



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 5, 2023 – 06:32 PM EDT

PDB ID : 4E1V
Title : X-RAY Structure of the Uridine Phosphorylase from Salmonella Typhimurium
in Complex with 5-Fluorouracil at 2.15 Å Resolution
Authors : Lashkov, A.A.; Sotnichenko, S.E.; Prokofev, I.I.; Gabdoulkhakov, A.G.;
Mikhailov, A.M.
Deposited on : 2012-03-07
Resolution : 2.15 Å (reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.35
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35

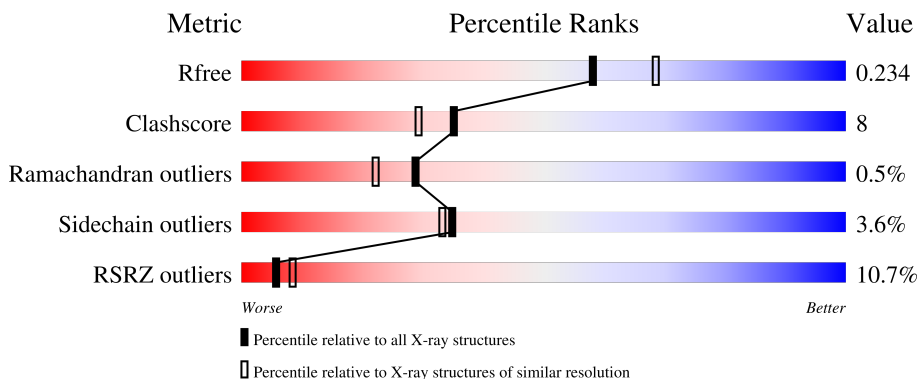
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.15 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	1479 (2.16-2.16)
Clashscore	141614	1585 (2.16-2.16)
Ramachandran outliers	138981	1560 (2.16-2.16)
Sidechain outliers	138945	1559 (2.16-2.16)
RSRZ outliers	127900	1456 (2.16-2.16)

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	253	
1	B	253	
1	C	253	
1	D	253	
1	E	253	

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Mol	Chain	Length	Quality of chain
1	F	253	<p>%</p>
1	G	253	
1	H	253	
1	I	253	

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	URF	A	1301	-	X	-	-
2	URF	B	1301	-	X	-	-
2	URF	C	1301	-	X	-	-
2	URF	D	1301	-	X	-	-
2	URF	E	1301	-	X	-	-
2	URF	F	1301	-	X	-	-
2	URF	G	1301	-	X	-	-
2	URF	H	1301	-	X	-	-
3	GOL	F	1302	-	-	-	X
4	K	D	1302	-	-	-	X
5	EDO	C	1302	-	-	X	-

2 Entry composition [i](#)

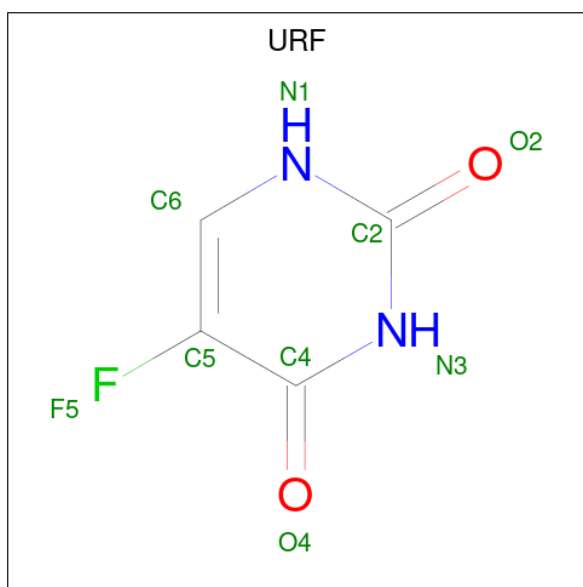
There are 6 unique types of molecules in this entry. The entry contains 17042 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Uridine phosphorylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	248	1868	1171	330	356	11	0	1	0
1	E	245	1835	1149	323	352	11	0	0	0
1	F	242	1814	1137	320	346	11	0	0	0
1	D	245	1843	1156	325	351	11	0	1	0
1	C	246	1846	1156	325	354	11	0	0	0
1	B	244	1838	1153	324	350	11	0	1	0
1	H	243	1824	1143	321	349	11	0	0	0
1	I	243	1823	1143	322	347	11	0	0	0
1	G	242	1814	1137	320	346	11	0	0	0

- Molecule 2 is 5-FLUOROURACIL (three-letter code: URF) (formula: C₄H₃FN₂O₂).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	F	N			O
2	A	1	Total	C	F	N	O	0	0
			9	4	1	2	2		
2	E	1	Total	C	F	N	O	0	0
			9	4	1	2	2		
2	F	1	Total	C	F	N	O	0	0
			9	4	1	2	2		
2	D	1	Total	C	F	N	O	0	0
			9	4	1	2	2		
2	C	1	Total	C	F	N	O	0	0
			9	4	1	2	2		
2	B	1	Total	C	F	N	O	0	0
			9	4	1	2	2		
2	H	1	Total	C	F	N	O	0	0
			9	4	1	2	2		
2	G	1	Total	C	F	N	O	0	0
			9	4	1	2	2		

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



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

- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total K 1 1	0	0
4	E	1	Total K 1 1	0	0
4	D	1	Total K 1 1	0	0

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



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

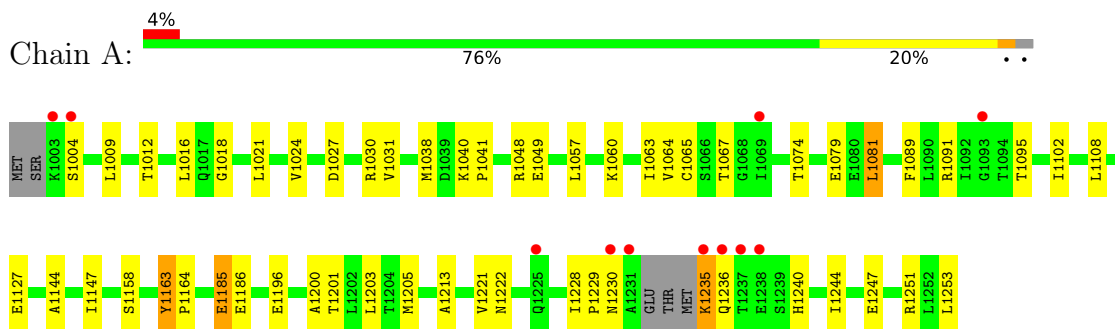
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	61	Total	O	0	1
			62	62		
6	E	62	Total	O	0	0
			62	62		
6	F	67	Total	O	0	0
			67	67		
6	D	69	Total	O	0	1
			70	70		
6	C	58	Total	O	0	0
			58	58		
6	B	66	Total	O	0	0
			66	66		
6	H	16	Total	O	0	0
			16	16		
6	I	12	Total	O	0	0
			12	12		
6	G	15	Total	O	0	0
			15	15		

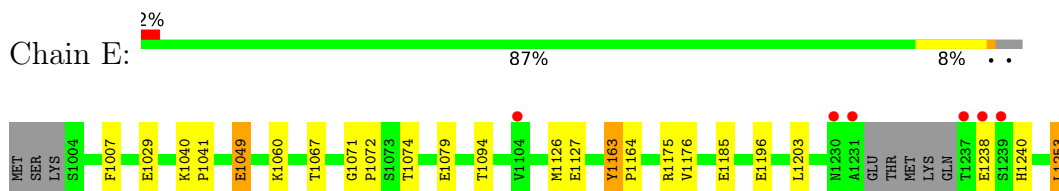
3 Residue-property plots [i](#)

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.

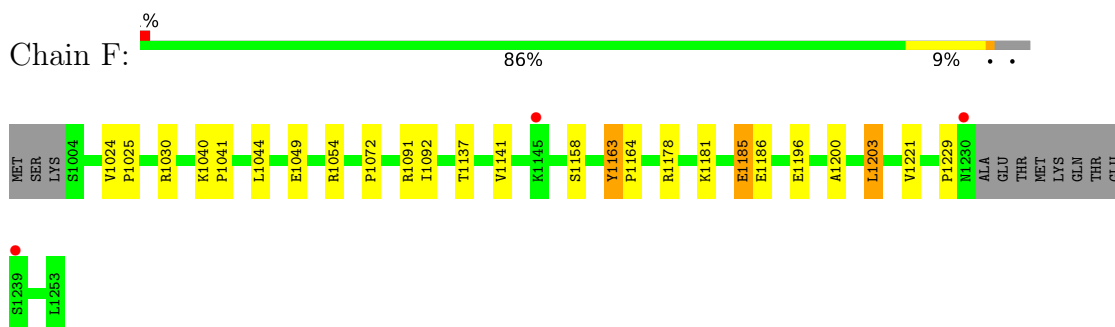
- Molecule 1: Uridine phosphorylase



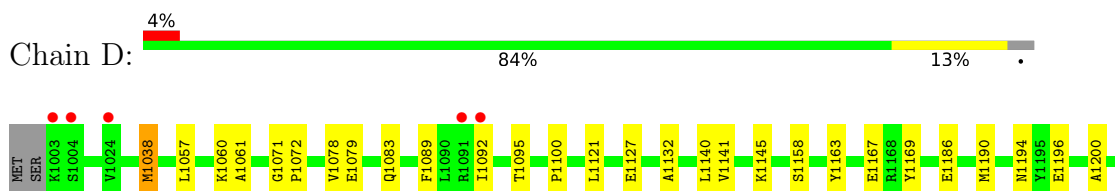
- Molecule 1: Uridine phosphorylase

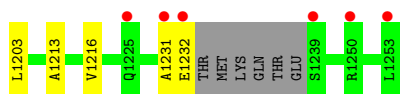


- Molecule 1: Uridine phosphorylase

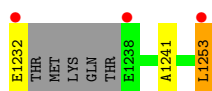
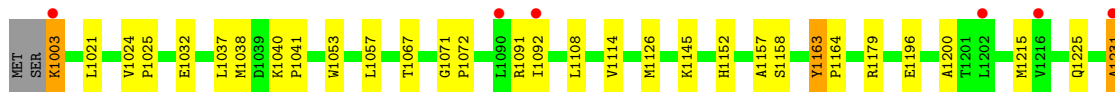
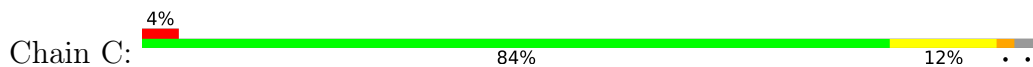


- Molecule 1: Uridine phosphorylase

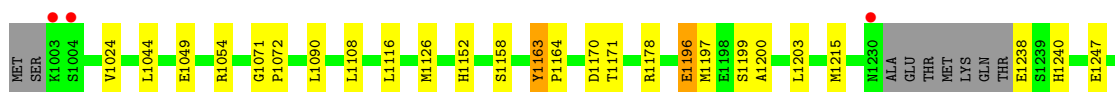
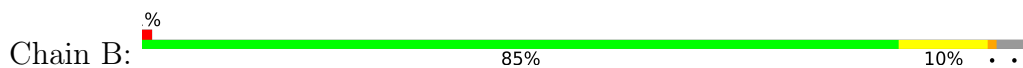




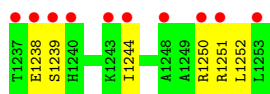
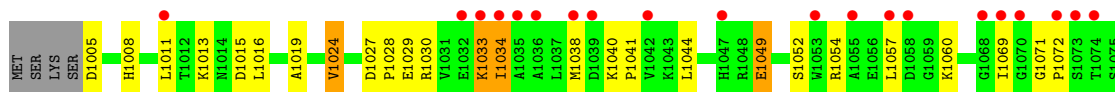
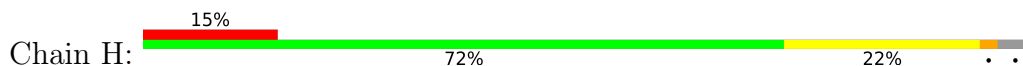
- Molecule 1: Uridine phosphorylase



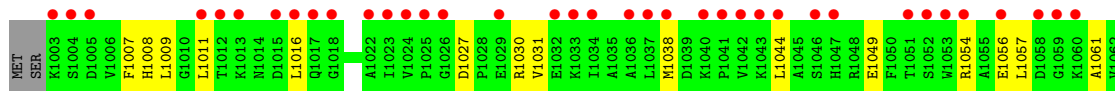
- Molecule 1: Uridine phosphorylase

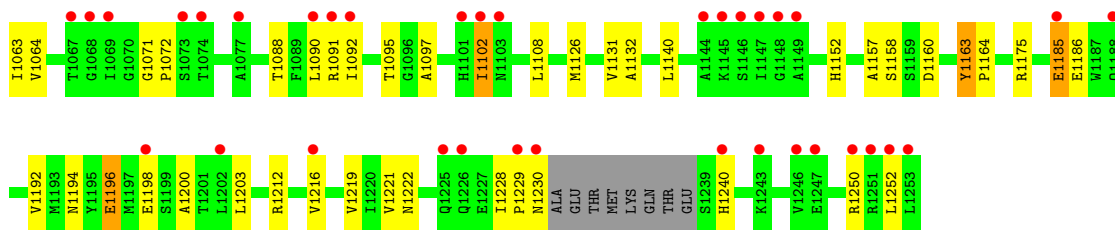


- Molecule 1: Uridine phosphorylase

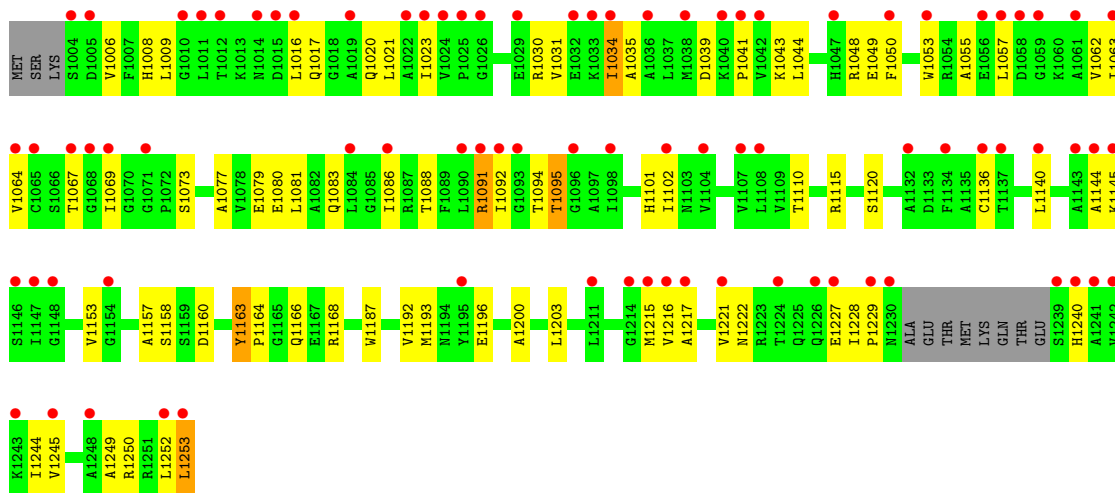


- Molecule 1: Uridine phosphorylase





• Molecule 1: Uridine phosphorylase



4 Data and refinement statistics i

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	158.49Å 93.21Å 149.97Å 90.00° 90.82° 90.00°	Depositor
Resolution (Å)	28.88 – 2.15 29.53 – 2.15	Depositor EDS
% Data completeness (in resolution range)	96.9 (28.88-2.15) 96.9 (29.53-2.15)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.04 (at 2.16Å)	Xtrriage
Refinement program	PHENIX 1.7.3_928	Depositor
R, R_{free}	0.194 , 0.238 0.190 , 0.234	Depositor DCC
R_{free} test set	5750 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	34.1	Xtrriage
Anisotropy	0.375	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 54.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	0.027 for -1/2*h+3/2*k,1/2*h+1/2*k,-l 0.026 for -1/2*h-3/2*k,-1/2*h+1/2*k,-l 0.077 for 1/2*h+3/2*k,1/2*h-1/2*k,-l 0.057 for 1/2*h-3/2*k,-1/2*h-1/2*k,-l 0.028 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	17042	wwPDB-VP
Average B, all atoms (Å ²)	54.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.62% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: K, EDO, URF, 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	0.37	0/1900	0.52	0/2571
1	B	0.38	0/1870	0.53	0/2531
1	C	0.38	0/1875	0.53	0/2539
1	D	0.40	0/1875	0.54	0/2538
1	E	0.37	0/1864	0.53	0/2526
1	F	0.37	0/1843	0.53	0/2497
1	G	0.28	0/1843	0.48	0/2497
1	H	0.31	0/1853	0.48	0/2511
1	I	0.26	0/1852	0.45	0/2508
All	All	0.35	0/16775	0.51	0/22718

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

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	1868	0	1890	38	0
1	B	1838	0	1857	18	0
1	C	1846	0	1855	23	0
1	D	1843	0	1862	21	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	1835	0	1843	20	0
1	F	1814	0	1825	25	0
1	G	1814	0	1825	69	0
1	H	1824	0	1833	39	0
1	I	1823	0	1838	34	0
2	A	9	0	3	1	0
2	B	9	0	3	2	0
2	C	9	0	3	2	0
2	D	9	0	3	0	0
2	E	9	0	3	1	0
2	F	9	0	3	1	0
2	G	9	0	3	0	0
2	H	9	0	3	0	0
3	A	6	0	8	1	0
3	B	6	0	8	3	0
3	C	6	0	8	2	0
3	E	6	0	8	2	0
3	F	6	0	8	1	0
4	A	1	0	0	0	0
4	D	1	0	0	0	0
4	E	1	0	0	0	0
5	C	4	0	6	4	0
6	A	62	0	0	0	0
6	B	66	0	0	1	0
6	C	58	0	0	0	0
6	D	70	0	0	1	0
6	E	62	0	0	0	0
6	F	67	0	0	1	0
6	G	15	0	0	0	0
6	H	16	0	0	0	0
6	I	12	0	0	1	0
All	All	17042	0	16698	274	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

All (274) 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:G:1095:THR:CG2	1:G:1217:ALA:HB1	1.97	0.94
2:E:1301:URF:HN1	3:E:1302:GOL:H2	1.36	0.91

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:1069:ILE:HD11	1:G:1048:ARG:HD3	1.55	0.88
1:G:1021:LEU:HD21	1:G:1088:THR:HB	1.59	0.84
1:I:1163:TYR:HB2	1:I:1164:PRO:HD3	1.61	0.83
1:G:1095:THR:HG22	1:G:1217:ALA:HB1	1.60	0.82
1:G:1095:THR:HG21	1:G:1217:ALA:CB	2.10	0.82
2:A:1301:URF:HN1	3:A:1302:GOL:H2	1.51	0.75
1:G:1055:ALA:O	1:G:1062:VAL:N	2.20	0.75
1:C:1179:ARG:HD2	5:C:1302:EDO:H21	1.68	0.74
1:H:1016:LEU:HG	1:H:1019:ALA:HB3	1.70	0.74
1:G:1166:GLN:OE1	1:G:1168:ARG:NH1	2.22	0.72
1:G:1020:GLN:C	1:G:1021:LEU:HD12	2.09	0.72
1:G:1020:GLN:O	1:G:1021:LEU:HD12	1.88	0.71
1:F:1158:SER:HB3	1:F:1200:ALA:HB2	1.71	0.71
1:H:1144:ALA:HA	1:H:1244:ILE:HD12	1.72	0.71
1:C:1067:THR:OG1	1:C:1091:ARG:NH1	2.24	0.70
1:I:1228:ILE:HB	1:I:1229:PRO:HD2	1.73	0.69
1:G:1006:VAL:HG11	1:G:1080:GLU:O	1.94	0.68
1:A:1144:ALA:HA	1:A:1244:ILE:HD12	1.76	0.68
1:G:1021:LEU:HD21	1:G:1088:THR:CB	2.25	0.67
1:G:1081:LEU:HB3	1:G:1086:ILE:HD12	1.75	0.67
1:G:1031:VAL:HG13	1:G:1064:VAL:HG12	1.75	0.67
1:E:1049:GLU:HB3	1:F:1049:GLU:HG2	1.78	0.66
1:D:1167:GLU:HG2	1:D:1169:TYR:CE1	2.32	0.65
1:A:1024:VAL:O	1:A:1091:ARG:HD2	1.96	0.65
1:F:1221:VAL:HB	1:F:1229:PRO:HB3	1.78	0.65
1:I:1044:LEU:HD11	1:I:1054:ARG:HB2	1.79	0.65
1:G:1021:LEU:CD2	1:G:1088:THR:HB	2.26	0.65
1:G:1095:THR:HG21	1:G:1217:ALA:HB1	1.67	0.65
1:H:1033:LYS:HA	1:H:1033:LYS:HE3	1.78	0.65
1:I:1228:ILE:HB	1:I:1229:PRO:CD	2.28	0.64
1:G:1101:HIS:O	1:G:1102:ILE:HD12	1.98	0.64
1:D:1231:ALA:O	1:D:1232:GLU:HB3	1.97	0.64
1:G:1095:THR:HG21	1:G:1217:ALA:HB3	1.79	0.63
1:G:1034:ILE:HG22	1:G:1064:VAL:HG21	1.80	0.63
1:A:1018:GLY:O	1:A:1060[A]:LYS:NZ	2.33	0.62
1:G:1102:ILE:O	1:G:1222:ASN:ND2	2.33	0.62
1:C:1092:ILE:HD11	1:C:1241:ALA:HB1	1.81	0.61
1:G:1101:HIS:ND1	1:G:1102:ILE:HD12	2.14	0.61
2:C:1301:URF:HN1	3:C:1303:GOL:H2	1.65	0.61
1:G:1158:SER:HB3	1:G:1200:ALA:HB2	1.83	0.61
1:G:1031:VAL:HG13	1:G:1064:VAL:CG1	2.31	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1240:HIS:O	1:A:1244:ILE:HG12	2.00	0.60
1:C:1179:ARG:NH1	5:C:1302:EDO:O1	2.34	0.60
1:D:1121:LEU:HD22	5:C:1302:EDO:H12	1.82	0.60
1:A:1144:ALA:HA	1:A:1244:ILE:CD1	2.31	0.60
1:G:1034:ILE:HG22	1:G:1035:ALA:N	2.17	0.59
1:G:1020:GLN:O	1:G:1086:ILE:HG23	2.03	0.59
1:G:1021:LEU:HD21	1:G:1088:THR:CG2	2.32	0.59
1:I:1158:SER:HB3	1:I:1200:ALA:HB2	1.84	0.59
2:F:1301:URF:HN1	3:F:1302:GOL:H11	1.67	0.57
1:I:1090:LEU:HD11	1:I:1252:LEU:HD12	1.86	0.57
1:E:1094:THR:HG1	3:E:1302:GOL:HO2	1.49	0.57
1:F:1044:LEU:HD11	1:F:1054:ARG:HB2	1.86	0.57
1:D:1100:PRO:HG2	6:D:1465:HOH:O	2.05	0.57
1:G:1101:HIS:ND1	1:G:1102:ILE:CD1	2.67	0.57
1:D:1038:MET:HB3	1:D:1057:LEU:HD13	1.87	0.56
1:H:1028:PRO:HD2	1:G:1048:ARG:HA	1.87	0.56
1:G:1101:HIS:C	1:G:1102:ILE:HD12	2.27	0.56
1:A:1004:SER:HA	1:A:1012:THR:HG22	1.87	0.55
1:F:1054:ARG:NH2	6:F:1434:HOH:O	2.38	0.55
1:D:1140:LEU:HD22	1:D:1216:VAL:HB	1.88	0.55
1:H:1109:VAL:HB	1:H:1153:VAL:HG22	1.88	0.55
1:E:1049:GLU:HG2	1:F:1049:GLU:HG2	1.88	0.55
1:C:1158:SER:HB3	1:C:1200:ALA:HB2	1.89	0.55
1:G:1016:LEU:O	1:G:1017:GLN:HB2	2.06	0.55
1:C:1179:ARG:CD	5:C:1302:EDO:H21	2.34	0.55
1:G:1044:LEU:HD11	1:G:1063:ILE:CD1	2.37	0.55
1:E:1060:LYS:HD2	1:E:1253:LEU:HB3	1.87	0.55
1:G:1163:TYR:HB2	1:G:1164:PRO:HD3	1.88	0.55
1:F:1163:TYR:HB2	1:F:1164:PRO:CD	2.36	0.55
1:D:1167:GLU:HG2	1:D:1169:TYR:HE1	1.70	0.55
1:G:1021:LEU:HG	1:G:1088:THR:O	2.07	0.55
1:E:1040:LYS:N	1:E:1041:PRO:HD3	2.22	0.54
1:H:1005:ASP:N	1:H:1005:ASP:OD2	2.40	0.54
1:C:1108:LEU:HD22	1:C:1152:HIS:HB2	1.89	0.54
1:H:1005:ASP:N	1:H:1011:LEU:O	2.41	0.54
1:H:1163:TYR:HB2	1:H:1164:PRO:CD	2.38	0.54
1:G:1021:LEU:CG	1:G:1088:THR:HB	2.38	0.54
1:H:1076:ILE:HD12	1:G:1069:ILE:HD13	1.89	0.53
1:H:1168:ARG:HG2	1:H:1227:GLU:HG3	1.91	0.53
1:E:1163:TYR:HB2	1:E:1164:PRO:CD	2.37	0.53
1:A:1040:LYS:N	1:A:1041:PRO:HD3	2.23	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:1040:LYS:N	1:F:1041:PRO:HD3	2.24	0.53
1:E:1175:ARG:HG2	1:E:1176:VAL:N	2.24	0.53
1:G:1094:THR:C	1:G:1095:THR:HG22	2.29	0.53
1:H:1040:LYS:N	1:H:1041:PRO:HD3	2.23	0.53
1:H:1252:LEU:O	1:H:1252:LEU:HD12	2.09	0.53
1:C:1071:GLY:N	1:C:1072:PRO:CD	2.72	0.52
1:G:1030:ARG:O	1:G:1034:ILE:HD12	2.09	0.52
1:A:1158:SER:HB3	1:A:1200:ALA:HB2	1.91	0.52
1:D:1060[B]:LYS:HD2	1:D:1061:ALA:N	2.25	0.52
1:I:1102:ILE:HD12	1:I:1108:LEU:HD21	1.91	0.52
1:C:1091:ARG:HG2	1:C:1215:MET:SD	2.50	0.52
1:H:1163:TYR:CB	1:H:1164:PRO:CD	2.88	0.52
1:D:1060[A]:LYS:HD3	1:D:1061:ALA:N	2.24	0.52
1:B:1116:LEU:HB2	1:B:1158:SER:O	2.10	0.52
1:A:1027:ASP:HB3	1:A:1030:ARG:HG3	1.91	0.51
1:B:1163:TYR:HB2	1:B:1164:PRO:CD	2.40	0.51
1:B:1163:TYR:CB	1:B:1164:PRO:CD	2.88	0.51
1:I:1071:GLY:N	1:I:1072:PRO:CD	2.74	0.51
1:F:1137:THR:O	1:F:1141:VAL:HG23	2.10	0.51
1:G:1110:THR:HB	1:G:1215:MET:HB3	1.92	0.51
1:A:1038:MET:HG2	1:A:1057:LEU:HD13	1.93	0.51
1:E:1007:PHE:CE1	1:F:1229:PRO:HG2	2.46	0.51
1:H:1049:GLU:CD	1:G:1069:ILE:H	2.15	0.51
1:I:1016:LEU:HG	1:I:1063:ILE:HD12	1.93	0.50
1:B:1054:ARG:HG2	6:B:1406:HOH:O	2.11	0.50
1:I:1229:PRO:O	1:I:1230:ASN:CB	2.59	0.50
1:I:1088:THR:HA	1:I:1212:ARG:HB2	1.94	0.50
1:H:1125:PRO:HB2	1:H:1127:GLU:OE2	2.12	0.50
1:G:1250:ARG:HA	1:G:1253:LEU:HD22	1.92	0.50
1:A:1163:TYR:HB2	1:A:1164:PRO:CD	2.42	0.49
1:I:1038:MET:HG2	1:I:1057:LEU:HD12	1.94	0.49
1:D:1079:GLU:O	1:D:1083:GLN:HG3	2.13	0.49
1:A:1095:THR:HG21	1:A:1108:LEU:HD12	1.94	0.49
1:B:1158:SER:HB3	1:B:1200:ALA:HB2	1.95	0.49
1:H:1071:GLY:N	1:H:1072:PRO:CD	2.76	0.48
1:G:1163:TYR:HB2	1:G:1164:PRO:CD	2.43	0.48
1:H:1091:ARG:HG3	1:H:1202:LEU:HD22	1.95	0.48
1:G:1067:THR:O	1:G:1073:SER:HB3	2.13	0.48
1:A:1009:LEU:CD1	1:A:1081:LEU:HD13	2.44	0.48
1:F:1163:TYR:CB	1:F:1164:PRO:CD	2.91	0.48
1:I:1071:GLY:N	1:I:1072:PRO:HD2	2.28	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1230:ASN:HB2	1:A:1235:LYS:CE	2.44	0.48
1:F:1092:ILE:HG23	1:F:1092:ILE:O	2.12	0.48
1:H:1027:ASP:OD2	1:H:1029:GLU:HB2	2.13	0.48
1:E:1127:GLU:H	1:E:1127:GLU:CD	2.17	0.48
1:F:1024:VAL:O	1:F:1091:ARG:HD2	2.13	0.48
1:B:1044:LEU:HD11	1:B:1054:ARG:HB2	1.96	0.48
1:G:1030:ARG:O	1:G:1034:ILE:CD1	2.62	0.48
1:G:1030:ARG:HB3	1:G:1034:ILE:CD1	2.44	0.48
1:A:1102:ILE:O	1:A:1222:ASN:ND2	2.47	0.47
1:G:1008:HIS:H	1:G:1080:GLU:CD	2.17	0.47
1:G:1240:HIS:O	1:G:1244:ILE:HG12	2.14	0.47
1:D:1089:PHE:O	1:D:1213:ALA:HA	2.12	0.47
1:B:1090:LEU:HD11	1:B:1252:LEU:HD12	1.95	0.47
1:G:1221:VAL:HB	1:G:1229:PRO:HB3	1.97	0.47
1:I:1095:THR:OG1	1:I:1194:ASN:HB2	2.14	0.47
1:G:1168:ARG:HE	1:G:1227:GLU:HB2	1.80	0.47
1:A:1016:LEU:HG	1:A:1063:ILE:HG13	1.96	0.47
1:I:1057:LEU:HD21	1:I:1250:ARG:HB3	1.96	0.47
1:A:1009:LEU:HD12	1:A:1081:LEU:HD13	1.97	0.47
1:D:1158:SER:HB3	1:D:1200:ALA:HB2	1.97	0.47
1:E:1049:GLU:CB	1:F:1049:GLU:HG2	2.45	0.47
1:E:1071:GLY:N	1:E:1072:PRO:CD	2.78	0.47
1:A:1163:TYR:HB2	1:A:1164:PRO:HD3	1.96	0.46
1:B:1247:GLU:HG3	1:B:1251:ARG:HH22	1.80	0.46
1:C:1038:MET:HE2	1:C:1057:LEU:HB2	1.97	0.46
1:H:1015:ASP:O	1:H:1054:ARG:NE	2.47	0.46
1:H:1147:ILE:HG13	1:H:1244:ILE:HD13	1.98	0.46
1:E:1067:THR:HB	1:E:1074:THR:HA	1.98	0.46
1:E:1238:GLU:HG3	1:E:1238:GLU:O	2.15	0.46
1:H:1008:HIS:CE1	1:H:1076:ILE:HD13	2.51	0.46
1:I:1027:ASP:HB3	1:I:1030:ARG:HB2	1.98	0.46
1:D:1132:ALA:HA	1:D:1203:LEU:HD22	1.97	0.46
1:F:1163:TYR:HB2	1:F:1164:PRO:HD3	1.98	0.46
1:C:1231:ALA:O	1:C:1232:GLU:HB3	2.15	0.46
1:H:1169:TYR:O	1:H:1171:THR:N	2.49	0.46
1:A:1163:TYR:CB	1:A:1164:PRO:CD	2.93	0.46
1:I:1221:VAL:HG22	1:I:1222:ASN:N	2.31	0.46
1:I:1031:VAL:HG13	1:I:1064:VAL:HG12	1.98	0.46
1:A:1067:THR:OG1	1:A:1091:ARG:NH1	2.46	0.45
1:I:1092:ILE:HA	1:I:1216:VAL:O	2.16	0.45
1:C:1057:LEU:HB3	1:C:1253:LEU:HD21	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:1196:GLU:CD	1:I:1198:GLU:H	2.19	0.45
1:A:1147:ILE:HG22	1:A:1147:ILE:O	2.15	0.45
1:A:1185:GLU:HG3	1:A:1186:GLU:N	2.31	0.45
1:A:1247:GLU:HG3	1:A:1251:ARG:HH12	1.82	0.45
1:H:1024:VAL:HG23	1:H:1091:ARG:HA	1.99	0.45
1:G:1023:ILE:HD12	1:G:1245:VAL:HG22	1.99	0.45
1:D:1186:GLU:O	1:D:1190:MET:HG3	2.16	0.45
1:I:1011:LEU:HD11	1:I:1044:LEU:HD13	1.98	0.45
1:G:1041:PRO:HB2	1:G:1053:TRP:CZ3	2.52	0.45
1:F:1181:LYS:O	1:B:1178:ARG:NH2	2.50	0.45
1:C:1040:LYS:N	1:C:1041:PRO:CD	2.80	0.45
1:A:1127:GLU:CD	1:A:1127:GLU:H	2.21	0.45
1:H:1163:TYR:HB2	1:H:1164:PRO:HD3	1.98	0.45
1:G:1157:ALA:HB2	1:G:1192:VAL:HG11	1.99	0.45
1:I:1009:LEU:HB3	1:I:1011:LEU:HD23	1.99	0.44
1:C:1163:TYR:HB2	1:C:1164:PRO:CD	2.47	0.44
1:H:1108:LEU:HD22	1:H:1152:HIS:HB2	1.99	0.44
1:H:1049:GLU:HG2	1:G:1049:GLU:HB3	1.99	0.44
1:G:1095:THR:CG2	1:G:1217:ALA:CB	2.71	0.44
1:E:1163:TYR:CB	1:E:1164:PRO:CD	2.95	0.44
1:B:1108:LEU:HD22	1:B:1152:HIS:HB2	2.00	0.44
1:H:1251:ARG:HA	1:H:1251:ARG:HD3	1.76	0.44
1:B:1197:MET:HB2	3:B:1302:GOL:O3	2.18	0.44
1:D:1141:VAL:O	1:D:1145:LYS:HG2	2.18	0.44
1:B:1071:GLY:N	1:B:1072:PRO:CD	2.81	0.44
1:G:1023:ILE:HD11	1:G:1249:ALA:HB2	2.00	0.44
1:C:1024:VAL:HA	1:C:1025:PRO:HD2	1.91	0.44
1:I:1131:VAL:HG22	1:I:1132:ALA:O	2.18	0.44
1:D:1071:GLY:N	1:D:1072:PRO:CD	2.81	0.43
1:B:1170:ASP:HA	1:H:1013:LYS:HD3	1.99	0.43
1:A:1067:THR:HB	1:A:1074:THR:HA	2.00	0.43
1:A:1201:THR:O	1:A:1205:MET:HG2	2.19	0.43
1:D:1078:VAL:HG13	1:D:1089:PHE:CZ	2.54	0.43
1:I:1185:GLU:HG2	1:I:1186:GLU:N	2.32	0.43
1:G:1145:LYS:HE3	1:G:1145:LYS:HB3	1.87	0.43
1:A:1048:ARG:HB3	1:A:1049:GLU:OE1	2.18	0.43
1:E:1049:GLU:HB3	1:F:1049:GLU:CG	2.47	0.43
1:H:1126:MET:HG3	1:I:1126:MET:HG3	2.01	0.43
1:I:1097:ALA:HB2	1:I:1102:ILE:HD11	2.00	0.43
1:G:1091:ARG:HG2	1:G:1215:MET:SD	2.58	0.43
1:G:1136:CYS:HA	1:G:1252:LEU:HD11	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1196:GLU:OE2	1:B:1199:SER:OG	2.34	0.43
1:G:1044:LEU:CD1	1:G:1063:ILE:HD12	2.49	0.43
1:G:1057:LEU:HB3	1:G:1253:LEU:HD21	2.00	0.43
1:E:1079:GLU:HG2	1:F:1163:TYR:CD2	2.54	0.43
1:H:1038:MET:SD	1:H:1057:LEU:HD11	2.58	0.43
1:C:1021:LEU:HD13	1:C:1253:LEU:CD1	2.49	0.43
2:B:1301:URF:HN1	3:B:1302:GOL:H31	1.84	0.43
1:A:1221:VAL:HB	1:A:1229:PRO:HG3	2.01	0.43
2:B:1301:URF:HN1	3:B:1302:GOL:C3	2.32	0.43
1:E:1253:LEU:HD12	1:E:1253:LEU:HA	1.83	0.42
1:H:1211:LEU:HD12	1:H:1211:LEU:N	2.34	0.42
1:G:1228:ILE:HA	1:G:1229:PRO:HD3	1.81	0.42
1:E:1072:PRO:HG2	1:F:1072:PRO:HD2	2.01	0.42
1:C:1114:VAL:HB	1:C:1157:ALA:HA	2.00	0.42
1:C:1163:TYR:CB	1:C:1164:PRO:CD	2.97	0.42
1:B:1090:LEU:HD23	1:B:1090:LEU:HA	1.81	0.42
1:G:1163:TYR:HA	1:G:1168:ARG:HB2	2.00	0.42
1:A:1021:LEU:C	1:A:1021:LEU:HD23	2.39	0.42
1:C:1032:GLU:HG3	1:C:1053:TRP:CH2	2.55	0.42
1:C:1091:ARG:HG3	1:C:1092:ILE:N	2.34	0.42
1:H:1158:SER:HB2	1:H:1200:ALA:HB2	2.01	0.42
1:I:1140:LEU:HD12	1:I:1140:LEU:HA	1.82	0.42
1:A:1024:VAL:HA	1:A:1065:CYS:O	2.19	0.42
1:A:1089:PHE:O	1:A:1213:ALA:HA	2.19	0.42
1:E:1126:MET:SD	1:D:1127:GLU:HG3	2.60	0.42
1:F:1185:GLU:HG3	1:F:1186:GLU:N	2.29	0.42
1:F:1203:LEU:HA	1:F:1203:LEU:HD12	1.70	0.42
1:I:1175:ARG:HD2	6:I:1309:HOH:O	2.19	0.42
1:A:1024:VAL:O	1:A:1024:VAL:HG23	2.20	0.42
1:D:1060[A]:LYS:HD3	1:D:1061:ALA:H	1.83	0.42
1:G:1136:CYS:O	1:G:1140:LEU:HD13	2.20	0.42
1:H:1030:ARG:O	1:H:1034:ILE:HG22	2.20	0.42
1:I:1007:PHE:HD2	1:I:1008:HIS:CE1	2.37	0.42
1:G:1115:ARG:NE	1:G:1120:SER:OG	2.51	0.42
1:A:1235:LYS:HD3	1:A:1236:GLN:H	1.85	0.42
1:H:1108:LEU:CD2	1:H:1152:HIS:HB2	2.50	0.42
1:H:1238:GLU:HG3	1:H:1239:SER:N	2.34	0.42
1:E:1049:GLU:CG	1:F:1049:GLU:HG2	2.49	0.42
1:C:1126:MET:HG3	1:B:1126:MET:HG3	2.01	0.41
1:I:1102:ILE:HD11	1:I:1219:VAL:HG21	2.01	0.41
1:G:1009:LEU:HD11	1:G:1081:LEU:HG	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:1178:ARG:HH21	1:D:1186:GLU:CD	2.22	0.41
1:C:1003:LYS:HE2	1:C:1003:LYS:HB3	1.83	0.41
1:I:1108:LEU:HD22	1:I:1152:HIS:HB2	2.01	0.41
1:G:1079:GLU:O	1:G:1083:GLN:HG3	2.19	0.41
1:H:1139:ALA:O	1:H:1143:ALA:N	2.46	0.41
1:A:1081:LEU:HD12	1:A:1081:LEU:HA	1.91	0.41
1:A:1144:ALA:CA	1:A:1244:ILE:HD12	2.48	0.41
1:F:1158:SER:CB	1:F:1200:ALA:HB2	2.46	0.41
1:F:1024:VAL:HA	1:F:1025:PRO:HD2	1.96	0.41
1:C:1092:ILE:HG23	1:C:1092:ILE:O	2.21	0.41
1:I:1157:ALA:HB2	1:I:1192:VAL:HG11	2.03	0.41
1:I:1163:TYR:CB	1:I:1164:PRO:HD3	2.37	0.41
1:G:1050:PHE:HE2	1:G:1077:ALA:HB2	1.86	0.41
1:G:1153:VAL:O	1:G:1193:MET:HE1	2.20	0.41
1:H:1228:ILE:HA	1:H:1229:PRO:HD3	1.92	0.40
1:A:1031:VAL:HG13	1:A:1064:VAL:HG12	2.02	0.40
1:A:1228:ILE:HA	1:A:1229:PRO:HD3	1.95	0.40
1:B:1024:VAL:HG23	1:B:1024:VAL:O	2.21	0.40
1:G:1144:ALA:HA	1:G:1244:ILE:HD12	2.03	0.40
1:G:1187:TRP:HB3	1:G:1192:VAL:HB	2.03	0.40
1:D:1095:THR:OG1	1:D:1194:ASN:HB2	2.21	0.40
2:C:1301:URF:N1	3:C:1303:GOL:H2	2.35	0.40
1:H:1163:TYR:CB	1:H:1164:PRO:HD3	2.51	0.40
1:G:1009:LEU:CD1	1:G:1081:LEU:HG	2.52	0.40
1:A:1079:GLU:OE1	1:B:1171:THR:HB	2.21	0.40
1:I:1056:GLU:HG2	1:I:1061:ALA:HA	2.02	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	245/253 (97%)	239 (98%)	5 (2%)	1 (0%)	34	29
1	B	241/253 (95%)	234 (97%)	6 (2%)	1 (0%)	34	29
1	C	242/253 (96%)	235 (97%)	5 (2%)	2 (1%)	19	12
1	D	242/253 (96%)	237 (98%)	4 (2%)	1 (0%)	34	29
1	E	241/253 (95%)	236 (98%)	4 (2%)	1 (0%)	34	29
1	F	238/253 (94%)	232 (98%)	5 (2%)	1 (0%)	34	29
1	G	238/253 (94%)	223 (94%)	14 (6%)	1 (0%)	34	29
1	H	239/253 (94%)	228 (95%)	9 (4%)	2 (1%)	19	12
1	I	239/253 (94%)	229 (96%)	9 (4%)	1 (0%)	34	29
All	All	2165/2277 (95%)	2093 (97%)	61 (3%)	11 (0%)	29	22

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	1163	TYR
1	F	1163	TYR
1	D	1163	TYR
1	C	1163	TYR
1	A	1163	TYR
1	E	1163	TYR
1	B	1163	TYR
1	C	1231	ALA
1	H	1170	ASP
1	G	1163	TYR
1	I	1163	TYR

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	198/202 (98%)	192 (97%)	6 (3%)	41	40
1	B	195/202 (96%)	189 (97%)	6 (3%)	40	39
1	C	195/202 (96%)	189 (97%)	6 (3%)	40	39

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	195/202 (96%)	192 (98%)	3 (2%)	65	69
1	E	194/202 (96%)	187 (96%)	7 (4%)	35	33
1	F	192/202 (95%)	188 (98%)	4 (2%)	53	57
1	G	192/202 (95%)	181 (94%)	11 (6%)	20	16
1	H	193/202 (96%)	181 (94%)	12 (6%)	18	14
1	I	193/202 (96%)	185 (96%)	8 (4%)	30	29
All	All	1747/1818 (96%)	1684 (96%)	63 (4%)	35	33

All (63) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1081	LEU
1	A	1185	GLU
1	A	1196	GLU
1	A	1203	LEU
1	A	1235	LYS
1	A	1253	LEU
1	E	1029	GLU
1	E	1049	GLU
1	E	1185	GLU
1	E	1196	GLU
1	E	1203	LEU
1	E	1240	HIS
1	E	1253	LEU
1	F	1030	ARG
1	F	1185	GLU
1	F	1196	GLU
1	F	1203	LEU
1	D	1038	MET
1	D	1092	ILE
1	D	1196	GLU
1	C	1003	LYS
1	C	1037	LEU
1	C	1145	LYS
1	C	1196	GLU
1	C	1225	GLN
1	C	1253	LEU
1	B	1049	GLU
1	B	1196	GLU
1	B	1203	LEU

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Mol	Chain	Res	Type
1	B	1215	MET
1	B	1238	GLU
1	B	1240	HIS
1	H	1024	VAL
1	H	1033	LYS
1	H	1034	ILE
1	H	1044	LEU
1	H	1049	GLU
1	H	1052	SER
1	H	1060	LYS
1	H	1091	ARG
1	H	1175	ARG
1	H	1181	LYS
1	H	1196	GLU
1	H	1250	ARG
1	I	1049	GLU
1	I	1091	ARG
1	I	1102	ILE
1	I	1160	ASP
1	I	1185	GLU
1	I	1196	GLU
1	I	1203	LEU
1	I	1240	HIS
1	G	1034	ILE
1	G	1039	ASP
1	G	1043	LYS
1	G	1091	ARG
1	G	1092	ILE
1	G	1095	THR
1	G	1160	ASP
1	G	1196	GLU
1	G	1203	LEU
1	G	1216	VAL
1	G	1253	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	F	1209	GLN

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](#)

Of 17 ligands modelled in this entry, 3 are monoatomic - leaving 14 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	URF	H	1301	-	9,9,9	3.39	5 (55%)	12,12,12	3.76	8 (66%)
2	URF	B	1301	-	9,9,9	2.97	5 (55%)	12,12,12	3.82	7 (58%)
2	URF	G	1301	-	9,9,9	3.46	5 (55%)	12,12,12	3.63	8 (66%)
3	GOL	A	1302	-	5,5,5	0.32	0	5,5,5	0.69	0
3	GOL	F	1302	-	5,5,5	0.37	0	5,5,5	0.42	0
2	URF	D	1301	-	9,9,9	3.40	5 (55%)	12,12,12	3.43	6 (50%)
3	GOL	E	1302	-	5,5,5	0.39	0	5,5,5	0.34	0
3	GOL	B	1302	-	5,5,5	0.38	0	5,5,5	0.15	0
2	URF	A	1301	-	9,9,9	3.36	5 (55%)	12,12,12	3.46	8 (66%)
5	EDO	C	1302	-	3,3,3	0.41	0	2,2,2	0.35	0
2	URF	E	1301	-	9,9,9	3.17	5 (55%)	12,12,12	3.88	6 (50%)
2	URF	C	1301	-	9,9,9	3.36	5 (55%)	12,12,12	3.43	7 (58%)
3	GOL	C	1303	-	5,5,5	0.36	0	5,5,5	0.19	0
2	URF	F	1301	-	9,9,9	3.26	5 (55%)	12,12,12	3.78	8 (66%)

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	URF	H	1301	-	-	-	0/1/1/1
2	URF	B	1301	-	-	-	0/1/1/1
3	GOL	A	1302	-	-	0/4/4/4	-
2	URF	G	1301	-	-	-	0/1/1/1
3	GOL	F	1302	-	-	2/4/4/4	-
3	GOL	E	1302	-	-	2/4/4/4	-
2	URF	D	1301	-	-	-	0/1/1/1
3	GOL	B	1302	-	-	0/4/4/4	-
5	EDO	C	1302	-	-	0/1/1/1	-
2	URF	A	1301	-	-	-	0/1/1/1
2	URF	E	1301	-	-	-	0/1/1/1
2	URF	C	1301	-	-	-	0/1/1/1
3	GOL	C	1303	-	-	2/4/4/4	-
2	URF	F	1301	-	-	-	0/1/1/1

All (40) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1301	URF	C2-N1	5.95	1.44	1.36
2	A	1301	URF	C2-N1	5.57	1.44	1.36
2	G	1301	URF	C6-N1	5.51	1.45	1.36
2	C	1301	URF	C2-N1	5.46	1.44	1.36
2	G	1301	URF	C2-N1	5.45	1.44	1.36
2	H	1301	URF	C6-N1	5.45	1.45	1.36
2	E	1301	URF	C6-N1	5.42	1.45	1.36
2	F	1301	URF	C6-N1	5.42	1.45	1.36
2	A	1301	URF	C6-N1	5.38	1.45	1.36
2	C	1301	URF	C6-N1	5.37	1.45	1.36
2	H	1301	URF	C2-N1	5.27	1.43	1.36
2	D	1301	URF	C6-N1	5.23	1.44	1.36
2	B	1301	URF	C2-N1	5.12	1.43	1.36
2	F	1301	URF	C2-N1	5.09	1.43	1.36
2	G	1301	URF	C6-C5	5.01	1.38	1.33
2	E	1301	URF	C2-N1	4.89	1.43	1.36
2	B	1301	URF	C6-N1	4.76	1.44	1.36
2	H	1301	URF	C6-C5	4.60	1.37	1.33
2	A	1301	URF	C6-C5	4.52	1.37	1.33
2	E	1301	URF	C6-C5	4.52	1.37	1.33
2	D	1301	URF	C6-C5	4.46	1.37	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	1301	URF	C6-C5	4.46	1.37	1.33
2	F	1301	URF	C6-C5	4.05	1.37	1.33
2	C	1301	URF	C4-C5	3.78	1.49	1.44
2	B	1301	URF	C6-C5	3.57	1.37	1.33
2	F	1301	URF	C4-C5	3.56	1.48	1.44
2	H	1301	URF	C4-C5	3.49	1.48	1.44
2	G	1301	URF	C4-C5	3.37	1.48	1.44
2	A	1301	URF	C4-C5	3.35	1.48	1.44
2	D	1301	URF	C4-C5	3.27	1.48	1.44
2	B	1301	URF	C4-C5	2.91	1.47	1.44
2	H	1301	URF	C2-N3	2.81	1.42	1.37
2	G	1301	URF	C2-N3	2.73	1.42	1.37
2	E	1301	URF	C2-N3	2.58	1.41	1.37
2	A	1301	URF	C2-N3	2.56	1.41	1.37
2	F	1301	URF	C2-N3	2.53	1.41	1.37
2	E	1301	URF	C4-C5	2.46	1.47	1.44
2	D	1301	URF	C2-N3	2.40	1.41	1.37
2	C	1301	URF	C2-N3	2.39	1.41	1.37
2	B	1301	URF	C2-N3	2.38	1.41	1.37

All (58) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	E	1301	URF	C5-C4-N3	8.34	120.77	112.56
2	B	1301	URF	C5-C4-N3	7.54	119.98	112.56
2	G	1301	URF	C5-C4-N3	7.17	119.62	112.56
2	F	1301	URF	C5-C4-N3	7.11	119.56	112.56
2	H	1301	URF	C5-C4-N3	7.07	119.52	112.56
2	C	1301	URF	C5-C4-N3	6.94	119.39	112.56
2	D	1301	URF	C5-C4-N3	6.89	119.34	112.56
2	A	1301	URF	C5-C4-N3	6.76	119.22	112.56
2	E	1301	URF	O4-C4-C5	-6.70	119.68	125.72
2	B	1301	URF	O4-C4-C5	-6.52	119.84	125.72
2	G	1301	URF	O4-C4-C5	-5.90	120.39	125.72
2	H	1301	URF	O4-C4-C5	-5.77	120.52	125.72
2	F	1301	URF	O4-C4-C5	-5.76	120.53	125.72
2	C	1301	URF	O4-C4-C5	-5.71	120.57	125.72
2	A	1301	URF	O4-C4-C5	-5.62	120.65	125.72
2	D	1301	URF	O4-C4-C5	-5.53	120.73	125.72
2	E	1301	URF	C4-N3-C2	-4.91	119.27	126.34
2	B	1301	URF	C4-N3-C2	-4.55	119.78	126.34
2	F	1301	URF	F5-C5-C4	4.51	120.58	116.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	1301	URF	N1-C2-N3	4.50	120.23	115.13
2	E	1301	URF	N1-C2-N3	4.44	120.16	115.13
2	H	1301	URF	N1-C2-N3	4.37	120.08	115.13
2	H	1301	URF	F5-C5-C4	4.33	120.41	116.40
2	H	1301	URF	C4-N3-C2	-4.26	120.20	126.34
2	F	1301	URF	C4-N3-C2	-4.25	120.22	126.34
2	D	1301	URF	C4-N3-C2	-4.25	120.22	126.34
2	F	1301	URF	N1-C2-N3	4.23	119.92	115.13
2	G	1301	URF	N1-C2-N3	4.13	119.81	115.13
2	C	1301	URF	N1-C2-N3	4.10	119.78	115.13
2	G	1301	URF	C4-N3-C2	-4.09	120.44	126.34
2	B	1301	URF	F5-C5-C4	4.09	120.19	116.40
2	C	1301	URF	C4-N3-C2	-4.02	120.55	126.34
2	B	1301	URF	N1-C2-N3	3.93	119.58	115.13
2	A	1301	URF	C4-N3-C2	-3.82	120.83	126.34
2	A	1301	URF	N1-C2-N3	3.82	119.46	115.13
2	G	1301	URF	F5-C5-C4	3.80	119.92	116.40
2	F	1301	URF	F5-C5-C6	-3.80	119.04	121.73
2	A	1301	URF	F5-C5-C4	3.70	119.83	116.40
2	B	1301	URF	F5-C5-C6	-3.35	119.36	121.73
2	H	1301	URF	F5-C5-C6	-3.25	119.43	121.73
2	C	1301	URF	F5-C5-C4	3.13	119.30	116.40
2	A	1301	URF	F5-C5-C6	-3.11	119.53	121.73
2	F	1301	URF	O2-C2-N1	-2.88	119.62	122.79
2	D	1301	URF	C6-N1-C2	-2.84	119.78	122.68
2	H	1301	URF	O2-C2-N1	-2.79	119.72	122.79
2	H	1301	URF	C6-N1-C2	-2.72	119.90	122.68
2	D	1301	URF	F5-C5-C4	2.58	118.79	116.40
2	G	1301	URF	C6-N1-C2	-2.57	120.05	122.68
2	E	1301	URF	F5-C5-C4	2.53	118.74	116.40
2	B	1301	URF	O2-C2-N1	-2.47	120.07	122.79
2	G	1301	URF	O2-C2-N1	-2.41	120.14	122.79
2	G	1301	URF	F5-C5-C6	-2.40	120.03	121.73
2	A	1301	URF	O2-C2-N1	-2.38	120.17	122.79
2	E	1301	URF	O2-C2-N1	-2.38	120.17	122.79
2	F	1301	URF	C6-N1-C2	-2.29	120.34	122.68
2	A	1301	URF	C6-N1-C2	-2.27	120.37	122.68
2	C	1301	URF	C6-N1-C2	-2.23	120.40	122.68
2	C	1301	URF	F5-C5-C6	-2.16	120.20	121.73

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	E	1302	GOL	O1-C1-C2-C3
3	C	1303	GOL	O1-C1-C2-C3
3	E	1302	GOL	O1-C1-C2-O2
3	F	1302	GOL	O1-C1-C2-C3
3	F	1302	GOL	O1-C1-C2-O2
3	C	1303	GOL	O1-C1-C2-O2

There are no ring outliers.

11 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1301	URF	2	0
3	A	1302	GOL	1	0
3	F	1302	GOL	1	0
3	E	1302	GOL	2	0
3	B	1302	GOL	3	0
2	A	1301	URF	1	0
5	C	1302	EDO	4	0
2	E	1301	URF	1	0
2	C	1301	URF	2	0
3	C	1303	GOL	2	0
2	F	1301	URF	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

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	248/253 (98%)	0.02	11 (4%) 34 43	26, 39, 62, 113	0
1	B	244/253 (96%)	-0.09	3 (1%) 79 83	27, 41, 64, 102	0
1	C	246/253 (97%)	0.10	9 (3%) 41 49	25, 39, 61, 107	0
1	D	245/253 (96%)	0.05	11 (4%) 33 42	23, 38, 62, 96	0
1	E	245/253 (96%)	-0.11	6 (2%) 59 67	26, 39, 60, 114	0
1	F	242/253 (95%)	-0.12	3 (1%) 79 83	26, 39, 57, 78	0
1	G	242/253 (95%)	1.55	83 (34%) 0 0	57, 89, 119, 135	0
1	H	243/253 (96%)	0.80	38 (15%) 2 2	45, 72, 104, 128	0
1	I	243/253 (96%)	1.38	72 (29%) 0 0	39, 77, 121, 130	0
All	All	2198/2277 (96%)	0.40	236 (10%) 6 8	23, 47, 108, 135	0

All (236) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1231	ALA	9.1
1	G	1148	GLY	8.3
1	C	1231	ALA	7.9
1	G	1252	LEU	7.6
1	I	1146	SER	7.3
1	I	1029	GLU	7.0
1	I	1016	LEU	6.4
1	I	1003	LYS	6.4
1	G	1147	ILE	6.3
1	A	1236	GLN	6.3
1	D	1231	ALA	6.2
1	E	1237	THR	6.2
1	D	1003	LYS	6.2
1	H	1238	GLU	6.0
1	I	1253	LEU	5.9

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Mol	Chain	Res	Type	RSRZ
1	I	1053	TRP	5.9
1	E	1231	ALA	5.8
1	H	1053	TRP	5.7
1	I	1092	ILE	5.7
1	I	1147	ILE	5.6
1	A	1237	THR	5.4
1	I	1058	ASP	5.4
1	G	1014	ASN	5.3
1	G	1230	ASN	5.2
1	I	1017	GLN	5.1
1	G	1026	GLY	5.1
1	G	1024	VAL	5.0
1	I	1225	GLN	5.0
1	G	1143	ALA	5.0
1	B	1003	LYS	4.9
1	G	1146	SER	4.9
1	H	1011	LEU	4.7
1	I	1024	VAL	4.6
1	G	1029	GLU	4.5
1	H	1244	ILE	4.5
1	I	1044	LEU	4.5
1	E	1239	SER	4.4
1	I	1043	LYS	4.3
1	I	1103	ASN	4.3
1	C	1232	GLU	4.2
1	A	1003	LYS	4.2
1	G	1010	GLY	4.2
1	D	1253	LEU	4.1
1	H	1250	ARG	4.0
1	I	1036	ALA	3.9
1	G	1239	SER	3.9
1	G	1034	ILE	3.9
1	G	1107	VAL	3.9
1	I	1046	SER	3.8
1	G	1053	TRP	3.8
1	G	1057	LEU	3.8
1	I	1026	GLY	3.8
1	H	1149	ALA	3.7
1	F	1230	ASN	3.7
1	C	1238	GLU	3.7
1	G	1253	LEU	3.7
1	G	1025	PRO	3.7

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Mol	Chain	Res	Type	RSRZ
1	D	1232	GLU	3.7
1	G	1036	ALA	3.7
1	I	1149	ALA	3.7
1	G	1245	VAL	3.7
1	C	1253	LEU	3.6
1	I	1023	ILE	3.6
1	I	1038	MET	3.6
1	G	1092	ILE	3.6
1	G	1145	LYS	3.6
1	H	1057	LEU	3.6
1	A	1238	GLU	3.5
1	G	1056	GLU	3.5
1	G	1195	TYR	3.5
1	I	1145	LYS	3.5
1	I	1025	PRO	3.5
1	G	1058	ASP	3.5
1	G	1137	THR	3.5
1	G	1032	GLU	3.5
1	A	1230	ASN	3.5
1	H	1038	MET	3.4
1	H	1253	LEU	3.4
1	G	1104	VAL	3.4
1	G	1012	THR	3.4
1	G	1061	ALA	3.4
1	E	1238	GLU	3.4
1	A	1235	LYS	3.4
1	H	1237	THR	3.4
1	H	1146	SER	3.3
1	I	1060	LYS	3.3
1	G	1067	THR	3.2
1	G	1136	CYS	3.2
1	H	1230	ASN	3.2
1	H	1069	ILE	3.2
1	I	1252	LEU	3.1
1	G	1140	LEU	3.1
1	I	1018	GLY	3.1
1	I	1144	ALA	3.1
1	G	1019	ALA	3.1
1	G	1005	ASP	3.1
1	H	1036	ALA	3.1
1	I	1073	SER	3.1
1	G	1041	PRO	3.0

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Mol	Chain	Res	Type	RSRZ
1	I	1247	GLU	3.0
1	C	1202	LEU	3.0
1	G	1063	ILE	3.0
1	C	1003	LYS	3.0
1	H	1055	ALA	3.0
1	G	1215	MET	3.0
1	G	1015	ASP	3.0
1	I	1012	THR	3.0
1	H	1035	ALA	3.0
1	I	1091	ARG	3.0
1	I	1246	VAL	2.9
1	G	1091	ARG	2.9
1	E	1230	ASN	2.9
1	I	1230	ASN	2.9
1	G	1038	MET	2.9
1	A	1004	SER	2.9
1	G	1211	LEU	2.9
1	G	1241	ALA	2.8
1	G	1221	VAL	2.8
1	I	1250	ARG	2.8
1	G	1229	PRO	2.8
1	H	1042	VAL	2.7
1	G	1154	GLY	2.7
1	I	1052	SER	2.7
1	I	1090	LEU	2.7
1	G	1226	GLN	2.7
1	G	1227	GLU	2.7
1	G	1023	ILE	2.7
1	G	1022	ALA	2.7
1	G	1248	ALA	2.7
1	H	1251	ARG	2.7
1	I	1202	LEU	2.7
1	I	1059	GLY	2.6
1	I	1148	GLY	2.6
1	G	1098	ILE	2.6
1	H	1148	GLY	2.6
1	I	1013	LYS	2.6
1	H	1039	ASP	2.6
1	G	1216	VAL	2.6
1	H	1172	TYR	2.6
1	I	1054	ARG	2.6
1	G	1016	LEU	2.6

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Mol	Chain	Res	Type	RSRZ
1	I	1040	LYS	2.5
1	I	1067	THR	2.5
1	I	1041	PRO	2.5
1	G	1134	PHE	2.5
1	I	1005	ASP	2.5
1	G	1144	ALA	2.5
1	I	1042	VAL	2.5
1	I	1102	ILE	2.5
1	G	1069	ILE	2.5
1	G	1217	ALA	2.4
1	I	1056	GLU	2.4
1	I	1047	HIS	2.4
1	I	1251	ARG	2.4
1	H	1248	ALA	2.4
1	I	1243	LYS	2.4
1	G	1011	LEU	2.4
1	D	1091	ARG	2.4
1	G	1059	GLY	2.4
1	G	1108	LEU	2.4
1	G	1224	THR	2.4
1	I	1068	GLY	2.4
1	G	1093	GLY	2.4
1	H	1243	LYS	2.4
1	G	1033	LYS	2.4
1	D	1024	VAL	2.4
1	I	1022	ALA	2.4
1	I	1004	SER	2.4
1	H	1070	GLY	2.4
1	H	1074	THR	2.4
1	G	1214	GLY	2.4
1	I	1037	LEU	2.3
1	H	1073	SER	2.3
1	I	1074	THR	2.3
1	I	1188	GLN	2.3
1	C	1216	VAL	2.3
1	G	1132	ALA	2.3
1	G	1102	ILE	2.3
1	D	1239	SER	2.3
1	I	1216	VAL	2.3
1	I	1051	THR	2.3
1	H	1033	LYS	2.3
1	G	1040	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	C	1092	ILE	2.3
1	G	1004	SER	2.3
1	C	1090	LEU	2.3
1	G	1084	LEU	2.3
1	I	1198	GLU	2.3
1	G	1240	HIS	2.3
1	A	1069	ILE	2.3
1	G	1086	ILE	2.3
1	I	1240	HIS	2.2
1	I	1185	GLU	2.2
1	E	1104	VAL	2.2
1	D	1250	ARG	2.2
1	D	1092	ILE	2.2
1	H	1032	GLU	2.2
1	I	1011	LEU	2.2
1	I	1032	GLU	2.2
1	G	1071	GLY	2.2
1	G	1242	VAL	2.2
1	H	1072	PRO	2.2
1	G	1042	VAL	2.2
1	G	1050	PHE	2.2
1	A	1093	GLY	2.2
1	H	1199	SER	2.2
1	H	1034	ILE	2.1
1	I	1069	ILE	2.1
1	G	1065	CYS	2.1
1	F	1145	LYS	2.1
1	D	1225	GLN	2.1
1	G	1047	HIS	2.1
1	I	1015	ASP	2.1
1	H	1239	SER	2.1
1	H	1058	ASP	2.1
1	H	1106	ASP	2.1
1	I	1101	HIS	2.1
1	F	1239	SER	2.1
1	I	1033	LYS	2.1
1	B	1230	ASN	2.1
1	I	1034	ILE	2.1
1	G	1090	LEU	2.1
1	G	1096	GLY	2.1
1	I	1077	ALA	2.1
1	H	1068	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
1	G	1243	LYS	2.1
1	H	1076	ILE	2.1
1	H	1240	HIS	2.1
1	G	1068	GLY	2.1
1	I	1229	PRO	2.0
1	H	1047	HIS	2.0
1	A	1225	GLN	2.0
1	G	1064	VAL	2.0
1	D	1004	SER	2.0
1	B	1004	SER	2.0
1	I	1226	GLN	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
4	K	D	1302	1/1	0.01	0.49	104,104,104,104	0
3	GOL	F	1302	6/6	0.75	0.48	61,65,66,66	0
3	GOL	C	1303	6/6	0.77	0.31	66,70,70,71	0
3	GOL	A	1302	6/6	0.77	0.30	66,68,68,69	0
4	K	A	1303	1/1	0.78	0.16	61,61,61,61	0
4	K	E	1303	1/1	0.81	0.14	50,50,50,50	0
2	URF	H	1301	9/9	0.83	0.18	71,72,73,73	0
5	EDO	C	1302	4/4	0.88	0.27	43,43,45,48	0
3	GOL	B	1302	6/6	0.89	0.26	55,56,58,58	0
3	GOL	E	1302	6/6	0.90	0.24	60,63,64,64	0
2	URF	G	1301	9/9	0.90	0.18	72,73,73,73	0
2	URF	D	1301	9/9	0.91	0.12	32,33,35,38	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	URF	A	1301	9/9	0.92	0.13	38,40,42,43	0
2	URF	B	1301	9/9	0.93	0.13	30,31,36,37	0
2	URF	C	1301	9/9	0.93	0.14	33,37,39,41	0
2	URF	F	1301	9/9	0.94	0.14	43,44,46,47	0
2	URF	E	1301	9/9	0.96	0.12	25,26,31,32	0

6.5 Other polymers [i](#)

There are no such residues in this entry.