Full wwPDB X-ray Structure Validation Report (i)

Jun 13, 2024 – 07:13 AM EDT

PDB ID	:	1PFZ
Title	:	PROPLASMEPSIN II FROM PLASMODIUM FALCIPARUM
Authors	:	Bernstein, N.K.; Cherney, M.M.; Loetscher, H.; Ridley, R.G.; James, M.N.G.
Deposited on	:	1998-07-07
Resolution	:	1.85 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 (i) 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 (i)) were used in the production of this report:

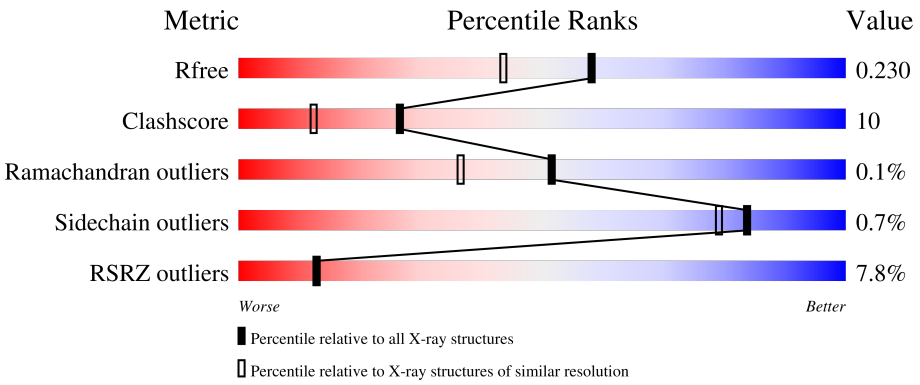
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.85 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	2469 (1.86-1.86)
Clashscore	141614	2625 (1.86-1.86)
Ramachandran outliers	138981	2592 (1.86-1.86)
Sidechain outliers	138945	2592 (1.86-1.86)
RSRZ outliers	127900	2436 (1.86-1.86)

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 <=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	380	5% 79% 18% • •
1	B	380	11% 76% 21% •
1	C	380	6% 74% 20% 6%
1	D	380	8% 73% 23% • •

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	D	330	-	-	X	-

2 Entry composition (i)

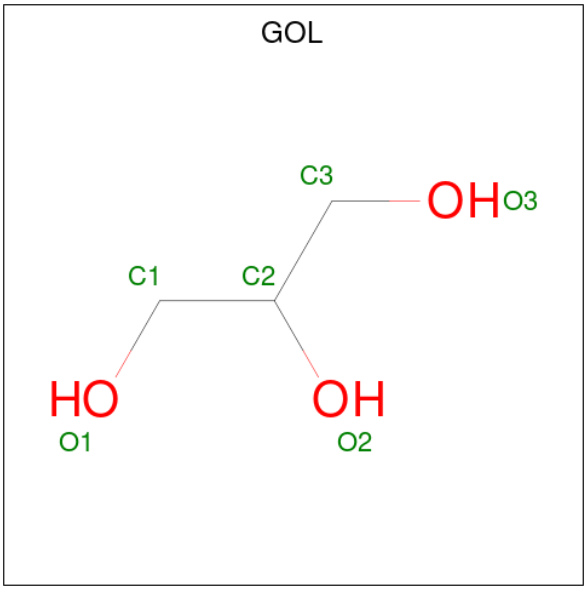
There are 3 unique types of molecules in this entry. The entry contains 12503 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 PROPLASMEPSIN II.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	370	2957	1917	467	562	11	19	2	0
1	B	369	2940	1905	465	559	11	37	1	0
1	C	356	2866	1863	451	541	11	15	4	0
1	D	369	2973	1928	470	564	11	21	4	0

- Molecule 2 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



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

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

- Molecule 3 is water.

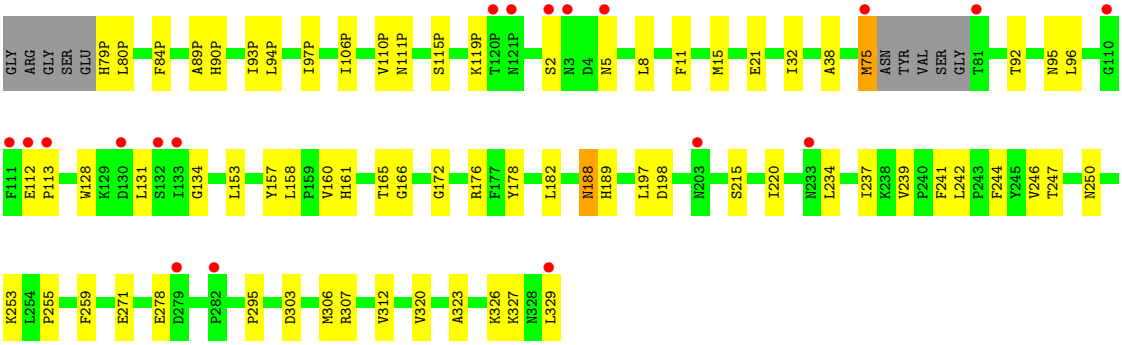
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
3	A	240	240	240	0	0
			Total	O		
3	B	124	124	124	0	0
			Total	O		
3	C	203	203	203	0	0
			Total	O		
3	D	164	164	164	0	0

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.

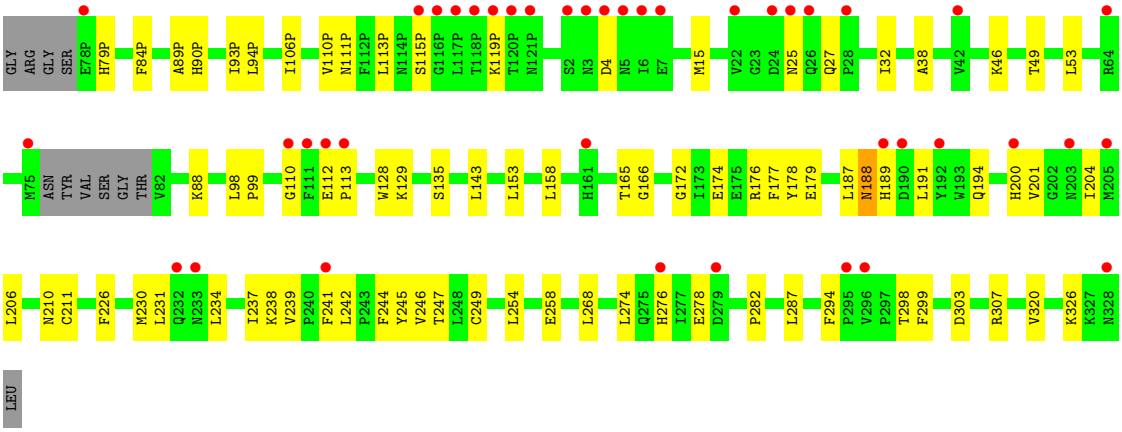
• Molecule 1: PROPLASMEPSIN II

Chain A:



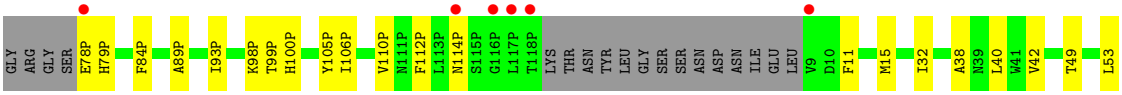
• Molecule 1: PROPLASMEPSIN II

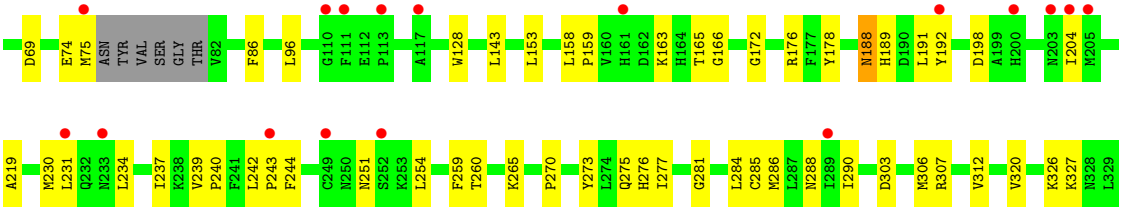
Chain B:



• Molecule 1: PROPLASMEPSIN II

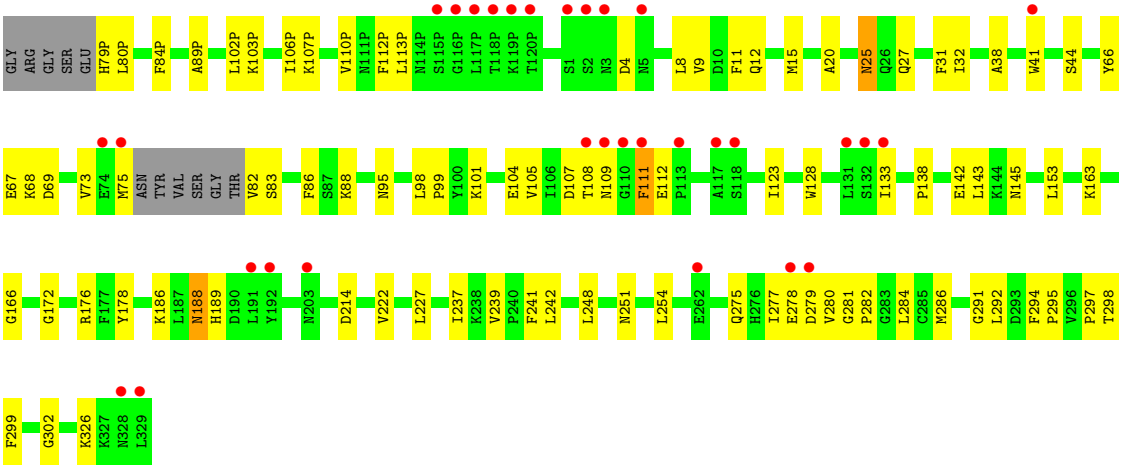
Chain C:





- Molecule 1: PROPLASMEPSIN II

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	52.01Å 133.22Å 114.23Å 90.00° 98.45° 90.00°	Depositor
Resolution (Å)	20.00 – 1.85 18.65 – 1.85	Depositor EDS
% Data completeness (in resolution range)	96.1 (20.00-1.85) 96.2 (18.65-1.85)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.56 (at 1.85Å)	Xtriage
Refinement program	CNS 0.3	Depositor
R, R_{free}	0.214 , 0.237 0.204 , 0.230	Depositor DCC
R_{free} test set	2700 reflections (2.15%)	wwPDB-VP
Wilson B-factor (Å^2)	16.9	Xtriage
Anisotropy	0.396	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.43 , 60.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	12503	wwPDB-VP
Average B, all atoms (Å^2)	22.0	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 23.55 % 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 4.5602e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[1]Intensities estimated from amplitudes.

[2]Theoretical values of $< |L| >$, $< L^2 >$ 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	0.35	0/3029	0.68	1/4116 (0.0%)
1	B	0.32	0/3012	0.64	0/4092
1	C	0.35	0/2936	0.66	0/3988
1	D	0.33	0/3047	0.67	0/4139
All	All	0.34	0/12024	0.66	1/16335 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	220	ILE	N-CA-C	-5.59	95.92	111.00

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	2957	0	2911	54	0
1	B	2940	0	2887	56	0
1	C	2866	0	2824	53	0
1	D	2973	0	2917	82	0
2	A	18	0	24	3	0
2	C	12	0	16	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	6	0	8	4	0
3	A	240	0	0	3	0
3	B	124	0	0	2	0
3	C	203	0	0	3	0
3	D	164	0	0	1	0
All	All	12503	0	11587	239	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 10.

All (239) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:297:PRO:HB2	2:D:330:GOL:H32	1.42	0.98
1:D:41[B]:TRP:HE1	1:D:123:ILE:HD12	1.26	0.98
1:D:44:SER:HB2	1:D:104:GLU:HG2	1.49	0.95
1:C:277:ILE:HD13	1:C:286:MET:HG3	1.62	0.79
1:D:25:ASN:HD22	1:D:25:ASN:H	1.27	0.78
1:A:188:ASN:C	1:A:188:ASN:HD22	1.88	0.77
1:B:188:ASN:HD22	1:B:188:ASN:C	1.89	0.76
1:C:188:ASN:C	1:C:188:ASN:HD22	1.89	0.75
1:A:112:GLU:HB3	1:A:113:PRO:HD3	1.67	0.75
1:C:178:TYR:O	1:C:326:LYS:HE3	1.86	0.74
1:A:110(P):VAL:HA	1:A:237:ILE:HD11	1.71	0.73
1:D:25:ASN:HD21	1:D:27:GLN:HE21	1.33	0.73
1:B:178:TYR:O	1:B:326:LYS:HE3	1.88	0.73
1:D:109:ASN:HA	1:D:112:GLU:HB2	1.68	0.73
1:C:38:ALA:HB2	1:C:128:TRP:O	1.89	0.72
1:C:11:PHE:HB3	1:C:290:ILE:HD12	1.70	0.71
1:A:8:LEU:HD21	2:A:331:GOL:H2	1.72	0.71
1:D:188:ASN:C	1:D:188:ASN:HD22	1.93	0.71
1:B:241:PHE:HB2	1:D:112(P):PHE:HE2	1.56	0.70
1:D:297:PRO:HD2	2:D:330:GOL:H2	1.72	0.70
1:D:41[B]:TRP:NE1	1:D:123:ILE:HD12	2.03	0.70
1:A:271:GLU:CD	1:A:271:GLU:H	1.97	0.68
1:D:277:ILE:O	1:D:280:VAL:HG12	1.94	0.68
1:C:176:ARG:O	1:C:326:LYS:HD2	1.96	0.66
1:A:239:VAL:HG11	1:A:242:LEU:HD12	1.80	0.64
1:D:251:ASN:HB3	1:D:254:LEU:HG	1.79	0.64
1:A:271:GLU:HA	1:D:282:PRO:HG3	1.80	0.64
1:B:231:LEU:HA	1:B:234:LEU:HD12	1.80	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:176:ARG:O	1:A:326:LYS:HD3	1.99	0.63
1:B:239:VAL:HG11	1:B:242:LEU:HD12	1.80	0.62
1:B:98:LEU:HD13	1:B:143:LEU:HD23	1.79	0.62
1:B:242:LEU:HB3	1:B:244:PHE:HE1	1.65	0.61
1:D:88:LYS:HE2	1:D:99:PRO:HB2	1.83	0.61
1:C:79(P):HIS:CD2	1:C:172:GLY:HA3	2.36	0.60
1:C:239:VAL:HG21	1:C:244:PHE:HE1	1.66	0.60
1:B:294:PHE:CD2	1:B:298:THR:HB	2.36	0.60
1:A:110(P):VAL:HA	1:A:237:ILE:CD1	2.31	0.60
1:A:234:LEU:HD22	1:A:253:LYS:HB3	1.84	0.60
1:B:188:ASN:C	1:B:188:ASN:ND2	2.56	0.59
1:B:90(P):HIS:CE1	1:B:94(P):LEU:HD11	2.37	0.58
1:B:278:GLU:OE2	1:B:282:PRO:HA	2.03	0.58
1:D:75:MET:HG2	1:D:133:ILE:HD13	1.84	0.58
1:C:281:GLY:HA3	1:C:284:LEU:HD12	1.86	0.58
1:D:88:LYS:HB2	1:D:101:LYS:HG2	1.86	0.58
1:D:275[B]:GLN:HB3	1:D:286:MET:HG2	1.85	0.57
1:C:163:LYS:NZ	1:C:163:LYS:HB3	2.20	0.57
1:D:84(P):PHE:CZ	1:D:166:GLY:HA3	2.39	0.57
1:D:109:ASN:C	1:D:111:PHE:H	2.09	0.57
1:A:241:PHE:HB2	1:C:112(P):PHE:HE2	1.70	0.56
1:D:188:ASN:C	1:D:188:ASN:ND2	2.58	0.56
1:B:153:LEU:C	1:B:153:LEU:HD12	2.24	0.56
1:D:8:LEU:HD13	1:D:292[A]:LEU:HD11	1.87	0.56
1:C:327:LYS:HE3	3:C:345:HOH:O	2.06	0.56
1:A:188:ASN:C	1:A:188:ASN:ND2	2.59	0.56
1:B:242:LEU:HB3	1:B:244:PHE:CE1	2.42	0.55
1:D:15:MET:O	1:D:32:ILE:HA	2.06	0.55
1:D:38:ALA:HB1	1:D:138:PRO:HG3	1.87	0.55
1:C:219:ALA:HB2	1:C:288:ASN:OD1	2.07	0.55
1:B:38:ALA:HB2	1:B:128:TRP:O	2.07	0.55
1:D:79(P):HIS:CD2	1:D:172:GLY:HA3	2.42	0.55
1:D:142:GLU:HA	1:D:145:ASN:HD22	1.72	0.54
1:B:254:LEU:CD1	1:B:274:LEU:HD11	2.37	0.54
1:C:11:PHE:HB3	1:C:290:ILE:CD1	2.35	0.54
1:A:241:PHE:HB2	1:C:112(P):PHE:CE2	2.42	0.54
1:A:326:LYS:HD2	3:A:475:HOH:O	2.07	0.54
1:C:15:MET:O	1:C:32:ILE:HA	2.08	0.54
1:A:38:ALA:HB2	1:A:128:TRP:O	2.08	0.54
1:A:106(P):ILE:O	1:A:110(P):VAL:HG23	2.07	0.54
1:A:329:LEU:CD2	2:A:332:GOL:H12	2.38	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:153:LEU:C	1:C:153:LEU:HD12	2.28	0.54
1:B:189:HIS:CE1	1:B:191:LEU:HB2	2.44	0.53
1:C:239:VAL:HG11	1:C:242:LEU:HD12	1.89	0.53
1:D:281:GLY:HA3	1:D:284:LEU:HD12	1.90	0.53
1:A:110(P):VAL:HG22	1:A:246[B]:VAL:HG21	1.90	0.53
1:D:69:ASP:HB3	1:D:86:PHE:O	2.08	0.52
1:D:83:SER:HB3	1:D:107:ASP:HB3	1.91	0.52
1:D:248:LEU:HD23	1:D:284:LEU:HD23	1.91	0.52
1:A:79(P):HIS:CE1	1:A:172:GLY:HA3	2.44	0.52
1:B:179:GLU:OE1	1:B:326:LYS:HE2	2.10	0.52
1:A:250:ASN:HA	1:D:107(P):LYS:HE3	1.93	0.51
1:B:111(P):ASN:O	1:B:115(P):SER:HB3	2.10	0.51
1:B:174:GLU:HB2	1:B:177:PHE:CD2	2.45	0.51
1:D:277:ILE:HD12	1:D:280:VAL:HG11	1.91	0.51
1:A:15:MET:O	1:A:32:ILE:HA	2.10	0.51
1:C:251:ASN:HB3	1:C:254:LEU:HG	1.92	0.51
1:A:84(P):PHE:CZ	1:A:166:GLY:HA3	2.46	0.51
1:B:110(P):VAL:HA	1:B:237:ILE:HD11	1.91	0.51
1:D:25:ASN:HD22	1:D:25:ASN:N	2.00	0.51
1:C:198:ASP:O	1:C:259:PHE:HA	2.11	0.51
1:D:103(P):LYS:HE3	1:D:279:ASP:O	2.10	0.51
1:C:276:HIS:ND1	1:C:285:CYS:SG	2.84	0.50
1:C:188:ASN:C	1:C:188:ASN:ND2	2.62	0.50
1:D:66:TYR:CZ	1:D:68:LYS:HG2	2.46	0.50
1:A:327:LYS:HE2	3:A:400:HOH:O	2.11	0.50
1:D:108:THR:O	1:D:112:GLU:N	2.45	0.50
1:B:200:HIS:HB2	1:B:258:GLU:HB2	1.94	0.50
1:D:80(P):LEU:HD13	1:D:95:ASN:OD1	2.12	0.50
1:D:79(P):HIS:CE1	1:D:172:GLY:HA3	2.47	0.49
1:A:329:LEU:HD22	2:A:332:GOL:H12	1.95	0.49
1:C:165[A]:THR:HG22	1:C:166:GLY:N	2.28	0.49
1:D:297:PRO:CB	2:D:330:GOL:H32	2.29	0.49
1:A:295:PRO:HD2	3:A:571:HOH:O	2.12	0.49
1:C:84(P):PHE:CZ	1:C:166:GLY:HA3	2.48	0.49
1:C:74:GLU:O	1:C:75:MET:HB3	2.12	0.49
1:A:111(P):ASN:O	1:A:115(P):SER:HB3	2.13	0.49
1:B:249:CYS:SG	1:B:276:HIS:CE1	3.07	0.48
1:D:66:TYR:OH	1:D:68:LYS:HG2	2.13	0.48
1:B:129:LYS:HD2	1:B:135:SER:HA	1.95	0.48
1:D:110(P):VAL:HA	1:D:237:ILE:HD11	1.96	0.48
1:A:2:SER:O	1:A:5:ASN:ND2	2.47	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:106(P):ILE:O	1:D:110(P):VAL:HG23	2.13	0.48
1:A:89(P):ALA:HB2	1:A:11:PHE:HA	1.95	0.48
1:D:82:VAL:HG13	1:D:105:VAL:HG11	1.95	0.48
1:C:78(P):GLU:N	2:C:330:GOL:HO1	2.12	0.48
1:C:105(P):TYR:OH	1:C:240:PRO:HB2	2.14	0.48
1:B:88:LYS:HE2	1:B:99:PRO:HB2	1.95	0.47
1:D:8:LEU:HD22	1:D:292[B]:LEU:HD21	1.96	0.47
1:A:79(P):HIS:CD2	1:A:172:GLY:HA3	2.49	0.47
1:D:4:ASP:OD1	1:D:241:PHE:HA	2.13	0.47
1:B:176:ARG:O	1:B:326:LYS:HD2	2.13	0.47
1:A:90(P):HIS:CE1	1:A:94(P):LEU:HD11	2.49	0.47
1:B:110:GLY:O	1:B:113:PRO:HD2	2.14	0.47
1:B:4:ASP:OD1	1:B:241:PHE:N	2.42	0.47
1:B:206:LEU:HD12	1:B:299:PHE:CE2	2.50	0.47
1:D:153:LEU:C	1:D:153:LEU:HD12	2.34	0.47
1:D:294:PHE:CD2	1:D:298:THR:HB	2.49	0.47
1:C:106(P):ILE:O	1:C:110(P):VAL:HG23	2.15	0.47
1:D:275[B]:GLN:HB3	1:D:286:MET:CG	2.44	0.47
1:B:187:LEU:HD21	1:B:320:VAL:HG23	1.97	0.47
1:A:153:LEU:C	1:A:153:LEU:HD12	2.35	0.47
1:D:8:LEU:HD13	1:D:292[A]:LEU:CD1	2.44	0.47
1:D:178:TYR:O	1:D:326:LYS:NZ	2.44	0.47
1:C:158:LEU:HB3	1:C:307:ARG:CZ	2.46	0.46
1:D:176:ARG:O	1:D:326:LYS:HD2	2.16	0.46
1:A:165:THR:HG22	1:A:166:GLY:N	2.30	0.46
1:B:106(P):ILE:O	1:B:110(P):VAL:HG23	2.15	0.46
1:D:278:GLU:OE1	1:D:282:PRO:HA	2.16	0.46
1:B:226:PHE:O	1:B:230:MET:HG3	2.14	0.46
1:C:89(P):ALA:O	1:C:93(P):ILE:HG13	2.16	0.46
1:C:40[B]:LEU:CD2	1:C:42[B]:VAL:HG23	2.46	0.46
1:C:260:THR:HG22	1:C:265:LYS:HG3	1.98	0.46
1:B:49:THR:O	1:B:53:LEU:HG	2.15	0.46
1:B:15:MET:O	1:B:32:ILE:HA	2.16	0.46
1:C:275:GLN:HG3	1:C:288:ASN:HB2	1.98	0.46
1:D:239:VAL:HG11	1:D:242:LEU:HD12	1.97	0.46
1:D:9:VAL:O	1:D:12:GLN:HG3	2.16	0.46
1:D:41[B]:TRP:CE3	1:D:105:VAL:HG21	2.51	0.46
1:A:80(P):LEU:HD13	1:A:95:ASN:OD1	2.16	0.45
1:B:254:LEU:HD13	1:B:274:LEU:HD11	1.98	0.45
1:C:239:VAL:HG21	1:C:244:PHE:CE1	2.48	0.45
1:B:206:LEU:HG	1:B:226:PHE:CD2	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:376:HOH:O	1:D:102(P):LEU:HA	2.15	0.45
1:A:21:GLU:HB2	1:A:92:THR:HB	1.99	0.45
1:A:157:TYR:OH	1:A:329:LEU:HD13	2.17	0.45
1:D:98:LEU:HD13	1:D:143:LEU:HD23	1.99	0.45
1:C:188:ASN:HD22	1:C:189:HIS:N	2.14	0.45
1:D:109:ASN:HA	1:D:112:GLU:CB	2.41	0.45
1:D:188:ASN:HD22	1:D:189:HIS:N	2.15	0.45
1:D:186:LYS:HB3	1:D:186:LYS:HZ2	1.82	0.45
1:B:113(P):LEU:HD21	1:D:241:PHE:CD1	2.52	0.45
1:B:112:GLU:N	1:B:113:PRO:CD	2.80	0.45
1:A:84(P):PHE:CE1	1:A:166:GLY:HA3	2.51	0.44
1:C:158:LEU:HD12	1:C:306:MET:HB2	1.99	0.44
1:D:66:TYR:CE2	1:D:68:LYS:HG2	2.52	0.44
1:D:222:VAL:HG12	1:D:299:PHE:CD2	2.52	0.44
1:A:278:GLU:OE1	1:A:278:GLU:N	2.45	0.44
1:B:246:VAL:HG12	1:B:247:THR:N	2.32	0.44
1:C:49:THR:O	1:C:53:LEU:HG	2.18	0.44
1:D:73:VAL:HG12	1:D:75:MET:H	1.81	0.44
1:B:247:THR:HG22	1:B:287:LEU:HD11	1.98	0.44
1:D:227:LEU:HD22	1:D:291:GLY:N	2.33	0.44
1:A:75:MET:SD	1:A:75:MET:C	2.96	0.44
1:D:163:LYS:HD2	1:D:275[B]:GLN:HE22	1.83	0.44
1:A:197:LEU:HD13	1:A:259:PHE:HB3	1.99	0.44
1:C:231:LEU:HA	1:C:234:LEU:HD12	2.00	0.44
1:D:75:MET:HG2	1:D:133:ILE:CD1	2.46	0.44
1:B:79(P):HIS:CD2	1:B:172:GLY:HA3	2.53	0.44
1:A:131:LEU:HA	1:A:134:GLY:O	2.18	0.44
1:D:20:ALA:HB3	1:D:31:PHE:CD2	2.53	0.44
1:C:303:ASP:O	1:C:307:ARG:HG2	2.19	0.43
1:B:238:LYS:HB2	1:B:245:TYR:CE1	2.53	0.43
1:D:38:ALA:HB2	1:D:128:TRP:C	2.38	0.43
1:B:165:THR:HG22	1:B:166:GLY:N	2.33	0.43
1:C:114(P):ASN:OD1	1:C:237:ILE:HD11	2.18	0.43
1:D:82:VAL:HG13	1:D:105:VAL:CG1	2.48	0.43
1:A:182:LEU:HD23	1:A:323:ALA:HB2	2.01	0.43
1:B:249:CYS:SG	1:B:276:HIS:ND1	2.92	0.43
1:D:84(P):PHE:CE1	1:D:166:GLY:HA3	2.54	0.43
1:B:201:VAL:O	1:B:204:ILE:HG12	2.19	0.43
1:C:69:ASP:HB3	1:C:86:PHE:O	2.19	0.43
1:C:96:LEU:HD13	1:C:143:LEU:HD13	2.01	0.43
1:D:113(P):LEU:HB2	1:D:237:ILE:HD12	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:214:ASP:O	1:D:302:GLY:HA2	2.19	0.43
1:B:194:GLN:NE2	1:B:210:ASN:HB3	2.34	0.42
1:C:40[B]:LEU:CD2	1:C:42[B]:VAL:CG2	2.97	0.42
1:D:67:GLU:HB2	1:D:88:LYS:HB3	2.00	0.42
1:D:295:PRO:HD2	3:D:450:HOH:O	2.19	0.42
1:A:158:LEU:HB3	1:A:307:ARG:CZ	2.49	0.42
1:B:303:ASP:O	1:B:307:ARG:HG2	2.19	0.42
1:A:178:TYR:CE2	1:A:182:LEU:HG	2.55	0.42
1:B:46:LYS:HE2	3:B:364:HOH:O	2.20	0.42
1:B:268:LEU:HD12	1:B:268:LEU:HA	1.90	0.42
1:C:204:ILE:HD11	1:C:230:MET:HG3	2.01	0.42
1:A:215:SER:HB3	1:A:306:MET:CE	2.50	0.42
1:C:191:LEU:HB2	1:C:192:TYR:CE1	2.55	0.42
1:D:106(P):ILE:CG2	1:D:280:VAL:HG21	2.49	0.42
1:A:312:VAL:O	1:A:320:VAL:HA	2.20	0.42
1:B:242:LEU:HD23	1:B:242:LEU:HA	1.93	0.42
1:D:186:LYS:HB3	1:D:186:LYS:NZ	2.34	0.42
1:A:93(P):ILE:O	1:A:97(P):ILE:HG13	2.19	0.42
1:A:198:ASP:O	1:A:259:PHE:HA	2.20	0.41
1:C:326:LYS:HE2	3:C:483:HOH:O	2.19	0.41
1:C:163:LYS:HB3	1:C:163:LYS:HZ3	1.84	0.41
1:D:89(P):ALA:HB2	1:D:11:PHE:HA	2.01	0.41
1:A:80(P):LEU:HD22	1:A:96:LEU:HG	2.01	0.41
1:C:312:VAL:O	1:C:320:VAL:HA	2.21	0.41
1:D:110(P):VAL:HA	1:D:237:ILE:CD1	2.50	0.41
1:A:303:ASP:O	1:A:307:ARG:HG2	2.19	0.41
1:C:98(P):LYS:NZ	3:C:453:HOH:O	2.53	0.41
1:A:239:VAL:CG1	1:A:242:LEU:HD12	2.46	0.41
1:B:84(P):PHE:CZ	1:B:166:GLY:HA3	2.55	0.41
1:B:211:CYS:HA	1:B:299:PHE:O	2.20	0.41
1:B:112:GLU:HB3	1:B:113:PRO:HD3	2.01	0.41
1:C:99(P):THR:HG22	1:C:100(P):HIS:CD2	2.56	0.41
1:B:89(P):ALA:O	1:B:93(P):ILE:HG13	2.20	0.41
1:B:158:LEU:HB3	1:B:307:ARG:CZ	2.50	0.41
1:B:206:LEU:HD12	1:B:299:PHE:HE2	1.85	0.41
1:C:242:LEU:HA	1:C:243:PRO:HD3	1.71	0.41
1:D:109:ASN:C	1:D:111:PHE:N	2.73	0.41
1:A:188:ASN:HD22	1:A:189:HIS:N	2.19	0.41
1:D:277:ILE:O	1:D:277:ILE:HG13	2.21	0.41
1:A:246[A]:VAL:HG12	1:A:247:THR:N	2.36	0.41
1:D:79(P):HIS:NE2	1:D:172:GLY:HA3	2.35	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:25:ASN:HD21	1:B:27:GLN:CG	2.34	0.40
1:C:270:PRO:HA	1:C:273:TYR:CE2	2.57	0.40
1:D:297:PRO:HD2	2:D:330:GOL:C2	2.46	0.40
1:A:160:VAL:HG13	1:A:161:HIS:CD2	2.56	0.40
1:A:106(P):ILE:HD13	1:A:244:PHE:HZ	1.86	0.40
1:C:158:LEU:HA	1:C:159:PRO:HD2	1.97	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	368/380 (97%)	359 (98%)	9 (2%)	0	100	100
1	B	366/380 (96%)	354 (97%)	12 (3%)	0	100	100
1	C	354/380 (93%)	344 (97%)	10 (3%)	0	100	100
1	D	369/380 (97%)	360 (98%)	8 (2%)	1 (0%)	41	26
All	All	1457/1520 (96%)	1417 (97%)	39 (3%)	1 (0%)	51	36

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	111	PHE

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	334/339 (98%)	330 (99%)	4 (1%)	71	62
1	B	331/339 (98%)	329 (99%)	2 (1%)	86	83
1	C	323/339 (95%)	322 (100%)	1 (0%)	92	91
1	D	335/339 (99%)	333 (99%)	2 (1%)	86	83
All	All	1323/1356 (98%)	1314 (99%)	9 (1%)	84	79

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

Mol	Chain	Res	Type
1	A	119(P)	LYS
1	A	75	MET
1	A	188	ASN
1	A	255	PRO
1	B	119(P)	LYS
1	B	188	ASN
1	C	188	ASN
1	D	25	ASN
1	D	188	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	111(P)	ASN
1	A	188	ASN
1	A	194	GLN
1	A	228	ASN
1	B	111(P)	ASN
1	B	114(P)	ASN
1	B	3	ASN
1	B	26	GLN
1	B	188	ASN
1	B	194	GLN
1	B	228	ASN
1	B	233	ASN
1	B	276	HIS
1	C	100(P)	HIS
1	C	147	ASN
1	C	188	ASN
1	C	194	GLN

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Mol	Chain	Res	Type
1	C	228	ASN
1	D	3	ASN
1	D	25	ASN
1	D	145	ASN
1	D	161	HIS
1	D	188	ASN
1	D	194	GLN
1	D	228	ASN
1	D	263	ASN
1	D	288	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

6 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	332	-	5,5,5	0.28	0	5,5,5	0.16	0
2	GOL	C	331	-	5,5,5	0.25	0	5,5,5	0.21	0
2	GOL	D	330	-	5,5,5	0.32	0	5,5,5	0.24	0
2	GOL	A	331	-	5,5,5	0.28	0	5,5,5	0.17	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	GOL	C	330	-	5,5,5	0.33	0	5,5,5	0.35	0
2	GOL	A	330	-	5,5,5	0.27	0	5,5,5	0.11	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	332	-	-	0/4/4/4	-
2	GOL	C	331	-	-	0/4/4/4	-
2	GOL	D	330	-	-	0/4/4/4	-
2	GOL	A	331	-	-	0/4/4/4	-
2	GOL	C	330	-	-	0/4/4/4	-
2	GOL	A	330	-	-	0/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	332	GOL	2	0
2	D	330	GOL	4	0
2	A	331	GOL	1	0
2	C	330	GOL	1	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (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	370/380 (97%)	0.09	19 (5%)	28	26	7, 16, 40, 54	5 (1%)
1	B	369/380 (97%)	0.53	41 (11%)	5	5	11, 25, 47, 58	11 (2%)
1	C	356/380 (93%)	0.20	23 (6%)	18	18	6, 18, 41, 61	4 (1%)
1	D	369/380 (97%)	0.33	31 (8%)	11	10	10, 21, 46, 60	6 (1%)
All	All	1464/1520 (96%)	0.29	114 (7%)	13	13	6, 20, 43, 61	26 (1%)

All (114) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	132	SER	6.8
1	B	111	PHE	6.8
1	C	111	PHE	6.8
1	B	110	GLY	6.6
1	D	131	LEU	6.6
1	C	117(P)	LEU	6.5
1	A	81	THR	5.8
1	A	111	PHE	5.2
1	D	110	GLY	5.1
1	D	75	MET	5.0
1	C	113	PRO	4.9
1	B	26	GLN	4.7
1	A	329	LEU	4.7
1	B	115(P)	SER	4.7
1	D	109	ASN	4.6
1	A	120(P)	THR	4.6
1	B	2	SER	4.6
1	B	119(P)	LYS	4.5
1	B	203	ASN	4.5
1	C	78(P)	GLU	4.4
1	D	2	SER	4.4

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Mol	Chain	Res	Type	RSRZ
1	B	296	VAL	4.4
1	C	118(P)	THR	4.4
1	A	2	SER	4.3
1	B	113	PRO	4.2
1	D	133	ILE	4.2
1	B	64	ARG	4.2
1	B	3	ASN	4.1
1	C	203	ASN	4.0
1	D	116(P)	GLY	4.0
1	B	295	PRO	4.0
1	D	113	PRO	4.0
1	B	117(P)	LEU	4.0
1	A	132	SER	3.9
1	B	116(P)	GLY	3.9
1	A	110	GLY	3.7
1	A	113	PRO	3.7
1	A	130	ASP	3.7
1	B	192	TYR	3.7
1	A	75	MET	3.7
1	A	5	ASN	3.7
1	C	116(P)	GLY	3.5
1	A	112	GLU	3.5
1	B	120(P)	THR	3.4
1	D	5	ASN	3.4
1	C	9	VAL	3.4
1	B	75	MET	3.4
1	B	233	ASN	3.3
1	B	78(P)	GLU	3.2
1	D	279	ASP	3.2
1	D	115(P)	SER	3.2
1	B	328	ASN	3.2
1	D	192	TYR	3.2
1	B	28	PRO	3.1
1	C	117	ALA	3.1
1	C	252	SER	3.0
1	C	233	ASN	3.0
1	C	205	MET	3.0
1	D	278	GLU	3.0
1	D	111	PHE	2.9
1	B	4	ASP	2.9
1	B	5	ASN	2.9
1	B	24	ASP	2.9

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Mol	Chain	Res	Type	RSRZ
1	A	3	ASN	2.9
1	B	25	ASN	2.9
1	D	41[A]	TRP	2.9
1	D	119(P)	LYS	2.8
1	D	118(P)	THR	2.8
1	C	75	MET	2.8
1	D	3	ASN	2.8
1	C	110	GLY	2.8
1	D	74	GLU	2.8
1	A	282	PRO	2.7
1	C	231	LEU	2.7
1	A	133	ILE	2.6
1	D	203	ASN	2.6
1	D	329	LEU	2.6
1	B	118(P)	THR	2.6
1	B	276	HIS	2.5
1	C	249	CYS	2.5
1	D	1	SER	2.5
1	C	204	ILE	2.5
1	B	189	HIS	2.5
1	B	200	HIS	2.4
1	D	328	ASN	2.4
1	C	243	PRO	2.4
1	D	117(P)	LEU	2.4
1	B	121(P)	ASN	2.3
1	B	190	ASP	2.3
1	B	241	PHE	2.3
1	C	200	HIS	2.3
1	B	6	ILE	2.2
1	A	233	ASN	2.2
1	D	118	SER	2.2
1	B	161	HIS	2.2
1	B	232	GLN	2.2
1	B	42[A]	VAL	2.2
1	D	262	GLU	2.2
1	A	121(P)	ASN	2.2
1	B	279	ASP	2.2
1	B	22	VAL	2.2
1	B	205	MET	2.1
1	A	279	ASP	2.1
1	B	112	GLU	2.1
1	C	289	ILE	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	114(P)	ASN	2.1
1	D	108	THR	2.1
1	D	191	LEU	2.1
1	D	120(P)	THR	2.0
1	C	161	HIS	2.0
1	C	192	TYR	2.0
1	D	117	ALA	2.0
1	A	203	ASN	2.0
1	B	7	GLU	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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	330	6/6	0.55	0.28	46,46,46,46	0
2	GOL	C	331	6/6	0.68	0.18	50,50,50,51	0
2	GOL	A	330	6/6	0.72	0.19	47,47,47,48	0
2	GOL	C	330	6/6	0.73	0.20	41,41,41,41	0
2	GOL	A	332	6/6	0.80	0.13	44,44,44,44	0
2	GOL	A	331	6/6	0.82	0.15	50,50,50,50	0

6.5 Other polymers (i)

There are no such residues in this entry.