W O R L D W I D E

wwPDB

PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

May 5, 2025 – 06:09 AM EDT

PDB ID	:	6CIJ / pdb_00006cij
EMDB ID	:	EMD-7480
Title	:	Cryo-EM structure of mouse RAG1/2 HFC complex containing partial HMGB1 linker(3.9 A)
Authors	:	Chen, X.; Kim, M.; Chuenchor, W.; Cui, Y.; Zhang, X.; Zhou, Z.H.; Gellert, M.; Yang, W.
Deposited on	:	2018-02-24
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
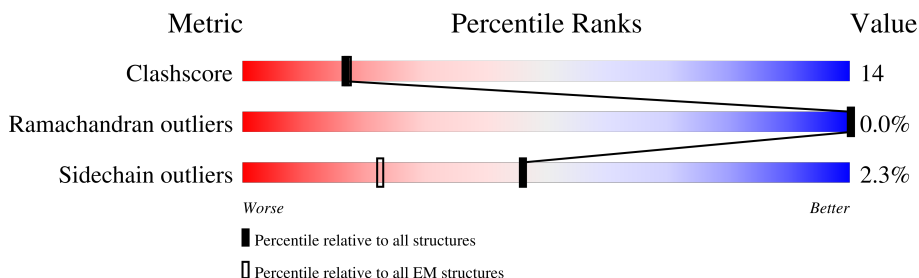http://www.wwpdb.org/validation/2017/FAQs#types.

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	Percentile Ranks	Value
Clashscore		14
Ramachandran outliers		0.0%
Sidechain outliers		2.3%

Worse — *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	A	776	60% 18% • 21%
1	C	776	59% 19% • 21%
2	F	46	39% 61%
3	I	16	62% 38%
4	J	20	10% / 20% 75% 5%
5	G	61	• / 39% 59% •
6	N	163	• / 64% 17% • 18%
7	L	30	40% 60%

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Mol	Chain	Length	Quality of chain
8	B	520	48% 17% • 34%
8	D	520	50% 14% • 35%
9	M	41	39% 61%

2 Entry composition (i)

There are 11 unique types of molecules in this entry. The entry contains 20413 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 V(D)J recombination-activating protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	614	Total 4921	C 3097	N 876	O 914	S 34	0	0
1	C	616	Total 4946	C 3115	N 880	O 917	S 34	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	962	GLN	GLU	conflict	UNP P15919
C	962	GLN	GLU	conflict	UNP P15919

- Molecule 2 is a DNA chain called DNA (46-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
2	F	46	Total 947	C 452	N 172	O 278	P 45	0	0

- Molecule 3 is a DNA chain called DNA (5'-D(*GP*AP*TP*CP*TP*GP*GP*CP*CP*TP*GP*TP*CP*TP*TP*A)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
3	I	16	Total 323	C 156	N 54	O 98	P 15	0	0

- Molecule 4 is a DNA chain called DNA (5'-D(P*CP*TP*GP*GP*AP*TP*CP*TP*GP*GP*CP*CP*TP*GP*TP*CP*TP*TP*A)-3').

Mol	Chain	Residues	Atoms					AltConf	Trace
4	J	19	Total 387	C 185	N 64	O 119	P 19	0	0

- Molecule 5 is a DNA chain called DNA (60-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
5	G	60	Total	C	N	O	P	0	0
			1225	586	215	365	59		

- Molecule 6 is a protein called High mobility group protein B1.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	N	133	Total	C	N	O	S	0	0
			910	577	158	170	5		

- Molecule 7 is a DNA chain called DNA (30-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
7	L	30	Total	C	N	O	P	0	0
			610	290	118	172	30		

- Molecule 8 is a protein called V(D)J recombination-activating protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	D	340	Total	C	N	O	S	0	0
			2643	1689	447	489	18		
8	B	342	Total	C	N	O	S	0	0
			2652	1694	448	492	18		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	490	ALA	THR	conflict	UNP P21784
B	490	ALA	THR	conflict	UNP P21784

- Molecule 9 is a DNA chain called DNA (41-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
9	M	41	Total	C	N	O	P	0	0
			845	400	170	234	41		

- Molecule 10 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
10	A	1	Total	Zn	0
			1	1	
10	C	1	Total	Zn	0
			1	1	

- Molecule 11 is CALCIUM ION (CCD ID: CA) (formula: Ca).

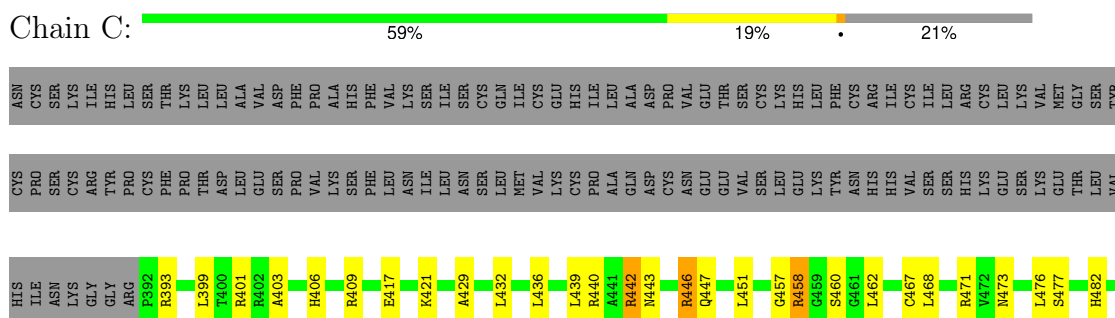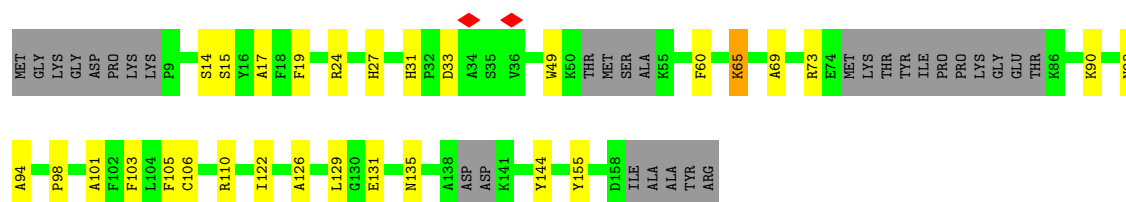| Mol	Chain	Residues	Atoms		AltConf
11	A	1	Total 1	Ca 1	0
11	C	1	Total 1	Ca 1	0

3 Residue-property plots ⓘ

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.
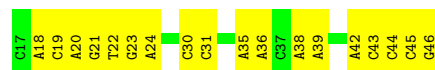
• Molecule 1: V(D)J recombination-activating protein 1

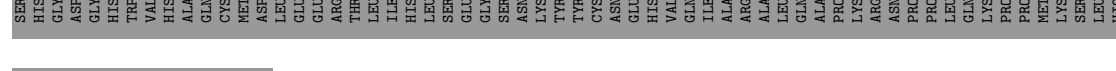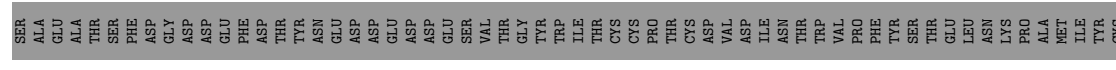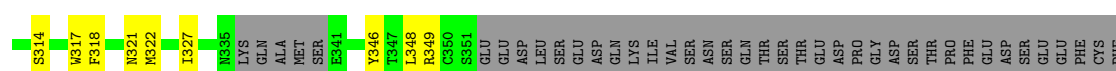• Molecule 1: V(D)J recombination-activating protein 1

Y485 R494 Q495 I496 F497 Q498 P499 L500 L503 E507 W519 Q520 P521 P522 L523 V526 R529 D536 G537 L538 R558 Y559 D560 S561 A562 L563 M568 D569 M570 E571 D584 L587 P590 F591 T592 V593 V594 V595 D600 G601 M602 A614 M627 R628 I629

T630 I631 F641 E649 L650 L655 C656 L657 M658 I671 L672 S673 P674 R679 M682 K683 S684 S685 E686 L687 T688 L689 G692 F698 K699 F702 R713 E719 A720 I726 C727 T728 L729 N740 L741 V742 F743 H744 S745 I746 H750 L754 E758

R761 E767 L772 R773 V776 V779 P783 E786 D792 A793 L794 H795 F804 Y805 K806 Q809 L810 E811 I812 G813 E814 V815 Y816 K817 H818 K823 R828 L833 R838 M841 P845 R848 M849 N852 F853 M858 T859 Q860 E861 P871

R875 L887 K890 W893 Q908 N912 N934 A941 E959 S963 G964 N965 R969 R977 Q978 L988 S996 Q1000 H1006 N1007 ALA LEU LYS SER SER GLY PHE THR MET ASN SER LYS GLU THR LEU GLY ASP PRO LEU GLY ILE GLU ASP SER LEU

GLU SER GLN ASP SER MET GLU PHE

- Molecule 2: DNA (46-MER)

Chain F: 39%   61%

C1 G2 G3 G4 T5 T6 T7 T8 T9 G10 T11 T12 A13 A14 G15 C24 A25 C26 T27 G28 T29 G30 T31 A32 A33 G34 A35 C36 A37 C40 C41 A42 G43 A44 T45 C46

- Molecule 3: DNA (5'-D(*GP*AP*TP*CP*TP*GP*GP*CP*CP*TP*GP*TP*CP*TP*TP*A)-3')

Chain I: 62%   38%

G1 A2 T3 C4 T5 G6 G7 C8 C9 T10 A16

- Molecule 4: DNA (5'-D(P*CP*TP*GP*GP*AP*TP*CP*TP*GP*GP*CP*CP*TP*GP*TP*CP*TP*TP*A)-3')

Chain J: 10%   20%   75%   5%

DC C-2 T-1 G0 G1 A2 T3 C4 T5 G6 C9 T10 G11 T12 C13 T14 T15 A16

- Molecule 5: DNA (60-MER)

Chain G: 39%   59%

C1 T6 T7 T8 T9 G10 C19 A20 C21 A22 C23 T24 T25 G26 A27 T28 T29 T30 G31 C32 A33 T34 C35 A36 C37 T38 G39 T40 G41 A46 C47 A48 G49 G50 C51 C52 A53 G54 A55 G60 DG

- Molecule 6: High mobility group protein B1

Chain N: 64%   17%   18%

MET GLY LYS ASP PRO LYS LYS P9 S14 S15 Y16 A17 F18 F19 R24 H27 H31 P32 D33 A34 S35 V36 W49 K50 THR MET SER ALA K55 F60 K65 A69 R73 E74 MET LYS THR TYR ILE PRO PRO LYS GLY GLU THR K86 K90 N93

A94 P98 A101 F102 F103 L104 F105 C106 R110 I122 A126 L129 G130 E131 N135 A138 ASP ASP K141 Y144 Y155 D158 ILE ALA ALA TYR ARG

- Molecule 7: DNA (30-MER)

Chain L:

40% 60%

C17 A18 C19 A20 G21 T22 G23 A24 C30 C31 A35 A36 C37 A38 A39 A42 C43 C44 C45 G46

- Molecule 8: V(D)J recombination-activating protein 2

Chain D:

50% 14% • 35%

M1 V8 N11 I12 P17 M22 F29 F30 R39 F46 H47 F48 L55 K56 L57 K58 D65 L69 K81 GLY SER ILE ASP SER ASP K88 Y91 K97 L103 S104 D105 K106 R123 E126 E135 P136 R137 I142 V145 R148

L155 F156 G157 G158 R159 L204 S205 I210 A211 R212 N213 D214 T215 V216 Y217 I228 R229 P230 L233 Y234 R235 I236 R237 V238 D239 L240 V247 N248 C249 G255 I256 S257 V258 S259 S260 A261 G275 Q276 Y277 Q278 L279 Q282 K283 R284 G293 T308 S309 D310 I311

S314 W317 F318 N321 M322 I327 N335 LYS GLN ALA MET SER E341 Y346 T347 L348 R349 C350 S351 GLU GLU ASP LEU GLU GLU ASP GLN ILE VAL SER ASN SER GLN THR SER THR GLU ASP PRO GLY SER ASP SER THR PRO GLU GLU SER GLU PHE CYS PHE

SER ALA GLU ALA THR SER PHE ASP GLY ASP ASP GLU PHE ASP THR TYR ASN GLU ASP ASP GLU ASP GLU SER VAL THR GLY TYR TRP ILE THR CYS PRO VAL CYS ASP GLY HIS VAL GLN ILE ALA ARG ALA LEU GLN ALA PRO LYS ARG ASN PRO LEU GLU LEU ASN LYS PRO ALA MET ILE TYR CYS

SER HIS GLY ASP GLY HIS TRP VAL HIS ALA GLN CYS MET ASP LEU GLU GLU ARG THR LEU ILE HIS LEU SER GLU GLY SER ASN LYS TYR TYR CYS ASN GLU HIS VAL GLN ILE ALA ARG ALA LEU GLN GLY ALA PRO LYS ARG ASN PRO LEU GLU GLN LYS PRO ALA MET LYS SER LEU HIS

LYS LYS GLY SER GLY LYS VAL LEU THR PRO ALA LYS LYS SER

- Molecule 8: V(D)J recombination-activating protein 2

Chain B:

48% 17% • 34%

M1 S2 L3 Q4 M5 V6 T7 V8 Q16 M22 V28 F29 F30 Q33 C41 F46 H47 F48 K51 Q52 N53 H54 L55 K56 L57 K58 L69 R73 C78 S79 Y80 K81 GLY SER ILE ASP SER ASP K88 Y91 I92 I93 K97 N101 E102 L103 S104

D105 K106 I107 Y108 A113 R123 E126 K127 D128 L129 V133 P136 S141 I142 D143 S147 R167 W172 L197 P198 E199 L200 Q201 L204 H207 V208 S209 R212 Y217 G221 H222 R229 R235 I236 R237 L240 P241 P245 C249

T266 N267 E270 F271 V272 G275 K283 R284 M285 S288 L289 V290 S291 L292 I299 M302 W307 T308 W317 N321 M322 D334 N335 K336 GLN ALA MET S340 T347 L348 R349 C350 S351 GLU GLU ASP LEU SER GLU ASP GLN LYS ILE VAL SER ASN SER GLN THR

SER THR GLU ASP PRO GLY ASP SER THR PRO PHE GLU GLU ASP SER GLU GLU PHE CYS PHE SER ALA GLU ALA THR SER PHE ASP GLY ASP ASP THR TYR ASN GLU ASP ASP GLU ASP GLU SER VAL THR GLY TYR TRP ILE THR CYS PRO VAL CYS ASP VAL ASP ILE

ASN THR TRP VAL PRO PHE TYR SER THR GLU LEU ASN LYS PRO ALA MET ILE TYR CYS SER HIS GLY ASP GLY HIS TRP VAL HIS ALA GLN CYS MET ASP LEU GLU GLU ARG THR LEU ILE HIS LEU SER GLU GLY SER ASN LYS TYR TYR CYS ASN GLU HIS VAL GLN ILE ALA ARG ALA

LEU GLN ALA PRO LYS ARG ASN PRO PRO LEU GLN LYS PRO PRO MET LYS SER LEU HIS LYS LYS GLY SER GLY LYS VAL LEU THR PRO ALA LYS LYS SER

• Molecule 9: DNA (41-MER)

Chain M:

39%   61%

C17 A18 C19 A20 G21 T22 G23 A24 T25 G26 C27 A28 A29 A30 T31 C32 A33 A34 G35 T36 G37 T38 A45 G46 A49 A50 A51 C54 C55 C56 G57

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	49624	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 $(e^-/\text{Å}^2)$	57.6	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.117	Depositor
Minimum map value	-0.043	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.014	Depositor
Map size (Å)	308.16, 308.16, 308.16	wwPDB
Map dimensions	288, 288, 288	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.07, 1.07, 1.07	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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	0.14	0/5022	0.39	1/6767 (0.0%)
1	C	0.14	0/5049	0.38	0/6802
2	F	0.18	0/1062	0.38	0/1640
3	I	0.17	0/360	0.40	0/554
4	J	0.20	0/431	0.47	0/663
5	G	0.17	0/1371	0.38	0/2115
6	N	0.14	0/934	0.40	0/1270
7	L	0.16	0/685	0.32	0/1052
8	B	0.12	0/2719	0.32	0/3690
8	D	0.12	0/2710	0.32	0/3678
9	M	0.19	0/952	0.35	0/1466
All	All	0.14	0/21295	0.37	1/29697 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	456	GLN	N-CA-C	-6.07	104.02	112.45

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	4921	0	4887	132	0
1	C	4946	0	4919	140	0
2	F	947	0	522	24	0
3	I	323	0	184	4	0
4	J	387	0	217	10	0
5	G	1225	0	681	41	0
6	N	910	0	726	23	0
7	L	610	0	335	18	0
8	B	2652	0	2577	68	0
8	D	2643	0	2571	63	0
9	M	845	0	457	50	0
10	A	1	0	0	0	0
10	C	1	0	0	0	0
11	A	1	0	0	0	0
11	C	1	0	0	0	0
All	All	20413	0	18076	520	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 14.

All (520) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:669:THR:HG22	1:A:784:PHE:CE2	1.90	1.05
8:D:235:ARG:NH1	8:D:237:ARG:HH22	1.56	1.04
1:C:761:ARG:HH12	8:D:106:LYS:NZ	1.61	0.96
1:A:504:ARG:HG3	1:A:504:ARG:HH11	1.34	0.92
8:D:235:ARG:HH11	8:D:237:ARG:HH22	1.17	0.92
1:A:803:GLU:HG2	1:A:936:PHE:HE2	1.35	0.91
1:A:532:VAL:HG21	1:A:558:ARG:NH1	1.86	0.91
1:A:558:ARG:HG3	1:A:558:ARG:HH11	1.34	0.91
1:A:972:ARG:HG3	1:A:972:ARG:HH11	1.35	0.91
1:C:761:ARG:HH12	8:D:106:LYS:HZ3	0.96	0.89
1:C:442:ARG:HG2	1:C:442:ARG:HH11	1.38	0.88
9:M:18:DA:C5	9:M:19:DC:N4	2.42	0.88
8:D:283:LYS:HE2	8:D:314:SER:O	1.76	0.86
1:C:977:ARG:HH12	7:L:24:DA:H5'	1.44	0.83
1:C:713:ARG:HD3	1:C:719:GLU:O	1.81	0.81
1:A:803:GLU:HG2	1:A:936:PHE:CE2	2.15	0.80
1:C:520:GLN:CB	1:C:521:PRO:HD3	2.11	0.79
1:A:440:ARG:HH12	1:C:401:ARG:CZ	1.96	0.78
1:A:811:GLU:OE2	1:A:875:ARG:HD3	1.81	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:442:ARG:HG2	1:C:442:ARG:NH1	1.98	0.77
1:A:401:ARG:HH12	1:C:440:ARG:NH1	1.82	0.76
1:C:485:TYR:OH	1:C:499:PRO:HG3	1.83	0.76
8:D:235:ARG:HH11	8:D:237:ARG:NH2	1.82	0.76
1:C:828:ARG:HG2	1:C:828:ARG:HH11	1.49	0.75
9:M:18:DA:N7	9:M:19:DC:N4	2.35	0.75
1:C:794:LEU:HD22	1:C:959:GLU:OE1	1.87	0.75
1:C:713:ARG:HH21	1:C:713:ARG:HG3	1.51	0.74
1:C:828:ARG:HG2	1:C:828:ARG:NH1	2.01	0.74
1:A:558:ARG:NH1	1:A:558:ARG:HG3	2.00	0.74
9:M:21:DG:H2'	9:M:22:DT:H72	1.68	0.74
8:D:212:ARG:HG2	8:D:213:ASN:H	1.52	0.74
8:B:222:HIS:HD2	8:B:229:ARG:HE	1.35	0.74
1:A:804:PHE:CD2	1:A:858:MET:HE1	2.23	0.73
1:A:669:THR:HG22	1:A:784:PHE:HE2	1.53	0.73
1:C:740:ASN:HD21	1:C:743:PHE:HB2	1.54	0.73
5:G:19:DC:H2'	5:G:20:DA:H8	1.53	0.73
1:A:532:VAL:HG21	1:A:558:ARG:HH11	1.52	0.72
8:B:285:MET:HE3	8:B:307:TRP:CD1	2.24	0.72
6:N:110:ARG:HG2	6:N:129:LEU:HD12	1.73	0.71
1:A:977:ARG:HG2	9:M:23:DG:H1'	1.72	0.71
2:F:12:DT:C4	7:L:35:DA:N1	2.59	0.71
5:G:7:DT:H2'	5:G:8:DT:H71	1.72	0.71
1:C:761:ARG:NH1	8:D:106:LYS:HZ3	1.80	0.70
8:D:212:ARG:NH2	8:D:293:GLY:O	2.20	0.70
2:F:12:DT:H2'	2:F:13:DA:C8	2.27	0.70
1:C:519:TRP:CH2	1:C:682:MET:HE3	2.27	0.70
1:C:773:ARG:HH11	8:D:39:ARG:NH2	1.89	0.70
1:C:934:ASN:HD22	4:J:15:DT:H5'	1.57	0.70
5:G:23:DC:H2'	5:G:24:DT:H71	1.73	0.70
1:A:977:ARG:HG2	9:M:23:DG:C1'	2.23	0.69
8:B:212:ARG:HD3	8:B:292:LEU:HD13	1.74	0.69
9:M:19:DC:H1'	9:M:20:DA:C8	2.27	0.69
8:D:235:ARG:HG3	8:D:235:ARG:NH2	2.06	0.69
8:B:105:ASP:HB3	8:B:136:PRO:HG3	1.74	0.69
1:A:972:ARG:HG3	1:A:972:ARG:NH1	2.02	0.69
6:N:14:SER:H	6:N:17:ALA:HB3	1.58	0.69
1:A:816:TYR:CE1	1:A:875:ARG:HD2	2.28	0.68
1:A:628:ARG:HD3	1:A:639:LYS:NZ	2.09	0.68
1:C:977:ARG:NH1	7:L:24:DA:H5'	2.07	0.68
1:A:713:ARG:NH1	1:A:721:SER:HA	2.09	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:B:290:VAL:HG12	8:B:299:ILE:HG12	1.76	0.68
1:A:893:TRP:CZ3	1:A:894:ARG:HD3	2.29	0.67
1:A:713:ARG:NH2	1:A:726:ILE:O	2.28	0.67
5:G:36:DA:H2"	5:G:37:DC:H5"	1.76	0.67
8:B:51:LYS:HZ2	8:B:52:GLN:HG3	1.59	0.67
8:D:235:ARG:HG3	8:D:235:ARG:HH21	1.57	0.67
1:C:523:LEU:HB3	1:C:526:VAL:HB	1.76	0.67
1:A:504:ARG:HG3	1:A:504:ARG:NH1	2.00	0.66
8:B:29:PHE:CE1	8:B:47:HIS:CD2	2.83	0.66
1:C:462:LEU:O	1:C:498:GLN:NE2	2.28	0.66
9:M:18:DA:C5	9:M:19:DC:C4	2.82	0.66
1:C:406:HIS:O	1:C:409:ARG:NH1	2.29	0.66
1:A:532:VAL:CG2	1:A:558:ARG:NH1	2.58	0.66
1:C:750:HIS:CE1	1:C:786:GLU:HA	2.31	0.66
1:A:803:GLU:OE1	1:A:803:GLU:HA	1.96	0.65
1:A:752:GLU:O	1:A:756:ARG:HG2	1.95	0.65
1:C:460:SER:OG	1:C:494:ARG:NH2	2.30	0.65
1:C:773:ARG:NH1	8:D:39:ARG:NH2	2.44	0.65
6:N:24:ARG:HA	6:N:27:HIS:CE1	2.32	0.65
1:C:457:GLY:C	1:C:458:ARG:HG2	2.21	0.64
1:A:804:PHE:CE2	1:A:858:MET:HE1	2.32	0.64
1:C:520:GLN:CB	1:C:521:PRO:CD	2.76	0.64
1:A:767:GLU:OE2	1:A:775:ARG:NH2	2.28	0.64
6:N:106:CYS:HB3	6:N:110:ARG:HE	1.61	0.64
9:M:23:DG:H2'	9:M:24:DA:C8	2.32	0.63
8:D:283:LYS:CE	8:D:314:SER:O	2.46	0.63
8:B:212:ARG:HG3	8:B:212:ARG:NH1	2.14	0.63
1:A:977:ARG:CG	9:M:23:DG:H1'	2.28	0.63
1:A:792:ASP:OD2	1:A:795:HIS:ND1	2.26	0.63
1:A:851:GLY:O	1:A:855:ARG:HG2	2.00	0.62
5:G:39:DG:C6	9:M:18:DA:N6	2.67	0.62
1:C:838:ARG:NH1	1:C:845:PRO:HD2	2.15	0.62
8:D:105:ASP:HB3	8:D:136:PRO:HB3	1.80	0.61
8:B:1:MET:N	8:B:349:ARG:O	2.22	0.61
8:B:113:ALA:HB2	8:B:123:ARG:HG3	1.83	0.61
1:C:713:ARG:HH21	1:C:713:ARG:CG	2.14	0.61
1:A:689:LEU:HD11	1:A:691:MET:HE3	1.83	0.61
1:C:523:LEU:HD13	1:C:526:VAL:HG21	1.83	0.61
4:J:11:DG:H2'	4:J:12:DT:H71	1.83	0.61
1:A:784:PHE:CD1	1:A:785:ILE:HG13	2.36	0.60
1:C:812:ILE:HD11	1:C:833:LEU:HD13	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:D:235:ARG:HH21	8:D:235:ARG:CG	2.14	0.60
1:A:843:LEU:HD21	1:A:856:LYS:HD2	1.82	0.60
1:A:838:ARG:HH21	1:C:614:ALA:HA	1.66	0.60
8:B:235:ARG:HH21	8:B:237:ARG:NH2	1.98	0.60
1:A:977:ARG:HE	1:A:982:TYR:HB3	1.65	0.60
8:D:210:ILE:HB	8:D:217:TYR:HB2	1.83	0.60
8:D:145:VAL:HG13	8:D:214:ASP:HA	1.82	0.60
1:A:713:ARG:HH12	1:A:721:SER:HA	1.66	0.60
8:B:212:ARG:CG	8:B:212:ARG:HH11	2.14	0.60
1:A:977:ARG:HD3	9:M:23:DG:H1'	1.83	0.59
1:A:599:CYS:HB2	1:A:622:PHE:HD1	1.67	0.59
1:C:629:ILE:HD12	1:C:641:PHE:HD2	1.67	0.59
1:C:773:ARG:NH1	8:D:39:ARG:HH21	1.99	0.59
9:M:18:DA:H2"	9:M:19:DC:C6	2.38	0.59
1:A:520:GLN:HB3	1:A:521:PRO:HD3	1.85	0.59
1:A:977:ARG:CD	9:M:23:DG:H1'	2.33	0.59
8:D:279:LEU:HB2	8:D:282:GLN:HB3	1.85	0.58
9:M:19:DC:H1'	9:M:20:DA:N7	2.17	0.58
1:C:806:LYS:HD2	1:C:809:GLN:HE21	1.68	0.58
1:A:532:VAL:HG21	1:A:558:ARG:HG3	1.83	0.58
9:M:22:DT:C2'	9:M:23:DG:O5'	2.52	0.58
1:C:828:ARG:HH11	1:C:828:ARG:CG	2.14	0.58
8:B:235:ARG:NH2	8:B:237:ARG:HH22	2.00	0.58
9:M:19:DC:H2"	9:M:20:DA:N7	2.18	0.58
1:C:848:ARG:NH1	1:C:849:MET:O	2.36	0.58
2:F:12:DT:H2'	2:F:13:DA:H8	1.67	0.58
5:G:23:DC:H42	9:M:35:DG:H1	1.51	0.58
8:D:65:ASP:OD1	8:D:123:ARG:NH1	2.37	0.58
8:D:308:THR:OG1	8:D:310:ASP:OD1	2.21	0.58
1:A:608:LYS:HZ2	1:A:972:ARG:NH2	2.01	0.57
8:D:142:ILE:HD12	8:D:155:LEU:HD12	1.86	0.57
1:C:860:GLN:HE21	1:C:887:LEU:HD12	1.69	0.57
1:A:401:ARG:NH1	1:C:440:ARG:NH1	2.50	0.57
4:J:-1:DT:H2'	4:J:0:DG:C8	2.39	0.57
1:A:608:LYS:NZ	1:A:972:ARG:NH2	2.53	0.57
8:B:41:CYS:SG	8:B:46:PHE:HE1	2.27	0.57
8:B:289:LEU:HB2	8:B:302:MET:HE2	1.86	0.57
5:G:21:DC:N3	5:G:22:DA:N6	2.53	0.57
6:N:110:ARG:HH12	6:N:126:ALA:HB2	1.69	0.57
7:L:45:DC:H2'	7:L:46:DG:C8	2.39	0.57
1:C:792:ASP:OD2	1:C:795:HIS:ND1	2.29	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:B:167:ARG:HH21	8:B:172:TRP:NE1	2.02	0.57
8:B:198:PRO:O	8:B:201:GLN:NE2	2.37	0.57
8:D:11:ASN:HD21	8:D:57:LEU:HB2	1.70	0.57
8:B:212:ARG:HG3	8:B:212:ARG:HH11	1.69	0.57
8:B:235:ARG:HH21	8:B:237:ARG:HH22	1.51	0.57
9:M:37:DG:H2'	9:M:38:DT:H71	1.85	0.56
1:C:773:ARG:HH11	8:D:39:ARG:HH21	1.51	0.56
8:D:235:ARG:NH1	8:D:237:ARG:NH2	2.37	0.56
1:C:560:ASP:OD1	1:C:561:SER:N	2.38	0.56
1:C:658:MET:SD	1:C:671:ILE:HG21	2.45	0.56
5:G:19:DC:H2'	5:G:20:DA:C8	2.39	0.56
1:A:574:ILE:HG22	1:A:578:MET:HE2	1.87	0.56
1:A:803:GLU:OE2	1:A:927:ARG:NE	2.37	0.56
1:C:591:PHE:HE1	1:C:631:ILE:HD12	1.69	0.56
5:G:8:DT:H1'	5:G:9:DT:H5"	1.86	0.56
8:B:16:GLN:NE2	8:B:33:GLN:O	2.38	0.56
1:C:594:VAL:HG13	1:C:627:MET:HB2	1.86	0.56
7:L:21:DG:H2'	7:L:22:DT:H71	1.88	0.56
8:D:30:PHE:HB3	8:D:46:PHE:HB2	1.88	0.56
1:C:890:LYS:HA	1:C:893:TRP:CZ3	2.40	0.56
8:D:215:THR:CG2	8:D:235:ARG:HG2	2.36	0.56
1:C:519:TRP:CZ2	1:C:682:MET:HE3	2.41	0.56
1:C:569:ASP:OD1	1:C:996:SER:OG	2.23	0.56
1:A:793:ALA:HB1	1:A:894:ARG:HH11	1.71	0.56
1:A:794:LEU:HD21	2:F:30:DG:C4	2.42	0.55
1:C:750:HIS:ND1	1:C:786:GLU:HA	2.21	0.55
1:A:628:ARG:HD3	1:A:639:LYS:HZ2	1.70	0.55
1:A:848:ARG:NH2	2:F:31:DT:OP1	2.39	0.55
1:C:458:ARG:CB	1:C:458:ARG:HH11	2.19	0.55
1:C:477:SER:OG	7:L:23:DG:OP2	2.25	0.55
8:B:197:LEU:HD23	8:B:249:CYS:HB2	1.89	0.55
8:D:106:LYS:NZ	8:D:126:GLU:OE2	2.39	0.55
8:B:217:TYR:HE1	8:B:235:ARG:HD3	1.72	0.55
8:B:285:MET:CE	8:B:307:TRP:CD1	2.90	0.55
1:A:650:LEU:HB3	1:A:1000:GLN:HE22	1.71	0.55
1:A:466:VAL:HG22	1:A:1002:PHE:CD2	2.43	0.54
8:D:275:GLY:HA2	8:D:284:ARG:HD3	1.88	0.54
1:C:439:LEU:HD21	1:C:447:GLN:HB2	1.88	0.54
1:C:641:PHE:CD1	1:C:641:PHE:C	2.85	0.54
1:C:853:PHE:CD1	1:C:853:PHE:C	2.86	0.54
2:F:36:DC:H2"	2:F:37:DA:C8	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:761:ARG:NH1	8:D:106:LYS:NZ	2.45	0.54
1:C:893:TRP:CD1	1:C:893:TRP:C	2.86	0.54
1:A:761:ARG:HH12	8:B:126:GLU:CD	2.15	0.54
4:J:3:DT:H4'	4:J:4:DC:OP1	2.06	0.54
1:C:446:ARG:HH12	6:N:90:LYS:CB	2.21	0.54
6:N:93:ASN:HD22	6:N:94:ALA:H	1.54	0.54
1:A:401:ARG:HH12	1:C:440:ARG:HH12	1.53	0.53
1:C:593:VAL:HG22	1:C:629:ILE:HG12	1.89	0.53
1:C:571:GLU:OE2	1:C:692:GLY:N	2.41	0.53
1:C:908:GLN:O	1:C:912:ASN:ND2	2.41	0.53
5:G:6:DT:H2'	5:G:7:DT:C6	2.43	0.53
1:A:489:LYS:NZ	5:G:31:DG:OP1	2.28	0.53
1:A:934:ASN:HB3	1:A:938:LYS:NZ	2.23	0.53
9:M:21:DG:H2"	9:M:22:DT:H5'	1.91	0.53
1:A:478:CYS:HB2	9:M:23:DG:OP2	2.07	0.53
2:F:6:DT:H2'	2:F:7:DT:C6	2.44	0.53
8:B:41:CYS:HG	8:B:46:PHE:HE1	1.54	0.53
9:M:22:DT:H2"	9:M:23:DG:C5'	2.38	0.53
6:N:110:ARG:CG	6:N:129:LEU:HD12	2.39	0.53
8:B:107:ILE:HG23	8:B:127:LYS:HB3	1.90	0.53
5:G:51:DC:H2"	5:G:52:DC:C6	2.44	0.53
8:B:284:ARG:NH2	8:B:288:SER:OG	2.42	0.53
1:A:784:PHE:CD1	1:A:784:PHE:C	2.86	0.53
5:G:19:DC:C2	5:G:20:DA:C8	2.96	0.53
1:A:908:GLN:O	1:A:912:ASN:ND2	2.42	0.52
1:C:602:MET:SD	1:C:965:ASN:ND2	2.81	0.52
2:F:12:DT:O4	7:L:35:DA:C6	2.62	0.52
8:B:129:LEU:HG	8:B:133:VAL:HG12	1.90	0.52
1:A:977:ARG:NH1	1:A:985:GLU:OE2	2.42	0.52
5:G:6:DT:C6	5:G:7:DT:H72	2.44	0.52
7:L:35:DA:H2"	7:L:36:DA:C8	2.44	0.52
8:B:6:VAL:HG21	8:B:347:THR:HG23	1.91	0.52
9:M:19:DC:H2"	9:M:20:DA:C8	2.45	0.52
9:M:54:DC:H2'	9:M:55:DC:C6	2.45	0.52
6:N:15:SER:HB2	6:N:65:LYS:HE3	1.92	0.52
8:B:57:LEU:O	8:B:58:LYS:HD2	2.09	0.52
9:M:18:DA:C4	9:M:19:DC:C4	2.98	0.52
5:G:29:DT:H2"	5:G:30:DT:H5"	1.92	0.52
8:B:222:HIS:CD2	8:B:229:ARG:HE	2.23	0.52
8:D:22:MET:HB2	8:D:91:TYR:CE2	2.45	0.51
8:D:47:HIS:C	8:D:47:HIS:CD2	2.88	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:469:ALA:HB2	1:A:999:LEU:HD22	1.91	0.51
1:A:761:ARG:NH2	8:B:108:TYR:OH	2.41	0.51
1:A:784:PHE:CE1	1:A:785:ILE:HG13	2.45	0.51
8:D:159:ARG:HH21	8:D:205:SER:HB2	1.75	0.51
1:C:729:LEU:HD23	1:C:746:ILE:HG12	1.90	0.51
1:C:852:ASN:ND2	5:G:39:DG:O6	2.41	0.51
5:G:25:DT:H1'	5:G:26:DG:N7	2.26	0.51
6:N:69:ALA:O	6:N:73:ARG:HG2	2.10	0.51
8:D:8:VAL:HG11	8:D:12:ILE:HD12	1.92	0.51
8:D:259:SER:HB3	8:D:277:TYR:HB2	1.92	0.51
1:A:556:ARG:HD2	1:A:557:PHE:O	2.11	0.51
1:C:457:GLY:O	1:C:458:ARG:HG2	2.11	0.51
1:C:814:GLU:OE2	1:C:871:PRO:HD2	2.11	0.51
8:D:256:ILE:HG22	8:D:258:VAL:HG23	1.93	0.51
1:A:650:LEU:HB3	1:A:1000:GLN:NE2	2.26	0.50
1:A:852:ASN:HA	1:A:855:ARG:HG3	1.92	0.50
1:A:476:LEU:HD21	1:C:476:LEU:HD21	1.94	0.50
1:A:560:ASP:OD1	1:A:561:SER:N	2.44	0.50
1:A:911:PHE:CD1	1:A:911:PHE:C	2.88	0.50
1:C:720:ALA:HB3	5:G:46:DA:H5'	1.93	0.50
1:C:742:VAL:HG23	1:C:743:PHE:CD2	2.46	0.50
3:I:9:DC:H2"	3:I:10:DT:O5'	2.10	0.50
9:M:45:DA:N6	9:M:46:DG:O6	2.42	0.50
1:A:552:THR:HG21	1:A:667:THR:HG21	1.93	0.50
2:F:9:DT:H2"	2:F:10:DG:H5"	1.92	0.50
1:A:761:ARG:NH1	8:B:126:GLU:OE1	2.45	0.50
1:C:713:ARG:CG	1:C:713:ARG:NH2	2.73	0.50
8:D:8:VAL:HG23	8:D:55:LEU:HD23	1.93	0.50
8:B:235:ARG:O	8:B:235:ARG:HG3	2.12	0.50
1:A:840:ARG:NH1	1:A:868:GLU:OE1	2.45	0.50
1:C:536:ASP:OD2	1:C:538:LEU:HB2	2.12	0.50
5:G:35:DC:N3	5:G:36:DA:N6	2.60	0.50
1:C:852:ASN:ND2	5:G:39:DG:N7	2.59	0.50
2:F:2:DG:H2"	2:F:3:DG:C8	2.47	0.50
4:J:4:DC:H2"	4:J:5:DT:H71	1.94	0.50
6:N:93:ASN:ND2	6:N:94:ALA:H	2.09	0.49
8:D:275:GLY:HA3	8:D:284:ARG:HG2	1.93	0.49
1:C:978:GLN:HE21	2:F:27:DT:H4'	1.76	0.49
8:D:22:MET:HG3	8:D:29:PHE:HB2	1.95	0.49
8:B:266:THR:HG22	8:B:350:CYS:O	2.12	0.49
1:A:717:GLY:HA2	1:A:781:ALA:HB3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:977:ARG:HG2	9:M:23:DG:O4'	2.12	0.49
7:L:42:DA:H2'	7:L:43:DC:C6	2.47	0.49
5:G:9:DT:H2"	5:G:10:DG:C8	2.47	0.49
6:N:122:ILE:O	6:N:126:ALA:CB	2.60	0.49
1:A:470:ILE:O	1:A:474:THR:OG1	2.25	0.49
8:B:275:GLY:HA2	8:B:317:TRP:CZ2	2.47	0.49
1:C:436:LEU:HD21	1:C:451:LEU:HD22	1.94	0.49
2:F:43:DG:H2"	2:F:44:DA:N7	2.28	0.49
8:B:78:CYS:HB2	8:B:142:ILE:HG23	1.94	0.49
1:C:503:LEU:O	1:C:507:GLU:HG3	2.13	0.49
1:C:458:ARG:HH11	1:C:458:ARG:HB3	1.78	0.49
1:C:570:MET:SD	1:C:641:PHE:HE2	2.36	0.49
1:C:649:GLU:HB3	1:C:963:SER:HB3	1.95	0.48
1:A:760:TRP:HB2	1:A:776:VAL:HG11	1.95	0.48
1:A:578:MET:HE1	1:A:696:ARG:HH22	1.77	0.48
1:C:473:ASN:ND2	1:C:473:ASN:O	2.45	0.48
3:I:9:DC:H2'	3:I:10:DT:C6	2.48	0.48
5:G:47:DC:H2"	5:G:48:DA:C8	2.48	0.48
9:M:22:DT:H3'	9:M:22:DT:H6	1.79	0.48
1:A:850:ASN:ND2	1:A:851:GLY:H	2.10	0.48
1:C:442:ARG:O	1:C:443:ASN:OD1	2.32	0.48
9:M:20:DA:C4	9:M:21:DG:C8	3.01	0.48
1:A:876:HIS:O	1:A:880:ARG:HG2	2.13	0.48
1:A:934:ASN:HB3	1:A:938:LYS:HZ3	1.76	0.48
4:J:5:DT:H2"	4:J:6:DG:C8	2.48	0.48
8:B:8:VAL:HA	8:B:55:LEU:HB3	1.96	0.48
8:B:97:LYS:HG3	8:B:103:LEU:CD2	2.44	0.48
1:A:489:LYS:NZ	1:A:495:GLN:HE21	2.10	0.48
8:B:241:PRO:HD2	8:B:245:PRO:HA	1.95	0.48
9:M:49:DA:H2"	9:M:50:DA:C8	2.48	0.48
1:C:471:ARG:O	1:C:471:ARG:HG2	2.14	0.48
4:J:9:DC:H4'	4:J:10:DT:OP1	2.14	0.48
1:A:608:LYS:NZ	1:A:972:ARG:CZ	2.77	0.48
1:A:754:LEU:HD23	1:A:783:PRO:HD2	1.96	0.48
2:F:40:DC:H2"	2:F:41:DC:C5	2.49	0.48
8:D:137:ARG:HH11	8:D:157:GLY:HA2	1.79	0.48
1:C:600:ASP:OD1	1:C:601:GLY:N	2.47	0.48
1:C:713:ARG:NH1	1:C:726:ILE:O	2.46	0.48
1:C:969:ARG:NH2	5:G:41:DG:OP1	2.43	0.47
7:L:42:DA:H2'	7:L:43:DC:C5	2.49	0.47
9:M:22:DT:H2"	9:M:23:DG:O5'	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:B:69:LEU:HD23	8:B:69:LEU:H	1.80	0.47
9:M:36:DT:H2"	9:M:37:DG:C8	2.49	0.47
9:M:32:DC:H2"	9:M:33:DA:C8	2.50	0.47
8:D:258:VAL:HG11	8:D:261:ALA:HB2	1.97	0.47
9:M:24:DA:C8	9:M:25:DT:H72	2.49	0.47
5:G:25:DT:H4'	5:G:26:DG:H5'	1.97	0.47
5:G:26:DG:H2"	5:G:27:DA:H5"	1.97	0.47
6:N:19:PHE:HD1	6:N:60:PHE:HD2	1.62	0.47
8:B:235:ARG:NH2	8:B:237:ARG:NH2	2.60	0.47
1:A:486:ARG:HH21	1:C:1006:HIS:HB3	1.80	0.47
1:A:628:ARG:HD3	1:A:639:LYS:HZ3	1.80	0.47
1:A:812:ILE:HD11	1:A:833:LEU:HD13	1.97	0.47
2:F:32:DA:H2"	2:F:33:DA:OP2	2.14	0.47
8:B:30:PHE:N	8:B:46:PHE:O	2.43	0.47
1:A:628:ARG:CD	1:A:639:LYS:NZ	2.78	0.47
8:D:156:PHE:HE2	8:D:204:LEU:HB3	1.80	0.47
1:C:468:LEU:HB2	1:C:503:LEU:HD22	1.98	0.46
2:F:27:DT:H2"	2:F:28:DG:C8	2.50	0.46
1:C:417:GLU:O	1:C:421:LYS:HG3	2.15	0.46
8:B:22:MET:HG3	8:B:29:PHE:HB2	1.97	0.46
1:C:523:LEU:HD23	1:C:523:LEU:HA	1.75	0.46
6:N:103:PHE:HZ	9:M:33:DA:N3	2.14	0.46
1:C:794:LEU:HD13	1:C:959:GLU:OE1	2.16	0.46
1:C:816:TYR:CZ	1:C:817:LYS:NZ	2.83	0.46
8:D:1:MET:N	8:D:349:ARG:O	2.39	0.46
1:A:473:ASN:O	1:A:473:ASN:ND2	2.49	0.46
1:C:679:ARG:NH2	1:C:683:LYS:NZ	2.63	0.46
7:L:20:DA:C4	7:L:21:DG:C8	3.04	0.46
8:B:283:LYS:HD3	8:B:317:TRP:CE2	2.51	0.46
9:M:49:DA:H2"	9:M:50:DA:H8	1.79	0.46
1:A:852:ASN:HA	1:A:855:ARG:CG	2.45	0.46
1:A:977:ARG:CG	9:M:23:DG:C1'	2.90	0.46
9:M:21:DG:H2'	9:M:22:DT:C7	2.42	0.46
1:C:485:TYR:HE2	1:C:497:PHE:O	1.99	0.46
3:I:6:DG:H2"	3:I:7:DG:C8	2.51	0.46
6:N:105:PHE:CE2	6:N:129:LEU:HD22	2.50	0.46
7:L:20:DA:H2"	7:L:21:DG:H5"	1.97	0.46
1:A:977:ARG:HH11	1:A:982:TYR:HD1	1.63	0.46
5:G:27:DA:H2'	5:G:28:DT:H71	1.98	0.46
5:G:48:DA:H2"	5:G:49:DG:H8	1.81	0.46
1:C:467:CYS:SG	1:C:503:LEU:HD21	2.56	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:G:52:DC:H2"	5:G:53:DA:C8	2.51	0.46
1:A:715:VAL:HB	1:A:784:PHE:HE1	1.81	0.46
1:C:429:ALA:O	1:C:432:LEU:HD23	2.16	0.46
1:C:726:ILE:HB	1:C:934:ASN:OD1	2.16	0.46
2:F:41:DC:H2"	2:F:42:DA:C8	2.51	0.46
2:F:5:DT:H2'	2:F:6:DT:H71	1.98	0.45
4:J:-2:DC:H2'	4:J:-1:DT:C6	2.50	0.45
5:G:21:DC:H2"	5:G:22:DA:N7	2.31	0.45
9:M:29:DA:H2"	9:M:30:DA:C8	2.52	0.45
1:A:661:ASP:HB3	1:A:664:ASP:HB2	1.97	0.45
1:A:893:TRP:O	1:A:893:TRP:HE3	1.99	0.45
4:J:14:DT:H2'	4:J:15:DT:C6	2.50	0.45
1:C:559:TYR:CD2	1:C:655:LEU:HD21	2.51	0.45
6:N:19:PHE:HB3	6:N:49:TRP:CZ2	2.51	0.45
8:D:311:ILE:HD11	8:D:346:TYR:HD2	1.81	0.45
8:B:7:THR:OG1	8:B:54:HIS:ND1	2.37	0.45
1:C:458:ARG:CB	1:C:458:ARG:NH1	2.80	0.45
1:C:458:ARG:NH1	1:C:458:ARG:HB2	2.32	0.45
9:M:19:DC:C1'	9:M:20:DA:N7	2.79	0.45
1:A:962:GLN:HA	1:A:965:ASN:ND2	2.32	0.45
5:G:39:DG:O6	9:M:18:DA:N6	2.50	0.45
8:B:147:SER:HB3	8:B:240:LEU:HB2	1.98	0.45
8:B:317:TRP:N	8:B:317:TRP:CD1	2.82	0.45
1:A:449:ASP:HA	1:A:452:GLU:HG2	1.99	0.45
1:A:661:ASP:OD1	1:A:662:GLU:N	2.49	0.45
6:N:101:ALA:HB1	6:N:144:TYR:HB3	1.99	0.45
8:B:141:SER:HG	8:B:207:HIS:HE2	1.62	0.45
1:A:503:LEU:O	1:A:507:GLU:HG3	2.17	0.44
1:C:893:TRP:CD1	1:C:893:TRP:O	2.70	0.44
1:A:416:LYS:NZ	1:A:420:ASP:OD2	2.50	0.44
8:D:238:VAL:HG12	8:D:247:VAL:HG12	1.98	0.44
8:D:275:GLY:CA	8:D:284:ARG:HG2	2.48	0.44
1:C:399:LEU:HD23	1:C:403:ALA:HB1	1.99	0.44
2:F:12:DT:C5	7:L:35:DA:C2	3.06	0.44
8:D:317:TRP:CD1	8:D:317:TRP:O	2.70	0.44
1:A:893:TRP:O	1:A:893:TRP:CE3	2.70	0.44
1:C:457:GLY:C	1:C:458:ARG:CG	2.90	0.44
8:D:311:ILE:HD11	8:D:346:TYR:CD2	2.52	0.44
1:A:395:HIS:O	1:A:398:SER:OG	2.29	0.44
1:A:622:PHE:CD2	1:A:655:LEU:HD23	2.52	0.44
1:A:798:ILE:HD11	2:F:30:DG:C8	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:911:PHE:CD1	1:A:911:PHE:O	2.70	0.44
1:C:482:HIS:HB2	1:C:500:LEU:HD11	1.99	0.44
2:F:24:DC:H2'	2:F:25:DA:C8	2.53	0.44
1:A:729:LEU:HB3	1:A:746:ILE:HG22	1.98	0.44
1:C:563:LEU:HD12	1:C:682:MET:HE1	2.00	0.44
8:B:197:LEU:HB2	8:B:200:LEU:HD12	2.00	0.44
1:C:485:TYR:CD1	1:C:485:TYR:C	2.95	0.44
1:C:529:ARG:O	1:C:558:ARG:NH2	2.47	0.44
1:C:568:MET:HE2	1:C:689:LEU:HD21	2.00	0.44
1:C:590:PRO:HB2	1:C:699:LYS:HE3	2.00	0.44
1:C:673:SER:OG	1:C:674:PRO:HD3	2.18	0.44
1:A:401:ARG:C	1:A:403:ALA:H	2.26	0.44
1:A:483:LYS:O	1:A:486:ARG:HG3	2.18	0.44
1:A:556:ARG:HD3	1:A:675:LEU:HD11	1.99	0.44
1:A:726:ILE:HG13	1:A:727:CYS:N	2.33	0.44
1:C:393:ARG:NH2	2:F:7:DT:OP1	2.51	0.44
1:C:657:LEU:HD12	1:C:988:LEU:HB2	2.00	0.44
1:C:804:PHE:HD2	1:C:858:MET:HE1	1.83	0.44
6:N:24:ARG:HA	6:N:27:HIS:ND1	2.33	0.44
8:B:212:ARG:HD2	8:B:212:ARG:HA	1.27	0.44
1:C:650:LEU:HB3	1:C:1000:GLN:HE22	1.83	0.43
2:F:3:DG:H2"	2:F:4:DG:H8	1.83	0.43
8:D:97:LYS:HG3	8:D:103:LEU:HD23	1.99	0.43
8:B:143:ASP:OD2	8:B:209:SER:HB3	2.18	0.43
9:M:50:DA:H2"	9:M:51:DA:H5"	1.99	0.43
8:D:321:ASN:OD1	8:D:322:MET:N	2.51	0.43
1:A:823:LYS:H	1:A:823:LYS:HG2	1.48	0.43
1:A:843:LEU:HD13	1:A:853:PHE:CE1	2.52	0.43
5:G:38:DT:H2"	5:G:39:DG:C5	2.53	0.43
8:B:93:ILE:HB	8:B:108:TYR:HB2	2.01	0.43
8:B:8:VAL:HG13	8:B:55:LEU:HD23	2.01	0.43
9:M:23:DG:C6	9:M:24:DA:C6	3.06	0.43
1:A:602:MET:N	1:A:619:ALA:O	2.48	0.43
1:C:570:MET:SD	1:C:641:PHE:CE2	3.12	0.43
1:C:713:ARG:HH22	1:C:728:THR:HG23	1.84	0.43
1:C:773:ARG:HA	1:C:776:VAL:HG12	1.99	0.43
1:C:744:HIS:HB2	1:C:941:ALA:HB1	2.00	0.43
8:B:267:ASN:HB3	8:B:270:GLU:OE2	2.18	0.43
8:B:275:GLY:HA2	8:B:317:TRP:CH2	2.53	0.43
1:C:485:TYR:CE2	1:C:497:PHE:O	2.72	0.43
1:C:754:LEU:HD23	1:C:783:PRO:HD2	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:570:MET:HG2	1:A:997:LYS:HD2	2.00	0.42
1:A:962:GLN:HA	1:A:965:ASN:HD22	1.84	0.42
8:B:321:ASN:OD1	8:B:322:MET:N	2.53	0.42
8:B:3:LEU:HD23	8:B:308:THR:HG23	2.01	0.42
8:B:79:SER:HA	8:B:91:TYR:CD1	2.54	0.42
1:A:720:ALA:HB3	2:F:35:DA:H5'	2.00	0.42
1:C:523:LEU:HD12	1:C:526:VAL:HG11	2.00	0.42
1:C:838:ARG:HH11	1:C:845:PRO:HD2	1.80	0.42
5:G:7:DT:H2"	5:G:8:DT:H5'	2.01	0.42
1:A:593:VAL:HG22	1:A:629:ILE:HG12	2.01	0.42
1:A:689:LEU:CD1	1:A:691:MET:HE3	2.47	0.42
1:C:804:PHE:HD2	1:C:858:MET:CE	2.32	0.42
6:N:31:HIS:CE1	6:N:33:ASP:HB3	2.54	0.42
8:D:233:LEU:HD22	8:D:255:GLY:HA2	2.01	0.42
9:M:22:DT:H2"	9:M:23:DG:H5'	2.01	0.42
1:A:977:ARG:NE	1:A:982:TYR:HB3	2.33	0.42
7:L:30:DC:C2	7:L:31:DC:C5	3.07	0.42
8:D:135:GLU:CD	8:D:136:PRO:HD2	2.44	0.42
8:B:271:PHE:HE2	8:B:292:LEU:HD11	1.85	0.42
8:B:283:LYS:HB2	8:B:283:LYS:HE3	1.74	0.42
1:A:959:GLU:OE2	7:L:18:DA:C4	2.73	0.42
1:C:687:LEU:HB3	1:C:698:PHE:HB2	2.02	0.42
1:C:767:GLU:OE2	1:C:772:LEU:HA	2.19	0.42
5:G:20:DA:C4	5:G:21:DC:C5	3.08	0.42
5:G:35:DC:H2"	5:G:36:DA:C8	2.54	0.42
6:N:110:ARG:CG	6:N:129:LEU:CD1	2.98	0.42
1:A:532:VAL:CG2	1:A:558:ARG:HH12	2.33	0.42
1:C:521:PRO:HD2	1:C:685:SER:OG	2.20	0.42
2:F:14:DA:H2"	2:F:15:DG:O4'	2.19	0.42
1:C:811:GLU:CD	1:C:875:ARG:HH21	2.27	0.42
7:L:38:DA:H2"	7:L:39:DA:H8	1.85	0.42
1:A:836:HIS:NE2	1:A:865:ALA:O	2.53	0.41
1:C:521:PRO:O	1:C:522:PRO:C	2.63	0.41
1:C:713:ARG:HH22	1:C:728:THR:CG2	2.32	0.41
1:C:776:VAL:HG22	1:C:779:VAL:HB	2.02	0.41
1:A:401:ARG:NH1	1:C:440:ARG:HH12	2.14	0.41
4:J:1:DG:H2"	4:J:2:DA:C8	2.55	0.41
8:B:73:ARG:HH22	8:B:101:ASN:ND2	2.18	0.41
1:A:784:PHE:CE1	1:A:785:ILE:CD1	3.03	0.41
1:C:853:PHE:C	1:C:853:PHE:HD1	2.28	0.41
6:N:15:SER:HB3	9:M:50:DA:OP1	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:D:47:HIS:CD2	8:D:48:PHE:O	2.74	0.41
8:D:137:ARG:NH1	8:D:157:GLY:HA2	2.35	0.41
8:B:28:VAL:O	8:B:48:PHE:N	2.49	0.41
9:M:18:DA:C8	9:M:19:DC:C5	3.08	0.41
9:M:18:DA:C6	9:M:19:DC:N4	2.86	0.41
1:C:641:PHE:O	1:C:641:PHE:CG	2.72	0.41
1:C:817:LYS:HG3	1:C:818:HIS:ND1	2.36	0.41
8:D:248:ASN:OD1	8:D:249:CYS:N	2.53	0.41
8:D:310:ASP:OD1	8:D:311:ILE:N	2.53	0.41
8:B:204:LEU:HD11	8:B:221:GLY:HA3	2.03	0.41
1:A:723:SER:OG	1:A:724:VAL:N	2.53	0.41
1:A:810:LEU:HD22	1:A:815:VAL:HG21	2.03	0.41
1:C:841:MET:HE1	1:C:861:GLU:OE2	2.21	0.41
8:D:17:PRO:HG3	8:D:318:PHE:CE1	2.56	0.41
9:M:27:DC:H2”	9:M:28:DA:C8	2.55	0.41
1:A:399:LEU:HD23	5:G:8:DT:H3’	2.03	0.41
1:A:548:TYR:CD1	1:A:549:PRO:HD2	2.56	0.41
1:A:802:ALA:HA	1:A:849:MET:HE3	2.03	0.41
3:I:3:DT:H2”	3:I:4:DC:C6	2.56	0.41
5:G:32:DC:H2”	5:G:33:DA:H8	1.85	0.41
5:G:38:DT:H2”	5:G:39:DG:N7	2.35	0.41
8:D:228:ILE:O	8:D:230:PRO:HD3	2.20	0.41
8:D:239:ASP:OD1	8:D:240:LEU:N	2.53	0.41
8:D:327:ILE:HB	8:D:348:LEU:HB3	2.03	0.41
1:A:972:ARG:O	1:A:972:ARG:HG2	2.20	0.41
8:D:69:LEU:HD23	8:D:69:LEU:H	1.85	0.41
1:A:475:PHE:CD2	1:A:970:ARG:NH1	2.88	0.41
1:C:595:VAL:HG21	1:C:702:PHE:CD1	2.56	0.41
8:B:334:ASP:OD1	8:B:335:ASN:N	2.48	0.41
9:M:19:DC:C2’	9:M:20:DA:C8	3.04	0.41
1:C:713:ARG:NH2	1:C:728:THR:CG2	2.84	0.41
1:C:740:ASN:ND2	1:C:743:PHE:HB2	2.28	0.41
5:G:54:DG:H2”	5:G:55:DA:C8	2.56	0.41
6:N:131:GLU:O	6:N:135:ASN:ND2	2.53	0.41
8:B:30:PHE:HB3	8:B:46:PHE:HB2	2.03	0.41
8:B:272:VAL:HG22	8:B:302:MET:HE1	2.03	0.41
1:A:483:LYS:HB3	1:A:483:LYS:HE2	1.93	0.40
5:G:48:DA:H2”	5:G:49:DG:C8	2.56	0.40
9:M:19:DC:C2’	9:M:20:DA:N7	2.84	0.40
1:C:713:ARG:CD	1:C:719:GLU:O	2.63	0.40
7:L:19:DC:H1’	7:L:20:DA:C8	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:L:44:DC:H2"	7:L:45:DC:O4'	2.20	0.40
8:B:167:ARG:NH2	8:B:172:TRP:NE1	2.68	0.40
5:G:33:DA:H2'	5:G:34:DT:H71	2.02	0.40
6:N:98:PRO:HD3	6:N:155:TYR:CE1	2.56	0.40
8:D:278:GLN:HG2	8:D:279:LEU:HD12	2.03	0.40
1:C:584:ASP:HB2	1:C:587:LEU:HG	2.04	0.40
1:C:804:PHE:CD2	1:C:858:MET:HE1	2.57	0.40
5:G:21:DC:C2	5:G:22:DA:N6	2.90	0.40
9:M:28:DA:H2"	9:M:29:DA:H8	1.87	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	612/776 (79%)	590 (96%)	21 (3%)	1 (0%)	44	75
1	C	614/776 (79%)	588 (96%)	26 (4%)	0	100	100
6	N	125/163 (77%)	117 (94%)	8 (6%)	0	100	100
8	B	336/520 (65%)	331 (98%)	5 (2%)	0	100	100
8	D	334/520 (64%)	322 (96%)	12 (4%)	0	100	100
All	All	2021/2755 (73%)	1948 (96%)	72 (4%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	457	GLY

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	536/692 (78%)	519 (97%)	17 (3%)	34	56
1	C	540/692 (78%)	529 (98%)	11 (2%)	50	68
6	N	71/139 (51%)	70 (99%)	1 (1%)	62	75
8	B	293/461 (64%)	288 (98%)	5 (2%)	56	72
8	D	292/461 (63%)	287 (98%)	5 (2%)	56	72
All	All	1732/2445 (71%)	1693 (98%)	39 (2%)	46	64

All (39) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	401	ARG
1	A	410	GLU
1	A	471	ARG
1	A	504	ARG
1	A	558	ARG
1	A	628	ARG
1	A	709	GLU
1	A	719	GLU
1	A	756	ARG
1	A	784	PHE
1	A	823	LYS
1	A	827	LYS
1	A	839	LYS
1	A	844	LYS
1	A	890	LYS
1	A	972	ARG
1	A	1003	MET
1	C	442	ARG
1	C	446	ARG
1	C	458	ARG
1	C	495	GLN
1	C	523	LEU
1	C	628	ARG

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Mol	Chain	Res	Type
1	C	641	PHE
1	C	758	GLU
1	C	804	PHE
1	C	823	LYS
1	C	828	ARG
6	N	65	LYS
8	D	48	PHE
8	D	58	LYS
8	D	148	ARG
8	D	235	ARG
8	D	283	LYS
8	B	5	MET
8	B	212	ARG
8	B	235	ARG
8	B	283	LYS
8	B	317	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	473	ASN
1	A	495	GLN
1	A	505	ASN
1	A	753	ASN
1	A	818	HIS
1	A	850	ASN
1	A	860	GLN
1	A	990	HIS
1	A	1000	GLN
1	C	406	HIS
1	C	482	HIS
1	C	740	ASN
1	C	750	HIS
1	C	809	GLN
1	C	860	GLN
1	C	912	ASN
1	C	934	ASN
1	C	937	HIS
1	C	961	ASN
1	C	962	GLN
1	C	978	GLN
1	C	990	HIS

Continued from previous page...

Mol	Chain	Res	Type
1	C	1000	GLN
6	N	31	HIS
6	N	93	ASN
6	N	117	HIS
6	N	135	ASN
8	D	27	GLN
8	D	47	HIS
8	D	89	HIS
8	D	94	HIS
8	B	16	GLN
8	B	27	GLN
8	B	47	HIS
8	B	52	GLN
8	B	94	HIS
8	B	222	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 4 ligands modelled in this entry, 4 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 ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-7480. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections ⓘ

6.1.1 Primary map

| X | Y | Z |
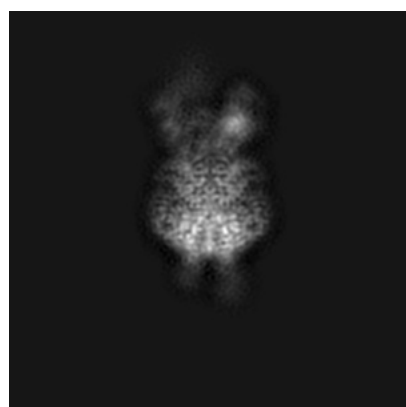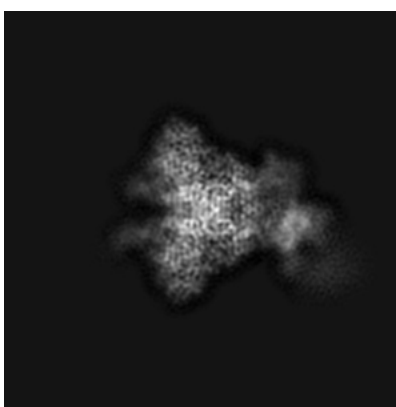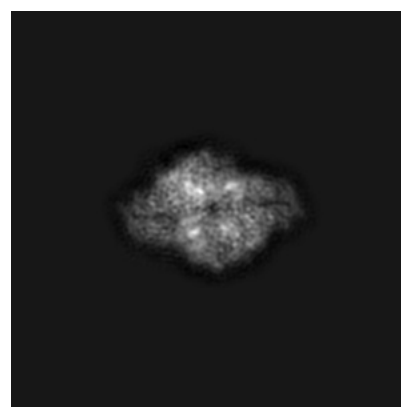
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
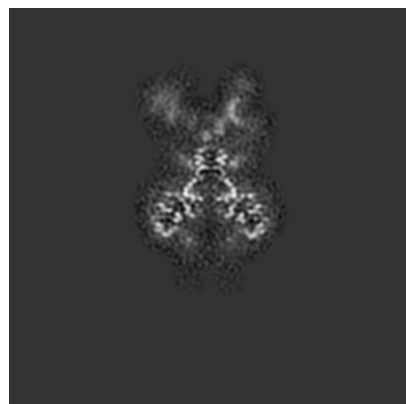
6.2.1 Primary map
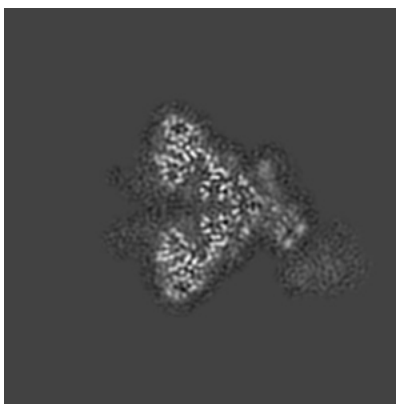
| X Index: 144 | Y Index: 144 | Z Index: 144 |
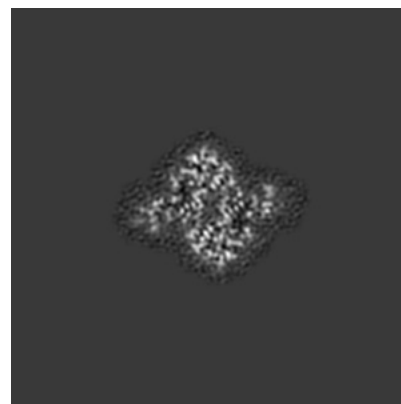
The images above show central slices of the map in three orthogonal directions.

6.3   Largest variance slices ⓘ
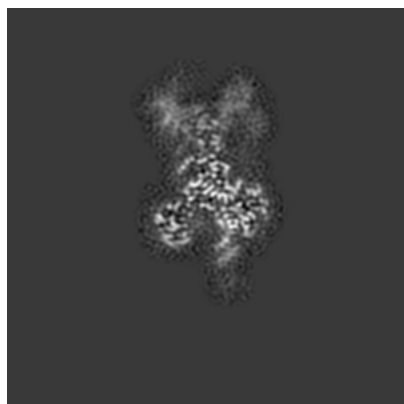
6.3.1   Primary map
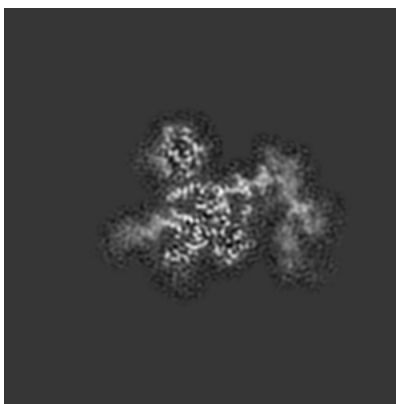
| X Index: 136 | Y Index: 160 | Z Index: 130 |
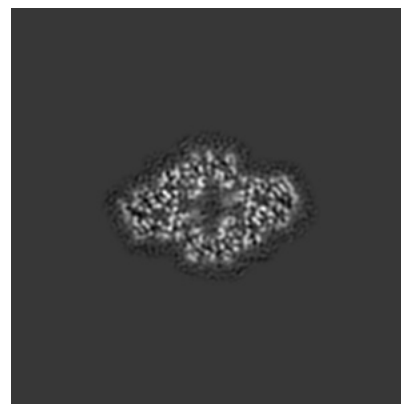
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1   Primary map

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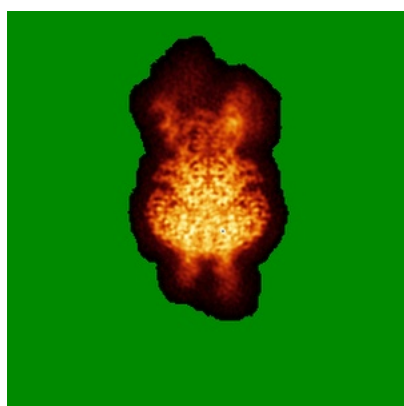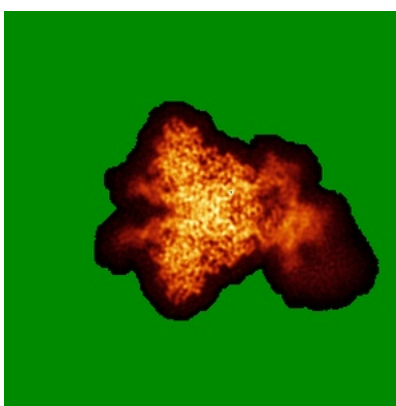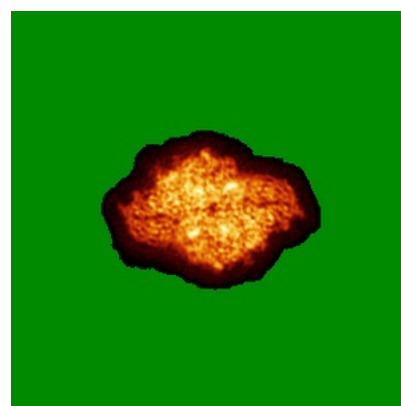
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.014. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6 Mask visualisation ⓘ

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

7 Map analysis ⓘ

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

7.1 Map-value distribution ⓘ

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

7.2 Volume estimate ⓘ
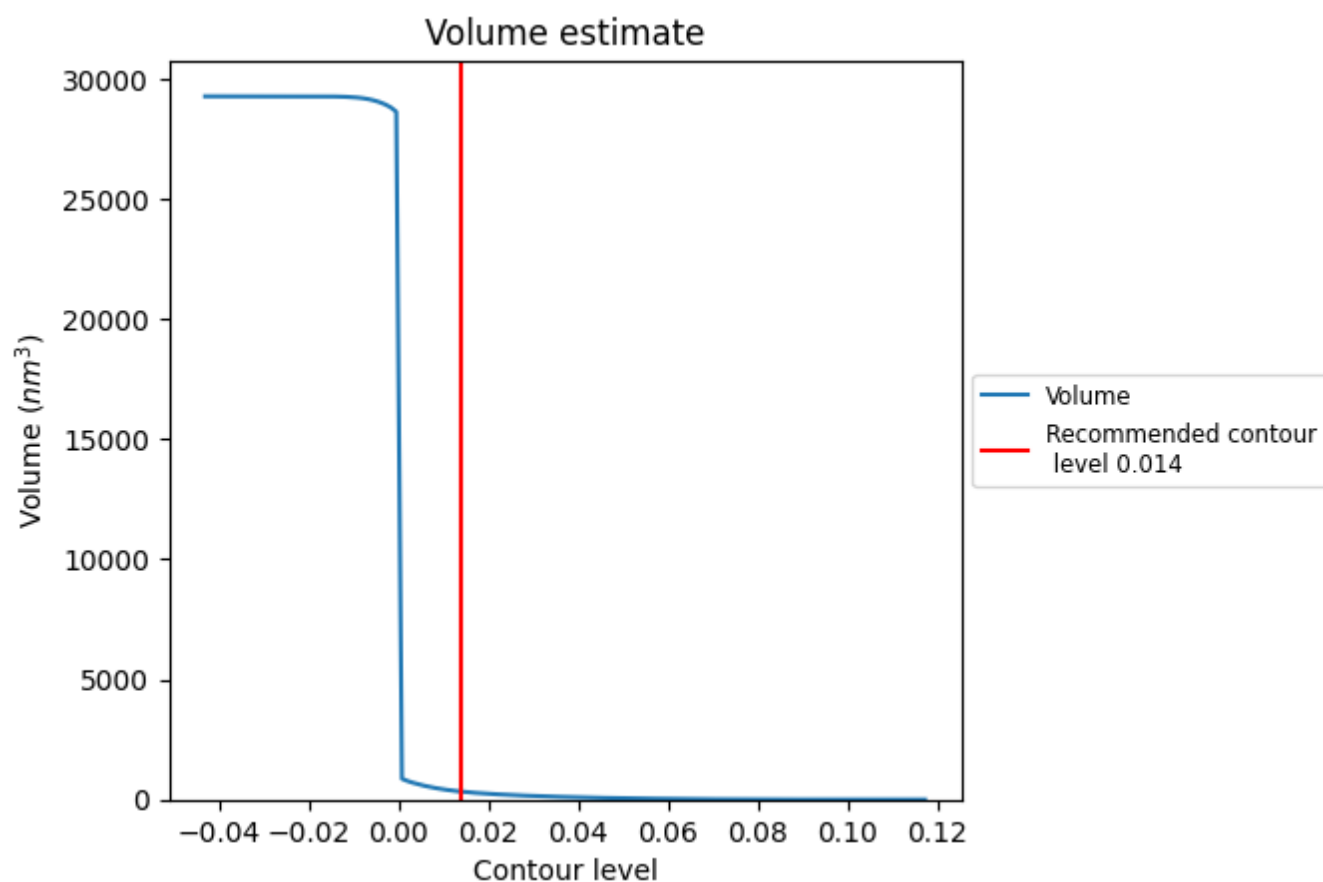
The volume at the recommended contour level is 332 nm^3; this corresponds to an approximate mass of 300 kDa.

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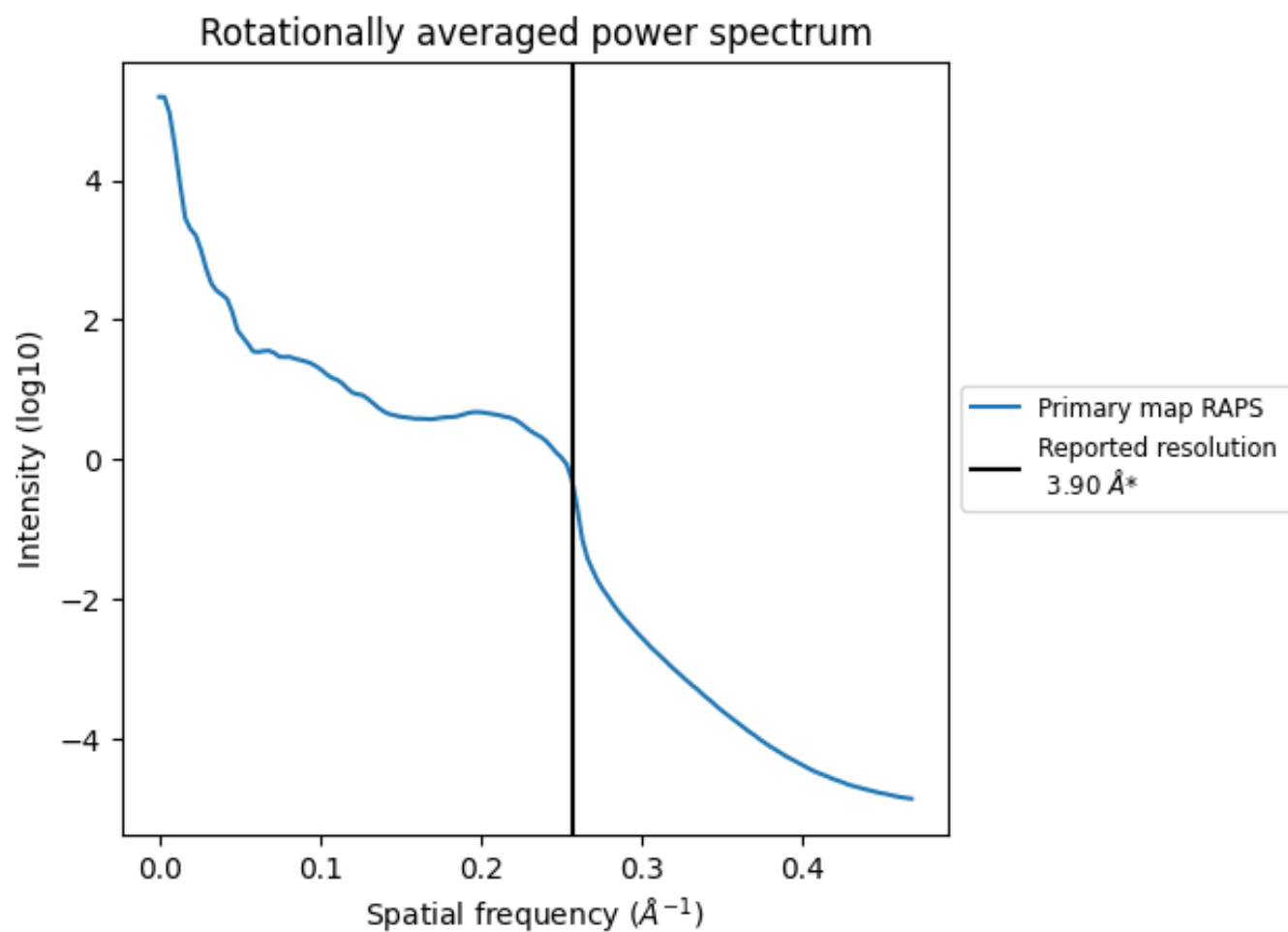
*Reported resolution corresponds to spatial frequency of 0.256 Å^{-1}

8 Fourier-Shell correlation ⓘ

This section was not generated. No FSC curve or half-maps provided.

9　Map-model fit　ⓘ

This section contains information regarding the fit between EMDB map EMD-7480 and PDB model 6CIJ. Per-residue inclusion information can be found in section 3 on page 7.

9.1　Map-model overlay　ⓘ

| X | Y | Z |
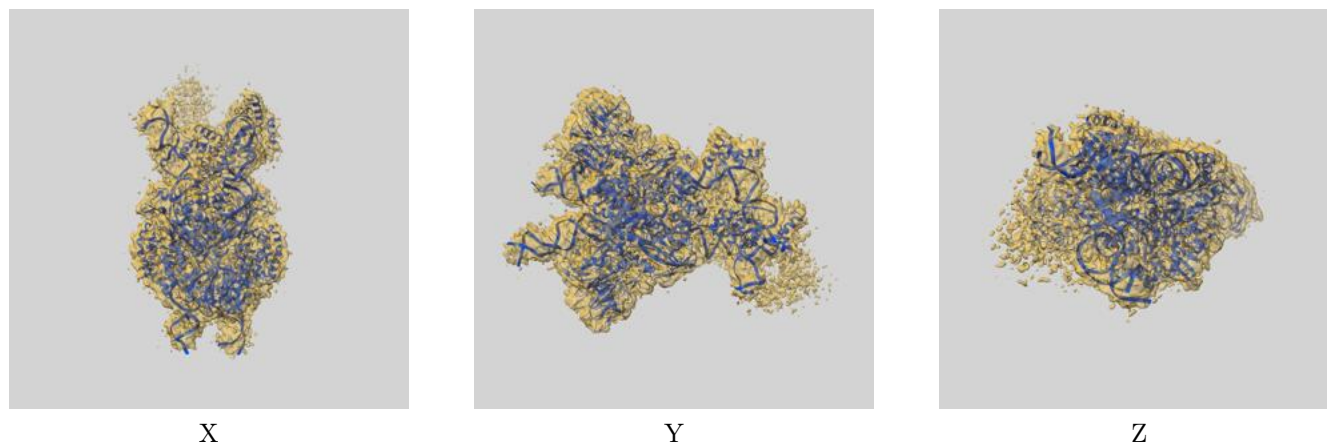
The images above show the 3D surface view of the map at the recommended contour level 0.014 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)

X Y Z
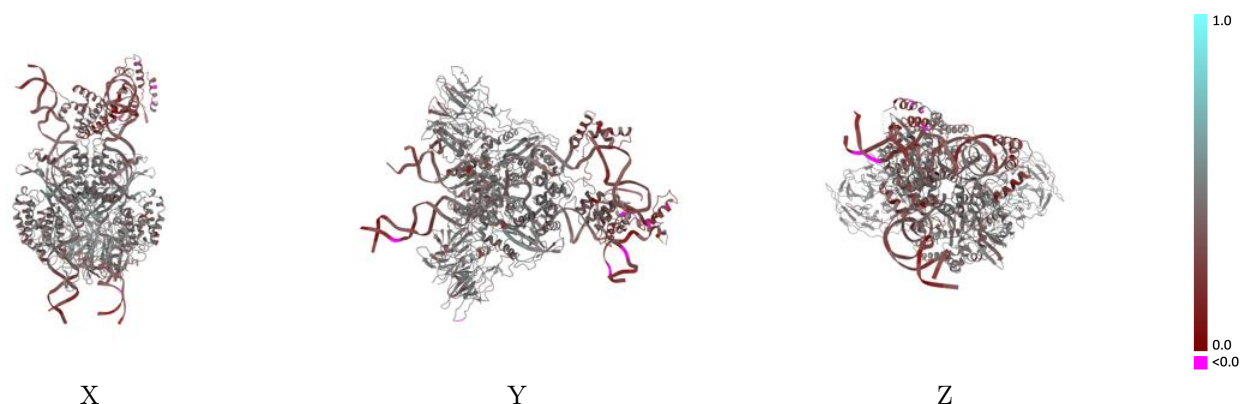
The images above show the model with each residue coloured according its Q-score. This shows
their resolvability in the map with higher Q-score values reflecting better resolvability. Please
note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at
resolutions 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
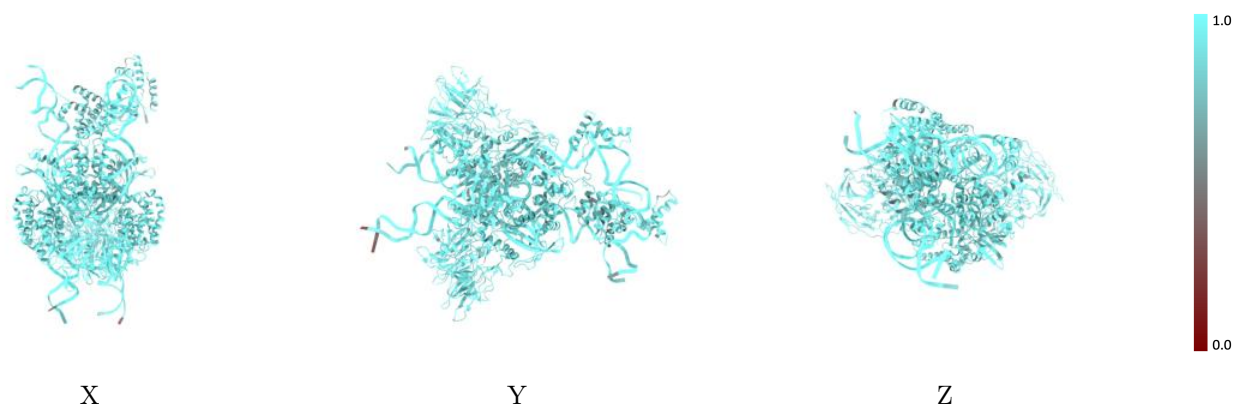
The images above show the model with each residue coloured according to its atom inclusion. This
shows to what extent they are inside the map at the recommended contour level (0.014).

9.4 Atom inclusion ⓘ
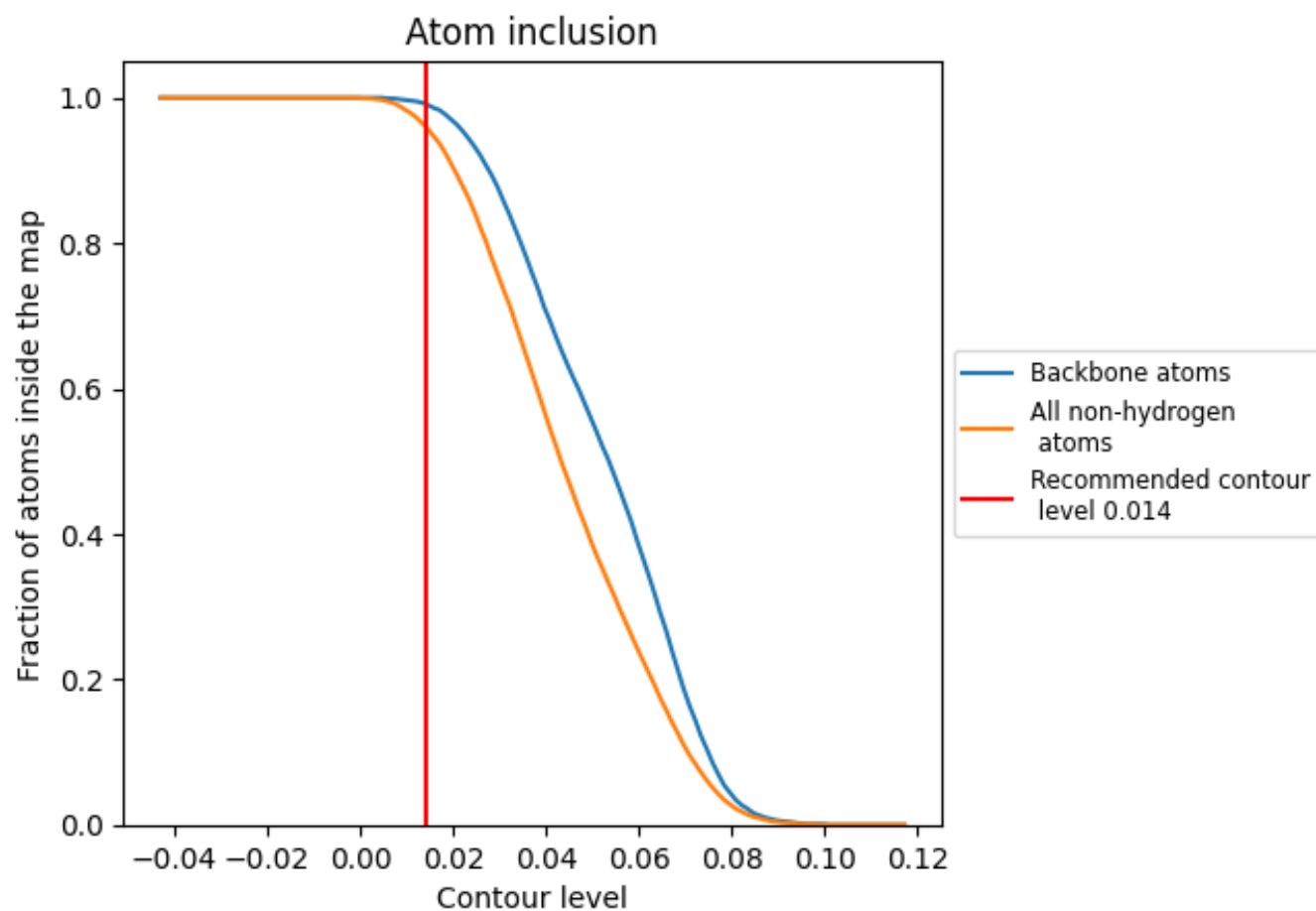
At the recommended contour level, 99% of all backbone atoms, 96% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.014) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9610	0.4090
A	0.9630	0.4390
B	0.9640	0.4520
C	0.9600	0.4370
D	0.9600	0.4520
F	0.9770	0.3300
G	0.9600	0.3030
I	0.9780	0.3350
J	0.9150	0.2810
L	0.9930	0.3470
M	0.9810	0.3220
N	0.9110	0.2700

1.0

0.0
<0.0