



Full wwPDB EM Validation Report ⓘ

Mar 9, 2026 – 07:16 AM UTC

PDB ID : 8HXY / pdb_00008hxy
EMDB ID : EMD-35082
Title : Cryo-EM structure of the histone deacetylase complex Rpd3S in complex with nucleosome
Authors : Cui, H.; Wang, H.
Deposited on : 2023-01-05
Resolution : 3.10 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.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
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) : 2.49

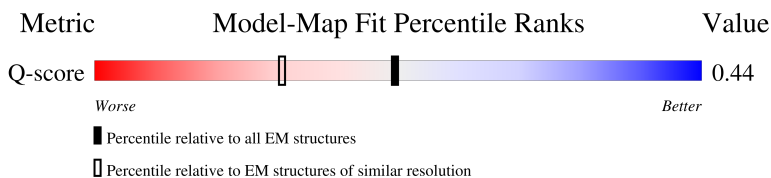
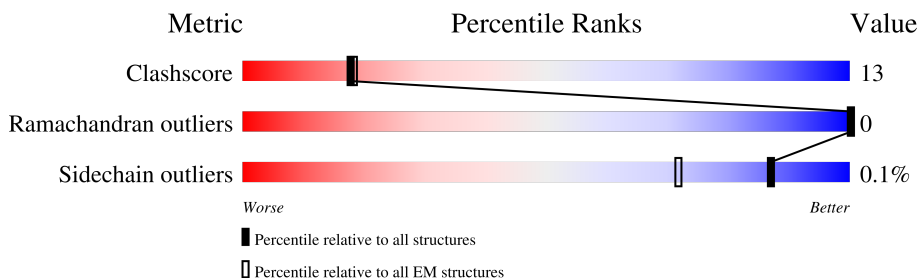
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

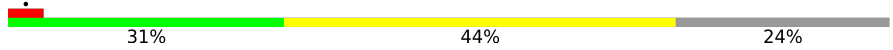
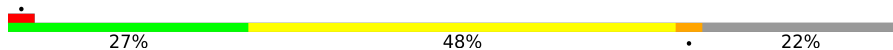
The reported resolution of this entry is 3.10 Å.

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.



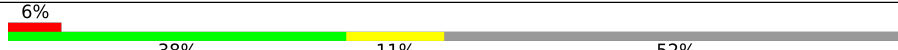
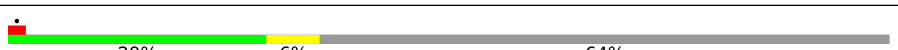
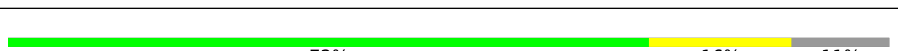
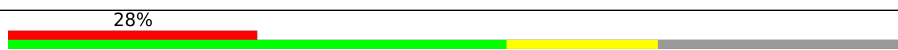
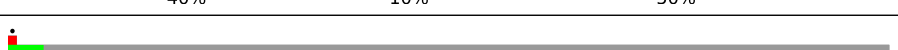
Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	14724 (2.60 - 3.60)

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 $\leq 5\%$. 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	A	135	
1	E	135	
2	B	102	
2	F	102	

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Mol	Chain	Length	Quality of chain
3	C	129	
3	G	129	
4	D	122	
4	H	122	
5	I	352	
6	J	352	
7	K	1536	
8	L	433	
9	M	401	
10	N	684	
10	P	684	

2 Entry composition [i](#)

There are 11 unique types of molecules in this entry. The entry contains 26263 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Histone H3.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	102	Total	C	N	O	S	0	0
			837	529	162	143	3		
1	E	116	Total	C	N	O	S	0	0
			945	591	189	163	2		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	110	ALA	CYS	engineered mutation	UNP A0A310TTQ1
E	110	ALA	CYS	engineered mutation	UNP A0A310TTQ1

- Molecule 2 is a protein called Histone H4.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	80	Total	C	N	O	S	0	0
			641	405	125	110	1		
2	F	79	Total	C	N	O	S	0	0
			627	395	121	110	1		

- Molecule 3 is a protein called Histone H2A.

Mol	Chain	Residues	Atoms				AltConf	Trace
3	C	109	Total	C	N	O	0	0
			843	531	167	145		
3	G	106	Total	C	N	O	0	0
			818	516	160	142		

- Molecule 4 is a protein called Histone H2B.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	96	Total	C	N	O	S	0	0
			757	475	140	140	2		

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Mol	Chain	Residues	Atoms					AltConf	Trace
4	H	94	Total	C	N	O	S	0	0
			736	463	132	139	2		

- Molecule 5 is a DNA chain called DNA (352-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
5	I	170	Total	C	N	O	P	0	0
			3466	1648	623	1025	170		

- Molecule 6 is a DNA chain called DNA (352-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
6	J	170	Total	C	N	O	P	0	0
			3504	1659	660	1015	170		

- Molecule 7 is a protein called Transcriptional regulatory protein SIN3.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	K	549	Total	C	N	O	S	0	0
			4597	2954	774	854	15		

- Molecule 8 is a protein called Histone deacetylase RPD3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	L	384	Total	C	N	O	S	0	0
			3048	1941	512	569	26		

- Molecule 9 is a protein called Chromatin modification-related protein EAF3.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	M	294	Total	C	N	O	S	0	0
			2398	1541	394	449	14		

- Molecule 10 is a protein called Transcriptional regulatory protein RCO1.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	N	340	Total	C	N	O	S	0	0
			2769	1752	480	520	17		
10	P	31	Total	C	N	O	S	0	0
			272	178	42	51	1		

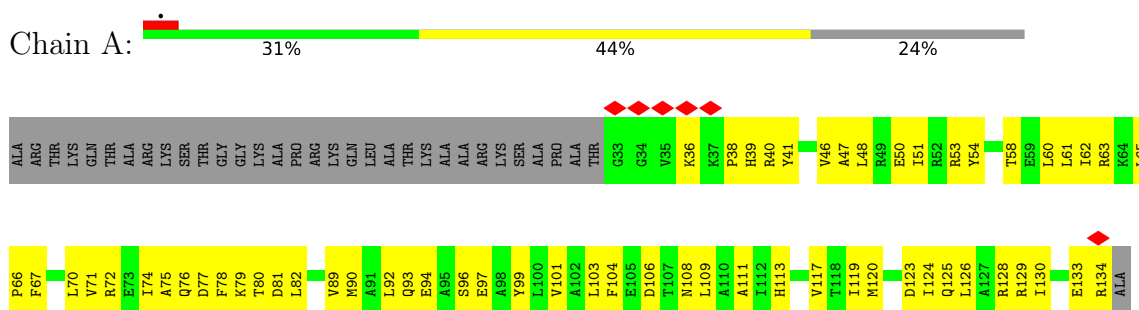
- Molecule 11 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
11	L	1	Total 1	Zn 1	0
11	N	4	Total 4	Zn 4	0

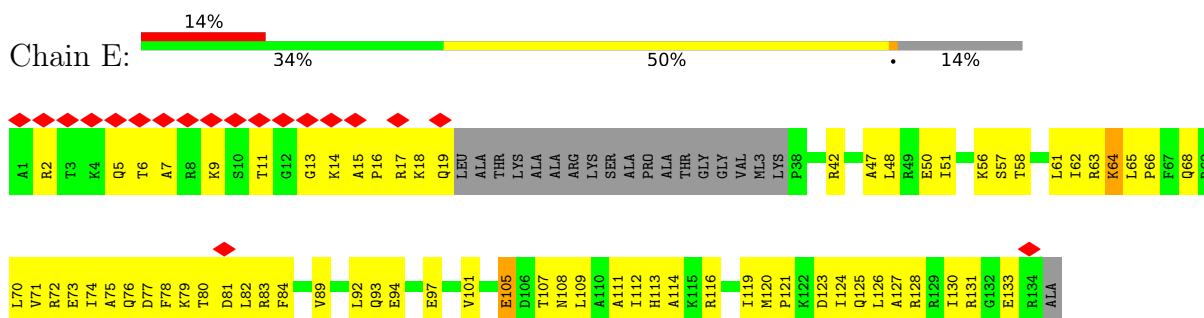
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

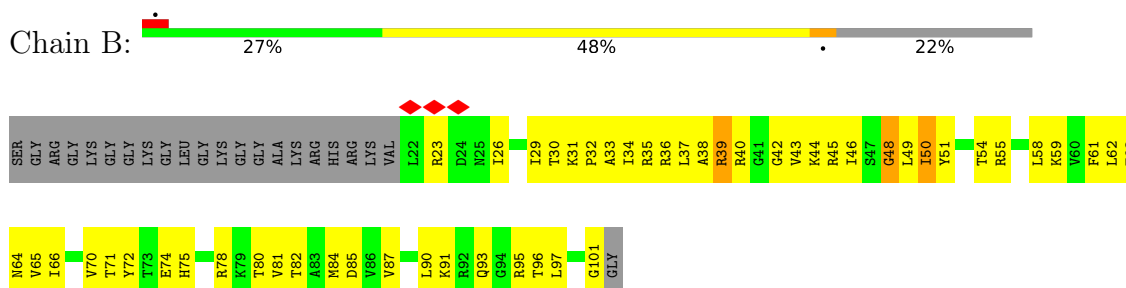
• Molecule 1: Histone H3



• Molecule 1: Histone H3

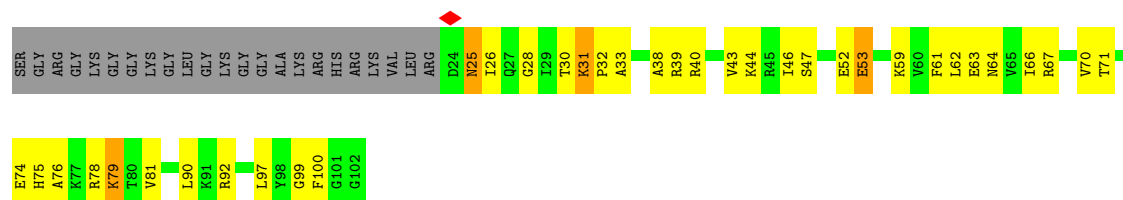


• Molecule 2: Histone H4

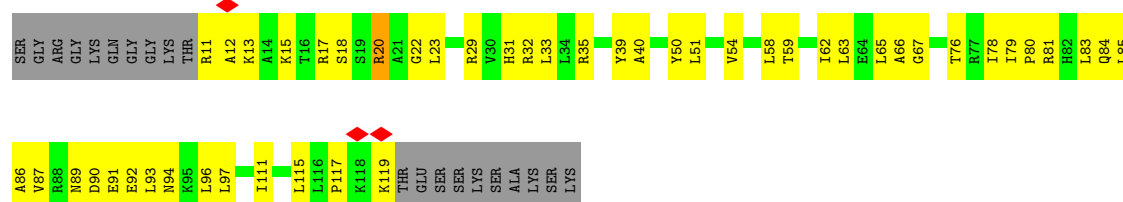


• Molecule 2: Histone H4

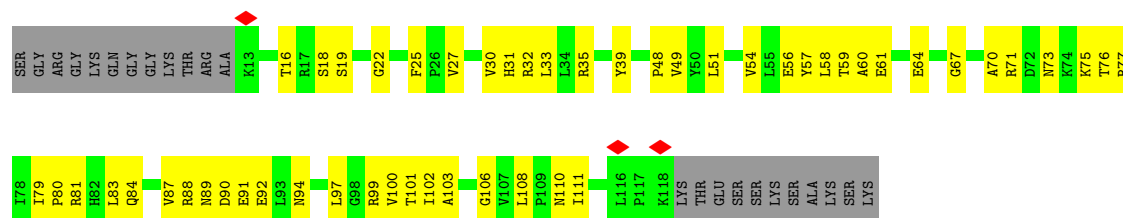




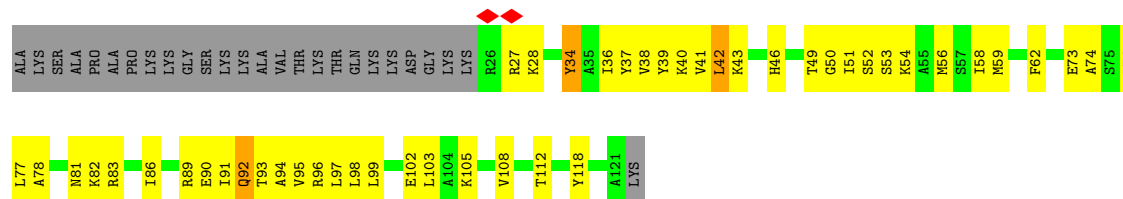
• Molecule 3: Histone H2A



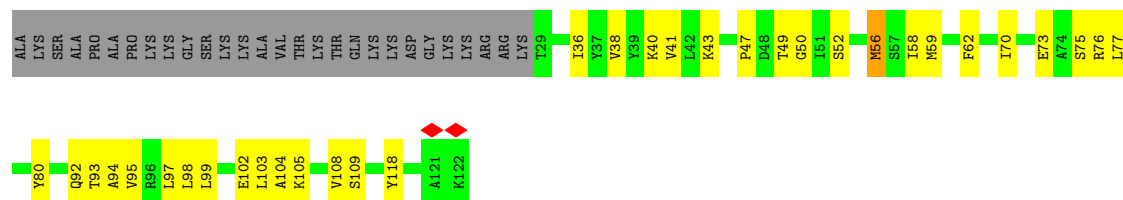
• Molecule 3: Histone H2A



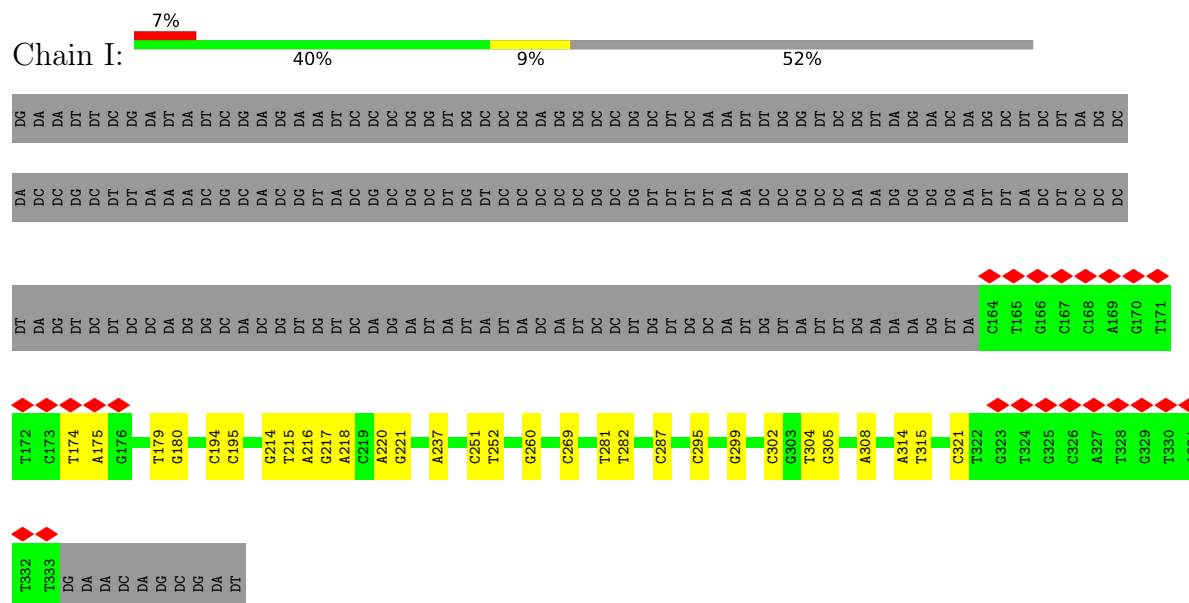
• Molecule 4: Histone H2B



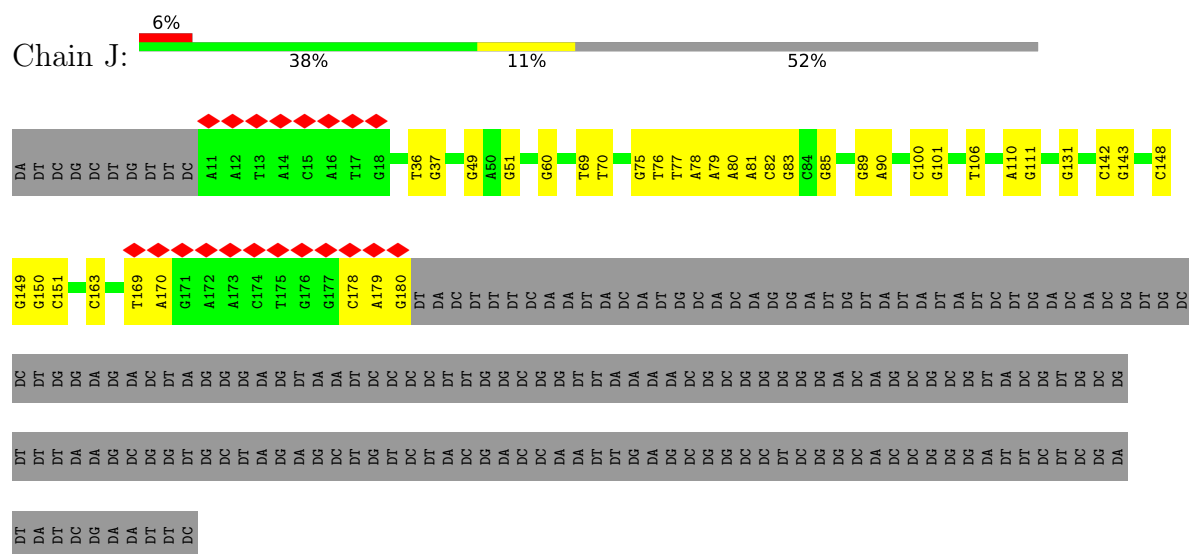
• Molecule 4: Histone H2B



- Molecule 5: DNA (352-MER)



- Molecule 6: DNA (352-MER)



- Molecule 7: Transcriptional regulatory protein SIN3



- Molecule 8: Histone deacetylase RPD3

Response	Percentage
U.S. should take action to reduce greenhouse gas emissions	72%
U.S. should not take action to reduce greenhouse gas emissions	16%
U.S. should not take action to reduce greenhouse gas emissions (unlabeled)	11%

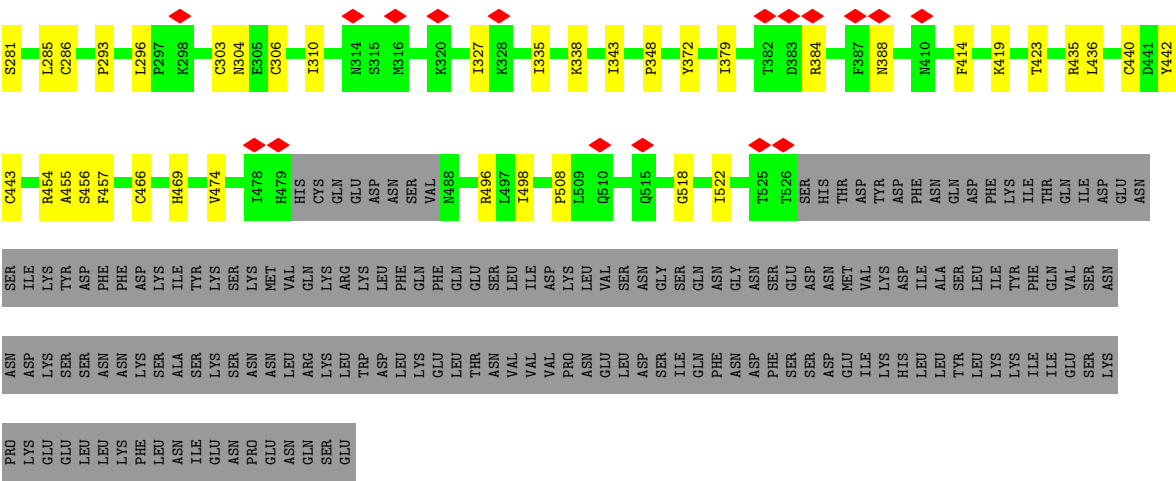


Response	Percentage
Current government	28%
Opposition	56%
Neither	17%
No answer	27%



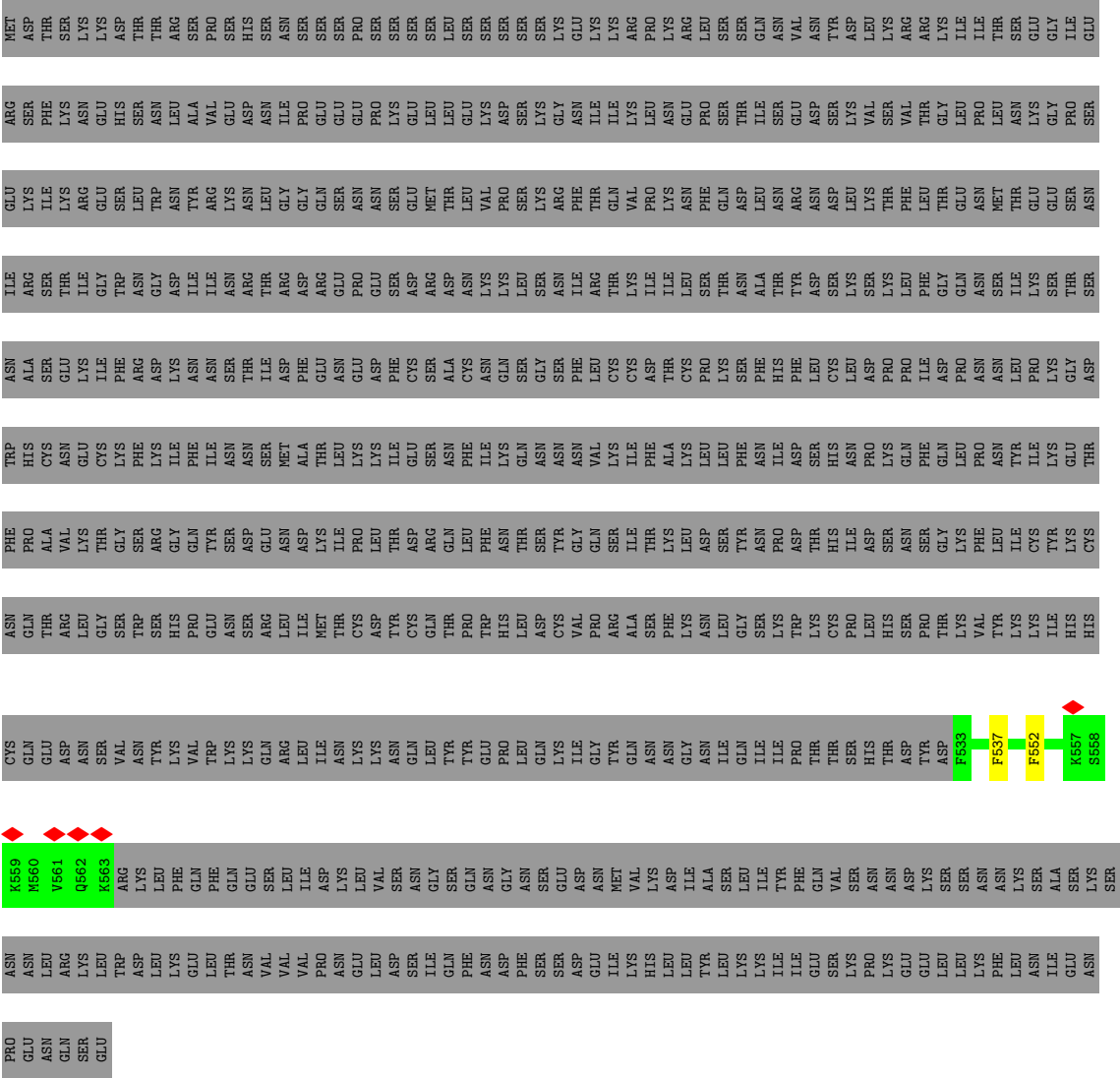
Frequency	Percentage
5%	5%
40%	40%
10%	10%
50%	50%





● Molecule 10: Transcriptional regulatory protein RCO1

Chain P: . 95%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	145512	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	44	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.305	Depositor
Minimum map value	-0.168	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	268.8, 268.8, 268.8	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, ML3

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	A	0.76	0/836	0.97	1/1120 (0.1%)
1	E	0.74	0/957	0.97	3/1279 (0.2%)
2	B	0.96	0/648	1.14	3/868 (0.3%)
2	F	0.88	0/634	1.15	6/848 (0.7%)
3	C	0.73	0/853	0.88	2/1149 (0.2%)
3	G	0.82	0/828	0.97	3/1117 (0.3%)
4	D	0.88	0/768	1.01	4/1032 (0.4%)
4	H	0.72	0/747	0.76	1/1004 (0.1%)
5	I	0.21	0/3882	0.46	0/5985
6	J	0.18	0/3936	0.38	0/6077
7	K	0.30	0/4699	0.50	2/6334 (0.0%)
8	L	0.31	1/3127 (0.0%)	0.43	0/4231
9	M	0.29	0/2446	0.50	2/3292 (0.1%)
10	N	0.32	0/2835	0.51	3/3826 (0.1%)
10	P	0.19	0/277	0.57	0/367
All	All	0.45	1/27473 (0.0%)	0.61	30/38529 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
8	L	44	ARG	CA-C	-5.32	1.45	1.52

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	50	ILE	N-CA-C	-9.65	104.02	112.12
1	A	133	GLU	N-CA-C	-9.58	101.71	113.97
2	F	75	HIS	N-CA-C	-7.56	104.30	113.97
2	B	48	GLY	N-CA-C	-7.56	100.95	112.51
9	M	18	HIS	N-CA-C	-6.92	96.06	110.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	39	ARG	N-CA-C	-6.80	103.80	111.07
1	E	105	GLU	N-CA-C	-6.63	104.13	111.36
4	D	92	GLN	N-CA-C	-6.59	104.13	111.71
7	K	723	PHE	N-CA-C	-6.54	103.84	112.34
2	F	79	LYS	N-CA-C	-6.26	105.96	113.97
10	N	508	PRO	CA-N-CD	-6.22	103.30	112.00
3	C	39	TYR	N-CA-C	-6.12	104.72	111.82
2	F	25	ASN	N-CA-C	-5.98	105.08	112.38
10	N	518	GLY	N-CA-C	-5.75	107.73	115.21
1	E	64	LYS	N-CA-C	5.61	117.08	110.97
1	E	125	GLN	N-CA-C	-5.54	105.25	112.23
4	D	42	LEU	N-CA-C	-5.41	106.68	113.28
4	H	56	MET	N-CA-C	-5.40	105.08	110.97
2	F	53	GLU	N-CA-C	-5.35	105.90	112.90
3	G	106	GLY	N-CA-C	-5.30	102.61	112.37
3	G	99	ARG	N-CA-C	-5.29	104.41	111.87
2	F	31	LYS	CA-C-N	-5.26	113.37	119.47
2	F	31	LYS	C-N-CA	-5.26	113.37	119.47
7	K	1288	LEU	CA-CB-CG	5.22	134.58	116.30
9	M	254	VAL	CB-CA-C	-5.20	105.39	111.94
10	N	262	PHE	N-CA-C	-5.14	100.31	109.06
3	C	20	ARG	N-CA-C	-5.14	106.85	113.02
4	D	95	VAL	N-CA-C	-5.11	104.67	111.05
3	G	59	THR	N-CA-C	-5.09	106.58	112.89
4	D	34	TYR	N-CA-C	-5.04	106.38	112.88

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	837	0	885	91	0
1	E	945	0	1004	97	0
2	B	641	0	684	90	0
2	F	627	0	663	48	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	843	0	908	58	0
3	G	818	0	877	52	0
4	D	757	0	786	56	0
4	H	736	0	760	38	0
5	I	3466	0	1912	26	0
6	J	3504	0	1907	31	0
7	K	4597	0	4560	87	0
8	L	3048	0	2932	55	0
9	M	2398	0	2429	57	0
10	N	2769	0	2716	62	0
10	P	272	0	268	3	0
11	L	1	0	0	0	0
11	N	4	0	0	0	0
All	All	26263	0	23291	660	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 13.

All (660) 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)
3:C:63:LEU:HD22	4:D:59:MET:HE3	1.21	1.14
2:B:91:LYS:HD3	2:B:96:THR:HG22	1.39	1.04
2:B:65:VAL:HG22	2:B:93:GLN:HE22	1.18	1.03
2:B:91:LYS:HD3	2:B:96:THR:CG2	1.90	1.01
7:K:937:GLN:CB	7:K:940:LYS:HE2	1.90	1.00
3:C:79:ILE:HG23	3:C:80:PRO:HD2	1.43	0.98
4:D:78:ALA:HB2	4:D:90:GLU:OE1	1.64	0.97
9:M:17:PHE:CD1	9:M:22:MET:HE1	2.00	0.96
7:K:937:GLN:HB2	7:K:940:LYS:HE2	1.49	0.93
3:C:15:LYS:HE2	3:C:20:ARG:HD3	1.51	0.93
9:M:255:GLU:HG3	9:M:286:LYS:HE2	1.50	0.93
4:D:51:ILE:HG21	4:D:56:MET:HE2	1.51	0.92
3:G:58:LEU:HD21	4:H:99:LEU:HD21	1.51	0.92
9:M:255:GLU:HB2	9:M:323:ILE:CG2	2.01	0.91
9:M:255:GLU:HB2	9:M:323:ILE:HG23	1.51	0.90
3:G:102:ILE:HG23	4:H:58:ILE:HD12	1.55	0.87
10:N:304:ASN:HD22	10:N:348:PRO:HD3	1.37	0.87
3:C:79:ILE:CG2	3:C:80:PRO:HD2	2.05	0.87
9:M:17:PHE:HD1	9:M:22:MET:HE1	1.36	0.86
1:A:70:LEU:HD22	2:B:29:ILE:HD11	1.57	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:K:937:GLN:CA	7:K:940:LYS:HE2	2.06	0.85
3:C:62:ILE:HG23	4:D:59:MET:HE1	1.57	0.85
3:C:115:LEU:HD11	1:E:108:ASN:HD21	1.40	0.85
2:B:26:ILE:HD12	2:B:29:ILE:HD12	1.58	0.84
7:K:1194:MET:HG3	7:K:1196:LEU:HG	1.59	0.84
10:N:466:CYS:SG	10:N:469:HIS:CD2	2.70	0.84
2:B:29:ILE:HD13	2:B:58:LEU:HD23	1.59	0.83
3:G:79:ILE:CG2	3:G:80:PRO:HD2	2.08	0.83
3:C:111:ILE:CD1	1:E:51:ILE:HG21	2.10	0.81
5:I:217:DG:H2''	5:I:218:DA:C8	2.15	0.81
10:N:304:ASN:ND2	10:N:348:PRO:HD3	1.96	0.81
1:A:46:VAL:HG21	5:I:260:DG:H3'	1.62	0.81
3:G:79:ILE:HG22	3:G:80:PRO:HD2	1.63	0.80
7:K:937:GLN:HA	7:K:940:LYS:HE2	1.62	0.80
3:C:111:ILE:HD11	1:E:51:ILE:HG21	1.63	0.80
1:E:63:ARG:HH21	5:I:237:DA:H5''	1.45	0.79
9:M:18:HIS:HB3	9:M:23:TYR:CE2	2.18	0.78
7:K:937:GLN:O	7:K:940:LYS:HG2	1.84	0.77
2:B:65:VAL:HG22	2:B:93:GLN:NE2	1.99	0.75
1:E:7:ALA:HB2	10:N:270:GLY:HA2	1.69	0.75
5:I:215:DT:H2''	5:I:216:DA:N7	2.02	0.75
10:N:443:CYS:SG	10:N:469:HIS:CE1	2.81	0.74
1:E:124:ILE:HD11	2:F:53:GLU:HG2	1.70	0.73
3:C:111:ILE:HD11	1:E:51:ILE:CG2	2.17	0.73
3:C:40:ALA:HB3	4:D:86:ILE:HD13	1.68	0.73
1:E:68:GLN:HE21	1:E:72:ARG:HH21	1.37	0.72
1:A:79:LYS:HB2	2:B:70:VAL:HG21	1.72	0.72
2:B:35:ARG:NH2	2:B:51:TYR:OH	2.22	0.72
1:A:78:PHE:HB3	2:B:70:VAL:HG11	1.70	0.71
3:C:62:ILE:HG23	4:D:59:MET:CE	2.20	0.71
7:K:722:ASN:C	7:K:724:VAL:N	2.46	0.71
2:B:43:VAL:HG21	2:B:46:ILE:HD11	1.73	0.71
3:C:31:HIS:CD2	3:C:35:ARG:HE	2.09	0.70
7:K:937:GLN:HA	7:K:940:LYS:HG2	1.72	0.69
1:A:79:LYS:HD3	1:A:82:LEU:HD21	1.72	0.69
2:B:90:LEU:HA	2:B:93:GLN:HE21	1.57	0.69
1:A:103:LEU:HD21	1:A:124:ILE:HG23	1.75	0.69
2:B:84:MET:O	2:B:87:VAL:HG12	1.92	0.69
4:H:36:ILE:HG22	4:H:40:LYS:HE3	1.75	0.69
7:K:925:PHE:HB3	7:K:1229:ARG:HD3	1.75	0.68
1:E:15:ALA:HB3	1:E:16:PRO:HD3	1.75	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:N:172:THR:HA	10:N:175:MET:HG2	1.75	0.68
2:B:48:GLY:O	2:B:49:LEU:HB2	1.93	0.68
7:K:1148:PHE:CE2	7:K:1312:VAL:HG11	2.29	0.68
1:E:71:VAL:HG13	2:F:66:ILE:HD13	1.75	0.68
3:G:57:TYR:HD2	3:G:58:LEU:HD22	1.60	0.67
1:A:92:LEU:HD21	2:B:66:ILE:CG1	2.24	0.67
1:E:73:GLU:OE1	2:F:25:ASN:HB2	1.95	0.67
1:A:48:LEU:HD21	2:B:44:LYS:HE2	1.77	0.67
1:E:79:LYS:HD3	1:E:82:LEU:HD13	1.77	0.66
2:B:30:THR:HB	2:B:32:PRO:HD2	1.78	0.66
1:E:17:ARG:HB3	8:L:109:ASP:CG	2.21	0.66
1:A:70:LEU:O	1:A:74:ILE:HG13	1.96	0.65
7:K:722:ASN:C	7:K:724:VAL:H	2.00	0.65
3:C:62:ILE:CG2	4:D:59:MET:HE1	2.27	0.65
7:K:1190:GLN:H	7:K:1190:GLN:NE2	1.95	0.64
3:G:49:VAL:HG21	4:H:118:TYR:CD2	2.31	0.64
1:A:125:GLN:HG2	1:A:134:ARG:HH12	1.60	0.64
4:D:36:ILE:HG13	4:D:37:TYR:N	2.10	0.64
1:E:62:ILE:HD13	2:F:33:ALA:HB1	1.79	0.64
7:K:1309:THR:O	7:K:1310:LEU:C	2.38	0.64
9:M:22:MET:SD	9:M:98:ARG:NH2	2.71	0.64
4:D:46:HIS:HB3	4:D:49:THR:OG1	1.98	0.63
3:G:84:GLN:HA	3:G:87:VAL:HG12	1.80	0.63
7:K:1196:LEU:HD13	7:K:1227:SER:HB2	1.80	0.63
1:A:71:VAL:HG13	2:B:66:ILE:HD13	1.79	0.63
7:K:754:SER:HB2	8:L:218:THR:HG22	1.79	0.63
1:E:5:GLN:NE2	10:N:271:SER:HB2	2.13	0.63
1:E:65:LEU:HB2	1:E:66:PRO:HD3	1.80	0.63
5:I:220:DA:H2''	5:I:221:DG:H5'	1.80	0.63
8:L:29:VAL:HG11	8:L:45:ILE:HG21	1.79	0.63
2:B:65:VAL:CG2	2:B:93:GLN:HE22	2.05	0.63
9:M:17:PHE:CE1	9:M:22:MET:HE1	2.34	0.63
3:G:57:TYR:CD2	3:G:58:LEU:HD22	2.34	0.62
7:K:937:GLN:C	7:K:940:LYS:HG2	2.23	0.62
2:B:90:LEU:HD23	2:B:93:GLN:NE2	2.14	0.62
1:A:40:ARG:HH22	6:J:85:DG:H21	1.47	0.62
1:A:71:VAL:O	1:A:74:ILE:N	2.31	0.62
3:C:79:ILE:CG2	3:C:80:PRO:CD	2.78	0.62
3:G:83:LEU:HD13	4:H:59:MET:HE3	1.80	0.62
3:G:102:ILE:HG23	4:H:58:ILE:CD1	2.26	0.62
7:K:937:GLN:HA	7:K:940:LYS:CE	2.29	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:124:ILE:HD11	2:F:53:GLU:CG	2.30	0.61
2:B:26:ILE:HG13	2:B:55:ARG:HD3	1.81	0.61
3:C:97:LEU:HD21	4:D:62:PHE:HE1	1.65	0.61
1:E:68:GLN:NE2	1:E:72:ARG:HH21	1.99	0.61
4:H:92:GLN:HA	4:H:95:VAL:HG12	1.82	0.61
1:E:18:LYS:HD2	8:L:188:HIS:CE1	2.36	0.61
3:G:77:ARG:HG2	4:H:50:GLY:HA3	1.82	0.61
3:G:79:ILE:HD13	4:H:52:SER:HB2	1.83	0.61
1:E:92:LEU:HD12	2:F:62:LEU:CD1	2.30	0.61
1:A:82:LEU:HD11	2:B:70:VAL:CG2	2.29	0.61
3:G:79:ILE:HG23	3:G:80:PRO:HD2	1.82	0.61
3:C:11:ARG:HH21	5:I:295:DC:H1'	1.66	0.61
3:G:79:ILE:CG2	3:G:80:PRO:CD	2.79	0.61
6:J:79:DA:H2''	6:J:80:DA:H8	1.66	0.61
2:B:32:PRO:HG2	6:J:80:DA:H3'	1.83	0.60
3:C:63:LEU:CD2	4:D:59:MET:HE3	2.13	0.60
1:A:92:LEU:HD21	2:B:66:ILE:HG12	1.82	0.60
1:A:36:ML3:HM2B	9:M:18:HIS:CE1	2.36	0.60
2:B:32:PRO:O	2:B:36:ARG:HG3	2.00	0.60
6:J:142:DC:H2'	6:J:143:DG:C8	2.36	0.60
7:K:788:TRP:NE1	9:M:395:GLU:OE1	2.31	0.60
6:J:80:DA:H2''	6:J:81:DA:H5'	1.82	0.59
7:K:1226:GLU:HA	7:K:1229:ARG:HG2	1.83	0.59
2:F:67:ARG:O	2:F:70:VAL:HG12	2.03	0.59
1:A:36:ML3:HM2B	9:M:18:HIS:CD2	2.37	0.59
1:A:70:LEU:CD2	2:B:29:ILE:HD11	2.32	0.59
7:K:937:GLN:CA	7:K:940:LYS:HG2	2.33	0.59
3:G:79:ILE:HG22	3:G:80:PRO:CD	2.31	0.59
9:M:105:ILE:HG22	9:M:109:LYS:HE3	1.83	0.59
10:N:176:THR:O	10:N:176:THR:HG23	2.02	0.58
1:A:63:ARG:NH2	6:J:79:DA:H5''	2.18	0.58
1:E:2:ARG:HG3	10:N:274:CYS:HB2	1.84	0.58
8:L:73:GLU:OE1	10:N:182:ARG:NH1	2.36	0.58
10:N:414:PHE:HB3	10:N:423:THR:HG21	1.85	0.58
3:C:65:LEU:HB3	3:C:86:ALA:HB1	1.85	0.58
2:F:31:LYS:HB3	2:F:32:PRO:HD3	1.86	0.58
5:I:220:DA:H2''	5:I:221:DG:C5'	2.34	0.58
4:D:83:ARG:HH22	6:J:60:DG:P	2.26	0.58
4:D:105:LYS:HD2	4:D:105:LYS:N	2.19	0.57
7:K:911:GLU:HG3	10:N:119:PRO:HD2	1.86	0.57
1:A:60:LEU:HD21	1:A:94:GLU:OE2	2.04	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:7:ALA:HB1	1:E:9:LYS:HE3	1.86	0.57
10:N:173:GLU:O	10:N:176:THR:HG22	2.03	0.57
7:K:706:VAL:HG12	7:K:717:PHE:CD1	2.40	0.57
7:K:937:GLN:O	7:K:940:LYS:CG	2.51	0.57
9:M:18:HIS:HB3	9:M:23:TYR:HE2	1.66	0.57
9:M:335:ILE:HG21	9:M:363:LEU:HD21	1.86	0.57
2:B:91:LYS:HD3	2:B:96:THR:HG21	1.82	0.57
3:C:63:LEU:HD12	4:D:42:LEU:HD13	1.84	0.57
2:F:52:GLU:O	2:F:52:GLU:HG2	2.04	0.57
6:J:77:DT:H2''	6:J:78:DA:C8	2.40	0.57
2:B:61:PHE:O	2:B:65:VAL:HG23	2.04	0.57
3:G:58:LEU:HD21	4:H:99:LEU:CD2	2.30	0.57
7:K:1132:ASN:H	7:K:1277:THR:HG22	1.68	0.57
7:K:818:ASP:OD1	7:K:909:GLN:NE2	2.37	0.57
1:A:120:MET:C	2:B:50:ILE:HD11	2.31	0.56
1:E:109:LEU:HA	1:E:112:ILE:HG22	1.87	0.56
8:L:152:ALA:O	8:L:164:ASN:ND2	2.38	0.56
8:L:212:GLY:HA2	10:N:456:SER:HB3	1.87	0.56
10:N:454:ARG:NH2	10:N:456:SER:OG	2.38	0.56
7:K:1305:PHE:CE1	7:K:1310:LEU:HA	2.40	0.56
8:L:148:GLY:HA3	8:L:310:GLY:HA2	1.86	0.56
1:E:7:ALA:HB1	1:E:9:LYS:HG2	1.87	0.56
2:B:72:TYR:HE1	4:D:97:LEU:HD13	1.71	0.56
7:K:937:GLN:HA	7:K:940:LYS:CD	2.35	0.56
1:A:103:LEU:HD11	1:A:128:ARG:HD2	1.87	0.56
7:K:937:GLN:HA	7:K:940:LYS:CG	2.36	0.56
3:G:25:PHE:CZ	4:H:38:VAL:HG22	2.41	0.56
1:A:79:LYS:HB2	2:B:70:VAL:CG2	2.36	0.56
3:C:51:LEU:O	3:C:54:VAL:HG22	2.06	0.56
4:D:37:TYR:HA	4:D:40:LYS:HD2	1.88	0.56
1:E:71:VAL:HG13	2:F:66:ILE:CD1	2.37	0.55
1:E:119:ILE:HG23	2:F:43:VAL:HG13	1.88	0.55
3:G:97:LEU:HD21	4:H:62:PHE:CD1	2.41	0.55
8:L:114:ASP:OD1	8:L:114:ASP:N	2.38	0.55
2:B:29:ILE:CD1	2:B:58:LEU:HD23	2.31	0.55
1:E:16:PRO:HG2	7:K:787:VAL:HG22	1.88	0.55
2:B:38:ALA:O	2:B:43:VAL:HG22	2.07	0.55
7:K:851:LEU:HD13	7:K:855:LEU:HD22	1.88	0.55
1:A:99:TYR:CE2	2:B:61:PHE:HB2	2.42	0.55
1:E:84:PHE:CD2	2:F:81:VAL:HG21	2.42	0.55
8:L:257:LYS:O	8:L:261:TRP:HB2	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:84:PHE:HA	2:F:81:VAL:HG22	1.88	0.55
7:K:759:PRO:HG3	9:M:388:VAL:HB	1.88	0.55
4:D:54:LYS:O	4:D:58:ILE:HG12	2.07	0.55
9:M:297:LEU:HD21	9:M:334:LEU:HB2	1.88	0.55
2:B:38:ALA:HB1	2:B:43:VAL:HG21	1.89	0.55
1:E:84:PHE:HA	2:F:81:VAL:CG2	2.37	0.55
3:G:27:VAL:HG11	3:G:49:VAL:HG22	1.88	0.54
8:L:239:ARG:HE	10:N:455:ALA:HA	1.72	0.54
1:A:82:LEU:HD11	2:B:70:VAL:HG21	1.90	0.54
3:C:58:LEU:HD11	4:D:99:LEU:HD21	1.88	0.54
1:E:5:GLN:HE22	10:N:271:SER:HB2	1.70	0.54
2:B:33:ALA:O	2:B:34:ILE:C	2.46	0.54
3:C:59:THR:HA	3:C:62:ILE:HG22	1.87	0.54
3:C:66:ALA:HB1	3:C:78:ILE:HG23	1.90	0.54
3:G:31:HIS:CE1	3:G:35:ARG:HE	2.25	0.54
2:B:26:ILE:CD1	2:B:29:ILE:HD12	2.33	0.54
4:D:105:LYS:HD2	4:D:105:LYS:H	1.72	0.54
8:L:272:GLY:O	8:L:291:HIS:NE2	2.41	0.54
1:E:13:GLY:C	1:E:16:PRO:HD2	2.32	0.54
6:J:79:DA:H2''	6:J:80:DA:C8	2.43	0.54
1:A:51:ILE:HD11	2:B:39:ARG:HD3	1.90	0.54
1:A:61:LEU:N	1:A:97:GLU:OE2	2.36	0.54
2:B:35:ARG:HD3	2:B:46:ILE:HG13	1.89	0.54
4:D:94:ALA:HA	4:D:97:LEU:HD12	1.89	0.54
3:G:39:TYR:O	4:H:75:SER:HB2	2.07	0.54
3:G:56:GLU:HG3	4:H:41:VAL:HG21	1.89	0.54
1:A:106:ASP:HB2	1:E:130:ILE:HG22	1.90	0.54
4:D:76:ARG:O	4:D:77:LEU:C	2.50	0.54
2:F:92:ARG:HE	4:H:98:LEU:HD23	1.72	0.54
2:F:61:PHE:HD2	2:F:62:LEU:HD22	1.73	0.53
1:A:46:VAL:HG21	5:I:260:DG:C3'	2.34	0.53
8:L:149:LEU:HB3	8:L:161:CYS:HB3	1.91	0.53
10:N:498:ILE:HD11	10:P:537:PHE:HD2	1.73	0.53
1:A:40:ARG:HH22	6:J:85:DG:N2	2.06	0.53
9:M:244:LYS:HD3	9:M:379:PRO:HG2	1.90	0.53
4:D:36:ILE:HD11	4:D:37:TYR:CZ	2.43	0.53
1:E:77:ASP:OD1	1:E:78:PHE:N	2.42	0.53
1:E:82:LEU:HG	2:F:81:VAL:HG13	1.91	0.53
8:L:133:ARG:HG2	10:N:181:ILE:HD11	1.91	0.53
3:C:66:ALA:HB2	3:C:83:LEU:HD23	1.91	0.53
4:H:102:GLU:O	4:H:103:LEU:C	2.48	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:M:18:HIS:HB3	9:M:23:TYR:CD2	2.43	0.53
9:M:303:ARG:HD3	10:N:286:CYS:HA	1.90	0.53
2:B:90:LEU:HD23	2:B:93:GLN:HE21	1.72	0.53
3:G:97:LEU:HD21	4:H:62:PHE:HD1	1.74	0.53
1:A:78:PHE:CB	2:B:70:VAL:HG11	2.37	0.53
7:K:723:PHE:CZ	10:P:552:PHE:CE1	2.97	0.53
1:E:11:THR:HA	8:L:102:VAL:HG12	1.91	0.52
4:H:92:GLN:O	4:H:93:THR:C	2.50	0.52
3:G:18:SER:O	3:G:22:GLY:N	2.42	0.52
7:K:1256:LEU:HD11	7:K:1266:MET:HE2	1.89	0.52
3:C:66:ALA:HB1	3:C:78:ILE:CG2	2.39	0.52
4:H:38:VAL:HA	4:H:41:VAL:HG12	1.92	0.52
7:K:1189:SER:O	7:K:1193:GLU:HG3	2.09	0.52
1:E:71:VAL:HA	1:E:74:ILE:HG22	1.92	0.52
8:L:29:VAL:HG21	8:L:45:ILE:HD13	1.90	0.52
1:E:83:ARG:O	2:F:81:VAL:HG22	2.10	0.52
2:F:61:PHE:CD2	2:F:62:LEU:HD22	2.45	0.52
8:L:49:HIS:HE2	10:N:172:THR:HG21	1.74	0.52
1:A:36:ML3:HM2B	9:M:18:HIS:CG	2.44	0.52
1:A:47:ALA:O	1:A:51:ILE:HG12	2.10	0.52
3:G:31:HIS:CD2	3:G:48:PRO:HG3	2.44	0.52
4:H:56:MET:HE3	4:H:56:MET:HA	1.90	0.52
6:J:82:DC:H2"	6:J:83:DG:H8	1.75	0.52
7:K:778:LEU:HD11	8:L:171:ILE:HD11	1.91	0.52
7:K:937:GLN:HB2	7:K:940:LYS:CE	2.32	0.52
1:A:89:VAL:HG23	1:A:90:MET:N	2.24	0.52
1:E:119:ILE:HD11	2:F:46:ILE:HG23	1.90	0.52
4:D:102:GLU:O	4:D:103:LEU:C	2.52	0.51
4:H:102:GLU:C	4:H:104:ALA:N	2.66	0.51
7:K:979:PHE:HZ	7:K:1152:THR:HG22	1.75	0.51
1:A:63:ARG:HB2	1:A:66:PRO:HG2	1.92	0.51
2:F:39:ARG:NH1	2:F:46:ILE:HD11	2.25	0.51
4:H:43:LYS:HD2	4:H:47:PRO:HA	1.92	0.51
7:K:1140:ALA:HB1	7:K:1144:ILE:HB	1.91	0.51
1:A:61:LEU:H	1:A:97:GLU:CD	2.19	0.51
1:A:61:LEU:HD23	2:B:37:LEU:HD23	1.93	0.51
4:D:91:ILE:O	4:D:92:GLN:C	2.52	0.51
2:B:71:THR:O	2:B:74:GLU:HG2	2.11	0.51
4:D:58:ILE:HD13	2:F:99:GLY:CA	2.41	0.51
2:F:71:THR:HG22	4:H:93:THR:HG23	1.91	0.51
1:E:92:LEU:HD12	2:F:62:LEU:HD13	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:K:683:THR:HG23	10:N:522:ILE:HG13	1.93	0.51
8:L:44:ARG:NH1	8:L:311:GLY:O	2.44	0.51
1:A:79:LYS:HB3	1:A:82:LEU:HG	1.93	0.51
4:H:76:ARG:HB3	4:H:80:TYR:CE2	2.46	0.51
7:K:897:ARG:NH1	10:N:101:THR:OG1	2.43	0.51
7:K:1190:GLN:H	7:K:1190:GLN:CD	2.18	0.51
7:K:1300:MET:HB3	7:K:1317:ILE:HG13	1.93	0.51
9:M:99:ALA:O	9:M:104:ASN:ND2	2.34	0.51
9:M:254:VAL:O	9:M:257:VAL:HG22	2.11	0.51
1:A:79:LYS:CB	2:B:70:VAL:HG21	2.37	0.51
8:L:76:GLN:OE1	8:L:175:ARG:NH2	2.40	0.51
3:C:85:LEU:O	3:C:89:ASN:HB2	2.11	0.50
1:E:13:GLY:O	1:E:16:PRO:HD2	2.11	0.50
2:B:61:PHE:HE1	2:B:95:ARG:HD2	1.75	0.50
4:D:98:LEU:O	4:D:99:LEU:C	2.54	0.50
2:F:70:VAL:O	2:F:74:GLU:HG2	2.11	0.50
1:A:108:ASN:ND2	2:B:42:GLY:O	2.44	0.50
9:M:101:ASN:OD1	9:M:104:ASN:ND2	2.44	0.50
1:A:119:ILE:HD11	2:B:46:ILE:HD13	1.94	0.50
1:A:129:ARG:O	1:A:130:ILE:HD13	2.11	0.50
4:D:49:THR:HG22	4:D:50:GLY:H	1.75	0.50
1:E:61:LEU:N	1:E:97:GLU:OE2	2.45	0.50
6:J:69:DT:H2'	6:J:70:DT:H71	1.93	0.50
8:L:299:LYS:HD2	8:L:329:LEU:HD23	1.92	0.50
9:M:236:TRP:O	9:M:240:THR:OG1	2.29	0.50
1:A:79:LYS:HB3	1:A:82:LEU:CG	2.40	0.50
1:A:117:VAL:HG23	2:B:45:ARG:HD3	1.93	0.50
3:C:40:ALA:HB3	4:D:86:ILE:CD1	2.40	0.50
3:C:93:LEU:HD13	4:D:103:LEU:HD21	1.93	0.50
3:C:58:LEU:HD21	4:D:99:LEU:HD21	1.94	0.50
4:H:36:ILE:O	4:H:40:LYS:HG3	2.12	0.50
2:B:34:ILE:HD11	2:B:55:ARG:HG3	1.94	0.50
3:G:89:ASN:OD1	3:G:108:LEU:HD21	2.12	0.50
7:K:854:GLY:HA3	7:K:860:MET:SD	2.51	0.50
1:E:19:GLN:HB2	8:L:160:PHE:CZ	2.47	0.50
1:E:68:GLN:HE21	1:E:72:ARG:NH2	2.06	0.49
7:K:663:ASN:O	7:K:667:THR:OG1	2.21	0.49
7:K:875:ARG:HE	10:N:99:PRO:HB3	1.77	0.49
8:L:150:HIS:H	8:L:150:HIS:CD2	2.29	0.49
10:N:466:CYS:SG	10:N:469:HIS:HD2	2.23	0.49
3:C:50:TYR:OH	4:D:108:VAL:HA	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:65:LEU:O	1:E:66:PRO:C	2.53	0.49
1:E:65:LEU:HG	6:J:111:DG:OP2	2.12	0.49
7:K:722:ASN:O	7:K:724:VAL:N	2.45	0.49
9:M:241:LYS:HB2	10:N:372:TYR:HB3	1.94	0.49
10:N:303:CYS:SG	10:N:306:CYS:HB2	2.52	0.49
1:A:38:PRO:HB3	9:M:84:TRP:CZ3	2.47	0.49
3:G:16:THR:HG23	3:G:19:SER:H	1.76	0.49
1:E:14:LYS:HG2	8:L:108:ASP:OD2	2.13	0.49
5:I:215:DT:H2''	5:I:216:DA:C8	2.47	0.49
8:L:364:ASN:HB3	8:L:369:LEU:HD11	1.95	0.49
8:L:367:GLU:OE1	10:N:435:ARG:NE	2.44	0.49
1:A:71:VAL:HG22	2:B:66:ILE:HD11	1.94	0.49
2:B:91:LYS:CD	2:B:96:THR:HG22	2.26	0.49
6:J:82:DC:H2''	6:J:83:DG:C8	2.48	0.49
3:C:62:ILE:HG12	4:D:59:MET:HE1	1.95	0.49
1:E:11:THR:OG1	8:L:108:ASP:HB3	2.12	0.49
3:C:58:LEU:HD21	4:D:99:LEU:CD2	2.43	0.49
3:G:60:ALA:O	3:G:61:GLU:C	2.52	0.49
3:G:110:ASN:O	3:G:111:ILE:HD13	2.13	0.49
9:M:238:TYR:HA	9:M:242:ASP:HB2	1.95	0.49
1:A:54:TYR:OH	2:B:36:ARG:HD2	2.12	0.48
1:A:113:HIS:ND1	1:E:126:LEU:HD22	2.28	0.48
1:E:65:LEU:HD12	6:J:110:DA:H2'	1.95	0.48
7:K:886:HIS:HB3	10:N:93:ILE:HD13	1.95	0.48
1:A:39:HIS:HE1	1:A:41:TYR:CZ	2.30	0.48
1:A:104:PHE:CZ	2:B:54:THR:HG21	2.48	0.48
1:A:129:ARG:O	1:A:129:ARG:HG3	2.13	0.48
2:B:34:ILE:HD13	2:B:54:THR:OG1	2.12	0.48
7:K:865:LYS:NZ	8:L:31:ASN:O	2.42	0.48
3:C:20:ARG:O	4:D:118:TYR:HA	2.13	0.48
1:E:42:ARG:HG3	5:I:321:DC:P	2.53	0.48
1:E:82:LEU:HD12	2:F:79:LYS:O	2.13	0.48
7:K:814:ARG:NH1	7:K:913:ASN:OD1	2.46	0.48
9:M:258:LEU:HD21	9:M:285:LEU:HD23	1.95	0.48
9:M:264:GLU:OE1	9:M:365:TRP:NE1	2.42	0.48
2:B:31:LYS:O	2:B:32:PRO:C	2.53	0.48
10:N:259:ASN:HB3	10:N:281:SER:OG	2.13	0.48
2:B:80:THR:O	2:B:81:VAL:C	2.56	0.48
4:D:27:ARG:HH22	5:I:302:DC:H5'	1.78	0.48
4:D:39:TYR:O	4:D:40:LYS:C	2.53	0.48
8:L:63:ILE:O	10:N:176:THR:HA	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:79:LYS:HB3	1:A:82:LEU:HD11	1.96	0.48
2:B:43:VAL:CG2	2:B:46:ILE:HD11	2.42	0.48
4:D:28:LYS:NZ	4:D:28:LYS:H	2.12	0.48
3:G:73:ASN:O	3:G:75:LYS:HG2	2.14	0.48
7:K:921:GLN:NE2	7:K:1186:LEU:O	2.46	0.48
9:M:253:THR:HG21	9:M:324:ARG:O	2.14	0.48
3:C:15:LYS:HG2	6:J:51:DG:OP1	2.14	0.48
1:A:124:ILE:O	1:A:128:ARG:HG3	2.14	0.48
1:E:62:ILE:O	1:E:63:ARG:C	2.54	0.48
3:G:76:THR:H	6:J:151:DC:P	2.36	0.48
3:C:84:GLN:O	3:C:85:LEU:C	2.55	0.48
4:D:41:VAL:HG12	4:D:41:VAL:O	2.12	0.48
1:E:74:ILE:HD12	2:F:59:LYS:HG3	1.95	0.48
3:G:102:ILE:CG2	3:G:103:ALA:N	2.77	0.48
5:I:314:DA:H2''	5:I:315:DT:H5''	1.96	0.48
9:M:38:TYR:HE1	9:M:61:LEU:HA	1.79	0.48
9:M:255:GLU:HG2	9:M:259:ASN:ND2	2.28	0.48
1:A:41:TYR:HA	6:J:163:DC:H5''	1.95	0.47
2:F:31:LYS:O	2:F:32:PRO:C	2.51	0.47
2:F:63:GLU:O	2:F:63:GLU:HG2	2.13	0.47
8:L:316:ARG:HH21	8:L:320:ARG:HH22	1.62	0.47
2:B:84:MET:HE1	2:B:101:GLY:HA3	1.95	0.47
1:E:107:THR:CG2	1:E:124:ILE:HG22	2.44	0.47
1:E:126:LEU:O	1:E:127:ALA:C	2.55	0.47
7:K:1305:PHE:HE2	7:K:1307:LYS:HD3	1.79	0.47
1:A:74:ILE:HG22	1:A:74:ILE:O	2.14	0.47
7:K:1137:ASN:OD1	7:K:1302:ARG:NH1	2.39	0.47
1:A:61:LEU:HB2	1:A:97:GLU:OE2	2.15	0.47
1:E:50:GLU:OE1	2:F:39:ARG:HG3	2.14	0.47
3:G:76:THR:HB	6:J:150:DG:O3'	2.14	0.47
1:E:128:ARG:HB3	1:E:133:GLU:HG3	1.96	0.47
3:G:110:ASN:C	3:G:111:ILE:HD13	2.39	0.47
4:H:92:GLN:C	4:H:94:ALA:N	2.71	0.47
6:J:75:DG:H1'	6:J:76:DT:H5'	1.97	0.47
1:A:61:LEU:HD21	2:B:40:ARG:CZ	2.45	0.47
1:A:130:ILE:HG22	1:E:131:ARG:HG2	1.97	0.47
3:C:96:LEU:C	3:C:97:LEU:HD22	2.40	0.47
1:E:68:GLN:HG3	1:E:89:VAL:HG11	1.96	0.47
1:E:119:ILE:HD13	2:F:43:VAL:HG11	1.97	0.47
7:K:712:SER:OG	10:N:419:LYS:O	2.27	0.47
1:A:61:LEU:O	1:A:62:ILE:C	2.56	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:23:ARG:HA	2:B:23:ARG:NE	2.30	0.47
2:B:82:THR:HG22	2:B:84:MET:H	1.79	0.47
9:M:296:MET:HE3	9:M:341:LEU:HD21	1.97	0.47
10:N:121:GLU:HA	10:N:124:LYS:HB2	1.96	0.47
4:H:108:VAL:O	4:H:109:SER:C	2.57	0.47
8:L:169:GLY:HA3	8:L:306:MET:HE1	1.97	0.47
1:E:75:ALA:O	1:E:76:GLN:C	2.58	0.46
1:E:120:MET:O	1:E:121:PRO:C	2.57	0.46
3:G:102:ILE:HG22	3:G:103:ALA:N	2.29	0.46
1:E:111:ALA:O	1:E:112:ILE:C	2.56	0.46
5:I:281:DT:H2'	5:I:282:DT:H71	1.97	0.46
10:N:180:ASN:OD1	10:N:180:ASN:N	2.47	0.46
9:M:226:ILE:HA	9:M:229:LYS:HB2	1.98	0.46
10:N:256:ASP:CG	10:N:257:PHE:H	2.24	0.46
1:E:6:THR:HG21	10:N:272:PHE:HE2	1.80	0.46
1:A:82:LEU:HD11	2:B:70:VAL:HG23	1.97	0.46
1:A:92:LEU:HD21	2:B:66:ILE:HG13	1.97	0.46
2:B:31:LYS:HG3	2:B:51:TYR:CE1	2.51	0.46
3:G:51:LEU:HD12	3:G:51:LEU:HA	1.76	0.46
10:N:296:LEU:N	10:N:296:LEU:HD22	2.31	0.46
1:A:51:ILE:CD1	2:B:39:ARG:HD3	2.44	0.46
1:E:57:SER:OG	2:F:40:ARG:NH2	2.45	0.46
8:L:72:GLN:OE1	10:N:188:ASN:HB2	2.15	0.46
1:A:78:PHE:HZ	2:B:63:GLU:HG2	1.81	0.46
6:J:178:DC:H2''	6:J:179:DA:C8	2.51	0.46
7:K:1157:ARG:HG2	7:K:1238:LYS:HB3	1.97	0.46
9:M:255:GLU:HB2	9:M:323:ILE:HG22	1.92	0.46
10:N:440:CYS:HB2	10:N:466:CYS:HB3	1.98	0.46
1:A:54:TYR:HE2	2:B:36:ARG:HB3	1.80	0.46
3:C:81:ARG:HD3	1:E:58:THR:CG2	2.45	0.46
1:E:111:ALA:C	1:E:113:HIS:N	2.74	0.46
1:E:114:ALA:O	1:E:116:ARG:HG3	2.16	0.46
3:C:90:ASP:CG	3:C:91:GLU:H	2.23	0.46
2:F:38:ALA:HB1	2:F:43:VAL:HB	1.98	0.46
3:G:51:LEU:HD12	3:G:54:VAL:CG2	2.46	0.46
1:A:51:ILE:HG21	3:G:111:ILE:HD12	1.98	0.46
3:C:87:VAL:O	3:C:94:ASN:HB2	2.16	0.46
3:G:84:GLN:O	3:G:87:VAL:HG12	2.16	0.46
6:J:89:DG:H2''	6:J:90:DA:C8	2.51	0.46
8:L:44:ARG:HB3	8:L:315:MET:HG2	1.97	0.46
1:A:108:ASN:O	1:A:109:LEU:C	2.57	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:88:ARG:HB2	3:G:108:LEU:HG	1.97	0.45
7:K:1148:PHE:CZ	7:K:1312:VAL:HG11	2.51	0.45
1:A:65:LEU:HB2	1:A:66:PRO:HD3	1.96	0.45
1:A:92:LEU:CD2	2:B:66:ILE:HG12	2.45	0.45
4:H:76:ARG:O	4:H:77:LEU:C	2.57	0.45
8:L:316:ARG:NH2	8:L:348:GLY:O	2.49	0.45
9:M:375:ASN:H	9:M:386:LEU:HD11	1.81	0.45
1:A:50:GLU:HA	1:A:53:ARG:HB3	1.99	0.45
3:G:108:LEU:HD23	3:G:108:LEU:HA	1.82	0.45
5:I:304:DT:H2"	5:I:305:DG:C8	2.51	0.45
7:K:956:LYS:HD2	7:K:1316:TYR:HB3	1.98	0.45
9:M:237:GLU:HG3	10:N:372:TYR:CE2	2.51	0.45
1:A:58:THR:CG2	3:G:81:ARG:HD3	2.45	0.45
1:A:75:ALA:C	1:A:77:ASP:N	2.72	0.45
7:K:1012:ASP:OD1	7:K:1012:ASP:N	2.47	0.45
9:M:380:ASN:OD1	9:M:389:ASN:ND2	2.50	0.45
10:N:306:CYS:O	10:N:310:ILE:HG12	2.17	0.45
1:E:80:THR:O	1:E:81:ASP:C	2.59	0.45
3:G:70:ALA:O	3:G:71:ARG:C	2.56	0.45
8:L:244:ASP:OD2	8:L:287:SER:OG	2.28	0.45
1:E:68:GLN:HE21	1:E:72:ARG:HE	1.64	0.45
4:H:102:GLU:O	4:H:104:ALA:N	2.49	0.45
1:A:54:TYR:HE2	2:B:36:ARG:CB	2.29	0.45
1:A:54:TYR:CE2	2:B:36:ARG:HB3	2.52	0.45
4:D:93:THR:O	4:D:96:ARG:HB2	2.16	0.45
1:E:9:LYS:HD2	1:E:14:LYS:CE	2.47	0.45
1:E:47:ALA:O	1:E:51:ILE:HG12	2.17	0.45
7:K:720:PHE:O	7:K:721:LYS:C	2.58	0.45
7:K:843:GLU:HG2	7:K:846:LYS:HE2	1.99	0.45
9:M:254:VAL:HG12	9:M:331:LEU:HB2	1.97	0.45
9:M:291:LYS:HG2	10:N:343:ILE:HD11	1.98	0.45
2:B:43:VAL:HG21	2:B:46:ILE:CD1	2.45	0.45
5:I:214:DG:H2"	5:I:215:DT:OP2	2.17	0.45
1:A:96:SER:O	1:A:97:GLU:C	2.57	0.45
7:K:706:VAL:HG21	7:K:720:PHE:CZ	2.52	0.45
8:L:53:MET:SD	10:N:172:THR:HG22	2.57	0.45
2:B:75:HIS:CD2	4:D:89:ARG:NH1	2.85	0.45
1:E:42:ARG:HG3	5:I:321:DC:OP1	2.16	0.45
1:E:94:GLU:HG3	2:F:100:PHE:CE2	2.51	0.45
8:L:191:ASP:OD1	8:L:191:ASP:N	2.49	0.45
1:A:36:ML3:HM2B	9:M:18:HIS:NE2	2.31	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:17:ARG:HG2	3:C:20:ARG:NH2	2.32	0.44
6:J:142:DC:H2'	6:J:143:DG:H8	1.81	0.44
7:K:1280:ALA:O	7:K:1284:ILE:HD12	2.16	0.44
4:D:52:SER:O	4:D:53:SER:C	2.60	0.44
2:F:46:ILE:HG22	2:F:47:SER:O	2.17	0.44
3:G:27:VAL:HA	3:G:30:VAL:HG22	1.99	0.44
8:L:153:LYS:HB2	8:L:156:GLU:HG2	1.98	0.44
9:M:356:ILE:HD13	9:M:356:ILE:HA	1.88	0.44
2:B:72:TYR:HE1	4:D:97:LEU:CD1	2.28	0.44
1:E:19:GLN:N	8:L:109:ASP:OD1	2.50	0.44
5:I:194:DC:H2''	5:I:195:DC:C5	2.53	0.44
6:J:179:DA:H2''	6:J:180:DG:C8	2.53	0.44
10:N:436:LEU:HD22	10:N:457:PHE:HE2	1.82	0.44
4:D:34:TYR:HA	4:D:37:TYR:HD2	1.83	0.44
4:D:73:GLU:O	4:D:74:ALA:C	2.56	0.44
5:I:251:DC:H2'	5:I:252:DT:H71	2.00	0.44
7:K:1196:LEU:O	7:K:1197:ASP:C	2.60	0.44
8:L:23:TYR:HD2	8:L:63:ILE:HG23	1.82	0.44
10:N:164:ARG:HD2	10:N:164:ARG:HA	1.75	0.44
2:B:59:LYS:HE2	2:B:59:LYS:HB3	1.86	0.44
1:E:127:ALA:O	1:E:130:ILE:HG12	2.18	0.44
1:A:72:ARG:O	1:A:76:GLN:HG2	2.18	0.44
3:G:90:ASP:OD1	3:G:91:GLU:N	2.51	0.44
7:K:813:GLU:HG2	10:N:111:THR:HG22	2.00	0.44
9:M:222:LEU:HD13	9:M:356:ILE:HD12	2.00	0.44
1:E:93:GLN:O	1:E:94:GLU:C	2.57	0.44
7:K:841:MET:HE3	7:K:846:LYS:HG3	1.99	0.44
7:K:874:GLU:HG3	7:K:875:ARG:HG2	2.00	0.44
9:M:122:LEU:HD12	9:M:125:GLN:HE21	1.83	0.44
9:M:290:ASP:OD1	9:M:323:ILE:HG12	2.17	0.44
6:J:169:DT:H2''	6:J:170:DA:C8	2.53	0.43
7:K:1198:PHE:HE1	7:K:1227:SER:OG	2.01	0.43
7:K:1321:ASP:OD1	7:K:1321:ASP:N	2.51	0.43
9:M:323:ILE:HD13	9:M:323:ILE:HA	1.90	0.43
1:E:19:GLN:HE22	8:L:38:HIS:CD2	2.36	0.43
1:E:50:GLU:OE2	2:F:39:ARG:NE	2.51	0.43
9:M:304:LEU:HD13	10:N:285:LEU:HD11	1.99	0.43
10:N:372:TYR:OH	10:N:496:ARG:NH1	2.49	0.43
1:A:80:THR:O	1:A:81:ASP:C	2.60	0.43
2:B:78:ARG:NH2	2:B:85:ASP:OD1	2.52	0.43
3:C:90:ASP:CG	3:C:91:GLU:N	2.76	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:H:104:ALA:O	4:H:105:LYS:C	2.60	0.43
1:A:123:ASP:O	1:A:124:ILE:C	2.61	0.43
2:B:96:THR:OG1	3:G:100:VAL:HG22	2.18	0.43
3:C:18:SER:O	3:C:22:GLY:N	2.52	0.43
1:E:70:LEU:O	1:E:74:ILE:HG22	2.17	0.43
10:N:172:THR:HA	10:N:175:MET:CG	2.47	0.43
2:F:30:THR:HG23	2:F:33:ALA:H	1.83	0.43
6:J:100:DC:H2"	6:J:101:DG:C8	2.54	0.43
7:K:928:LEU:HD21	8:L:356:ARG:HB2	2.01	0.43
9:M:321:VAL:HG22	9:M:323:ILE:H	1.84	0.43
10:N:176:THR:O	10:N:176:THR:CG2	2.67	0.43
4:D:81:ASN:O	4:D:82:LYS:C	2.60	0.43
4:H:98:LEU:O	4:H:99:LEU:C	2.58	0.43
7:K:697:LEU:HD12	10:N:474:VAL:HG21	1.99	0.43
7:K:723:PHE:HZ	10:P:552:PHE:CE1	2.37	0.43
7:K:1257:MET:HG3	7:K:1258:THR:HG23	2.01	0.43
3:C:18:SER:HB3	3:C:23:LEU:O	2.19	0.43
1:A:67:PHE:CZ	2:B:62:LEU:HD11	2.53	0.43
7:K:706:VAL:HG12	7:K:717:PHE:CE1	2.54	0.43
9:M:354:LEU:HD11	10:N:335:ILE:HG21	2.00	0.43
1:A:126:LEU:O	1:A:130:ILE:HG12	2.19	0.43
4:D:108:VAL:O	4:D:112:THR:HG23	2.18	0.43
2:F:76:ALA:C	2:F:78:ARG:N	2.75	0.43
8:L:242:ILE:HG13	8:L:246:THR:HB	2.00	0.43
9:M:242:ASP:HB3	9:M:244:LYS:HE2	2.01	0.43
9:M:293:LEU:HA	9:M:297:LEU:HB2	2.00	0.43
3:C:15:LYS:HG3	3:C:20:ARG:NH1	2.33	0.42
10:N:442:TYR:HB2	10:N:469:HIS:CE1	2.53	0.42
1:A:93:GLN:O	1:A:94:GLU:C	2.61	0.42
1:A:104:PHE:HZ	2:B:54:THR:HG21	1.84	0.42
3:C:117:PRO:HD3	1:E:48:LEU:HD22	2.00	0.42
1:E:7:ALA:HB1	1:E:9:LYS:CE	2.49	0.42
1:E:107:THR:OG1	1:E:124:ILE:HG22	2.19	0.42
3:C:29:ARG:HG3	3:C:32:ARG:NH2	2.34	0.42
4:D:43:LYS:O	4:D:43:LYS:HG2	2.18	0.42
4:H:92:GLN:O	4:H:95:VAL:HG12	2.19	0.42
7:K:722:ASN:O	7:K:723:PHE:C	2.60	0.42
4:D:36:ILE:HG13	4:D:37:TYR:H	1.80	0.42
6:J:148:DC:H2"	6:J:149:DG:C8	2.54	0.42
7:K:718:THR:O	7:K:719:TRP:C	2.61	0.42
7:K:962:LYS:HA	7:K:962:LYS:HD2	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:K:1291:ARG:HB2	7:K:1300:MET:HE1	2.01	0.42
2:B:39:ARG:O	2:B:40:ARG:C	2.58	0.42
3:C:92:GLU:O	3:C:93:LEU:C	2.62	0.42
1:E:120:MET:HG2	2:F:47:SER:HB2	2.00	0.42
2:F:92:ARG:HD2	4:H:97:LEU:CD2	2.49	0.42
1:A:78:PHE:CZ	2:B:63:GLU:HG2	2.55	0.42
2:B:54:THR:O	2:B:55:ARG:C	2.60	0.42
2:B:90:LEU:HB3	2:B:95:ARG:O	2.20	0.42
3:C:63:LEU:HD21	4:D:38:VAL:HG13	2.00	0.42
3:C:76:THR:OG1	5:I:308:DA:O3'	2.37	0.42
4:D:81:ASN:O	4:D:83:ARG:HG3	2.20	0.42
5:I:179:DT:H2''	5:I:180:DG:C8	2.54	0.42
7:K:1303:ILE:HG23	7:K:1314:ILE:HG12	2.01	0.42
7:K:1304:GLU:O	7:K:1312:VAL:HA	2.19	0.42
8:L:269:LEU:HD21	8:L:295:VAL:HG22	2.02	0.42
2:F:70:VAL:O	2:F:71:THR:C	2.60	0.42
10:N:175:MET:HE2	10:N:175:MET:HB3	1.78	0.42
3:G:64:GLU:O	3:G:67:GLY:N	2.53	0.42
4:H:70:ILE:HA	4:H:98:LEU:HD12	2.01	0.42
10:N:379:ILE:HD12	10:N:379:ILE:H	1.85	0.42
1:A:108:ASN:O	1:A:111:ALA:N	2.53	0.42
3:C:12:ALA:O	3:C:13:LYS:C	2.62	0.42
4:D:27:ARG:NH2	5:I:302:DC:H5'	2.35	0.42
4:D:40:LYS:H	4:D:40:LYS:HG3	1.61	0.42
3:G:32:ARG:O	3:G:33:LEU:C	2.63	0.42
7:K:901:LYS:HB2	7:K:901:LYS:HE2	1.69	0.42
10:N:384:ARG:HA	10:N:388:ASN:HB2	2.01	0.42
1:A:65:LEU:HG	5:I:269:DC:OP2	2.19	0.41
2:B:97:LEU:HD12	3:G:101:THR:O	2.20	0.41
3:C:111:ILE:HD12	1:E:51:ILE:HG21	1.96	0.41
4:D:54:LYS:HA	4:D:54:LYS:HD2	1.86	0.41
2:F:64:ASN:HA	2:F:67:ARG:NH1	2.34	0.41
8:L:341:ASN:HD21	8:L:347:TYR:HE2	1.68	0.41
4:H:43:LYS:HE2	4:H:49:THR:O	2.20	0.41
7:K:810:ILE:HD11	7:K:919:LEU:HD23	2.02	0.41
3:C:115:LEU:HD11	1:E:108:ASN:ND2	2.20	0.41
4:D:28:LYS:H	4:D:28:LYS:HZ3	1.67	0.41
3:G:84:GLN:CA	3:G:87:VAL:HG12	2.48	0.41
3:G:92:GLU:C	3:G:94:ASN:N	2.77	0.41
7:K:710:LEU:O	7:K:717:PHE:HB2	2.20	0.41
10:N:327:ILE:HD11	10:N:338:LYS:HG3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:M:31:TRP:HB3	9:M:76:CYS:HB2	2.02	0.41
1:A:79:LYS:HB3	1:A:82:LEU:CD1	2.50	0.41
2:B:62:LEU:HD23	2:B:62:LEU:HA	1.86	0.41
3:C:65:LEU:CB	3:C:86:ALA:HB1	2.51	0.41
3:C:119:LYS:HB2	3:C:119:LYS:HE2	1.88	0.41
1:E:64:LYS:O	1:E:65:LEU:C	2.63	0.41
1:E:127:ALA:O	1:E:131:ARG:HG3	2.20	0.41
6:J:106:DT:H6	6:J:106:DT:H2'	1.76	0.41
8:L:270:GLN:NE2	8:L:310:GLY:HA3	2.35	0.41
3:C:67:GLY:HA2	3:C:78:ILE:HD11	2.01	0.41
7:K:1190:GLN:HA	7:K:1193:GLU:CD	2.46	0.41
1:A:97:GLU:OE2	2:B:37:LEU:HD21	2.21	0.41
1:A:113:HIS:HE1	1:E:123:ASP:HA	1.85	0.41
2:B:63:GLU:O	2:B:64:ASN:C	2.63	0.41
3:G:91:GLU:H	3:G:91:GLU:CD	2.28	0.41
8:L:328:LEU:HD23	8:L:328:LEU:HA	1.91	0.41
10:N:172:THR:O	10:N:173:GLU:C	2.61	0.41
10:N:293:PRO:O	10:N:296:LEU:HD21	2.20	0.41
3:C:79:ILE:HG23	3:C:80:PRO:CD	2.29	0.41
1:E:56:LYS:O	1:E:56:LYS:HG2	2.19	0.41
4:H:73:GLU:OE2	4:H:77:LEU:HG	2.21	0.41
7:K:867:ILE:HG21	7:K:880:ILE:HG13	2.03	0.41
8:L:44:ARG:NH1	8:L:322:TRP:CH2	2.89	0.41
8:L:177:HIS:HB3	8:L:265:SER:HB2	2.03	0.41
9:M:26:LYS:O	9:M:79:ILE:HA	2.21	0.41
3:C:29:ARG:O	3:C:33:LEU:HD23	2.20	0.41
1:E:48:LEU:HD11	2:F:44:LYS:HD2	2.03	0.41
1:E:101:VAL:O	1:E:105:GLU:HG2	2.21	0.41
1:E:105:GLU:O	1:E:109:LEU:HD23	2.20	0.41
2:F:26:ILE:C	2:F:28:GLY:N	2.79	0.41
6:J:36:DT:H2''	6:J:37:DG:C8	2.55	0.41
7:K:785:HIS:CD2	7:K:786:PRO:HD2	2.56	0.41
7:K:1196:LEU:HB3	7:K:1227:SER:HB2	2.03	0.41
8:L:138:LYS:H	8:L:138:LYS:HG2	1.72	0.41
9:M:80:HIS:ND1	9:M:89:ASP:OD1	2.41	0.41
9:M:92:VAL:HB	9:M:96:ARG:HB2	2.02	0.41
1:E:128:ARG:HG2	1:E:133:GLU:OE2	2.21	0.41
5:I:214:DG:N2	6:J:131:DG:C2	2.89	0.41
8:L:256:LYS:O	8:L:260:GLU:HG2	2.21	0.41
10:N:285:LEU:HD23	10:N:285:LEU:HA	1.95	0.41
2:B:33:ALA:C	2:B:35:ARG:N	2.77	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:9:LYS:HD2	1:E:14:LYS:HD3	2.04	0.40
2:F:52:GLU:O	2:F:52:GLU:CG	2.68	0.40
8:L:28:ASP:O	8:L:29:VAL:C	2.62	0.40
8:L:273:GLY:HA3	8:L:318:VAL:HG23	2.04	0.40
10:N:104:GLU:HB3	10:N:107:LYS:HE3	2.03	0.40
1:A:101:VAL:HG21	2:B:40:ARG:HG2	2.03	0.40
3:C:29:ARG:HA	6:J:49:DG:OP1	2.21	0.40
1:E:9:LYS:HD2	1:E:14:LYS:HE3	2.03	0.40
5:I:287:DC:H6	5:I:287:DC:H2'	1.72	0.40
7:K:671:LYS:HD2	7:K:716:LEU:HD13	2.03	0.40
10:N:296:LEU:HD22	10:N:296:LEU:H	1.85	0.40
4:D:36:ILE:HD13	5:I:299:DG:H3'	2.04	0.40
8:L:242:ILE:HA	8:L:362:ASN:ND2	2.36	0.40
9:M:334:LEU:O	9:M:338:LEU:HB2	2.22	0.40
1:A:62:ILE:HD11	2:B:37:LEU:HD11	2.03	0.40
1:A:67:PHE:O	1:A:70:LEU:HB3	2.21	0.40
4:D:41:VAL:O	4:D:41:VAL:CG1	2.69	0.40
2:F:71:THR:HG22	4:H:93:THR:CG2	2.51	0.40
2:F:90:LEU:HD12	2:F:97:LEU:CB	2.51	0.40
2:F:39:ARG:HH12	2:F:46:ILE:CD1	2.34	0.40
4:H:56:MET:O	4:H:59:MET:N	2.55	0.40
5:I:174:DT:H2''	5:I:175:DA:C8	2.57	0.40
7:K:963:LYS:HE2	7:K:963:LYS:HB3	1.94	0.40
8:L:299:LYS:HD2	8:L:329:LEU:HA	2.02	0.40
9:M:15:LEU:HD22	9:M:108:LYS:HD2	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	99/135 (73%)	90 (91%)	9 (9%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	112/135 (83%)	108 (96%)	4 (4%)	0	100	100
2	B	78/102 (76%)	72 (92%)	6 (8%)	0	100	100
2	F	77/102 (76%)	74 (96%)	3 (4%)	0	100	100
3	C	107/129 (83%)	103 (96%)	4 (4%)	0	100	100
3	G	104/129 (81%)	97 (93%)	7 (7%)	0	100	100
4	D	94/122 (77%)	88 (94%)	6 (6%)	0	100	100
4	H	92/122 (75%)	81 (88%)	11 (12%)	0	100	100
7	K	543/1536 (35%)	525 (97%)	18 (3%)	0	100	100
8	L	382/433 (88%)	369 (97%)	13 (3%)	0	100	100
9	M	288/401 (72%)	284 (99%)	4 (1%)	0	100	100
10	N	332/684 (48%)	316 (95%)	16 (5%)	0	100	100
10	P	29/684 (4%)	28 (97%)	1 (3%)	0	100	100
All	All	2337/4714 (50%)	2235 (96%)	102 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	86/108 (80%)	86 (100%)	0	100	100
1	E	98/108 (91%)	98 (100%)	0	100	100
2	B	66/78 (85%)	66 (100%)	0	100	100
2	F	64/78 (82%)	64 (100%)	0	100	100
3	C	86/101 (85%)	86 (100%)	0	100	100
3	G	84/101 (83%)	84 (100%)	0	100	100
4	D	82/102 (80%)	82 (100%)	0	100	100
4	H	80/102 (78%)	80 (100%)	0	100	100
7	K	510/1391 (37%)	509 (100%)	1 (0%)	87	89

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
8	L	326/367 (89%)	326 (100%)	0	100	100
9	M	268/359 (75%)	268 (100%)	0	100	100
10	N	321/653 (49%)	320 (100%)	1 (0%)	86	87
10	P	31/653 (5%)	31 (100%)	0	100	100
All	All	2102/4201 (50%)	2100 (100%)	2 (0%)	87	90

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
7	K	1190	GLN
10	N	260	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	39	HIS
1	A	76	GLN
1	A	108	ASN
2	B	25	ASN
2	B	93	GLN
3	C	68	ASN
4	D	44	GLN
4	D	92	GLN
1	E	19	GLN
1	E	68	GLN
1	E	76	GLN
1	E	85	GLN
1	E	108	ASN
1	E	113	HIS
3	G	68	ASN
4	H	64	ASN
7	K	690	ASN
7	K	886	HIS
7	K	937	GLN
7	K	961	ASN
7	K	1132	ASN
7	K	1311	HIS
8	L	38	HIS
8	L	72	GLN
9	M	82	GLN

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Mol	Chain	Res	Type
9	M	104	ASN
9	M	389	ASN
10	N	304	ASN
10	N	350	GLN
10	N	393	GLN
10	N	517	ASN
10	P	534	ASN
10	P	535	GLN
10	P	545	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

1 non-standard protein/DNA/RNA residue is modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
1	ML3	A	36	1	10,11,12	0.79	0	11,14,16	0.90	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	ML3	A	36	1	-	5/8/10/12	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	36	ML3	SG-CD-CE-NZ
1	A	36	ML3	CD-CE-NZ-CM1
1	A	36	ML3	CD-CE-NZ-CM2
1	A	36	ML3	CD-CE-NZ-CM3
1	A	36	ML3	CA-CB-SG-CD

There are no ring outliers.

1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	36	ML3	4	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 5 ligands modelled in this entry, 5 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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.

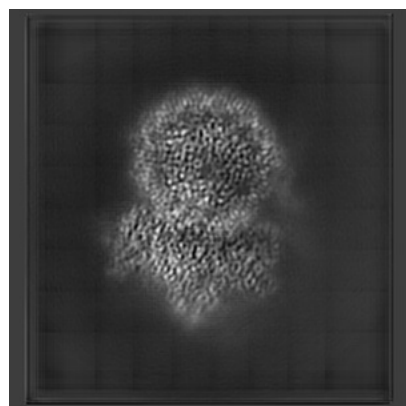
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-35082. These allow visual inspection of the internal detail of the map and identification of artifacts.

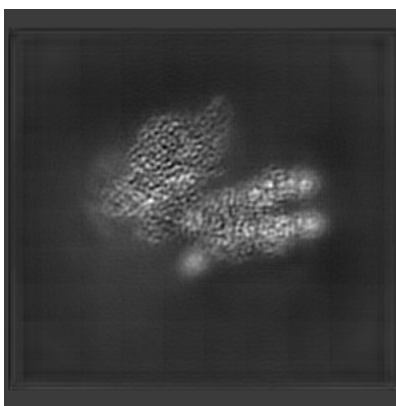
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

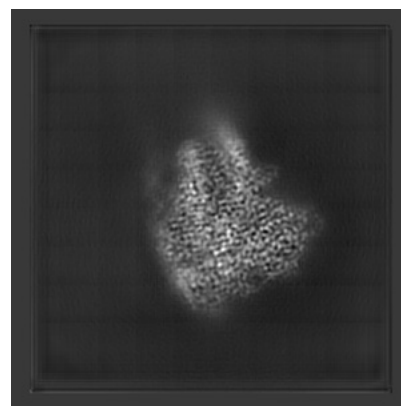
6.1.1 Primary map



X

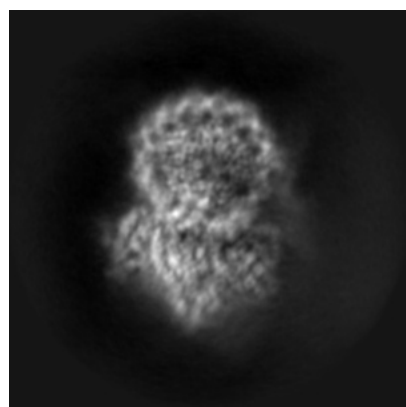


Y

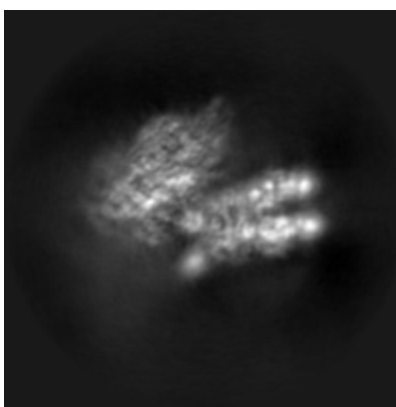


Z

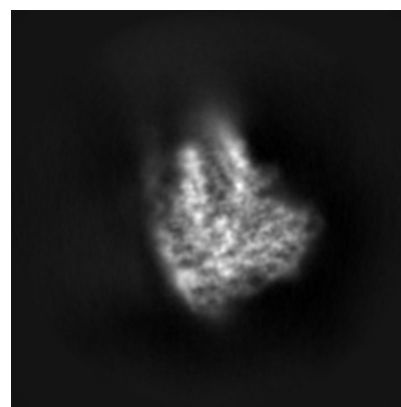
6.1.2 Raw map



X



Y

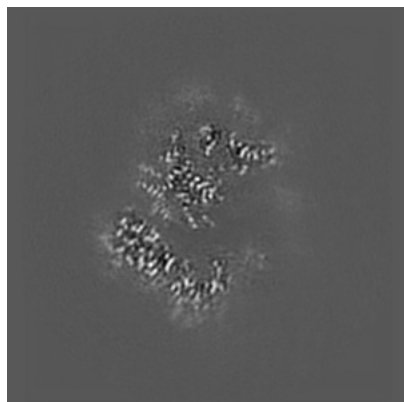


Z

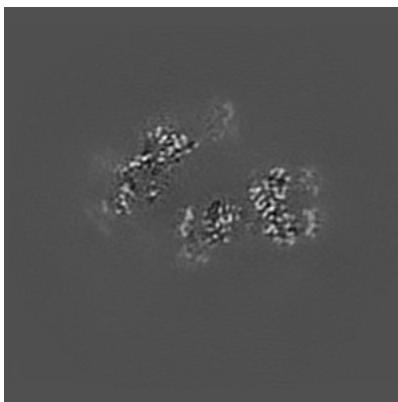
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

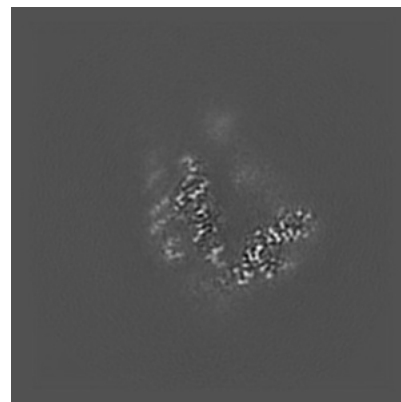
6.2.1 Primary map



X Index: 128

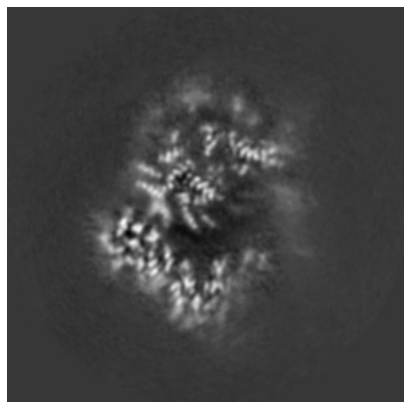


Y Index: 128

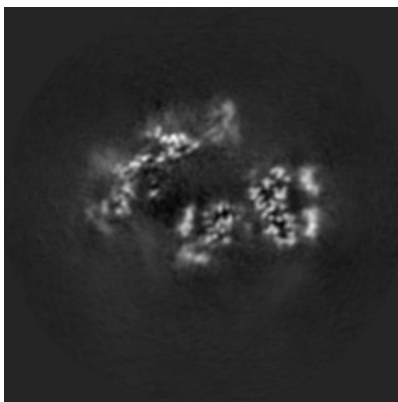


Z Index: 128

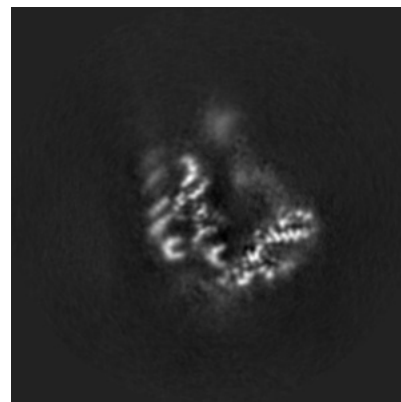
6.2.2 Raw map



X Index: 128



Y Index: 128

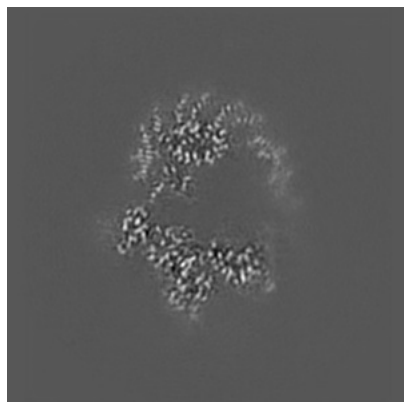


Z Index: 128

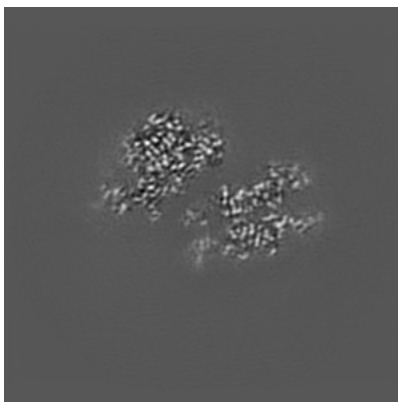
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

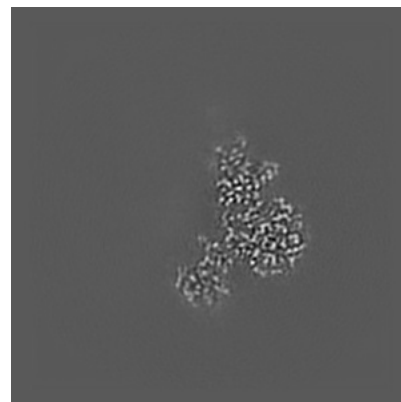
6.3.1 Primary map



X Index: 138

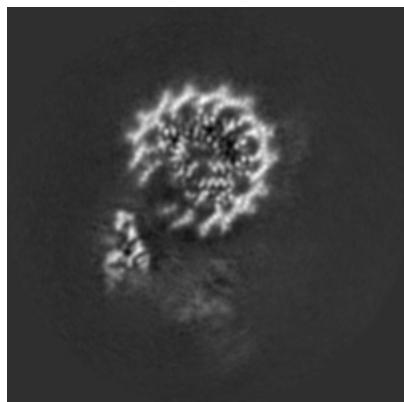


Y Index: 106

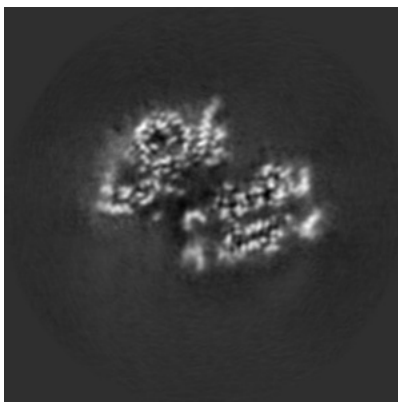


Z Index: 98

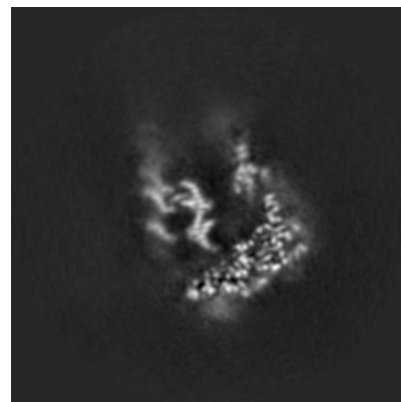
6.3.2 Raw map



X Index: 116



Y Index: 109

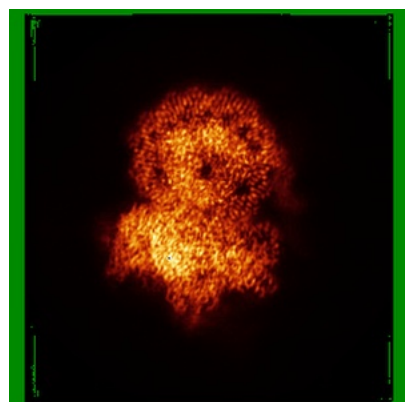


Z Index: 118

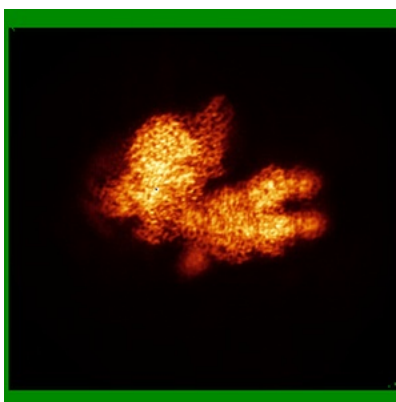
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

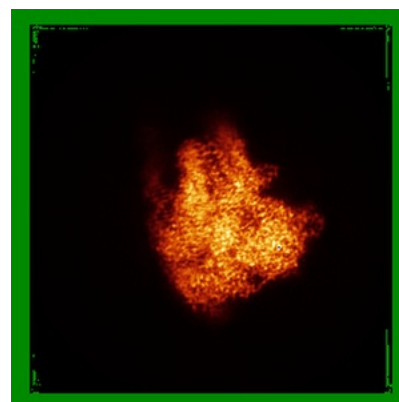
6.4.1 Primary map



X

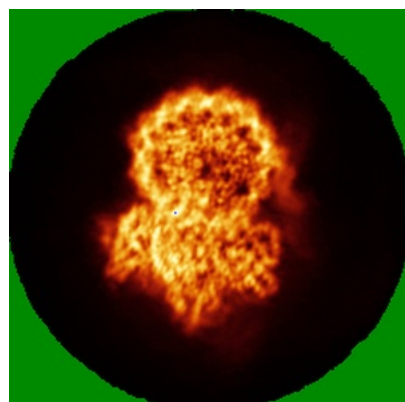


Y

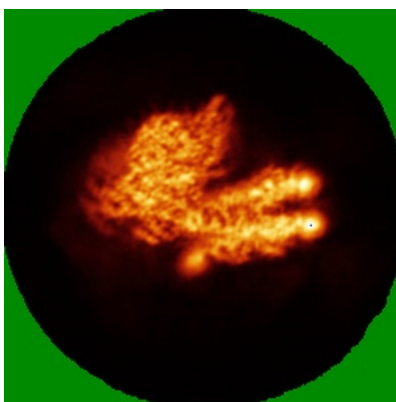


Z

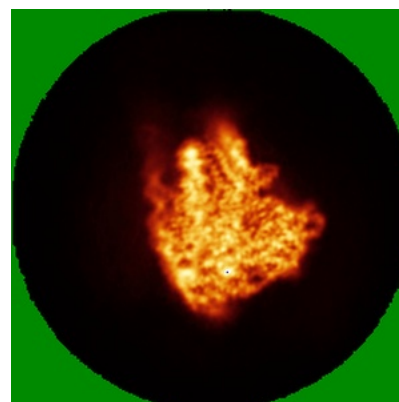
6.4.2 Raw map



X



Y

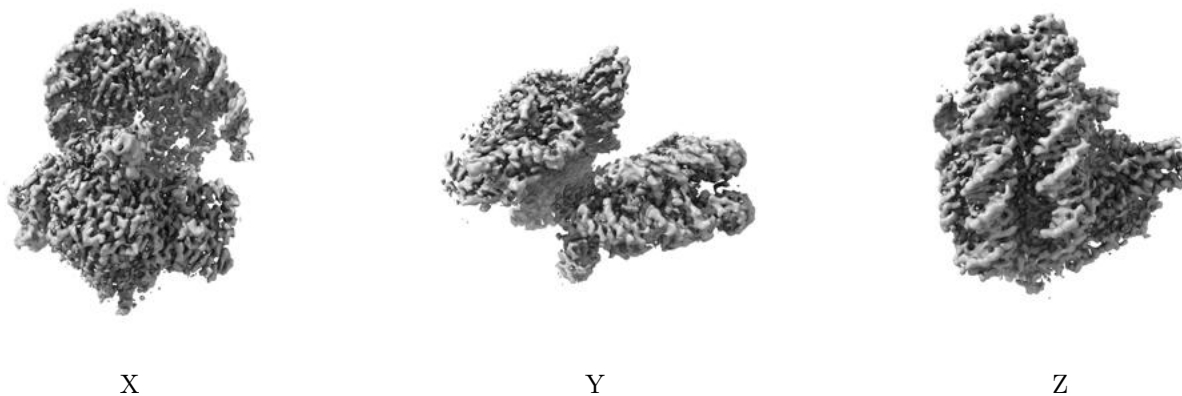


Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.03. 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



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.

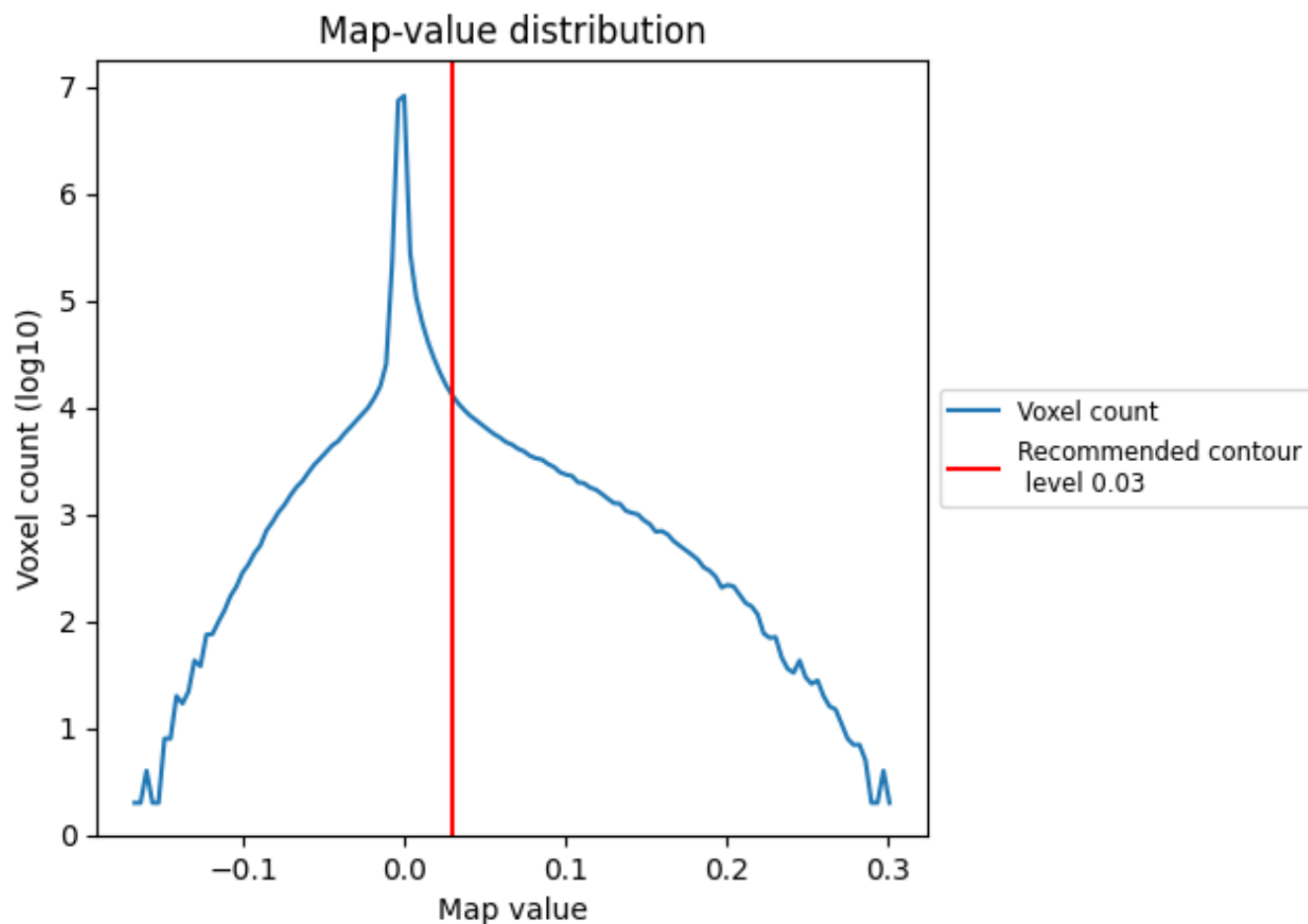
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

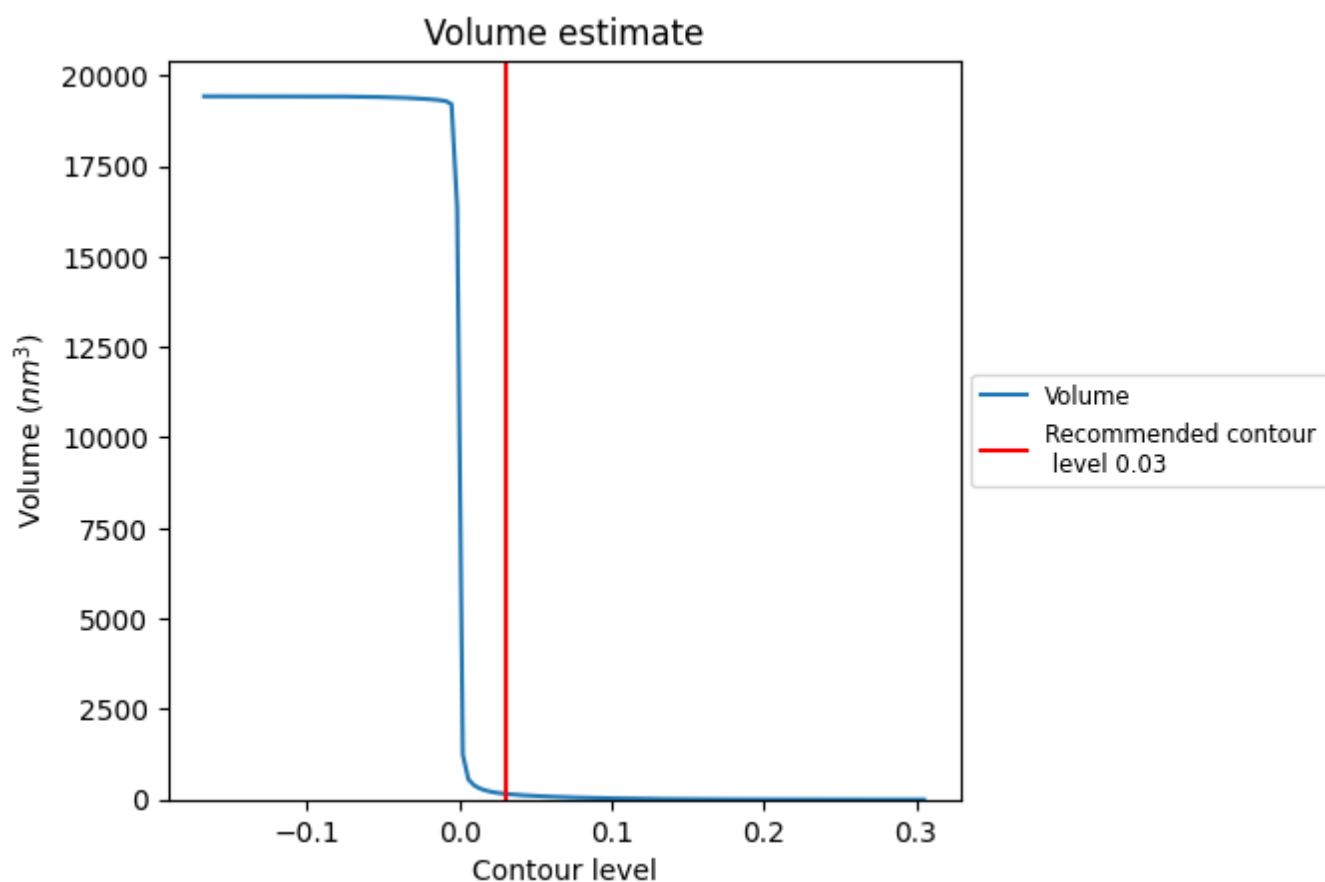
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

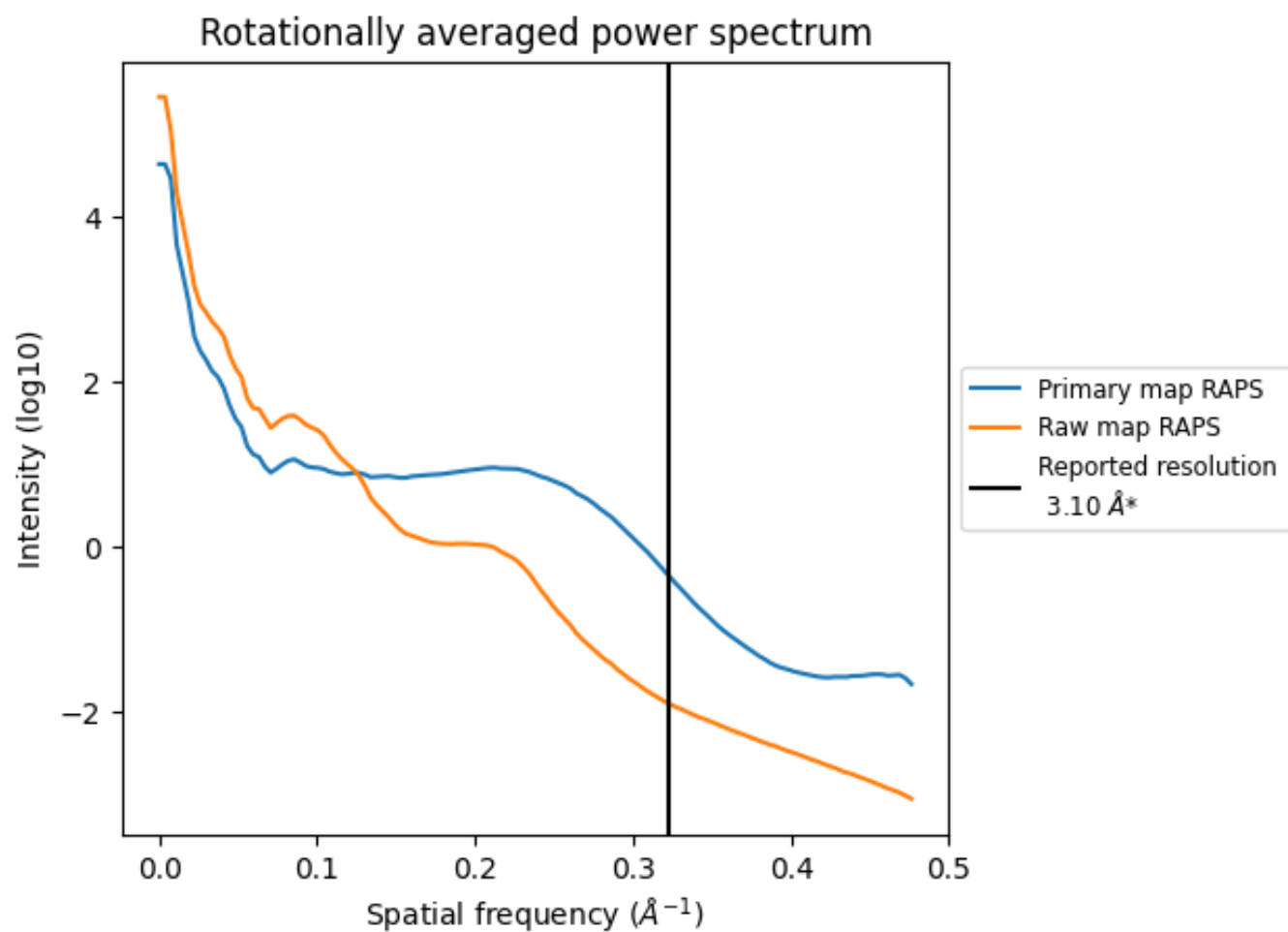
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 160 nm³; this corresponds to an approximate mass of 145 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 ⓘ

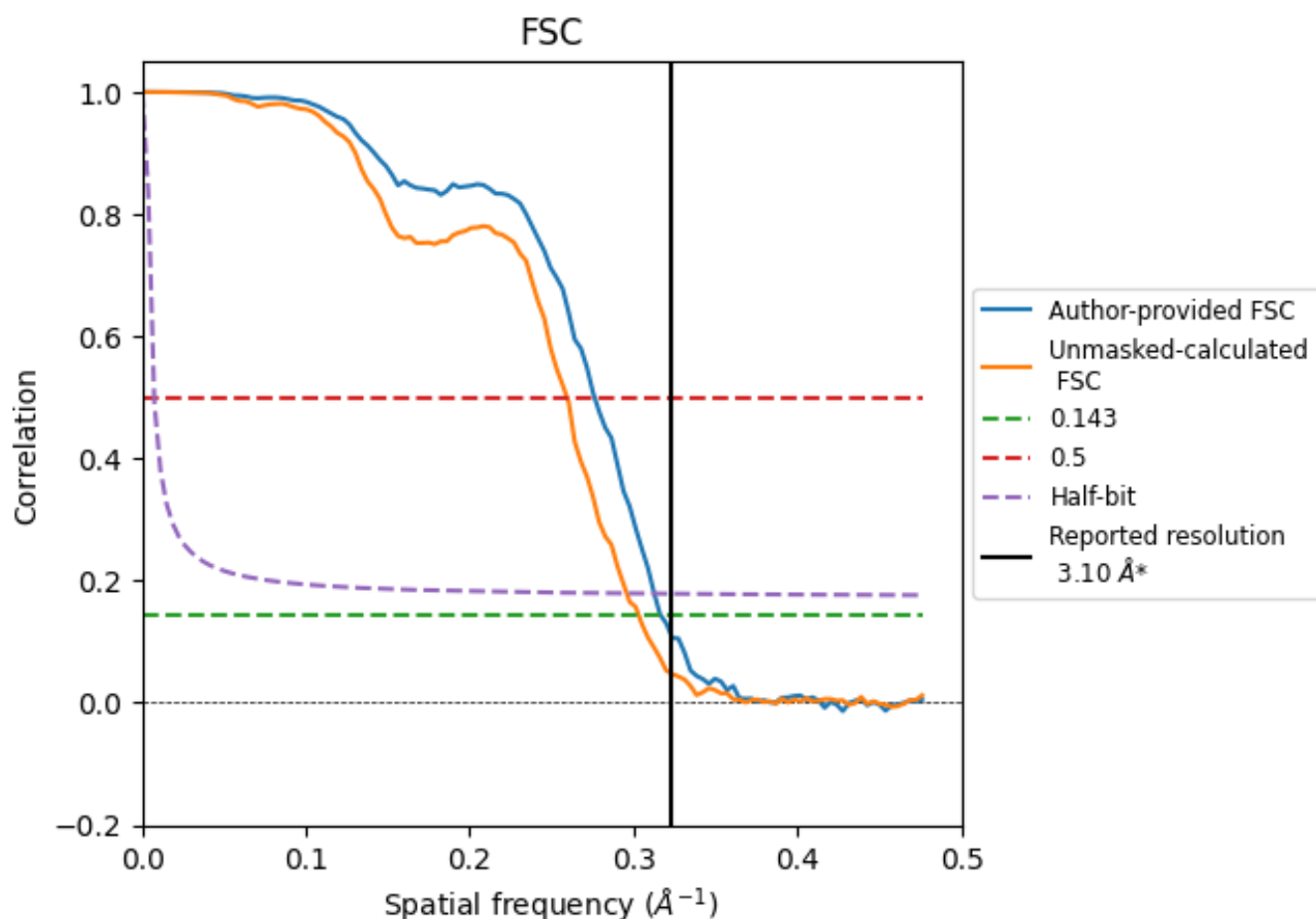


*Reported resolution corresponds to spatial frequency of 0.323 Å⁻¹

8 Fourier-Shell correlation [i](#)

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 [i](#)



*Reported resolution corresponds to spatial frequency of 0.323 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

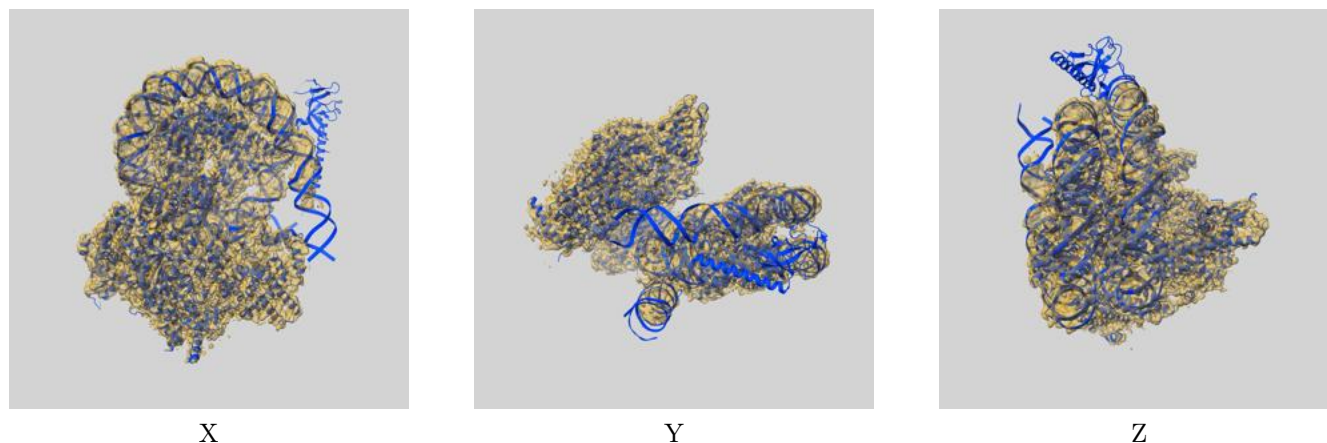
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.16	3.62	3.20
Unmasked-calculated*	3.30	3.86	3.38

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit [i](#)

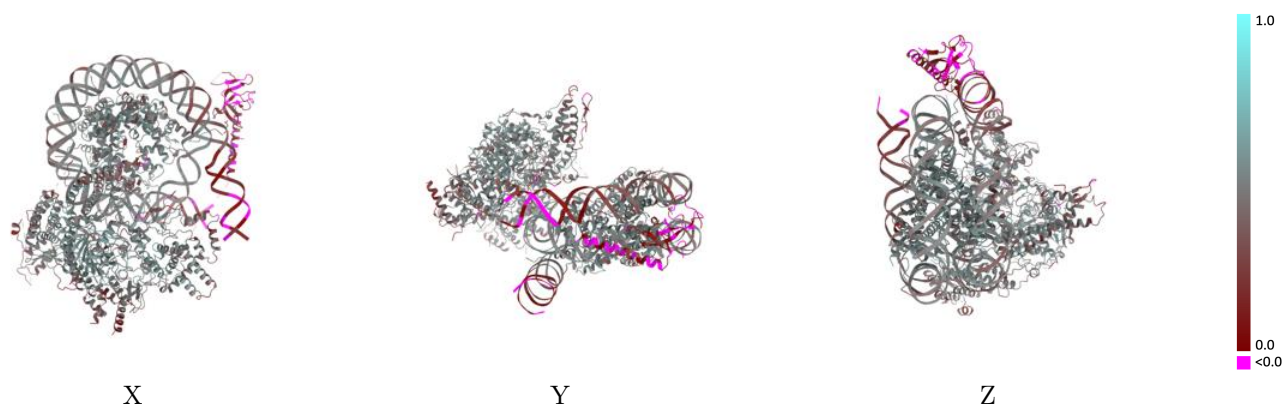
This section contains information regarding the fit between EMDB map EMD-35082 and PDB model 8HXY. Per-residue inclusion information can be found in section [3](#) on page [7](#).

9.1 Map-model overlay [i](#)



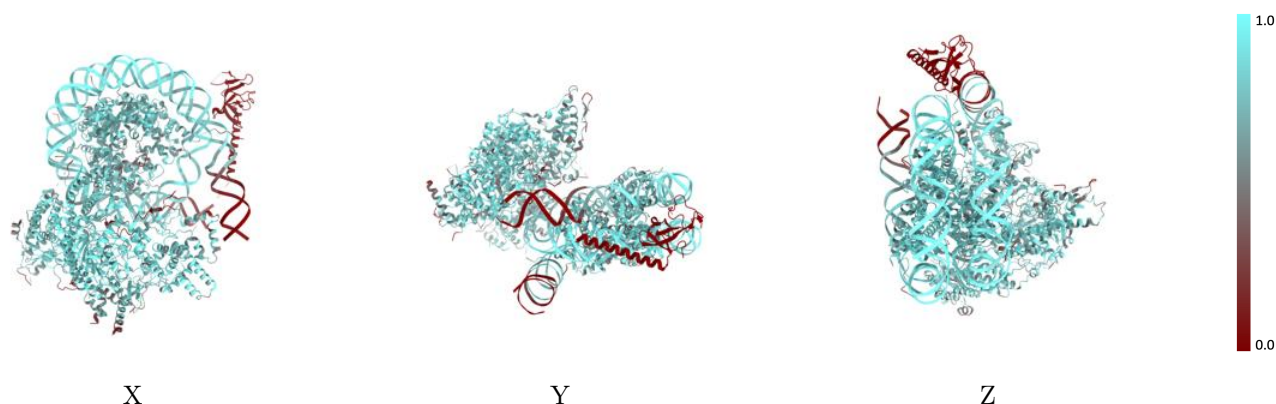
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



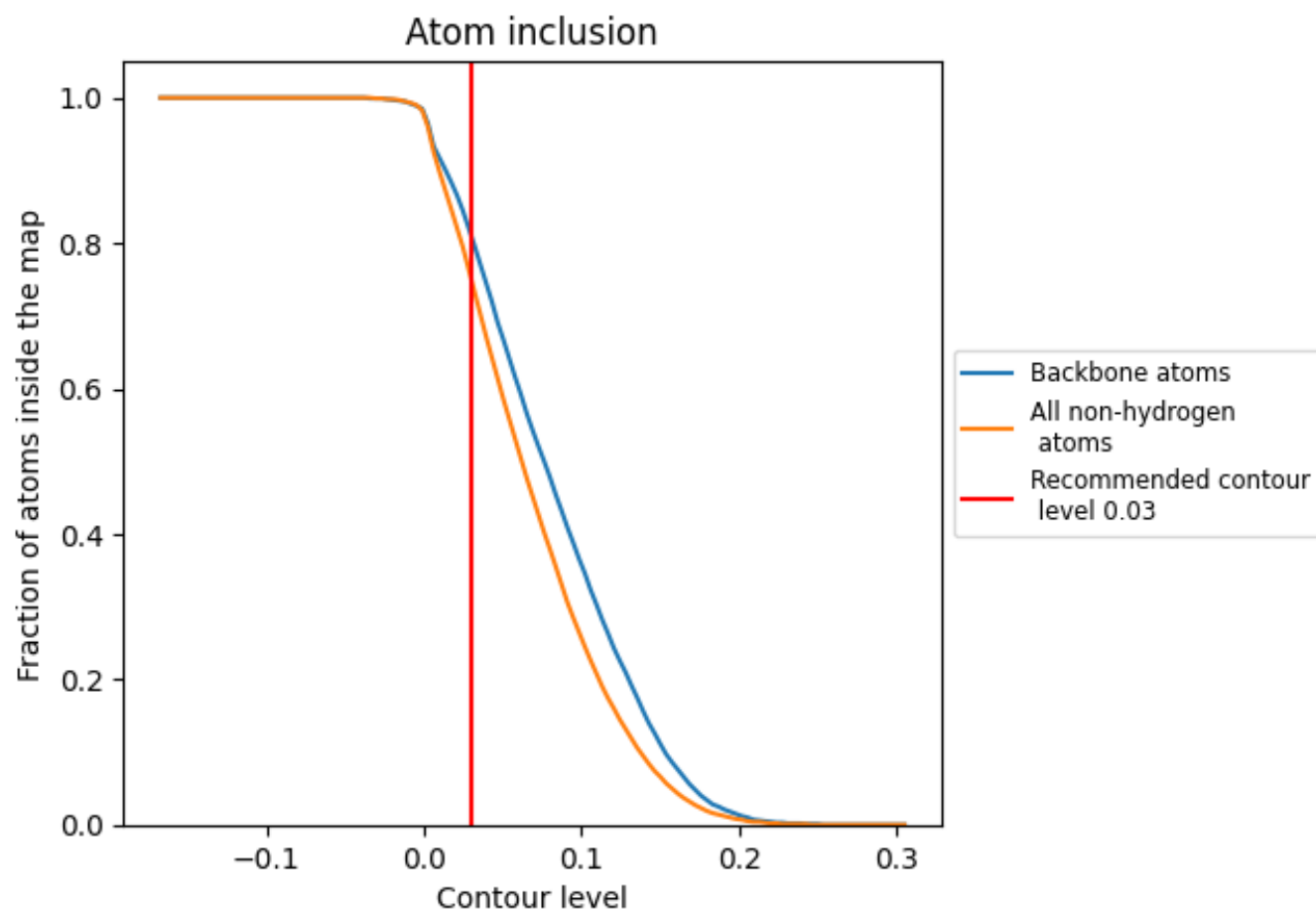
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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](#)



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 (0.03).

9.4 Atom inclusion [i](#)



At the recommended contour level, 81% of all backbone atoms, 75% 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 (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7500	0.4400
A	0.7770	0.4780
B	0.8180	0.5190
C	0.8030	0.5010
D	0.7920	0.4900
E	0.7060	0.4570
F	0.8510	0.5170
G	0.8060	0.5050
H	0.7760	0.4720
I	0.7510	0.4010
J	0.7520	0.3960
K	0.7670	0.4480
L	0.8810	0.5330
M	0.5070	0.3110
N	0.7220	0.4430
P	0.6040	0.3320

1.0

0.0

<0.0