



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 01:31 AM UTC

PDB ID : 2NQQ / pdb_00002nqq
Title : MoeA R137Q
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Deposited on : 2006-10-31
Resolution : 2.40 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

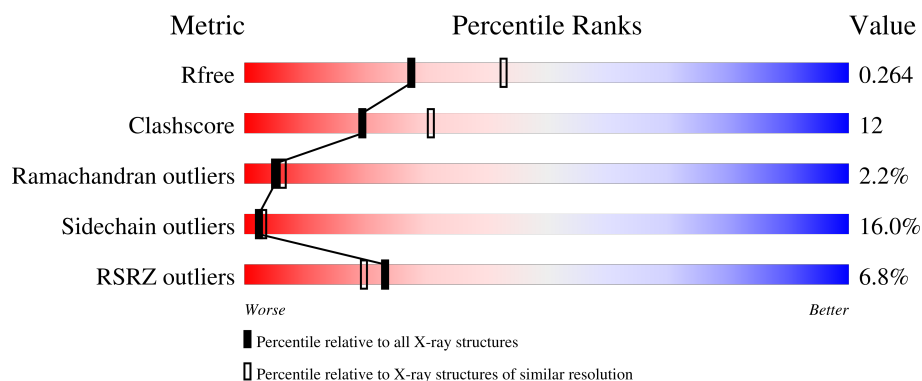
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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}	180053	4912 (2.40-2.40)
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

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	411	2% 71% 21% 6% .
1	B	411	5% 71% 21% 6% .
1	C	411	7% 72% 21% 5% .
1	D	411	13% 64% 27% 7% .

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard

residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	GOL	B	903	-	-	X	-
2	GOL	D	902	-	-	X	-

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 13077 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 Molybdopterin biosynthesis protein moeA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	403	Total	C	N	O	S	0	0	0
			3038	1917	529	579	13			
1	B	403	Total	C	N	O	S	0	0	0
			3038	1917	529	579	13			
1	C	403	Total	C	N	O	S	0	0	0
			3038	1917	529	579	13			
1	D	403	Total	C	N	O	S	0	0	0
			3038	1917	529	579	13			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	137	GLN	ARG	engineered mutation	UNP P12281
B	137	GLN	ARG	engineered mutation	UNP P12281
C	137	GLN	ARG	engineered mutation	UNP P12281
D	137	GLN	ARG	engineered mutation	UNP P12281

- Molecule 2 is GLYCEROL (CCD ID: GOL) (formula: C₃H₈O₃).



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

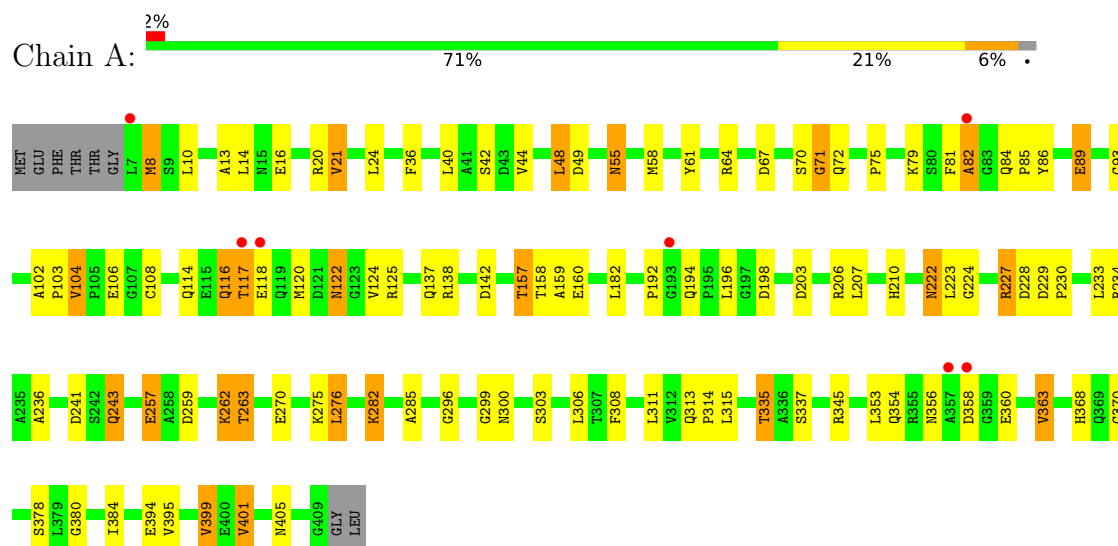
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	249	Total 249	O 249	0	0
3	B	236	Total 236	O 236	0	0
3	C	189	Total 189	O 189	0	0
3	D	167	Total 167	O 167	0	0

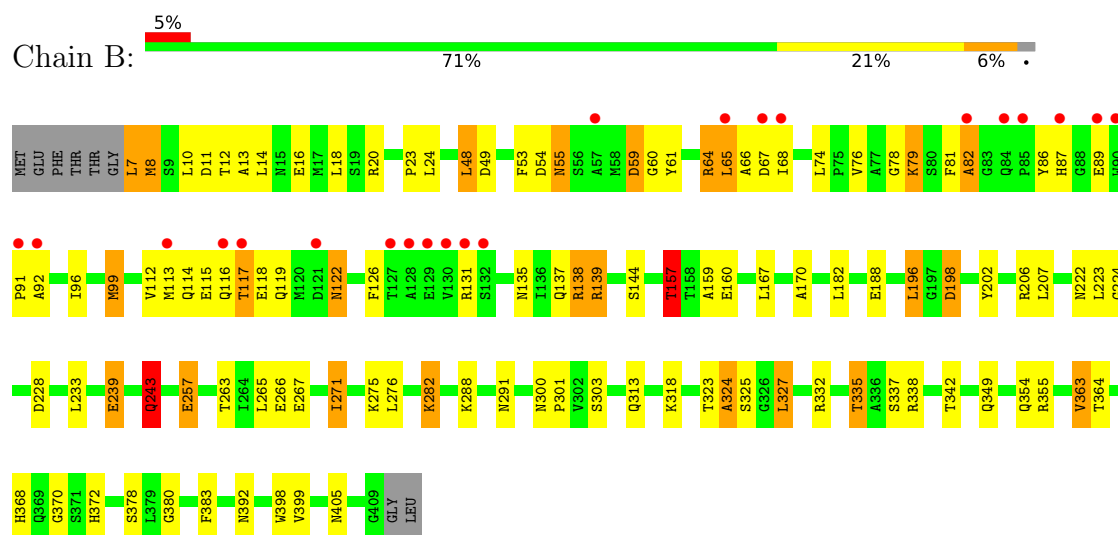
3 Residue-property plots [i](#)

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

• Molecule 1: Molybdopterin biosynthesis protein moeA

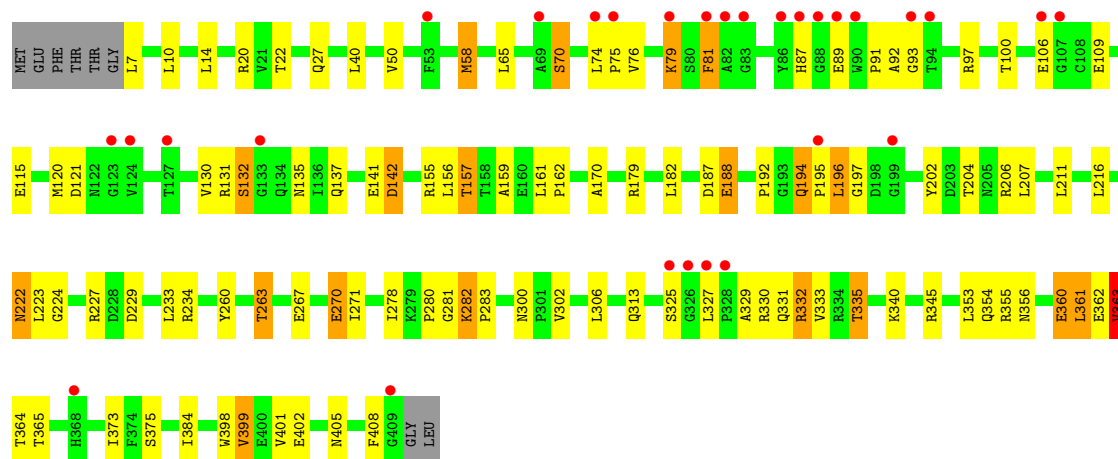


• Molecule 1: Molybdopterin biosynthesis protein moeA

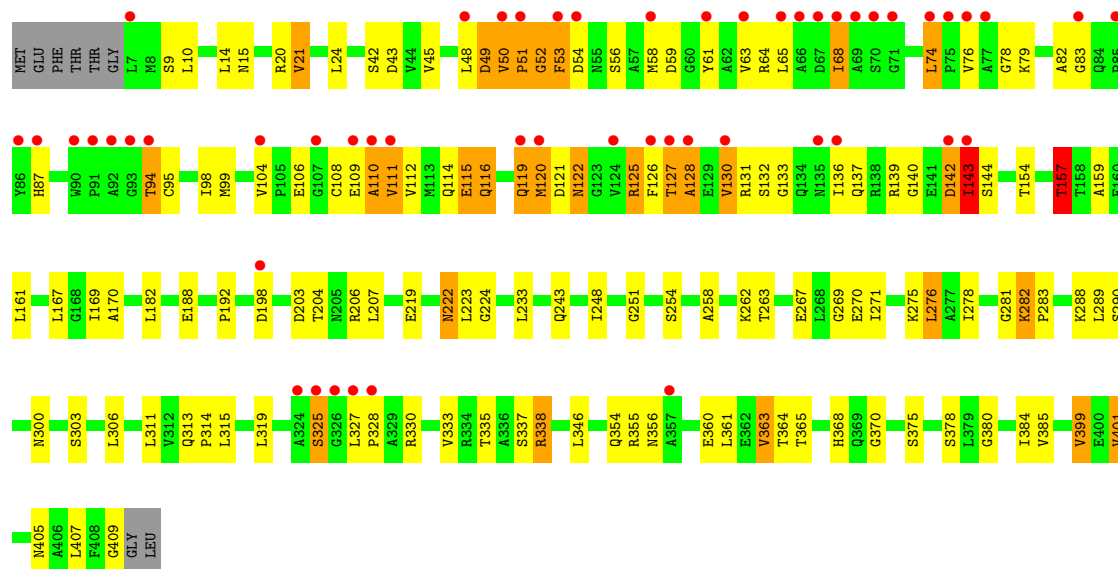


• Molecule 1: Molybdopterin biosynthesis protein moeA





• Molecule 1: Molybdopterin biosynthesis protein moeA



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	80.20Å 106.64Å 99.69Å 90.00° 91.57° 90.00°	Depositor
Resolution (Å)	50.00 – 2.40 50.00 – 2.40	Depositor EDS
% Data completeness (in resolution range)	96.9 (50.00-2.40) 96.9 (50.00-2.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.12 (at 2.39Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, R_{free}	0.190 , 0.261 (Not available) , 0.264	Depositor DCC
R_{free} test set	3157 reflections (4.81%)	wwPDB-VP
Wilson B-factor (Å ²)	35.3	Xtriage
Anisotropy	0.032	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 46.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.028 for h,-k,-l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	13077	wwPDB-VP
Average B, all atoms (Å ²)	42.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.32% 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: GOL

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	1.07	4/3097 (0.1%)	1.08	2/4210 (0.0%)
1	B	1.02	1/3097 (0.0%)	1.09	6/4210 (0.1%)
1	C	0.99	1/3097 (0.0%)	1.04	2/4210 (0.0%)
1	D	1.00	1/3097 (0.0%)	1.09	8/4210 (0.2%)
All	All	1.02	7/12388 (0.1%)	1.08	18/16840 (0.1%)

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	308	PHE	C-O	-6.53	1.16	1.24
1	B	8	MET	SD-CE	-6.43	1.63	1.79
1	C	50	VAL	CA-CB	6.36	1.59	1.54
1	A	21	VAL	C-O	-6.08	1.17	1.24
1	D	248	ILE	C-O	-5.34	1.18	1.24
1	A	262	LYS	C-O	-5.26	1.18	1.24
1	A	36	PHE	C-O	-5.11	1.17	1.23

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	363	VAL	CB-CA-C	-10.68	96.43	111.38
1	A	363	VAL	CB-CA-C	-6.73	100.12	110.95
1	D	289	LEU	N-CA-C	-6.09	100.38	109.94
1	D	169	ILE	N-CA-C	5.89	116.89	108.93
1	B	157	THR	N-CA-CB	-5.69	101.81	111.31
1	B	55	ASN	N-CA-C	5.57	117.44	109.14
1	C	58	MET	N-CA-C	5.56	116.72	108.60
1	C	363	VAL	CB-CA-C	-5.56	102.34	110.62
1	A	48	LEU	N-CA-C	5.51	117.18	108.96
1	D	78	GLY	N-CA-C	5.39	119.15	110.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	51	PRO	N-CA-C	-5.39	107.03	113.98
1	B	243	GLN	CB-CA-C	-5.36	100.38	109.38
1	D	269	GLY	N-CA-C	5.31	118.34	110.42
1	D	154	THR	N-CA-C	5.19	118.02	109.76
1	D	157	THR	N-CA-CB	-5.16	103.09	111.24
1	B	335	THR	OG1-CB-CG2	-5.14	99.02	109.30
1	B	198	ASP	N-CA-C	5.03	117.16	111.02
1	D	290	SER	N-CA-C	5.03	116.45	111.07

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3038	0	3032	70	0
1	B	3038	0	3032	77	0
1	C	3038	0	3032	57	0
1	D	3038	0	3032	85	0
2	A	30	0	40	6	0
2	B	18	0	24	9	0
2	C	6	0	8	0	0
2	D	30	0	40	11	0
3	A	249	0	0	16	0
3	B	236	0	0	12	0
3	C	189	0	0	7	0
3	D	167	0	0	14	0
All	All	13077	0	12240	285	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 12.

All (285) 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:B:271:ILE:HG13	3:B:998:HOH:O	1.40	1.17
1:C:142:ASP:N	1:C:142:ASP:OD1	1.89	0.95
1:B:122:ASN:H	1:B:122:ASN:HD22	1.18	0.91
1:A:313:GLN:HE22	1:A:405:ASN:HD21	1.18	0.89
1:A:70:SER:C	3:A:1087:HOH:O	2.19	0.85
1:D:140:GLY:HA2	1:D:143:ILE:HG23	1.59	0.85
1:C:216:LEU:HD21	1:C:313:GLN:HE21	1.40	0.84
1:D:380:GLY:O	2:D:902:GOL:C3	2.25	0.84
1:C:282:LYS:HB3	1:C:283:PRO:HD3	1.60	0.82
1:B:243:GLN:OE1	3:B:1106:HOH:O	1.96	0.82
1:D:313:GLN:HE22	1:D:405:ASN:HD21	1.25	0.81
1:A:70:SER:O	1:A:70:SER:OG	1.91	0.81
1:D:49:ASP:HA	1:D:143:ILE:HD12	1.60	0.81
1:C:141:GLU:C	1:C:142:ASP:OD1	2.23	0.80
1:B:368:HIS:HD2	1:B:370:GLY:H	1.26	0.80
1:D:368:HIS:HD2	1:D:370:GLY:H	1.30	0.79
1:C:92:ALA:HA	3:C:1036:HOH:O	1.82	0.79
1:D:222:ASN:HD22	1:D:224:GLY:H	1.31	0.78
1:B:380:GLY:O	2:B:903:GOL:C1	2.31	0.78
1:A:234:ARG:HD2	3:A:1141:HOH:O	1.83	0.77
1:D:380:GLY:O	2:D:902:GOL:H31	1.86	0.76
1:B:300:ASN:HD22	1:B:303:SER:H	1.34	0.76
1:B:368:HIS:CD2	1:B:370:GLY:H	2.04	0.75
1:A:117:THR:O	1:A:117:THR:HG22	1.88	0.74
1:B:335:THR:HG22	1:B:337:SER:H	1.51	0.74
1:A:70:SER:O	1:A:72:GLN:N	2.19	0.73
1:B:313:GLN:HE22	1:B:405:ASN:HD21	1.34	0.73
1:D:15:ASN:OD1	3:D:1043:HOH:O	2.07	0.72
1:B:257:GLU:OE2	3:B:1045:HOH:O	2.05	0.72
1:A:71:GLY:N	3:A:1087:HOH:O	2.22	0.71
1:C:222:ASN:C	1:C:222:ASN:HD22	1.98	0.71
1:D:356:ASN:HD21	1:D:360:GLU:HG3	1.54	0.71
1:D:50:VAL:H	1:D:143:ILE:HG21	1.53	0.71
1:B:380:GLY:O	2:B:903:GOL:H31	1.92	0.70
1:C:7:LEU:N	3:C:1069:HOH:O	2.22	0.70
1:D:328:PRO:CB	3:D:1000:HOH:O	2.39	0.69
1:B:380:GLY:O	2:B:903:GOL:H11	1.92	0.69
1:A:206:ARG:HH11	1:A:222:ASN:HD21	1.41	0.68
1:D:313:GLN:HE22	1:D:405:ASN:ND2	1.91	0.68
1:B:271:ILE:N	1:B:271:ILE:HD12	2.08	0.68
1:D:328:PRO:HB2	3:D:1000:HOH:O	1.93	0.68
1:B:117:THR:HB	3:B:1128:HOH:O	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:368:HIS:CD2	1:D:370:GLY:H	2.11	0.67
1:B:243:GLN:CD	3:B:1106:HOH:O	2.36	0.66
1:A:300:ASN:HD22	1:A:303:SER:H	1.42	0.65
1:A:117:THR:HG23	1:A:124:VAL:CG1	2.27	0.65
1:B:378:SER:O	2:B:903:GOL:H32	1.97	0.65
1:D:380:GLY:O	2:D:902:GOL:H32	1.96	0.64
1:D:222:ASN:ND2	1:D:224:GLY:H	1.95	0.64
2:A:908:GOL:H2	3:A:1106:HOH:O	1.97	0.63
1:C:79:LYS:HZ3	1:C:81:PHE:HE2	1.46	0.63
1:A:276:LEU:HB2	1:A:282:LYS:O	1.99	0.62
1:A:70:SER:CA	3:A:1087:HOH:O	2.47	0.62
1:D:282:LYS:HB3	1:D:283:PRO:HD3	1.81	0.62
1:D:335:THR:HG22	1:D:337:SER:H	1.64	0.62
1:A:81:PHE:O	1:A:82:ALA:HB2	1.98	0.62
1:B:222:ASN:HD22	1:B:224:GLY:H	1.48	0.62
1:B:115:GLU:HG3	1:B:116:GLN:N	2.14	0.61
1:B:7:LEU:N	3:B:951:HOH:O	2.33	0.61
1:B:122:ASN:H	1:B:122:ASN:ND2	1.93	0.61
1:C:313:GLN:HE22	1:C:405:ASN:HD21	1.46	0.61
1:B:48:LEU:HD11	1:B:167:LEU:HA	1.82	0.61
1:B:122:ASN:HD22	1:B:122:ASN:N	1.90	0.61
1:A:137:GLN:HE22	1:A:142:ASP:HB2	1.66	0.61
1:A:368:HIS:HD2	1:A:370:GLY:H	1.49	0.61
1:A:210:HIS:HD2	1:A:222:ASN:OD1	1.82	0.61
1:B:8:MET:HE2	1:B:13:ALA:HA	1.82	0.61
1:D:300:ASN:HD22	1:D:303:SER:H	1.48	0.61
1:B:79:LYS:O	1:B:86:TYR:HB2	2.02	0.60
1:D:143:ILE:HG23	1:D:144:SER:H	1.67	0.60
1:A:40:LEU:HD11	1:A:44:VAL:HG23	1.82	0.60
1:B:65:LEU:HG	1:B:66:ALA:H	1.66	0.60
1:B:380:GLY:O	2:B:903:GOL:H12	2.01	0.60
1:A:21:VAL:HG21	1:A:315:LEU:CD1	2.32	0.59
1:C:109:GLU:O	1:C:132:SER:O	2.19	0.59
1:A:313:GLN:HE22	1:A:405:ASN:ND2	1.94	0.59
1:C:202:TYR:O	1:C:204:THR:HG23	2.03	0.59
1:A:299:GLY:O	2:A:904:GOL:H31	2.02	0.58
1:D:378:SER:O	2:D:902:GOL:H31	2.03	0.58
1:A:192:PRO:HB2	1:B:170:ALA:HB2	1.85	0.58
1:B:8:MET:HE2	1:B:13:ALA:CA	2.32	0.58
1:A:8:MET:HE2	1:A:13:ALA:HA	1.84	0.58
1:B:78:GLY:HA3	1:B:86:TYR:CE2	2.39	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:50:VAL:HB	1:D:51:PRO:HD3	1.85	0.58
1:B:332:ARG:HG2	1:B:398:TRP:CE3	2.38	0.57
1:C:75:PRO:HD2	1:C:93:GLY:O	2.04	0.57
1:A:122:ASN:HD22	1:A:122:ASN:H	1.51	0.57
1:A:345:ARG:HD3	3:A:1139:HOH:O	2.02	0.57
1:B:59:ASP:HB3	1:B:99:MET:HA	1.84	0.57
1:C:271:ILE:N	1:C:271:ILE:HD12	2.19	0.57
1:D:222:ASN:HD22	1:D:222:ASN:C	2.12	0.57
1:A:384:ILE:HG23	1:A:399:VAL:CG1	2.35	0.57
1:D:206:ARG:HH11	1:D:222:ASN:HD21	1.51	0.57
1:B:157:THR:HG22	1:B:159:ALA:H	1.70	0.57
1:A:157:THR:HG23	1:A:159:ALA:H	1.70	0.56
1:B:243:GLN:HB3	3:B:1106:HOH:O	2.04	0.56
1:C:373:ILE:HG23	1:D:142:ASP:HB2	1.85	0.56
1:C:27:GLN:NE2	3:C:962:HOH:O	2.18	0.56
1:C:353:LEU:HD13	1:C:363:VAL:HG13	1.87	0.56
1:B:23:PRO:HB2	2:B:910:GOL:H2	1.87	0.56
1:C:192:PRO:HB2	1:D:170:ALA:HB2	1.86	0.56
1:B:313:GLN:HE22	1:B:405:ASN:ND2	2.02	0.55
1:C:330:ARG:NH1	1:C:402:GLU:OE1	2.38	0.55
1:A:75:PRO:HD2	1:A:93:GLY:O	2.07	0.55
1:A:229:ASP:HB2	1:A:230:PRO:HD2	1.89	0.55
1:B:112:VAL:HG11	1:B:116:GLN:HG3	1.89	0.55
1:B:115:GLU:CG	1:B:116:GLN:N	2.69	0.55
1:D:161:LEU:CD1	3:D:1080:HOH:O	2.54	0.55
1:A:117:THR:O	1:A:117:THR:CG2	2.54	0.55
1:D:50:VAL:C	1:D:52:GLY:N	2.62	0.55
1:A:300:ASN:ND2	1:A:303:SER:H	2.05	0.54
1:C:157:THR:HG22	1:C:159:ALA:H	1.72	0.54
1:A:263:THR:HB	3:A:997:HOH:O	2.06	0.54
1:B:222:ASN:ND2	1:B:224:GLY:H	2.04	0.54
1:A:137:GLN:NE2	1:A:142:ASP:HB2	2.21	0.54
1:C:282:LYS:HB3	1:C:283:PRO:CD	2.36	0.54
1:B:323:THR:C	1:B:324:ALA:O	2.51	0.54
1:C:216:LEU:HD21	1:C:313:GLN:NE2	2.17	0.54
1:A:157:THR:HG22	1:A:160:GLU:OE2	2.08	0.54
1:B:114:GLN:HA	3:B:1128:HOH:O	2.08	0.54
1:D:384:ILE:HG23	1:D:399:VAL:CG1	2.38	0.54
1:A:285:ALA:HB3	1:A:296:GLY:HA3	1.90	0.53
1:C:211:LEU:HD22	3:D:1080:HOH:O	2.07	0.53
1:B:18:LEU:O	1:B:318:LYS:NZ	2.36	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:142:ASP:CG	3:C:1002:HOH:O	2.50	0.53
1:B:81:PHE:O	1:B:82:ALA:CB	2.56	0.52
1:C:373:ILE:HG23	1:D:142:ASP:CB	2.40	0.52
1:B:239:GLU:O	1:B:243:GLN:HG2	2.08	0.52
1:B:368:HIS:CD2	1:B:372:HIS:HE1	2.27	0.52
1:A:116:GLN:NE2	3:A:964:HOH:O	2.42	0.52
1:B:275:LYS:HD3	3:B:1012:HOH:O	2.08	0.52
1:A:21:VAL:HG21	1:A:315:LEU:HD12	1.91	0.52
1:A:81:PHE:O	1:A:82:ALA:CB	2.58	0.52
1:B:222:ASN:HD22	1:B:222:ASN:C	2.17	0.52
1:C:281:GLY:O	1:C:282:LYS:HB2	2.09	0.51
1:D:116:GLN:HE21	1:D:116:GLN:N	2.07	0.51
1:A:157:THR:HG23	1:A:158:THR:N	2.24	0.51
1:B:196:LEU:HD13	1:B:202:TYR:CE2	2.46	0.51
1:A:86:TYR:OH	1:A:89:GLU:O	2.27	0.51
1:D:51:PRO:O	1:D:53:PHE:N	2.43	0.51
1:D:378:SER:O	2:D:902:GOL:C3	2.59	0.51
1:A:49:ASP:HB2	2:A:905:GOL:H12	1.92	0.51
1:B:49:ASP:OD2	2:B:907:GOL:H31	2.11	0.51
1:B:332:ARG:HG2	1:B:398:TRP:HE3	1.76	0.50
1:D:59:ASP:O	1:D:114:GLN:HB2	2.11	0.50
1:D:157:THR:HG22	1:D:159:ALA:H	1.74	0.50
1:A:104:VAL:HG13	1:A:108:CYS:HB3	1.92	0.50
1:C:278:ILE:O	1:C:345:ARG:HD2	2.11	0.50
1:D:206:ARG:HD2	1:D:222:ASN:HD21	1.76	0.50
1:D:51:PRO:HB2	1:D:139:ARG:HA	1.93	0.50
1:D:281:GLY:O	1:D:282:LYS:HB2	2.11	0.50
1:A:236:ALA:HB2	2:A:906:GOL:H11	1.93	0.49
1:A:243:GLN:NE2	3:A:953:HOH:O	2.28	0.49
1:A:394:GLU:O	1:A:395:VAL:C	2.53	0.49
1:A:8:MET:HE2	1:A:13:ALA:CA	2.42	0.49
1:A:257:GLU:HG3	3:A:1156:HOH:O	2.11	0.49
1:A:313:GLN:HB3	1:A:314:PRO:HD3	1.95	0.49
1:A:356:ASN:HD21	1:A:360:GLU:CB	2.25	0.49
1:B:81:PHE:O	1:B:82:ALA:HB3	2.13	0.49
1:D:127:THR:O	1:D:128:ALA:C	2.55	0.49
1:A:353:LEU:HD13	1:A:401:VAL:HG11	1.94	0.49
1:C:333:VAL:CG1	1:C:362:GLU:HA	2.43	0.49
1:D:258:ALA:HA	1:D:262:LYS:HD3	1.95	0.49
1:D:328:PRO:HD3	3:D:969:HOH:O	2.13	0.49
1:B:53:PHE:O	1:B:54:ASP:C	2.56	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:251:GLY:HA3	2:D:912:GOL:O1	2.13	0.48
1:C:58:MET:HA	1:C:100:THR:OG1	2.13	0.48
1:D:51:PRO:HD2	1:D:143:ILE:HG22	1.96	0.48
1:D:68:ILE:HD13	1:D:68:ILE:O	2.13	0.48
1:D:300:ASN:ND2	1:D:303:SER:H	2.11	0.48
1:A:380:GLY:O	3:A:909:HOH:O	2.20	0.48
1:A:335:THR:HG22	1:A:337:SER:H	1.78	0.48
1:B:206:ARG:HD2	1:B:222:ASN:HD21	1.78	0.48
1:B:65:LEU:HD12	1:B:66:ALA:HB2	1.96	0.48
1:B:288:LYS:NZ	3:B:1066:HOH:O	2.13	0.48
1:A:222:ASN:HD22	1:A:224:GLY:H	1.62	0.48
1:A:368:HIS:CD2	1:A:370:GLY:H	2.30	0.48
1:B:116:GLN:O	1:B:126:PHE:HA	2.14	0.48
1:A:276:LEU:HD21	1:A:311:LEU:HD11	1.96	0.47
1:D:355:ARG:O	3:D:1046:HOH:O	2.20	0.47
1:C:170:ALA:HB2	1:D:192:PRO:HB2	1.96	0.47
1:C:206:ARG:HH11	1:C:222:ASN:HD21	1.62	0.47
1:D:115:GLU:C	1:D:116:GLN:HE21	2.22	0.47
1:D:74:LEU:HB3	1:D:94:THR:HA	1.97	0.47
1:B:300:ASN:ND2	1:B:303:SER:H	2.07	0.47
1:D:276:LEU:HD21	1:D:311:LEU:HD11	1.96	0.47
1:A:55:ASN:ND2	1:A:137:GLN:HB3	2.30	0.47
1:D:125:ARG:NE	1:D:125:ARG:HA	2.30	0.47
1:B:239:GLU:OE2	1:B:243:GLN:NE2	2.47	0.46
1:A:118:GLU:O	1:A:125:ARG:HB3	2.15	0.46
1:D:104:VAL:HG21	1:D:136:ILE:HG22	1.97	0.46
1:D:384:ILE:HG23	1:D:399:VAL:HG11	1.98	0.46
1:D:409:GLY:HA2	2:D:909:GOL:H12	1.96	0.46
1:D:49:ASP:HB2	1:D:52:GLY:HA2	1.98	0.46
1:D:363:VAL:HG21	1:D:401:VAL:HG21	1.97	0.46
1:B:378:SER:O	2:B:903:GOL:C3	2.64	0.45
1:C:58:MET:SD	1:C:135:ASN:ND2	2.89	0.45
1:A:85:PRO:HB3	1:A:103:PRO:HG2	1.97	0.45
1:B:49:ASP:OD1	2:B:907:GOL:H12	2.16	0.45
1:B:65:LEU:HG	1:B:66:ALA:N	2.31	0.45
1:C:280:PRO:HG3	1:C:302:VAL:HG12	1.99	0.45
1:D:133:GLY:O	1:D:136:ILE:HG13	2.16	0.45
1:A:70:SER:HA	3:A:1087:HOH:O	2.12	0.45
1:C:270:GLU:C	1:C:271:ILE:HD12	2.42	0.45
1:D:51:PRO:HD3	1:D:142:ASP:OD2	2.16	0.45
1:B:157:THR:HB	1:B:160:GLU:OE2	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:64:ARG:NH1	1:A:67:ASP:OD1	2.49	0.45
1:B:113:MET:HE1	1:B:135:ASN:HD21	1.81	0.45
1:D:405:ASN:OD1	1:D:407:LEU:HG	2.17	0.45
1:C:75:PRO:CD	1:C:93:GLY:O	2.64	0.45
1:C:222:ASN:ND2	1:C:224:GLY:H	2.14	0.45
1:A:55:ASN:HD21	1:A:137:GLN:HB3	1.81	0.44
1:A:61:TYR:CE1	1:A:117:THR:HG21	2.52	0.44
1:B:74:LEU:HD12	1:B:126:PHE:CE1	2.53	0.44
1:B:338:ARG:HH22	1:B:392:ASN:HD22	1.63	0.44
1:B:349:GLN:O	1:B:383:PHE:HA	2.17	0.44
1:B:198:ASP:N	3:B:1064:HOH:O	2.49	0.44
1:D:364:THR:HG22	1:D:365:THR:O	2.17	0.44
1:B:113:MET:CE	1:B:135:ASN:HD21	2.31	0.44
1:C:194:GLN:HG3	1:C:195:PRO:HD2	1.99	0.44
1:D:319:LEU:HD23	1:D:319:LEU:HA	1.83	0.44
1:D:161:LEU:HD13	3:D:1080:HOH:O	2.15	0.43
1:C:384:ILE:HG23	1:C:399:VAL:CG1	2.48	0.43
3:A:1131:HOH:O	1:B:332:ARG:HD2	2.17	0.43
1:D:56:SER:OG	1:D:111:VAL:HG11	2.17	0.43
1:C:260:TYR:HA	1:C:263:THR:HG23	2.00	0.43
1:C:332:ARG:HG2	1:C:398:TRP:CE3	2.53	0.43
1:D:330:ARG:NH1	1:D:385:VAL:HG11	2.34	0.43
1:B:59:ASP:CG	1:B:99:MET:HE3	2.44	0.43
1:C:40:LEU:HG	1:C:156:LEU:HD21	2.01	0.43
1:D:110:ALA:O	1:D:111:VAL:C	2.61	0.43
1:D:325:SER:C	3:D:1023:HOH:O	2.62	0.43
1:D:333:VAL:CG1	1:D:363:VAL:HG23	2.49	0.43
1:A:222:ASN:HD22	1:A:222:ASN:C	2.27	0.43
1:B:206:ARG:HH11	1:B:222:ASN:HD21	1.66	0.43
1:C:188:GLU:HG2	1:D:82:ALA:HB1	2.01	0.43
1:C:363:VAL:HG11	1:C:401:VAL:HG21	2.00	0.43
1:C:375:SER:HA	3:C:918:HOH:O	2.19	0.43
1:A:384:ILE:HG23	1:A:399:VAL:HG11	2.00	0.42
1:C:227:ARG:O	1:C:229:ASP:N	2.52	0.42
1:C:408:PHE:HA	1:D:157:THR:HG23	2.01	0.42
1:D:276:LEU:HB3	1:D:278:ILE:HG12	2.00	0.42
1:A:203:ASP:OD1	2:A:904:GOL:H11	2.19	0.42
1:C:333:VAL:HG13	1:C:362:GLU:HA	2.02	0.42
1:C:155:ARG:HH12	2:D:909:GOL:C1	2.32	0.42
1:C:157:THR:CG2	1:C:159:ALA:H	2.31	0.42
1:D:119:GLN:O	1:D:120:MET:CB	2.68	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:333:VAL:HG13	1:C:361:LEU:O	2.20	0.42
1:D:61:TYR:CD2	1:D:95:CYS:SG	3.14	0.41
1:B:64:ARG:HB2	1:B:67:ASP:OD2	2.20	0.41
1:D:375:SER:HA	3:D:920:HOH:O	2.19	0.41
1:B:265:LEU:HD22	1:B:271:ILE:HG12	2.02	0.41
1:C:364:THR:HG22	1:C:365:THR:O	2.20	0.41
1:D:281:GLY:HA2	1:D:303:SER:HB3	2.02	0.41
1:D:338:ARG:O	2:D:913:GOL:H32	2.20	0.41
1:A:227:ARG:NE	3:A:1116:HOH:O	2.54	0.41
1:B:138:ARG:O	1:B:139:ARG:C	2.62	0.41
1:D:112:VAL:HG22	1:D:130:VAL:HG12	2.03	0.41
1:C:222:ASN:HD22	1:C:224:GLY:H	1.69	0.41
1:A:345:ARG:CD	3:A:1139:HOH:O	2.63	0.41
1:D:53:PHE:HB2	3:D:1075:HOH:O	2.21	0.41
1:A:259:ASP:OD1	1:A:259:ASP:C	2.64	0.41
2:A:908:GOL:C3	3:A:983:HOH:O	2.68	0.41
1:B:60:GLY:C	1:B:61:TYR:CD1	2.99	0.41
1:C:196:LEU:HD13	1:C:202:TYR:CZ	2.55	0.41
1:D:56:SER:HB2	1:D:98:ILE:HD13	2.03	0.41
1:D:346:LEU:HD13	3:D:947:HOH:O	2.19	0.41
2:D:902:GOL:O2	3:D:1029:HOH:O	2.14	0.41
1:D:21:VAL:HG21	1:D:315:LEU:HD11	2.03	0.41
1:D:313:GLN:HB3	1:D:314:PRO:HD3	2.02	0.41
1:C:161:LEU:N	1:C:162:PRO:CD	2.84	0.40
1:C:179:ARG:HD3	3:C:1082:HOH:O	2.21	0.40
1:C:335:THR:HA	1:C:363:VAL:HG23	2.03	0.40
1:C:356:ASN:HD21	1:C:360:GLU:HG2	1.86	0.40
1:D:203:ASP:OD1	2:D:912:GOL:O3	2.35	0.40
1:A:81:PHE:C	1:A:102:ALA:HB2	2.47	0.40
1:C:234:ARG:NH2	3:C:1087:HOH:O	2.54	0.40
1:D:50:VAL:O	1:D:51:PRO:C	2.63	0.40
1:B:87:HIS:HB2	3:B:1051:HOH:O	2.22	0.40
1:D:143:ILE:HG12	3:D:1004:HOH:O	2.21	0.40
1:A:21:VAL:HG21	1:A:315:LEU:HD11	2.04	0.40
1:A:61:TYR:CD1	1:A:117:THR:HG21	2.56	0.40
1:D:50:VAL:O	1:D:52:GLY:N	2.55	0.40
1:B:55:ASN:OD1	1:B:137:GLN:HB3	2.21	0.40
1:B:300:ASN:HA	1:B:301:PRO:HD3	1.95	0.40

There are no symmetry-related clashes.

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	401/411 (98%)	385 (96%)	11 (3%)	5 (1%)	10	16
1	B	401/411 (98%)	378 (94%)	16 (4%)	7 (2%)	7	10
1	C	401/411 (98%)	364 (91%)	31 (8%)	6 (2%)	8	12
1	D	401/411 (98%)	356 (89%)	28 (7%)	17 (4%)	2	2
All	All	1604/1644 (98%)	1483 (92%)	86 (5%)	35 (2%)	5	6

All (35) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	82	ALA
1	A	228	ASP
1	A	282	LYS
1	B	82	ALA
1	B	91	PRO
1	B	324	ALA
1	C	91	PRO
1	C	282	LYS
1	D	52	GLY
1	D	120	MET
1	D	122	ASN
1	D	128	ALA
1	D	282	LYS
1	A	71	GLY
1	B	92	ALA
1	B	228	ASP
1	B	282	LYS
1	C	70	SER
1	C	197	GLY
1	D	63	VAL
1	D	111	VAL
1	D	121	ASP

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Mol	Chain	Res	Type
1	C	132	SER
1	D	50	VAL
1	D	325	SER
1	A	198	ASP
1	C	329	ALA
1	D	43	ASP
1	D	54	ASP
1	D	110	ALA
1	D	130	VAL
1	B	327	LEU
1	D	143	ILE
1	D	76	VAL
1	D	83	GLY

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	325/331 (98%)	279 (86%)	46 (14%)	3	4
1	B	325/331 (98%)	274 (84%)	51 (16%)	2	3
1	C	325/331 (98%)	277 (85%)	48 (15%)	3	4
1	D	325/331 (98%)	262 (81%)	63 (19%)	1	2
All	All	1300/1324 (98%)	1092 (84%)	208 (16%)	2	3

All (208) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	MET
1	A	10	LEU
1	A	14	LEU
1	A	16	GLU
1	A	20	ARG
1	A	24	LEU
1	A	42	SER
1	A	48	LEU

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Mol	Chain	Res	Type
1	A	55	ASN
1	A	58	MET
1	A	79	LYS
1	A	84	GLN
1	A	89	GLU
1	A	104	VAL
1	A	106	GLU
1	A	114	GLN
1	A	116	GLN
1	A	117	THR
1	A	120	MET
1	A	122	ASN
1	A	138	ARG
1	A	157	THR
1	A	182	LEU
1	A	194	GLN
1	A	196	LEU
1	A	207	LEU
1	A	222	ASN
1	A	223	LEU
1	A	227	ARG
1	A	233	LEU
1	A	241	ASP
1	A	243	GLN
1	A	257	GLU
1	A	262	LYS
1	A	263	THR
1	A	270	GLU
1	A	275	LYS
1	A	276	LEU
1	A	306	LEU
1	A	335	THR
1	A	354	GLN
1	A	358	ASP
1	A	363	VAL
1	A	378	SER
1	A	399	VAL
1	A	401	VAL
1	B	7	LEU
1	B	10	LEU
1	B	11	ASP
1	B	12	THR

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Mol	Chain	Res	Type
1	B	14	LEU
1	B	16	GLU
1	B	20	ARG
1	B	24	LEU
1	B	48	LEU
1	B	59	ASP
1	B	64	ARG
1	B	65	LEU
1	B	68	ILE
1	B	76	VAL
1	B	79	LYS
1	B	89	GLU
1	B	96	ILE
1	B	99	MET
1	B	117	THR
1	B	118	GLU
1	B	119	GLN
1	B	122	ASN
1	B	131	ARG
1	B	138	ARG
1	B	139	ARG
1	B	144	SER
1	B	157	THR
1	B	182	LEU
1	B	188	GLU
1	B	196	LEU
1	B	207	LEU
1	B	223	LEU
1	B	233	LEU
1	B	239	GLU
1	B	243	GLN
1	B	257	GLU
1	B	263	THR
1	B	266	GLU
1	B	267	GLU
1	B	271	ILE
1	B	276	LEU
1	B	282	LYS
1	B	291	ASN
1	B	325	SER
1	B	327	LEU
1	B	342	THR

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Mol	Chain	Res	Type
1	B	354	GLN
1	B	355	ARG
1	B	363	VAL
1	B	364	THR
1	B	399	VAL
1	C	10	LEU
1	C	14	LEU
1	C	20	ARG
1	C	22	THR
1	C	65	LEU
1	C	70	SER
1	C	74	LEU
1	C	76	VAL
1	C	79	LYS
1	C	81	PHE
1	C	87	HIS
1	C	89	GLU
1	C	97	ARG
1	C	106	GLU
1	C	115	GLU
1	C	120	MET
1	C	121	ASP
1	C	130	VAL
1	C	131	ARG
1	C	137	GLN
1	C	142	ASP
1	C	157	THR
1	C	182	LEU
1	C	187	ASP
1	C	188	GLU
1	C	194	GLN
1	C	196	LEU
1	C	207	LEU
1	C	222	ASN
1	C	223	LEU
1	C	233	LEU
1	C	263	THR
1	C	267	GLU
1	C	270	GLU
1	C	300	ASN
1	C	306	LEU
1	C	325	SER

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Mol	Chain	Res	Type
1	C	327	LEU
1	C	331	GLN
1	C	332	ARG
1	C	335	THR
1	C	340	LYS
1	C	354	GLN
1	C	355	ARG
1	C	360	GLU
1	C	361	LEU
1	C	363	VAL
1	C	399	VAL
1	D	9	SER
1	D	10	LEU
1	D	14	LEU
1	D	20	ARG
1	D	21	VAL
1	D	24	LEU
1	D	42	SER
1	D	45	VAL
1	D	48	LEU
1	D	49	ASP
1	D	53	PHE
1	D	58	MET
1	D	64	ARG
1	D	65	LEU
1	D	68	ILE
1	D	74	LEU
1	D	79	LYS
1	D	87	HIS
1	D	94	THR
1	D	99	MET
1	D	106	GLU
1	D	108	CYS
1	D	109	GLU
1	D	115	GLU
1	D	116	GLN
1	D	119	GLN
1	D	122	ASN
1	D	125	ARG
1	D	126	PHE
1	D	127	THR
1	D	131	ARG

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Mol	Chain	Res	Type
1	D	132	SER
1	D	137	GLN
1	D	142	ASP
1	D	143	ILE
1	D	157	THR
1	D	167	LEU
1	D	182	LEU
1	D	188	GLU
1	D	198	ASP
1	D	204	THR
1	D	207	LEU
1	D	219	GLU
1	D	222	ASN
1	D	223	LEU
1	D	233	LEU
1	D	243	GLN
1	D	254	SER
1	D	263	THR
1	D	267	GLU
1	D	270	GLU
1	D	271	ILE
1	D	275	LYS
1	D	276	LEU
1	D	288	LYS
1	D	306	LEU
1	D	327	LEU
1	D	338	ARG
1	D	354	GLN
1	D	361	LEU
1	D	363	VAL
1	D	399	VAL
1	D	401	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (39) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	15	ASN
1	A	55	ASN
1	A	116	GLN
1	A	122	ASN
1	A	137	GLN
1	A	210	HIS

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Mol	Chain	Res	Type
1	A	222	ASN
1	A	300	ASN
1	A	313	GLN
1	A	331	GLN
1	A	349	GLN
1	A	368	HIS
1	B	15	ASN
1	B	122	ASN
1	B	135	ASN
1	B	194	GLN
1	B	210	HIS
1	B	222	ASN
1	B	300	ASN
1	B	313	GLN
1	B	349	GLN
1	B	368	HIS
1	B	392	ASN
1	C	15	ASN
1	C	135	ASN
1	C	137	GLN
1	C	210	HIS
1	C	222	ASN
1	C	313	GLN
1	C	354	GLN
1	D	15	ASN
1	D	116	GLN
1	D	119	GLN
1	D	137	GLN
1	D	210	HIS
1	D	222	ASN
1	D	300	ASN
1	D	313	GLN
1	D	368	HIS

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 [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

14 ligands 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	GOL	A	901	-	5,5,5	0.67	0	5,5,5	0.54	0
2	GOL	C	911	-	5,5,5	0.45	0	5,5,5	0.25	0
2	GOL	B	903	-	5,5,5	0.38	0	5,5,5	1.31	1 (20%)
2	GOL	B	910	-	5,5,5	0.65	0	5,5,5	0.78	0
2	GOL	B	907	-	5,5,5	0.37	0	5,5,5	0.25	0
2	GOL	A	908	-	5,5,5	0.54	0	5,5,5	0.67	0
2	GOL	A	904	-	5,5,5	0.37	0	5,5,5	0.92	0
2	GOL	D	913	-	5,5,5	0.41	0	5,5,5	0.61	0
2	GOL	A	905	-	5,5,5	0.57	0	5,5,5	1.18	1 (20%)
2	GOL	D	902	-	5,5,5	0.78	0	5,5,5	0.70	0
2	GOL	D	914	-	5,5,5	0.32	0	5,5,5	0.41	0
2	GOL	A	906	-	5,5,5	0.63	0	5,5,5	0.91	0
2	GOL	D	909	-	5,5,5	0.69	0	5,5,5	1.16	0
2	GOL	D	912	-	5,5,5	0.39	0	5,5,5	0.44	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	GOL	A	901	-	-	2/4/4/4	-
2	GOL	C	911	-	-	4/4/4/4	-
2	GOL	B	903	-	-	4/4/4/4	-
2	GOL	B	910	-	-	2/4/4/4	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	B	907	-	-	2/4/4/4	-
2	GOL	A	908	-	-	3/4/4/4	-
2	GOL	A	904	-	-	4/4/4/4	-
2	GOL	D	913	-	-	2/4/4/4	-
2	GOL	A	905	-	-	2/4/4/4	-
2	GOL	D	902	-	-	1/4/4/4	-
2	GOL	D	914	-	-	2/4/4/4	-
2	GOL	A	906	-	-	4/4/4/4	-
2	GOL	D	909	-	-	2/4/4/4	-
2	GOL	D	912	-	-	2/4/4/4	-

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	903	GOL	O1-C1-C2	2.24	120.47	110.38
2	A	905	GOL	O1-C1-C2	2.05	119.61	110.38

There are no chirality outliers.

All (36) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	901	GOL	C1-C2-C3-O3
2	A	906	GOL	C1-C2-C3-O3
2	A	906	GOL	O2-C2-C3-O3
2	A	908	GOL	O1-C1-C2-C3
2	B	903	GOL	C1-C2-C3-O3
2	B	910	GOL	C1-C2-C3-O3
2	C	911	GOL	C1-C2-C3-O3
2	D	913	GOL	O1-C1-C2-C3
2	D	914	GOL	O1-C1-C2-C3
2	A	901	GOL	O2-C2-C3-O3
2	A	906	GOL	O1-C1-C2-O2
2	D	909	GOL	O1-C1-C2-O2
2	D	912	GOL	O1-C1-C2-O2
2	D	913	GOL	O1-C1-C2-O2
2	D	914	GOL	O1-C1-C2-O2
2	A	904	GOL	O1-C1-C2-C3
2	A	904	GOL	C1-C2-C3-O3

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Mol	Chain	Res	Type	Atoms
2	A	905	GOL	O1-C1-C2-C3
2	A	906	GOL	O1-C1-C2-C3
2	B	907	GOL	O1-C1-C2-C3
2	D	909	GOL	O1-C1-C2-C3
2	D	912	GOL	O1-C1-C2-C3
2	A	904	GOL	O1-C1-C2-O2
2	A	908	GOL	O1-C1-C2-O2
2	B	903	GOL	O1-C1-C2-O2
2	B	910	GOL	O2-C2-C3-O3
2	C	911	GOL	O2-C2-C3-O3
2	B	903	GOL	O2-C2-C3-O3
2	A	908	GOL	O2-C2-C3-O3
2	B	907	GOL	O1-C1-C2-O2
2	D	902	GOL	O2-C2-C3-O3
2	C	911	GOL	O1-C1-C2-C3
2	B	903	GOL	O1-C1-C2-C3
2	A	905	GOL	O1-C1-C2-O2
2	C	911	GOL	O1-C1-C2-O2
2	A	904	GOL	O2-C2-C3-O3

There are no ring outliers.

11 monomers are involved in 26 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	903	GOL	6	0
2	B	910	GOL	1	0
2	B	907	GOL	2	0
2	A	908	GOL	2	0
2	A	904	GOL	2	0
2	D	913	GOL	1	0
2	A	905	GOL	1	0
2	D	902	GOL	6	0
2	A	906	GOL	1	0
2	D	909	GOL	2	0
2	D	912	GOL	2	0

5.7 Other polymers ⓘ

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	403/411 (98%)	-0.16	7 (1%) 69 65	18, 32, 59, 83	0
1	B	403/411 (98%)	0.07	22 (5%) 30 27	20, 34, 83, 107	0
1	C	403/411 (98%)	0.25	29 (7%) 21 18	22, 38, 75, 90	0
1	D	403/411 (98%)	0.48	52 (12%) 7 5	21, 38, 105, 115	0
All	All	1612/1644 (98%)	0.16	110 (6%) 23 20	18, 35, 84, 115	0

All (110) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	327	LEU	5.8
1	D	68	ILE	5.7
1	D	327	LEU	5.5
1	D	325	SER	5.5
1	D	74	LEU	5.4
1	B	130	VAL	5.4
1	D	65	LEU	4.9
1	D	326	GLY	4.7
1	D	71	GLY	4.4
1	D	53	PHE	4.3
1	B	128	ALA	4.2
1	D	77	ALA	4.2
1	B	131	ARG	4.1
1	D	50	VAL	4.1
1	B	127	THR	4.1
1	D	66	ALA	4.0
1	C	53	PHE	3.9
1	C	326	GLY	3.8
1	D	86	TYR	3.8
1	B	90	TRP	3.7
1	D	51	PRO	3.7

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Mol	Chain	Res	Type	RSRZ
1	B	116	GLN	3.6
1	D	69	ALA	3.6
1	C	83	GLY	3.5
1	D	143	ILE	3.5
1	B	67	ASP	3.5
1	D	70	SER	3.5
1	D	130	VAL	3.4
1	D	127	THR	3.2
1	C	328	PRO	3.2
1	D	67	ASP	3.1
1	A	117	THR	3.1
1	A	193	GLY	3.1
1	D	93	GLY	3.0
1	D	48	LEU	3.0
1	D	92	ALA	3.0
1	D	91	PRO	2.9
1	D	94	THR	2.9
1	C	82	ALA	2.9
1	D	128	ALA	2.9
1	D	119	GLN	2.8
1	A	118	GLU	2.8
1	C	87	HIS	2.8
1	C	409	GLY	2.7
1	B	57	ALA	2.7
1	B	92	ALA	2.7
1	D	126	PHE	2.7
1	B	65	LEU	2.6
1	C	86	TYR	2.6
1	D	90	TRP	2.6
1	C	107	GLY	2.6
1	A	7	LEU	2.6
1	D	136	ILE	2.5
1	C	81	PHE	2.5
1	C	325	SER	2.5
1	D	75	PRO	2.5
1	D	76	VAL	2.5
1	D	111	VAL	2.5
1	B	132	SER	2.5
1	C	89	GLU	2.5
1	C	199	GLY	2.5
1	A	358	ASP	2.4
1	D	58	MET	2.4

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Mol	Chain	Res	Type	RSRZ
1	D	110	ALA	2.4
1	B	68	ILE	2.4
1	B	121	ASP	2.4
1	D	324	ALA	2.4
1	C	127	THR	2.4
1	D	61	TYR	2.4
1	C	94	THR	2.4
1	C	106	GLU	2.4
1	D	87	HIS	2.4
1	C	124	VAL	2.4
1	B	82	ALA	2.4
1	C	69	ALA	2.4
1	B	89	GLU	2.4
1	C	133	GLY	2.3
1	D	7	LEU	2.3
1	D	85	PRO	2.3
1	C	123	GLY	2.3
1	D	63	VAL	2.3
1	C	79	LYS	2.3
1	C	195	PRO	2.3
1	D	328	PRO	2.3
1	B	85	PRO	2.2
1	A	82	ALA	2.2
1	B	91	PRO	2.2
1	D	104	VAL	2.2
1	D	124	VAL	2.2
1	D	357	ALA	2.2
1	B	129	GLU	2.2
1	D	54	ASP	2.2
1	C	368	HIS	2.1
1	B	113	MET	2.1
1	C	88	GLY	2.1
1	C	93	GLY	2.1
1	D	142	ASP	2.1
1	D	83	GLY	2.1
1	D	107	GLY	2.1
1	A	357	ALA	2.1
1	C	90	TRP	2.1
1	D	135	ASN	2.1
1	B	117	THR	2.1
1	D	120	MET	2.1
1	B	87	HIS	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	74	LEU	2.0
1	C	75	PRO	2.0
1	B	84	GLN	2.0
1	D	109	GLU	2.0
1	D	198	ASP	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 oligosaccharides 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
2	GOL	D	914	6/6	0.73	0.15	63,65,65,66	0
2	GOL	D	902	6/6	0.74	0.14	28,37,40,41	0
2	GOL	A	901	6/6	0.77	0.17	42,52,54,56	0
2	GOL	A	908	6/6	0.82	0.12	33,38,39,41	0
2	GOL	B	907	6/6	0.82	0.14	46,49,52,52	0
2	GOL	B	903	6/6	0.87	0.11	26,33,38,39	0
2	GOL	A	906	6/6	0.88	0.19	47,50,52,52	0
2	GOL	B	910	6/6	0.88	0.11	46,48,50,50	0
2	GOL	D	909	6/6	0.89	0.12	37,44,49,53	0
2	GOL	C	911	6/6	0.89	0.12	55,57,57,59	0
2	GOL	A	904	6/6	0.90	0.10	28,36,37,38	0
2	GOL	A	905	6/6	0.91	0.24	37,47,49,50	0
2	GOL	D	913	6/6	0.92	0.17	46,51,54,56	0
2	GOL	D	912	6/6	0.95	0.10	41,43,45,48	0

6.5 Other polymers [i](#)

There are no such residues in this entry.