3,3,3	0.21	0	3,3,3	0.60	0
5	DMS	D	9025	-	3,3,3	0.24	0	3,3,3	0.63	0
5	DMS	C	9006	-	3,3,3	0.23	0	3,3,3	0.60	0
5	DMS	B	9037	-	3,3,3	0.25	0	3,3,3	0.62	0
5	DMS	A	9011	-	3,3,3	0.22	0	3,3,3	0.60	0
5	DMS	D	9011	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	D	9006	-	3,3,3	0.20	0	3,3,3	0.60	0
5	DMS	B	9008	-	3,3,3	0.24	0	3,3,3	0.61	0
5	DMS	D	9020	-	3,3,3	0.26	0	3,3,3	0.63	0
5	DMS	A	9021	-	3,3,3	0.24	0	3,3,3	0.63	0
5	DMS	C	9028	-	3,3,3	0.23	0	3,3,3	0.62	0
2	IPT	A	2002	-	14,15,15	0.97	1 (7%)	18,21,21	0.77	0
5	DMS	A	9028	-	3,3,3	0.23	0	3,3,3	0.63	0
5	DMS	B	9017	4	3,3,3	0.24	0	3,3,3	0.63	0
5	DMS	C	9005	-	3,3,3	0.21	0	3,3,3	0.60	0
5	DMS	D	9028	-	3,3,3	0.22	0	3,3,3	0.62	0
5	DMS	C	9027	-	3,3,3	0.26	0	3,3,3	0.63	0
5	DMS	A	9029	-	3,3,3	0.22	0	3,3,3	0.63	0
5	DMS	A	9032	-	3,3,3	0.22	0	3,3,3	0.62	0
5	DMS	C	9002	-	3,3,3	0.21	0	3,3,3	0.58	0
5	DMS	D	5025	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	C	9013	-	3,3,3	0.23	0	3,3,3	0.60	0
5	DMS	D	9012	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	A	9030	-	3,3,3	0.22	0	3,3,3	0.61	0
2	IPT	D	2002	-	14,15,15	0.99	1 (7%)	18,21,21	0.94	0
5	DMS	A	9018	-	3,3,3	0.24	0	3,3,3	0.62	0
2	IPT	D	2001	4	14,15,15	0.91	1 (7%)	18,21,21	0.73	0
5	DMS	C	9039	-	3,3,3	0.22	0	3,3,3	0.63	0
5	DMS	C	9007	-	3,3,3	0.22	0	3,3,3	0.60	0
5	DMS	D	5030	-	3,3,3	0.24	0	3,3,3	0.60	0
2	IPT	B	2001	4	14,15,15	0.95	1 (7%)	18,21,21	0.72	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
5	DMS	D	9009	-	3,3,3	0.24	0	3,3,3	0.61	0
5	DMS	D	9018	-	3,3,3	0.24	0	3,3,3	0.63	0
5	DMS	B	9034	-	3,3,3	0.21	0	3,3,3	0.64	0
5	DMS	A	9020	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	D	9007	-	3,3,3	0.22	0	3,3,3	0.59	0
5	DMS	D	9001	-	3,3,3	0.22	0	3,3,3	0.62	0
5	DMS	C	9003	-	3,3,3	0.23	0	3,3,3	0.60	0
5	DMS	B	9024	-	3,3,3	0.25	0	3,3,3	0.59	0
5	DMS	B	9013	-	3,3,3	0.25	0	3,3,3	0.64	0
5	DMS	A	9013	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	D	9017	-	3,3,3	0.22	0	3,3,3	0.62	0
5	DMS	D	9008	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	A	9007	-	3,3,3	0.22	0	3,3,3	0.60	0
5	DMS	B	9032	-	3,3,3	0.24	0	3,3,3	0.64	0
5	DMS	C	9014	-	3,3,3	0.23	0	3,3,3	0.59	0
5	DMS	B	9039	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	A	9004	-	3,3,3	0.22	0	3,3,3	0.63	0
5	DMS	C	9018	-	3,3,3	0.21	0	3,3,3	0.62	0
5	DMS	C	9017	4	3,3,3	0.26	0	3,3,3	0.63	0
5	DMS	A	9036	-	3,3,3	0.24	0	3,3,3	0.63	0
5	DMS	B	9009	-	3,3,3	0.24	0	3,3,3	0.60	0
5	DMS	A	9002	-	3,3,3	0.23	0	3,3,3	0.60	0
5	DMS	A	9031	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	A	9019	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	D	9015	-	3,3,3	0.22	0	3,3,3	0.60	0
5	DMS	C	9022	-	3,3,3	0.24	0	3,3,3	0.61	0
2	IPT	A	2001	4	14,15,15	0.88	1 (7%)	18,21,21	0.71	0
5	DMS	B	9041	-	3,3,3	0.23	0	3,3,3	0.63	0
5	DMS	B	9038	-	3,3,3	0.24	0	3,3,3	0.63	0
5	DMS	A	9026	-	3,3,3	0.21	0	3,3,3	0.60	0
5	DMS	D	9003	-	3,3,3	0.20	0	3,3,3	0.60	0
5	DMS	A	9014	-	3,3,3	0.19	0	3,3,3	0.62	0
5	DMS	D	9027	-	3,3,3	0.16	0	3,3,3	0.59	0
5	DMS	D	9005	-	3,3,3	0.23	0	3,3,3	0.56	0
5	DMS	C	9016	-	3,3,3	0.22	0	3,3,3	0.59	0
5	DMS	D	5026	-	3,3,3	0.21	0	3,3,3	0.62	0
5	DMS	B	9025	-	3,3,3	0.23	0	3,3,3	0.63	0
5	DMS	B	9005	-	3,3,3	0.25	0	3,3,3	0.59	0
5	DMS	D	9016	-	3,3,3	0.22	0	3,3,3	0.61	0
2	IPT	C	2001	4	14,15,15	0.97	1 (7%)	18,21,21	0.71	0
5	DMS	C	9034	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	A	9022	-	3,3,3	0.26	0	3,3,3	0.63	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
5	DMS	B	9020	-	3,3,3	0.23	0	3,3,3	0.62	0
5	DMS	C	9033	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	C	9021	-	3,3,3	0.24	0	3,3,3	0.62	0
5	DMS	C	9042	-	3,3,3	0.25	0	3,3,3	0.62	0
5	DMS	D	9026	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	D	9024	-	3,3,3	0.24	0	3,3,3	0.61	0
5	DMS	A	9006	-	3,3,3	0.21	0	3,3,3	0.61	0
5	DMS	C	9009	-	3,3,3	0.24	0	3,3,3	0.58	0
5	DMS	B	9036	-	3,3,3	0.21	0	3,3,3	0.62	0
5	DMS	D	9002	-	3,3,3	0.17	0	3,3,3	0.62	0
5	DMS	A	9017	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	B	9016	-	3,3,3	0.23	0	3,3,3	0.61	0
5	DMS	A	9008	-	3,3,3	0.21	0	3,3,3	0.61	0
5	DMS	B	9030	-	3,3,3	0.22	0	3,3,3	0.61	0
5	DMS	C	9004	-	3,3,3	0.20	0	3,3,3	0.62	0
5	DMS	B	9015	-	3,3,3	0.22	0	3,3,3	0.60	0
5	DMS	C	9040	-	3,3,3	0.24	0	3,3,3	0.63	0
5	DMS	B	9010	-	3,3,3	0.24	0	3,3,3	0.62	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
2	IPT	A	2002	-	-	0/6/26/26	0/1/1/1
2	IPT	D	2001	4	-	3/6/26/26	0/1/1/1
2	IPT	A	2001	4	-	1/6/26/26	0/1/1/1
2	IPT	B	2001	4	-	1/6/26/26	0/1/1/1
2	IPT	C	2001	4	-	1/6/26/26	0/1/1/1
2	IPT	D	2002	-	-	3/6/26/26	0/1/1/1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2002	IPT	O5-C1	2.76	1.46	1.42
2	B	2001	IPT	O5-C1	2.74	1.46	1.42
2	D	2002	IPT	O5-C1	2.73	1.46	1.42
2	C	2001	IPT	O5-C1	2.72	1.46	1.42
2	D	2001	IPT	O5-C1	2.53	1.46	1.42
2	A	2001	IPT	O5-C1	2.42	1.46	1.42

There are no bond angle outliers.

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	D	2001	IPT	C2'-C1'-S1-C1
2	D	2001	IPT	C3'-C1'-S1-C1
2	D	2002	IPT	C2'-C1'-S1-C1
2	B	2001	IPT	O5-C5-C6-O6
2	D	2002	IPT	C4-C5-C6-O6
2	C	2001	IPT	O5-C5-C6-O6
2	A	2001	IPT	O5-C5-C6-O6
2	D	2001	IPT	O5-C5-C6-O6
2	D	2002	IPT	O5-C5-C6-O6

There are no ring outliers.

7 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	9021	DMS	1	0
5	C	9037	DMS	1	0
5	B	9040	DMS	1	0
5	C	9041	DMS	2	0
5	B	9043	DMS	1	0
5	C	9030	DMS	4	0
5	D	9027	DMS	1	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	A	1011/1023 (98%)	-0.44	23 (2%) 60 58	5, 19, 40, 70	0
1	B	1011/1023 (98%)	-0.52	18 (1%) 68 66	6, 15, 37, 71	0
1	C	1011/1023 (98%)	-0.54	15 (1%) 73 72	5, 14, 33, 68	0
1	D	1011/1023 (98%)	-0.43	19 (1%) 66 65	7, 19, 38, 71	0
All	All	4044/4092 (98%)	-0.48	75 (1%) 66 65	5, 17, 37, 71	0

All (75) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	731	PRO	7.0
1	D	689	GLU	6.5
1	A	735	HIS	6.2
1	A	689	GLU	5.5
1	B	1023	LYS	5.5
1	D	735	HIS	5.5
1	B	689	GLU	5.5
1	C	731	PRO	4.9
1	B	686	PRO	4.7
1	C	800	ARG	4.5
1	B	685	LEU	4.3
1	C	689	GLU	4.2
1	A	687	GLN	4.1
1	C	581	ASN	4.1
1	A	798	ALA	4.1
1	B	732	ALA	3.9
1	B	730	LEU	3.8
1	D	687	GLN	3.8
1	A	686	PRO	3.8
1	A	733	ALA	3.7
1	C	684	GLU	3.6

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Mol	Chain	Res	Type	RSRZ
1	A	731	PRO	3.6
1	A	1023	LYS	3.6
1	C	1023	LYS	3.6
1	C	799	THR	3.5
1	A	71	GLU	3.5
1	D	684	GLU	3.5
1	A	685	LEU	3.4
1	C	686	PRO	3.3
1	D	730	LEU	3.2
1	C	733	ALA	3.2
1	D	732	ALA	3.2
1	B	1022	GLN	3.2
1	D	581	ASN	3.2
1	B	687	GLN	3.1
1	A	799	THR	3.1
1	C	735	HIS	3.1
1	B	733	ALA	3.0
1	A	684	GLU	3.0
1	D	799	THR	3.0
1	B	800	ARG	3.0
1	D	798	ALA	2.9
1	C	1022	GLN	2.9
1	A	580	GLU	2.9
1	A	732	ALA	2.9
1	D	800	ARG	2.8
1	A	800	ARG	2.8
1	B	798	ALA	2.7
1	D	580	GLU	2.7
1	D	583	ASN	2.7
1	C	798	ALA	2.7
1	B	735	HIS	2.6
1	B	684	GLU	2.5
1	A	583	ASN	2.5
1	D	130	ASP	2.5
1	A	730	LEU	2.4
1	D	131	GLU	2.4
1	B	682	LEU	2.4
1	B	683	PRO	2.3
1	C	690	SER	2.3
1	C	687	GLN	2.3
1	A	801	ILE	2.3
1	A	117	GLU	2.2

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Mol	Chain	Res	Type	RSRZ
1	B	772	ASP	2.2
1	D	686	PRO	2.2
1	B	681	GLU	2.2
1	C	651	LEU	2.2
1	A	178	ARG	2.2
1	D	75	GLU	2.2
1	A	131	GLU	2.1
1	D	688	PRO	2.1
1	A	977	HIS	2.1
1	D	770	ILE	2.0
1	D	634	GLN	2.0
1	A	116	THR	2.0

## 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 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( $\text{\AA}^2$ )	Q<0.9
5	DMS	D	5025	4/4	0.46	0.35	96,96,97,97	0
5	DMS	C	9037	4/4	0.56	0.31	67,67,67,70	0
5	DMS	B	9034	4/4	0.61	0.29	79,80,80,81	0
5	DMS	B	9019	4/4	0.64	0.31	92,92,92,93	0
3	MG	A	3004	1/1	0.65	0.20	56,56,56,56	0
5	DMS	A	9023	4/4	0.68	0.37	91,92,92,92	0
5	DMS	D	9027	4/4	0.69	0.36	81,82,82,83	0
5	DMS	B	9043	4/4	0.73	0.21	68,69,69,70	0
5	DMS	C	9039	4/4	0.73	0.27	71,72,72,73	0
5	DMS	D	9028	4/4	0.74	0.23	70,70,71,71	0
3	MG	B	3004	1/1	0.75	0.14	64,64,64,64	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
5	DMS	B	9020	4/4	0.75	0.40	92,93,93,93	0
5	DMS	D	9022	4/4	0.75	0.24	82,82,82,83	0
5	DMS	D	9008	4/4	0.76	0.29	85,85,86,86	0
5	DMS	C	9031	4/4	0.78	0.16	64,65,65,66	0
5	DMS	A	9020	4/4	0.79	0.23	80,81,81,82	0
5	DMS	C	9040	4/4	0.80	0.24	56,56,56,59	0
5	DMS	A	9036	4/4	0.80	0.26	64,65,65,66	0
5	DMS	A	9015	4/4	0.82	0.26	81,81,81,81	0
5	DMS	B	9042	4/4	0.82	0.21	72,72,72,74	0
5	DMS	B	9035	4/4	0.83	0.26	58,59,59,60	0
4	NA	B	3105	1/1	0.83	0.11	42,42,42,42	0
5	DMS	A	9024	4/4	0.84	0.29	92,93,93,93	0
5	DMS	D	9026	4/4	0.84	0.21	76,76,77,77	0
5	DMS	B	9013	4/4	0.84	0.20	64,64,65,66	0
5	DMS	D	9024	4/4	0.84	0.18	81,81,81,81	0
5	DMS	A	9031	4/4	0.85	0.21	83,83,83,83	0
5	DMS	A	9018	4/4	0.85	0.18	70,70,70,71	0
5	DMS	D	9018	4/4	0.85	0.27	55,57,57,57	0
5	DMS	B	9017	4/4	0.86	0.32	72,73,73,74	0
5	DMS	D	5027	4/4	0.86	0.19	54,55,56,56	0
5	DMS	B	9041	4/4	0.86	0.21	72,72,72,73	0
5	DMS	C	9021	4/4	0.86	0.14	68,69,69,69	0
5	DMS	C	9023	4/4	0.86	0.23	74,75,75,75	0
5	DMS	B	9040	4/4	0.87	0.20	45,45,46,47	0
5	DMS	B	9025	4/4	0.87	0.14	71,71,71,72	0
5	DMS	A	9032	4/4	0.87	0.16	86,86,87,87	0
5	DMS	D	9017	4/4	0.87	0.31	91,92,92,92	0
5	DMS	C	9032	4/4	0.87	0.20	52,54,54,55	0
2	IPT	D	2002	15/15	0.87	0.15	26,29,31,32	0
3	MG	D	3004	1/1	0.88	0.21	60,60,60,60	0
5	DMS	D	5030	4/4	0.88	0.18	68,68,69,69	0
5	DMS	A	9035	4/4	0.88	0.16	62,62,62,62	0
5	DMS	B	9037	4/4	0.88	0.15	71,72,72,72	0
5	DMS	B	9030	4/4	0.88	0.24	89,89,89,89	0
5	DMS	C	9044	4/4	0.89	0.41	81,81,81,82	0
5	DMS	A	9026	4/4	0.89	0.27	67,68,68,69	0
5	DMS	A	9012	4/4	0.89	0.15	73,73,74,74	0
5	DMS	C	9035	4/4	0.89	0.17	60,61,62,62	0
5	DMS	C	9041	4/4	0.89	0.21	56,56,57,57	0
5	DMS	C	9042	4/4	0.89	0.20	43,45,45,47	0
5	DMS	B	9039	4/4	0.90	0.15	63,63,63,64	0
5	DMS	A	9030	4/4	0.90	0.19	62,63,63,63	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
5	DMS	B	9006	4/4	0.90	0.18	48,48,48,49	0
5	DMS	C	9036	4/4	0.90	0.17	66,68,68,68	0
5	DMS	B	9011	4/4	0.90	0.18	38,41,41,41	0
5	DMS	A	9013	4/4	0.90	0.16	73,73,73,73	0
5	DMS	C	9017	4/4	0.90	0.32	70,70,70,70	0
5	DMS	C	9019	4/4	0.90	0.22	50,50,51,52	0
3	MG	B	3005	1/1	0.90	0.26	43,43,43,43	0
5	DMS	C	9043	4/4	0.90	0.18	65,66,66,66	0
5	DMS	A	9021	4/4	0.90	0.18	69,69,69,69	0
5	DMS	C	9006	4/4	0.91	0.17	40,41,41,42	0
5	DMS	C	9030	4/4	0.91	0.22	49,50,50,50	0
5	DMS	B	9008	4/4	0.91	0.22	55,56,56,56	0
2	IPT	A	2002	15/15	0.91	0.12	19,25,27,27	15
5	DMS	C	9033	4/4	0.91	0.12	72,72,72,72	0
5	DMS	D	9020	4/4	0.91	0.17	60,61,62,62	0
5	DMS	B	9036	4/4	0.91	0.13	52,53,53,54	0
5	DMS	C	9034	4/4	0.92	0.29	70,71,71,71	0
5	DMS	B	9038	4/4	0.92	0.20	60,61,61,61	0
5	DMS	B	9014	4/4	0.92	0.17	62,62,62,63	0
5	DMS	D	9014	4/4	0.92	0.25	69,70,70,70	0
5	DMS	A	9011	4/4	0.92	0.19	62,63,63,63	0
5	DMS	C	9022	4/4	0.93	0.18	56,57,57,57	0
5	DMS	B	9007	4/4	0.93	0.13	33,33,35,37	0
5	DMS	C	9008	4/4	0.93	0.16	57,58,58,59	0
5	DMS	C	9013	4/4	0.93	0.16	56,56,57,57	0
5	DMS	C	9016	4/4	0.93	0.11	53,54,54,55	0
5	DMS	B	9032	4/4	0.93	0.24	44,44,45,45	0
5	DMS	D	5026	4/4	0.93	0.24	79,79,79,80	0
5	DMS	C	9018	4/4	0.93	0.25	47,48,49,49	0
5	DMS	D	9006	4/4	0.93	0.12	48,49,50,51	0
5	DMS	A	9016	4/4	0.93	0.11	72,72,72,73	0
5	DMS	D	9011	4/4	0.93	0.18	67,67,67,67	0
5	DMS	A	9028	4/4	0.93	0.13	55,55,56,57	0
5	DMS	B	9016	4/4	0.94	0.11	56,57,58,58	0
4	NA	B	3103	1/1	0.94	0.10	39,39,39,39	0
2	IPT	C	2001	15/15	0.94	0.10	15,18,24,25	0
5	DMS	C	9029	4/4	0.94	0.18	57,58,58,59	0
5	DMS	D	9012	4/4	0.94	0.19	54,55,55,55	0
5	DMS	D	9013	4/4	0.94	0.15	76,76,77,77	0
4	NA	C	3104	1/1	0.94	0.17	30,30,30,30	0
5	DMS	D	9015	4/4	0.94	0.24	74,74,74,74	0
5	DMS	A	9004	4/4	0.94	0.10	38,39,40,41	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
5	DMS	B	9027	4/4	0.94	0.23	30,30,31,34	0
5	DMS	D	9019	4/4	0.94	0.19	60,60,61,62	0
5	DMS	C	9004	4/4	0.94	0.18	49,49,50,51	0
5	DMS	B	9029	4/4	0.94	0.28	59,59,59,60	0
5	DMS	D	9023	4/4	0.94	0.14	52,53,53,54	0
5	DMS	A	9022	4/4	0.94	0.16	48,49,49,51	0
5	DMS	A	9007	4/4	0.94	0.17	59,59,60,60	0
5	DMS	C	9015	4/4	0.94	0.11	64,65,65,66	0
3	MG	C	3004	1/1	0.94	0.11	49,49,49,49	0
3	MG	D	3001	1/1	0.94	0.07	17,17,17,17	0
5	DMS	D	9025	4/4	0.94	0.13	65,66,66,66	0
2	IPT	A	2001	15/15	0.94	0.13	19,22,29,30	0
4	NA	A	3104	1/1	0.94	0.07	29,29,29,29	0
5	DMS	C	9020	4/4	0.94	0.20	60,61,61,61	0
5	DMS	C	9025	4/4	0.95	0.23	57,58,58,58	0
5	DMS	C	9027	4/4	0.95	0.15	55,56,57,57	0
5	DMS	A	9019	4/4	0.95	0.16	46,46,47,47	0
2	IPT	B	2001	15/15	0.95	0.11	14,18,21,23	0
4	NA	D	3104	1/1	0.95	0.15	33,33,33,33	0
5	DMS	A	9014	4/4	0.95	0.10	49,50,50,51	0
5	DMS	C	9009	4/4	0.95	0.15	31,32,32,33	0
5	DMS	A	9033	4/4	0.95	0.12	44,45,45,46	0
5	DMS	C	9014	4/4	0.95	0.17	65,65,66,66	0
5	DMS	A	9034	4/4	0.95	0.25	64,65,65,65	0
4	NA	B	3104	1/1	0.95	0.13	30,30,30,30	0
5	DMS	C	9038	4/4	0.95	0.14	62,62,62,63	0
5	DMS	B	9018	4/4	0.95	0.24	63,63,63,64	0
2	IPT	D	2001	15/15	0.95	0.13	20,25,29,29	0
4	NA	C	3103	1/1	0.95	0.08	33,33,33,33	0
5	DMS	D	5028	4/4	0.95	0.21	40,40,40,42	0
5	DMS	B	9021	4/4	0.95	0.26	61,61,61,61	0
5	DMS	B	9022	4/4	0.95	0.15	53,53,53,53	0
5	DMS	B	9023	4/4	0.95	0.16	52,52,52,52	0
5	DMS	B	9024	4/4	0.95	0.17	54,54,54,54	0
5	DMS	C	9024	4/4	0.95	0.16	53,54,54,54	0
3	MG	A	3002	1/1	0.96	0.04	18,18,18,18	0
5	DMS	B	9026	4/4	0.96	0.14	61,61,62,62	0
5	DMS	D	9002	4/4	0.96	0.14	26,26,29,29	0
5	DMS	D	9003	4/4	0.96	0.12	36,36,37,37	0
5	DMS	B	9012	4/4	0.96	0.23	63,63,63,64	0
5	DMS	D	9007	4/4	0.96	0.11	48,48,48,49	0
5	DMS	A	9008	4/4	0.96	0.11	48,49,49,50	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
5	DMS	A	9017	4/4	0.96	0.18	53,53,53,54	0
5	DMS	B	9015	4/4	0.96	0.11	58,58,59,59	0
5	DMS	B	9033	4/4	0.96	0.24	46,47,47,47	0
5	DMS	C	9028	4/4	0.96	0.19	40,41,43,43	0
4	NA	D	3101	1/1	0.96	0.08	24,24,24,24	0
5	DMS	C	9002	4/4	0.96	0.09	17,19,21,24	0
5	DMS	A	9029	4/4	0.96	0.12	47,47,47,47	0
4	NA	A	3101	1/1	0.97	0.07	27,27,27,27	0
5	DMS	A	9010	4/4	0.97	0.13	43,44,45,45	0
5	DMS	A	9002	4/4	0.97	0.11	24,25,25,26	0
5	DMS	A	9003	4/4	0.97	0.07	29,31,32,32	0
5	DMS	D	9004	4/4	0.97	0.10	27,29,30,31	0
5	DMS	C	9005	4/4	0.97	0.11	25,27,28,30	0
3	MG	D	3002	1/1	0.97	0.10	19,19,19,19	0
5	DMS	C	9007	4/4	0.97	0.09	42,42,42,42	0
5	DMS	D	9010	4/4	0.97	0.09	37,38,38,40	0
5	DMS	B	9002	4/4	0.97	0.10	22,24,25,26	0
5	DMS	B	9004	4/4	0.97	0.17	28,29,30,31	0
5	DMS	C	9011	4/4	0.97	0.09	40,40,40,42	0
5	DMS	B	9005	4/4	0.97	0.10	26,27,27,29	0
5	DMS	A	9006	4/4	0.97	0.07	56,57,57,58	0
4	NA	D	3103	1/1	0.97	0.08	34,34,34,34	0
5	DMS	B	9009	4/4	0.98	0.09	35,36,36,36	0
5	DMS	B	9010	4/4	0.98	0.10	32,32,33,34	0
5	DMS	D	9009	4/4	0.98	0.18	42,42,42,42	0
5	DMS	C	9003	4/4	0.98	0.11	28,28,29,29	0
3	MG	A	3001	1/1	0.98	0.07	14,14,14,14	0
4	NA	A	3102	1/1	0.98	0.07	9,9,9,9	0
5	DMS	D	9001	4/4	0.98	0.08	20,22,22,24	0
4	NA	D	3102	1/1	0.98	0.07	12,12,12,12	0
3	MG	B	3002	1/1	0.98	0.09	13,13,13,13	0
5	DMS	D	9016	4/4	0.98	0.12	45,46,46,48	0
4	NA	C	3102	1/1	0.98	0.05	15,15,15,15	0
5	DMS	D	9005	4/4	0.98	0.15	28,28,28,29	0
4	NA	B	3102	1/1	0.98	0.05	13,13,13,13	0
5	DMS	C	9010	4/4	0.99	0.10	34,34,35,35	0
3	MG	C	3001	1/1	0.99	0.04	12,12,12,12	0
3	MG	C	3002	1/1	0.99	0.09	11,11,11,11	0
4	NA	A	3103	1/1	0.99	0.05	31,31,31,31	0
5	DMS	C	9001	4/4	0.99	0.07	13,15,16,18	0
5	DMS	A	9005	4/4	0.99	0.11	29,29,29,30	0
3	MG	B	3001	1/1	0.99	0.04	12,12,12,12	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
4	NA	C	3101	1/1	0.99	0.07	18,18,18,18	0
5	DMS	B	9001	4/4	0.99	0.09	15,17,18,18	0
4	NA	B	3101	1/1	0.99	0.05	15,15,15,15	0
5	DMS	B	9003	4/4	0.99	0.11	28,29,30,31	0
5	DMS	A	9009	4/4	0.99	0.14	36,36,37,37	0
5	DMS	A	9001	4/4	0.99	0.07	16,17,18,19	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.