Full wwPDB EM Validation Report ⓘ

Nov 19, 2026 – 12:33 PM EST

PDB ID	:	36AB / pdb_000036ab
EMDB ID	:	EMD-77313
Title	:	Cryo-EM structure of the VchCAST holo integration complex (HIC) - focused on Cascade
Authors	:	Florez Ariza, A.J.; Dubey, S.; Truong, V.H.; Fatma, S.; Kellogg, E.H.
Deposited on	:	2026-05-27
Resolution	:	3.90 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:

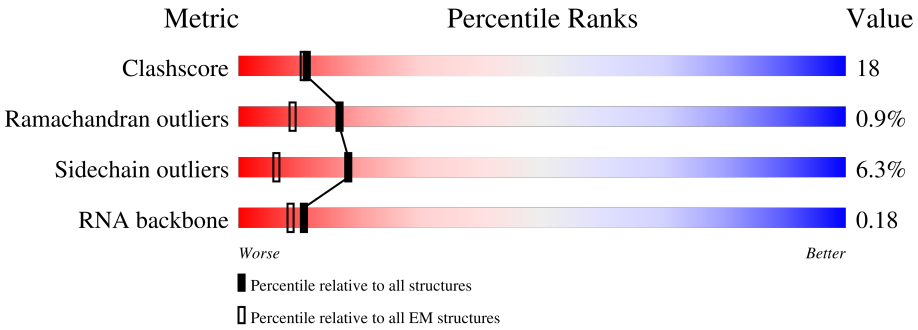
EMDB validation analysis	:	0.0.1.dev133
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh &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

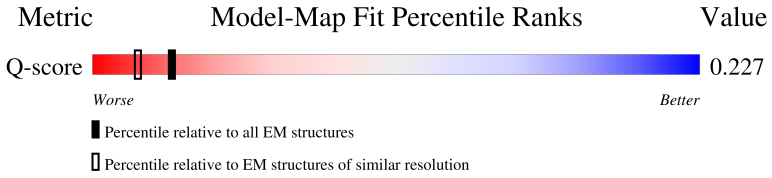
1 Overall quality at a glance

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

The reported resolution of this entry is 3.90 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.





Metric	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	8855 (3.40 - 4.40)

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	5% 8% 6% • 81%
2	3	189	• 14% 20% • 65%
3	N	402	8% 57% 35% 6% •

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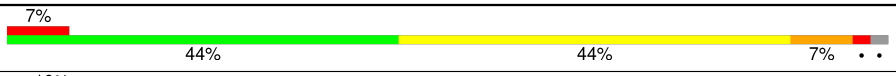
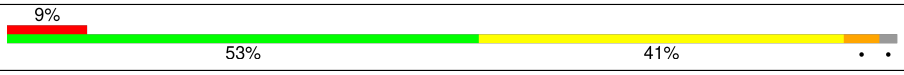
Mol	Chain	Length	Quality of chain
3	O	402	
4	P	199	
5	W	640	
6	7	99	
7	Q	352	
7	R	352	
7	S	352	
7	T	352	
7	U	352	
7	V	352	

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 32427 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-Target Strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	3	67	Total	C	N	O	P	0	0
			1368	650	244	407	67		

- Molecule 3 is a protein called Transposition protein TniQ.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	O	393	Total	C	N	O	S	0	0
			3203	2050	556	579	18		
3	N	394	Total	C	N	O	S	0	0
			3211	2055	557	580	19		

There are 14 discrepancies between the modelled and reference sequences:

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
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

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Chain	Residue	Modelled	Actual	Comment	Reference
N	-1	HIS	-	expression tag	UNP A0A6I8WFP2

- Molecule 4 is a protein called Cas6.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	P	195	Total	C	N	O	S	0	0
			1594	1012	283	292	7		

- Molecule 5 is a protein called CRISPR-associated protein Cas8.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	W	627	Total	C	N	O	S	0	0
			4972	3136	875	938	23		

- Molecule 6 is a DNA chain called Non Template Strand-Scramble.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	7	39	Total	C	N	O	P	0	0
			803	379	155	230	39		

- Molecule 7 is a protein called Cas7.

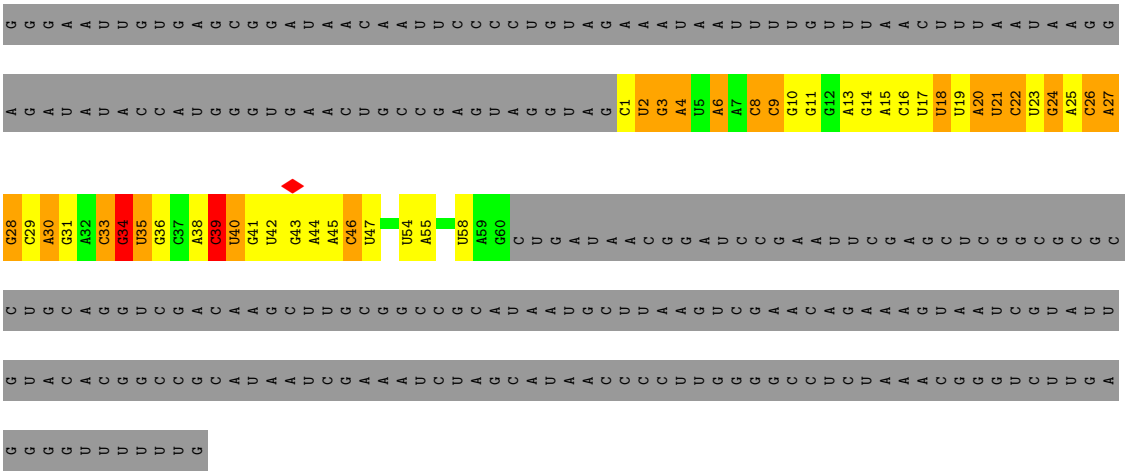
Mol	Chain	Residues	Atoms					AltConf	Trace
7	V	340	Total	C	N	O	S	0	0
			2715	1728	465	507	15		
7	R	338	Total	C	N	O	S	0	0
			2700	1719	463	503	15		
7	S	337	Total	C	N	O	S	0	0
			2696	1717	462	502	15		
7	T	337	Total	C	N	O	S	0	0
			2696	1717	462	502	15		
7	U	337	Total	C	N	O	S	0	0
			2696	1717	462	502	15		
7	Q	308	Total	C	N	O	S	0	0
			2487	1590	425	458	14		

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.

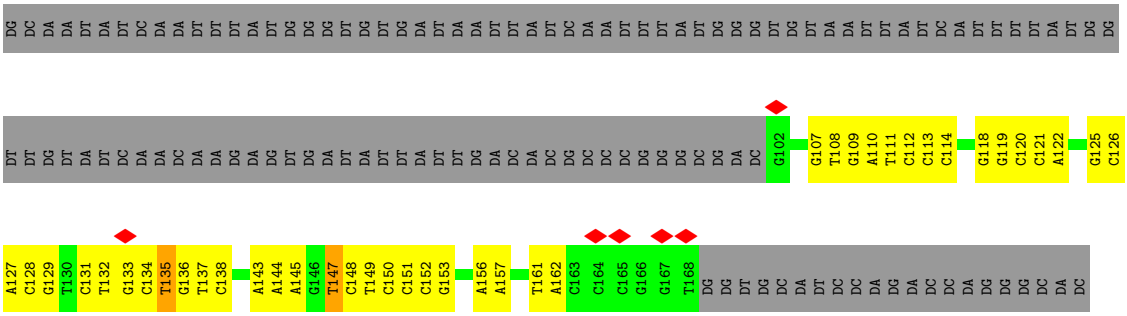
• Molecule 1: Guide RNA

Chain 1: 5% 8% 6% 81%



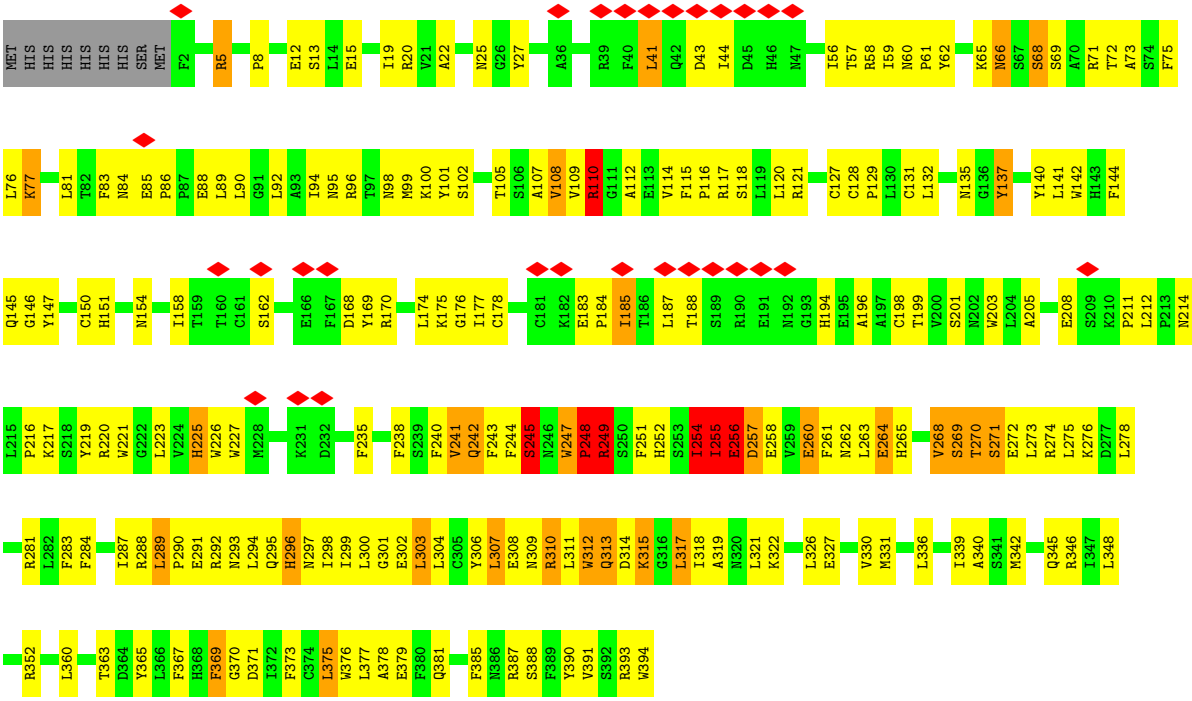
• Molecule 2: RE-Target Strand

Chain 3: 14% 20% 65%



• Molecule 3: Transposition protein TniQ

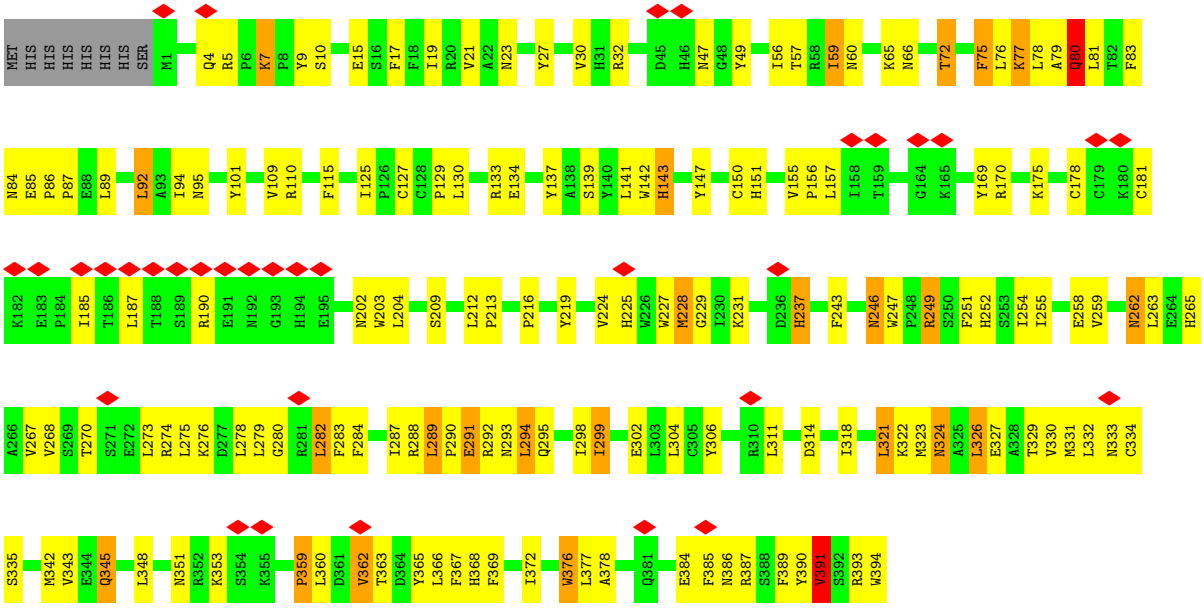
Chain O: 7% 44% 44% 7%



• Molecule 3: Transposition protein TniQ

Chain N:

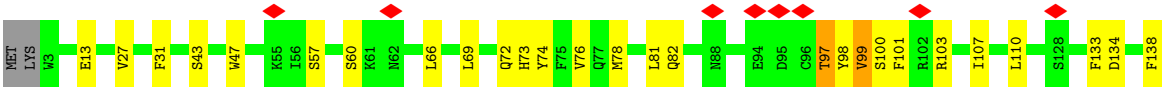


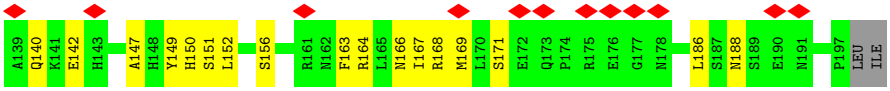


• Molecule 4: Cas6

Chain P:

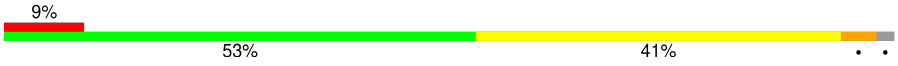


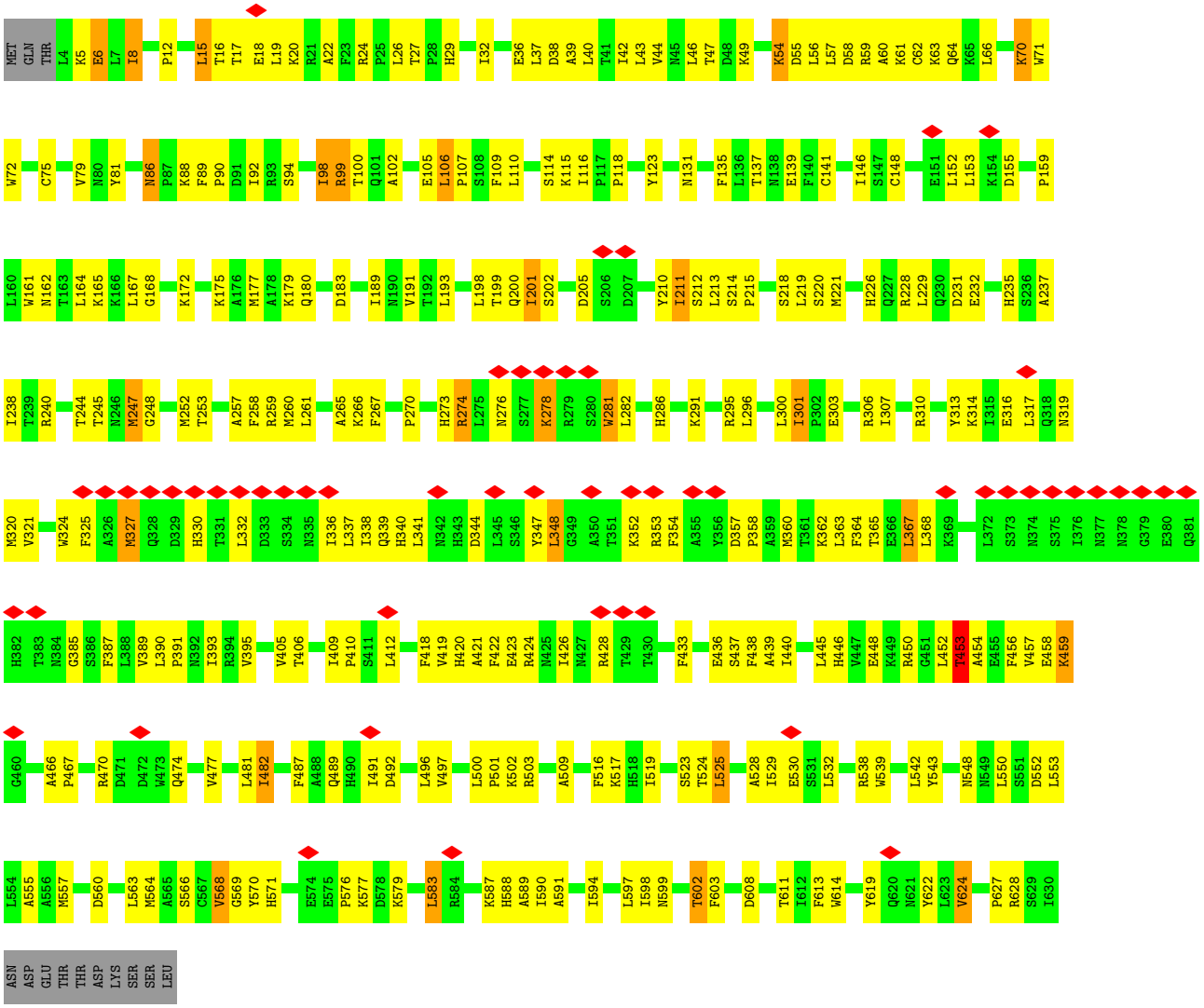




• Molecule 5: CRISPR-associated protein Cas8

Chain W:

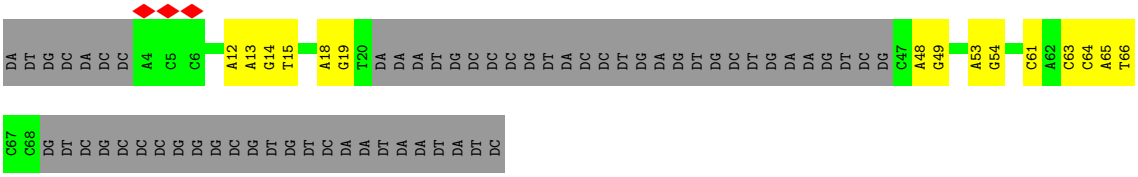




• Molecule 6: Non Template Strand-Scramble

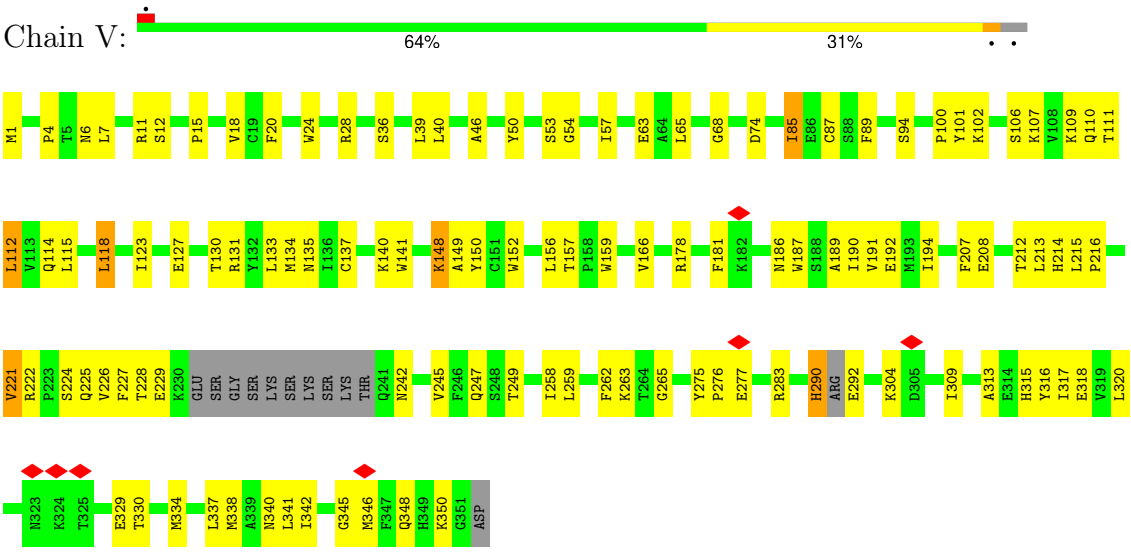
Chain 7:





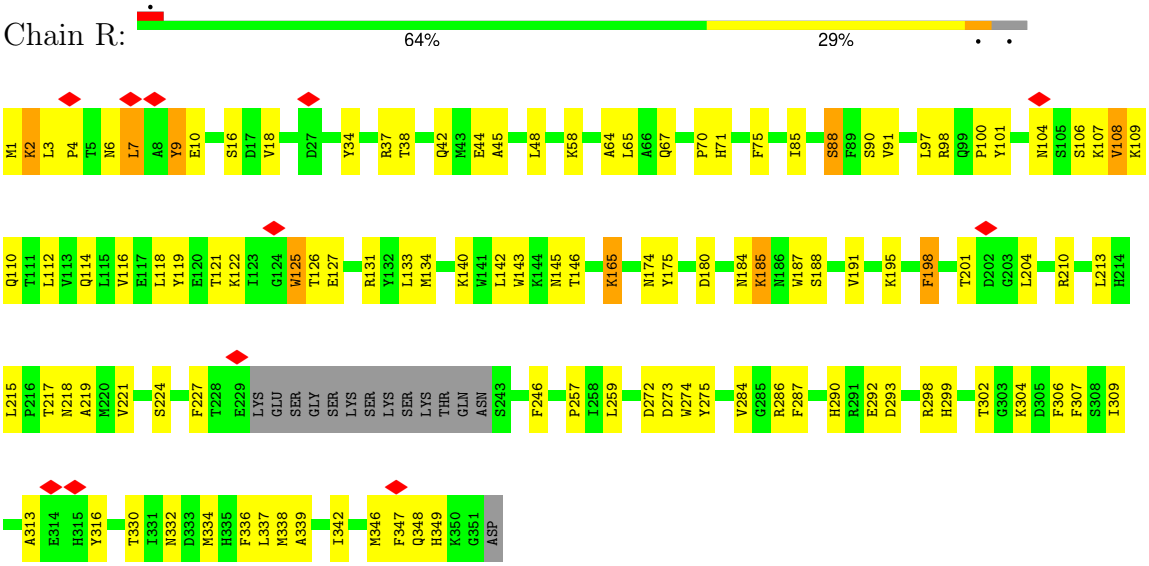
• Molecule 7: Cas7

Chain V:



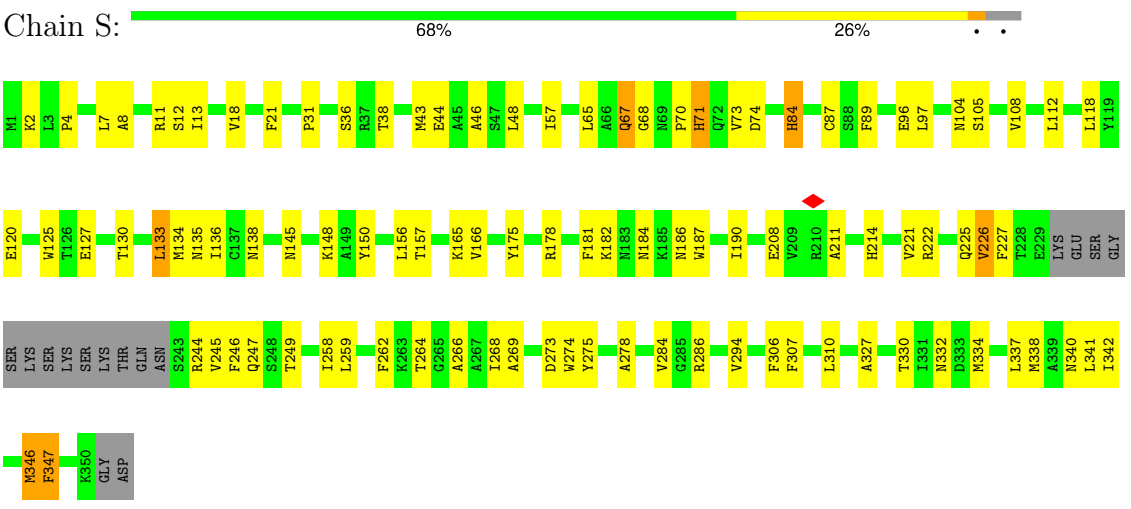
• Molecule 7: Cas7

Chain R:



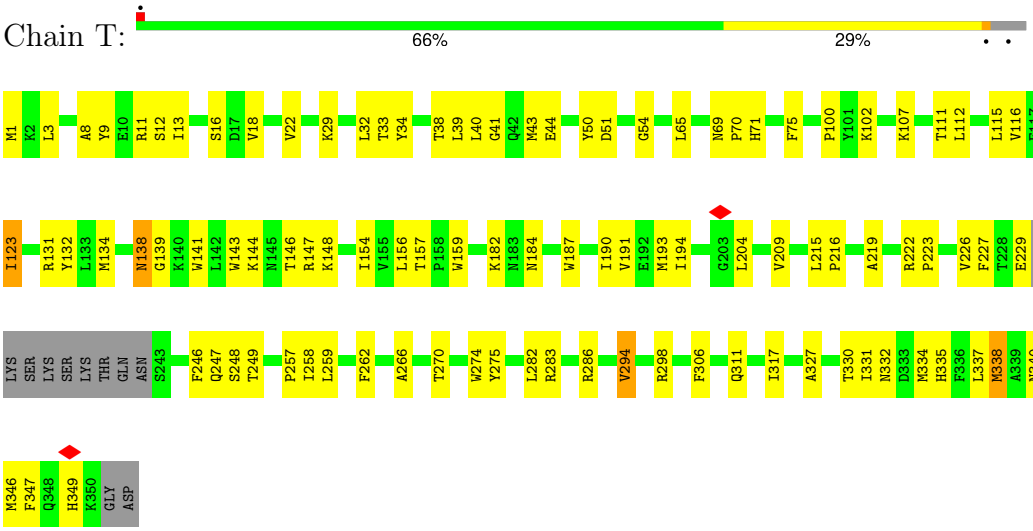
• Molecule 7: Cas7

Chain S:



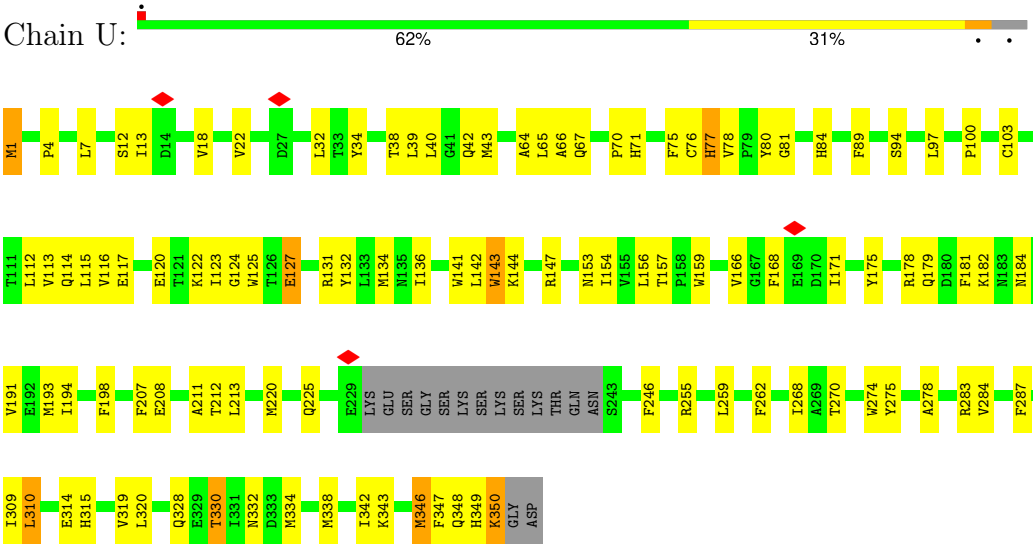
• Molecule 7: Cas7

Chain T:



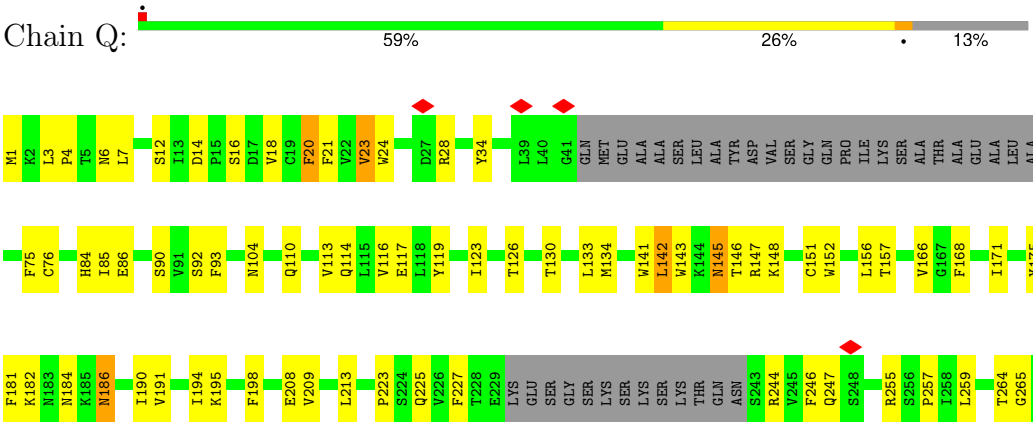
• Molecule 7: Cas7

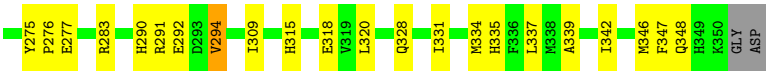
Chain U:



• Molecule 7: Cas7

Chain Q:




V275
P276
E277
R283
H290
R291
E292
D293
V294
I309
H315
E318
V319
L320
Q328
I331
M334
H335
F336
L337
M338
A339
I342
M346
F347
Q348
H349
K350
GLY
ASP

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	41561	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	2.207	Depositor
Minimum map value	-0.002	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.028	Depositor
Map size (Å)	648.5, 648.5, 648.5	wwPDB
Map dimensions	500, 500, 500	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.297, 1.297, 1.297	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

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	0.27	0/1439	0.93	9/2242 (0.4%)
2	3	0.77	0/1531	1.04	4/2360 (0.2%)
3	N	0.29	1/3302 (0.0%)	0.76	7/4475 (0.2%)
3	O	0.40	0/3294	1.01	24/4465 (0.5%)
4	P	0.10	0/1631	0.31	0/2200
5	W	0.20	0/5081	0.60	3/6891 (0.0%)
6	7	0.81	0/901	0.90	0/1386
7	Q	0.16	0/2554	0.43	0/3468
7	R	0.16	0/2771	0.43	0/3764
7	S	0.15	0/2767	0.45	1/3759 (0.0%)
7	T	0.15	0/2767	0.42	0/3759
7	U	0.17	0/2767	0.42	2/3759 (0.1%)
7	V	0.15	0/2785	0.45	0/3781
All	All	0.30	1/33590 (0.0%)	0.65	50/46309 (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
3	O	0	6

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	N	75	PHE	CA-C	-6.47	1.44	1.52

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	3	135	DT	O4'-C1'-N1	10.96	115.67	108.00
3	O	251	PHE	N-CA-CB	10.03	124.86	110.12

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	O	319	ALA	CA-C-N	-8.70	109.97	122.06
3	O	319	ALA	C-N-CA	-8.70	109.97	122.06
3	O	110	ARG	CA-CB-CG	8.30	130.70	114.10
1	1	39	C	N1-C2-O2	8.02	123.71	118.90
3	O	309	ASN	N-CA-C	-7.87	103.18	114.12
1	1	18	U	N1-C2-O2	7.79	128.26	122.80
3	O	251	PHE	N-CA-C	-7.71	102.87	111.28
1	1	18	U	N3-C2-O2	-7.50	116.95	122.20
2	3	135	DT	C1'-O4'-C4'	-7.33	102.77	110.10
3	O	248	PRO	CA-N-CD	-6.88	102.37	112.00
3	O	270	THR	CA-C-N	-6.81	108.53	121.54
3	O	270	THR	C-N-CA	-6.81	108.53	121.54
7	U	66	ALA	CA-C-N	-6.71	108.72	121.54
7	U	66	ALA	C-N-CA	-6.71	108.72	121.54
3	O	255	ILE	N-CA-C	-6.58	102.82	111.05
5	W	281	TRP	CA-C-N	6.58	132.86	122.93
5	W	281	TRP	C-N-CA	6.58	132.86	122.93
3	N	75	PHE	N-CA-C	-6.49	104.67	112.59
3	N	76	LEU	N-CA-C	-6.39	106.11	114.04
1	1	18	U	C2-N1-C1'	6.28	125.24	117.70
1	1	39	C	N3-C2-O2	-6.24	117.53	121.90
2	3	147	DT	O4'-C4'-C3'	-6.24	102.26	106.00
3	O	110	ARG	CB-CG-CD	6.10	125.32	111.30
3	O	110	ARG	CG-CD-NE	-6.09	98.60	112.00
3	O	241	VAL	N-CA-C	-6.04	104.46	110.62
3	O	118	SER	N-CA-C	-6.02	104.76	114.09
3	O	244	PHE	N-CA-C	-6.02	105.99	113.15
3	O	248	PRO	CB-CA-C	5.87	121.24	111.56
3	N	75	PHE	CB-CA-C	-5.85	101.61	111.02
1	1	39	C	C2-N1-C1'	5.72	125.09	118.80
1	1	18	U	C5-C4-O4	5.65	129.29	125.90
3	O	240	PHE	CA-C-N	-5.59	112.80	120.46
3	O	240	PHE	C-N-CA	-5.59	112.80	120.46
3	O	252	HIS	N-CA-C	-5.58	105.28	111.36
7	S	67	GLN	CA-CB-CG	5.34	124.78	114.10
3	N	314	ASP	CB-CA-C	-5.30	110.44	116.54
3	O	245	SER	N-CA-C	-5.29	106.21	113.30
2	3	128	DC	O4'-C4'-C3'	-5.28	102.83	106.00
3	O	254	ILE	N-CA-C	-5.24	106.69	111.67
5	W	281	TRP	N-CA-C	5.24	116.75	109.31
3	N	80	GLN	CA-C-N	-5.21	113.86	121.99
3	N	80	GLN	C-N-CA	-5.21	113.86	121.99

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	1	34	G	P-O3'-C3'	5.17	125.91	119.70
3	O	84	ASN	CA-C-N	5.14	128.58	120.97
3	O	84	ASN	C-N-CA	5.14	128.58	120.97
3	N	78	LEU	N-CA-C	-5.14	106.98	113.20
3	O	244	PHE	CB-CA-C	5.12	119.84	110.36
1	1	39	C	C6-N1-C2	-5.07	118.27	120.30

There are no chirality outliers.

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	O	102	SER	Peptide
3	O	110	ARG	Sidechain
3	O	289	LEU	Peptide
3	O	310	ARG	Sidechain
3	O	387	ARG	Peptide,Sidechain

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	44	0
2	3	1368	0	755	41	0
3	N	3211	0	3117	151	0
3	O	3203	0	3103	200	0
4	P	1594	0	1570	28	0
5	W	4972	0	4941	251	0
6	7	803	0	437	23	0
7	Q	2487	0	2423	73	0
7	R	2700	0	2634	98	0
7	S	2696	0	2631	79	0
7	T	2696	0	2627	83	0
7	U	2696	0	2631	88	0
7	V	2715	0	2647	94	0
All	All	32427	0	30164	1135	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 18.

All (1135) 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)
7:V:134:MET:HE1	7:V:178:ARG:HA	1.49	0.94
3:O:270:THR:HA	3:O:273:LEU:HG	1.51	0.92
5:W:338:ILE:HD11	5:W:368:LEU:HD11	1.52	0.89
3:O:247:TRP:HB3	3:O:248:PRO:HD2	1.53	0.88
7:U:190:ILE:HA	7:U:193:MET:HE3	1.55	0.87
3:O:308:GLU:OE2	3:O:373:PHE:HB3	1.74	0.87
5:W:568:VAL:HG23	5:W:569:GLY:H	1.40	0.87
7:U:107:LYS:HA	7:U:110:GLN:HE21	1.40	0.86
3:O:292:ARG:HE	3:O:295:GLN:HE21	1.29	0.81
3:N:130:LEU:HD12	3:N:155:VAL:HG11	1.61	0.80
3:O:57:THR:HA	3:O:170:ARG:HD3	1.62	0.80
5:W:410:PRO:HG2	5:W:566:SER:HB3	1.63	0.80
3:O:221:TRP:HB3	3:O:289:LEU:HD22	1.64	0.79
3:N:227:TRP:HE1	3:N:299:ILE:HG21	1.45	0.78
3:O:110:ARG:NE	3:O:144:PHE:HZ	1.76	0.78
5:W:212:SER:HB3	5:W:588:HIS:HD1	1.46	0.78
5:W:261:LEU:HD21	5:W:406:THR:HG22	1.66	0.77
7:V:228:THR:HG22	7:V:229:GLU:H	1.48	0.77
4:P:99:VAL:HG12	4:P:100:SER:H	1.49	0.77
5:W:282:LEU:HD22	5:W:348:LEU:HD22	1.67	0.76
7:T:215:LEU:HD12	7:T:216:PRO:HD2	1.65	0.76
7:U:136:ILE:HG22	7:U:268:ILE:HG12	1.67	0.75
3:N:304:LEU:HD22	3:N:332:LEU:HD12	1.68	0.75
7:U:18:VAL:HB	7:U:259:LEU:HB2	1.69	0.75
5:W:281:TRP:CZ3	5:W:324:TRP:HB2	2.22	0.75
3:N:125:ILE:HD13	3:N:170:ARG:HH12	1.51	0.75
3:O:292:ARG:HE	3:O:295:GLN:NE2	1.86	0.74
5:W:193:LEU:HD21	5:W:588:HIS:HD2	1.52	0.74
3:O:13:SER:HA	3:O:140:TYR:CE1	2.22	0.74
3:N:275:LEU:HD12	3:N:323:MET:HB3	1.70	0.74
2:3:120:DC:H1'	3:O:352:ARG:HH12	1.53	0.74
7:Q:152:TRP:HE1	7:Q:171:ILE:HB	1.51	0.74
3:O:65:LYS:NZ	6:7:61:DC:H1'	2.03	0.73
7:R:2:LYS:HE3	7:R:346:MET:HB2	1.69	0.73
2:3:134:DC:H5"	2:3:135:DT:H5"	1.71	0.73
3:O:66:ASN:HA	3:N:394:TRP:HD1	1.54	0.73
5:W:105:GLU:HG2	5:W:114:SER:HB2	1.70	0.72
3:O:203:TRP:HZ3	3:O:220:ARG:HG2	1.54	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:194:HIS:CE1	3:O:196:ALA:HB3	2.24	0.72
7:Q:16:SER:HB3	7:Q:90:SER:H	1.54	0.72
5:W:569:GLY:HA2	5:W:594:ILE:H	1.55	0.71
2:3:133:DG:H4'	7:R:1:MET:HE2	1.72	0.71
3:N:321:LEU:HB2	3:N:369:PHE:HE1	1.55	0.71
3:N:280:GLY:N	3:N:283:PHE:HB3	2.05	0.71
3:O:205:ALA:HB2	3:O:216:PRO:HG3	1.73	0.71
3:O:318:ILE:HA	3:O:321:LEU:HD11	1.73	0.71
3:N:324:ASN:HB3	3:N:365:TYR:H	1.56	0.71
3:O:308:GLU:OE1	3:O:377:LEU:HD12	1.90	0.71
7:R:227:PHE:HZ	7:S:70:PRO:HB3	1.56	0.70
5:W:563:LEU:HD21	5:W:597:LEU:HB3	1.72	0.70
3:N:130:LEU:HG	3:N:187:LEU:HD12	1.74	0.70
3:N:292:ARG:HD3	3:N:333:ASN:HB3	1.73	0.70
3:N:332:LEU:H	3:N:387:ARG:NH2	1.90	0.70
7:S:4:PRO:HG2	7:S:7:LEU:HB2	1.73	0.70
3:O:292:ARG:HG2	3:O:296:HIS:HE1	1.57	0.69
7:Q:142:LEU:HD12	7:Q:145:ASN:HD22	1.57	0.69
5:W:63:LYS:HA	5:W:66:LEU:HD12	1.73	0.69
7:R:184:ASN:HB3	7:R:187:TRP:HB2	1.74	0.69
5:W:90:PRO:HG2	5:W:470:ARG:HH21	1.58	0.69
7:S:18:VAL:HB	7:S:259:LEU:HB2	1.75	0.69
7:S:338:MET:O	7:S:342:ILE:HD12	1.93	0.69
5:W:281:TRP:HZ3	5:W:324:TRP:HB2	1.56	0.68
3:N:212:LEU:HD12	3:N:213:PRO:HD2	1.76	0.68
3:N:125:ILE:HD13	3:N:170:ARG:NH1	2.08	0.68
7:R:227:PHE:CD2	7:S:38:THR:HB	2.29	0.68
7:Q:191:VAL:O	7:Q:195:LYS:HG2	1.93	0.68
3:O:15:GLU:HG2	3:O:170:ARG:HG2	1.74	0.67
2:3:119:DG:H2"	2:3:120:DC:C2	2.28	0.67
3:O:217:LYS:O	3:O:221:TRP:HD1	1.76	0.67
3:N:327:GLU:HA	3:N:330:VAL:HG12	1.77	0.67
3:O:59:ILE:HA	3:O:71:ARG:HH21	1.59	0.67
3:O:292:ARG:HG2	3:O:296:HIS:CE1	2.29	0.67
3:N:130:LEU:HD23	3:N:133:ARG:HH21	1.59	0.67
7:R:88:SER:HB2	7:R:210:ARG:HG2	1.76	0.67
4:P:99:VAL:HA	4:P:171:SER:HA	1.76	0.67
3:N:321:LEU:HB2	3:N:369:PHE:CE1	2.30	0.67
1:1:10:G:H2'	1:1:11:G:C8	2.30	0.67
3:N:369:PHE:HB3	3:N:372:ILE:HD12	1.76	0.66
7:R:2:LYS:HG3	7:R:348:GLN:H	1.60	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:R:45:ALA:HB3	7:R:48:LEU:HG	1.77	0.66
7:U:178:ARG:HG2	7:U:182:LYS:HE3	1.77	0.66
5:W:568:VAL:HG21	5:W:624:VAL:HG23	1.77	0.66
7:T:11:ARG:HH12	7:U:220:MET:HE1	1.60	0.66
3:O:289:LEU:HD12	3:O:299:ILE:HD12	1.78	0.66
5:W:409:ILE:H	5:W:564:MET:HE1	1.61	0.66
7:U:142:LEU:HD23	7:U:213:LEU:HD22	1.78	0.66
7:Q:346:MET:HG2	7:Q:348:GLN:HG3	1.77	0.66
3:N:57:THR:HB	3:N:170:ARG:HE	1.60	0.66
5:W:58:ASP:HB3	5:W:61:LYS:HD2	1.78	0.65
3:O:92:LEU:HG	3:O:140:TYR:OH	1.96	0.65
3:O:212:LEU:HB2	3:O:214:ASN:HD22	1.61	0.65
3:N:345:GLN:HA	3:N:345:GLN:HE21	1.62	0.65
5:W:338:ILE:HD13	5:W:365:THR:HG22	1.78	0.65
3:N:127:CYS:HG	3:N:142:TRP:CG	2.14	0.65
7:R:4:PRO:HA	7:R:349:HIS:HD2	1.61	0.65
3:N:343:VAL:HG21	3:N:367:PHE:CZ	2.32	0.65
7:R:274:TRP:HB3	7:R:332:ASN:HB3	1.79	0.65
7:T:3:LEU:HB2	7:T:349:HIS:HB2	1.79	0.65
3:O:293:ASN:OD1	3:O:385:PHE:HA	1.96	0.65
1:1:2:U:H3	5:W:418:PHE:HD2	1.45	0.65
4:P:103:ARG:HB3	4:P:188:ASN:HD22	1.60	0.65
5:W:141:CYS:HA	5:W:146:ILE:HA	1.78	0.65
7:R:18:VAL:HB	7:R:259:LEU:HB2	1.79	0.65
7:R:131:ARG:HA	7:R:134:MET:HG2	1.78	0.65
3:N:95:ASN:HB3	3:N:109:VAL:HG13	1.79	0.64
7:R:45:ALA:HA	7:Q:346:MET:HE1	1.78	0.64
7:Q:7:LEU:H	7:Q:348:GLN:HG2	1.62	0.64
7:Q:21:PHE:HB2	7:Q:86:GLU:HB3	1.79	0.64
5:W:16:THR:HG22	5:W:56:LEU:HD11	1.77	0.64
3:O:72:THR:HA	3:O:75:PHE:HD2	1.61	0.64
3:O:247:TRP:O	3:O:249:ARG:N	2.30	0.64
3:O:318:ILE:HA	3:O:321:LEU:CD1	2.28	0.64
3:O:203:TRP:HH2	3:O:223:LEU:HD22	1.61	0.64
5:W:422:PHE:HE2	5:W:500:LEU:HD13	1.63	0.64
3:O:203:TRP:CH2	3:O:223:LEU:HD22	2.33	0.64
5:W:238:ILE:HG12	5:W:259:ARG:HH12	1.62	0.64
2:3:131:DC:C4	7:S:71:HIS:CE1	2.85	0.63
7:V:133:LEU:HD12	7:V:190:ILE:HD12	1.79	0.63
7:R:70:PRO:HB3	7:Q:227:PHE:CE1	2.33	0.63
7:U:191:VAL:HA	7:U:194:ILE:HD12	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:W:18:GLU:HG3	5:W:22:ALA:HB2	1.80	0.63
5:W:81:TYR:HA	5:W:99:ARG:HH12	1.61	0.63
3:O:247:TRP:HB3	3:O:248:PRO:CD	2.29	0.63
5:W:201:ILE:HG22	5:W:215:PRO:HD3	1.81	0.63
5:W:139:GLU:HG2	5:W:148:CYS:HB2	1.81	0.63
3:N:60:ASN:HB3	3:N:94:ILE:HB	1.81	0.63
4:P:60:SER:HB3	4:P:66:LEU:HG	1.81	0.63
7:U:168:PHE:HB3	7:U:171:ILE:HD11	1.81	0.63
1:1:54:U:H3	4:P:138:PHE:HA	1.64	0.62
3:O:66:ASN:HA	3:N:394:TRP:CD1	2.34	0.62
3:O:311:LEU:HD11	3:O:370:GLY:HA2	1.80	0.62
7:T:8:ALA:HB3	7:T:102:LYS:HB2	1.81	0.62
3:N:142:TRP:HH2	3:N:150:CYS:HA	1.63	0.62
3:O:274:ARG:HG2	3:O:322:LYS:HB2	1.82	0.62
7:U:225:GLN:HA	7:U:246:PHE:HA	1.82	0.62
1:1:3:G:C8	5:W:199:THR:HG21	2.35	0.62
3:O:150:CYS:O	3:O:154:ASN:HA	2.00	0.62
7:R:6:ASN:O	7:R:347:PHE:HB2	1.99	0.62
5:W:301:ILE:HG13	5:W:306:ARG:HB3	1.82	0.62
7:U:106:SER:O	7:U:110:GLN:HG3	2.00	0.61
7:S:337:LEU:O	7:S:341:LEU:HD22	1.99	0.61
1:1:22:C:H2'	1:1:23:U:C6	2.35	0.61
7:V:12:SER:HB2	7:V:342:ILE:HG23	1.82	0.61
7:Q:175:TYR:HA	7:Q:180:ASP:HB3	1.83	0.61
3:O:95:ASN:HB2	3:O:109:VAL:H	1.65	0.61
5:W:321:VAL:O	5:W:324:TRP:HB3	2.00	0.61
5:W:552:ASP:HA	5:W:555:ALA:HB3	1.82	0.61
7:U:12:SER:HB2	7:U:342:ILE:HG23	1.82	0.61
7:V:111:THR:O	7:V:115:LEU:HD12	2.00	0.61
7:R:37:ARG:HD2	7:R:75:PHE:HD2	1.65	0.61
5:W:450:ARG:HG2	5:W:474:GLN:HE21	1.66	0.61
5:W:193:LEU:HD21	5:W:588:HIS:CD2	2.35	0.61
5:W:213:LEU:HD12	5:W:214:SER:H	1.65	0.61
3:N:251:PHE:HA	3:N:254:ILE:HG12	1.81	0.61
7:T:227:PHE:HB3	7:U:38:THR:OG1	2.01	0.61
2:3:118:DG:H2'	3:O:363:THR:HG21	1.82	0.61
3:O:340:ALA:HA	3:O:360:LEU:HD12	1.81	0.61
7:R:4:PRO:HA	7:R:349:HIS:CD2	2.36	0.61
7:R:227:PHE:CZ	7:S:70:PRO:HB3	2.34	0.61
5:W:72:TRP:CE3	5:W:177:MET:HE2	2.35	0.61
5:W:282:LEU:HD13	5:W:348:LEU:HD13	1.83	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:W:212:SER:HB3	5:W:588:HIS:ND1	2.15	0.60
3:O:72:THR:HA	3:O:75:PHE:CD2	2.36	0.60
1:1:41:G:H1	2:3:121:DC:H42	1.48	0.60
5:W:266:LYS:HD3	5:W:538:ARG:NE	2.16	0.60
7:S:105:SER:HB3	7:S:108:VAL:HG22	1.82	0.60
3:O:127:CYS:HB2	3:O:169:TYR:OH	2.01	0.60
7:V:127:GLU:O	7:V:131:ARG:HG2	2.01	0.60
2:3:120:DC:H1'	3:O:352:ARG:NH1	2.15	0.60
3:N:275:LEU:HD22	3:N:279:LEU:HD22	1.82	0.60
7:T:141:TRP:H	7:T:141:TRP:CD1	2.19	0.60
3:N:204:LEU:HD21	3:N:224:VAL:HG21	1.83	0.60
7:V:152:TRP:HB3	7:V:213:LEU:HD12	1.82	0.60
5:W:26:LEU:HD12	5:W:253:THR:HB	1.83	0.60
7:S:13:ILE:HD12	7:S:13:ILE:H	1.67	0.59
7:T:187:TRP:O	7:T:191:VAL:HG12	2.03	0.59
5:W:167:LEU:HD12	5:W:168:GLY:H	1.68	0.59
7:T:39:LEU:HD12	7:T:40:LEU:H	1.68	0.59
7:T:332:ASN:HA	7:T:335:HIS:CD2	2.36	0.59
3:O:115:PHE:HB3	3:O:220:ARG:HD3	1.84	0.59
4:P:31:PHE:CD2	4:P:69:LEU:HD13	2.37	0.59
7:S:274:TRP:HB3	7:S:332:ASN:HB3	1.85	0.59
7:T:131:ARG:HD3	7:T:131:ARG:N	2.18	0.59
7:Q:142:LEU:HD11	7:Q:145:ASN:HB2	1.85	0.59
7:Q:265:GLY:HA2	7:Q:268:ILE:HD12	1.84	0.59
3:O:68:SER:O	3:O:71:ARG:HG3	2.03	0.59
3:O:65:LYS:HZ3	6:7:61:DC:H1'	1.67	0.58
5:W:568:VAL:CG2	5:W:569:GLY:H	2.14	0.58
5:W:200:GLN:HG3	5:W:583:LEU:HD13	1.86	0.58
3:N:333:ASN:O	3:N:387:ARG:HG3	2.02	0.58
7:V:156:LEU:HD11	7:V:207:PHE:HB3	1.86	0.58
5:W:153:LEU:HB3	5:W:161:TRP:HZ2	1.68	0.58
7:T:144:LYS:HZ1	7:T:147:ARG:HH11	1.52	0.58
5:W:341:LEU:HA	5:W:344:ASP:OD2	2.03	0.58
3:N:345:GLN:HA	3:N:345:GLN:NE2	2.19	0.58
7:T:306:PHE:HE2	7:T:347:PHE:HB3	1.69	0.58
3:O:275:LEU:HD11	3:O:327:GLU:HG2	1.85	0.58
5:W:201:ILE:HG23	5:W:213:LEU:HB3	1.86	0.58
5:W:94:SER:HB2	5:W:198:LEU:HD22	1.85	0.58
5:W:265:ALA:HB1	5:W:267:PHE:CE1	2.39	0.58
5:W:281:TRP:CD1	5:W:282:LEU:HD12	2.39	0.58
6:7:63:DC:H2'	6:7:64:DC:C6	2.39	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:R:3:LEU:HB3	7:R:4:PRO:HD2	1.86	0.58
1:1:33:C:C5	7:R:227:PHE:HA	2.39	0.58
7:R:38:THR:OG1	7:Q:227:PHE:HB3	2.04	0.58
7:U:7:LEU:H	7:U:348:GLN:HG2	1.68	0.58
3:O:129:PRO:HG3	3:O:158:ILE:HD12	1.85	0.57
3:O:194:HIS:HE1	3:O:196:ALA:HB3	1.66	0.57
3:O:226:TRP:HB3	3:O:235:PHE:HE1	1.68	0.57
3:N:334:CYS:N	3:N:387:ARG:HE	2.01	0.57
5:W:568:VAL:HG23	5:W:569:GLY:N	2.14	0.57
3:O:294:LEU:HG	3:O:295:GLN:OE1	2.03	0.57
1:1:9:C:C5	7:V:227:PHE:HA	2.39	0.57
7:R:119:TYR:CD2	7:R:338:MET:HG3	2.39	0.57
7:T:100:PRO:HG3	7:T:112:LEU:HD21	1.87	0.57
7:Q:157:THR:HB	7:Q:208:GLU:HB2	1.85	0.57
1:1:33:C:H5	7:R:227:PHE:HA	1.70	0.57
3:O:178:CYS:HB2	3:O:183:GLU:O	2.04	0.57
3:O:336:LEU:HA	3:O:339:ILE:HG22	1.86	0.57
5:W:503:ARG:NH2	7:V:11:ARG:HH22	2.02	0.57
7:S:67:GLN:NE2	7:S:68:GLY:H	2.02	0.57
7:S:73:VAL:HB	7:S:244:ARG:HH21	1.70	0.57
3:N:15:GLU:O	3:N:19:ILE:HG13	2.05	0.57
3:N:251:PHE:HB3	3:N:302:GLU:OE2	2.05	0.57
7:U:109:LYS:O	7:U:113:VAL:HG22	2.04	0.57
7:Q:12:SER:HB2	7:Q:342:ILE:HG13	1.86	0.57
7:R:287:PHE:HZ	7:S:43:MET:HB2	1.69	0.57
7:T:274:TRP:HB3	7:T:332:ASN:HB3	1.86	0.57
3:O:115:PHE:CB	3:O:220:ARG:HD3	2.35	0.57
7:R:106:SER:HA	7:R:109:LYS:HD2	1.87	0.57
3:O:101:TYR:CD1	3:O:116:PRO:HG3	2.40	0.57
5:W:286:HIS:HB3	5:W:320:MET:HG3	1.87	0.56
7:U:132:TYR:O	7:U:136:ILE:HG23	2.05	0.56
5:W:16:THR:HA	5:W:19:LEU:HG	1.88	0.56
3:N:139:SER:H	3:N:142:TRP:HD1	1.52	0.56
7:V:85:ILE:HG23	7:V:213:LEU:HB3	1.87	0.56
7:V:127:GLU:HG2	7:V:131:ARG:NH2	2.19	0.56
5:W:49:LYS:HD3	6:7:18:DA:P	2.45	0.56
5:W:502:LYS:HZ1	7:V:94:SER:HB2	1.70	0.56
3:N:293:ASN:H	3:N:385:PHE:HD2	1.53	0.56
7:R:114:GLN:O	7:R:118:LEU:HG	2.05	0.56
7:R:275:TYR:HB3	7:R:298:ARG:NH1	2.20	0.56
7:R:286:ARG:HG3	7:S:44:GLU:HA	1.85	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:Q:178:ARG:O	7:Q:182:LYS:HG2	2.06	0.56
1:1:26:C:H5'	7:S:266:ALA:HB2	1.87	0.56
5:W:228:ARG:HH11	5:W:550:LEU:HB3	1.69	0.56
3:N:125:ILE:HG23	3:N:143:HIS:HA	1.87	0.56
3:N:150:CYS:HB3	3:N:155:VAL:HG22	1.87	0.56
3:O:114:VAL:HB	3:O:217:LYS:HE3	1.87	0.56
7:V:36:SER:HA	7:V:74:ASP:HA	1.87	0.56
7:V:187:TRP:O	7:V:191:VAL:HG22	2.05	0.56
7:S:156:LEU:HB2	7:S:166:VAL:HG12	1.87	0.56
7:U:89:PHE:CE2	7:U:141:TRP:HE3	2.24	0.56
3:N:47:ASN:HB3	3:N:49:TYR:CE2	2.41	0.56
3:N:130:LEU:HD23	3:N:133:ARG:HE	1.70	0.56
7:S:57:ILE:H	7:S:57:ILE:HD12	1.71	0.56
7:U:186:ASN:O	7:U:190:ILE:HG12	2.06	0.56
7:U:287:PHE:HA	7:U:298:ARG:HB2	1.88	0.56
5:W:62:CYS:SG	5:W:167:LEU:HD21	2.46	0.56
5:W:105:GLU:O	5:W:106:LEU:HB2	2.06	0.56
3:O:41:LEU:HG	3:O:77:LYS:NZ	2.21	0.55
5:W:66:LEU:HD11	5:W:167:LEU:HG	1.88	0.55
7:U:18:VAL:HG22	7:U:89:PHE:HD2	1.70	0.55
3:O:19:ILE:HG21	3:O:174:LEU:HB2	1.89	0.55
3:O:41:LEU:HG	3:O:77:LYS:HZ2	1.71	0.55
5:W:40:LEU:O	5:W:44:VAL:HG23	2.05	0.55
5:W:266:LYS:HD3	5:W:538:ARG:HE	1.71	0.55
3:N:329:THR:HG23	3:N:334:CYS:HB2	1.87	0.55
7:U:334:MET:O	7:U:338:MET:HG3	2.06	0.55
3:O:73:ALA:HA	3:O:76:LEU:HD12	1.89	0.55
3:O:312:TRP:HA	3:O:312:TRP:CE3	2.41	0.55
7:Q:130:THR:O	7:Q:134:MET:HG2	2.06	0.55
3:N:156:PRO:HG3	3:N:190:ARG:O	2.05	0.55
3:N:274:ARG:HE	3:N:365:TYR:HD2	1.54	0.55
7:R:125:TRP:CZ3	7:R:198:PHE:HB3	2.42	0.55
7:U:190:ILE:O	7:U:194:ILE:HG13	2.06	0.55
5:W:54:LYS:HD3	5:W:55:ASP:H	1.72	0.55
5:W:338:ILE:HA	5:W:341:LEU:HD13	1.88	0.55
7:S:184:ASN:HB2	7:S:187:TRP:HB2	1.87	0.55
3:O:301:GLY:HA2	3:O:390:TYR:CE1	2.42	0.55
3:O:262:ASN:O	3:O:263:LEU:C	2.50	0.55
5:W:36:GLU:HA	5:W:39:ALA:HB3	1.89	0.55
5:W:66:LEU:HD21	5:W:164:LEU:HD11	1.87	0.55
3:O:270:THR:C	3:O:272:GLU:N	2.63	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:W:146:ILE:HD12	5:W:146:ILE:H	1.72	0.55
5:W:221:MET:HE3	5:W:405:VAL:HG21	1.89	0.55
5:W:237:ALA:HB3	5:W:260:MET:HB3	1.87	0.55
3:N:326:LEU:HB2	3:N:362:VAL:HA	1.89	0.55
7:Q:290:HIS:NE2	7:Q:292:GLU:HB2	2.22	0.55
3:O:96:ARG:HA	3:O:107:ALA:O	2.07	0.55
3:O:317:LEU:O	3:O:321:LEU:HD11	2.07	0.55
1:1:11:G:N2	7:U:346:MET:HE2	2.22	0.54
5:W:282:LEU:HA	5:W:286:HIS:HB2	1.89	0.54
5:W:487:PHE:HB2	5:W:489:GLN:OE1	2.08	0.54
3:N:227:TRP:NE1	3:N:299:ILE:HG21	2.19	0.54
3:N:378:ALA:HB2	3:N:389:PHE:HD1	1.72	0.54
3:O:238:PHE:O	3:O:242:GLN:HB2	2.07	0.54
5:W:201:ILE:HG21	5:W:570:TYR:HE1	1.72	0.54
3:N:345:GLN:HE21	3:N:345:GLN:CA	2.19	0.54
7:U:141:TRP:CD1	7:U:142:LEU:HD12	2.42	0.54
3:N:267:VAL:HG12	3:N:268:VAL:HG22	1.90	0.54
3:N:366:LEU:HD23	3:N:366:LEU:O	2.07	0.54
4:P:107:ILE:HB	4:P:166:ASN:HD22	1.72	0.54
5:W:281:TRP:HD1	5:W:282:LEU:HD12	1.71	0.54
5:W:569:GLY:HA2	5:W:594:ILE:N	2.21	0.54
7:V:330:THR:O	7:V:334:MET:HG3	2.07	0.54
7:U:306:PHE:HA	7:U:309:ILE:HD12	1.90	0.54
3:O:59:ILE:HA	3:O:71:ARG:NH2	2.21	0.54
5:W:422:PHE:O	5:W:426:ILE:HG12	2.08	0.54
5:W:202:SER:HA	5:W:212:SER:HA	1.90	0.54
5:W:352:LYS:HE3	5:W:352:LYS:HA	1.89	0.54
3:O:211:PRO:HB2	3:O:219:TYR:OH	2.08	0.54
5:W:419:VAL:O	5:W:423:GLU:HG3	2.08	0.54
7:V:24:TRP:CD1	7:V:28:ARG:HE	2.26	0.54
7:V:127:GLU:HG2	7:V:131:ARG:HH21	1.73	0.54
1:1:8:C:H1'	7:V:263:LYS:HE2	1.90	0.54
3:O:270:THR:C	3:O:272:GLU:H	2.16	0.54
3:O:339:ILE:HA	3:O:342:MET:HE3	1.89	0.54
5:W:115:LYS:HG2	5:W:115:LYS:O	2.08	0.54
3:N:298:ILE:C	3:N:299:ILE:HD12	2.33	0.54
5:W:274:ARG:HH12	5:W:276:ASN:HB2	1.72	0.54
3:N:170:ARG:HG3	3:N:170:ARG:HH11	1.73	0.54
7:R:1:MET:HB2	7:R:2:LYS:HG2	1.90	0.54
7:Q:20:PHE:HD2	7:Q:257:PRO:HG2	1.73	0.54
3:O:128:CYS:HB2	3:O:142:TRP:CH2	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:W:325:PHE:HB3	5:W:330:HIS:CD2	2.42	0.54
7:T:227:PHE:HE2	7:U:40:LEU:HD13	1.72	0.53
7:U:112:LEU:O	7:U:116:VAL:HG22	2.08	0.53
3:O:147:TYR:CZ	3:O:203:TRP:HB3	2.44	0.53
5:W:218:SER:HB2	5:W:221:MET:HB2	1.89	0.53
7:S:269:ALA:HB1	7:S:284:VAL:HG12	1.90	0.53
3:O:226:TRP:HB3	3:O:235:PHE:CE1	2.43	0.53
5:W:70:LYS:HE3	5:W:70:LYS:H	1.73	0.53
5:W:105:GLU:O	5:W:110:LEU:HG	2.06	0.53
7:S:133:LEU:HA	7:S:136:ILE:HG22	1.90	0.53
2:3:152:DC:H2"	2:3:153:DG:O4'	2.08	0.53
5:W:452:LEU:HB3	7:V:227:PHE:CD2	2.43	0.53
3:N:227:TRP:HE3	3:N:228:MET:H	1.55	0.53
7:T:141:TRP:HZ2	7:T:154:ILE:HD12	1.71	0.53
2:3:152:DC:OP1	7:U:350:LYS:HE3	2.09	0.53
5:W:159:PRO:HA	5:W:162:ASN:HB2	1.90	0.53
7:R:126:THR:HG22	7:R:195:LYS:HZ1	1.72	0.53
7:S:227:PHE:HE2	7:T:40:LEU:HB3	1.74	0.53
5:W:560:ASP:OD2	5:W:563:LEU:HD13	2.08	0.53
3:N:246:ASN:HA	3:N:249:ARG:HH21	1.72	0.53
7:R:119:TYR:CE2	7:R:338:MET:HG3	2.44	0.53
7:U:184:ASN:HB2	7:U:187:TRP:HB2	1.89	0.53
3:O:247:TRP:CB	3:O:248:PRO:HD2	2.34	0.53
3:N:376:TRP:HA	3:N:376:TRP:CE3	2.44	0.53
7:V:149:ALA:HA	7:V:215:LEU:HD23	1.91	0.53
7:S:264:THR:O	7:S:268:ILE:HG12	2.08	0.53
3:O:263:LEU:HD21	3:O:317:LEU:HD11	1.90	0.53
5:W:303:GLU:HA	5:W:306:ARG:HG2	1.89	0.53
2:3:132:DT:H1'	7:R:1:MET:HA	1.91	0.53
5:W:66:LEU:HD23	5:W:72:TRP:HZ2	1.73	0.53
3:N:302:GLU:HA	3:N:306:TYR:CD2	2.44	0.53
1:1:6:A:H5"	7:V:11:ARG:HE	1.72	0.53
5:W:281:TRP:HZ2	5:W:344:ASP:OD1	1.92	0.53
5:W:324:TRP:HH2	5:W:340:HIS:CE1	2.27	0.53
5:W:313:TYR:O	5:W:317:LEU:HG	2.09	0.52
7:S:87:CYS:HB2	7:S:211:ALA:HB3	1.90	0.52
7:S:227:PHE:HB3	7:T:38:THR:OG1	2.08	0.52
7:U:4:PRO:HD3	7:U:108:VAL:HG21	1.91	0.52
3:N:288:ARG:HH12	3:N:292:ARG:N	2.06	0.52
7:R:127:GLU:OE1	7:R:131:ARG:HD2	2.09	0.52
2:3:161:DT:H2"	2:3:162:DA:C8	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:W:75:CYS:O	5:W:79:VAL:HG12	2.08	0.52
5:W:278:LYS:NZ	5:W:327:MET:HE3	2.24	0.52
7:V:329:GLU:CD	7:V:329:GLU:H	2.17	0.52
7:U:330:THR:O	7:U:334:MET:HG2	2.09	0.52
1:1:30:A:H5'	7:R:346:MET:HE1	1.91	0.52
2:3:150:DC:H2"	2:3:151:DC:H5"	1.92	0.52
3:O:108:VAL:O	3:O:114:VAL:HG22	2.10	0.52
5:W:450:ARG:HH11	7:V:247:GLN:HG2	1.75	0.52
3:O:65:LYS:HE2	6:7:61:DC:O3'	2.09	0.52
2:3:156:DA:H2"	2:3:157:DA:C8	2.45	0.52
3:O:248:PRO:HG3	3:O:394:TRP:HB3	1.91	0.52
3:O:311:LEU:HA	3:O:318:ILE:HG23	1.91	0.52
7:R:34:TYR:HD1	7:R:257:PRO:HD3	1.73	0.52
7:R:217:THR:HG22	7:R:218:ASN:OD1	2.10	0.52
7:Q:20:PHE:HE2	7:Q:223:PRO:HG3	1.75	0.52
3:O:85:GLU:N	3:O:86:PRO:HD2	2.25	0.52
7:T:306:PHE:CE1	7:T:340:ASN:ND2	2.77	0.52
7:U:153:ASN:HB2	7:U:212:THR:HB	1.92	0.52
2:3:129:DG:H2"	7:S:67:GLN:CD	2.35	0.52
5:W:43:LEU:HB3	5:W:135:PHE:CD1	2.45	0.52
5:W:201:ILE:HG21	5:W:570:TYR:CE1	2.45	0.52
2:3:136:DG:H1'	7:T:70:PRO:HG2	1.91	0.51
3:O:371:ASP:O	3:O:375:LEU:HB2	2.11	0.51
5:W:191:VAL:HG11	5:W:590:ILE:HD11	1.91	0.51
5:W:619:TYR:HE2	5:W:624:VAL:HG12	1.74	0.51
7:R:2:LYS:HB3	7:R:346:MET:HG2	1.92	0.51
7:S:157:THR:HB	7:S:208:GLU:HB2	1.93	0.51
4:P:13:GLU:H	4:P:13:GLU:CD	2.18	0.51
7:V:157:THR:HB	7:V:208:GLU:HB2	1.92	0.51
7:V:181:PHE:HB3	7:V:187:TRP:CD1	2.45	0.51
3:O:60:ASN:HB2	3:O:62:TYR:CD2	2.45	0.51
3:O:176:GLY:HA2	3:O:185:ILE:HG13	1.93	0.51
3:O:312:TRP:HD1	3:N:77:LYS:HB2	1.75	0.51
5:W:608:ASP:HB3	5:W:611:THR:HG23	1.92	0.51
6:7:12:DA:H2"	6:7:13:DA:C8	2.46	0.51
7:V:350:LYS:C	7:V:350:LYS:HD2	2.36	0.51
7:S:226:VAL:HG23	7:S:247:GLN:HA	1.90	0.51
3:O:269:SER:N	3:O:272:GLU:OE1	2.41	0.51
6:7:14:DG:H2'	6:7:15:DT:H71	1.93	0.51
7:V:133:LEU:HD21	7:V:194:ILE:HG21	1.91	0.51
7:V:309:ILE:HG23	7:V:316:TYR:HE2	1.75	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:T:226:VAL:HG12	7:T:247:GLN:HG3	1.93	0.51
1:1:9:C:O2'	7:V:225:GLN:HG2	2.11	0.51
3:O:110:ARG:NE	3:O:144:PHE:CZ	2.65	0.51
5:W:47:THR:HG21	5:W:71:TRP:HE1	1.76	0.51
7:V:337:LEU:HA	7:V:340:ASN:ND2	2.26	0.51
5:W:338:ILE:HG13	5:W:368:LEU:HD21	1.92	0.51
5:W:453:THR:HG23	5:W:454:ALA:H	1.76	0.51
3:N:110:ARG:HB2	3:N:115:PHE:CE2	2.45	0.51
7:S:12:SER:HB2	7:S:96:GLU:OE1	2.11	0.51
7:S:120:GLU:HG2	7:S:125:TRP:HE1	1.75	0.51
7:T:132:TYR:CE2	7:T:342:ILE:HG21	2.46	0.51
3:N:7:LYS:HB2	3:N:9:TYR:CE2	2.46	0.51
3:N:288:ARG:HH12	3:N:291:GLU:C	2.17	0.51
3:N:390:TYR:O	3:N:391:VAL:HG23	2.11	0.51
7:R:3:LEU:HD21	7:R:307:PHE:CG	2.46	0.51
7:S:249:THR:HG23	7:S:258:ILE:HD13	1.92	0.51
7:T:184:ASN:HB3	7:T:187:TRP:HB2	1.93	0.51
7:T:270:THR:HA	7:T:283:ARG:HA	1.92	0.51
7:Q:290:HIS:HE2	7:Q:292:GLU:HB2	1.75	0.51
5:W:102:ALA:HB1	5:W:571:HIS:NE2	2.26	0.51
5:W:529:ILE:HG12	5:W:539:TRP:CZ2	2.46	0.51
7:V:18:VAL:HG22	7:V:89:PHE:HB3	1.93	0.51
3:O:342:MET:HA	3:O:345:GLN:HB3	1.93	0.51
5:W:291:LYS:HZ1	5:W:353:ARG:HD2	1.75	0.51
7:R:1:MET:HE3	7:R:349:HIS:HA	1.93	0.51
7:S:306:PHE:CE2	7:S:310:LEU:HD22	2.46	0.51
7:Q:291:ARG:HA	7:Q:294:VAL:HA	1.93	0.51
3:O:221:TRP:CE3	3:O:289:LEU:HA	2.45	0.50
4:P:43:SER:HB3	4:P:57:SER:HB2	1.93	0.50
5:W:70:LYS:HE3	5:W:70:LYS:N	2.26	0.50
5:W:106:LEU:HD12	5:W:107:PRO:HD2	1.92	0.50
5:W:266:LYS:HD2	5:W:267:PHE:N	2.26	0.50
3:N:127:CYS:HG	3:N:142:TRP:CD1	2.29	0.50
3:N:343:VAL:HG22	3:N:348:LEU:O	2.12	0.50
7:V:50:TYR:HB3	7:V:54:GLY:HA2	1.93	0.50
7:T:118:LEU:HD21	7:T:317:ILE:HA	1.92	0.50
7:T:227:PHE:CZ	7:U:70:PRO:HB3	2.46	0.50
7:Q:309:ILE:HD12	7:Q:309:ILE:H	1.75	0.50
3:O:5:ARG:NE	3:O:83:PHE:HB2	2.26	0.50
3:O:62:TYR:HD1	3:O:117:ARG:HH21	1.58	0.50
7:T:275:TYR:HB3	7:T:298:ARG:NH1	2.27	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:Q:225:GLN:C	7:Q:247:GLN:HE22	2.20	0.50
5:W:29:HIS:CG	5:W:146:ILE:HG21	2.45	0.50
5:W:364:PHE:O	5:W:368:LEU:HG	2.12	0.50
3:N:23:ASN:HD22	3:N:175:LYS:HE3	1.77	0.50
3:O:115:PHE:HZ	3:O:120:LEU:HD12	1.76	0.50
3:O:221:TRP:HE3	3:O:289:LEU:HA	1.76	0.50
3:O:304:LEU:O	3:O:308:GLU:N	2.44	0.50
7:T:43:MET:N	7:T:43:MET:HE2	2.27	0.50
3:O:296:HIS:HB3	3:O:299:ILE:HG13	1.94	0.50
5:W:20:LYS:O	5:W:24:ARG:HG2	2.12	0.50
5:W:100:THR:HB	5:W:189:ILE:HD11	1.94	0.50
7:T:143:TRP:O	7:T:146:THR:HG22	2.10	0.50
2:3:131:DC:H2"	2:3:132:DT:O4'	2.12	0.50
3:O:13:SER:HA	3:O:140:TYR:CD1	2.47	0.50
5:W:153:LEU:HB3	5:W:161:TRP:CZ2	2.46	0.50
3:N:17:PHE:O	3:N:21:VAL:HG12	2.12	0.50
3:N:59:ILE:HG13	3:N:75:PHE:CZ	2.46	0.50
5:W:316:GLU:HA	5:W:319:ASN:HB3	1.93	0.50
5:W:354:PHE:HB3	5:W:360:MET:HG3	1.93	0.50
7:Q:1:MET:HE2	7:Q:1:MET:HA	1.93	0.50
3:O:270:THR:O	3:O:272:GLU:N	2.45	0.49
3:O:378:ALA:HB2	3:N:72:THR:OG1	2.12	0.49
5:W:270:PRO:HD2	5:W:538:ARG:HB3	1.92	0.49
3:N:212:LEU:HD12	3:N:213:PRO:CD	2.41	0.49
3:N:270:THR:HA	3:N:273:LEU:HG	1.93	0.49
7:Q:7:LEU:HG	7:Q:347:PHE:HB2	1.94	0.49
7:Q:85:ILE:HB	7:Q:213:LEU:HG	1.93	0.49
7:Q:190:ILE:O	7:Q:194:ILE:HG22	2.12	0.49
7:V:135:ASN:HA	7:V:140:LYS:HD2	1.93	0.49
7:S:67:GLN:NE2	7:S:68:GLY:O	2.45	0.49
1:1:6:A:H1'	7:V:345:GLY:HA2	1.93	0.49
2:3:110:DA:H4'	2:3:111:DT:OP1	2.13	0.49
3:O:296:HIS:HB3	3:O:299:ILE:CG1	2.42	0.49
4:P:147:ALA:HB3	4:P:168:ARG:CZ	2.42	0.49
5:W:337:LEU:O	5:W:341:LEU:HD12	2.13	0.49
3:N:27:TYR:HB3	3:N:32:ARG:HD2	1.93	0.49
7:R:339:ALA:O	7:R:342:ILE:HG22	2.12	0.49
7:S:175:TYR:HB3	7:S:181:PHE:CZ	2.47	0.49
7:T:115:LEU:HA	7:T:118:LEU:HG	1.92	0.49
7:U:112:LEU:O	7:U:115:LEU:HG	2.12	0.49
7:Q:223:PRO:HD2	7:Q:246:PHE:CE2	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:1:6:A:H5”	7:V:11:ARG:NE	2.27	0.49
3:O:300:LEU:HD13	3:O:385:PHE:HZ	1.78	0.49
5:W:273:HIS:O	5:W:273:HIS:ND1	2.45	0.49
5:W:338:ILE:HD13	5:W:365:THR:CG2	2.41	0.49
5:W:357:ASP:HB3	5:W:360:MET:HE1	1.93	0.49
6:7:13:DA:H2”	6:7:14:DG:H8	1.77	0.49
7:V:118:LEU:HD11	7:V:317:ILE:HD13	1.93	0.49
7:V:214:HIS:O	7:V:214:HIS:ND1	2.45	0.49
7:R:2:LYS:HE2	7:R:348:GLN:N	2.28	0.49
3:O:199:THR:O	3:O:203:TRP:HD1	1.96	0.49
7:Q:315:HIS:O	7:Q:318:GLU:HG2	2.13	0.49
5:W:116:ILE:O	5:W:118:PRO:HD3	2.12	0.49
3:N:178:CYS:HB2	3:N:181:CYS:SG	2.53	0.49
1:1:28:G:H2’	1:1:29:C:C6	2.48	0.49
3:N:216:PRO:HD2	3:N:219:TYR:HB2	1.93	0.49
7:V:123:ILE:HD11	7:V:320:LEU:HD11	1.95	0.49
7:R:1:MET:CB	7:R:2:LYS:HG2	2.42	0.49
7:S:104:ASN:HD21	7:T:294:VAL:HG23	1.78	0.49
7:U:64:ALA:C	7:U:67:GLN:HE22	2.20	0.49
2:3:129:DG:H2”	7:S:67:GLN:OE1	2.13	0.49
2:3:132:DT:O2	7:R:1:MET:HA	2.11	0.49
3:O:263:LEU:HD11	3:O:317:LEU:HD21	1.95	0.49
4:P:47:TRP:HH2	4:P:167:ILE:HG13	1.77	0.49
5:W:37:LEU:HD12	5:W:38:ASP:H	1.78	0.49
7:V:228:THR:HG22	7:V:229:GLU:N	2.22	0.49
5:W:389:VAL:HG21	5:W:528:ALA:HB1	1.94	0.49
3:N:251:PHE:O	3:N:255:ILE:HD12	2.12	0.49
7:T:262:PHE:CD2	7:U:39:LEU:HD21	2.47	0.49
1:1:8:C:H5	7:V:283:ARG:HD2	1.76	0.49
7:T:107:LYS:O	7:T:111:THR:HG23	2.13	0.49
3:O:110:ARG:HE	3:O:144:PHE:HZ	1.56	0.48
3:O:299:ILE:HG22	3:O:300:LEU:H	1.77	0.48
6:7:65:DA:H2’	6:7:66:DT:H71	1.94	0.48
7:S:130:THR:O	7:S:134:MET:HG2	2.12	0.48
7:S:262:PHE:N	7:S:262:PHE:CD2	2.80	0.48
7:S:275:TYR:CE1	7:S:278:ALA:HA	2.48	0.48
7:U:127:GLU:HB3	7:U:131:ARG:HH21	1.78	0.48
3:O:263:LEU:O	3:O:264:GLU:C	2.57	0.48
3:O:290:PRO:HB2	3:O:292:ARG:NH1	2.28	0.48
5:W:116:ILE:CD1	5:W:220:SER:HB3	2.43	0.48
5:W:245:THR:HG23	6:7:19:DG:C8	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:W:247:MET:HE3	5:W:248:GLY:H	1.78	0.48
5:W:439:ALA:HB3	5:W:482:ILE:HG23	1.95	0.48
7:T:9:TYR:HD2	7:T:347:PHE:HZ	1.61	0.48
7:Q:147:ARG:HG2	7:Q:148:LYS:HD3	1.96	0.48
4:P:107:ILE:HB	4:P:166:ASN:ND2	2.29	0.48
5:W:450:ARG:NH2	7:V:226:VAL:HA	2.29	0.48
7:V:18:VAL:HB	7:V:259:LEU:HB2	1.94	0.48
7:S:166:VAL:HG23	7:S:186:ASN:HB2	1.96	0.48
7:U:77:HIS:HD1	7:U:77:HIS:C	2.20	0.48
2:3:113:DC:H5"	3:O:117:ARG:HD3	1.95	0.48
5:W:66:LEU:HD23	5:W:72:TRP:CZ2	2.48	0.48
5:W:437:SER:HB2	5:W:613:PHE:HB3	1.94	0.48
5:W:457:VAL:HG13	5:W:458:GLU:N	2.29	0.48
3:N:127:CYS:O	3:N:157:LEU:HD22	2.13	0.48
3:N:299:ILE:HG23	3:N:302:GLU:OE1	2.13	0.48
7:V:189:ALA:O	7:V:192:GLU:HG3	2.13	0.48
1:1:6:A:P	7:V:11:ARG:HH21	2.37	0.48
7:V:130:THR:HB	7:V:131:ARG:NH1	2.28	0.48
7:V:46:ALA:HB3	7:U:349:HIS:HB3	1.95	0.48
7:R:3:LEU:HD23	7:R:3:LEU:HA	1.74	0.48
7:S:73:VAL:HB	7:S:244:ARG:NH2	2.29	0.48
7:T:215:LEU:HD11	7:T:219:ALA:HB3	1.95	0.48
2:3:143:DA:H2'	2:3:143:DA:N3	2.29	0.48
3:O:260:GLU:O	3:O:261:PHE:C	2.57	0.48
5:W:177:MET:HA	5:W:180:GLN:OE1	2.13	0.48
5:W:244:THR:HG23	6:7:19:DG:H8	1.78	0.48
3:N:203:TRP:HB2	3:N:209:SER:HB3	1.95	0.48
7:R:3:LEU:HD23	7:S:46:ALA:HB2	1.96	0.48
7:U:43:MET:HE2	7:U:43:MET:N	2.29	0.48
3:O:58:ARG:HH12	6:7:61:DC:H2'	1.79	0.48
5:W:6:GLU:HB3	5:W:32:ILE:HD13	1.95	0.48
5:W:362:LYS:HA	5:W:365:THR:OG1	2.14	0.48
3:N:255:ILE:HD12	3:N:255:ILE:H	1.78	0.48
2:3:110:DA:H2"	2:3:111:DT:O5'	2.14	0.48
3:O:315:LYS:HB2	3:O:315:LYS:HE2	1.43	0.48
5:W:273:HIS:HB2	5:W:529:ILE:HG22	1.95	0.48
7:R:85:ILE:HD11	7:R:213:LEU:HD23	1.95	0.48
7:S:120:GLU:HG2	7:S:125:TRP:NE1	2.29	0.48
7:T:132:TYR:HE2	7:T:342:ILE:HG21	1.76	0.48
3:O:256:GLU:O	3:O:257:ASP:C	2.57	0.47
3:O:276:LYS:HA	3:O:284:PHE:HE2	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:348:LEU:HB3	3:O:367:PHE:HE1	1.79	0.47
5:W:273:HIS:CD2	5:W:530:GLU:HB2	2.49	0.47
5:W:344:ASP:HA	5:W:347:TYR:CG	2.49	0.47
3:N:343:VAL:HG21	3:N:367:PHE:CE1	2.49	0.47
7:R:116:VAL:HG22	7:R:338:MET:HE1	1.96	0.47
7:U:315:HIS:O	7:U:319:VAL:HG12	2.14	0.47
7:Q:152:TRP:NE1	7:Q:171:ILE:HB	2.26	0.47
1:1:40:U:H2'	1:1:41:G:C4	2.49	0.47
3:O:62:TYR:HB3	3:O:94:ILE:HG22	1.97	0.47
5:W:19:LEU:HD12	5:W:20:LYS:N	2.29	0.47
5:W:278:LYS:HZ1	5:W:327:MET:HE3	1.78	0.47
6:7:48:DA:C8	6:7:48:DA:H5"	2.49	0.47
7:R:145:ASN:HD22	7:R:221:VAL:HG23	1.79	0.47
7:S:178:ARG:O	7:S:182:LYS:HG3	2.14	0.47
7:S:227:PHE:HZ	7:T:70:PRO:HB3	1.78	0.47
3:N:5:ARG:HH22	3:N:84:ASN:CG	2.22	0.47
4:P:27:VAL:HG11	4:P:74:TYR:CD2	2.48	0.47
5:W:459:LYS:HE2	5:W:467:PRO:HA	1.95	0.47
3:O:223:LEU:HD12	3:O:227:TRP:HE1	1.79	0.47
5:W:123:TYR:HB2	5:W:137:THR:HG21	1.96	0.47
7:U:103:CYS:HB3	7:U:109:LYS:HD3	1.97	0.47
3:O:121:ARG:NH2	3:O:145:GLN:HA	2.30	0.47
4:P:149:TYR:HB3	4:P:168:ARG:HH21	1.79	0.47
5:W:421:ALA:HA	5:W:424:ARG:HG2	1.96	0.47
3:N:9:TYR:HD1	3:N:137:TYR:CD1	2.32	0.47
3:N:258:GLU:OE2	3:N:282:LEU:HB2	2.14	0.47
7:V:1:MET:HG2	7:V:313:ALA:HB3	1.97	0.47
7:V:6:ASN:HD22	7:V:102:LYS:HG2	1.78	0.47
7:V:15:PRO:HG3	7:V:265:GLY:HA3	1.97	0.47
7:R:3:LEU:HD11	7:R:307:PHE:CD1	2.49	0.47
7:S:65:LEU:O	7:S:65:LEU:HD12	2.15	0.47
7:U:84:HIS:HB2	7:U:213:LEU:O	2.14	0.47
7:U:270:THR:HA	7:U:283:ARG:HA	1.97	0.47
1:1:26:C:H3'	7:T:40:LEU:HD11	1.97	0.47
3:N:178:CYS:SG	3:N:185:ILE:HG13	2.55	0.47
7:R:3:LEU:N	7:R:347:PHE:HA	2.30	0.47
7:Q:186:ASN:O	7:Q:190:ILE:HG13	2.14	0.47
7:Q:270:THR:HA	7:Q:283:ARG:HA	1.97	0.47
4:P:156:SER:HB2	4:P:163:PHE:HE2	1.80	0.47
5:W:43:LEU:HB3	5:W:135:PHE:HD1	1.80	0.47
7:S:226:VAL:HB	7:S:245:VAL:HG13	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:S:262:PHE:HE1	7:T:39:LEU:HD22	1.79	0.47
7:T:223:PRO:HG3	7:T:257:PRO:HB2	1.96	0.47
3:O:141:LEU:HB3	3:O:147:TYR:CD1	2.50	0.47
4:P:107:ILE:HA	4:P:110:LEU:HG	1.96	0.47
5:W:19:LEU:HD11	5:W:56:LEU:CD1	2.45	0.47
5:W:49:LYS:HE3	5:W:49:LYS:HB2	1.66	0.47
7:R:131:ARG:HH12	7:R:274:TRP:HE1	1.62	0.47
7:U:144:LYS:HD2	7:U:144:LYS:HA	1.66	0.47
3:O:15:GLU:O	3:O:19:ILE:HG12	2.14	0.46
3:O:128:CYS:O	3:O:132:LEU:HG	2.15	0.46
5:W:324:TRP:HE1	5:W:337:LEU:HD11	1.80	0.46
3:N:274:ARG:HA	3:N:274:ARG:NH1	2.30	0.46
3:N:335:SER:HB3	3:N:386:ASN:HB2	1.96	0.46
7:R:126:THR:HG22	7:R:195:LYS:NZ	2.29	0.46
7:U:112:LEU:HD23	7:U:115:LEU:HD21	1.97	0.46
1:1:58:U:H3'	4:P:103:ARG:HH22	1.79	0.46
2:3:108:DT:H2"	2:3:109:DG:C8	2.50	0.46
5:W:270:PRO:HB2	5:W:602:THR:HB	1.97	0.46
5:W:426:ILE:HD12	5:W:496:LEU:HD23	1.96	0.46
5:W:550:LEU:HD12	5:W:553:LEU:HB3	1.97	0.46
3:N:326:LEU:HA	6:7:49:DG:H22	1.81	0.46
7:T:9:TYR:CD2	7:T:347:PHE:HZ	2.32	0.46
5:W:320:MET:HE2	5:W:320:MET:HB3	1.88	0.46
3:N:293:ASN:OD1	3:N:384:GLU:HB3	2.16	0.46
3:N:351:ASN:ND2	3:N:368:HIS:H	2.13	0.46
7:U:75:PHE:HE1	7:U:220:MET:HG3	1.80	0.46
1:1:22:C:H2'	1:1:23:U:C5	2.50	0.46
3:O:312:TRP:HA	3:O:312:TRP:HE3	1.80	0.46
5:W:450:ARG:CZ	7:V:226:VAL:HA	2.45	0.46
3:N:30:VAL:HG21	3:N:56:ILE:HD12	1.97	0.46
7:V:115:LEU:HG	7:V:317:ILE:HD11	1.96	0.46
7:R:7:LEU:HB3	7:R:108:VAL:HB	1.97	0.46
7:R:286:ARG:HB3	7:R:307:PHE:CZ	2.50	0.46
7:T:122:LYS:HE3	7:T:123:ILE:H	1.80	0.46
5:W:115:LYS:HE3	5:W:548:ASN:C	2.40	0.46
5:W:393:ILE:HG22	5:W:509:ALA:HB1	1.97	0.46
3:N:294:LEU:HD13	3:N:333:ASN:HD22	1.81	0.46
3:N:351:ASN:HD21	3:N:368:HIS:H	1.62	0.46
7:T:18:VAL:HB	7:T:259:LEU:HB2	1.98	0.46
3:O:76:LEU:HD13	3:N:376:TRP:HZ2	1.79	0.46
3:O:288:ARG:HG3	3:O:288:ARG:O	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:306:TYR:CE1	3:O:310:ARG:HD3	2.51	0.46
7:S:74:ASP:H	7:S:244:ARG:HE	1.64	0.46
7:T:141:TRP:CZ2	7:T:154:ILE:HD12	2.49	0.46
1:1:24:G:H5"	7:S:11:ARG:HB3	1.97	0.46
3:O:388:SER:HA	3:O:391:VAL:HG23	1.98	0.46
5:W:37:LEU:HD12	5:W:38:ASP:N	2.31	0.46
5:W:420:HIS:HA	5:W:423:GLU:CD	2.40	0.46
5:W:503:ARG:HD2	5:W:503:ARG:HA	1.82	0.46
7:S:8:ALA:HA	7:S:346:MET:HB3	1.97	0.46
7:T:9:TYR:CE1	7:T:100:PRO:HA	2.50	0.46
7:U:284:VAL:HG13	7:U:343:LYS:HD2	1.98	0.46
7:Q:156:LEU:HB2	7:Q:166:VAL:HB	1.98	0.46
1:1:6:A:H5'	7:V:11:ARG:HG3	1.98	0.46
7:V:100:PRO:HG3	7:V:112:LEU:HD13	1.98	0.46
7:R:143:TRP:O	7:R:146:THR:HG22	2.15	0.46
7:U:131:ARG:HA	7:U:134:MET:HG2	1.97	0.46
2:3:113:DC:H5"	3:O:117:ARG:CD	2.46	0.46
4:P:101:PHE:HB3	4:P:167:ILE:HD11	1.98	0.46
5:W:619:TYR:CE2	5:W:624:VAL:HG12	2.51	0.46
6:7:53:DA:H4'	6:7:54:DG:OP1	2.15	0.46
7:V:106:SER:HA	7:V:109:LYS:HE2	1.97	0.46
7:R:313:ALA:HA	7:R:316:TYR:HE1	1.81	0.46
7:S:133:LEU:HD21	7:S:190:ILE:HD11	1.98	0.46
7:U:42:GLN:C	7:U:43:MET:HE2	2.41	0.46
1:1:20:A:OP2	7:T:266:ALA:HB2	2.16	0.46
1:1:28:G:H5"	7:S:225:GLN:HE22	1.81	0.46
5:W:450:ARG:HD3	7:V:247:GLN:OE1	2.16	0.46
5:W:458:GLU:HG3	5:W:459:LYS:H	1.81	0.46
7:V:249:THR:HG23	7:V:258:ILE:HG21	1.97	0.46
7:Q:175:TYR:HB3	7:Q:181:PHE:CZ	2.51	0.46
3:O:270:THR:O	3:O:271:SER:C	2.53	0.45
7:R:2:LYS:HG3	7:R:348:GLN:O	2.16	0.45
7:R:133:LEU:HB3	7:R:187:TRP:CH2	2.50	0.45
3:O:61:PRO:HG2	3:O:94:ILE:O	2.16	0.45
5:W:47:THR:HA	5:W:131:ASN:O	2.17	0.45
5:W:175:LYS:O	5:W:179:LYS:HG3	2.16	0.45
7:V:63:GLU:CD	7:V:63:GLU:H	2.24	0.45
7:V:337:LEU:HA	7:V:340:ASN:HD21	1.80	0.45
7:R:2:LYS:O	7:R:349:HIS:HB3	2.17	0.45
7:U:314:GLU:H	7:U:314:GLU:CD	2.24	0.45
3:O:101:TYR:HA	3:O:221:TRP:CZ3	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:326:LEU:O	3:O:330:VAL:HG23	2.16	0.45
7:S:133:LEU:HB3	7:S:187:TRP:CH2	2.51	0.45
7:S:334:MET:O	7:S:338:MET:HG2	2.16	0.45
7:T:330:THR:O	7:T:334:MET:HG2	2.16	0.45
7:Q:24:TRP:HB2	7:Q:28:ARG:HB2	1.98	0.45
1:1:46:C:H2'	1:1:47:U:C6	2.51	0.45
2:3:137:DT:H2"	2:3:138:DC:O4'	2.16	0.45
2:3:149:DT:H6	2:3:149:DT:H2'	1.59	0.45
3:O:98:ASN:N	3:N:393:ARG:HH12	2.14	0.45
3:O:117:ARG:HG2	3:O:117:ARG:O	2.17	0.45
5:W:110:LEU:HD22	5:W:594:ILE:HG21	1.96	0.45
7:V:242:ASN:ND2	7:V:245:VAL:HG22	2.32	0.45
7:T:159:TRP:HE1	7:T:204:LEU:HD23	1.81	0.45
7:T:262:PHE:HD2	7:U:39:LEU:HD21	1.81	0.45
5:W:63:LYS:HA	5:W:66:LEU:HB2	1.96	0.45
5:W:391:PRO:HD2	5:W:519:ILE:HD13	1.99	0.45
7:R:273:ASP:HA	7:R:275:TYR:CE2	2.51	0.45
7:Q:18:VAL:HB	7:Q:259:LEU:HB2	1.97	0.45
7:Q:171:ILE:HA	7:Q:175:TYR:HD2	1.82	0.45
1:1:54:U:N3	4:P:138:PHE:HA	2.28	0.45
3:O:8:PRO:HG2	3:O:89:LEU:HD12	1.98	0.45
3:O:303:LEU:O	3:O:307:LEU:HB2	2.16	0.45
4:P:74:TYR:O	4:P:78:MET:HG2	2.15	0.45
5:W:16:THR:HB	5:W:20:LYS:HB3	1.99	0.45
5:W:240:ARG:NE	5:W:257:ALA:HB2	2.32	0.45
5:W:539:TRP:CD1	5:W:603:PHE:HB2	2.52	0.45
3:N:288:ARG:NH1	3:N:291:GLU:C	2.75	0.45
7:R:9:TYR:CD1	7:R:100:PRO:HA	2.52	0.45
7:T:306:PHE:CE2	7:T:347:PHE:HB3	2.50	0.45
3:O:203:TRP:CZ3	3:O:220:ARG:HG2	2.42	0.45
5:W:412:LEU:HB2	5:W:568:VAL:HG12	1.98	0.45
3:N:287:ILE:HG22	3:N:330:VAL:HG21	1.97	0.45
3:N:351:ASN:HB2	3:N:366:LEU:O	2.17	0.45
7:V:215:LEU:HD22	7:V:216:PRO:HD2	1.98	0.45
7:U:67:GLN:N	7:U:67:GLN:CD	2.75	0.45
7:Q:320:LEU:HD12	7:Q:320:LEU:HA	1.87	0.45
3:O:86:PRO:HB2	3:O:89:LEU:HD23	1.99	0.45
3:O:135:ASN:OD1	3:O:137:TYR:CG	2.61	0.45
7:V:118:LEU:HD13	7:V:320:LEU:HB3	1.98	0.45
7:S:286:ARG:HE	7:T:44:GLU:HG2	1.82	0.45
7:T:286:ARG:NH2	7:T:345:GLY:HA3	2.32	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:56:ILE:O	3:O:59:ILE:HG22	2.17	0.45
5:W:563:LEU:HD12	5:W:599:ASN:HA	1.98	0.45
6:7:14:DG:H4'	6:7:15:DT:OP1	2.17	0.45
3:O:68:SER:HB3	3:N:394:TRP:O	2.17	0.45
3:O:262:ASN:O	3:O:265:HIS:N	2.49	0.45
5:W:38:ASP:O	5:W:42:ILE:HG12	2.17	0.45
5:W:563:LEU:HG	5:W:598:ILE:O	2.17	0.45
3:N:130:LEU:HD23	3:N:133:ARG:NH2	2.30	0.45
7:R:107:LYS:O	7:R:110:GLN:HG3	2.17	0.45
7:Q:34:TYR:HB2	7:Q:75:PHE:O	2.17	0.45
3:O:62:TYR:HD1	3:O:117:ARG:NH2	2.15	0.44
3:O:283:PHE:CZ	3:O:331:MET:HE3	2.52	0.44
3:N:288:ARG:HG3	3:N:289:LEU:O	2.17	0.44
7:U:274:TRP:HB3	7:U:332:ASN:ND2	2.32	0.44
3:O:289:LEU:HB2	3:O:299:ILE:HG23	2.00	0.44
5:W:43:LEU:HD12	5:W:135:PHE:O	2.16	0.44
5:W:390:LEU:O	5:W:390:LEU:HD23	2.16	0.44
3:N:255:ILE:HD11	3:N:302:GLU:OE2	2.17	0.44
7:R:2:LYS:CE	7:R:346:MET:HB2	2.43	0.44
7:R:42:GLN:O	7:R:44:GLU:HG3	2.17	0.44
7:R:306:PHE:HB2	7:R:336:PHE:CE2	2.53	0.44
7:S:330:THR:O	7:S:334:MET:HG2	2.17	0.44
7:T:182:LYS:HA	7:T:187:TRP:CD1	2.53	0.44
7:T:227:PHE:HD2	7:U:40:LEU:HB2	1.82	0.44
2:3:144:DA:H2"	2:3:145:DA:C8	2.51	0.44
5:W:202:SER:OG	5:W:210:TYR:HD1	2.00	0.44
5:W:542:LEU:HD12	5:W:543:TYR:N	2.31	0.44
3:N:170:ARG:NH1	3:N:170:ARG:HG3	2.31	0.44
3:O:212:LEU:HD21	3:O:247:TRP:CZ2	2.53	0.44
5:W:8:ILE:HA	5:W:12:PRO:HG3	1.99	0.44
5:W:15:LEU:C	5:W:17:THR:H	2.25	0.44
5:W:98:ILE:O	5:W:100:THR:HG22	2.17	0.44
3:N:243:PHE:HB3	3:N:251:PHE:HE1	1.82	0.44
7:R:306:PHE:HA	7:R:309:ILE:HG12	2.00	0.44
3:O:268:VAL:HG13	3:O:269:SER:O	2.16	0.44
5:W:436:GLU:HB3	5:W:628:ARG:NH2	2.32	0.44
3:N:127:CYS:HB2	3:N:169:TYR:CE2	2.52	0.44
3:N:295:GLN:O	3:N:295:GLN:HG2	2.17	0.44
6:7:12:DA:H2"	6:7:13:DA:N7	2.32	0.44
7:V:150:TYR:HE2	7:U:159:TRP:CG	2.35	0.44
7:S:327:ALA:HB3	7:S:330:THR:HG23	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:T:327:ALA:O	7:T:331:ILE:HG12	2.18	0.44
5:W:553:LEU:O	5:W:557:MET:HG2	2.18	0.44
5:W:614:TRP:H	5:W:614:TRP:CD1	2.35	0.44
3:N:227:TRP:C	3:N:229:GLY:H	2.26	0.44
7:V:221:VAL:C	7:V:222:ARG:HD2	2.43	0.44
7:R:2:LYS:CG	7:R:348:GLN:H	2.27	0.44
7:R:104:ASN:HB3	7:S:294:VAL:HG23	2.00	0.44
7:S:108:VAL:O	7:S:112:LEU:HD23	2.16	0.44
1:1:9:C:C4	7:V:227:PHE:CD1	3.05	0.44
5:W:193:LEU:HD13	5:W:579:LYS:HD2	2.00	0.44
5:W:450:ARG:CG	5:W:474:GLN:HE21	2.30	0.44
7:S:138:ASN:C	7:S:138:ASN:OD1	2.60	0.44
7:T:229:GLU:N	7:T:229:GLU:OE1	2.51	0.44
2:3:122:DA:H5"	2:3:122:DA:H8	1.83	0.44
3:O:100:LYS:HG2	3:O:288:ARG:NH2	2.33	0.44
3:O:141:LEU:HD22	3:O:147:TYR:CE1	2.53	0.44
3:O:273:LEU:HD22	3:O:278:LEU:HD21	2.00	0.44
5:W:193:LEU:HD22	5:W:579:LYS:HB2	1.99	0.44
5:W:419:VAL:HG12	5:W:423:GLU:OE2	2.17	0.44
3:N:262:ASN:OD1	3:N:278:LEU:HA	2.18	0.44
7:V:276:PRO:O	7:V:277:GLU:HG2	2.18	0.44
7:R:133:LEU:HD12	7:R:133:LEU:HA	1.86	0.44
3:O:176:GLY:HA3	3:O:184:PRO:HB3	2.00	0.44
4:P:133:PHE:HD1	4:P:134:ASP:N	2.16	0.44
5:W:232:GLU:HB2	5:W:235:HIS:ND1	2.33	0.44
5:W:258:PHE:HE1	5:W:260:MET:HE2	1.82	0.44
5:W:459:LYS:HA	5:W:459:LYS:HD3	1.64	0.44
3:N:204:LEU:HD12	3:N:204:LEU:H	1.82	0.44
6:7:19:DG:N3	6:7:19:DG:H2'	2.33	0.44
7:T:144:LYS:NZ	7:T:147:ARG:HH11	2.14	0.44
7:T:190:ILE:O	7:T:194:ILE:HG22	2.17	0.44
1:1:39:C:O2'	7:Q:225:GLN:HB2	2.18	0.43
2:3:113:DC:OP1	3:O:117:ARG:HD2	2.18	0.43
3:O:89:LEU:O	3:O:92:LEU:HB2	2.17	0.43
3:O:311:LEU:HD13	3:O:373:PHE:HD1	1.83	0.43
3:N:79:ALA:O	3:N:86:PRO:HB3	2.17	0.43
3:N:293:ASN:HB3	3:N:294:LEU:H	1.45	0.43
6:7:53:DA:N3	6:7:53:DA:H2'	2.32	0.43
7:V:150:TYR:HE2	7:U:159:TRP:CD2	2.36	0.43
7:S:286:ARG:H	7:S:286:ARG:HG2	1.53	0.43
7:Q:34:TYR:CZ	7:Q:255:ARG:HD3	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:Q:339:ALA:O	7:Q:342:ILE:HG22	2.17	0.43
3:N:77:LYS:HB3	3:N:77:LYS:HZ3	1.82	0.43
3:N:141:LEU:HD23	3:N:141:LEU:HA	1.89	0.43
3:N:292:ARG:HH21	6:7:48:DA:N6	2.15	0.43
3:N:345:GLN:NE2	3:N:345:GLN:CA	2.81	0.43
7:V:275:TYR:HB2	7:V:304:LYS:HZ3	1.82	0.43
7:R:330:THR:O	7:R:334:MET:HG2	2.18	0.43
7:T:32:LEU:HD12	7:T:33:THR:N	2.33	0.43
7:U:97:LEU:HD11	7:U:125:TRP:HH2	1.83	0.43
7:U:120:GLU:HG2	7:U:125:TRP:NE1	2.33	0.43
7:U:122:LYS:HD2	7:U:122:LYS:HA	1.74	0.43
7:U:166:VAL:HG13	7:U:186:ASN:HD21	1.84	0.43
7:Q:194:ILE:HD11	7:Q:198:PHE:CE2	2.53	0.43
2:3:132:DT:H6	2:3:132:DT:H2'	1.59	0.43
3:O:77:LYS:O	3:O:81:LEU:HG	2.17	0.43
5:W:106:LEU:HD13	5:W:622:TYR:CE1	2.53	0.43
7:V:114:GLN:O	7:V:118:LEU:HG	2.18	0.43
7:V:338:MET:O	7:V:341:LEU:HD12	2.18	0.43
7:R:64:ALA:HA	7:R:67:GLN:HE22	1.81	0.43
7:R:165:LYS:H	7:R:165:LYS:HG3	1.40	0.43
7:R:185:LYS:H	7:R:185:LYS:HG3	1.43	0.43
7:T:147:ARG:HG2	7:T:148:LYS:HD2	2.00	0.43
7:Q:113:VAL:HA	7:Q:116:VAL:HG22	1.99	0.43
3:O:348:LEU:HD23	3:O:348:LEU:HA	1.84	0.43
5:W:22:ALA:HA	5:W:27:THR:HG21	2.00	0.43
3:N:273:LEU:HB2	3:N:321:LEU:HD22	2.00	0.43
7:V:290:HIS:CE1	7:V:292:GLU:HB2	2.53	0.43
7:T:41:GLY:H	7:T:69:ASN:H	1.67	0.43
7:Q:264:THR:O	7:Q:268:ILE:HG13	2.17	0.43
3:O:261:PHE:O	3:O:265:HIS:ND1	2.51	0.43
5:W:88:LYS:HB3	5:W:92:ILE:HA	2.01	0.43
5:W:395:VAL:HG12	5:W:477:VAL:HB	2.01	0.43
3:N:342:MET:HE1	3:N:390:TYR:O	2.19	0.43
6:7:13:DA:H2"	6:7:14:DG:C8	2.53	0.43
7:U:100:PRO:HG2	7:U:109:LYS:HA	2.00	0.43
7:U:156:LEU:HD21	7:U:207:PHE:CE1	2.52	0.43
1:1:21:U:C6	7:T:227:PHE:HA	2.52	0.43
3:O:69:SER:HA	3:O:72:THR:HG23	2.00	0.43
5:W:26:LEU:HD23	5:W:26:LEU:HA	1.85	0.43
5:W:446:HIS:ND1	7:V:249:THR:HA	2.34	0.43
3:N:65:LYS:HE3	7:Q:277:GLU:HG2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:N:204:LEU:CD2	3:N:224:VAL:HG21	2.49	0.43
7:R:3:LEU:HB2	7:R:347:PHE:CD1	2.53	0.43
7:U:141:TRP:HZ2	7:U:154:ILE:HD12	1.83	0.43
7:U:175:TYR:HB3	7:U:181:PHE:CE2	2.53	0.43
3:O:101:TYR:O	3:O:289:LEU:HD23	2.19	0.43
3:O:147:TYR:CE1	3:O:203:TRP:HB3	2.53	0.43
3:O:241:VAL:O	3:O:242:GLN:C	2.60	0.43
3:N:59:ILE:HD12	3:N:59:ILE:HA	1.84	0.43
7:Q:110:GLN:HA	7:Q:113:VAL:HG22	2.00	0.43
3:O:128:CYS:HB2	3:O:142:TRP:CZ2	2.54	0.43
3:O:243:PHE:C	3:O:245:SER:H	2.25	0.43
3:O:346:ARG:HB2	3:N:66:ASN:HD21	1.82	0.43
5:W:86:ASN:HB2	5:W:219:LEU:HG	2.00	0.43
7:R:272:ASP:HB2	7:R:284:VAL:HG22	2.00	0.43
7:T:147:ARG:HD3	7:T:148:LYS:NZ	2.34	0.43
7:U:287:PHE:C	7:U:298:ARG:HB2	2.43	0.43
7:Q:23:VAL:HG12	7:Q:84:HIS:H	1.83	0.43
3:O:128:CYS:HB3	3:O:131:CYS:HB2	1.43	0.43
3:O:283:PHE:CE1	3:O:287:ILE:HD11	2.54	0.43
5:W:489:GLN:O	5:W:492:ASP:HB2	2.18	0.43
5:W:491:ILE:HD12	5:W:491:ILE:HA	1.83	0.43
7:V:6:ASN:HA	7:V:348:GLN:NE2	2.34	0.43
7:V:20:PHE:HB3	7:V:85:ILE:HD11	1.99	0.43
7:R:16:SER:HB3	7:R:90:SER:O	2.19	0.43
7:R:65:LEU:HD23	7:R:65:LEU:HA	1.84	0.43
7:Q:20:PHE:HD1	7:Q:20:PHE:HA	1.74	0.43
7:Q:148:LYS:HE2	7:Q:148:LYS:HB2	1.90	0.43
3:O:12:GLU:OE2	3:O:20:ARG:HD3	2.19	0.43
3:O:141:LEU:HB3	3:O:147:TYR:CE1	2.54	0.43
3:O:168:ASP:OD1	3:O:168:ASP:C	2.62	0.43
3:O:290:PRO:HB2	3:O:292:ARG:HH12	1.84	0.43
5:W:43:LEU:HD13	5:W:46:LEU:HD22	2.00	0.43
5:W:57:LEU:O	5:W:59:ARG:HD2	2.19	0.43
7:V:40:LEU:HD11	7:V:68:GLY:HA3	2.00	0.43
7:R:299:HIS:HB3	7:R:302:THR:HG23	2.01	0.43
2:3:125:DG:C5	7:R:71:HIS:CE1	3.07	0.42
3:O:198:CYS:HB2	3:O:208:GLU:OE2	2.19	0.42
3:N:259:VAL:O	3:N:263:LEU:HB2	2.19	0.42
7:T:29:LYS:HE2	7:T:29:LYS:HB2	1.89	0.42
7:Q:267:ALA:O	7:Q:270:THR:HG22	2.19	0.42
3:O:298:ILE:C	3:O:299:ILE:HD13	2.45	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:298:ILE:HG12	3:O:298:ILE:O	2.19	0.42
3:O:322:LYS:HB3	3:O:365:TYR:HB3	2.00	0.42
5:W:106:LEU:HD13	5:W:622:TYR:HE1	1.84	0.42
5:W:116:ILE:HD11	5:W:220:SER:HB3	2.01	0.42
5:W:260:MET:HE1	5:W:405:VAL:C	2.44	0.42
5:W:307:ILE:O	5:W:310:ARG:HG2	2.20	0.42
3:N:142:TRP:CH2	3:N:150:CYS:HA	2.49	0.42
3:N:225:HIS:HA	3:N:228:MET:SD	2.59	0.42
7:R:215:LEU:HB3	7:R:219:ALA:HB3	2.00	0.42
7:U:275:TYR:CZ	7:U:278:ALA:HA	2.55	0.42
1:1:27:A:H4'	1:1:28:G:OP1	2.20	0.42
3:O:25:ASN:HB3	3:O:27:TYR:CE1	2.54	0.42
5:W:72:TRP:CD2	5:W:177:MET:HE2	2.54	0.42
5:W:180:GLN:HA	5:W:183:ASP:HB2	2.00	0.42
3:N:147:TYR:CE1	3:N:204:LEU:HD13	2.53	0.42
3:N:249:ARG:O	3:N:252:HIS:HB2	2.18	0.42
7:V:166:VAL:HG22	7:V:186:ASN:HB3	2.01	0.42
7:S:346:MET:HB2	7:S:346:MET:HE2	1.64	0.42
7:T:11:ARG:NH1	7:U:220:MET:HE1	2.30	0.42
7:T:119:TYR:HD1	7:T:119:TYR:O	2.03	0.42
7:T:223:PRO:HG2	7:T:246:PHE:CG	2.54	0.42
1:1:28:G:H5"	7:S:225:GLN:NE2	2.33	0.42
5:W:109:PHE:CE2	5:W:542:LEU:HD21	2.55	0.42
3:N:101:TYR:CE1	3:N:290:PRO:HG3	2.55	0.42
6:7:53:DA:C4	6:7:54:DG:C8	3.07	0.42
7:U:110:GLN:OE1	7:U:110:GLN:C	2.63	0.42
3:O:223:LEU:HB2	3:O:235:PHE:CZ	2.54	0.42
3:O:268:VAL:HG22	3:O:272:GLU:OE1	2.19	0.42
4:P:140:GLN:HE22	4:P:142:GLU:HA	1.85	0.42
5:W:497:VAL:CG1	7:V:159:TRP:HH2	2.33	0.42
7:V:20:PHE:HD1	7:V:87:CYS:HB3	1.85	0.42
7:S:18:VAL:HG22	7:S:89:PHE:HB3	2.01	0.42
7:T:122:LYS:HE3	7:T:122:LYS:HB3	1.92	0.42
7:T:138:ASN:HB3	7:T:139:GLY:H	1.72	0.42
7:Q:6:ASN:H	7:Q:104:ASN:HD21	1.68	0.42
3:O:101:TYR:CD1	3:O:221:TRP:CD2	3.08	0.42
3:O:187:LEU:HD23	3:O:187:LEU:HA	1.88	0.42
5:W:258:PHE:CE1	5:W:260:MET:HE2	2.54	0.42
5:W:452:LEU:HB3	7:V:227:PHE:HD2	1.83	0.42
7:S:135:ASN:HB3	7:S:268:ILE:HA	2.01	0.42
1:1:4:A:H8	7:V:101:TYR:HE2	1.67	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:O:221:TRP:CD2	3:O:290:PRO:HG3	2.55	0.42
3:O:345:GLN:O	3:O:345:GLN:HG3	2.18	0.42
5:W:577:LYS:C	5:W:587:LYS:HG3	2.45	0.42
5:W:614:TRP:HA	5:W:627:PRO:HA	2.01	0.42
3:N:83:PHE:CE2	3:N:87:PRO:HG3	2.55	0.42
3:N:141:LEU:HD22	3:N:147:TYR:CE2	2.54	0.42
3:N:292:ARG:HD3	3:N:333:ASN:CB	2.44	0.42
7:R:3:LEU:HB2	7:R:347:PHE:HB3	2.02	0.42
7:R:304:LYS:HD3	7:R:304:LYS:HA	1.79	0.42
7:S:245:VAL:HG22	7:S:246:PHE:H	1.85	0.42
7:S:286:ARG:HG3	7:T:44:GLU:HA	2.01	0.42
7:S:307:PHE:HE1	7:S:347:PHE:HB3	1.83	0.42
7:T:11:ARG:HH22	7:U:220:MET:HE1	1.85	0.42
7:Q:143:TRP:O	7:Q:146:THR:HG22	2.19	0.42
1:1:2:U:N3	5:W:418:PHE:HD2	2.14	0.42
3:O:299:ILE:O	3:O:301:GLY:N	2.52	0.42
5:W:395:VAL:HB	5:W:509:ALA:HB2	2.02	0.42
5:W:418:PHE:CE2	5:W:501:PRO:HB2	2.55	0.42
5:W:438:PHE:CE1	5:W:614:TRP:HB2	2.55	0.42
5:W:543:TYR:HB3	5:W:597:LEU:HB2	2.02	0.42
7:R:3:LEU:HB2	7:R:347:PHE:HD1	1.84	0.42
7:T:282:LEU:HD12	7:T:283:ARG:H	1.83	0.42
7:U:80:TYR:HD1	7:U:81:GLY:N	2.18	0.42
7:U:143:TRP:HB3	7:U:144:LYS:H	1.54	0.42
7:Q:14:ASP:HB3	7:Q:92:SER:HB3	2.02	0.42
5:W:155:ASP:OD1	5:W:155:ASP:C	2.63	0.42
5:W:229:LEU:HD23	5:W:229:LEU:HA	1.84	0.42
3:N:359:PRO:HB2	3:N:360:LEU:H	1.68	0.42
7:R:98:ARG:HG2	7:R:98:ARG:HH11	1.85	0.42
7:R:227:PHE:HD2	7:S:38:THR:HB	1.83	0.42
7:S:334:MET:SD	7:S:334:MET:N	2.93	0.42
2:3:144:DA:H2	7:T:346:MET:SD	2.43	0.42
3:N:295:GLN:H	3:N:295:GLN:CD	2.28	0.42
7:V:228:THR:CG2	7:V:229:GLU:H	2.26	0.42
7:R:1:MET:C	7:R:2:LYS:HG2	2.44	0.42
7:R:121:THR:OG1	7:R:122:LYS:HD2	2.19	0.42
7:U:208:GLU:OE2	7:U:208:GLU:HA	2.20	0.42
7:Q:3:LEU:HD23	7:Q:4:PRO:HD2	2.02	0.42
7:Q:119:TYR:CE1	7:Q:123:ILE:HB	2.54	0.42
7:Q:328:GLN:HA	7:Q:331:ILE:HG22	2.01	0.42
1:1:1:C:H4'	5:W:202:SER:HB3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:3:114:DC:OP2	3:O:105:THR:HG22	2.19	0.41
3:O:275:LEU:HB3	3:O:369:PHE:CE2	2.55	0.41
5:W:387:PHE:CE2	5:W:525:LEU:HB2	2.55	0.41
5:W:450:ARG:HH12	7:V:225:GLN:C	2.28	0.41
3:N:7:LYS:H	3:N:7:LYS:HG2	1.39	0.41
3:N:329:THR:HA	3:N:334:CYS:HB2	2.02	0.41
7:V:133:LEU:O	7:V:137:CYS:HB2	2.19	0.41
7:U:147:ARG:HD2	7:U:147:ARG:HA	1.84	0.41
2:3:107:DG:H2'	2:3:108:DT:H71	2.03	0.41
3:O:225:HIS:NE2	3:O:298:ILE:HD11	2.34	0.41
3:N:332:LEU:HB3	3:N:387:ARG:NH1	2.35	0.41
7:V:87:CYS:HB2	7:V:141:TRP:HH2	1.84	0.41
7:R:107:LYS:HD3	7:R:107:LYS:C	2.46	0.41
7:S:97:LEU:H	7:S:97:LEU:HD23	1.85	0.41
7:Q:309:ILE:HG22	7:Q:337:LEU:HD22	2.02	0.41
2:3:111:DT:H2"	2:3:112:DC:OP2	2.20	0.41
3:O:312:TRP:CD1	3:N:77:LYS:HB2	2.55	0.41
5:W:89:PHE:HA	5:W:90:PRO:HA	1.89	0.41
5:W:497:VAL:HG13	7:V:159:TRP:HH2	1.85	0.41
3:N:311:LEU:O	3:N:318:ILE:HD13	2.20	0.41
6:7:64:DC:H2"	6:7:65:DA:H8	1.85	0.41
7:V:4:PRO:HG2	7:V:7:LEU:HG	2.03	0.41
7:V:148:LYS:HE2	7:V:148:LYS:HB3	1.82	0.41
7:R:131:ARG:NH1	7:R:274:TRP:HE1	2.18	0.41
7:S:118:LEU:HD23	7:S:118:LEU:HA	1.90	0.41
7:S:338:MET:HA	7:S:341:LEU:HD23	2.02	0.41
7:U:123:ILE:HG23	7:U:124:GLY:H	1.85	0.41
7:U:274:TRP:CD1	7:U:332:ASN:HB2	2.56	0.41
7:Q:171:ILE:HA	7:Q:175:TYR:CD2	2.56	0.41
3:O:22:ALA:HB1	3:O:27:TYR:HB2	2.03	0.41
3:O:291:GLU:HG3	3:O:385:PHE:CE2	2.55	0.41
3:O:313:GLN:HB2	3:O:314:ASP:H	1.54	0.41
4:P:103:ARG:HB2	4:P:186:LEU:HD22	2.03	0.41
5:W:336:ILE:HA	5:W:339:GLN:HB2	2.02	0.41
7:Q:114:GLN:HA	7:Q:117:GLU:HG2	2.03	0.41
7:Q:225:GLN:OE1	7:Q:244:ARG:HG2	2.20	0.41
2:3:110:DA:H2'	2:3:111:DT:H71	2.02	0.41
3:O:381:GLN:HB2	3:N:109:VAL:HG11	2.01	0.41
5:W:72:TRP:O	5:W:75:CYS:HB2	2.20	0.41
5:W:205:ASP:HB3	5:W:211:ILE:HB	2.02	0.41
5:W:332:LEU:HB3	5:W:337:LEU:HD13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:S:84:HIS:HB3	7:S:214:HIS:ND1	2.35	0.41
7:T:50:TYR:CD2	7:T:54:GLY:HA2	2.55	0.41
3:O:88:GLU:HB2	3:N:377:LEU:HD12	2.03	0.41
3:O:260:GLU:H	3:O:260:GLU:HG3	1.57	0.41
5:W:37:LEU:HB2	5:W:59:ARG:HH22	1.85	0.41
5:W:201:ILE:HG12	5:W:570:TYR:CZ	2.56	0.41
5:W:252:MET:HE3	5:W:252:MET:C	2.46	0.41
5:W:385:GLY:HA3	5:W:523:SER:HA	2.01	0.41
5:W:456:PHE:CD1	5:W:466:ALA:HB2	2.54	0.41
5:W:557:MET:HA	5:W:560:ASP:OD1	2.21	0.41
3:N:141:LEU:HD12	3:N:151:HIS:HE1	1.85	0.41
3:N:202:ASN:OD1	3:N:202:ASN:C	2.63	0.41
3:N:270:THR:O	3:N:321:LEU:HD23	2.21	0.41
7:V:181:PHE:HB3	7:V:187:TRP:NE1	2.35	0.41
7:V:309:ILE:HG21	7:V:337:LEU:HB2	2.02	0.41
7:R:175:TYR:HA	7:R:180:ASP:HB2	2.01	0.41
7:Q:331:ILE:HG13	7:Q:335:HIS:CE1	2.56	0.41
5:W:60:ALA:HA	5:W:63:LYS:NZ	2.36	0.41
5:W:300:LEU:HD23	3:N:359:PRO:HB2	2.03	0.41
5:W:450:ARG:HG2	5:W:474:GLN:NE2	2.34	0.41
7:V:107:LYS:O	7:V:110:GLN:HG3	2.20	0.41
7:R:10:GLU:HB2	7:R:101:TYR:HB2	2.02	0.41
7:T:1:MET:HB3	7:T:311:GLN:O	2.21	0.41
4:P:81:LEU:C	4:P:82:GLN:HG3	2.46	0.41
5:W:165:LYS:HA	5:W:165:LYS:HD2	1.83	0.41
5:W:226:HIS:CE1	5:W:259:ARG:HG2	2.56	0.41
5:W:321:VAL:HG12	5:W:325:PHE:CE2	2.55	0.41
5:W:363:LEU:O	5:W:367:LEU:HD13	2.21	0.41
3:N:9:TYR:HD1	3:N:137:TYR:HD1	1.66	0.41
7:R:292:GLU:O	7:R:293:ASP:C	2.63	0.41
7:T:249:THR:HG23	7:T:258:ILE:HD13	2.03	0.41
7:U:114:GLN:O	7:U:117:GLU:HG3	2.21	0.41
7:Q:342:ILE:HD12	7:Q:342:ILE:HA	1.98	0.41
1:1:8:C:H5'	7:V:262:PHE:HB3	2.02	0.41
2:3:120:DC:C1'	3:O:352:ARG:HH12	2.29	0.41
2:3:126:DC:H2'	2:3:127:DA:C4	2.56	0.41
4:P:97:THR:OG1	4:P:98:TYR:N	2.47	0.41
5:W:201:ILE:HG12	5:W:570:TYR:CE1	2.56	0.41
5:W:332:LEU:HD23	5:W:337:LEU:HD13	2.03	0.41
3:N:139:SER:HB3	3:N:142:TRP:CD1	2.56	0.41
3:N:247:TRP:O	3:N:251:PHE:HB2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:V:315:HIS:O	7:V:318:GLU:HG2	2.20	0.41
7:R:188:SER:HA	7:R:191:VAL:HG12	2.03	0.41
7:R:275:TYR:H	7:R:275:TYR:HD2	1.69	0.41
7:S:21:PHE:CD1	7:S:31:PRO:HA	2.56	0.41
7:U:1:MET:HE1	7:U:310:LEU:HG	2.01	0.41
7:U:34:TYR:HB2	7:U:76:CYS:HB2	2.03	0.41
7:Q:141:TRP:CZ3	7:Q:142:LEU:HB2	2.56	0.41
1:1:24:G:C2	7:S:346:MET:HE1	2.56	0.41
4:P:47:TRP:CH2	4:P:167:ILE:HG13	2.55	0.41
4:P:72:GLN:O	4:P:76:VAL:HG22	2.21	0.41
5:W:516:PHE:HE2	7:V:159:TRP:CE2	2.39	0.41
5:W:576:PRO:HB3	5:W:589:ALA:HB2	2.03	0.41
3:N:4:GLN:H	3:N:4:GLN:HG2	1.75	0.41
3:N:7:LYS:HB2	3:N:9:TYR:HE2	1.86	0.41
3:N:92:LEU:H	3:N:92:LEU:HG	1.72	0.41
7:R:198:PHE:HD1	7:R:198:PHE:HA	1.76	0.41
7:T:34:TYR:HD1	7:T:257:PRO:HD3	1.84	0.41
7:U:65:LEU:HD12	7:U:65:LEU:O	2.21	0.41
7:U:275:TYR:HA	7:U:298:ARG:HH12	1.86	0.41
7:Q:147:ARG:HG2	7:Q:148:LYS:CD	2.51	0.41
1:1:9:C:C2	1:1:10:G:C6	3.09	0.40
5:W:26:LEU:HD13	5:W:226:HIS:CD2	2.56	0.40
5:W:213:LEU:HD11	5:W:591:ALA:CB	2.50	0.40
3:N:129:PRO:HG2	3:N:187:LEU:HG	2.02	0.40
3:N:228:MET:HA	3:N:231:LYS:HE2	2.03	0.40
3:N:334:CYS:CA	3:N:387:ARG:HE	2.34	0.40
7:T:116:VAL:HG22	7:T:338:MET:HE1	2.03	0.40
7:T:337:LEU:HD23	7:T:341:LEU:HD23	2.02	0.40
7:U:34:TYR:HE1	7:U:255:ARG:HG2	1.86	0.40
1:1:34:G:HO2'	1:1:35:U:H5	1.65	0.40
3:O:145:GLN:HB2	3:O:146:GLY:H	1.70	0.40
3:O:162:SER:HB3	3:O:188:THR:HG21	2.03	0.40
4:P:151:SER:OG	4:P:164:ARG:HD3	2.21	0.40
5:W:55:ASP:C	5:W:56:LEU:HD23	2.45	0.40
5:W:433:PHE:HB2	5:W:489:GLN:HE21	1.85	0.40
7:V:346:MET:HE1	7:V:348:GLN:CD	2.47	0.40
7:S:145:ASN:HB3	7:S:222:ARG:HG2	2.02	0.40
7:T:337:LEU:HA	7:T:340:ASN:OD1	2.21	0.40
7:U:22:VAL:HG23	7:U:32:LEU:HB2	2.02	0.40
7:U:141:TRP:CD1	7:U:141:TRP:N	2.89	0.40
7:U:320:LEU:HD12	7:U:320:LEU:HA	1.91	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:Q:142:LEU:CD1	7:Q:145:ASN:HB2	2.49	0.40
3:O:99:MET:O	3:O:107:ALA:HB2	2.22	0.40
3:O:100:LYS:HG2	3:O:288:ARG:HH21	1.85	0.40
3:O:254:ILE:O	3:O:255:ILE:C	2.64	0.40
3:O:297:ASN:O	3:O:302:GLU:HG3	2.21	0.40
3:O:321:LEU:HB2	3:O:369:PHE:CD2	2.57	0.40
5:W:19:LEU:HD11	5:W:56:LEU:HD12	2.04	0.40
7:R:125:TRP:HZ3	7:R:198:PHE:HB3	1.83	0.40
7:S:97:LEU:HD11	7:S:125:TRP:CH2	2.57	0.40
7:U:141:TRP:CD1	7:U:141:TRP:H	2.40	0.40
7:U:153:ASN:C	7:U:154:ILE:HD13	2.46	0.40
7:Q:93:PHE:HD2	7:Q:194:ILE:CD1	2.34	0.40
7:Q:168:PHE:HE1	7:Q:184:ASN:HD22	1.70	0.40
2:3:119:DG:N3	3:O:352:ARG:NH2	2.69	0.40
3:O:243:PHE:C	3:O:245:SER:N	2.79	0.40
7:R:107:LYS:O	7:R:107:LYS:HD3	2.21	0.40
7:T:144:LYS:HB2	7:T:222:ARG:HD2	2.03	0.40
7:T:332:ASN:HA	7:T:335:HIS:HD2	1.81	0.40
7:Q:275:TYR:HB2	7:Q:276:PRO:HD2	2.03	0.40
1:1:2:U:H6	1:1:2:U:P	2.45	0.40
1:1:21:U:C5	7:T:227:PHE:HA	2.57	0.40
2:3:147:DT:H73	2:3:148:DC:C5	2.56	0.40
3:O:151:HIS:ND1	3:O:201:SER:HB3	2.35	0.40
3:O:217:LYS:O	3:O:220:ARG:HB2	2.22	0.40
5:W:161:TRP:H	5:W:161:TRP:CD1	2.40	0.40
5:W:358:PRO:O	5:W:362:LYS:HG2	2.21	0.40
3:N:139:SER:H	3:N:142:TRP:CD1	2.36	0.40
3:N:147:TYR:CZ	3:N:204:LEU:HD22	2.57	0.40
7:U:141:TRP:CZ2	7:U:211:ALA:HB2	2.57	0.40
7:Q:34:TYR:HB3	7:Q:76:CYS:SG	2.62	0.40
7:Q:328:GLN:HA	7:Q:328:GLN:OE1	2.22	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	
3	N	392/402 (98%)	298 (76%)	85 (22%)	9 (2%)	5	30
3	O	391/402 (97%)	304 (78%)	76 (19%)	11 (3%)	4	27
4	P	193/199 (97%)	181 (94%)	10 (5%)	2 (1%)	12	45
5	W	625/640 (98%)	542 (87%)	78 (12%)	5 (1%)	16	50
7	Q	302/352 (86%)	286 (95%)	15 (5%)	1 (0%)	36	69
7	R	334/352 (95%)	314 (94%)	20 (6%)	0	100	100
7	S	333/352 (95%)	319 (96%)	14 (4%)	0	100	100
7	T	333/352 (95%)	312 (94%)	18 (5%)	3 (1%)	14	47
7	U	333/352 (95%)	316 (95%)	17 (5%)	0	100	100
7	V	334/352 (95%)	314 (94%)	20 (6%)	0	100	100
All	All	3570/3755 (95%)	3186 (89%)	353 (10%)	31 (1%)	16	47

All (31) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	O	112	ALA
3	O	185	ILE
3	O	248	PRO
5	W	15	LEU
5	W	453	THR
3	N	10	SER
3	N	237	HIS
3	N	359	PRO
3	N	391	VAL
7	T	138	ASN
3	O	249	ARG
4	P	99	VAL
5	W	568	VAL
3	N	80	GLN
3	N	289	LEU
3	N	294	LEU
3	N	362	VAL
7	T	123	ILE
3	O	68	SER
3	O	393	ARG
5	W	106	LEU
3	O	271	SER

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Mol	Chain	Res	Type
4	P	97	THR
3	O	247	TRP
3	O	296	HIS
5	W	247	MET
3	O	256	GLU
3	N	299	ILE
3	O	177	ILE
7	Q	294	VAL
7	T	294	VAL

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
3	N	356/364 (98%)	325 (91%)	31 (9%)	9 33
3	O	355/364 (98%)	320 (90%)	35 (10%)	7 28
4	P	177/181 (98%)	173 (98%)	4 (2%)	44 63
5	W	559/573 (98%)	521 (93%)	38 (7%)	14 41
7	Q	274/308 (89%)	263 (96%)	11 (4%)	28 51
7	R	295/308 (96%)	273 (92%)	22 (8%)	12 38
7	S	295/308 (96%)	279 (95%)	16 (5%)	20 46
7	T	295/308 (96%)	280 (95%)	15 (5%)	21 46
7	U	295/308 (96%)	276 (94%)	19 (6%)	16 42
7	V	297/308 (96%)	285 (96%)	12 (4%)	28 51
All	All	3198/3330 (96%)	2995 (94%)	203 (6%)	18 42

All (203) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	O	5	ARG
3	O	41	LEU
3	O	43	ASP
3	O	44	ILE

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Mol	Chain	Res	Type
3	O	66	ASN
3	O	77	LYS
3	O	90	LEU
3	O	108	VAL
3	O	137	TYR
3	O	175	LYS
3	O	225	HIS
3	O	242	GLN
3	O	245	SER
3	O	248	PRO
3	O	249	ARG
3	O	254	ILE
3	O	255	ILE
3	O	256	GLU
3	O	257	ASP
3	O	258	GLU
3	O	260	GLU
3	O	264	GLU
3	O	268	VAL
3	O	269	SER
3	O	281	ARG
3	O	303	LEU
3	O	307	LEU
3	O	312	TRP
3	O	313	GLN
3	O	315	LYS
3	O	317	LEU
3	O	369	PHE
3	O	375	LEU
3	O	376	TRP
3	O	379	GLU
4	P	73	HIS
4	P	150	HIS
4	P	152	LEU
4	P	169	MET
5	W	5	LYS
5	W	6	GLU
5	W	8	ILE
5	W	54	LYS
5	W	64	GLN
5	W	70	LYS
5	W	86	ASN

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Mol	Chain	Res	Type
5	W	98	ILE
5	W	99	ARG
5	W	152	LEU
5	W	172	LYS
5	W	201	ILE
5	W	211	ILE
5	W	231	ASP
5	W	274	ARG
5	W	278	LYS
5	W	295	ARG
5	W	296	LEU
5	W	301	ILE
5	W	314	LYS
5	W	327	MET
5	W	348	LEU
5	W	367	LEU
5	W	428	ARG
5	W	440	ILE
5	W	445	LEU
5	W	448	GLU
5	W	453	THR
5	W	459	LYS
5	W	481	LEU
5	W	482	ILE
5	W	517	LYS
5	W	524	THR
5	W	525	LEU
5	W	532	LEU
5	W	583	LEU
5	W	602	THR
5	W	624	VAL
3	N	7	LYS
3	N	59	ILE
3	N	72	THR
3	N	77	LYS
3	N	80	GLN
3	N	81	LEU
3	N	85	GLU
3	N	89	LEU
3	N	92	LEU
3	N	134	GLU
3	N	143	HIS

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Mol	Chain	Res	Type
3	N	228	MET
3	N	237	HIS
3	N	246	ASN
3	N	249	ARG
3	N	262	ASN
3	N	265	HIS
3	N	276	LYS
3	N	282	LEU
3	N	284	PHE
3	N	291	GLU
3	N	321	LEU
3	N	322	LYS
3	N	324	ASN
3	N	326	LEU
3	N	331	MET
3	N	345	GLN
3	N	353	LYS
3	N	363	THR
3	N	376	TRP
3	N	391	VAL
7	V	39	LEU
7	V	53	SER
7	V	57	ILE
7	V	65	LEU
7	V	85	ILE
7	V	112	LEU
7	V	118	LEU
7	V	148	LYS
7	V	212	THR
7	V	221	VAL
7	V	224	SER
7	V	290	HIS
7	R	2	LYS
7	R	7	LEU
7	R	9	TYR
7	R	58	LYS
7	R	88	SER
7	R	91	VAL
7	R	97	LEU
7	R	108	VAL
7	R	112	LEU
7	R	125	TRP

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Mol	Chain	Res	Type
7	R	140	LYS
7	R	142	LEU
7	R	165	LYS
7	R	174	ASN
7	R	185	LYS
7	R	198	PHE
7	R	201	THR
7	R	204	LEU
7	R	224	SER
7	R	246	PHE
7	R	290	HIS
7	R	337	LEU
7	S	2	LYS
7	S	36	SER
7	S	48	LEU
7	S	71	HIS
7	S	84	HIS
7	S	127	GLU
7	S	133	LEU
7	S	148	LYS
7	S	150	TYR
7	S	165	LYS
7	S	221	VAL
7	S	226	VAL
7	S	273	ASP
7	S	340	ASN
7	S	346	MET
7	S	347	PHE
7	T	12	SER
7	T	13	ILE
7	T	16	SER
7	T	22	VAL
7	T	51	ASP
7	T	65	LEU
7	T	71	HIS
7	T	75	PHE
7	T	134	MET
7	T	156	LEU
7	T	157	THR
7	T	193	MET
7	T	209	VAL
7	T	248	SER

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Mol	Chain	Res	Type
7	T	338	MET
7	U	1	MET
7	U	13	ILE
7	U	71	HIS
7	U	77	HIS
7	U	78	VAL
7	U	94	SER
7	U	109	LYS
7	U	127	GLU
7	U	143	TRP
7	U	157	THR
7	U	179	GLN
7	U	198	PHE
7	U	262	PHE
7	U	310	LEU
7	U	328	GLN
7	U	330	THR
7	U	346	MET
7	U	347	PHE
7	U	350	LYS
7	Q	20	PHE
7	Q	23	VAL
7	Q	126	THR
7	Q	133	LEU
7	Q	142	LEU
7	Q	145	ASN
7	Q	151	CYS
7	Q	178	ARG
7	Q	186	ASN
7	Q	209	VAL
7	Q	334	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
3	O	151	HIS
3	O	242	GLN
3	O	295	GLN
3	O	313	GLN
5	W	392	ASN
5	W	444	GLN
5	W	626	GLN

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Mol	Chain	Res	Type
3	N	151	HIS
3	N	345	GLN
7	R	349	HIS
7	S	67	GLN
7	S	71	HIS
7	S	214	HIS
7	T	153	ASN
7	U	110	GLN
7	U	290	HIS

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	59/317 (18%)	36 (61%)	5 (8%)

All (36) 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	9	C
1	1	13	A
1	1	14	G
1	1	15	A
1	1	16	C
1	1	17	U
1	1	18	U
1	1	19	U
1	1	20	A
1	1	21	U
1	1	22	C
1	1	24	G
1	1	25	A
1	1	26	C
1	1	27	A
1	1	28	G
1	1	30	A
1	1	31	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
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	44	A
1	1	45	A
1	1	46	C
1	1	55	A

All (5) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	1	15	A
1	1	18	U
1	1	19	U
1	1	34	G
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.

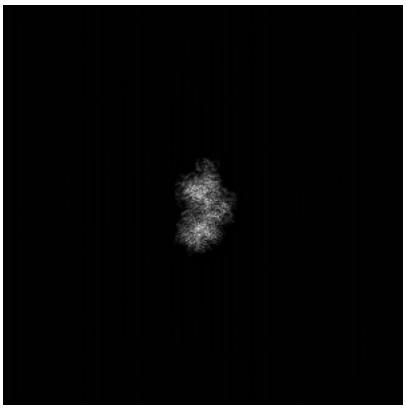
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-77313. These allow visual inspection of the internal detail of the map and identification of artifacts.

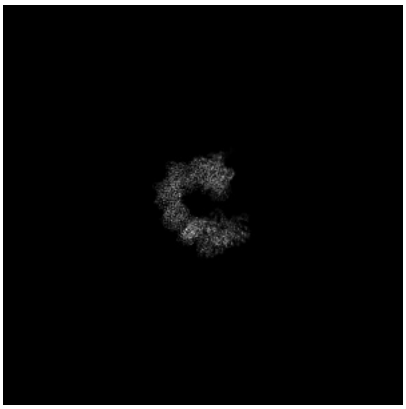
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

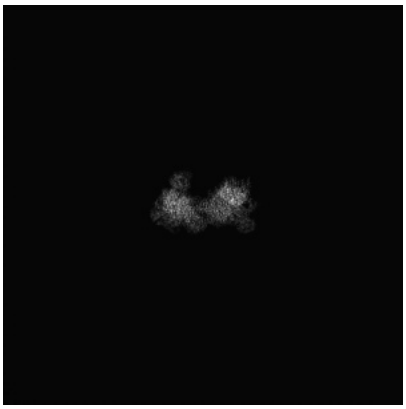
6.1.1 Primary map



X

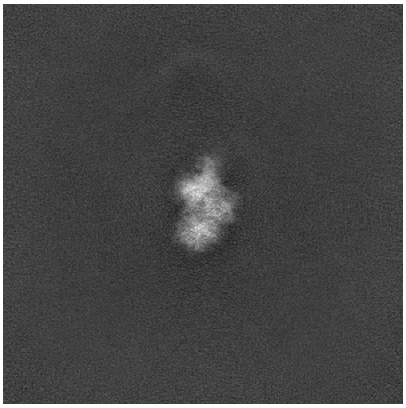


Y

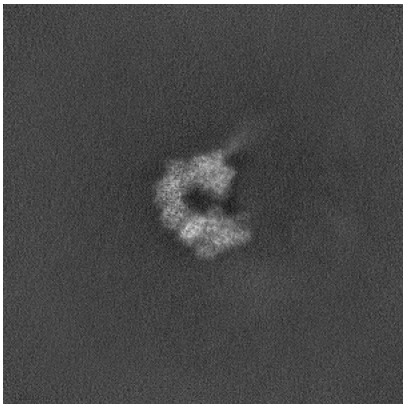


Z

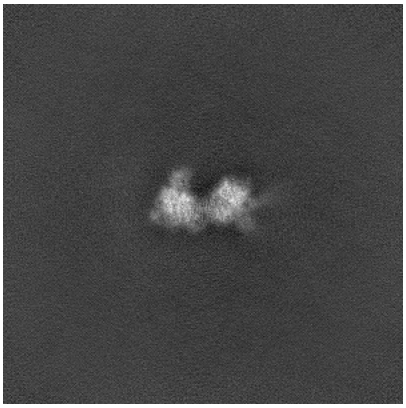
6.1.2 Raw map



X



Y

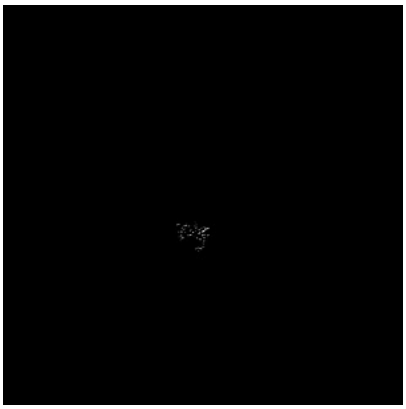


Z

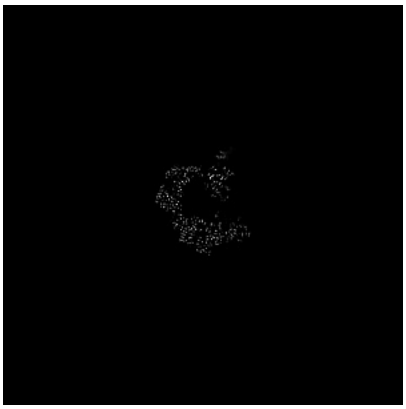
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

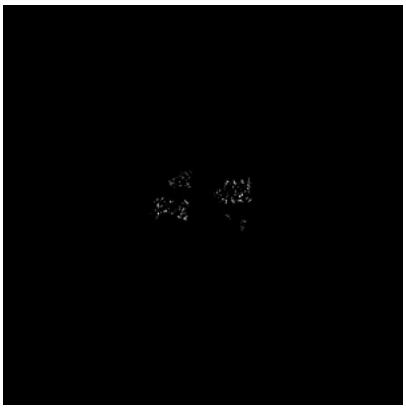
6.2.1 Primary map



X Index: 250

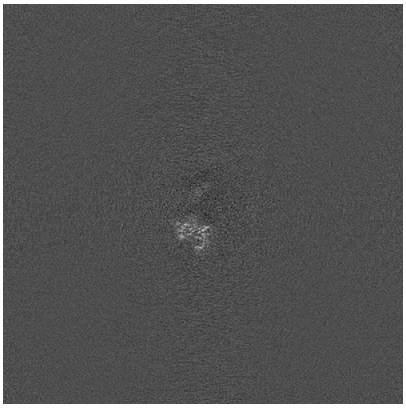


Y Index: 250

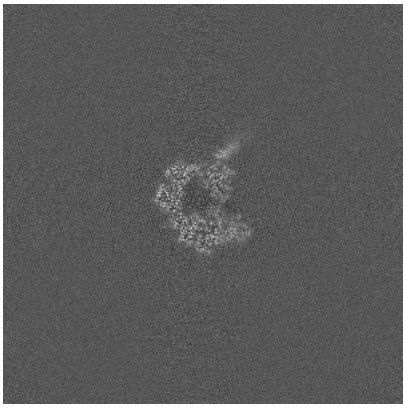


Z Index: 250

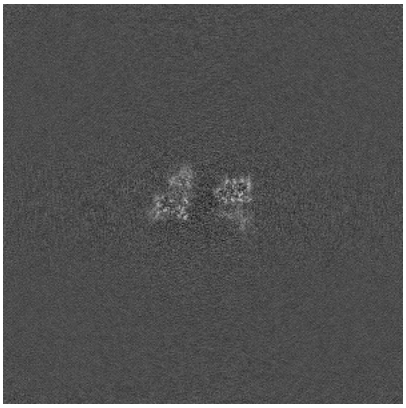
6.2.2 Raw map



X Index: 250



Y Index: 250

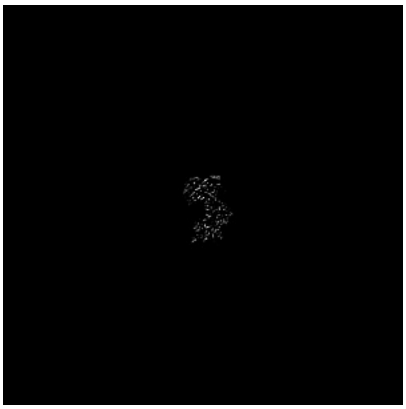


Z Index: 250

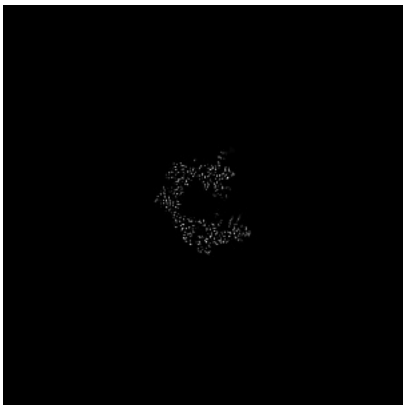
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

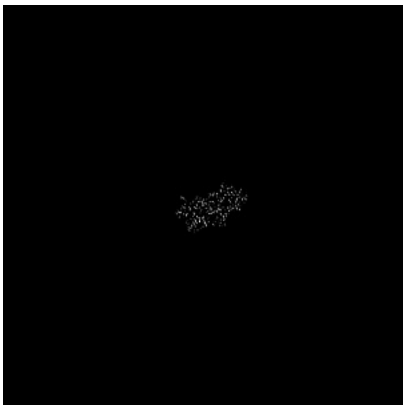
6.3.1 Primary map



X Index: 283

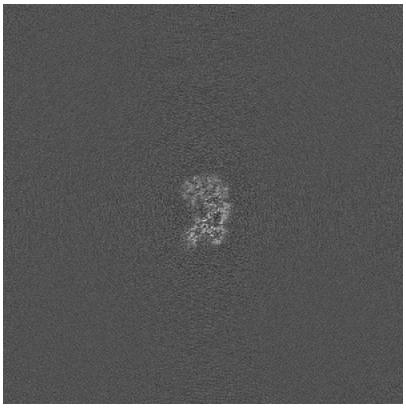


Y Index: 252

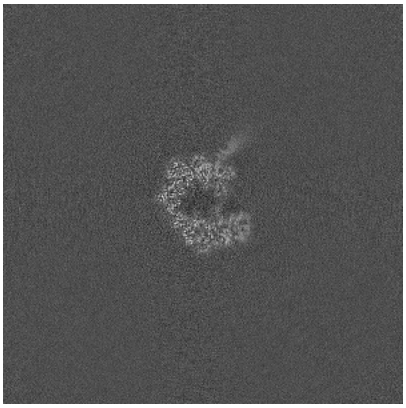


Z Index: 212

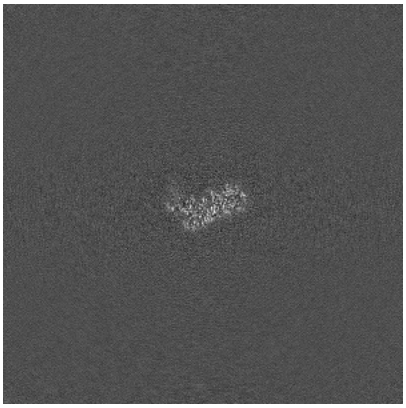
6.3.2 Raw map



X Index: 279



Y Index: 254

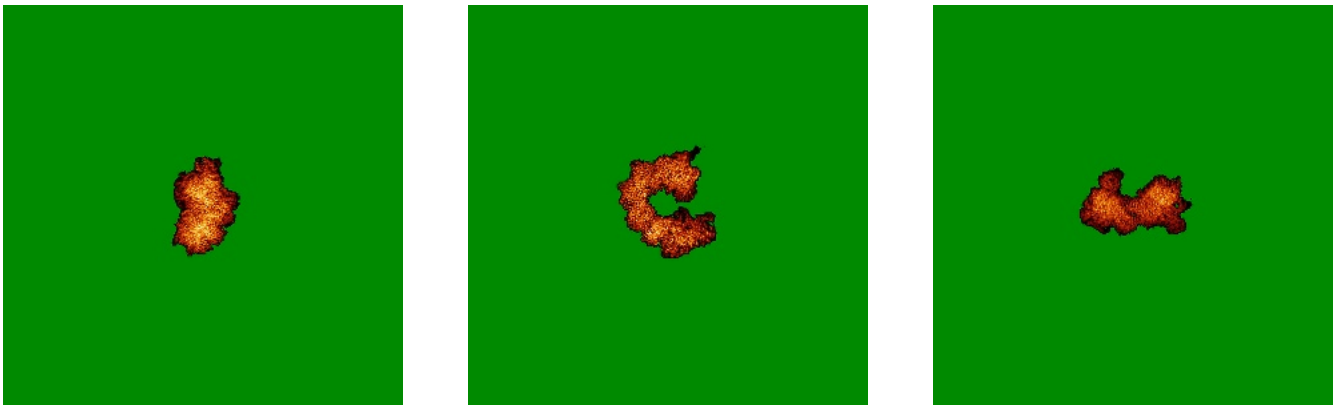


Z Index: 220

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

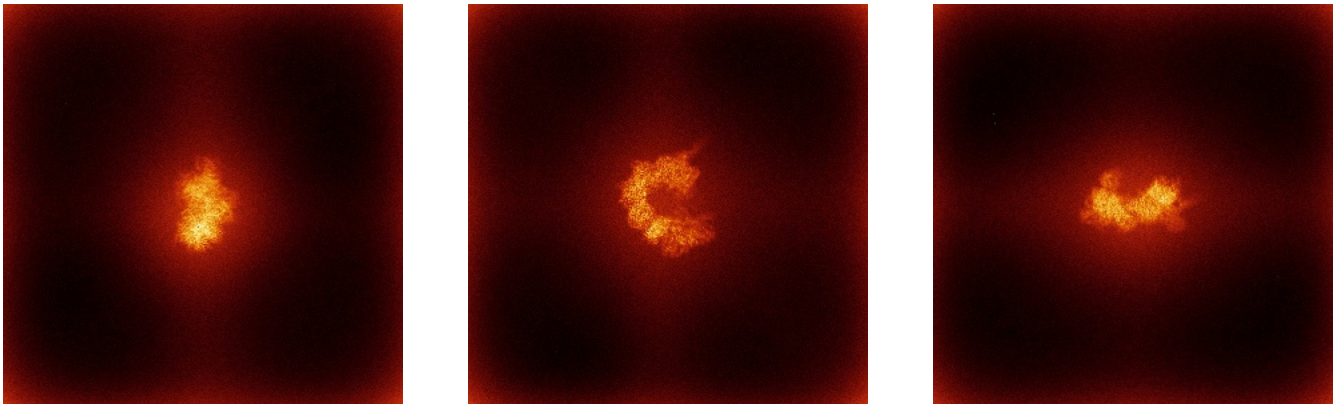
6.4 Orthogonal standard-deviation projections (False-color) (i)

6.4.1 Primary map



X Y Z

6.4.2 Raw map

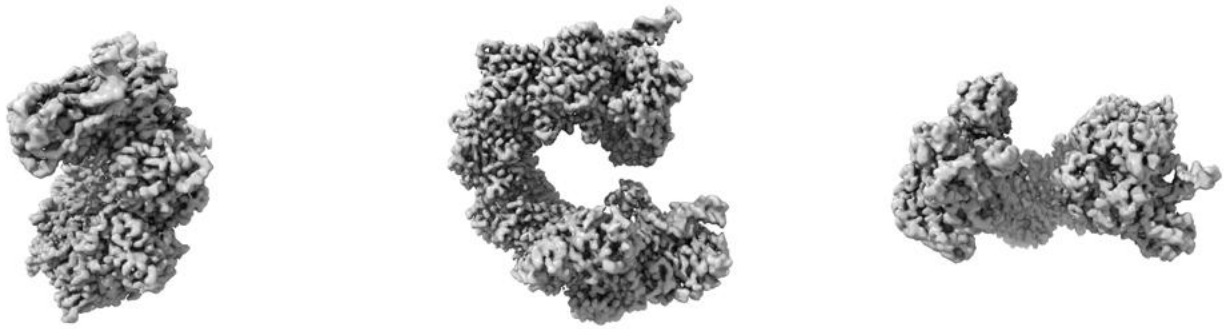


X Y Z

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 0.028. 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.

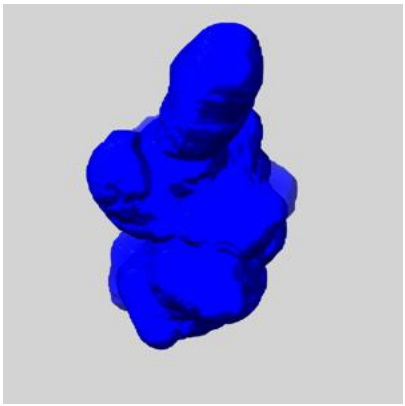
6.6 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

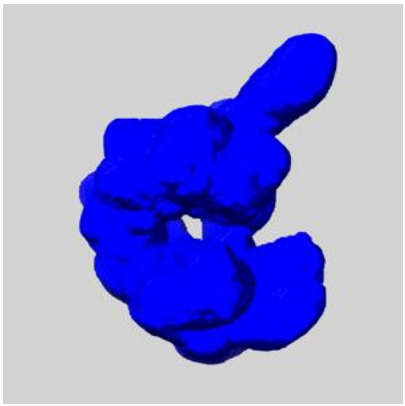
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

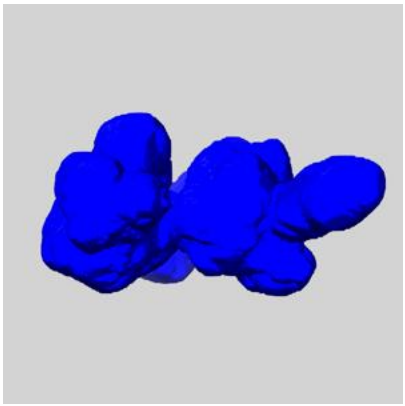
6.6.1 emd_77313_msk_1.map (i)



X



Y

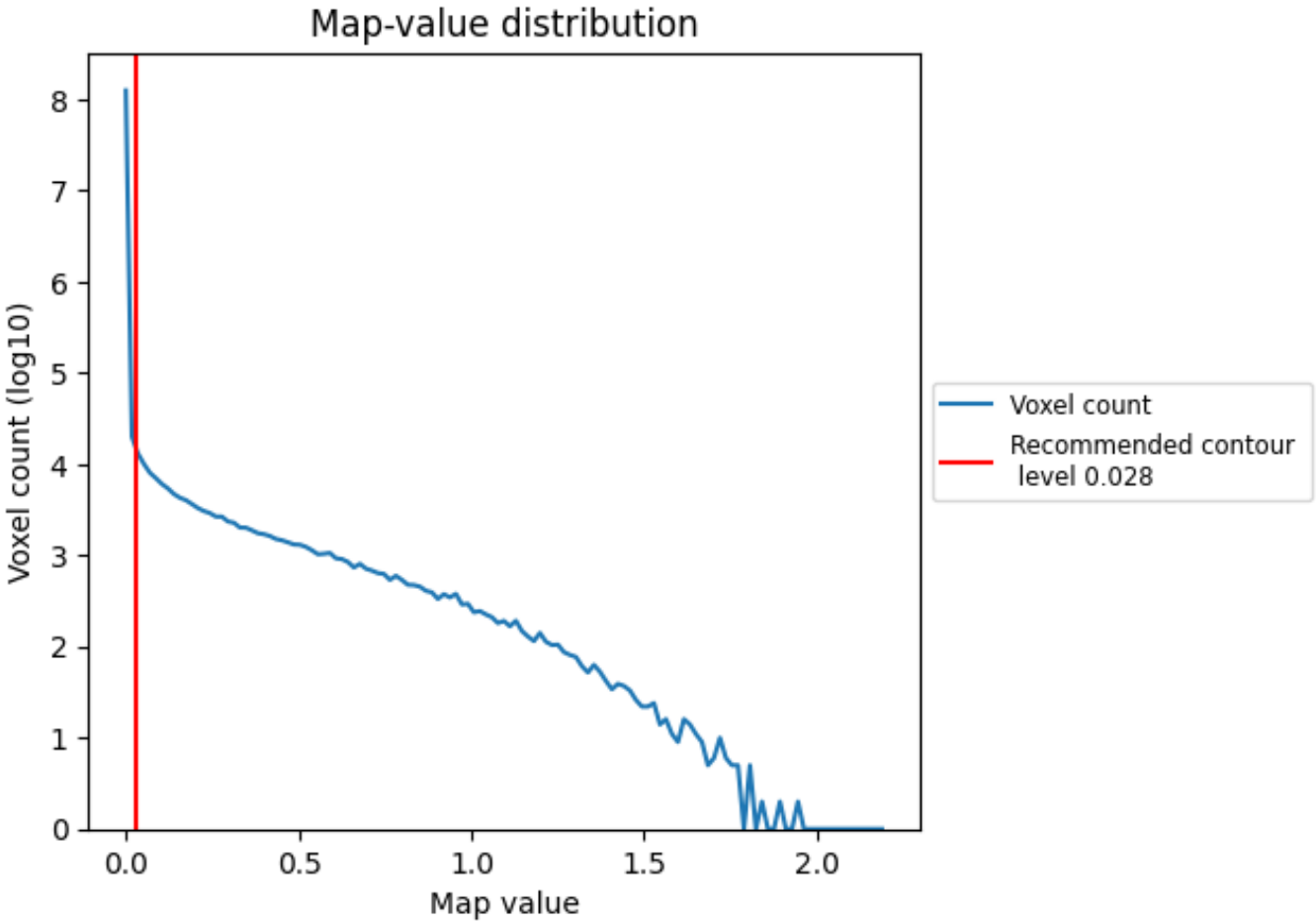


Z

7 Map analysis

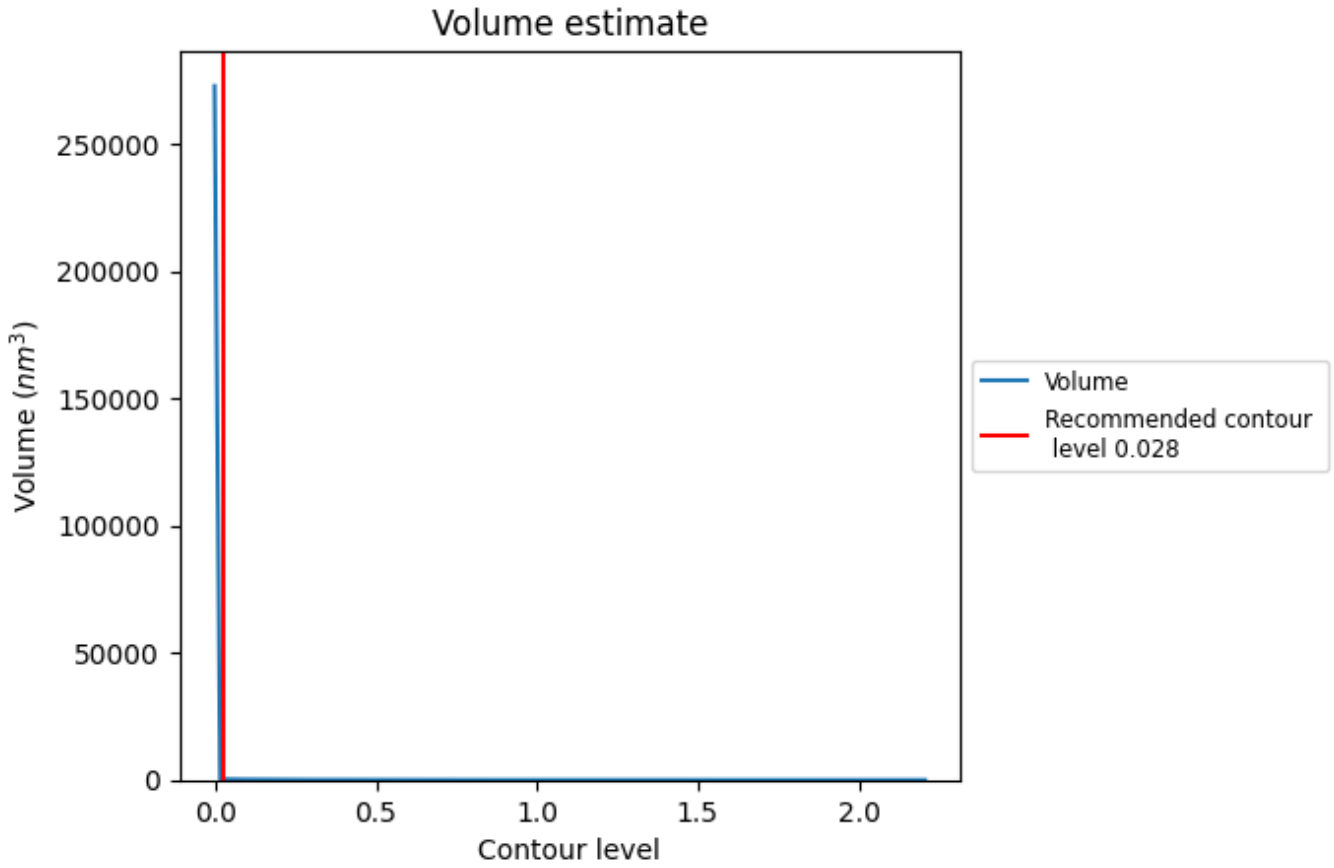
This section contains the results of statistical analysis of the map.

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.

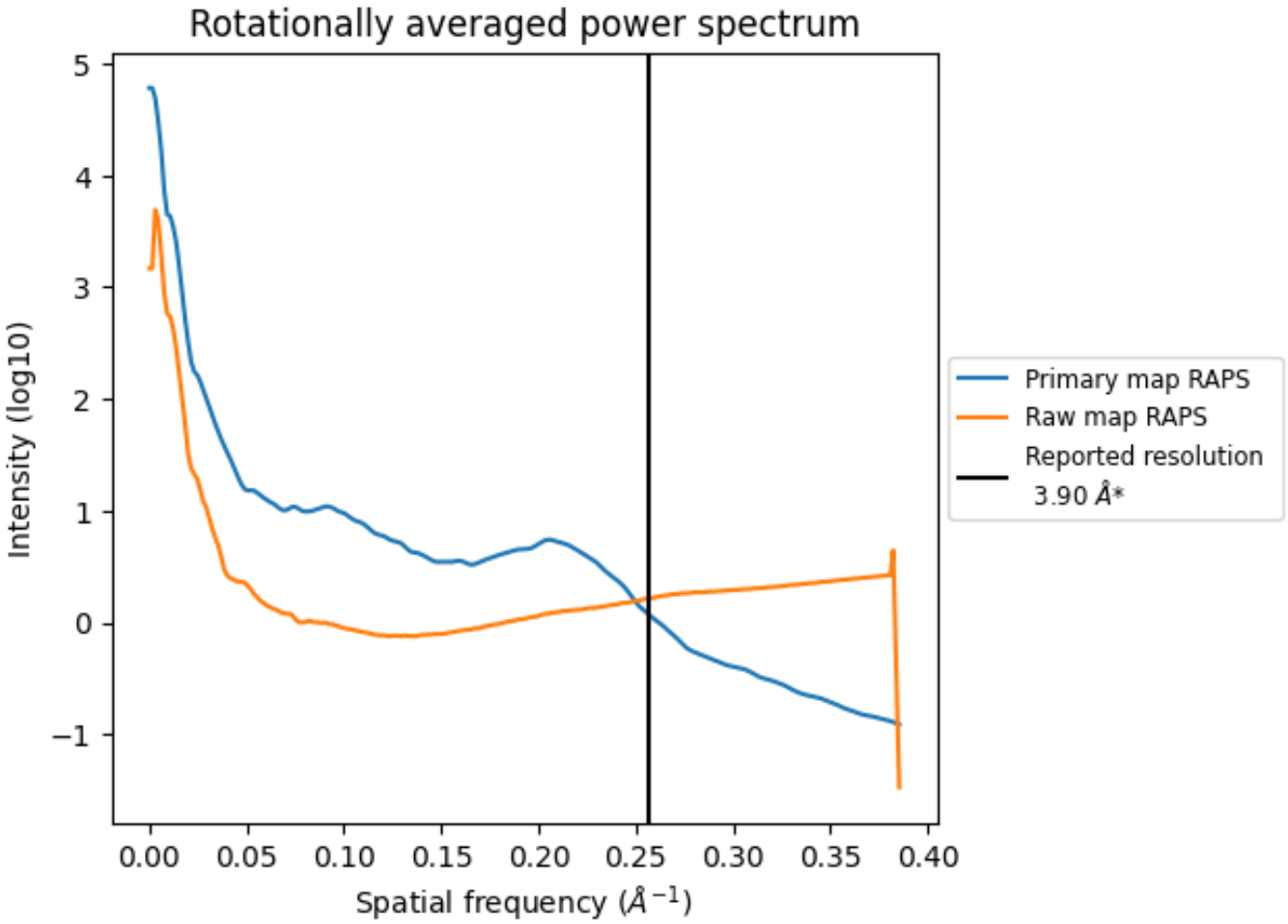
7.2 Volume estimate



The volume at the recommended contour level is 286 nm^3; this corresponds to an approximate mass of 258 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)

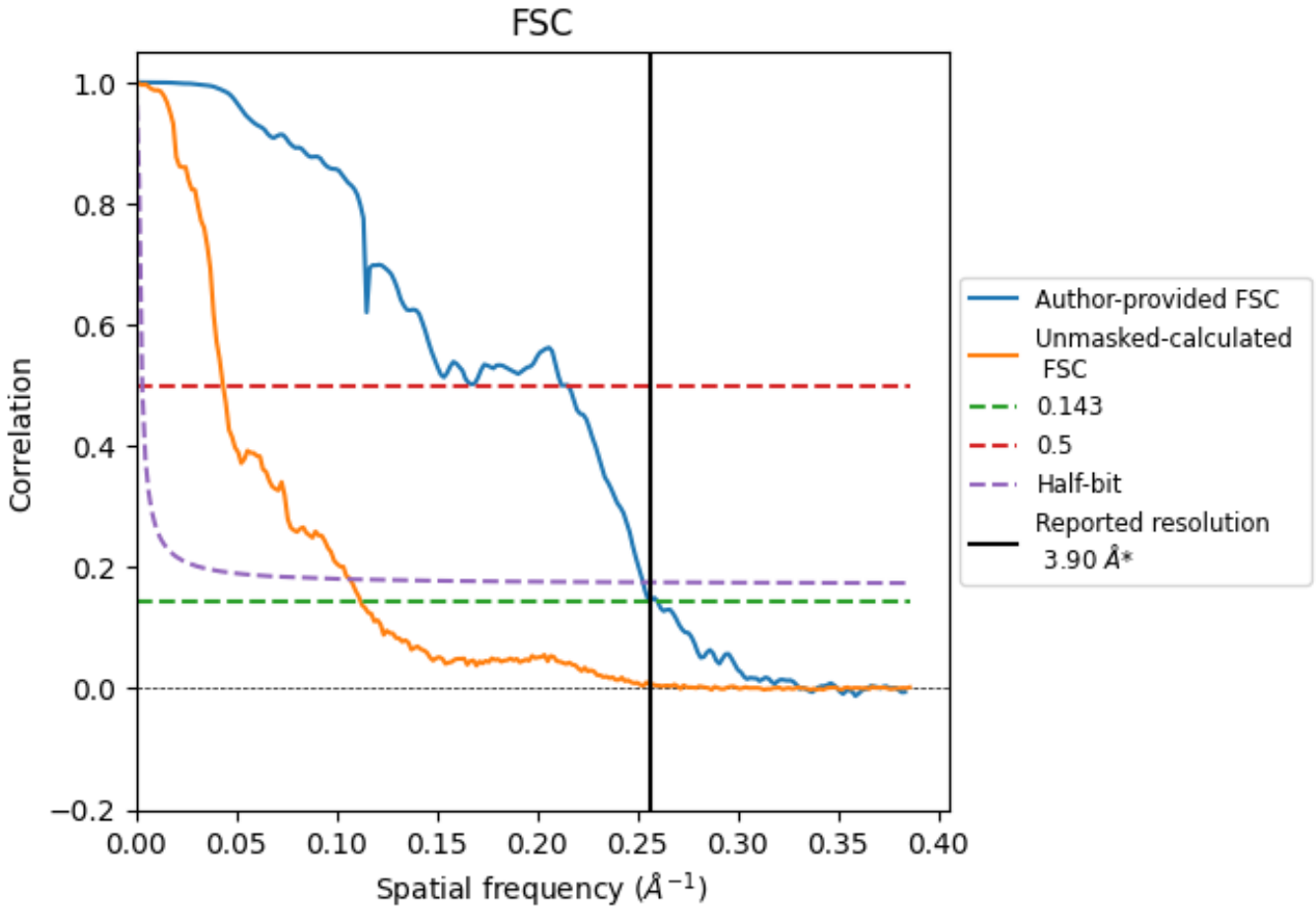


*Reported resolution corresponds to spatial frequency of 0.256 Å^{-1}

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 0.256 Å^{-1}

8.2 Resolution estimates (i)

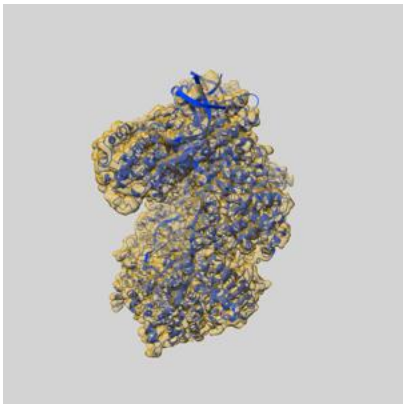
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.90	-	-
Author-provided FSC curve	3.85	4.69	3.96
Unmasked-calculated*	8.93	23.09	9.36

*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 8.93 differs from the reported value 3.9 by more than 10 %

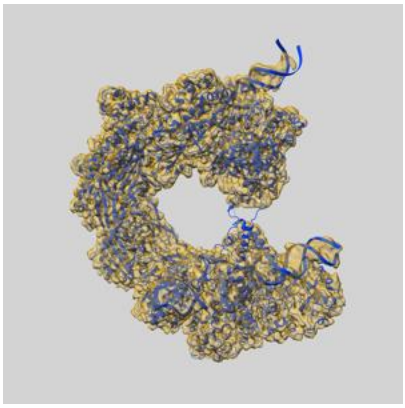
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-77313 and PDB model 36AB. Per-residue inclusion information can be found in section 3 on page 6.

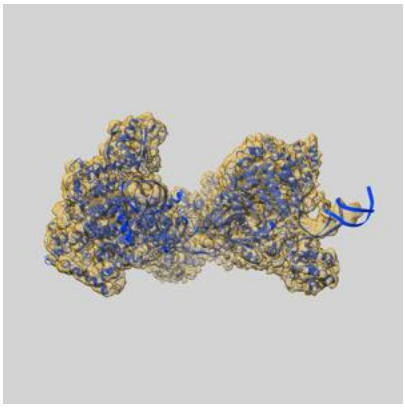
9.1 Map-model overlay



X



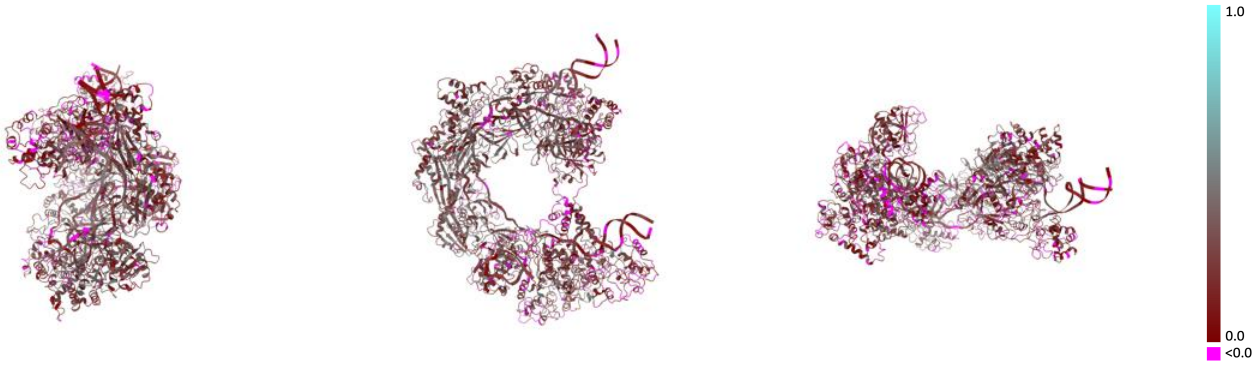
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.028 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.

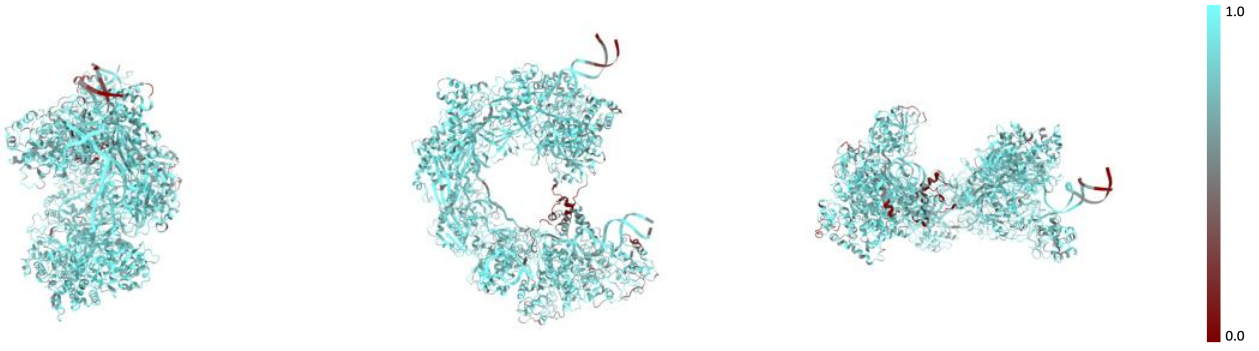
9.2 Q-score mapped to coordinate model (i)



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.

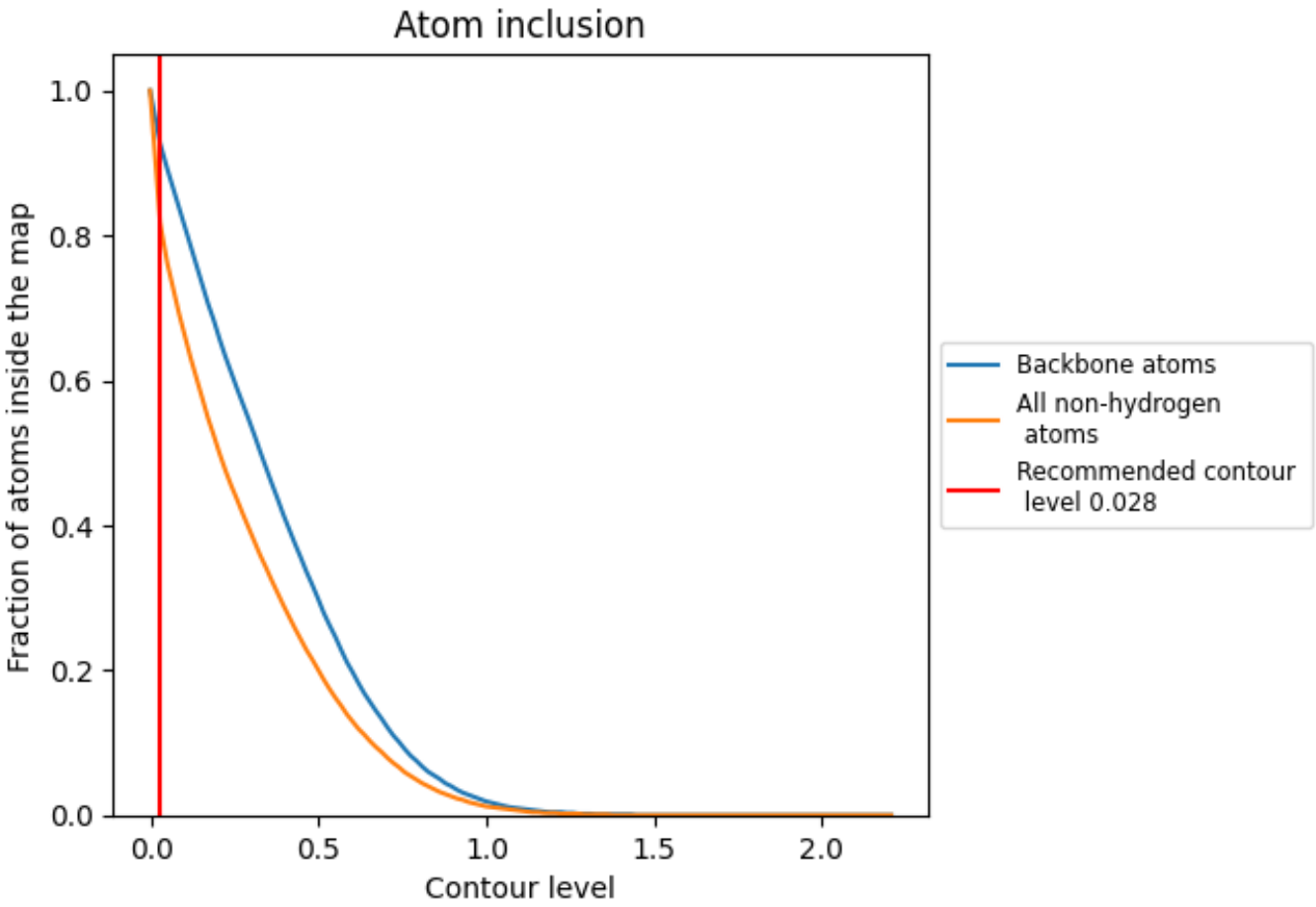
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.028).

9.4 Atom inclusion (i)



At the recommended contour level, 93% of all backbone atoms, 82% 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 (0.028) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8180	0.2270
1	0.8970	0.2380
3	0.7840	0.1890
7	0.7580	0.1670
N	0.7500	0.1570
O	0.7790	0.2030
P	0.7480	0.1730
Q	0.8780	0.2940
R	0.8610	0.2630
S	0.8810	0.2990
T	0.8790	0.2880
U	0.8630	0.2770
V	0.8510	0.2540
W	0.7450	0.1570

