



wwPDB X-ray Structure Validation Summary Report ⓘ

Feb 15, 2017 – 06:06 am GMT

PDB ID : 1JYW
Title : E. COLI (lacZ) BETA-GALACTOSIDASE (E537Q) IN COMPLEX WITH PNPG
Authors : Juers, D.H.; Matthews, B.W.
Deposited on : 2001-09-13
Resolution : 1.55 Å(reported)

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

We welcome your comments at 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.

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 : trunk28620
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) : recalc28949

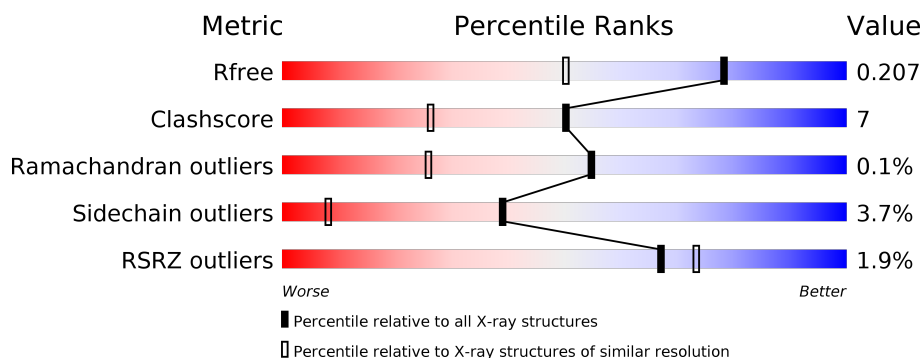
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.55 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	1088 (1.56-1.56)
Clashscore	112137	1132 (1.56-1.56)
Ramachandran outliers	110173	1110 (1.56-1.56)
Sidechain outliers	110143	1108 (1.56-1.56)
RSRZ outliers	101464	1089 (1.56-1.56)

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 ≥ 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	1023	<div> <div>2%</div> <div> <div></div> <div>75%</div> <div>20%</div> <div>• •</div> </div> </div>
1	B	1023	<div> <div>%</div> <div> <div></div> <div>74%</div> <div>21%</div> <div>• •</div> </div> </div>
1	C	1023	<div> <div>2%</div> <div> <div></div> <div>74%</div> <div>22%</div> <div>• • •</div> </div> </div>
1	D	1023	<div> <div>3%</div> <div> <div></div> <div>73%</div> <div>21%</div> <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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	DMS	A	8402	-	-	-	X
5	DMS	A	8404	-	-	-	X
5	DMS	A	8405	-	-	-	X
5	DMS	A	8406	-	-	-	X
5	DMS	A	8407	-	-	-	X
5	DMS	A	8412	-	-	-	X
5	DMS	A	8413	-	X	-	-
5	DMS	A	8415	-	X	-	-
5	DMS	A	8417	-	-	-	X
5	DMS	A	8419	-	-	-	X
5	DMS	A	8420	-	-	-	X
5	DMS	A	8423	-	-	-	X
5	DMS	A	8502	-	X	-	-
5	DMS	B	8402	-	X	-	-
5	DMS	B	8403	-	-	-	X
5	DMS	B	8404	-	-	-	X
5	DMS	B	8406	-	-	-	X
5	DMS	B	8407	-	-	-	X
5	DMS	B	8408	-	-	-	X
5	DMS	B	8415	-	X	-	-
5	DMS	B	8417	-	-	-	X
5	DMS	B	8420	-	-	-	X
5	DMS	B	8423	-	-	-	X
5	DMS	B	8502	-	-	-	X
5	DMS	B	8506	-	-	-	X
5	DMS	B	8508	-	X	-	X
5	DMS	C	8402	-	-	X	X
5	DMS	C	8404	-	-	-	X
5	DMS	C	8405	-	-	-	X
5	DMS	C	8406	-	-	-	X
5	DMS	C	8407	-	-	-	X
5	DMS	C	8412	-	-	-	X
5	DMS	C	8417	-	-	-	X
5	DMS	C	8419	-	-	-	X
5	DMS	C	8420	-	-	-	X
5	DMS	C	8423	-	-	-	X
5	DMS	C	8501	-	-	-	X
5	DMS	C	8506	-	-	-	X
5	DMS	C	8602	-	-	-	X
5	DMS	D	8404	-	-	-	X
5	DMS	D	8406	-	-	-	X
5	DMS	D	8407	-	X	-	X

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Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	DMS	D	8416	-	-	X	-
5	DMS	D	8417	-	-	-	X
5	DMS	D	8419	-	-	-	X
5	DMS	D	8423	-	-	-	X
5	DMS	D	8425	-	-	-	X
5	DMS	D	8501	-	-	-	X
5	DMS	D	8508	-	-	-	X
5	DMS	D	8705	-	-	-	X

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 37524 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	2	0
			8127	5139	1441	1509	38			
1	B	1011	Total	C	N	O	S	0	2	0
			8128	5139	1442	1509	38			
1	C	1011	Total	C	N	O	S	0	2	0
			8128	5139	1442	1509	38			
1	D	1011	Total	C	N	O	S	0	2	0
			8128	5139	1442	1509	38			

There are 36 discrepancies between the modelled and reference sequences:

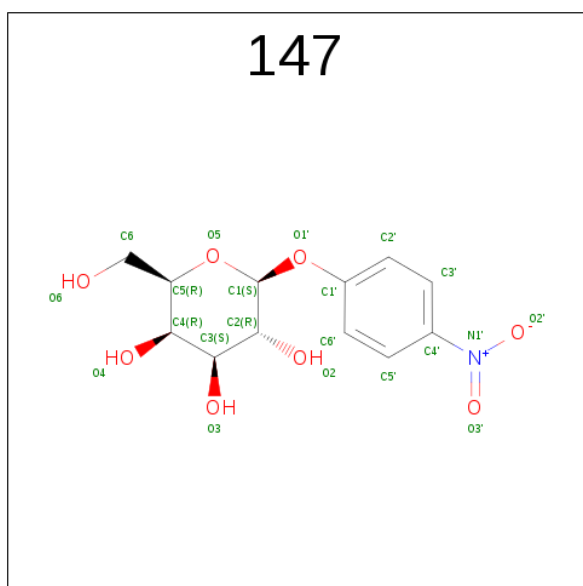
Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	THR	CLONING ARTIFACT	? P00722
A	2	SER	MET	CLONING ARTIFACT	? P00722
A	3	HIS	ILE	CLONING ARTIFACT	? P00722
A	4	MET	THR	CLONING ARTIFACT	? P00722
A	5	LEU	ASP	CLONING ARTIFACT	? P00722
A	6	GLU	SER	CLONING ARTIFACT	? P00722
A	7	ASP	LEU	CLONING ARTIFACT	? P00722
A	8	PRO	ALA	CLONING ARTIFACT	? P00722
A	537	GLN	GLU	ENGINEERED	? P00722
B	1	GLY	THR	CLONING ARTIFACT	? P00722
B	2	SER	MET	CLONING ARTIFACT	? P00722
B	3	HIS	ILE	CLONING ARTIFACT	? P00722
B	4	MET	THR	CLONING ARTIFACT	? P00722
B	5	LEU	ASP	CLONING ARTIFACT	? P00722
B	6	GLU	SER	CLONING ARTIFACT	? P00722
B	7	ASP	LEU	CLONING ARTIFACT	? P00722
B	8	PRO	ALA	CLONING ARTIFACT	? P00722
B	537	GLN	GLU	ENGINEERED	? P00722
C	1	GLY	THR	CLONING ARTIFACT	? P00722
C	2	SER	MET	CLONING ARTIFACT	? P00722
C	3	HIS	ILE	CLONING ARTIFACT	? P00722

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Chain	Residue	Modelled	Actual	Comment	Reference
C	4	MET	THR	CLONING ARTIFACT	? P00722
C	5	LEU	ASP	CLONING ARTIFACT	? P00722
C	6	GLU	SER	CLONING ARTIFACT	? P00722
C	7	ASP	LEU	CLONING ARTIFACT	? P00722
C	8	PRO	ALA	CLONING ARTIFACT	? P00722
C	537	GLN	GLU	ENGINEERED	? P00722
D	1	GLY	THR	CLONING ARTIFACT	? P00722
D	2	SER	MET	CLONING ARTIFACT	? P00722
D	3	HIS	ILE	CLONING ARTIFACT	? P00722
D	4	MET	THR	CLONING ARTIFACT	? P00722
D	5	LEU	ASP	CLONING ARTIFACT	? P00722
D	6	GLU	SER	CLONING ARTIFACT	? P00722
D	7	ASP	LEU	CLONING ARTIFACT	? P00722
D	8	PRO	ALA	CLONING ARTIFACT	? P00722
D	537	GLN	GLU	ENGINEERED	? P00722

- Molecule 2 is SUGAR (1-O-[P-NITROPHENYL]-BETA-D-GALACTOPYRANOSE) (three-letter code: 147) (formula: C₁₂H₁₅NO₈).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			21	12	1	8		
2	B	1	Total	C	N	O	0	0
			21	12	1	8		
2	C	1	Total	C	N	O	0	0
			21	12	1	8		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	D	1	Total	C	N	O	0	0
			21	12	1	8		

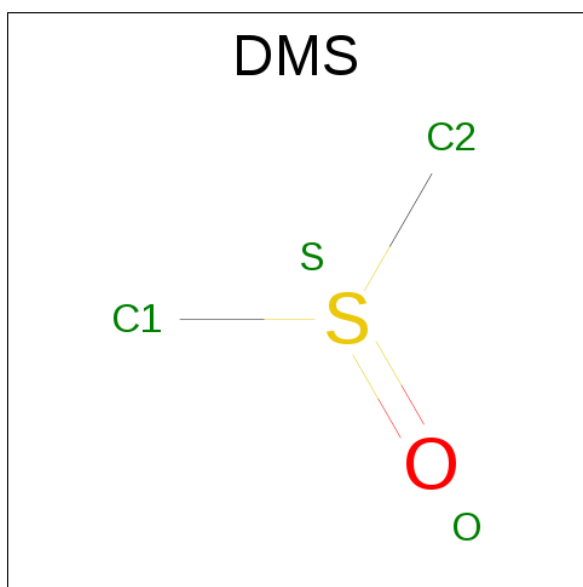
- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

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

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

- Molecule 5 is DIMETHYL SULFOXIDE (three-letter code: DMS) (formula: C₂H₆OS).



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	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	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
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
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
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
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
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
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
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
5	D	1	Total C O S 4 2 1 1	0	0

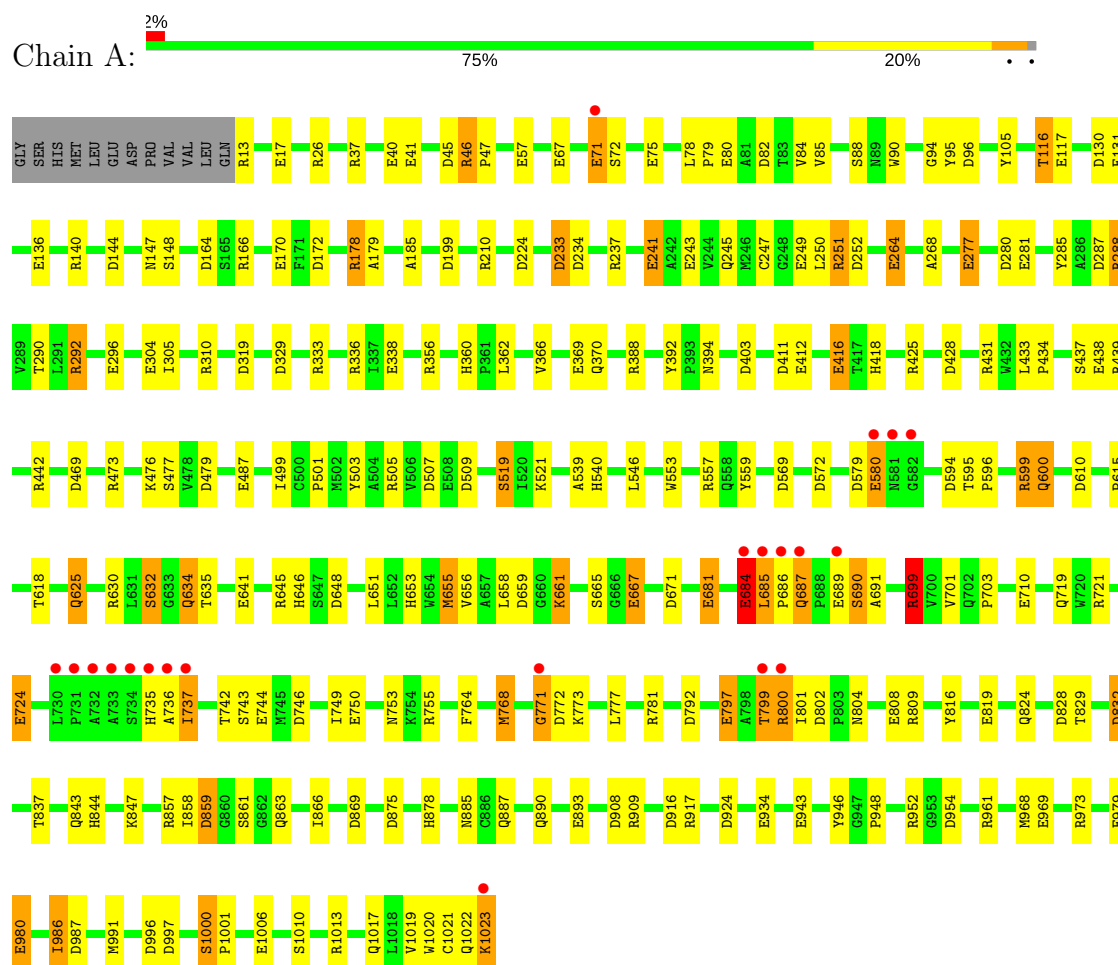
- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1112	Total O 1112 1112	0	0
6	B	1128	Total O 1128 1128	0	0
6	C	1104	Total O 1104 1104	0	0
6	D	1118	Total O 1118 1118	0	0

3 Residue-property plots

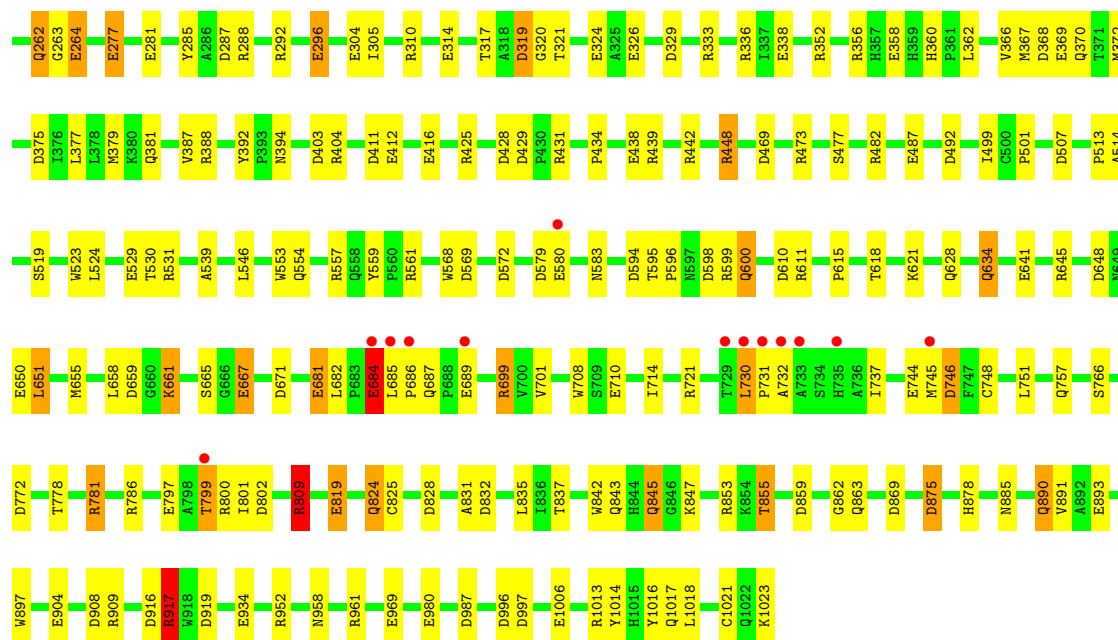
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are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

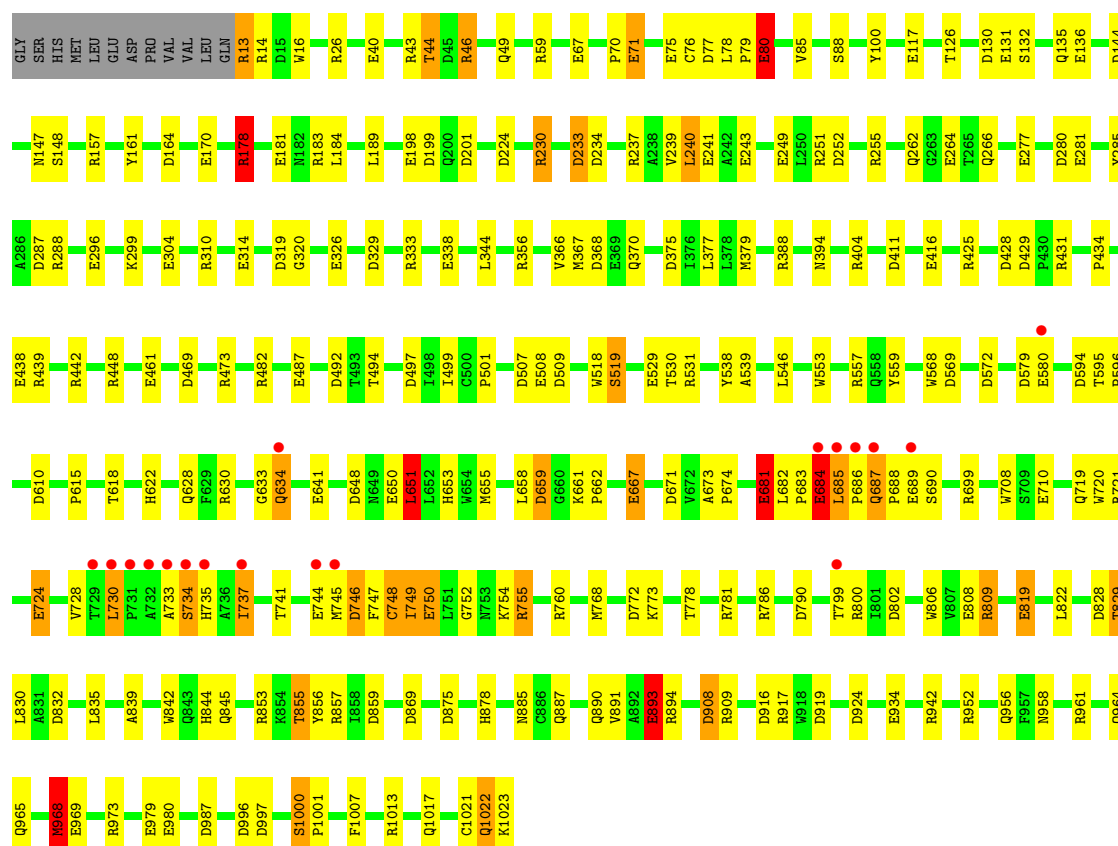
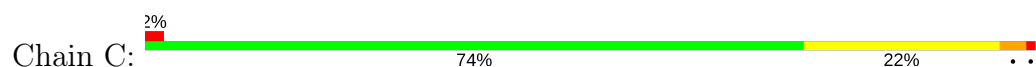


• Molecule 1: Beta-Galactosidase

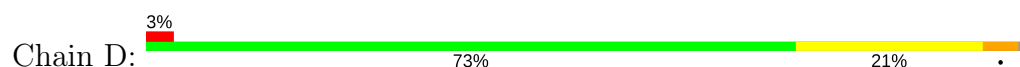




• Molecule 1: Beta-Galactosidase



• Molecule 1: Beta-Galactosidase



GLY	Q135	E136	E281	D428	K577	E581	E797	R917
SER				D429	Y578	L682	A798	A918
HIS	R140	D287	D428	P430	D579	P683	T799	D919
MET				E580	E580	E684	R800	D924
LEU	D144	R292		W432	N581	L685	I801	N925
GLU				L433	N583	P686	D802	Y926
ASP	N147	E296		P434	P584	Q687	P803	
PRO	S148	E304		R439	Y588	P688	N804	R942
VAL		I305			E589	S690	E808	E943
VAL	R157			R442	D591		R809	
LEU		E314		R446	D594	R699	Q814	R952
GLN	R13	D164	D319	D447	T596	Y701	Q817	G953
R14	S165			R448	P596	E710	A818	D954
D15	R166	E324		E461	D610	W717	T829	N958
W16	F170	A325		D469	T618	Q718	L830	R961
E17	E171	E326		Y472	E519	Q719	A831	Y962
	D172	D329		R473	Q625	E724	D832	R973
R37				K476	F629	L730	H840	E979
E41	F176			D479	R630	F731	Q843	E980
D45	L177	R333		R482	L631	A732	H844	T986
P47	R178	E334		E487	S632	A733	Q845	D987
	A179	G180			Q634	S734	G846	D996
E67	E181	N182		D492	Q637	H735	K847	D997
	R183	L344		I499	V638	W737	T848	L1018
E71	D193			P501	T639	F738	L849	Y1019
S72					E641	H739	F850	W1020
W73						D746	I858	C1021
L74	D224				R645	I749	D859	Q1022
E75	R230					E750	Q860	K1023
C76						L751		
D77	D233					K754	D869	
	D234					R765	H878	
E80						R760	N885	
	R237					M768	C886	
V85						W769	Q887	
V86	L240					I770		
P87	E241					G771	Q890	
S88	A242					D772	V891	
	E243					K773	A892	
D96						Q774	E893	
P111	E249					Q775	R894	
P112	L250					T778	D908	
F113	R251						R909	
	D252						L910	
T116	Y253						D916	
E117	L284							
	R295							
C122	E264							
	V267							
N128	E277							
V129	D280							
D130								
E131								
L134								

4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	149.68Å 168.60Å 201.09Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	28.80 – 1.55 28.75 – 1.55	Depositor EDS
% Data completeness (in resolution range)	98.3 (28.80-1.55) 91.2 (28.75-1.55)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.69 (at 1.54Å)	Xtriage
Refinement program	TNT V. 5-E	Depositor
R, R_{free}	0.180 , 0.229 0.164 , 0.207	Depositor DCC
R_{free} test set	9750 reflections (1.48%)	DCC
Wilson B-factor (Å ²)	12.3	Xtriage
Anisotropy	0.205	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 84.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	37524	wwPDB-VP
Average B, all atoms (Å ²)	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 35.91 % 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 5.4252e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹Intensities estimated from amplitudes.

²Theoretical 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: 147, MG, DMS, NA

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	1.21	49/8382 (0.6%)	1.67	163/11435 (1.4%)
1	B	1.23	51/8383 (0.6%)	1.65	169/11437 (1.5%)
1	C	1.21	46/8383 (0.5%)	1.71	180/11437 (1.6%)
1	D	1.22	47/8383 (0.6%)	1.61	161/11437 (1.4%)
All	All	1.22	193/33531 (0.6%)	1.66	673/45746 (1.5%)

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	C	1	0

The worst 5 of 193 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1006	GLU	CD-OE2	10.08	1.36	1.25
1	D	681	GLU	CD-OE2	9.79	1.36	1.25
1	D	893	GLU	CD-OE2	9.79	1.36	1.25
1	B	71	GLU	CD-OE2	9.33	1.35	1.25
1	B	689	GLU	CD-OE2	9.25	1.35	1.25

The worst 5 of 673 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	230	ARG	NE-CZ-NH1	33.80	137.20	120.30
1	C	630	ARG	NE-CZ-NH2	-20.87	109.87	120.30
1	C	721	ARG	NE-CZ-NH1	19.65	130.13	120.30
1	A	755	ARG	NE-CZ-NH1	17.36	128.98	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	431	ARG	NE-CZ-NH2	-16.56	112.02	120.30

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	C	733	ALA	CA

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	8127	0	7711	104	0
1	B	8128	0	7712	89	0
1	C	8128	0	7712	93	0
1	D	8128	0	7712	120	0
2	A	21	0	14	0	0
2	B	21	0	14	0	0
2	C	21	0	14	0	0
2	D	21	0	14	0	0
3	A	4	0	0	0	0
3	B	3	0	0	0	0
3	C	4	0	0	0	0
3	D	4	0	0	0	0
4	A	4	0	0	0	0
4	B	4	0	0	0	0
4	C	4	0	0	0	0
4	D	4	0	0	0	0
5	A	108	0	162	17	0
5	B	108	0	162	14	0
5	C	112	0	168	14	0
5	D	108	0	162	19	0
6	A	1112	0	0	16	3
6	B	1128	0	0	15	0
6	C	1104	0	0	16	3
6	D	1118	0	0	27	0
All	All	37524	0	31557	427	3

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.

The worst 5 of 427 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)
5:D:8415:DMS:C1	5:D:8415:DMS:S	2.01	1.48
5:B:8508:DMS:C1	5:B:8508:DMS:S	2.02	1.47
5:A:8403:DMS:S	5:A:8403:DMS:C2	2.03	1.46
5:B:8415:DMS:C2	5:B:8415:DMS:S	2.04	1.45
5:C:8402:DMS:C2	5:C:8402:DMS:S	2.04	1.44

All (3) 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)
6:A:9652:HOH:O	6:C:9432:HOH:O[3_544]	2.15	0.05
6:A:9694:HOH:O	6:C:9467:HOH:O[3_544]	2.16	0.04
6:A:9697:HOH:O	6:C:9628:HOH:O[2_554]	2.19	0.01

5.3 Torsion angles

5.3.1 Protein backbone

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	1011/1023 (99%)	974 (96%)	37 (4%)	0	100	100
1	B	1011/1023 (99%)	978 (97%)	30 (3%)	3 (0%)	44	19
1	C	1011/1023 (99%)	974 (96%)	36 (4%)	1 (0%)	55	26
1	D	1011/1023 (99%)	971 (96%)	38 (4%)	2 (0%)	51	23
All	All	4044/4092 (99%)	3897 (96%)	141 (4%)	6 (0%)	55	26

5 of 6 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	731	PRO
1	B	732	ALA
1	C	734	SER
1	D	688	PRO
1	B	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	864/875 (99%)	839 (97%)	25 (3%)	48	15
1	B	865/875 (99%)	834 (96%)	31 (4%)	40	9
1	C	865/875 (99%)	827 (96%)	38 (4%)	33	5
1	D	865/875 (99%)	831 (96%)	34 (4%)	37	7
All	All	3459/3500 (99%)	3331 (96%)	128 (4%)	39	8

5 of 128 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	76	CYS
1	C	634	GLN
1	D	755	ARG
1	C	135	GLN
1	C	333	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 40 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	890	GLN
1	C	634	GLN
1	D	878	HIS
1	C	363	HIS
1	C	687	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 144 ligands modelled in this entry, 31 are monoatomic - leaving 113 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	147	A	2001	4	21,22,22	0.74	0	29,31,31	1.58	5 (17%)
5	DMS	A	8401	-	3,3,3	0.93	0	3,3,3	0.26	0
5	DMS	A	8402	-	3,3,3	2.18	1 (33%)	3,3,3	0.33	0
5	DMS	A	8403	-	3,3,3	2.36	1 (33%)	3,3,3	0.38	0
5	DMS	A	8404	-	3,3,3	1.65	1 (33%)	3,3,3	0.34	0
5	DMS	A	8405	-	3,3,3	1.36	1 (33%)	3,3,3	0.72	0
5	DMS	A	8406	3	3,3,3	0.45	0	3,3,3	0.24	0
5	DMS	A	8407	-	3,3,3	3.24	2 (66%)	3,3,3	0.46	0
5	DMS	A	8408	-	3,3,3	1.11	0	3,3,3	1.13	0
5	DMS	A	8409	-	3,3,3	2.38	1 (33%)	3,3,3	0.62	0
5	DMS	A	8410	-	3,3,3	0.78	0	3,3,3	0.93	0
5	DMS	A	8411	-	3,3,3	0.80	0	3,3,3	0.25	0
5	DMS	A	8412	-	3,3,3	2.19	1 (33%)	3,3,3	0.28	0
5	DMS	A	8413	-	3,3,3	2.96	3 (100%)	3,3,3	0.74	0
5	DMS	A	8414	-	3,3,3	0.93	0	3,3,3	0.20	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	DMS	A	8415	-	3,3,3	2.66	3 (100%)	3,3,3	0.29	0
5	DMS	A	8416	-	3,3,3	1.11	0	3,3,3	0.41	0
5	DMS	A	8417	-	3,3,3	0.96	0	3,3,3	0.55	0
5	DMS	A	8419	-	3,3,3	0.69	0	3,3,3	0.61	0
5	DMS	A	8420	-	3,3,3	1.59	0	3,3,3	0.57	0
5	DMS	A	8421	-	3,3,3	0.74	0	3,3,3	0.27	0
5	DMS	A	8423	-	3,3,3	1.47	0	3,3,3	0.23	0
5	DMS	A	8425	4	3,3,3	2.11	2 (66%)	3,3,3	0.71	0
5	DMS	A	8427	-	3,3,3	0.78	0	3,3,3	0.17	0
5	DMS	A	8501	-	3,3,3	1.64	1 (33%)	3,3,3	0.36	0
5	DMS	A	8502	-	3,3,3	2.15	2 (66%)	3,3,3	1.68	1 (33%)
5	DMS	A	8504	-	3,3,3	0.28	0	3,3,3	0.51	0
5	DMS	A	8602	-	3,3,3	1.31	0	3,3,3	0.64	0
2	147	B	2001	4	21,22,22	0.81	1 (4%)	29,31,31	1.68	8 (27%)
5	DMS	B	8401	-	3,3,3	0.86	0	3,3,3	0.53	0
5	DMS	B	8402	-	3,3,3	2.55	3 (100%)	3,3,3	0.82	0
5	DMS	B	8403	-	3,3,3	1.85	2 (66%)	3,3,3	0.56	0
5	DMS	B	8404	-	3,3,3	1.51	1 (33%)	3,3,3	0.14	0
5	DMS	B	8405	-	3,3,3	1.36	1 (33%)	3,3,3	0.97	0
5	DMS	B	8406	-	3,3,3	1.18	0	3,3,3	0.88	0
5	DMS	B	8407	-	3,3,3	2.22	1 (33%)	3,3,3	0.45	0
5	DMS	B	8408	-	3,3,3	1.22	0	3,3,3	0.15	0
5	DMS	B	8409	-	3,3,3	2.82	2 (66%)	3,3,3	0.77	0
5	DMS	B	8410	-	3,3,3	1.71	1 (33%)	3,3,3	0.41	0
5	DMS	B	8411	-	3,3,3	1.59	0	3,3,3	0.54	0
5	DMS	B	8412	-	3,3,3	0.92	0	3,3,3	0.17	0
5	DMS	B	8413	-	3,3,3	2.16	1 (33%)	3,3,3	0.98	0
5	DMS	B	8414	-	3,3,3	0.57	0	3,3,3	1.39	1 (33%)
5	DMS	B	8415	-	3,3,3	2.88	2 (66%)	3,3,3	1.86	1 (33%)
5	DMS	B	8416	-	3,3,3	1.20	0	3,3,3	0.56	0
5	DMS	B	8417	-	3,3,3	1.46	1 (33%)	3,3,3	0.57	0
5	DMS	B	8420	-	3,3,3	1.48	1 (33%)	3,3,3	0.16	0
5	DMS	B	8421	-	3,3,3	0.77	0	3,3,3	1.07	0
5	DMS	B	8423	-	3,3,3	0.78	0	3,3,3	0.88	0
5	DMS	B	8425	4	3,3,3	1.73	1 (33%)	3,3,3	0.32	0
5	DMS	B	8427	-	3,3,3	0.65	0	3,3,3	0.27	0
5	DMS	B	8502	-	3,3,3	1.41	0	3,3,3	1.93	1 (33%)
5	DMS	B	8504	-	3,3,3	1.00	0	3,3,3	0.57	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	DMS	B	8506	-	3,3,3	1.88	1 (33%)	3,3,3	0.57	0
5	DMS	B	8508	-	3,3,3	2.63	3 (100%)	3,3,3	0.29	0
5	DMS	B	8601	-	3,3,3	1.84	2 (66%)	3,3,3	0.67	0
2	147	C	2001	4	21,22,22	0.83	0	29,31,31	1.29	2 (6%)
5	DMS	C	8401	-	3,3,3	0.77	0	3,3,3	0.23	0
5	DMS	C	8402	-	3,3,3	2.45	1 (33%)	3,3,3	0.37	0
5	DMS	C	8403	-	3,3,3	1.93	1 (33%)	3,3,3	0.35	0
5	DMS	C	8404	-	3,3,3	1.28	0	3,3,3	0.66	0
5	DMS	C	8405	-	3,3,3	1.98	1 (33%)	3,3,3	0.32	0
5	DMS	C	8406	-	3,3,3	1.66	0	3,3,3	0.39	0
5	DMS	C	8407	-	3,3,3	1.59	1 (33%)	3,3,3	0.16	0
5	DMS	C	8408	-	3,3,3	1.31	0	3,3,3	0.80	0
5	DMS	C	8409	-	3,3,3	2.38	1 (33%)	3,3,3	0.87	0
5	DMS	C	8410	-	3,3,3	1.17	0	3,3,3	0.39	0
5	DMS	C	8411	-	3,3,3	1.35	0	3,3,3	0.28	0
5	DMS	C	8412	-	3,3,3	1.67	1 (33%)	3,3,3	0.29	0
5	DMS	C	8413	-	3,3,3	2.29	1 (33%)	3,3,3	0.59	0
5	DMS	C	8414	-	3,3,3	1.86	2 (66%)	3,3,3	0.82	0
5	DMS	C	8415	-	3,3,3	1.66	0	3,3,3	0.48	0
5	DMS	C	8416	-	3,3,3	1.74	1 (33%)	3,3,3	0.34	0
5	DMS	C	8417	-	3,3,3	0.80	0	3,3,3	1.04	0
5	DMS	C	8419	-	3,3,3	1.11	0	3,3,3	0.26	0
5	DMS	C	8420	-	3,3,3	2.35	1 (33%)	3,3,3	0.90	0
5	DMS	C	8421	-	3,3,3	0.79	0	3,3,3	1.07	0
5	DMS	C	8423	-	3,3,3	0.83	0	3,3,3	0.27	0
5	DMS	C	8425	4	3,3,3	1.61	1 (33%)	3,3,3	0.54	0
5	DMS	C	8427	-	3,3,3	0.93	0	3,3,3	0.61	0
5	DMS	C	8501	-	3,3,3	1.11	0	3,3,3	0.77	0
5	DMS	C	8504	-	3,3,3	0.78	0	3,3,3	0.48	0
5	DMS	C	8506	-	3,3,3	2.26	1 (33%)	3,3,3	0.22	0
5	DMS	C	8601	-	3,3,3	1.38	1 (33%)	3,3,3	0.62	0
5	DMS	C	8602	-	3,3,3	0.26	0	3,3,3	0.59	0
2	147	D	2001	4	21,22,22	0.86	1 (4%)	29,31,31	1.38	2 (6%)
5	DMS	D	8401	-	3,3,3	1.21	0	3,3,3	0.94	0
5	DMS	D	8402	-	3,3,3	2.04	1 (33%)	3,3,3	0.61	0
5	DMS	D	8403	-	3,3,3	1.34	0	3,3,3	0.78	0
5	DMS	D	8404	-	3,3,3	1.88	1 (33%)	3,3,3	0.46	0
5	DMS	D	8405	-	3,3,3	1.27	0	3,3,3	0.49	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	DMS	D	8406	-	3,3,3	0.67	0	3,3,3	0.35	0
5	DMS	D	8407	-	3,3,3	2.12	3 (100%)	3,3,3	0.50	0
5	DMS	D	8408	-	3,3,3	1.27	0	3,3,3	0.33	0
5	DMS	D	8409	-	3,3,3	2.21	1 (33%)	3,3,3	1.03	0
5	DMS	D	8410	-	3,3,3	1.38	1 (33%)	3,3,3	0.47	0
5	DMS	D	8411	-	3,3,3	0.75	0	3,3,3	0.20	0
5	DMS	D	8412	-	3,3,3	1.43	0	3,3,3	0.76	0
5	DMS	D	8413	-	3,3,3	1.39	1 (33%)	3,3,3	0.46	0
5	DMS	D	8414	-	3,3,3	0.54	0	3,3,3	0.46	0
5	DMS	D	8415	-	3,3,3	3.14	2 (66%)	3,3,3	0.20	0
5	DMS	D	8416	-	3,3,3	0.74	0	3,3,3	0.60	0
5	DMS	D	8417	-	3,3,3	0.81	0	3,3,3	0.13	0
5	DMS	D	8419	-	3,3,3	0.44	0	3,3,3	0.45	0
5	DMS	D	8421	-	3,3,3	0.48	0	3,3,3	0.33	0
5	DMS	D	8423	-	3,3,3	1.61	1 (33%)	3,3,3	0.43	0
5	DMS	D	8425	4	3,3,3	0.95	0	3,3,3	0.90	0
5	DMS	D	8427	-	3,3,3	1.06	0	3,3,3	0.19	0
5	DMS	D	8501	-	3,3,3	1.19	0	3,3,3	0.40	0
5	DMS	D	8508	-	3,3,3	1.67	1 (33%)	3,3,3	0.43	0
5	DMS	D	8701	-	3,3,3	2.68	2 (66%)	3,3,3	0.49	0
5	DMS	D	8703	-	3,3,3	0.99	0	3,3,3	0.54	0
5	DMS	D	8705	-	3,3,3	1.21	0	3,3,3	0.15	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	147	A	2001	4	-	0/8/30/30	0/2/2/2
5	DMS	A	8401	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8402	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8403	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8404	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8405	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8406	3	-	0/0/0/0	0/0/0/0
5	DMS	A	8407	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8408	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8409	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8410	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8411	-	-	0/0/0/0	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	DMS	A	8412	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8413	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8414	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8415	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8416	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8417	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8419	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8420	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8421	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8423	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8425	4	-	0/0/0/0	0/0/0/0
5	DMS	A	8427	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8501	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8502	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8504	-	-	0/0/0/0	0/0/0/0
5	DMS	A	8602	-	-	0/0/0/0	0/0/0/0
2	147	B	2001	4	-	0/8/30/30	0/2/2/2
5	DMS	B	8401	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8402	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8403	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8404	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8405	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8406	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8407	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8408	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8409	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8410	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8411	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8412	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8413	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8414	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8415	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8416	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8417	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8420	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8421	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8423	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8425	4	-	0/0/0/0	0/0/0/0
5	DMS	B	8427	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8502	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8504	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8506	-	-	0/0/0/0	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	DMS	B	8508	-	-	0/0/0/0	0/0/0/0
5	DMS	B	8601	-	-	0/0/0/0	0/0/0/0
2	147	C	2001	4	-	0/8/30/30	0/2/2/2
5	DMS	C	8401	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8402	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8403	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8404	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8405	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8406	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8407	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8408	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8409	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8410	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8411	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8412	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8413	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8414	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8415	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8416	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8417	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8419	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8420	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8421	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8423	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8425	4	-	0/0/0/0	0/0/0/0
5	DMS	C	8427	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8501	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8504	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8506	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8601	-	-	0/0/0/0	0/0/0/0
5	DMS	C	8602	-	-	0/0/0/0	0/0/0/0
2	147	D	2001	4	-	0/8/30/30	0/2/2/2
5	DMS	D	8401	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8402	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8403	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8404	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8405	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8406	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8407	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8408	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8409	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8410	-	-	0/0/0/0	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	DMS	D	8411	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8412	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8413	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8414	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8415	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8416	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8417	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8419	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8421	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8423	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8425	4	-	0/0/0/0	0/0/0/0
5	DMS	D	8427	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8501	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8508	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8701	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8703	-	-	0/0/0/0	0/0/0/0
5	DMS	D	8705	-	-	0/0/0/0	0/0/0/0

The worst 5 of 72 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	2001	147	C5'-C4'	-2.35	1.34	1.38
5	C	8414	DMS	C1-S	-2.34	1.58	1.75
5	B	8402	DMS	C1-S	-2.14	1.59	1.75
5	B	8601	DMS	C1-S	2.01	1.90	1.75
5	D	8407	DMS	O-S	2.02	1.63	1.50

The worst 5 of 21 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	2001	147	C3'-C4'-N1'	-4.54	115.95	119.41
2	B	2001	147	C5'-C4'-N1'	-3.79	116.52	119.41
2	D	2001	147	C5'-C4'-N1'	-3.75	116.55	119.41
2	C	2001	147	O1'-C1-C2	-3.40	102.08	107.11
2	B	2001	147	C6'-C5'-C4'	-3.19	115.51	120.10

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

37 monomers are involved in 64 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	8403	DMS	2	0
5	A	8409	DMS	1	0
5	A	8412	DMS	3	0
5	A	8414	DMS	2	0
5	A	8416	DMS	2	0
5	A	8417	DMS	3	0
5	A	8419	DMS	1	0
5	A	8420	DMS	1	0
5	A	8421	DMS	1	0
5	A	8602	DMS	1	0
5	B	8402	DMS	1	0
5	B	8406	DMS	2	0
5	B	8411	DMS	1	0
5	B	8412	DMS	1	0
5	B	8415	DMS	3	0
5	B	8417	DMS	1	0
5	B	8421	DMS	1	0
5	B	8504	DMS	3	0
5	B	8508	DMS	1	0
5	C	8402	DMS	4	0
5	C	8406	DMS	2	0
5	C	8417	DMS	1	0
5	C	8420	DMS	1	0
5	C	8427	DMS	2	0
5	C	8504	DMS	1	0
5	C	8506	DMS	2	0
5	C	8602	DMS	1	0
5	D	8406	DMS	2	0
5	D	8409	DMS	1	0
5	D	8412	DMS	2	0
5	D	8415	DMS	2	0
5	D	8416	DMS	4	0
5	D	8417	DMS	1	0
5	D	8427	DMS	2	0
5	D	8508	DMS	1	0
5	D	8703	DMS	1	0
5	D	8705	DMS	3	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, 95th 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 ²)	Q<0.9
1	A	1011/1023 (98%)	-0.50	21 (2%) 64 70	8, 15, 45, 100	0
1	B	1011/1023 (98%)	-0.51	13 (1%) 77 82	8, 15, 43, 94	0
1	C	1011/1023 (98%)	-0.49	18 (1%) 69 75	8, 15, 47, 100	0
1	D	1011/1023 (98%)	-0.49	26 (2%) 56 64	9, 16, 46, 95	0
All	All	4044/4092 (98%)	-0.50	78 (1%) 67 73	8, 15, 46, 100	0

The worst 5 of 78 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	686	PRO	10.9
1	D	735	HIS	10.1
1	A	735	HIS	9.3
1	B	730	LEU	8.0
1	C	732	ALA	8.0

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 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, 95th 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 ²)	Q<0.9
5	DMS	C	8602	4/4	0.89	0.20	22.08	21,74,91,100	0
5	DMS	D	8423	4/4	0.86	0.17	18.04	38,53,100,100	0
5	DMS	B	8407	4/4	0.93	0.12	16.58	28,32,33,38	0
5	DMS	D	8407	4/4	0.87	0.16	12.92	29,47,53,100	0
5	DMS	A	8406	4/4	0.91	0.20	12.36	13,59,73,100	0
5	DMS	D	8404	4/4	0.94	0.12	11.37	20,23,41,63	0
5	DMS	D	8508	4/4	0.94	0.11	10.47	36,52,53,53	0
5	DMS	C	8420	4/4	0.93	0.14	9.73	35,55,58,100	0
5	DMS	C	8407	4/4	0.95	0.14	8.76	27,30,40,42	0
5	DMS	B	8406	4/4	0.90	0.16	8.56	35,52,87,100	0
5	DMS	C	8419	4/4	0.80	0.20	8.27	41,46,50,67	0
5	DMS	A	8417	4/4	0.91	0.18	8.26	23,27,96,100	0
5	DMS	B	8420	4/4	0.89	0.16	8.11	41,60,65,69	0
5	DMS	A	8407	4/4	0.91	0.10	7.60	23,32,33,45	0
5	DMS	A	8404	4/4	0.96	0.08	7.29	18,30,31,39	0
5	DMS	D	8501	4/4	0.93	0.09	6.99	24,30,34,48	0
5	DMS	A	8420	4/4	0.94	0.10	6.00	39,45,45,47	0
5	DMS	A	8412	4/4	0.95	0.19	5.50	38,46,51,100	0
5	DMS	B	8508	4/4	0.93	0.11	5.03	27,35,48,62	0
5	DMS	C	8506	4/4	0.95	0.11	4.97	26,40,47,52	0
5	DMS	C	8423	4/4	0.93	0.13	4.72	28,64,100,100	0
5	DMS	D	8417	4/4	0.89	0.16	4.38	26,31,47,100	0
5	DMS	C	8406	4/4	0.91	0.16	4.10	37,38,46,94	0
5	DMS	B	8502	4/4	0.95	0.10	4.05	28,30,43,49	0
5	DMS	B	8423	4/4	0.94	0.09	3.72	33,34,66,100	0
5	DMS	C	8501	4/4	0.95	0.08	3.52	20,29,37,51	0
5	DMS	B	8403	4/4	0.98	0.09	3.36	21,22,28,30	0
5	DMS	A	8423	4/4	0.93	0.12	3.34	30,46,74,100	0
5	DMS	C	8412	4/4	0.96	0.11	3.25	28,31,36,100	0
5	DMS	B	8408	4/4	0.97	0.09	3.21	31,34,38,100	0
5	DMS	C	8404	4/4	0.98	0.07	3.21	18,19,26,29	0
5	DMS	D	8705	4/4	0.87	0.15	2.97	20,47,58,71	0
5	DMS	A	8405	4/4	0.99	0.09	2.75	21,24,25,32	0
5	DMS	A	8419	4/4	0.93	0.10	2.58	33,46,49,50	0
5	DMS	D	8406	4/4	0.95	0.10	2.56	26,26,28,41	0
5	DMS	C	8417	4/4	0.89	0.13	2.40	24,30,54,74	0
5	DMS	C	8405	4/4	0.98	0.09	2.36	27,27,28,32	0
5	DMS	B	8417	4/4	0.93	0.15	2.32	25,28,70,73	0
5	DMS	D	8419	4/4	0.97	0.09	2.28	33,43,46,48	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
5	DMS	A	8402	4/4	0.98	0.07	2.27	15,29,30,47	0
5	DMS	B	8506	4/4	0.98	0.07	2.26	27,34,43,44	0
5	DMS	C	8402	4/4	0.97	0.08	2.20	19,29,34,51	0
5	DMS	B	8404	4/4	0.97	0.07	2.19	18,20,31,37	0
5	DMS	D	8425	4/4	0.94	0.14	2.08	16,19,24,24	4
5	DMS	A	8504	4/4	0.97	0.09	1.95	22,43,50,100	0
5	DMS	A	8502	4/4	0.94	0.09	1.94	22,26,54,58	0
5	DMS	A	8501	4/4	0.95	0.10	1.92	17,27,37,39	0
5	DMS	C	8408	4/4	0.98	0.06	1.84	18,29,30,31	0
5	DMS	C	8411	4/4	0.99	0.10	1.76	22,23,23,28	0
5	DMS	B	8405	4/4	0.98	0.10	1.76	27,30,30,34	0
5	DMS	D	8405	4/4	0.99	0.07	1.56	24,30,30,34	0
5	DMS	D	8403	4/4	0.98	0.07	1.51	18,26,28,29	0
4	NA	A	3104	1/1	0.98	0.09	1.38	23,23,23,23	0
5	DMS	D	8701	4/4	0.98	0.09	1.27	16,17,22,44	0
5	DMS	A	8408	4/4	0.97	0.08	1.16	22,34,35,36	0
5	DMS	D	8402	4/4	0.97	0.07	1.05	17,28,31,33	0
5	DMS	C	8425	4/4	0.98	0.09	0.99	27,29,29,100	0
5	DMS	B	8402	4/4	0.97	0.07	0.94	19,19,28,33	0
5	DMS	D	8408	4/4	0.98	0.08	0.92	18,31,36,39	0
5	DMS	A	8403	4/4	0.98	0.07	0.88	23,23,25,31	0
5	DMS	B	8504	4/4	0.91	0.10	0.59	35,40,58,63	0
5	DMS	A	8401	4/4	0.99	0.06	0.56	11,13,14,15	0
5	DMS	D	8412	4/4	0.98	0.08	0.52	27,27,33,100	0
4	NA	C	3104	1/1	0.97	0.08	0.51	21,21,21,21	0
2	147	D	2001	21/21	0.97	0.06	0.51	11,13,27,32	0
5	DMS	A	8425	4/4	0.96	0.10	0.49	33,38,38,44	0
2	147	A	2001	21/21	0.97	0.06	0.33	10,13,21,30	0
5	DMS	B	8412	4/4	0.97	0.08	0.32	27,37,37,43	0
5	DMS	C	8403	4/4	0.99	0.06	0.23	22,24,25,26	0
4	NA	D	3103	1/1	0.97	0.06	0.15	27,27,27,27	0
5	DMS	B	8425	4/4	0.98	0.07	0.11	19,25,27,29	0
5	DMS	B	8401	4/4	0.99	0.05	-0.11	14,17,18,18	0
4	NA	D	3104	1/1	0.98	0.06	-0.17	28,28,28,28	0
5	DMS	B	8411	4/4	0.99	0.06	-0.22	21,23,25,33	0
2	147	C	2001	21/21	0.97	0.06	-0.23	10,12,25,50	0
4	NA	B	3104	1/1	0.98	0.06	-0.30	20,20,20,20	0
5	DMS	D	8401	4/4	0.99	0.05	-0.46	13,15,17,20	0
2	147	B	2001	21/21	0.97	0.05	-0.49	9,11,20,35	0
5	DMS	D	8411	4/4	0.99	0.05	-0.60	19,24,26,71	0
4	NA	A	3103	1/1	0.98	0.06	-0.77	23,23,23,23	0
5	DMS	A	8411	4/4	0.98	0.05	-0.86	22,26,26,43	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
5	DMS	C	8401	4/4	0.99	0.04	-1.17	14,15,18,18	0
4	NA	D	3102	1/1	1.00	0.04	-1.28	11,11,11,11	0
4	NA	C	3102	1/1	0.99	0.03	-1.49	12,12,12,12	0
4	NA	B	3102	1/1	1.00	0.03	-1.81	11,11,11,11	0
4	NA	B	3103	1/1	0.99	0.03	-1.97	19,19,19,19	0
4	NA	C	3103	1/1	0.99	0.04	-2.36	21,21,21,21	0
3	MG	B	3002	1/1	1.00	0.03	-2.36	14,14,14,14	0
4	NA	A	3101	1/1	0.99	0.04	-2.37	13,13,13,13	0
4	NA	A	3102	1/1	1.00	0.02	-2.84	12,12,12,12	0
3	MG	A	3002	1/1	0.99	0.04	-2.86	14,14,14,14	0
3	MG	D	3002	1/1	0.99	0.03	-3.04	14,14,14,14	0
3	MG	C	3002	1/1	1.00	0.02	-3.04	13,13,13,13	0
4	NA	B	3101	1/1	0.99	0.03	-3.30	12,12,12,12	0
4	NA	D	3101	1/1	1.00	0.04	-3.47	13,13,13,13	0
3	MG	C	3001	1/1	1.00	0.03	-3.78	10,10,10,10	0
3	MG	A	3001	1/1	0.99	0.03	-3.92	11,11,11,11	0
3	MG	B	3001	1/1	1.00	0.02	-3.97	10,10,10,10	0
4	NA	C	3101	1/1	1.00	0.03	-4.90	11,11,11,11	0
3	MG	D	3001	1/1	1.00	0.03	-6.09	12,12,12,12	0
3	MG	C	3006	1/1	0.97	0.12	-	20,20,20,20	1
5	DMS	B	8416	4/4	0.95	0.14	-	34,36,47,90	0
5	DMS	D	8703	4/4	0.78	0.26	-	47,73,77,81	0
5	DMS	B	8427	4/4	0.87	0.14	-	35,40,68,100	0
5	DMS	D	8409	4/4	0.96	0.11	-	29,30,31,34	0
5	DMS	B	8413	4/4	0.96	0.14	-	27,31,35,39	0
5	DMS	C	8410	4/4	0.98	0.09	-	22,24,33,34	0
5	DMS	B	8601	4/4	0.96	0.09	-	30,37,41,45	0
5	DMS	B	8414	4/4	0.96	0.12	-	30,39,41,100	0
5	DMS	A	8415	4/4	0.98	0.08	-	19,36,37,46	0
5	DMS	B	8421	4/4	0.95	0.09	-	31,35,46,73	0
5	DMS	A	8409	4/4	0.96	0.09	-	26,31,34,40	0
5	DMS	A	8602	4/4	0.96	0.19	-	38,53,74,100	0
5	DMS	D	8413	4/4	0.98	0.11	-	28,31,31,100	0
5	DMS	D	8427	4/4	0.81	0.16	-	47,51,59,75	0
3	MG	A	3105	1/1	0.92	0.11	-	21,21,21,21	1
5	DMS	A	8427	4/4	0.84	0.14	-	41,54,55,100	0
3	MG	A	3005	1/1	0.95	0.06	-	33,33,33,33	0
5	DMS	C	8414	4/4	0.97	0.08	-	22,39,41,49	0
5	DMS	B	8410	4/4	0.97	0.09	-	19,28,32,38	0
5	DMS	A	8413	4/4	0.97	0.10	-	30,33,34,35	0
5	DMS	C	8421	4/4	0.94	0.10	-	32,46,55,57	0
5	DMS	C	8416	4/4	0.94	0.20	-	38,50,52,100	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(\AA^2)	Q<0.9
5	DMS	C	8415	4/4	0.98	0.06	-	21,26,32,45	0
5	DMS	A	8416	4/4	0.96	0.20	-	22,38,73,100	0
5	DMS	D	8414	4/4	0.97	0.09	-	24,40,87,100	0
5	DMS	C	8409	4/4	0.98	0.07	-	24,31,33,34	0
5	DMS	D	8410	4/4	0.99	0.07	-	20,29,30,34	0
5	DMS	D	8421	4/4	0.97	0.12	-	49,51,52,52	0
3	MG	B	3105	1/1	0.98	0.07	-	18,18,18,18	1
5	DMS	B	8409	4/4	0.96	0.09	-	25,26,33,34	0
3	MG	C	3105	1/1	0.93	0.12	-	19,19,19,19	1
5	DMS	C	8504	4/4	0.92	0.10	-	35,54,63,66	0
5	DMS	A	8414	4/4	0.95	0.12	-	24,43,84,100	0
5	DMS	B	8415	4/4	0.95	0.10	-	21,29,32,37	0
5	DMS	A	8421	4/4	0.93	0.21	-	55,56,68,100	0
3	MG	D	3105	1/1	0.93	0.11	-	24,24,24,24	1
5	DMS	C	8413	4/4	0.98	0.14	-	31,33,34,36	0
5	DMS	D	8415	4/4	0.96	0.10	-	20,37,42,100	0
5	DMS	A	8410	4/4	0.98	0.10	-	22,31,40,44	0
5	DMS	C	8427	4/4	0.91	0.12	-	49,51,56,65	0
5	DMS	C	8601	4/4	0.97	0.09	-	35,40,42,57	0
5	DMS	D	8416	4/4	0.92	0.19	-	29,53,77,80	0
3	MG	D	3005	1/1	0.97	0.07	-	27,27,27,27	0

6.5 Other polymers

There are no such residues in this entry.