Full wwPDB X-ray Structure Validation Report (i)

Feb 1, 2016 – 05:56 AM GMT

PDB ID	:	2VCG
Title	:	CRYSTAL STRUCTURE OF A HDAC-LIKE PROTEIN HDAH FROM BORDETELLA SP. WITH THE BOUND INHIBITOR ST-17
Authors	:	Dickmanns, A.; Strasser, A.; Ficner, R.
Deposited on	:	2007-09-24
Resolution	:	1.90 Å(reported)

The following versions of software and data (see references (i)) were used in the production of this report:

|		
MolProbity	:	4.02b-467
Mogul	:	1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20026688
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	trunk26865

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 1.90 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	Percentile Ranks	Value
Rfree		0.206
Clashscore		9
Ramachandran outliers		0.2%
Sidechain outliers		1.9%
RSRZ outliers		2.2%

Worse   *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
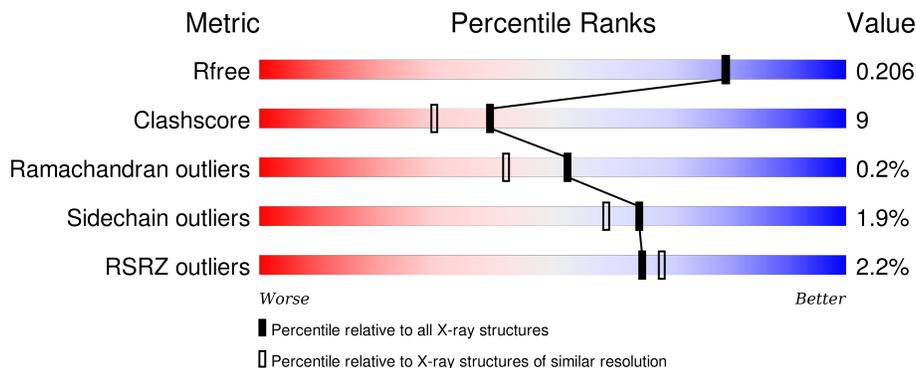
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	91344	4755 (1.90-1.90)
Clashscore	102246	5398 (1.90-1.90)
Ramachandran outliers	100387	5338 (1.90-1.90)
Sidechain outliers	100360	5339 (1.90-1.90)
RSRZ outliers	91569	4766 (1.90-1.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	375	3% / 84% / 14% / •
1	B	375	2% / 83% / 13% / • •
1	C	375	2% / 81% / 16% / • •
1	D	375	2% / 86% / 13% / •

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
3	K	C	1379	-	-	-	X
3	K	D	1380	-	-	-	X
4	S17	A	1378	-	-	-	X
4	S17	B	1379	-	-	-	X
4	S17	C	1380	-	-	-	X
4	S17	D	1381	-	-	-	X
5	GOL	D	1376	-	-	X	-

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 12995 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 HISTONE DEACETYLASE-LIKE AMIDOHYDROLASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	368	Total	C	N	O	S	0	5	0
			2782	1746	501	517	18			
1	B	368	Total	C	N	O	S	0	3	0
			2775	1741	502	514	18			
1	C	368	Total	C	N	O	S	0	3	0
			2776	1739	507	512	18			
1	D	375	Total	C	N	O	S	0	3	0
			2838	1779	520	520	19			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	257	PRO	HIS	CONFLICT	UNP Q70I53
B	257	PRO	HIS	CONFLICT	UNP Q70I53
C	257	PRO	HIS	CONFLICT	UNP Q70I53
D	257	PRO	HIS	CONFLICT	UNP Q70I53

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	1	Total	Zn	0	0
			1	1		
2	A	1	Total	Zn	0	0
			1	1		
2	D	2	Total	Zn	0	0
			2	2		
2	C	1	Total	Zn	0	0
			1	1		

- Molecule 3 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	2	Total 2	K 2	0	0
3	A	2	Total 2	K 2	0	0
3	D	2	Total 2	K 2	0	0
3	C	2	Total 2	K 2	0	0

- Molecule 4 is METHYL 4-BROMO-N-[8-(HYDROXYAMINO)-8-OXOOCTANOYL]-L-PHENYLALANINATE (three-letter code: S17) (formula: $C_{18}H_{25}BrN_2O_5$).
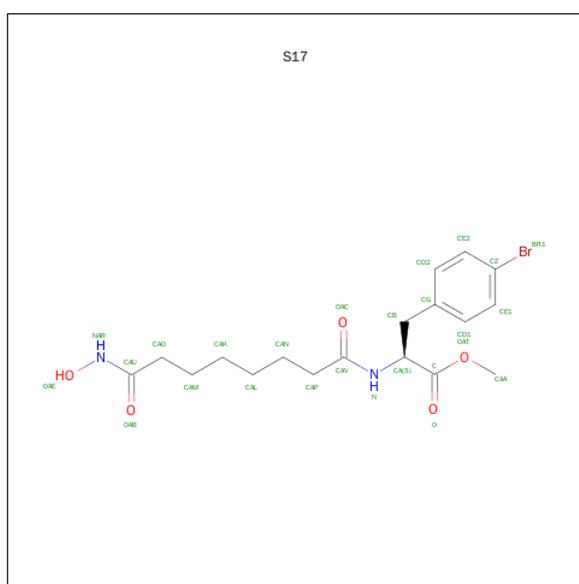
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total 26	Br 1	C 18	N 2	O 5	0	0
4	B	1	Total 26	Br 1	C 18	N 2	O 5	0	0
4	C	1	Total 26	Br 1	C 18	N 2	O 5	0	0
4	D	1	Total 26	Br 1	C 18	N 2	O 5	0	0

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).
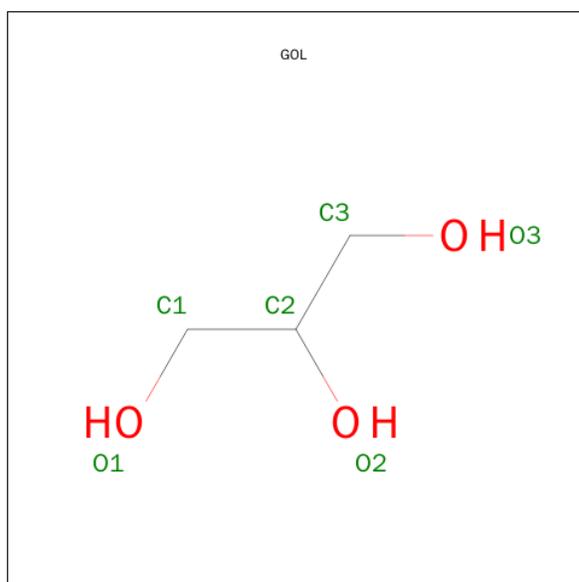
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	C	1	Total 6	C 3	O 3	0	0
5	D	1	Total 6	C 3	O 3	0	0

- Molecule 6 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	D	1	Total 1	Cl 1	0	0

- Molecule 7 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	393	Total 393	O 393	0	0
7	B	448	Total 448	O 448	0	0
7	C	409	Total 409	O 409	0	0
7	D	444	Total 444	O 444	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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: HISTONE DEACETYLASE-LIKE AMIDOHYDROLASE
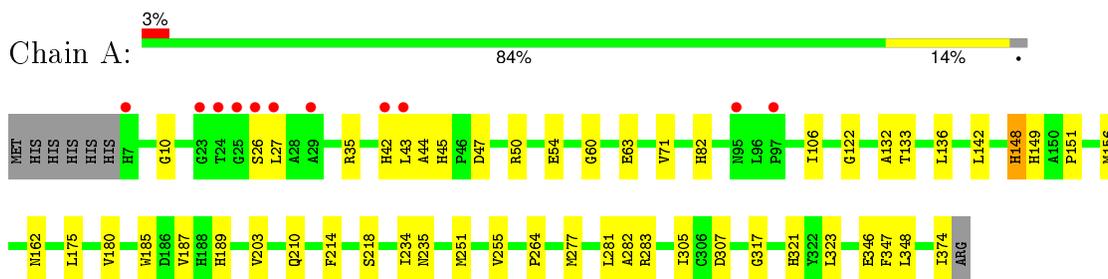
- Molecule 1: HISTONE DEACETYLASE-LIKE AMIDOHYDROLASE
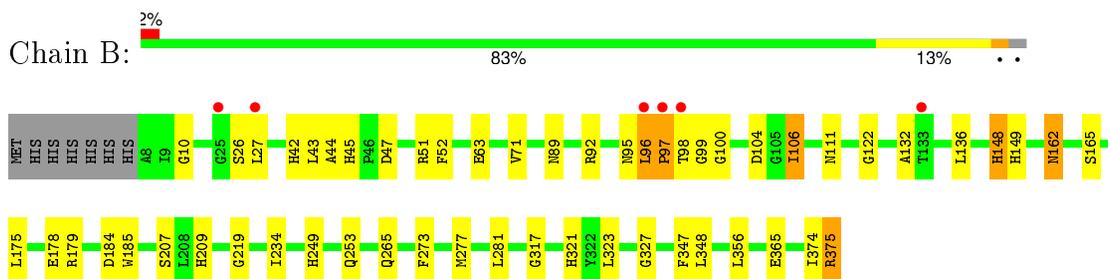
- Molecule 1: HISTONE DEACETYLASE-LIKE AMIDOHYDROLASE
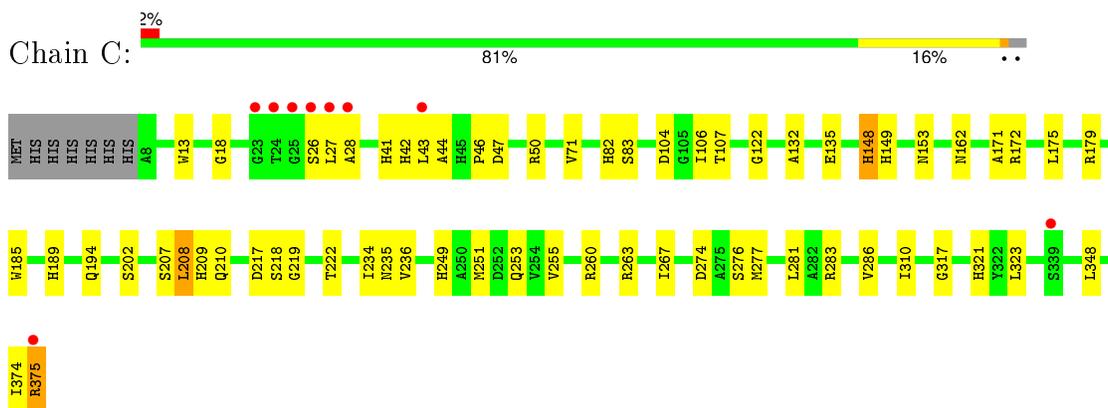
- Molecule 1: HISTONE DEACETYLASE-LIKE AMIDOHYDROLASE
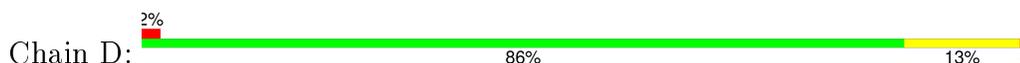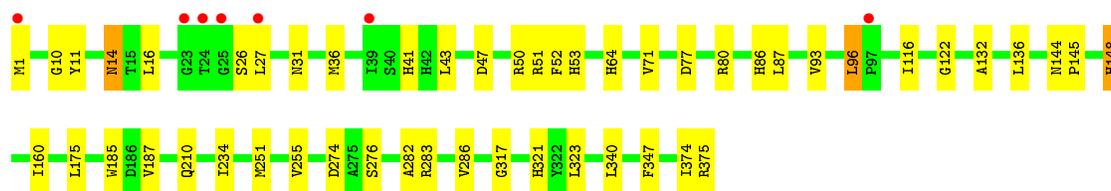
4   Data and refinement statistics   (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	67.66Å 93.63Å 121.66Å 90.00° 103.99° 90.00°	Depositor
Resolution (Å)	117.85 – 1.90 46.82 – 1.90	Depositor EDS
% Data completeness (in resolution range)	96.0 (117.85-1.90) 96.0 (46.82-1.90)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	1.63 (at 1.90Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.156 , 0.206 0.156 , 0.206	Depositor DCC
R_{free} test set	5588 reflections (5.28%)	DCC
Wilson B-factor (Å^2)	14.5	Xtriage
Anisotropy	0.318	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.40 , 60.9	EDS
Estimated twinning fraction	0.013 for h,-k,-h-l	Xtriage
L-test for twinning [2]	$<|L|> = 0.49$, $<L^2> = 0.33$	Xtriage
Outliers	0 of 111607 reflections	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	12995	wwPDB-VP
Average B, all atoms (Å^2)	16.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.54% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1] Intensities estimated from amplitudes.

[2] Theoretical values of $<|L|>$, $<L^2>$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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, ZN, S17, K, CL

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	0.46	0/2867	0.62	0/3910
1	B	0.53	0/2854	0.68	0/3892
1	C	0.54	0/2859	0.68	0/3897
1	D	0.50	0/2925	0.65	0/3987
All	All	0.51	0/11505	0.66	0/15686

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2782	0	2694	47	0
1	B	2775	0	2692	56	0
1	C	2776	0	2698	64	0
1	D	2838	0	2744	42	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	2	0	0	0	0
3	A	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	2	0	0	0	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
4	A	26	0	24	5	0
4	B	26	0	24	8	0
4	C	26	0	24	5	0
4	D	26	0	24	4	0
5	C	6	0	8	0	0
5	D	6	0	8	4	0
6	D	1	0	0	0	0
7	A	393	0	0	8	2
7	B	448	0	0	12	1
7	C	409	0	0	8	1
7	D	444	0	0	9	0
All	All	12995	0	10940	198	2

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 9.

All (198) 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:249[B]:HIS:NE2	7:B:2320:HOH:O	1.72	1.21
7:A:2159:HOH:O	1:D:43:LEU:HD11	1.42	1.16
7:B:2379:HOH:O	1:C:43:LEU:HD11	1.50	1.11
1:B:249[B]:HIS:CD2	7:B:2320:HOH:O	2.00	1.04
1:D:210:GLN:HE22	1:D:283:ARG:H	1.06	1.02
1:C:104:ASP:OD1	1:C:106:ILE:O	1.79	1.01
1:A:43:LEU:HD11	7:D:2181:HOH:O	1.59	0.99
1:C:210:GLN:HE22	1:C:283:ARG:H	1.06	0.99
1:A:210:GLN:HE22	1:A:283:ARG:H	1.13	0.96
1:B:321:HIS:CD2	1:C:26:SER:HB3	2.05	0.92
1:B:43:LEU:HD11	7:C:2344:HOH:O	1.71	0.91
1:C:82:HIS:HE1	1:C:162:ASN:H	1.19	0.90
1:C:179[B]:ARG:HH12	1:C:375:ARG:HD2	1.37	0.89
1:A:82:HIS:HE1	1:A:162:ASN:H	1.17	0.89
1:A:82:HIS:CE1	1:A:162:ASN:H	1.91	0.89
1:C:42:HIS:HD2	1:C:44:ALA:H	1.25	0.85
1:A:42:HIS:HD2	1:A:44:ALA:H	1.21	0.84
1:B:375:ARG:HD2	7:B:2447:HOH:O	1.77	0.84
1:B:89:ASN:HD21	1:B:92:ARG:HH21	1.22	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:27:LEU:HG	4:B:1379:S17:H	1.43	0.84
1:C:194:GLN:HE22	1:C:235:ASN:HD21	1.29	0.81
1:C:82:HIS:CE1	1:C:162:ASN:H	1.99	0.80
1:B:45:HIS:HD2	1:B:47:ASP:H	1.28	0.79
1:C:179[B]:ARG:NH1	1:C:375:ARG:HD2	1.98	0.79
1:A:50[B]:ARG:NH1	7:A:2084:HOH:O	2.15	0.78
1:D:1:MET:HE3	7:D:2005:HOH:O	1.85	0.77
1:D:64:HIS:CE1	5:D:1376:GOL:H31	2.20	0.75
1:B:43:LEU:HB2	7:B:2062:HOH:O	1.86	0.75
1:C:210:GLN:NE2	1:C:283:ARG:H	1.84	0.74
4:B:1379:S17:HBC2	7:C:2193:HOH:O	1.86	0.74
1:D:210:GLN:NE2	1:D:283:ARG:H	1.84	0.74
1:A:210:GLN:NE2	1:A:283:ARG:H	1.84	0.73
1:D:1:MET:CE	7:D:2005:HOH:O	2.35	0.73
1:D:64:HIS:HE1	5:D:1376:GOL:H31	1.52	0.72
1:B:321:HIS:HD2	1:C:26:SER:HB3	1.56	0.70
1:D:234:ILE:HD11	1:D:374:ILE:HD11	1.73	0.70
1:D:93:VAL:HA	1:D:96:LEU:HD22	1.74	0.70
1:B:97:PRO:O	1:B:99:GLY:N	2.24	0.69
1:C:210:GLN:HE22	1:C:283:ARG:N	1.88	0.69
1:A:60:GLY:O	1:A:63[A]:GLU:HG2	1.93	0.68
1:A:45:HIS:HD2	1:A:47:ASP:H	1.41	0.68
1:A:133:THR:HG23	7:A:2188:HOH:O	1.94	0.68
1:B:321:HIS:HD2	1:C:26:SER:CB	2.07	0.67
1:B:47:ASP:HB3	7:B:2079:HOH:O	1.95	0.66
1:C:234:ILE:HD11	1:C:374:ILE:HD11	1.77	0.66
1:B:26:SER:OG	1:C:321:HIS:HD2	1.77	0.66
1:C:71:VAL:O	1:C:122:GLY:HA3	1.96	0.65
1:D:210:GLN:HE22	1:D:283:ARG:N	1.89	0.65
1:C:42:HIS:CD2	1:C:44:ALA:H	2.12	0.64
1:A:26:SER:HB3	1:D:321:HIS:ND1	2.13	0.64
1:B:365:GLU:HG3	7:B:2319:HOH:O	1.98	0.62
1:A:42:HIS:CD2	1:A:44:ALA:H	2.11	0.61
1:B:42:HIS:HD2	1:B:44:ALA:H	1.48	0.61
1:C:189:HIS:HD2	1:C:218:SER:OG	1.82	0.61
1:B:42:HIS:CD2	1:B:44:ALA:H	2.18	0.61
4:B:1379:S17:OAC	4:B:1379:S17:HBC1	1.99	0.61
1:D:86:HIS:HD2	7:D:2161:HOH:O	1.83	0.61
1:A:277:MET:HG2	1:A:348:LEU:HD22	1.83	0.61
1:A:26:SER:CB	1:D:321:HIS:ND1	2.63	0.61
1:B:132:ALA:CB	1:B:175:LEU:HD13	2.31	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:210:GLN:HE22	1:A:283:ARG:N	1.92	0.60
1:B:317:GLY:HA3	1:B:323:LEU:HD12	1.83	0.59
1:B:26:SER:CB	1:C:321:HIS:CD2	2.85	0.59
1:B:71:VAL:O	1:B:122:GLY:HA3	2.01	0.59
1:B:45:HIS:CD2	1:B:47:ASP:H	2.17	0.59
1:B:63:GLU:HG2	7:B:2100:HOH:O	2.02	0.59
1:B:89:ASN:ND2	1:B:92:ARG:HH21	1.97	0.59
1:D:86:HIS:HE1	1:D:160:ILE:O	1.86	0.59
1:B:249[B]:HIS:CD2	1:B:356:LEU:HD22	2.37	0.59
1:B:347:PHE:CE1	4:C:1380:S17:HAP2	2.38	0.58
7:B:2379:HOH:O	1:C:27:LEU:HD11	2.03	0.58
1:B:321:HIS:CD2	1:C:26:SER:CB	2.80	0.58
1:B:43:LEU:HD13	1:B:281:LEU:HD21	1.85	0.57
1:D:71:VAL:O	1:D:122:GLY:HA3	2.04	0.57
1:A:47:ASP:HB3	7:A:2083:HOH:O	2.03	0.57
1:C:83:SER:OG	1:C:153:ASN:ND2	2.36	0.57
1:C:47:ASP:CG	1:C:50[A]:ARG:HH21	2.08	0.57
1:D:14:ASN:HD22	1:D:16:LEU:H	1.53	0.56
1:C:317:GLY:HA3	1:C:323:LEU:HD12	1.88	0.56
1:B:26:SER:HB3	1:C:321:HIS:CD2	2.41	0.55
1:B:179:ARG:NH2	1:B:265[B]:GLN:HE22	2.05	0.55
1:C:207:SER:OG	1:C:209:HIS:HD2	1.91	0.54
1:D:11:TYR:OH	1:D:53:HIS:HD2	1.90	0.54
1:D:187:VAL:HG11	1:D:282:ALA:HB2	1.89	0.54
1:B:26:SER:OG	1:C:321:HIS:CD2	2.59	0.54
1:A:189:HIS:HD2	1:A:218:SER:OG	1.91	0.54
1:C:13:TRP:CZ2	1:C:50[B]:ARG:HG2	2.43	0.53
1:B:27:LEU:HG	4:B:1379:S17:N	2.18	0.53
1:D:27:LEU:HD11	4:D:1381:S17:HAN1	1.91	0.53
1:A:71:VAL:O	1:A:122:GLY:HA3	2.09	0.53
1:D:41:HIS:HE1	1:D:47:ASP:OD2	1.93	0.52
1:D:317:GLY:HA3	1:D:323:LEU:HD12	1.92	0.52
1:B:317:GLY:HA3	1:B:323:LEU:CD1	2.40	0.52
1:C:260:ARG:O	1:C:263[A]:ARG:NE	2.32	0.52
1:B:106:ILE:HD12	4:B:1379:S17:CAV	2.40	0.51
1:A:50[B]:ARG:CZ	7:A:2084:HOH:O	2.57	0.51
1:D:86:HIS:CE1	1:D:160:ILE:O	2.64	0.51
1:B:162:ASN:HD22	1:B:165:SER:H	1.59	0.51
1:C:222:THR:HG21	5:D:1376:GOL:H2	1.92	0.51
1:A:50[A]:ARG:NH1	1:A:54:GLU:OE2	2.44	0.51
1:B:26:SER:CB	1:C:321:HIS:HD2	2.23	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:171:ALA:HA	1:C:175:LEU:HD12	1.93	0.50
1:C:148:HIS:NE2	4:C:1380:S17:OAE	2.35	0.50
1:B:89:ASN:ND2	1:B:92:ARG:HE	2.10	0.50
1:A:347:PHE:CE2	1:D:27:LEU:HD21	2.46	0.50
1:A:234:ILE:HD11	1:A:374:ILE:HD11	1.94	0.50
1:A:43:LEU:HD13	1:A:281:LEU:HD21	1.94	0.50
1:D:276:SER:HA	1:D:286:VAL:O	2.10	0.50
1:D:50[B]:ARG:CZ	7:D:2096:HOH:O	2.60	0.50
1:A:45:HIS:CD2	1:A:47:ASP:H	2.25	0.50
1:C:194:GLN:NE2	1:C:235:ASN:HD21	2.03	0.49
1:A:82:HIS:HE1	1:A:162:ASN:N	1.98	0.49
1:C:179[B]:ARG:HH12	1:C:375:ARG:CD	2.17	0.49
5:D:1376:GOL:H11	7:D:2120:HOH:O	2.13	0.49
1:C:132:ALA:CB	1:C:175:LEU:HD13	2.43	0.49
1:C:27:LEU:HB3	4:C:1380:S17:OAC	2.13	0.49
4:A:1378:S17:HAP2	1:D:347:PHE:CE1	2.47	0.48
1:C:149:HIS:NE2	4:C:1380:S17:NAR	2.60	0.48
1:B:178:GLU:N	1:B:265[A]:GLN:OE1	2.46	0.48
1:B:253:GLN:NE2	7:B:2326:HOH:O	2.46	0.48
1:A:149:HIS:O	1:A:151:PRO:HD3	2.13	0.48
1:B:89:ASN:HD21	1:B:92:ARG:NH2	2.03	0.47
1:B:207:SER:OG	1:B:209:HIS:HD2	1.97	0.47
1:A:347:PHE:CE1	4:D:1381:S17:HAP2	2.48	0.47
1:A:317:GLY:HA3	1:A:323:LEU:HD12	1.96	0.47
1:D:132:ALA:CB	1:D:175:LEU:HD13	2.44	0.47
1:D:375:ARG:NE	7:D:2440:HOH:O	2.47	0.47
1:B:104:ASP:O	4:B:1379:S17:HE1	2.15	0.47
1:A:307:ASP:HB3	7:A:2319:HOH:O	2.14	0.47
1:B:234:ILE:HD11	1:B:374:ILE:HD11	1.96	0.47
1:B:95:ASN:O	1:B:96:LEU:HB2	2.15	0.47
1:A:132:ALA:CB	1:A:175:LEU:HD13	2.44	0.47
1:B:89:ASN:HD22	1:B:92:ARG:HE	1.62	0.47
1:C:208:LEU:HD12	1:C:236:VAL:HB	1.96	0.47
1:B:149:HIS:NE2	4:B:1379:S17:NAR	2.61	0.47
1:A:214:PHE:CE1	4:A:1378:S17:HAP1	2.50	0.47
1:C:281:LEU:HD23	1:C:281:LEU:HA	1.77	0.47
1:B:277:MET:HG2	1:B:348:LEU:HD22	1.97	0.47
1:C:217:ASP:OD1	1:D:1:MET:N	2.39	0.46
1:C:28:ALA:HA	1:C:106:ILE:HG22	1.96	0.46
1:A:264:PRO:HD2	1:A:305:ILE:HD12	1.97	0.46
1:D:50[A]:ARG:NH1	7:D:2095:HOH:O	2.48	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:189:HIS:HE1	1:A:235:ASN:HD21	1.63	0.46
1:D:10:GLY:HA3	1:D:136:LEU:HD13	1.97	0.46
1:C:179[B]:ARG:NH1	7:C:2240:HOH:O	2.38	0.46
1:C:277:MET:HG2	1:C:348:LEU:HD22	1.98	0.46
1:D:148:HIS:NE2	4:D:1381:S17:OAE	2.37	0.45
1:D:187:VAL:HG11	1:D:282:ALA:CB	2.45	0.45
1:A:180:VAL:O	1:A:203:VAL:HA	2.16	0.45
1:B:374:ILE:O	1:B:375:ARG:HB2	2.16	0.45
1:A:148:HIS:NE2	4:A:1378:S17:OAE	2.39	0.45
1:C:249:HIS:CE1	1:C:253:GLN:HG3	2.51	0.45
1:C:18:GLY:HA2	1:C:46:PRO:HB2	1.99	0.45
1:A:187:VAL:HG11	1:A:282:ALA:HB2	1.98	0.45
1:B:148:HIS:ND1	1:B:184:ASP:OD2	2.49	0.45
1:A:189:HIS:CE1	1:A:235:ASN:HD21	2.35	0.45
1:A:106:ILE:HG13	4:A:1378:S17:HBC2	1.99	0.45
1:D:14:ASN:ND2	1:D:16:LEU:H	2.13	0.45
1:B:27:LEU:O	1:B:42:HIS:HE1	2.00	0.44
1:C:189:HIS:CE1	1:C:194:GLN:NE2	2.86	0.44
7:B:2200:HOH:O	1:C:321:HIS:HE1	1.99	0.44
1:D:31:ASN:H	1:D:36:MET:HB2	1.82	0.44
4:B:1379:S17:CB	7:C:2193:HOH:O	2.54	0.43
1:B:47:ASP:O	1:B:51:ARG:HG3	2.19	0.43
1:A:47:ASP:CB	7:A:2083:HOH:O	2.65	0.43
1:C:317:GLY:HA3	1:C:323:LEU:CD1	2.48	0.43
1:D:16:LEU:HB3	1:D:116:ILE:HG12	2.01	0.43
1:C:281:LEU:HD22	7:C:2314:HOH:O	2.18	0.43
1:B:265[B]:GLN:NE2	7:B:2335:HOH:O	2.51	0.42
1:C:209:HIS:HE1	1:C:219:GLY:O	2.03	0.42
1:D:51:ARG:HG3	7:D:2095:HOH:O	2.18	0.42
1:A:10:GLY:HA3	1:A:136:LEU:HD13	2.01	0.42
1:A:251:MET:HA	1:A:255:VAL:HB	2.01	0.42
1:A:156:MET:HE1	7:A:2116:HOH:O	2.18	0.42
1:A:346:GLU:HG2	4:D:1381:S17:BR1	2.75	0.42
1:C:106:ILE:O	1:C:107:THR:HB	2.20	0.42
1:C:132:ALA:HB2	1:C:175:LEU:HD13	2.02	0.42
1:C:106:ILE:HD13	4:C:1380:S17:CAV	2.50	0.42
1:C:375:ARG:HA	7:C:2240:HOH:O	2.18	0.42
1:B:209:HIS:HE1	1:B:219:GLY:O	2.03	0.42
1:A:321:HIS:ND1	1:D:26:SER:CB	2.83	0.42
1:C:41:HIS:HB2	7:C:2057:HOH:O	2.20	0.41
1:C:106:ILE:O	1:C:107:THR:CB	2.68	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:189:HIS:CD2	1:C:218:SER:OG	2.68	0.41
1:B:10:GLY:HA3	1:B:136:LEU:HD13	2.01	0.41
1:A:27:LEU:HD13	4:A:1378:S17:O	2.21	0.41
1:D:144:ASN:ND2	1:D:145:PRO:HA	2.35	0.41
1:A:35:ARG:HB2	1:D:340:LEU:HD21	2.03	0.41
1:C:276:SER:HA	1:C:286:VAL:O	2.20	0.41
1:C:135:GLU:OE1	7:C:2210:HOH:O	2.21	0.40
1:B:97:PRO:HA	1:B:111:ASN:HB2	2.03	0.40
1:B:273:PHE:CZ	1:B:327:GLY:HA2	2.56	0.40
1:D:251:MET:HA	1:D:255:VAL:HB	2.02	0.40
1:C:172:ARG:NE	1:C:202:SER:OG	2.55	0.40
1:D:77:ASP:HA	1:D:80:ARG:NH1	2.35	0.40
1:C:251:MET:HA	1:C:255:VAL:HB	2.04	0.40
1:C:267:ILE:O	1:C:310:ILE:HA	2.21	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:A:2091:HOH:O	7:B:2087:HOH:O[2_545]	2.09	0.11
7:A:2056:HOH:O	7:C:2015:HOH:O[2_545]	2.19	0.01

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	371/375 (99%)	364 (98%)	7 (2%)	0	100	100
1	B	369/375 (98%)	353 (96%)	13 (4%)	3 (1%)	24	11
1	C	369/375 (98%)	356 (96%)	13 (4%)	0	100	100
1	D	376/375 (100%)	363 (96%)	13 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
All	All	1485/1500 (99%)	1436 (97%)	46 (3%)	3 (0%)	52　42

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	97	PRO
1	B	98	THR
1	B	100	GLY

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	286/288 (99%)	283 (99%)	3 (1%)	82　81
1	B	284/288 (99%)	277 (98%)	7 (2%)	55　47
1	C	284/288 (99%)	279 (98%)	5 (2%)	66　61
1	D	291/288 (101%)	284 (98%)	7 (2%)	57　49
All	All	1145/1152 (99%)	1123 (98%)	22 (2%)	65　59

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	142	LEU
1	A	148	HIS
1	A	185	TRP
1	B	52	PHE
1	B	96	LEU
1	B	106	ILE
1	B	148	HIS
1	B	162	ASN
1	B	185	TRP
1	B	375	ARG
1	C	148	HIS
1	C	185	TRP

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Mol	Chain	Res	Type
1	C	208	LEU
1	C	274	ASP
1	C	375	ARG
1	D	14	ASN
1	D	52	PHE
1	D	87	LEU
1	D	96	LEU
1	D	148	HIS
1	D	185	TRP
1	D	274	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (51) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	37	GLN
1	A	42	HIS
1	A	45	HIS
1	A	82	HIS
1	A	111	ASN
1	A	153	ASN
1	A	189	HIS
1	A	210	GLN
1	A	228	ASN
1	A	233	ASN
1	A	235	ASN
1	A	314	GLN
1	B	37	GLN
1	B	41	HIS
1	B	42	HIS
1	B	45	HIS
1	B	89	ASN
1	B	144	ASN
1	B	153	ASN
1	B	162	ASN
1	B	194	GLN
1	B	209	HIS
1	B	235	ASN
1	B	253	GLN
1	B	293	GLN
1	B	314	GLN
1	B	321	HIS
1	B	354	ASN

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Mol	Chain	Res	Type
1	C	42	HIS
1	C	61	GLN
1	C	82	HIS
1	C	153	ASN
1	C	189	HIS
1	C	194	GLN
1	C	209	HIS
1	C	210	GLN
1	C	228	ASN
1	C	233	ASN
1	C	314	GLN
1	C	321	HIS
1	D	14	ASN
1	D	41	HIS
1	D	53	HIS
1	D	86	HIS
1	D	95	ASN
1	D	111	ASN
1	D	144	ASN
1	D	153	ASN
1	D	210	GLN
1	D	235	ASN
1	D	354	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 carbohydrates in this entry.

5.6 Ligand geometry (i)

Of 20 ligands modelled in this entry, 14 are monoatomic - leaving 6 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	$\#|Z| > 2$
4	S17	A	1378	2	26,26,26	0.99	1 (3%)	31,32,32	1.11	2 (6%)
4	S17	B	1379	2	26,26,26	0.86	1 (3%)	31,32,32	1.15	3 (9%)
5	GOL	C	1376	-	5,5,5	0.41	0	5,5,5	0.33	0
4	S17	C	1380	2	26,26,26	0.78	0	31,32,32	1.02	2 (6%)
5	GOL	D	1376	-	5,5,5	0.31	0	5,5,5	0.41	0
4	S17	D	1381	2	26,26,26	0.79	1 (3%)	31,32,32	1.13	1 (3%)

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
4	S17	A	1378	2	-	0/25/25/25	0/1/1/1
4	S17	B	1379	2	-	0/25/25/25	0/1/1/1
5	GOL	C	1376	-	-	0/4/4/4	0/0/0/0
4	S17	C	1380	2	-	0/25/25/25	0/1/1/1
5	GOL	D	1376	-	-	0/4/4/4	0/0/0/0
4	S17	D	1381	2	-	0/25/25/25	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1378	S17	OAE-NAR	-3.18	1.34	1.39
4	B	1379	S17	OAE-NAR	-2.25	1.35	1.39
4	D	1381	S17	OAE-NAR	-2.07	1.36	1.39

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	1378	S17	OAT-C-O	-2.32	118.99	123.79
4	B	1379	S17	OAT-C-O	-2.13	119.40	123.79
4	C	1380	S17	OAT-C-O	-2.11	119.43	123.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	B	1379	S17	CA-N-CAV	2.40	127.69	121.58
4	C	1380	S17	OAT-C-CA	3.27	120.01	111.52
4	B	1379	S17	OAT-C-CA	3.30	120.08	111.52
4	A	1378	S17	OAT-C-CA	3.46	120.51	111.52
4	D	1381	S17	OAT-C-CA	3.53	120.68	111.52

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 26 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1378	S17	5	0
4	B	1379	S17	8	0
4	C	1380	S17	5	0
5	D	1376	GOL	4	0
4	D	1381	S17	4	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(Å²)	Q<0.9
1	A	368/375 (98%)	-0.09	11 (2%)	54	57	7, 15, 30, 40	0
1	B	368/375 (98%)	-0.26	6 (1%)	74	78	6, 11, 30, 41	0
1	C	368/375 (98%)	-0.45	9 (2%)	62	66	5, 10, 25, 43	0
1	D	375/375 (100%)	-0.32	7 (1%)	70	73	7, 13, 28, 38	0
All	All	1479/1500 (98%)	-0.28	33 (2%)	65	68	5, 12, 29, 43	0

All (33) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	23	GLY	4.5
1	C	26	SER	4.2
1	B	96	LEU	4.2
1	A	43	LEU	4.0
1	C	25	GLY	3.9
1	D	1	MET	3.9
1	A	23	GLY	3.9
1	A	25	GLY	3.8
1	D	24	THR	3.8
1	A	29	ALA	3.5
1	D	23	GLY	3.3
1	B	25	GLY	3.1
1	C	24	THR	3.1
1	B	97	PRO	3.1
1	C	27	LEU	3.0
1	A	27	LEU	3.0
1	B	27	LEU	2.8
1	A	24	THR	2.8
1	C	339	SER	2.8
1	B	98	THR	2.7
1	D	39	ILE	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	7	HIS	2.6
1	D	25	GLY	2.4
1	A	42	HIS	2.3
1	A	26	SER	2.3
1	D	97	PRO	2.3
1	A	97	PRO	2.2
1	C	43	LEU	2.2
1	C	28	ALA	2.1
1	A	95	ASN	2.1
1	C	375	ARG	2.1
1	D	27	LEU	2.1
1	B	133	THR	2.0

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

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

6.3 Carbohydrates (i)

There are no carbohydrates in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å^2)	Q<0.9
4	S17	B	1379	26/26	0.65	0.46	7.80	2,41,48,52	26
4	S17	D	1381	26/26	0.80	0.41	7.23	2,30,35,39	26
3	K	D	1380	1/1	0.98	0.14	7.03	27,27,27,27	0
4	S17	C	1380	26/26	0.79	0.45	6.86	2,32,37,41	26
4	S17	A	1378	26/26	0.73	0.47	6.82	2,35,39,43	26
3	K	C	1379	1/1	0.99	0.10	2.16	25,25,25,25	0
5	GOL	D	1376	6/6	0.78	0.20	0.80	44,45,46,46	0
3	K	A	1377	1/1	0.98	0.10	0.06	31,31,31,31	0
2	ZN	A	1375	1/1	0.99	0.09	-0.30	14,14,14,14	1

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors(Å²)	Q<0.9
3	K	B	1377	1/1	1.00	0.07	-0.60	10,10,10,10	0
2	ZN	C	1377	1/1	0.99	0.06	-0.79	11,11,11,11	1
3	K	C	1378	1/1	1.00	0.05	-1.43	9,9,9,9	0
2	ZN	D	1377	1/1	0.99	0.05	-1.94	12,12,12,12	1
2	ZN	B	1376	1/1	0.99	0.04	-2.12	11,11,11,11	1
3	K	B	1378	1/1	0.98	0.04	-2.21	22,22,22,22	0
6	CL	D	1382	1/1	0.99	0.04	-2.29	21,21,21,21	0
3	K	A	1376	1/1	1.00	0.04	-2.30	12,12,12,12	0
2	ZN	D	1378	1/1	1.00	0.02	-2.99	21,21,21,21	0
3	K	D	1379	1/1	0.99	0.03	-3.81	11,11,11,11	0
5	GOL	C	1376	6/6	0.64	0.30	-	46,48,48,48	0

6.5 Other polymers (i)

There are no such residues in this entry.