



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 30, 2023 – 04:16 PM EDT

PDB ID : 2XE4
Title : Structure of Oligopeptidase B from Leishmania major
Authors : McLuskey, K.; Paterson, N.G.; Bland, N.D.; Mottram, J.C.; Isaacs, N.W.
Deposited on : 2010-05-11
Resolution : 1.65 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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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 : 2.35.1
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) : 2.35.1

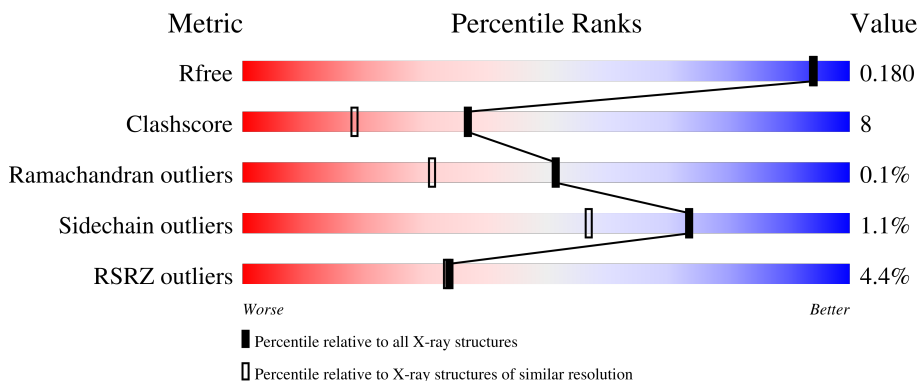
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.65 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	1827 (1.66-1.66)
Clashscore	141614	1931 (1.66-1.66)
Ramachandran outliers	138981	1891 (1.66-1.66)
Sidechain outliers	138945	1891 (1.66-1.66)
RSRZ outliers	127900	1791 (1.66-1.66)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 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	751	 4% 75% 18% . .
2	B	4	 25% 50% 25%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	PGR	A	1767	-	X	-	-
4	PGR	A	1782	-	-	X	-
5	PGO	A	1743	X	-	-	-

2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 7215 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 OLIGOPEPTIDASE B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	721	6125	3890	1046	1148	41	0	51	0

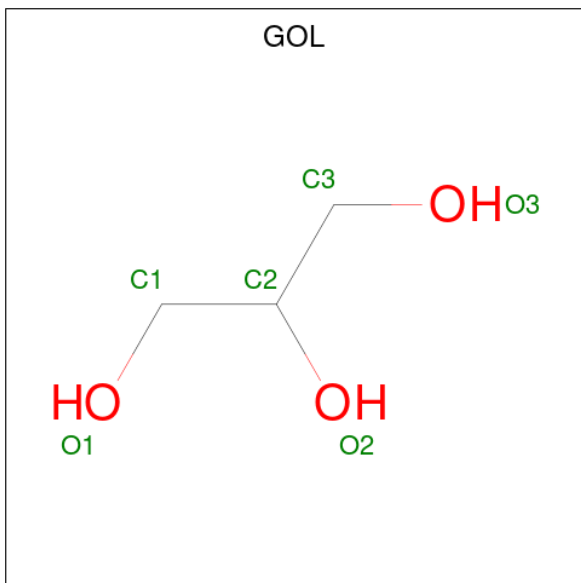
There are 21 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	expression tag	UNP Q4QHU7
A	-18	GLY	-	expression tag	UNP Q4QHU7
A	-17	SER	-	expression tag	UNP Q4QHU7
A	-16	SER	-	expression tag	UNP Q4QHU7
A	-15	HIS	-	expression tag	UNP Q4QHU7
A	-14	HIS	-	expression tag	UNP Q4QHU7
A	-13	HIS	-	expression tag	UNP Q4QHU7
A	-12	HIS	-	expression tag	UNP Q4QHU7
A	-11	HIS	-	expression tag	UNP Q4QHU7
A	-10	HIS	-	expression tag	UNP Q4QHU7
A	-9	SER	-	expression tag	UNP Q4QHU7
A	-8	SER	-	expression tag	UNP Q4QHU7
A	-7	GLY	-	expression tag	UNP Q4QHU7
A	-6	LEU	-	expression tag	UNP Q4QHU7
A	-5	VAL	-	expression tag	UNP Q4QHU7
A	-4	PRO	-	expression tag	UNP Q4QHU7
A	-3	ARG	-	expression tag	UNP Q4QHU7
A	-2	GLY	-	expression tag	UNP Q4QHU7
A	-1	SER	-	expression tag	UNP Q4QHU7
A	0	HIS	-	expression tag	UNP Q4QHU7
A	25	LEU	PHE	engineered mutation	UNP Q4QHU7

- Molecule 2 is a protein called ANTIPAIN.

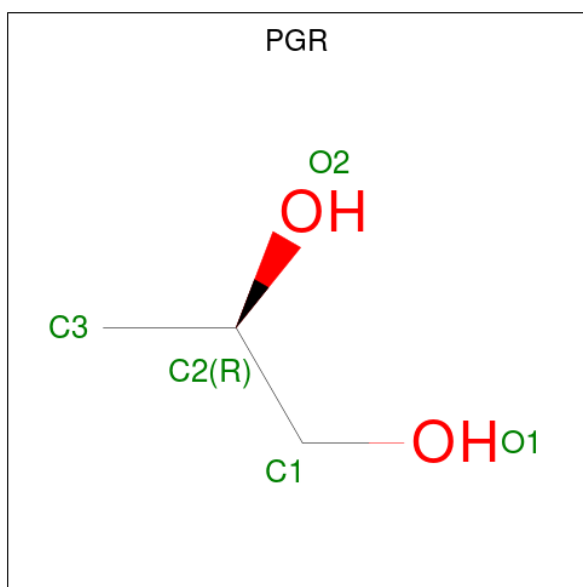
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	B	4	43	27	10	6	0	0	0

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
3	A	1	6	3	3	0	0
3	A	1	6	3	3	0	0
3	A	1	6	3	3	0	0
3	A	1	6	3	3	0	0
3	A	1	6	3	3	0	0
3	A	1	6	3	3	0	0
3	A	1	6	3	3	0	0
3	A	1	6	3	3	0	0
3	A	1	6	3	3	0	0
3	A	1	6	3	3	0	0

- Molecule 4 is R-1,2-PROPANEDIOL (three-letter code: PGR) (formula: C₃H₈O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		

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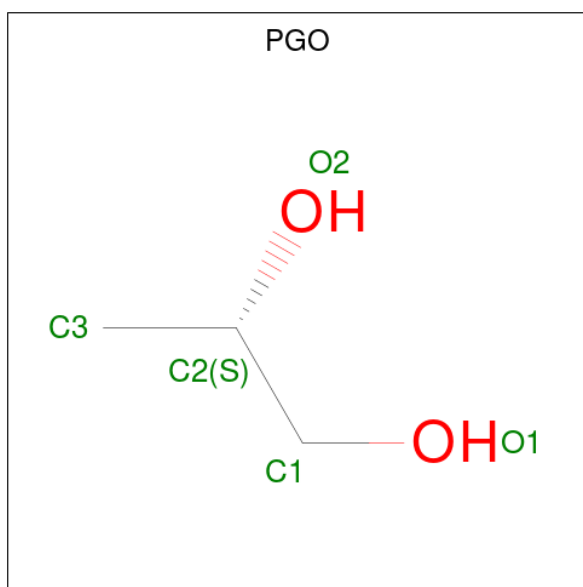
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		
4	A	1	Total	C	O	0	0
			5	3	2		

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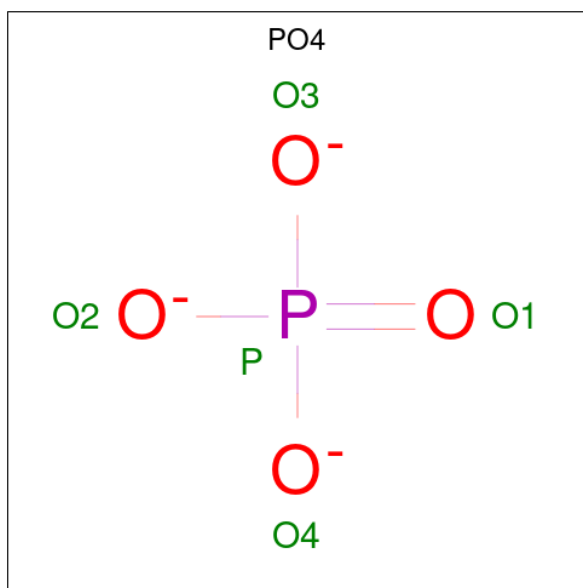
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0
4	A	1	Total C O 5 3 2	0	0

- Molecule 5 is S-1,2-PROPANEDIOL (three-letter code: PGO) (formula: C₃H₈O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	A	1	Total	C	O	0	0
			5	3	2		

- Molecule 6 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	O	P	0	0
			5	4	1		
6	A	1	Total	O	P	0	0
			5	4	1		
6	A	1	Total	O	P	0	0
			5	4	1		

- Molecule 7 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	4	Total Cl 4 4	0	0

- Molecule 8 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	2	Total Na 2 2	0	0

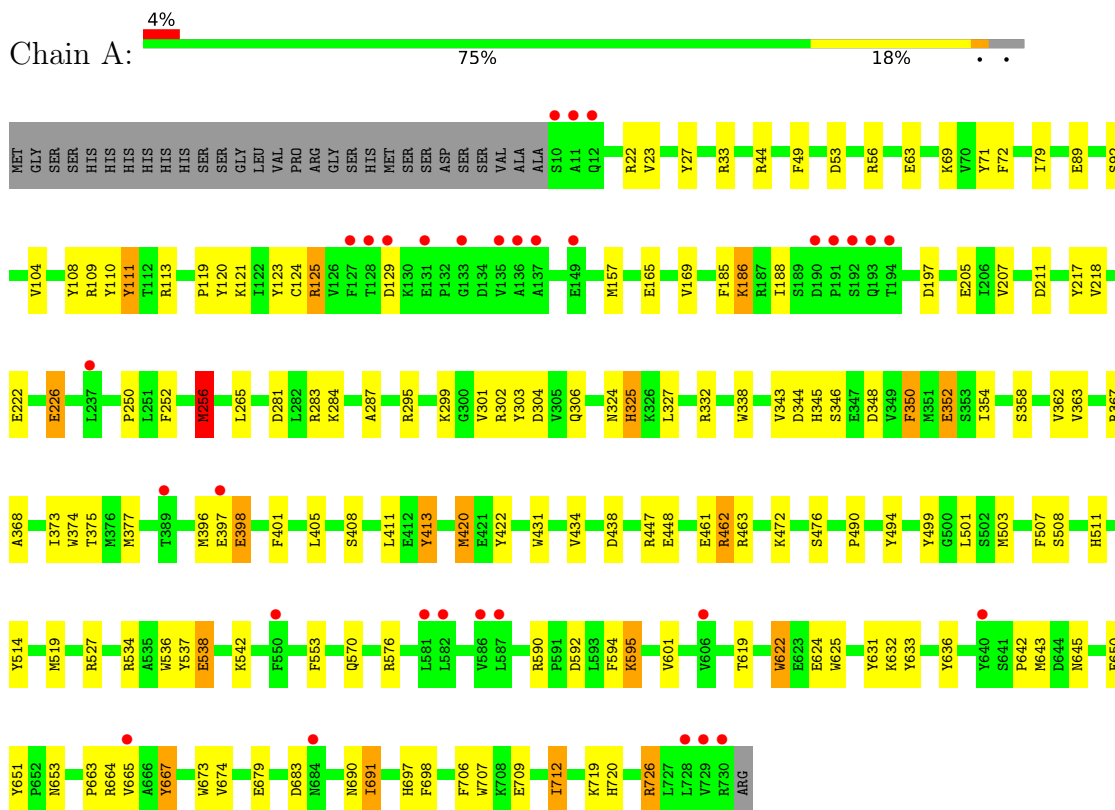
- Molecule 9 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
9	A	721	Total O 721 721	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: OLIGOPEPTIDASE B



• Molecule 2: ANTIPAIN



4 Data and refinement statistics

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α , β , γ	95.48Å 142.78Å 208.92Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	117.85 – 1.65 37.96 – 1.65	Depositor EDS
% Data completeness (in resolution range)	98.0 (117.85-1.65) 98.0 (37.96-1.65)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.67 (at 1.65Å)	Xtrriage
Refinement program	REFMAC 5.5.0102	Depositor
R, R_{free}	0.140 , 0.178 0.142 , 0.180	Depositor DCC
R_{free} test set	8321 reflections (4.98%)	wwPDB-VP
Wilson B-factor (Å ²)	26.8	Xtrriage
Anisotropy	0.235	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 57.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.53$, $\langle L^2 \rangle = 0.36$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.98	EDS
Total number of atoms	7215	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.40% of the height of the origin peak. No significant pseudotranslation is detected.*

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 i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: PO4, PGR, CL, FC0, PGO, GOL, RGL, 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	1.67	73/6332 (1.2%)	1.15	37/8586 (0.4%)
2	B	5.07	4/17 (23.5%)	11.03	3/21 (14.3%)
All	All	1.69	77/6349 (1.2%)	1.27	40/8607 (0.5%)

All (77) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	2	ARG	CZ-NH1	14.45	1.51	1.33
1	A	352	GLU	CG-CD	10.43	1.67	1.51
2	B	2	ARG	NE-CZ	8.91	1.44	1.33
1	A	352	GLU	CB-CG	-8.88	1.35	1.52
1	A	514	TYR	CE2-CZ	8.31	1.49	1.38
1	A	538	GLU	CB-CG	-8.23	1.36	1.52
1	A	110	TYR	CE1-CZ	8.13	1.49	1.38
2	B	2	ARG	CD-NE	7.96	1.59	1.46
1	A	698	PHE	CE2-CZ	7.47	1.51	1.37
1	A	338	TRP	CG-CD1	7.10	1.46	1.36
1	A	667	TYR	CG-CD1	7.05	1.48	1.39
1	A	494	TYR	CE2-CZ	7.04	1.47	1.38
1	A	537	TYR	CG-CD1	6.86	1.48	1.39
1	A	217	TYR	CG-CD1	6.82	1.48	1.39
1	A	633	TYR	CE2-CZ	6.78	1.47	1.38
1	A	624	GLU	CG-CD	6.77	1.62	1.51
1	A	537	TYR	CE2-CZ	6.69	1.47	1.38
1	A	624	GLU	CD-OE2	6.63	1.32	1.25
1	A	368	ALA	CA-CB	6.62	1.66	1.52
1	A	536	TRP	CZ3-CH2	6.60	1.50	1.40
1	A	625	TRP	CZ3-CH2	6.60	1.50	1.40
1	A	332	ARG	CZ-NH2	6.59	1.41	1.33
1	A	205	GLU	CD-OE2	-6.54	1.18	1.25
1	A	667	TYR	CE2-CZ	6.51	1.47	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	624	GLU	CD-OE1	6.48	1.32	1.25
1	A	346	SER	CB-OG	-6.40	1.33	1.42
1	A	553	PHE	CE1-CZ	6.39	1.49	1.37
1	A	625	TRP	CG-CD1	6.37	1.45	1.36
1	A	71	TYR	CG-CD1	6.28	1.47	1.39
1	A	673	TRP	CE3-CZ3	6.26	1.49	1.38
1	A	350	PHE	CG-CD1	6.24	1.48	1.38
1	A	499	TYR	CE1-CZ	6.23	1.46	1.38
1	A	706	PHE	CE1-CZ	6.16	1.49	1.37
1	A	707	TRP	CE3-CZ3	6.13	1.48	1.38
1	A	514	TYR	CG-CD1	6.11	1.47	1.39
1	A	185	PHE	CE1-CZ	5.96	1.48	1.37
1	A	633	TYR	CG-CD2	5.87	1.46	1.39
1	A	664	ARG	CZ-NH1	5.86	1.40	1.33
1	A	594	PHE	CE1-CZ	5.78	1.48	1.37
1	A	434	VAL	CB-CG2	5.75	1.65	1.52
1	A	514	TYR	CD1-CE1	5.72	1.48	1.39
1	A	23	VAL	CB-CG1	5.70	1.64	1.52
1	A	343	VAL	CB-CG1	5.69	1.64	1.52
1	A	431	TRP	CG-CD1	5.66	1.44	1.36
1	A	408	SER	CB-OG	5.63	1.49	1.42
1	A	679	GLU	CD-OE1	5.63	1.31	1.25
1	A	674	VAL	CB-CG2	5.63	1.64	1.52
1	A	631	TYR	CG-CD2	5.62	1.46	1.39
2	B	2	ARG	CZ-NH2	5.59	1.40	1.33
1	A	49	PHE	CE1-CZ	5.57	1.48	1.37
1	A	350	PHE	CE1-CZ	5.56	1.48	1.37
1	A	398	GLU	CD-OE1	5.55	1.31	1.25
1	A	709	GLU	CD-OE2	-5.52	1.19	1.25
1	A	434	VAL	CB-CG1	5.47	1.64	1.52
1	A	27	TYR	CE1-CZ	5.38	1.45	1.38
1	A	121	LYS	CE-NZ	-5.37	1.35	1.49
1	A	413	TYR	CE1-CZ	5.37	1.45	1.38
1	A	226	GLU	CG-CD	-5.35	1.44	1.51
1	A	121	LYS	CD-CE	5.34	1.64	1.51
1	A	303	TYR	CE1-CZ	5.30	1.45	1.38
1	A	601	VAL	CB-CG2	5.29	1.64	1.52
1	A	301	VAL	CB-CG1	5.26	1.63	1.52
1	A	537	TYR	CE1-CZ	5.24	1.45	1.38
1	A	507	PHE	CE1-CZ	5.22	1.47	1.37
1	A	287	ALA	CA-CB	5.20	1.63	1.52
1	A	651	TYR	CG-CD2	5.20	1.46	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	663	PRO	N-CA	5.19	1.56	1.47
1	A	111	TYR	CG-CD2	5.19	1.45	1.39
1	A	537	TYR	CG-CD2	5.17	1.45	1.39
1	A	542	LYS	CB-CG	-5.16	1.38	1.52
1	A	622	TRP	CD2-CE2	5.14	1.47	1.41
1	A	252	PHE	CG-CD2	5.10	1.46	1.38
1	A	123	TYR	CE2-CZ	5.10	1.45	1.38
1	A	165	GLU	CG-CD	5.10	1.59	1.51
1	A	665	VAL	CB-CG2	5.08	1.63	1.52
1	A	374	TRP	CE3-CZ3	5.07	1.47	1.38
1	A	110	TYR	CD2-CE2	5.04	1.47	1.39

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	2	ARG	NE-CZ-NH2	-34.05	103.27	120.30
2	B	2	ARG	NE-CZ-NH1	31.13	135.86	120.30
2	B	2	ARG	CD-NE-CZ	19.52	150.92	123.60
1	A	576	ARG	NE-CZ-NH2	-8.84	115.88	120.30
1	A	344[A]	ASP	CB-CG-OD1	8.32	125.78	118.30
1	A	344[B]	ASP	CB-CG-OD1	8.32	125.78	118.30
1	A	129	ASP	CB-CG-OD1	8.12	125.61	118.30
1	A	211	ASP	CB-CG-OD1	7.71	125.24	118.30
1	A	462	ARG	NE-CZ-NH2	-7.51	116.55	120.30
1	A	726	ARG	NE-CZ-NH1	7.22	123.91	120.30
1	A	113	ARG	NE-CZ-NH1	-7.19	116.71	120.30
1	A	295	ARG	NE-CZ-NH1	-7.11	116.75	120.30
1	A	712	ILE	CG1-CB-CG2	-7.03	95.94	111.40
1	A	33	ARG	NE-CZ-NH2	-7.01	116.79	120.30
1	A	56	ARG	NE-CZ-NH1	-6.44	117.08	120.30
1	A	344[A]	ASP	CB-CG-OD2	-6.43	112.51	118.30
1	A	344[B]	ASP	CB-CG-OD2	-6.43	112.51	118.30
1	A	295	ARG	NE-CZ-NH2	6.27	123.44	120.30
1	A	590	ARG	NE-CZ-NH2	-6.25	117.17	120.30
1	A	281	ASP	CB-CG-OD1	6.18	123.86	118.30
1	A	283[A]	ARG	NE-CZ-NH1	-6.16	117.22	120.30
1	A	283[B]	ARG	NE-CZ-NH1	-6.16	117.22	120.30
1	A	726	ARG	NE-CZ-NH2	-6.14	117.23	120.30
1	A	527	ARG	NE-CZ-NH1	-6.11	117.25	120.30
1	A	420	MET	CG-SD-CE	5.99	109.79	100.20
1	A	348[A]	ASP	CB-CG-OD1	5.89	123.61	118.30
1	A	348[B]	ASP	CB-CG-OD1	5.89	123.61	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	332	ARG	NE-CZ-NH2	5.83	123.22	120.30
1	A	22	ARG	NE-CZ-NH1	-5.81	117.40	120.30
1	A	576	ARG	NE-CZ-NH1	5.80	123.20	120.30
1	A	44	ARG	NE-CZ-NH1	-5.64	117.48	120.30
1	A	367	ARG	NE-CZ-NH2	-5.64	117.48	120.30
1	A	514	TYR	CB-CG-CD2	-5.60	117.64	121.00
1	A	438	ASP	CB-CG-OD1	5.51	123.26	118.30
1	A	256[A]	MET	CG-SD-CE	-5.51	91.38	100.20
1	A	256[B]	MET	CG-SD-CE	-5.51	91.38	100.20
1	A	53	ASP	CB-CG-OD2	5.50	123.25	118.30
1	A	632	LYS	CD-CE-NZ	-5.35	99.40	111.70
1	A	595	LYS	CD-CE-NZ	-5.21	99.71	111.70
1	A	125	ARG	NE-CZ-NH2	-5.19	117.70	120.30

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	6125	0	5995	89	0
2	B	43	0	42	1	0
3	A	60	0	79	11	0
4	A	240	0	382	32	0
5	A	5	0	7	1	0
6	A	15	0	0	1	0
7	A	4	0	0	0	0
8	A	2	0	0	0	0
9	A	721	0	0	21	0
All	All	7215	0	6505	102	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 8.

All (102) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:712:ILE:CD1	1:A:712:ILE:CG1	1.75	1.60
1:A:157[B]:MET:HE1	9:A:2223:HOH:O	1.56	1.06
1:A:448[B]:GLU:HG3	9:A:2471:HOH:O	1.61	1.00
1:A:448[B]:GLU:CG	9:A:2471:HOH:O	2.16	0.93
1:A:92:SER:OG	4:A:1750:PGR:H11	1.78	0.83
1:A:396[B]:MET:HE3	1:A:422:TYR:CE1	2.16	0.79
1:A:461:GLU:OE1	1:A:463[A]:ARG:NH1	2.19	0.75
4:A:1758:PGR:H33	9:A:2696:HOH:O	1.87	0.72
4:A:1784:PGR:O2	9:A:2712:HOH:O	2.09	0.70
1:A:534[A]:ARG:NE	1:A:538:GLU:OE2	2.17	0.70
1:A:396[B]:MET:CE	1:A:422:TYR:CE1	2.75	0.69
1:A:327:LEU:HD21	1:A:354[B]:ILE:HG21	1.73	0.69
1:A:306:GLN:HG3	1:A:354[B]:ILE:HG13	1.75	0.69
1:A:720:HIS:HE1	4:A:1767:PGR:H11	1.59	0.68
3:A:1740:GOL:H11	9:A:2591:HOH:O	1.94	0.68
1:A:396[B]:MET:CE	1:A:422:TYR:CD1	2.77	0.67
1:A:511[B]:HIS:HE1	9:A:2516:HOH:O	1.76	0.67
1:A:511[B]:HIS:NE2	9:A:2521:HOH:O	2.18	0.66
1:A:720:HIS:CE1	4:A:1767:PGR:H11	2.30	0.65
3:A:1741:GOL:C3	9:A:2686:HOH:O	2.45	0.65
1:A:447:ARG:O	3:A:1738:GOL:H32	1.98	0.63
1:A:250:PRO:HB2	1:A:619[B]:THR:HG21	1.79	0.63
1:A:645:ASN:OD1	4:A:1784:PGR:H11	1.98	0.63
1:A:650:GLU:OE2	4:A:1782:PGR:C3	2.49	0.61
1:A:218:VAL:CG2	1:A:256[A]:MET:HG2	2.31	0.60
1:A:63:GLU:HG3	9:A:2094:HOH:O	2.02	0.59
1:A:109:ARG:HH21	1:A:109:ARG:HG2	1.66	0.59
1:A:89:GLU:OE2	1:A:726:ARG:HD2	2.03	0.58
1:A:69:LYS:CG	1:A:691[A]:ILE:HG23	2.34	0.58
1:A:643[A]:MET:CE	9:A:2080:HOH:O	2.50	0.58
1:A:398:GLU:HG3	1:A:422:TYR:OH	2.06	0.56
3:A:1741:GOL:C2	9:A:2686:HOH:O	2.53	0.56
1:A:501[B]:LEU:HD21	2:B:1:FC0:CE1	2.37	0.55
1:A:398:GLU:HG3	9:A:2450:HOH:O	2.06	0.55
1:A:411[A]:LEU:HD12	1:A:411[A]:LEU:N	2.21	0.55
1:A:712:ILE:CD1	1:A:712:ILE:CB	2.78	0.54
1:A:636:TYR:HB2	3:A:1740:GOL:H32	1.89	0.54
1:A:595:LYS:HE3	3:A:1735:GOL:H2	1.90	0.54
4:A:1770:PGR:H11	9:A:2159:HOH:O	2.08	0.54
1:A:354[B]:ILE:HG22	1:A:363:VAL:HG22	1.90	0.53
4:A:1753:PGR:H12	9:A:2204:HOH:O	2.09	0.53
1:A:350:PHE:CZ	1:A:352:GLU:HG2	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:1753:PGR:H32	9:A:2437:HOH:O	2.09	0.52
1:A:186:LYS:HD2	4:A:1752:PGR:C3	2.40	0.52
3:A:1740:GOL:H32	9:A:2590:HOH:O	2.09	0.52
1:A:472:LYS:HE2	9:A:2488:HOH:O	2.10	0.52
1:A:362[B]:VAL:HG11	1:A:405:LEU:HD13	1.92	0.51
1:A:650:GLU:OE2	4:A:1782:PGR:H33	2.11	0.50
1:A:302[A]:ARG:HB3	4:A:1756:PGR:H2	1.92	0.50
1:A:653:ASN:OD1	4:A:1767:PGR:H12	2.11	0.50
1:A:72:PHE:CE1	1:A:690:ASN:HB2	2.46	0.50
1:A:256[A]:MET:CE	1:A:265:LEU:HD11	2.42	0.50
1:A:89:GLU:HG2	4:A:1750:PGR:H12	1.94	0.49
1:A:109:ARG:HG2	1:A:109:ARG:NH2	2.27	0.49
1:A:476:SER:OG	4:A:1749:PGR:H32	2.12	0.49
1:A:169[A]:VAL:HG21	1:A:188:ILE:HD11	1.94	0.48
1:A:622:TRP:HZ3	4:A:1778:PGR:H31	1.78	0.48
4:A:1746:PGR:H31	4:A:1780:PGR:H32	1.96	0.48
1:A:186:LYS:NZ	4:A:1752:PGR:H33	2.29	0.48
1:A:396[B]:MET:HE3	1:A:422:TYR:CD1	2.46	0.47
1:A:69:LYS:HG3	1:A:691[A]:ILE:CG2	2.45	0.46
1:A:396[B]:MET:CE	1:A:422:TYR:HD1	2.28	0.46
1:A:222[B]:GLU:H	1:A:222[B]:GLU:CD	2.20	0.45
5:A:1743:PGO:H31	4:A:1777:PGR:H11	1.99	0.45
1:A:683:ASP:HB2	4:A:1782:PGR:H32	1.99	0.45
1:A:104:VAL:HG11	4:A:1768:PGR:H33	1.99	0.45
1:A:324:ASN:H	1:A:345[A]:HIS:CD2	2.35	0.45
1:A:207:VAL:HB	1:A:256[A]:MET:HE1	1.98	0.45
1:A:396[B]:MET:HG3	1:A:401:PHE:CZ	2.53	0.44
1:A:79:ILE:CG2	1:A:719:LYS:HD2	2.47	0.44
1:A:490:PRO:HA	1:A:570:GLN:HB3	1.99	0.44
1:A:462:ARG:HD3	4:A:1749:PGR:O2	2.17	0.43
1:A:650:GLU:OE2	4:A:1782:PGR:H31	2.18	0.43
1:A:304:ASP:HB2	4:A:1756:PGR:H12	2.01	0.43
1:A:396[B]:MET:HE1	1:A:422:TYR:HD1	1.84	0.43
1:A:119:PRO:HG2	1:A:120:TYR:CD2	2.53	0.43
1:A:256[A]:MET:HE3	1:A:256[A]:MET:HB2	1.65	0.43
1:A:511[B]:HIS:CD2	9:A:2521:HOH:O	2.65	0.43
1:A:302[A]:ARG:NH1	4:A:1756:PGR:O2	2.52	0.42
1:A:396[B]:MET:HE1	1:A:422:TYR:CD1	2.53	0.42
1:A:302[A]:ARG:NH2	1:A:325:HIS:NE2	2.66	0.42
1:A:358[A]:SER:HB2	1:A:413:TYR:CE2	2.54	0.42
1:A:592:ASP:HA	3:A:1732:GOL:H12	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:69:LYS:CG	1:A:691[A]:ILE:CG2	2.98	0.42
1:A:503:MET:SD	4:A:1764:PGR:H12	2.60	0.42
1:A:448[A]:GLU:HA	3:A:1738:GOL:H31	2.01	0.42
1:A:490:PRO:HB2	1:A:519:MET:HG2	2.02	0.42
1:A:508:SER:HB3	1:A:511[B]:HIS:CE1	2.55	0.42
1:A:186:LYS:HD2	4:A:1752:PGR:H32	2.02	0.41
1:A:697:HIS:NE2	6:A:1791:PO4:O4	2.51	0.41
1:A:284:LYS:HE2	4:A:1781:PGR:O1	2.20	0.41
1:A:299:LYS:NZ	3:A:1741:GOL:H11	2.35	0.41
1:A:362[A]:VAL:HG23	1:A:375:THR:HG22	2.01	0.41
4:A:1747:PGR:H31	9:A:2491:HOH:O	2.19	0.41
1:A:306:GLN:CG	1:A:354[B]:ILE:HG13	2.49	0.41
1:A:108:TYR:CG	1:A:125:ARG:HD2	2.56	0.41
1:A:377:MET:HB2	4:A:1760:PGR:H12	2.03	0.40
1:A:683:ASP:CB	4:A:1782:PGR:H32	2.51	0.40
1:A:111:TYR:CE1	1:A:124:CYS:HB2	2.57	0.40
1:A:373[B]:ILE:HD12	1:A:420:MET:HG3	2.04	0.40
1:A:667:TYR:CD1	1:A:667:TYR:C	2.95	0.40
3:A:1734:GOL:H31	9:A:2682:HOH:O	2.21	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	770/751 (102%)	753 (98%)	16 (2%)	1 (0%)	51 31
2	B	1/4 (25%)	1 (100%)	0	0	100 100
All	All	771/755 (102%)	754 (98%)	16 (2%)	1 (0%)	51 31

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	325	HIS

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	675/649 (104%)	666 (99%)	9 (1%)	69	50
2	B	2/2 (100%)	2 (100%)	0	100	100
All	All	677/651 (104%)	668 (99%)	9 (1%)	73	50

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	186	LYS
1	A	197	ASP
1	A	226	GLU
1	A	256[A]	MET
1	A	256[B]	MET
1	A	397	GLU
1	A	642	PRO
1	A	691[A]	ILE
1	A	691[B]	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	FC0	B	1	2	14,14,15	1.60	4 (28%)	16,17,19	0.95	1 (6%)
2	RGL	B	4	1,2	9,10,10	2.58	3 (33%)	5,11,11	2.61	2 (40%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FC0	B	1	2	-	6/11/11/12	0/1/1/1
2	RGL	B	4	1,2	-	0/8/9/9	-

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	4	RGL	O-C	6.46	1.45	1.19
2	B	1	FC0	CA-N	3.14	1.50	1.45
2	B	4	RGL	CZ-NE	3.01	1.39	1.33
2	B	4	RGL	CG-CB	2.18	1.61	1.52
2	B	1	FC0	CA-C	2.15	1.58	1.52
2	B	1	FC0	O-C	2.10	1.28	1.22
2	B	1	FC0	CB-CG	2.10	1.56	1.51

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	4	RGL	NE-CZ-NH2	-4.95	111.99	120.70
2	B	1	FC0	O1-C1-N	-2.44	118.84	125.27
2	B	4	RGL	NH1-CZ-NH2	2.14	126.85	120.26

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	1	FC0	O-C-CA-CB

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Mol	Chain	Res	Type	Atoms
2	B	1	FC0	OXT-C-CA-CB
2	B	1	FC0	O-C-CA-N
2	B	1	FC0	OXT-C-CA-N
2	B	1	FC0	CA-CB-CG-CD2
2	B	1	FC0	CA-CB-CG-CD1

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1	FC0	1	0

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 68 ligands modelled in this entry, 6 are monoatomic - leaving 62 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	$\# Z > 2$
3	GOL	A	1740	-	5,5,5	0.63	0	5,5,5	1.10	0
4	PGR	A	1763	-	3,4,4	1.41	0	1,4,4	2.03	1 (100%)
4	PGR	A	1760	-	3,4,4	1.43	0	1,4,4	1.11	0
4	PGR	A	1780	-	3,4,4	0.44	0	1,4,4	1.39	0
4	PGR	A	1751	-	3,4,4	2.00	1 (33%)	1,4,4	0.74	0
4	PGR	A	1766	-	3,4,4	1.08	0	1,4,4	0.51	0
4	PGR	A	1753	-	3,4,4	1.07	0	1,4,4	0.13	0
3	GOL	A	1734	-	5,5,5	0.59	0	5,5,5	1.03	0
4	PGR	A	1776	-	3,4,4	1.56	1 (33%)	1,4,4	0.69	0
3	GOL	A	1739	-	5,5,5	0.51	0	5,5,5	0.96	0
4	PGR	A	1748	-	3,4,4	0.42	0	1,4,4	0.80	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	PGR	A	1749	-	3,4,4	1.09	0	1,4,4	1.02	0
4	PGR	A	1785	-	3,4,4	0.98	0	1,4,4	0.12	0
4	PGR	A	1769	-	3,4,4	0.59	0	1,4,4	0.59	0
4	PGR	A	1747	-	3,4,4	1.10	0	1,4,4	2.34	1 (100%)
3	GOL	A	1736	-	5,5,5	0.68	0	5,5,5	0.81	0
3	GOL	A	1737	-	5,5,5	0.37	0	5,5,5	0.50	0
4	PGR	A	1756	-	3,4,4	0.53	0	1,4,4	0.24	0
4	PGR	A	1773	-	3,4,4	0.70	0	1,4,4	0.46	0
4	PGR	A	1745	-	3,4,4	0.81	0	1,4,4	0.75	0
4	PGR	A	1742	-	3,4,4	1.34	0	1,4,4	0.90	0
4	PGR	A	1771	-	3,4,4	1.76	1 (33%)	1,4,4	2.41	1 (100%)
4	PGR	A	1789	-	3,4,4	1.03	0	1,4,4	0.69	0
4	PGR	A	1755	-	3,4,4	1.55	1 (33%)	1,4,4	0.09	0
4	PGR	A	1779	-	3,4,4	0.61	0	1,4,4	0.43	0
4	PGR	A	1768	-	3,4,4	0.62	0	1,4,4	0.66	0
4	PGR	A	1786	-	3,4,4	0.61	0	1,4,4	1.15	0
4	PGR	A	1775	-	3,4,4	0.54	0	1,4,4	1.25	0
3	GOL	A	1733	-	5,5,5	0.49	0	5,5,5	1.60	1 (20%)
5	PGO	A	1743	-	3,4,4	0.66	0	1,4,4	3.56	1 (100%)
4	PGR	A	1787	-	3,4,4	1.88	1 (33%)	1,4,4	0.39	0
6	PO4	A	1791	-	4,4,4	2.60	1 (25%)	6,6,6	1.76	2 (33%)
4	PGR	A	1744	-	3,4,4	0.74	0	1,4,4	0.98	0
4	PGR	A	1777	-	3,4,4	1.29	1 (33%)	1,4,4	0.31	0
4	PGR	A	1767	-	3,4,4	1.38	1 (33%)	1,4,4	2.74	1 (100%)
4	PGR	A	1784	-	3,4,4	1.51	1 (33%)	1,4,4	0.44	0
4	PGR	A	1788	-	3,4,4	0.44	0	1,4,4	1.06	0
4	PGR	A	1774	-	3,4,4	1.25	0	1,4,4	1.52	0
4	PGR	A	1762	-	3,4,4	0.33	0	1,4,4	0.10	0
4	PGR	A	1754	-	3,4,4	0.70	0	1,4,4	0.01	0
4	PGR	A	1770	-	3,4,4	0.76	0	1,4,4	0.09	0
4	PGR	A	1750	-	3,4,4	1.25	0	1,4,4	1.37	0
4	PGR	A	1783	-	3,4,4	1.96	1 (33%)	1,4,4	0.01	0
4	PGR	A	1758	-	3,4,4	0.95	0	1,4,4	0.86	0
4	PGR	A	1778	-	3,4,4	0.84	0	1,4,4	0.75	0
6	PO4	A	1793	-	4,4,4	1.60	1 (25%)	6,6,6	1.09	1 (16%)
4	PGR	A	1790	-	3,4,4	1.19	0	1,4,4	2.00	0
3	GOL	A	1735	-	5,5,5	0.78	0	5,5,5	1.89	1 (20%)
4	PGR	A	1757	-	3,4,4	0.99	0	1,4,4	0.34	0
4	PGR	A	1761	-	3,4,4	1.69	1 (33%)	1,4,4	0.04	0
4	PGR	A	1764	-	3,4,4	0.99	0	1,4,4	0.57	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	PGR	A	1752	-	3,4,4	0.43	0	1,4,4	0.11	0
4	PGR	A	1765	-	3,4,4	0.81	0	1,4,4	1.95	0
6	PO4	A	1792	-	4,4,4	1.22	0	6,6,6	0.69	0
3	GOL	A	1738	-	5,5,5	0.77	0	5,5,5	0.60	0
4	PGR	A	1772	-	3,4,4	0.32	0	1,4,4	0.69	0
4	PGR	A	1781	-	3,4,4	0.94	0	1,4,4	1.78	0
4	PGR	A	1782	-	3,4,4	0.94	0	1,4,4	0.79	0
4	PGR	A	1746	-	3,4,4	2.09	1 (33%)	1,4,4	0.11	0
3	GOL	A	1732	-	5,5,5	1.59	1 (20%)	5,5,5	1.39	1 (20%)
4	PGR	A	1759	-	3,4,4	0.69	0	1,4,4	0.24	0
3	GOL	A	1741	-	5,5,5	1.14	0	5,5,5	1.87	2 (40%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	GOL	A	1740	-	-	4/4/4/4	-
4	PGR	A	1763	-	-	1/2/2/2	-
4	PGR	A	1760	-	-	1/2/2/2	-
4	PGR	A	1780	-	-	0/2/2/2	-
4	PGR	A	1751	-	-	1/2/2/2	-
4	PGR	A	1766	-	-	2/2/2/2	-
4	PGR	A	1753	-	-	1/2/2/2	-
3	GOL	A	1734	-	-	4/4/4/4	-
4	PGR	A	1776	-	-	0/2/2/2	-
3	GOL	A	1739	-	-	4/4/4/4	-
4	PGR	A	1748	-	-	0/2/2/2	-
4	PGR	A	1749	-	-	2/2/2/2	-
4	PGR	A	1785	-	-	2/2/2/2	-
4	PGR	A	1769	-	-	1/2/2/2	-
4	PGR	A	1747	-	-	2/2/2/2	-
3	GOL	A	1736	-	-	3/4/4/4	-
3	GOL	A	1737	-	-	2/4/4/4	-
4	PGR	A	1756	-	-	0/2/2/2	-
4	PGR	A	1773	-	-	1/2/2/2	-
4	PGR	A	1745	-	-	0/2/2/2	-
4	PGR	A	1742	-	-	2/2/2/2	-
4	PGR	A	1771	-	-	0/2/2/2	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	PGR	A	1789	-	-	1/2/2/2	-
4	PGR	A	1755	-	-	0/2/2/2	-
4	PGR	A	1779	-	-	2/2/2/2	-
4	PGR	A	1768	-	-	2/2/2/2	-
4	PGR	A	1786	-	-	0/2/2/2	-
4	PGR	A	1775	-	-	0/2/2/2	-
3	GOL	A	1733	-	-	4/4/4/4	-
5	PGO	A	1743	-	1/1/1/1	1/2/2/2	-
4	PGR	A	1787	-	-	1/2/2/2	-
4	PGR	A	1744	-	-	0/2/2/2	-
4	PGR	A	1777	-	-	2/2/2/2	-
4	PGR	A	1767	-	-	2/2/2/2	-
4	PGR	A	1784	-	-	1/2/2/2	-
4	PGR	A	1788	-	-	2/2/2/2	-
4	PGR	A	1774	-	-	2/2/2/2	-
4	PGR	A	1762	-	-	2/2/2/2	-
4	PGR	A	1754	-	-	2/2/2/2	-
4	PGR	A	1770	-	-	2/2/2/2	-
4	PGR	A	1750	-	-	1/2/2/2	-
4	PGR	A	1783	-	-	2/2/2/2	-
4	PGR	A	1758	-	-	0/2/2/2	-
4	PGR	A	1778	-	-	1/2/2/2	-
4	PGR	A	1790	-	-	2/2/2/2	-
3	GOL	A	1735	-	-	4/4/4/4	-
4	PGR	A	1757	-	-	2/2/2/2	-
4	PGR	A	1761	-	-	0/2/2/2	-
4	PGR	A	1764	-	-	2/2/2/2	-
4	PGR	A	1752	-	-	0/2/2/2	-
4	PGR	A	1765	-	-	0/2/2/2	-
3	GOL	A	1738	-	-	2/4/4/4	-
4	PGR	A	1772	-	-	1/2/2/2	-
4	PGR	A	1781	-	-	2/2/2/2	-
4	PGR	A	1782	-	-	2/2/2/2	-
4	PGR	A	1746	-	-	2/2/2/2	-
3	GOL	A	1732	-	-	2/4/4/4	-
4	PGR	A	1759	-	-	2/2/2/2	-
3	GOL	A	1741	-	-	3/4/4/4	-

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	1791	PO4	P-O4	-4.94	1.39	1.54
4	A	1746	PGR	O1-C1	3.57	1.57	1.42
4	A	1751	PGR	O2-C2	3.02	1.56	1.43
4	A	1771	PGR	O2-C2	2.99	1.56	1.43
4	A	1787	PGR	O1-C1	2.80	1.54	1.42
3	A	1732	GOL	O1-C1	2.75	1.54	1.42
4	A	1783	PGR	O2-C2	2.68	1.54	1.43
4	A	1761	PGR	C3-C2	2.43	1.62	1.51
4	A	1784	PGR	C3-C2	2.29	1.61	1.51
6	A	1793	PO4	P-O3	-2.26	1.47	1.54
4	A	1767	PGR	C3-C2	2.12	1.60	1.51
4	A	1776	PGR	O2-C2	2.11	1.52	1.43
4	A	1755	PGR	O1-C1	2.05	1.51	1.42
4	A	1777	PGR	O2-C2	-2.02	1.34	1.43

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1735	GOL	O1-C1-C2	-3.61	92.91	110.20
5	A	1743	PGO	O2-C2-C3	3.56	124.78	109.38
3	A	1741	GOL	O2-C2-C3	3.05	122.54	109.12
3	A	1733	GOL	O2-C2-C1	2.97	122.20	109.12
6	A	1791	PO4	O3-P-O2	-2.86	98.77	107.97
4	A	1767	PGR	O2-C2-C3	2.74	121.26	109.38
3	A	1741	GOL	O2-C2-C1	2.47	120.00	109.12
4	A	1771	PGR	O2-C2-C3	2.41	119.81	109.38
4	A	1747	PGR	O2-C2-C3	2.34	119.50	109.38
6	A	1791	PO4	O4-P-O3	2.19	114.98	107.97
3	A	1732	GOL	O2-C2-C3	-2.15	99.65	109.12
6	A	1793	PO4	O4-P-O1	2.08	118.50	110.89
4	A	1763	PGR	O2-C2-C3	2.03	118.16	109.38

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	A	1743	PGO	C2

All (89) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	1733	GOL	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
3	A	1733	GOL	O1-C1-C2-C3
3	A	1733	GOL	O2-C2-C3-O3
3	A	1734	GOL	C1-C2-C3-O3
3	A	1739	GOL	C1-C2-C3-O3
3	A	1740	GOL	O1-C1-C2-C3
3	A	1740	GOL	C1-C2-C3-O3
3	A	1741	GOL	C1-C2-C3-O3
4	A	1742	PGR	O1-C1-C2-O2
4	A	1746	PGR	O1-C1-C2-O2
4	A	1747	PGR	O1-C1-C2-C3
4	A	1747	PGR	O1-C1-C2-O2
4	A	1751	PGR	O1-C1-C2-O2
4	A	1753	PGR	O1-C1-C2-C3
4	A	1754	PGR	O1-C1-C2-C3
4	A	1757	PGR	O1-C1-C2-C3
4	A	1757	PGR	O1-C1-C2-O2
4	A	1759	PGR	O1-C1-C2-C3
4	A	1759	PGR	O1-C1-C2-O2
4	A	1762	PGR	O1-C1-C2-C3
4	A	1762	PGR	O1-C1-C2-O2
4	A	1764	PGR	O1-C1-C2-C3
4	A	1764	PGR	O1-C1-C2-O2
4	A	1766	PGR	O1-C1-C2-C3
4	A	1766	PGR	O1-C1-C2-O2
4	A	1767	PGR	O1-C1-C2-C3
4	A	1767	PGR	O1-C1-C2-O2
4	A	1768	PGR	O1-C1-C2-O2
4	A	1770	PGR	O1-C1-C2-C3
4	A	1770	PGR	O1-C1-C2-O2
4	A	1774	PGR	O1-C1-C2-O2
4	A	1777	PGR	O1-C1-C2-C3
4	A	1777	PGR	O1-C1-C2-O2
4	A	1779	PGR	O1-C1-C2-C3
4	A	1779	PGR	O1-C1-C2-O2
4	A	1781	PGR	O1-C1-C2-C3
4	A	1781	PGR	O1-C1-C2-O2
4	A	1782	PGR	O1-C1-C2-C3
4	A	1782	PGR	O1-C1-C2-O2
4	A	1783	PGR	O1-C1-C2-C3
4	A	1783	PGR	O1-C1-C2-O2
4	A	1784	PGR	O1-C1-C2-O2
4	A	1785	PGR	O1-C1-C2-C3

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Mol	Chain	Res	Type	Atoms
4	A	1785	PGR	O1-C1-C2-O2
4	A	1787	PGR	O1-C1-C2-C3
4	A	1788	PGR	O1-C1-C2-O2
4	A	1789	PGR	O1-C1-C2-O2
4	A	1790	PGR	O1-C1-C2-O2
5	A	1743	PGO	O1-C1-C2-O2
3	A	1735	GOL	O1-C1-C2-O2
3	A	1741	GOL	O1-C1-C2-O2
3	A	1734	GOL	O1-C1-C2-C3
3	A	1735	GOL	O1-C1-C2-C3
3	A	1735	GOL	C1-C2-C3-O3
3	A	1736	GOL	O1-C1-C2-C3
3	A	1738	GOL	C1-C2-C3-O3
3	A	1739	GOL	O1-C1-C2-C3
3	A	1732	GOL	O1-C1-C2-O2
3	A	1735	GOL	O2-C2-C3-O3
3	A	1736	GOL	O1-C1-C2-O2
3	A	1738	GOL	O2-C2-C3-O3
3	A	1739	GOL	O1-C1-C2-O2
3	A	1740	GOL	O1-C1-C2-O2
3	A	1740	GOL	O2-C2-C3-O3
3	A	1734	GOL	O2-C2-C3-O3
4	A	1749	PGR	O1-C1-C2-O2
4	A	1754	PGR	O1-C1-C2-O2
4	A	1763	PGR	O1-C1-C2-O2
4	A	1772	PGR	O1-C1-C2-O2
3	A	1734	GOL	O1-C1-C2-O2
3	A	1739	GOL	O2-C2-C3-O3
4	A	1742	PGR	O1-C1-C2-C3
4	A	1746	PGR	O1-C1-C2-C3
4	A	1768	PGR	O1-C1-C2-C3
4	A	1773	PGR	O1-C1-C2-C3
4	A	1774	PGR	O1-C1-C2-C3
4	A	1788	PGR	O1-C1-C2-C3
4	A	1790	PGR	O1-C1-C2-C3
3	A	1741	GOL	O2-C2-C3-O3
3	A	1733	GOL	C1-C2-C3-O3
3	A	1736	GOL	C1-C2-C3-O3
4	A	1769	PGR	O1-C1-C2-O2
3	A	1732	GOL	O1-C1-C2-C3
4	A	1749	PGR	O1-C1-C2-C3
3	A	1737	GOL	C1-C2-C3-O3

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Mol	Chain	Res	Type	Atoms
4	A	1750	PGR	O1-C1-C2-O2
4	A	1760	PGR	O1-C1-C2-O2
4	A	1778	PGR	O1-C1-C2-O2
3	A	1737	GOL	O2-C2-C3-O3

There are no ring outliers.

27 monomers are involved in 44 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1740	GOL	3	0
4	A	1760	PGR	1	0
4	A	1780	PGR	1	0
4	A	1753	PGR	2	0
3	A	1734	GOL	1	0
4	A	1749	PGR	2	0
4	A	1747	PGR	1	0
4	A	1756	PGR	3	0
4	A	1768	PGR	1	0
5	A	1743	PGO	1	0
6	A	1791	PO4	1	0
4	A	1777	PGR	1	0
4	A	1767	PGR	3	0
4	A	1784	PGR	2	0
4	A	1770	PGR	1	0
4	A	1750	PGR	2	0
4	A	1758	PGR	1	0
4	A	1778	PGR	1	0
3	A	1735	GOL	1	0
4	A	1764	PGR	1	0
4	A	1752	PGR	3	0
3	A	1738	GOL	2	0
4	A	1781	PGR	1	0
4	A	1782	PGR	5	0
4	A	1746	PGR	1	0
3	A	1732	GOL	1	0
3	A	1741	GOL	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

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, 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	721/751 (96%)	0.03	32 (4%) 34 34	28, 36, 53, 79	0
2	B	2/4 (50%)	0.31	0 100 100	38, 38, 38, 49	0
All	All	723/755 (95%)	0.03	32 (4%) 34 34	28, 36, 53, 79	0

All (32) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	192	SER	5.6
1	A	135	VAL	5.6
1	A	136	ALA	4.9
1	A	137	ALA	4.3
1	A	10	SER	3.9
1	A	11	ALA	3.8
1	A	397	GLU	3.8
1	A	129	ASP	3.6
1	A	586[A]	VAL	3.4
1	A	194	THR	3.3
1	A	12	GLN	3.2
1	A	728	LEU	3.1
1	A	191	PRO	3.1
1	A	237	LEU	3.1
1	A	730	ARG	3.0
1	A	389[A]	THR	2.9
1	A	193	GLN	2.9
1	A	581	LEU	2.8
1	A	131[A]	GLU	2.8
1	A	190	ASP	2.7
1	A	127	PHE	2.6
1	A	133	GLY	2.6
1	A	729	VAL	2.5
1	A	128	THR	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	640	TYR	2.3
1	A	550	PHE	2.3
1	A	149[A]	GLU	2.2
1	A	587	LEU	2.2
1	A	684[A]	ASN	2.2
1	A	606	VAL	2.1
1	A	665	VAL	2.1
1	A	582	LEU	2.1

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

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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	B-factors(Å ²)	Q<0.9
2	FC0	B	1	14/15	0.88	0.15	62,84,89,89	0
2	RGL	B	4	11/11	0.97	0.14	28,31,33,36	0

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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	B-factors(Å ²)	Q<0.9
4	PGR	A	1753	5/5	0.54	0.27	63,67,69,72	0
4	PGR	A	1786	5/5	0.57	0.29	87,87,89,89	0
4	PGR	A	1773	5/5	0.66	0.31	86,91,93,94	0
4	PGR	A	1784	5/5	0.67	0.29	49,52,55,57	5
4	PGR	A	1770	5/5	0.69	0.34	63,69,70,71	5
4	PGR	A	1789	5/5	0.69	0.23	67,69,73,75	5
3	GOL	A	1739	6/6	0.72	0.19	57,69,71,72	6
4	PGR	A	1787	5/5	0.74	0.19	65,73,78,79	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	PGR	A	1751	5/5	0.74	0.18	54,55,58,61	0
4	PGR	A	1748	5/5	0.78	0.25	85,88,91,93	0
4	PGR	A	1759	5/5	0.78	0.22	89,90,92,92	0
4	PGR	A	1760	5/5	0.78	0.27	71,75,81,83	0
4	PGR	A	1790	5/5	0.78	0.23	69,76,77,78	0
4	PGR	A	1779	5/5	0.79	0.25	78,86,92,93	0
4	PGR	A	1771	5/5	0.80	0.14	43,46,51,53	5
4	PGR	A	1778	5/5	0.81	0.35	73,75,78,78	0
4	PGR	A	1785	5/5	0.81	0.29	67,67,70,73	5
4	PGR	A	1780	5/5	0.81	0.25	67,70,71,72	5
3	GOL	A	1737	6/6	0.83	0.20	68,70,73,73	6
3	GOL	A	1740	6/6	0.84	0.45	46,48,53,54	6
4	PGR	A	1767	5/5	0.84	0.21	67,71,76,76	0
4	PGR	A	1782	5/5	0.84	0.27	48,61,67,70	4
4	PGR	A	1788	5/5	0.85	0.20	63,70,73,73	5
3	GOL	A	1736	6/6	0.85	0.18	71,82,85,89	0
4	PGR	A	1750	5/5	0.85	0.14	68,74,75,75	0
4	PGR	A	1763	5/5	0.86	0.24	67,77,80,82	0
4	PGR	A	1768	5/5	0.86	0.17	81,84,85,86	0
4	PGR	A	1783	5/5	0.86	0.12	61,62,66,66	0
4	PGR	A	1769	5/5	0.86	0.32	59,69,70,70	4
4	PGR	A	1764	5/5	0.86	0.15	48,54,60,61	0
3	GOL	A	1735	6/6	0.87	0.16	64,74,78,78	0
4	PGR	A	1754	5/5	0.87	0.18	87,88,89,90	0
3	GOL	A	1741	6/6	0.88	0.12	42,48,52,56	6
4	PGR	A	1755	5/5	0.88	0.26	51,59,61,64	0
4	PGR	A	1781	5/5	0.89	0.09	70,70,72,73	0
3	GOL	A	1734	6/6	0.89	0.13	50,67,70,70	0
4	PGR	A	1744	5/5	0.89	0.12	47,48,51,53	0
4	PGR	A	1757	5/5	0.89	0.12	52,59,64,67	0
3	GOL	A	1732	6/6	0.89	0.10	44,46,49,50	0
6	PO4	A	1792	5/5	0.89	0.18	74,75,76,77	5
3	GOL	A	1733	6/6	0.90	0.15	75,81,82,84	0
4	PGR	A	1749	5/5	0.90	0.12	53,59,62,62	0
4	PGR	A	1745	5/5	0.90	0.10	51,55,60,65	0
4	PGR	A	1766	5/5	0.90	0.23	60,73,75,79	0
4	PGR	A	1742	5/5	0.92	0.15	41,41,46,50	0
3	GOL	A	1738	6/6	0.92	0.20	46,49,53,64	5
4	PGR	A	1761	5/5	0.93	0.11	55,58,64,71	0
4	PGR	A	1765	5/5	0.93	0.15	35,53,58,58	0
4	PGR	A	1772	5/5	0.93	0.33	79,82,83,85	0
4	PGR	A	1776	5/5	0.94	0.13	41,52,58,65	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	PGR	A	1777	5/5	0.94	0.17	56,59,62,63	0
4	PGR	A	1758	5/5	0.94	0.22	77,78,80,81	0
4	PGR	A	1774	5/5	0.94	0.23	41,56,67,69	0
6	PO4	A	1793	5/5	0.94	0.24	53,53,56,58	5
4	PGR	A	1756	5/5	0.95	0.07	54,58,63,63	0
4	PGR	A	1746	5/5	0.95	0.16	34,43,56,61	0
4	PGR	A	1775	5/5	0.95	0.08	42,53,61,65	0
4	PGR	A	1747	5/5	0.95	0.07	44,57,61,61	0
4	PGR	A	1752	5/5	0.95	0.18	54,60,65,71	0
4	PGR	A	1762	5/5	0.96	0.20	69,70,71,72	0
6	PO4	A	1791	5/5	0.97	0.17	47,50,56,58	5
7	CL	A	1799	1/1	0.97	0.04	66,66,66,66	0
5	PGO	A	1743	5/5	0.98	0.14	30,34,41,43	0
8	NA	A	1795	1/1	0.99	0.05	47,47,47,47	0
8	NA	A	1797	1/1	0.99	0.17	34,34,34,34	0
7	CL	A	1794	1/1	1.00	0.09	45,45,45,45	0
7	CL	A	1796	1/1	1.00	0.04	46,46,46,46	0
7	CL	A	1798	1/1	1.00	0.13	42,42,42,42	0

6.5 Other polymers [i](#)

There are no such residues in this entry.