WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Dec 10, 2025 – 01:25 pm GMT

PDB ID	:	5M3F / pdb_00005m3f
EMDB ID	:	EMD-4147
Title	:	Yeast RNA polymerase I elongation complex at 3.8A
Authors	:	Neyer, S.; Kunz, M.; Geiss, C.; Hantsche, M.; Hodirnau, V.-V.; Seybert, A.; Engel, C.; Scheffer, M.P.; Cramer, P.; Frangakis, A.S.
Deposited on	:	2016-10-14
Resolution	:	3.80 Å(reported)

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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 3.80 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		0.3%
Sidechain outliers		1.1%
RNA backbone		0.32

Worse — Better

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.383

Worse — Better

▮ Percentile relative to all EM structures
▯ Percentile relative to EM structures of similar resolution

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	10198 (3.30 - 4.30)

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	1664	38% / 64% 23% 12%
2	B	1203	32% / 69% 28% •
3	C	335	35% / 71% 20% 9%
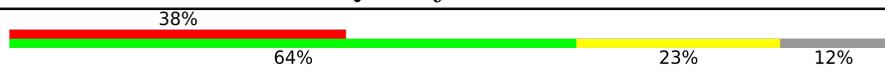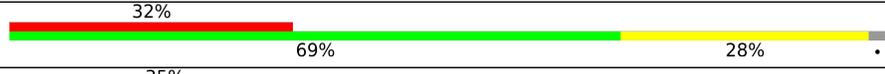
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Mol	Chain	Length	Quality of chain
4	E	215	67% / 81% / 17%
5	F	155	30% / 45% / 19% / 35%
6	H	146	36% / 70% / 20% / 10%
7	I	125	50% / 30% / 20% / 50%
8	J	70	17% / 76% / 23%
9	K	142	22% / 57% / 14% / 29%
10	L	70	23% / 51% / 11% / 37%
11	T	39	51% / 26% / 38% / 36%
12	U	39	36% / 13% / 23% / 64%
13	R	20	25% / 15% / 20% / 5% / 60%
14	M	415	26% / 17% / 9% / 74%
15	N	233	62% / 42% / 19% / 38%
16	D	137	39% / 28% / 11% / 61%
17	G	326	59% / 43% / 15% / 41%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
20	SO4	B	1301	-	-	X	-

2 Entry composition ⓘ

There are 20 unique types of molecules in this entry. The entry contains 34032 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 DNA-directed RNA polymerase I subunit RPA190.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1459	Total 11526	C 7281	N 2004	O 2180	S 61	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase I subunit RPA135.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	1177	Total 9350	C 5913	N 1639	O 1747	S 51	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerases I and III subunit RPAC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	305	Total 2423	C 1539	N 416	O 460	S 8	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	E	212	Total 1735	C 1102	N 306	O 316	S 11	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	F	100	Total 823	C 522	N 144	O 154	S 3	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	H	131	Total 1052	C 664	N 176	O 208	S 4	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase I subunit RPA12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	I	63	466	292	77	93	4	0	0

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	J	69	569	362	101	100	6	0	0

- Molecule 9 is a protein called DNA-directed RNA polymerases I and III subunit RPAC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	K	101	793	496	130	162	5	0	0

- Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	L	44	352	217	70	61	4	0	0

- Molecule 11 is a DNA chain called template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
11	T	25	509	244	95	146	24	0	0

- Molecule 12 is a DNA chain called non-template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
12	U	14	285	138	51	83	13	0	0

- Molecule 13 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
13	R	8	173	77	34	54	8	0	0

- Molecule 14 is a protein called DNA-directed RNA polymerase I subunit RPA49.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	M	108	Total 856	C 543	N 142	O 171	0	0

- Molecule 15 is a protein called DNA-directed RNA polymerase I subunit RPA34.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	N	145	Total 1151	C 735	N 188	O 224	S 4	0	0

- Molecule 16 is a protein called DNA-directed RNA polymerase I subunit RPA14.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	D	54	Total 431	C 270	N 73	O 88	0	0

- Molecule 17 is a protein called DNA-directed RNA polymerase I subunit RPA43.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	G	193	Total 1526	C 985	N 262	O 274	S 5	0	0

- Molecule 18 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
18	A	2	Total 2	Zn 2	0
18	B	1	Total 1	Zn 1	0
18	I	1	Total 1	Zn 1	0
18	J	1	Total 1	Zn 1	0
18	L	1	Total 1	Zn 1	0

- Molecule 19 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
19	A	1	Total 1	Mg 1	0

- Molecule 20 is SULFATE ION (CCD ID: SO4) (formula: O_4S).

SO4

O1

O3 O⁻ — S — O⁻ O4

S

O2
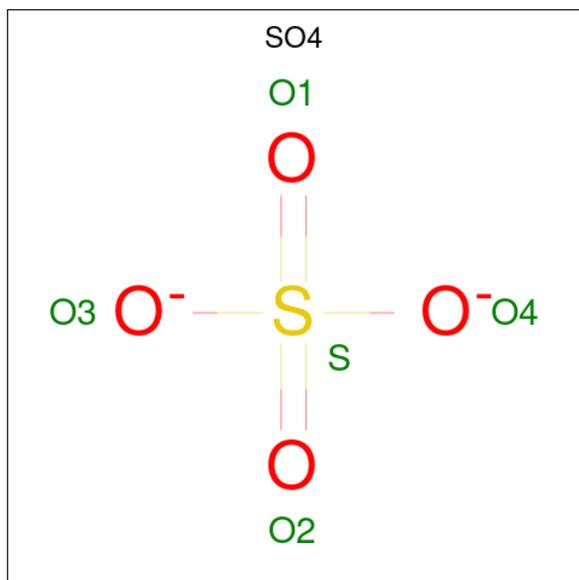
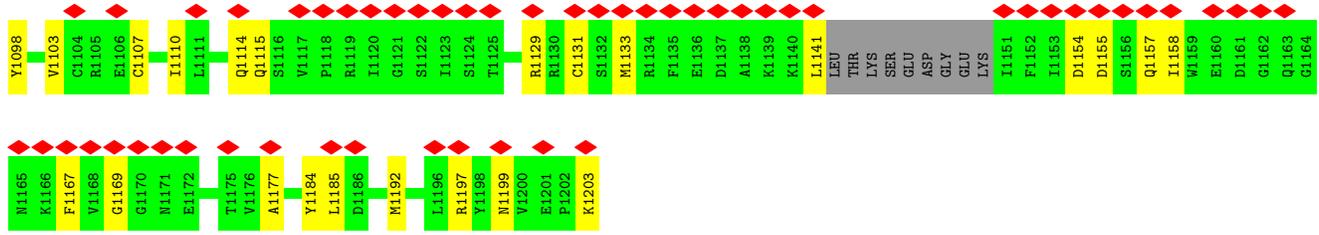| Mol	Chain	Residues	Atoms			AltConf
20	B	1	Total	O	S	0
			5	4	1	

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.

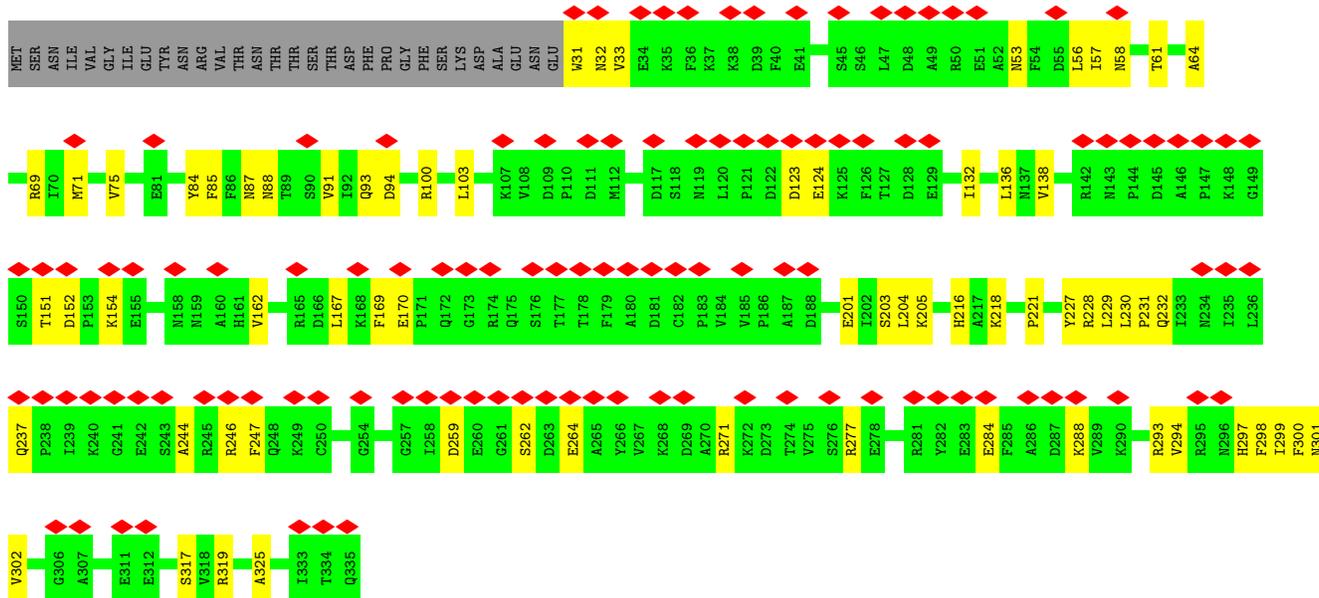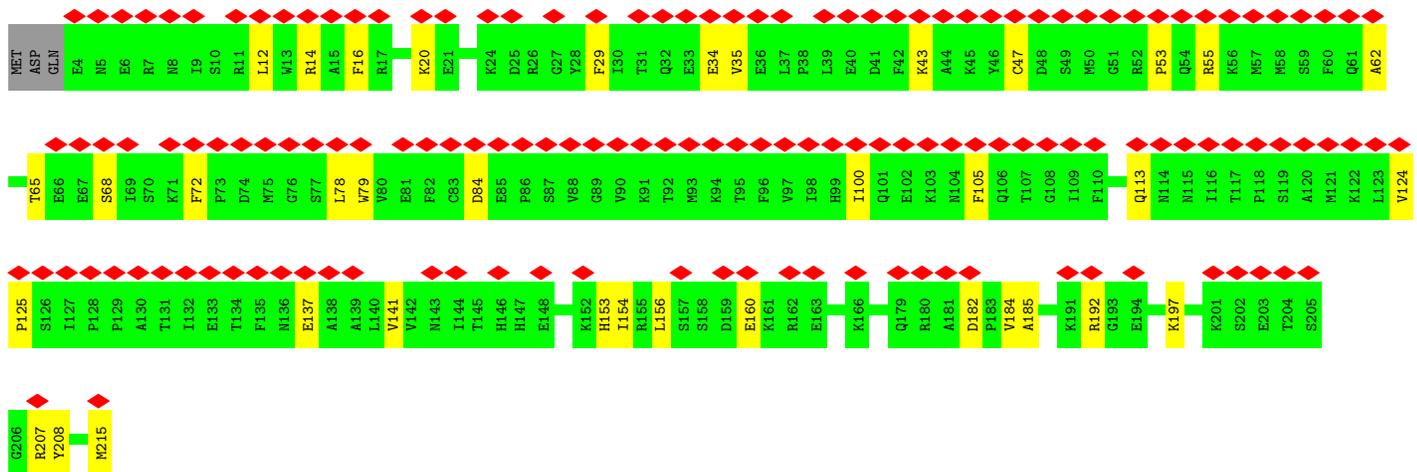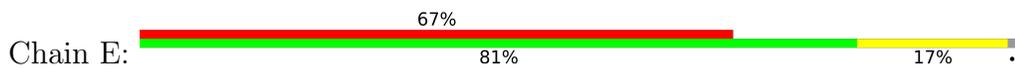• Molecule 1: DNA-directed RNA polymerase I subunit RPA190

• Molecule 2: DNA-directed RNA polymerase I subunit RPA135

Y1098 V1103 C1104 R1105 E1106 C1107 I1110 L1111 Q1114 Q1115 S1116 V1117 P1118 R1119 I1120 G1121 S1122 I1123 S1124 T1125 R1129 R1130 C1131 S1132 M1133 R1134 F1135 E1136 D1137 A1138 K1139 K1140 L1141 LEU THR LYS SER GLU ASP GLY LYS I1151 F1152 I1153 D1154 D1155 S1156 Q1157 I1158 W1159 E1160 D1161 G1162 Q1163 G1164

N1165 K1166 F1167 V1168 G1169 G1170 N1171 E1172 T1175 V1176 A1177 Y1184 L1185 D1186 M1192 L1196 R1197 Y1198 N1199 V1200 E1201 P1202 K1203

• Molecule 3: DNA-directed RNA polymerases I and III subunit RPAC1

Chain C:

35%

71% 20% 9%

MET SER ASN ILE VAL GLY ILE GLU TYR ASN ARG VAL THR ASN THR SER THR ASP PHE PRO GLY PHE SER LYS ASP ALA GLU ASN GLU W31 N32 V33 E34 K35 F36 K37 K38 D39 F40 E41 S45 S46 L47 D48 A49 R50 E51 A52 N53 F54 D55 L56 I57 N58 T61 A64

R69 I70 M71 V75 E81 Y84 F85 F86 N87 N88 T89 S90 V91 I92 Q93 D94 R100 L103 K107 V108 D109 P110 D111 M112 D117 S118 N119 L120 P121 D122 D123 E124 K125 F126 T127 D128 E129 I132 L136 N137 V138 R142 N143 P144 D145 A146 P147 K148 G149

S150 S151 T151 D152 P153 K154 E155 N158 N159 A160 H161 V162 R165 D166 L167 K168 F169 E170 P171 Q172 G173 R174 Q175 S176 T177 T178 F179 A180 D181 C182 P183 V184 V185 P186 A187 D188 E201 I202 S203 L204 K205 H216 A217 K218 P221 Y227 R228 L229 L230 P231 Q232 T233 N234 I235 L236

Q237 P238 I239 K240 G241 E242 S243 A244 R245 R246 F247 Q248 K249 C250 G254 G257 I258 D259 E260 Q261 S262 D263 E264 A265 Y266 V267 K268 D269 A270 R271 K272 D273 T274 V275 S276 R277 E278 R281 Y282 E283 E284 E285 A286 D287 K288 V289 K290 R293 V294 R295 N296 H297 F298 I299 F300 N301

V302 G306 A307 E311 E312 S317 V318 R319 A325 I333 T334 Q335

• Molecule 4: DNA-directed RNA polymerases I, II, and III subunit RPABC1

Chain E:

67%

81% 17% •

MET ASP GLN E4 N5 E6 R7 N8 I9 S10 R11 L12 W13 R14 A15 F16 R17 K20 E21 K24 D25 R26 G27 Y28 F29 I30 T31 Q32 E33 E34 V35 E36 L37 P38 L39 E40 D41 F42 K43 A44 K45 Y46 C47 D48 S49 M50 G51 R52 P53 Q54 R55 K56 M57 M58 S59 F60 Q61 A62

T65 E66 E67 S68 I69 S70 K71 F72 P73 D74 M75 G76 S77 L78 W79 V80 E81 F82 C83 D84 E85 P86 S87 V88 G89 V90 K91 T92 M93 K94 T95 F96 V97 I98 H99 I100 Q101 E102 K103 N104 F105 Q106 T107 G108 I109 F110 Q113 N114 N115 I116 T117 P118 S119 A120 M121 K122 L123 V124

P125 S126 I127 P128 P129 A130 T131 I132 E133 T134 F135 M136 E137 A138 A139 L140 V141 V142 N143 I144 T145 H146 H147 E148 K152 H153 I154 R155 L156 S157 S158 D159 E160 K161 R162 E163 K166 Q179 R180 A181 D182 P183 V184 A185 K191 R192 G193 E194 K197 K201 S202 E203 T204 S205

G206 R207 Y208 M215

• Molecule 5: DNA-directed RNA polymerases I, II, and III subunit RPABC2

Chain F:

30%
45%   19%   35%

MET SER ASP TYR GLU GLU ALA PHE ASN ASP GLY ASN GLU ASN PHE GLU ASP PHE VAL GLU HIS PHE SER ASP GLU GLU THR TYR GLU GLU LYS PRO GLN PHE LYS ASP GLY GLU THR THR ASP ALA ASN GLY LYS THR ILE VAL THR GLY GLY ASN GLY P55 E56 D57 F58 Q59 Q60

H61 E62 Q63 I64 R65 R66 K67 T68 L69 K70 E71 K72 A73 K76 D77 Q78 R79 A80 M85 Y88 E89 R92 I93 L94 A98 L99 Q100 I101 S102 M103 N104 A105 P106 V107 F108 V109 D110 L111 E112 G113 E114 T115 D116 P117 L118 R119 I120 A121 M122 K123 E127 K128 K129

R136 Y137 L138 P139 D140 F143 E144 D145 V148 E149 V153 D154 LEU

• Molecule 6: DNA-directed RNA polymerases I, II, and III subunit RPABC3

Chain H:

36%
70%   20%   10%

MET SER N3 D7 D8 I9 V12 S13 E14 V15 D16 P17 G18 R19 Y20 N21 K22 I26 E27 T32 Q33 D34 Q35 C36 K37 L38 T39 L40 D41 I42 E45 L46 F47 P48 V49 A50 A51 Q52 D53 S54 N64 LEU GLU ASP THR PRO ALA ASN ASP SER SER ALA THR ARG

S78 P82 Q83 A84 G85 D86 R87 S88 D91 D92 Y93 D94 G99 T100 A101 Y102 K103 F104 E105 E106 V107 S108 K109 D110 L111 I112 Y115 Y116 S117 F118 M123 R124 L125 E126 G127 N128 Y129 R130 N131 L132 N133 N134 L135 K136 Q137 E138 L143 I144 R145 R146

• Molecule 7: DNA-directed RNA polymerase I subunit RPA12

Chain I:

50%
30%   20%   50%

MET S2 V3 V4 G5 S6 L7 I8 F9 C10 L11 D12 C13 G14 D15 L16 L17 E18 N19 P20 N21 A22 V23 L24 G25 S26 N27 V28 E29 C30 S31 Q32 C33 K34 A35 I36 Y37 P38 K39 S40 Q41 F42 S43 N44 L45 K46 V47 V48 T49 T50 T51 A52 D53 D54 A55 F56 P57 S58 S59 L60

R61 A62 K63 K64 SER VAL VAL LYS THR SER LEU LYS ASN GLU LEU LYS ASP GLY ALA THR ILE LYS GLU LYS CYS PRO GLN CYS ASN GLU GLU MET ASN TYR HIS THR LEU GLN LEU ARG SER ALA ASP GLU GLY ALA THR VAL PHE TYR THR CYS THR SER CYS GLY TYR LYS

PHE ARG THR ASN ASN

• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC5

Chain J:

17%
76%   23%   .

M1 I2 V3 R6 S9 C10 E19 S20 Y21 L25 Q26 E27 D28 E29 L30 D31 E32 S37 K42 R43 Y44 C45 R48 K59 F60 Y63 E67 K68 R69 ASP

• Molecule 9: DNA-directed RNA polymerases I and III subunit RPAC2

Chain K:

22%
57%   14%   29%

• Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC4

Chain L:

• Molecule 11: template DNA

Chain T:

• Molecule 12: non-template DNA

Chain U:

• Molecule 13: RNA

Chain R:

• Molecule 14: DNA-directed RNA polymerase I subunit RPA49

Chain M:

• Molecule 15: DNA-directed RNA polymerase I subunit RPA34

Chain N:

62%
42% 19% 38%

• Molecule 16: DNA-directed RNA polymerase I subunit RPA14

Chain D:

39%
28% 11% 61%

• Molecule 17: DNA-directed RNA polymerase I subunit RPA43

Chain G:

59%
43% 15% 41%

N121 L122 Y123 V124 W125 Q126 P127 Q128 V129 G130 D131 V132 L133 E134 G135 Y136 I137 F138 I139 Q140 S141 A142 S143 H144 I145 G146 L147 L148 I149 H150 D151 A152 F153 N154 A155 S156 I157 K158 K159 N160 N161 I162 P163 V164 D165 W166 T167 F168 V169 H170 ASN ASP VAL GLU GLU ASP ALA ASP VAL ILE

ASN THR ASP GLU ASN ASN GLY ASN ASN ASN GLU ASP ASN LYS ASP SER ASN GLY GLY SER ASN SER LEU GLY LYS PHE SER PHE GLY ASN ARG SER LEU G215 H216 W217 V218 D219 S220 N221 G222 E223 P224 I225 D226 G227 K228 L229 R230 F231 T232 V233 R234 N235 V236 H237 T238 T239 G240

R241 V242 V243 S244 V245 D246 G247 T248 L249 I250 SER ASP ALA ASP GLU GLU GLY ASN GLY TYR ASN SER SER ARG SER GLN ALA GLU SER LEU PRO ILE VAL SER ASN LYS LYS ILE VAL PHE ASP ASP GLU VAL SER ILE GLU ASN LYS GLU SER HIS LYS GLU LEU ASP LEU PRO GLU VAL

LYS GLU ASP ASN GLY SER GLU ILE VAL TYR GLU GLU ASN THR SER GLU SER ASN ASP GLY GLU SER SER ASP SER ASP

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	94000	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 $(e^-/Å^2)$	56	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.218	Depositor
Minimum map value	-0.142	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.010	Depositor
Recommended contour level	0.045	Depositor
Map size (Å)	241.49998, 241.49998, 241.49998	wwPDB
Map dimensions	230, 230, 230	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

5   Model quality (i)

5.1   Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: MG, SO4, 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	0.27	0/11738	0.53	4/15851 (0.0%)
2	B	0.29	0/9557	0.54	0/12918
3	C	0.27	0/2475	0.47	0/3354
4	E	0.23	0/1771	0.43	0/2383
5	F	0.25	0/838	0.46	0/1129
6	H	0.23	0/1070	0.44	0/1449
7	I	0.17	0/472	0.57	0/639
8	J	0.29	0/578	0.51	0/775
9	K	0.28	0/804	0.44	0/1083
10	L	0.25	0/354	0.47	0/468
11	T	0.24	0/571	0.35	0/879
12	U	0.22	0/319	0.38	0/491
13	R	0.23	0/193	0.46	0/299
14	M	0.50	0/872	0.87	0/1170
15	N	0.49	0/1172	0.90	1/1580 (0.1%)
16	D	0.46	0/436	0.77	0/591
17	G	0.50	0/1564	0.84	3/2127 (0.1%)
All	All	0.31	0/34784	0.56	8/47186 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
2	B	0	3

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1254	PHE	CA-C-N	-5.67	114.97	122.85
1	A	1254	PHE	C-N-CA	-5.67	114.97	122.85
17	G	241	ARG	CD-NE-CZ	5.46	132.05	124.40
15	N	127	ASP	N-CA-C	-5.39	106.19	114.16
17	G	241	ARG	NE-CZ-NH2	-5.28	114.45	119.20
17	G	219	ASP	N-CA-C	5.23	116.73	109.31
1	A	610	ASN	CA-C-N	-5.20	113.72	123.03
1	A	610	ASN	C-N-CA	-5.20	113.72	123.03

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	1048	SER	Peptide
2	B	1061	LYS	Peptide
2	B	319	HIS	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	11526	0	11614	341	0
2	B	9350	0	9240	379	0
3	C	2423	0	2412	71	0
4	E	1735	0	1764	25	0
5	F	823	0	840	50	0
6	H	1052	0	1021	21	0
7	I	466	0	466	29	0
8	J	569	0	585	21	0
9	K	793	0	790	18	0
10	L	352	0	376	7	0
11	T	509	0	283	16	0
12	U	285	0	161	9	0
13	R	173	0	89	6	0
14	M	856	0	852	97	0
15	N	1151	0	1169	102	0
16	D	431	0	428	11	0
17	G	1526	0	1540	96	0

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W O R L D W I D E
wwPDB
PROTEIN DATA BANK

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
18	A	2	0	0	0	0
18	B	1	0	0	0	0
18	I	1	0	0	0	0
18	J	1	0	0	0	0
18	L	1	0	0	0	0
19	A	1	0	0	0	0
20	B	5	0	0	2	0
All	All	34032	0	33630	960	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 (960) 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)
2:B:328:GLN:NE2	14:M:112:LYS:HA	1.22	1.49
1:A:1661:PRO:CD	17:G:55:GLU:CA	1.86	1.44
2:B:328:GLN:CD	14:M:112:LYS:HA	1.39	1.43
2:B:987:ASN:ND2	15:N:157:ARG:CD	1.85	1.39
3:C:301:ASN:ND2	15:N:173:THR:HB	1.37	1.37
1:A:1661:PRO:CD	17:G:55:GLU:HA	1.11	1.36
2:B:977:ILE:CD1	15:N:163:VAL:HG21	1.59	1.29
1:A:1182:GLY:O	1:A:1649:VAL:CB	1.81	1.29
2:B:575:HIS:HB3	14:M:97:VAL:CG2	1.63	1.27
1:A:460:LEU:HD23	1:A:466:LEU:CB	1.65	1.25
1:A:1661:PRO:HD3	17:G:55:GLU:CA	1.52	1.25
2:B:977:ILE:CD1	15:N:163:VAL:CG2	2.14	1.24
5:F:100:GLN:HE21	17:G:112:PRO:CB	1.48	1.24
1:A:1660:VAL:CA	17:G:54:LEU:O	1.86	1.24
2:B:987:ASN:ND2	15:N:157:ARG:NE	1.86	1.23
2:B:321:GLN:OE1	14:M:108:LEU:HD13	1.33	1.22
2:B:577:PHE:CZ	15:N:106:ASN:OD1	1.91	1.22
2:B:328:GLN:OE1	14:M:111:PRO:O	1.57	1.21
1:A:460:LEU:CD2	1:A:466:LEU:HB3	1.71	1.20
2:B:987:ASN:HD21	15:N:157:ARG:NE	1.37	1.20
1:A:1656:VAL:O	17:G:107:ILE:HB	1.38	1.19
3:C:271:ARG:NH1	15:N:175:TYR:OH	1.75	1.19
1:A:1658:ALA:N	17:G:107:ILE:HG12	1.56	1.19
2:B:572:PRO:HG3	14:M:70:SER:CB	1.73	1.19
1:A:1658:ALA:N	17:G:107:ILE:CG1	2.06	1.18
1:A:1659:LYS:O	17:G:54:LEU:HD22	1.45	1.17

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:346:ASP:OD2	14:M:113:ILE:HD13	1.45	1.17
2:B:346:ASP:CG	14:M:113:ILE:CD1	2.17	1.16
3:C:301:ASN:HD22	15:N:173:THR:CB	1.56	1.16
2:B:346:ASP:OD2	14:M:113:ILE:CD1	1.93	1.16
2:B:977:ILE:HD13	15:N:163:VAL:CG2	1.70	1.16
1:A:1660:VAL:HA	17:G:54:LEU:O	0.97	1.14
2:B:584:CYS:HB3	2:B:596:VAL:O	1.43	1.14
5:F:100:GLN:NE2	17:G:112:PRO:HB2	1.59	1.14
5:F:58:PHE:CZ	16:D:23:HIS:HB2	1.78	1.14
2:B:987:ASN:ND2	15:N:157:ARG:HD3	1.56	1.13
1:A:1657:LEU:HG	17:G:106:LYS:HA	1.15	1.12
5:F:58:PHE:CE2	16:D:23:HIS:HB2	1.84	1.12
2:B:328:GLN:NE2	14:M:112:LYS:CA	2.13	1.09
3:C:53:ASN:ND2	15:N:174:GLY:HA3	1.66	1.09
2:B:328:GLN:CD	14:M:112:LYS:CA	2.25	1.08
1:A:1658:ALA:HB3	17:G:107:ILE:HD11	1.33	1.08
1:A:1660:VAL:HG12	17:G:54:LEU:HA	1.35	1.08
1:A:457:LYS:NZ	1:A:461:GLU:OE2	1.85	1.08
2:B:572:PRO:CG	14:M:70:SER:CB	2.32	1.08
2:B:577:PHE:CE2	14:M:28:LYS:HE2	1.88	1.08
3:C:53:ASN:HD22	15:N:174:GLY:HA3	1.05	1.07
2:B:575:HIS:CB	14:M:97:VAL:HG22	1.85	1.07
2:B:346:ASP:OD2	14:M:113:ILE:CG1	2.02	1.07
2:B:572:PRO:CG	14:M:70:SER:HB2	1.83	1.07
1:A:460:LEU:HD21	1:A:466:LEU:HD23	1.30	1.07
2:B:975:HIS:CG	15:N:166:LEU:HD22	1.92	1.02
2:B:987:ASN:HD22	15:N:157:ARG:CD	1.53	1.02
5:F:58:PHE:CE2	16:D:23:HIS:CB	2.42	1.02
1:A:1651:THR:O	5:F:92:ARG:NH1	1.91	1.01
2:B:1003:ALA:C	15:N:168:LEU:HD23	1.83	1.01
2:B:21:ARG:HH12	2:B:763:ASP:HB3	1.25	1.01
2:B:328:GLN:OE1	14:M:111:PRO:C	2.03	1.00
1:A:460:LEU:HD23	1:A:466:LEU:HB3	1.01	1.00
1:A:1651:THR:OG1	2:B:1085:SER:HB2	1.62	1.00
3:C:301:ASN:HD22	15:N:173:THR:HB	0.86	1.00
1:A:1658:ALA:H	17:G:107:ILE:CG1	1.68	1.00
1:A:1661:PRO:HD2	17:G:55:GLU:CA	1.89	1.00
2:B:572:PRO:HB3	14:M:70:SER:HB3	1.44	0.99
7:I:32:GLN:O	14:M:104:SER:OG	1.80	0.98
7:I:12:ASP:HB3	14:M:60:LEU:HD21	1.45	0.97
1:A:1658:ALA:H	17:G:107:ILE:HG12	1.15	0.97

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:346:ASP:CB	14:M:113:ILE:HG12	1.94	0.97
2:B:572:PRO:HG3	14:M:70:SER:HB2	0.99	0.97
2:B:566:TYR:CE2	14:M:69:SER:O	2.18	0.96
2:B:346:ASP:HB2	14:M:113:ILE:HG12	1.43	0.96
2:B:575:HIS:HB3	14:M:97:VAL:HG22	0.99	0.96
3:C:301:ASN:CG	15:N:173:THR:HB	1.91	0.95
2:B:987:ASN:HD22	15:N:157:ARG:HD3	1.15	0.95
5:F:100:GLN:HE21	17:G:112:PRO:HB2	0.77	0.94
5:F:100:GLN:NE2	17:G:112:PRO:CB	2.21	0.93
1:A:466:LEU:HD21	2:B:1184:TYR:HE2	1.31	0.92
2:B:577:PHE:HE2	14:M:28:LYS:HE2	1.20	0.92
2:B:346:ASP:OD2	14:M:113:ILE:HG12	1.68	0.92
2:B:346:ASP:CG	14:M:113:ILE:HG12	1.93	0.92
2:B:683:ASN:ND2	15:N:150:TYR:CE2	2.38	0.92
15:N:143:ALA:C	15:N:144:LYS:HD2	1.94	0.91
2:B:1107:CYS:HB3	2:B:1131:CYS:SG	2.09	0.91
1:A:466:LEU:HD21	2:B:1184:TYR:CE2	2.06	0.90
2:B:977:ILE:CD1	15:N:163:VAL:HG22	1.98	0.90
3:C:301:ASN:ND2	15:N:173:THR:CB	2.22	0.90
2:B:346:ASP:CG	14:M:113:ILE:CG1	2.44	0.90
2:B:328:GLN:HB3	14:M:112:LYS:O	1.72	0.89
2:B:683:ASN:ND2	15:N:150:TYR:CZ	2.40	0.89
2:B:346:ASP:CG	14:M:113:ILE:HD11	1.95	0.89
3:C:271:ARG:CZ	15:N:175:TYR:OH	2.20	0.88
3:C:228:ARG:NH1	15:N:172:ALA:HB1	1.88	0.88
2:B:328:GLN:NE2	14:M:112:LYS:CG	2.37	0.88
3:C:53:ASN:HD22	15:N:174:GLY:CA	1.87	0.88
1:A:1657:LEU:HA	17:G:107:ILE:HG12	1.55	0.87
2:B:321:GLN:OE1	14:M:108:LEU:CD1	2.20	0.87
2:B:574:SER:OG	14:M:67:ASP:CG	2.17	0.87
3:C:228:ARG:NH1	15:N:172:ALA:CB	2.38	0.87
1:A:1657:LEU:C	17:G:107:ILE:HG12	1.99	0.86
1:A:1658:ALA:HB3	17:G:107:ILE:CD1	2.05	0.86
1:A:1657:LEU:CG	17:G:106:LYS:HA	2.03	0.85
2:B:977:ILE:HD12	15:N:163:VAL:CG1	2.06	0.84
1:A:1658:ALA:CB	17:G:107:ILE:HD11	2.07	0.84
2:B:941:THR:OG1	15:N:170:HIS:NE2	2.09	0.84
1:A:1657:LEU:CA	17:G:107:ILE:HG12	2.07	0.84
2:B:1047:ARG:HH21	2:B:1049:THR:HG21	1.42	0.83
5:F:66:ARG:NH1	17:G:90:LEU:HB3	1.93	0.83
1:A:1661:PRO:CD	17:G:54:LEU:O	2.26	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:301:ASN:CB	15:N:173:THR:HB	2.09	0.82
2:B:368:GLN:HG3	2:B:372:ARG:HH12	1.44	0.82
1:A:916:THR:HG22	1:A:944:MET:HE1	1.60	0.82
2:B:134:ARG:HD3	2:B:160:GLY:HA3	1.62	0.82
7:I:12:ASP:OD1	14:M:60:LEU:HD11	1.78	0.82
7:I:26:SER:HA	7:I:39:LYS:HE2	1.62	0.82
1:A:1658:ALA:N	17:G:107:ILE:HG13	1.95	0.81
2:B:977:ILE:HD13	15:N:163:VAL:HG21	0.85	0.81
7:I:33:CYS:HA	14:M:104:SER:HB3	1.61	0.81
2:B:572:PRO:CB	14:M:70:SER:HB3	2.09	0.81
1:A:466:LEU:CD2	2:B:1184:TYR:HE2	1.94	0.81
1:A:372:LYS:HA	1:A:376:GLU:O	1.81	0.80
1:A:1256:LYS:NZ	1:A:1305:GLU:O	2.15	0.80
1:A:1661:PRO:HD2	17:G:54:LEU:O	1.82	0.80
2:B:975:HIS:CE1	15:N:166:LEU:HB3	2.17	0.80
1:A:440:SER:H	1:A:458:GLN:HE22	1.28	0.79
1:A:1652:GLY:C	1:A:1654:PHE:H	1.90	0.79
5:F:92:ARG:NH2	17:G:109:PRO:HA	1.98	0.79
1:A:1242:ILE:HG22	1:A:1536:ILE:HG22	1.65	0.79
1:A:1659:LYS:O	17:G:54:LEU:CD2	2.28	0.78
17:G:22:LYS:HD3	17:G:128:GLN:HG2	1.65	0.78
1:A:460:LEU:CD2	1:A:466:LEU:CB	2.45	0.78
2:B:977:ILE:HD12	15:N:163:VAL:CG2	2.11	0.78
2:B:346:ASP:CG	14:M:113:ILE:HD13	1.99	0.78
2:B:1003:ALA:O	15:N:168:LEU:HD23	1.83	0.77
2:B:328:GLN:HE22	14:M:112:LYS:HA	1.43	0.77
2:B:566:TYR:HE2	14:M:69:SER:O	1.66	0.77
2:B:574:SER:HG	14:M:67:ASP:CG	1.92	0.76
1:A:1660:VAL:HG12	17:G:54:LEU:CA	2.15	0.76
1:A:460:LEU:CD2	1:A:466:LEU:HD23	2.13	0.75
5:F:100:GLN:CG	17:G:112:PRO:HB3	2.17	0.75
2:B:322:ASN:HB2	14:M:108:LEU:O	1.87	0.75
7:I:12:ASP:OD2	14:M:59:ARG:NH1	2.18	0.75
1:A:509:GLU:OE2	1:A:584:ARG:NH2	2.20	0.74
1:A:489:ASN:ND2	2:B:781:TYR:OH	2.19	0.74
2:B:328:GLN:NE2	14:M:109:ARG:HH21	1.85	0.74
7:I:6:SER:H	7:I:45:LEU:HD21	1.51	0.74
2:B:987:ASN:HD22	15:N:157:ARG:HD2	1.50	0.74
2:B:1155:ASP:HB2	17:G:235:ASN:HD21	1.52	0.74
1:A:30:LYS:NZ	1:A:51:ASP:OD2	2.21	0.74
1:A:1652:GLY:O	1:A:1654:PHE:N	2.20	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1657:LEU:HG	17:G:106:LYS:CA	2.07	0.74
2:B:328:GLN:NE2	14:M:109:ARG:NH2	2.36	0.74
1:A:666:VAL:HG23	1:A:667:ARG:HG3	1.69	0.73
2:B:346:ASP:OD2	14:M:113:ILE:CG2	2.36	0.73
1:A:95:TYR:OH	1:A:99:ARG:NH1	2.22	0.73
2:B:346:ASP:HB2	14:M:113:ILE:CG1	2.19	0.73
1:A:707:THR:HG22	1:A:709:ARG:H	1.52	0.73
1:A:460:LEU:HD21	1:A:466:LEU:CD2	2.15	0.73
1:A:15:ASP:HB2	2:B:1197:ARG:HB3	1.70	0.72
1:A:886:ASN:OD1	1:A:955:ARG:NH1	2.16	0.72
5:F:58:PHE:CE2	16:D:23:HIS:HB3	2.25	0.72
2:B:838:GLU:O	10:L:63:ARG:NH2	2.23	0.72
2:B:186:GLU:HB3	2:B:189:GLU:HB2	1.70	0.72
1:A:1647:ASN:ND2	2:B:1085:SER:OG	2.22	0.72
2:B:328:GLN:NE2	14:M:112:LYS:HG2	2.04	0.72
1:A:700:ILE:O	1:A:706:HIS:ND1	2.23	0.71
2:B:1012:PRO:HG3	3:C:277:ARG:HH12	1.55	0.71
1:A:1658:ALA:H	17:G:107:ILE:CD1	2.02	0.71
2:B:857:PRO:HB3	2:B:871:ILE:HD11	1.72	0.71
8:J:42:LYS:NZ	15:N:176:ASP:HB3	2.04	0.71
2:B:338:PHE:HE2	2:B:353:VAL:HG22	1.55	0.71
1:A:690:GLU:HB3	9:K:77:ARG:HH22	1.56	0.71
15:N:144:LYS:HD2	15:N:144:LYS:N	2.06	0.71
2:B:328:GLN:CB	14:M:112:LYS:O	2.38	0.71
2:B:987:ASN:ND2	15:N:157:ARG:CZ	2.53	0.70
3:C:271:ARG:NH1	15:N:175:TYR:CZ	2.59	0.70
6:H:26:ILE:HD12	6:H:42:ILE:HD12	1.73	0.70
1:A:645:ALA:O	1:A:649:ASN:ND2	2.21	0.70
1:A:753:ASN:ND2	1:A:780:ILE:O	2.25	0.69
1:A:1661:PRO:HD2	17:G:54:LEU:C	2.16	0.69
2:B:328:GLN:HE21	14:M:112:LYS:HG2	1.56	0.69
2:B:815:ARG:NH2	2:B:819:ASP:O	2.25	0.69
5:F:58:PHE:CD2	16:D:23:HIS:HB3	2.27	0.69
13:R:13:G:H2'	13:R:14:A:C8	2.27	0.69
1:A:579:ARG:NH2	1:A:585:ASP:OD1	2.21	0.69
2:B:582:SER:O	2:B:598:HIS:NE2	2.25	0.69
3:C:301:ASN:HD22	15:N:173:THR:CG2	2.06	0.69
2:B:883:GLU:OE1	2:B:906:ARG:NH1	2.26	0.69
9:K:85:ASP:OD2	9:K:111:THR:OG1	2.11	0.69
2:B:293:ILE:HD12	2:B:302:LEU:HB3	1.73	0.69
2:B:711:GLN:HG2	2:B:713:PRO:HD2	1.75	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:228:SER:O	2:B:254:ASN:ND2	2.25	0.68
14:M:38:PHE:HB3	14:M:53:LEU:HD11	1.73	0.68
5:F:66:ARG:HH12	17:G:90:LEU:HB3	1.58	0.68
1:A:594:THR:HG23	1:A:599:SER:HB2	1.75	0.68
1:A:956:ARG:HE	1:A:979:GLY:HA3	1.57	0.68
2:B:320:LEU:HD13	2:B:326:VAL:HG22	1.76	0.68
1:A:90:PHE:O	1:A:92:ASN:N	2.23	0.68
11:T:7:DA:H2'	11:T:8:DA:C8	2.28	0.68
1:A:1658:ALA:CB	17:G:107:ILE:CD1	2.68	0.68
7:I:12:ASP:CG	14:M:60:LEU:HD11	2.19	0.67
2:B:1004:GLY:HA3	15:N:168:LEU:CD2	2.24	0.67
1:A:99:ARG:HH21	1:A:228:LEU:HD13	1.57	0.67
1:A:462:LYS:O	1:A:463:LYS:C	2.38	0.67
1:A:771:PHE:HE1	1:A:776:LEU:HD13	1.59	0.67
5:F:100:GLN:CG	17:G:112:PRO:CB	2.72	0.67
2:B:941:THR:HG1	15:N:170:HIS:HE2	1.25	0.67
3:C:271:ARG:HG2	15:N:175:TYR:OH	1.94	0.67
1:A:456:VAL:HG12	2:B:1192:MET:HE3	1.77	0.67
2:B:773:VAL:HG21	2:B:1033:TYR:HE2	1.59	0.67
1:A:656:GLN:HE22	2:B:1082:HIS:CE1	2.14	0.66
1:A:1310:LYS:NZ	1:A:1464:ASP:O	2.23	0.66
2:B:572:PRO:CG	14:M:70:SER:HB3	2.21	0.66
2:B:939:SER:HA	2:B:1013:MET:HG2	1.77	0.66
2:B:783:MET:HA	2:B:950:ASN:HD22	1.60	0.66
1:A:1224:GLU:O	1:A:1228:THR:OG1	2.12	0.66
1:A:89:LEU:HD11	2:B:1192:MET:HB3	1.78	0.65
6:H:106:GLU:HG2	6:H:112:ILE:HG12	1.77	0.65
11:T:22:DG:H1	13:R:15:C:H42	1.43	0.65
1:A:109:ARG:NH1	1:A:230:ARG:O	2.26	0.65
2:B:324:THR:HG21	14:M:109:ARG:NE	2.10	0.65
2:B:785:ASP:OD1	2:B:957:ARG:NH2	2.29	0.65
5:F:100:GLN:HG3	17:G:112:PRO:HB3	1.78	0.65
1:A:467:PHE:CZ	1:A:1613:MET:HE2	2.31	0.65
2:B:322:ASN:CB	14:M:108:LEU:O	2.45	0.65
7:I:27:ASN:HA	7:I:37:TYR:O	1.96	0.65
1:A:90:PHE:C	1:A:92:ASN:H	2.04	0.65
1:A:672:ASP:OD2	2:B:950:ASN:ND2	2.29	0.65
2:B:184:LYS:HD2	2:B:735:HIS:CD2	2.32	0.65
1:A:683:LYS:NZ	6:H:41:ASP:OD2	2.26	0.65
1:A:1145:GLU:O	1:A:1149:ASP:HB2	1.96	0.65
2:B:328:GLN:CG	14:M:112:LYS:O	2.45	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:92:ARG:NH2	17:G:109:PRO:CA	2.60	0.65
2:B:975:HIS:ND1	15:N:166:LEU:HD22	2.12	0.65
2:B:209:GLN:NE2	2:B:215:MET:SD	2.70	0.65
2:B:328:GLN:HE22	14:M:112:LYS:HG3	1.62	0.65
1:A:460:LEU:HD23	1:A:466:LEU:HB2	1.70	0.64
2:B:112:GLY:HA3	2:B:893:ASN:HB3	1.79	0.64
2:B:328:GLN:OE1	14:M:112:LYS:HA	1.92	0.64
1:A:706:HIS:CE1	1:A:815:ARG:HH22	2.14	0.64
2:B:891:GLU:HG2	2:B:892:SER:H	1.62	0.64
2:B:977:ILE:HD12	15:N:163:VAL:HG11	1.78	0.64
3:C:228:ARG:CZ	15:N:172:ALA:HB1	2.28	0.63
11:T:3:DG:N2	12:U:38:DT:O2	2.32	0.63
3:C:32:ASN:OD1	3:C:33:VAL:N	2.32	0.63
3:C:229:LEU:HB2	3:C:293:ARG:HD2	1.79	0.63
5:F:92:ARG:HH22	17:G:109:PRO:HB3	1.64	0.63
3:C:103:LEU:HD22	8:J:6:ARG:HD2	1.80	0.63
2:B:328:GLN:OE1	14:M:112:LYS:CA	2.47	0.63
2:B:480:GLN:OE1	2:B:507:SER:N	2.28	0.63
2:B:987:ASN:HD21	15:N:157:ARG:HE	1.40	0.63
2:B:332:ASP:HB2	14:M:113:ILE:HG23	1.81	0.63
3:C:271:ARG:CZ	15:N:175:TYR:HH	2.12	0.63
13:R:13:G:H2'	13:R:14:A:H8	1.64	0.63
1:A:1600:ARG:NH2	1:A:1620:GLN:OE1	2.31	0.63
2:B:74:PHE:HE1	2:B:94:LYS:HG3	1.62	0.63
1:A:697:TYR:HE1	1:A:702:PRO:HD2	1.63	0.62
2:B:17:ARG:NH1	2:B:758:ASP:OD2	2.31	0.62
2:B:977:ILE:HD11	15:N:163:VAL:HG22	1.80	0.62
7:I:3:VAL:HG22	7:I:8:ILE:HG12	1.80	0.62
2:B:218:ILE:HD12	2:B:391:PRO:HG3	1.81	0.62
2:B:577:PHE:HE2	14:M:28:LYS:CE	2.04	0.62
2:B:328:GLN:HE22	14:M:109:ARG:NH2	1.97	0.62
2:B:379:ARG:HH21	2:B:581:PRO:HD2	1.63	0.62
2:B:921:HIS:NE2	2:B:965:GLU:OE1	2.32	0.62
1:A:1104:TYR:HB3	1:A:1120:TYR:OH	2.00	0.62
1:A:1657:LEU:C	17:G:107:ILE:CG1	2.65	0.62
2:B:234:ILE:HG12	2:B:381:LEU:HD13	1.81	0.62
2:B:379:ARG:HE	2:B:580:GLY:HA2	1.65	0.62
1:A:1291:VAL:HG22	1:A:1473:LYS:HG3	1.81	0.62
2:B:577:PHE:HZ	15:N:106:ASN:OD1	1.70	0.62
1:A:551:VAL:HA	1:A:554:ARG:HH21	1.63	0.62
1:A:1008:ASP:HA	1:A:1011:VAL:HG12	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:577:PHE:CZ	14:M:28:LYS:HE2	2.34	0.62
4:E:100:ILE:HG23	4:E:105:PHE:HB2	1.82	0.61
1:A:94:LEU:O	1:A:98:LEU:HB2	2.00	0.61
2:B:979:GLN:HE21	2:B:996:PHE:HE1	1.47	0.61
7:I:32:GLN:CA	14:M:105:SER:HB3	2.28	0.61
2:B:1089:GLN:HE21	2:B:1093:LEU:HD23	1.66	0.61
2:B:328:GLN:HE22	14:M:112:LYS:CG	2.11	0.61
1:A:263:ASN:OD1	1:A:267:LYS:NZ	2.25	0.61
1:A:1182:GLY:C	1:A:1649:VAL:CB	2.71	0.61
2:B:606:ASP:OD2	15:N:145:ILE:HD11	1.99	0.61
2:B:773:VAL:HG21	2:B:1033:TYR:CE2	2.36	0.61
2:B:577:PHE:CE1	15:N:106:ASN:OD1	2.53	0.61
7:I:32:GLN:HA	14:M:105:SER:HB3	1.83	0.61
7:I:12:ASP:CB	14:M:60:LEU:HD21	2.26	0.61
1:A:1640:ARG:NE	1:A:1646:LEU:O	2.28	0.60
2:B:532:HIS:ND1	20:B:1301:SO4:O4	2.31	0.60
2:B:987:ASN:HD21	15:N:157:ARG:CD	1.76	0.60
4:E:14:ARG:HD2	4:E:141:VAL:HG13	1.83	0.60
8:J:42:LYS:HZ3	15:N:176:ASP:HB3	1.67	0.60
3:C:87:ASN:ND2	3:C:201:GLU:OE2	2.35	0.60
3:C:228:ARG:HH12	15:N:172:ALA:CB	2.13	0.60
1:A:560:GLN:O	1:A:575:LYS:NZ	2.32	0.60
1:A:1461:ASN:OD1	1:A:1462:PHE:N	2.34	0.60
5:F:66:ARG:CZ	17:G:90:LEU:HB3	2.32	0.60
1:A:1655:ASP:OD2	5:F:137:TYR:OH	2.12	0.59
1:A:67:LEU:HD11	2:B:1115:GLN:HG3	1.84	0.59
1:A:526:GLY:HA3	1:A:554:ARG:HH11	1.66	0.59
1:A:546:LEU:HD22	1:A:554:ARG:HG2	1.84	0.59
2:B:99:VAL:HG23	2:B:421:LEU:HD11	1.84	0.59
4:E:153:HIS:CE1	4:E:184:VAL:HG11	2.37	0.59
1:A:1631:ARG:HH22	2:B:1199:ASN:HD22	1.50	0.59
2:B:37:LEU:HD12	2:B:759:ASP:HB3	1.85	0.59
2:B:1103:VAL:HG22	2:B:1110:ILE:HG22	1.85	0.59
5:F:66:ARG:NH1	17:G:90:LEU:CB	2.63	0.59
4:E:20:LYS:HB3	4:E:35:VAL:HG22	1.85	0.59
2:B:307:GLU:HB2	7:I:7:LEU:HD11	1.84	0.58
17:G:30:GLU:HA	17:G:32:ASN:N	2.18	0.58
11:T:8:DA:N6	12:U:32:DT:H3	2.01	0.58
1:A:102:CYS:CB	1:A:105:CYS:SG	2.84	0.58
15:N:89:ILE:HG12	15:N:139:VAL:HG22	1.85	0.58
1:A:1261:VAL:HG12	1:A:1498:ILE:HD12	1.84	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:68:SER:O	4:E:72:PHE:N	2.24	0.58
7:I:33:CYS:HA	14:M:102:SER:OG	2.03	0.58
9:K:62:SER:HA	9:K:103:ILE:O	2.03	0.58
6:H:48:PRO:O	6:H:146:ARG:NH2	2.28	0.58
4:E:16:PHE:CZ	4:E:20:LYS:HE3	2.39	0.58
1:A:1194:GLY:O	1:A:1197:SER:OG	2.16	0.58
9:K:64:GLN:HE21	9:K:100:LEU:HD13	1.69	0.58
2:B:331:GLY:HA3	2:B:346:ASP:HB3	1.86	0.57
1:A:1053:ASP:OD2	1:A:1580:ARG:NH2	2.28	0.57
1:A:1657:LEU:HA	17:G:107:ILE:CG1	2.32	0.57
5:F:92:ARG:HH21	17:G:109:PRO:HA	1.66	0.57
1:A:1661:PRO:CD	17:G:54:LEU:C	2.77	0.57
1:A:1047:GLN:NE2	1:A:1587:ASP:OD2	2.27	0.57
2:B:651:ARG:NH1	2:B:690:GLU:OE2	2.36	0.57
7:I:8:ILE:HG22	7:I:17:LEU:HD12	1.86	0.57
1:A:117:ARG:HB3	1:A:185:ARG:NH1	2.19	0.57
1:A:879:LEU:HD21	1:A:974:THR:HG22	1.86	0.57
1:A:1049:MET:HE3	1:A:1054:ALA:HB2	1.87	0.57
1:A:1229:ALA:HB2	1:A:1597:ALA:HB2	1.87	0.57
2:B:741:LEU:HD22	2:B:804:TYR:HD2	1.70	0.57
3:C:88:ASN:ND2	3:C:94:ASP:OD1	2.32	0.57
1:A:1619:CYS:HA	1:A:1622:LEU:HB3	1.86	0.57
2:B:657:PRO:HB3	15:N:146:PRO:HD2	1.86	0.57
1:A:440:SER:OG	1:A:458:GLN:NE2	2.38	0.57
2:B:572:PRO:CB	14:M:70:SER:CB	2.75	0.57
2:B:1133:MET:HE1	17:G:15:ARG:NH1	2.20	0.57
1:A:706:HIS:HE1	1:A:815:ARG:HH12	1.51	0.56
2:B:181:VAL:HG13	8:J:63:TYR:HE1	1.69	0.56
2:B:338:PHE:CE2	2:B:353:VAL:HG22	2.39	0.56
2:B:1085:SER:O	2:B:1088:LEU:N	2.38	0.56
1:A:385:LEU:HD23	1:A:437:PHE:HA	1.86	0.56
2:B:584:CYS:CB	2:B:596:VAL:O	2.36	0.56
3:C:227:TYR:HA	3:C:299:ILE:O	2.05	0.56
1:A:53:ALA:O	1:A:64:THR:OG1	2.17	0.56
1:A:1660:VAL:CB	17:G:54:LEU:O	2.53	0.56
1:A:1661:PRO:HD3	17:G:55:GLU:HA	0.56	0.56
17:G:56:ASN:HB3	17:G:59:GLN:HB3	1.87	0.56
2:B:322:ASN:OD1	2:B:323:ARG:N	2.38	0.56
2:B:977:ILE:HD12	15:N:163:VAL:HG13	1.86	0.56
14:M:10:ILE:HB	15:N:70:LEU:HB3	1.86	0.56
1:A:1319:ASN:O	1:A:1323:HIS:ND1	2.33	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:I:32:GLN:O	14:M:104:SER:CB	2.53	0.56
1:A:507:TYR:OH	1:A:641:GLU:OE2	2.24	0.56
1:A:975:ASP:OD1	1:A:976:ALA:N	2.39	0.56
2:B:556:SER:OG	2:B:623:ASP:OD2	2.22	0.56
2:B:1158:ILE:HA	2:B:1167:PHE:O	2.06	0.56
1:A:980:GLY:HA2	1:A:997:PHE:CD2	2.41	0.56
2:B:1079:LEU:HB2	2:B:1088:LEU:HD12	1.87	0.56
14:M:15:VAL:HG22	14:M:90:LEU:HB2	1.88	0.56
2:B:784:ASP:OD1	2:B:785:ASP:N	2.39	0.56
1:A:1148:LEU:HG	1:A:1155:PHE:HE2	1.71	0.55
2:B:346:ASP:CB	14:M:113:ILE:CG1	2.73	0.55
6:H:8:ASP:OD1	6:H:9:ILE:N	2.36	0.55
1:A:471:MET:HE1	2:B:1185:LEU:HD22	1.88	0.55
1:A:697:TYR:CE1	9:K:104:ARG:HG3	2.41	0.55
2:B:328:GLN:NE2	14:M:112:LYS:CB	2.69	0.55
2:B:335:ARG:HH21	2:B:342:PRO:HA	1.70	0.55
1:A:37:VAL:HG12	1:A:38:LEU:HG	1.89	0.55
1:A:943:ILE:HG13	2:B:958:MET:HE1	1.87	0.55
1:A:468:ARG:HD3	2:B:1073:GLU:OE2	2.06	0.55
1:A:925:MET:SD	2:B:955:PRO:HB3	2.46	0.55
1:A:1661:PRO:HD2	17:G:55:GLU:N	2.21	0.55
1:A:435:ASN:O	1:A:439:ASP:N	2.40	0.55
1:A:589:MET:HG3	1:A:603:HIS:HD2	1.70	0.55
1:A:964:LYS:NZ	2:B:672:MET:O	2.39	0.55
2:B:504:HIS:HB3	2:B:542:LEU:HD23	1.88	0.55
2:B:729:PRO:HG2	2:B:733:LEU:HD21	1.88	0.55
5:F:89:GLU:OE2	5:F:136:ARG:NE	2.40	0.55
1:A:1329:ILE:HG12	1:A:1488:ILE:HD13	1.87	0.55
1:A:462:LYS:O	1:A:465:GLY:N	2.39	0.55
1:A:1227:MET:O	1:A:1599:ASN:ND2	2.39	0.55
7:I:11:LEU:N	7:I:37:TYR:OH	2.37	0.55
15:N:69:SER:OG	15:N:70:LEU:N	2.37	0.55
9:K:77:ARG:O	9:K:81:MET:HG2	2.08	0.54
1:A:1121:ASP:OD2	4:E:197:LYS:NZ	2.39	0.54
1:A:1661:PRO:CD	17:G:55:GLU:N	2.66	0.54
6:H:21:ASN:OD1	6:H:22:LYS:N	2.40	0.54
17:G:35:SER:HG	17:G:132:VAL:H	1.56	0.54
1:A:799:GLU:OE2	1:A:1173:LYS:NZ	2.41	0.54
2:B:1089:GLN:O	2:B:1093:LEU:N	2.39	0.54
11:T:17:DG:H2'	11:T:18:DC:O4'	2.08	0.54
3:C:237:GLN:HE21	3:C:288:LYS:HE3	1.72	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:N:145:ILE:CG2	15:N:146:PRO:CD	2.86	0.54
1:A:1612:LYS:HB3	1:A:1621:PHE:CD2	2.43	0.54
3:C:301:ASN:CB	15:N:173:THR:CB	2.82	0.54
1:A:1588:MET:O	1:A:1591:ARG:NH1	2.39	0.54
2:B:609:ARG:HH22	2:B:672:MET:HE1	1.72	0.54
2:B:731:VAL:HG21	8:J:59:LYS:HE3	1.88	0.54
17:G:229:LEU:HD12	17:G:230:ARG:H	1.72	0.54
2:B:341:SER:OG	2:B:343:ASP:OD1	2.24	0.54
2:B:236:ILE:HG21	2:B:377:MET:HE1	1.89	0.54
3:C:136:LEU:HB2	3:C:167:LEU:HD23	1.90	0.54
5:F:65:ARG:HH12	17:G:117:TRP:HZ2	1.53	0.54
1:A:597:LYS:HE3	1:A:660:PRO:HG2	1.88	0.54
1:A:1657:LEU:HA	17:G:107:ILE:H	1.73	0.54
2:B:745:GLN:OE1	3:C:93:GLN:NE2	2.41	0.54
3:C:84:TYR:HE1	10:L:66:GLN:HG3	1.72	0.53
2:B:494:TYR:HB3	2:B:700:LEU:HD21	1.90	0.53
14:M:12:ILE:HD12	15:N:67:LEU:HB2	1.90	0.53
2:B:314:LYS:HZ1	7:I:16:LEU:H	1.55	0.53
2:B:574:SER:OG	14:M:67:ASP:CB	2.56	0.53
17:G:132:VAL:HG22	17:G:232:THR:HG22	1.90	0.53
1:A:885:ASP:OD1	1:A:886:ASN:N	2.42	0.53
1:A:1179:ILE:HD11	1:A:1183:GLU:OE2	2.07	0.53
2:B:662:ASP:OD1	2:B:663:ILE:N	2.35	0.53
2:B:745:GLN:NE2	8:J:1:MET:SD	2.81	0.53
3:C:75:VAL:HB	3:C:221:PRO:HG3	1.90	0.53
1:A:83:VAL:HG21	1:A:427:PHE:CE1	2.44	0.53
4:E:156:LEU:HD22	4:E:160:GLU:HG2	1.89	0.53
5:F:66:ARG:CZ	17:G:90:LEU:HD13	2.39	0.53
5:F:100:GLN:HG2	17:G:112:PRO:CB	2.37	0.53
8:J:9:SER:HB2	8:J:45:CYS:SG	2.48	0.53
1:A:632:GLU:OE2	2:B:1043:LYS:HE2	2.09	0.53
2:B:42:VAL:HG21	2:B:190:ILE:HD12	1.90	0.53
3:C:132:ILE:HG23	3:C:169:PHE:HE1	1.73	0.53
1:A:973:GLU:HG3	1:A:975:ASP:H	1.74	0.53
1:A:1240:LEU:HB2	1:A:1519:LEU:HB2	1.91	0.53
2:B:651:ARG:HH12	2:B:690:GLU:CD	2.16	0.53
3:C:100:ARG:NH2	8:J:3:VAL:O	2.31	0.53
8:J:10:CYS:SG	8:J:45:CYS:CB	2.90	0.53
1:A:403:LEU:HD13	1:A:419:ILE:HG21	1.91	0.53
5:F:100:GLN:NE2	17:G:112:PRO:HB3	2.20	0.52
14:M:11:GLU:N	14:M:86:LYS:O	2.36	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:M:75:GLN:HB2	15:N:60:SER:HA	1.91	0.52
17:G:20:HIS:O	17:G:20:HIS:ND1	2.38	0.52
17:G:30:GLU:HA	17:G:32:ASN:H	1.74	0.52
1:A:468:ARG:HH22	1:A:1021:ARG:NH1	2.07	0.52
1:A:1242:ILE:HD11	1:A:1517:ARG:NE	2.24	0.52
7:I:60:LEU:O	7:I:64:LYS:N	2.38	0.52
1:A:1074:TYR:O	1:A:1078:LYS:NZ	2.30	0.52
2:B:752:VAL:HG12	2:B:981:SER:HB3	1.92	0.52
11:T:7:DA:H2'	11:T:8:DA:H8	1.74	0.52
1:A:256:LEU:HD13	1:A:264:ASN:HD21	1.74	0.52
1:A:833:LEU:HD21	1:A:925:MET:HE3	1.92	0.52
2:B:826:GLY:H	2:B:861:TYR:HA	1.75	0.52
2:B:986:PHE:HA	15:N:157:ARG:HH12	1.74	0.52
2:B:1013:MET:SD	2:B:1026:ILE:HD11	2.50	0.52
1:A:683:LYS:HD2	6:H:20:TYR:CE2	2.44	0.52
1:A:1485:MET:O	1:A:1488:ILE:N	2.42	0.52
2:B:322:ASN:ND2	14:M:108:LEU:O	2.35	0.52
2:B:346:ASP:OD2	14:M:113:ILE:HG21	2.07	0.52
2:B:599:GLU:OE1	2:B:599:GLU:N	2.38	0.52
2:B:832:TRP:CZ3	2:B:834:LYS:HA	2.44	0.52
5:F:66:ARG:HH12	17:G:90:LEU:CB	2.20	0.52
6:H:38:LEU:HD11	6:H:123:MET:HE2	1.90	0.52
8:J:10:CYS:SG	8:J:45:CYS:HB3	2.49	0.52
1:A:581:ILE:HD11	1:A:605:VAL:HG21	1.90	0.52
2:B:773:VAL:HG22	2:B:947:ILE:HB	1.91	0.52
15:N:144:LYS:N	15:N:144:LYS:CD	2.73	0.52
1:A:863:ASN:O	1:A:878:ARG:NH1	2.42	0.52
2:B:110:ASN:HB3	2:B:118:GLU:HG2	1.91	0.52
2:B:328:GLN:CD	14:M:112:LYS:C	2.77	0.52
1:A:1641:ILE:HD13	2:B:1076:ARG:HD2	1.92	0.51
1:A:1660:VAL:HG13	17:G:54:LEU:HD23	1.91	0.51
3:C:227:TYR:HB3	3:C:300:PHE:CD1	2.45	0.51
16:D:48:GLU:OE2	16:D:90:LYS:NZ	2.43	0.51
1:A:598:ALA:O	1:A:601:MET:HE3	2.10	0.51
1:A:771:PHE:HE2	1:A:793:ILE:HD13	1.76	0.51
2:B:566:TYR:CE2	14:M:69:SER:C	2.86	0.51
2:B:851:TYR:HD1	2:B:881:TYR:CE1	2.28	0.51
3:C:136:LEU:O	3:C:203:SER:HA	2.10	0.51
1:A:108:PHE:CE2	1:A:331:GLU:HG3	2.45	0.51
6:H:124:ARG:NH1	6:H:126:GLU:OE1	2.43	0.51
2:B:21:ARG:HH22	2:B:763:ASP:CG	2.19	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:257:ASN:O	1:A:261:ILE:HD12	2.10	0.51
1:A:418:VAL:HG13	1:A:419:ILE:HG13	1.93	0.51
1:A:461:GLU:O	1:A:461:GLU:HG2	2.09	0.51
1:A:495:ILE:HG22	1:A:604:LYS:O	2.10	0.51
3:C:57:ILE:HG22	3:C:58:ASN:ND2	2.25	0.51
1:A:952:LEU:HD22	1:A:1004:GLU:HG3	1.93	0.51
2:B:987:ASN:ND2	15:N:157:ARG:HD2	2.04	0.51
2:B:1154:ASP:OD1	2:B:1155:ASP:N	2.44	0.51
3:C:138:VAL:HG11	3:C:162:VAL:HG22	1.91	0.51
3:C:170:GLU:OE2	3:C:205:LYS:NZ	2.43	0.51
2:B:878:GLU:OE2	2:B:909:ARG:NH1	2.43	0.51
2:B:314:LYS:O	2:B:315:LYS:HG2	2.11	0.51
2:B:574:SER:OG	14:M:67:ASP:HB2	2.11	0.51
3:C:123:ASP:OD1	3:C:124:GLU:N	2.44	0.51
1:A:706:HIS:CE1	1:A:815:ARG:HH12	2.28	0.50
1:A:1559:ARG:HD2	1:A:1587:ASP:OD1	2.11	0.50
2:B:1157:GLN:NE2	2:B:1169:GLY:HA2	2.25	0.50
11:T:2:DA:H2"	11:T:3:DG:C8	2.45	0.50
1:A:1645:LYS:HG3	1:A:1646:LEU:H	1.75	0.50
5:F:100:GLN:CD	17:G:112:PRO:CB	2.83	0.50
2:B:359:LEU:O	2:B:370:LYS:HE2	2.11	0.50
2:B:946:ASP:OD1	8:J:9:SER:OG	2.26	0.50
2:B:1004:GLY:CA	15:N:168:LEU:CD2	2.88	0.50
3:C:71:MET:HG2	3:C:317:SER:OG	2.10	0.50
7:I:27:ASN:HB3	7:I:36:ILE:HG23	1.94	0.50
1:A:94:LEU:O	1:A:98:LEU:CB	2.59	0.50
2:B:346:ASP:OD1	14:M:113:ILE:HD11	2.11	0.50
2:B:584:CYS:SG	2:B:585:CYS:N	2.84	0.50
2:B:705:PRO:HA	2:B:981:SER:HB2	1.93	0.50
2:B:941:THR:CB	15:N:170:HIS:HE2	2.24	0.50
6:H:103:LYS:HD2	6:H:115:TYR:CD2	2.47	0.50
15:N:145:ILE:HG23	15:N:146:PRO:CD	2.41	0.50
1:A:1003:ARG:HH22	2:B:540:GLY:HA2	1.77	0.50
2:B:1010:ASN:HB3	2:B:1025:ASP:HB3	1.94	0.50
2:B:1042:ASP:O	2:B:1063:ARG:NH1	2.44	0.50
7:I:33:CYS:HB3	14:M:102:SER:HB2	1.93	0.50
15:N:63:ASP:OD2	15:N:66:LYS:NZ	2.35	0.50
1:A:672:ASP:OD1	2:B:952:HIS:ND1	2.45	0.50
1:A:771:PHE:CE2	1:A:793:ILE:HD13	2.47	0.49
4:E:53:PRO:HG2	4:E:55:ARG:HH12	1.77	0.49
11:T:8:DA:H61	12:U:32:DT:H3	1.58	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:621:THR:HG21	1:A:628:PHE:HE2	1.77	0.49
2:B:929:ARG:NH1	9:K:96:PRO:HB2	2.27	0.49
3:C:228:ARG:NH1	15:N:172:ALA:HB2	2.24	0.49
1:A:4:SER:HB3	1:A:576:LYS:NZ	2.27	0.49
1:A:1258:ILE:HB	1:A:1501:ILE:HD12	1.95	0.49
4:E:20:LYS:NZ	4:E:34:GLU:O	2.30	0.49
12:U:31:DC:H1'	12:U:32:DT:H5'	1.95	0.49
1:A:1187:ILE:O	1:A:1190:SER:N	2.44	0.49
1:A:1511:GLU:O	1:A:1513:GLU:N	2.44	0.49
2:B:168:ASN:HA	2:B:173:ASN:HD22	1.78	0.49
2:B:924:LYS:NZ	13:R:20:C:OP1	2.43	0.49
3:C:85:PHE:HE1	3:C:204:LEU:HD22	1.76	0.49
17:G:47:VAL:HB	17:G:65:HIS:CD2	2.47	0.49
1:A:596:HIS:CD2	1:A:598:ALA:HB3	2.46	0.49
1:A:1101:THR:HA	1:A:1120:TYR:CE1	2.48	0.49
2:B:609:ARG:HH21	2:B:626:ILE:HB	1.76	0.49
4:E:55:ARG:HB2	4:E:84:ASP:HB2	1.93	0.49
1:A:460:LEU:CD2	1:A:466:LEU:CG	2.90	0.49
1:A:800:VAL:O	1:A:1079:LYS:HD2	2.13	0.49
1:A:1018:TYR:HE1	1:A:1021:ARG:HH21	1.59	0.49
2:B:328:GLN:OE1	14:M:112:LYS:N	2.45	0.49
2:B:649:MET:HE3	2:B:666:PRO:HG2	1.93	0.49
1:A:852:ASP:OD2	1:A:855:ARG:NH2	2.44	0.49
1:A:1658:ALA:HB2	17:G:107:ILE:HG13	1.94	0.49
2:B:941:THR:CG2	15:N:170:HIS:HE2	2.26	0.49
2:B:995:TYR:OH	15:N:161:PRO:O	2.25	0.49
6:H:12:VAL:HG13	6:H:26:ILE:HG23	1.95	0.49
5:F:107:VAL:HG11	5:F:111:LEU:HD21	1.95	0.49
12:U:29:DT:H2'	12:U:30:DA:C8	2.47	0.49
1:A:1603:MET:HG2	1:A:1612:LYS:HG2	1.94	0.49
2:B:107:PRO:HG2	2:B:133:TYR:CZ	2.47	0.49
2:B:709:PHE:CZ	2:B:992:PRO:HG2	2.48	0.49
3:C:246:ARG:NH1	3:C:284:GLU:OE1	2.46	0.49
5:F:94:LEU:O	5:F:98:ALA:HB2	2.13	0.49
1:A:1240:LEU:HD22	1:A:1536:ILE:HD12	1.94	0.48
2:B:21:ARG:O	2:B:24:ARG:N	2.45	0.48
2:B:353:VAL:HG13	2:B:357:ILE:HD12	1.95	0.48
6:H:93:TYR:CE1	6:H:143:LEU:HD23	2.48	0.48
1:A:1223:ARG:HG3	1:A:1227:MET:HG3	1.95	0.48
6:H:116:TYR:HB2	6:H:123:MET:HB3	1.95	0.48
1:A:1533:GLU:HA	1:A:1536:ILE:O	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1652:GLY:C	1:A:1654:PHE:N	2.58	0.48
2:B:733:LEU:HD22	2:B:741:LEU:HD11	1.96	0.48
2:B:1047:ARG:NH2	2:B:1049:THR:HG21	2.21	0.48
2:B:1157:GLN:HE21	2:B:1169:GLY:HA2	1.78	0.48
6:H:101:ALA:HB2	6:H:116:TYR:CE2	2.49	0.48
14:M:65:TYR:CE1	14:M:97:VAL:HB	2.48	0.48
1:A:492:THR:HB	1:A:667:ARG:HH21	1.77	0.48
1:A:1040:ASP:CG	1:A:1041:ALA:H	2.21	0.48
1:A:1660:VAL:CG1	17:G:54:LEU:HA	2.24	0.48
2:B:292:ILE:HG22	2:B:293:ILE:HD13	1.94	0.48
2:B:783:MET:HA	2:B:950:ASN:ND2	2.26	0.48
3:C:91:VAL:HG21	8:J:60:PHE:HB3	1.96	0.48
3:C:259:ASP:OD2	3:C:262:SER:OG	2.25	0.48
15:N:111:VAL:HG13	15:N:122:ALA:HB2	1.95	0.48
1:A:1660:VAL:CG1	17:G:54:LEU:HD23	2.44	0.48
2:B:380:LYS:HE3	2:B:637:TYR:HB3	1.95	0.48
2:B:789:ILE:HD12	2:B:927:CYS:SG	2.53	0.48
2:B:916:LYS:HD3	2:B:924:LYS:HD2	1.96	0.48
15:N:145:ILE:HG22	15:N:146:PRO:N	2.27	0.48
1:A:102:CYS:HB3	1:A:105:CYS:SG	2.51	0.48
1:A:1015:ARG:HG3	1:A:1219:ILE:HG21	1.94	0.48
1:A:1025:LYS:HG2	1:A:1615:TYR:HD1	1.79	0.48
2:B:432:ILE:HA	2:B:438:ILE:HD11	1.95	0.48
1:A:834:ARG:HH21	2:B:993:ALA:HB1	1.76	0.48
1:A:1118:VAL:HG21	4:E:154:ILE:HD11	1.95	0.48
2:B:493:PHE:CE2	2:B:762:MET:HE1	2.48	0.48
2:B:648:ARG:HH12	2:B:650:LEU:HD21	1.78	0.48
2:B:1098:TYR:CE1	2:B:1177:ALA:HB1	2.49	0.48
2:B:841:ASP:OD1	2:B:842:GLU:N	2.41	0.48
1:A:460:LEU:CD2	1:A:466:LEU:CD2	2.84	0.48
1:A:508:PRO:HB3	1:A:578:TYR:CE1	2.49	0.48
1:A:656:GLN:NE2	2:B:1082:HIS:CE1	2.80	0.48
1:A:1658:ALA:CB	17:G:107:ILE:HG13	2.44	0.48
2:B:975:HIS:CB	15:N:166:LEU:HD22	2.43	0.48
2:B:1079:LEU:HD13	2:B:1088:LEU:HA	1.94	0.48
5:F:111:LEU:HD22	5:F:120:ILE:HD13	1.96	0.48
10:L:27:LEU:HA	10:L:39:SER:HB2	1.96	0.48
11:T:13:DT:H2''	11:T:14:DT:H5'	1.95	0.48
1:A:1040:ASP:OD1	1:A:1041:ALA:N	2.41	0.48
2:B:628:TYR:HB2	2:B:640:LEU:HD13	1.96	0.48
2:B:1003:ALA:O	15:N:168:LEU:CD2	2.58	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:89:GLU:O	5:F:93:ILE:HG12	2.14	0.48
1:A:139:ILE:O	1:A:140:THR:OG1	2.28	0.47
1:A:509:GLU:CD	1:A:579:ARG:HE	2.22	0.47
3:C:57:ILE:HG13	3:C:297:HIS:CD2	2.49	0.47
3:C:301:ASN:HB3	15:N:173:THR:HB	1.90	0.47
4:E:124:VAL:HB	4:E:125:PRO:HD3	1.94	0.47
6:H:26:ILE:HD11	6:H:49:VAL:HG11	1.96	0.47
1:A:113:VAL:HG21	1:A:178:LEU:HD22	1.95	0.47
1:A:208:PHE:CE2	1:A:1607:THR:HG23	2.48	0.47
1:A:332:GLN:O	1:A:336:GLN:HB2	2.14	0.47
1:A:1546:VAL:HG11	1:A:1595:TYR:CE1	2.49	0.47
1:A:96:ILE:HG23	1:A:228:LEU:HD11	1.96	0.47
1:A:1486:VAL:HG11	7:I:51:THR:HG21	1.95	0.47
2:B:1063:ARG:HG2	11:T:20:DT:H5"	1.96	0.47
1:A:751:SER:OG	1:A:752:LYS:N	2.48	0.47
1:A:1459:LYS:HB2	1:A:1473:LYS:HB3	1.95	0.47
1:A:1221:ARG:O	1:A:1224:GLU:N	2.47	0.47
2:B:396:ALA:HB1	2:B:523:GLU:OE1	2.13	0.47
17:G:137:ILE:HG13	17:G:227:GLY:O	2.13	0.47
1:A:589:MET:CG	1:A:603:HIS:HD2	2.27	0.47
1:A:739:VAL:HG21	1:A:809:VAL:HG22	1.96	0.47
1:A:1089:LEU:HD13	1:A:1175:MET:HE1	1.97	0.47
4:E:62:ALA:HB3	4:E:78:LEU:HB3	1.95	0.47
11:T:21:DG:H2'	11:T:22:DG:C8	2.49	0.47
1:A:511:VAL:HG22	1:A:519:LEU:HD12	1.97	0.47
1:A:590:ASN:OD1	1:A:591:ARG:N	2.48	0.47
1:A:1080:TYR:OH	1:A:1173:LYS:HG3	2.15	0.47
1:A:1608:SER:O	1:A:1612:LYS:NZ	2.46	0.47
1:A:1658:ALA:H	17:G:107:ILE:HD11	1.78	0.47
2:B:445:TYR:O	2:B:449:VAL:HG23	2.15	0.47
2:B:535:ASP:HA	2:B:539:CYS:HB2	1.95	0.47
2:B:581:PRO:HB3	2:B:637:TYR:CE1	2.50	0.47
2:B:609:ARG:NH2	2:B:672:MET:HE1	2.29	0.47
2:B:1046:VAL:HG22	2:B:1047:ARG:HG3	1.97	0.47
5:F:85:MET:HE1	5:F:148:VAL:HG13	1.96	0.47
12:U:29:DT:H2'	12:U:30:DA:H8	1.78	0.47
7:I:53:ASP:HB3	7:I:61:ARG:NH2	2.29	0.47
16:D:46:GLU:OE1	16:D:47:LYS:HE2	2.15	0.47
1:A:793:ILE:HG23	1:A:794:VAL:H	1.80	0.47
2:B:343:ASP:OD1	2:B:344:GLN:N	2.48	0.47
3:C:227:TYR:HB3	3:C:300:PHE:HD1	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:95:TYR:CD1	1:A:245:LYS:HD3	2.50	0.47
2:B:588:ILE:HG12	2:B:642:LEU:HD12	1.97	0.47
2:B:894:LYS:C	2:B:896:GLN:H	2.23	0.47
11:T:19:DC:H2'	11:T:20:DT:C6	2.50	0.47
1:A:1443:GLN:NE2	1:A:1462:PHE:O	2.48	0.46
2:B:654:ARG:HB3	2:B:689:VAL:HG13	1.98	0.46
2:B:832:TRP:HZ3	2:B:834:LYS:HA	1.79	0.46
5:F:137:TYR:HD1	5:F:143:PHE:HB3	1.80	0.46
11:T:13:DT:H3	12:U:27:DA:H61	1.63	0.46
1:A:90:PHE:C	1:A:92:ASN:N	2.71	0.46
1:A:1631:ARG:HH12	2:B:1199:ASN:HD21	1.64	0.46
15:N:145:ILE:CG2	15:N:146:PRO:HD2	2.45	0.46
16:D:33:THR:HG23	16:D:96:PHE:HD1	1.80	0.46
1:A:1105:ARG:NH2	4:E:207:ARG:HD3	2.31	0.46
1:A:1200:MET:SD	1:A:1219:ILE:HG13	2.55	0.46
1:A:1490:GLU:HB3	1:A:1494:ARG:HH12	1.81	0.46
2:B:577:PHE:CZ	14:M:28:LYS:HG3	2.51	0.46
5:F:103:MET:O	5:F:104:ASN:HB2	2.16	0.46
2:B:200:GLU:OE2	2:B:736:ARG:NH1	2.45	0.46
5:F:92:ARG:HH22	17:G:109:PRO:CB	2.27	0.46
1:A:669:LEU:HD12	1:A:786:TYR:CD2	2.50	0.46
1:A:697:TYR:HB2	9:K:88:PHE:HZ	1.80	0.46
2:B:99:VAL:HG12	2:B:100:GLU:H	1.81	0.46
1:A:1097:TYR:O	1:A:1101:THR:HG23	2.16	0.46
1:A:1658:ALA:N	17:G:107:ILE:CD1	2.67	0.46
2:B:181:VAL:HG13	8:J:63:TYR:CE1	2.51	0.46
8:J:21:TYR:CZ	8:J:25:LEU:HD11	2.51	0.46
14:M:65:TYR:HE1	14:M:97:VAL:HB	1.81	0.46
1:A:1545:ASP:OD1	1:A:1546:VAL:N	2.48	0.46
5:F:77:ASP:OD1	5:F:78:GLN:HG3	2.15	0.46
5:F:92:ARG:HH21	17:G:109:PRO:CA	2.27	0.46
1:A:527:PRO:O	1:A:580:HIS:HE1	1.99	0.46
2:B:99:VAL:HG12	2:B:100:GLU:N	2.31	0.46
2:B:1016:GLY:O	3:C:69:ARG:NH2	2.49	0.46
1:A:686:PHE:CE1	1:A:727:THR:HG22	2.51	0.45
1:A:702:PRO:HD3	1:A:712:ILE:HD11	1.97	0.45
1:A:862:THR:O	1:A:878:ARG:NH1	2.48	0.45
1:A:1229:ALA:HA	1:A:1595:TYR:CE2	2.52	0.45
2:B:629:VAL:HG22	2:B:671:TYR:CE2	2.51	0.45
1:A:328:PHE:CE1	1:A:335:LEU:HD13	2.52	0.45
2:B:1061:LYS:HG2	2:B:1062:GLY:H	1.81	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:M:26:PHE:CE1	14:M:98:SER:HB2	2.51	0.45
1:A:530:TRP:HZ2	1:A:582:LYS:HA	1.81	0.45
1:A:1242:ILE:HD11	1:A:1517:ARG:HE	1.82	0.45
2:B:52:LEU:O	2:B:59:GLY:HA3	2.17	0.45
2:B:747:GLY:HA3	2:B:766:PRO:HB2	1.97	0.45
2:B:941:THR:HG1	15:N:170:HIS:CE1	2.31	0.45
3:C:301:ASN:ND2	15:N:173:THR:CA	2.79	0.45
1:A:467:PHE:HZ	1:A:1613:MET:HE2	1.82	0.45
1:A:1631:ARG:HH22	2:B:1199:ASN:ND2	2.12	0.45
5:F:65:ARG:NH1	17:G:117:TRP:CZ2	2.84	0.45
5:F:100:GLN:CD	17:G:112:PRO:HB3	2.41	0.45
1:A:1097:TYR:O	1:A:1100:LYS:HB3	2.17	0.45
1:A:1575:ILE:HG22	1:A:1576:SER:N	2.31	0.45
2:B:219:ARG:HG2	2:B:221:SER:H	1.81	0.45
2:B:936:MET:HE1	2:B:948:ILE:HG13	1.98	0.45
1:A:10:GLU:OE2	1:A:1645:LYS:HD3	2.17	0.45
1:A:1661:PRO:HG3	17:G:55:GLU:HB3	1.99	0.45
3:C:228:ARG:HH12	15:N:172:ALA:HB2	1.80	0.45
6:H:101:ALA:HA	6:H:116:TYR:HA	1.98	0.45
2:B:379:ARG:NH2	2:B:581:PRO:HD2	2.31	0.45
2:B:731:VAL:HG13	8:J:60:PHE:HD1	1.81	0.45
2:B:1048:SER:O	2:B:1048:SER:OG	2.25	0.45
4:E:113:GLN:HA	4:E:137:GLU:CD	2.42	0.45
11:T:24:DC:H2"	11:T:25:DA:N7	2.32	0.45
1:A:719:ILE:O	1:A:724:PRO:HA	2.17	0.45
1:A:1658:ALA:CB	17:G:107:ILE:CG1	2.95	0.45
2:B:577:PHE:CE2	14:M:28:LYS:CE	2.79	0.45
1:A:836:THR:O	1:A:840:ASN:ND2	2.50	0.45
1:A:1027:LEU:HD21	1:A:1588:MET:HG2	1.98	0.45
2:B:31:ASP:CG	2:B:32:LYS:H	2.25	0.45
2:B:164:MET:HB2	2:B:194:PHE:HE1	1.82	0.45
2:B:314:LYS:C	2:B:316:ARG:H	2.24	0.45
2:B:402:VAL:O	2:B:647:SER:HB3	2.17	0.45
2:B:1004:GLY:N	15:N:168:LEU:HD23	2.29	0.45
2:B:1025:ASP:OD2	3:C:277:ARG:NH1	2.50	0.45
9:K:85:ASP:OD1	9:K:110:GLU:HB2	2.17	0.45
1:A:32:ILE:HD12	1:A:48:GLY:O	2.18	0.44
1:A:50:TYR:OH	1:A:383:ASN:ND2	2.50	0.44
1:A:1482:LYS:NZ	2:B:307:GLU:OE1	2.47	0.44
2:B:229:TYR:HE1	2:B:253:LEU:HD11	1.82	0.44
2:B:368:GLN:HG3	2:B:372:ARG:NH1	2.21	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:84:TYR:CE1	10:L:66:GLN:HG3	2.52	0.44
4:E:100:ILE:HA	4:E:105:PHE:HD2	1.82	0.44
1:A:408:LYS:HA	1:A:411:VAL:HB	1.99	0.44
1:A:609:PRO:HB2	1:A:610:ASN:HD22	1.83	0.44
2:B:369:ASP:OD2	2:B:591:LYS:HE2	2.17	0.44
2:B:610:TYR:HE1	2:B:658:LEU:HD13	1.82	0.44
5:F:118:LEU:HD21	5:F:122:MET:HE3	1.98	0.44
1:A:427:PHE:HA	1:A:430:ILE:HG22	1.99	0.44
1:A:1101:THR:HG22	1:A:1120:TYR:CE1	2.53	0.44
1:A:1264:SER:HB2	7:I:56:PHE:CD1	2.52	0.44
15:N:142:THR:HG23	15:N:144:LYS:HE2	1.99	0.44
2:B:21:ARG:NH1	2:B:763:ASP:HB3	2.10	0.44
2:B:559:SER:O	2:B:562:PRO:HD2	2.18	0.44
1:A:1200:MET:HG2	1:A:1573:TYR:CE2	2.52	0.44
2:B:354:LEU:O	2:B:370:LYS:NZ	2.51	0.44
2:B:708:ASP:OD1	2:B:708:ASP:N	2.49	0.44
2:B:886:ASN:HB2	2:B:902:SER:OG	2.18	0.44
8:J:45:CYS:O	8:J:48:ARG:HG2	2.17	0.44
1:A:1298:ASP:HB2	1:A:1301:GLU:CD	2.43	0.44
1:A:1613:MET:HE3	1:A:1622:LEU:HD13	1.99	0.44
2:B:324:THR:HG23	2:B:347:LEU:HD13	1.99	0.44
6:H:107:VAL:HB	6:H:111:LEU:HD11	2.00	0.44
1:A:457:LYS:O	1:A:461:GLU:HB3	2.16	0.44
2:B:493:PHE:HE2	2:B:762:MET:HE1	1.82	0.44
2:B:588:ILE:HD12	2:B:593:ILE:HG13	2.00	0.44
2:B:859:CYS:O	2:B:871:ILE:HG13	2.17	0.44
11:T:8:DA:H2"	11:T:9:DG:H8	1.83	0.44
11:T:14:DT:H6	11:T:14:DT:H2'	1.67	0.44
17:G:163:PRO:HG2	17:G:166:TRP:CD1	2.52	0.44
1:A:1254:PHE:CD2	1:A:1255:CYS:HB2	2.52	0.44
1:A:1650:GLY:HA2	5:F:88:TYR:HB3	2.00	0.44
1:A:1660:VAL:HG12	17:G:54:LEU:C	2.42	0.44
2:B:446:MET:O	2:B:449:VAL:N	2.50	0.44
7:I:26:SER:O	7:I:39:LYS:N	2.50	0.44
15:N:78:THR:HB	15:N:79:THR:H	1.56	0.44
16:D:37:LEU:HD23	16:D:37:LEU:HA	1.88	0.44
1:A:196:ALA:HA	1:A:201:ARG:HH21	1.82	0.44
2:B:1048:SER:OG	2:B:1059:PRO:HB3	2.18	0.44
3:C:319:ARG:NH2	9:K:132:GLU:OE2	2.51	0.44
1:A:93:GLN:HG3	1:A:1627:LEU:HD13	1.99	0.43
1:A:1322:ILE:HG21	1:A:1457:ILE:HD11	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:975:HIS:CE1	2:B:1003:ALA:HB2	2.53	0.43
3:C:325:ALA:HB2	9:K:124:LEU:HD23	1.99	0.43
1:A:36:THR:HG22	1:A:45:VAL:HG21	2.01	0.43
2:B:78:PRO:C	2:B:80:ASN:H	2.26	0.43
2:B:490:LYS:HE2	2:B:736:ARG:CZ	2.48	0.43
2:B:898:LEU:HD13	10:L:46:VAL:HG21	2.00	0.43
17:G:17:ILE:C	17:G:19:LYS:H	2.25	0.43
1:A:824:THR:HB	2:B:1023:ARG:NH1	2.34	0.43
1:A:959:VAL:HG12	1:A:960:MET:O	2.19	0.43
1:A:1651:THR:CB	2:B:1085:SER:HB2	2.45	0.43
2:B:67:ASP:HB2	2:B:242:ASP:OD2	2.18	0.43
2:B:505:ARG:HB3	2:B:509:PHE:HD2	1.83	0.43
2:B:1114:GLN:CD	2:B:1129:ARG:HH21	2.26	0.43
2:B:64:GLY:HA2	2:B:242:ASP:CG	2.43	0.43
2:B:577:PHE:CE1	15:N:106:ASN:CG	2.96	0.43
9:K:64:GLN:NE2	9:K:100:LEU:HD13	2.32	0.43
9:K:81:MET:SD	9:K:89:CYS:HB3	2.59	0.43
1:A:947:LEU:HD22	1:A:982:VAL:HG11	2.01	0.43
1:A:1615:TYR:CD2	1:A:1616:GLU:HG3	2.53	0.43
2:B:324:THR:CG2	14:M:109:ARG:NE	2.79	0.43
2:B:585:CYS:O	2:B:640:LEU:N	2.50	0.43
17:G:106:LYS:HE3	17:G:106:LYS:HB2	1.82	0.43
1:A:409:ASP:OD1	1:A:410:LYS:N	2.51	0.43
1:A:782:ASP:CG	1:A:783:LYS:H	2.26	0.43
2:B:582:SER:C	2:B:598:HIS:HE2	2.18	0.43
2:B:698:SER:HB2	20:B:1301:SO4:O3	2.18	0.43
2:B:803:MET:HE3	2:B:907:ILE:HD13	2.00	0.43
8:J:67:GLU:HG2	8:J:68:LYS:N	2.34	0.43
1:A:588:LEU:HD21	2:B:1087:LEU:HD21	2.01	0.43
2:B:741:LEU:HD22	2:B:804:TYR:CD2	2.52	0.43
6:H:99:GLY:HA3	6:H:118:PHE:CD1	2.54	0.43
9:K:66:VAL:O	9:K:68:GLU:HG2	2.19	0.43
1:A:834:ARG:NH2	2:B:993:ALA:HB1	2.33	0.43
1:A:1195:GLU:HB3	1:A:1196:PRO:HD3	2.01	0.43
1:A:1263:LEU:HA	1:A:1498:ILE:HD11	2.00	0.43
1:A:1562:ILE:HD13	1:A:1589:MET:HE3	2.01	0.43
2:B:1141:LEU:HD13	17:G:18:LYS:NZ	2.34	0.43
3:C:64:ALA:HB3	3:C:298:PHE:CE2	2.54	0.43
3:C:230:LEU:HD12	3:C:231:PRO:HD2	1.99	0.43
5:F:59:GLN:NE2	16:D:25:THR:HB	2.33	0.43
13:R:14:A:H2'	13:R:15:C:C6	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:92:ARG:HH22	17:G:109:PRO:CA	2.32	0.43
1:A:571:HIS:CD2	1:A:572:THR:HG23	2.54	0.43
1:A:611:GLU:CB	1:A:615:ARG:HH22	2.32	0.43
1:A:1049:MET:HB2	4:E:208:TYR:HE1	1.84	0.43
2:B:216:ALA:HB1	2:B:384:LEU:HD22	2.00	0.43
2:B:1048:SER:CB	2:B:1059:PRO:HB3	2.49	0.43
1:A:526:GLY:HA3	1:A:554:ARG:NH1	2.34	0.42
1:A:718:THR:OG1	1:A:730:GLN:NE2	2.52	0.42
4:E:29:PHE:HB2	4:E:65:THR:HG22	2.00	0.42
4:E:192:ARG:HG2	4:E:215:MET:O	2.19	0.42
15:N:145:ILE:HG23	15:N:146:PRO:HD2	2.01	0.42
1:A:10:GLU:HG3	1:A:11:ILE:H	1.85	0.42
1:A:579:ARG:HH22	1:A:585:ASP:CG	2.19	0.42
1:A:690:GLU:HG3	9:K:81:MET:HE2	2.01	0.42
1:A:1480:THR:HG22	1:A:1481:GLU:N	2.34	0.42
1:A:1645:LYS:HG3	1:A:1646:LEU:N	2.33	0.42
1:A:1649:VAL:O	2:B:1083:GLY:O	2.37	0.42
2:B:139:LEU:HD13	2:B:158:CYS:SG	2.59	0.42
2:B:525:TRP:CZ2	2:B:696:ILE:HG21	2.54	0.42
2:B:1199:ASN:HB3	2:B:1203:LYS:NZ	2.34	0.42
5:F:99:LEU:O	5:F:102:SER:OG	2.30	0.42
6:H:103:LYS:HB3	6:H:115:TYR:HD2	1.84	0.42
1:A:195:LYS:O	1:A:198:SER:OG	2.25	0.42
1:A:232:LYS:HE2	1:A:239:PHE:CZ	2.55	0.42
1:A:1227:MET:HE3	1:A:1227:MET:HB3	1.90	0.42
1:A:1243:TRP:HD1	1:A:1535:PHE:O	2.03	0.42
2:B:934:ILE:HD12	3:C:69:ARG:HG3	2.01	0.42
4:E:79:TRP:HB2	4:E:105:PHE:CD1	2.54	0.42
7:I:58:SER:OG	7:I:61:ARG:HB2	2.18	0.42
1:A:1105:ARG:HH12	1:A:1138:GLU:HG2	1.84	0.42
2:B:346:ASP:OD1	14:M:113:ILE:CD1	2.62	0.42
17:G:29:ASP:OD1	17:G:30:GLU:N	2.52	0.42
17:G:160:ASN:OD1	17:G:160:ASN:N	2.52	0.42
1:A:518:GLU:O	1:A:521:GLN:N	2.52	0.42
1:A:960:MET:SD	2:B:523:GLU:HG2	2.59	0.42
2:B:27:ASN:HD21	3:C:151:THR:HG23	1.83	0.42
2:B:264:TRP:CH2	2:B:356:ARG:HD3	2.54	0.42
2:B:822:THR:HG22	2:B:823:GLN:HG3	2.01	0.42
9:K:66:VAL:HG12	9:K:67:GLU:N	2.35	0.42
12:U:37:DC:H2"	12:U:38:DT:C5	2.54	0.42
14:M:8:SER:O	15:N:71:PRO:HA	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:N:94:ASP:HB3	15:N:99:LEU:HG	2.00	0.42
1:A:488:PRO:HD2	2:B:781:TYR:CE2	2.55	0.42
1:A:1647:ASN:HB2	1:A:1648:ASN:H	1.70	0.42
2:B:206:LEU:HD11	2:B:484:TYR:CE1	2.54	0.42
3:C:132:ILE:HG23	3:C:169:PHE:CE1	2.54	0.42
1:A:646:GLU:O	1:A:649:ASN:N	2.53	0.42
1:A:1003:ARG:NH2	2:B:540:GLY:HA2	2.35	0.42
1:A:1226:VAL:HG13	1:A:1598:PHE:CD2	2.54	0.42
2:B:470:LEU:HD22	2:B:484:TYR:HE2	1.84	0.42
10:L:53:HIS:CD2	10:L:55:ILE:HG22	2.54	0.42
1:A:67:LEU:HD13	1:A:71:PHE:HB3	2.01	0.42
1:A:411:VAL:HG13	1:A:415:ASP:HB2	2.02	0.42
2:B:25:PHE:CE1	8:J:59:LYS:HD2	2.55	0.42
2:B:943:ILE:HD11	8:J:43:ARG:HB3	2.01	0.42
6:H:40:LEU:HD13	6:H:123:MET:HE3	2.02	0.42
1:A:459:ALA:O	1:A:466:LEU:HB2	2.20	0.42
2:B:705:PRO:HG3	2:B:920:ARG:NH2	2.35	0.42
2:B:731:VAL:HG13	8:J:60:PHE:CD1	2.54	0.42
3:C:56:LEU:O	3:C:297:HIS:HD2	2.02	0.42
3:C:232:GLN:HB2	3:C:294:VAL:HG23	2.01	0.42
1:A:396:ILE:HD11	1:A:426:ALA:HB1	2.02	0.42
2:B:289:PHE:HD1	2:B:306:LEU:HD22	1.85	0.42
2:B:489:GLU:HG3	2:B:495:ARG:HE	1.85	0.42
2:B:755:ASN:ND2	2:B:980:ASP:OD1	2.53	0.42
2:B:368:GLN:O	2:B:372:ARG:NH1	2.53	0.41
2:B:1003:ALA:HA	15:N:168:LEU:HA	2.02	0.41
15:N:90:MET:HE3	15:N:90:MET:HB2	1.87	0.41
1:A:1226:VAL:HG13	1:A:1598:PHE:HD2	1.85	0.41
1:A:1575:ILE:HG22	1:A:1576:SER:H	1.86	0.41
2:B:357:ILE:O	2:B:360:VAL:HG13	2.20	0.41
3:C:244:ALA:O	3:C:247:PHE:HB3	2.19	0.41
9:K:63:PHE:O	9:K:102:ASN:HA	2.21	0.41
16:D:82:LEU:O	16:D:86:ILE:HG23	2.20	0.41
1:A:1299:ASN:HA	1:A:1302:TYR:CE1	2.55	0.41
1:A:1326:GLU:OE2	1:A:1456:PHE:HB2	2.21	0.41
2:B:325:GLN:HG3	14:M:109:ARG:HA	1.47	0.41
2:B:781:TYR:OH	2:B:929:ARG:NH2	2.53	0.41
2:B:1063:ARG:O	2:B:1066:HIS:N	2.37	0.41
4:E:43:LYS:O	4:E:47:CYS:HB2	2.20	0.41
7:I:54:ASP:OD1	7:I:55:ALA:N	2.46	0.41
1:A:844:THR:O	1:A:848:LYS:HG3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1245:ASP:OD1	1:A:1246:VAL:N	2.53	0.41
2:B:819:ASP:OD1	2:B:820:PRO:HD2	2.20	0.41
12:U:35:DA:H2"	12:U:36:DG:C8	2.55	0.41
1:A:407:GLN:O	1:A:411:VAL:N	2.45	0.41
1:A:721:LYS:HG3	1:A:722:PRO:HA	2.03	0.41
2:B:20:GLU:OE2	2:B:24:ARG:NH2	2.54	0.41
2:B:264:TRP:CD1	2:B:265:ARG:HG2	2.56	0.41
4:E:182:ASP:O	4:E:185:ALA:N	2.46	0.41
1:A:389:VAL:O	1:A:393:SER:HB2	2.20	0.41
1:A:506:THR:HG22	1:A:580:HIS:HD2	1.86	0.41
2:B:324:THR:CG2	14:M:109:ARG:HE	2.34	0.41
2:B:537:SER:N	2:B:538:PRO:HD2	2.36	0.41
2:B:781:TYR:HB2	2:B:788:ILE:HD11	2.03	0.41
2:B:866:LEU:O	2:B:868:LYS:HG3	2.21	0.41
2:B:1063:ARG:O	2:B:1064:LYS:C	2.62	0.41
8:J:42:LYS:HZ1	15:N:176:ASP:HB3	1.83	0.41
1:A:477:ASN:OD1	2:B:1048:SER:HB3	2.21	0.41
1:A:1176:ARG:NH2	5:F:154:ASP:HB3	2.35	0.41
1:A:460:LEU:O	1:A:1618:THR:CB	2.69	0.41
1:A:589:MET:O	1:A:600:MET:HA	2.21	0.41
1:A:741:PRO:HD2	1:A:801:TYR:CD1	2.56	0.41
2:B:253:LEU:HB2	2:B:257:GLN:O	2.20	0.41
2:B:332:ASP:CB	14:M:113:ILE:HG23	2.49	0.41
2:B:1070:ARG:HG2	2:B:1071:VAL:O	2.20	0.41
15:N:40:LEU:HD12	15:N:40:LEU:HA	1.84	0.41
15:N:81:THR:HG22	15:N:86:ASP:HB3	2.01	0.41
1:A:387:SER:O	1:A:391:THR:HG23	2.21	0.41
1:A:1482:LYS:NZ	2:B:304:ASP:HA	2.36	0.41
2:B:974:LEU:HD21	2:B:1005:TYR:HE2	1.86	0.41
3:C:31:TRP:CG	3:C:32:ASN:H	2.39	0.41
5:F:100:GLN:CD	17:G:112:PRO:HB2	2.37	0.41
10:L:46:VAL:HG13	10:L:56:LEU:HD12	2.03	0.41
13:R:13:G:C2	13:R:14:A:C5	3.09	0.41
15:N:141:GLU:HG2	15:N:142:THR:N	2.36	0.41
2:B:404:LEU:HD21	2:B:551:ILE:HG21	2.03	0.41
2:B:1079:LEU:HD22	2:B:1087:LEU:HD23	2.03	0.41
4:E:12:LEU:HD22	4:E:55:ARG:NH1	2.35	0.41
17:G:50:ALA:HA	17:G:113:PHE:CD2	2.56	0.41
1:A:28:SER:OG	1:A:77:GLY:HA2	2.20	0.40
1:A:1654:PHE:CE1	5:F:92:ARG:HD3	2.55	0.40
2:B:335:ARG:HD2	2:B:346:ASP:OD1	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:577:PHE:CZ	15:N:106:ASN:CG	2.86	0.40
3:C:61:THR:HA	3:C:298:PHE:HZ	1.86	0.40
5:F:68:THR:O	5:F:72:LYS:HG2	2.21	0.40
6:H:101:ALA:HB2	6:H:116:TYR:CD2	2.57	0.40
2:B:206:LEU:HD11	2:B:484:TYR:HE1	1.86	0.40
2:B:529:CYS:HB2	2:B:698:SER:HB3	2.04	0.40
3:C:71:MET:HE1	3:C:302:VAL:HG21	2.03	0.40
3:C:262:SER:C	3:C:264:GLU:H	2.29	0.40
3:C:271:ARG:NH1	15:N:175:TYR:CE1	2.89	0.40
9:K:66:VAL:HG12	9:K:67:GLU:HG2	2.03	0.40
15:N:127:ASP:OD2	15:N:129:ALA:HB2	2.21	0.40
15:N:145:ILE:HG22	15:N:146:PRO:CD	2.50	0.40
1:A:460:LEU:O	1:A:1618:THR:HB	2.21	0.40
2:B:244:THR:HG21	2:B:414:LYS:NZ	2.37	0.40
3:C:216:HIS:ND1	3:C:218:LYS:HG2	2.37	0.40
4:E:47:CYS:SG	4:E:53:PRO:HB3	2.61	0.40
7:I:6:SER:N	7:I:45:LEU:HD21	2.27	0.40
15:N:145:ILE:CG2	15:N:146:PRO:N	2.85	0.40
17:G:73:TYR:CZ	17:G:238:THR:HG21	2.57	0.40
1:A:603:HIS:NE2	1:A:624:TYR:OH	2.48	0.40
1:A:1060:GLU:HG2	1:A:1060:GLU:O	2.22	0.40
2:B:250:LEU:HD23	2:B:260:PHE:HA	2.04	0.40
2:B:679:GLN:OE1	2:B:679:GLN:N	2.52	0.40
2:B:736:ARG:HD3	2:B:738:ASP:OD2	2.22	0.40
2:B:824:HIS:O	2:B:861:TYR:HB2	2.21	0.40
3:C:152:ASP:OD2	3:C:154:LYS:HB2	2.22	0.40
1:A:1314:GLN:O	1:A:1318:SER:OG	2.25	0.40
1:A:1480:THR:HG22	1:A:1481:GLU:H	1.87	0.40
2:B:717:TYR:O	2:B:721:MET:HG2	2.22	0.40
2:B:757:TYR:CE1	2:B:762:MET:HB2	2.57	0.40
2:B:782:ASP:HB3	2:B:788:ILE:HG12	2.03	0.40
17:G:62:MET:HE2	17:G:84:TYR:HE1	1.86	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

entries.

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1447/1664 (87%)	1325 (92%)	119 (8%)	3 (0%)	44	74
2	B	1171/1203 (97%)	1109 (95%)	60 (5%)	2 (0%)	44	74
3	C	303/335 (90%)	286 (94%)	17 (6%)	0	100	100
4	E	210/215 (98%)	200 (95%)	10 (5%)	0	100	100
5	F	98/155 (63%)	96 (98%)	2 (2%)	0	100	100
6	H	127/146 (87%)	124 (98%)	3 (2%)	0	100	100
7	I	61/125 (49%)	53 (87%)	8 (13%)	0	100	100
8	J	67/70 (96%)	63 (94%)	4 (6%)	0	100	100
9	K	99/142 (70%)	93 (94%)	6 (6%)	0	100	100
10	L	42/70 (60%)	37 (88%)	5 (12%)	0	100	100
14	M	106/415 (26%)	96 (91%)	8 (8%)	2 (2%)	6	33
15	N	139/233 (60%)	122 (88%)	14 (10%)	3 (2%)	5	30
16	D	50/137 (36%)	48 (96%)	2 (4%)	0	100	100
17	G	189/326 (58%)	174 (92%)	13 (7%)	2 (1%)	12	42
All	All	4109/5236 (78%)	3826 (93%)	271 (7%)	12 (0%)	38	69

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	463	LYS
1	A	1653	SER
1	A	91	PHE
2	B	1047	ARG
14	M	85	LYS
17	G	99	ASP
14	M	36	THR
15	N	115	SER
17	G	100	THR
2	B	895	PHE
15	N	70	LEU
15	N	39	PRO

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	1289/1465 (88%)	1283 (100%)	6 (0%)	86	90
2	B	1030/1053 (98%)	1030 (100%)	0	100	100
3	C	269/296 (91%)	269 (100%)	0	100	100
4	E	194/197 (98%)	194 (100%)	0	100	100
5	F	90/137 (66%)	90 (100%)	0	100	100
6	H	115/128 (90%)	115 (100%)	0	100	100
7	I	55/110 (50%)	55 (100%)	0	100	100
8	J	64/65 (98%)	64 (100%)	0	100	100
9	K	91/130 (70%)	91 (100%)	0	100	100
10	L	39/57 (68%)	39 (100%)	0	100	100
14	M	98/371 (26%)	86 (88%)	12 (12%)	4	19
15	N	135/220 (61%)	128 (95%)	7 (5%)	19	44
16	D	52/116 (45%)	48 (92%)	4 (8%)	10	34
17	G	171/291 (59%)	158 (92%)	13 (8%)	11	34
All	All	3692/4636 (80%)	3650 (99%)	42 (1%)	69	79

All (42) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	460	LEU
1	A	462	LYS
1	A	463	LYS
1	A	464	GLU
1	A	1648	ASN
1	A	1653	SER
14	M	17	ASP
14	M	18	GLN
14	M	31	ARG
14	M	44	LYS
14	M	48	LYS

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Mol	Chain	Res	Type
14	M	52	VAL
14	M	63	GLU
14	M	65	TYR
14	M	77	VAL
14	M	84	GLU
14	M	98	SER
14	M	109	ARG
15	N	51	GLN
15	N	89	ILE
15	N	124	THR
15	N	135	LYS
15	N	153	VAL
15	N	167	LYS
15	N	178	GLU
16	D	15	THR
16	D	29	GLN
16	D	38	GLN
16	D	80	THR
17	G	21	LYS
17	G	24	VAL
17	G	35	SER
17	G	39	VAL
17	G	139	ILE
17	G	147	LEU
17	G	167	THR
17	G	169	VAL
17	G	223	GLU
17	G	230	ARG
17	G	239	THR
17	G	241	ARG
17	G	243	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (56) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	60	ASN
1	A	107	HIS
1	A	264	ASN
1	A	336	GLN
1	A	383	ASN
1	A	458	GLN
1	A	489	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	580	HIS
1	A	610	ASN
1	A	639	GLN
1	A	694	GLN
1	A	730	GLN
1	A	1108	HIS
1	A	1180	ASN
1	A	1314	GLN
1	A	1336	GLN
1	A	1453	HIS
1	A	1662	ASN
2	B	27	ASN
2	B	45	HIS
2	B	166	GLN
2	B	328	GLN
2	B	715	ASN
2	B	718	GLN
2	B	748	GLN
2	B	770	ASN
2	B	823	GLN
2	B	824	HIS
2	B	975	HIS
2	B	987	ASN
2	B	1082	HIS
2	B	1089	GLN
2	B	1171	ASN
2	B	1199	ASN
3	C	237	GLN
3	C	297	HIS
3	C	301	ASN
3	C	323	ASN
3	C	335	GLN
4	E	32	GLN
5	F	59	GLN
5	F	100	GLN
7	I	21	ASN
8	J	26	GLN
9	K	64	GLN
9	K	106	GLN
10	L	53	HIS
14	M	18	GLN
15	N	61	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
15	N	132	GLN
16	D	23	HIS
17	G	23	GLN
17	G	56	ASN
17	G	59	GLN
17	G	75	ASN
17	G	235	ASN

5.3.3   RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
13	R	7/20 (35%)	2 (28%)	0

All (2) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
13	R	15	C
13	R	17	A

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 oligosaccharides in this entry.

5.6   Ligand geometry ⓘ

Of 8 ligands modelled in this entry, 7 are monoatomic - leaving 1 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z|>2$	Counts	RMSZ	$\#|Z|>2$
20	SO4	B	1301	-	4,4,4	0.16	0	6,6,6	0.09	0

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.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
20	B	1301	SO4	2	0

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 (i)

This section contains visualisations of the EMDB entry EMD-4147. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections (i)

6.1.1 Primary map
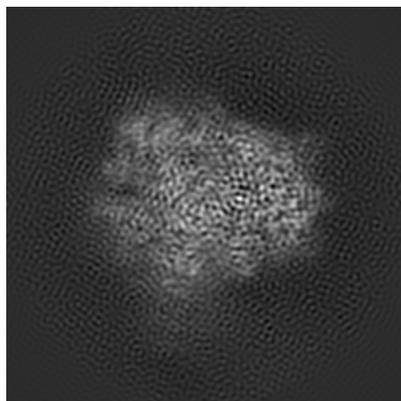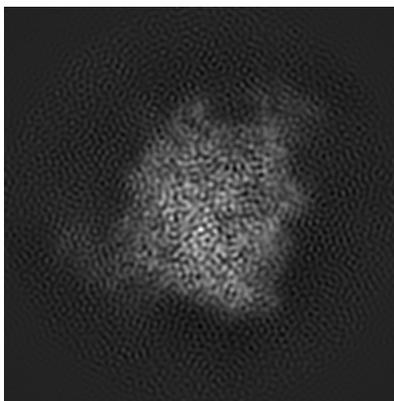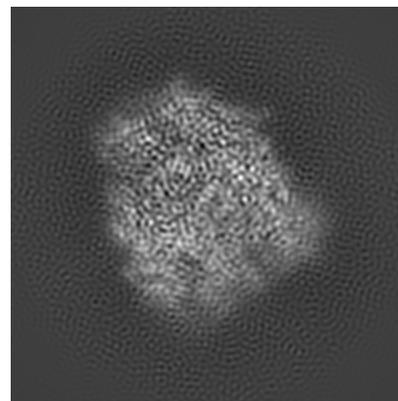
X	Y	Z

6.1.2 Raw map

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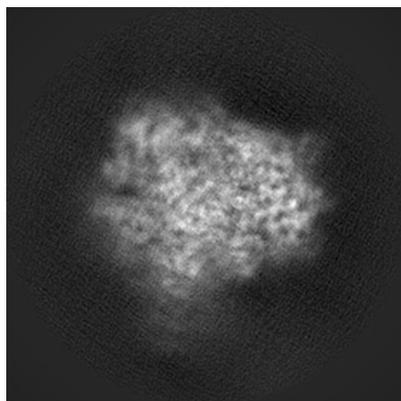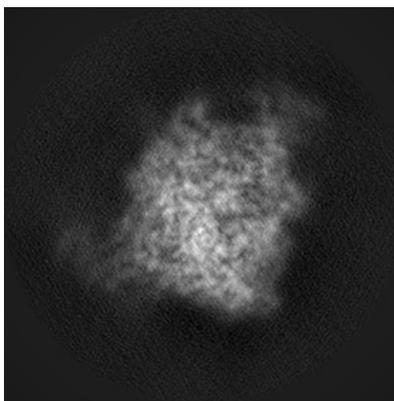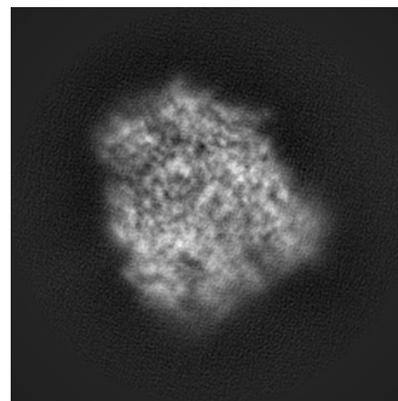
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
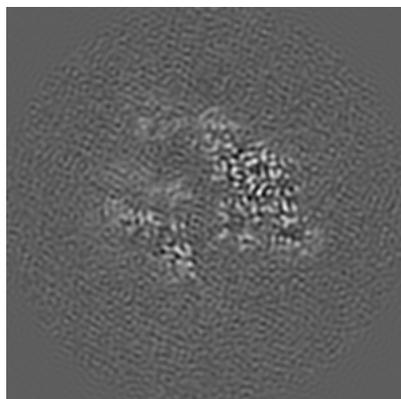
6.2.1 Primary map
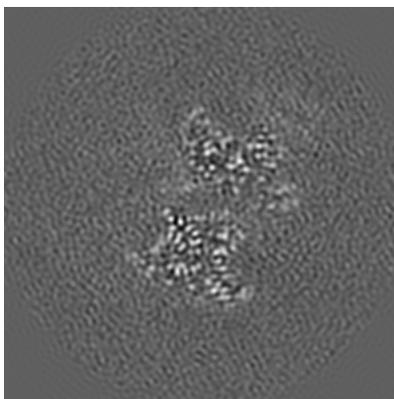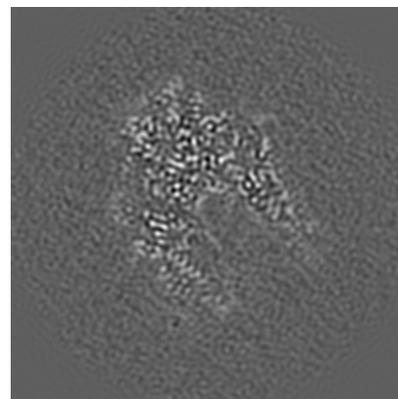
X Index: 115   Y Index: 115   Z Index: 115

6.2.2 Raw map
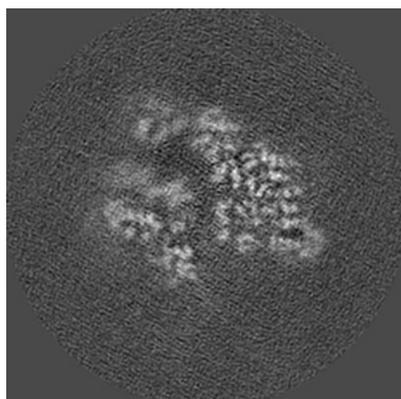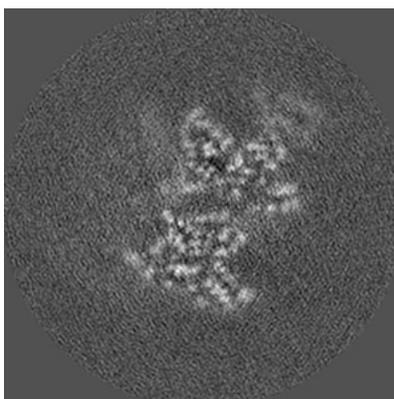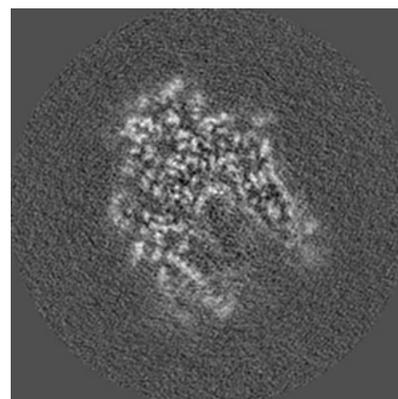
X Index: 115   Y Index: 115   Z Index: 115

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map
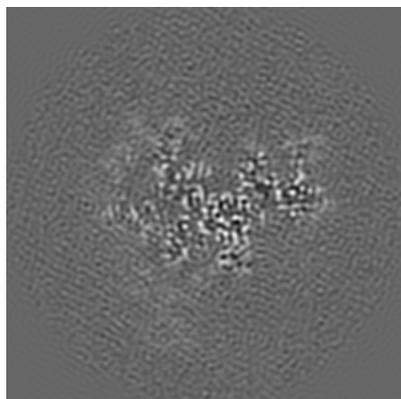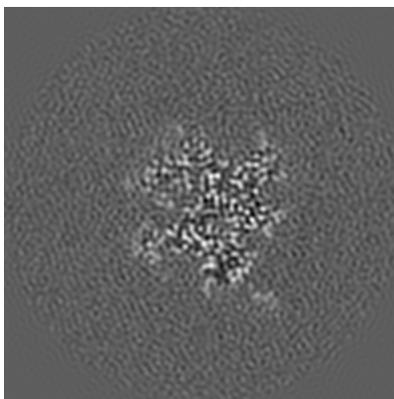
| X Index: 94 | Y Index: 135 | Z Index: 122 |
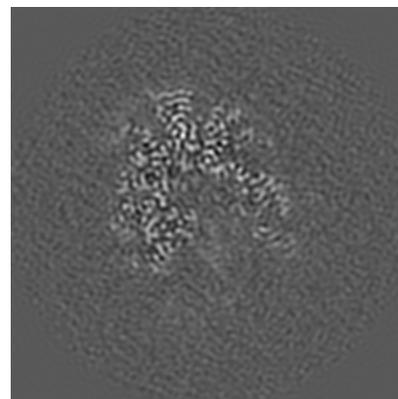
6.3.2 Raw map
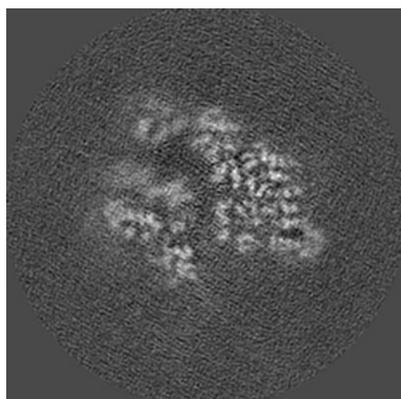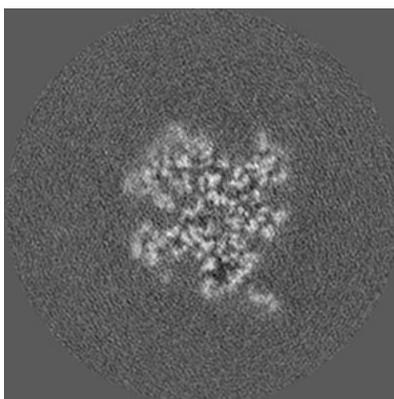
| X Index: 115 | Y Index: 135 | Z Index: 113 |
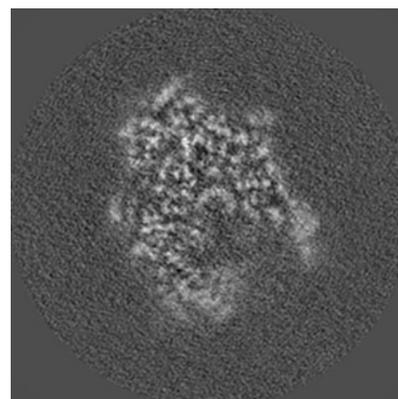
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
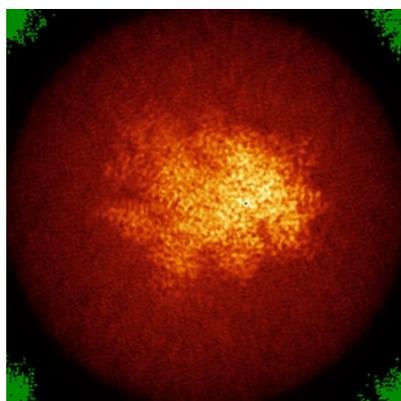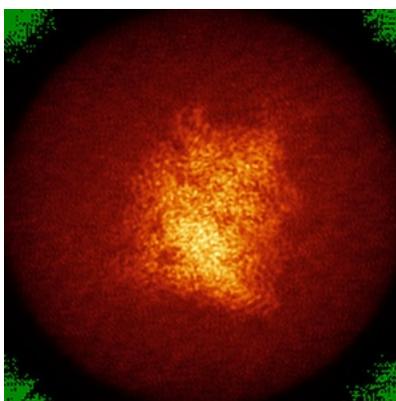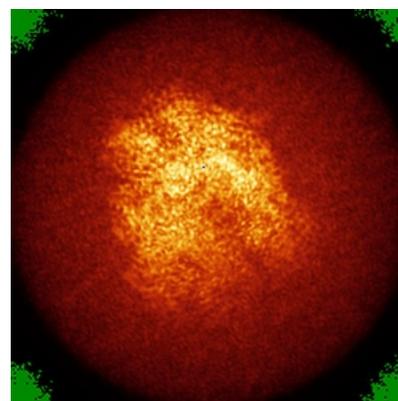
X   Y   Z

6.4.2 Raw map

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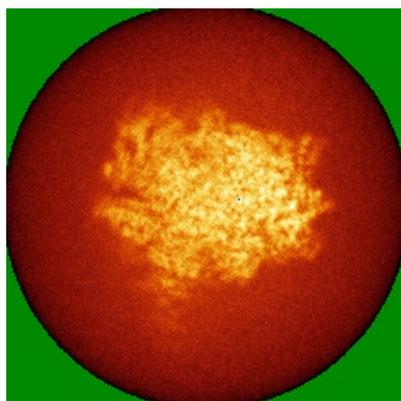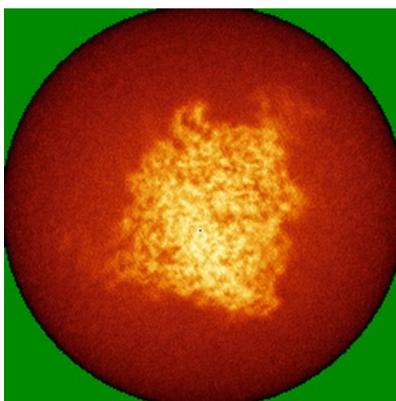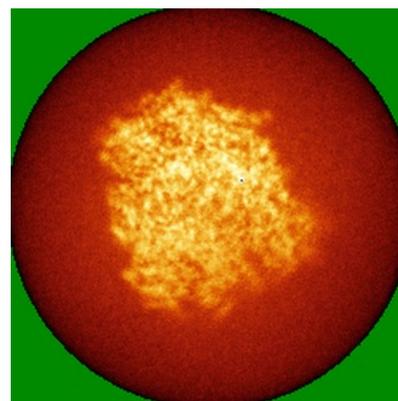
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X   Y   Z
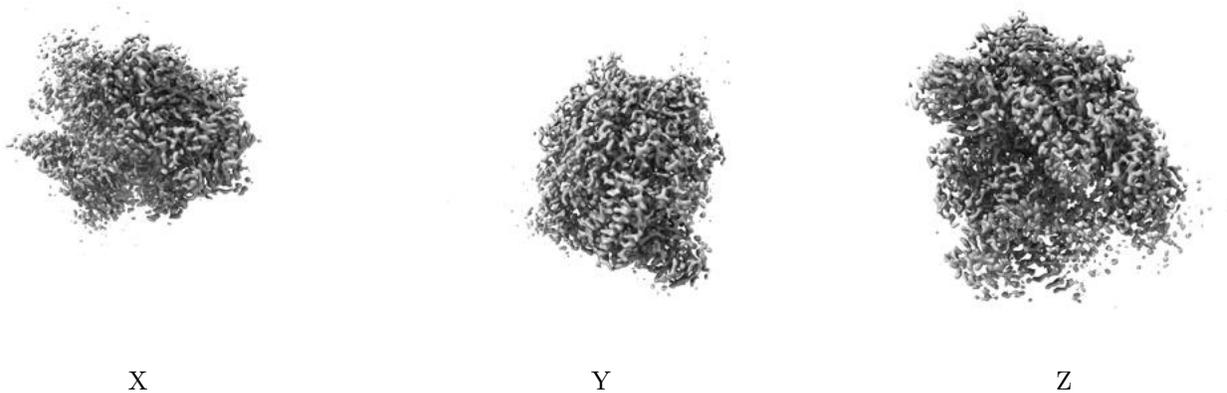
The images above show the 3D surface view of the map at the recommended contour level 0.045. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X   Y   Z
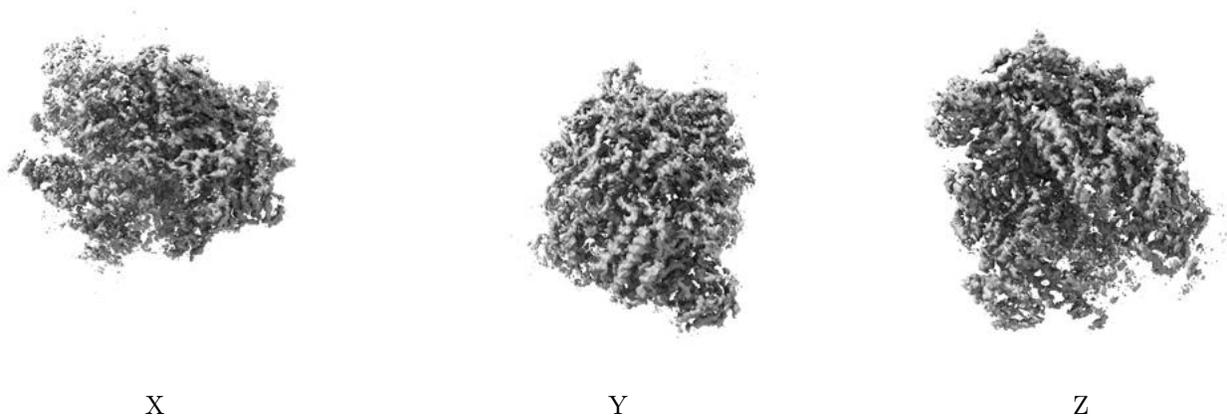
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

6.6 Mask visualisation ⓘ

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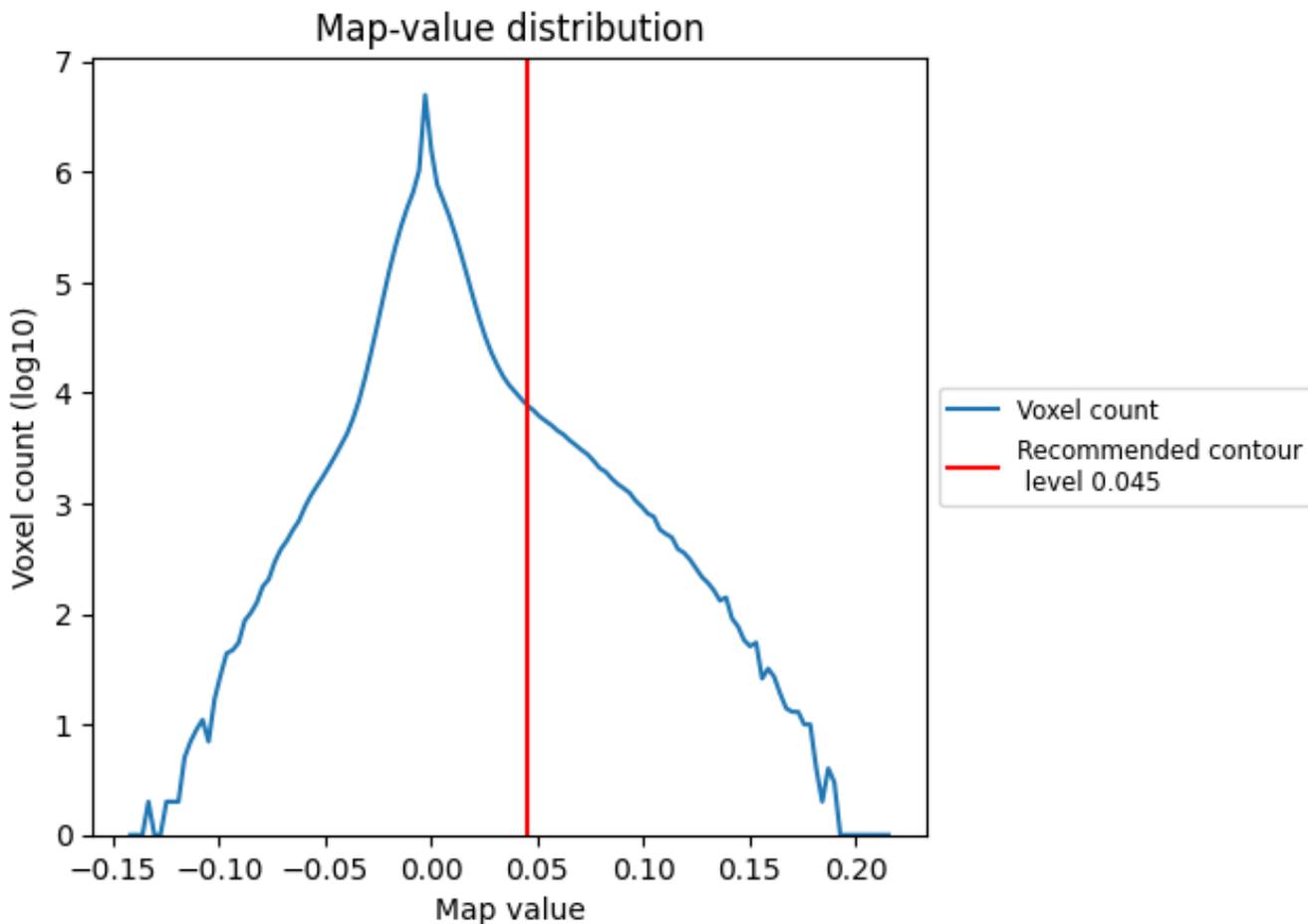
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2   Volume estimate ⓘ
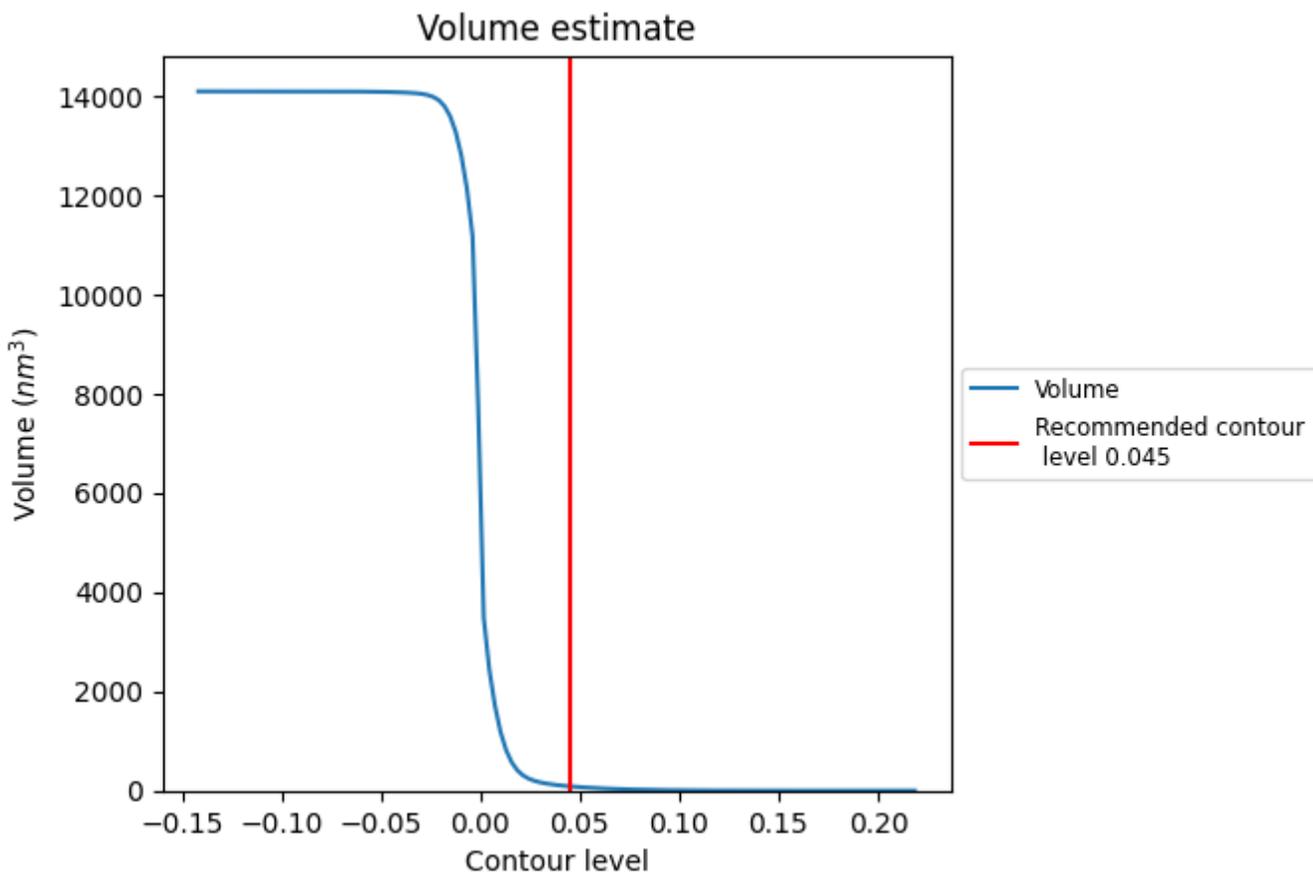
The volume at the recommended contour level is 87 nm^3; this corresponds to an approximate mass of 78 kDa.

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 ⓘ
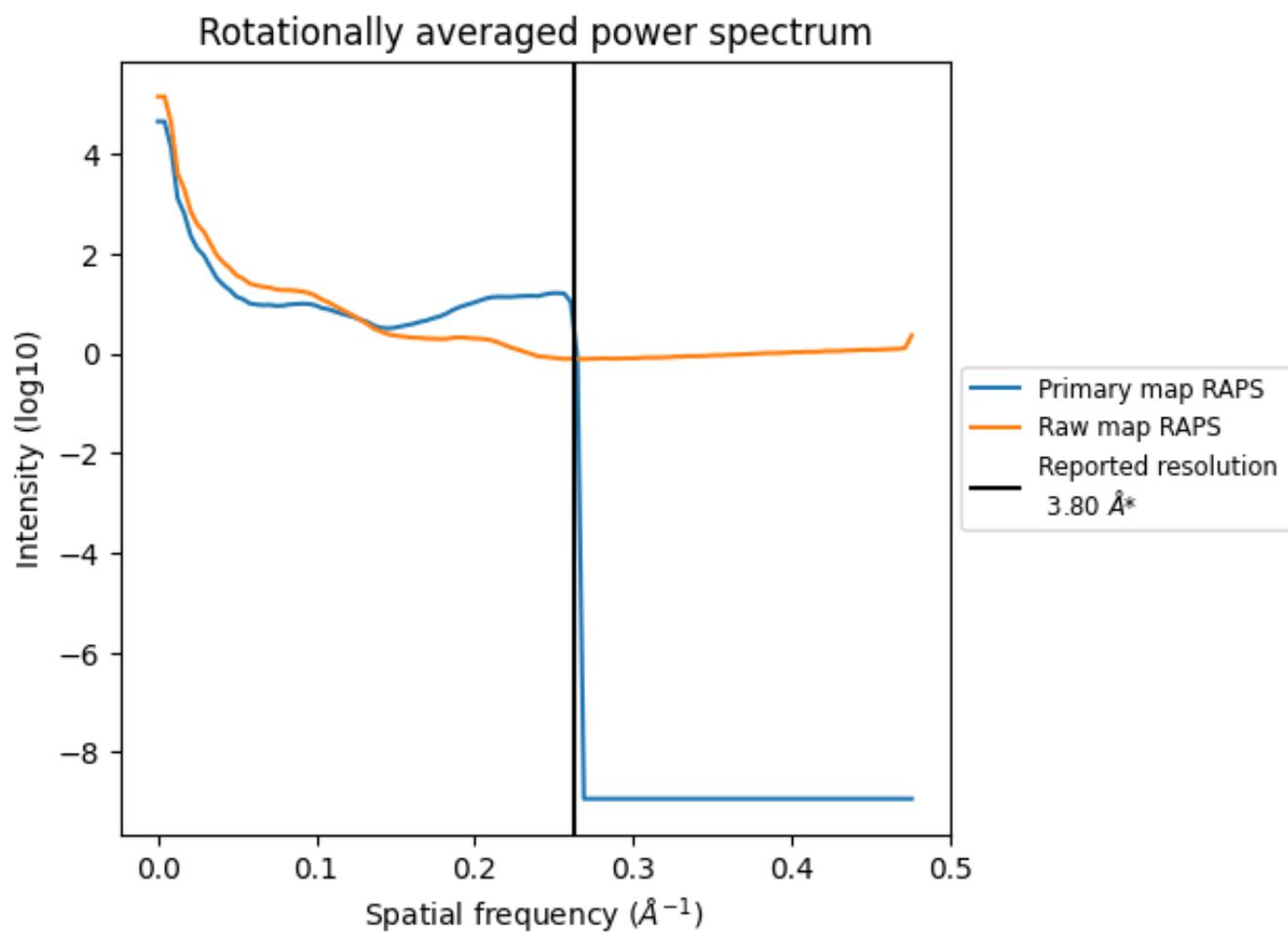
*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

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)
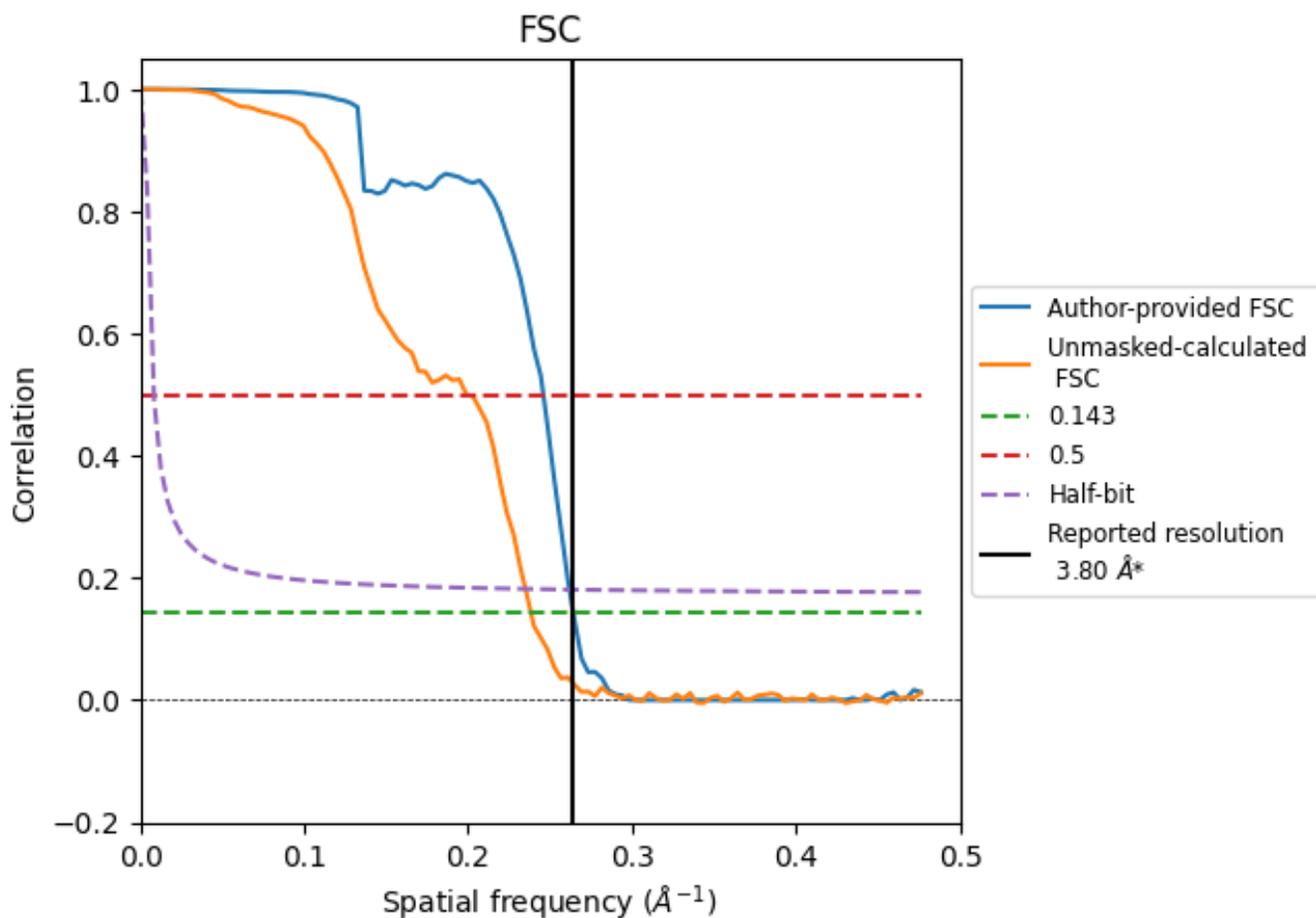
*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

8.2   Resolution estimates ⓘ

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.80	-	-
Author-provided FSC curve	3.79	4.07	3.82
Unmasked-calculated*	4.20	5.01	4.26

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.20 differs from the reported value 3.8 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-4147 and PDB model 5M3F. Per-residue inclusion information can be found in section 3 on page 8.

## 9.1 Map-model overlay ⓘ

X   Y   Z
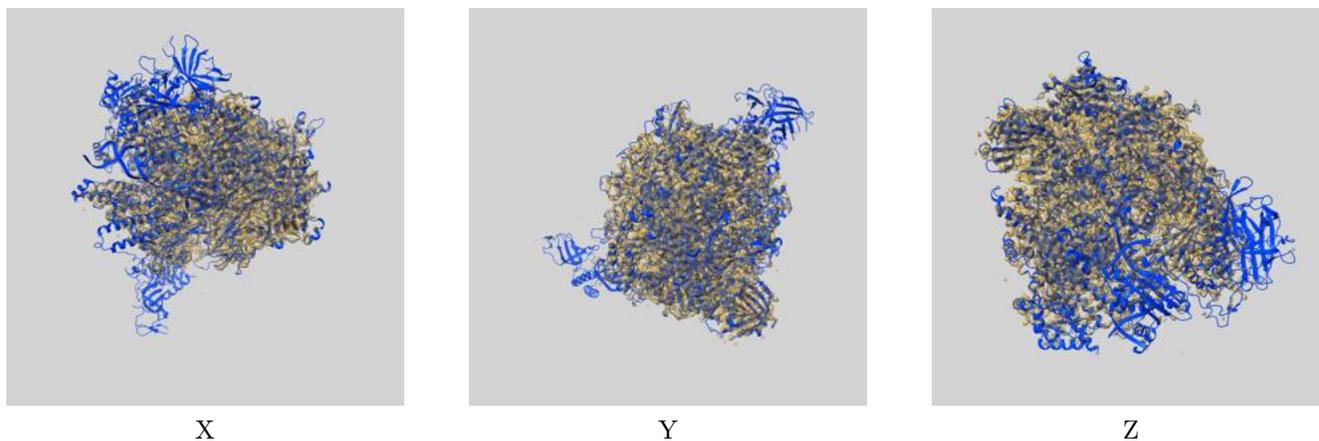
The images above show the 3D surface view of the map at the recommended contour level 0.045 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

X   Y   Z
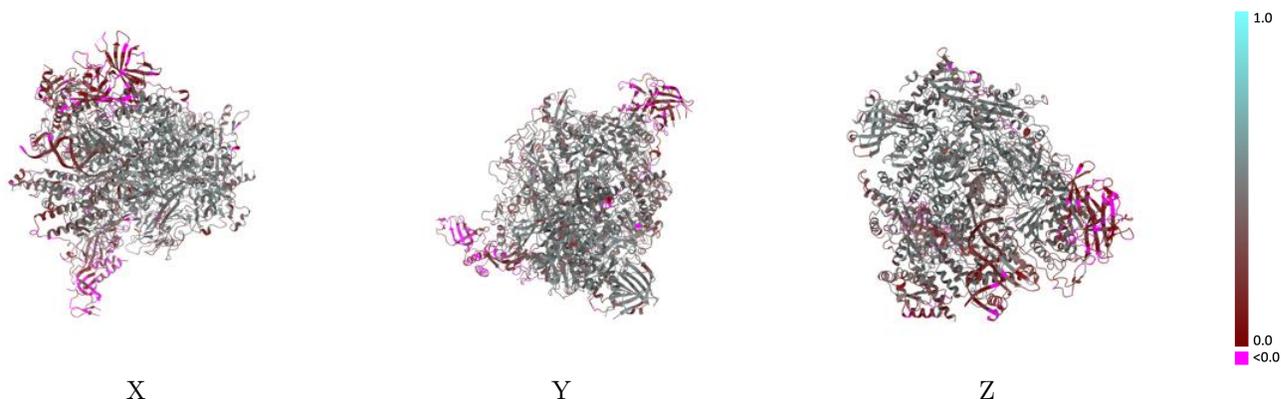
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model ⓘ

X   Y   Z
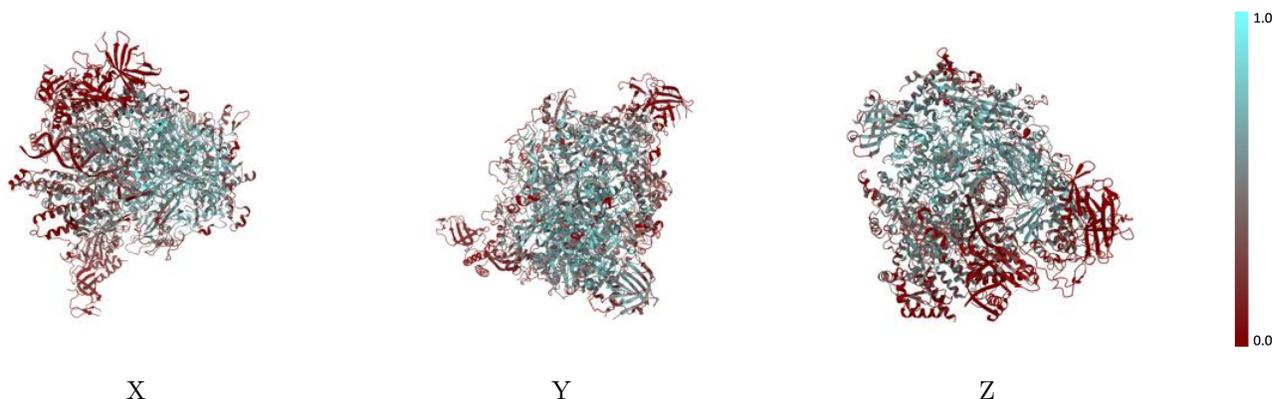
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.045).

9.4 Atom inclusion ⓘ
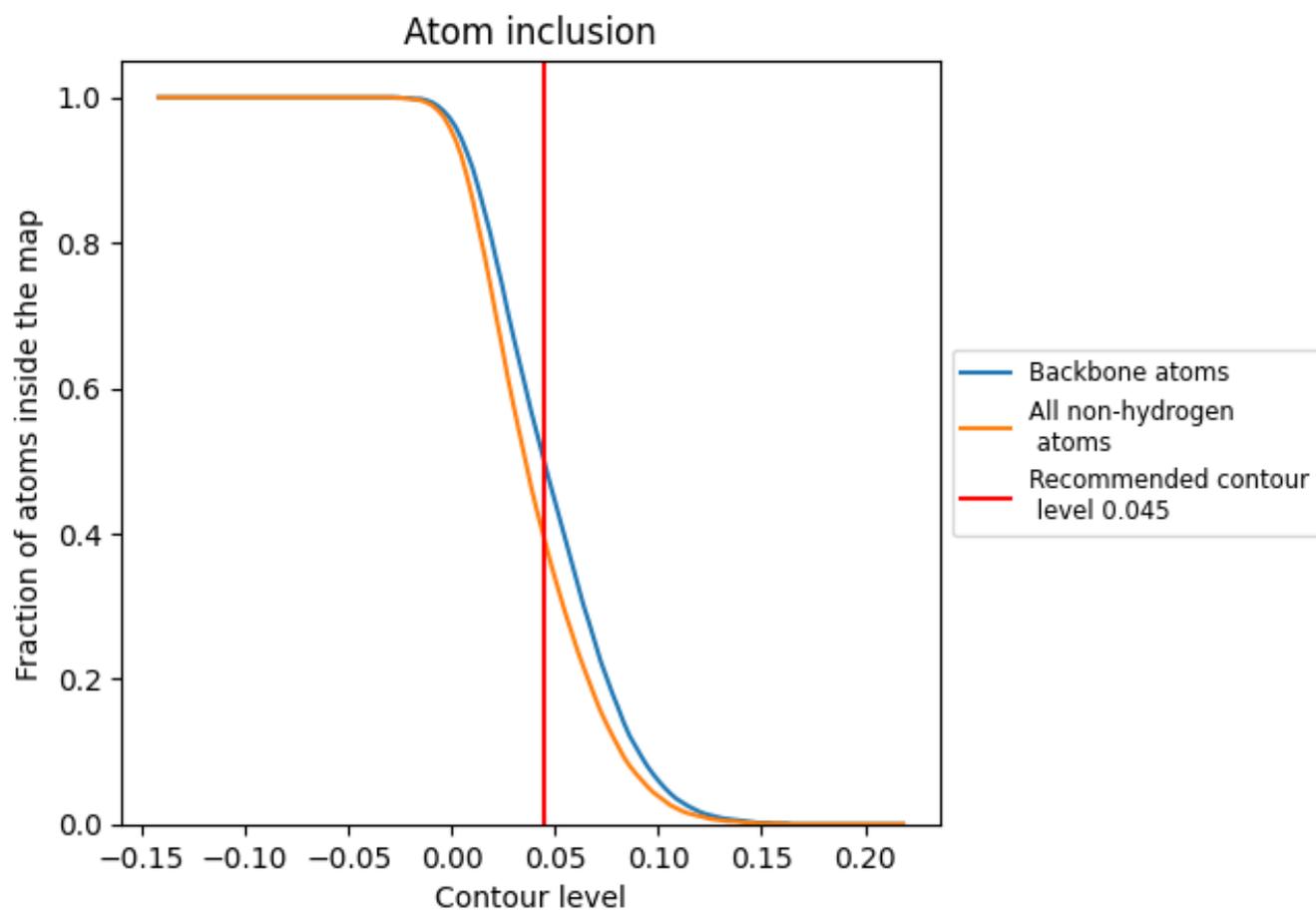
At the recommended contour level, 50% of all backbone atoms, 39% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.045) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.3900	0.3830
A	0.4300	0.4240
B	0.5100	0.4500
C	0.4640	0.4480
D	0.0210	0.0430
E	0.2910	0.3670
F	0.4210	0.4200
G	0.0330	0.0420
H	0.4330	0.4430
I	0.0410	0.2560
J	0.6030	0.4880
K	0.4990	0.4600
L	0.4710	0.4510
M	0.0020	0.0870
N	0.0030	0.0760
R	0.2950	0.3370
T	0.1710	0.2880
U	0.0250	0.1580

1.0

0.0
<0.0