WORLDWIDE PDB
PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Jun 28, 2025 – 11:07 pm BST

PDB ID	:	8BWS / pdb_00008bws
EMDB ID	:	EMD-16299
Title	:	Structure of yeast RNA Polymerase III elongation complex at 3.3 A
Authors	:	Nguyen, P.Q.; Fernandez-Tornero, C.
Deposited on	:	2022-12-07
Resolution	:	3.20 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

EMDB validation analysis	:	0.0.1.dev118
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0rc1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

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 3.20 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		10
Ramachandran outliers		0.0%
Sidechain outliers		4.0%
RNA backbone		0.22

Worse   *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures
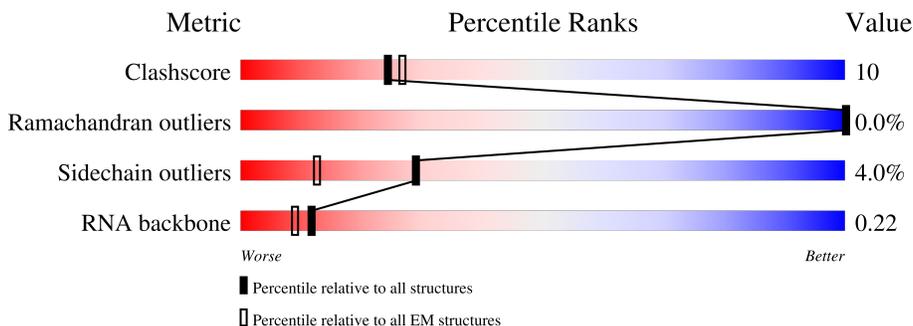
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	1460	73%　　24%　　••
2	B	1149	67%　　27%　　•　•
3	C	335	73%　　25%　　•
4	D	161	10%　54%　　34%　•　11%
5	E	215	73%　　27%
6	F	155	39%　14%　•　46%
7	G	212	9%　58%　　31%　•　8%

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Mol	Chain	Length	Quality of chain
8	H	146	5% 68% 27% 5%
9	I	110	7% 34% 15% 50%
10	J	70	67% 24%
11	K	142	64% 6% 29%
12	L	76	50% 14% 34%
13	M	282	9% 49% 16% 35%
14	N	422	16% 8% 75%
15	O	654	61% 24% 13%
16	P	317	31% 12% 57%
17	Q	251	5% 33% 12% 53%
18	S	52	15% 21% 63%
19	T	52	23% 25% 52%
20	R	10	50% 20% 30% 20% 30%

2 Entry composition ⓘ

There are 23 unique types of molecules in this entry. The entry contains 41013 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 III subunit RPC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1424	Total 11145	C 7026	N 1968	O 2093	S 58	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase III subunit RPC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	1104	Total 8715	C 5515	N 1502	O 1638	S 60	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	335	Total 2655	C 1681	N 454	O 511	S 9	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerase III subunit RPC9.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	143	Total 1169	C 745	N 197	O 221	S 6	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	215	Total 1759	C 1116	N 310	O 321	S 12	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	83	Total 671	C 429	N 114	O 125	S 3	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase III subunit RPC8.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	196	Total	C	N	O	S	0	0
			1569	1022	255	286	6		

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	138	Total	C	N	O	S	0	0
			1103	694	186	218	5		

- Molecule 9 is a protein called DNA-directed RNA polymerase III subunit RPC10.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	55	Total	C	N	O	S	0	0
			432	274	69	83	6		

- Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	67	Total	C	N	O	S	0	0
			549	350	95	98	6		

- Molecule 11 is a protein called DNA-directed RNA polymerases I and III subunit RPAC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	101	Total	C	N	O	S	0	0
			792	496	130	161	5		

- Molecule 12 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	50	Total	C	N	O	S	0	0
			381	235	76	66	4		

- Molecule 13 is a protein called DNA-directed RNA polymerase III subunit RPC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	183	Total	C	N	O	S	0	0
			1492	953	250	288	1		

- Molecule 14 is a protein called DNA-directed RNA polymerase III subunit RPC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	105	Total 802	C 508	N 144	O 147	S 3	0	0

- Molecule 15 is a protein called DNA-directed RNA polymerase III subunit RPC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	568	Total 4558	C 2897	N 784	O 858	S 19	0	0

- Molecule 16 is a protein called DNA-directed RNA polymerase III subunit RPC6.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	137	Total 1134	C 740	N 177	O 213	S 4	0	0

- Molecule 17 is a protein called DNA-directed RNA polymerase III subunit RPC7.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	119	Total 947	C 612	N 158	O 175	S 2	0	0

- Molecule 18 is a DNA chain called Non-template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	S	19	Total 402	C 187	N 89	O 107	P 19	0	0

- Molecule 19 is a DNA chain called Template DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	T	25	Total 492	C 238	N 68	O 161	P 25	0	0

- Molecule 20 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	R	7	Total 158	C 70	N 35	O 46	P 7	0	0

- Molecule 21 is ZINC ION (CCD ID: ZN) (formula: Zn).

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

- Molecule 22 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

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

- Molecule 23 is (3R,5S,7R,8R,9S,10S,12S,13R,14S,17R)-10,13-dimethyl-17-[(2R)-pentan-2-yl] -2,3,4,5,6,7,8,9,11,12,14,15,16,17-tetradecahydro-1H-cyclopenta[a]phenanthrene-3,7,12-triol (CCD ID: 4QM) (formula: $C_{24}H_{42}O_3$).
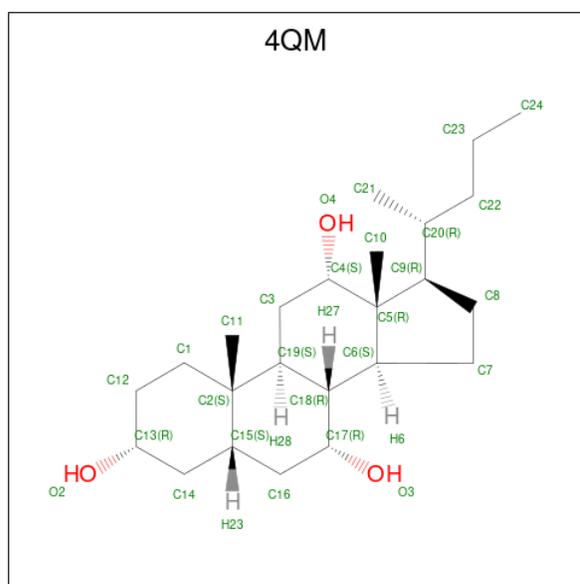
Mol	Chain	Residues	Atoms			AltConf
23	A	1	Total 27	C 24	O 3	0
23	C	1	Total 27	C 24	O 3	0

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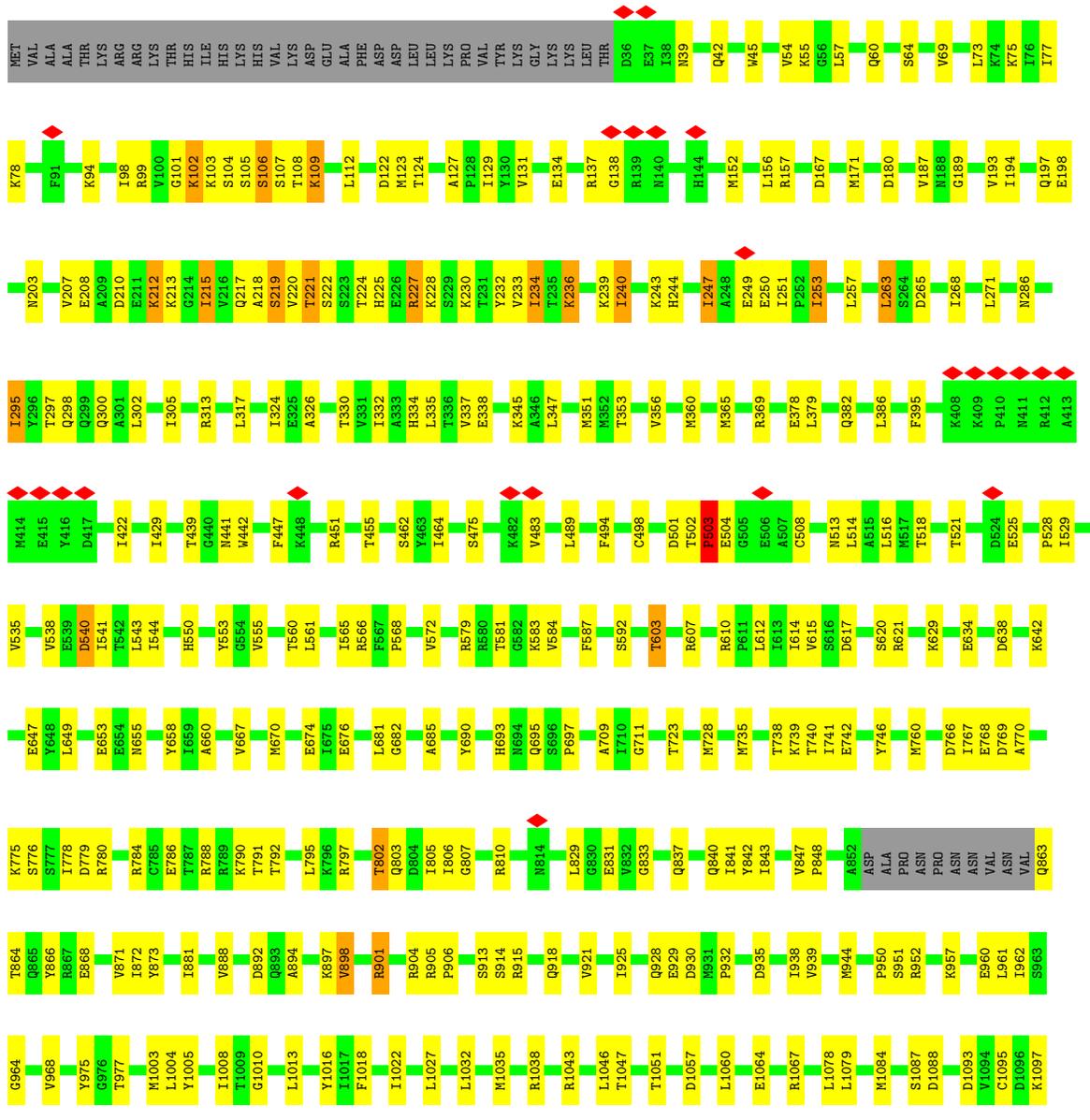| Mol	Chain	Residues	Atoms			AltConf
			Total	C	O	
23	I	1	27	24	3	0

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.

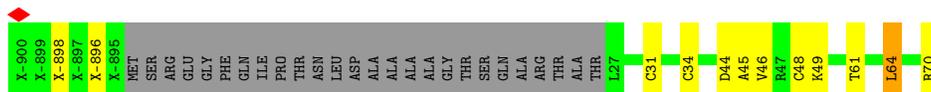• Molecule 1: DNA-directed RNA polymerase III subunit RPC1

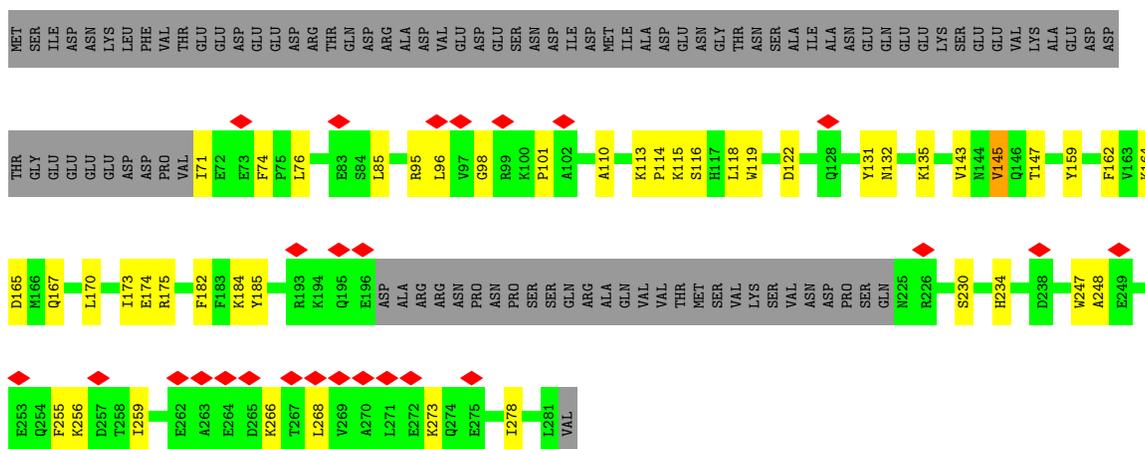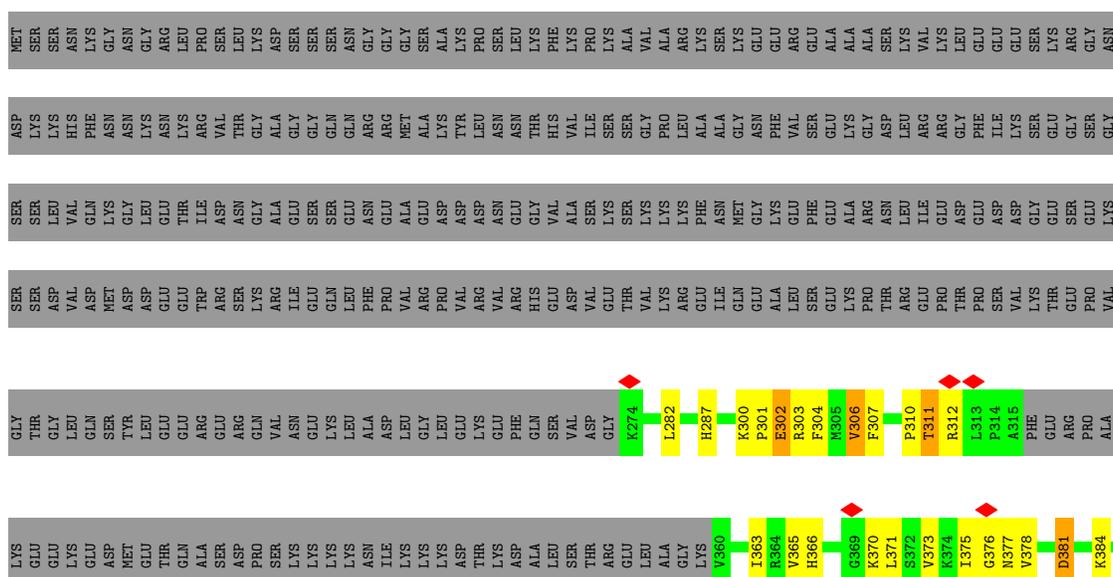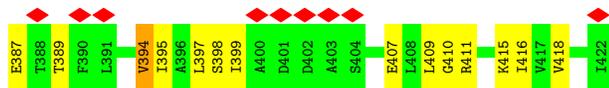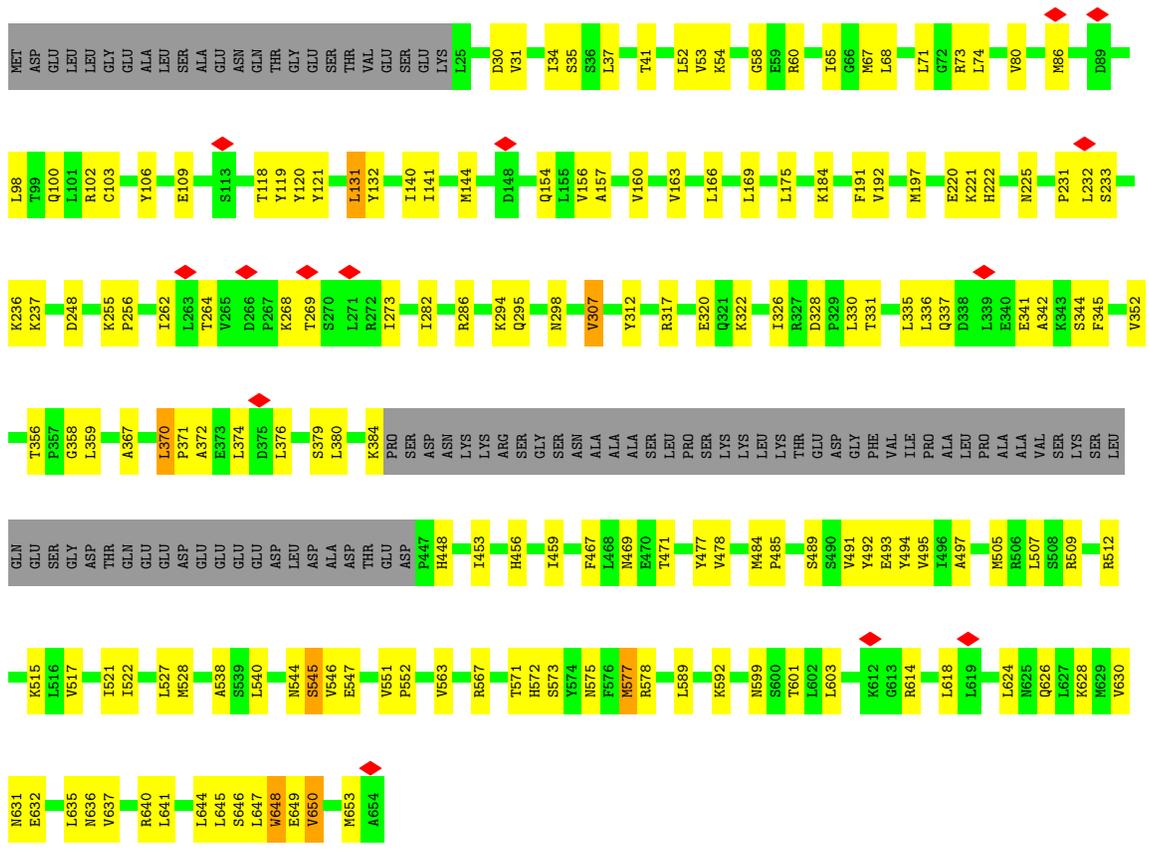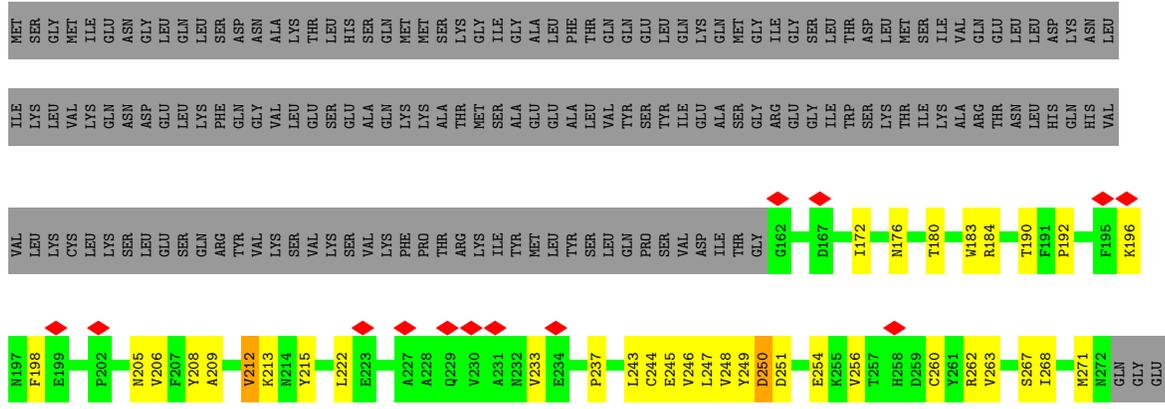• Molecule 2: DNA-directed RNA polymerase III subunit RPC2

Chain B:

67%   27%

C1098 G1099 L1100 M1101 G1105 W1106 C1107 A1113 I1116 I1117 T1120 I1121 P1122 K1126 L1127 E1131 S1134 M1135 N1136 I1137 A1138 R1142 D1145 Q1148 Q1149

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

Chain C: 73% 25%

M1 I4 V5 E8 D19 D26 W31 E34 K38 N53 F54 D55 I59 N65 R69 A80 F86 N87 N88 T89 I92 Q93 D94 E95 R100 I101 V108 L113 V116 K125 F126 T127 D128 E129 N130 T131 I132 V133 L134 S135

V138 K139 C140 A146 G149 S150 Y157 A160 H161 V162 Y163 A164 E170 P171 Q172 G173 R174 Q175 T178 V184 A187 I191 L192 L193 A194 K195 L196 R197 P198 C208 I209 D215 H216 A217 S223 T224 L229 L236 I239 E242 R245 Q248

V255 I256 D269 A270 R271 V275 S276 R277 E278 V279 L280 R281 R293 V294 R295 F298 I299 F300 N301 G306 A307 M308 K316 I333 T334 Q335

• Molecule 4: DNA-directed RNA polymerase III subunit RPC9

Chain D: 10% 54% 34% 11%

M1 R7 L11 E15 V16 L17 K26 W29 A35 A36 L37 K38 K39 S40 R41 S42 K43 G44 K45 Q46 N47 R48 P49 Y50 N51 H52 P53 E54 L55 T59 V62 L66 K70 N71 F72 ILE ASN GLN GLU ASP GLU GLY GLU GLU ARG GLU SER SER GLY ALA

LYS ASP ALA E91 I95 M98 A104 E105 L106 M107 T108 K109 L110 N111 K114 K117 A118 E119 K120 L121 Q122 I123 V124 N125 Q126 L127 N130 M131 V132 H133 L134 I137 V138 E139 E140 C141 D142 A143 D146 E147 K148 E151 L154 E155 I156 I157 A161

• Molecule 5: DNA-directed RNA polymerases I, II, and III subunit RPABC1

Chain E: 73% 27%

M1 N5 W13 R14 T18 V19 K20 E21 E34 L37 P38 L39 K43 D48 S49 M50 G51 R52 P53 Q54 R55 K56 M57 Q61 A62 N63 P64 S68 M75 G76 S77 L78 W79 V80 E81 F82 V88 T92 E102 K103 Q106 Q113 I116 T117

P118 S119 A120 V124 I127 I132 E137 V142 N143 I144 R167 Y168 I178 Q179 R180 A181 D182 P183 V184 A185 L186 Y187 L188 R192 V195 R200 R212 I213 C214 M215

• Molecule 6: DNA-directed RNA polymerases I, II, and III subunit RPABC2

Chain F: 39% 14% 46%

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

HIS GLU GLN ILE ARG ARG LYS THR LEU LYS E71 K72 K76 R79 A80 T81 T82 M85 E89 R90 A91 R92 I93 R97 E112 T115 D116 K123 V133 I134 R135 R136 Y137 F143 E144 D145 E150 V153 ASP LEU

• Molecule 7: DNA-directed RNA polymerase III subunit RPC8

Chain G:

9%

58%　　　31%　　　8%

MET F2 I3 D16 T22 I26 T27 H28 N31 A35 N36 K37 I38 I39 V42 C45 Y49 D50 L51 L52 T53 V54 G57 D63 G64 S65 I68 N69 V70 T71 F72 R73 A74 V75 V76 P79 E83 I84 V85 T86 I89 S90 K91 C92 T93 A94

I97 K98 V99 L102 G103 I104 F105 D106 D107 I108 F109 I110 P111 Q112 L115 C119 Y120 Y121 T122 P123 E124 E125 S126 A127 W128 P131 M132 D133 E134 E135 T136 K137 D141 V142 N143 R147 R152 D157 V158 K159 P160 K161 R166 E169 E170 R171 A172 Q173 LEU

GLU ASN GLU ILE GLU GLY LYS ASN GLU GLU THR PRO GLN ASN E189 K190 P191 P192 L197 D203 L207 V208 S209 W210 W211 E212

• Molecule 8: DNA-directed RNA polymerase I, II, and III subunit RPABC3

Chain H:

5%

68%　　　27%　　　5%

M1 S2 N3 T4 L5 F6 Q11 V12 V15 Y20 I26 T32 C36 M43 V44 P48 Q52 D53 T56 I59 A60 S61 S62 L65 GLU ASP THR PRO ALA ASN ASP SER S74 A75 R87 S88 L89 A90 Y93 V96 A101 Y102 K103

E106 D110 L111 I112 Y116 G120 E126 R130 N131 L132 N133 Y141 R145 R146

• Molecule 9: DNA-directed RNA polymerase III subunit RPC10

Chain I:

7%

34%　　　15%　　　50%

M1 C5 C8 N9 N10 M11 L12 L13 I14 D18 S19 L24 A25 C26 R27 S28 C29 E32 F33 P34 I35 E36 G37 K44 K45 L46 P47 R48 K49 E50 V51 D52 D53 V54 L55 GLY GLY TRP ASP ASN VAL ASP GLN THR LYS GLN CYS PRO ASN TYR ASP THR

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

• Molecule 10: DNA-directed RNA polymerase I, II, and III subunit RPABC5

Chain J:

67%　　　24%

M1 I2 V3 C7 F8 S9 C10 G11 K12 V13 V14 L36 L41 K42 R43 Y44 C45 C46 R47 R48 M49 I50 L51 L56 I57 E58 P65 L66 E67 LYS ARG ASP

• Molecule 11: DNA-directed RNA polymerases I and III subunit RPAC2

Chain K:

64%　　　6%　　　29%

MET THR GLU ASP ILE GLU GLN LYS LYS THR ALA THR GLU VAL THR PRO GLN GLU PRO LYS HIS ILE GLN GLU GLU GLU GLU GLN ASN ASP VAL MET THR GLY ASP GLU GLN GLU GLN GLU GLU GLU P42 I47 D57 S60 Q64 K82 E87 F88 L100 Q106

G109 E110 M142

• Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC4

Chain L:

50% 14% · 34%

X-900 X-899 X-898 X-897 X-896 X-895 MET SER ARG GLU GLY PHE GLN ILE PRO THR ASN LEU ASP ALA ALA ALA GLY THR SER GLN ARG THR ALA THR L27 C31 C34 D44 A45 V46 R47 C48 K49 T61 L64 R70

• Molecule 13: DNA-directed RNA polymerase III subunit RPC5

Chain M:

9%

49% 16% 35%

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

THR GLY GLU GLU GLU GLU ASP ASP PRO VAL I71 E72 E73 F74 P75 L76 E83 S84 L85 R95 L96 V97 G98 R99 K100 P101 A102 A110 K113 P114 K115 S116 H117 L118 W119 D122 Q128 Y131 N132 K135 V143 N144 V145 Q146 T147 Y159 F162 V163 K164

D165 M166 Q167 L170 I173 E174 R175 F182 F183 K184 Y185 R193 K194 Q195 E196 ASP ALA ARG ARG ASN PRO ASN PRO SER SER GLN ARG ALA GLN VAL VAL THR MET SER VAL LYS SER VAL ASN ASP PRO SER GLN N225 R226 S230 H234 D238 W247 A248 E249

E253 Q254 F255 K256 D257 T258 I259 E262 A263 E264 D265 K266 T267 L268 V269 A270 L271 E272 K273 Q274 E275 I278 L281 VAL

• Molecule 14: DNA-directed RNA polymerase III subunit RPC4

Chain N:

16% 8% · 75%

MET SER SER ASN LYS GLY ASN GLY ARG LEU PRO SER SER LEU LYS ASP SER SER ASN GLY GLY SER ALA LYS PRO SER LEU LYS PHE LYS PRO LYS ALA VAL ALA ARG LYS SER LYS GLU GLU ARG GLU ALA ALA SER LYS VAL LYS LEU GLU GLU GLU SER LYS ARG GLY ASN

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

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

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

GLY THR GLY LEU GLN SER TYR LEU GLU GLU ARG GLU GLU GLN ARG GLN VAL ASN GLU LYS LEU LEU ALA ASP LEU GLY LEU GLU LYS GLY K274 L282 H287 K300 P301 E302 R303 F304 M305 V306 F307 P310 T311 R312 L313 P314 A315 PHE GLU ARG PRO ALA VAL

LYS GLU GLU LYS GLU ASP MET GLU THR GLN ALA SER ASP PRO SER LYS LYS LYS ASN ILE LYS LYS ASP THR LYS ASP ALA LEU SER THR ARG GLU LEU LEU GLY LYS V360 I363 R364 V365 H366 G369 K370 L371 S372 V373 K374 I375 G376 N377 V378 D381 K384

E387 T388 F389 F390 L391 V394 I395 A396 L397 S398 I399 A400 D401 D402 A403 S404 E407 L408 L409 G410 R411 K415 I416 V417 V418 I422

• Molecule 15: DNA-directed RNA polymerase III subunit RPC3

Chain O:

61% 24% • 13%

MET ASP GLU LEU LEU GLY GLU ALA LEU SER ALA GLU GLN ASN THR GLY GLU SER THR VAL GLU SER GLU LYS L25 D30 V31 I34 S35 S36 L37 T41 L52 V53 K54 G58 E59 R60 I65 G66 M67 I68 L71 G72 R73 L74 V80 M86 D89

L98 T99 Q100 L101 R102 C103 Y106 E109 S113 T118 Y119 Y120 Y121 L131 Y132 I140 I141 M144 D148 Q154 L155 V156 A157 V160 V163 L166 L169 L175 K184 F191 V192 M197 E220 K221 H222 N225 P231 L232 S233

K236 K237 D248 K255 P256 I262 L263 T264 V265 D266 P267 K268 T269 S270 L271 R272 I273 I282 R286 K294 Q295 N298 V307 Y312 R317 E320 Q321 K322 I326 R327 D328 P329 L330 T331 L335 L336 Q337 D338 L339 E340 E341 A342 K343 S344 F345 V352

T356 P357 G358 L359 A367 L370 P371 A372 E373 L374 D375 L376 S379 L380 K384 PRO SER ASP ASN LYS LYS ARG SER GLY SER ASN ALA ALA ALA SER LEU PRO SER LYS LYS LEU LYS THR GLU ASP GLY PHE VAL ILE PRO ALA LEU PRO ALA ALA VAL SER LYS SER LEU

GLN GLU SER GLY ASP THR GLN GLU GLU ASP GLU GLU GLU GLU ASP LEU ASP ALA ASP THR GLU ASP P447 H448 I453 H456 I459 F467 L468 N469 E470 T471 V477 V478 M484 P485 S489 S490 V491 Y492 E493 Y494 V495 I496 A497 M505 R506 L507 S508 R509 R512

K515 L516 V517 I521 I522 L527 M528 A538 S539 L540 N544 S545 V546 E547 V551 P552 V563 R567 T571 H572 S573 Y574 N575 F576 M577 R578 L589 K592 N599 S600 T601 L602 L603 K612 G613 R614 L618 L619 L624 N625 Q626 L627 K628 M629 V630

N631 E632 L635 N636 V637 R640 L641 L644 L645 S646 L647 W648 E649 V650 M653 A654

• Molecule 16: DNA-directed RNA polymerase III subunit RPC6

Chain P:

31% 12% • 57%

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

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

VAL LEU LYS CYS LEU LYS SER LEU GLU GLU SER GLN ARG TYR VAL LYS SER VAL LYS SER VAL LYS PHE PRO THR ARG LYS ILE TYR MET LEU TYR SER LEU GLN PRO SER VAL ASP ILE THR GLY G162 D167 I172 N176 T180 W183 R184 T190 F191 P192 F195 K196

N197 F198 E199 P202 N205 V206 F207 Y208 A209 V212 K213 N214 Y215 L222 E223 A227 A228 Q229 V230 A231 N232 V233 E234 P237 L243 C244 E245 V246 L247 V248 Y249 D250 D251 E254 K255 V256 T257 H258 D259 C260 Y261 R262 V263 S267 I268 M271 N272 GLN GLY GLU

GLY GLU PRO GLU ALA GLY ASN LYS ALA LEU GLU ASP GLU GLU F291 Y296 M299 H305 T316 ILE

• Molecule 17: DNA-directed RNA polymerase III subunit RPC7

Chain Q:

5%

33%   12%   ••   53%

MET SER SER TYR ARG GLY GLY SER ARG GLY GLY SER ASN TYR MET SER N18 L19 P20 L23 G24 Y25 G26 D27 T34 E35 F36 L41 P42 I43 N44 R52 S53 L54 A55 V56 K57 Y58 F61 K66 V71 T72 G73 S74 M75 SER LEU ILE ASP GLN GLN

GLU ASN SER LYS SER GLY LYS ARG LYS PRO ASN ILE ILE LEU ASP ASP ASP T101 G104 R107 Y108 S109 Y112 R116 K117 I118 G119 I120 P126 L129 F132 E135 L136 Y137 M140 K145 K146 N155 A156 D157 D158 V159 F160 T161 GLY THR GLY LEU

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

ASN ALA GLU LYS TYR PHE ASN ASN GLY ASP ASP ASP ASP TYR GLY ASP GLU GLU ASP PRO ASN GLU GLU ALA ALA PHE

• Molecule 18: Non-template DNA

Chain S:

15%   21%   63%

DG DC DA DG DC DT DA DG DT DT DG DA DT DC DT DA DT DA DG DC DC DT DC DC DA DT DC DC DA DT C34 A35 G36 G37 A38 G39 A40 A41 G42 G43 A44 G45 C46 A47 C51 G52

• Molecule 19: Template DNA

Chain T:

•

23%   25%   52%

C1 G2 C3 T4 C5 T6 T9 C10 C14 T15 C16 C21 C22 T23 C24 T25 DC DG DA DT DG DG DC DT DA DT DG DA DG DA DT DC DA DA DC DT DA DG DG DC DT DG DC

• Molecule 20: RNA

Chain R:

50%

20%   30%   20%   30%

A U C G4 A5 G6 A7 G8 G9 A10

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	101928	Depositor
Resolution determination method	FSC 0.5 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS TALOS	Depositor
Voltage (kV)	200	Depositor
Electron dose $(e^-/\text{Å}^2)$	30.96	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2600	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	2.523	Depositor
Minimum map value	-1.351	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.053	Depositor
Recommended contour level	0.252	Depositor
Map size (Å)	427.5, 427.5, 427.5	wwPDB
Map dimensions	500, 500, 500	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.855, 0.855, 0.855	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: 4QM, ZN, MG

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	0.15	0/11344	0.30	0/15325
2	B	0.24	0/8867	0.38	0/11959
3	C	0.19	0/2711	0.34	0/3676
4	D	0.11	0/1187	0.28	0/1588
5	E	0.12	0/1795	0.28	0/2416
6	F	0.32	0/683	0.49	0/923
7	G	0.22	0/1609	0.39	0/2184
8	H	0.13	0/1121	0.30	0/1517
9	I	0.18	0/440	0.43	0/594
10	J	0.41	0/558	0.54	1/750 (0.1%)
11	K	0.24	0/803	0.35	0/1083
12	L	0.11	0/353	0.29	0/468
13	M	0.10	0/1524	0.31	0/2061
14	N	0.13	0/810	0.34	0/1088
15	O	0.13	0/4627	0.31	0/6243
16	P	0.10	0/1165	0.27	0/1582
17	Q	0.31	0/969	0.58	3/1307 (0.2%)
18	S	0.28	0/455	0.47	0/702
19	T	0.35	0/543	0.60	0/832
20	R	0.14	0/178	0.41	0/277
All	All	0.19	0/41742	0.35	4/56575 (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	1

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
17	Q	61	PHE	N-CA-C	-6.67	101.28	110.35
17	Q	57	LYS	N-CA-C	-5.77	106.22	113.20
17	Q	58	TYR	N-CA-C	-5.65	106.93	113.88
10	J	8	PHE	CA-CB-CG	5.09	118.89	113.80

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	227	ARG	Sidechain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	11145	0	11269	232	0
2	B	8715	0	8835	199	0
3	C	2655	0	2628	63	0
4	D	1169	0	1189	49	0
5	E	1759	0	1788	39	0
6	F	671	0	692	19	0
7	G	1569	0	1551	57	0
8	H	1103	0	1079	26	0
9	I	432	0	430	20	0
10	J	549	0	560	13	0
11	K	792	0	790	11	0
12	L	381	0	383	11	0
13	M	1492	0	1456	38	0
14	N	802	0	851	31	0
15	O	4558	0	4735	105	0
16	P	1134	0	1085	27	0
17	Q	947	0	950	32	0
18	S	402	0	210	10	0
19	T	492	0	287	10	0
20	R	158	0	77	2	0
21	A	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
21	B	1	0	0	0	0
21	I	1	0	0	0	0
21	J	1	0	0	0	0
21	L	1	0	0	0	0
22	A	1	0	0	0	0
23	A	27	0	0	0	0
23	C	27	0	0	0	0
23	I	27	0	0	0	0
All	All	41013	0	40845	854	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 10.

All (854) 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)
10:J:10:CYS:SG	10:J:45:CYS:SG	2.66	0.93
9:I:32:GLU:HB2	13:M:132:ASN:HB2	1.54	0.90
9:I:26:CYS:O	9:I:29:CYS:SG	2.32	0.88
13:M:132:ASN:HD21	13:M:135:LYS:HB2	1.45	0.82
9:I:5:CYS:SG	9:I:8:CYS:HB3	2.21	0.80
12:L:31:CYS:HB3	12:L:34:CYS:SG	2.24	0.77
2:B:944:MET:SD	2:B:957:LYS:NZ	2.58	0.76
2:B:1105:GLY:HA2	2:B:1116:ILE:HG21	1.69	0.75
7:G:79:PRO:HB2	7:G:83:GLU:HG2	1.68	0.74
1:A:330:ASP:OD1	1:A:355:GLN:NE2	2.21	0.73
1:A:493:ARG:HB2	1:A:499:ARG:HH21	1.51	0.73
2:B:805:ILE:HG22	2:B:807:GLY:H	1.54	0.73
1:A:264:PRO:O	1:A:269:ARG:NH1	2.23	0.72
7:G:110:ILE:HD11	7:G:115:LEU:HD11	1.71	0.72
15:O:592:LYS:HB2	15:O:637:VAL:HG11	1.72	0.71
2:B:213:LYS:HB2	2:B:215:ILE:HG22	1.71	0.71
1:A:1450:SER:HB2	4:D:107:MET:HG2	1.71	0.71
13:M:164:LYS:HD3	14:N:300:LYS:HD3	1.71	0.71
1:A:393:ALA:HB3	1:A:499:ARG:HB2	1.73	0.71
1:A:573:ARG:HH21	11:K:87:GLU:HG3	1.55	0.70
1:A:1325:VAL:HG23	1:A:1326:LEU:HG	1.73	0.70
5:E:195:VAL:HG22	5:E:213:ILE:HG22	1.72	0.70
2:B:439:THR:HG23	2:B:441:ASN:H	1.56	0.70
1:A:11:LYS:HD2	2:B:1117:ILE:HD13	1.73	0.70
1:A:555:GLN:NE2	2:B:767:ILE:O	2.24	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1391:LYS:HD3	19:T:16:DC:H4'	1.75	0.69
2:B:961:LEU:HD12	2:B:1022:ILE:HD11	1.74	0.69
1:A:11:LYS:NZ	2:B:1145:ASP:OD1	2.25	0.69
4:D:140:GLU:HB2	4:D:143:ALA:HB3	1.75	0.68
2:B:194:ILE:HG12	2:B:455:THR:HG22	1.75	0.68
2:B:695:GLN:HG2	2:B:697:PRO:HD2	1.73	0.68
4:D:122:GLN:HG3	4:D:137:ILE:HD11	1.74	0.68
7:G:159:LYS:HD3	7:G:161:LYS:HE2	1.75	0.68
9:I:8:CYS:SG	9:I:29:CYS:HB3	2.34	0.68
17:Q:41:LEU:O	17:Q:44:ASN:ND2	2.26	0.68
5:E:5:ASN:ND2	5:E:51:GLY:O	2.26	0.68
19:T:5:DC:H2"	19:T:6:DT:H5"	1.74	0.68
2:B:302:LEU:HD13	2:B:324:ILE:HG12	1.76	0.67
1:A:964:ASN:OD1	1:A:1009:ARG:NH1	2.28	0.67
15:O:575:ASN:OD1	15:O:578:ARG:NH2	2.27	0.67
2:B:1005:TYR:OH	3:C:293:ARG:NH1	2.27	0.67
9:I:35:ILE:HG12	9:I:37:GLY:H	1.59	0.67
15:O:294:LYS:O	15:O:298:ASN:ND2	2.28	0.67
1:A:589:HIS:O	1:A:617:ASN:ND2	2.28	0.67
15:O:286:ARG:NH1	15:O:320:GLU:OE2	2.28	0.66
7:G:189:GLU:HG2	7:G:191:PRO:HD3	1.75	0.66
10:J:10:CYS:SG	10:J:43:ARG:NE	2.68	0.66
14:N:366:HIS:HB2	14:N:370:LYS:HB2	1.77	0.66
1:A:53:ALA:O	1:A:269:ARG:NH2	2.29	0.66
7:G:54:VAL:HG22	7:G:70:VAL:HG23	1.77	0.66
17:Q:107:ARG:HG3	17:Q:109:SER:H	1.60	0.66
2:B:711:GLY:HA2	2:B:728:MET:HB2	1.78	0.65
12:L:31:CYS:HB2	12:L:48:CYS:SG	2.35	0.65
17:Q:20:PRO:HG2	17:Q:23:LEU:HB2	1.77	0.65
2:B:69:VAL:HA	2:B:73:LEU:HD23	1.79	0.65
2:B:395:PHE:HZ	2:B:422:ILE:HG13	1.61	0.65
2:B:776:SER:O	2:B:780:ARG:NH1	2.29	0.65
1:A:378:ARG:HD2	2:B:1060:LEU:HD11	1.78	0.65
2:B:210:ASP:HB3	2:B:215:ILE:HG23	1.79	0.65
2:B:129:ILE:HD11	2:B:152:MET:HB2	1.79	0.65
2:B:760:MET:HE1	2:B:932:PRO:HG2	1.79	0.64
3:C:55:ASP:OD2	3:C:271:ARG:NH1	2.31	0.64
15:O:295:GLN:NE2	15:O:646:SER:O	2.30	0.64
1:A:460:ASP:N	1:A:460:ASP:OD1	2.30	0.64
2:B:338:GLU:HA	13:M:230:SER:HB2	1.78	0.64
4:D:121:LEU:O	4:D:125:ASN:ND2	2.28	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:779:ASP:OD1	2:B:905:ARG:NH2	2.30	0.64
8:H:5:LEU:HB2	8:H:133:ASN:HB3	1.79	0.64
3:C:88:ASN:ND2	3:C:94:ASP:OD1	2.30	0.64
4:D:111:ASN:OD1	4:D:120:LYS:NZ	2.30	0.64
13:M:113:LYS:HB3	13:M:118:LEU:HB2	1.78	0.64
4:D:130:ASN:ND2	7:G:212:GLU:OE1	2.31	0.64
7:G:97:ILE:HG23	7:G:110:ILE:HG23	1.79	0.64
15:O:326:ILE:HD11	15:O:653:MET:HG2	1.80	0.64
1:A:378:ARG:NH1	1:A:516:GLU:OE1	2.32	0.63
2:B:157:ARG:HH21	2:B:180:ASP:HB3	1.62	0.63
1:A:615:LYS:NZ	1:A:620:SER:O	2.30	0.63
2:B:831:GLU:HB3	12:L:61:THR:HB	1.80	0.63
9:I:5:CYS:HB3	9:I:26:CYS:SG	2.37	0.63
1:A:108:LYS:O	15:O:572:HIS:NE2	2.28	0.63
2:B:1043:ARG:NH2	2:B:1087:SER:O	2.31	0.63
1:A:497:THR:OG1	1:A:499:ARG:NH1	2.32	0.63
1:A:607:LYS:HD2	8:H:120:GLY:HA3	1.79	0.63
2:B:212:LYS:HG2	2:B:213:LYS:HG3	1.81	0.63
1:A:1051:ASN:O	8:H:131:ASN:ND2	2.31	0.63
2:B:218:ALA:HB3	2:B:233:VAL:HB	1.80	0.63
2:B:313:ARG:NH1	2:B:317:LEU:O	2.32	0.63
2:B:837:GLN:H	2:B:840:GLN:HG3	1.62	0.62
14:N:381:ASP:OD1	14:N:381:ASP:N	2.32	0.62
3:C:53:ASN:HD22	3:C:301:ASN:HD22	1.46	0.62
15:O:614:ARG:HH12	15:O:618:LEU:HD22	1.63	0.62
2:B:39:ASN:ND2	2:B:42:GLN:OE1	2.32	0.62
7:G:147:ARG:HH11	7:G:208:VAL:HG23	1.65	0.62
3:C:100:ARG:NH2	3:C:192:LEU:O	2.30	0.62
1:A:665:ASP:OD1	1:A:666:LYS:N	2.32	0.62
2:B:792:THR:HG22	2:B:897:LYS:HG2	1.80	0.62
5:E:113:GLN:NE2	5:E:137:GLU:OE1	2.33	0.62
1:A:247:THR:HG23	15:O:67:MET:HE1	1.82	0.61
1:A:753:GLN:HG3	1:A:761:THR:HG23	1.80	0.61
2:B:741:ILE:HB	2:B:746:TYR:HB3	1.80	0.61
7:G:84:ILE:HD11	7:G:147:ARG:HB3	1.80	0.61
1:A:878:LYS:NZ	1:A:1102:THR:O	2.28	0.61
2:B:797:ARG:NH1	2:B:892:ASP:O	2.33	0.61
3:C:242:GLU:HA	3:C:245:ARG:HH21	1.66	0.61
12:L:31:CYS:CB	12:L:34:CYS:SG	2.86	0.61
15:O:163:VAL:HA	15:O:169:LEU:HD13	1.83	0.61
1:A:1198:LEU:HB3	1:A:1200:LEU:HD22	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1038:ARG:NH1	2:B:1057:ASP:O	2.33	0.60
16:P:256:VAL:HB	16:P:260:CYS:HB2	1.83	0.60
1:A:951:ASP:OD1	1:A:1061:ARG:NH1	2.33	0.60
2:B:263:LEU:HD23	2:B:298:GLN:HB2	1.82	0.60
15:O:73:ARG:NH2	15:O:109:GLU:OE1	2.34	0.60
2:B:1148:GLN:OE1	7:G:69:ASN:ND2	2.35	0.60
8:H:48:PRO:O	8:H:146:ARG:NH2	2.34	0.60
2:B:122:ASP:HA	2:B:189:GLY:HA3	1.82	0.60
15:O:551:VAL:HB	15:O:563:VAL:HG23	1.82	0.60
15:O:635:LEU:HD21	17:Q:52:ARG:HG3	1.82	0.60
1:A:154:CYS:HB2	1:A:157:CYS:SG	2.37	0.60
3:C:275:VAL:O	3:C:277:ARG:NH2	2.34	0.60
4:D:117:LYS:HE3	4:D:119:GLU:HG3	1.83	0.60
1:A:200:GLU:HG2	15:O:515:LYS:HB3	1.83	0.60
2:B:806:ILE:HD12	2:B:829:LEU:HD21	1.84	0.60
17:Q:54:LEU:O	17:Q:55:ALA:C	2.44	0.60
2:B:112:LEU:HD21	2:B:127:ALA:HB2	1.83	0.60
15:O:166:LEU:HB3	15:O:169:LEU:HD11	1.83	0.60
4:D:7:ARG:HH22	17:Q:104:GLY:H	1.47	0.59
1:A:1148:ASP:O	1:A:1291:ARG:NH1	2.35	0.59
2:B:723:THR:HA	2:B:790:LYS:HG2	1.84	0.59
13:M:96:LEU:HG	13:M:98:GLY:H	1.67	0.59
1:A:406:GLU:OE2	1:A:412:ASN:ND2	2.36	0.59
1:A:567:LYS:NZ	8:H:120:GLY:O	2.35	0.59
15:O:264:THR:OG1	15:O:273:ILE:O	2.21	0.59
1:A:988:ASP:HB3	1:A:991:LYS:HD2	1.85	0.59
4:D:123:ILE:HG22	4:D:137:ILE:HD13	1.84	0.59
15:O:603:LEU:HD21	15:O:630:VAL:HG11	1.85	0.59
2:B:658:TYR:HB3	2:B:670:MET:HA	1.85	0.59
1:A:233:GLN:OE1	15:O:575:ASN:ND2	2.36	0.59
6:F:137:TYR:HD1	6:F:143:PHE:HB3	1.67	0.59
1:A:913:GLN:NE2	1:A:1360:ASP:OD2	2.36	0.59
5:E:181:ALA:HA	5:E:186:LEU:HD23	1.85	0.59
9:I:28:SER:O	13:M:185:TYR:OH	2.21	0.59
15:O:491:VAL:HG11	15:O:650:VAL:HG11	1.84	0.58
1:A:1175:ASP:HB2	1:A:1264:ARG:HD2	1.85	0.58
2:B:326:ALA:HA	2:B:330:THR:HB	1.84	0.58
1:A:630:ASN:ND2	1:A:650:GLY:O	2.36	0.58
3:C:31:TRP:HB2	11:K:82:LYS:HD3	1.85	0.58
3:C:138:VAL:HG11	3:C:162:VAL:HG22	1.86	0.58
15:O:53:VAL:HG21	15:O:65:ILE:HG13	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:P:222:LEU:HD21	16:P:237:PRO:HA	1.85	0.58
1:A:17:GLU:HG2	1:A:1405:LYS:HG3	1.85	0.58
1:A:412:ASN:HB3	6:F:115:THR:HB	1.84	0.58
1:A:731:VAL:HG11	1:A:849:ARG:HE	1.69	0.58
4:D:117:LYS:HG3	17:Q:107:ARG:HD3	1.86	0.58
1:A:862:LEU:HD13	2:B:494:PHE:HD2	1.68	0.58
4:D:142:ASP:HA	4:D:146:ASP:HB2	1.84	0.58
7:G:94:ALA:HA	7:G:121:TYR:CE1	2.39	0.58
18:S:38:DA:H2"	18:S:39:DG:H8	1.69	0.58
1:A:1193:ILE:HD12	1:A:1200:LEU:HD21	1.85	0.57
13:M:71:ILE:N	14:N:365:VAL:O	2.36	0.57
13:M:101:PRO:O	14:N:411:ARG:NH1	2.36	0.57
6:F:137:TYR:CD1	6:F:143:PHE:HB3	2.40	0.57
1:A:1327:GLY:HA2	5:E:183:PRO:HD2	1.86	0.57
2:B:766:ASP:HA	2:B:770:ALA:HB3	1.86	0.57
3:C:34:GLU:O	3:C:38:LYS:NZ	2.36	0.57
3:C:128:ASP:O	3:C:175:GLN:NE2	2.37	0.57
15:O:60:ARG:NE	17:Q:74:SER:O	2.38	0.57
2:B:566:ARG:HH21	14:N:282:LEU:HD21	1.69	0.57
1:A:707:ASN:HD21	2:B:1008:ILE:HD11	1.69	0.57
3:C:19:ASP:OD1	11:K:82:LYS:NZ	2.37	0.57
13:M:248:ALA:HB3	14:N:407:GLU:HG3	1.87	0.57
18:S:38:DA:H2"	18:S:39:DG:C8	2.39	0.57
4:D:36:ALA:O	4:D:41:ARG:NE	2.37	0.57
1:A:897:SER:HB3	1:A:1423:ILE:HG22	1.85	0.57
2:B:313:ARG:HH11	2:B:317:LEU:H	1.53	0.57
15:O:489:SER:OG	15:O:512:ARG:NH1	2.37	0.57
15:O:120:TYR:OH	17:Q:135:GLU:OE2	2.21	0.56
15:O:589:LEU:HD21	15:O:641:LEU:HD22	1.87	0.56
1:A:201:TRP:HA	1:A:204:VAL:HG12	1.86	0.56
15:O:356:THR:HB	15:O:359:LEU:HG	1.86	0.56
18:S:45:DG:H2"	18:S:46:DC:H5"	1.86	0.56
15:O:197:MET:HE3	15:O:286:ARG:HH21	1.69	0.56
1:A:974:LEU:HD13	1:A:998:TYR:HB3	1.86	0.56
2:B:535:VAL:HG13	14:N:310:PRO:HB3	1.87	0.56
6:F:85:MET:HE2	6:F:90:ARG:HA	1.86	0.56
5:E:124:VAL:HA	5:E:132:ILE:HD11	1.87	0.56
5:E:180:ARG:NH1	5:E:215:MET:O	2.38	0.56
7:G:125:GLU:O	7:G:126:SER:C	2.49	0.56
9:I:12:LEU:HB3	9:I:24:LEU:HD11	1.87	0.56
3:C:55:ASP:N	3:C:55:ASP:OD1	2.37	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:277:ARG:HB2	3:C:280:LEU:HD12	1.88	0.56
15:O:175:LEU:HD22	15:O:184:LYS:HG2	1.88	0.56
2:B:351:MET:HE1	2:B:550:HIS:HE1	1.71	0.56
2:B:778:ILE:O	2:B:784:ARG:NH2	2.38	0.56
5:E:124:VAL:HG13	5:E:132:ILE:HG13	1.88	0.56
15:O:248:ASP:OD1	15:O:248:ASP:N	2.38	0.56
2:B:501:ASP:OD2	2:B:513:ASN:ND2	2.38	0.55
15:O:494:TYR:OH	16:P:251:ASP:OD2	2.22	0.55
3:C:236:LEU:HD23	3:C:236:LEU:H	1.71	0.55
6:F:135:ARG:HG2	6:F:145:ASP:OD1	2.07	0.55
15:O:221:LYS:O	15:O:225:ASN:ND2	2.39	0.55
1:A:128:ARG:NH2	1:A:240:GLU:OE1	2.39	0.55
15:O:192:VAL:HG13	15:O:262:ILE:HD11	1.88	0.55
2:B:442:TRP:HB2	2:B:451:ARG:HG3	1.88	0.55
7:G:207:LEU:HD23	7:G:210:TRP:CD1	2.42	0.55
2:B:795:LEU:HB2	2:B:894:ALA:HB3	1.89	0.55
14:N:363:ILE:HG12	14:N:373:VAL:HG12	1.87	0.55
15:O:631:ASN:HB3	17:Q:159:VAL:HG13	1.88	0.55
19:T:22:DC:H42	20:R:8:G:H22	1.55	0.55
1:A:1101:GLY:HA2	1:A:1104:MET:HE2	1.88	0.55
3:C:248:GLN:HA	3:C:256:ILE:HD11	1.88	0.55
10:J:36:LEU:HD11	10:J:51:LEU:HB2	1.89	0.55
2:B:541:ILE:HD12	2:B:544:ILE:HD11	1.89	0.55
7:G:50:ASP:OD2	7:G:73:ARG:NH2	2.40	0.55
2:B:928:GLN:HG3	2:B:939:VAL:HG21	1.88	0.54
5:E:13:TRP:NE1	5:E:37:LEU:O	2.40	0.54
15:O:80:VAL:HG13	15:O:86:MET:HB2	1.89	0.54
15:O:645:LEU:HA	15:O:648:TRP:HD1	1.72	0.54
2:B:739:LYS:HG3	2:B:977:THR:HG21	1.89	0.54
1:A:1373:ARG:HD2	1:A:1391:LYS:HG3	1.89	0.54
15:O:73:ARG:HG2	15:O:119:TYR:HB3	1.87	0.54
19:T:22:DC:H2"	19:T:23:DT:H5"	1.89	0.54
1:A:1327:GLY:HA3	5:E:184:VAL:HG23	1.89	0.54
2:B:810:ARG:NH2	2:B:868:GLU:OE1	2.36	0.54
2:B:841:ILE:HG13	2:B:872:ILE:HG12	1.89	0.54
3:C:113:LEU:HD21	3:C:132:ILE:HG13	1.89	0.54
17:Q:52:ARG:NH1	17:Q:157:ASP:OD2	2.40	0.54
1:A:1254:ASN:OD1	9:I:27:ARG:NH1	2.40	0.54
5:E:19:VAL:HG11	5:E:80:VAL:HG11	1.90	0.54
7:G:207:LEU:HG	7:G:209:SER:H	1.72	0.54
13:M:266:LYS:HD3	13:M:268:LEU:HD23	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:Q:54:LEU:O	17:Q:57:LYS:N	2.40	0.54
1:A:582:MET:HE3	1:A:703:ARG:HB2	1.89	0.54
1:A:887:ARG:NH2	1:A:1389:PHE:O	2.40	0.54
7:G:49:TYR:HB2	7:G:75:VAL:HG23	1.88	0.54
15:O:540:LEU:O	15:O:545:SER:OG	2.25	0.54
1:A:110:CYS:HB3	1:A:157:CYS:HB3	1.90	0.54
1:A:251:GLY:HA2	1:A:1403:MET:HE1	1.90	0.54
1:A:841:THR:O	1:A:844:SER:OG	2.21	0.54
2:B:583:LYS:HE2	13:M:278:ILE:HG22	1.88	0.54
5:E:102:GLU:OE2	5:E:103:LYS:NZ	2.37	0.54
15:O:231:PRO:O	15:O:232:LEU:C	2.47	0.54
15:O:233:SER:O	15:O:237:LYS:N	2.34	0.54
2:B:566:ARG:HD2	14:N:387:GLU:HA	1.89	0.54
1:A:471:VAL:HB	1:A:528:ARG:HG3	1.90	0.54
2:B:251:ILE:HG21	2:B:305:ILE:HD13	1.89	0.54
2:B:738:THR:HG22	2:B:740:THR:H	1.73	0.54
4:D:137:ILE:HG23	4:D:138:VAL:HG13	1.90	0.54
5:E:55:ARG:HB3	5:E:82:PHE:HB2	1.90	0.54
7:G:94:ALA:HA	7:G:121:TYR:CD1	2.42	0.54
1:A:379:THR:HG22	2:B:1035:MET:HA	1.90	0.53
15:O:154:GLN:HE22	17:Q:155:ASN:HB2	1.73	0.53
1:A:830:ARG:NH2	2:B:655:ASN:O	2.40	0.53
5:E:76:GLY:N	5:E:106:GLN:OE1	2.38	0.53
7:G:16:ASP:N	7:G:16:ASP:OD1	2.40	0.53
13:M:113:LYS:HD2	13:M:116:SER:HB2	1.88	0.53
13:M:119:TRP:HH2	14:N:399:ILE:HD11	1.74	0.53
1:A:848:VAL:HG13	1:A:860:GLU:HB3	1.91	0.53
7:G:122:THR:HG23	7:G:127:ALA:H	1.72	0.53
1:A:168:ALA:HB3	1:A:174:ALA:HB1	1.90	0.53
17:Q:126:PRO:HG3	17:Q:146:LYS:HG2	1.90	0.53
2:B:98:ILE:HG13	2:B:131:VAL:HG12	1.91	0.53
2:B:502:THR:O	2:B:503:PRO:C	2.52	0.53
4:D:17:LEU:HB2	4:D:66:LEU:HD23	1.90	0.53
15:O:517:VAL:HG22	15:O:522:ILE:HG12	1.90	0.53
1:A:625:ASN:ND2	1:A:656:GLY:H	2.06	0.53
3:C:92:ILE:HD11	10:J:2:ILE:HD11	1.90	0.53
4:D:46:GLN:HB3	4:D:48:ARG:HH11	1.74	0.53
7:G:152:ARG:HD3	7:G:197:LEU:HD12	1.90	0.53
2:B:197:GLN:HB2	2:B:378:GLU:HG3	1.90	0.53
2:B:1016:TYR:OH	3:C:8:GLU:O	2.23	0.53
1:A:480:LEU:HD22	1:A:1102:THR:HG21	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:825:ASP:OD1	1:A:845:LYS:NZ	2.36	0.53
2:B:930:ASP:OD1	3:C:69:ARG:NH1	2.35	0.53
5:E:52:ARG:HD2	5:E:53:PRO:HD2	1.90	0.53
15:O:131:LEU:HD22	15:O:645:LEU:HD21	1.91	0.53
15:O:140:ILE:HG13	15:O:160:VAL:HG21	1.89	0.53
1:A:652:VAL:HG21	1:A:668:VAL:HG21	1.91	0.53
1:A:873:VAL:HG22	2:B:508:CYS:O	2.09	0.53
2:B:483:VAL:HG22	18:S:36:DG:OP1	2.09	0.53
2:B:1095:CYS:HB2	2:B:1107:CYS:SG	2.48	0.53
1:A:410:ARG:HB3	1:A:458:ILE:HD11	1.91	0.53
2:B:57:LEU:HD11	2:B:516:LEU:HD23	1.91	0.53
13:M:132:ASN:ND2	13:M:135:LYS:HB2	2.20	0.53
15:O:492:TYR:CZ	15:O:573:SER:HB3	2.43	0.53
2:B:137:ARG:HH11	2:B:138:GLY:H	1.57	0.52
7:G:89:ILE:HB	7:G:143:ASN:H	1.74	0.52
3:C:131:THR:HG22	3:C:209:ILE:HG22	1.91	0.52
17:Q:129:LEU:O	17:Q:137:TYR:OH	2.25	0.52
1:A:165:LYS:NZ	18:S:43:DG:OP1	2.43	0.52
2:B:221:THR:O	2:B:222:SER:C	2.53	0.52
8:H:12:VAL:HG22	8:H:53:ASP:H	1.73	0.52
1:A:1196:LEU:HB3	1:A:1198:LEU:HD13	1.90	0.52
2:B:514:LEU:HD22	2:B:518:THR:HG21	1.92	0.52
4:D:117:LYS:HD2	4:D:118:ALA:N	2.24	0.52
10:J:41:LEU:HD22	10:J:46:CYS:HB3	1.91	0.52
1:A:815:GLN:HG3	1:A:817:ILE:HG23	1.91	0.52
2:B:1047:THR:HG22	2:B:1127:LEU:HD22	1.90	0.52
16:P:213:LYS:HE2	16:P:215:TYR:HE2	1.73	0.52
17:Q:53:SER:O	17:Q:54:LEU:C	2.52	0.52
15:O:58:GLY:HA3	17:Q:73:GLY:HA2	1.92	0.52
1:A:1130:ILE:HD11	1:A:1358:LEU:HD21	1.92	0.52
1:A:1367:GLU:OE1	1:A:1367:GLU:N	2.43	0.52
7:G:131:PRO:HA	7:G:136:THR:HA	1.91	0.52
13:M:76:LEU:HD22	14:N:363:ILE:HG13	1.92	0.52
1:A:1172:TYR:CE2	1:A:1187:ARG:HB3	2.45	0.52
7:G:84:ILE:HG12	7:G:147:ARG:HE	1.75	0.52
1:A:180:HIS:HB3	1:A:220:ASP:HB3	1.92	0.51
1:A:473:LEU:HD23	1:A:485:ILE:HD11	1.92	0.51
1:A:531:ALA:HB2	2:B:1078:LEU:HD13	1.92	0.51
4:D:147:GLU:HG2	4:D:148:LYS:H	1.75	0.51
15:O:233:SER:HB3	15:O:236:LYS:HE2	1.90	0.51
15:O:374:LEU:HD22	15:O:376:LEU:HB2	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:892:SER:HB2	1:A:1371:ILE:HG23	1.91	0.51
15:O:628:LYS:HD3	17:Q:160:PHE:HD2	1.75	0.51
1:A:512:PHE:HB2	2:B:768:GLU:O	2.10	0.51
1:A:1431:VAL:HG21	6:F:135:ARG:HE	1.74	0.51
7:G:26:ILE:HD11	7:G:68:ILE:HD12	1.92	0.51
1:A:1326:LEU:HD23	5:E:144:ILE:HD12	1.92	0.51
2:B:64:SER:HB3	2:B:379:LEU:HD12	1.92	0.51
2:B:913:SER:HB2	2:B:1027:LEU:HD11	1.92	0.51
3:C:278:GLU:OE2	3:C:281:ARG:NH2	2.41	0.51
3:C:333:ILE:HA	11:K:47:ILE:HG22	1.92	0.51
2:B:1064:GLU:OE1	2:B:1064:GLU:N	2.39	0.51
15:O:144:MET:HE2	15:O:156:VAL:HG21	1.91	0.51
1:A:37:ARG:HG3	1:A:294:TRP:HB2	1.93	0.51
1:A:954:LEU:HD11	1:A:1064:GLU:HB2	1.93	0.51
1:A:16:LEU:HD11	1:A:1417:LEU:HD11	1.92	0.51
9:I:48:ARG:NH1	9:I:49:LYS:O	2.44	0.51
4:D:7:ARG:HG3	7:G:3:ILE:HG12	1.93	0.51
1:A:583:MET:HB3	1:A:700:LEU:HB2	1.93	0.51
2:B:157:ARG:HH22	2:B:171:MET:HE1	1.76	0.51
4:D:35:ALA:HA	4:D:39:LYS:HB2	1.92	0.51
7:G:52:LEU:O	7:G:71:THR:OG1	2.27	0.51
1:A:1329:GLU:OE2	5:E:212:ARG:NE	2.37	0.51
2:B:776:SER:HA	3:C:217:ALA:HB2	1.93	0.51
13:M:85:LEU:HA	14:N:398:SER:HA	1.92	0.51
1:A:1059:LEU:HD11	8:H:112:ILE:HG21	1.92	0.50
3:C:26:ASP:OD1	3:C:26:ASP:N	2.40	0.50
7:G:51:LEU:HD12	7:G:72:PHE:HB3	1.93	0.50
7:G:124:GLU:O	7:G:125:GLU:C	2.55	0.50
13:M:122:ASP:HB3	13:M:145:VAL:HG21	1.93	0.50
14:N:375:ILE:HG22	14:N:376:GLY:H	1.75	0.50
15:O:493:GLU:OE1	15:O:509:ARG:NH2	2.44	0.50
20:R:6:G:H2'	20:R:7:A:C8	2.46	0.50
9:I:32:GLU:HG3	9:I:33:PHE:H	1.75	0.50
13:M:159:TYR:HB3	13:M:170:LEU:HD22	1.93	0.50
15:O:312:TYR:OH	15:O:467:PHE:O	2.26	0.50
1:A:890:MET:HE3	1:A:894:GLU:HG3	1.93	0.50
18:S:41:DA:H2"	18:S:42:DG:H5"	1.92	0.50
4:D:132:VAL:HG21	7:G:211:TRP:CD1	2.46	0.50
13:M:74:PHE:HB3	14:N:363:ILE:O	2.11	0.50
15:O:547:GLU:HB3	15:O:567:ARG:HG3	1.94	0.50
1:A:389:ILE:HD11	1:A:691:ALA:HA	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1360:ASP:O	1:A:1364:TYR:HB3	2.12	0.50
1:A:1431:VAL:HG21	6:F:135:ARG:NE	2.26	0.50
1:A:585:ASP:OD2	1:A:699:LYS:NZ	2.43	0.50
14:N:395:ILE:HA	14:N:411:ARG:HA	1.94	0.50
1:A:521:VAL:O	1:A:523:GLN:NE2	2.43	0.50
2:B:802:THR:HG23	2:B:863:GLN:HG2	1.93	0.50
3:C:157:TYR:HB2	3:C:160:ALA:HB2	1.93	0.50
15:O:220:GLU:C	15:O:222:HIS:H	2.20	0.50
1:A:504:VAL:HG23	1:A:551:ILE:HD13	1.93	0.50
1:A:638:SER:HB2	1:A:641:LEU:HG	1.93	0.50
2:B:901:ARG:NH1	3:C:95:GLU:OE1	2.45	0.50
4:D:104:ALA:HA	4:D:107:MET:HG3	1.93	0.50
7:G:39:ILE:HB	7:G:42:VAL:HG12	1.94	0.50
3:C:215:ASP:OD1	12:L:70:ARG:NH1	2.45	0.50
8:H:112:ILE:HG13	8:H:130:ARG:HH22	1.77	0.50
19:T:1:DC:H2"	19:T:2:DG:C8	2.47	0.50
1:A:737:LYS:O	1:A:740:GLU:HG3	2.11	0.49
1:A:832:LEU:HD21	1:A:862:LEU:HD22	1.93	0.49
1:A:1051:ASN:OD1	1:A:1052:VAL:N	2.46	0.49
2:B:240:ILE:HG21	2:B:353:THR:HG23	1.94	0.49
5:E:21:GLU:OE2	5:E:143:ASN:ND2	2.44	0.49
6:F:76:LYS:NZ	6:F:150:GLU:OE1	2.45	0.49
7:G:104:ILE:HG22	7:G:105:PHE:HD1	1.77	0.49
13:M:113:LYS:HZ3	13:M:115:LYS:HG2	1.76	0.49
1:A:800:LYS:HE3	2:B:951:SER:HB3	1.92	0.49
1:A:959:ILE:HD12	1:A:1067:VAL:HG21	1.95	0.49
1:A:1134:LYS:HA	1:A:1320:LEU:HD12	1.93	0.49
2:B:778:ILE:HG23	2:B:906:PRO:HD2	1.94	0.49
2:B:1149:GLN:NE2	6:F:71:GLU:OE2	2.44	0.49
3:C:101:ILE:HG12	3:C:193:LEU:HD21	1.94	0.49
5:E:64:PRO:HB3	5:E:75:MET:HE3	1.94	0.49
15:O:328:ASP:C	15:O:330:LEU:H	2.20	0.49
5:E:178:ILE:HB	5:E:212:ARG:HD3	1.94	0.49
3:C:195:LYS:NZ	10:J:58:GLU:OE2	2.38	0.49
2:B:769:ASP:OD1	2:B:952:ARG:NH2	2.42	0.49
3:C:80:ALA:HA	3:C:208:CYS:HA	1.93	0.49
2:B:233:VAL:HG12	2:B:233:VAL:O	2.13	0.49
7:G:158:VAL:HG22	7:G:160:PRO:HD3	1.93	0.49
1:A:180:HIS:CE1	1:A:182:THR:HG23	2.48	0.49
2:B:208:GLU:HG2	2:B:369:ARG:HD2	1.95	0.49
3:C:1:MET:N	3:C:4:ILE:O	2.46	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:15:VAL:HG22	8:H:26:ILE:HG22	1.94	0.49
1:A:486:LEU:HB2	1:A:508:TYR:OH	2.13	0.49
1:A:1425:THR:O	6:F:92:ARG:NH1	2.46	0.49
3:C:132:ILE:HD13	3:C:184:VAL:HG11	1.94	0.49
5:E:167:ARG:HH21	5:E:168:TYR:HE1	1.60	0.49
18:S:51:DC:H2"	18:S:52:DG:C8	2.48	0.49
19:T:21:DC:H2"	19:T:22:DC:O5'	2.12	0.49
1:A:1408:VAL:HG12	1:A:1413:GLU:HB3	1.93	0.49
2:B:94:LYS:HB3	2:B:134:GLU:HB2	1.95	0.49
2:B:775:LYS:HB2	2:B:925:ILE:HG22	1.95	0.49
15:O:509:ARG:HD2	16:P:249:TYR:HA	1.95	0.49
16:P:250:ASP:N	16:P:250:ASP:OD1	2.45	0.49
1:A:222:LEU:HD23	1:A:226:LYS:HD2	1.94	0.48
1:A:978:ASP:OD1	1:A:979:ASN:N	2.42	0.48
2:B:617:ASP:N	2:B:617:ASP:OD1	2.45	0.48
7:G:166:ARG:O	7:G:169:GLU:HG3	2.13	0.48
4:D:117:LYS:HD2	4:D:118:ALA:H	1.77	0.48
5:E:5:ASN:HD21	5:E:52:ARG:HG2	1.78	0.48
7:G:124:GLU:C	7:G:125:GLU:HG3	2.39	0.48
15:O:372:ALA:HA	15:O:448:HIS:CE1	2.48	0.48
2:B:742:GLU:OE2	2:B:975:TYR:OH	2.30	0.48
8:H:101:ALA:HB2	8:H:116:TYR:CE1	2.48	0.48
12:L:44:ASP:OD1	12:L:45:ALA:N	2.43	0.48
15:O:384:LYS:HG2	16:P:208:TYR:CZ	2.48	0.48
2:B:615:VAL:HG12	2:B:620:SER:HA	1.94	0.48
13:M:147:THR:O	13:M:182:PHE:N	2.41	0.48
15:O:100:GLN:HE21	17:Q:132:PHE:HZ	1.62	0.48
1:A:1143:ALA:HB3	1:A:1293:LEU:HG	1.95	0.48
1:A:1177:TYR:CE1	9:I:14:ILE:HG13	2.49	0.48
1:A:1228:ASP:N	1:A:1228:ASP:OD1	2.45	0.48
3:C:116:VAL:HG23	3:C:130:ASN:HD21	1.77	0.48
7:G:99:VAL:HG13	7:G:108:ILE:HB	1.94	0.48
7:G:102:LEU:HD23	7:G:102:LEU:H	1.78	0.48
1:A:121:ARG:NH2	15:O:121:TYR:OH	2.46	0.48
1:A:205:LEU:HD13	1:A:212:GLU:HG2	1.95	0.48
1:A:1428:PHE:CZ	6:F:89:GLU:HA	2.48	0.48
2:B:1084:MET:HG3	2:B:1122:PRO:HG3	1.95	0.48
4:D:110:LEU:HD13	4:D:120:LYS:HB3	1.95	0.48
1:A:1207:VAL:HG22	1:A:1211:ARG:HE	1.79	0.48
7:G:122:THR:OG1	7:G:124:GLU:O	2.29	0.48
1:A:48:PRO:HB2	1:A:56:PRO:HD3	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:667:VAL:HG22	2:B:670:MET:HE3	1.95	0.48
3:C:113:LEU:HD11	3:C:132:ILE:HD11	1.96	0.48
4:D:50:TYR:OH	7:G:28:HIS:ND1	2.44	0.48
5:E:18:THR:HG23	5:E:143:ASN:HB3	1.96	0.48
1:A:22:SER:HB3	1:A:250:SER:HA	1.94	0.48
1:A:1050:ASP:HA	1:A:1053:LYS:HD2	1.96	0.47
1:A:1441:LEU:HG	7:G:52:LEU:HA	1.95	0.47
2:B:843:ILE:HB	2:B:871:VAL:HB	1.96	0.47
2:B:848:PRO:HG3	2:B:866:TYR:HE1	1.79	0.47
2:B:786:GLU:OE2	2:B:788:ARG:NE	2.47	0.47
1:A:1211:ARG:O	1:A:1214:LYS:NZ	2.42	0.47
15:O:495:VAL:HG21	15:O:647:LEU:HD21	1.96	0.47
15:O:527:LEU:HG	16:P:246:VAL:HG21	1.96	0.47
16:P:254:GLU:HB3	16:P:262:ARG:O	2.14	0.47
17:Q:55:ALA:O	17:Q:58:TYR:N	2.39	0.47
1:A:22:SER:HB2	15:O:41:THR:HG21	1.96	0.47
2:B:610:ARG:NH2	2:B:674:GLU:OE2	2.48	0.47
15:O:322:LYS:HG2	15:O:358:GLY:HA3	1.96	0.47
2:B:234:ILE:HG21	2:B:243:LYS:HE2	1.95	0.47
2:B:1093:ASP:HB3	2:B:1116:ILE:HG23	1.96	0.47
4:D:50:TYR:CE2	4:D:52:HIS:HB2	2.49	0.47
8:H:60:ALA:O	8:H:141:TYR:HB2	2.14	0.47
1:A:538:LYS:HB3	1:A:687:PRO:HB2	1.96	0.47
1:A:1028:MET:HG2	1:A:1048:VAL:HG11	1.95	0.47
1:A:1392:THR:OG1	1:A:1393:THR:N	2.47	0.47
2:B:73:LEU:HD12	2:B:98:ILE:HD13	1.96	0.47
2:B:767:ILE:HG22	2:B:768:GLU:HG3	1.97	0.47
3:C:229:LEU:HD13	3:C:295:ARG:HA	1.97	0.47
7:G:112:GLN:HA	7:G:115:LEU:HD22	1.96	0.47
7:G:97:ILE:HB	7:G:128:TRP:HE1	1.79	0.47
2:B:240:ILE:HG22	2:B:253:ILE:HG13	1.97	0.47
2:B:295:ILE:HG12	9:I:28:SER:OG	2.15	0.47
1:A:108:LYS:HD3	1:A:180:HIS:CE1	2.50	0.47
1:A:593:PRO:HD3	1:A:612:LEU:HD21	1.97	0.47
3:C:19:ASP:O	11:K:82:LYS:NZ	2.41	0.47
13:M:110:ALA:HB2	13:M:247:TRP:NE1	2.30	0.47
1:A:95:TYR:OH	2:B:1136:ASN:O	2.28	0.46
2:B:167:ASP:OD1	2:B:167:ASP:N	2.48	0.46
7:G:63:ASP:OD2	7:G:65:SER:OG	2.25	0.46
14:N:307:PHE:CE1	14:N:416:ILE:HD12	2.50	0.46
16:P:198:PHE:HE1	16:P:205:ASN:HD22	1.61	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:303:LEU:HD22	15:O:538:ALA:HB1	1.97	0.46
1:A:1170:ALA:HB3	9:I:46:LEU:HD22	1.97	0.46
2:B:914:SER:HB3	2:B:918:GLN:HB2	1.96	0.46
8:H:6:PHE:HB3	8:H:59:ILE:HB	1.98	0.46
1:A:1136:ILE:HG12	1:A:1318:HIS:HD2	1.80	0.46
2:B:219:SER:HA	2:B:232:TYR:HA	1.97	0.46
2:B:240:ILE:HG13	2:B:286:ASN:ND2	2.30	0.46
8:H:3:ASN:ND2	8:H:62:SER:O	2.42	0.46
1:A:1178:LYS:N	1:A:1181:LEU:O	2.49	0.46
1:A:1460:ASN:HB3	4:D:114:LYS:HD3	1.97	0.46
2:B:1003:MET:HE1	3:C:293:ARG:HD2	1.96	0.46
4:D:59:THR:HA	4:D:62:VAL:HG12	1.97	0.46
6:F:79:ARG:HG2	6:F:144:GLU:HB3	1.97	0.46
13:M:76:LEU:HD13	14:N:363:ILE:HD11	1.97	0.46
15:O:268:LYS:HG3	15:O:269:THR:HG23	1.97	0.46
1:A:1300:LEU:HD22	1:A:1316:THR:HG22	1.96	0.46
2:B:382:GLN:O	2:B:386:LEU:HG	2.16	0.46
2:B:629:LYS:HB3	2:B:634:GLU:HG3	1.98	0.46
16:P:192:PRO:HG2	16:P:206:VAL:HG23	1.97	0.46
1:A:727:LYS:HG3	1:A:777:VAL:HG21	1.98	0.46
1:A:1453:ASN:ND2	1:A:1453:ASN:O	2.49	0.46
5:E:117:THR:HG22	5:E:119:SER:H	1.81	0.46
1:A:599:LYS:HB3	1:A:600:PRO:HD3	1.97	0.46
1:A:959:ILE:HG23	1:A:1067:VAL:HG21	1.97	0.46
2:B:45:TRP:HB2	2:B:676:GLU:OE1	2.15	0.46
2:B:612:LEU:HD12	2:B:649:LEU:HD12	1.97	0.46
2:B:938:ILE:HD11	10:J:43:ARG:HB3	1.98	0.46
3:C:255:VAL:HG12	3:C:256:ILE:HG23	1.96	0.46
4:D:11:LEU:HD11	4:D:15:GLU:HB2	1.98	0.46
8:H:43:ASN:OD1	8:H:44:VAL:N	2.49	0.46
8:H:132:LEU:HD23	8:H:132:LEU:H	1.79	0.46
15:O:370:LEU:HG	15:O:371:PRO:HD2	1.98	0.46
15:O:380:LEU:HD11	16:P:209:ALA:HA	1.98	0.46
1:A:432:TYR:HB2	1:A:463:GLU:HG3	1.97	0.46
1:A:897:SER:OG	1:A:899:GLN:OE1	2.33	0.46
3:C:1:MET:N	3:C:1:MET:SD	2.88	0.46
4:D:29:TRP:CZ2	4:D:50:TYR:HB3	2.51	0.46
1:A:1035:PRO:HG2	1:A:1040:GLN:HE22	1.81	0.46
3:C:55:ASP:CG	3:C:299:ILE:HG22	2.40	0.46
14:N:302:GLU:HG3	14:N:410:GLY:HA3	1.98	0.46
15:O:106:TYR:HA	15:O:120:TYR:HA	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:P:190:THR:HG21	16:P:263:VAL:HG12	1.98	0.46
1:A:1332:ARG:NH1	5:E:200:ARG:HD3	2.31	0.46
1:A:1429:LYS:HB2	6:F:135:ARG:HB2	1.98	0.46
2:B:1088:ASP:OD1	2:B:1088:ASP:N	2.48	0.45
5:E:180:ARG:HH12	5:E:192:ARG:HH11	1.64	0.45
13:M:273:LYS:C	14:N:377:ASN:HD21	2.24	0.45
16:P:213:LYS:HE2	16:P:215:TYR:CE2	2.50	0.45
1:A:882:THR:HB	1:A:1102:THR:HG22	1.98	0.45
3:C:86:PHE:HE1	12:L:64:LEU:HD12	1.81	0.45
7:G:3:ILE:HG23	7:G:76:VAL:HG23	1.98	0.45
15:O:52:LEU:HD11	15:O:131:LEU:HG	1.97	0.45
15:O:71:LEU:HB2	15:O:74:LEU:HD21	1.97	0.45
1:A:1332:ARG:NE	1:A:1360:ASP:OD1	2.37	0.45
2:B:335:LEU:HD21	2:B:560:THR:HG21	1.98	0.45
2:B:929:GLU:HB2	3:C:69:ARG:HG2	1.98	0.45
4:D:71:ASN:HB3	7:G:208:VAL:HG21	1.99	0.45
15:O:636:ASN:HB3	15:O:640:ARG:NH1	2.32	0.45
1:A:105:GLY:HA2	1:A:148:CYS:SG	2.56	0.45
1:A:1139:PRO:HG3	1:A:1298:TYR:CZ	2.50	0.45
2:B:681:LEU:HB3	2:B:685:ALA:HB3	1.97	0.45
9:I:26:CYS:C	9:I:29:CYS:SG	2.98	0.45
15:O:628:LYS:NZ	17:Q:160:PHE:O	2.41	0.45
2:B:1131:GLU:O	2:B:1134:SER:OG	2.29	0.45
15:O:599:ASN:OD1	15:O:626:GLN:NE2	2.50	0.45
1:A:66:GLU:HG2	1:A:71:HIS:HA	1.99	0.45
1:A:381:ILE:HD13	1:A:517:MET:HE3	1.99	0.45
2:B:251:ILE:H	2:B:251:ILE:HD12	1.81	0.45
8:H:36:CYS:HA	8:H:126:GLU:O	2.17	0.45
15:O:317:ARG:NH1	15:O:320:GLU:OE1	2.50	0.45
16:P:183:TRP:HE1	16:P:267:SER:HB3	1.82	0.45
1:A:388:SER:OG	1:A:695:ASN:ND2	2.49	0.45
1:A:721:ASP:OD1	1:A:721:ASP:N	2.48	0.45
2:B:54:VAL:HG23	2:B:55:LYS:HG3	1.99	0.45
2:B:1106:TRP:HE3	2:B:1113:ALA:HB2	1.82	0.45
15:O:644:LEU:HG	17:Q:43:ILE:HD12	1.99	0.45
17:Q:34:THR:C	17:Q:36:PHE:H	2.25	0.45
1:A:351:ARG:CZ	1:A:356:ARG:HG2	2.47	0.45
1:A:351:ARG:HG2	1:A:356:ARG:HG3	1.99	0.45
1:A:417:GLN:HB2	1:A:453:ALA:HB1	1.99	0.45
2:B:123:MET:O	2:B:189:GLY:N	2.49	0.45
2:B:295:ILE:HD11	9:I:10:ASN:HD22	1.81	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:93:TYR:CD2	8:H:145:ARG:HG3	2.51	0.45
13:M:114:PRO:C	13:M:116:SER:H	2.24	0.45
15:O:645:LEU:HA	15:O:648:TRP:CD1	2.51	0.45
1:A:184:ARG:NH1	18:S:43:DG:OP2	2.38	0.45
2:B:75:LYS:O	2:B:78:LYS:HG3	2.17	0.45
2:B:228:LYS:HG3	2:B:447:PHE:CE1	2.52	0.45
3:C:125:LYS:HE3	3:C:126:PHE:CE1	2.52	0.45
15:O:341:GLU:O	15:O:344:SER:HB3	2.17	0.45
1:A:1021:ASN:HA	1:A:1024:LYS:HG2	1.99	0.44
2:B:968:VAL:HG21	10:J:48:ARG:HB3	1.99	0.44
5:E:62:ALA:HB3	5:E:78:LEU:HD21	1.99	0.44
1:A:90:VAL:HG21	1:A:323:VAL:HG11	1.99	0.44
8:H:56:THR:HB	8:H:145:ARG:HB2	1.99	0.44
15:O:649:GLU:O	15:O:653:MET:HG3	2.17	0.44
2:B:257:LEU:HD13	2:B:268:ILE:HD12	1.99	0.44
2:B:525:GLU:HB3	2:B:528:PRO:HD2	1.99	0.44
2:B:1010:GLY:HA3	3:C:65:ASN:HB2	1.99	0.44
4:D:95:ILE:HA	4:D:98:MET:HE3	1.99	0.44
1:A:384:ASP:HB2	1:A:499:ARG:HB3	1.98	0.44
1:A:528:ARG:NH1	6:F:116:ASP:OD1	2.43	0.44
3:C:164:ALA:HB2	3:C:191:ILE:HB	1.99	0.44
10:J:2:ILE:HG22	10:J:3:VAL:H	1.82	0.44
13:M:131:TYR:OH	13:M:143:VAL:O	2.27	0.44
19:T:9:DT:H2"	19:T:10:DC:H5"	1.98	0.44
2:B:104:SER:OG	2:B:105:SER:N	2.49	0.44
2:B:620:SER:OG	2:B:621:ARG:N	2.51	0.44
2:B:833:GLY:N	2:B:881:ILE:O	2.34	0.44
2:B:888:VAL:HG13	12:L:46:VAL:HG11	1.99	0.44
7:G:112:GLN:CD	7:G:112:GLN:H	2.26	0.44
11:K:60:SER:HA	11:K:106:GLN:HA	2.00	0.44
15:O:335:LEU:HG	15:O:336:LEU:O	2.18	0.44
15:O:517:VAL:HG23	15:O:521:ILE:HB	2.00	0.44
1:A:427:HIS:CE1	1:A:492:ILE:HG13	2.52	0.44
1:A:1150:ASP:N	1:A:1150:ASP:OD1	2.51	0.44
2:B:60:GLN:CD	2:B:60:GLN:H	2.25	0.44
5:E:187:TYR:HD1	5:E:188:LEU:HD12	1.81	0.44
19:T:14:DC:C6	19:T:15:DT:H72	2.53	0.44
1:A:22:SER:C	1:A:24:ALA:H	2.25	0.44
2:B:540:ASP:HB2	2:B:543:LEU:HD13	2.00	0.44
3:C:140:CYS:HB2	3:C:196:LEU:HG	2.00	0.44
4:D:139:GLU:OE2	17:Q:107:ARG:NH1	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:45:CYS:HA	7:G:76:VAL:HG12	2.00	0.44
15:O:336:LEU:HD23	15:O:337:GLN:N	2.33	0.44
1:A:888:ARG:HH22	1:A:1127:LYS:HG3	1.82	0.44
1:A:1104:MET:HE3	1:A:1123:VAL:HG22	1.98	0.44
2:B:99:ARG:HH12	2:B:104:SER:HA	1.83	0.44
4:D:43:LYS:HD2	4:D:46:GLN:HA	1.99	0.44
7:G:119:CYS:HB3	7:G:128:TRP:HE3	1.83	0.44
13:M:170:LEU:HD21	14:N:307:PHE:CD2	2.52	0.44
19:T:4:DT:H2"	19:T:5:DC:O5'	2.18	0.44
1:A:888:ARG:HH12	1:A:1131:ASN:HD21	1.65	0.44
2:B:553:TYR:CD1	2:B:568:PRO:HG3	2.53	0.44
3:C:333:ILE:HA	11:K:47:ILE:CG2	2.48	0.44
6:F:97:ARG:HA	6:F:97:ARG:HD2	1.76	0.44
1:A:15:GLY:HA2	1:A:1408:VAL:HG22	1.99	0.43
2:B:462:SER:HB2	2:B:709:ALA:O	2.18	0.43
2:B:614:ILE:HD13	2:B:614:ILE:HA	1.86	0.43
2:B:690:TYR:HB3	2:B:693:HIS:HD2	1.82	0.43
8:H:48:PRO:HG2	8:H:146:ARG:HH22	1.82	0.43
16:P:192:PRO:HA	16:P:208:TYR:CZ	2.53	0.43
16:P:296:TYR:HA	16:P:299:MET:HE2	2.00	0.43
1:A:436:ARG:HD3	1:A:459:GLY:HA3	2.00	0.43
2:B:791:THR:HB	2:B:898:VAL:HG13	1.99	0.43
3:C:5:VAL:HG13	3:C:293:ARG:HB2	2.00	0.43
3:C:223:SER:OG	3:C:224:THR:N	2.51	0.43
6:F:144:GLU:H	6:F:144:GLU:HG2	1.48	0.43
16:P:244:CYS:O	16:P:248:VAL:HG23	2.18	0.43
1:A:13:ILE:HG21	1:A:1417:LEU:HD13	2.00	0.43
1:A:27:VAL:HG21	15:O:37:LEU:HD21	2.00	0.43
7:G:89:ILE:HG22	7:G:142:VAL:HG13	2.00	0.43
14:N:384:LYS:HA	14:N:384:LYS:HD3	1.84	0.43
15:O:73:ARG:HG3	15:O:121:TYR:CZ	2.54	0.43
1:A:382:SER:O	1:A:499:ARG:HA	2.19	0.43
1:A:967:LEU:HD21	1:A:1008:LEU:HD13	2.01	0.43
1:A:1431:VAL:HG13	7:G:57:GLY:O	2.18	0.43
2:B:540:ASP:OD1	2:B:540:ASP:N	2.51	0.43
4:D:154:LEU:HA	4:D:157:ILE:HG22	2.00	0.43
8:H:11:GLN:CD	8:H:52:GLN:HE22	2.25	0.43
16:P:183:TRP:HB2	16:P:247:LEU:HD21	2.00	0.43
9:I:44:LYS:HG2	9:I:46:LEU:HD12	1.99	0.43
10:J:11:GLY:O	10:J:12:LYS:C	2.60	0.43
12:L:48:CYS:SG	12:L:49:LYS:N	2.91	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1218:GLN:O	1:A:1259:ARG:NH2	2.52	0.43
4:D:70:LYS:NZ	4:D:127:LEU:H	2.16	0.43
7:G:203:ASP:HB2	7:G:211:TRP:NE1	2.34	0.43
15:O:307:VAL:HG11	15:O:379:SER:HB2	2.01	0.43
15:O:484:MET:HB2	15:O:485:PRO:HD3	2.01	0.43
15:O:497:ALA:HB2	15:O:505:MET:HB2	2.00	0.43
1:A:1143:ALA:O	1:A:1292:GLU:HB2	2.19	0.43
2:B:347:LEU:HD13	2:B:541:ILE:HD11	2.00	0.43
5:E:120:ALA:O	5:E:124:VAL:HG23	2.18	0.43
1:A:564:ILE:O	1:A:606:GLY:HA3	2.18	0.43
2:B:244:HIS:HB3	2:B:247:ILE:HG13	2.00	0.43
2:B:1097:LYS:O	2:B:1142:ARG:NH1	2.51	0.43
5:E:61:GLN:HB2	5:E:79:TRP:HE3	1.84	0.43
13:M:85:LEU:HB2	14:N:397:LEU:O	2.19	0.43
1:A:123:PHE:HB3	1:A:144:ILE:HD11	1.99	0.43
2:B:904:ARG:HH12	2:B:1032:LEU:HB3	1.84	0.43
3:C:174:ARG:HH21	3:C:178:THR:HG21	1.84	0.43
4:D:107:MET:SD	4:D:108:THR:N	2.92	0.43
7:G:191:PRO:HG2	7:G:192:PRO:HD3	2.01	0.43
1:A:91:PHE:CD2	1:A:224:PRO:HG3	2.53	0.43
1:A:1222:VAL:HG13	1:A:1230:ILE:HG23	2.00	0.43
2:B:581:THR:HG23	2:B:583:LYS:HG2	1.99	0.43
9:I:14:ILE:HG12	9:I:24:LEU:HD13	2.00	0.43
15:O:30:ASP:O	15:O:34:ILE:HG12	2.19	0.43
15:O:456:HIS:O	15:O:459:ILE:HG22	2.19	0.43
1:A:217:ARG:HH12	15:O:552:PRO:HG2	1.83	0.42
1:A:1451:LEU:HG	4:D:107:MET:HB3	2.00	0.42
4:D:43:LYS:HB2	4:D:46:GLN:HA	2.01	0.42
14:N:301:PRO:HD2	14:N:303:ARG:HE	1.84	0.42
16:P:305:HIS:O	16:P:305:HIS:ND1	2.52	0.42
1:A:905:ARG:NH1	1:A:909:ASN:OD1	2.38	0.42
15:O:469:ASN:HB3	15:O:477:TYR:CE1	2.54	0.42
16:P:172:ILE:O	16:P:176:ASN:N	2.39	0.42
1:A:19:SER:O	2:B:1138:ALA:N	2.47	0.42
1:A:37:ARG:NH2	17:Q:25:TYR:OH	2.53	0.42
1:A:556:ASP:HA	1:A:559:THR:HB	2.00	0.42
1:A:960:MET:HE2	1:A:960:MET:HA	2.01	0.42
1:A:1097:ILE:HD13	1:A:1358:LEU:HD22	2.02	0.42
1:A:1305:CYS:O	5:E:14:ARG:NH2	2.53	0.42
2:B:218:ALA:HB2	2:B:356:VAL:CG2	2.49	0.42
2:B:332:ILE:HB	2:B:345:LYS:HE2	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:31:ASN:O	7:G:35:ALA:HB2	2.19	0.42
1:A:567:LYS:HD3	8:H:20:TYR:CE2	2.54	0.42
1:A:606:GLY:HA2	1:A:609:VAL:HG12	2.02	0.42
1:A:1441:LEU:HD21	7:G:54:VAL:H	1.84	0.42
2:B:579:ARG:HA	2:B:584:VAL:HG22	2.01	0.42
2:B:797:ARG:HG2	2:B:803:GLN:HG2	2.01	0.42
2:B:1004:LEU:HB2	2:B:1013:LEU:HD12	2.02	0.42
4:D:117:LYS:HB3	4:D:119:GLU:HG3	2.00	0.42
5:E:48:ASP:OD1	5:E:52:ARG:N	2.41	0.42
7:G:86:THR:HG22	7:G:147:ARG:HG2	2.01	0.42
15:O:98:LEU:O	15:O:103:CYS:N	2.42	0.42
1:A:1271:VAL:HG21	1:A:1276:PRO:HB3	2.02	0.42
5:E:20:LYS:NZ	5:E:34:GLU:O	2.41	0.42
2:B:521:THR:HG22	2:B:587:PHE:CD1	2.53	0.42
2:B:638:ASP:O	2:B:642:LYS:HG2	2.20	0.42
3:C:31:TRP:HB2	11:K:82:LYS:HB3	2.02	0.42
15:O:102:ARG:NH2	15:O:282:ILE:O	2.49	0.42
1:A:33:GLU:HB2	1:A:83:HIS:CE1	2.55	0.42
1:A:869:ARG:HD2	2:B:489:LEU:HB2	2.02	0.42
1:A:1293:LEU:H	1:A:1293:LEU:HD23	1.85	0.42
3:C:133:VAL:HB	3:C:172:GLN:HE22	1.85	0.42
6:F:72:LYS:HE3	6:F:72:LYS:HB3	1.90	0.42
8:H:89:LEU:HG	8:H:90:ALA:H	1.85	0.42
1:A:501:ASN:O	1:A:504:VAL:HG12	2.20	0.42
3:C:308:MET:SD	3:C:316:LYS:NZ	2.81	0.42
4:D:7:ARG:NH2	17:Q:104:GLY:H	2.15	0.42
5:E:55:ARG:NH1	5:E:113:GLN:OE1	2.50	0.42
13:M:165:ASP:HB2	13:M:167:GLN:NE2	2.35	0.42
1:A:874:ASP:HA	1:A:877:VAL:HG12	2.02	0.42
1:A:1026:ARG:NH1	8:H:110:ASP:OD1	2.53	0.42
1:A:1304:MET:HE1	1:A:1326:LEU:HD21	2.02	0.42
2:B:101:GLY:HA3	2:B:109:LYS:HE3	2.00	0.42
2:B:247:ILE:HD13	2:B:305:ILE:HD11	2.02	0.42
10:J:14:VAL:HG21	10:J:49:MET:HG2	2.02	0.42
14:N:304:PHE:CE2	14:N:409:LEU:HB3	2.55	0.42
15:O:342:ALA:O	15:O:345:PHE:HB2	2.19	0.42
16:P:245:GLU:O	16:P:248:VAL:HB	2.20	0.42
17:Q:132:PHE:CG	17:Q:140:MET:HE1	2.55	0.42
19:T:1:DC:H6	19:T:1:DC:H2'	1.70	0.42
1:A:644:GLU:OE1	1:A:644:GLU:N	2.50	0.42
13:M:95:ARG:HH21	14:N:394:VAL:H	1.68	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1187:ARG:HB2	1:A:1229:ARG:HG2	2.02	0.41
1:A:1373:ARG:HD3	1:A:1390:GLU:OE2	2.20	0.41
2:B:1101:MET:HE1	2:B:1126:LYS:HG2	2.02	0.41
3:C:59:ILE:HG13	3:C:298:PHE:HE2	1.84	0.41
13:M:164:LYS:HE3	13:M:255:PHE:HB3	2.01	0.41
1:A:468:ASP:N	1:A:468:ASP:OD1	2.52	0.41
1:A:625:ASN:HD21	1:A:656:GLY:H	1.65	0.41
2:B:529:ILE:HD12	2:B:603:THR:HG21	2.03	0.41
2:B:541:ILE:HD12	2:B:541:ILE:HA	1.86	0.41
2:B:660:ALA:HB2	2:B:670:MET:SD	2.60	0.41
5:E:39:LEU:HG	5:E:43:LYS:HE3	2.01	0.41
5:E:68:SER:OG	5:E:75:MET:HE1	2.20	0.41
5:E:127:ILE:HD13	5:E:127:ILE:HA	1.95	0.41
5:E:192:ARG:NH1	5:E:215:MET:O	2.53	0.41
13:M:162:PHE:HB3	14:N:304:PHE:CD1	2.54	0.41
1:A:790:ALA:HB3	1:A:791:PRO:HD3	2.02	0.41
3:C:197:ARG:HB3	3:C:198:PRO:HD2	2.01	0.41
4:D:138:VAL:HG23	4:D:141:CYS:HB2	2.02	0.41
13:M:119:TRP:CH2	14:N:399:ILE:HD11	2.53	0.41
15:O:640:ARG:HH21	17:Q:44:ASN:HB3	1.85	0.41
17:Q:66:LYS:HG2	17:Q:71:TYR:HE1	1.85	0.41
18:S:38:DA:H1'	18:S:39:DG:C8	2.56	0.41
18:S:46:DC:H2"	18:S:47:DA:C8	2.56	0.41
1:A:794:MET:SD	2:B:950:PRO:HG3	2.60	0.41
1:A:1110:HIS:CE1	1:A:1113:GLY:H	2.38	0.41
1:A:1260:MET:HE2	1:A:1260:MET:HB3	1.85	0.41
1:A:1307:ASP:N	1:A:1307:ASP:OD1	2.53	0.41
2:B:124:THR:HG23	2:B:187:VAL:HA	2.02	0.41
2:B:324:ILE:HD13	13:M:234:HIS:ND1	2.35	0.41
2:B:351:MET:HE1	2:B:550:HIS:CE1	2.52	0.41
2:B:614:ILE:HD11	2:B:647:GLU:CD	2.45	0.41
3:C:135:SER:HB2	3:C:170:GLU:OE2	2.20	0.41
3:C:216:HIS:CD2	12:L:70:ARG:HD3	2.55	0.41
3:C:269:ASP:OD1	3:C:269:ASP:N	2.53	0.41
4:D:52:HIS:HB3	4:D:55:LEU:HB3	2.01	0.41
4:D:54:GLU:OE1	7:G:37:LYS:NZ	2.53	0.41
15:O:367:ALA:HB2	15:O:453:ILE:HD12	2.02	0.41
16:P:268:ILE:HD12	16:P:271:MET:HG3	2.02	0.41
1:A:26:ILE:HG12	1:A:262:PRO:HG3	2.02	0.41
2:B:915:ARG:NH2	2:B:960:GLU:OE2	2.41	0.41
7:G:122:THR:O	7:G:126:SER:HA	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:5:CYS:CB	9:I:26:CYS:SG	2.79	0.41
15:O:54:LYS:HA	15:O:58:GLY:O	2.20	0.41
15:O:632:GLU:O	15:O:636:ASN:ND2	2.35	0.41
1:A:888:ARG:NH2	1:A:1127:LYS:HG3	2.36	0.41
2:B:105:SER:O	2:B:107:SER:N	2.48	0.41
2:B:1098:CYS:O	2:B:1100:LEU:N	2.46	0.41
11:K:88:PHE:HB3	11:K:106:GLN:HB2	2.02	0.41
12:L:-898:UNK:O	12:L:-896:UNK:N	2.53	0.41
14:N:311:THR:HG22	14:N:312:ARG:H	1.84	0.41
15:O:495:VAL:HG11	15:O:577:MET:HE1	2.03	0.41
1:A:409:THR:C	1:A:411:TYR:H	2.28	0.41
1:A:1460:ASN:HB3	4:D:114:LYS:HB3	2.03	0.41
2:B:77:ILE:HG13	2:B:98:ILE:HB	2.01	0.41
2:B:234:ILE:HD11	2:B:236:LYS:HB2	2.03	0.41
4:D:120:LYS:H	4:D:120:LYS:HG3	1.65	0.41
8:H:102:TYR:CD2	8:H:103:LYS:HG3	2.55	0.41
11:K:64:GLN:NE2	11:K:100:LEU:HD11	2.36	0.41
13:M:173:ILE:HG22	13:M:175:ARG:H	1.86	0.41
17:Q:53:SER:OG	17:Q:54:LEU:N	2.52	0.41
1:A:180:HIS:O	1:A:219:MET:HB3	2.21	0.41
1:A:476:ARG:HD2	1:A:517:MET:HE2	2.03	0.41
1:A:599:LYS:HB2	8:H:96:VAL:HB	2.02	0.41
1:A:625:ASN:HD22	1:A:655:ARG:HA	1.86	0.41
1:A:654:ILE:HG12	1:A:659:ILE:HA	2.02	0.41
1:A:882:THR:HG21	1:A:1102:THR:HA	2.01	0.41
2:B:579:ARG:NH2	2:B:653:GLU:OE2	2.53	0.41
16:P:209:ALA:HB3	16:P:212:VAL:HG13	2.02	0.41
1:A:714:ILE:HD12	1:A:714:ILE:HA	1.92	0.41
1:A:925:GLU:HG3	1:A:1081:ALA:HA	2.02	0.41
1:A:1187:ARG:HA	1:A:1229:ARG:HA	2.02	0.41
1:A:1384:LEU:HB2	1:A:1413:GLU:OE1	2.21	0.41
1:A:1451:LEU:HD21	4:D:110:LEU:HD12	2.03	0.41
2:B:102:LYS:HD2	2:B:106:SER:HB2	2.02	0.41
2:B:249:GLU:HG2	2:B:250:GLU:OE1	2.20	0.41
2:B:297:THR:HG23	2:B:300:GLN:H	1.86	0.41
2:B:572:VAL:HG21	2:B:592:SER:OG	2.21	0.41
11:K:109:GLY:C	11:K:110:GLU:HG2	2.44	0.41
13:M:182:PHE:HE2	13:M:184:LYS:HD3	1.86	0.41
14:N:287:HIS:ND1	14:N:371:LEU:HB2	2.36	0.41
14:N:306:VAL:HG13	14:N:415:LYS:HG3	2.03	0.41
15:O:370:LEU:HB3	15:O:448:HIS:CD2	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:544:ASN:HB3	15:O:572:HIS:HB3	2.03	0.41
1:A:107:CYS:C	1:A:108:LYS:HD2	2.46	0.41
2:B:538:VAL:HB	2:B:565:ILE:HB	2.01	0.41
4:D:26:LYS:HB3	4:D:26:LYS:HE2	1.88	0.41
7:G:93:THR:HG22	7:G:94:ALA:H	1.86	0.41
15:O:31:VAL:O	15:O:35:SER:OG	2.28	0.41
15:O:577:MET:HE2	15:O:577:MET:HB3	1.79	0.41
1:A:434:LEU:HD12	1:A:441:ARG:HG3	2.03	0.40
2:B:198:GLU:HG2	2:B:475:SER:HA	2.03	0.40
2:B:203:ASN:HB3	2:B:334:HIS:CE1	2.56	0.40
2:B:360:MET:HE2	2:B:360:MET:HB3	1.98	0.40
3:C:161:HIS:CE1	3:C:195:LYS:HE3	2.56	0.40
4:D:105:GLU:O	4:D:109:LYS:HG2	2.21	0.40
6:F:93:ILE:HD13	6:F:93:ILE:HA	1.96	0.40
8:H:90:ALA:HB1	8:H:96:VAL:HG21	2.02	0.40
15:O:370:LEU:HB3	15:O:448:HIS:HD2	1.86	0.40
1:A:403:THR:OG1	1:A:463:GLU:OE1	2.32	0.40
2:B:253:ILE:HD13	2:B:253:ILE:HA	1.78	0.40
3:C:127:THR:H	3:C:130:ASN:HB3	1.87	0.40
6:F:112:GLU:HG3	6:F:123:LYS:NZ	2.37	0.40
16:P:208:TYR:HB3	16:P:212:VAL:HG21	2.04	0.40
1:A:60:VAL:HG22	1:A:62:SER:H	1.87	0.40
1:A:162:GLY:HA3	1:A:181:ASP:O	2.21	0.40
1:A:422:ASN:ND2	1:A:428:PRO:O	2.54	0.40
2:B:265:ASP:HB3	9:I:10:ASN:HA	2.04	0.40
4:D:134:LEU:O	4:D:137:ILE:HG22	2.21	0.40
5:E:88:VAL:HB	5:E:116:ILE:HD13	2.02	0.40
10:J:65:PRO:HG2	10:J:66:LEU:HD12	2.03	0.40
13:M:256:LYS:HA	13:M:259:ILE:HG22	2.04	0.40
16:P:180:THR:O	16:P:184:ARG:HG3	2.21	0.40
16:P:196:LYS:H	16:P:196:LYS:HG2	1.67	0.40
17:Q:118:ILE:H	17:Q:118:ILE:HG12	1.64	0.40
1:A:623:VAL:HA	1:A:657:SER:HB2	2.03	0.40
2:B:271:LEU:HD22	2:B:347:LEU:HD21	2.02	0.40
2:B:735:MET:HE2	2:B:964:GLY:O	2.22	0.40
3:C:134:LEU:HD13	3:C:208:CYS:SG	2.62	0.40
10:J:56:LEU:HD23	10:J:56:LEU:HA	1.96	0.40
15:O:141:ILE:HD11	15:O:157:ALA:HB2	2.02	0.40
15:O:255:LYS:HB3	15:O:256:PRO:HD3	2.04	0.40
17:Q:132:PHE:CB	17:Q:140:MET:HE1	2.51	0.40
1:A:284:ASP:HB3	1:A:350:ILE:HG23	2.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1323:PHE:HB2	1:A:1331:ALA:HB2	2.04	0.40
1:A:1333:TYR:HD1	1:A:1333:TYR:HA	1.75	0.40
2:B:60:GLN:HB3	2:B:379:LEU:HD22	2.03	0.40
2:B:498:CYS:SG	2:B:682:GLY:N	2.78	0.40
2:B:587:PHE:O	2:B:607:ARG:NH2	2.49	0.40
2:B:842:TYR:HE2	2:B:873:TYR:HB2	1.86	0.40
2:B:1064:GLU:HA	2:B:1067:ARG:HG2	2.02	0.40
3:C:187:ALA:HB1	3:C:306:GLY:HA3	2.02	0.40
15:O:132:TYR:CE1	15:O:645:LEU:HD22	2.57	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1416/1460 (97%)	1323 (93%)	93 (7%)	0	100	100
2	B	1100/1149 (96%)	1016 (92%)	83 (8%)	1 (0%)	48	80
3	C	333/335 (99%)	304 (91%)	29 (9%)	0	100	100
4	D	139/161 (86%)	124 (89%)	15 (11%)	0	100	100
5	E	213/215 (99%)	201 (94%)	12 (6%)	0	100	100
6	F	81/155 (52%)	77 (95%)	4 (5%)	0	100	100
7	G	192/212 (91%)	167 (87%)	25 (13%)	0	100	100
8	H	134/146 (92%)	125 (93%)	9 (7%)	0	100	100
9	I	53/110 (48%)	45 (85%)	8 (15%)	0	100	100
10	J	65/70 (93%)	61 (94%)	4 (6%)	0	100	100
11	K	99/142 (70%)	91 (92%)	8 (8%)	0	100	100
12	L	42/76 (55%)	40 (95%)	2 (5%)	0	100	100
13	M	179/282 (64%)	161 (90%)	18 (10%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
14	N	101/422 (24%)	83 (82%)	18 (18%)	0	100	100
15	O	564/654 (86%)	533 (94%)	31 (6%)	0	100	100
16	P	133/317 (42%)	125 (94%)	8 (6%)	0	100	100
17	Q	115/251 (46%)	108 (94%)	7 (6%)	0	100	100
All	All	4959/6157 (80%)	4584 (92%)	374 (8%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	503	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	1230/1257 (98%)	1183 (96%)	47 (4%)	28	60
2	B	966/1006 (96%)	916 (95%)	50 (5%)	19	52
3	C	296/296 (100%)	286 (97%)	10 (3%)	32	63
4	D	131/145 (90%)	129 (98%)	2 (2%)	60	81
5	E	197/197 (100%)	194 (98%)	3 (2%)	60	81
6	F	73/137 (53%)	68 (93%)	5 (7%)	13	43
7	G	170/190 (90%)	161 (95%)	9 (5%)	19	52
8	H	121/128 (94%)	119 (98%)	2 (2%)	56	78
9	I	51/98 (52%)	50 (98%)	1 (2%)	50	75
10	J	62/65 (95%)	58 (94%)	4 (6%)	14	45
11	K	91/130 (70%)	89 (98%)	2 (2%)	47	73
12	L	39/57 (68%)	38 (97%)	1 (3%)	41	70
13	M	159/249 (64%)	157 (99%)	2 (1%)	65	83
14	N	88/360 (24%)	80 (91%)	8 (9%)	7	29

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
15	O	521/593 (88%)	501 (96%)	20 (4%)	28	60
16	P	127/285 (45%)	123 (97%)	4 (3%)	35	66
17	Q	105/212 (50%)	99 (94%)	6 (6%)	17	50
All	All	4427/5405 (82%)	4251 (96%)	176 (4%)	29	59

All (176) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	5	VAL
1	A	6	VAL
1	A	34	VAL
1	A	118	THR
1	A	119	ASP
1	A	182	THR
1	A	186	VAL
1	A	266	VAL
1	A	269	ARG
1	A	289	LEU
1	A	310	ASN
1	A	321	LEU
1	A	332	VAL
1	A	394	VAL
1	A	401	VAL
1	A	460	ASP
1	A	482	ARG
1	A	483	LEU
1	A	515	ASP
1	A	542	LEU
1	A	559	THR
1	A	623	VAL
1	A	682	LEU
1	A	705	LEU
1	A	813	VAL
1	A	818	ILE
1	A	843	GLN
1	A	862	LEU
1	A	889	LEU
1	A	912	VAL
1	A	933	VAL
1	A	960	MET
1	A	975	VAL

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Mol	Chain	Res	Type
1	A	1039	LEU
1	A	1120	THR
1	A	1121	LEU
1	A	1186	VAL
1	A	1202	ILE
1	A	1228	ASP
1	A	1256	VAL
1	A	1283	ILE
1	A	1333	TYR
1	A	1345	ASN
1	A	1346	HIS
1	A	1383	VAL
1	A	1391	LYS
1	A	1392	THR
2	B	102	LYS
2	B	103	LYS
2	B	106	SER
2	B	108	THR
2	B	109	LYS
2	B	156	LEU
2	B	193	VAL
2	B	207	VAL
2	B	212	LYS
2	B	215	ILE
2	B	217	GLN
2	B	219	SER
2	B	220	VAL
2	B	221	THR
2	B	224	THR
2	B	225	HIS
2	B	227	ARG
2	B	230	LYS
2	B	234	ILE
2	B	236	LYS
2	B	239	LYS
2	B	240	ILE
2	B	247	ILE
2	B	253	ILE
2	B	263	LEU
2	B	295	ILE
2	B	337	VAL
2	B	365	MET

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Mol	Chain	Res	Type
2	B	429	ILE
2	B	464	ILE
2	B	503	PRO
2	B	504	GLU
2	B	540	ASP
2	B	555	VAL
2	B	561	LEU
2	B	603	THR
2	B	802	THR
2	B	847	VAL
2	B	864	THR
2	B	898	VAL
2	B	901	ARG
2	B	921	VAL
2	B	935	ASP
2	B	962	ILE
2	B	1018	PHE
2	B	1046	LEU
2	B	1051	THR
2	B	1079	LEU
2	B	1120	THR
2	B	1127	LEU
3	C	5	VAL
3	C	26	ASP
3	C	55	ASP
3	C	89	THR
3	C	108	VAL
3	C	192	LEU
3	C	239	ILE
3	C	299	ILE
3	C	333	ILE
3	C	334	THR
4	D	52	HIS
4	D	132	VAL
5	E	92	THR
5	E	142	VAL
5	E	184	VAL
6	F	81	THR
6	F	82	THR
6	F	133	VAL
6	F	137	TYR
6	F	144	GLU

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Mol	Chain	Res	Type
7	G	16	ASP
7	G	22	THR
7	G	42	VAL
7	G	93	THR
7	G	99	VAL
7	G	108	ILE
7	G	110	ILE
7	G	122	THR
7	G	126	SER
8	H	32	THR
8	H	106	GLU
9	I	26	CYS
10	J	2	ILE
10	J	7	CYS
10	J	8	PHE
10	J	12	LYS
11	K	47	ILE
11	K	110	GLU
12	L	64	LEU
13	M	145	VAL
13	M	174	GLU
14	N	302	GLU
14	N	306	VAL
14	N	311	THR
14	N	378	VAL
14	N	381	ASP
14	N	389	THR
14	N	394	VAL
14	N	418	VAL
15	O	68	LEU
15	O	118	THR
15	O	131	LEU
15	O	191	PHE
15	O	307	VAL
15	O	331	THR
15	O	352	VAL
15	O	370	LEU
15	O	471	THR
15	O	478	VAL
15	O	507	LEU
15	O	528	MET
15	O	545	SER

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Mol	Chain	Res	Type
15	O	546	VAL
15	O	571	THR
15	O	577	MET
15	O	601	THR
15	O	624	LEU
15	O	648	TRP
15	O	650	VAL
16	P	212	VAL
16	P	233	VAL
16	P	243	LEU
16	P	250	ASP
17	Q	53	SER
17	Q	54	LEU
17	Q	57	LYS
17	Q	58	TYR
17	Q	118	ILE
17	Q	120	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (42) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	134	ASN
1	A	161	ASN
1	A	180	HIS
1	A	320	GLN
1	A	417	GLN
1	A	455	ASN
1	A	533	ASN
1	A	608	GLN
1	A	625	ASN
1	A	630	ASN
1	A	843	GLN
1	A	979	ASN
1	A	1040	GLN
1	A	1058	GLN
1	A	1174	GLN
1	A	1419	GLN
2	B	286	ASN
2	B	493	GLN
2	B	550	HIS
2	B	837	GLN
2	B	840	GLN

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Mol	Chain	Res	Type
2	B	936	GLN
2	B	1014	GLN
3	C	53	ASN
3	C	330	ASN
4	D	52	HIS
4	D	56	GLN
4	D	71	ASN
7	G	69	ASN
8	H	33	GLN
8	H	134	ASN
9	I	10	ASN
10	J	23	ASN
13	M	132	ASN
13	M	178	GLN
14	N	288	GLN
15	O	254	ASN
15	O	544	ASN
15	O	584	ASN
15	O	631	ASN
16	P	219	GLN
16	P	232	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
20	R	6/10 (60%)	4 (66%)	0

All (4) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
20	R	5	A
20	R	6	G
20	R	8	G
20	R	9	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 (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 10 ligands modelled in this entry, 7 are monoatomic - leaving 3 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	$\#|Z| > 2$
23	4QM	C	2001	-	30,30,30	0.40	0	47,48,48	0.58	0
23	4QM	I	2001	-	30,30,30	0.43	0	47,48,48	0.51	0
23	4QM	A	1504	-	30,30,30	0.41	0	47,48,48	0.60	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
23	4QM	C	2001	-	-	6/7/72/72	0/4/4/4
23	4QM	I	2001	-	-	7/7/72/72	0/4/4/4
23	4QM	A	1504	-	-	6/7/72/72	0/4/4/4

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
23	A	1504	4QM	C21-C20-C9-C5
23	A	1504	4QM	C21-C20-C9-C8
23	C	2001	4QM	C21-C20-C9-C5
23	A	1504	4QM	C22-C20-C9-C8

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Mol	Chain	Res	Type	Atoms
23	A	1504	4QM	C22-C20-C9-C5
23	A	1504	4QM	C21-C20-C22-C23
23	C	2001	4QM	C21-C20-C9-C8
23	C	2001	4QM	C22-C20-C9-C8
23	C	2001	4QM	C22-C20-C9-C5
23	C	2001	4QM	C21-C20-C22-C23
23	I	2001	4QM	C21-C20-C22-C23
23	C	2001	4QM	C9-C20-C22-C23
23	I	2001	4QM	C9-C20-C22-C23
23	A	1504	4QM	C9-C20-C22-C23
23	I	2001	4QM	C20-C22-C23-C24
23	I	2001	4QM	C22-C20-C9-C5
23	I	2001	4QM	C21-C20-C9-C5
23	I	2001	4QM	C21-C20-C9-C8
23	I	2001	4QM	C22-C20-C9-C8

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand 4QM C 2001

Bond lengths

Bond angles

Torsions

Rings

Ligand 4QM I 2001

Bond lengths

Bond angles

Torsions

Rings

Ligand 4QM A 1504
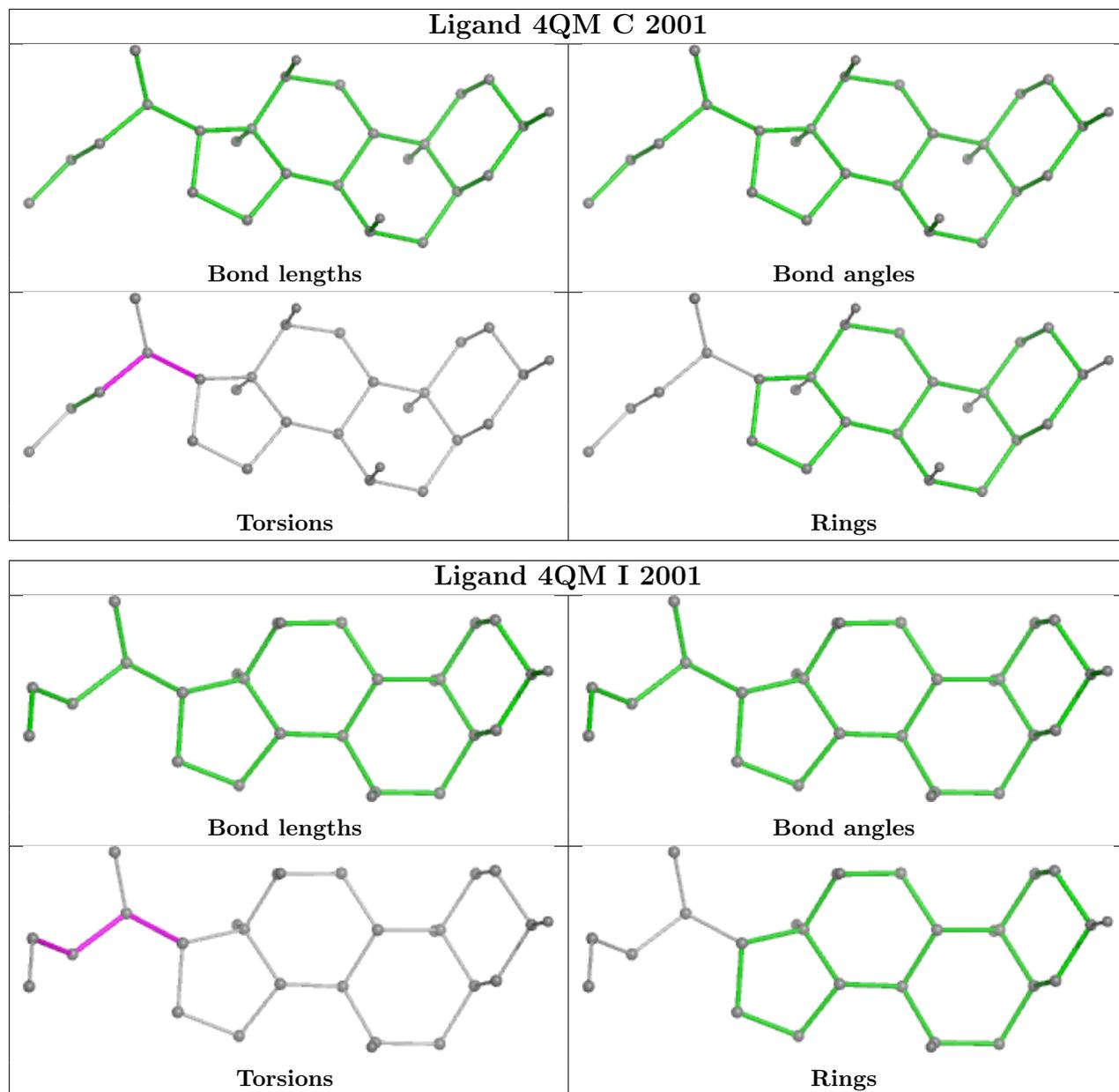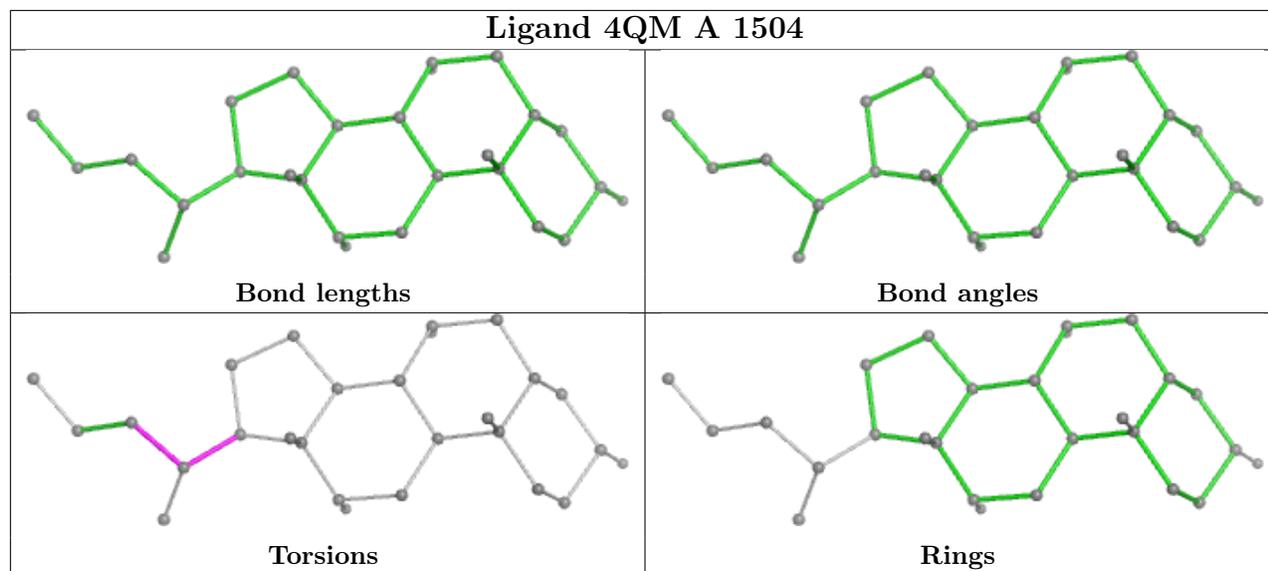
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-16299. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections ⓘ
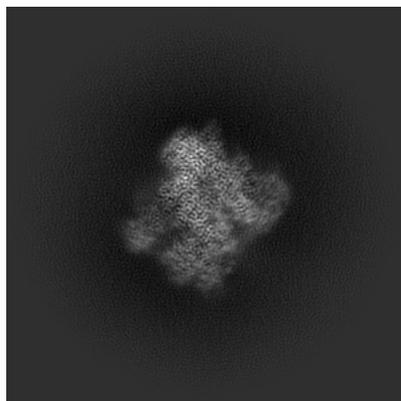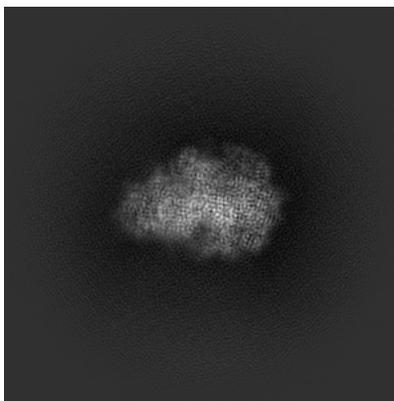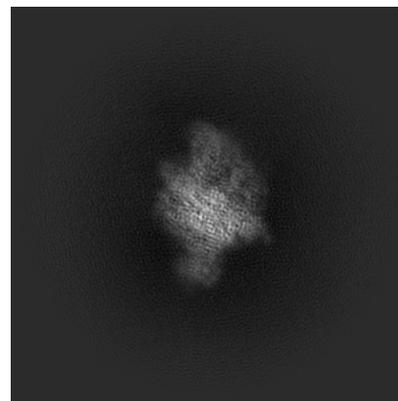
6.1.1 Primary map

| X | Y | Z |

6.1.2 Raw map

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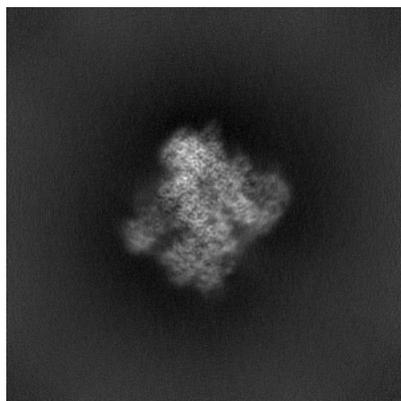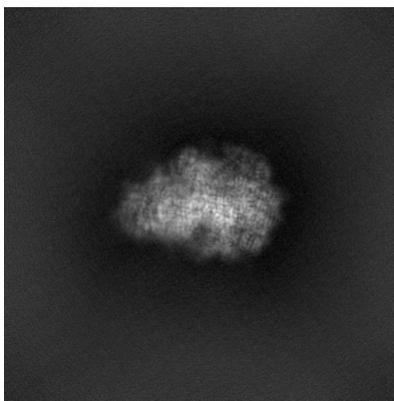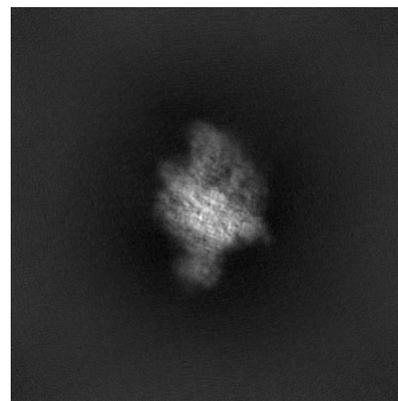
The images above show the map projected in three orthogonal directions.

6.2   Central slices ⓘ
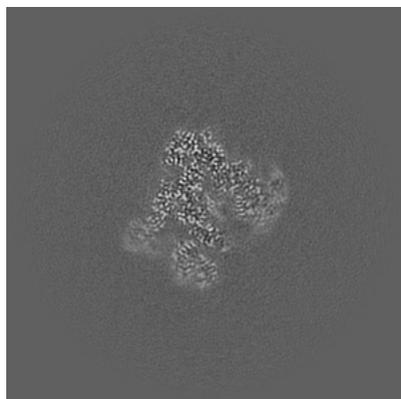
6.2.1   Primary map
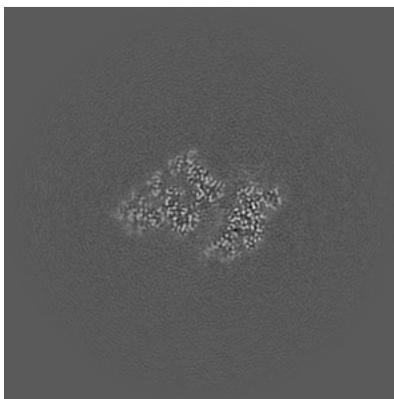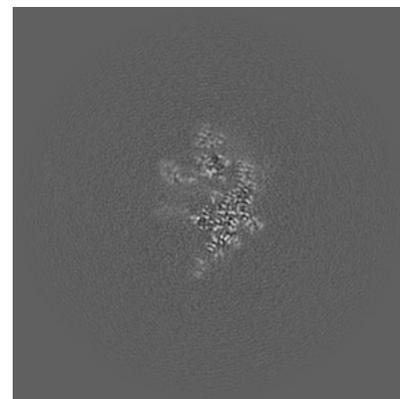
X Index: 250   Y Index: 250   Z Index: 250

6.2.2   Raw map
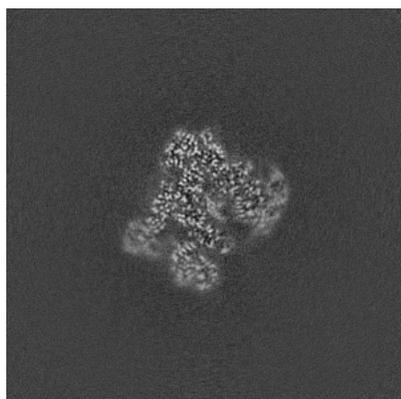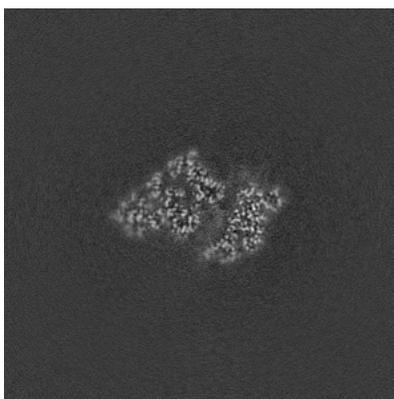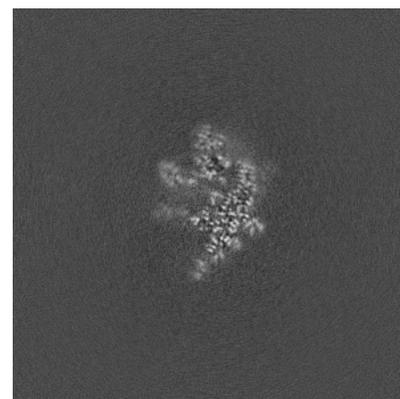
X Index: 250   Y Index: 250   Z Index: 250

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

6.3   Largest variance slices ⓘ

6.3.1   Primary map
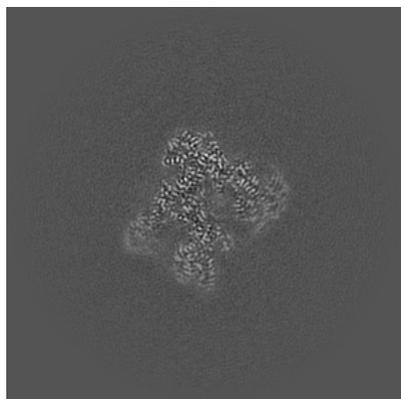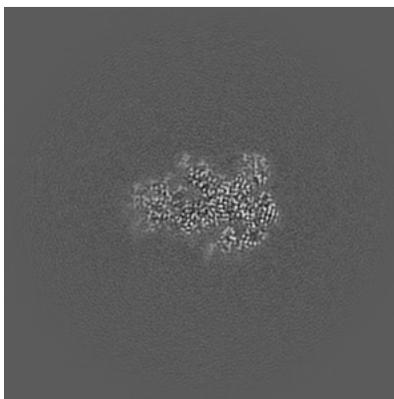
| X Index: 247 | Y Index: 234 | Z Index: 302 |
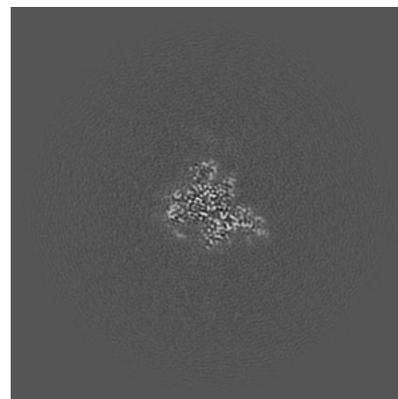
6.3.2   Raw map
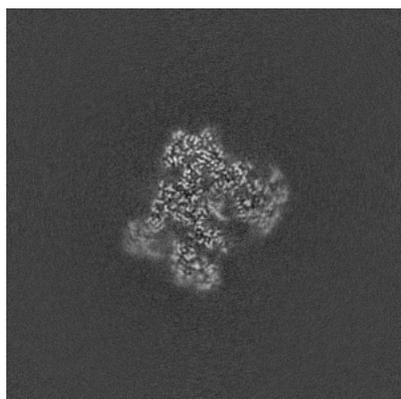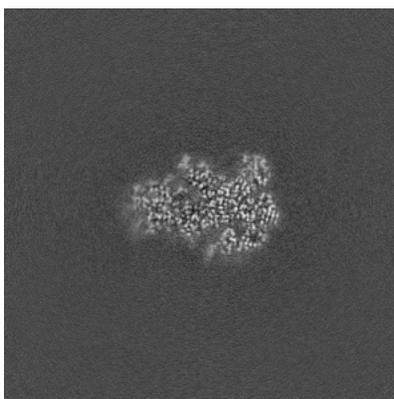
| X Index: 252 | Y Index: 234 | Z Index: 273 |
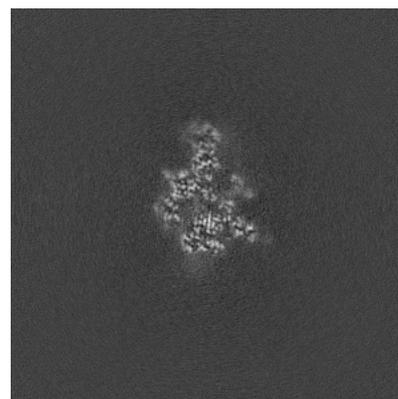
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map
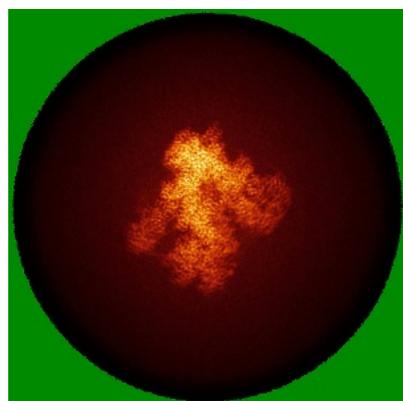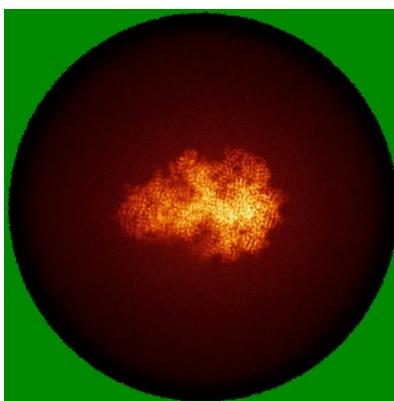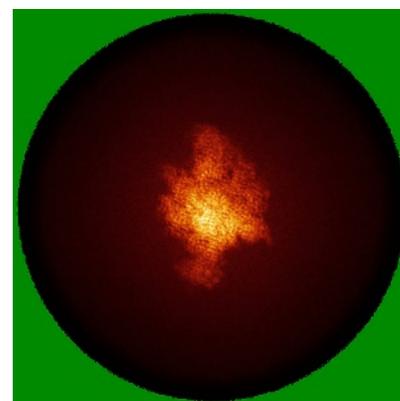
X Y Z

6.4.2 Raw map

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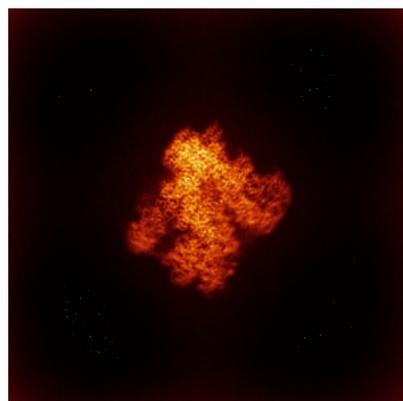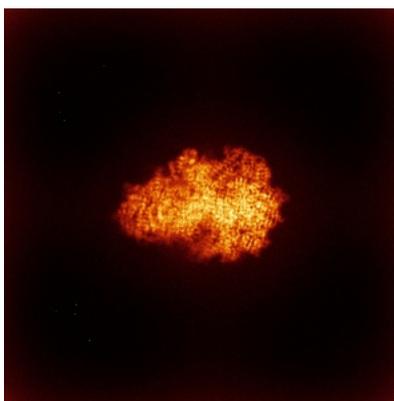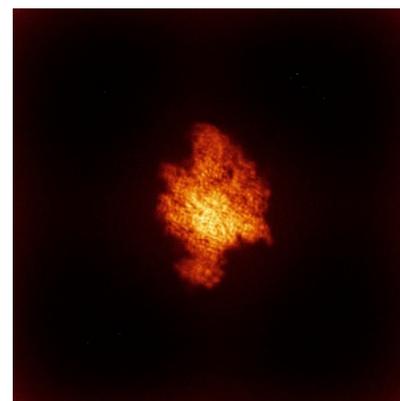
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

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 0.252. 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 |
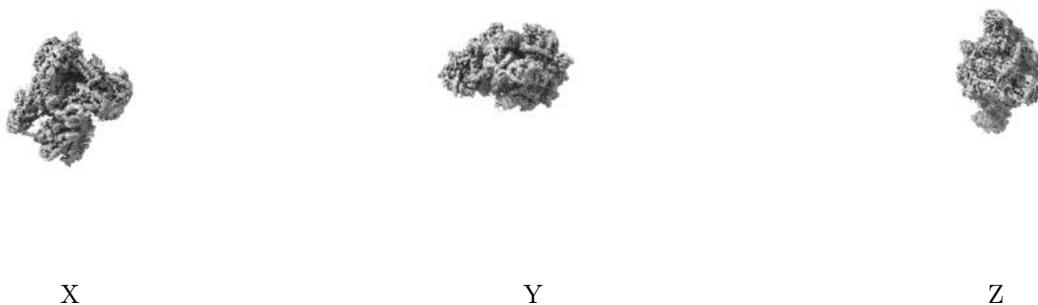
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

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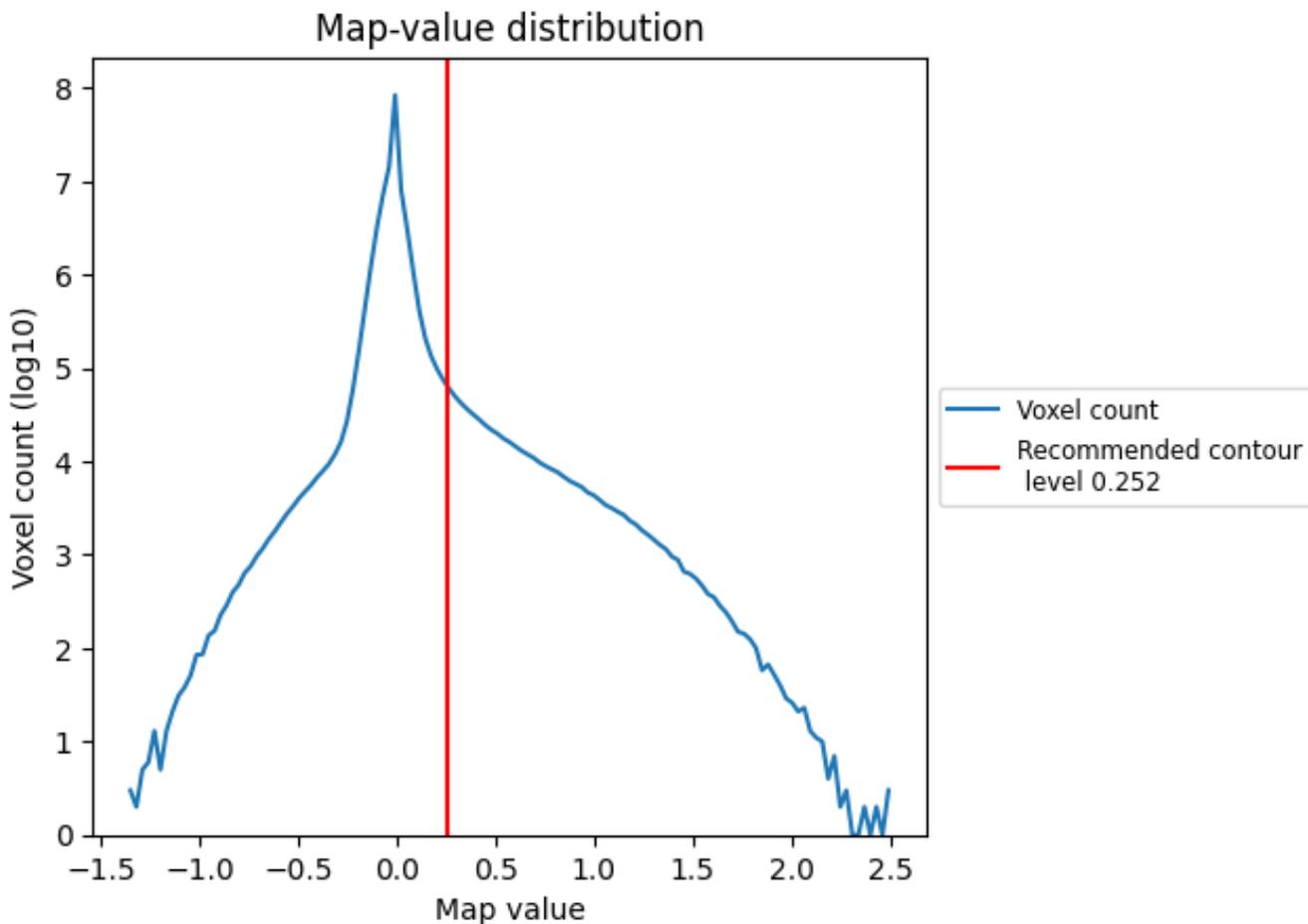
The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
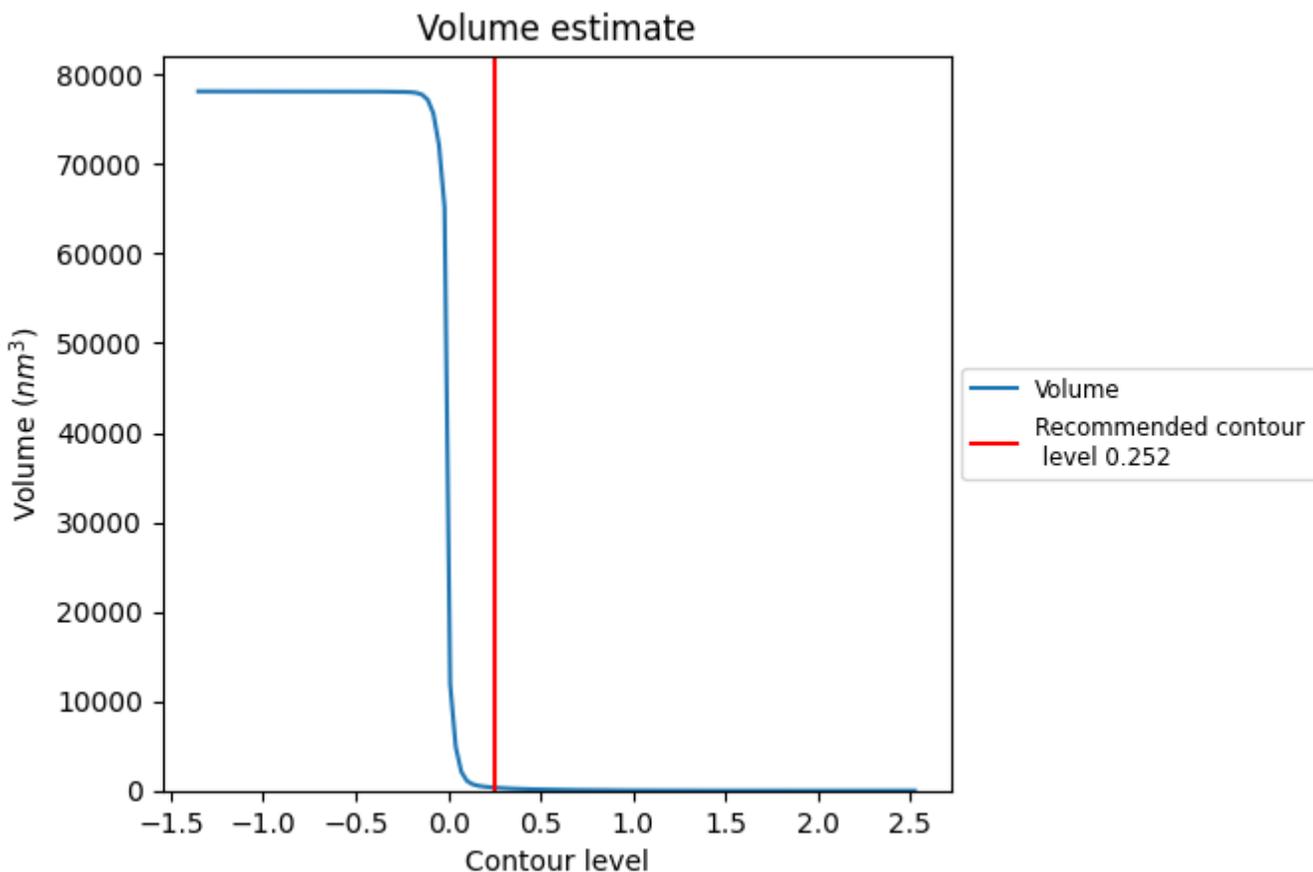
The volume at the recommended contour level is 333 nm^3; this corresponds to an approximate mass of 301 kDa.

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 ⓘ
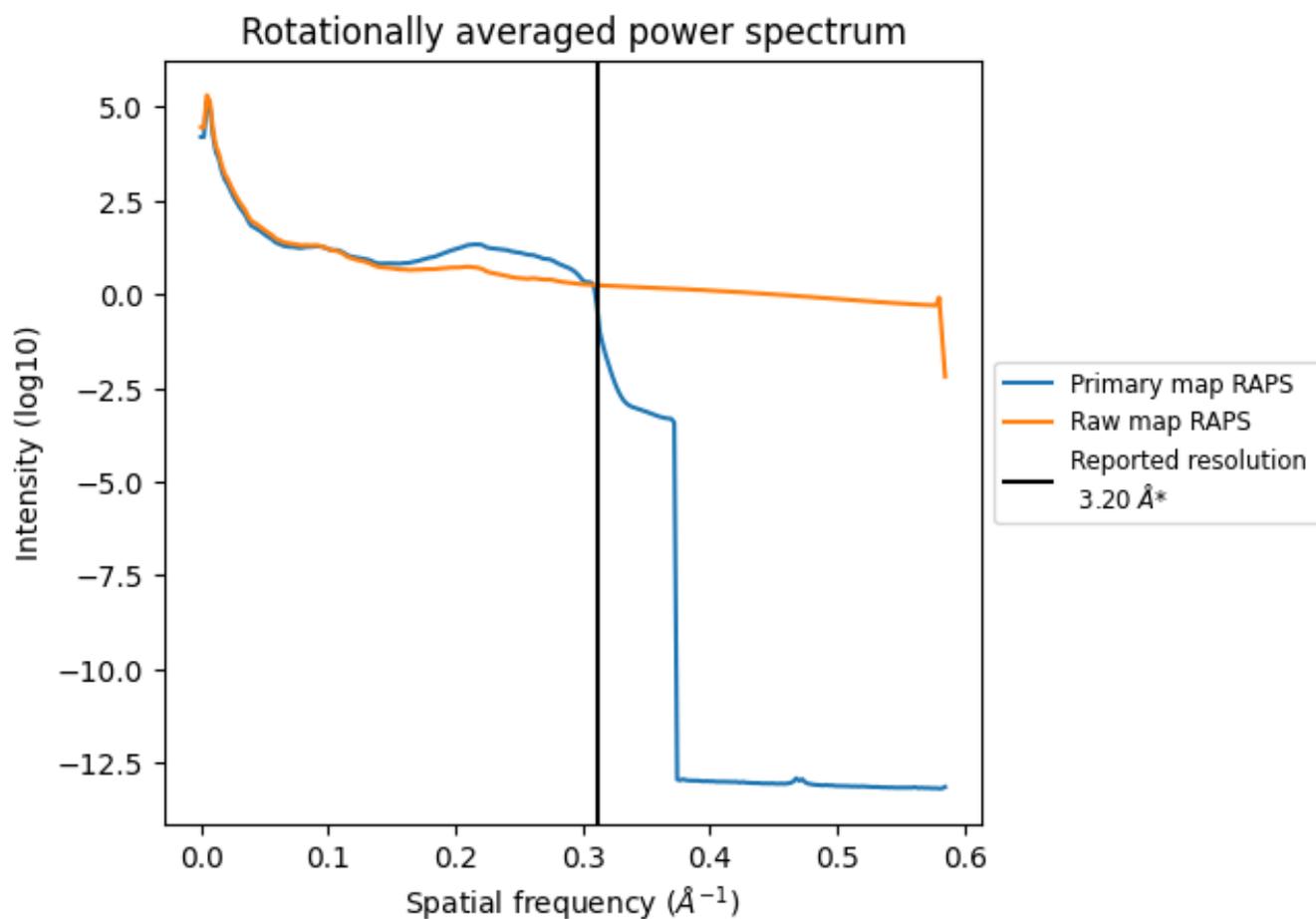
*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8　Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1　FSC ⓘ
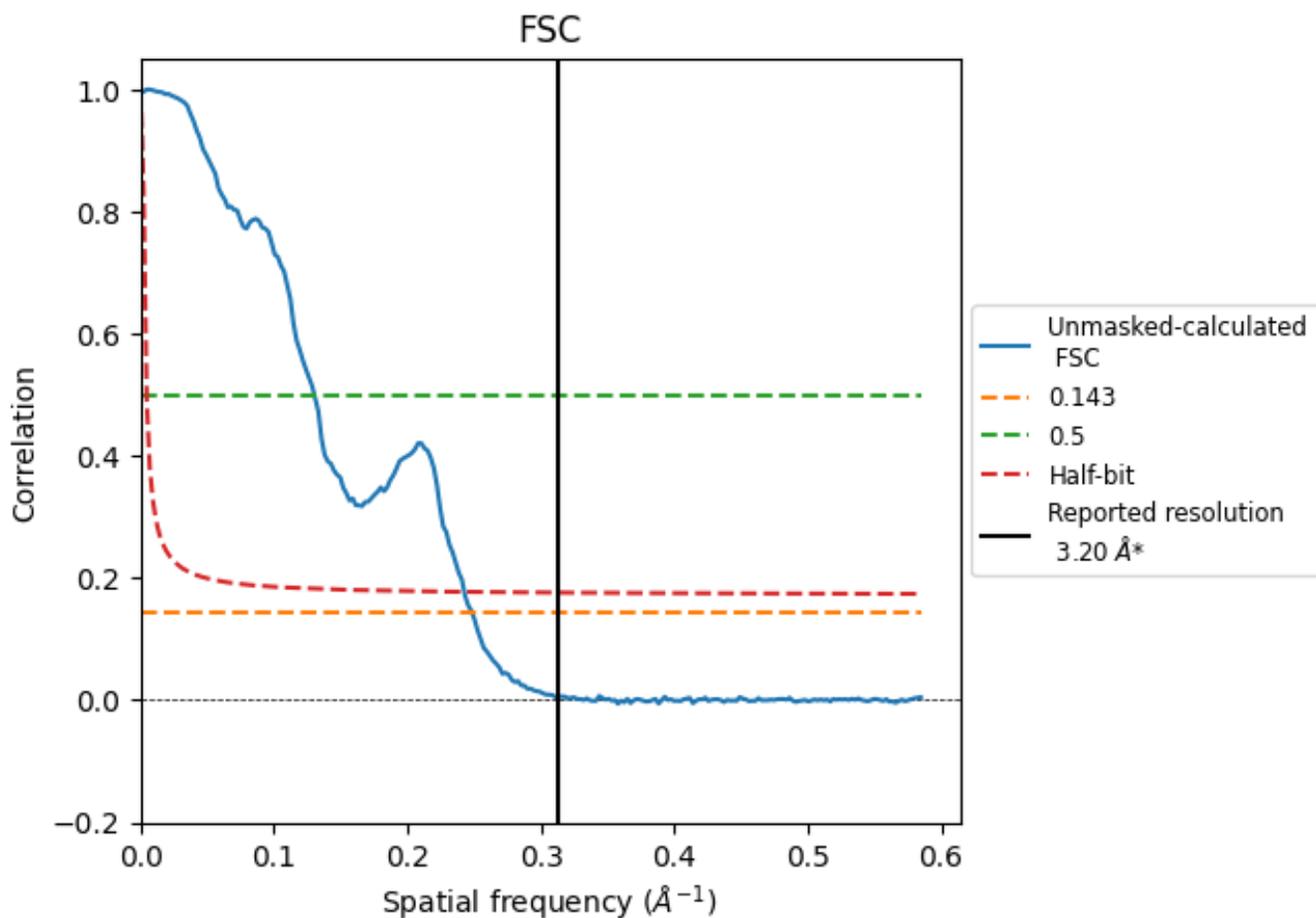
*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	-	3.20	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	4.02	7.67	4.12

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.5 CUT-OFF 7.67 differs from the reported value 3.2 by more than 10 %

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-16299 and PDB model 8BWS. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay (i)

| X | Y | Z |
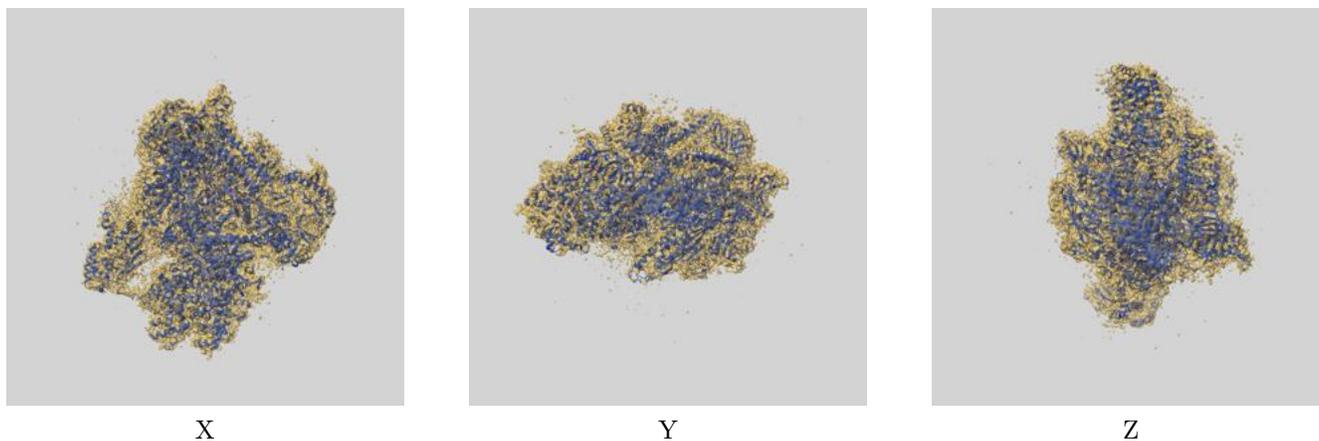
The images above show the 3D surface view of the map at the recommended contour level 0.252 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2　Q-score mapped to coordinate model ⓘ

X　　　　　　　　　　　　　　　　Y　　　　　　　　　　　　　　　　Z
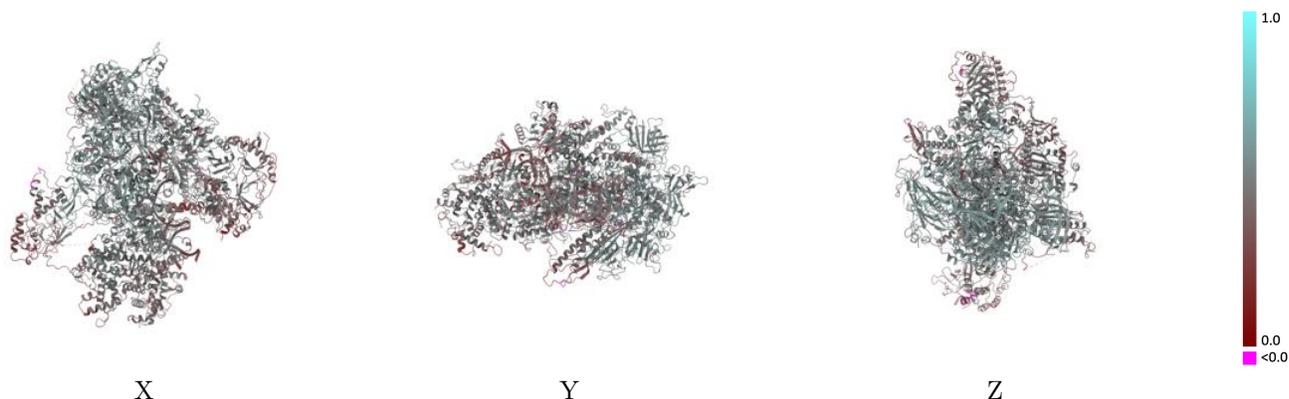
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
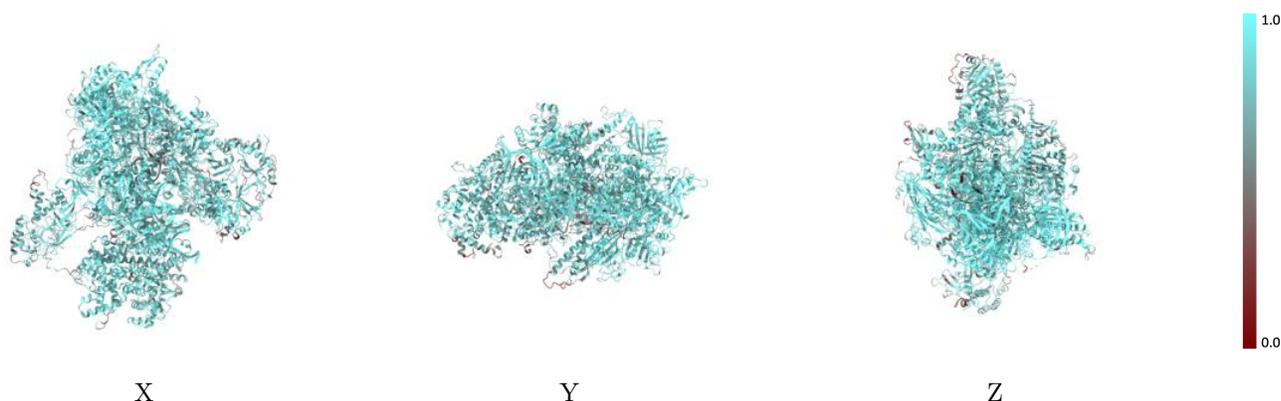
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.252).

9.4　Atom inclusion ⓘ
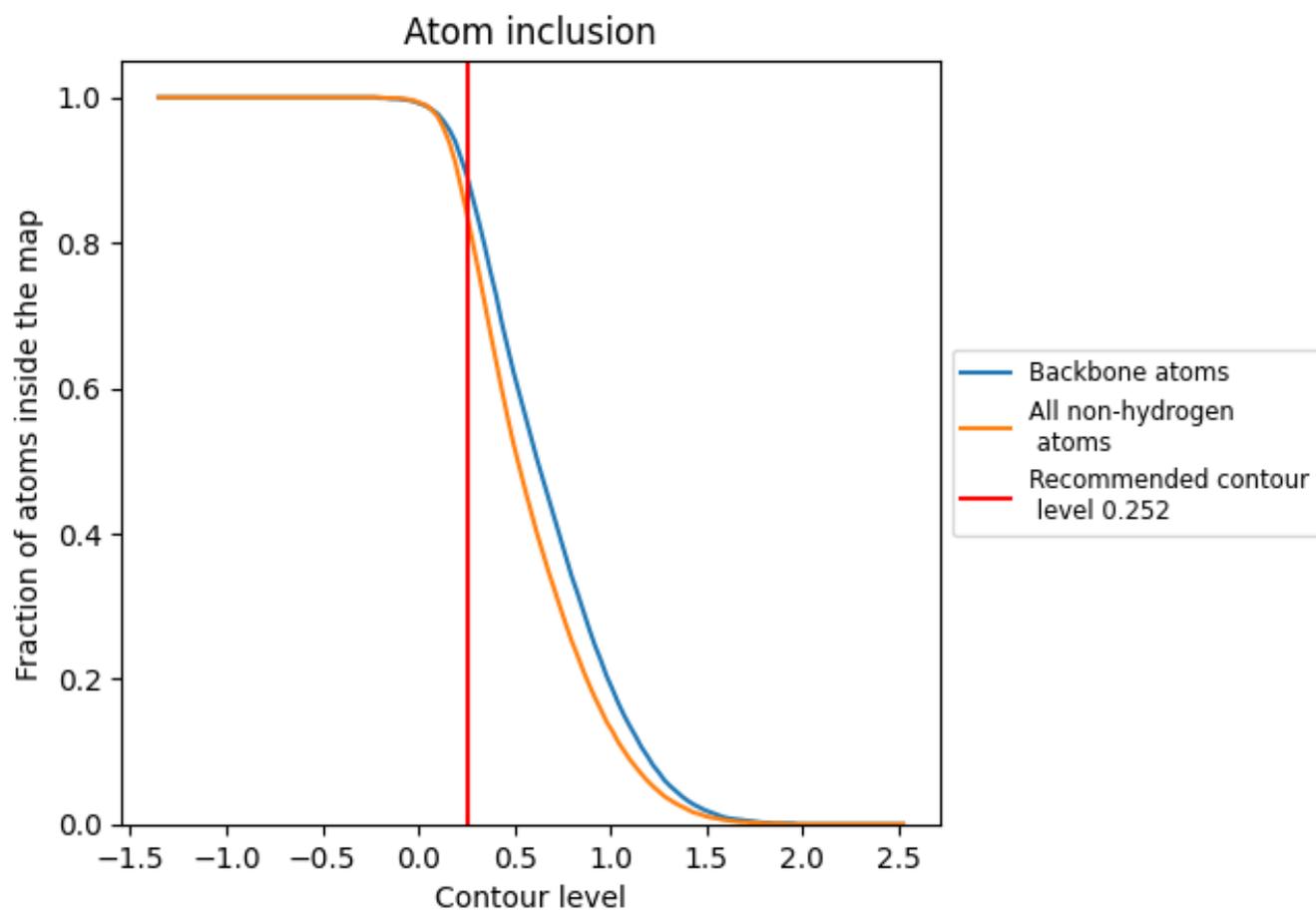
At the recommended contour level, 89% of all backbone atoms, 84% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.252) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8410	0.4720
A	0.8750	0.5010
B	0.8660	0.4990
C	0.9060	0.5130
D	0.7120	0.3430
E	0.8570	0.4770
F	0.9030	0.5300
G	0.7790	0.4130
H	0.8790	0.4920
I	0.7140	0.3750
J	0.9290	0.5290
K	0.9040	0.5180
L	0.8730	0.5030
M	0.7110	0.3750
N	0.7110	0.3820
O	0.8270	0.4550
P	0.7320	0.4120
Q	0.7480	0.4240
R	0.2720	0.3110
S	0.8580	0.3800
T	0.7540	0.3500

1.0

0.0
<0.0