WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Feb 25, 2024 – 07:49 AM EST

PDB ID	:	6XAV
EMDB ID	:	EMD-22115
Title	:	CryoEM Structure of E. coli Rho-dependent Transcription Pre-termination Complex bound with NusG
Authors	:	Hao, Z.T.; Kim, H.K.; Walz, T.; Nudler, E.
Deposited on	:	2020-06-04
Resolution	:	7.70 Å(reported)

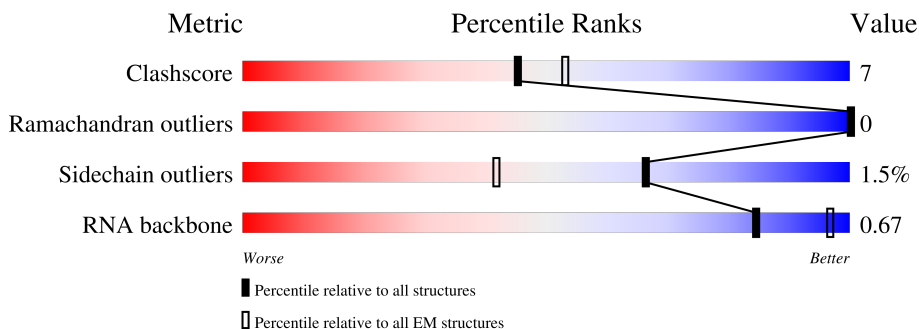The following versions of software and data (see references ⓘ) were used in the production of this report:

EMDB validation analysis	:	0.0.1.dev70
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 7.70 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		7
Ramachandran outliers		0
Sidechain outliers		1.5%
RNA backbone		0.67

Worse   *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	L	181	38% 13% • 48%
2	N	31	52% 35% 13%
3	T	29	59% 41%
4	R	18	33% 22% 44%
5	W	91	45% 15% 40%
6	H	329	51% 15% 34%
6	K	329	70% 15% 15%

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Mol	Chain	Length	Quality of chain
7	I	1342	79% 18%
8	J	1416	75% 19% 6%
9	G	495	26% 7% 66%
10	A	419	73% 11% 16%
10	B	419	86% 11%
10	C	419	83% 16%
10	D	419	85% 14%
10	E	419	85% 14%
10	F	419	69% 13% 18%

2 Entry composition ⓘ

There are 12 unique types of molecules in this entry. The entry contains 46728 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 Transcription termination/antitermination protein NusG.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	L	95	Total 765	C 491	N 136	O 133	S 5	0	0

- Molecule 2 is a DNA chain called DNA (29-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
2	N	27	Total 546	C 260	N 100	O 160	P 26	0	0

- Molecule 3 is a DNA chain called DNA (29-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
3	T	29	Total 583	C 279	N 99	O 177	P 28	0	0

- Molecule 4 is a RNA chain called RNA (18-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
4	R	10	Total 221	C 98	N 45	O 68	P 10	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	W	55	Total 430	C 265	N 81	O 83	S 1	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	K	279	Total 2003	C 1242	N 359	O 396	S 6	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
6	H	218	Total 1679	C 1049	N 297	O 327	S 6	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	I	1304	Total 10277	C 6445	N 1790	O 1998	S 44	0	0

- Molecule 8 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	J	1338	Total 10392	C 6527	N 1856	O 1959	S 50	0	0

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
J	1	VAL	-	expression tag	UNP P0A8T7
J	1408	LEU	-	expression tag	UNP P0A8T7
J	1409	GLU	-	expression tag	UNP P0A8T7
J	1410	VAL	-	expression tag	UNP P0A8T7
J	1411	HIS	-	expression tag	UNP P0A8T7
J	1412	HIS	-	expression tag	UNP P0A8T7
J	1413	HIS	-	expression tag	UNP P0A8T7
J	1414	HIS	-	expression tag	UNP P0A8T7
J	1415	HIS	-	expression tag	UNP P0A8T7
J	1416	HIS	-	expression tag	UNP P0A8T7

- Molecule 9 is a protein called Transcription termination/antitermination protein NusA.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	G	166	Total 1335	C 827	N 243	O 264	S 1	0	0

- Molecule 10 is a protein called Transcription termination factor Rho.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	C	413	Total 3253	C 2051	N 576	O 609	S 17	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
10	A	353	Total 2803	C 1769	N 497	O 523	S 14	0	0
10	B	407	Total 3215	C 2028	N 570	O 600	S 17	0	0
10	D	415	Total 3263	C 2056	N 578	O 612	S 17	0	0
10	E	415	Total 3263	C 2056	N 578	O 612	S 17	0	0
10	F	345	Total 2697	C 1697	N 482	O 507	S 11	0	0

- Molecule 11 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
11	J	1	Total 1	Mg 1	0

- Molecule 12 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
12	J	2	Total 2	Zn 2	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: Transcription termination/antitermination protein NusG

Chain L:

38% 13% • 48%

MET SER GLU ALA PRO K6 K7 A14 G17 F18 E19 R27 E28 K31 N34 MET GLU ASP L38 E41 P45 T46 E47 E48 VAL GLU ILE ARG GLY GLN ARG ARG LYS SER GLU ARG K63 F64 F65 P66 V69 P87 R88 V89 S97 D98 R99

I103 S104 D105 K106 E107 A110 R114 Q117 VAL GLY ASP LYS PRO ARG PRO LYS THR LEU PHE GLU GLU PRO GLY GLU MET VAL ARG VAL ASN ASP GLY PRO PHE ALA ASP PHE ASN GLY VAL VAL GLU GLU VAL ASP TYR GLU LYS SER ARG LEU LYS VAL SER VAL SER ILE PHE GLY

ARG ALA THR PRO VAL GLU LEU ASP PHE SER GLN VAL GLU GLU LYS ALA

• Molecule 2: DNA (29-MER)

Chain N:

52% 35% 13%

G1 G2 T5 A6 C7 C8 T9 C12 DT DC DC DA T15 G16 A17 C21 G22 A23 C29

• Molecule 3: DNA (29-MER)

Chain T:

59% 41%

G1 G2 G3 G12 T15 A16 C17 C18 T19 C20 T21 C26 C29

• Molecule 4: RNA (18-MER)

Chain R:

33% 22% 44%

A U U C A A A G C9 G10 A14 G15 A18

• Molecule 5: DNA-directed RNA polymerase subunit omega

Chain W:

45% 15% 40%

MET A2 R3 V4 T5 R16 L19 R26 A27 R28 Q31 V32 K35 D36 P37 L38 V39 K45 T46 T47 V48 E56 GLY LEU ILE ASN ASN GLN ILE LEU ASP VAL ARG GLU ARG GLN GLU GLN GLN GLN GLN GLU ALA ALA GLU LEU LEU GLN ALA VAL THR ALA ILE ALA

GLU GLY ARG ARG

• Molecule 6: DNA-directed RNA polymerase subunit alpha

Chain K:

70% 15% 15%

MET GLN GLY SER VAL THR E7 L13 I16 E17 Q18 V19 S20 H23 A24 K25 V26 T27 L28 E29 P30 L31 R44 R45 T57 GLU V59 E60 I61 D62 G63 Q75 K86 V92 L102 N103 K104 S105 G106 V110 I115 C131 H132 E136 R143 I144

K145 V146 Q147 R148 P154 T157 R166 P167 R170 C176 Y177 I183 A184 Y185 T196 D199 K200 L201 L224 F231 L234 ARG ASP VAL ARG GLN PRO GLU VAL LYS GLU GLU LYS PRO GLU PHE ASP PRO ILE LEU LEU ARG PRO

VAL ASP ASP LEU GLU LEU THR V264 G315 MET ARG LEU GLU ASN TRP PRO PRO ALA SER ILE ALA ASP GLU
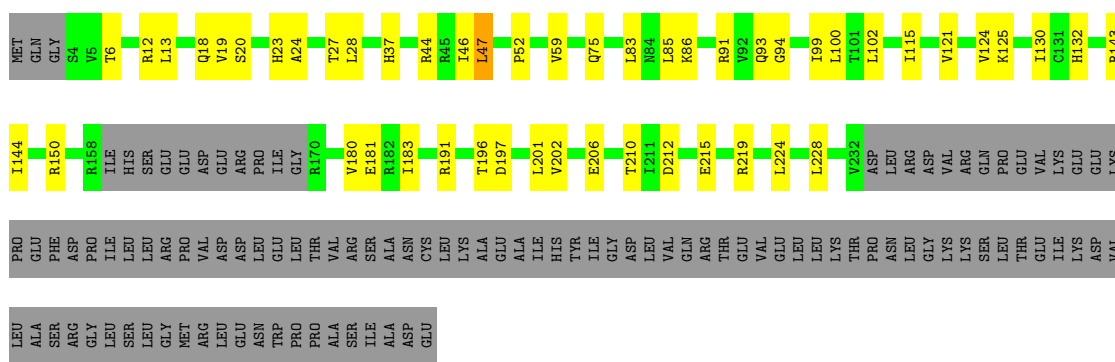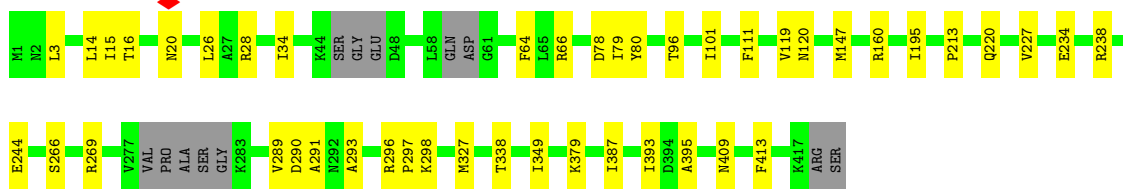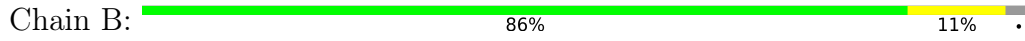
• Molecule 6: DNA-directed RNA polymerase subunit alpha

Chain H:

51% 15% 34%

MET GLN GLY S4 V5 T6 R12 L13 Q18 V19 S20 H23 A24 T27 L28 H37 R44 R45 I46 L47 P52 V59 Q75 L83 N84 L85 K86 R91 V92 Q93 G94 I99 L100 T101 L102 I115 V121 V124 K125 I130 C131 H132 R143

I144 R150 R158 ILE HIS SER GLU GLU ASP GLU ARG PRO VAL ASP GLU LEU GLU THR VAL R170 V180 E181 R182 I183 R191 T196 D197 L201 V202 E206 T210 I211 D212 E215 R219 L224 L228 V232 ASP LEU ARG ASP VAL ARG GLN PRO GLU VAL LYS GLU GLU LYS

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

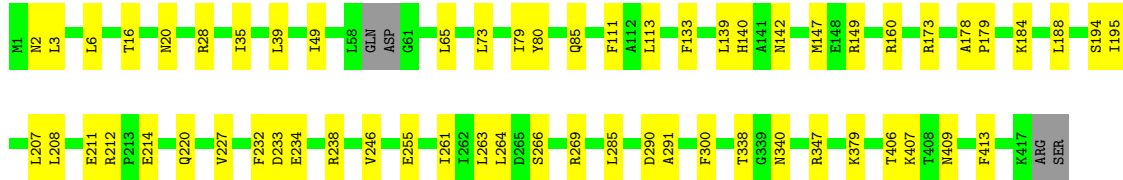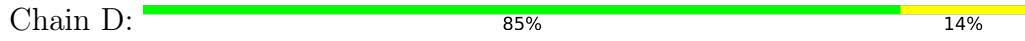LEU ALA SER ARG GLY LEU LEU GLY MET ARG LEU GLU ASN TRP PRO PRO ALA SER ILE ALA ASP GLU

• Molecule 7: DNA-directed RNA polymerase subunit beta

Chain I:

79% 18% •

M1 T6 K9 R12 R18 V21 L22 L27 S34 Q60 E67 L68 Y73 R74 F80 D81 E84 C85 Q86 I87 R88 R97 V98 K99 L100 Y105 E111 D116 Q120 E121 I138 N139 G140 H150 R151 S152 D192 R197

R201 T207 R211 F225 E231 I232 L237 Q238 L241 V242 P243 L246 T250 A251 I255 V263 R268 I269 I285 N314 L317 S318 L319 D320 L321 L336 R352 V353 D354 N357 L363 P375 A381 E382 S408 K431 R436

R452 I463 R454 G457 E458 M459 Q463 R473 E477 L481 G482 D483 T486 P489 Q490 F505 F514 N519 P520 L521 S522 R528 R529 G536 T539 R540 E541 E542 H554 V558 I572 S576 T589 R592 E602 I603 L606

E610 V615 Q618 S621 N622 L623 G627 R637 S638 T657 Q658 Q659 V663 H673 D674 D675 A689 L693 R694 A695 D696 K697 P698 V714 R720 Q725 Y726 V733 V736 M741 G747 I748 D749 K755 V771 V777 V782 L783

• Molecule 8: DNA-directed RNA polymerase subunit beta'

Chain J:
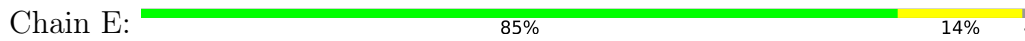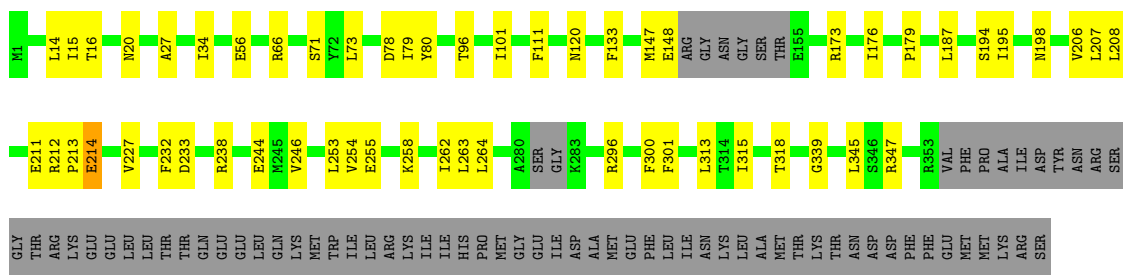
75% 19% • 6%

• Molecule 9: Transcription termination/antitermination protein NusA

Chain G: 26%   7%   66%

MET ASN LYS GLU ILE LEU LEU ALA VAL VAL GLU ALA VAL SER ASN GLU LYS ALA LEU PRO ARG GLU GLU LYS ILE PHE E25 A30 I43 D44 R51 K52 T58 F59 R60 T72 D95 Q96 V100 THR PHE D103 R104 A110 R123 V126 V127 F130 I138 T139

G140 V141 V145 N146 R147 D148 N149 L152 D153 A158 E159 A160 V161 I162 L163 R164 GLU ASP MET LEU PRO ARG GLU ASN F173 R178 L183 V186 L195 F196 V197 S200 LYS PRO GLU MET LEU ILE GLU LEU PHE ARG ILE GLU VAL PRO GLU ILE GLY GLU GLU VAL

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

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

VAL ASP ASP LEU GLN ALA LYS HIS GLN ALA GLU ALA HIS ALA ALA ASP THR ILE ASP PHE THR LYS TYR LEU ASP ILE ASP GLU PHE ALA THR VAL LEU VAL GLU LEU GLY PHE SER THR LEU GLU GLU LEU TYR VAL MET GLY LYS GLU LEU LEU ILE GLU LEU ASP GLU

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

GLU GLN GLY ILE ASP ASP LEU ALA ASP ILE GLU GLY LEU THR ASP GLU LYS ALA GLY ALA LEU ILE MET ALA ALA ARG ASN ILE CYS TRP PHE GLY ASP GLU ALA

• Molecule 10: Transcription termination factor Rho

Chain C: 83%   16%   •

M1 T4 N8 L14 I15 T16 L17 N20 I34 I38 I49 L55 L58 GLN ASP G61 L65 R66 D78 I79 Y80 V81 S82 Q85 N90 T96 I101 R102 P103 F111 A112 L113 L114 N120 L145 S153 T154 E155 R170 G171

Q172 R173 I176 L188 L207 R212 P213 E214 E215 Q220 V227 F232 E244 M245 V246 V254 L263 L264 D265 S266 R269 T276 A280 SER GLY K283 D290 A293 R296 R299 F300 L313 T318 N340 K348 I349 I387

E392 I393 D394 A395 T406 K407 K417 ARG SER

• Molecule 10: Transcription termination factor Rho

Chain A: 73%   11%   16%

MET ASN LEU THR GLU LEU LYS ASN THR PRO VAL SER GLU LEU ILE THR LEU GLY GLU ASN MET GLY LEU GLU ASN LEU ALA ARG MET ARG LYS GLN ASP ILE ILE PHE ALA ILE LEU LYS GLN HIS ALA LYS SER GLY GLU ASP I49 E56 R66 S67 A68 D69 D78 I79 Y80

Q85 I101 F111 A112 L113 R128 F133 P138 M147 E148 R149 E155 T158 A159 R160 I176 P179 L188 Q193 S194 I195 N198 R212 E215 Q220 V227 E244 I247 E255 L264 V277 VAL PRO ALA SER GLY LYS

VAL LEU THR GLY VAL ASP ALA ASN ALA L294 H295 R296 F300 R305 T318 R347 P356 A357 I358 K379 T406 K407 T408 N409 F413 K417 ARG SER

• Molecule 10: Transcription termination factor Rho

Chain B: 86% 11%

M1 N2 L3 L14 I15 T16 N20 L26 A27 R28 I34 K44 SER GLY GLU D48 L58 GLN ASP G61 F64 L65 R66 D78 I79 Y80 T96 I101 F111 V119 N120 M147 R160 I195 P213 Q220 V227 E234 R238

E244 S266 R269 V277 VAL PRO ALA SER GLY K283 V289 D290 A291 N292 A293 R296 P297 K298 M327 T338 I349 K379 I387 I393 D394 A395 N409 F413 K417 ARG SER

• Molecule 10: Transcription termination factor Rho

Chain D: 85% 14%

M1 N2 L3 L6 T16 N20 R28 I35 L39 I49 L58 GLN ASP G61 L65 L73 I79 Y80 Q85 F111 A112 L113 F133 L139 H140 A141 N142 M147 E148 R149 R160 R173 A178 P179 K184 L188 S194 I195

L207 L208 E211 R212 P213 E214 Q220 V227 F232 D233 E234 R238 V246 E255 I261 I262 L263 L264 D265 S266 R269 L285 D290 A291 F300 T338 G339 N340 R347 K379 T406 K407 T408 N409 F413 K417 ARG SER

• Molecule 10: Transcription termination factor Rho

Chain E: 85% 14%

M1 L14 I15 T16 N20 I34 I49 V54 L58 GLN ASP G61 L65 I79 Y80 Q85 S98 I101 R102 P103 Y110 F111 A112 L113 E118 M147 T154 E155 R160 V161 L162 R170 R173 G174 L175 I176 L188 I195 C202

L207 E214 F232 E244 M245 V246 K249 D259 V260 I261 I262 L263 L264 D265 S266 R269 T276 R296 P297 K298 R299 N306 T314 T318 M341 E342 L343 I349 P356 A357 I358 K379 E392 M396 T406 K407 F413 K417 ARG

SER

• Molecule 10: Transcription termination factor Rho

Chain F: 69% 13% 18%

M1 L14 I15 T16 N20 A27 I34 E56 R66 S71 Y72 L73 D78 I79 Y80 T96 I101 F111 N120 F133 M147 E148 ARG GLY ASN GLY SER THR E155 R173 I176 P179 L187 S194 I195 N198 V206 L207 L208

E211 R212 P213 E214 V227 F232 D233 R238 E244 M245 V246 L253 V254 E255 K258 I262 L263 L264 A280 SER GLY K283 R296 F300 F301 L313 T314 I315 T318 G339 L345 S346 R347 R353 VAL PHE PRO ALA ILE ASP TYR ASN ARG SER

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

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	57227	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 $(e^-/Å^2)$	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.021	Depositor
Minimum map value	-0.004	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.0025	Depositor
Map size (Å)	366.8, 366.8, 366.8	wwPDB
Map dimensions	350, 350, 350	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.048, 1.048, 1.048	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: MG, 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	L	0.27	0/782	0.39	0/1052
2	N	0.44	0/610	0.82	0/936
3	T	0.43	0/650	0.83	0/1000
4	R	0.12	0/248	0.62	0/386
5	W	0.30	0/432	0.41	0/582
6	H	0.23	0/1698	0.42	0/2301
6	K	0.24	0/2023	0.42	0/2749
7	I	0.23	0/10439	0.41	0/14082
8	J	0.24	0/10547	0.41	0/14238
9	G	0.25	0/1347	0.41	0/1814
10	A	0.24	0/2847	0.39	0/3832
10	B	0.24	0/3260	0.39	0/4384
10	C	0.24	0/3300	0.39	0/4441
10	D	0.24	0/3311	0.39	0/4457
10	E	0.24	0/3311	0.39	0/4457
10	F	0.24	0/2734	0.39	0/3683
All	All	0.25	0/47539	0.42	0/64394

There are no bond length outliers.

There are no bond angle outliers.

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.

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L	765	0	763	30	0
2	N	546	0	305	11	0
3	T	583	0	329	10	0
4	R	221	0	109	2	0
5	W	430	0	445	12	0
6	H	1679	0	1715	34	0
6	K	2003	0	1880	30	0
7	I	10277	0	10284	155	0
8	J	10392	0	10590	180	0
9	G	1335	0	1337	22	0
10	A	2803	0	2860	29	0
10	B	3215	0	3301	27	0
10	C	3253	0	3337	40	0
10	D	3263	0	3346	33	0
10	E	3263	0	3346	40	0
10	F	2697	0	2771	36	0
11	J	1	0	0	0	0
12	J	2	0	0	0	0
All	All	46728	0	46718	627	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 7.

All (627) 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)
8:J:826:ILE:HG21	8:J:992:LYS:O	1.65	0.95
1:L:45:PRO:HB2	1:L:64:PHE:CE2	2.11	0.86
1:L:64:PHE:HB3	8:J:281:ARG:HH12	1.42	0.83
6:K:29:GLU:HG3	6:K:30:PRO:HA	1.63	0.81
8:J:155:GLU:HB3	8:J:158:GLN:HB2	1.65	0.78
8:J:1327:GLU:O	8:J:1331:VAL:HG23	1.85	0.77
6:K:29:GLU:CG	6:K:30:PRO:HA	2.14	0.77
1:L:64:PHE:HA	8:J:281:ARG:HH22	1.51	0.76
8:J:826:ILE:CG2	8:J:992:LYS:O	2.38	0.71
10:E:299:ARG:HH21	10:F:233:ASP:HB3	1.56	0.70
8:J:749:LYS:HG2	8:J:753:SER:H	1.57	0.70
8:J:985:ILE:HG23	8:J:989:GLY:HA2	1.73	0.70
1:L:64:PHE:HA	8:J:281:ARG:NH2	2.06	0.69
7:I:241:LEU:HD22	7:I:285:ILE:HD13	1.73	0.69
8:J:275:ARG:HH11	8:J:298:MET:HB3	1.58	0.69
7:I:1022:LYS:HA	7:I:1026:GLU:HB2	1.73	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:I:589:THR:OG1	7:I:659:GLN:NE2	2.25	0.68
8:J:749:LYS:HG3	8:J:751:ASP:H	1.59	0.68
8:J:343:LEU:HD11	8:J:1324:SER:HB2	1.75	0.68
8:J:749:LYS:HE3	8:J:751:ASP:HB3	1.76	0.68
10:C:102:ARG:HG3	10:C:114:LEU:HB2	1.75	0.68
7:I:1013:GLN:O	7:I:1017:GLN:N	2.25	0.67
8:J:1346:GLY:O	8:J:1350:ASN:ND2	2.26	0.67
1:L:47:GLU:HG3	1:L:64:PHE:HE1	1.61	0.66
6:K:145:LYS:HE2	6:K:147:GLN:HE21	1.61	0.66
8:J:1075:ARG:NH2	8:J:1169:THR:OG1	2.28	0.66
6:K:16:ILE:HG12	6:K:26:VAL:HG13	1.78	0.65
7:I:528:ARG:NH2	7:I:576:SER:O	2.30	0.65
10:D:285:LEU:HD21	10:E:276:THR:HG23	1.78	0.65
10:F:208:LEU:HB3	10:F:211:GLU:HG3	1.78	0.65
1:L:65:PHE:HZ	8:J:288:PRO:HD2	1.62	0.65
9:G:162:ILE:HG12	9:G:197:VAL:HB	1.78	0.65
7:I:12:ARG:HG3	7:I:1181:PRO:HB2	1.79	0.65
1:L:104:SER:HB2	1:L:107:GLU:HB2	1.79	0.64
7:I:463:GLN:HG2	7:I:505:PHE:HB2	1.79	0.64
8:J:268:LEU:HB3	8:J:306:LEU:HD23	1.78	0.64
7:I:1022:LYS:HE3	10:C:82:SER:HB2	1.78	0.64
8:J:647:PRO:HG2	8:J:650:LYS:HB2	1.78	0.64
8:J:1161:GLY:HA3	8:J:1179:PRO:HA	1.79	0.64
6:H:28:LEU:HD12	6:H:201:LEU:HD23	1.79	0.64
7:I:840:SER:HG	7:I:1048:LYS:H	1.43	0.64
8:J:36:GLY:HA3	8:J:61:ILE:HD12	1.79	0.63
7:I:231:GLU:N	7:I:238:GLN:O	2.30	0.63
1:L:98:ASP:HA	7:I:375:PRO:HD3	1.80	0.63
8:J:121:PRO:HG2	8:J:123:ARG:HH12	1.64	0.63
6:K:60:GLU:HG2	6:K:170:ARG:HA	1.79	0.63
8:J:1285:VAL:O	8:J:1289:ASN:ND2	2.30	0.63
6:K:44:ARG:HG3	6:K:183:ILE:HB	1.81	0.62
7:I:657:THR:HB	7:I:1187:PHE:HB2	1.81	0.62
8:J:612:LEU:HB3	8:J:616:PRO:HG2	1.81	0.62
10:C:16:THR:O	10:C:20:ASN:ND2	2.33	0.62
8:J:43:THR:HG22	8:J:56:LEU:HD12	1.80	0.62
6:K:31:LEU:HB2	6:K:199:ASP:O	2.00	0.61
10:C:173:ARG:NH2	10:D:214:GLU:OE2	2.31	0.61
8:J:140:TYR:HE2	8:J:312:ARG:HE	1.48	0.61
10:D:16:THR:O	10:D:20:ASN:ND2	2.33	0.61
8:J:968:ASN:HD21	8:J:972:LYS:HB2	1.66	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:E:170:ARG:NH1	10:E:202:CYS:SG	2.74	0.61
10:F:16:THR:O	10:F:20:ASN:ND2	2.32	0.61
6:K:92:VAL:O	6:K:148:ARG:NH2	2.32	0.60
7:I:720:ARG:HE	7:I:736:VAL:HG11	1.65	0.60
10:F:206:VAL:HB	10:F:227:VAL:HG13	1.84	0.60
7:I:1254:VAL:O	8:J:99:ARG:NH2	2.34	0.60
8:J:1163:VAL:HG23	8:J:1177:ILE:HG12	1.83	0.60
7:I:1072:ASN:ND2	7:I:1111:GLN:OE1	2.35	0.59
8:J:885:VAL:HG23	8:J:894:VAL:HG11	1.84	0.59
8:J:977:SER:OG	8:J:980:THR:OG1	2.20	0.59
3:T:12:DG:OP1	8:J:1326:GLN:HG2	2.03	0.59
10:F:73:LEU:HB2	10:F:238:ARG:HH21	1.68	0.59
10:F:262:ILE:HB	10:F:315:ILE:HG12	1.84	0.59
8:J:984:LEU:HB3	8:J:993:GLU:HB2	1.82	0.59
6:H:47:LEU:HD22	6:H:183:ILE:HD12	1.85	0.59
10:E:80:TYR:N	10:E:111:PHE:O	2.35	0.59
1:L:27:ARG:NH2	1:L:41:GLU:OE1	2.29	0.59
7:I:828:PHE:HB3	7:I:1234:LYS:HD2	1.83	0.59
7:I:841:ARG:HD3	7:I:1046:VAL:HG12	1.84	0.59
8:J:54:ASP:OD1	8:J:60:ARG:NH2	2.35	0.59
1:L:19:GLU:HG3	1:L:69:VAL:HG22	1.85	0.59
7:I:363:LEU:HB3	7:I:381:ALA:HB1	1.84	0.58
10:B:16:THR:O	10:B:20:ASN:ND2	2.35	0.58
10:E:349:ILE:HG21	10:E:396:MET:HG3	1.83	0.58
8:J:507:VAL:HG12	8:J:601:ILE:HD12	1.85	0.58
10:A:66:ARG:NH1	10:A:78:ASP:OD2	2.36	0.58
6:K:131:CYS:SG	6:K:132:HIS:N	2.76	0.58
6:H:59:VAL:HG22	6:H:144:ILE:HA	1.83	0.58
8:J:1179:PRO:HB2	8:J:1182:GLY:H	1.68	0.58
10:F:66:ARG:NH1	10:F:78:ASP:OD2	2.35	0.58
1:L:99:ARG:NH2	8:J:161:THR:OG1	2.32	0.58
8:J:114:ILE:HD12	8:J:304:ASP:HB3	1.85	0.58
8:J:584:PRO:HG2	8:J:587:LEU:HD13	1.84	0.58
10:D:6:LEU:HD23	10:D:35:ILE:HG23	1.84	0.58
10:E:16:THR:O	10:E:20:ASN:ND2	2.35	0.58
7:I:241:LEU:HD11	7:I:246:LEU:HD21	1.84	0.58
7:I:197:ARG:NH1	7:I:201:ARG:O	2.37	0.58
10:A:158:THR:HA	10:A:356:PRO:HG3	1.86	0.58
7:I:88:ARG:NH1	7:I:1040:ASP:OD2	2.37	0.57
7:I:694:ARG:O	7:I:798:GLN:NE2	2.36	0.57
10:D:85:GLN:NE2	10:D:113:LEU:O	2.36	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:C:85:GLN:NE2	10:C:113:LEU:O	2.34	0.57
9:G:60:ARG:NH1	9:G:72:THR:O	2.37	0.57
7:I:67:GLU:OE1	7:I:105:TYR:OH	2.22	0.57
8:J:1150:PRO:HG3	8:J:1214:PRO:HB2	1.87	0.57
6:H:91:ARG:NH2	6:H:210:THR:O	2.38	0.57
8:J:492:SER:OG	8:J:495:ASN:OD1	2.21	0.57
8:J:1027:VAL:HG21	8:J:1122:ALA:HB3	1.87	0.57
10:D:149:ARG:HE	10:D:194:SER:HA	1.68	0.57
10:D:234:GLU:OE2	10:D:238:ARG:NH1	2.38	0.57
7:I:1246:ARG:NH2	7:I:1250:SER:O	2.37	0.56
7:I:811:ASN:O	7:I:1099:ASN:ND2	2.37	0.56
7:I:968:GLU:O	7:I:972:PHE:N	2.31	0.56
10:A:220:GLN:HA	10:A:227:VAL:HG21	1.88	0.56
10:B:220:GLN:HA	10:B:227:VAL:HG21	1.86	0.56
10:E:207:LEU:HD13	10:E:246:VAL:HG21	1.86	0.56
8:J:1038:THR:HG21	8:J:1079:LYS:HE2	1.87	0.56
8:J:245:LEU:HB3	8:J:250:ARG:HD3	1.88	0.56
10:A:138:PRO:HG2	10:B:213:PRO:HB2	1.88	0.56
7:I:60:GLN:HG2	7:I:67:GLU:HG3	1.86	0.56
10:F:80:TYR:N	10:F:111:PHE:O	2.38	0.56
10:F:244:GLU:OE2	10:F:296:ARG:NH2	2.38	0.56
6:H:59:VAL:HG21	6:H:85:LEU:HD13	1.86	0.56
6:H:124:VAL:HG13	6:H:125:LYS:HG3	1.88	0.56
7:I:88:ARG:NH2	7:I:1035:LYS:O	2.38	0.56
7:I:529:ARG:HD2	7:I:572:ILE:HG22	1.87	0.56
10:E:98:SER:HB2	10:E:118:GLU:HB3	1.88	0.56
7:I:241:LEU:HD21	7:I:246:LEU:HD11	1.88	0.56
7:I:317:LEU:HA	7:I:321:LEU:HD12	1.87	0.56
2:N:16:DG:H2”	2:N:17:DA:H5”	1.88	0.55
6:K:75:GLN:NE2	7:I:771:VAL:O	2.39	0.55
10:C:266:SER:HB2	10:C:269:ARG:HB2	1.87	0.55
1:L:65:PHE:CE2	8:J:291:ILE:HG13	2.42	0.55
8:J:121:PRO:O	8:J:123:ARG:NH1	2.40	0.55
8:J:394:ILE:HG22	8:J:398:LYS:HE3	1.89	0.55
8:J:648:GLU:N	8:J:648:GLU:OE1	2.39	0.55
9:G:148:ASP:OD1	9:G:164:ARG:HD3	2.07	0.55
6:H:99:ILE:HD11	6:H:143:ARG:HB3	1.88	0.55
8:J:381:ILE:HD11	8:J:412:LEU:HD13	1.87	0.55
7:I:314:ASN:O	7:I:352:ARG:NH1	2.39	0.55
7:I:34:SER:HG	7:I:457:GLY:H	1.54	0.55
8:J:513:MET:HG2	8:J:544:LEU:HD21	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:G:127:VAL:HG13	9:G:195:LEU:HD21	1.89	0.55
10:B:119:VAL:HG12	10:B:120:ASN:HD22	1.72	0.55
6:H:181:GLU:OE1	8:J:535:ARG:NH2	2.39	0.55
7:I:68:LEU:HD11	7:I:100:LEU:HB3	1.89	0.55
7:I:408:SER:O	7:I:431:LYS:NZ	2.38	0.55
8:J:848:VAL:HG11	8:J:880:VAL:HG12	1.89	0.55
10:A:128:ARG:HB2	10:B:28:ARG:HG2	1.89	0.55
10:E:207:LEU:HG	10:E:264:LEU:HD13	1.89	0.55
7:I:802:VAL:HG12	7:I:1096:ILE:HB	1.89	0.54
10:B:266:SER:HB2	10:B:269:ARG:HB2	1.89	0.54
10:E:349:ILE:HD11	10:E:392:GLU:HB3	1.89	0.54
2:N:6:DA:H2"	2:N:7:DC:H5'	1.87	0.54
2:N:16:DG:N3	2:N:16:DG:H2'	2.22	0.54
7:I:120:GLN:HE22	7:I:489:PRO:HG2	1.72	0.54
8:J:661:VAL:HA	8:J:664:ILE:HG22	1.88	0.54
6:H:180:VAL:O	8:J:535:ARG:NH1	2.40	0.54
10:B:80:TYR:N	10:B:111:PHE:O	2.39	0.54
1:L:107:GLU:HB3	8:J:288:PRO:HB3	1.90	0.54
10:A:80:TYR:N	10:A:111:PHE:O	2.40	0.54
6:K:231:PHE:HD1	6:K:231:PHE:H	1.56	0.54
7:I:255:ILE:HB	7:I:263:VAL:HB	1.88	0.54
8:J:91:GLU:OE1	8:J:92:VAL:N	2.41	0.54
1:L:87:PRO:HG3	7:I:477:GLU:HG3	1.90	0.54
7:I:18:ARG:HH12	7:I:621:SER:N	2.06	0.54
10:D:179:PRO:HB2	10:D:347:ARG:HH11	1.71	0.54
6:K:18:GLN:NE2	6:K:20:SER:O	2.40	0.54
7:I:1298:VAL:HG22	7:I:1301:ARG:HH22	1.73	0.54
8:J:514:THR:HG21	8:J:596:LEU:HD12	1.90	0.54
8:J:644:MET:O	8:J:764:ARG:NH1	2.41	0.54
1:L:66:PRO:HG2	8:J:278:ARG:NH2	2.22	0.54
10:E:176:ILE:HA	10:E:343:LEU:HB3	1.90	0.54
7:I:68:LEU:HD21	7:I:100:LEU:HD13	1.89	0.54
10:A:85:GLN:NE2	10:A:113:LEU:O	2.40	0.54
10:A:244:GLU:OE2	10:A:296:ARG:NH2	2.40	0.53
10:B:244:GLU:OE2	10:B:296:ARG:NH2	2.40	0.53
8:J:836:ARG:HH22	8:J:873:GLU:HG2	1.73	0.53
9:G:145:VAL:HG12	9:G:145:VAL:O	2.08	0.53
8:J:1005:LYS:HG3	8:J:1011:VAL:HG12	1.91	0.53
10:B:234:GLU:OE2	10:B:238:ARG:NH1	2.39	0.53
8:J:1158:GLU:OE2	8:J:1222:ARG:NH2	2.42	0.53
8:J:1172:LYS:HB3	8:J:1189:MET:HB3	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:J:1322:ALA:HA	8:J:1325:PHE:CZ	2.44	0.53
6:H:86:LYS:NZ	8:J:526:VAL:O	2.42	0.53
7:I:1246:ARG:HH11	7:I:1266:GLY:HA2	1.74	0.53
8:J:1155:ILE:HG13	8:J:1210:ILE:HB	1.91	0.53
8:J:1317:GLU:N	8:J:1317:GLU:OE1	2.41	0.53
7:I:814:ASP:OD1	7:I:1106:ARG:NH1	2.41	0.53
6:H:83:LEU:HD23	8:J:528:THR:HA	1.90	0.53
7:I:1120:ALA:HB1	7:I:1198:LEU:HG	1.91	0.53
6:K:167:PRO:HD2	6:K:170:ARG:HE	1.74	0.52
10:C:66:ARG:NH1	10:C:78:ASP:OD2	2.41	0.52
10:B:15:ILE:HG23	10:B:26:LEU:HB2	1.91	0.52
5:W:31:GLN:HB2	5:W:46:THR:HG21	1.90	0.52
7:I:1269:ARG:HH11	7:I:1271:GLY:HA2	1.75	0.52
10:C:79:ILE:HD13	10:C:101:ILE:HG21	1.89	0.52
10:A:149:ARG:HH21	10:A:193:GLN:HB3	1.74	0.52
7:I:808:ASN:HD21	7:I:1216:ARG:HH22	1.57	0.52
8:J:268:LEU:HD23	8:J:306:LEU:HA	1.90	0.52
7:I:9:LYS:HG2	7:I:1171:ARG:HH11	1.74	0.52
9:G:43:ILE:O	9:G:60:ARG:NH2	2.43	0.52
8:J:118:LYS:NZ	8:J:311:ARG:O	2.39	0.52
6:H:19:VAL:HB	6:H:23:HIS:HB3	1.92	0.52
7:I:979:LEU:HD12	7:I:1011:LEU:HD21	1.92	0.52
10:D:290:ASP:OD1	10:D:291:ALA:N	2.43	0.52
3:T:2:DG:OP1	8:J:212:THR:OG1	2.28	0.52
8:J:1060:VAL:HG22	8:J:1106:ILE:HG23	1.92	0.52
10:E:379:LYS:HD3	10:E:413:PHE:HB3	1.91	0.51
7:I:34:SER:OG	7:I:457:GLY:N	2.38	0.51
10:E:299:ARG:NH2	10:F:233:ASP:HB3	2.24	0.51
10:C:264:LEU:HD22	10:C:300:PHE:HE1	1.75	0.51
10:B:66:ARG:NH1	10:B:78:ASP:OD2	2.43	0.51
5:W:48:VAL:HG21	8:J:418:GLU:HG2	1.92	0.51
7:I:1295:SER:OG	7:I:1296:ASP:N	2.39	0.51
8:J:510:LEU:HA	8:J:513:MET:HE2	1.93	0.51
10:E:65:LEU:HB2	10:E:79:ILE:HB	1.92	0.51
7:I:1105:SER:HB2	8:J:731:ARG:HG2	1.93	0.51
7:I:1288:GLN:HE21	8:J:1355:ARG:HA	1.75	0.51
8:J:811:GLU:OE2	8:J:890:THR:OG1	2.25	0.51
8:J:844:THR:HA	8:J:882:VAL:HA	1.93	0.51
6:H:27:THR:HG23	6:H:202:VAL:HG22	1.92	0.51
10:E:261:ILE:HG12	10:E:314:THR:HB	1.92	0.51
7:I:823:VAL:HG22	7:I:1060:ILE:HG21	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:D:80:TYR:N	10:D:111:PHE:O	2.40	0.51
8:J:644:MET:HG2	8:J:722:ILE:HD13	1.93	0.51
10:E:49:ILE:HD12	10:E:103:PRO:HD3	1.91	0.51
2:N:12:DC:OP1	7:I:201:ARG:NH2	2.43	0.51
7:I:1155:VAL:O	7:I:1158:LYS:NZ	2.43	0.51
7:I:6:THR:HG21	7:I:782:VAL:H	1.76	0.51
7:I:817:LEU:HD11	7:I:1080:ASN:HB2	1.93	0.51
10:B:79:ILE:HG12	10:B:101:ILE:HG21	1.93	0.51
5:W:28:ARG:O	5:W:32:VAL:HG23	2.11	0.50
9:G:51:ARG:HH12	9:G:52:LYS:HE2	1.76	0.50
10:C:188:LEU:HD21	10:C:263:LEU:HB3	1.92	0.50
10:E:188:LEU:HD21	10:E:263:LEU:HB3	1.94	0.50
10:F:73:LEU:HD13	10:F:238:ARG:HE	1.76	0.50
10:F:173:ARG:HE	10:F:339:GLY:HA2	1.76	0.50
7:I:22:LEU:HD22	7:I:603:ILE:HD13	1.92	0.50
8:J:988:PHE:CD1	8:J:988:PHE:N	2.78	0.50
10:C:96:THR:N	10:C:120:ASN:OD1	2.41	0.50
10:C:207:LEU:HD13	10:C:246:VAL:HG21	1.92	0.50
1:L:14:ALA:HB2	1:L:89:VAL:HA	1.92	0.50
1:L:64:PHE:HB3	8:J:281:ARG:NH1	2.20	0.50
6:K:29:GLU:CG	6:K:30:PRO:CA	2.89	0.50
7:I:693:LEU:HB2	7:I:829:THR:HG23	1.93	0.50
7:I:318:SER:OG	7:I:320:ASP:OD1	2.21	0.50
7:I:615:VAL:HG12	7:I:638:SER:HB3	1.93	0.50
7:I:689:ALA:HB2	7:I:1233:LEU:HD23	1.94	0.50
10:E:79:ILE:HD13	10:E:101:ILE:HG21	1.94	0.50
3:T:20:DC:H2'	3:T:21:DT:C6	2.46	0.50
8:J:1167:LYS:HD3	8:J:1170:LYS:HD2	1.94	0.50
7:I:18:ARG:HH12	7:I:621:SER:H	1.59	0.50
8:J:1028:ILE:HB	8:J:1118:GLY:HA2	1.93	0.50
8:J:1046:ILE:HG22	8:J:1061:VAL:HA	1.93	0.50
10:E:244:GLU:OE2	10:E:296:ARG:NH2	2.45	0.50
10:E:170:ARG:NH1	10:E:259:ASP:OD2	2.45	0.50
7:I:74:ARG:N	7:I:97:ARG:O	2.45	0.49
8:J:250:ARG:NE	8:J:266:ASN:OD1	2.40	0.49
8:J:601:ILE:HA	8:J:604:MET:HG2	1.94	0.49
10:D:140:HIS:O	10:D:142:ASN:ND2	2.45	0.49
8:J:1321:SER:HB2	8:J:1348:LYS:HD2	1.94	0.49
10:E:176:ILE:HB	10:E:318:THR:HG22	1.94	0.49
6:H:191:ARG:HB3	6:H:196:THR:HG23	1.93	0.49
7:I:116:ASP:OD1	7:I:116:ASP:N	2.44	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:I:1142:ARG:NH2	7:I:1166:ASP:OD1	2.46	0.49
8:J:264:ASP:HB3	8:J:324:LEU:HB3	1.92	0.49
10:F:254:VAL:HG21	10:F:313:LEU:HB2	1.94	0.49
6:K:28:LEU:HB2	6:K:201:LEU:HB3	1.94	0.49
7:I:725:GLN:HB3	7:I:733:VAL:HG12	1.92	0.49
7:I:915:ASP:OD2	7:I:919:ARG:NH2	2.45	0.49
8:J:102:MET:HG2	8:J:246:PRO:HD3	1.94	0.49
10:B:14:LEU:HB3	10:B:34:ILE:HG21	1.93	0.49
10:F:56:GLU:OE1	10:F:66:ARG:NE	2.45	0.49
6:K:104:LYS:HD3	6:K:110:VAL:HG22	1.93	0.49
8:J:338:PHE:HA	8:J:342:LEU:HB2	1.95	0.49
8:J:709:ARG:HB2	8:J:714:GLU:HB2	1.95	0.49
5:W:4:VAL:HG12	5:W:5:THR:HG23	1.95	0.49
8:J:504:GLN:OE1	8:J:731:ARG:NH1	2.46	0.49
10:F:207:LEU:HD13	10:F:246:VAL:HG21	1.95	0.49
10:C:212:ARG:NE	10:B:338:THR:O	2.44	0.48
10:F:14:LEU:HB3	10:F:34:ILE:HG21	1.94	0.48
1:L:64:PHE:CD1	1:L:64:PHE:N	2.78	0.48
10:D:379:LYS:HD3	10:D:413:PHE:HB3	1.95	0.48
10:E:160:ARG:NH1	10:E:407:LYS:O	2.46	0.48
10:B:290:ASP:HB3	10:B:293:ALA:HB2	1.95	0.48
8:J:118:LYS:HD3	8:J:311:ARG:HG2	1.96	0.48
8:J:131:PRO:HB2	8:J:133:ARG:CG	2.43	0.48
8:J:317:THR:OG1	8:J:318:GLY:N	2.47	0.48
10:D:188:LEU:HD21	10:D:263:LEU:HB3	1.96	0.48
10:A:138:PRO:HG3	10:A:305:ARG:HD3	1.95	0.48
2:N:9:DT:OP1	7:I:473:ARG:NH2	2.47	0.48
7:I:850:ILE:HG12	7:I:1048:LYS:HD3	1.96	0.48
7:I:1006:GLU:O	7:I:1010:GLN:N	2.46	0.48
9:G:95:ASP:OD1	9:G:96:GLN:N	2.47	0.48
6:K:62:ASP:OD1	6:K:63:GLY:N	2.47	0.48
8:J:393:THR:HG23	8:J:396:ALA:H	1.79	0.48
8:J:865:HIS:CE1	8:J:867:GLN:HB2	2.49	0.48
7:I:675:ASP:OD1	7:I:675:ASP:N	2.42	0.48
8:J:712:GLN:OE1	8:J:712:GLN:N	2.47	0.48
10:C:49:ILE:HD12	10:C:103:PRO:HG3	1.96	0.48
7:I:714:VAL:HB	7:I:787:PRO:HD2	1.94	0.47
7:I:1041:ASP:OD1	7:I:1041:ASP:N	2.46	0.47
10:C:349:ILE:HG12	10:C:393:ILE:HG12	1.96	0.47
6:H:93:GLN:HG3	6:H:94:GLY:H	1.79	0.47
7:I:520:PRO:HG3	7:I:714:VAL:HG21	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:J:516:ASP:OD1	8:J:516:ASP:N	2.48	0.47
10:F:176:ILE:HB	10:F:318:THR:HG22	1.96	0.47
6:H:44:ARG:HA	6:H:183:ILE:HD13	1.96	0.47
7:I:817:LEU:HB3	7:I:1097:VAL:HB	1.96	0.47
10:A:56:GLU:OE1	10:A:66:ARG:NE	2.41	0.47
6:H:83:LEU:HB3	8:J:528:THR:HG23	1.96	0.47
10:A:212:ARG:NH1	10:A:215:GLU:OE2	2.46	0.47
7:I:225:PHE:HB2	7:I:336:LEU:HD22	1.96	0.47
8:J:318:GLY:N	8:J:322:ARG:O	2.44	0.47
8:J:1263:LYS:HG2	8:J:1281:GLU:HA	1.95	0.47
9:G:58:THR:H	9:G:100:VAL:HG22	1.79	0.47
10:D:264:LEU:HD22	10:D:300:PHE:HE1	1.79	0.47
10:F:15:ILE:HD13	10:F:27:ALA:HA	1.97	0.47
1:L:110:ALA:HB1	1:L:114:ARG:HH12	1.80	0.47
6:H:19:VAL:HG12	6:H:20:SER:H	1.79	0.47
7:I:207:THR:OG1	7:I:354:ASP:OD1	2.32	0.47
7:I:539:THR:HG23	7:I:541:GLU:H	1.79	0.47
7:I:720:ARG:NH2	7:I:749:ASP:OD1	2.47	0.47
9:G:30:ALA:HB1	9:G:110:ALA:HA	1.95	0.47
10:C:387:ILE:HG23	10:C:395:ALA:HB1	1.96	0.47
10:E:298:LYS:HB3	10:F:232:PHE:HD1	1.80	0.47
10:F:206:VAL:HG22	10:F:263:LEU:HD23	1.97	0.47
10:F:264:LEU:HD22	10:F:300:PHE:HE1	1.80	0.47
10:A:160:ARG:NE	10:A:409:ASN:OD1	2.44	0.47
7:I:726:TYR:HB3	7:I:733:VAL:HB	1.96	0.47
10:D:2:ASN:OD1	10:D:3:LEU:N	2.47	0.47
7:I:232:ILE:HG12	7:I:237:LEU:HG	1.97	0.47
8:J:515:ARG:NH2	8:J:718:SER:O	2.36	0.47
6:H:212:ASP:OD1	6:H:212:ASP:N	2.48	0.46
10:C:244:GLU:OE2	10:C:296:ARG:NH2	2.48	0.46
10:D:220:GLN:HG2	10:D:227:VAL:HB	1.98	0.46
7:I:777:VAL:HG11	7:I:783:LEU:HD21	1.97	0.46
7:I:1119:MET:HB2	7:I:1228:GLY:HA2	1.96	0.46
8:J:1261:LEU:O	8:J:1304:ARG:NH1	2.48	0.46
10:A:148:GLU:O	10:A:198:ASN:ND2	2.47	0.46
10:E:298:LYS:HB3	10:F:232:PHE:CD1	2.50	0.46
3:T:2:DG:H2"	3:T:3:DG:C8	2.50	0.46
6:H:102:LEU:HD13	6:H:115:ILE:HG12	1.97	0.46
10:C:348:LYS:HG2	10:C:393:ILE:HD11	1.97	0.46
10:E:147:MET:HE1	10:E:195:ILE:HG13	1.97	0.46
7:I:698:PRO:HA	7:I:799:ASN:HD21	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:I:452:ARG:NH2	7:I:458:GLU:OE2	2.42	0.46
8:J:795:TYR:HB3	8:J:799:ARG:HH12	1.79	0.46
8:J:957:SER:N	8:J:985:ILE:O	2.47	0.46
9:G:130:PHE:HZ	9:G:138:ILE:HG21	1.80	0.46
10:B:26:LEU:HD23	10:B:34:ILE:HG12	1.98	0.46
8:J:131:PRO:HB2	8:J:133:ARG:HG2	1.97	0.46
10:B:64:PHE:HB3	10:B:78:ASP:HB3	1.98	0.46
6:H:215:GLU:OE1	6:H:219:ARG:NE	2.47	0.46
7:I:1283:ALA:HB1	7:I:1286:THR:HB	1.98	0.46
8:J:704:GLU:H	8:J:718:SER:HB2	1.81	0.46
1:L:47:GLU:HG3	1:L:64:PHE:CE1	2.45	0.46
7:I:1255:THR:OG1	7:I:1296:ASP:OD1	2.33	0.46
8:J:1062:LEU:O	8:J:1067:ARG:NH2	2.48	0.46
6:K:29:GLU:HG2	6:K:30:PRO:CA	2.46	0.46
6:H:18:GLN:HA	6:H:24:ALA:HA	1.98	0.46
7:I:1154:ASP:OD1	7:I:1154:ASP:N	2.48	0.46
8:J:844:THR:HA	8:J:882:VAL:HG12	1.97	0.46
8:J:1136:GLY:HA2	8:J:1140:ARG:HB2	1.97	0.46
9:G:126:VAL:HG11	9:G:158:ALA:HB2	1.96	0.46
10:E:14:LEU:HB3	10:E:34:ILE:HG21	1.96	0.46
2:N:22:DG:H1'	2:N:23:DA:H5'	1.98	0.45
6:H:19:VAL:N	6:H:23:HIS:O	2.49	0.45
7:I:696:ASP:O	7:I:697:LYS:HG3	2.16	0.45
10:B:147:MET:HE1	10:B:195:ILE:HG13	1.98	0.45
10:F:147:MET:HE3	10:F:194:SER:HB2	1.98	0.45
8:J:1059:LEU:O	8:J:1107:VAL:N	2.49	0.45
1:L:65:PHE:CZ	8:J:291:ILE:HG13	2.52	0.45
6:K:102:LEU:HD13	6:K:115:ILE:HG12	1.98	0.45
7:I:1307:ASN:HB3	7:I:1312:ASN:O	2.17	0.45
8:J:586:GLY:HA3	8:J:612:LEU:HD11	1.98	0.45
8:J:733:SER:OG	8:J:736:GLN:OE1	2.26	0.45
10:C:145:LEU:HD21	10:C:170:ARG:HE	1.80	0.45
10:B:379:LYS:HD3	10:B:413:PHE:HB3	1.98	0.45
5:W:45:LYS:HZ1	8:J:415:VAL:HA	1.82	0.45
8:J:816:THR:OG1	8:J:818:GLU:OE1	2.33	0.45
10:C:96:THR:HB	10:C:120:ASN:HA	1.98	0.45
4:R:18:A:OP1	7:I:1073:LYS:NZ	2.37	0.45
7:I:211:ARG:NH2	7:I:357:ASN:O	2.50	0.45
10:C:4:THR:O	10:C:8:ASN:ND2	2.50	0.45
7:I:839:VAL:HG12	7:I:1049:ILE:HD12	1.99	0.45
10:D:160:ARG:NE	10:D:409:ASN:OD1	2.44	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:D:178:ALA:HB3	10:D:184:LYS:HD3	1.99	0.45
10:E:85:GLN:NE2	10:E:113:LEU:O	2.46	0.45
6:H:100:LEU:HB2	6:H:144:ILE:HG23	1.99	0.45
7:I:9:LYS:O	7:I:1175:ASN:ND2	2.35	0.45
8:J:517:CYS:SG	8:J:518:VAL:N	2.89	0.45
8:J:1190:ILE:HG21	8:J:1196:LEU:HD21	1.99	0.45
1:L:65:PHE:N	1:L:65:PHE:HD1	2.14	0.45
5:W:16:ARG:NE	8:J:905:ARG:HH21	2.15	0.45
7:I:21:VAL:HG21	7:I:592:ARG:HD2	1.99	0.45
10:A:138:PRO:HB3	10:A:305:ARG:HB2	1.98	0.45
7:I:1313:HIS:HB2	8:J:474:LEU:HD12	1.99	0.45
8:J:215:LYS:O	8:J:218:THR:OG1	2.34	0.45
8:J:319:SER:OG	8:J:322:ARG:NH2	2.50	0.45
8:J:495:ASN:ND2	8:J:1247:LYS:O	2.50	0.45
8:J:527:LEU:HD21	8:J:536:LEU:HD22	1.98	0.45
10:C:14:LEU:HB3	10:C:34:ILE:HG21	1.99	0.45
10:A:176:ILE:HB	10:A:318:THR:HG22	1.99	0.45
6:K:207:THR:HG21	6:K:211:ILE:HG22	1.99	0.45
7:I:720:ARG:HH21	7:I:736:VAL:HG21	1.82	0.45
7:I:838:CYS:HB3	7:I:1050:VAL:HG13	1.99	0.45
10:C:102:ARG:HD3	10:C:114:LEU:HD13	1.99	0.45
10:B:349:ILE:HG12	10:B:393:ILE:HG12	1.99	0.45
6:K:154:PRO:HG2	6:K:157:THR:HG23	2.00	0.44
6:K:224:LEU:HD23	6:H:228:LEU:HD11	1.99	0.44
8:J:422:LEU:HB2	8:J:469:HIS:HB2	1.99	0.44
10:C:212:ARG:NH1	10:C:215:GLU:OE2	2.50	0.44
10:A:356:PRO:HB2	10:A:358:ILE:HG13	1.99	0.44
10:D:65:LEU:HB2	10:D:79:ILE:HB	1.99	0.44
7:I:539:THR:HG23	7:I:542:ARG:H	1.83	0.44
8:J:975:ILE:HD13	8:J:980:THR:HG21	1.99	0.44
10:C:17:LEU:HD12	10:C:38:ILE:HD13	1.99	0.44
10:C:65:LEU:HB2	10:C:79:ILE:HB	1.99	0.44
10:D:340:ASN:ND2	10:E:214:GLU:OE2	2.51	0.44
10:F:212:ARG:HA	10:F:232:PHE:HE2	1.81	0.44
2:N:17:DA:H1’	7:I:542:ARG:HG3	1.99	0.44
8:J:64:PRO:HG3	8:J:93:THR:H	1.82	0.44
10:C:90:ASN:ND2	10:D:28:ARG:HD2	2.33	0.44
10:B:160:ARG:NE	10:B:409:ASN:OD1	2.41	0.44
7:I:889:PRO:HA	7:I:913:VAL:HA	1.99	0.44
8:J:115:TRP:HE1	8:J:308:ASP:HB2	1.83	0.44
8:J:1101:LEU:HD13	8:J:1124:ILE:HD11	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:J:1344:LEU:HD22	8:J:1349:GLU:HB3	1.99	0.44
10:C:232:PHE:CD1	10:B:298:LYS:HG3	2.52	0.44
10:F:187:LEU:HD13	10:F:345:LEU:HD11	1.99	0.44
1:L:65:PHE:N	1:L:65:PHE:CD1	2.85	0.44
7:I:73:TYR:HA	7:I:98:VAL:HA	2.00	0.44
10:C:290:ASP:HB3	10:C:293:ALA:HB2	2.00	0.44
1:L:64:PHE:CB	8:J:281:ARG:HH12	2.22	0.44
1:L:65:PHE:CZ	8:J:288:PRO:HD2	2.48	0.44
3:T:15:DT:H2'	3:T:16:DA:C8	2.53	0.44
6:H:75:GLN:HB2	6:H:132:HIS:HB2	2.00	0.44
8:J:1000:GLY:HA3	8:J:1026:PRO:HG3	1.99	0.44
9:G:152:LEU:N	9:G:160:ALA:O	2.48	0.44
10:A:147:MET:HE3	10:A:194:SER:HB2	1.99	0.44
8:J:484:MET:HA	8:J:489:ASN:HD21	1.82	0.44
8:J:926:PRO:HG3	8:J:1248:ILE:HD11	2.00	0.44
10:E:299:ARG:HD2	10:F:233:ASP:OD2	2.17	0.44
6:K:45:ARG:HA	7:I:1083:GLU:HB2	2.00	0.44
6:H:115:ILE:HD11	6:H:130:ILE:HD11	1.98	0.44
7:I:250:THR:HA	7:I:268:ARG:HA	1.99	0.44
7:I:454:ARG:HG2	7:I:459:MET:HG3	2.00	0.44
10:D:208:LEU:HB3	10:D:211:GLU:HG3	2.00	0.44
10:E:356:PRO:HB2	10:E:358:ILE:HG13	2.00	0.44
10:F:79:ILE:HD13	10:F:101:ILE:HG21	2.00	0.44
7:I:1123:GLY:HA3	7:I:1204:LEU:HD11	2.00	0.44
8:J:1202:GLU:HB3	8:J:1204:VAL:HG13	2.00	0.44
10:D:147:MET:HE1	10:D:195:ILE:HG13	2.00	0.44
8:J:1036:ARG:HH21	8:J:1081:VAL:HG11	1.83	0.43
9:G:186:VAL:HB	9:G:195:LEU:HD23	1.99	0.43
10:C:299:ARG:HG2	10:D:233:ASP:HB3	2.00	0.43
6:H:206:GLU:OE1	8:J:531:LYS:NZ	2.36	0.43
7:I:99:LYS:HG2	7:I:121:GLU:HB3	2.00	0.43
7:I:972:PHE:HA	7:I:975:ILE:HB	1.99	0.43
9:G:139:THR:OG1	9:G:178:ARG:NH2	2.46	0.43
10:F:147:MET:HE1	10:F:195:ILE:HG13	2.01	0.43
2:N:21:DC:H2"	2:N:22:DG:N7	2.33	0.43
6:K:60:GLU:OE1	6:K:143:ARG:NH2	2.51	0.43
10:D:133:PHE:N	10:D:255:GLU:OE2	2.51	0.43
10:E:154:THR:HG23	10:E:155:GLU:OE1	2.19	0.43
1:L:28:GLU:HB3	7:I:481:LEU:HD22	2.00	0.43
7:I:251:ALA:HB2	7:I:269:ILE:HD11	2.01	0.43
10:A:264:LEU:HD22	10:A:300:PHE:HE1	1.82	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:R:14:A:H2'	4:R:15:G:C8	2.53	0.43
6:K:29:GLU:HG2	6:K:30:PRO:HA	1.98	0.43
7:I:519:ASN:OD1	7:I:522:SER:N	2.50	0.43
10:C:80:TYR:N	10:C:111:PHE:O	2.48	0.43
10:C:153:SER:OG	10:C:155:GLU:OE1	2.36	0.43
10:E:147:MET:HG3	10:E:162:LEU:HD22	2.01	0.43
10:E:173:ARG:NH1	10:F:214:GLU:OE2	2.51	0.43
10:F:179:PRO:HB2	10:F:347:ARG:HH11	1.83	0.43
7:I:1085:MET:HB2	7:I:1085:MET:HE2	1.83	0.43
8:J:1098:GLN:NE2	8:J:1200:GLU:OE1	2.52	0.43
9:G:183:LEU:HB3	9:G:197:VAL:HG22	1.99	0.43
10:A:264:LEU:HD22	10:A:300:PHE:CE1	2.53	0.43
7:I:1087:TYR:HE2	7:I:1215:GLY:HA2	1.84	0.43
8:J:505:ASP:N	8:J:505:ASP:OD1	2.51	0.43
10:C:172:GLN:NE2	10:C:340:ASN:OD1	2.52	0.43
10:E:54:VAL:HG21	10:E:249:LYS:HD2	2.00	0.43
6:K:86:LYS:HE2	6:K:176:CYS:SG	2.59	0.43
7:I:152:SER:HB3	7:I:452:ARG:HG3	1.99	0.43
7:I:623:LEU:HD13	7:I:627:GLY:HA2	2.00	0.43
8:J:204:GLU:N	8:J:204:GLU:OE1	2.52	0.43
9:G:103:ASP:OD1	9:G:104:ARG:N	2.52	0.43
10:A:179:PRO:HB3	10:A:347:ARG:HH11	1.84	0.43
7:I:935:THR:HA	7:I:1048:LYS:HA	2.01	0.43
10:C:55:LEU:HD13	10:C:81:VAL:HG21	2.01	0.43
7:I:454:ARG:HH22	7:I:536:GLY:HA3	1.82	0.43
8:J:615:LYS:HB2	8:J:616:PRO:HD3	2.01	0.43
8:J:990:ARG:HE	8:J:990:ARG:HB3	1.66	0.43
9:G:148:ASP:HA	9:G:164:ARG:HB2	2.01	0.43
10:D:173:ARG:NH2	10:D:338:THR:O	2.41	0.43
10:E:80:TYR:HB2	10:E:110:TYR:HB2	2.01	0.43
5:W:37:PRO:C	5:W:39:VAL:H	2.22	0.42
8:J:416:ILE:HG23	8:J:439:PRO:HB2	2.01	0.42
9:G:43:ILE:HG12	9:G:44:ASP:H	1.84	0.42
10:C:176:ILE:HB	10:C:318:THR:HG22	2.01	0.42
10:D:406:THR:OG1	10:D:407:LYS:N	2.52	0.42
2:N:5:DT:H1'	2:N:6:DA:C8	2.54	0.42
6:K:23:HIS:NE2	6:K:204:GLU:OE2	2.50	0.42
7:I:80:PHE:HB3	7:I:84:GLU:HB3	2.00	0.42
7:I:86:GLN:HA	7:I:140:GLY:HA2	2.02	0.42
7:I:673:HIS:HB3	7:I:1109:ILE:HB	2.00	0.42
8:J:60:ARG:HG2	8:J:90:VAL:HG12	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:J:1150:PRO:HG2	8:J:1153:PRO:HA	2.00	0.42
7:I:1085:MET:SD	7:I:1086:PRO:HD2	2.59	0.42
10:C:254:VAL:HG21	10:C:313:LEU:HB2	2.01	0.42
10:A:379:LYS:HD3	10:A:413:PHE:HB3	2.01	0.42
1:L:103:ILE:HG23	1:L:104:SER:H	1.83	0.42
7:I:99:LYS:HA	7:I:121:GLU:HA	2.02	0.42
7:I:1296:ASP:HB3	7:I:1321:GLU:H	1.84	0.42
8:J:342:LEU:HD13	8:J:1352:ILE:HG23	2.00	0.42
10:F:71:SER:HB2	10:F:238:ARG:HH22	1.85	0.42
10:F:133:PHE:N	10:F:255:GLU:OE2	2.51	0.42
7:I:9:LYS:HG2	7:I:1171:ARG:NH1	2.34	0.42
7:I:192:ASP:OD2	7:I:436:ARG:NH2	2.50	0.42
8:J:282:LEU:HD21	8:J:291:ILE:HG22	2.02	0.42
8:J:1145:PHE:HB3	8:J:1309:ILE:HD11	2.00	0.42
1:L:17:GLY:O	2:N:6:DA:H3'	2.20	0.42
8:J:131:PRO:O	8:J:135:ILE:HG13	2.20	0.42
8:J:1322:ALA:HA	8:J:1325:PHE:CE1	2.54	0.42
10:B:387:ILE:HG23	10:B:395:ALA:HB1	2.01	0.42
6:H:46:ILE:HD11	6:H:224:LEU:HD13	2.02	0.42
7:I:972:PHE:HD1	7:I:975:ILE:HD12	1.84	0.42
10:C:349:ILE:HD11	10:C:392:GLU:HB3	2.02	0.42
10:F:213:PRO:HD3	10:F:232:PHE:CE2	2.55	0.42
6:K:185:TYR:HH	7:I:1087:TYR:HH	1.63	0.42
7:I:12:ARG:NH2	7:I:698:PRO:O	2.45	0.42
7:I:741:MET:HE3	7:I:747:GLY:H	1.85	0.42
8:J:1146:GLU:HB3	8:J:1148:ARG:HG3	2.02	0.42
9:G:123:ARG:NH2	9:G:159:GLU:O	2.39	0.42
10:C:220:GLN:HG2	10:C:227:VAL:HB	2.01	0.42
10:B:289:VAL:HG22	10:B:327:MET:HG3	2.02	0.42
10:E:174:GLY:HA2	10:E:341:MET:HB3	2.02	0.42
5:W:28:ARG:NH1	7:I:1314:GLN:HB2	2.35	0.41
8:J:111:THR:O	8:J:239:LEU:N	2.53	0.41
10:C:406:THR:OG1	10:C:407:LYS:N	2.53	0.41
10:E:264:LEU:HD11	10:E:266:SER:HB3	2.02	0.41
5:W:16:ARG:H	5:W:19:LEU:HD23	1.85	0.41
8:J:591:ILE:O	8:J:594:GLN:NE2	2.53	0.41
8:J:1163:VAL:HG12	8:J:1202:GLU:H	1.85	0.41
8:J:1178:THR:HG23	8:J:1184:ASP:HB3	2.02	0.41
10:A:247:ILE:HB	10:A:300:PHE:CE2	2.55	0.41
10:E:170:ARG:O	10:E:306:ASN:ND2	2.50	0.41
10:F:96:THR:N	10:F:120:ASN:OD1	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:J:259:ARG:HD3	8:J:259:ARG:H	1.85	0.41
8:J:841:GLY:HA3	8:J:901:ARG:HG2	2.01	0.41
10:D:73:LEU:HD13	10:D:238:ARG:NH1	2.35	0.41
6:K:17:GLU:HB3	6:K:25:LYS:HB3	2.02	0.41
8:J:668:PHE:CG	8:J:678:ARG:HD3	2.55	0.41
9:G:183:LEU:HD23	9:G:183:LEU:H	1.84	0.41
10:A:406:THR:OG1	10:A:407:LYS:N	2.52	0.41
5:W:26:ARG:HH12	5:W:35:LYS:NZ	2.18	0.41
7:I:840:SER:OG	7:I:1048:LYS:N	2.37	0.41
7:I:1010:GLN:HA	7:I:1013:GLN:HB3	2.02	0.41
8:J:123:ARG:HA	8:J:123:ARG:HD3	1.91	0.41
8:J:850:LYS:HG3	8:J:852:GLY:H	1.85	0.41
8:J:930:LEU:HD11	8:J:1241:TYR:CE1	2.56	0.41
2:N:2:DG:N2	3:T:29:DC:O2	2.53	0.41
8:J:317:THR:HA	8:J:323:PRO:HA	2.03	0.41
8:J:1265:THR:O	8:J:1303:SER:N	2.53	0.41
10:D:212:ARG:HA	10:D:232:PHE:HE2	1.86	0.41
10:E:406:THR:OG1	10:E:407:LYS:N	2.52	0.41
1:L:6:LYS:NZ	1:L:7:LYS:O	2.45	0.41
6:H:100:LEU:HD21	6:H:121:VAL:HG11	2.03	0.41
7:I:81:ASP:OD1	7:I:84:GLU:N	2.49	0.41
7:I:138:ILE:HG23	7:I:139:ASN:H	1.85	0.41
7:I:618:GLN:OE1	8:J:768:ASN:ND2	2.53	0.41
7:I:1219:GLU:OE1	8:J:634:ARG:NH1	2.54	0.41
10:A:133:PHE:N	10:A:255:GLU:OE2	2.54	0.41
10:D:195:ILE:HD13	10:D:261:ILE:HG21	2.02	0.41
7:I:1124:ILE:HD12	7:I:1201:LEU:HD23	2.02	0.41
8:J:504:GLN:HG2	8:J:731:ARG:HB2	2.02	0.41
8:J:1275:LEU:HB2	8:J:1278:GLU:HB2	2.03	0.41
10:A:79:ILE:HG12	10:A:101:ILE:HG21	2.03	0.41
10:F:253:LEU:HB3	10:F:258:LYS:HB2	2.03	0.41
3:T:26:DG:H8	3:T:26:DG:H5'	1.85	0.41
7:I:1223:ARG:NH2	8:J:719:PHE:O	2.54	0.41
8:J:152:THR:HG23	8:J:154:LEU:H	1.86	0.41
8:J:361:LEU:HD13	8:J:366:CYS:HA	2.02	0.41
8:J:363:LEU:HD23	8:J:618:VAL:HG13	2.02	0.41
10:A:67:SER:OG	10:A:69:ASP:OD1	2.25	0.41
3:T:18:DC:H2'	3:T:19:DT:C6	2.55	0.41
6:H:52:PRO:HA	6:H:150:ARG:HG2	2.03	0.41
6:H:197:ASP:OD1	6:H:197:ASP:N	2.52	0.41
7:I:554:HIS:HB3	7:I:558:VAL:HB	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:I:606:LEU:HD23	7:I:610:GLU:HB3	2.03	0.41
7:I:695:ALA:HB1	7:I:795:ALA:HB3	2.03	0.41
7:I:755:LYS:HA	7:I:755:LYS:HD3	1.79	0.41
8:J:959:LYS:HB3	8:J:983:LYS:HB2	2.03	0.41
10:D:207:LEU:HD13	10:D:246:VAL:HG21	2.02	0.41
10:E:266:SER:OG	10:E:269:ARG:HB2	2.21	0.41
1:L:45:PRO:CB	1:L:64:PHE:CE2	2.94	0.40
5:W:45:LYS:NZ	8:J:415:VAL:HA	2.36	0.40
6:K:106:GLY:HA2	6:K:136:GLU:HA	2.03	0.40
7:I:1176:LEU:HD22	7:I:1180:MET:HA	2.03	0.40
10:A:147:MET:HE1	10:A:195:ILE:HG13	2.03	0.40
3:T:17:DC:H2'	3:T:18:DC:C6	2.57	0.40
6:H:28:LEU:HB2	6:H:201:LEU:HB3	2.02	0.40
6:H:37:HIS:CD2	7:I:1216:ARG:HD2	2.56	0.40
10:B:96:THR:HB	10:B:120:ASN:HA	2.03	0.40
10:D:266:SER:HB2	10:D:269:ARG:HB2	2.04	0.40
3:T:16:DA:H2'	3:T:17:DC:C6	2.56	0.40
7:I:120:GLN:NE2	7:I:489:PRO:HG2	2.34	0.40
7:I:243:PRO:HA	7:I:246:LEU:HD12	2.03	0.40
7:I:1244:HIS:NE2	7:I:1266:GLY:O	2.44	0.40
8:J:17:PHE:HZ	8:J:1353:VAL:HG21	1.87	0.40
8:J:985:ILE:CG2	8:J:989:GLY:HA2	2.45	0.40
10:B:296:ARG:HB2	10:B:297:PRO:HD3	2.02	0.40
10:F:148:GLU:O	10:F:198:ASN:ND2	2.54	0.40
7:I:27:LEU:HD13	7:I:663:VAL:HG11	2.04	0.40
7:I:1007:LYS:HE2	7:I:1007:LYS:HB3	1.96	0.40
7:I:1214:ASP:OD1	7:I:1215:GLY:N	2.55	0.40
8:J:137:ARG:O	8:J:142:GLU:N	2.53	0.40
8:J:189:LEU:HD23	8:J:235:GLU:HA	2.02	0.40
9:G:141:VAL:HB	9:G:153:ASP:HB3	2.03	0.40
10:A:247:ILE:HB	10:A:300:PHE:HE2	1.87	0.40
5:W:28:ARG:HH12	7:I:1314:GLN:HB2	1.86	0.40
7:I:1082:ILE:HD12	7:I:1082:ILE:H	1.86	0.40
8:J:129:ASP:OD2	8:J:220:ARG:NH1	2.54	0.40
8:J:332:LYS:HE2	8:J:332:LYS:HB3	1.92	0.40
10:C:276:THR:HG23	10:B:291:ALA:HB1	2.02	0.40
10:D:39:LEU:HD22	10:D:49:ILE:HD13	2.04	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	L	89/181 (49%)	82 (92%)	7 (8%)	0	100	100
5	W	53/91 (58%)	51 (96%)	2 (4%)	0	100	100
6	H	214/329 (65%)	206 (96%)	8 (4%)	0	100	100
6	K	273/329 (83%)	266 (97%)	7 (3%)	0	100	100
7	I	1298/1342 (97%)	1247 (96%)	51 (4%)	0	100	100
8	J	1330/1416 (94%)	1278 (96%)	52 (4%)	0	100	100
9	G	160/495 (32%)	152 (95%)	8 (5%)	0	100	100
10	A	349/419 (83%)	346 (99%)	3 (1%)	0	100	100
10	B	399/419 (95%)	395 (99%)	4 (1%)	0	100	100
10	C	407/419 (97%)	404 (99%)	3 (1%)	0	100	100
10	D	411/419 (98%)	411 (100%)	0	0	100	100
10	E	411/419 (98%)	408 (99%)	3 (1%)	0	100	100
10	F	339/419 (81%)	339 (100%)	0	0	100	100
All	All	5733/6697 (86%)	5585 (97%)	148 (3%)	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	L	83/158 (52%)	78 (94%)	5 (6%)	19	44

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
5	W	46/75 (61%)	46 (100%)	0	100	100
6	H	186/286 (65%)	182 (98%)	4 (2%)	52	71
6	K	192/286 (67%)	187 (97%)	5 (3%)	46	66
7	I	1125/1157 (97%)	1109 (99%)	16 (1%)	67	80
8	J	1115/1177 (95%)	1088 (98%)	27 (2%)	49	69
9	G	145/409 (36%)	140 (97%)	5 (3%)	37	60
10	A	305/359 (85%)	303 (99%)	2 (1%)	84	90
10	B	350/359 (98%)	349 (100%)	1 (0%)	92	95
10	C	354/359 (99%)	353 (100%)	1 (0%)	92	95
10	D	355/359 (99%)	354 (100%)	1 (0%)	92	95
10	E	355/359 (99%)	352 (99%)	3 (1%)	81	89
10	F	293/359 (82%)	291 (99%)	2 (1%)	84	90
All	All	4904/5702 (86%)	4832 (98%)	72 (2%)	66	80

All (72) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	L	31	LYS
1	L	64	PHE
1	L	97	SER
1	L	103	ILE
1	L	106	LYS
6	K	13	LEU
6	K	166	ARG
6	K	177	TYR
6	K	196	THR
6	K	231	PHE
6	H	6	THR
6	H	12	ARG
6	H	13	LEU
6	H	47	LEU
7	I	111	GLU
7	I	116	ASP
7	I	138	ILE
7	I	150	HIS
7	I	382	GLU
7	I	483	ASP
7	I	486	THR

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Mol	Chain	Res	Type
7	I	490	GLN
7	I	514	PHE
7	I	602	GLU
7	I	637	ARG
7	I	862	LEU
7	I	888	THR
7	I	943	LYS
7	I	1025	PHE
7	I	1106	ARG
8	J	76	LYS
8	J	93	THR
8	J	95	THR
8	J	133	ARG
8	J	134	ASP
8	J	197	GLU
8	J	250	ARG
8	J	253	VAL
8	J	259	ARG
8	J	322	ARG
8	J	430	HIS
8	J	528	THR
8	J	593	ASN
8	J	620	PHE
8	J	663	GLU
8	J	668	PHE
8	J	684	ASP
8	J	706	VAL
8	J	715	LYS
8	J	757	THR
8	J	847	ASP
8	J	907	HIS
8	J	987	GLU
8	J	990	ARG
8	J	1261	LEU
8	J	1301	THR
8	J	1326	GLN
9	G	59	PHE
9	G	130	PHE
9	G	147	ARG
9	G	148	ASP
9	G	149	ASN
10	C	214	GLU

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Mol	Chain	Res	Type
10	A	155	GLU
10	A	188	LEU
10	B	3	LEU
10	D	139	LEU
10	E	154	THR
10	E	155	GLU
10	E	232	PHE
10	F	214	GLU
10	F	301	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (36) such sidechains are listed below:

Mol	Chain	Res	Type
5	W	31	GLN
6	K	147	GLN
6	H	75	GLN
6	H	194	GLN
7	I	150	HIS
7	I	490	GLN
7	I	649	GLN
7	I	659	GLN
7	I	799	ASN
7	I	808	ASN
7	I	832	HIS
7	I	952	GLN
7	I	965	GLN
7	I	1008	GLN
7	I	1017	GLN
7	I	1256	GLN
7	I	1264	GLN
7	I	1288	GLN
8	J	365	GLN
8	J	489	ASN
8	J	593	ASN
8	J	897	HIS
8	J	910	ASN
8	J	1010	GLN
8	J	1108	GLN
9	G	194	GLN
10	C	8	ASN
10	C	90	ASN
10	C	172	GLN

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Mol	Chain	Res	Type
10	A	172	GLN
10	B	120	ASN
10	B	172	GLN
10	B	193	GLN
10	D	142	ASN
10	D	172	GLN
10	E	239	HIS

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
4	R	9/18 (50%)	1 (11%)	0

All (1) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
4	R	10	G

There are no RNA pucker outliers to report.

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 monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 3 ligands modelled in this entry, 3 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 ⓘ

This section contains visualisations of the EMDB entry EMD-22115. 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
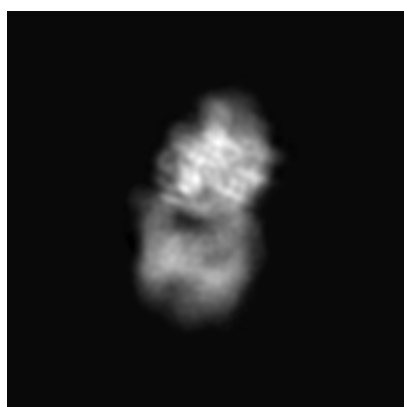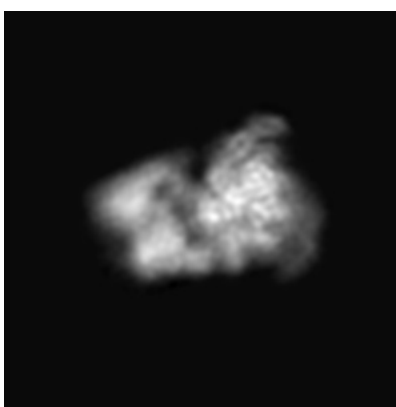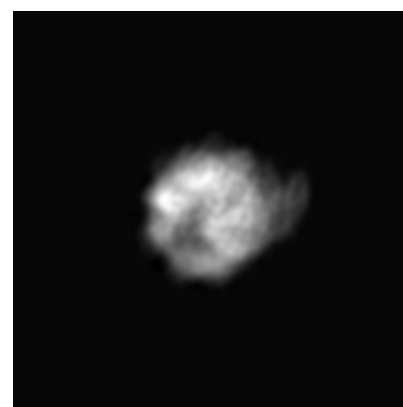
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

6.2.1 Primary map
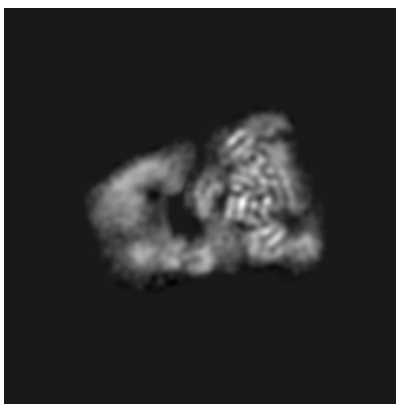
X Index: 175   Y Index: 175   Z Index: 175
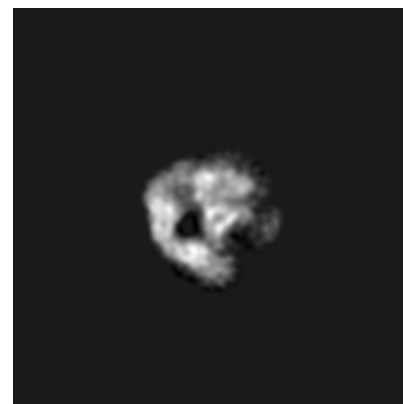
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ
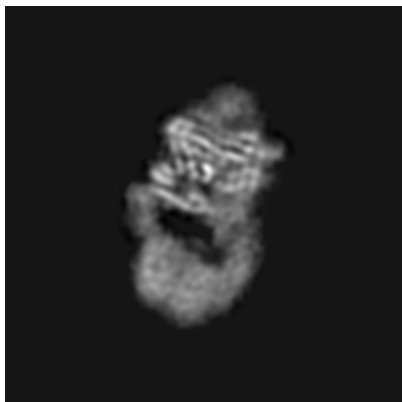
6.3.1 Primary map
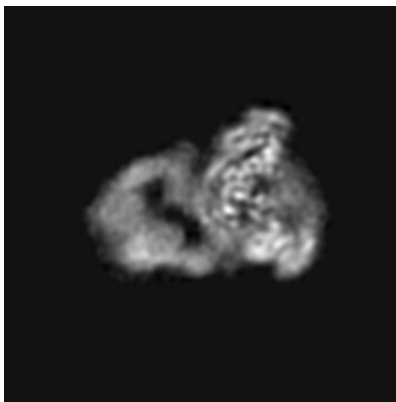
| X Index: 180 | Y Index: 185 | Z Index: 223 |

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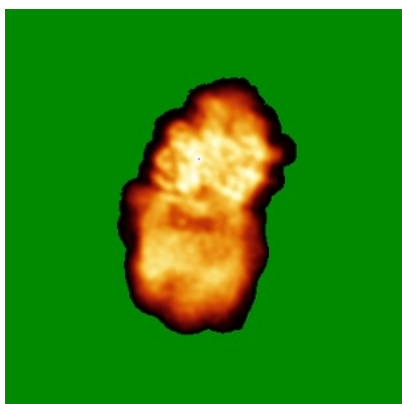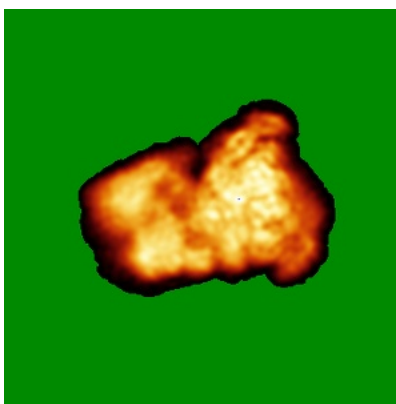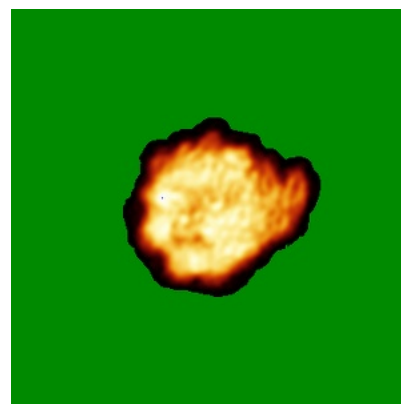
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X   Y   Z
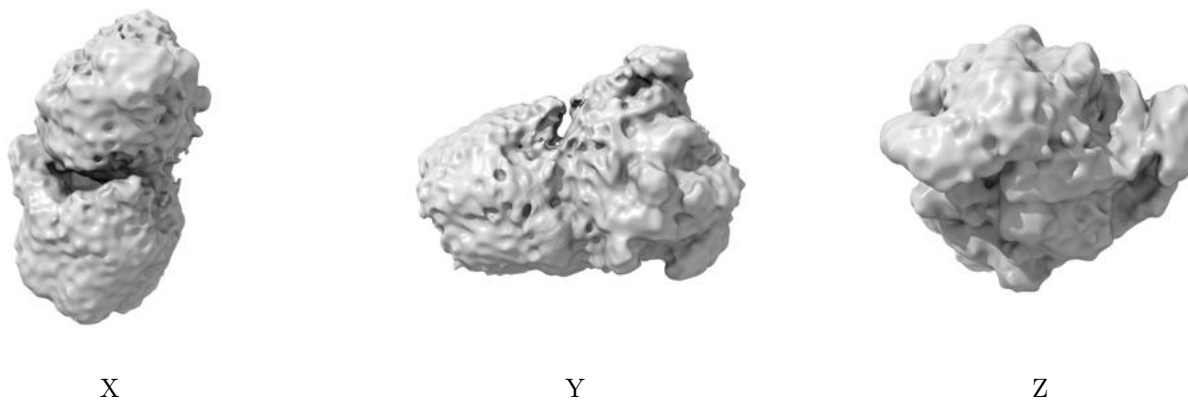
The images above show the 3D surface view of the map at the recommended contour level 0.0025. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6 Mask visualisation (i)

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

7 Map analysis ⓘ

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

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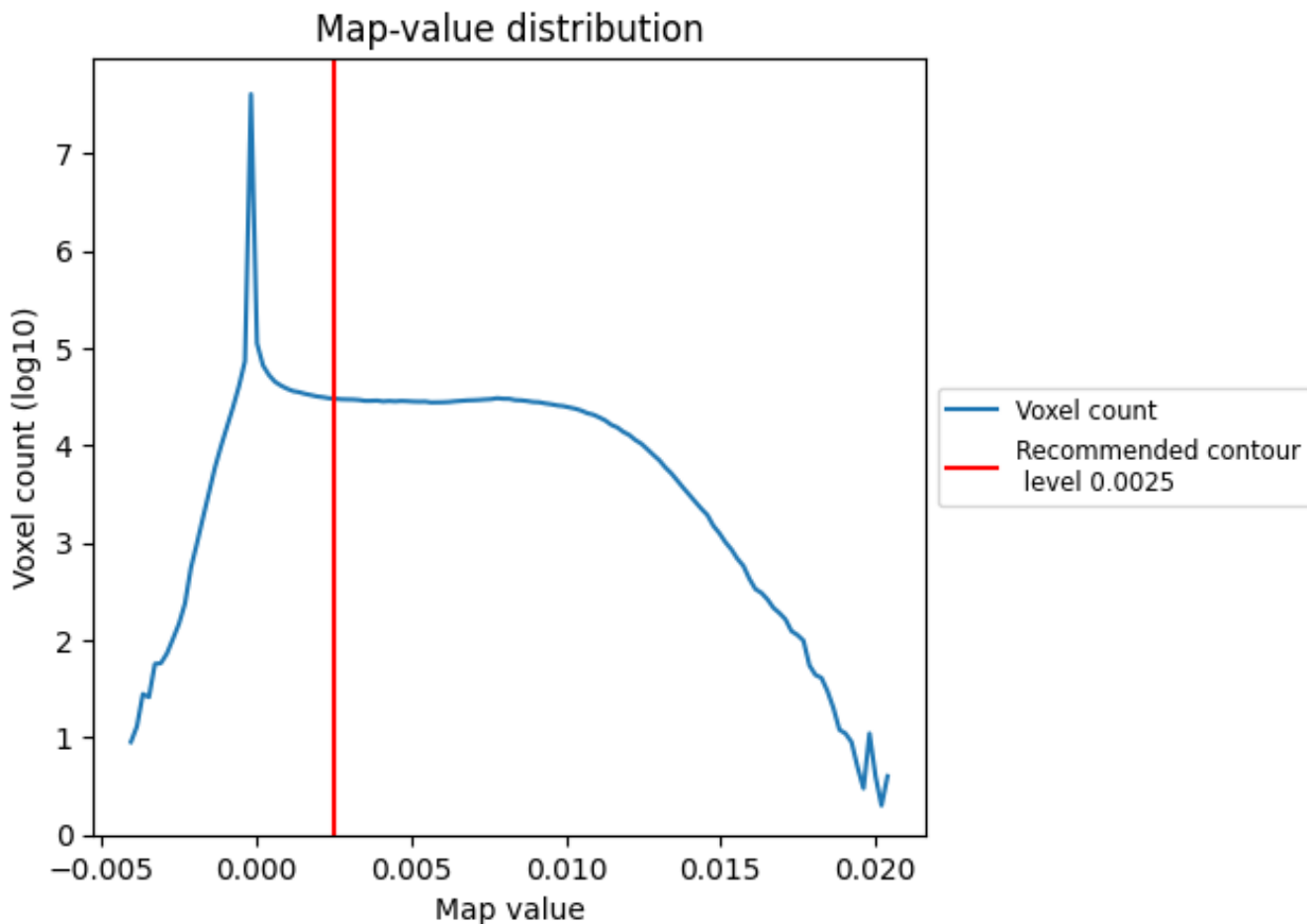
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
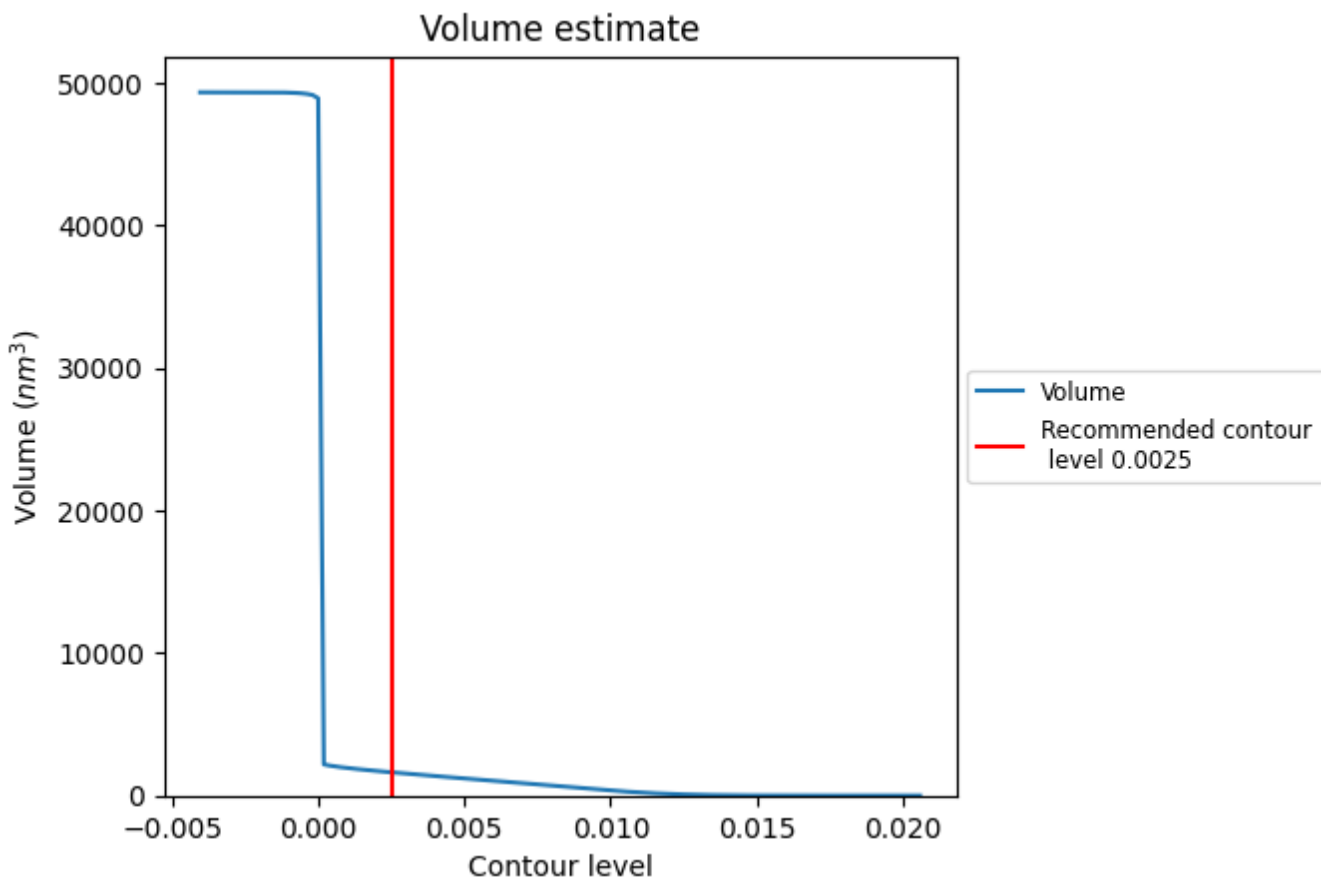
The volume at the recommended contour level is 1632 nm^3; this corresponds to an approximate mass of 1474 kDa.

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 ⓘ
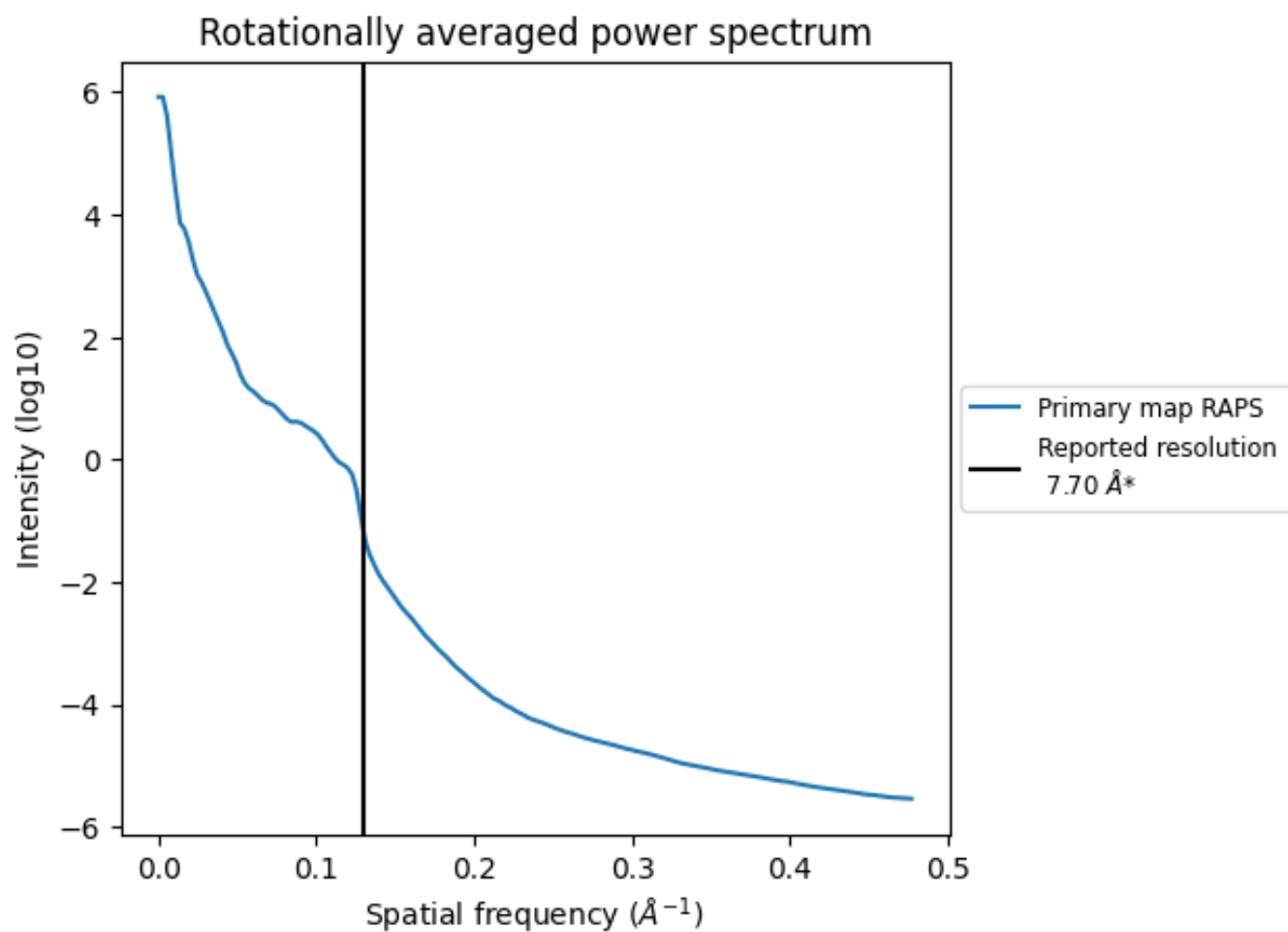
*Reported resolution corresponds to spatial frequency of 0.130 Å^{-1}

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)
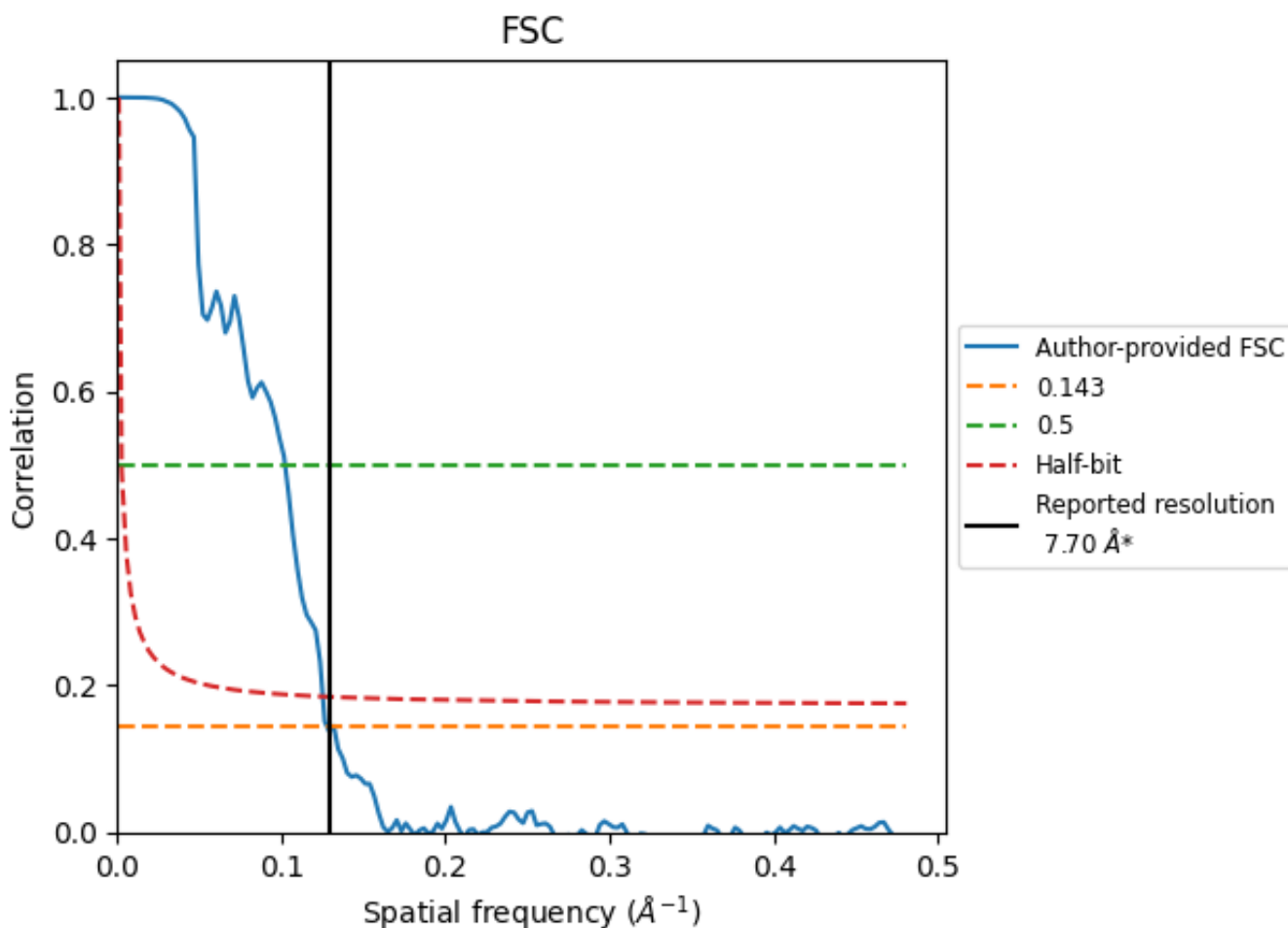
*Reported resolution corresponds to spatial frequency of 0.130 Å^{-1}

8.2　Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	7.70	-	-
Author-provided FSC curve	7.82	9.78	7.99
Unmasked-calculated*	-	-	-

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

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-22115 and PDB model 6XAV. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay ⓘ
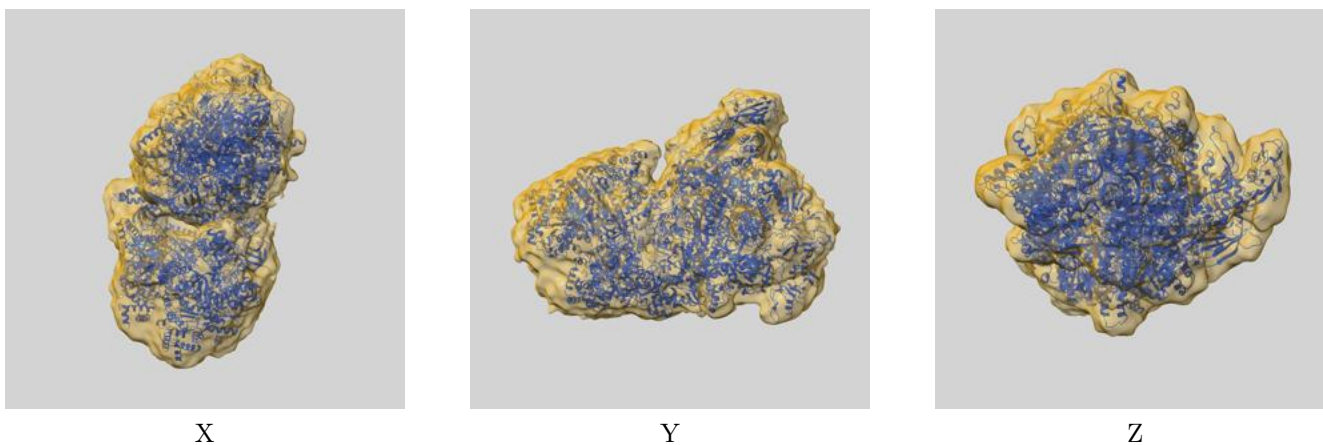
| X | Y | Z |

The images above show the 3D surface view of the map at the recommended contour level 0.0025 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 ⓘ
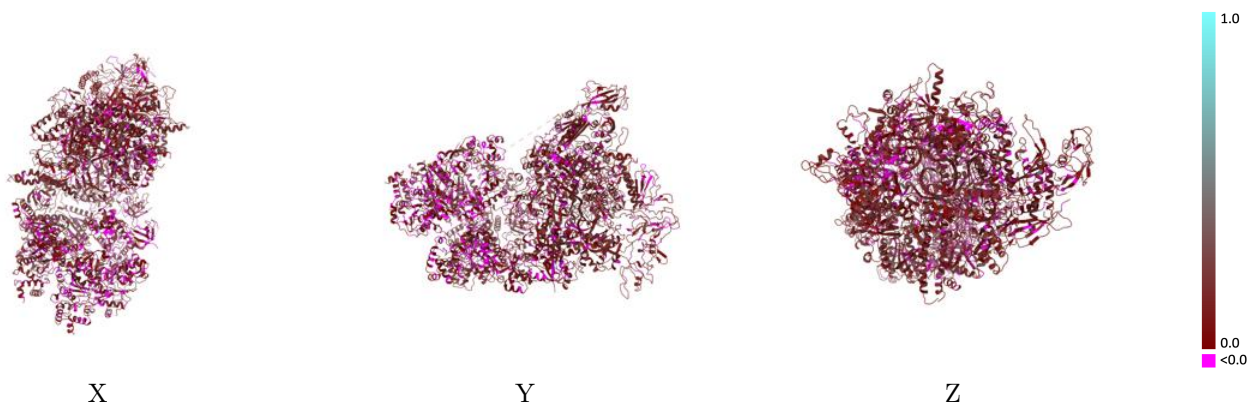
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 ⓘ
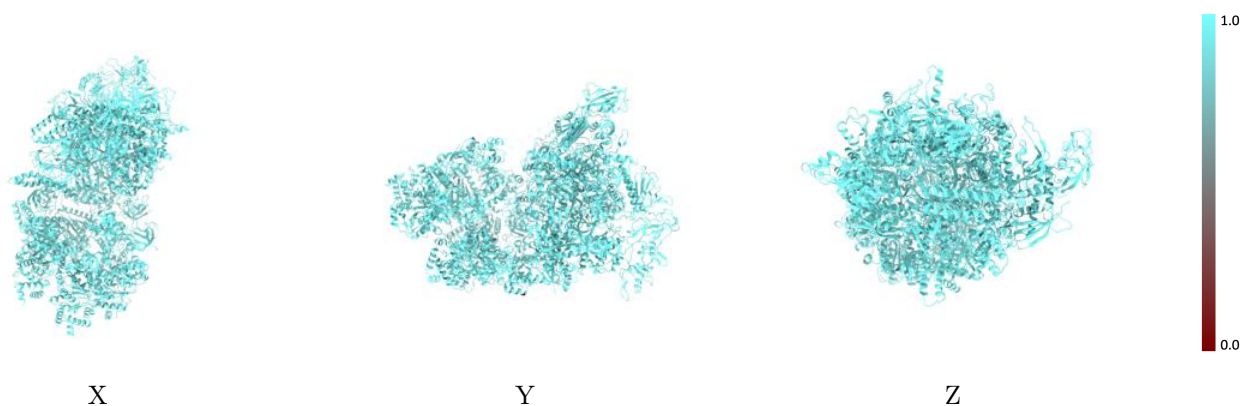
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0025).

9.4　Atom inclusion　ⓘ
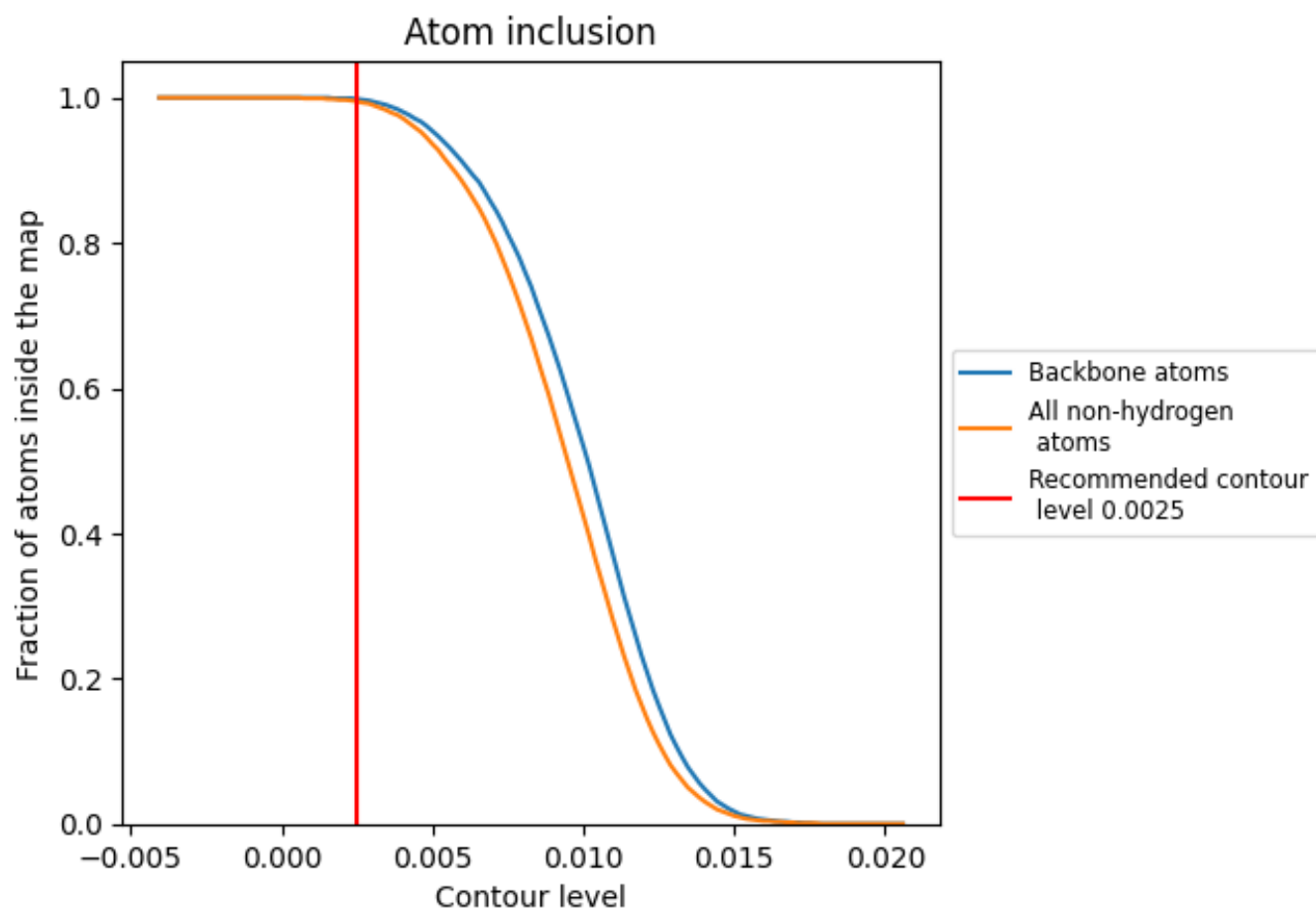
At the recommended contour level, 100% of all backbone atoms, 100% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.0025) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9950	0.1030
A	0.9920	0.0650
B	0.9940	0.1070
C	0.9940	0.1120
D	0.9950	0.0820
E	0.9940	0.0770
F	0.9940	0.0500
G	0.9780	0.0650
H	0.9950	0.1150
I	0.9970	0.1280
J	0.9970	0.1170
K	0.9980	0.1170
L	0.9930	0.0370
N	0.9840	0.0860
R	1.0000	0.1990
T	1.0000	0.1510
W	0.9710	0.0270

1.0

0.0
<0.0