Full wwPDB EM Validation Report ⓘ

Nov 19, 2026 – 12:32 PM EST

PDB ID	:	36BQ / pdb_000036bq
EMDB ID	:	EMD-77366
Title	:	Cryo-EM structure of the VchCAST Cascade-TniQ Target Recognition Complex (TRC)
Authors	:	Florez Ariza, A.J.; Dubey, S.; Truong, V.H.; Fatma, S.; Kellogg, E.H.
Deposited on	:	2026-05-29
Resolution	:	3.00 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:

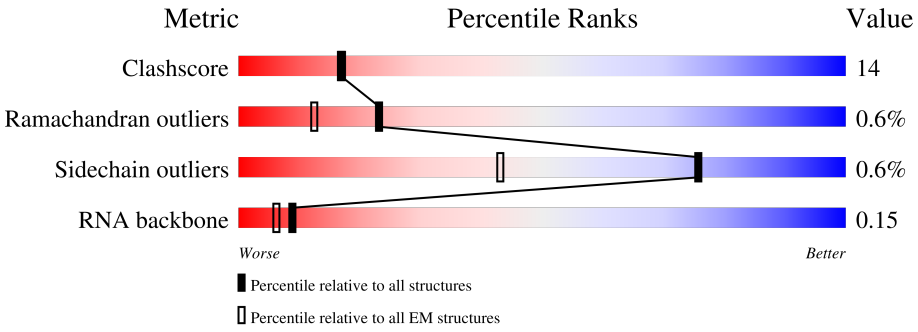
EMDB validation analysis	:	0.0.1.dev133
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh &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

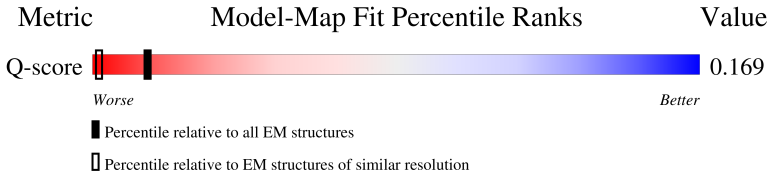
1 Overall quality at a glance

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

The reported resolution of this entry is 3.00 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	14081 (2.50 - 3.50)

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	1	317	8% 7% 81%
2	3	189	17% 7% 75%
3	7	99	9% 83%

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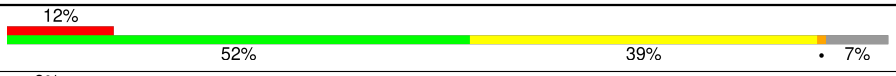
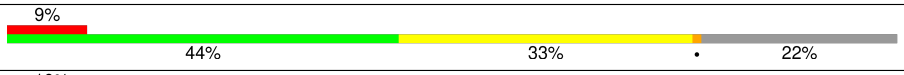
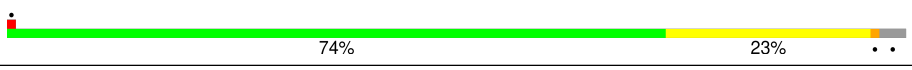
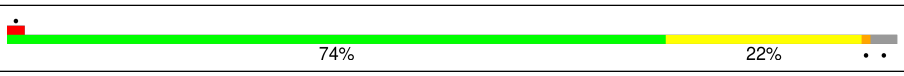
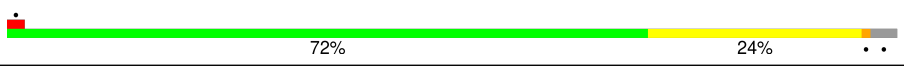
Mol	Chain	Length	Quality of chain
4	N	402	
4	O	402	
5	P	199	
6	Q	352	
6	R	352	
6	S	352	
6	T	352	
6	U	352	
6	V	352	
7	W	640	

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 30074 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 RNA chain called Guide RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	1	60	Total	C	N	O	P	0	0
			1286	574	235	417	60		

- Molecule 2 is a DNA chain called RE-TS.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	3	48	Total	C	N	O	P	0	0
			978	466	173	291	48		

- Molecule 3 is a DNA chain called NTS-Scramble.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	7	17	Total	C	N	O	P	0	0
			352	167	67	101	17		

- Molecule 4 is a protein called Transposition protein TniQ.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	N	373	Total	C	N	O	S	0	0
			3036	1951	519	547	19		
4	O	314	Total	C	N	O	S	0	0
			2570	1653	445	459	13		

There are 14 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
N	-7	MET	-	initiating methionine	UNP A0A6I8WFP2
N	-6	HIS	-	expression tag	UNP A0A6I8WFP2
N	-5	HIS	-	expression tag	UNP A0A6I8WFP2
N	-4	HIS	-	expression tag	UNP A0A6I8WFP2
N	-3	HIS	-	expression tag	UNP A0A6I8WFP2
N	-2	HIS	-	expression tag	UNP A0A6I8WFP2
N	-1	HIS	-	expression tag	UNP A0A6I8WFP2

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Chain	Residue	Modelled	Actual	Comment	Reference
O	-7	MET	-	initiating methionine	UNP A0A6I8WFP2
O	-6	HIS	-	expression tag	UNP A0A6I8WFP2
O	-5	HIS	-	expression tag	UNP A0A6I8WFP2
O	-4	HIS	-	expression tag	UNP A0A6I8WFP2
O	-3	HIS	-	expression tag	UNP A0A6I8WFP2
O	-2	HIS	-	expression tag	UNP A0A6I8WFP2
O	-1	HIS	-	expression tag	UNP A0A6I8WFP2

- Molecule 5 is a protein called Cas6.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	P	195	Total	C	N	O	S	0	0
			1588	1007	282	292	7		

- Molecule 6 is a protein called Cas7.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	R	343	Total	C	N	O	S	0	0
			2742	1744	472	511	15		
6	S	341	Total	C	N	O	S	0	0
			2729	1736	469	509	15		
6	T	341	Total	C	N	O	S	0	0
			2729	1736	469	509	15		
6	U	343	Total	C	N	O	S	0	0
			2747	1747	472	513	15		
6	V	342	Total	C	N	O	S	0	0
			2735	1739	470	511	15		
6	Q	309	Total	C	N	O	S	0	0
			2501	1597	430	460	14		

- Molecule 7 is a protein called CRISPR-associated protein Cas8.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	W	520	Total	C	N	O	S	0	0
			4081	2576	709	776	20		

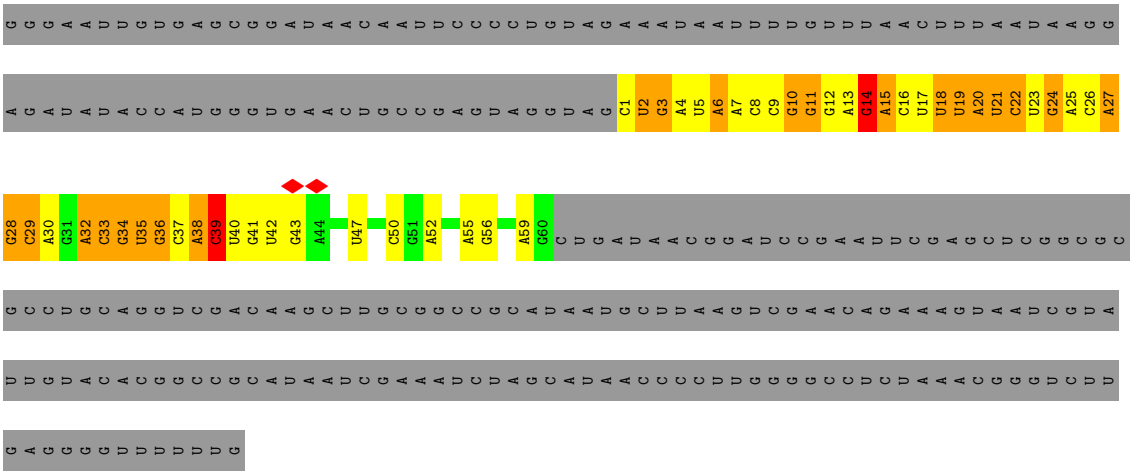
3 Residue-property plots (i)

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: Guide RNA

Chain 1:

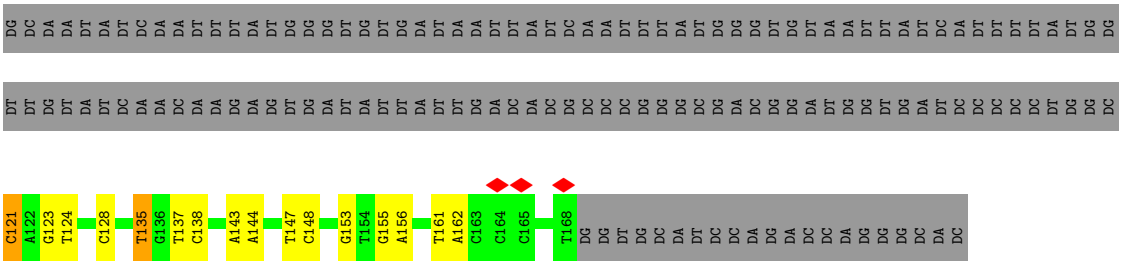




- Molecule 2: RE-TS

Chain 3:





- Molecule 3: NTS-Scramble

Chain 7:



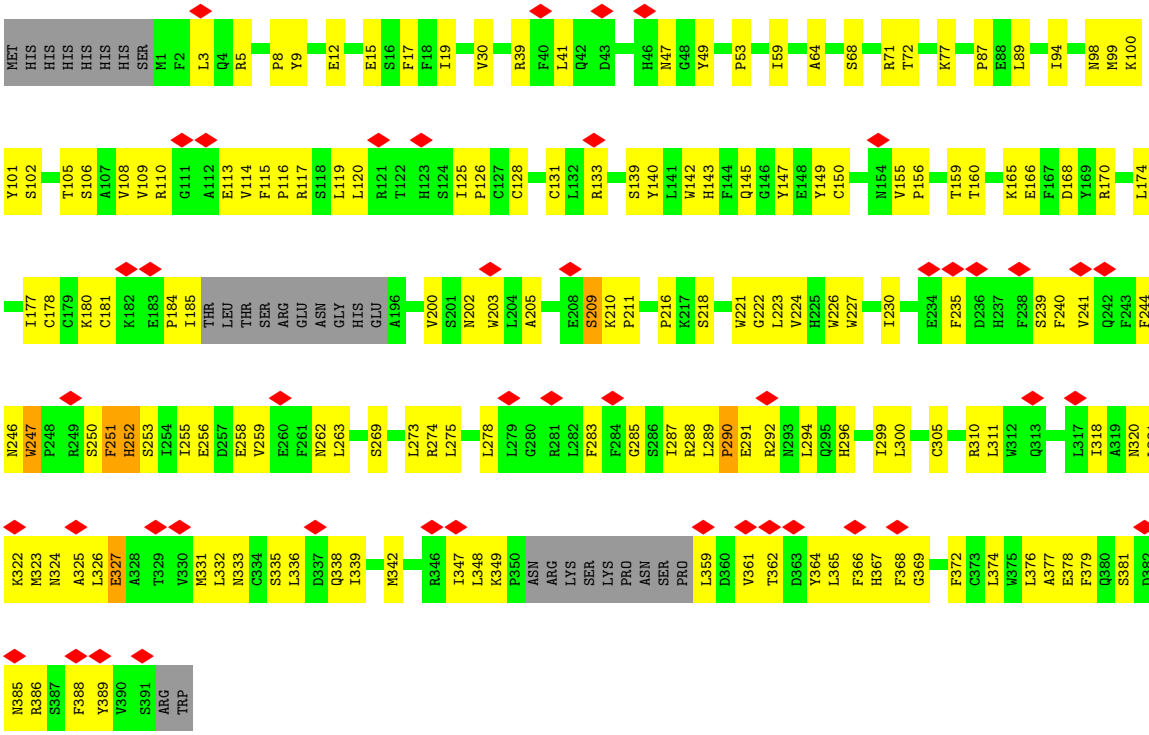




• Molecule 4: Transposition protein TniQ

Chain N:

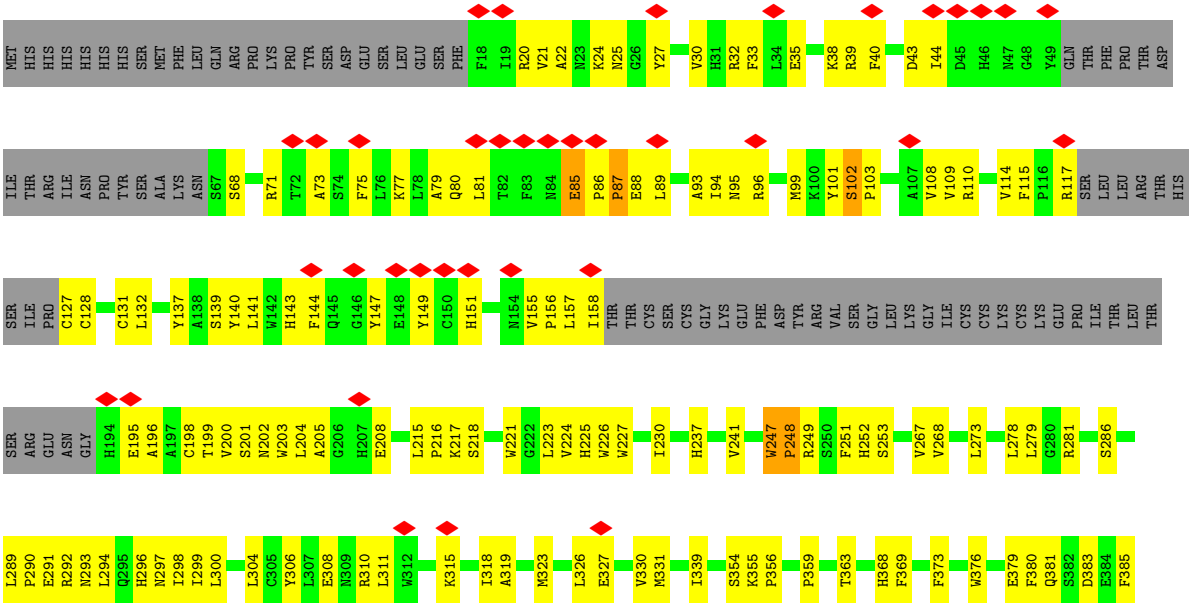


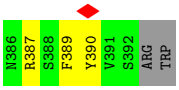


• Molecule 4: Transposition protein TniQ

Chain O:



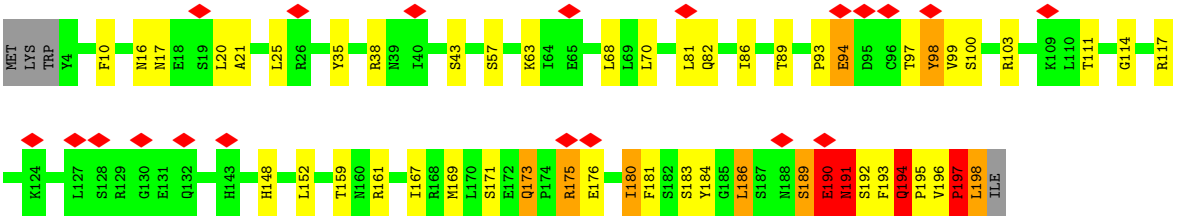




• Molecule 5: Cas6

Chain P:

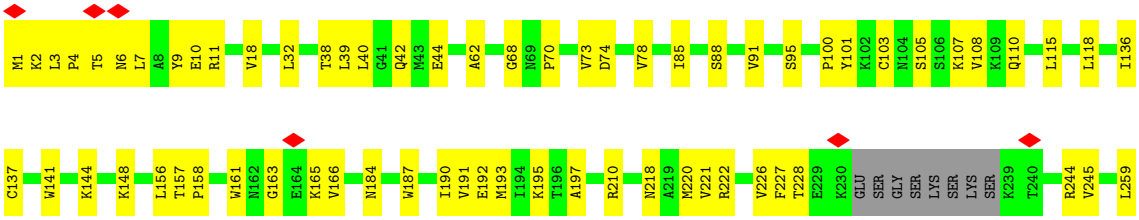




• Molecule 6: Cas7

Chain R:

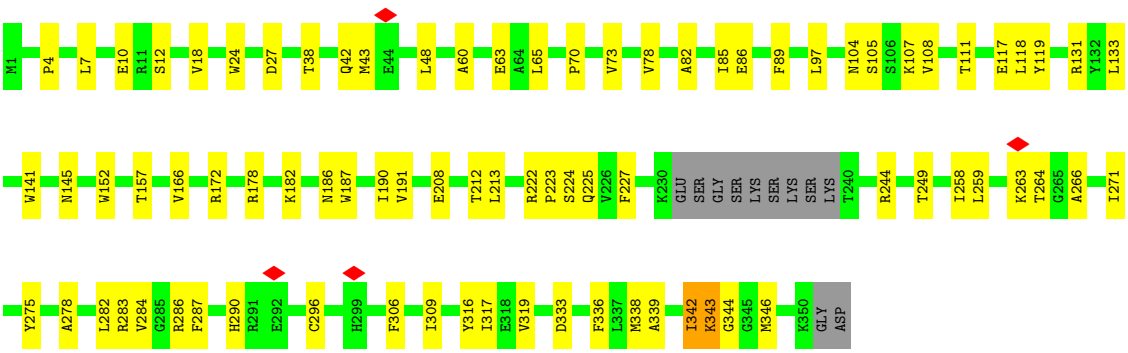




• Molecule 6: Cas7

Chain S:

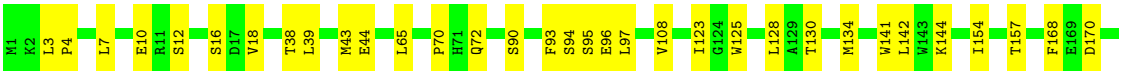


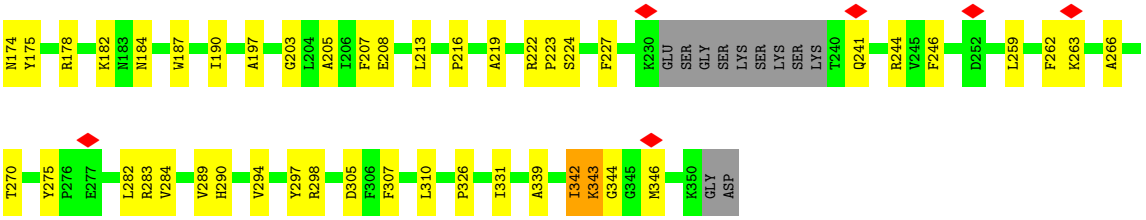


• Molecule 6: Cas7

Chain T:



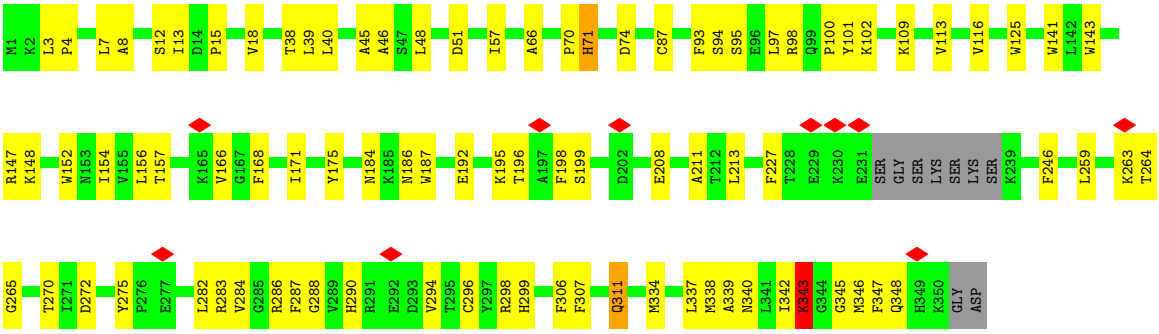




• Molecule 6: Cas7

Chain U:

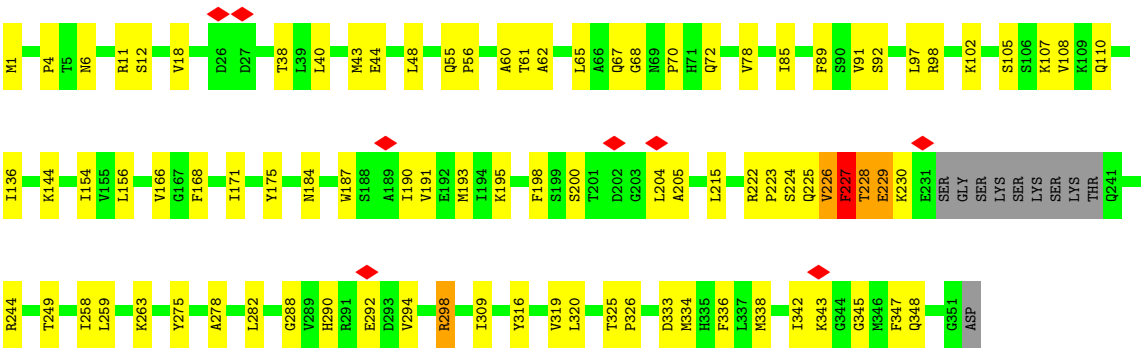




• Molecule 6: Cas7

Chain V:

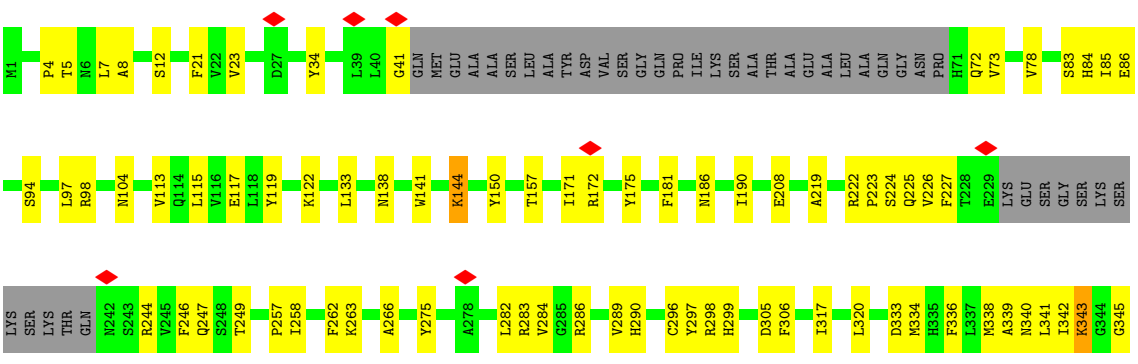




• Molecule 6: Cas7

Chain Q:



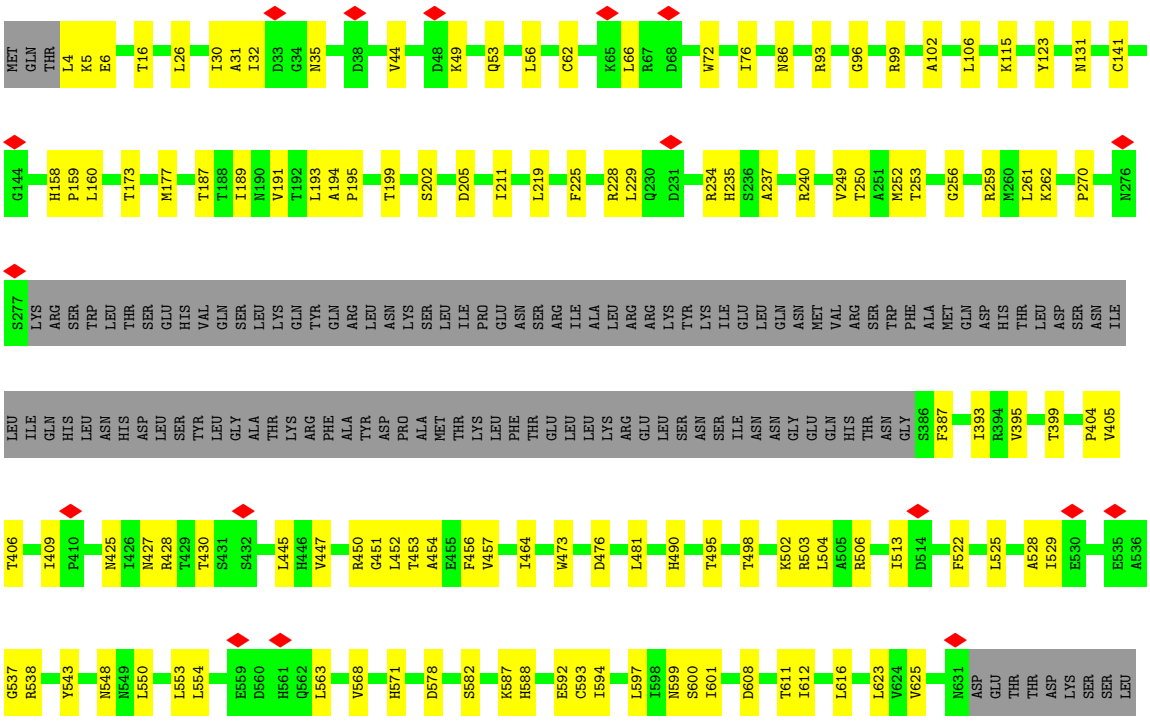




• Molecule 7: CRISPR-associated protein Cas8

Chain W:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	144592	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 ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	2.172	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.011	Depositor
Recommended contour level	0.04	Depositor
Map size (Å)	650.0, 650.0, 650.0	wwPDB
Map dimensions	500, 500, 500	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.3, 1.3, 1.3	Depositor

5 Model quality

5.1 Standard geometry

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	1	0.36	0/1439	0.99	4/2242 (0.2%)
2	3	0.79	0/1094	1.11	5/1685 (0.3%)
3	7	0.83	0/395	1.14	4/608 (0.7%)
4	N	0.23	0/3120	0.68	1/4226 (0.0%)
4	O	0.22	0/2642	0.70	0/3578
5	P	0.38	0/1623	0.65	3/2188 (0.1%)
6	Q	0.19	0/2568	0.50	2/3486 (0.1%)
6	R	0.16	0/2813	0.39	0/3819
6	S	0.20	0/2800	0.55	5/3803 (0.1%)
6	T	0.14	0/2800	0.40	1/3803 (0.0%)
6	U	0.18	0/2818	0.47	1/3826 (0.0%)
6	V	0.22	0/2806	0.50	5/3810 (0.1%)
7	W	0.15	0/4171	0.44	0/5664
All	All	0.27	0/31089	0.61	31/42738 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
4	O	0	3
5	P	0	2
6	Q	0	1
6	S	0	2
6	T	0	1
6	U	0	1
6	V	0	3
All	All	0	13

There are no bond length outliers.

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	S	343	LYS	CD-CE-NZ	10.16	144.41	111.90
2	3	121	DC	OP1-P-O3'	-8.95	81.15	108.00
6	S	343	LYS	CG-CD-CE	-8.90	90.83	111.30
6	T	343	LYS	CA-CB-CG	8.69	131.47	114.10
6	U	343	LYS	CA-CB-CG	8.37	130.84	114.10
3	7	18	DA	O3'-P-O5'	7.87	118.95	104.00
6	Q	343	LYS	CA-CB-CG	7.82	129.74	114.10
1	1	39	C	N1-C2-O2	7.58	123.45	118.90
3	7	17	DC	O4'-C4'-C3'	-7.39	101.56	106.00
6	V	227	PHE	CA-CB-CG	7.31	121.11	113.80
6	V	226	VAL	N-CA-CB	-7.29	100.28	110.26
2	3	121	DC	OP2-P-O3'	-7.13	86.60	108.00
6	S	343	LYS	CB-CG-CD	6.98	127.36	111.30
6	Q	343	LYS	CB-CG-CD	6.32	125.82	111.30
2	3	128	DC	O4'-C4'-C3'	-6.17	102.30	106.00
1	1	39	C	C2-N1-C1'	6.05	125.45	118.80
5	P	194	GLN	CB-CA-C	-6.04	102.03	110.13
1	1	39	C	N3-C2-O2	-5.88	117.79	121.90
6	V	227	PHE	CB-CA-C	5.75	119.35	109.51
2	3	135	DT	O4'-C4'-C3'	-5.72	102.57	106.00
2	3	153	DG	O4'-C4'-C3'	-5.66	102.60	106.00
6	V	348	GLN	CA-CB-CG	5.62	125.35	114.10
1	1	14	G	C4-N9-C1'	5.40	133.51	126.50
5	P	98	TYR	N-CA-C	5.39	117.01	111.03
6	S	27	ASP	CB-CA-C	-5.38	110.35	116.54
6	V	229	GLU	CB-CA-C	5.38	118.50	109.89
3	7	16	DT	P-O3'-C3'	5.32	126.08	119.70
4	N	327	GLU	N-CA-C	-5.29	107.00	112.93
5	P	191	ASN	N-CA-C	-5.21	106.95	113.72
3	7	19	DG	O5'-C5'-C4'	5.07	113.46	109.40
6	S	343	LYS	CA-CB-CG	5.01	124.12	114.10

There are no chirality outliers.

All (13) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	O	102	SER	Peptide
4	O	247	TRP	Peptide
4	O	79	ALA	Peptide
5	P	175	ARG	Sidechain
5	P	97	THR	Peptide
6	Q	144	LYS	Peptide
6	S	186	ASN	Peptide

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Mol	Chain	Res	Type	Group
6	S	342	ILE	Peptide
6	T	342	ILE	Peptide
6	U	343	LYS	Peptide
6	V	298	ARG	Sidechain
6	V	343	LYS	Peptide
6	V	347	PHE	Peptide

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	1	1286	0	648	60	0
2	3	978	0	542	16	0
3	7	352	0	192	13	0
4	N	3036	0	2952	152	0
4	O	2570	0	2484	132	0
5	P	1588	0	1574	33	0
6	Q	2501	0	2426	70	0
6	R	2742	0	2674	74	0
6	S	2729	0	2658	70	0
6	T	2729	0	2660	69	0
6	U	2747	0	2669	75	0
6	V	2735	0	2658	67	0
7	W	4081	0	4042	91	0
All	All	30074	0	28179	811	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 14.

All (811) 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)
6:S:339:ALA:O	6:S:343:LYS:HB2	1.46	1.13
6:Q:144:LYS:HE2	6:Q:222:ARG:H	1.24	1.03
6:U:286:ARG:HH22	6:U:345:GLY:HA3	1.16	1.03
6:V:227:PHE:CD1	7:W:452:LEU:HG	1.94	1.03

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:12:G:H21	6:V:44:GLU:HG2	1.22	1.00
1:1:34:G:HO2'	1:1:35:U:H5	1.09	0.99
6:T:339:ALA:O	6:T:343:LYS:HB3	1.71	0.90
6:V:227:PHE:CG	7:W:452:LEU:HG	2.07	0.89
4:N:116:PRO:HG3	4:N:224:VAL:HG21	1.52	0.88
3:7:16:DT:H1'	3:7:17:DC:H5'	1.57	0.87
4:N:255:ILE:HD13	4:N:305:CYS:HB3	1.58	0.86
6:Q:144:LYS:HE2	6:Q:222:ARG:N	1.91	0.85
6:R:227:PHE:HB3	6:S:38:THR:HG23	1.57	0.83
6:Q:340:ASN:HA	6:Q:343:LYS:HB3	1.60	0.82
4:N:320:ASN:O	4:N:367:HIS:HA	1.81	0.81
4:N:227:TRP:HE1	4:N:235:PHE:H	1.27	0.80
6:U:12:SER:HB2	6:U:342:ILE:HG23	1.63	0.79
1:1:41:G:H1	2:3:121:DC:H42	1.29	0.79
6:R:118:LEU:HB3	6:R:320:LEU:HD22	1.63	0.79
7:W:571:HIS:HB2	7:W:594:ILE:HD11	1.66	0.78
4:O:75:PHE:HB2	4:O:87:PRO:HB2	1.66	0.78
6:U:184:ASN:C	6:U:187:TRP:HD1	1.92	0.77
4:N:246:ASN:HB3	4:N:250:SER:HB3	1.66	0.77
4:O:218:SER:HA	4:O:290:PRO:HG3	1.66	0.77
6:Q:144:LYS:HD3	6:Q:222:ARG:HB2	1.67	0.77
6:Q:282:LEU:HD11	6:Q:290:HIS:HD2	1.49	0.76
4:N:324:ASN:HA	4:N:327:GLU:HB3	1.66	0.75
6:S:224:SER:HB3	6:S:263:LYS:HD3	1.69	0.75
4:N:263:LEU:HD22	4:N:278:LEU:HD11	1.68	0.74
6:S:224:SER:HB3	6:S:263:LYS:CD	2.18	0.74
4:N:210:LYS:HG3	4:N:211:PRO:HD3	1.69	0.74
6:Q:12:SER:HB2	6:Q:342:ILE:HG23	1.70	0.74
6:Q:282:LEU:HD21	6:Q:290:HIS:NE2	2.03	0.73
6:U:284:VAL:HB	6:U:343:LYS:HD2	1.70	0.73
6:U:286:ARG:NH2	6:U:345:GLY:HA3	1.98	0.73
7:W:592:GLU:HG2	7:W:593:CYS:H	1.52	0.73
6:V:184:ASN:C	6:V:187:TRP:HD1	1.96	0.73
4:N:221:TRP:HB3	4:N:289:LEU:HD23	1.71	0.72
1:1:12:G:N2	6:V:44:GLU:HG2	2.03	0.72
6:R:70:PRO:HB3	6:Q:227:PHE:HE2	1.52	0.72
7:W:261:LEU:HD21	7:W:550:LEU:HD11	1.70	0.72
7:W:31:ALA:HA	7:W:141:CYS:HB3	1.70	0.72
4:O:273:LEU:HD13	4:O:278:LEU:HD11	1.71	0.72
6:R:10:GLU:HB2	6:R:101:TYR:HB2	1.70	0.72
5:P:159:THR:HG23	5:P:161:ARG:HG3	1.71	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:27:A:C8	6:S:227:PHE:HA	2.24	0.71
1:1:1:C:H4'	7:W:202:SER:HB2	1.73	0.71
6:S:4:PRO:HG2	6:S:7:LEU:HB2	1.71	0.71
6:S:283:ARG:N	6:S:290:HIS:HE1	1.89	0.71
1:1:33:C:H5	6:R:228:THR:H	1.37	0.71
6:S:259:LEU:HB3	6:S:263:LYS:HG2	1.73	0.71
4:N:47:ASN:HB3	4:N:49:TYR:HD2	1.55	0.70
6:T:4:PRO:HD3	6:T:108:VAL:HG21	1.73	0.70
4:N:53:PRO:HD3	4:N:71:ARG:HE	1.56	0.70
4:N:274:ARG:HD3	4:N:322:LYS:HA	1.73	0.70
4:N:110:ARG:HA	4:O:387:ARG:HH22	1.57	0.70
4:O:300:LEU:HD22	4:O:389:PHE:CE2	2.25	0.70
2:3:123:DG:H5"	2:3:123:DG:H8	1.58	0.69
6:R:18:VAL:HB	6:R:259:LEU:HB2	1.73	0.69
4:N:259:VAL:HA	4:N:263:LEU:HD23	1.74	0.69
5:P:43:SER:HB3	5:P:57:SER:HB2	1.74	0.69
6:V:168:PHE:HB3	6:V:171:ILE:HD11	1.74	0.69
6:R:10:GLU:HG3	6:R:11:ARG:H	1.57	0.69
6:U:284:VAL:HB	6:U:343:LYS:CD	2.16	0.69
7:W:249:VAL:HG23	7:W:252:MET:HE2	1.73	0.69
6:T:184:ASN:C	6:T:187:TRP:HD1	2.01	0.69
4:N:159:THR:HG23	4:N:160:THR:HG23	1.75	0.68
4:N:274:ARG:HE	4:N:364:TYR:HD1	1.41	0.68
6:Q:290:HIS:CE1	6:Q:297:TYR:HD2	2.11	0.68
6:Q:333:ASP:HA	6:Q:336:PHE:HD2	1.57	0.68
6:S:157:THR:HB	6:S:208:GLU:HB2	1.76	0.67
6:S:282:LEU:HD13	6:S:290:HIS:CD2	2.30	0.67
4:O:143:HIS:HB3	4:O:144:PHE:HD1	1.59	0.67
6:R:70:PRO:HB3	6:Q:227:PHE:CE2	2.29	0.67
1:1:14:G:H21	6:U:283:ARG:CZ	2.07	0.67
4:N:101:TYR:OH	4:N:116:PRO:HA	1.95	0.67
6:R:3:LEU:HB3	6:R:6:ASN:HB2	1.76	0.67
4:O:223:LEU:HB3	4:O:227:TRP:HE1	1.60	0.67
3:7:16:DT:C1'	3:7:17:DC:H5'	2.24	0.67
4:N:210:LYS:HZ1	4:N:241:VAL:HA	1.60	0.67
6:T:142:LEU:HD13	6:T:213:LEU:HD21	1.76	0.67
6:V:43:MET:HG3	6:V:65:LEU:HA	1.75	0.67
4:O:35:GLU:HB3	4:O:39:ARG:HH12	1.60	0.67
6:S:18:VAL:HB	6:S:259:LEU:HB2	1.77	0.67
6:R:7:LEU:HA	6:R:103:CYS:HA	1.77	0.66
3:7:18:DA:OP1	7:W:49:LYS:HE3	1.95	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:U:125:TRP:HB2	6:U:195:LYS:HG3	1.76	0.66
4:N:99:MET:HE2	4:O:381:GLN:HA	1.77	0.66
4:N:318:ILE:HG23	4:N:369:GLY:HA3	1.77	0.66
7:W:563:LEU:HD21	7:W:597:LEU:HD13	1.77	0.66
6:S:166:VAL:HG21	6:S:190:ILE:HD11	1.77	0.66
6:S:283:ARG:H	6:S:290:HIS:HE1	1.43	0.66
4:N:246:ASN:HB2	4:N:251:PHE:CE1	2.31	0.66
6:U:282:LEU:HD21	6:U:290:HIS:CE1	2.31	0.66
6:U:275:TYR:CZ	6:U:298:ARG:HB2	2.31	0.65
5:P:103:ARG:HB2	5:P:186:LEU:HG	1.79	0.65
4:N:160:THR:HG22	4:N:166:GLU:HG2	1.77	0.65
6:R:184:ASN:HB3	6:R:187:TRP:CD1	2.32	0.65
6:V:166:VAL:HG21	6:V:190:ILE:HD11	1.78	0.65
6:V:288:GLY:HA3	6:V:298:ARG:HG3	1.79	0.65
4:O:151:HIS:CE1	4:O:198:CYS:HA	2.32	0.65
6:R:78:VAL:HB	6:R:85:ILE:HD11	1.78	0.65
4:N:39:ARG:HH22	6:Q:172:ARG:HG3	1.61	0.65
6:V:61:THR:HG22	6:V:62:ALA:H	1.61	0.65
4:O:157:LEU:HD23	4:O:158:ILE:HG12	1.79	0.65
4:N:119:LEU:HD22	4:N:145:GLN:HB2	1.79	0.65
2:3:147:DT:H5”	6:V:67:GLN:HG3	1.80	0.64
4:N:218:SER:HA	4:N:221:TRP:HD1	1.61	0.64
1:1:33:C:C5	6:R:227:PHE:HA	2.32	0.64
7:W:173:THR:HG23	7:W:177:MET:HE2	1.79	0.64
4:O:77:LYS:H	4:O:87:PRO:HB3	1.62	0.64
6:U:18:VAL:HB	6:U:259:LEU:HB2	1.78	0.64
4:O:215:LEU:HD23	4:O:217:LYS:H	1.60	0.64
6:S:227:PHE:CZ	6:T:70:PRO:HB3	2.33	0.64
6:Q:286:ARG:HH12	6:Q:345:GLY:HA3	1.62	0.64
6:R:291:ARG:HH21	6:S:42:GLN:HG2	1.63	0.64
4:O:289:LEU:HB3	4:O:290:PRO:HD2	1.79	0.64
7:W:543:TYR:HB2	7:W:599:ASN:HB2	1.79	0.63
1:1:36:G:N2	6:Q:346:MET:HG2	2.13	0.63
6:V:12:SER:HB2	6:V:342:ILE:HG23	1.81	0.63
6:V:225:GLN:NE2	6:V:244:ARG:HG3	2.13	0.63
1:1:27:A:H61	2:3:135:DT:H3	1.46	0.63
4:O:24:LYS:HG3	4:O:25:ASN:H	1.64	0.63
6:Q:286:ARG:HA	6:Q:306:PHE:HD2	1.63	0.62
4:O:323:MET:H	4:O:326:LEU:HD12	1.64	0.62
1:1:21:U:C5	6:T:227:PHE:HA	2.34	0.62
4:N:117:ARG:HD2	4:N:120:LEU:HD11	1.82	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:N:210:LYS:NZ	4:N:241:VAL:HA	2.14	0.62
6:R:339:ALA:O	6:R:343:LYS:HB2	1.98	0.62
4:N:47:ASN:HB3	4:N:49:TYR:CD2	2.34	0.62
7:W:86:ASN:HB2	7:W:219:LEU:HD21	1.81	0.62
4:N:77:LYS:HE3	4:O:311:LEU:HD22	1.80	0.62
6:Q:157:THR:HB	6:Q:208:GLU:HB2	1.82	0.62
4:O:80:GLN:HB3	4:O:88:GLU:HA	1.81	0.62
6:V:1:MET:HE1	6:V:108:VAL:HG13	1.82	0.62
4:O:147:TYR:HD1	4:O:200:VAL:HG13	1.65	0.62
4:N:311:LEU:HD11	4:O:77:LYS:HD3	1.82	0.61
4:N:325:ALA:HB2	4:N:362:THR:HG22	1.82	0.61
4:O:149:TYR:CD1	4:O:156:PRO:HB3	2.35	0.61
6:U:7:LEU:HD23	6:U:347:PHE:HB2	1.83	0.61
6:Q:282:LEU:HD21	6:Q:290:HIS:CD2	2.35	0.61
5:P:100:SER:HB3	5:P:195:PRO:HA	1.82	0.61
3:7:18:DA:P	7:W:49:LYS:HE3	2.40	0.61
6:Q:282:LEU:HD21	6:Q:290:HIS:HE2	1.65	0.61
1:1:10:G:H2'	6:V:225:GLN:NE2	2.15	0.61
4:O:132:LEU:HD22	4:O:139:SER:H	1.64	0.61
5:P:189:SER:O	5:P:190:GLU:C	2.43	0.61
6:Q:113:VAL:O	6:Q:117:GLU:HG3	2.01	0.61
4:N:227:TRP:NE1	4:N:235:PHE:H	1.97	0.60
6:T:12:SER:HB2	6:T:342:ILE:HG23	1.83	0.60
6:R:337:LEU:O	6:R:340:ASN:HB2	2.01	0.60
4:O:319:ALA:H	4:O:369:PHE:HE2	1.49	0.60
6:U:175:TYR:HE1	6:U:184:ASN:HD21	1.49	0.60
3:7:18:DA:H4'	7:W:49:LYS:NZ	2.16	0.60
4:N:39:ARG:NH2	6:Q:172:ARG:HG3	2.16	0.60
1:1:14:G:O2'	1:1:15:A:H4'	2.01	0.60
6:T:93:PHE:HB2	6:T:205:ALA:HB3	1.83	0.60
6:U:87:CYS:HB2	6:U:211:ALA:HB3	1.82	0.60
7:W:6:GLU:HA	7:W:30:ILE:HD11	1.82	0.60
4:O:221:TRP:HB3	4:O:289:LEU:HD22	1.82	0.60
4:N:209:SER:H	4:N:211:PRO:HD2	1.66	0.60
4:N:322:LYS:HG3	4:N:368:PHE:CE1	2.37	0.60
6:S:97:LEU:HD13	6:S:342:ILE:HG13	1.84	0.60
6:S:227:PHE:HB3	6:T:38:THR:HG23	1.84	0.59
7:W:538:ARG:HE	7:W:600:SER:HB2	1.67	0.59
4:O:221:TRP:CG	4:O:290:PRO:HD3	2.37	0.59
1:1:6:A:H5'	6:V:11:ARG:HB3	1.84	0.59
4:O:296:HIS:ND1	4:O:299:ILE:HB	2.17	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:11:G:H1'	6:U:8:ALA:HB1	1.82	0.59
4:N:320:ASN:HB3	4:N:368:PHE:CE1	2.37	0.59
4:N:100:LYS:HD2	4:N:288:ARG:HE	1.68	0.59
4:N:320:ASN:HB3	4:N:368:PHE:CD1	2.37	0.59
4:N:321:LEU:HA	4:N:366:PHE:O	2.02	0.59
4:N:149:TYR:HA	4:N:156:PRO:HA	1.84	0.59
4:N:218:SER:HA	4:N:221:TRP:CD1	2.37	0.59
4:N:5:ARG:HD3	4:N:87:PRO:HB3	1.85	0.59
4:N:210:LYS:HB2	4:N:247:TRP:HE1	1.67	0.59
6:U:152:TRP:HB3	6:U:213:LEU:HD12	1.84	0.59
6:T:144:LYS:HD3	6:T:222:ARG:HH11	1.68	0.59
6:T:284:VAL:HG11	6:T:343:LYS:HD2	1.85	0.59
7:W:66:LEU:HA	7:W:72:TRP:HE1	1.67	0.59
4:N:19:ILE:HD13	4:N:30:VAL:HG21	1.84	0.59
6:R:73:VAL:HG23	6:R:244:ARG:HB3	1.85	0.59
6:R:184:ASN:HB3	6:R:187:TRP:HD1	1.67	0.58
4:O:21:VAL:HG11	4:O:137:TYR:HB3	1.84	0.58
6:S:4:PRO:HD3	6:S:108:VAL:HG21	1.85	0.58
6:V:204:LEU:HD21	7:W:502:LYS:HE3	1.84	0.58
6:V:320:LEU:HD21	6:V:334:MET:HE1	1.85	0.58
4:O:315:LYS:HD3	4:O:318:ILE:HG21	1.85	0.58
6:V:4:PRO:HG3	6:V:105:SER:HB3	1.84	0.58
6:U:334:MET:O	6:U:338:MET:HG2	2.04	0.58
6:T:94:SER:HB2	6:U:148:LYS:HE3	1.85	0.58
4:O:310:ARG:NH2	4:O:368:HIS:HD2	2.02	0.58
1:1:34:G:H1'	1:1:35:U:C5	2.38	0.57
5:P:111:THR:HG23	5:P:114:GLY:H	1.69	0.57
6:V:309:ILE:HG23	6:V:316:TYR:HE2	1.68	0.57
7:W:26:LEU:HD12	7:W:253:THR:HB	1.86	0.57
6:R:226:VAL:HB	6:R:245:VAL:HG13	1.84	0.57
6:S:104:ASN:HD21	6:T:294:VAL:HB	1.70	0.57
4:O:21:VAL:HG22	4:O:140:TYR:CD1	2.39	0.57
4:O:297:ASN:HA	4:O:300:LEU:HD21	1.86	0.57
6:R:3:LEU:HD13	6:R:348:GLN:HA	1.85	0.57
6:Q:78:VAL:HG23	6:Q:85:ILE:HD11	1.85	0.57
1:1:28:G:H2'	1:1:29:C:C6	2.38	0.57
4:N:41:LEU:HB3	4:N:47:ASN:ND2	2.18	0.57
4:N:349:LYS:HE3	4:N:367:HIS:N	2.20	0.57
6:V:4:PRO:HD3	6:V:108:VAL:HG21	1.86	0.57
6:R:105:SER:HB3	6:R:108:VAL:HG12	1.84	0.57
4:O:108:VAL:HG13	4:O:115:PHE:HB2	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:O:300:LEU:HD22	4:O:389:PHE:HE2	1.69	0.57
4:N:64:ALA:HB2	4:N:71:ARG:NH1	2.19	0.57
6:S:12:SER:HB3	6:S:342:ILE:HG23	1.86	0.57
6:R:144:LYS:HB2	6:R:222:ARG:HD3	1.86	0.57
2:3:123:DG:N2	6:R:40:LEU:HD22	2.20	0.56
6:R:288:GLY:HA3	6:R:298:ARG:HD3	1.86	0.56
6:U:3:LEU:HB3	6:U:348:GLN:HB3	1.87	0.56
4:O:217:LYS:O	4:O:221:TRP:HD1	1.88	0.56
4:N:274:ARG:HH12	4:N:326:LEU:HB2	1.68	0.56
4:O:249:ARG:NH1	4:O:253:SER:HB3	2.21	0.56
1:1:11:G:H5'	6:U:101:TYR:HE1	1.71	0.56
4:N:332:LEU:HD13	4:N:384:PHE:HZ	1.69	0.56
6:T:283:ARG:HG3	6:T:284:VAL:N	2.20	0.56
2:3:155:DG:H2"	2:3:156:DA:H5'	1.87	0.56
7:W:261:LEU:HD12	7:W:406:THR:HG22	1.86	0.56
4:O:22:ALA:HA	4:O:27:TYR:H	1.70	0.56
6:Q:226:VAL:HB	6:Q:247:GLN:CD	2.30	0.56
6:T:142:LEU:HD22	6:T:213:LEU:HD11	1.88	0.56
6:V:85:ILE:HD12	6:V:215:LEU:HD12	1.88	0.56
7:W:450:ARG:HH22	7:W:476:ASP:CG	2.14	0.56
4:O:143:HIS:HB3	4:O:144:PHE:CD1	2.39	0.56
3:7:19:DG:OP1	7:W:131:ASN:ND2	2.39	0.56
6:R:148:LYS:HE3	6:Q:94:SER:HB3	1.88	0.56
4:N:322:LYS:O	4:N:366:PHE:HB2	2.06	0.56
4:N:15:GLU:O	4:N:19:ILE:HG12	2.06	0.55
4:N:255:ILE:O	4:N:258:GLU:HG3	2.06	0.55
6:S:24:TRP:HD1	6:S:82:ALA:HA	1.71	0.55
6:V:40:LEU:HD12	6:V:68:GLY:HA3	1.86	0.55
6:Q:341:LEU:HD23	6:Q:347:PHE:HE2	1.72	0.55
6:U:94:SER:C	6:U:198:PHE:CD1	2.83	0.55
6:S:306:PHE:HA	6:S:336:PHE:HE2	1.70	0.55
1:1:15:A:N7	6:U:227:PHE:HA	2.22	0.55
3:7:17:DC:H2"	3:7:18:DA:OP1	2.06	0.55
7:W:219:LEU:HD22	7:W:250:THR:HG21	1.88	0.55
4:O:147:TYR:CE1	4:O:203:TRP:HB2	2.42	0.55
4:O:101:TYR:CE2	4:O:224:VAL:HG21	2.41	0.55
4:O:85:GLU:HB2	4:O:86:PRO:HD3	1.88	0.55
4:N:374:LEU:HA	4:N:377:ALA:HB3	1.87	0.55
4:O:141:LEU:HD12	4:O:147:TYR:CZ	2.42	0.55
6:T:157:THR:HB	6:T:208:GLU:HB2	1.88	0.54
6:U:4:PRO:HG2	6:U:348:GLN:HG2	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:O:310:ARG:HH21	4:O:368:HIS:HD2	1.54	0.54
7:W:409:ILE:HD12	7:W:445:LEU:HD13	1.89	0.54
4:N:336:LEU:HA	4:N:339:ILE:HB	1.90	0.54
4:O:40:PHE:O	4:O:44:ILE:HG12	2.07	0.54
1:1:37:C:H5"	6:Q:262:PHE:HD1	1.72	0.54
6:T:343:LYS:O	6:T:343:LYS:HD3	2.07	0.54
4:N:101:TYR:CE1	4:N:221:TRP:HZ3	2.26	0.54
4:O:376:TRP:CD1	4:O:380:PHE:HZ	2.26	0.54
5:P:100:SER:CB	5:P:195:PRO:HA	2.37	0.54
6:R:62:ALA:HA	6:Q:299:HIS:NE2	2.23	0.54
7:W:158:HIS:CE1	7:W:160:LEU:HD23	2.43	0.54
1:1:33:C:C6	6:R:227:PHE:HA	2.43	0.53
6:V:55:GLN:HG2	6:V:56:PRO:HD2	1.90	0.53
6:V:98:ARG:HH21	6:V:200:SER:H	1.56	0.53
7:W:102:ALA:HB1	7:W:571:HIS:CE1	2.43	0.53
6:V:6:ASN:HB3	6:V:102:LYS:HE3	1.90	0.53
4:O:292:ARG:HE	4:O:383:ASP:HB3	1.74	0.53
4:N:113:GLU:HG2	4:N:216:PRO:HB2	1.91	0.53
6:R:290:HIS:HD2	6:R:293:ASP:H	1.57	0.53
4:O:376:TRP:HD1	4:O:380:PHE:HZ	1.55	0.53
2:3:123:DG:H22	6:R:40:LEU:HD22	1.73	0.53
6:U:168:PHE:HB3	6:U:171:ILE:HD11	1.91	0.53
2:3:123:DG:H5"	2:3:123:DG:C8	2.42	0.53
3:7:16:DT:H2"	3:7:17:DC:H3'	1.90	0.53
6:U:171:ILE:HA	6:U:175:TYR:HD2	1.73	0.53
4:N:287:ILE:HG23	4:N:291:GLU:HG3	1.90	0.53
7:W:72:TRP:CG	7:W:177:MET:HE1	2.44	0.53
4:O:292:ARG:HA	4:O:383:ASP:HB2	1.89	0.53
5:P:25:LEU:HD12	5:P:184:TYR:HB3	1.89	0.53
6:U:100:PRO:HG2	6:U:109:LYS:HA	1.91	0.53
6:Q:119:TYR:CD1	6:Q:338:MET:HG3	2.44	0.53
4:N:125:ILE:HG22	4:N:143:HIS:HA	1.92	0.52
6:T:18:VAL:HB	6:T:259:LEU:HB2	1.92	0.52
4:O:306:TYR:O	4:O:310:ARG:HG2	2.09	0.52
6:T:282:LEU:HB3	6:T:290:HIS:CE1	2.43	0.52
7:W:399:THR:HB	7:W:506:ARG:HD2	1.91	0.52
6:V:191:VAL:O	6:V:195:LYS:HG3	2.10	0.52
3:7:14:DG:H1'	3:7:15:DT:H5'	1.91	0.52
4:N:347:ILE:HG22	4:N:349:LYS:HG2	1.91	0.52
6:Q:115:LEU:HD13	6:Q:317:ILE:HG12	1.92	0.52
4:O:201:SER:O	4:O:204:LEU:HG	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:P:38:ARG:O	5:P:180:ILE:HA	2.10	0.52
6:R:115:LEU:HD11	6:R:334:MET:HE1	1.90	0.52
6:T:144:LYS:HB2	6:T:222:ARG:HD2	1.91	0.52
6:V:316:TYR:HA	6:V:319:VAL:HG12	1.92	0.52
4:O:204:LEU:HD12	4:O:205:ALA:N	2.24	0.52
6:V:249:THR:HG23	6:V:258:ILE:HD13	1.92	0.52
7:W:194:ALA:HB1	7:W:195:PRO:HD2	1.91	0.52
1:1:6:A:H1'	6:V:345:GLY:HA2	1.91	0.52
4:O:155:VAL:HG22	4:O:156:PRO:HD2	1.91	0.52
6:R:141:TRP:H	6:R:141:TRP:CD1	2.27	0.52
6:R:158:PRO:HB3	6:R:193:MET:HE1	1.91	0.52
6:S:43:MET:HB3	6:S:48:LEU:HD11	1.91	0.52
6:Q:175:TYR:HB3	6:Q:181:PHE:HE1	1.74	0.52
4:O:202:ASN:ND2	4:O:208:GLU:HG2	2.25	0.52
3:7:15:DT:H1'	3:7:16:DT:H5'	1.91	0.52
6:S:141:TRP:HB2	6:S:264:THR:HG22	1.92	0.51
7:W:522:PHE:HD2	7:W:528:ALA:HA	1.74	0.51
1:1:27:A:H8	6:S:227:PHE:HA	1.72	0.51
6:S:133:LEU:HD11	6:S:190:ILE:HG22	1.93	0.51
6:T:284:VAL:HG11	6:T:343:LYS:CD	2.39	0.51
6:U:113:VAL:HA	6:U:116:VAL:HG12	1.91	0.51
6:U:307:PHE:O	6:U:311:GLN:HG2	2.10	0.51
6:V:18:VAL:HB	6:V:259:LEU:HB2	1.92	0.51
4:O:291:GLU:HA	4:O:296:HIS:CD2	2.45	0.51
6:S:60:ALA:HB1	6:S:65:LEU:HD23	1.91	0.51
6:S:283:ARG:N	6:S:290:HIS:CE1	2.74	0.51
6:U:156:LEU:HB2	6:U:166:VAL:HB	1.92	0.51
7:W:387:PHE:HE2	7:W:525:LEU:HB2	1.76	0.51
1:1:39:C:H5	2:3:123:DG:H1	1.58	0.51
1:1:47:U:C1'	5:P:161:ARG:HH22	2.24	0.51
4:N:41:LEU:HB3	4:N:47:ASN:HD21	1.75	0.51
5:P:181:PHE:HD1	5:P:194:GLN:HG3	1.76	0.51
6:R:295:THR:HG22	6:S:63:GLU:HG3	1.92	0.51
6:V:61:THR:HG22	6:V:62:ALA:N	2.25	0.51
4:O:101:TYR:HA	4:O:221:TRP:HZ3	1.74	0.51
4:N:227:TRP:HE3	4:N:240:PHE:CE1	2.29	0.51
6:Q:78:VAL:HG12	6:Q:219:ALA:H	1.74	0.51
4:O:247:TRP:CD1	4:O:248:PRO:HD3	2.46	0.51
1:1:32:A:H2'	6:R:291:ARG:HH12	1.75	0.51
6:Q:249:THR:HG23	6:Q:258:ILE:HD13	1.93	0.51
4:N:110:ARG:HG2	4:N:115:PHE:CE2	2.46	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:N:338:GLN:NE2	4:N:342:MET:HE3	2.26	0.51
4:N:385:ASN:HB2	4:N:388:PHE:CE2	2.46	0.51
7:W:158:HIS:HE1	7:W:160:LEU:HD23	1.75	0.51
4:N:177:ILE:HA	4:N:184:PRO:HA	1.93	0.51
6:U:275:TYR:CD1	6:U:298:ARG:NH1	2.71	0.51
6:Q:284:VAL:HB	6:Q:343:LYS:HG2	1.92	0.51
1:1:24:G:N2	6:S:346:MET:SD	2.85	0.50
4:N:77:LYS:HE3	4:O:311:LEU:CD2	2.41	0.50
4:N:110:ARG:HA	4:O:387:ARG:NH2	2.24	0.50
5:P:191:ASN:O	5:P:193:PHE:N	2.44	0.50
6:V:227:PHE:HB3	7:W:452:LEU:HB2	1.93	0.50
1:1:50:C:H42	1:1:56:G:H1	1.58	0.50
6:U:141:TRP:HB2	6:U:264:THR:HG22	1.93	0.50
6:Q:73:VAL:HG13	6:Q:244:ARG:HD2	1.93	0.50
4:O:109:VAL:HG23	4:O:114:VAL:HG12	1.93	0.50
4:N:133:ARG:HH22	4:N:185:ILE:HG23	1.76	0.50
4:N:227:TRP:CZ3	4:N:230:ILE:HD11	2.46	0.50
6:R:191:VAL:O	6:R:195:LYS:HG3	2.12	0.50
7:W:96:GLY:HA3	7:W:191:VAL:HG12	1.94	0.50
4:O:354:SER:C	4:O:355:LYS:HD2	2.36	0.50
1:1:12:G:N2	6:U:346:MET:HE2	2.27	0.50
4:N:72:THR:HG22	4:O:373:PHE:HD1	1.77	0.50
4:N:256:GLU:HA	4:N:259:VAL:HG23	1.92	0.50
5:P:98:TYR:CD2	5:P:99:VAL:HB	2.47	0.50
6:S:182:LYS:HD2	6:S:187:TRP:HH2	1.76	0.50
4:N:99:MET:SD	4:N:290:PRO:HG3	2.52	0.50
4:N:359:LEU:HD21	4:N:366:PHE:HZ	1.76	0.50
6:R:42:GLN:CD	6:Q:289:VAL:HB	2.36	0.50
6:R:227:PHE:CZ	6:S:70:PRO:HB3	2.47	0.50
7:W:451:GLY:O	7:W:452:LEU:HD22	2.11	0.50
4:O:81:LEU:HD21	4:O:86:PRO:HD2	1.94	0.50
4:O:101:TYR:HE2	4:O:224:VAL:HG21	1.77	0.50
4:N:9:TYR:HD2	4:N:12:GLU:HG3	1.77	0.50
4:N:126:PRO:HB3	4:N:159:THR:HB	1.94	0.50
4:N:128:CYS:HB3	4:N:131:CYS:SG	2.52	0.50
6:R:313:ALA:O	6:R:317:ILE:HG12	2.12	0.50
6:T:3:LEU:HD11	6:T:310:LEU:HD23	1.94	0.50
1:1:35:U:C2	6:Q:346:MET:HE1	2.46	0.49
4:N:94:ILE:HD13	4:N:110:ARG:HB3	1.94	0.49
5:P:99:VAL:HG23	5:P:171:SER:HA	1.94	0.49
4:O:195:GLU:HB2	4:O:241:VAL:HG21	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:T:125:TRP:HZ3	6:T:128:LEU:HD12	1.77	0.49
6:Q:133:LEU:HD11	6:Q:190:ILE:HG22	1.93	0.49
4:O:200:VAL:HA	4:O:203:TRP:CD1	2.46	0.49
6:V:43:MET:HB3	6:V:48:LEU:HD11	1.95	0.49
4:O:96:ARG:HG2	4:O:117:ARG:NH2	2.28	0.49
4:O:139:SER:OG	4:O:141:LEU:HD23	2.11	0.49
6:R:91:VAL:HG11	6:R:136:ILE:HD13	1.95	0.49
6:S:283:ARG:H	6:S:290:HIS:CE1	2.28	0.49
1:1:5:U:H5'	7:W:503:ARG:HH11	1.78	0.49
1:1:20:A:H5'	6:T:262:PHE:O	2.13	0.49
4:N:108:VAL:HG13	4:N:117:ARG:HD3	1.93	0.49
4:O:310:ARG:HB2	4:O:311:LEU:HD12	1.94	0.49
4:N:222:GLY:O	4:N:226:TRP:HB2	2.13	0.49
6:S:119:TYR:CE1	6:S:338:MET:HG3	2.47	0.49
6:U:296:CYS:HB2	6:U:299:HIS:NE2	2.27	0.49
4:O:195:GLU:HB3	4:O:198:CYS:SG	2.53	0.49
4:N:324:ASN:HB2	4:N:361:VAL:HA	1.94	0.49
6:Q:72:GLN:O	6:Q:72:GLN:HG3	2.12	0.49
4:N:19:ILE:HG21	4:N:174:LEU:HG	1.94	0.49
6:S:182:LYS:HD2	6:S:187:TRP:CH2	2.48	0.49
6:U:157:THR:HB	6:U:208:GLU:HB2	1.95	0.49
7:W:32:ILE:HD11	7:W:35:ASN:C	2.38	0.49
7:W:225:PHE:CD2	7:W:405:VAL:HB	2.48	0.49
4:O:94:ILE:HG23	4:O:108:VAL:HG21	1.95	0.49
4:N:273:LEU:HA	4:N:321:LEU:HD22	1.95	0.48
6:T:170:ASP:HB3	6:T:174:ASN:ND2	2.28	0.48
6:V:156:LEU:HB2	6:V:166:VAL:HB	1.95	0.48
4:O:200:VAL:HA	4:O:203:TRP:HD1	1.78	0.48
4:O:385:PHE:CD2	4:O:387:ARG:HB2	2.47	0.48
2:3:161:DT:H2"	2:3:162:DA:C8	2.48	0.48
4:N:376:LEU:HD13	4:O:87:PRO:HG3	1.95	0.48
6:T:4:PRO:HG2	6:T:7:LEU:HD23	1.96	0.48
6:U:45:ALA:HB3	6:U:48:LEU:HG	1.94	0.48
6:Q:282:LEU:HD11	6:Q:290:HIS:CD2	2.40	0.48
3:7:18:DA:H4'	7:W:49:LYS:HZ2	1.77	0.48
4:O:151:HIS:NE2	4:O:198:CYS:HA	2.27	0.48
6:R:5:THR:O	6:R:105:SER:HB2	2.13	0.48
6:S:131:ARG:HD3	6:S:271:ILE:HB	1.95	0.48
6:T:227:PHE:CZ	6:U:70:PRO:HB3	2.49	0.48
6:V:97:LEU:HD23	6:V:97:LEU:H	1.77	0.48
4:O:294:LEU:HA	4:O:389:PHE:CZ	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:10:G:H2'	6:V:225:GLN:HE22	1.79	0.48
6:T:97:LEU:HD23	6:T:97:LEU:H	1.78	0.48
7:W:16:THR:HG23	7:W:56:LEU:HG	1.94	0.48
1:1:36:G:N1	6:Q:346:MET:HE2	2.28	0.48
4:N:53:PRO:HD3	4:N:71:ARG:NE	2.27	0.48
7:W:228:ARG:HE	7:W:554:LEU:HD12	1.77	0.48
4:O:155:VAL:CG2	4:O:156:PRO:HD2	2.44	0.48
5:P:35:TYR:CE2	5:P:68:LEU:HD21	2.49	0.48
6:Q:23:VAL:HG13	6:Q:83:SER:HB2	1.96	0.48
1:1:19:U:C6	6:U:39:LEU:HD21	2.49	0.48
1:1:35:U:H1'	6:Q:8:ALA:HB1	1.95	0.48
6:R:3:LEU:HD23	6:R:6:ASN:HB2	1.94	0.48
6:U:288:GLY:HA3	6:U:298:ARG:HD2	1.95	0.48
6:R:40:LEU:HD13	6:R:68:GLY:HA3	1.96	0.48
6:T:216:PRO:HD2	6:T:219:ALA:HB2	1.95	0.48
6:Q:141:TRP:H	6:Q:141:TRP:CD1	2.31	0.48
4:O:21:VAL:O	4:O:27:TYR:HB2	2.13	0.48
4:O:68:SER:N	4:O:94:ILE:HB	2.28	0.48
6:U:125:TRP:HE1	6:U:199:SER:HB3	1.79	0.48
6:U:272:ASP:HB3	6:U:282:LEU:HB2	1.96	0.48
6:V:175:TYR:HE1	6:V:184:ASN:HD21	1.62	0.48
7:W:425:ASN:O	7:W:428:ARG:HG2	2.14	0.48
4:O:286:SER:O	4:O:299:ILE:HD11	2.14	0.48
4:O:355:LYS:HB3	4:O:356:PRO:HD2	1.96	0.48
1:1:32:A:H2'	6:R:291:ARG:NH1	2.29	0.47
6:U:94:SER:C	6:U:198:PHE:HD1	2.21	0.47
6:U:154:ILE:O	6:U:168:PHE:HB2	2.14	0.47
4:N:321:LEU:HD23	4:N:365:LEU:HA	1.95	0.47
6:Q:266:ALA:HB1	6:Q:283:ARG:NE	2.28	0.47
4:N:64:ALA:HB2	4:N:71:ARG:HH12	1.79	0.47
6:T:227:PHE:HE1	6:U:40:LEU:HD12	1.78	0.47
6:T:275:TYR:OH	6:T:298:ARG:HD2	2.10	0.47
4:N:110:ARG:HG2	4:N:115:PHE:CZ	2.50	0.47
6:R:3:LEU:HG	6:R:4:PRO:HD2	1.96	0.47
4:N:275:LEU:O	4:N:278:LEU:HB3	2.15	0.47
6:S:275:TYR:CZ	6:S:278:ALA:HA	2.49	0.47
6:U:141:TRP:CD1	6:U:141:TRP:H	2.32	0.47
7:W:568:VAL:O	7:W:594:ILE:HB	2.14	0.47
3:7:11:DA:H2"	3:7:12:DA:H8	1.79	0.47
4:N:244:PHE:HA	4:N:251:PHE:HZ	1.80	0.47
4:N:386:ARG:HE	4:N:386:ARG:C	2.22	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:S:97:LEU:H	6:S:97:LEU:HD23	1.79	0.47
6:T:282:LEU:HD13	6:T:290:HIS:NE2	2.30	0.47
6:U:306:PHE:CE1	6:U:337:LEU:HD12	2.49	0.47
6:V:334:MET:O	6:V:338:MET:HG2	2.14	0.47
6:Q:23:VAL:HG12	6:Q:84:HIS:O	2.14	0.47
7:W:4:LEU:N	7:W:30:ILE:HA	2.29	0.47
4:N:251:PHE:O	4:N:253:SER:N	2.48	0.47
6:U:7:LEU:HD12	6:U:102:LYS:O	2.14	0.47
4:O:128:CYS:HB2	4:O:131:CYS:SG	2.55	0.47
2:3:137:DT:H2"	2:3:138:DC:O4'	2.14	0.47
6:S:266:ALA:HB1	6:S:283:ARG:HG3	1.96	0.47
1:1:25:A:C8	6:T:39:LEU:HD11	2.50	0.47
6:Q:34:TYR:HD2	6:Q:257:PRO:HG3	1.79	0.47
6:Q:224:SER:O	6:Q:225:GLN:HG2	2.15	0.47
7:W:5:LYS:HD2	7:W:5:LYS:O	2.15	0.47
6:T:266:ALA:O	6:T:270:THR:HG23	2.14	0.46
4:O:387:ARG:HA	4:O:390:TYR:CE1	2.51	0.46
1:1:38:A:C8	6:Q:263:LYS:HD2	2.51	0.46
4:N:227:TRP:CH2	4:N:239:SER:HB3	2.50	0.46
5:P:181:PHE:CD1	5:P:194:GLN:HG3	2.50	0.46
6:T:203:GLY:H	6:U:147:ARG:HH22	1.62	0.46
6:U:286:ARG:HG2	6:U:307:PHE:CE2	2.51	0.46
7:W:106:LEU:HD11	7:W:571:HIS:ND1	2.30	0.46
4:O:226:TRP:O	4:O:230:ILE:HD12	2.16	0.46
1:1:9:C:C5	6:V:227:PHE:CG	3.04	0.46
6:T:326:PRO:HG2	6:T:331:ILE:HD11	1.96	0.46
2:3:148:DC:C2	6:V:70:PRO:HG2	2.50	0.46
4:N:347:ILE:C	4:N:348:LEU:HD23	2.40	0.46
5:P:173:GLN:O	5:P:195:PRO:HG3	2.15	0.46
6:S:78:VAL:HG13	6:S:85:ILE:HD11	1.96	0.46
6:V:227:PHE:HD1	6:V:228:THR:N	2.14	0.46
6:Q:290:HIS:ND1	6:Q:296:CYS:HA	2.30	0.46
4:O:221:TRP:CE3	4:O:289:LEU:HA	2.50	0.46
4:O:247:TRP:HA	4:O:247:TRP:CE3	2.51	0.46
6:S:316:TYR:HA	6:S:319:VAL:HG12	1.97	0.46
1:1:3:G:H1	7:W:404:PRO:HD3	1.80	0.46
4:N:106:SER:O	4:N:117:ARG:HG3	2.16	0.46
6:U:339:ALA:O	6:U:343:LYS:HB3	2.15	0.46
6:V:60:ALA:HB1	6:V:65:LEU:HD21	1.96	0.46
6:V:144:LYS:HD2	6:V:222:ARG:HH11	1.80	0.46
4:O:224:VAL:HA	4:O:227:TRP:CD1	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:S:182:LYS:HA	6:S:187:TRP:CH2	2.50	0.46
6:V:98:ARG:HH21	6:V:200:SER:N	2.13	0.46
7:W:93:ARG:NH1	7:W:457:VAL:HG21	2.30	0.46
7:W:193:LEU:HD11	7:W:588:HIS:CE1	2.51	0.46
5:P:169:MET:HE2	5:P:169:MET:HA	1.98	0.46
6:T:283:ARG:HG3	6:T:284:VAL:H	1.81	0.46
6:U:7:LEU:HB3	6:U:348:GLN:HG3	1.98	0.46
6:U:184:ASN:ND2	6:U:187:TRP:CZ2	2.83	0.46
7:W:99:ARG:O	7:W:187:THR:HA	2.16	0.46
4:O:20:ARG:HB3	4:O:140:TYR:HB2	1.96	0.46
4:O:195:GLU:O	4:O:199:THR:HG23	2.15	0.46
4:O:279:LEU:HD13	4:O:306:TYR:CE2	2.50	0.46
1:1:22:C:H2'	1:1:23:U:C6	2.51	0.46
6:S:145:ASN:OD1	6:S:222:ARG:HG2	2.15	0.46
7:W:601:ILE:HD11	7:W:612:ILE:HG22	1.97	0.46
1:1:11:G:C2	6:U:346:MET:SD	3.09	0.45
6:Q:298:ARG:O	6:Q:305:ASP:HB3	2.16	0.45
7:W:447:VAL:HG12	7:W:473:TRP:HE3	1.81	0.45
4:O:77:LYS:N	4:O:87:PRO:HB3	2.30	0.45
4:O:331:MET:HE1	4:O:379:GLU:CD	2.41	0.45
4:N:255:ILE:HG13	4:N:256:GLU:N	2.31	0.45
4:N:274:ARG:CZ	4:N:323:MET:H	2.29	0.45
5:P:35:TYR:HE2	5:P:68:LEU:HD21	1.80	0.45
1:1:38:A:O2'	1:1:39:C:H4'	2.17	0.45
6:S:309:ILE:HD13	6:S:333:ASP:HB2	1.98	0.45
6:Q:122:LYS:HB2	6:Q:122:LYS:HE2	1.72	0.45
6:Q:144:LYS:CD	6:Q:222:ARG:HB2	2.43	0.45
6:Q:223:PRO:HG2	6:Q:246:PHE:CG	2.51	0.45
6:S:178:ARG:O	6:S:182:LYS:HG2	2.17	0.45
7:W:229:LEU:HD11	7:W:261:LEU:HD23	1.98	0.45
4:O:267:VAL:HG23	4:O:268:VAL:HG13	1.98	0.45
5:P:197:PRO:O	5:P:198:LEU:HB2	2.17	0.45
6:R:2:LYS:HZ3	6:R:5:THR:HA	1.81	0.45
6:T:298:ARG:O	6:T:305:ASP:HB3	2.16	0.45
4:O:196:ALA:HA	4:O:237:HIS:HB3	1.98	0.45
1:1:24:G:H4'	6:S:344:GLY:HA3	1.98	0.45
4:N:221:TRP:CD1	4:N:296:HIS:HE2	2.33	0.45
4:N:274:ARG:NH1	4:N:326:LEU:HD12	2.32	0.45
6:T:227:PHE:HB3	6:U:38:THR:HB	1.97	0.45
4:O:286:SER:O	4:O:289:LEU:HG	2.16	0.45
6:T:175:TYR:HE1	6:T:184:ASN:HD21	1.65	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:W:158:HIS:CG	7:W:159:PRO:HD2	2.51	0.45
6:R:4:PRO:HD3	6:R:350:LYS:O	2.17	0.45
6:R:306:PHE:HE2	6:R:347:PHE:CD1	2.35	0.45
7:W:456:PHE:HD2	7:W:464:ILE:HG22	1.81	0.45
4:O:38:LYS:NZ	4:O:39:ARG:HH11	2.14	0.45
4:N:72:THR:HG21	4:O:373:PHE:O	2.16	0.45
4:N:110:ARG:HD3	4:N:140:TYR:HB3	1.98	0.45
4:N:275:LEU:HB3	4:N:278:LEU:HB3	1.99	0.45
4:N:321:LEU:HG	4:N:366:PHE:O	2.17	0.45
1:1:38:A:H5"	6:Q:266:ALA:HB2	1.98	0.45
4:N:259:VAL:O	4:N:263:LEU:HB2	2.17	0.45
6:V:107:LYS:O	6:V:110:GLN:HG3	2.17	0.45
7:W:405:VAL:HG23	7:W:406:THR:HG23	1.98	0.45
4:N:165:LYS:HE2	4:N:180:LYS:HD3	1.97	0.44
4:N:385:ASN:HB2	4:N:388:PHE:CZ	2.52	0.44
6:U:74:ASP:HB3	6:U:246:PHE:CE2	2.52	0.44
6:V:224:SER:HA	6:V:263:LYS:NZ	2.32	0.44
5:P:63:LYS:HE3	5:P:89:THR:HG21	1.99	0.44
6:S:18:VAL:HG22	6:S:89:PHE:HB3	2.00	0.44
6:Q:339:ALA:O	6:Q:343:LYS:HB2	2.17	0.44
7:W:237:ALA:HB2	7:W:262:LYS:HD3	1.97	0.44
4:N:53:PRO:HG3	4:N:59:ILE:HA	1.99	0.44
6:S:133:LEU:HD12	6:S:191:VAL:HG22	1.98	0.44
6:S:249:THR:HG23	6:S:258:ILE:HD13	1.99	0.44
6:T:130:THR:O	6:T:134:MET:HG3	2.17	0.44
6:U:299:HIS:NE2	6:V:62:ALA:HA	2.32	0.44
7:W:193:LEU:HD23	7:W:582:SER:HA	1.98	0.44
4:N:283:PHE:CE2	4:N:326:LEU:HD13	2.52	0.44
6:R:74:ASP:OD2	6:R:245:VAL:HA	2.18	0.44
6:U:282:LEU:HD11	6:U:290:HIS:NE2	2.32	0.44
6:V:38:THR:HA	6:V:72:GLN:HA	2.00	0.44
6:V:204:LEU:HD13	7:W:498:THR:HA	1.98	0.44
7:W:72:TRP:CB	7:W:177:MET:HE1	2.48	0.44
6:R:107:LYS:O	6:R:110:GLN:HG3	2.18	0.44
6:T:184:ASN:ND2	6:T:187:TRP:CE2	2.79	0.44
6:V:98:ARG:HH22	6:V:198:PHE:C	2.25	0.44
7:W:393:ILE:HD12	7:W:481:LEU:HD13	1.98	0.44
4:O:149:TYR:CE2	4:O:196:ALA:HB1	2.53	0.44
4:O:339:ILE:HG12	4:O:359:PRO:HG2	1.99	0.44
1:1:18:U:H5"	6:T:344:GLY:HA3	1.99	0.44
4:N:210:LYS:HG3	4:N:211:PRO:CD	2.43	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:T:10:GLU:HB2	6:T:96:GLU:HB3	2.00	0.44
6:U:3:LEU:HD22	6:U:347:PHE:O	2.17	0.44
6:T:289:VAL:HG13	6:U:66:ALA:HB1	2.00	0.44
4:N:98:ASN:OD1	4:O:379:GLU:HG3	2.17	0.44
4:N:147:TYR:CD1	4:N:200:VAL:HG13	2.53	0.44
4:N:178:CYS:HB3	4:N:181:CYS:HB2	1.69	0.44
7:W:16:THR:HG21	7:W:53:GLN:HE22	1.82	0.44
1:1:22:C:H2'	1:1:23:U:C5	2.53	0.44
4:N:101:TYR:CD2	4:N:105:THR:HG23	2.53	0.44
4:N:274:ARG:HB2	4:N:364:TYR:CD1	2.53	0.44
6:S:287:PHE:CD2	6:T:65:LEU:HD13	2.53	0.44
7:W:240:ARG:HA	7:W:256:GLY:O	2.17	0.44
7:W:616:LEU:HD11	7:W:623:LEU:HB3	2.00	0.44
4:O:215:LEU:HG	4:O:216:PRO:HD2	2.00	0.44
4:N:5:ARG:NH1	4:N:8:PRO:HD3	2.33	0.43
6:U:15:PRO:HG3	6:U:265:GLY:CA	2.48	0.43
6:Q:150:TYR:HA	6:Q:172:ARG:NH1	2.32	0.43
7:W:578:ASP:OD2	7:W:587:LYS:HD2	2.18	0.43
2:3:155:DG:O5'	7:W:93:ARG:HG2	2.18	0.43
4:N:17:PHE:CE2	4:N:89:LEU:HB3	2.53	0.43
6:T:266:ALA:HA	6:T:283:ARG:NE	2.33	0.43
4:O:95:ASN:O	4:O:108:VAL:HG23	2.18	0.43
4:N:252:HIS:O	4:N:255:ILE:HG23	2.17	0.43
4:N:368:PHE:HB3	4:N:372:PHE:HE2	1.83	0.43
5:P:186:LEU:HD13	5:P:186:LEU:HA	1.75	0.43
6:T:154:ILE:HB	6:T:168:PHE:HD2	1.83	0.43
7:W:625:VAL:HG23	7:W:625:VAL:O	2.19	0.43
2:3:143:DA:N6	6:U:71:HIS:CE1	2.86	0.43
4:N:310:ARG:O	4:N:311:LEU:HB2	2.18	0.43
5:P:152:LEU:HD23	5:P:167:ILE:HD13	2.01	0.43
4:O:249:ARG:HH12	4:O:253:SER:HB3	1.83	0.43
6:T:141:TRP:H	6:T:141:TRP:CD1	2.35	0.43
6:U:116:VAL:HG23	6:U:338:MET:HE1	2.00	0.43
6:U:287:PHE:O	6:U:298:ARG:HB3	2.18	0.43
6:U:294:VAL:HG12	6:U:294:VAL:O	2.18	0.43
6:R:100:PRO:HB2	6:R:103:CYS:HB2	2.00	0.43
6:S:86:GLU:OE1	6:S:212:THR:HG22	2.19	0.43
6:V:193:MET:HE2	6:V:205:ALA:HB1	2.01	0.43
6:V:282:LEU:HD21	6:V:290:HIS:ND1	2.34	0.43
6:Q:186:ASN:O	6:Q:190:ILE:HG12	2.19	0.43
7:W:608:ASP:O	7:W:611:THR:HG22	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:N:274:ARG:NH1	4:N:326:LEU:HB2	2.33	0.43
4:N:275:LEU:HB3	4:N:278:LEU:CB	2.49	0.43
6:V:290:HIS:CD2	6:V:292:GLU:HB2	2.53	0.43
7:W:428:ARG:HH21	7:W:498:THR:HG23	1.84	0.43
4:O:35:GLU:HB3	4:O:39:ARG:NH1	2.31	0.43
4:O:248:PRO:HB2	4:O:252:HIS:CE1	2.54	0.43
1:1:37:C:O2'	6:R:39:LEU:HD13	2.18	0.43
5:P:93:PRO:O	5:P:94:GLU:HG2	2.19	0.43
6:S:286:ARG:HG3	6:T:44:GLU:HA	2.00	0.43
6:T:95:SER:HB3	6:T:197:ALA:O	2.18	0.43
6:U:51:ASP:HB3	6:U:57:ILE:HD11	2.00	0.43
6:U:166:VAL:HG22	6:U:186:ASN:ND2	2.34	0.43
6:V:78:VAL:HB	6:V:85:ILE:HD11	1.99	0.43
4:N:288:ARG:HG2	4:N:288:ARG:HH11	1.84	0.43
6:S:117:GLU:OE2	6:S:118:LEU:HD12	2.19	0.43
7:W:553:LEU:HD22	7:W:597:LEU:HD21	2.00	0.43
4:N:116:PRO:HG2	4:N:119:LEU:HG	2.01	0.43
4:N:227:TRP:CE3	4:N:240:PHE:CE1	3.06	0.43
6:U:275:TYR:CE2	6:U:298:ARG:HB2	2.53	0.43
7:W:44:VAL:HG11	7:W:62:CYS:HB2	2.00	0.43
4:N:19:ILE:HA	4:N:30:VAL:HG21	2.01	0.42
6:R:38:THR:HG22	6:Q:227:PHE:HD2	1.84	0.42
6:S:111:THR:HG23	6:S:317:ILE:HD11	1.99	0.42
6:V:18:VAL:HG22	6:V:89:PHE:HB3	2.01	0.42
6:V:224:SER:CB	6:V:263:LYS:HZ2	2.31	0.42
4:N:262:ASN:OD1	4:N:278:LEU:HA	2.19	0.42
5:P:70:LEU:HD12	5:P:86:ILE:HD13	2.01	0.42
6:R:286:ARG:HA	6:R:306:PHE:HB2	2.01	0.42
6:U:95:SER:O	6:U:98:ARG:HG3	2.19	0.42
6:U:97:LEU:HD23	6:U:97:LEU:H	1.84	0.42
7:W:194:ALA:O	7:W:195:PRO:C	2.63	0.42
4:O:304:LEU:O	4:O:308:GLU:HG2	2.19	0.42
4:N:109:VAL:HG22	4:N:114:VAL:HG13	2.00	0.42
6:R:88:SER:HB2	6:R:210:ARG:HE	1.85	0.42
4:O:38:LYS:HZ3	4:O:39:ARG:HH11	1.67	0.42
4:O:127:CYS:SG	4:O:132:LEU:HD21	2.59	0.42
1:1:39:C:N4	6:Q:227:PHE:HE1	2.17	0.42
4:N:262:ASN:HB3	4:N:278:LEU:HD12	2.01	0.42
5:P:181:PHE:O	5:P:189:SER:HB3	2.19	0.42
6:S:282:LEU:CD1	6:S:290:HIS:CD2	3.00	0.42
6:S:287:PHE:O	6:S:296:CYS:HB3	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:20:A:OP2	6:T:266:ALA:HB2	2.20	0.42
4:N:165:LYS:O	4:N:180:LYS:HE2	2.19	0.42
4:N:227:TRP:HH2	4:N:239:SER:HB3	1.83	0.42
6:U:192:GLU:O	6:U:196:THR:HG23	2.19	0.42
4:O:293:ASN:H	4:O:296:HIS:HE2	1.66	0.42
4:O:323:MET:HG3	4:O:363:THR:C	2.44	0.42
5:P:114:GLY:HA2	5:P:117:ARG:CZ	2.50	0.42
6:R:137:CYS:SG	6:R:156:LEU:HD11	2.60	0.42
6:S:105:SER:C	6:S:107:LYS:H	2.28	0.42
6:U:270:THR:CG2	6:U:283:ARG:HE	2.33	0.42
4:O:247:TRP:O	4:O:249:ARG:N	2.52	0.42
6:R:166:VAL:HG21	6:R:190:ILE:HD11	2.02	0.42
6:V:91:VAL:HG11	6:V:136:ILE:HD13	2.01	0.42
6:Q:5:THR:HG22	6:Q:104:ASN:HD21	1.85	0.42
7:W:123:TYR:H	7:W:249:VAL:HG12	1.85	0.42
1:1:2:U:P	1:1:2:U:H6	2.42	0.42
2:3:144:DA:C2	6:T:346:MET:SD	3.13	0.42
6:T:43:MET:HG3	6:T:65:LEU:HA	2.02	0.42
6:U:270:THR:HA	6:U:282:LEU:O	2.20	0.42
7:W:115:LYS:HD3	7:W:548:ASN:HD22	1.85	0.42
7:W:395:VAL:HG11	7:W:504:LEU:HD23	2.01	0.42
4:O:102:SER:HB3	4:O:103:PRO:HD3	2.01	0.42
4:O:251:PHE:CE1	4:O:298:ILE:HA	2.54	0.42
4:N:149:TYR:O	4:N:200:VAL:HG11	2.20	0.42
6:Q:4:PRO:HG2	6:Q:7:LEU:HB2	2.02	0.42
4:O:93:ALA:O	4:O:110:ARG:HG2	2.20	0.42
4:N:327:GLU:OE1	4:N:333:ASN:HB2	2.20	0.42
6:R:9:TYR:HB3	6:R:345:GLY:O	2.20	0.42
6:V:229:GLU:O	6:V:230:LYS:C	2.62	0.42
4:N:168:ASP:OD1	4:N:170:ARG:HB2	2.20	0.41
4:N:296:HIS:HB3	4:N:299:ILE:HD12	2.01	0.41
6:S:275:TYR:CE1	6:S:278:ALA:HA	2.54	0.41
7:W:234:ARG:HG3	7:W:235:HIS:CE1	2.55	0.41
6:R:3:LEU:CG	6:R:4:PRO:HD2	2.51	0.41
6:R:95:SER:HB3	6:R:197:ALA:O	2.20	0.41
6:S:10:GLU:OE2	6:T:144:LYS:HE2	2.20	0.41
7:W:270:PRO:HD2	7:W:537:GLY:O	2.20	0.41
4:O:75:PHE:HB2	4:O:87:PRO:CB	2.44	0.41
3:7:11:DA:H2"	3:7:12:DA:OP2	2.19	0.41
4:N:275:LEU:HD12	4:N:278:LEU:HB2	2.02	0.41
4:N:320:ASN:C	4:N:321:LEU:HD12	2.45	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:S:104:ASN:ND2	6:T:294:VAL:HB	2.35	0.41
6:T:16:SER:HB3	6:T:90:SER:H	1.84	0.41
6:V:190:ILE:HA	6:V:193:MET:HG2	2.02	0.41
4:O:149:TYR:HE2	4:O:196:ALA:HB1	1.85	0.41
4:N:292:ARG:HH12	4:O:292:ARG:NH2	2.19	0.41
4:N:331:MET:HE2	4:N:374:LEU:HD22	2.02	0.41
5:P:10:PHE:HD2	5:P:17:ASN:HD22	1.67	0.41
6:T:290:HIS:HD2	6:T:297:TYR:CD1	2.38	0.41
4:O:35:GLU:O	4:O:38:LYS:HG2	2.20	0.41
6:R:32:LEU:HD21	6:R:221:VAL:HG11	2.02	0.41
6:R:157:THR:HG22	6:R:165:LYS:HG2	2.02	0.41
6:S:152:TRP:CZ3	6:S:172:ARG:HD3	2.55	0.41
6:T:307:PHE:CE1	6:U:46:ALA:HB2	2.55	0.41
6:U:143:TRP:NE1	6:U:263:LYS:HG3	2.35	0.41
6:Q:275:TYR:CD1	6:Q:297:TYR:HB2	2.56	0.41
6:Q:320:LEU:HD11	6:Q:334:MET:HE2	2.02	0.41
1:1:2:U:C4	7:W:503:ARG:HG3	2.56	0.41
1:1:39:C:C4	6:Q:227:PHE:CE1	3.09	0.41
4:N:64:ALA:HB3	4:N:68:SER:HA	2.02	0.41
4:N:139:SER:H	4:N:142:TRP:CD1	2.38	0.41
6:R:192:GLU:HA	6:R:195:LYS:HD3	2.03	0.41
6:T:178:ARG:HG2	6:T:182:LYS:HE2	2.03	0.41
6:T:190:ILE:HG23	6:T:207:PHE:CZ	2.55	0.41
4:O:96:ARG:HG2	4:O:117:ARG:HH22	1.84	0.41
1:1:28:G:N2	6:R:1:MET:HA	2.35	0.41
5:P:16:ASN:O	5:P:20:LEU:HD13	2.20	0.41
5:P:21:ALA:HB3	5:P:152:LEU:HD11	2.02	0.41
6:R:88:SER:HB2	6:R:210:ARG:NE	2.36	0.41
6:R:220:MET:HE2	6:R:220:MET:HB3	1.85	0.41
6:R:306:PHE:HA	6:R:336:PHE:HE2	1.85	0.41
6:S:152:TRP:HB3	6:S:213:LEU:HD12	2.02	0.41
6:T:97:LEU:HD13	6:T:342:ILE:CG1	2.51	0.41
6:T:223:PRO:HD2	6:T:246:PHE:CE1	2.55	0.41
6:Q:21:PHE:HB2	6:Q:86:GLU:HB3	2.02	0.41
4:O:147:TYR:CD1	4:O:200:VAL:HG13	2.51	0.41
6:R:161:TRP:CD1	6:R:163:GLY:H	2.38	0.41
6:R:296:CYS:HB2	6:R:299:HIS:CD2	2.54	0.41
6:S:222:ARG:HA	6:S:223:PRO:HD3	1.94	0.41
6:V:294:VAL:O	6:V:294:VAL:HG12	2.21	0.41
6:Q:98:ARG:O	6:Q:113:VAL:HG12	2.21	0.41
7:W:234:ARG:HG3	7:W:235:HIS:ND1	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:N:9:TYR:O	4:N:9:TYR:CG	2.73	0.41
4:N:150:CYS:HB3	4:N:155:VAL:O	2.21	0.41
4:N:223:LEU:HG	4:N:240:PHE:CE2	2.56	0.41
6:R:44:GLU:O	6:Q:286:ARG:HG3	2.21	0.41
6:S:73:VAL:HG23	6:S:244:ARG:HB3	2.02	0.41
6:S:284:VAL:HG21	6:S:343:LYS:HE2	1.57	0.41
6:S:306:PHE:HA	6:S:336:PHE:CE2	2.51	0.41
6:T:224:SER:OG	6:T:263:LYS:HD3	2.19	0.41
6:U:306:PHE:CE1	6:U:340:ASN:CB	3.04	0.41
6:Q:171:ILE:HA	6:Q:175:TYR:HB2	2.02	0.41
7:W:513:ILE:H	7:W:513:ILE:HD12	1.85	0.41
4:O:30:VAL:HB	4:O:33:PHE:HB2	2.02	0.41
4:N:300:LEU:HD13	4:N:389:TYR:HD2	1.86	0.41
6:T:244:ARG:HD2	6:T:246:PHE:CZ	2.56	0.41
6:V:275:TYR:CE2	6:V:278:ALA:HA	2.55	0.41
6:V:325:THR:HA	6:V:326:PRO:HD3	1.95	0.41
7:W:225:PHE:HA	7:W:550:LEU:HD22	2.03	0.41
7:W:229:LEU:O	7:W:259:ARG:HD3	2.21	0.41
4:O:81:LEU:HD13	4:O:89:LEU:HD23	2.03	0.41
1:1:7:A:N3	7:W:454:ALA:HA	2.35	0.40
1:1:27:A:O2'	6:S:225:GLN:HB2	2.22	0.40
1:1:39:C:H5"	6:R:40:LEU:HD23	2.03	0.40
4:N:102:SER:HB3	4:N:285:GLY:HA2	2.03	0.40
4:N:109:VAL:HG22	4:N:114:VAL:HG22	2.03	0.40
4:N:113:GLU:HG2	4:N:216:PRO:CB	2.50	0.40
4:N:202:ASN:HD22	4:N:211:PRO:HG3	1.85	0.40
5:P:20:LEU:HD11	4:O:267:VAL:HB	2.03	0.40
6:S:333:ASP:HA	6:S:336:PHE:HB3	2.03	0.40
6:T:3:LEU:HA	6:T:3:LEU:HD23	1.80	0.40
6:T:72:GLN:HB3	6:T:241:GLN:O	2.21	0.40
6:V:154:ILE:O	6:V:168:PHE:HB2	2.21	0.40
7:W:76:ILE:HD11	7:W:177:MET:HB3	2.03	0.40
4:O:30:VAL:HG12	4:O:32:ARG:H	1.85	0.40
4:O:141:LEU:HD11	4:O:204:LEU:HD22	2.03	0.40
4:N:240:PHE:CE1	4:N:244:PHE:CE2	3.09	0.40
4:N:294:LEU:HD13	4:N:388:PHE:CD1	2.56	0.40
4:N:378:GLU:O	4:N:379:PHE:HB2	2.20	0.40
6:R:266:ALA:HB1	6:R:283:ARG:HD3	2.04	0.40
6:S:97:LEU:HD13	6:S:342:ILE:CG1	2.51	0.40
6:S:282:LEU:C	6:S:290:HIS:CE1	2.96	0.40
6:U:13:ILE:HG12	6:U:93:PHE:CD2	2.57	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:W:205:ASP:OD2	7:W:211:ILE:HB	2.21	0.40
4:O:43:ASP:OD1	4:O:44:ILE:HG23	2.21	0.40
4:O:68:SER:HB3	4:O:94:ILE:HG21	2.02	0.40
4:O:225:HIS:CG	4:O:298:ILE:HG12	2.56	0.40
4:N:203:TRP:CZ2	4:N:223:LEU:HD23	2.57	0.40
4:N:381:SER:HB3	4:O:99:MET:HE3	2.02	0.40
6:R:3:LEU:O	6:R:4:PRO:C	2.64	0.40
6:T:259:LEU:HD22	6:T:263:LYS:HG2	2.02	0.40
6:V:333:ASP:O	6:V:336:PHE:HB3	2.21	0.40
7:W:525:LEU:O	7:W:529:ILE:HG12	2.21	0.40
4:O:224:VAL:HA	4:O:227:TRP:HD1	1.86	0.40
1:1:3:G:C8	7:W:199:THR:HG21	2.56	0.40
2:3:124:DT:C2	6:R:70:PRO:HB2	2.56	0.40
5:P:81:LEU:C	5:P:82:GLN:HG3	2.46	0.40
5:P:148:HIS:NE2	6:Q:41:GLY:HA3	2.37	0.40
6:T:284:VAL:HG21	6:T:343:LYS:HE3	1.12	0.40
6:V:92:SER:OG	6:V:204:LEU:HD23	2.21	0.40
6:Q:97:LEU:H	6:Q:97:LEU:HD23	1.86	0.40
7:W:189:ILE:HG22	7:W:189:ILE:O	2.21	0.40
7:W:427:ASN:HA	7:W:430:THR:O	2.22	0.40
7:W:495:THR:HA	7:W:498:THR:HG22	2.03	0.40
4:O:71:ARG:HG3	4:O:73:ALA:HB3	2.03	0.40
4:O:102:SER:HB3	4:O:103:PRO:CD	2.52	0.40
6:R:78:VAL:HG13	6:R:218:ASN:HA	2.02	0.40
6:V:184:ASN:ND2	6:V:187:TRP:CE2	2.84	0.40
6:Q:23:VAL:HG11	6:Q:84:HIS:CE1	2.56	0.40
4:O:128:CYS:O	4:O:132:LEU:HG	2.22	0.40
4:O:327:GLU:HA	4:O:330:VAL:HG12	2.04	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
4	N	367/402 (91%)	286 (78%)	72 (20%)	9 (2%)	4 23
4	O	306/402 (76%)	249 (81%)	53 (17%)	4 (1%)	9 38
5	P	193/199 (97%)	165 (86%)	24 (12%)	4 (2%)	5 27
6	Q	303/352 (86%)	285 (94%)	18 (6%)	0	100 100
6	R	339/352 (96%)	323 (95%)	16 (5%)	0	100 100
6	S	337/352 (96%)	314 (93%)	23 (7%)	0	100 100
6	T	337/352 (96%)	324 (96%)	12 (4%)	1 (0%)	36 70
6	U	339/352 (96%)	313 (92%)	26 (8%)	0	100 100
6	V	338/352 (96%)	321 (95%)	16 (5%)	1 (0%)	36 70
7	W	516/640 (81%)	473 (92%)	41 (8%)	2 (0%)	30 65
All	All	3375/3755 (90%)	3053 (90%)	301 (9%)	21 (1%)	23 56

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	N	252	HIS
4	N	290	PRO
4	N	335	SER
5	P	94	GLU
5	P	190	GLU
5	P	192	SER
5	P	197	PRO
7	W	453	THR
4	N	3	LEU
4	N	205	ALA
4	N	209	SER
6	T	123	ILE
4	O	85	GLU
4	O	281	ARG
4	N	251	PHE
4	N	269	SER
4	O	248	PRO
6	V	223	PRO
4	N	247	TRP
7	W	490	HIS
4	O	87	PRO

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
4	N	336/364 (92%)	336 (100%)	0	100 100
4	O	281/364 (77%)	281 (100%)	0	100 100
5	P	177/181 (98%)	164 (93%)	13 (7%)	13 42
6	Q	276/308 (90%)	275 (100%)	1 (0%)	84 90
6	R	300/308 (97%)	300 (100%)	0	100 100
6	S	299/308 (97%)	299 (100%)	0	100 100
6	T	299/308 (97%)	299 (100%)	0	100 100
6	U	301/308 (98%)	299 (99%)	2 (1%)	76 86
6	V	299/308 (97%)	296 (99%)	3 (1%)	68 84
7	W	460/573 (80%)	460 (100%)	0	100 100
All	All	3028/3330 (91%)	3009 (99%)	19 (1%)	76 88

All (19) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	P	173	GLN
5	P	175	ARG
5	P	176	GLU
5	P	180	ILE
5	P	183	SER
5	P	186	LEU
5	P	189	SER
5	P	190	GLU
5	P	191	ASN
5	P	194	GLN
5	P	196	VAL
5	P	197	PRO
5	P	198	LEU
6	U	71	HIS
6	U	311	GLN
6	V	226	VAL

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Mol	Chain	Res	Type
6	V	227	PHE
6	V	228	THR
6	Q	138	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
4	N	153	HIS
5	P	173	GLN
5	P	194	GLN
6	T	315	HIS
6	U	71	HIS
6	V	225	GLN
6	Q	138	ASN
6	Q	290	HIS
7	W	272	HIS
7	W	626	GLN
4	O	143	HIS
4	O	338	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	59/317 (18%)	35 (59%)	2 (3%)

All (35) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	2	U
1	1	3	G
1	1	4	A
1	1	6	A
1	1	8	C
1	1	10	G
1	1	11	G
1	1	13	A
1	1	14	G
1	1	15	A
1	1	16	C
1	1	17	U

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Mol	Chain	Res	Type
1	1	18	U
1	1	20	A
1	1	21	U
1	1	22	C
1	1	24	G
1	1	26	C
1	1	27	A
1	1	28	G
1	1	29	C
1	1	30	A
1	1	32	A
1	1	33	C
1	1	34	G
1	1	35	U
1	1	36	G
1	1	38	A
1	1	39	C
1	1	40	U
1	1	42	U
1	1	43	G
1	1	52	A
1	1	55	A
1	1	59	A

All (2) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	1	19	U
1	1	39	C

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

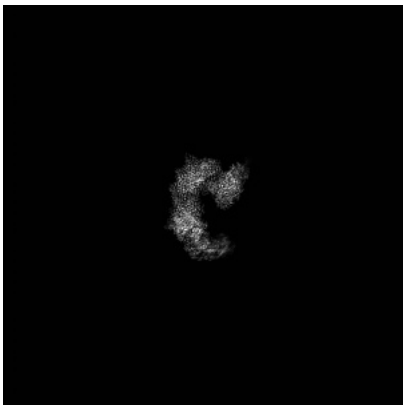
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-77366. These allow visual inspection of the internal detail of the map and identification of artifacts.

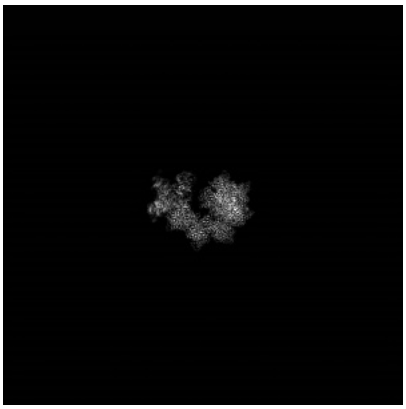
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

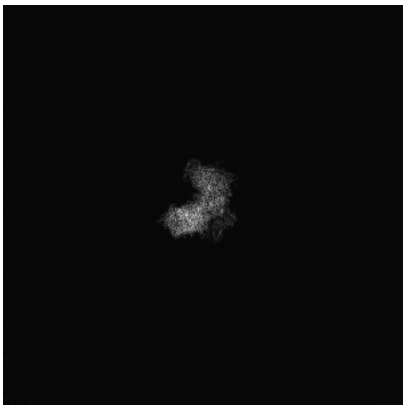
6.1.1 Primary map



X

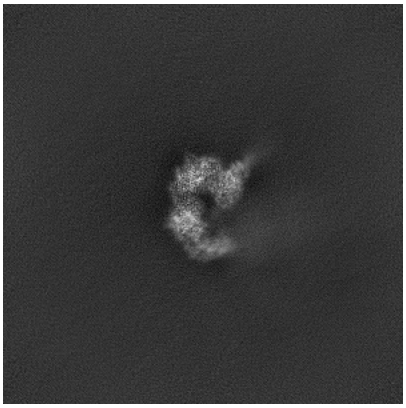


Y

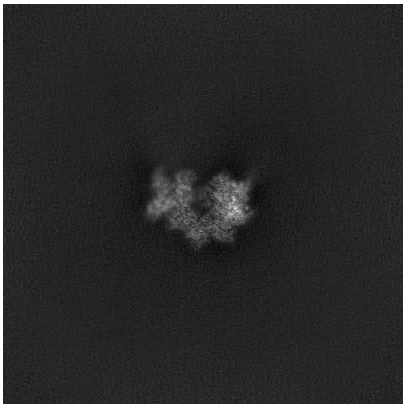


Z

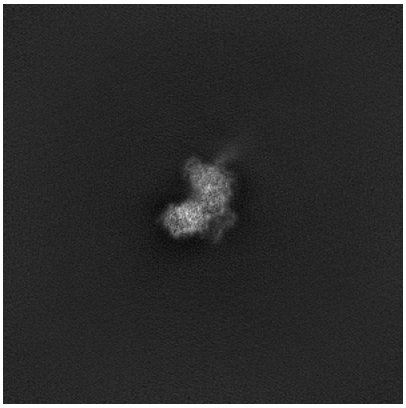
6.1.2 Raw map



X



Y



Z

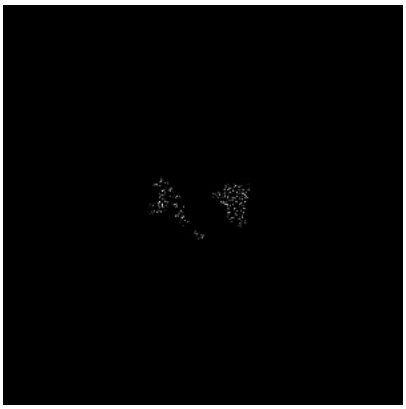
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

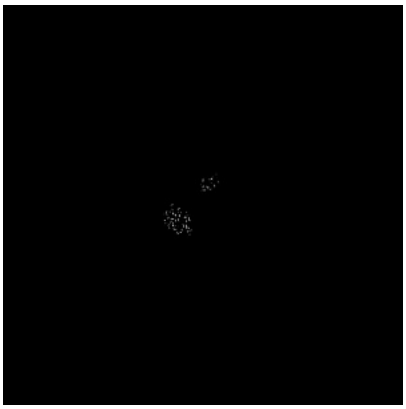
6.2.1 Primary map



X Index: 250

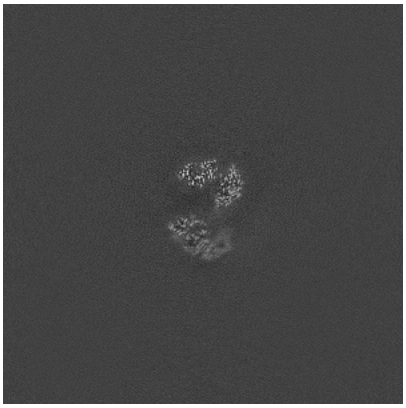


Y Index: 250

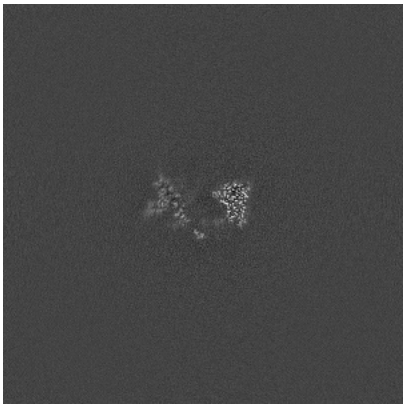


Z Index: 250

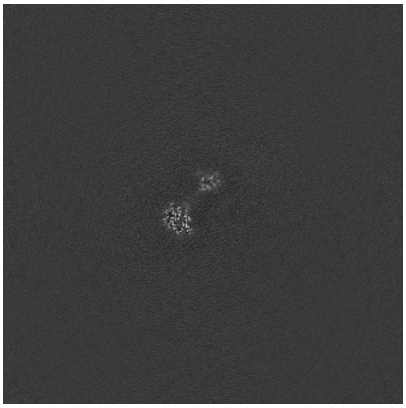
6.2.2 Raw map



X Index: 250



Y Index: 250

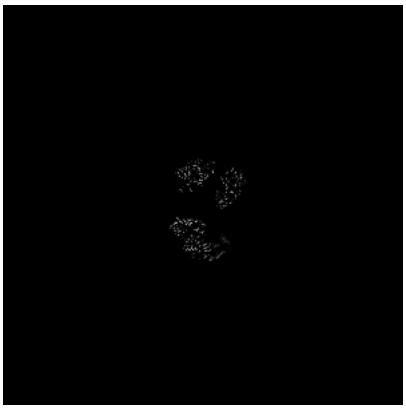


Z Index: 250

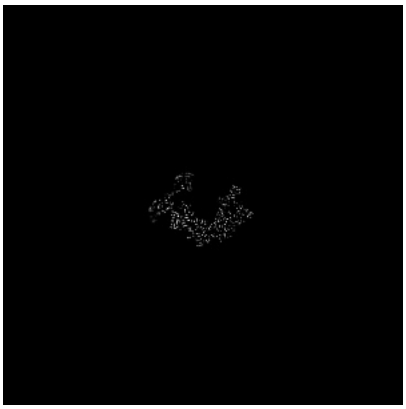
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

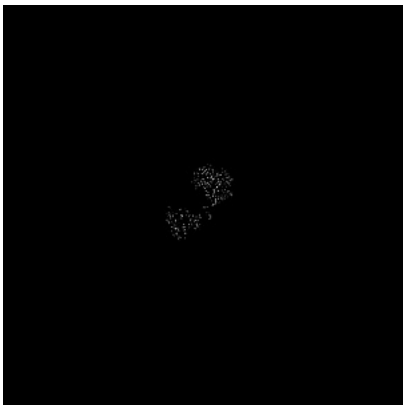
6.3.1 Primary map



X Index: 247

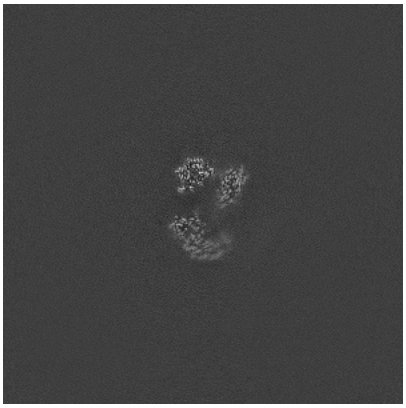


Y Index: 237

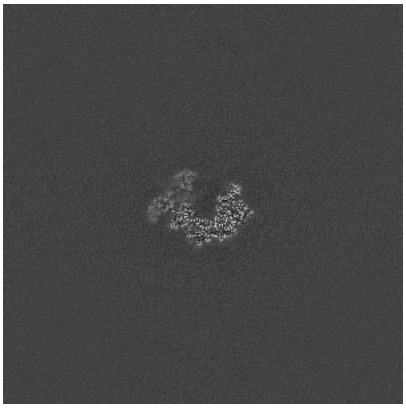


Z Index: 270

6.3.2 Raw map



X Index: 246



Y Index: 236

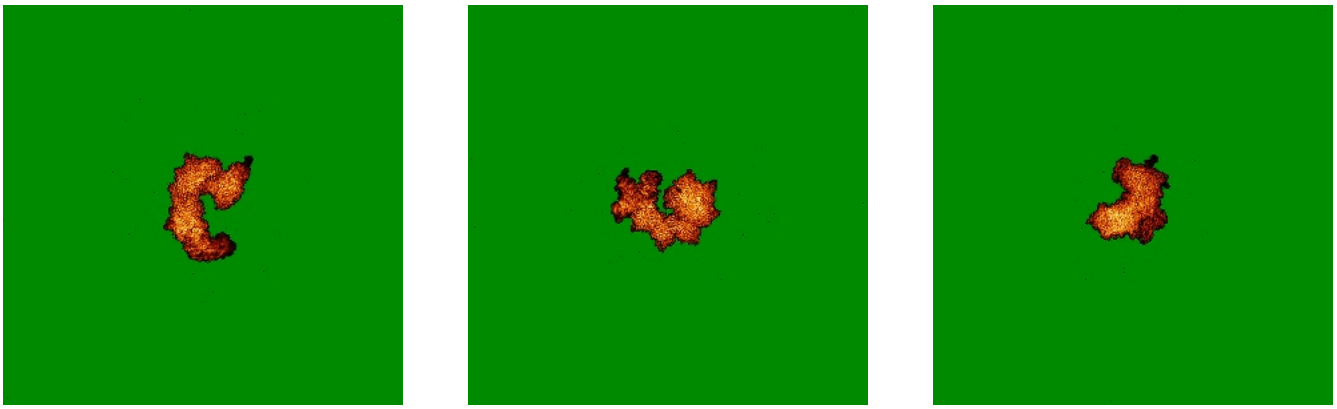


Z Index: 283

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

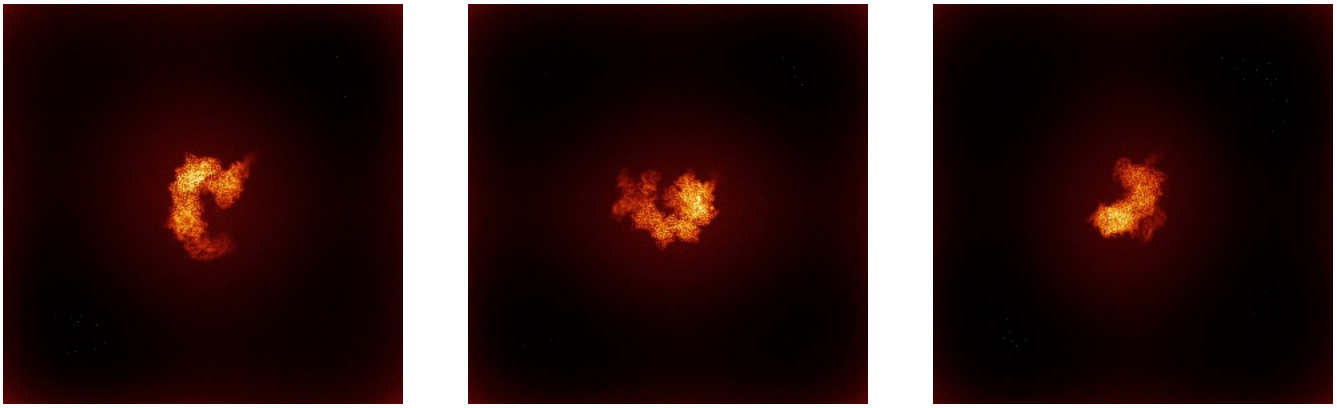
6.4 Orthogonal standard-deviation projections (False-color) (i)

6.4.1 Primary map



X Y Z

6.4.2 Raw map

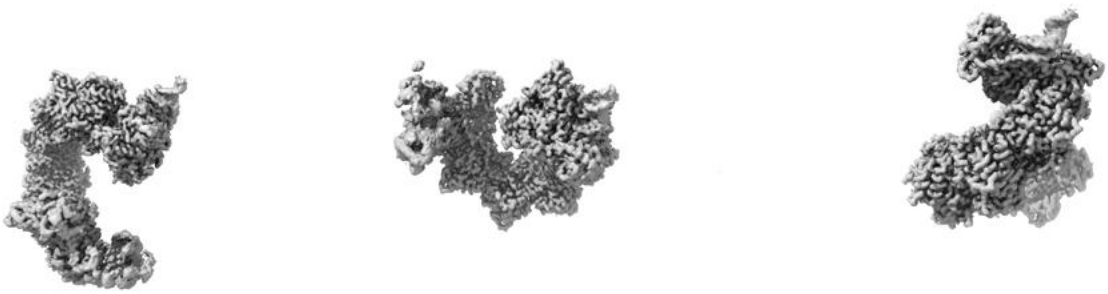


X Y Z

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 0.04. 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.

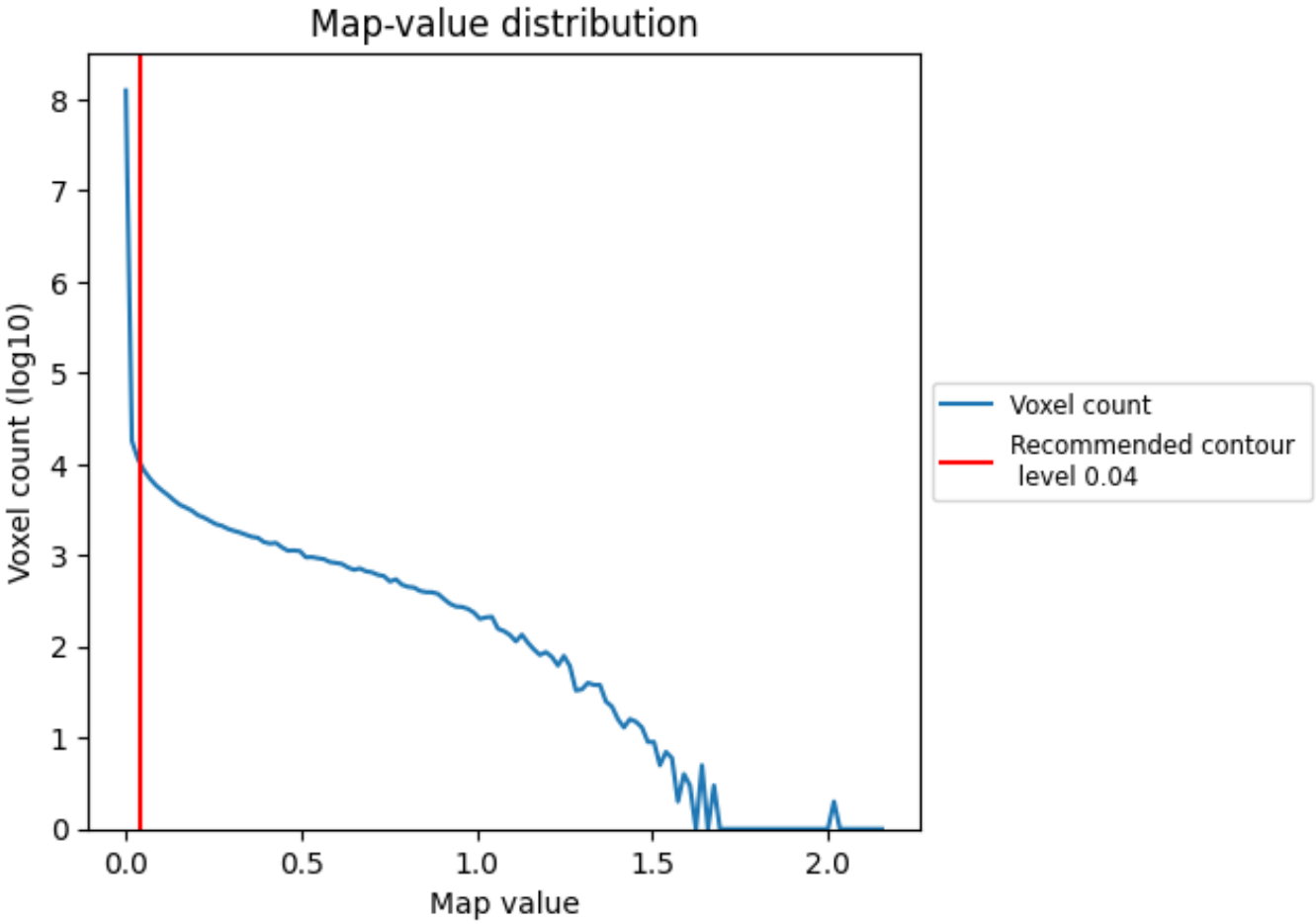
6.6 Mask visualisation (i)

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

7 Map analysis

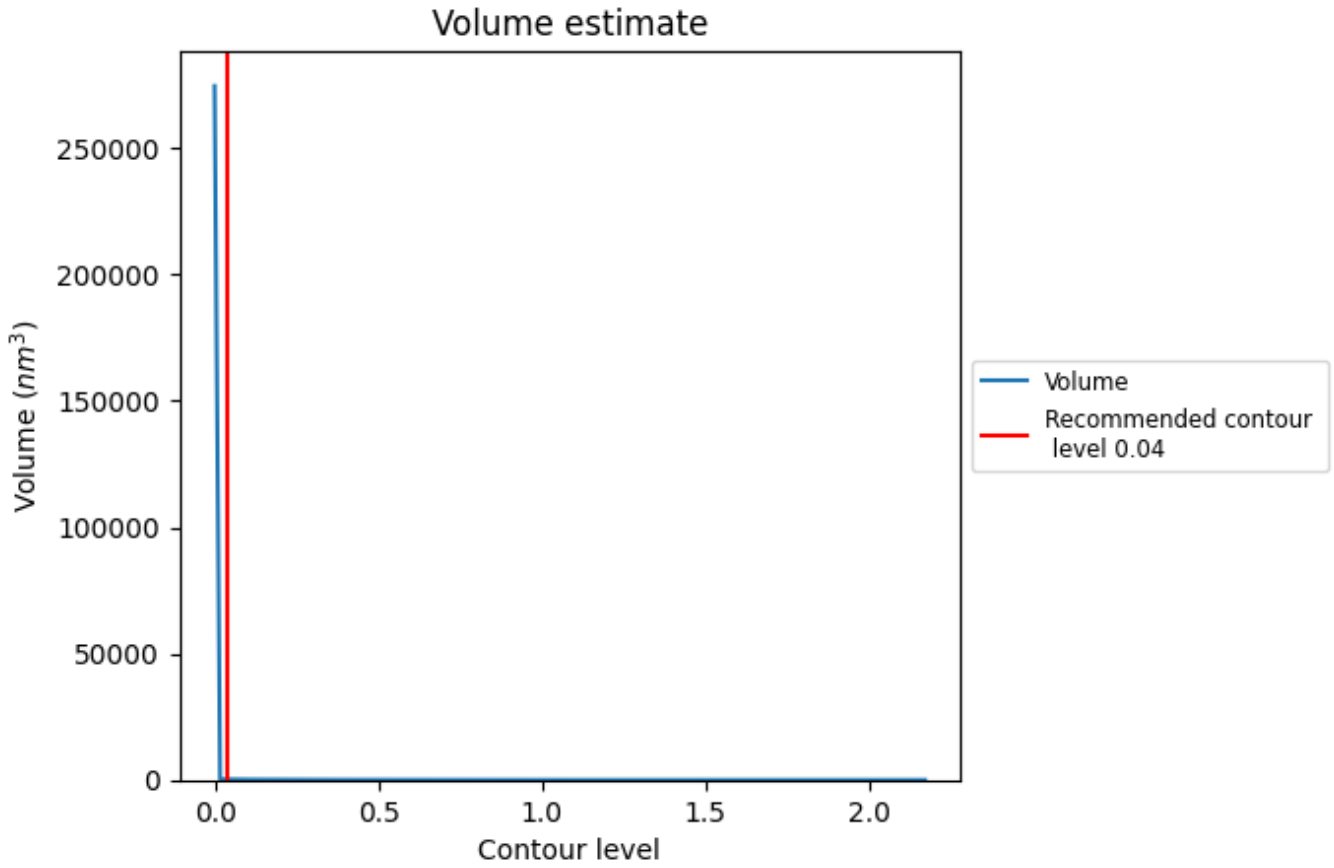
This section contains the results of statistical analysis of the map.

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.

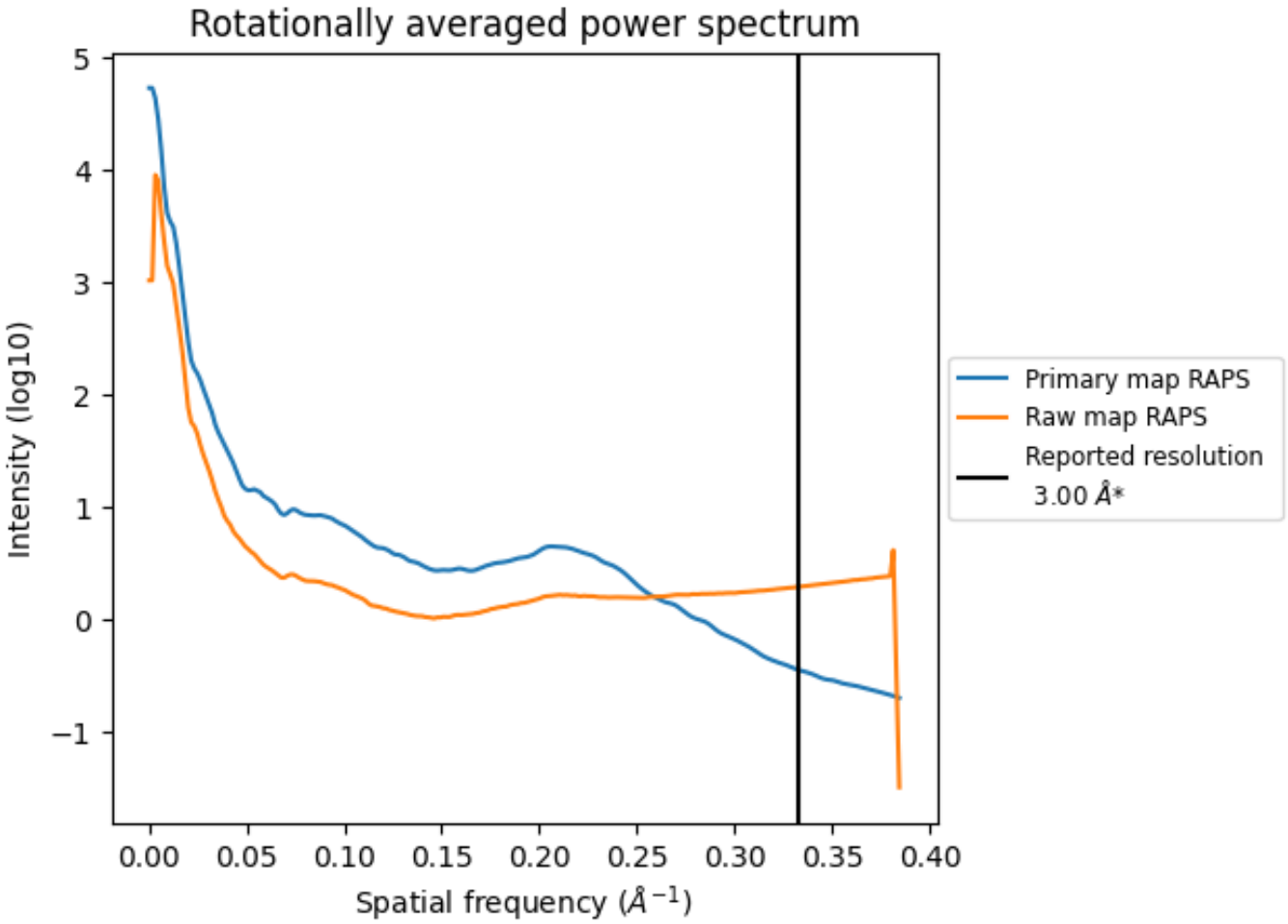
7.2 Volume estimate



The volume at the recommended contour level is 223 nm^3; this corresponds to an approximate mass of 202 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)

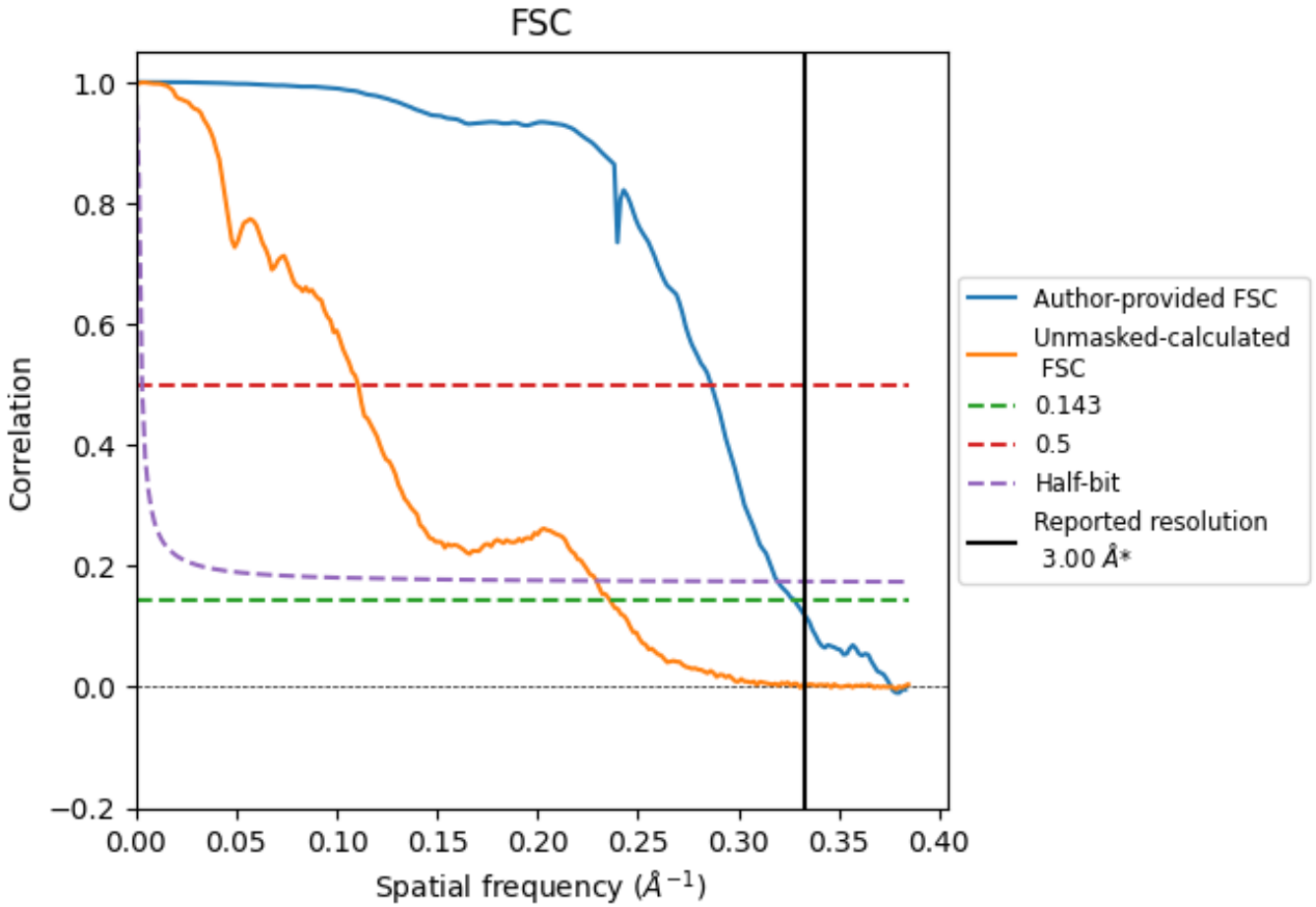


*Reported resolution corresponds to spatial frequency of 0.333 Å^{-1}

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 0.333 Å^{-1}

8.2 Resolution estimates (i)

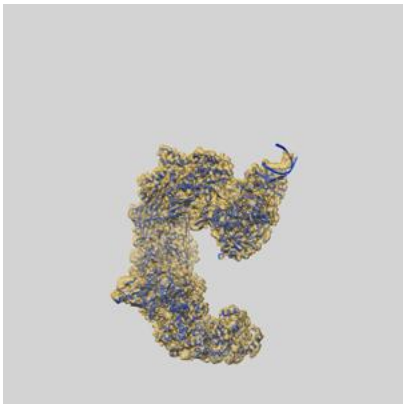
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.00	-	-
Author-provided FSC curve	3.05	3.49	3.13
Unmasked-calculated*	4.24	9.04	4.36

*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 4.24 differs from the reported value 3.0 by more than 10 %

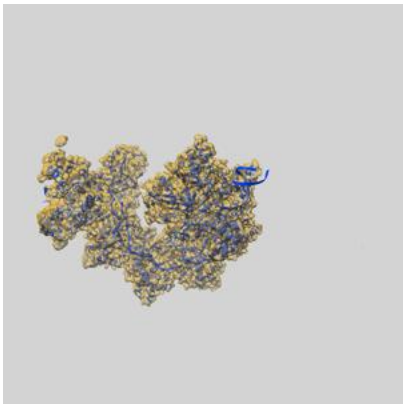
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-77366 and PDB model 36BQ. Per-residue inclusion information can be found in section 3 on page 6.

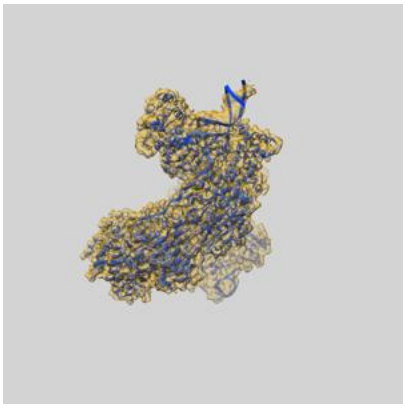
9.1 Map-model overlay



X



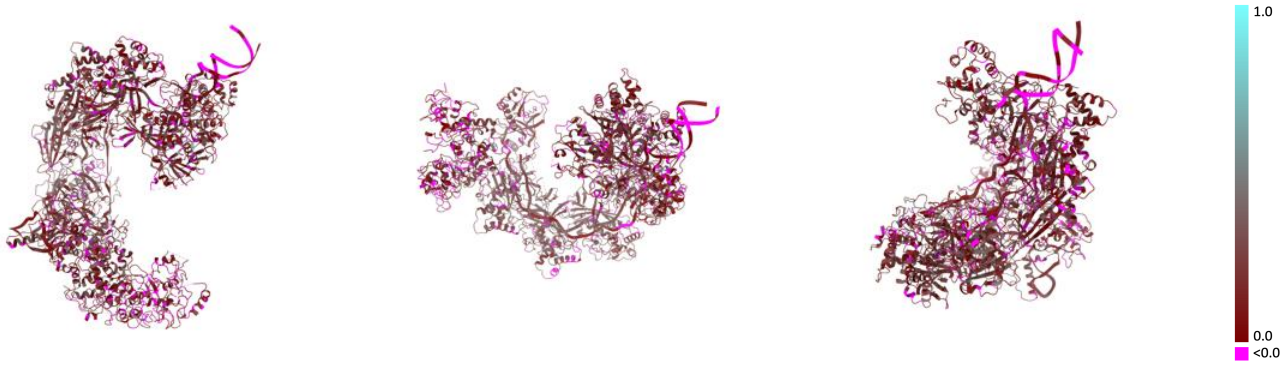
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.04 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.

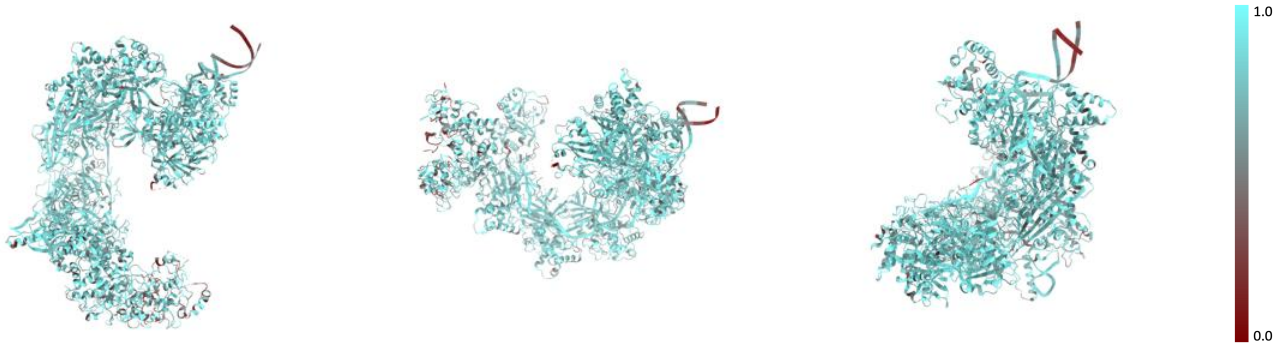
9.2 Q-score mapped to coordinate model



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.

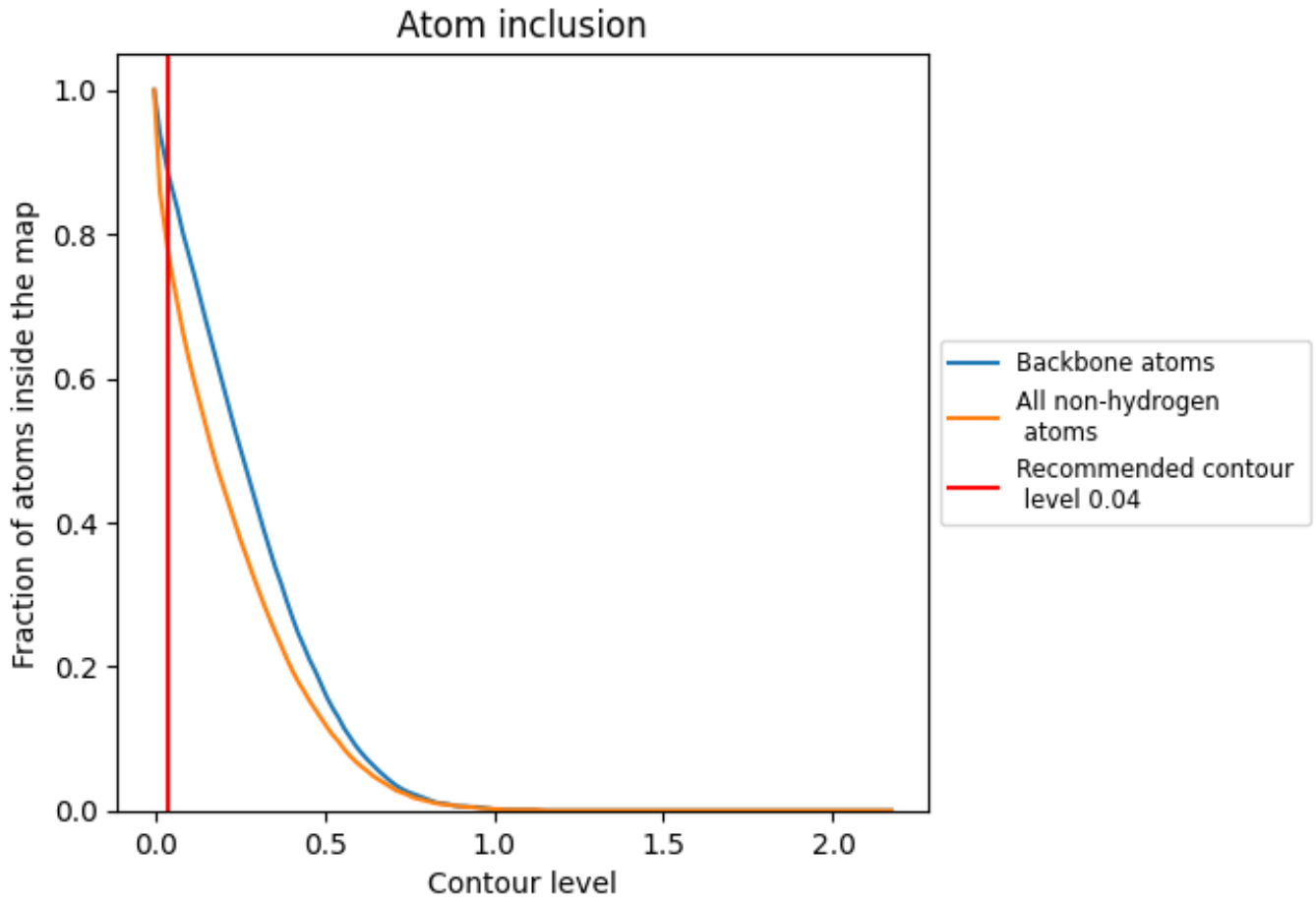
9.3 Atom inclusion mapped to coordinate model



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 (0.04).

9.4 Atom inclusion (i)



At the recommended contour level, 88% of all backbone atoms, 77% 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 (0.04) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7730	0.1690
1	0.8010	0.1680
3	0.7730	0.1370
7	0.5740	0.0310
N	0.7010	0.1130
O	0.6740	0.1140
P	0.7260	0.1640
Q	0.8240	0.2080
R	0.8220	0.2100
S	0.8130	0.2110
T	0.8030	0.1960
U	0.7710	0.1520
V	0.7860	0.1610
W	0.7980	0.1860

