Full wwPDB EM Validation Report ⓘ

Nov 16, 2026 – 10:36 AM EST

PDB ID	:	9Z4K / pdb_00009z4k
EMDB ID	:	EMD-73806
Title	:	80S ribosome bound to SW394672 inhibitor
Authors	:	Cruz, V.E.; Morgenstern, C.C.; Ready, J.M.; Erzberger, J.P.
Deposited on	:	2025-11-10
Resolution	:	2.20 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp
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:

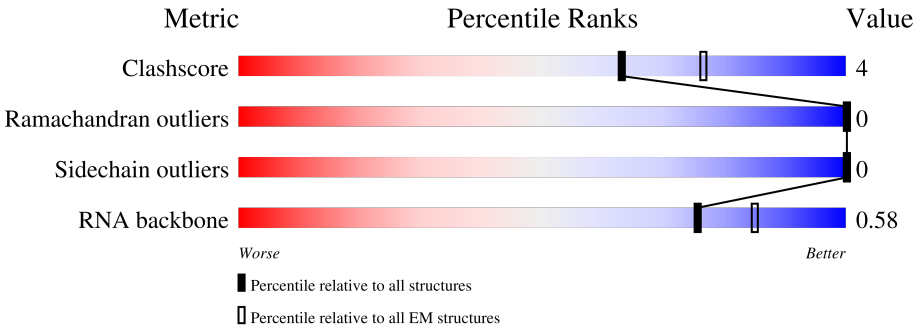
EMDB validation analysis	:	0.0.1.dev133
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.2
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

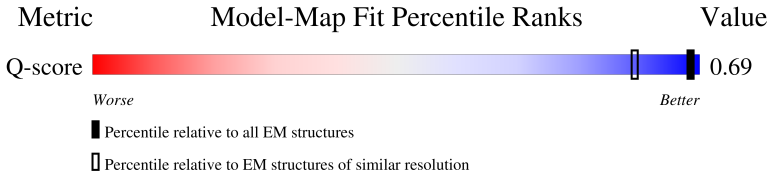
1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 2.20 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)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	3184 (1.71 - 2.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	S1	264	7% 76% 8% 16%
2	S2	1141	8% 66% 30% .
3	SA	295	8% 63% 11% 25%

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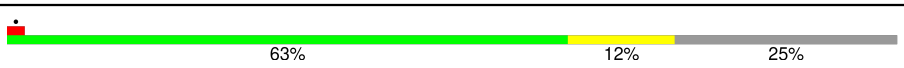
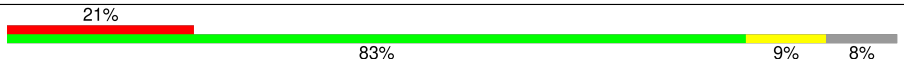
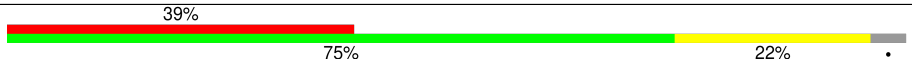
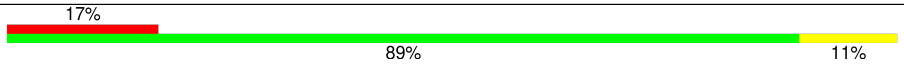
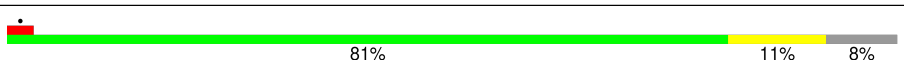
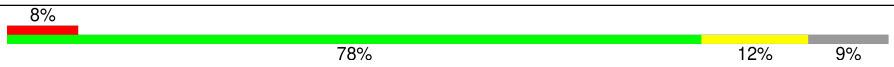
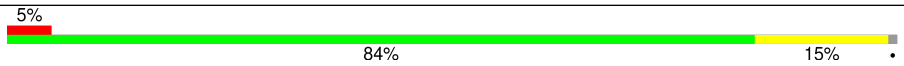
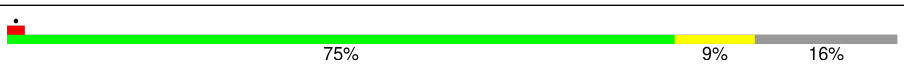
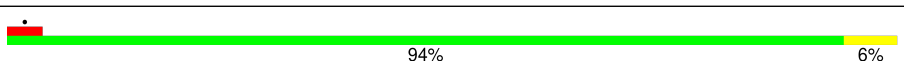
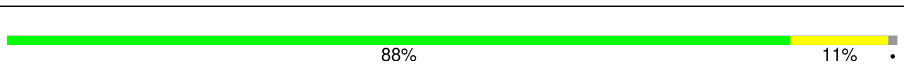
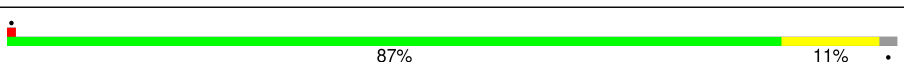
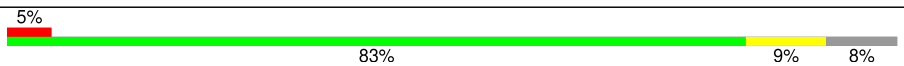
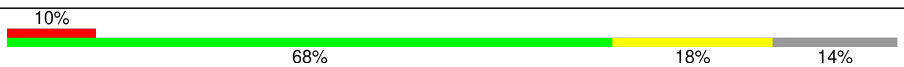
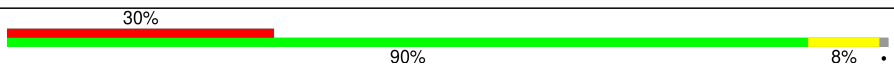
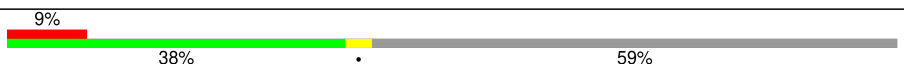
Mol	Chain	Length	Quality of chain
4	SC	293	
5	SE	263	
6	SG	249	
7	SH	194	
8	SI	208	
9	SJ	194	
10	SL	158	
11	SN	151	
12	SO	151	
13	SV	83	
14	SW	130	
15	SX	143	
16	SY	132	
17	Sa	115	
18	Sb	84	
19	Se	133	
20	So	25	

2 Entry composition (i)

There are 25 unique types of molecules in this entry. The entry contains 48554 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Small ribosomal subunit protein eS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	S1	221	Total	C	N	O	S	0	0
			1790	1135	323	318	14		

- Molecule 2 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	S2	1141	Total	C	N	O	P	0	0
			24425	10927	4416	7942	1140		

- Molecule 3 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	SA	220	Total	C	N	O	S	0	0
			1731	1099	303	321	8		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SA	1	ACE	-	acetylation	UNP P08865

- Molecule 4 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	SC	219	Total	C	N	O	S	0	0
			1700	1100	292	298	10		

- Molecule 5 is a protein called Small ribosomal subunit protein eS4, X isoform.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	SE	262	Total	C	N	O	S	0	0
			2075	1324	386	357	8		

- Molecule 6 is a protein called Small ribosomal subunit protein eS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	SG	229	Total	C	N	O	S	0	0
			1853	1158	369	319	7		

- Molecule 7 is a protein called Small ribosomal subunit protein eS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	SH	187	Total	C	N	O	S	0	0
			1509	963	277	268	1		

- Molecule 8 is a protein called Small ribosomal subunit protein eS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	SI	207	Total	C	N	O	S	0	0
			1695	1064	334	292	5		

- Molecule 9 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	SJ	179	Total	C	N	O	S	0	0
			1495	953	299	241	2		

- Molecule 10 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	SL	143	Total	C	N	O	S	0	0
			1180	754	223	197	6		

- Molecule 11 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	SN	150	Total	C	N	O	S	0	0
			1207	773	229	204	1		

- Molecule 12 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	SO	127	Total	C	N	O	S	0	0
			956	585	189	176	6		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
SO	138	IAS	ASP	conflict	UNP P62263

- Molecule 13 is a protein called Small ribosomal subunit protein eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	SV	83	Total	C	N	O	S	0	0
			636	393	117	121	5		

- Molecule 14 is a protein called Small ribosomal subunit protein uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	SW	129	Total	C	N	O	S	0	0
			1033	659	193	175	6		

- Molecule 15 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	SX	140	Total	C	N	O	S	0	0
			1088	687	215	183	3		

- Molecule 16 is a protein called Isoform 3 of Small ribosomal subunit protein eS24.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	SY	122	Total	C	N	O	S	0	0
			1002	635	196	166	5		

- Molecule 17 is a protein called Small ribosomal subunit protein eS26.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Sa	99	Total	C	N	O	S	0	0
			792	492	165	130	5		

- Molecule 18 is a protein called Small ribosomal subunit protein eS27.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	Sb	83	Total	C	N	O	S	0	0
			650	408	121	114	7		

- Molecule 19 is a protein called FAU ubiquitin-like and ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	Se	55	Total	C	N	O	S	0	0
			437	271	95	70	1		

- Molecule 20 is a protein called Small ribosomal subunit protein eS32.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	So	25	Total	C	N	O	S	0	0
			239	145	64	27	3		

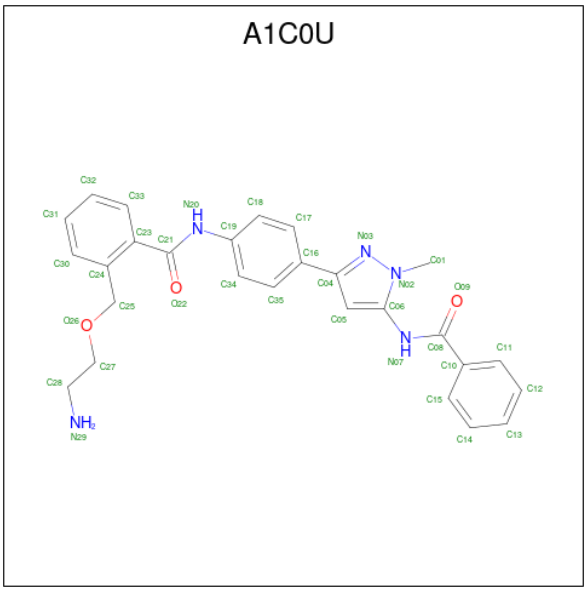
- Molecule 21 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
21	S2	23	Total	K	0
			23	23	
21	SO	1	Total	K	0
			1	1	

- Molecule 22 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
22	S2	45	Total	Mg	0
			45	45	
22	SC	1	Total	Mg	0
			1	1	
22	SG	2	Total	Mg	0
			2	2	
22	SO	1	Total	Mg	0
			1	1	
22	Sa	1	Total	Mg	0
			1	1	

- Molecule 23 is 2-[(2-aminoethoxy)methyl]-N-[4-(5-benzamido-1-methyl-1H-pyrazol-3-yl)phenyl]benzamide (CCD ID: A1C0U) (formula: $C_{27}H_{27}N_5O_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
23	SX	1	Total C N O 35 27 5 3	0

- Molecule 24 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
24	Sa	1	Total Zn 1 1	0
24	Sb	1	Total Zn 1 1	0

- Molecule 25 is water.

Mol	Chain	Residues	Atoms	AltConf
25	S1	9	Total O 9 9	0
25	S2	754	Total O 754 754	0
25	SA	4	Total O 4 4	0
25	SC	9	Total O 9 9	0
25	SE	17	Total O 17 17	0
25	SG	7	Total O 7 7	0

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Mol	Chain	Residues	Atoms	AltConf
25	SH	3	Total O 3 3	0
25	SI	14	Total O 14 14	0
25	SJ	12	Total O 12 12	0
25	SL	21	Total O 21 21	0
25	SN	19	Total O 19 19	0
25	SO	12	Total O 12 12	0
25	SV	4	Total O 4 4	0
25	SW	15	Total O 15 15	0
25	SX	29	Total O 29 29	0
25	SY	3	Total O 3 3	0
25	Sa	10	Total O 10 10	0
25	Sb	4	Total O 4 4	0
25	Se	1	Total O 1 1	0
25	So	3	Total O 3 3	0

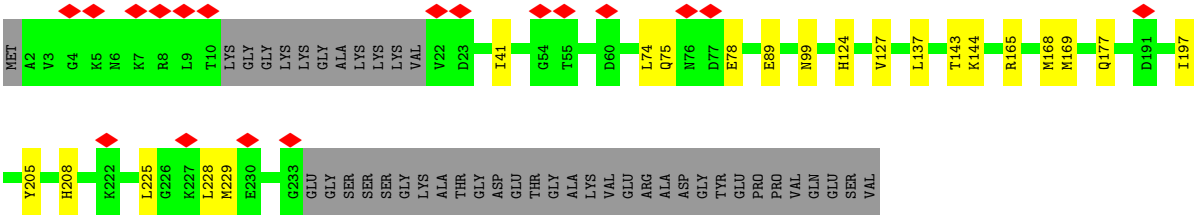
3 Residue-property plots (i)

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 atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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: Small ribosomal subunit protein eS1

Chain S1:

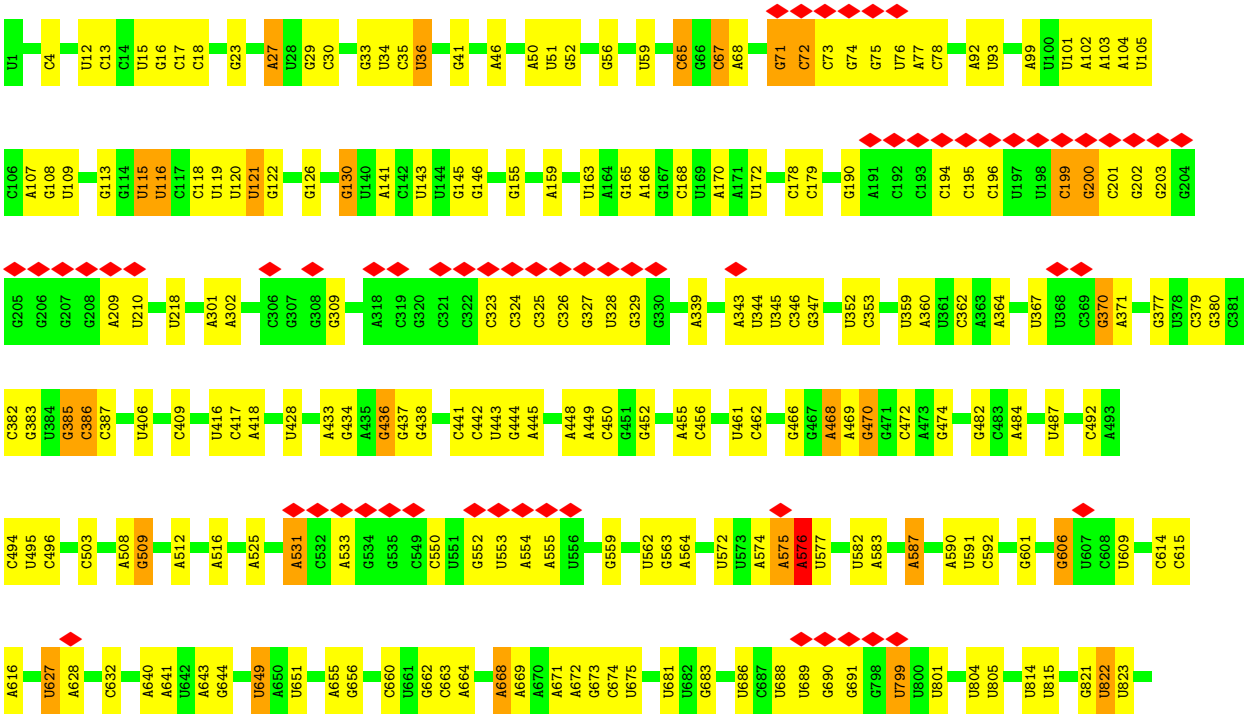


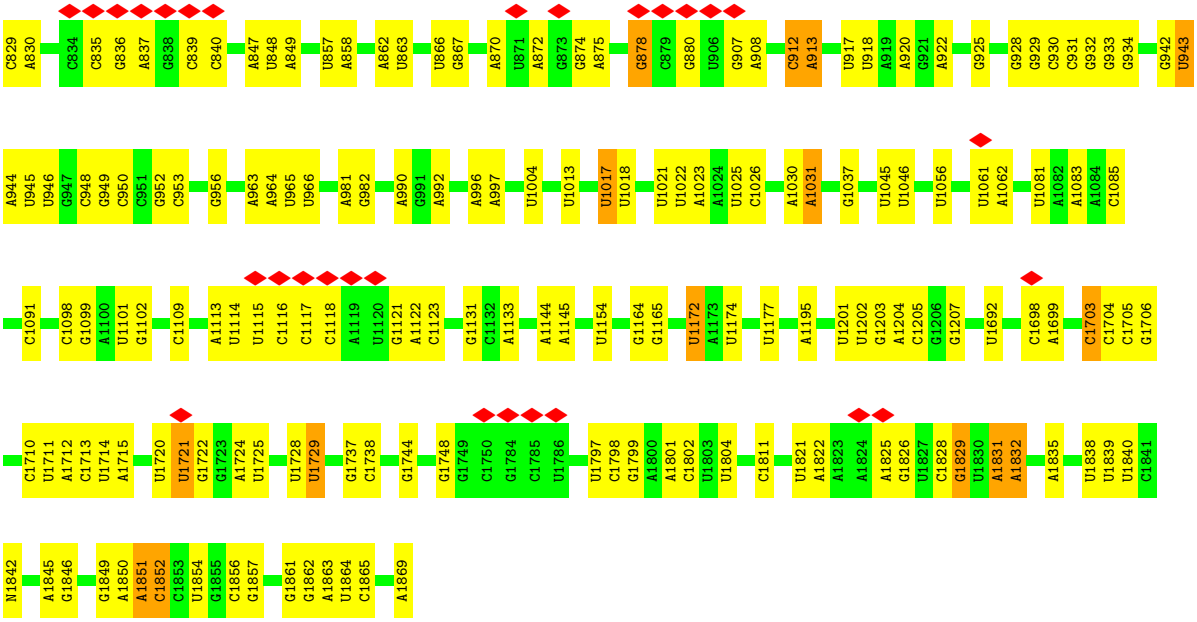


- Molecule 2: 18S rRNA

Chain S2:



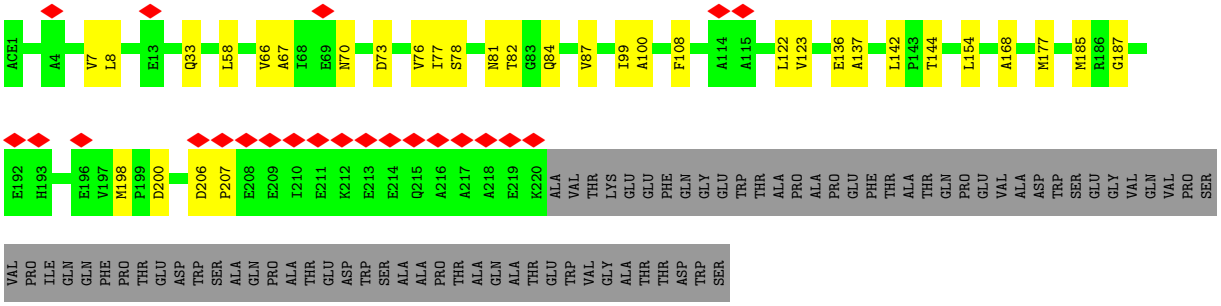




• Molecule 3: Small ribosomal subunit protein uS2

Chain SA:





• Molecule 4: Small ribosomal subunit protein uS5

Chain SC:

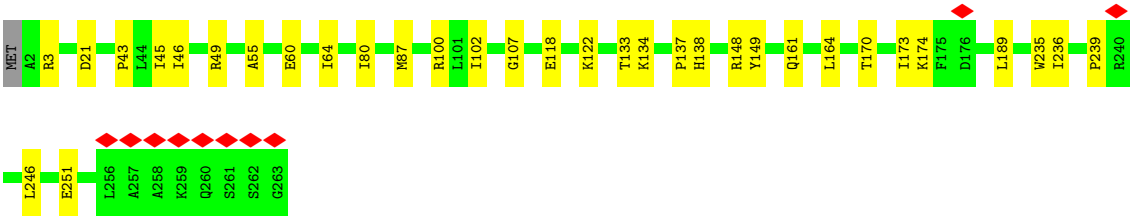




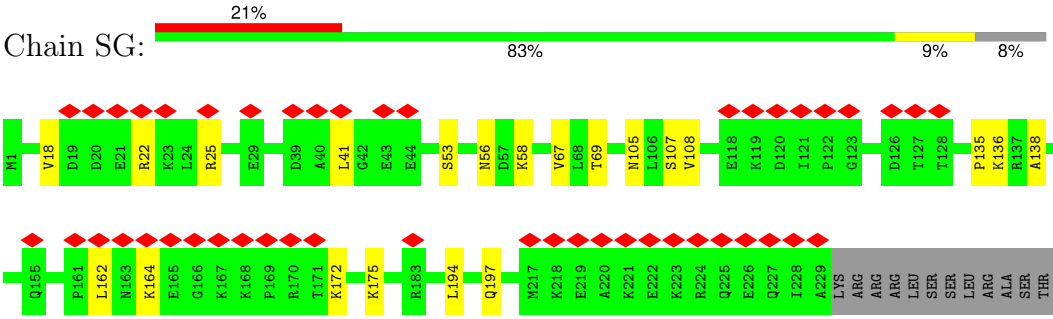
• Molecule 5: Small ribosomal subunit protein eS4, X isoform

Chain SE:

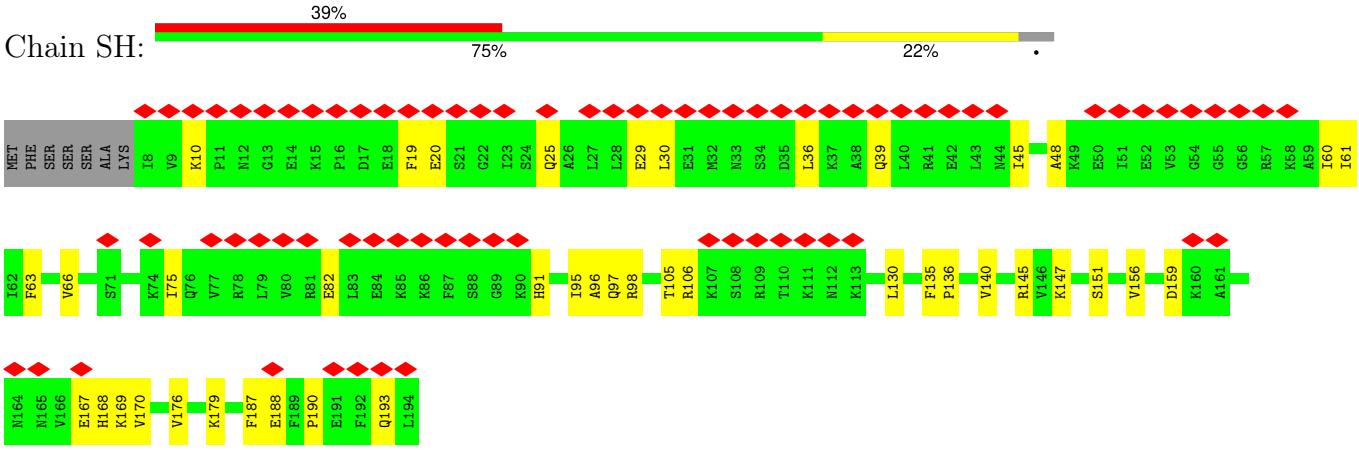




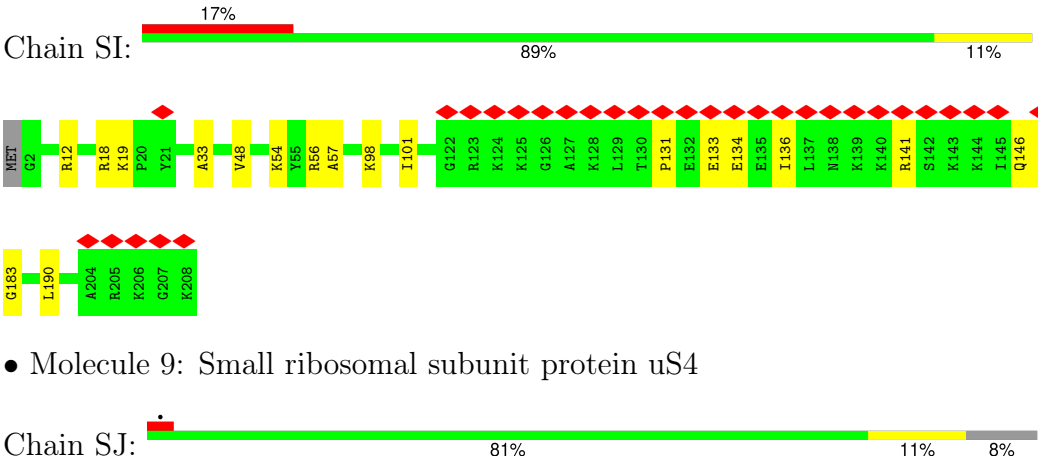
• Molecule 6: Small ribosomal subunit protein eS6



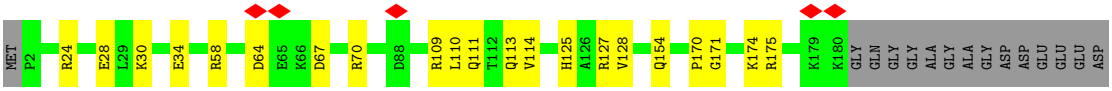
• Molecule 7: Small ribosomal subunit protein eS7



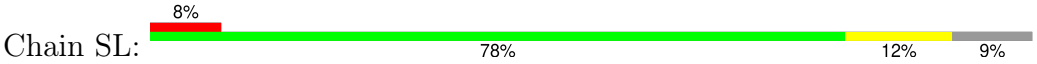
• Molecule 8: Small ribosomal subunit protein eS8

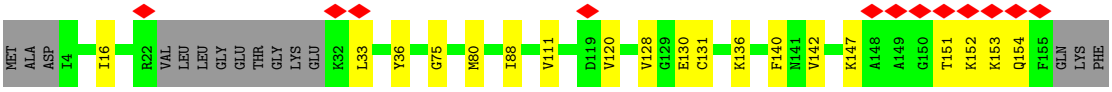


• Molecule 9: Small ribosomal subunit protein uS4

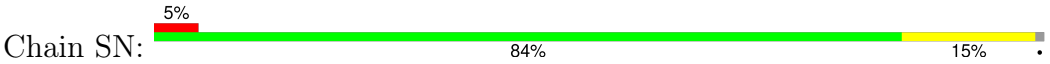


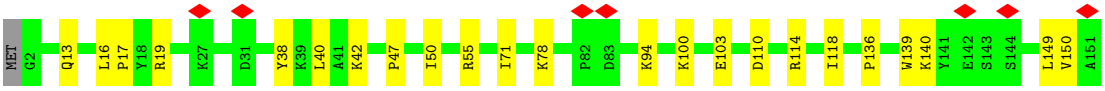
• Molecule 10: Small ribosomal subunit protein uS17



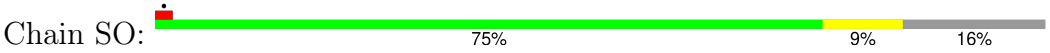


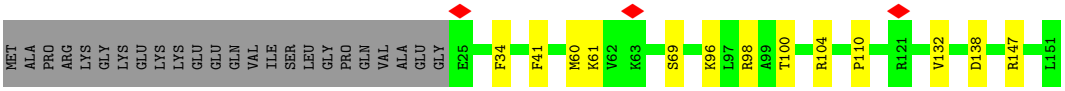
• Molecule 11: Small ribosomal subunit protein uS15





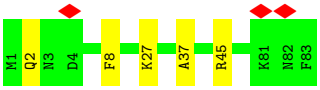
• Molecule 12: Small ribosomal subunit protein uS11



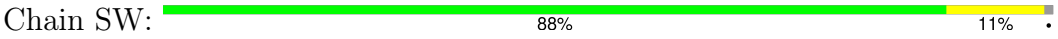


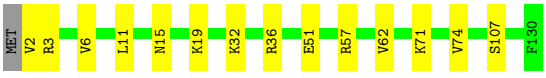
• Molecule 13: Small ribosomal subunit protein eS21



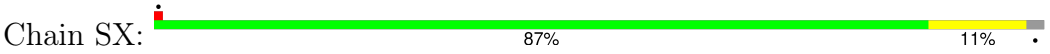


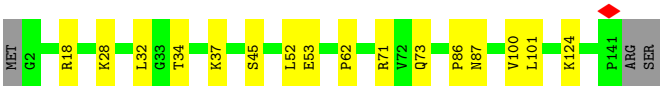
• Molecule 14: Small ribosomal subunit protein uS8





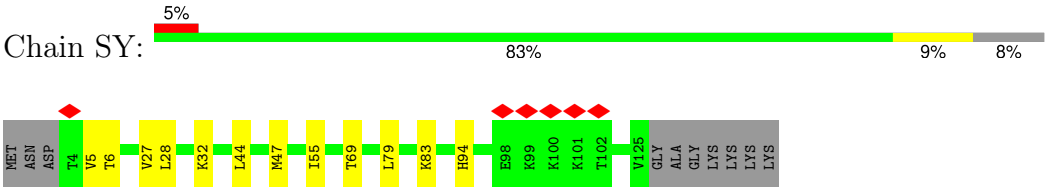
• Molecule 15: Small ribosomal subunit protein uS12





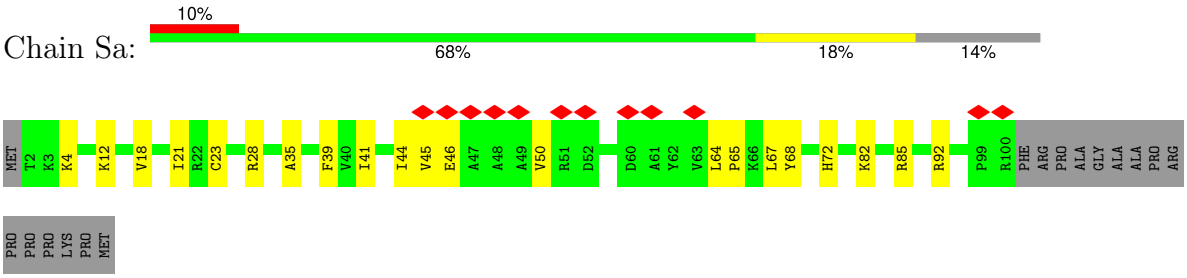
• Molecule 16: Isoform 3 of Small ribosomal subunit protein eS24

Chain SY:



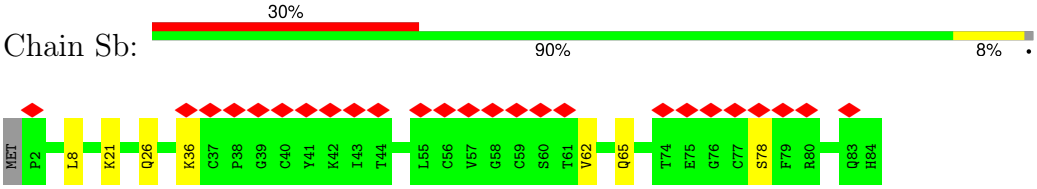
• Molecule 17: Small ribosomal subunit protein eS26

Chain Sa:



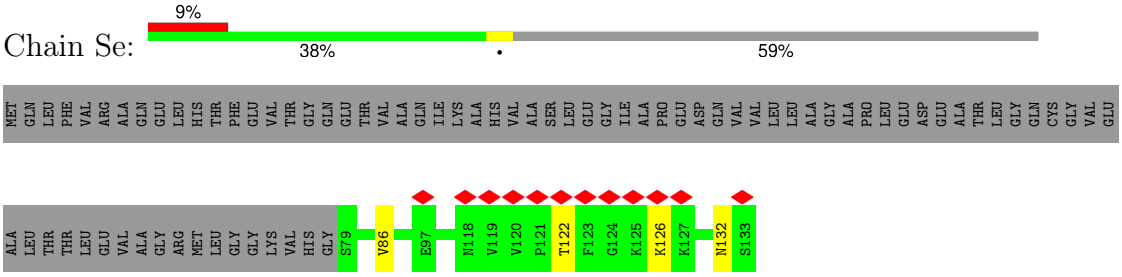
• Molecule 18: Small ribosomal subunit protein eS27

Chain Sb:



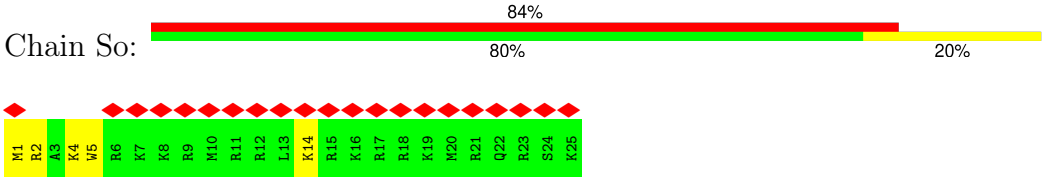
• Molecule 19: FAU ubiquitin-like and ribosomal protein S30

Chain Se:



• Molecule 20: Small ribosomal subunit protein eS32

Chain So:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	785588	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	20.3	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1900	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.195	Depositor
Minimum map value	-0.091	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	396.0, 396.0, 396.0	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.825, 0.825, 0.825	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: A2M, MA6, PSU, HY3, K, IAS, MG, ACE, OMG, OMC, ZN, A1C0U, 4AC, OMU, 6MZ

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	S1	0.13	0/1816	0.36	0/2427
2	S2	0.33	4/25785 (0.0%)	0.73	1/40188 (0.0%)
3	SA	0.17	0/1766	0.39	0/2399
4	SC	0.15	0/1737	0.40	0/2347
5	SE	0.15	0/2117	0.43	0/2849
6	SG	0.14	0/1876	0.40	0/2499
7	SH	0.16	0/1532	0.42	0/2053
8	SI	0.16	0/1724	0.43	0/2298
9	SJ	0.15	0/1520	0.41	0/2030
10	SL	0.14	0/1201	0.37	0/1604
11	SN	0.15	0/1231	0.37	0/1656
12	SO	0.15	0/959	0.40	0/1284
13	SV	0.13	0/643	0.38	0/860
14	SW	0.15	0/1050	0.41	0/1406
15	SX	0.18	0/1096	0.44	0/1461
16	SY	0.14	0/1019	0.39	0/1354
17	Sa	0.16	0/805	0.40	0/1079
18	Sb	0.15	0/664	0.41	0/891
19	Se	0.10	0/442	0.31	0/582
20	So	0.12	0/240	0.25	0/305
All	All	0.26	4/49223 (0.0%)	0.61	1/71572 (0.0%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	S2	576	A2M	O3'-P	5.32	1.61	1.56
2	S2	484	A2M	O3'-P	5.12	1.61	1.56
2	S2	468	A2M	O3'-P	5.07	1.61	1.56
2	S2	1804	OMU	O3'-P	5.01	1.61	1.56

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	S2	1123	C	O5'-C5'-C4'	5.15	113.52	109.40

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	S1	1790	0	1873	14	0
2	S2	24425	0	12370	158	0
3	SA	1731	0	1734	20	0
4	SC	1700	0	1784	20	0
5	SE	2075	0	2177	20	0
6	SG	1853	0	2005	17	0
7	SH	1509	0	1604	31	0
8	SI	1695	0	1785	13	0
9	SJ	1495	0	1615	14	0
10	SL	1180	0	1253	12	0
11	SN	1207	0	1293	15	0
12	SO	956	0	981	7	0
13	SV	636	0	637	4	0
14	SW	1033	0	1080	11	0
15	SX	1088	0	1149	9	0
16	SY	1002	0	1075	6	0
17	Sa	792	0	841	12	0
18	Sb	650	0	668	7	0
19	Se	437	0	484	4	0
20	So	239	0	289	6	0
21	S2	23	0	0	0	0
21	SO	1	0	0	0	0
22	S2	45	0	0	0	0
22	SC	1	0	0	0	0
22	SG	2	0	0	0	0
22	SO	1	0	0	0	0
22	Sa	1	0	0	0	0
23	SX	35	0	0	0	0
24	Sa	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
24	Sb	1	0	0	0	0
25	S1	9	0	0	0	0
25	S2	754	0	0	1	0
25	SA	4	0	0	1	0
25	SC	9	0	0	0	0
25	SE	17	0	0	0	0
25	SG	7	0	0	0	0
25	SH	3	0	0	0	0
25	SI	14	0	0	0	0
25	SJ	12	0	0	0	0
25	SL	21	0	0	0	0
25	SN	19	0	0	0	0
25	SO	12	0	0	0	0
25	SV	4	0	0	0	0
25	SW	15	0	0	0	0
25	SX	29	0	0	0	0
25	SY	3	0	0	0	0
25	Sa	10	0	0	0	0
25	Sb	4	0	0	0	0
25	Se	1	0	0	0	0
25	So	3	0	0	0	0
All	All	48554	0	36697	357	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 4.

All (357) 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)
2:S2:531:A:N6	2:S2:552:G:H1	1.53	1.06
2:S2:343:A:H1'	2:S2:344:U:H5	1.48	0.79
9:SJ:170:PRO:HB3	9:SJ:174:LYS:HD2	1.65	0.79
2:S2:531:A:H61	2:S2:552:G:H1	0.85	0.79
2:S2:928:G:H1	2:S2:1013:U:H3	1.33	0.76
2:S2:925:G:H1	2:S2:1017:U:H3	1.37	0.71
4:SC:121:ARG:HH12	4:SC:123:ARG:HD3	1.56	0.69
17:Sa:44:ILE:HD12	17:Sa:65:PRO:HG2	1.73	0.69
3:SA:137:ALA:HB1	3:SA:142:LEU:HB3	1.76	0.69
9:SJ:111:GLN:NE2	9:SJ:127:ARG:HD3	2.08	0.68
2:S2:1703:OMC:HM22	2:S2:1704:C:H5'	1.76	0.67
5:SE:87:MET:HE1	5:SE:236:ILE:HD13	1.76	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:S2:981:A:H2'	2:S2:982:G:C8	2.29	0.67
2:S2:377:G:H5'	8:SI:98:LYS:HB3	1.74	0.67
7:SH:39:GLN:NE2	7:SH:75:ILE:HG21	2.09	0.67
3:SA:108:PHE:HB2	3:SA:136:GLU:HG2	1.77	0.66
7:SH:105:THR:HG22	7:SH:106:ARG:H	1.62	0.64
2:S2:107:A:H2'	2:S2:108:G:C8	2.33	0.64
1:S1:75:GLN:HG3	1:S1:78:GLU:HG3	1.80	0.63
11:SN:16:LEU:HD12	11:SN:17:PRO:HD2	1.80	0.63
7:SH:10:LYS:HZ3	7:SH:20:GLU:HB3	1.63	0.63
7:SH:170:VAL:HG13	7:SH:187:PHE:HB2	1.82	0.62
9:SJ:30:LYS:O	9:SJ:34:GLU:HG2	1.99	0.62
9:SJ:67:ASP:HB3	9:SJ:70:ARG:HB3	1.80	0.62
11:SN:149:LEU:HD12	11:SN:150:VAL:HG13	1.82	0.61
2:S2:640:A:H2'	2:S2:641:A:C8	2.35	0.61
2:S2:1831:A:H2'	2:S2:1832:6MZ:H8	1.83	0.61
15:SX:28:LYS:HE2	15:SX:32:LEU:HD11	1.83	0.61
2:S2:67:C:C5	6:SG:164:LYS:HB2	2.36	0.61
2:S2:587:A:H5'	2:S2:592:C:H41	1.65	0.61
2:S2:1706:G:H5'	20:So:1:MET:HB2	1.81	0.61
3:SA:58:LEU:HD21	3:SA:177:MET:HB3	1.83	0.61
2:S2:1091:C:HO2'	14:SW:2:VAL:N	1.99	0.61
2:S2:1203:G:H2'	2:S2:1204:A:C8	2.34	0.60
9:SJ:24:ARG:O	9:SJ:28:GLU:HG3	2.00	0.60
2:S2:101:U:H5"	8:SI:19:LYS:HE3	1.83	0.60
2:S2:455:A:H2'	2:S2:456:C:C6	2.37	0.60
5:SE:102:ILE:HD11	5:SE:239:PRO:HD3	1.83	0.60
2:S2:575:A:C5	2:S2:576:A2M:H1'	2.36	0.60
2:S2:359:U:OP2	15:SX:18:ARG:HD3	2.02	0.60
7:SH:10:LYS:NZ	7:SH:20:GLU:HB3	2.17	0.59
2:S2:1712:A:H2'	2:S2:1713:C:C6	2.38	0.59
2:S2:120:U:H2'	2:S2:121:OMU:H6	1.85	0.59
3:SA:81:ASN:HA	3:SA:84:GLN:HG3	1.86	0.58
7:SH:167:GLU:HG2	7:SH:168:HIS:N	2.19	0.58
18:Sb:21:LYS:HD3	18:Sb:26:GLN:OE1	2.04	0.58
12:SO:34:PHE:HB3	12:SO:41:PHE:HB2	1.86	0.58
1:S1:143:THR:HB	1:S1:205:TYR:CE2	2.39	0.57
2:S2:12:U:H2'	2:S2:13:C:C6	2.39	0.57
2:S2:115:U:H2'	2:S2:116:OMU:C6	2.33	0.57
2:S2:194:C:H2'	2:S2:195:C:C6	2.40	0.57
17:Sa:45:VAL:HB	17:Sa:64:LEU:HD13	1.86	0.57
7:SH:36:LEU:HD22	7:SH:39:GLN:HE21	1.70	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:SH:36:LEU:HD22	7:SH:39:GLN:NE2	2.20	0.57
4:SC:125:LYS:HG2	4:SC:143:CYS:HB2	1.86	0.56
2:S2:1710:OMC:HM22	2:S2:1711:U:H5'	1.86	0.56
2:S2:379:C:H5'	8:SI:33:ALA:HA	1.87	0.56
2:S2:996:A:H2'	2:S2:997:A:C8	2.40	0.56
2:S2:942:G:H2'	2:S2:943:U:C6	2.40	0.56
2:S2:102:A:H4'	2:S2:104:A:C8	2.40	0.56
16:SY:79:LEU:HG	16:SY:83:LYS:HE3	1.88	0.56
17:Sa:21:ILE:HD12	17:Sa:72:HIS:HB3	1.88	0.56
2:S2:118:C:H1'	2:S2:445:A:C5	2.41	0.56
2:S2:436:OMG:HM22	2:S2:437:G:H5'	1.88	0.56
6:SG:67:VAL:HG12	6:SG:69:THR:HG22	1.87	0.56
2:S2:582:U:H2'	2:S2:583:A:H8	1.69	0.56
7:SH:25:GLN:HE21	7:SH:29:GLU:HG3	1.70	0.56
9:SJ:113:GLN:NE2	9:SJ:154:GLN:HE22	2.03	0.55
2:S2:928:G:H2'	2:S2:929:G:C8	2.41	0.55
14:SW:57:ARG:CZ	18:Sb:26:GLN:HE21	2.20	0.55
5:SE:122:LYS:HD2	5:SE:164:LEU:HD21	1.89	0.55
2:S2:29:G:H2'	2:S2:30:C:C6	2.41	0.55
8:SI:57:ALA:HB2	8:SI:183:GLY:HA2	1.88	0.55
2:S2:656:G:H5'	2:S2:662:G:N2	2.22	0.55
2:S2:367:U:H4'	2:S2:371:A:C8	2.41	0.55
11:SN:94:LYS:HG2	11:SN:118:ILE:HD13	1.89	0.55
15:SX:101:LEU:HB3	15:SX:124:LYS:HB2	1.89	0.55
2:S2:170:A:H4'	6:SG:136:LYS:HD3	1.88	0.55
4:SC:105:GLU:HG2	4:SC:216:MET:HE1	1.87	0.54
12:SO:98:ARG:HB3	12:SO:132:VAL:HG23	1.88	0.54
20:So:2:ARG:HB3	20:So:5:TRP:CD1	2.43	0.54
11:SN:100:LYS:O	11:SN:103:GLU:HG2	2.08	0.54
7:SH:145:ARG:HE	14:SW:51:GLU:HB2	1.72	0.54
11:SN:13:GLN:HG3	18:Sb:21:LYS:HE3	1.90	0.54
7:SH:30:LEU:HD21	7:SH:82:GLU:HB3	1.90	0.54
2:S2:1113:A:H2'	2:S2:1114:U:C6	2.43	0.54
3:SA:77:ILE:HG13	3:SA:99:ILE:HB	1.90	0.54
3:SA:122:LEU:HD23	3:SA:144:THR:HG22	1.90	0.54
2:S2:145:G:H2'	2:S2:146:G:C8	2.44	0.53
3:SA:70:ASN:HB3	3:SA:73:ASP:OD1	2.08	0.53
5:SE:45:ILE:HD12	5:SE:80:ILE:HD12	1.90	0.53
5:SE:173:ILE:HD11	5:SE:235:TRP:CD2	2.44	0.53
9:SJ:109:ARG:HH21	9:SJ:111:GLN:NE2	2.07	0.53
2:S2:190:G:H1'	2:S2:209:A:H61	1.74	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:S2:1845:A:H2'	2:S2:1846:G:C8	2.44	0.53
2:S2:952:G:H2'	2:S2:953:C:C6	2.43	0.53
2:S2:1030:A:H2'	2:S2:1031:A2M:H8	1.90	0.52
1:S1:205:TYR:CD1	2:S2:1122:A:H4'	2.43	0.52
2:S2:343:A:H1'	2:S2:344:U:C5	2.38	0.52
2:S2:17:C:H2'	2:S2:18:C:C6	2.44	0.52
2:S2:1801:A:H2'	2:S2:1802:C:C6	2.44	0.52
2:S2:674:C:H2'	2:S2:675:U:C6	2.45	0.52
2:S2:857:U:H2'	2:S2:858:A:C8	2.43	0.52
2:S2:1101:U:H2'	2:S2:1102:G:C8	2.45	0.52
1:S1:165:ARG:O	1:S1:169:MET:HG3	2.08	0.52
5:SE:138:HIS:CD2	5:SE:148:ARG:HG2	2.44	0.52
2:S2:1714:U:H2'	2:S2:1715:A:C8	2.45	0.52
10:SL:80:MET:HE1	10:SL:120:VAL:HB	1.93	0.51
2:S2:59:U:H5"	2:S2:503:C:N4	2.26	0.51
7:SH:176:VAL:O	7:SH:179:LYS:HB3	2.10	0.51
2:S2:1037:G:H4'	2:S2:1845:A:H4'	1.91	0.51
5:SE:246:LEU:HB2	5:SE:251:GLU:HG3	1.93	0.51
5:SE:107:GLY:HA2	5:SE:189:LEU:HG	1.92	0.51
7:SH:39:GLN:CD	7:SH:75:ILE:HG21	2.36	0.51
2:S2:862:A:C8	14:SW:107:SER:HA	2.46	0.50
2:S2:1201:U:H2'	2:S2:1202:U:C6	2.46	0.50
2:S2:649:PSU:H1'	15:SX:45:SER:HB3	1.93	0.50
5:SE:60:GLU:O	5:SE:64:ILE:HG13	2.11	0.50
7:SH:19:PHE:HZ	7:SH:60:ILE:HD12	1.77	0.50
2:S2:67:C:C5	6:SG:162:LEU:HG	2.46	0.50
2:S2:1797:U:H2'	2:S2:1798:C:C6	2.46	0.50
2:S2:1144:A:H2'	2:S2:1145:A:C8	2.46	0.50
2:S2:495:U:H2'	2:S2:496:C:O4'	2.12	0.50
2:S2:1798:C:H2'	2:S2:1799:G:O4'	2.12	0.50
3:SA:206:ASP:OD1	3:SA:207:PRO:HD2	2.12	0.50
2:S2:562:U:H2'	2:S2:563:G:C8	2.47	0.50
4:SC:191:VAL:HG11	4:SC:236:PHE:HA	1.94	0.49
2:S2:65:C:H4'	6:SG:172:LYS:HE2	1.93	0.49
2:S2:829:C:OP1	5:SE:21:ASP:HB2	2.12	0.49
2:S2:874:G:H2'	2:S2:875:A:H8	1.78	0.49
12:SO:96:LYS:HD3	12:SO:132:VAL:HG11	1.94	0.49
3:SA:198:MET:HG2	3:SA:200:ASP:H	1.77	0.49
2:S2:1712:A:H2'	2:S2:1713:C:H6	1.76	0.49
11:SN:110:ASP:O	11:SN:114:ARG:HG2	2.12	0.49
2:S2:380:G:P	8:SI:56:ARG:HH22	2.36	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:SA:77:ILE:HD13	3:SA:122:LEU:HD11	1.95	0.49
2:S2:178:C:H2'	2:S2:179:C:C6	2.47	0.48
2:S2:202:G:H2'	2:S2:203:G:H8	1.77	0.48
2:S2:1720:U:H5"	2:S2:1721:U:H5"	1.94	0.48
2:S2:4:C:H4'	4:SC:207:ALA:HB2	1.94	0.48
11:SN:38:TYR:CZ	11:SN:78:LYS:HE3	2.49	0.48
15:SX:34:THR:HA	15:SX:37:LYS:HG2	1.95	0.48
2:S2:195:C:H2'	2:S2:196:C:C6	2.49	0.48
2:S2:382:C:H2'	2:S2:383:G:H8	1.79	0.48
1:S1:168:MET:HG2	1:S1:197:ILE:HG21	1.96	0.48
2:S2:804:U:H2'	2:S2:805:U:C6	2.49	0.48
3:SA:33:GLN:HB3	3:SA:154:LEU:HD12	1.96	0.48
7:SH:130:LEU:HD21	7:SH:156:VAL:HG21	1.95	0.48
1:S1:127:VAL:HG23	1:S1:177:GLN:HG3	1.95	0.48
2:S2:1728:U:H2'	2:S2:1729:U:O4'	2.13	0.48
4:SC:187:ARG:HD3	4:SC:192:LEU:HD12	1.96	0.48
6:SG:135:PRO:HG2	6:SG:141:ILE:HG12	1.94	0.48
2:S2:455:A:H2'	2:S2:456:C:H6	1.78	0.48
7:SH:39:GLN:HE22	7:SH:75:ILE:HG21	1.79	0.48
2:S2:1705:C:H2'	2:S2:1706:G:C8	2.48	0.47
4:SC:170:TRP:CE2	4:SC:199:PRO:HG3	2.49	0.47
9:SJ:111:GLN:HE22	9:SJ:127:ARG:NH1	2.11	0.47
10:SL:152:LYS:HG3	10:SL:153:LYS:HG2	1.96	0.47
2:S2:107:A:H2'	2:S2:108:G:H8	1.79	0.47
17:Sa:82:LYS:HD3	17:Sa:85:ARG:HH12	1.79	0.47
7:SH:140:VAL:HG12	11:SN:19:ARG:HH11	1.79	0.47
11:SN:40:LEU:HD12	11:SN:50:ILE:HG23	1.95	0.47
4:SC:183:LYS:HA	4:SC:195:LEU:O	2.15	0.47
7:SH:188:GLU:O	7:SH:190:PRO:HD3	2.14	0.47
2:S2:78:C:H1'	6:SG:175:LYS:HG3	1.96	0.47
2:S2:352:U:H2'	2:S2:353:C:C6	2.48	0.47
2:S2:494:C:N4	2:S2:509:OMG:HN22	2.13	0.47
2:S2:1164:G:O2'	2:S2:1165:G:H5'	2.14	0.47
6:SG:58:LYS:HE3	6:SG:105:ASN:HA	1.97	0.47
7:SH:105:THR:HG22	7:SH:106:ARG:N	2.28	0.47
2:S2:531:A:N6	2:S2:552:G:N1	2.33	0.47
8:SI:133:GLU:O	8:SI:136:ILE:HG22	2.14	0.47
1:S1:41:ILE:HB	1:S1:74:LEU:HA	1.97	0.47
2:S2:1017:U:H5'	11:SN:55:ARG:HD3	1.97	0.47
3:SA:78:SER:HB2	3:SA:87:VAL:HG21	1.96	0.47
4:SC:142:LYS:HG2	4:SC:153:GLY:HA3	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:SN:47:PRO:HA	11:SN:50:ILE:HD12	1.97	0.47
2:S2:533:A:H61	2:S2:550:C:H42	1.62	0.47
2:S2:1203:G:H4'	4:SC:116:THR:HA	1.96	0.46
10:SL:130:GLU:HG2	10:SL:131:CYS:H	1.79	0.46
4:SC:196:ILE:HB	4:SC:223:TYR:HB2	1.96	0.46
16:SY:5:VAL:HG23	16:SY:32:LYS:HE3	1.97	0.46
2:S2:878:G:H22	2:S2:908:A:H2	1.62	0.46
5:SE:133:THR:HG22	5:SE:134:LYS:HG2	1.98	0.46
2:S2:15:U:H2'	2:S2:16:G:O4'	2.16	0.46
2:S2:67:C:C6	6:SG:162:LEU:HG	2.51	0.46
2:S2:912:C:H4'	2:S2:913:A:OP2	2.15	0.46
7:SH:147:LYS:HE3	7:SH:151:SER:HB3	1.96	0.46
8:SI:101:ILE:HD12	8:SI:190:LEU:HD11	1.97	0.46
17:Sa:4:LYS:HE2	17:Sa:92:ARG:CZ	2.46	0.46
8:SI:141:ARG:HD2	8:SI:146:GLN:HE22	1.81	0.46
2:S2:190:G:H8	2:S2:190:G:OP2	1.99	0.46
4:SC:114:LYS:HD3	4:SC:121:ARG:HH21	1.81	0.45
8:SI:131:PRO:O	8:SI:134:GLU:HG2	2.15	0.45
9:SJ:64:ASP:O	9:SJ:67:ASP:HB2	2.15	0.45
2:S2:1845:A:H2'	2:S2:1846:G:H8	1.80	0.45
9:SJ:171:GLY:O	9:SJ:175:ARG:HG3	2.15	0.45
3:SA:76:VAL:HG12	3:SA:123:VAL:HB	1.98	0.45
14:SW:3:ARG:HD3	14:SW:6:VAL:HG12	1.99	0.45
18:Sb:36:LYS:HB2	18:Sb:78:SER:OG	2.16	0.45
2:S2:92:A:H1'	5:SE:3:ARG:HB3	1.98	0.45
2:S2:386:C:H2'	2:S2:387:C:C6	2.51	0.45
2:S2:563:G:O2'	2:S2:564:A:H8	2.00	0.45
2:S2:1025:U:H2'	2:S2:1026:C:O4'	2.17	0.45
4:SC:82:TYR:CE2	4:SC:164:PRO:HD3	2.52	0.45
7:SH:168:HIS:CD2	7:SH:169:LYS:HG3	2.52	0.45
8:SI:149:TYR:O	8:SI:153:LYS:HG3	2.17	0.45
10:SL:147:LYS:HE3	10:SL:147:LYS:HB3	1.81	0.45
14:SW:57:ARG:NE	18:Sb:26:GLN:HE21	2.13	0.45
2:S2:1737:G:H2'	2:S2:1738:C:H6	1.82	0.45
17:Sa:46:GLU:O	17:Sa:50:VAL:HG23	2.16	0.45
2:S2:165:G:H4'	6:SG:53:SER:HB3	1.99	0.45
2:S2:416:U:H2'	2:S2:417:C:O4'	2.17	0.45
2:S2:443:U:H2'	2:S2:444:G:O4'	2.16	0.44
15:SX:53:GLU:HG2	15:SX:71:ARG:HB2	1.99	0.44
10:SL:33:LEU:HD23	10:SL:33:LEU:H	1.82	0.44
12:SO:60:MET:O	12:SO:61:LYS:HD3	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:Sa:23:CYS:HB3	17:Sa:28:ARG:H	1.83	0.44
2:S2:370:G:H1'	25:S2:2098:HOH:O	2.17	0.44
3:SA:66:VAL:HG21	3:SA:185:MET:HB2	2.00	0.44
2:S2:51:U:H2'	2:S2:52:G:C8	2.52	0.44
2:S2:656:G:N2	2:S2:663:C:H5"	2.32	0.44
5:SE:100:ARG:HH21	5:SE:118:GLU:HG2	1.83	0.44
6:SG:56:ASN:HB2	6:SG:108:VAL:HG12	1.98	0.44
2:S2:1021:U:H4'	2:S2:1022:U:O4'	2.18	0.44
3:SA:84:GLN:HB3	3:SA:100:ALA:HB1	1.99	0.44
4:SC:63:VAL:HG23	4:SC:64:THR:HG23	2.00	0.44
5:SE:161:GLN:HG2	5:SE:170:THR:HB	2.00	0.44
9:SJ:113:GLN:HE21	9:SJ:154:GLN:HE22	1.66	0.44
2:S2:441:C:H2'	2:S2:442:C:C6	2.53	0.44
2:S2:574:A:H2'	2:S2:575:A:H5"	2.00	0.44
2:S2:1801:A:H2'	2:S2:1802:C:H6	1.81	0.44
4:SC:60:TRP:O	4:SC:61:MET:HE2	2.17	0.44
10:SL:128:VAL:HG12	10:SL:142:VAL:HA	2.00	0.44
2:S2:71:G:H2'	2:S2:72:C:C6	2.53	0.43
2:S2:1204:A:H2'	2:S2:1205:C:C6	2.53	0.43
5:SE:102:ILE:CD1	5:SE:239:PRO:HD3	2.48	0.43
2:S2:848:U:H2'	2:S2:849:A:H8	1.83	0.43
2:S2:963:A:H2'	2:S2:964:A:C8	2.53	0.43
11:SN:136:PRO:HG2	11:SN:139:TRP:HB2	1.99	0.43
1:S1:89:GLU:OE1	1:S1:228:LEU:HD13	2.19	0.43
1:S1:225:LEU:O	1:S1:229:MET:HG2	2.18	0.43
5:SE:137:PRO:HG2	5:SE:149:TYR:HA	1.99	0.43
10:SL:111:VAL:HG12	10:SL:140:PHE:HB2	2.00	0.43
2:S2:301:A:H2'	2:S2:302:A:O4'	2.18	0.43
2:S2:433:A:H2'	2:S2:434:G:C8	2.54	0.43
2:S2:1098:C:H2'	2:S2:1099:G:C8	2.53	0.43
11:SN:140:LYS:HD3	11:SN:140:LYS:HA	1.89	0.43
16:SY:6:THR:HG22	16:SY:28:LEU:HB2	2.00	0.43
17:Sa:39:PHE:CE2	17:Sa:41:ILE:HD11	2.54	0.43
2:S2:29:G:H2'	2:S2:30:C:H6	1.83	0.43
2:S2:461:U:H2'	2:S2:462:OMC:H6	1.83	0.43
2:S2:945:U:H2'	2:S2:946:U:C6	2.53	0.43
2:S2:949:G:H2'	2:S2:950:C:C6	2.53	0.43
2:S2:1828:C:H2'	2:S2:1829:G:O4'	2.19	0.43
7:SH:19:PHE:CZ	7:SH:60:ILE:HD12	2.53	0.43
7:SH:159:ASP:HA	7:SH:193:GLN:NE2	2.34	0.43
16:SY:44:LEU:HD23	16:SY:47:MET:HE2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:S1:229:MET:HA	1:S1:229:MET:HE3	2.00	0.43
2:S2:1852:C:H5	20:So:5:TRP:CG	2.37	0.43
10:SL:151:THR:HG22	10:SL:154:GLN:HE22	1.83	0.43
1:S1:205:TYR:CE1	2:S2:1122:A:H4'	2.54	0.43
14:SW:62:VAL:HG11	18:Sb:8:LEU:HG	2.01	0.43
17:Sa:21:ILE:HD11	17:Sa:35:ALA:CB	2.49	0.43
9:SJ:110:LEU:O	9:SJ:114:VAL:HG23	2.18	0.43
13:SV:2:GLN:HE21	13:SV:8:PHE:HE1	1.67	0.43
2:S2:606:G:H1'	19:Se:132:ASN:OD1	2.19	0.42
2:S2:913:A:N6	7:SH:98:ARG:HB3	2.34	0.42
4:SC:124:PHE:O	4:SC:143:CYS:HA	2.19	0.42
5:SE:43:PRO:HG2	5:SE:46:ILE:HG12	2.00	0.42
2:S2:469:A:H2'	2:S2:470:G:H5'	2.00	0.42
2:S2:964:A:H2'	2:S2:965:U:C6	2.55	0.42
2:S2:1714:U:H2'	2:S2:1715:A:H8	1.83	0.42
2:S2:1724:A:H2'	2:S2:1725:U:C6	2.54	0.42
2:S2:1821:U:H2'	2:S2:1822:A:H8	1.84	0.42
14:SW:15:ASN:O	14:SW:19:LYS:HG3	2.19	0.42
2:S2:1713:C:H2'	2:S2:1714:U:C6	2.54	0.42
3:SA:7:VAL:HG13	3:SA:8:LEU:HG	2.01	0.42
7:SH:63:PHE:HA	7:SH:95:ILE:O	2.19	0.42
7:SH:91:HIS:CE1	7:SH:169:LYS:HG2	2.55	0.42
5:SE:49:ARG:HG3	5:SE:55:ALA:O	2.18	0.42
7:SH:63:PHE:HB3	7:SH:97:GLN:HG3	2.01	0.42
11:SN:38:TYR:O	11:SN:42:LYS:HG2	2.19	0.42
18:Sb:62:VAL:HG11	18:Sb:65:GLN:OE1	2.20	0.42
19:Se:122:THR:HG21	19:Se:126:LYS:HA	2.02	0.42
2:S2:121:OMU:HM22	2:S2:122:G:O4'	2.19	0.42
2:S2:130:G:N3	2:S2:130:G:H2'	2.34	0.42
2:S2:615:C:H2'	2:S2:616:A:O4'	2.20	0.42
2:S2:1839:U:H2'	2:S2:1840:U:C6	2.55	0.42
2:S2:1854:U:P	12:SO:147:ARG:HH22	2.42	0.42
7:SH:48:ALA:HA	7:SH:61:ILE:O	2.20	0.42
17:Sa:41:ILE:HG12	17:Sa:68:TYR:CD2	2.54	0.42
17:Sa:44:ILE:HG12	17:Sa:67:LEU:HB2	2.02	0.42
14:SW:15:ASN:ND2	14:SW:71:LYS:HG3	2.35	0.42
1:S1:144:LYS:HD2	1:S1:208:HIS:HB3	2.02	0.42
10:SL:16:ILE:HD11	10:SL:36:TYR:HB2	2.01	0.42
13:SV:27:LYS:HD3	13:SV:27:LYS:HA	1.89	0.42
14:SW:11:LEU:HD12	14:SW:74:VAL:HG13	2.01	0.42
2:S2:16:G:H2'	2:S2:17:C:C6	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:S2:1737:G:H2'	2:S2:1738:C:C6	2.55	0.42
8:SI:12:ARG:CZ	8:SI:18:ARG:HG2	2.50	0.42
2:S2:508:A:H2'	2:S2:509:OMG:O4'	2.19	0.41
6:SG:22:ARG:HG2	6:SG:25:ARG:HH12	1.84	0.41
7:SH:135:PHE:CG	7:SH:136:PRO:HA	2.55	0.41
9:SJ:125:HIS:HA	9:SJ:128:VAL:HG22	2.01	0.41
12:SO:100:THR:HG21	12:SO:104:ARG:CZ	2.50	0.41
2:S2:199:C:H4'	2:S2:200:G:C8	2.55	0.41
2:S2:616:A:H1'	19:Se:86:VAL:HG23	2.02	0.41
3:SA:187:GLY:HA2	13:SV:45:ARG:HD3	2.02	0.41
4:SC:242:ASP:O	4:SC:246:LYS:HG3	2.20	0.41
6:SG:194:LEU:HD23	6:SG:197:GLN:NE2	2.35	0.41
2:S2:202:G:H2'	2:S2:203:G:C8	2.54	0.41
2:S2:948:C:H2'	2:S2:949:G:H8	1.85	0.41
5:SE:164:LEU:HD23	5:SE:164:LEU:HA	1.93	0.41
15:SX:100:VAL:HA	15:SX:124:LYS:O	2.19	0.41
6:SG:58:LYS:HA	6:SG:107:SER:HB3	2.02	0.41
7:SH:10:LYS:HE3	7:SH:45:ILE:HG13	2.02	0.41
8:SI:147:LYS:O	8:SI:151:GLU:HG2	2.21	0.41
2:S2:616:A:N3	19:Se:86:VAL:HG21	2.35	0.41
2:S2:67:C:H41	6:SG:164:LYS:H	1.68	0.41
2:S2:141:A:C6	2:S2:178:C:H1'	2.56	0.41
3:SA:77:ILE:HG23	25:SA:301:HOH:O	2.21	0.41
4:SC:165:VAL:HG21	4:SC:217:ALA:HB1	2.03	0.41
4:SC:199:PRO:HG2	9:SJ:58:ARG:HD2	2.02	0.41
14:SW:32:LYS:O	14:SW:36:ARG:HG2	2.20	0.41
15:SX:52:LEU:HD11	15:SX:73:GLN:HB2	2.02	0.41
20:So:4:LYS:HG3	20:So:5:TRP:CE3	2.56	0.41
2:S2:1172:U:H5"	20:So:14:LYS:HD3	2.03	0.41
5:SE:174:LYS:HE3	5:SE:174:LYS:HB3	1.93	0.41
8:SI:48:VAL:HG11	8:SI:54:LYS:HD2	2.03	0.41
10:SL:75:GLY:HA3	10:SL:88:ILE:HD12	2.03	0.41
2:S2:345:U:H2'	2:S2:346:C:C6	2.56	0.41
2:S2:468:A2M:H2'	2:S2:469:A:O4'	2.20	0.41
2:S2:929:G:H2'	2:S2:930:C:O4'	2.20	0.41
3:SA:82:THR:HG23	3:SA:168:ALA:HA	2.03	0.41
4:SC:65:LYS:HD2	4:SC:273:LEU:HD13	2.02	0.41
7:SH:66:VAL:HG22	7:SH:96:ALA:HB1	2.02	0.41
2:S2:35:C:H2'	2:S2:36:PSU:H6	1.86	0.41
2:S2:1703:OMC:N3	2:S2:1832:6MZ:H9C2	2.36	0.41
16:SY:55:ILE:O	16:SY:94:HIS:HE1	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:S1:124:HIS:HA	1:S1:137:LEU:O	2.22	0.40
2:S2:27:A2M:HM'3	2:S2:27:A2M:H1'	1.87	0.40
2:S2:1856:C:H2'	2:S2:1857:G:C8	2.56	0.40
12:SO:69:SER:O	12:SO:110:PRO:HG2	2.21	0.40
15:SX:86:PRO:O	15:SX:87:ASN:HB2	2.20	0.40
6:SG:138:ALA:HA	6:SG:141:ILE:HD12	2.03	0.40
16:SY:27:VAL:HB	16:SY:69:THR:CG2	2.51	0.40
17:Sa:12:LYS:HD3	17:Sa:18:VAL:HG23	2.03	0.40
2:S2:1018:U:H5"	11:SN:71:ILE:HD12	2.03	0.40
3:SA:67:ALA:HB2	13:SV:37:ALA:HB2	2.02	0.40
10:SL:130:GLU:HG2	10:SL:131:CYS:N	2.35	0.40
1:S1:89:GLU:OE1	1:S1:99:ASN:HB2	2.21	0.40
2:S2:385:G:H3'	10:SL:136:LYS:HB2	2.02	0.40
2:S2:931:C:H2'	2:S2:932:G:C8	2.56	0.40
2:S2:943:U:C2	2:S2:944:A:C8	3.09	0.40
2:S2:1705:C:H4'	20:So:1:MET:N	2.37	0.40
6:SG:18:VAL:HG21	6:SG:41:LEU:HD11	2.03	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 PDB entries followed by that with respect to all EM entries.

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	S1	217/264 (82%)	217 (100%)	0	0	100	100
3	SA	218/295 (74%)	218 (100%)	0	0	100	100
4	SC	217/293 (74%)	217 (100%)	0	0	100	100
5	SE	260/263 (99%)	260 (100%)	0	0	100	100
6	SG	227/249 (91%)	227 (100%)	0	0	100	100
7	SH	185/194 (95%)	185 (100%)	0	0	100	100
8	SI	205/208 (99%)	203 (99%)	2 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	SJ	177/194 (91%)	176 (99%)	1 (1%)	0	100	100
10	SL	139/158 (88%)	139 (100%)	0	0	100	100
11	SN	148/151 (98%)	148 (100%)	0	0	100	100
12	SO	123/151 (82%)	123 (100%)	0	0	100	100
13	SV	81/83 (98%)	81 (100%)	0	0	100	100
14	SW	127/130 (98%)	126 (99%)	1 (1%)	0	100	100
15	SX	137/143 (96%)	136 (99%)	1 (1%)	0	100	100
16	SY	120/132 (91%)	119 (99%)	1 (1%)	0	100	100
17	Sa	97/115 (84%)	97 (100%)	0	0	100	100
18	Sb	81/84 (96%)	80 (99%)	1 (1%)	0	100	100
19	Se	53/133 (40%)	53 (100%)	0	0	100	100
20	So	23/25 (92%)	23 (100%)	0	0	100	100
All	All	2835/3265 (87%)	2828 (100%)	7 (0%)	0	100	100

There are no Ramachandran outliers to report.

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 PDB entries followed by that with respect to all EM entries.

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	S1	200/231 (87%)	200 (100%)	0	100	100
3	SA	182/242 (75%)	182 (100%)	0	100	100
4	SC	185/225 (82%)	185 (100%)	0	100	100
5	SE	224/225 (100%)	224 (100%)	0	100	100
6	SG	199/218 (91%)	199 (100%)	0	100	100
7	SH	168/174 (97%)	168 (100%)	0	100	100
8	SI	179/180 (99%)	179 (100%)	0	100	100
9	SJ	160/168 (95%)	160 (100%)	0	100	100
10	SL	130/142 (92%)	130 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
11	SN	130/131 (99%)	130 (100%)	0	100	100
12	SO	99/118 (84%)	99 (100%)	0	100	100
13	SV	67/67 (100%)	67 (100%)	0	100	100
14	SW	112/113 (99%)	112 (100%)	0	100	100
15	SX	111/114 (97%)	111 (100%)	0	100	100
16	SY	107/114 (94%)	107 (100%)	0	100	100
17	Sa	86/98 (88%)	86 (100%)	0	100	100
18	Sb	75/76 (99%)	75 (100%)	0	100	100
19	Se	45/104 (43%)	45 (100%)	0	100	100
20	So	24/24 (100%)	24 (100%)	0	100	100
All	All	2483/2764 (90%)	2483 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

Mol	Chain	Res	Type
1	S1	40	ASN
1	S1	43	ASN
1	S1	92	GLN
1	S1	95	ASN
1	S1	147	ASN
1	S1	159	GLN
1	S1	177	GLN
1	S1	202	GLN
1	S1	208	HIS
3	SA	9	GLN
3	SA	113	GLN
5	SE	197	ASN
6	SG	65	GLN
7	SH	25	GLN
7	SH	39	GLN
7	SH	112	ASN
7	SH	114	GLN
7	SH	186	ASN
8	SI	35	ASN
8	SI	52	ASN
8	SI	146	GLN

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Mol	Chain	Res	Type
9	SJ	27	GLN
9	SJ	111	GLN
9	SJ	113	GLN
10	SL	94	HIS
10	SL	106	HIS
10	SL	154	GLN
11	SN	62	GLN
12	SO	113	GLN
13	SV	21	ASN
14	SW	15	ASN
14	SW	70	ASN
15	SX	16	HIS
15	SX	23	HIS
15	SX	73	GLN
16	SY	94	HIS
16	SY	124	ASN
18	Sb	26	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
2	S2	1133/1141 (99%)	154 (13%)	1 (0%)

All (154) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
2	S2	23	G
2	S2	33	G
2	S2	41	G
2	S2	46	A
2	S2	50	A
2	S2	56	G
2	S2	65	C
2	S2	67	C
2	S2	68	A
2	S2	71	G
2	S2	72	C
2	S2	73	C
2	S2	74	G
2	S2	75	G
2	S2	76	U

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Mol	Chain	Res	Type
2	S2	77	A
2	S2	103	A
2	S2	113	G
2	S2	115	U
2	S2	126	G
2	S2	130	G
2	S2	143	U
2	S2	155	G
2	S2	163	U
2	S2	168	C
2	S2	199	C
2	S2	200	G
2	S2	201	C
2	S2	309	G
2	S2	323	C
2	S2	324	C
2	S2	325	C
2	S2	326	C
2	S2	327	G
2	S2	328	U
2	S2	329	G
2	S2	339	A
2	S2	347	G
2	S2	360	A
2	S2	362	C
2	S2	364	A
2	S2	370	G
2	S2	385	G
2	S2	386	C
2	S2	409	C
2	S2	418	A
2	S2	438	G
2	S2	448	A
2	S2	449	A
2	S2	450	C
2	S2	452	G
2	S2	466	G
2	S2	470	G
2	S2	472	C
2	S2	474	G
2	S2	482	G
2	S2	487	U

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Mol	Chain	Res	Type
2	S2	492	C
2	S2	516	A
2	S2	525	A
2	S2	531	A
2	S2	553	U
2	S2	554	A
2	S2	555	A
2	S2	559	G
2	S2	575	A
2	S2	576	A2M
2	S2	577	U
2	S2	587	A
2	S2	591	U
2	S2	606	G
2	S2	614	C
2	S2	627	OMU
2	S2	628	A
2	S2	632	C
2	S2	643	A
2	S2	655	A
2	S2	660	C
2	S2	664	A
2	S2	668	A2M
2	S2	669	A
2	S2	671	A
2	S2	672	A
2	S2	673	G
2	S2	688	U
2	S2	689	U
2	S2	690	G
2	S2	691	G
2	S2	799	OMU
2	S2	821	G
2	S2	822	PSU
2	S2	830	A
2	S2	835	C
2	S2	836	G
2	S2	837	A
2	S2	839	C
2	S2	840	C
2	S2	847	A
2	S2	870	A

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Mol	Chain	Res	Type
2	S2	872	A
2	S2	878	G
2	S2	880	G
2	S2	907	G
2	S2	913	A
2	S2	917	U
2	S2	920	A
2	S2	922	A
2	S2	933	G
2	S2	934	G
2	S2	943	U
2	S2	956	G
2	S2	990	A
2	S2	992	A
2	S2	1017	U
2	S2	1023	A
2	S2	1061	U
2	S2	1062	A
2	S2	1083	A
2	S2	1085	C
2	S2	1109	C
2	S2	1115	U
2	S2	1116	C
2	S2	1117	C
2	S2	1118	C
2	S2	1121	G
2	S2	1131	G
2	S2	1133	A
2	S2	1154	U
2	S2	1172	U
2	S2	1195	A
2	S2	1207	G
2	S2	1698	C
2	S2	1699	A
2	S2	1721	U
2	S2	1722	G
2	S2	1729	U
2	S2	1744	G
2	S2	1748	G
2	S2	1811	C
2	S2	1825	A
2	S2	1826	G

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Mol	Chain	Res	Type
2	S2	1829	G
2	S2	1831	A
2	S2	1835	A
2	S2	1838	U
2	S2	1849	G
2	S2	1851	MA6
2	S2	1852	C
2	S2	1861	G
2	S2	1862	G
2	S2	1863	A
2	S2	1864	U
2	S2	1865	C
2	S2	1869	A

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
2	S2	912	C

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	PSU	S2	119	2	18,21,22	1.32	2 (11%)	21,30,33	1.98	4 (19%)
2	OMG	S2	436	2	23,26,27	1.18	3 (13%)	32,38,41	1.99	6 (18%)
12	IAS	SO	138	12	6,7,8	1.16	0	3,8,10	1.90	1 (33%)
2	PSU	S2	681	2	18,21,22	1.39	2 (11%)	21,30,33	2.05	4 (19%)
2	PSU	S2	1692	2	18,21,22	1.39	2 (11%)	21,30,33	2.00	3 (14%)
2	A2M	S2	512	2	22,25,26	1.37	3 (13%)	30,36,39	1.02	2 (6%)
2	PSU	S2	1046	2	18,21,22	1.37	2 (11%)	21,30,33	2.07	4 (19%)
2	PSU	S2	406	2	18,21,22	1.42	3 (16%)	21,30,33	2.04	4 (19%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	MA6	S2	1850	2	23,26,27	1.51	5 (21%)	33,38,41	2.31	14 (42%)
2	4AC	S2	1842	21,2	21,24,25	3.20	11 (52%)	28,34,37	1.02	3 (10%)
2	PSU	S2	966	2	18,21,22	1.38	3 (16%)	21,30,33	1.94	3 (14%)
2	OMU	S2	627	2	19,22,23	1.20	3 (15%)	25,31,34	1.80	5 (20%)
2	A2M	S2	1031	2	22,25,26	1.36	2 (9%)	30,36,39	0.93	1 (3%)
2	PSU	S2	1174	21,2	18,21,22	1.38	2 (11%)	21,30,33	2.08	4 (19%)
2	OMU	S2	116	2	19,22,23	1.22	3 (15%)	25,31,34	1.75	5 (20%)
2	OMC	S2	174	2	19,22,23	0.78	0	25,31,34	0.78	0
2	PSU	S2	572	2	18,21,22	1.38	3 (16%)	21,30,33	2.01	4 (19%)
2	PSU	S2	109	2	18,21,22	1.38	2 (11%)	21,30,33	2.02	4 (19%)
2	A2M	S2	468	2	22,25,26	1.36	2 (9%)	30,36,39	1.10	4 (13%)
2	A2M	S2	590	2	22,25,26	1.46	3 (13%)	30,36,39	1.03	3 (10%)
2	A2M	S2	166	2	22,25,26	1.38	2 (9%)	30,36,39	1.05	3 (10%)
2	PSU	S2	36	2	18,21,22	1.44	3 (16%)	21,30,33	1.99	3 (14%)
2	PSU	S2	609	2	18,21,22	1.34	3 (16%)	21,30,33	1.98	3 (14%)
2	OMG	S2	601	2	23,26,27	1.19	3 (13%)	32,38,41	1.98	6 (18%)
2	OMU	S2	121	2	19,22,23	1.22	3 (15%)	25,31,34	1.80	5 (20%)
2	OMG	S2	683	2	23,26,27	1.18	3 (13%)	32,38,41	1.99	6 (18%)
2	PSU	S2	823	2	18,21,22	1.40	2 (11%)	21,30,33	2.00	4 (19%)
2	OMG	S2	867	2	23,26,27	1.18	3 (13%)	32,38,41	2.02	6 (18%)
2	PSU	S2	822	2	18,21,22	1.41	2 (11%)	21,30,33	2.07	4 (19%)
2	OMC	S2	1703	2	19,22,23	0.79	0	25,31,34	0.85	1 (4%)
2	PSU	S2	801	2	18,21,22	1.39	2 (11%)	21,30,33	2.00	3 (14%)
2	PSU	S2	866	2	18,21,22	1.37	2 (11%)	21,30,33	2.05	4 (19%)
2	A2M	S2	99	2,22	22,25,26	1.31	1 (4%)	30,36,39	0.99	2 (6%)
2	MA6	S2	1851	2	23,26,27	1.53	5 (21%)	33,38,41	2.37	14 (42%)
2	PSU	S2	1177	2	18,21,22	1.34	2 (11%)	21,30,33	2.08	4 (19%)
2	PSU	S2	815	2	18,21,22	1.38	2 (11%)	21,30,33	2.08	4 (19%)
2	PSU	S2	218	2	18,21,22	1.35	2 (11%)	21,30,33	2.02	4 (19%)
2	PSU	S2	814	2	18,21,22	1.40	3 (16%)	21,30,33	2.01	4 (19%)
2	PSU	S2	1081	2	18,21,22	1.42	2 (11%)	21,30,33	2.04	5 (23%)
2	PSU	S2	210	2	18,21,22	1.37	2 (11%)	21,30,33	2.02	3 (14%)
2	PSU	S2	1056	2	18,21,22	1.37	2 (11%)	21,30,33	2.05	5 (23%)
2	OMC	S2	462	2	19,22,23	0.78	0	25,31,34	0.81	0
2	PSU	S2	651	2	18,21,22	1.37	2 (11%)	21,30,33	2.08	3 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
2	OMG	S2	644	2	23,26,27	1.18	3 (13%)	32,38,41	1.95	6 (18%)
2	PSU	S2	105	2	18,21,22	1.37	2 (11%)	21,30,33	2.06	4 (19%)
2	PSU	S2	686	2	18,21,22	1.34	2 (11%)	21,30,33	2.05	4 (19%)
2	OMU	S2	428	2	19,22,23	1.23	2 (10%)	25,31,34	1.78	5 (20%)
2	PSU	S2	863	2	18,21,22	1.41	3 (16%)	21,30,33	2.05	6 (28%)
2	PSU	S2	1045	2	18,21,22	1.36	3 (16%)	21,30,33	2.03	4 (19%)
2	6MZ	S2	1832	21,2,22	22,25,26	1.46	3 (13%)	29,36,39	2.14	7 (24%)
2	A2M	S2	668	2	22,25,26	1.42	4 (18%)	30,36,39	0.94	0
2	OMU	S2	799	2	19,22,23	1.30	4 (21%)	25,31,34	1.90	7 (28%)
2	PSU	S2	649	2	18,21,22	1.40	3 (16%)	21,30,33	2.03	4 (19%)
2	PSU	S2	1004	2	18,21,22	1.40	3 (16%)	21,30,33	1.93	3 (14%)
2	OMC	S2	1710	2	19,22,23	0.78	0	25,31,34	0.81	0
2	A2M	S2	27	2	22,25,26	1.33	1 (4%)	30,36,39	0.97	1 (3%)
2	PSU	S2	93	2	18,21,22	1.39	2 (11%)	21,30,33	2.00	3 (14%)
2	A2M	S2	576	2	22,25,26	1.45	4 (18%)	30,36,39	1.24	4 (13%)
15	HY3	SX	62	15	7,8,9	1.01	0	7,10,12	1.05	1 (14%)
2	A2M	S2	484	2	22,25,26	1.39	3 (13%)	30,36,39	0.90	1 (3%)
2	PSU	S2	918	2	18,21,22	1.39	3 (16%)	21,30,33	2.14	5 (23%)
2	OMU	S2	1804	2	19,22,23	1.23	3 (15%)	25,31,34	1.79	4 (16%)
2	OMC	S2	517	2	19,22,23	0.78	0	25,31,34	0.82	0
2	PSU	S2	34	2	18,21,22	1.39	3 (16%)	21,30,33	1.99	3 (14%)
2	OMG	S2	509	2,22	23,26,27	1.19	3 (13%)	32,38,41	2.03	6 (18%)
2	OMU	S2	172	2	19,22,23	1.22	3 (15%)	25,31,34	1.87	5 (20%)
2	A2M	S2	159	2	22,25,26	1.37	4 (18%)	30,36,39	0.96	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
2	PSU	S2	119	2	-	0/7/25/26	0/2/2/2
2	OMG	S2	436	2	-	0/9/27/28	0/3/3/3
12	IAS	SO	138	12	-	1/7/7/8	-
2	PSU	S2	681	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	1692	2	-	0/7/25/26	0/2/2/2
2	A2M	S2	512	2	-	0/9/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PSU	S2	1046	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	406	2	-	0/7/25/26	0/2/2/2
2	MA6	S2	1850	2	-	1/11/29/30	0/3/3/3
2	4AC	S2	1842	21,2	-	0/11/29/30	0/2/2/2
2	PSU	S2	966	2	-	0/7/25/26	0/2/2/2
2	OMU	S2	627	2	-	0/9/27/28	0/2/2/2
2	A2M	S2	1031	2	-	0/9/27/28	0/3/3/3
2	PSU	S2	1174	21,2	-	0/7/25/26	0/2/2/2
2	OMU	S2	116	2	-	0/9/27/28	0/2/2/2
2	OMC	S2	174	2	-	0/9/27/28	0/2/2/2
2	PSU	S2	572	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	109	2	-	0/7/25/26	0/2/2/2
2	A2M	S2	468	2	-	0/9/27/28	0/3/3/3
2	A2M	S2	590	2	-	1/9/27/28	0/3/3/3
2	A2M	S2	166	2	-	0/9/27/28	0/3/3/3
2	PSU	S2	36	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	609	2	-	0/7/25/26	0/2/2/2
2	OMG	S2	601	2	-	0/9/27/28	0/3/3/3
2	OMU	S2	121	2	-	0/9/27/28	0/2/2/2
2	OMG	S2	683	2	-	1/9/27/28	0/3/3/3
2	PSU	S2	823	2	-	0/7/25/26	0/2/2/2
2	OMG	S2	867	2	-	1/9/27/28	0/3/3/3
2	PSU	S2	822	2	-	0/7/25/26	0/2/2/2
2	OMC	S2	1703	2	-	4/9/27/28	0/2/2/2
2	PSU	S2	801	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	866	2	-	0/7/25/26	0/2/2/2
2	A2M	S2	99	2,22	-	1/9/27/28	0/3/3/3
2	MA6	S2	1851	2	-	2/11/29/30	0/3/3/3
2	PSU	S2	1177	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	815	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	218	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	814	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	1081	2	-	1/7/25/26	0/2/2/2
2	PSU	S2	210	2	-	1/7/25/26	0/2/2/2
2	PSU	S2	1056	2	-	0/7/25/26	0/2/2/2
2	OMC	S2	462	2	-	0/9/27/28	0/2/2/2
2	PSU	S2	651	2	-	0/7/25/26	0/2/2/2
2	OMG	S2	644	2	-	1/9/27/28	0/3/3/3
2	PSU	S2	105	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	686	2	-	0/7/25/26	0/2/2/2
2	OMU	S2	428	2	-	4/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PSU	S2	863	2	-	3/7/25/26	0/2/2/2
2	PSU	S2	1045	2	-	0/7/25/26	0/2/2/2
2	6MZ	S2	1832	21,2,22	-	0/9/27/28	0/3/3/3
2	A2M	S2	668	2	-	4/9/27/28	0/3/3/3
2	OMU	S2	799	2	-	2/9/27/28	0/2/2/2
2	PSU	S2	649	2	-	0/7/25/26	0/2/2/2
2	PSU	S2	1004	2	-	0/7/25/26	0/2/2/2
2	OMC	S2	1710	2	-	0/9/27/28	0/2/2/2
2	A2M	S2	27	2	-	0/9/27/28	0/3/3/3
2	PSU	S2	93	2	-	0/7/25/26	0/2/2/2
2	A2M	S2	576	2	-	4/9/27/28	0/3/3/3
15	HY3	SX	62	15	-	1/1/12/14	0/1/1/1
2	A2M	S2	484	2	-	0/9/27/28	0/3/3/3
2	PSU	S2	918	2	-	0/7/25/26	0/2/2/2
2	OMU	S2	1804	2	-	0/9/27/28	0/2/2/2
2	OMC	S2	517	2	-	0/9/27/28	0/2/2/2
2	PSU	S2	34	2	-	0/7/25/26	0/2/2/2
2	OMG	S2	509	2,22	-	0/9/27/28	0/3/3/3
2	OMU	S2	172	2	-	0/9/27/28	0/2/2/2
2	A2M	S2	159	2	-	0/9/27/28	0/3/3/3

All (168) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	S2	1842	4AC	C4-N3	6.96	1.44	1.32
2	S2	1842	4AC	C6-C5	6.43	1.50	1.35
2	S2	1842	4AC	C2-N3	6.03	1.48	1.36
2	S2	1851	MA6	C5-C4	4.75	1.47	1.39
2	S2	1850	MA6	C5-C4	4.63	1.47	1.39
2	S2	1832	6MZ	C5-C4	4.49	1.47	1.39
2	S2	1842	4AC	C2-N1	4.20	1.48	1.40
2	S2	512	A2M	O5'-C5'	-4.15	1.32	1.44
2	S2	468	A2M	O5'-C5'	-4.02	1.32	1.44
2	S2	1842	4AC	C5-C4	3.91	1.49	1.41
2	S2	668	A2M	O5'-C5'	-3.88	1.32	1.44
2	S2	166	A2M	O5'-C5'	-3.82	1.33	1.44
2	S2	99	A2M	O5'-C5'	-3.81	1.33	1.44
2	S2	27	A2M	O5'-C5'	-3.78	1.33	1.44
2	S2	484	A2M	O5'-C5'	-3.76	1.33	1.44
2	S2	1031	A2M	O5'-C5'	-3.72	1.33	1.44
2	S2	590	A2M	O5'-C5'	-3.63	1.33	1.44

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	S2	1842	4AC	O2-C2	-3.63	1.17	1.23
2	S2	159	A2M	O5'-C5'	-3.57	1.33	1.44
2	S2	1842	4AC	C7-N4	3.54	1.44	1.37
2	S2	822	PSU	C6-C5	3.49	1.39	1.35
2	S2	36	PSU	C6-C5	3.47	1.39	1.35
2	S2	823	PSU	C6-C5	3.47	1.39	1.35
2	S2	210	PSU	C6-C5	3.43	1.39	1.35
2	S2	576	A2M	O5'-C5'	-3.41	1.34	1.44
2	S2	93	PSU	C6-C5	3.41	1.39	1.35
2	S2	406	PSU	C6-C5	3.41	1.39	1.35
2	S2	1081	PSU	C6-C5	3.40	1.39	1.35
2	S2	681	PSU	C6-C5	3.38	1.39	1.35
2	S2	34	PSU	C6-C5	3.37	1.39	1.35
2	S2	649	PSU	C6-C5	3.36	1.39	1.35
2	S2	109	PSU	C6-C5	3.36	1.39	1.35
2	S2	863	PSU	C6-C5	3.34	1.39	1.35
2	S2	1046	PSU	C6-C5	3.34	1.39	1.35
2	S2	815	PSU	C6-C5	3.33	1.39	1.35
2	S2	866	PSU	C6-C5	3.31	1.39	1.35
2	S2	1056	PSU	C6-C5	3.31	1.39	1.35
2	S2	1174	PSU	C6-C5	3.30	1.38	1.35
2	S2	1692	PSU	C6-C5	3.30	1.38	1.35
2	S2	651	PSU	C6-C5	3.28	1.38	1.35
2	S2	801	PSU	C6-C5	3.27	1.38	1.35
2	S2	966	PSU	C6-C5	3.26	1.38	1.35
2	S2	1842	4AC	C6-N1	3.24	1.45	1.38
2	S2	814	PSU	C6-C5	3.22	1.38	1.35
2	S2	1177	PSU	C6-C5	3.20	1.38	1.35
2	S2	105	PSU	C6-C5	3.19	1.38	1.35
2	S2	918	PSU	C6-C5	3.18	1.38	1.35
2	S2	1004	PSU	C6-C5	3.18	1.38	1.35
2	S2	609	PSU	C6-C5	3.17	1.38	1.35
2	S2	1045	PSU	C6-C5	3.17	1.38	1.35
2	S2	218	PSU	C6-C5	3.15	1.38	1.35
2	S2	601	OMG	C5-C4	3.14	1.47	1.38
2	S2	686	PSU	C6-C5	3.12	1.38	1.35
2	S2	572	PSU	C6-C5	3.11	1.38	1.35
2	S2	867	OMG	C5-C4	3.10	1.47	1.38
2	S2	1842	4AC	C4-N4	3.09	1.44	1.39
2	S2	644	OMG	C5-C4	3.07	1.47	1.38
2	S2	683	OMG	C5-C4	3.06	1.47	1.38
2	S2	119	PSU	C6-C5	3.05	1.38	1.35

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	S2	436	OMG	C5-C4	3.04	1.47	1.38
2	S2	509	OMG	C5-C4	3.03	1.47	1.38
2	S2	1851	MA6	C5-C6	2.97	1.49	1.41
2	S2	1850	MA6	C5-C6	2.95	1.49	1.41
2	S2	863	PSU	C4-N3	-2.92	1.33	1.38
2	S2	36	PSU	C4-N3	-2.88	1.33	1.38
2	S2	814	PSU	C4-N3	-2.86	1.33	1.38
2	S2	406	PSU	C4-N3	-2.86	1.33	1.38
2	S2	1004	PSU	C4-N3	-2.83	1.33	1.38
2	S2	649	PSU	C4-N3	-2.82	1.33	1.38
2	S2	681	PSU	C4-N3	-2.82	1.33	1.38
2	S2	1174	PSU	C4-N3	-2.80	1.33	1.38
2	S2	1692	PSU	C4-N3	-2.80	1.33	1.38
2	S2	801	PSU	C4-N3	-2.78	1.33	1.38
2	S2	822	PSU	C4-N3	-2.77	1.33	1.38
2	S2	428	OMU	C4-N3	-2.76	1.33	1.38
2	S2	172	OMU	C4-N3	-2.76	1.33	1.38
2	S2	1804	OMU	C4-N3	-2.74	1.33	1.38
2	S2	105	PSU	C4-N3	-2.74	1.33	1.38
2	S2	1056	PSU	C4-N3	-2.73	1.33	1.38
2	S2	815	PSU	C4-N3	-2.72	1.33	1.38
2	S2	1177	PSU	C4-N3	-2.72	1.33	1.38
2	S2	572	PSU	C4-N3	-2.71	1.33	1.38
2	S2	109	PSU	C4-N3	-2.71	1.33	1.38
2	S2	651	PSU	C4-N3	-2.71	1.33	1.38
2	S2	799	OMU	C4-N3	-2.71	1.34	1.38
2	S2	93	PSU	C4-N3	-2.70	1.33	1.38
2	S2	1045	PSU	C4-N3	-2.70	1.33	1.38
2	S2	609	PSU	C4-N3	-2.70	1.33	1.38
2	S2	966	PSU	C4-N3	-2.69	1.33	1.38
2	S2	918	PSU	C4-N3	-2.69	1.33	1.38
2	S2	823	PSU	C4-N3	-2.68	1.33	1.38
2	S2	686	PSU	C4-N3	-2.68	1.33	1.38
2	S2	509	OMG	C6-N1	-2.68	1.33	1.38
2	S2	218	PSU	C4-N3	-2.67	1.33	1.38
2	S2	1046	PSU	C4-N3	-2.67	1.33	1.38
2	S2	116	OMU	C4-N3	-2.66	1.34	1.38
2	S2	866	PSU	C4-N3	-2.65	1.33	1.38
2	S2	799	OMU	C2-N1	2.65	1.42	1.38
2	S2	34	PSU	C4-N3	-2.65	1.33	1.38
2	S2	1081	PSU	C4-N3	-2.63	1.33	1.38
2	S2	121	OMU	C4-N3	-2.62	1.34	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	S2	627	OMU	C4-N3	-2.62	1.34	1.38
2	S2	1832	6MZ	C5-N7	-2.61	1.34	1.39
2	S2	436	OMG	C6-N1	-2.59	1.34	1.38
2	S2	601	OMG	C6-N1	-2.58	1.34	1.38
2	S2	683	OMG	C6-N1	-2.56	1.34	1.38
2	S2	644	OMG	C6-N1	-2.55	1.34	1.38
2	S2	119	PSU	C4-N3	-2.55	1.34	1.38
2	S2	576	A2M	C5-C4	2.49	1.43	1.39
2	S2	863	PSU	C2-N3	-2.47	1.33	1.37
2	S2	867	OMG	C6-N1	-2.44	1.34	1.38
2	S2	210	PSU	C4-N3	-2.44	1.34	1.38
2	S2	1832	6MZ	C5-C6	2.42	1.47	1.41
2	S2	668	A2M	C2'-C1'	2.39	1.59	1.53
2	S2	590	A2M	C2'-C1'	2.38	1.59	1.53
2	S2	1031	A2M	C5-C4	2.36	1.43	1.39
2	S2	428	OMU	C2-N3	-2.31	1.33	1.38
2	S2	590	A2M	C5-C4	2.30	1.43	1.39
2	S2	576	A2M	C2'-C1'	2.28	1.58	1.53
2	S2	1842	4AC	O7-C7	-2.28	1.18	1.23
2	S2	484	A2M	C5-C4	2.25	1.43	1.39
2	S2	1851	MA6	C8-N7	2.24	1.36	1.31
2	S2	668	A2M	O4'-C4'	-2.23	1.40	1.45
2	S2	627	OMU	C2-N3	-2.23	1.34	1.38
2	S2	436	OMG	C5-N7	-2.22	1.34	1.39
2	S2	601	OMG	C5-N7	-2.22	1.34	1.39
2	S2	1850	MA6	C5-N7	-2.20	1.35	1.39
2	S2	1851	MA6	C5-N7	-2.20	1.35	1.39
2	S2	406	PSU	C2-N3	-2.19	1.33	1.37
2	S2	159	A2M	C5-C4	2.19	1.43	1.39
2	S2	172	OMU	C2-N3	-2.19	1.34	1.38
2	S2	1850	MA6	C8-N7	2.18	1.35	1.31
2	S2	799	OMU	C2-N3	-2.17	1.34	1.38
2	S2	116	OMU	C5-C4	-2.17	1.39	1.43
2	S2	1804	OMU	C2-N3	-2.17	1.34	1.38
2	S2	166	A2M	C5-C4	2.16	1.42	1.39
2	S2	468	A2M	C5-C4	2.15	1.42	1.39
2	S2	121	OMU	C5-C4	-2.15	1.39	1.43
2	S2	509	OMG	C5-N7	-2.15	1.34	1.39
2	S2	683	OMG	C5-N7	-2.14	1.34	1.39
2	S2	116	OMU	C2-N3	-2.14	1.34	1.38
2	S2	121	OMU	C2-N3	-2.12	1.34	1.38
2	S2	867	OMG	C5-N7	-2.12	1.34	1.39

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	S2	644	OMG	C5-N7	-2.12	1.34	1.39
2	S2	1804	OMU	C5-C4	-2.11	1.39	1.43
2	S2	799	OMU	C5-C4	-2.10	1.39	1.43
2	S2	918	PSU	O4'-C1'	-2.10	1.40	1.43
2	S2	159	A2M	C5'-C4'	2.09	1.57	1.51
2	S2	1004	PSU	C2-N3	-2.09	1.34	1.37
2	S2	512	A2M	C8-N9	2.09	1.41	1.37
2	S2	572	PSU	C2-N3	-2.09	1.34	1.37
2	S2	649	PSU	C2-N3	-2.08	1.34	1.37
2	S2	814	PSU	C2-N3	-2.08	1.34	1.37
2	S2	576	A2M	C8-N9	2.08	1.41	1.37
2	S2	512	A2M	C5-C4	2.07	1.42	1.39
2	S2	1851	MA6	C4-N9	-2.06	1.33	1.37
2	S2	609	PSU	C2-N3	-2.05	1.34	1.37
2	S2	1842	4AC	CM7-C7	2.05	1.54	1.50
2	S2	1045	PSU	C2-N3	-2.04	1.34	1.37
2	S2	966	PSU	C2-N3	-2.04	1.34	1.37
2	S2	1850	MA6	C4-N9	-2.03	1.33	1.37
2	S2	627	OMU	C5-C4	-2.03	1.39	1.43
2	S2	159	A2M	C8-N9	2.03	1.41	1.37
2	S2	172	OMU	C5-C4	-2.01	1.39	1.43
2	S2	36	PSU	C2-N3	-2.01	1.34	1.37
2	S2	34	PSU	C2-N3	-2.01	1.34	1.37
2	S2	668	A2M	C8-N9	2.00	1.41	1.37
2	S2	484	A2M	C8-N9	2.00	1.40	1.37

All (258) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	S2	651	PSU	N1-C2-N3	6.60	122.13	115.17
2	S2	681	PSU	N1-C2-N3	6.57	122.10	115.17
2	S2	1046	PSU	N1-C2-N3	6.55	122.07	115.17
2	S2	815	PSU	N1-C2-N3	6.54	122.07	115.17
2	S2	1174	PSU	N1-C2-N3	6.51	122.03	115.17
2	S2	918	PSU	N1-C2-N3	6.50	122.03	115.17
2	S2	406	PSU	N1-C2-N3	6.47	122.00	115.17
2	S2	822	PSU	N1-C2-N3	6.46	121.99	115.17
2	S2	105	PSU	N1-C2-N3	6.45	121.97	115.17
2	S2	36	PSU	N1-C2-N3	6.41	121.94	115.17
2	S2	1056	PSU	N1-C2-N3	6.41	121.93	115.17
2	S2	1177	PSU	N1-C2-N3	6.40	121.92	115.17
2	S2	1045	PSU	N1-C2-N3	6.39	121.91	115.17

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	S2	866	PSU	N1-C2-N3	6.37	121.89	115.17
2	S2	801	PSU	N1-C2-N3	6.36	121.88	115.17
2	S2	1832	6MZ	C5-C4-N3	-6.34	117.99	126.72
2	S2	823	PSU	N1-C2-N3	6.33	121.85	115.17
2	S2	867	OMG	C5-C4-N3	-6.32	118.33	128.39
2	S2	686	PSU	N1-C2-N3	6.30	121.82	115.17
2	S2	34	PSU	N1-C2-N3	6.29	121.81	115.17
2	S2	601	OMG	C5-C4-N3	-6.29	118.37	128.39
2	S2	572	PSU	N1-C2-N3	6.28	121.80	115.17
2	S2	1692	PSU	N1-C2-N3	6.28	121.80	115.17
2	S2	109	PSU	N1-C2-N3	6.28	121.79	115.17
2	S2	210	PSU	N1-C2-N3	6.27	121.78	115.17
2	S2	649	PSU	N1-C2-N3	6.27	121.78	115.17
2	S2	814	PSU	N1-C2-N3	6.26	121.78	115.17
2	S2	609	PSU	N1-C2-N3	6.25	121.76	115.17
2	S2	509	OMG	C5-C4-N3	-6.22	118.48	128.39
2	S2	93	PSU	N1-C2-N3	6.20	121.71	115.17
2	S2	218	PSU	N1-C2-N3	6.16	121.66	115.17
2	S2	436	OMG	C5-C4-N3	-6.16	118.59	128.39
2	S2	966	PSU	N1-C2-N3	6.15	121.66	115.17
2	S2	1081	PSU	N1-C2-N3	6.11	121.61	115.17
2	S2	1004	PSU	N1-C2-N3	6.10	121.60	115.17
2	S2	863	PSU	N1-C2-N3	6.07	121.57	115.17
2	S2	683	OMG	C5-C4-N3	-6.00	118.84	128.39
2	S2	644	OMG	C5-C4-N3	-5.97	118.89	128.39
2	S2	119	PSU	N1-C2-N3	5.94	121.43	115.17
2	S2	1851	MA6	C5-C4-N3	-5.64	118.94	126.72
2	S2	1832	6MZ	N3-C4-N9	5.58	136.66	127.17
2	S2	1850	MA6	C5-C4-N3	-5.32	119.39	126.72
2	S2	867	OMG	C2-N3-C4	5.27	121.38	112.30
2	S2	509	OMG	C2-N3-C4	5.14	121.14	112.30
2	S2	601	OMG	C2-N3-C4	5.08	121.05	112.30
2	S2	436	OMG	C2-N3-C4	5.06	121.01	112.30
2	S2	644	OMG	C2-N3-C4	5.05	121.00	112.30
2	S2	683	OMG	C2-N3-C4	5.03	120.97	112.30
2	S2	172	OMU	C4-N3-C2	-4.92	120.51	126.61
2	S2	627	OMU	C4-N3-C2	-4.81	120.65	126.61
2	S2	428	OMU	C4-N3-C2	-4.76	120.71	126.61
2	S2	121	OMU	C4-N3-C2	-4.69	120.79	126.61
2	S2	601	OMG	N9-C4-N3	4.68	135.31	125.95
2	S2	867	OMG	N9-C4-N3	4.63	135.21	125.95
2	S2	1804	OMU	C4-N3-C2	-4.61	120.89	126.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	S2	509	OMG	N9-C4-N3	4.60	135.14	125.95
2	S2	1851	MA6	C10-N6-C6	-4.59	108.84	120.52
2	S2	1850	MA6	C2-N1-C6	4.55	122.94	111.83
2	S2	683	OMG	N9-C4-N3	4.54	135.03	125.95
2	S2	436	OMG	N9-C4-N3	4.51	134.96	125.95
2	S2	644	OMG	N9-C4-N3	4.40	134.75	125.95
2	S2	116	OMU	C4-N3-C2	-4.39	121.16	126.61
2	S2	1177	PSU	C4-N3-C2	-4.38	120.34	126.37
2	S2	863	PSU	C4-N3-C2	-4.30	120.45	126.37
2	S2	1851	MA6	C2-N1-C6	4.24	122.18	111.83
2	S2	686	PSU	C4-N3-C2	-4.23	120.54	126.37
2	S2	815	PSU	C4-N3-C2	-4.23	120.54	126.37
2	S2	1850	MA6	C9-N6-C6	-4.22	109.79	120.52
2	S2	428	OMU	N3-C2-N1	4.21	120.38	114.89
2	S2	1851	MA6	N3-C4-N9	4.20	134.32	127.17
2	S2	105	PSU	C4-N3-C2	-4.19	120.60	126.37
2	S2	1046	PSU	C4-N3-C2	-4.19	120.60	126.37
2	S2	651	PSU	C4-N3-C2	-4.18	120.61	126.37
2	S2	121	OMU	N3-C2-N1	4.18	120.34	114.89
2	S2	1174	PSU	C4-N3-C2	-4.18	120.61	126.37
2	S2	1056	PSU	C4-N3-C2	-4.17	120.62	126.37
2	S2	866	PSU	C4-N3-C2	-4.16	120.64	126.37
2	S2	799	OMU	C1'-N1-C2	4.14	125.03	117.59
2	S2	814	PSU	C4-N3-C2	-4.13	120.68	126.37
2	S2	218	PSU	C4-N3-C2	-4.11	120.70	126.37
2	S2	172	OMU	N3-C2-N1	4.10	120.22	114.89
2	S2	119	PSU	C4-N3-C2	-4.09	120.73	126.37
2	S2	649	PSU	C4-N3-C2	-4.09	120.73	126.37
2	S2	572	PSU	C4-N3-C2	-4.09	120.74	126.37
2	S2	822	PSU	C4-N3-C2	-4.09	120.74	126.37
2	S2	918	PSU	C4-N3-C2	-4.08	120.74	126.37
2	S2	1081	PSU	C4-N3-C2	-4.08	120.74	126.37
2	S2	1045	PSU	C4-N3-C2	-4.08	120.75	126.37
2	S2	93	PSU	C4-N3-C2	-4.07	120.76	126.37
2	S2	1851	MA6	C4-C5-N7	-4.07	105.93	110.58
2	S2	799	OMU	C4-N3-C2	-4.07	121.56	126.61
2	S2	1850	MA6	C4-C5-N7	-4.07	105.93	110.58
2	S2	1804	OMU	N3-C2-N1	4.05	120.17	114.89
2	S2	406	PSU	C4-N3-C2	-4.04	120.80	126.37
2	S2	627	OMU	N3-C2-N1	4.03	120.14	114.89
2	S2	681	PSU	C4-N3-C2	-4.03	120.82	126.37
2	S2	109	PSU	C4-N3-C2	-4.02	120.83	126.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	S2	210	PSU	C4-N3-C2	-4.02	120.83	126.37
2	S2	1850	MA6	N3-C4-N9	4.02	134.00	127.17
2	S2	116	OMU	N3-C2-N1	4.00	120.10	114.89
2	S2	609	PSU	C4-N3-C2	-4.00	120.86	126.37
2	S2	627	OMU	C5-C4-N3	3.99	120.39	114.80
2	S2	172	OMU	C5-C4-N3	3.96	120.34	114.80
2	S2	1692	PSU	C4-N3-C2	-3.94	120.94	126.37
2	S2	428	OMU	C5-C4-N3	3.92	120.30	114.80
2	S2	34	PSU	C4-N3-C2	-3.92	120.97	126.37
2	S2	799	OMU	N3-C2-N1	3.90	119.97	114.89
2	S2	801	PSU	C4-N3-C2	-3.90	121.00	126.37
2	S2	823	PSU	C4-N3-C2	-3.90	121.00	126.37
2	S2	1804	OMU	C5-C4-N3	3.87	120.22	114.80
2	S2	210	PSU	O2-C2-N1	-3.85	118.82	122.79
2	S2	918	PSU	O2-C2-N1	-3.84	118.83	122.79
2	S2	116	OMU	C5-C4-N3	3.82	120.15	114.80
2	S2	121	OMU	C5-C4-N3	3.79	120.10	114.80
2	S2	36	PSU	C4-N3-C2	-3.76	121.19	126.37
2	S2	966	PSU	C4-N3-C2	-3.74	121.22	126.37
2	S2	1004	PSU	C4-N3-C2	-3.73	121.23	126.37
2	S2	799	OMU	C5-C4-N3	3.70	119.98	114.80
2	S2	109	PSU	O2-C2-N1	-3.69	118.98	122.79
2	S2	1851	MA6	C2-N3-C4	3.69	120.85	111.83
2	S2	1832	6MZ	C2-N3-C4	3.69	120.84	111.83
2	S2	815	PSU	O2-C2-N1	-3.66	119.01	122.79
2	S2	1081	PSU	O2-C2-N1	-3.65	119.02	122.79
2	S2	866	PSU	O2-C2-N1	-3.65	119.03	122.79
2	S2	1174	PSU	O2-C2-N1	-3.63	119.05	122.79
2	S2	1692	PSU	O2-C2-N1	-3.62	119.06	122.79
2	S2	1850	MA6	C2-N3-C4	3.60	120.62	111.83
2	S2	686	PSU	O2-C2-N1	-3.60	119.08	122.79
2	S2	105	PSU	O2-C2-N1	-3.59	119.08	122.79
2	S2	651	PSU	O2-C2-N1	-3.59	119.09	122.79
2	S2	801	PSU	O2-C2-N1	-3.59	119.09	122.79
2	S2	1177	PSU	O2-C2-N1	-3.57	119.11	122.79
2	S2	1850	MA6	N1-C2-N3	-3.52	123.26	128.58
2	S2	1046	PSU	O2-C2-N1	-3.50	119.18	122.79
2	S2	218	PSU	O2-C2-N1	-3.49	119.19	122.79
2	S2	649	PSU	O2-C2-N1	-3.47	119.21	122.79
2	S2	1851	MA6	C9-N6-C6	-3.45	111.75	120.52
2	S2	822	PSU	O2-C2-N1	-3.44	119.24	122.79
2	S2	1045	PSU	O2-C2-N1	-3.44	119.24	122.79

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	S2	1056	PSU	O2-C2-N1	-3.44	119.25	122.79
2	S2	823	PSU	O2-C2-N1	-3.41	119.27	122.79
2	S2	119	PSU	O2-C2-N1	-3.40	119.28	122.79
2	S2	34	PSU	O2-C2-N1	-3.36	119.32	122.79
2	S2	644	OMG	C6-C5-N7	3.35	136.39	130.29
2	S2	509	OMG	C6-C5-N7	3.34	136.37	130.29
2	S2	36	PSU	O2-C2-N1	-3.34	119.35	122.79
2	S2	572	PSU	O2-C2-N1	-3.33	119.35	122.79
2	S2	93	PSU	O2-C2-N1	-3.32	119.36	122.79
2	S2	576	A2M	C2'-C1'-N9	-3.30	108.31	113.75
2	S2	683	OMG	C6-C5-N7	3.28	136.27	130.29
2	S2	966	PSU	O2-C2-N1	-3.27	119.42	122.79
2	S2	1004	PSU	O2-C2-N1	-3.27	119.42	122.79
2	S2	867	OMG	C6-C5-N7	3.27	136.23	130.29
2	S2	436	OMG	C6-C5-N7	3.24	136.19	130.29
2	S2	681	PSU	O2-C2-N1	-3.24	119.45	122.79
2	S2	1851	MA6	N1-C2-N3	-3.22	123.70	128.58
2	S2	116	OMU	O4-C4-C5	-3.20	119.64	125.16
2	S2	121	OMU	O4-C4-C5	-3.18	119.69	125.16
2	S2	814	PSU	O2-C2-N1	-3.17	119.52	122.79
12	SO	138	IAS	OD1-CG-CB	-3.16	116.18	125.38
2	S2	609	PSU	O2-C2-N1	-3.15	119.54	122.79
2	S2	172	OMU	O4-C4-C5	-3.14	119.74	125.16
2	S2	406	PSU	O2-C2-N1	-3.12	119.57	122.79
2	S2	601	OMG	C6-C5-N7	3.11	135.94	130.29
2	S2	1804	OMU	O4-C4-C5	-3.09	119.83	125.16
2	S2	1850	MA6	C10-N6-C6	-3.06	112.74	120.52
2	S2	627	OMU	O4-C4-C5	-3.03	119.94	125.16
2	S2	1832	6MZ	N1-C2-N3	-2.99	124.06	128.58
2	S2	799	OMU	O4-C4-C5	-2.91	120.15	125.16
2	S2	1850	MA6	C5-N7-C8	2.90	108.01	103.45
2	S2	863	PSU	C6-C5-C4	-2.83	116.26	118.17
2	S2	1850	MA6	C4-N9-C8	2.82	108.70	105.74
2	S2	428	OMU	O4-C4-C5	-2.82	120.31	125.16
2	S2	1832	6MZ	C4-N9-C8	2.81	108.69	105.74
2	S2	1851	MA6	C5-N7-C8	2.80	107.85	103.45
2	S2	1832	6MZ	C4-C5-N7	-2.68	107.52	110.58
2	S2	918	PSU	O4'-C1'-C2'	2.68	108.85	105.15
2	S2	1851	MA6	C10-N6-C9	-2.66	107.62	116.18
2	S2	436	OMG	C4-C5-N7	-2.63	106.51	110.67
2	S2	1851	MA6	C4-N9-C8	2.62	108.49	105.74
2	S2	509	OMG	C4-C5-N7	-2.62	106.52	110.67

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	S2	867	OMG	C4-C5-N7	-2.59	106.56	110.67
2	S2	576	A2M	N3-C4-N9	2.56	131.52	127.17
2	S2	590	A2M	N3-C4-N9	2.52	131.46	127.17
2	S2	683	OMG	C4-C5-N7	-2.52	106.67	110.67
2	S2	601	OMG	C4-C5-N7	-2.50	106.71	110.67
2	S2	644	OMG	C4-C5-N7	-2.48	106.74	110.67
2	S2	1842	4AC	C6-C5-C4	2.36	119.85	117.00
2	S2	863	PSU	O2-C2-N1	-2.35	120.37	122.79
2	S2	1850	MA6	C6-C5-N7	2.34	137.17	133.43
2	S2	119	PSU	C6-C5-C4	-2.33	116.60	118.17
2	S2	121	OMU	O2-C2-N1	-2.30	119.80	122.80
2	S2	1851	MA6	N1-C6-N6	2.30	119.66	116.86
2	S2	799	OMU	O2-C2-N3	-2.29	117.26	121.49
2	S2	822	PSU	O4'-C1'-C2'	2.28	108.31	105.15
2	S2	590	A2M	C5-C4-N3	-2.28	123.58	126.72
2	S2	172	OMU	O2-C2-N1	-2.27	119.84	122.80
2	S2	1851	MA6	C6-C5-N7	2.27	137.06	133.43
2	S2	1832	6MZ	C5-N7-C8	2.26	107.01	103.45
2	S2	1850	MA6	N9-C8-N7	-2.24	110.75	113.94
2	S2	1850	MA6	N1-C6-N6	2.24	119.59	116.86
2	S2	649	PSU	C5-C6-N1	-2.24	119.03	122.14
2	S2	1703	OMC	O2-C2-N3	-2.24	118.81	122.33
2	S2	590	A2M	C2-N1-C6	-2.21	115.10	118.73
2	S2	406	PSU	C5-C6-N1	-2.21	119.08	122.14
2	S2	99	A2M	N3-C4-N9	2.19	130.88	127.17
2	S2	1842	4AC	C5-C4-N3	-2.18	119.19	122.60
2	S2	1174	PSU	C5-C6-N1	-2.18	119.12	122.14
2	S2	116	OMU	O2-C2-N1	-2.18	119.96	122.80
2	S2	1056	PSU	C5-C6-N1	-2.17	119.12	122.14
2	S2	468	A2M	C3'-C2'-C1'	-2.17	98.65	102.81
2	S2	866	PSU	C5-C6-N1	-2.17	119.14	122.14
2	S2	814	PSU	C5-C6-N1	-2.16	119.14	122.14
2	S2	683	OMG	O6-C6-C5	-2.16	120.83	126.53
2	S2	428	OMU	O2-C2-N1	-2.16	119.98	122.80
2	S2	512	A2M	C2'-C1'-N9	-2.15	110.21	113.75
2	S2	166	A2M	N3-C4-N9	2.15	130.82	127.17
2	S2	863	PSU	O2-C2-N3	-2.14	118.06	121.86
2	S2	1177	PSU	C5-C6-N1	-2.14	119.17	122.14
2	S2	1081	PSU	C6-C5-C4	-2.13	116.73	118.17
2	S2	99	A2M	C2-N1-C6	-2.13	115.23	118.73
2	S2	918	PSU	C5-C6-N1	-2.13	119.19	122.14
2	S2	601	OMG	O6-C6-C5	-2.12	120.94	126.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	SX	62	HY3	O-C-CA	-2.11	119.27	124.86
2	S2	576	A2M	C2'-C3'-C4'	-2.11	97.45	101.99
2	S2	815	PSU	C5-C6-N1	-2.11	119.21	122.14
2	S2	468	A2M	C2'-C3'-C4'	-2.10	97.47	101.99
2	S2	1045	PSU	C5-C6-N1	-2.10	119.22	122.14
2	S2	1046	PSU	C5-C6-N1	-2.10	119.23	122.14
2	S2	105	PSU	C5-C6-N1	-2.10	119.23	122.14
2	S2	799	OMU	C1'-N1-C6	-2.08	116.33	120.78
2	S2	1081	PSU	O4'-C1'-C2'	2.08	108.03	105.15
2	S2	681	PSU	C5-C6-N1	-2.08	119.26	122.14
2	S2	1851	MA6	N9-C8-N7	-2.08	110.99	113.94
2	S2	867	OMG	O6-C6-C5	-2.07	121.06	126.53
2	S2	436	OMG	O6-C6-C5	-2.07	121.07	126.53
2	S2	166	A2M	C2-N1-C6	-2.07	115.33	118.73
2	S2	1850	MA6	C10-N6-C9	-2.07	109.53	116.18
2	S2	823	PSU	O4'-C1'-C2'	2.07	108.01	105.15
2	S2	686	PSU	C5-C6-N1	-2.05	119.29	122.14
2	S2	109	PSU	C5-C6-N1	-2.05	119.30	122.14
2	S2	1031	A2M	N3-C4-N9	2.05	130.65	127.17
2	S2	468	A2M	C2-N1-C6	-2.05	115.37	118.73
2	S2	627	OMU	O2-C2-N1	-2.05	120.13	122.80
2	S2	218	PSU	O4'-C1'-C2'	2.04	107.97	105.15
2	S2	863	PSU	O4'-C1'-C2'	2.04	107.97	105.15
2	S2	1056	PSU	O4'-C1'-C2'	2.03	107.96	105.15
2	S2	576	A2M	C5-C4-N3	-2.03	123.93	126.72
2	S2	468	A2M	N3-C4-N9	2.02	130.61	127.17
2	S2	572	PSU	O4'-C1'-C2'	2.02	107.95	105.15
2	S2	512	A2M	N3-C4-N9	2.02	130.60	127.17
2	S2	1842	4AC	CM7-C7-N4	2.02	118.52	115.27
2	S2	509	OMG	O6-C6-C5	-2.01	121.22	126.53
2	S2	484	A2M	C2-N1-C6	-2.01	115.42	118.73
2	S2	644	OMG	O6-C6-C5	-2.01	121.23	126.53
2	S2	166	A2M	C2'-C1'-N9	-2.01	110.44	113.75
2	S2	27	A2M	N3-C4-N9	2.01	130.58	127.17
2	S2	159	A2M	C2-N1-C6	-2.00	115.44	118.73

There are no chirality outliers.

All (33) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	S2	576	A2M	O4'-C1'-N9-C4
2	S2	799	OMU	O4'-C1'-N1-C2

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Mol	Chain	Res	Type	Atoms
2	S2	799	OMU	O4'-C1'-N1-C6
2	S2	863	PSU	C2'-C1'-C5-C4
2	S2	863	PSU	O4'-C1'-C5-C4
2	S2	863	PSU	O4'-C1'-C5-C6
2	S2	576	A2M	O4'-C1'-N9-C8
2	S2	576	A2M	C3'-C4'-C5'-O5'
2	S2	668	A2M	O4'-C4'-C5'-O5'
2	S2	576	A2M	O4'-C4'-C5'-O5'
2	S2	668	A2M	C3'-C4'-C5'-O5'
2	S2	1850	MA6	C5-C6-N6-C10
2	S2	867	OMG	O4'-C4'-C5'-O5'
2	S2	99	A2M	O4'-C4'-C5'-O5'
15	SX	62	HY3	O-C-CA-C3
2	S2	428	OMU	C2'-C1'-N1-C6
2	S2	1851	MA6	C5-C6-N6-C9
2	S2	1703	OMC	C3'-C4'-C5'-O5'
2	S2	428	OMU	O4'-C1'-N1-C6
2	S2	1851	MA6	C4'-C5'-O5'-P
2	S2	1703	OMC	C3'-C2'-O2'-CM2
2	S2	644	OMG	C4'-C5'-O5'-P
12	SO	138	IAS	CA-CB-CG-OD1
2	S2	668	A2M	C1'-C2'-O2'-CM'
2	S2	1703	OMC	C1'-C2'-O2'-CM2
2	S2	1081	PSU	C4'-C5'-O5'-P
2	S2	683	OMG	O4'-C4'-C5'-O5'
2	S2	668	A2M	C2'-C1'-N9-C8
2	S2	210	PSU	C3'-C4'-C5'-O5'
2	S2	1703	OMC	O4'-C4'-C5'-O5'
2	S2	590	A2M	O4'-C1'-N9-C8
2	S2	428	OMU	O4'-C1'-N1-C2
2	S2	428	OMU	C2'-C1'-N1-C2

There are no ring outliers.

14 monomers are involved in 17 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	S2	436	OMG	1	0
2	S2	1031	A2M	1	0
2	S2	116	OMU	1	0
2	S2	468	A2M	1	0
2	S2	36	PSU	1	0
2	S2	121	OMU	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	S2	1703	OMC	2	0
2	S2	462	OMC	1	0
2	S2	1832	6MZ	2	0
2	S2	649	PSU	1	0
2	S2	1710	OMC	1	0
2	S2	27	A2M	1	0
2	S2	576	A2M	1	0
2	S2	509	OMG	2	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 77 ligands modelled in this entry, 76 are monoatomic - leaving 1 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	$\#\|Z\| > 2$
23	A1C0U	SX	201	-	37,38,38	1.33	5 (13%)	49,51,51	2.78	16 (32%)

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
23	A1C0U	SX	201	-	-	2/25/25/25	0/4/4/4

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
23	SX	201	A1C0U	C08-N07	3.52	1.43	1.37

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
23	SX	201	A1C0U	C23-C21	2.51	1.55	1.50
23	SX	201	A1C0U	C21-N20	2.43	1.42	1.35
23	SX	201	A1C0U	C05-C06	2.29	1.39	1.37
23	SX	201	A1C0U	C04-N03	2.29	1.37	1.34

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
23	SX	201	A1C0U	C05-C06-N02	-8.82	103.59	107.50
23	SX	201	A1C0U	C04-C05-C06	7.48	109.92	104.91
23	SX	201	A1C0U	C35-C16-C17	-6.00	110.94	118.57
23	SX	201	A1C0U	C04-N03-N02	5.35	108.46	105.11
23	SX	201	A1C0U	C34-C19-C18	-5.07	112.32	119.04
23	SX	201	A1C0U	C05-C04-N03	-4.29	106.40	111.11
23	SX	201	A1C0U	C18-C17-C16	4.15	125.23	120.80
23	SX	201	A1C0U	C01-N02-C06	-3.83	123.59	128.98
23	SX	201	A1C0U	C34-C35-C16	3.73	124.79	120.80
23	SX	201	A1C0U	C01-N02-N03	3.67	124.79	119.29
23	SX	201	A1C0U	C17-C16-C04	3.29	124.56	120.87
23	SX	201	A1C0U	C35-C16-C04	3.24	124.50	120.87
23	SX	201	A1C0U	C23-C21-N20	2.73	121.70	116.03
23	SX	201	A1C0U	C17-C18-C19	2.70	123.41	120.30
23	SX	201	A1C0U	C16-C04-N03	2.68	124.03	120.49
23	SX	201	A1C0U	C35-C34-C19	2.61	123.30	120.30

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
23	SX	201	A1C0U	N02-C06-N07-C08
23	SX	201	A1C0U	C28-C27-O26-C25

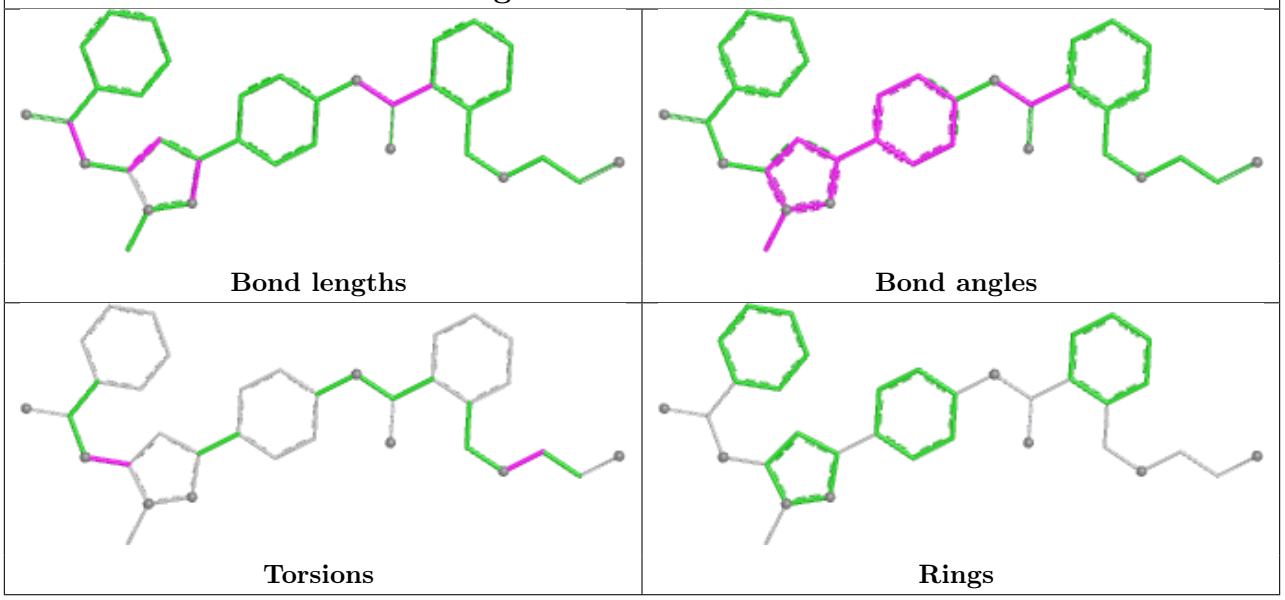
There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring

in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand A1C0U SX 201



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
2	S2	7

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	S2	691:G	O3'	798:G	P	39.01
1	S2	1750:C	O3'	1784:G	P	17.86
1	S2	880:G	O3'	906:U	P	17.78
1	S2	130:G	O3'	140:U	P	16.38
1	S2	535:G	O3'	549:C	P	16.23
1	S2	1209:A	O3'	1691:U	P	15.33
1	S2	225:G	O3'	287:U	P	7.17

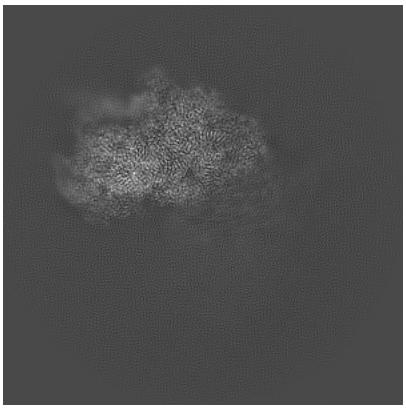
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-73806. These allow visual inspection of the internal detail of the map and identification of artifacts.

Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

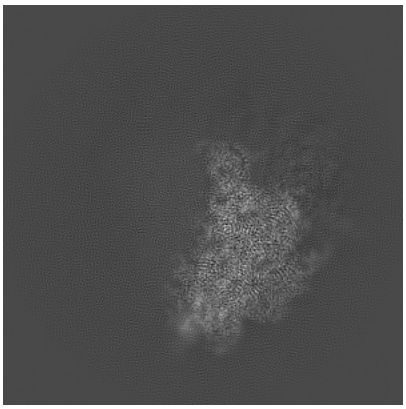
6.1.1 Primary map



X

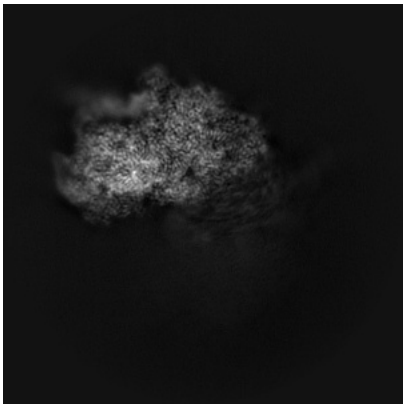


Y

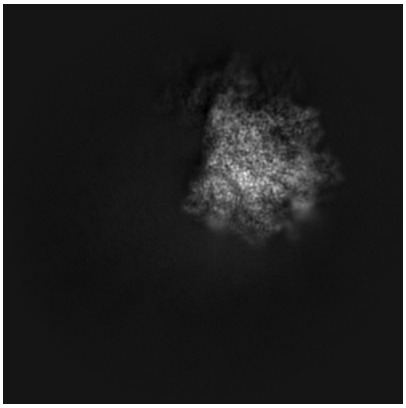


Z

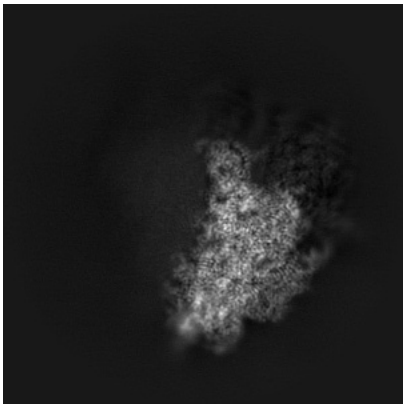
6.1.2 Raw map



X



Y

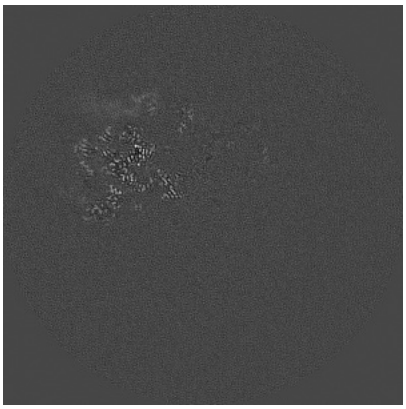


Z

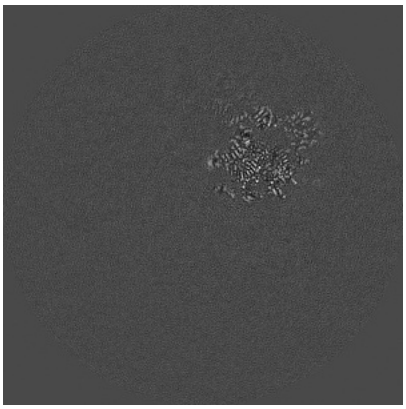
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

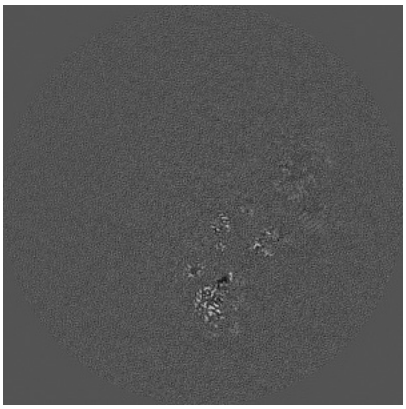
6.2.1 Primary map



X Index: 240

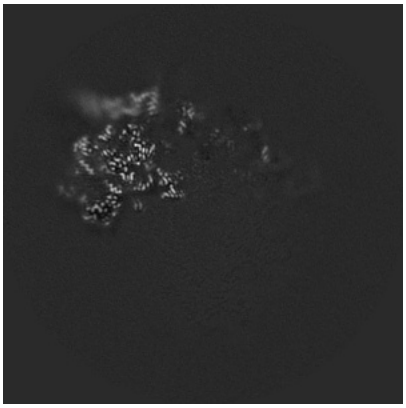


Y Index: 240

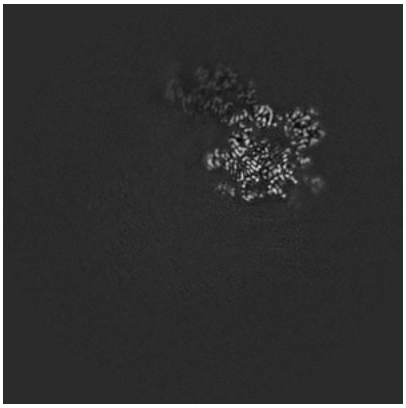


Z Index: 240

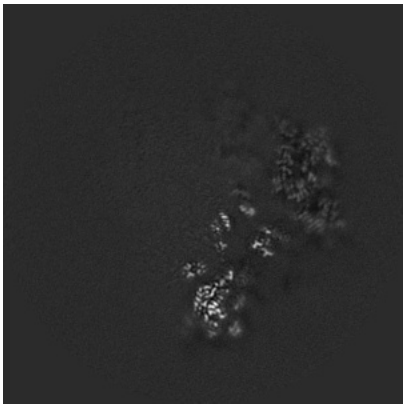
6.2.2 Raw map



X Index: 240



Y Index: 240

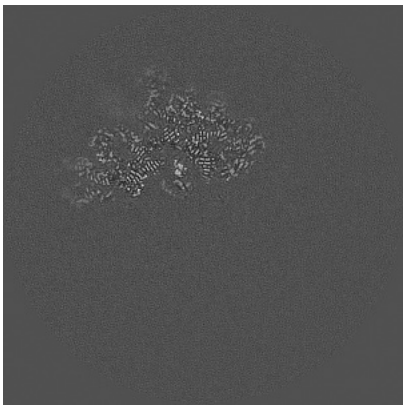


Z Index: 240

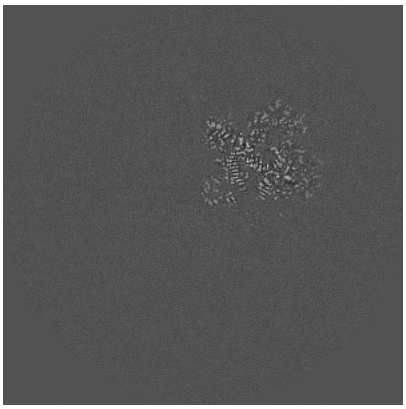
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

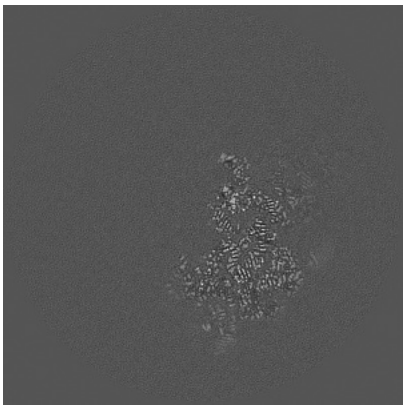
6.3.1 Primary map



X Index: 277

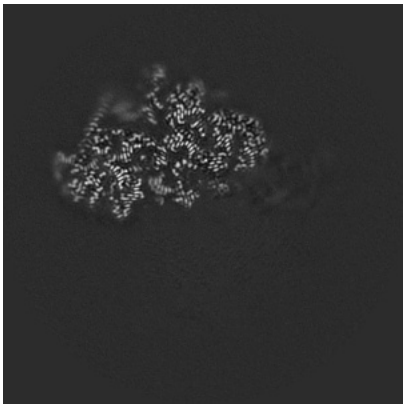


Y Index: 208

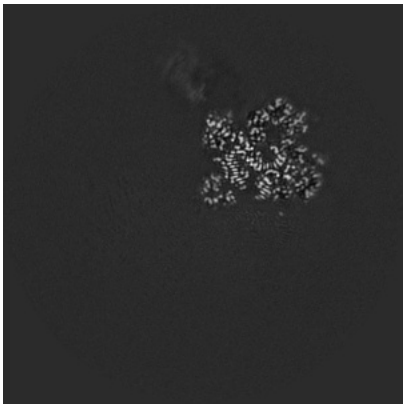


Z Index: 290

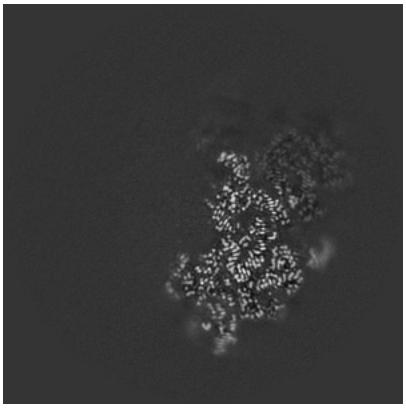
6.3.2 Raw map



X Index: 266



Y Index: 208

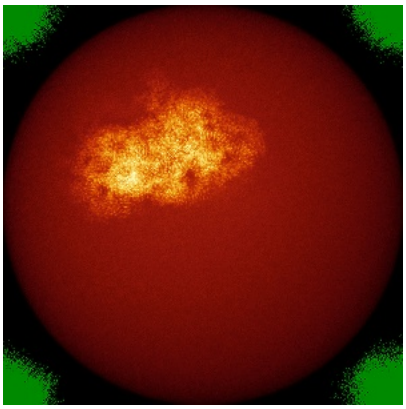


Z Index: 290

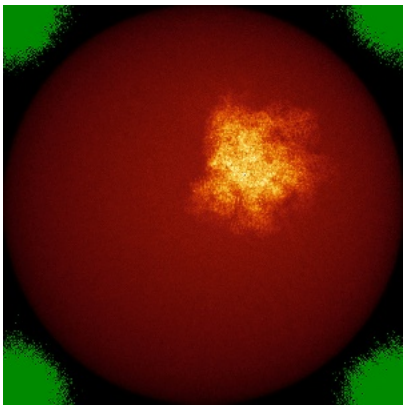
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

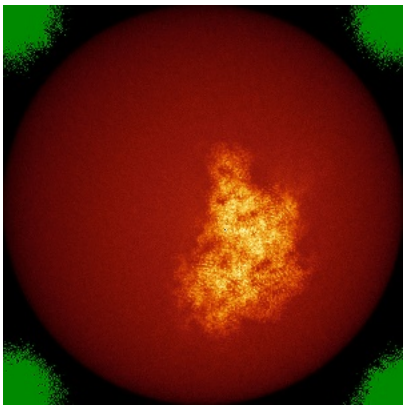
6.4.1 Primary map



X



Y

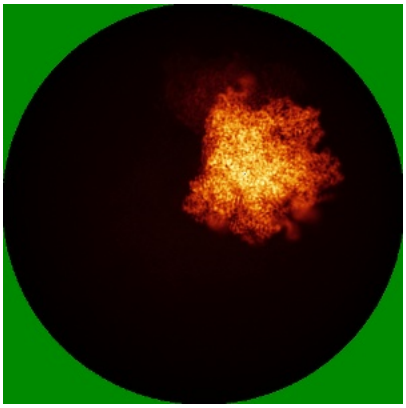


Z

6.4.2 Raw map



X



Y

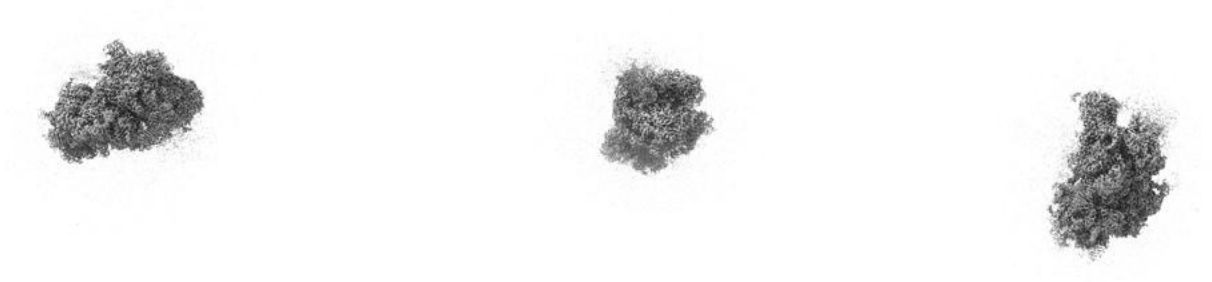


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

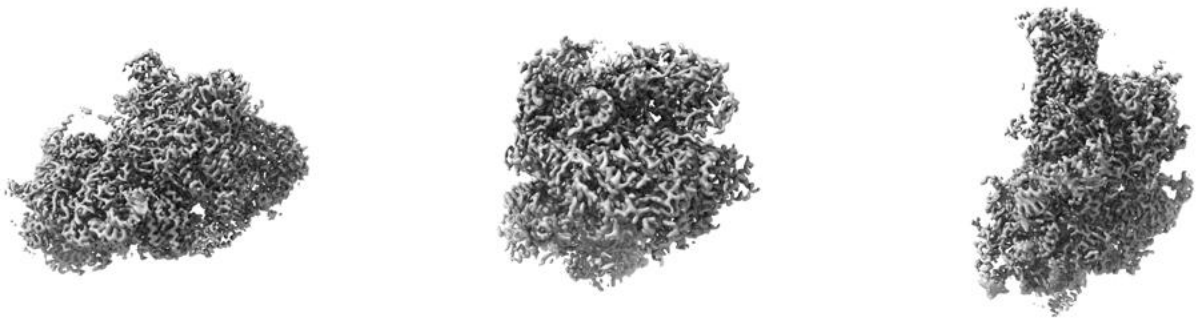
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

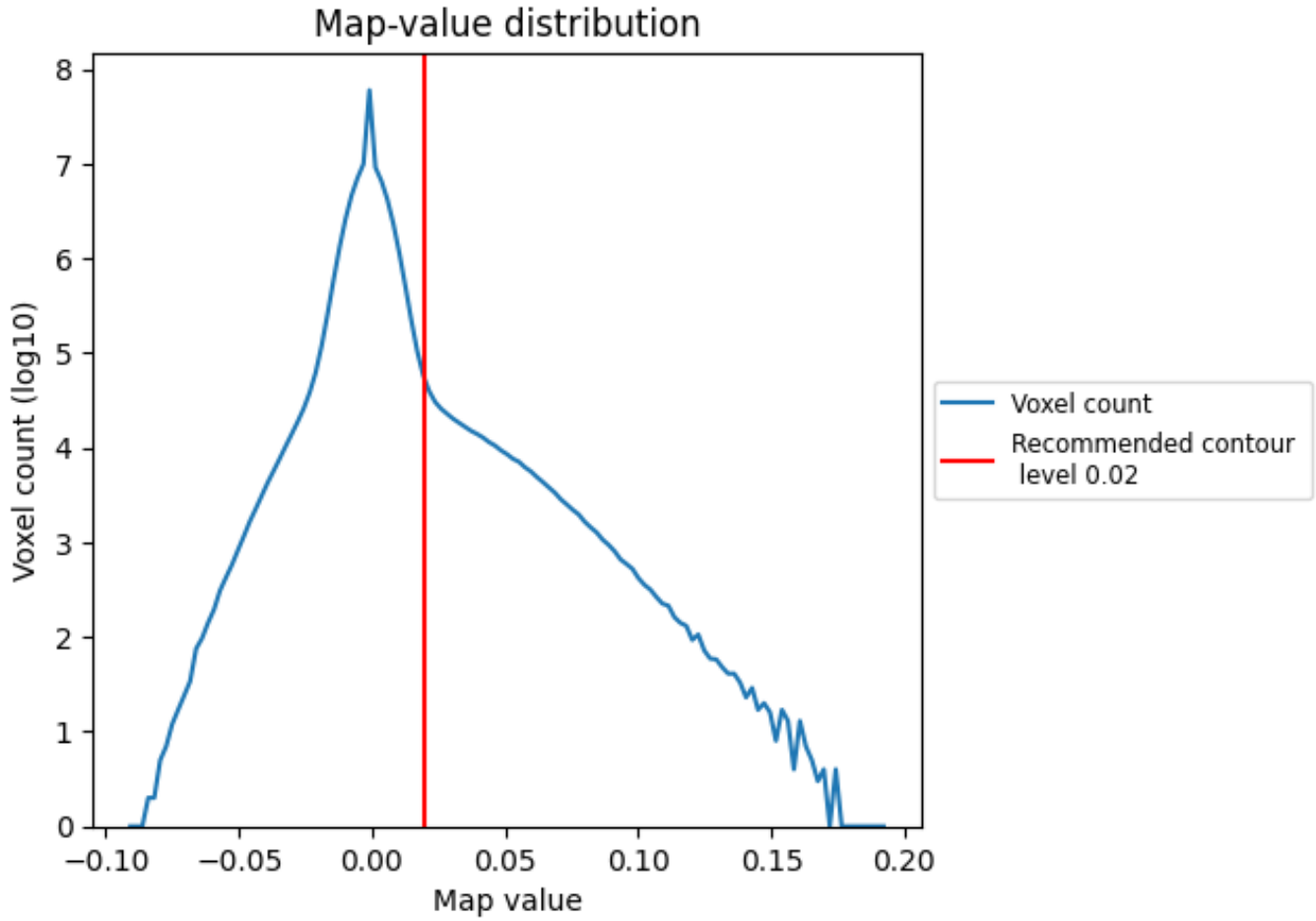
6.6 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis

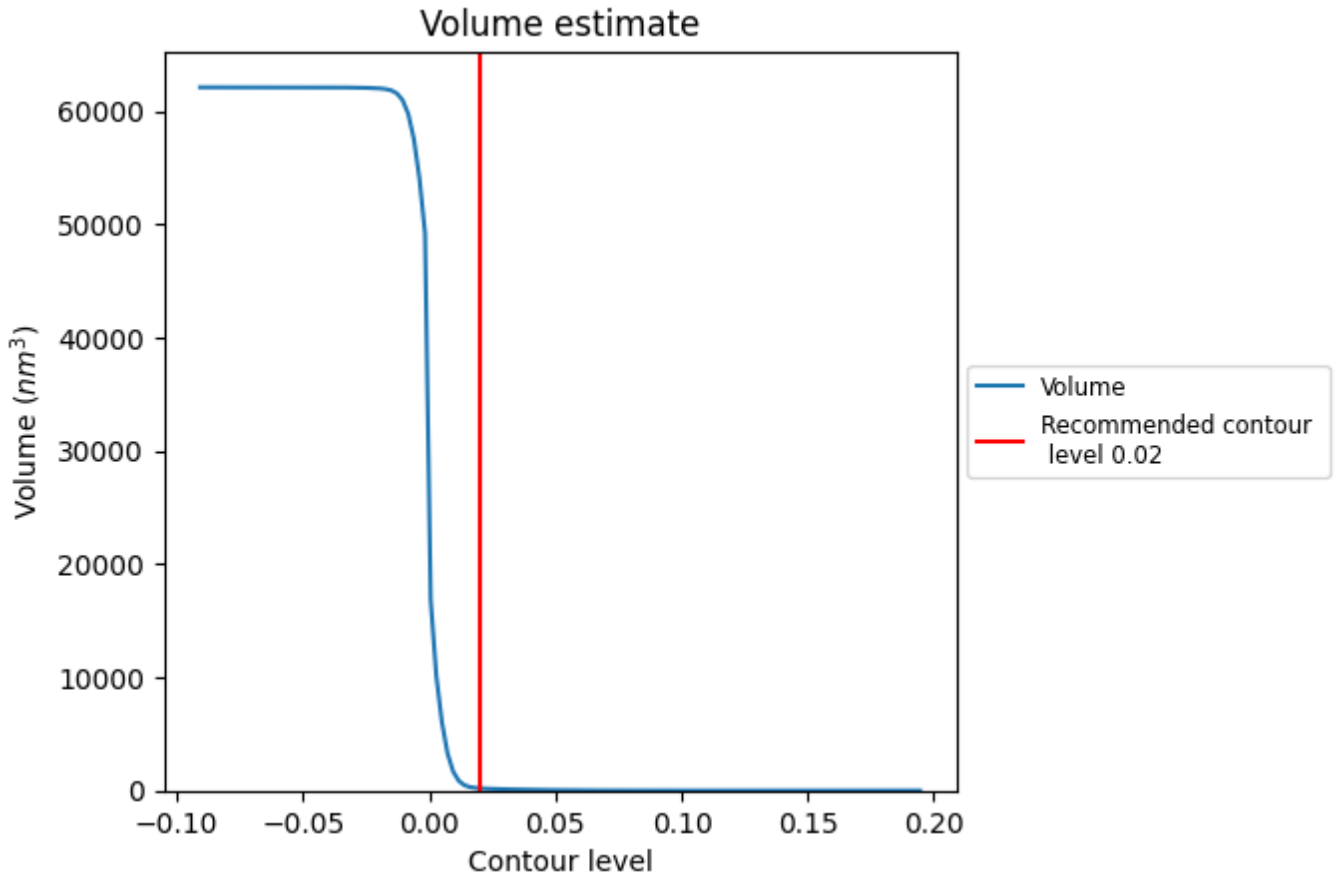
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

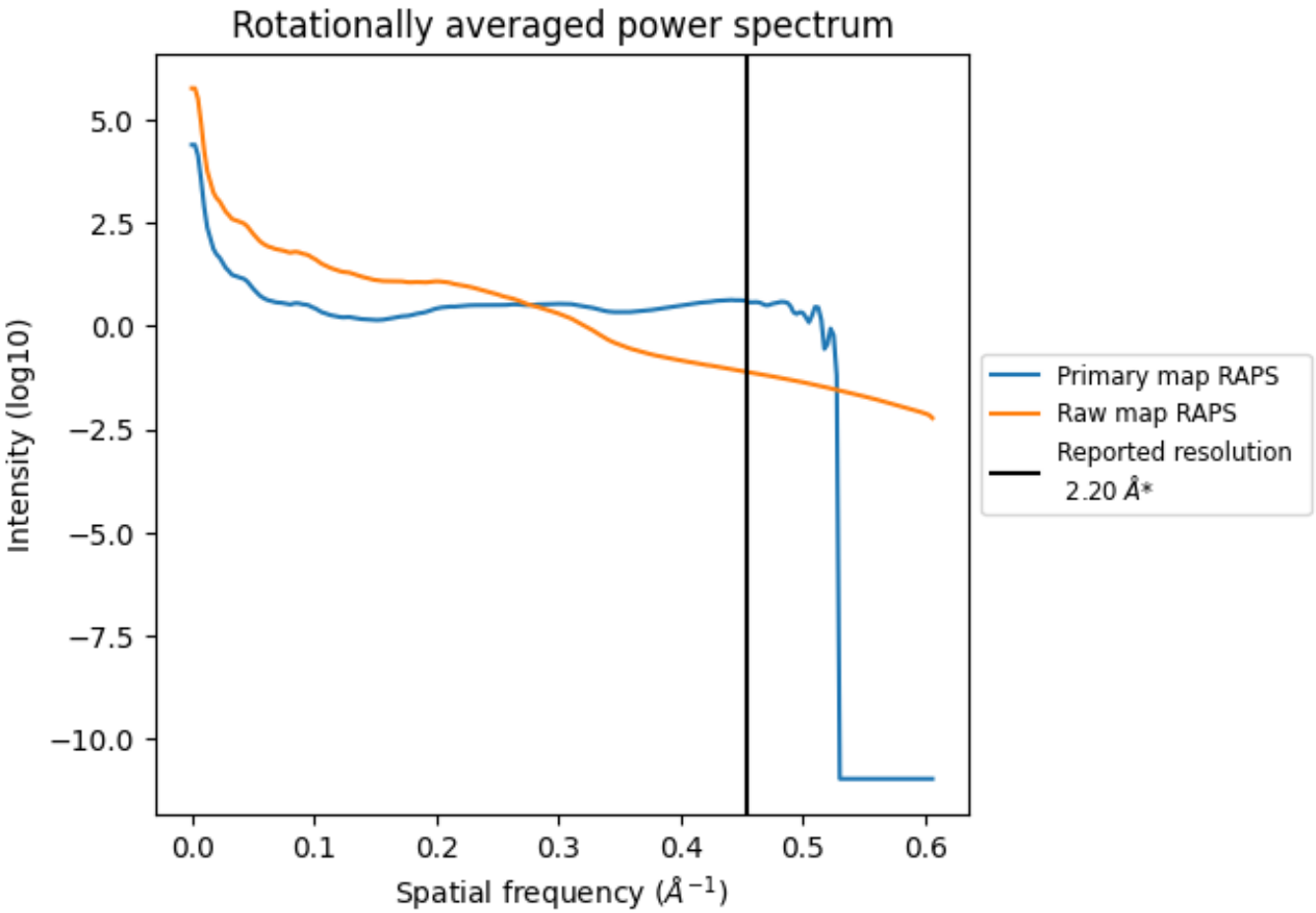
7.2 Volume estimate



The volume at the recommended contour level is 201 nm^3; this corresponds to an approximate mass of 182 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum (i)

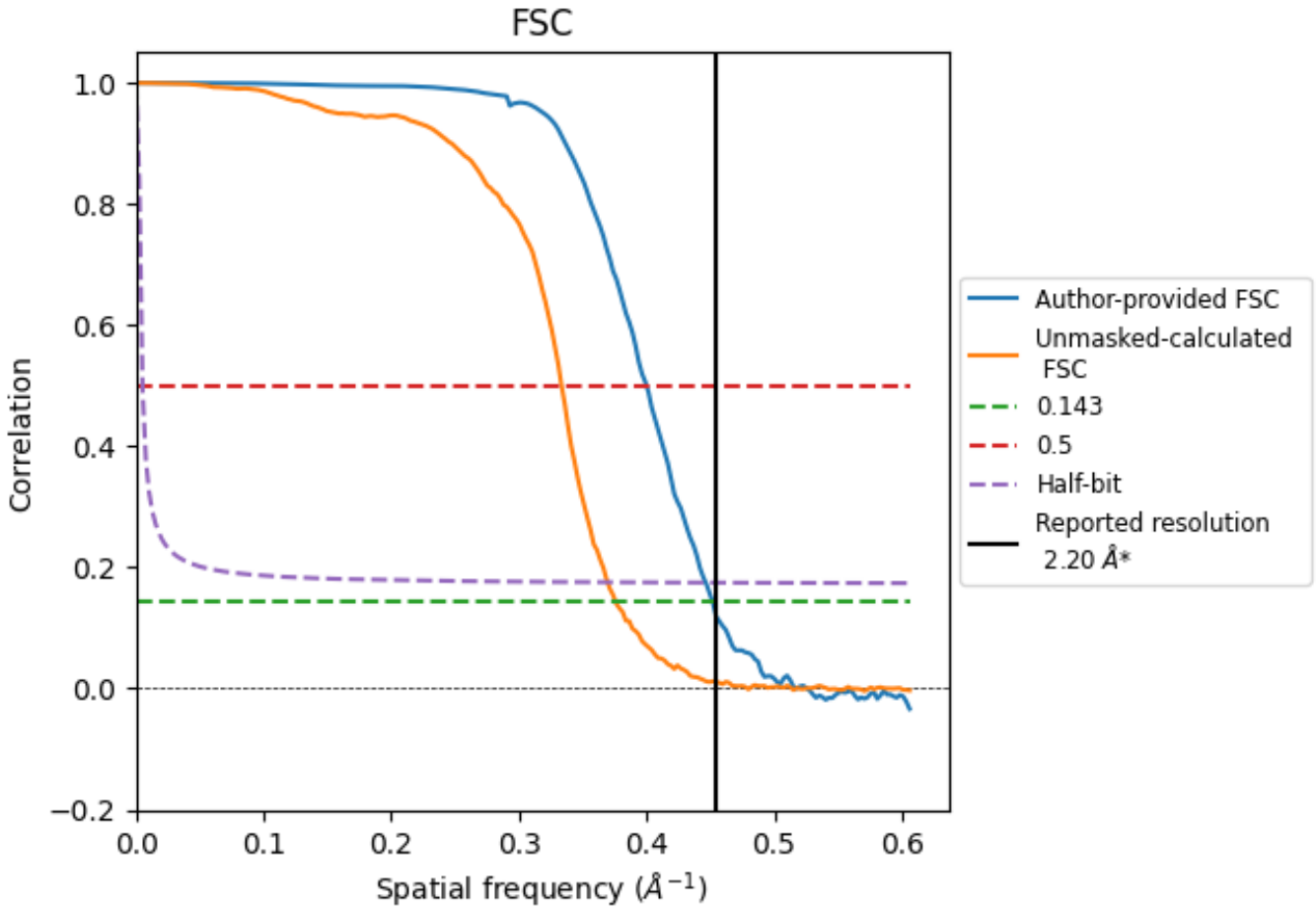


*Reported resolution corresponds to spatial frequency of 0.455 $Å^{-1}$

8 Fourier-Shell correlation

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC



*Reported resolution corresponds to spatial frequency of 0.455 Å^{-1}

8.2 Resolution estimates (i)

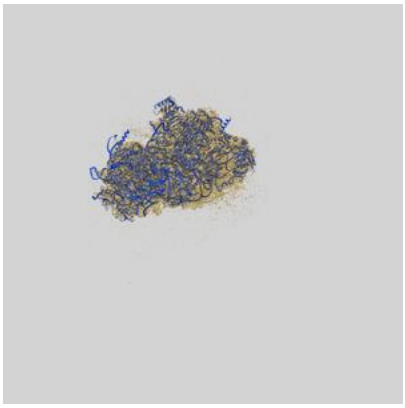
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.20	-	-
Author-provided FSC curve	2.21	2.50	2.24
Unmasked-calculated*	2.66	3.00	2.71

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 2.66 differs from the reported value 2.2 by more than 10 %

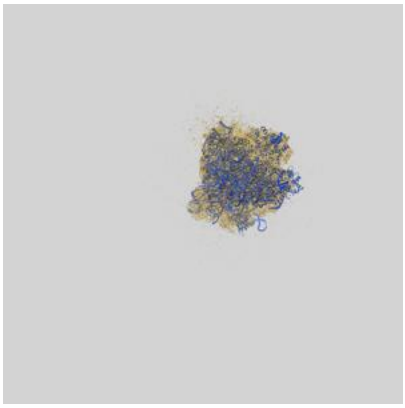
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-73806 and PDB model 9Z4K. Per-residue inclusion information can be found in section 3 on page 10.

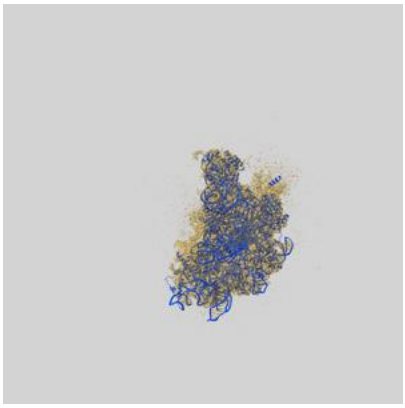
9.1 Map-model overlay



X



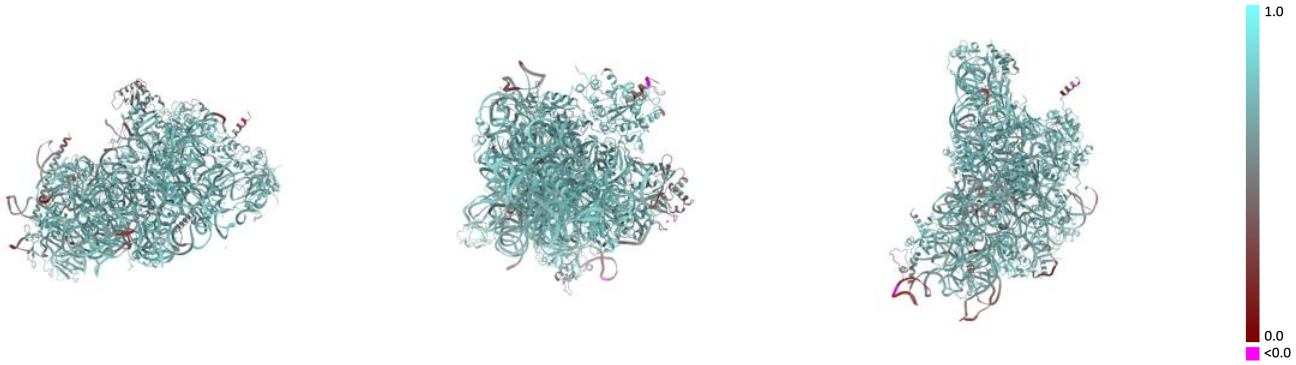
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

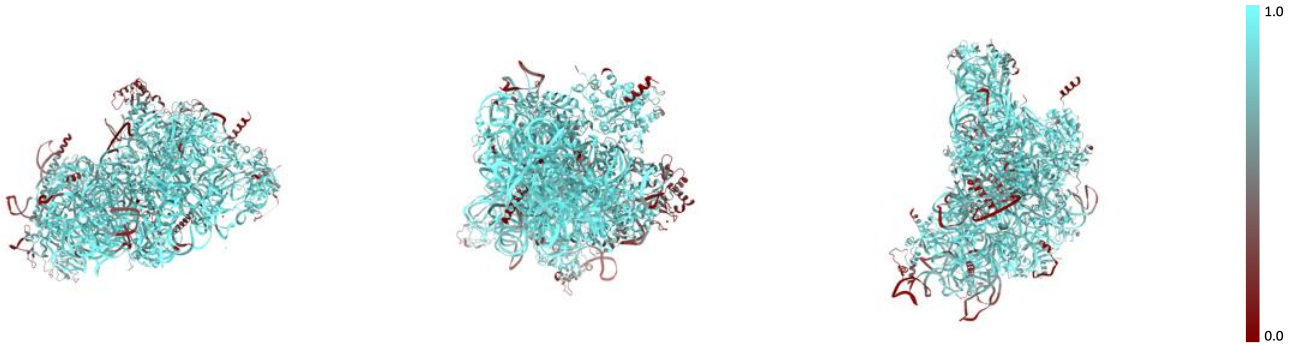
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

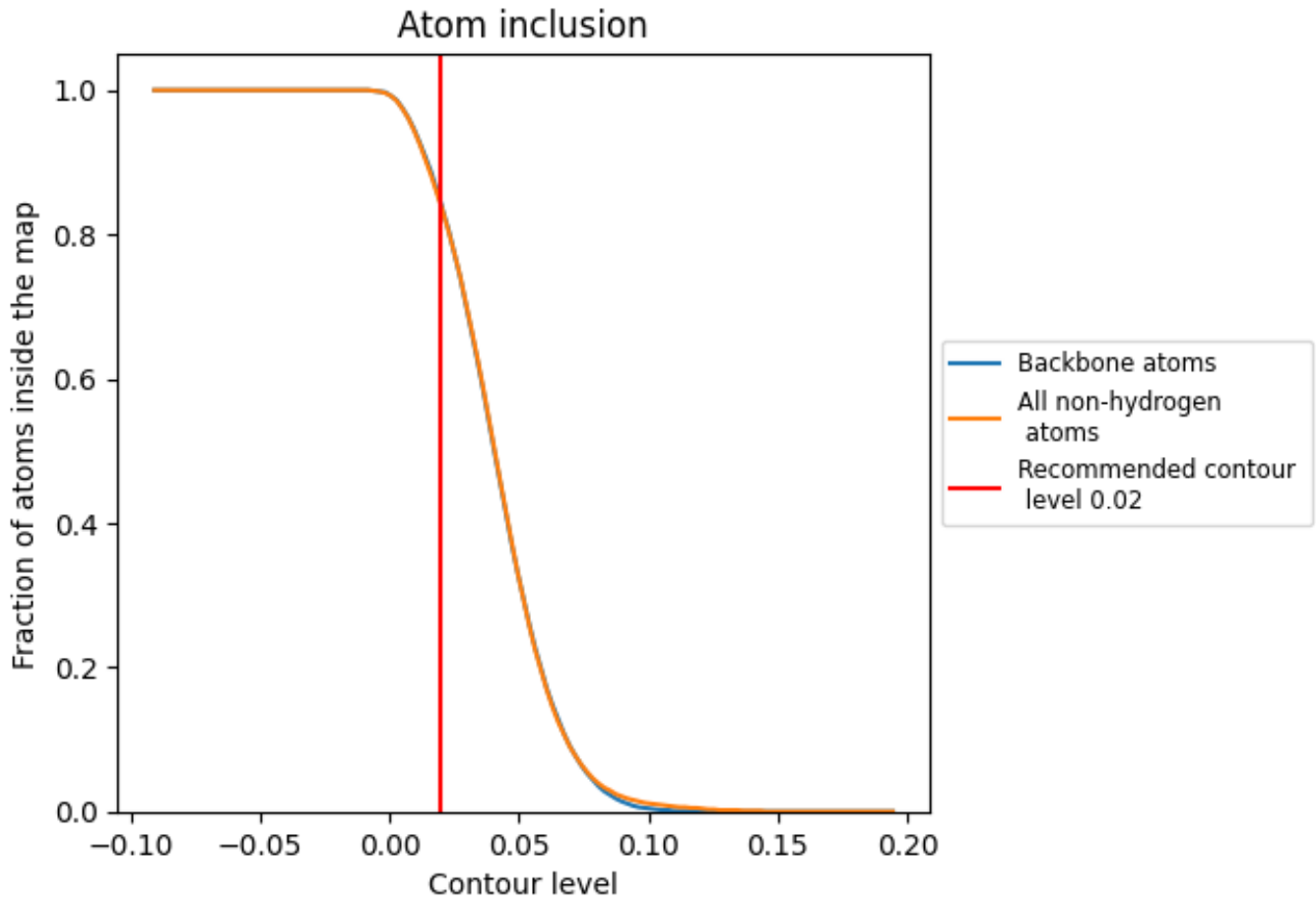
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.02).

9.4 Atom inclusion (i)



At the recommended contour level, 84% of all backbone atoms, 84% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8390	0.6900
S1	0.7950	0.6910
S2	0.8790	0.6890
SA	0.8070	0.6770
SC	0.8780	0.7230
SE	0.8820	0.7230
SG	0.6720	0.6490
SH	0.5130	0.5780
SI	0.7620	0.6770
SJ	0.8730	0.7150
SL	0.8720	0.7150
SN	0.8570	0.7120
SO	0.8890	0.7190
SV	0.8550	0.7060
SW	0.9440	0.7450
SX	0.9350	0.7460
SY	0.8420	0.7050
Sa	0.7930	0.7040
Sb	0.6350	0.6260
Se	0.6870	0.6620
So	0.1700	0.5670

