WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Dec 10, 2025 – 04:39 pm GMT

PDB ID	:	5M5W / pdb_00005m5w
EMDB ID	:	EMD-3446
Title	:	RNA Polymerase I open complex
Authors	:	Tafur, L.; Sadian, Y.; Hoffmann, N.A.; Jakobi, A.J.; Wetzel, R.; Hagen, W.J.H.; Sachse, C.; Muller, C.W.
Deposited on	:	2016-10-23
Resolution	:	3.80 Å(reported)

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

EMDB validation analysis	:	0.0.1.dev129
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.47

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		12
Ramachandran outliers		0.1%
Sidechain outliers		1.3%

Worse   *Better*

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

Metric	Model-Map Fit Percentile Ranks	Value
Q-score		0.362

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	-
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	65% 24% · 10%
2	B	1203	67% 30% ··
3	C	335	73% 18% 9%
4	D	137	14% — 31% 12% 57%

Continued from previous page...

Mol	Chain	Length	Quality of chain
5	E	215	73% 27%
6	F	155	45% 20% 35%
7	G	326	27% / 46% 16% 37%
8	H	146	68% 23% 8%
9	I	125	21% / 70% 21% 9%
10	J	70	63% 34%
11	K	142	51% 18% 30%
12	L	70	50% 11% 39%
13	M	415	10% / 15% 10% 74%
14	N	233	33% / 48% 14% 37%
15	S	70	9% / 9% 17% 74%
16	T	70	19% / 23% 13% 64%

2 Entry composition ⓘ

There are 17 unique types of molecules in this entry. The entry contains 34780 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	1493	Total 11760	C 7424	N 2048	O 2226	S 62	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	1183	Total 9389	C 5936	N 1642	O 1760	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	304	Total 2418	C 1536	N 414	O 460	S 8	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerase I subunit RPA14.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	D	59	Total 467	C 293	N 80	O 94	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	214	Total 1751	C 1111	N 309	O 320	S 11	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	100	Total 823	C 522	N 144	O 154	S 3	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase I subunit RPA43.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	205	Total 1624	C 1040	N 280	O 299	S 5	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	134	Total 1075	C 677	N 182	O 212	S 4	0	0

- Molecule 9 is a protein called DNA-directed RNA polymerase I subunit RPA12.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	114	Total 869	C 541	N 146	O 173	S 9	0	0

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	100	Total 785	C 491	N 129	O 160	S 5	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	43	Total 344	C 211	N 69	O 60	S 4	0	0

- Molecule 13 is a protein called DNA-directed RNA polymerase I subunit RPA49.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	M	107	Total 850	C 540	N 141	O 169	0	0

- Molecule 14 is a protein called DNA-directed RNA polymerase I subunit RPA34.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	146	Total	C	N	O	S	0	0
			1164	743	188	229	4		

- Molecule 15 is a DNA chain called Non-template strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	S	18	Total	C	N	O	P	0	0
			376	178	77	103	18		

- Molecule 16 is a DNA chain called Template strand.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	T	25	Total	C	N	O	P	0	0
			509	244	86	154	25		

- Molecule 17 is ZINC ION (CCD ID: ZN) (formula: Zn).

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

Chain A:

A1010 V1011 K1012 T1013 S1014 R1015 S1016 G1017 Y1018 L1019 Q1020 R1021 C1022 L1023 V1030 H1031 V1032 A1041 D1042 G1043 M1049 Y1050 G1051 G1052 D1053 A1054 I1055 T1058 S1061 T1064 D1071 K1079 L1085 L1091 V1097 E1111 K1115 V1118 V1123 K1131 Y1132 L1133

K1143 K1153 LEU PHE LYS SER ASP G1160 M1175 L1178 I1179 N1180 P1181 G1182 G1186 I1187 E1195 P1196 S1197 T1198 Q1199 M1200 T1201 H1206 F1207 ALA GLY HIS GLY ALA ALA N1214 V1215 T1216 I1219 P1220 R1221 M1227 T1228 A1229 L1240 P1241 I1242 V1246 Q1250 T1253

K1256 L1262 T1273 E1274 T1275 T1276 G1277 T1278 S1279 N1280 T1281 A1282 G1283 G1284 N1285 R1288 S1289 Y1290 V1291 I1292 F1296 F1297 D1298 N1299 N1300 E1301 K1310 V1316 I1322 L1325 E1332 K1335 R1350 L1351 Q1352 THR ASP VAL ALA ASN SER SER ASN SER LYS ARG LEU GLU

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

GLN ILE ASN LYS SER ILE V1433 E1434 A1435 N1436 N1437 N1438 K1441 I1450 I1451 S1452 F1456 I1457 T1458 K1459 Y1460 G1467 K1468 K1473 L1474 A1478 K1482 L1483 L1484 E1491 R1494 K1495 S1496 I1497 I1498 R1499 P1502 H1503 I1504 D1505 R1506 P1510 R1517 V1518 L1519 V1520 T1521 E1522

G1523 V1524 N1525 I1536 I1541 D1545 V1546 V1549 L1550 E1556 A1557 A1558 R1559 N1560 T1561 E1565 I1566 V1569 R1572 Y1573 A1574 I1575 R1580 H1581 L1582 D1583 L1584 I1585 M1589 G1593 T1594 Y1595 L1596 S1606 S1609 K1612 M1613 T1617 T1618 C1619 Q1620 T1623 R1631

L1634 D1635 S1636 P1637 R1640 N1647 N1648 D1655 V1656 L1657 A1658 K1659 V1660 P1661 N1662 A1663 ALA

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

Chain B:

67%　　　　　30%

MET SER LYS VAL ILE LYS PRO PRO GLY GLN A11 R12 T13 A14 R17 E20 R21 N27 P28 S33 L37 I46 N50 A51 L52 L60 K71 V72 I73 F74 D75 G76 E82 D83 E84 I85 S86 N87 S88 N93 K94 L95 S96 I104 A105 K106 P107

D111 G112 V113 S114 S115 A116 V117 E118 R119 R127 S132 Y133 R134 K140 W143 S144 V145 E149 V155 L161 M164 S167 N168 R169 C170 N173 K174 M175 S176 P177 Y178 E179 L180 V181 Q182 H183 K184 E185 E186 E189 I190 Y193 F194 I195 V196 N197 G198

L202 I203 R204 M205 L206 I207 V208 Q209 R210 R211 N212 H213 P214 M215 A216 I217 I218 R219 P220 S221 R225 Q235 I236 R237 S238 V239 R240 P241 D242 Q243 T244 S245 Q246 T247 L250 G256 F260 R261 W264 R265 K266 N267 E268 Y269 L270 V274 L277 K278 A279 L280 D285

R286 E287 I288 I292 I293 G294 N295 D296 V297 T303 D304 R305 L306 E307 R311 K314 Y317 L320 R323 V326 L327 Q328 V337 A340 D343 Q344 V353 L354 D355 R356 I357 V358 L359 L362 S367 K370 F371 R372 L375 F376 M377 I378 R379 K380

S383 L384 P391 P394 Q398 H399 Q400 E401 V402 L403 L404 I425 M446 T467 G468 N469 Q473 S474 G475 L476 D477 L478 Q479 Q480 T485 K490 I491 N492 F493 Y494 R501 R505 F508 Q511 R518 K519 L520 F527 P530 V531 H532 T533

S537 N543 H544 F545 A546 H547 I551 S552 T553 Q554 P562 A573 A579 V586 Q587 I588 D589 I593 G594 R609 E614 G615 K616 T617 P618 G619 I626 G627 Y628 V629 P630 P631 S632 T633 R634 G635 Q636 G637 P638 G639 L640 Y641 L642 H646 L650 R651 P652 V653
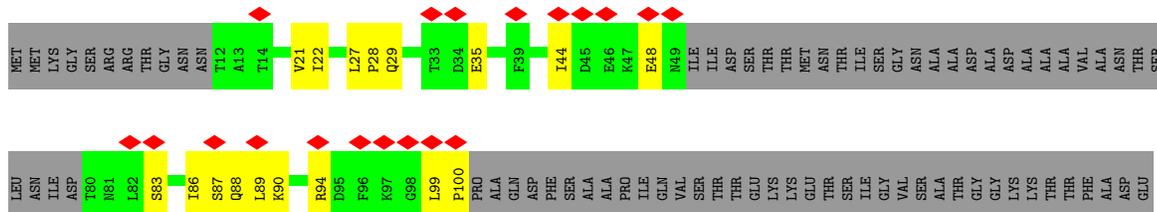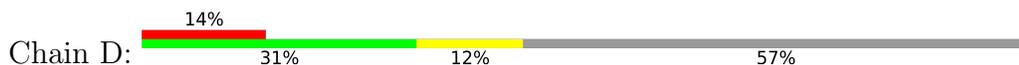
● Molecule 3: DNA-directed RNA polymerases I and III subunit RPAC1

● Molecule 4: DNA-directed RNA polymerase I subunit RPA14

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

MET D2 Q3 E4 N8 K20 E21 M22 V23 K24 D25 R26 Q32 E33 E34 Q54 R55 K56 Q61 W79 V80 E81 V88 M93 F96 I100 Q101 F105 Q106 T107 G108 I109 T117 L123 V124 P125 S126 I127 P128 E137 L140 N143 I144

L149 V150 P151 K152 H153 I154 R155 K161 L164 K171 Q174 L175 I178 Q179 R180 K191 R192 G193 E194 V195 V196 K197 I198 I199 R200 Y208 A209 S210 C214 M215

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

Chain F: 　　　　　　45%　　　　　　20%　　　　　　35%

MET SER ASP TYR GLU GLU ALA PHE ASN ASP GLY ASN ASN PHE 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 GLU THR THR ASP ALA ASN GLY LYS THR ILE VAL THR GLY GLY ASN GLY P55 E56 D57 H61 E62

Q63 I64 K67 I74 P75 Q78 T81 M85 T86 K87 Y88 A91 R92 R97 A98 L99 Q100 I101 S102 M103 N104 A105 F108 T115 D116 R119 K129 I130 P131 L132 E144 D145 W146 L151 I152 V153 D154 LEU

• Molecule 7: DNA-directed RNA polymerase I subunit RPA43

Chain G: 　27%　　　　　　46%　　　　16%　　　　37%

MET SER GLN VAL LYS ARG ALA N8 E9 N10 T13 A14 R15 F16 I17 K18 K19 H20 K21 K22 Q23 V24 T25 N26 P27 I28 D29 E30 K31 N32 G33 T34 S35 R40 L45 L49 A50 P51 L54 G60 K63 L66 N67 V70 M71 N74 N75 K76 V77

V80 D93 L104 I105 K106 I107 T108 P109 D110 T111 P112 F113 T116 Q126 P127 Q128 V129 G130 D131 V132 L133 E134 G135 Y136 I137 F138 I139 Q140 S141 A142 S143 H144 I145 L148 I149 H150 D151 A152 F153 N154 A155 S156 I157 K158 K159 N160 N161 I162 P163 V164 D165 W166 T167 F168 V169

H170 N171 D172 V173 E174 GLU ASP ALA ASP VAL ILE ASN THR ASP GLU ASN GLY ASN ASN ASN GLU ASN ASP LYS ASP SER ASN GLY SER GLY SER SER LEU GLY LYS PHE SER PHE GLY ASN ARG SER L214 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 S251 ASP ALA ASP GLU GLU GLY GLY ASN GLY TYR ASN SER SER ARG SER GLN ALA GLU LEU LEU PRO ILE VAL SER ASN LYS LYS ILE VAL PHE 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 GLN ASN THR SER GLU ASN ASP GLY GLU SER SER ASP SER ASP

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

Chain H: 　　　　68%　　　　23%　　・　8%

MET SER N3 F6 D7 D8 I9 D16 R25 Q33 D34 Q35 L38 N43 L46 V49 D53 S54 L55 T56 I59 N64 LEU GLU ASP THR PRO ALA ASN ASP SER SER A75 R87 D92 Y93 G99 Y102 V107 S108 F118 R124

L125 E126 Y129 R130 N131 L132 N133 N134 L143 I144 R145 R146

• Molecule 9: DNA-directed RNA polymerase I subunit RPA12

Chain I:

21%

70% 21% 9%

MET S2 L7 I8 F9 C10 L11 G14 N19 P20 N21 A22 V23 L24 V28 P38 N44 A52 L60 R61 A62 V67 K68 T69 K72 K73 N74 E75 L76 K77 D78 G79 A80 T81 I82 K83 E84 K85 C86 P87 Q88 C89 G90 N91 E92 E93 Y96 H97 T98

LEU GLN LEU ARG ALA ASP GLU GLY ALA T109 V110 F111 Y112 T113 C114 T115 S116 C117 G118 F121 R122 T123 N124 N125

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

Chain J:

63% 34%

M1 V5 S9 C10 G11 G15 Y21 D28 E29 L30 L36 L39 Y44 C45 C46 R47 L51 T52 H53 V54 D55 L56 I57 E58 K59 F60 L61 R62 Y63 N64 P65 L66 R69 ASP

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

Chain K:

51% 18% 30%

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 GLN GLU GLU GLU PRO D43 R44 E45 K46 I47 T54 D57 G58 A61 S62 F63 V66 T71

I80 M81 F88 C89 S97 E98 R104 I105 Q106 G109 E110 A116 G120 M125 D126 E132 K138 M142

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

Chain L:

50% 11% 39%

MET SER ARG GLU GLY PHE GLN ILE PRO THR ASN LEU ASP ALA ALA ALA GLY THR SER GLN ALA ARG THR ALA THR LEU K28 C31 A32 E33 C34 R42 G52 K58 L64 A69 R70

• Molecule 13: DNA-directed RNA polymerase I subunit RPA49

Chain M:

10%

15% 10% 74%

MET SER VAL LYS ARG SER VAL S8 E9 I10 E11 I12 E13 S14 V15 Q16 D17 Q18 P19 S20 V21 A22 V23 G24 K28 G29 F30 R31 A32 P33 S34 D35 T36 T37 F38 D39 L40 Y41 K42 K43 K44 K45 S46 E47 K48 D49 E50 L53 N57 E58 R59 L60 E61 Y62 Y65 T66

D67 S68 A72 S73 N74 Q75 Y76 V77 V78 G79 L80 F81 N82 P83 E84 K85 K86 S87 I88 Q89 L90 Y91 K92 A93 L96 K99 S105 K114 SER LYS SER ASP THR ARG PRO SER ALA LEU ARG ASN ALA LEU GLY GLU ALA PHE GLY THR LYS LYS ALA LYS LYS ALA ILE

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

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

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

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

PHE GLY ILE PRO LYS SER THR ALA ALA SER TYR LYS ILE ALA THR MET LYS VAL PRO PHE LYS LEU PRO GLU GLU MET THR ARG ARG GLY ARG GLY PRO ARG ARG

• Molecule 14: DNA-directed RNA polymerase I subunit RPA34

Chain N:

MET SER LYS LEU SER LYS ASP TYR VAL SER ASP SER SER ASP ASP GLU VAL ILE SER ASN **E22 F23** S24 **I25 P26 D27 G28 F29 K30 K31 C32 K33 H34 L35 K36 N37** **L40 N41 G42 D43 N44** LYS LYS ALA **K49 Q50 Q51 Q52 V53 W54 L55 I56** **S60 N61 V62 D63**

I64 S65 K66 L67 K68 **P71 V72 D73 F74 E75 S76 S77 T78** **I82 D83 K84 H85 D86** **I89 M90 D91 D92 T93 D94** ILE GLU SER SER LEU **T100 Q101 D102 N103 L104 S105 N106 M107 T108 L109 L110 V111 P112 S113** **K116 E117 S118 L119 K120 I121 A122 S123 T124 A125** LYS ASP ASN

ALA **P130 L131 Q132 F133 D134 K135 V136 F137 S138 V139** **T142 A143 K144** **D149 Y150 S151** **R157 K158 D159 V160** **L166 K167 L168** **F171 A172 T173 G174 Y175 D176 A177 E178 D179 F180** HIS VAL ALA GLU GLU VAL LYS GLU ASN LYS LYS GLU PRO LYS LYS ARG SER HIS HIS ASP ASP

GLU GLU GLU SER SER GLU LYS LYS LYS LYS LYS LYS GLU GLU LYS ARG GLU GLU LYS ARG GLU GLU LYS LYS ASP LYS LYS ASP LYS LYS LYS HIS ARG ASP

• Molecule 15: Non-template strand

Chain S:

DG DG DT DT DA DG DT DC DA DT DG DG DA DG DT DA DC DA DG DT DG DA DG DA DA DA DG DT DA DG DT DT DG DG DG DT DA DG DC DA DG DG DG DG **A53 G54 T55 A56 A57 A58 G59 C60**

A61 G62 T63 T64 G65 A66 A67 G68 A69 C70

• Molecule 16: Template strand

Chain T:

G1 T2 C3 T4 T5 **C6 A7 A8 C9 T10** **G17 C18 A19 T20 G21 A22 A23 C24 T25** DA DC DC DT DC DC DC DA DA DC DT DA DC DT DT DT DC DC DC DA DC DC DT DG DT DA DC DT DC DC DA DT DG DA DC DT

DA DA DA DC DC

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	98430	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	40	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.297	Depositor
Minimum map value	-0.202	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.013	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	237.6, 237.6, 237.6	wwPDB
Map dimensions	176, 176, 176	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.35, 1.35, 1.35	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0.15	1/11976 (0.0%)	0.33	5/16180 (0.0%)
2	B	0.13	1/9596 (0.0%)	0.41	7/12971 (0.1%)
3	C	0.09	0/2469	0.27	0/3347
4	D	0.07	0/473	0.26	0/641
5	E	0.10	0/1787	0.29	0/2406
6	F	0.09	0/838	0.28	0/1129
7	G	0.09	0/1662	0.28	0/2260
8	H	0.10	0/1093	0.30	0/1480
9	I	0.09	0/881	0.26	0/1187
10	J	0.09	0/578	0.29	0/775
11	K	0.67	3/795 (0.4%)	1.06	6/1072 (0.6%)
12	L	0.09	0/346	0.29	0/457
13	M	0.12	0/866	0.39	2/1162 (0.2%)
14	N	0.07	0/1186	0.26	0/1596
15	S	0.15	0/424	0.27	0/653
16	T	0.17	0/568	0.35	0/874
All	All	0.16	5/35538 (0.0%)	0.37	20/48190 (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
11	K	0	1

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	K	57	ASP	N-CA	16.15	1.66	1.46
1	A	250	LYS	CA-C	-11.45	1.37	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1064	LYS	N-CA	7.56	1.56	1.46
11	K	57	ASP	CA-CB	7.32	1.65	1.53
11	K	58	GLY	CA-C	-5.95	1.43	1.51

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	1064	LYS	N-CA-C	-27.13	79.37	113.55
11	K	57	ASP	N-CA-C	-27.03	73.12	112.04
11	K	57	ASP	CB-CA-C	-13.04	86.70	110.56
11	K	57	ASP	N-CA-CB	-9.24	95.88	110.19
2	B	1064	LYS	CB-CA-C	-8.73	95.81	109.34
1	A	444	GLN	CA-C-N	-8.72	104.32	121.41
1	A	444	GLN	C-N-CA	-8.72	104.32	121.41
2	B	1065	ARG	N-CA-C	-7.70	103.99	113.15
1	A	764	SER	N-CA-C	-6.74	100.25	110.70
13	M	45	LYS	N-CA-C	6.30	120.24	111.74
11	K	58	GLY	N-CA-C	-6.21	98.46	113.18
11	K	57	ASP	CA-CB-CG	-5.99	106.61	112.60
1	A	446	ARG	N-CA-C	5.90	125.34	113.31
11	K	58	GLY	CA-C-O	-5.68	110.69	120.57
1	A	250	LYS	N-CA-CB	-5.61	101.00	110.49
2	B	1064	LYS	N-CA-CB	-5.51	102.41	110.40
2	B	1063	ARG	CA-C-N	-5.44	113.11	122.79
2	B	1063	ARG	C-N-CA	-5.44	113.11	122.79
13	M	44	LYS	N-CA-C	5.25	117.45	108.90
2	B	359	LEU	CA-CB-CG	5.13	134.25	116.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
11	K	58	GLY	Mainchain

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	11760	0	11838	318	0
2	B	9389	0	9269	288	0
3	C	2418	0	2401	48	0
4	D	467	0	468	14	0
5	E	1751	0	1776	39	0
6	F	823	0	841	23	0
7	G	1624	0	1625	52	0
8	H	1075	0	1045	23	0
9	I	869	0	862	22	0
10	J	569	0	585	21	0
11	K	785	0	782	20	0
12	L	344	0	363	9	0
13	M	850	0	850	34	0
14	N	1164	0	1160	28	0
15	S	376	0	202	6	0
16	T	509	0	285	11	0
17	A	2	0	0	0	0
17	B	1	0	0	0	0
17	I	2	0	0	0	0
17	J	1	0	0	0	0
17	L	1	0	0	0	0
All	All	34780	0	34352	822	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 12.

All (822) 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:1140:LYS:HE2	7:G:17:ILE:CD1	1.46	1.44
1:A:248:PHE:CE1	1:A:442:LYS:NZ	2.04	1.26
2:B:1140:LYS:CE	7:G:17:ILE:HD11	1.75	1.15
1:A:248:PHE:CD1	1:A:442:LYS:NZ	2.17	1.10
10:J:10:CYS:HB3	10:J:45:CYS:SG	1.94	1.07
2:B:1140:LYS:HE2	7:G:17:ILE:HD11	1.09	1.05
1:A:764:SER:O	1:A:766:GLU:N	1.93	0.99
1:A:248:PHE:CE1	1:A:442:LYS:CE	2.46	0.99
2:B:1107:CYS:HB3	2:B:1131:CYS:SG	2.03	0.98
2:B:1104:CYS:HB3	2:B:1107:CYS:SG	2.09	0.92
1:A:248:PHE:CE1	1:A:442:LYS:HE3	2.06	0.87
2:B:1140:LYS:HE2	7:G:17:ILE:HD13	1.55	0.87
2:B:1140:LYS:CE	7:G:17:ILE:CD1	2.39	0.87

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1140:LYS:CD	7:G:17:ILE:HD11	2.04	0.87
1:A:173:ILE:HD12	1:A:173:ILE:O	1.79	0.83
2:B:358:VAL:HG22	2:B:359:LEU:HD12	1.58	0.82
2:B:1063:ARG:HA	2:B:1067:GLY:H	1.44	0.81
2:B:186:GLU:HB3	2:B:189:GLU:HB2	1.62	0.81
3:C:58:ASN:HA	3:C:296:ASN:HB3	1.65	0.78
1:A:1459:LYS:HE2	1:A:1473:LYS:HG2	1.66	0.77
1:A:760:TRP:HB2	1:A:764:SER:OG	1.82	0.76
2:B:480:GLN:HE22	2:B:508:PHE:H	1.33	0.76
2:B:675:ALA:HB3	2:B:689:VAL:HG12	1.67	0.76
1:A:248:PHE:CZ	1:A:442:LYS:HE3	2.19	0.75
1:A:670:ILE:HG13	1:A:671:GLN:HG3	1.66	0.75
2:B:654:ARG:HD2	2:B:691:PHE:HB3	1.69	0.74
1:A:764:SER:C	1:A:766:GLU:H	1.95	0.73
7:G:136:TYR:HB3	7:G:148:LEU:HB2	1.71	0.73
14:N:78:THR:HG21	14:N:89:ILE:HG13	1.71	0.73
13:M:46:SER:O	13:M:47:GLU:C	2.31	0.72
2:B:803:MET:HB3	2:B:907:ILE:HB	1.72	0.72
1:A:763:GLY:O	1:A:765:LEU:HD22	1.90	0.72
13:M:16:GLN:HE21	13:M:18:GLN:H	1.37	0.71
1:A:1456:PHE:HB3	1:A:1474:LEU:HG	1.71	0.71
2:B:790:ASN:HB2	2:B:946:ASP:HA	1.74	0.70
16:T:20:DT:H2"	16:T:21:DG:H5'	1.74	0.69
6:F:74:ILE:HB	6:F:144:GLU:HB3	1.74	0.69
14:N:56:ILE:HG12	14:N:137:PHE:HB2	1.75	0.69
2:B:292:ILE:HA	2:B:379:ARG:HD3	1.75	0.69
1:A:462:LYS:HD2	1:A:463:LYS:HG2	1.73	0.69
1:A:1240:LEU:HD23	1:A:1519:LEU:HD23	1.75	0.68
1:A:1482:LYS:NZ	2:B:307:GLU:OE1	2.25	0.68
2:B:494:TYR:HD1	2:B:700:LEU:HD22	1.59	0.68
3:C:301:ASN:HD22	14:N:173:THR:HG22	1.59	0.68
2:B:320:LEU:HB3	2:B:326:VAL:HG12	1.77	0.67
2:B:766:PRO:HG3	10:J:54:VAL:HG11	1.76	0.67
2:B:285:ASP:OD2	2:B:314:LYS:NZ	2.28	0.67
2:B:741:LEU:HB2	2:B:804:TYR:HB2	1.77	0.67
3:C:70:ILE:HD13	11:K:71:THR:HG21	1.77	0.66
1:A:986:PHE:HB3	2:B:960:ILE:HD13	1.77	0.66
2:B:731:VAL:HG11	10:J:59:LYS:HE2	1.76	0.66
5:E:200:ARG:HE	5:E:208:TYR:HD2	1.43	0.66
1:A:249:THR:HG22	1:A:431:GLN:HG2	1.77	0.66
13:M:22:ALA:HB2	13:M:40:LEU:HD21	1.76	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1003:ARG:HD2	2:B:520:LEU:HB2	1.78	0.65
2:B:216:ALA:HB1	2:B:384:LEU:HD13	1.79	0.65
2:B:726:MET:SD	2:B:1035:ARG:NH1	2.69	0.65
8:H:130:ARG:H	8:H:130:ARG:HD2	1.60	0.65
1:A:316:LEU:HD13	1:A:317:SER:H	1.61	0.65
1:A:490:ILE:HG23	1:A:494:GLU:HG3	1.77	0.65
2:B:921:HIS:NE2	2:B:965:GLU:OE1	2.29	0.65
2:B:781:TYR:HB2	2:B:788:ILE:HD11	1.78	0.65
3:C:271:ARG:NH1	14:N:175:TYR:OH	2.30	0.65
11:K:81:MET:HE1	11:K:89:CYS:HB3	1.77	0.65
2:B:588:ILE:HA	2:B:642:LEU:HB2	1.79	0.64
2:B:617:THR:HG22	2:B:619:GLY:H	1.60	0.64
2:B:633:THR:O	2:B:634:ARG:NH2	2.31	0.64
2:B:554:GLN:OE1	2:B:646:HIS:NE2	2.30	0.64
8:H:56:THR:HB	8:H:145:ARG:HB2	1.79	0.64
2:B:240:ARG:NH2	2:B:356:ARG:O	2.30	0.64
1:A:1660:VAL:HG21	7:G:105:ILE:HD13	1.79	0.64
2:B:240:ARG:HD3	2:B:244:THR:HG23	1.78	0.64
7:G:161:ASN:ND2	7:G:247:GLY:O	2.29	0.64
11:K:104:ARG:HH21	11:K:106:GLN:HE21	1.45	0.64
14:N:66:LYS:HZ3	14:N:67:LEU:HD23	1.63	0.64
2:B:492:ASN:HD22	2:B:725:THR:HG22	1.63	0.64
1:A:469:LYS:HA	2:B:1070:ARG:HH11	1.62	0.64
2:B:237:ARG:NH1	2:B:401:GLU:OE1	2.30	0.64
7:G:136:TYR:O	7:G:148:LEU:N	2.24	0.64
5:E:151:PRO:HB3	5:E:200:ARG:HB3	1.80	0.63
13:M:46:SER:O	13:M:48:LYS:N	2.31	0.63
16:T:7:DA:H2"	16:T:8:DA:H5"	1.79	0.63
1:A:1550:LEU:HD21	1:A:1594:THR:HB	1.79	0.63
2:B:752:VAL:O	2:B:920:ARG:NH1	2.28	0.63
13:M:16:GLN:NE2	13:M:18:GLN:OE1	2.32	0.63
2:B:28:PRO:HB2	2:B:178:TYR:HA	1.81	0.63
2:B:1104:CYS:CB	2:B:1107:CYS:SG	2.79	0.63
2:B:826:GLY:HA3	12:L:42:ARG:HH22	1.63	0.63
3:C:83:VAL:HG23	12:L:69:ALA:HB2	1.81	0.63
2:B:236:ILE:HD11	2:B:377:MET:HG2	1.81	0.62
2:B:547:HIS:HE1	2:B:702:ASN:HD22	1.47	0.62
1:A:15:ASP:HB3	1:A:1631:ARG:HD2	1.81	0.62
5:E:100:ILE:HG23	5:E:105:PHE:HB2	1.82	0.62
1:A:1635:ASP:O	1:A:1648:ASN:ND2	2.32	0.62
13:M:32:ALA:HB1	14:N:121:ILE:HG21	1.80	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1350:ARG:NH2	2:B:267:ASN:OD1	2.33	0.62
2:B:906:ARG:NH1	3:C:95:GLU:OE1	2.33	0.62
2:B:394:PRO:O	2:B:400:GLN:NE2	2.33	0.62
2:B:292:ILE:HG22	2:B:293:ILE:H	1.65	0.61
1:A:913:PRO:HB3	1:A:926:GLN:HE22	1.65	0.61
2:B:718:GLN:HE21	2:B:922:GLY:H	1.48	0.61
1:A:173:ILE:HD12	1:A:173:ILE:C	2.25	0.61
8:H:16:ASP:HB3	8:H:25:ARG:HB3	1.82	0.61
1:A:445:GLY:O	1:A:446:ARG:HB2	2.01	0.61
1:A:446:ARG:HE	1:A:446:ARG:N	1.98	0.61
2:B:184:LYS:HE3	2:B:735:HIS:HD2	1.66	0.61
6:F:63:GLN:HG3	6:F:67:LYS:HE3	1.81	0.61
1:A:692:TYR:OH	1:A:734:THR:OG1	2.18	0.61
7:G:161:ASN:HD21	7:G:248:THR:HA	1.66	0.61
2:B:52:LEU:HA	2:B:60:LEU:HD23	1.82	0.61
1:A:15:ASP:OD2	2:B:1197:ARG:NH2	2.34	0.61
1:A:995:TYR:OH	2:B:715:ASN:ND2	2.34	0.61
2:B:379:ARG:NH2	2:B:383:SER:OG	2.33	0.61
1:A:611:GLU:HG2	1:A:612:LYS:H	1.66	0.61
1:A:1050:TYR:HB3	1:A:1054:ALA:HA	1.82	0.61
2:B:50:ASN:OD1	2:B:168:ASN:ND2	2.31	0.61
14:N:63:ASP:O	14:N:66:LYS:NZ	2.31	0.61
1:A:939:ASN:ND2	2:B:955:PRO:O	2.31	0.60
1:A:11:ILE:HG12	2:B:1200:VAL:HG22	1.83	0.60
1:A:591:ARG:HB2	1:A:633:MET:HE2	1.81	0.60
2:B:17:ARG:HG3	2:B:20:GLU:HB3	1.83	0.60
2:B:119:ARG:NH1	12:L:52:GLY:O	2.34	0.60
2:B:986:PHE:HE1	14:N:160:VAL:HG21	1.65	0.60
2:B:1140:LYS:HD3	7:G:13:THR:HG21	1.84	0.60
13:M:77:VAL:HG12	13:M:92:LYS:HA	1.81	0.60
1:A:1187:ILE:HD11	2:B:1077:ASP:HB2	1.84	0.60
1:A:589:MET:HE1	1:A:616:LEU:HD21	1.84	0.60
1:A:1316:VAL:HG11	1:A:1498:ILE:HA	1.84	0.60
1:A:1593:GLY:HA3	5:E:179:GLN:HE21	1.66	0.60
3:C:222:VAL:HG11	3:C:225:ALA:HB2	1.82	0.60
9:I:72:LYS:HE3	9:I:75:GLU:HG2	1.84	0.60
5:E:4:GLU:OE1	5:E:8:ASN:ND2	2.35	0.59
1:A:462:LYS:HE2	1:A:469:LYS:HB2	1.85	0.59
2:B:718:GLN:OE1	2:B:1034:GLN:NE2	2.34	0.59
2:B:84:GLU:HG3	2:B:86:SER:H	1.67	0.59
1:A:1131:LYS:NZ	6:F:81:THR:O	2.34	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1256:LYS:O	1:A:1499:ARG:NH2	2.35	0.59
1:A:1655:ASP:OD2	7:G:106:LYS:NZ	2.35	0.59
2:B:193:TYR:HA	2:B:202:LEU:HD23	1.84	0.59
3:C:218:LYS:NZ	12:L:69:ALA:O	2.32	0.59
11:K:80:ILE:HG12	11:K:120:GLY:HA3	1.84	0.59
1:A:1573:TYR:HA	9:I:122:ARG:HH21	1.68	0.59
2:B:982:THR:HG23	2:B:985:ILE:HD13	1.85	0.59
6:F:146:TRP:HB3	6:F:151:LEU:HD21	1.85	0.59
7:G:24:VAL:HG11	7:G:126:GLN:HE22	1.68	0.59
2:B:218:ILE:HD11	2:B:384:LEU:HD21	1.83	0.59
13:M:23:VAL:HG12	14:N:107:MET:HB2	1.84	0.59
1:A:1574:ALA:HB3	9:I:122:ARG:HG2	1.85	0.59
3:C:100:ARG:NH2	3:C:192:LEU:O	2.36	0.58
12:L:31:CYS:CB	12:L:34:CYS:SG	2.91	0.58
1:A:1656:VAL:HB	6:F:92:ARG:HE	1.69	0.58
1:A:519:LEU:HD21	1:A:577:VAL:HB	1.83	0.58
2:B:292:ILE:HG13	2:B:306:LEU:HD22	1.85	0.58
2:B:845:LEU:HD21	2:B:887:LEU:HD21	1.85	0.58
1:A:203:THR:HG22	1:A:204:GLU:H	1.68	0.58
14:N:63:ASP:HB2	14:N:66:LYS:HD2	1.85	0.58
8:H:64:ASN:O	8:H:87:ARG:NH1	2.36	0.58
8:H:124:ARG:NH1	8:H:126:GLU:OE2	2.37	0.58
1:A:1253:THR:HA	1:A:1256:LYS:HD3	1.84	0.58
2:B:286:ARG:HH22	9:I:9:PHE:HB3	1.69	0.58
5:E:178:ILE:HG22	5:E:214:CYS:HA	1.84	0.58
9:I:112:TYR:HB2	9:I:121:PHE:HB2	1.84	0.58
15:S:63:DT:H2"	15:S:64:DT:H3'	1.86	0.58
1:A:40:ASN:HD22	1:A:41:LEU:H	1.52	0.58
1:A:399:LEU:HD21	1:A:422:ARG:HG3	1.86	0.58
1:A:1180:ASN:HD21	6:F:87:LYS:HG2	1.69	0.58
2:B:656:LEU:HB2	2:B:657:PRO:HD3	1.85	0.58
1:A:1290:TYR:HB2	1:A:1474:LEU:HB2	1.86	0.58
2:B:207:ILE:HD11	2:B:400:GLN:HB3	1.86	0.58
2:B:246:GLN:HE22	2:B:357:ILE:HG22	1.69	0.58
1:A:1566:ILE:HA	1:A:1569:VAL:HG22	1.85	0.57
1:A:1021:ARG:NH2	16:T:19:DA:OP1	2.37	0.57
2:B:209:GLN:O	2:B:237:ARG:NH1	2.37	0.57
2:B:221:SER:OG	2:B:225:ARG:NH1	2.37	0.57
2:B:636:GLN:NE2	2:B:671:TYR:OH	2.37	0.57
3:C:80:ALA:HB3	3:C:102:GLY:HA2	1.84	0.57
1:A:1457:ILE:HG12	1:A:1460:TYR:HB2	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:245:LYS:HG2	1:A:247:GLY:H	1.69	0.57
2:B:219:ARG:HG2	2:B:221:SER:H	1.69	0.57
2:B:573:ALA:HB2	2:B:594:GLY:HA2	1.87	0.57
2:B:773:VAL:N	2:B:1029:GLY:O	2.32	0.57
1:A:1274:GLU:OE2	1:A:1288:ARG:NH1	2.37	0.57
2:B:182:GLN:O	10:J:69:ARG:NH1	2.38	0.57
1:A:462:LYS:HD3	1:A:469:LYS:HE2	1.86	0.57
5:E:24:LYS:NZ	5:E:32:GLN:OE1	2.38	0.57
13:M:43:LYS:HG3	13:M:50:GLU:HB3	1.86	0.57
1:A:316:LEU:HD12	1:A:318:THR:HG23	1.86	0.57
2:B:17:ARG:O	2:B:21:ARG:NH2	2.38	0.57
3:C:107:LYS:HG3	3:C:187:ALA:HA	1.87	0.56
7:G:63:LYS:HA	7:G:67:ASN:HD22	1.70	0.56
1:A:709:ARG:NH1	1:A:740:THR:O	2.37	0.56
1:A:1482:LYS:HD3	2:B:311:ARG:HH12	1.71	0.56
3:C:327:TYR:HE2	11:K:46:LYS:HG3	1.69	0.56
7:G:74:ASN:HB3	7:G:77:VAL:HG12	1.87	0.56
13:M:46:SER:O	13:M:48:LYS:O	2.23	0.56
2:B:1116:SER:OG	2:B:1127:CYS:SG	2.64	0.56
5:E:93:MET:HE1	5:E:123:LEU:HB2	1.88	0.56
1:A:1111:GLU:HG2	1:A:1115:LYS:HB2	1.88	0.56
2:B:237:ARG:HA	2:B:247:THR:HA	1.87	0.56
5:E:88:VAL:O	5:E:117:THR:OG1	2.24	0.56
7:G:159:LYS:HA	7:G:162:ILE:HD12	1.88	0.56
9:I:11:LEU:HD13	13:M:31:ARG:HH12	1.70	0.56
1:A:674:ILE:HD11	1:A:933:ALA:HB2	1.87	0.56
4:D:44:ILE:HD13	4:D:89:LEU:HD22	1.88	0.56
1:A:1051:GLY:HA3	1:A:1580:ARG:HD2	1.87	0.56
1:A:592:GLN:HE22	1:A:634:ASN:HD21	1.54	0.56
2:B:60:LEU:HD11	2:B:243:GLN:HE21	1.71	0.56
2:B:743:ARG:NH2	2:B:804:TYR:OH	2.39	0.56
2:B:935:ASP:HB3	3:C:69:ARG:HH22	1.71	0.56
2:B:96:SER:HB3	2:B:144:SER:HB2	1.86	0.55
5:E:106:GLN:OE1	5:E:107:THR:OG1	2.24	0.55
2:B:976:GLY:HA2	10:J:51:LEU:HD11	1.88	0.55
5:E:80:VAL:HA	5:E:109:ILE:HG23	1.88	0.55
13:M:36:THR:O	14:N:120:LYS:NZ	2.38	0.55
1:A:1647:ASN:OD1	1:A:1648:ASN:N	2.38	0.55
2:B:33:SER:HA	2:B:177:PRO:HG3	1.88	0.55
2:B:196:VAL:HG12	2:B:197:ASN:H	1.71	0.55
1:A:647:ALA:HA	1:A:651:ALA:HB3	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:464:GLU:OE2	1:A:1617:THR:N	2.39	0.55
1:A:475:ARG:HD3	2:B:1070:ARG:HB2	1.89	0.55
1:A:1350:ARG:HH22	2:B:266:LYS:HD2	1.72	0.55
1:A:481:ARG:HB3	2:B:1045:GLN:HB2	1.89	0.55
5:E:161:LYS:NZ	5:E:193:GLY:O	2.40	0.55
14:N:122:ALA:HB3	14:N:131:LEU:HD23	1.88	0.55
13:M:75:GLN:HE22	14:N:64:ILE:HD11	1.71	0.55
2:B:897:GLU:OE1	2:B:899:GLN:NE2	2.39	0.55
2:B:1076:ARG:HG2	2:B:1088:LEU:HD11	1.89	0.55
4:D:94:ARG:NH2	7:G:151:ASP:OD2	2.39	0.55
6:F:97:ARG:HG2	6:F:130:ILE:HD12	1.89	0.54
1:A:994:GLU:OE1	1:A:994:GLU:N	2.40	0.54
1:A:1332:GLU:HA	1:A:1335:LYS:HB2	1.88	0.54
2:B:269:TYR:HE2	2:B:337:VAL:HG21	1.72	0.54
2:B:631:PRO:HB3	2:B:638:PRO:HG3	1.90	0.54
6:F:99:LEU:HB3	7:G:112:PRO:HG3	1.88	0.54
2:B:501:ARG:HD2	2:B:545:PHE:HB2	1.89	0.54
1:A:1585:ILE:HG12	1:A:1589:MET:HE2	1.89	0.54
2:B:1016:GLY:O	3:C:69:ARG:NH1	2.39	0.54
9:I:11:LEU:HD13	13:M:31:ARG:HH22	1.73	0.54
1:A:35:PRO:HB3	1:A:390:LEU:HB3	1.89	0.54
2:B:264:TRP:CG	2:B:265:ARG:H	2.26	0.54
3:C:301:ASN:ND2	14:N:173:THR:O	2.40	0.54
1:A:9:SER:OG	2:B:1201:GLU:O	2.25	0.54
1:A:584:ARG:NH1	6:F:115:THR:O	2.40	0.54
1:A:27:LEU:HD23	2:B:1130:ARG:HB2	1.89	0.54
2:B:654:ARG:NH2	2:B:659:ASP:OD2	2.41	0.54
4:D:28:PRO:HD2	7:G:23:GLN:HG2	1.89	0.54
5:E:124:VAL:HG23	5:E:125:PRO:HD3	1.90	0.53
1:A:1273:THR:HB	1:A:1291:VAL:HG23	1.89	0.53
1:A:1559:ARG:NH1	1:A:1583:ASP:OD1	2.42	0.53
2:B:127:ARG:NH2	2:B:193:TYR:OH	2.41	0.53
1:A:446:ARG:HE	1:A:446:ARG:H	1.56	0.53
1:A:1240:LEU:HB3	1:A:1519:LEU:HB3	1.90	0.53
1:A:1504:ILE:HA	1:A:1523:GLY:HA3	1.89	0.53
2:B:73:ILE:HD11	2:B:95:LEU:HD22	1.90	0.53
2:B:883:GLU:HG2	2:B:884:GLU:HG2	1.88	0.53
3:C:32:ASN:ND2	3:C:34:GLU:OE2	2.41	0.53
7:G:237:HIS:HB2	7:G:244:SER:HB3	1.90	0.53
2:B:211:ARG:HE	2:B:239:VAL:HG11	1.73	0.53
2:B:362:LEU:HB2	2:B:370:LYS:HD3	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:212:ILE:HD12	3:C:215:ASP:H	1.74	0.53
13:M:15:VAL:HA	13:M:90:LEU:HD21	1.90	0.53
1:A:1484:LEU:HD23	1:A:1484:LEU:H	1.73	0.53
1:A:1569:VAL:O	1:A:1572:ARG:NE	2.41	0.53
3:C:275:VAL:HG21	3:C:293:ARG:HH21	1.74	0.53
1:A:342:ARG:HE	1:A:1631:ARG:H	1.57	0.53
1:A:360:LEU:HD21	1:A:434:VAL:HG23	1.91	0.53
2:B:398:GLN:HB2	2:B:667:PHE:HD1	1.73	0.53
3:C:134:LEU:HD12	3:C:167:LEU:HB3	1.90	0.53
2:B:809:VAL:HG13	2:B:901:VAL:HG13	1.91	0.53
2:B:71:LYS:HE3	2:B:425:ILE:HD12	1.90	0.53
6:F:75:PRO:HG2	6:F:78:GLN:HB2	1.91	0.52
13:M:81:PHE:HE1	13:M:86:LYS:HA	1.74	0.52
1:A:1118:VAL:HG11	5:E:154:ILE:HG12	1.90	0.52
2:B:1099:THR:OG1	2:B:1178:ILE:O	2.24	0.52
13:M:21:VAL:N	13:M:91:TYR:OH	2.32	0.52
2:B:307:GLU:HG2	9:I:7:LEU:HG	1.92	0.52
8:H:33:GLN:HE22	8:H:35:GLN:HB3	1.74	0.52
8:H:93:TYR:CG	8:H:143:LEU:HB3	2.45	0.52
1:A:32:ILE:HB	1:A:79:ILE:HG22	1.91	0.52
1:A:637:PHE:O	2:B:1091:ARG:NH1	2.42	0.52
2:B:280:LEU:HD13	2:B:354:LEU:HD23	1.91	0.52
2:B:731:VAL:HG23	10:J:63:TYR:HE2	1.74	0.52
2:B:1010:ASN:HB3	2:B:1025:ASP:HB2	1.91	0.52
1:A:480:ALA:O	1:A:635:MET:N	2.43	0.52
1:A:829:GLY:N	1:A:832:ASP:OD2	2.41	0.52
1:A:373:LEU:HD12	1:A:376:GLU:H	1.74	0.52
1:A:763:GLY:C	1:A:765:LEU:H	2.17	0.52
2:B:106:LYS:HG2	2:B:107:PRO:HD2	1.92	0.52
2:B:913:ILE:HD12	2:B:929:ARG:HA	1.91	0.52
1:A:956:ARG:HH11	1:A:979:GLY:HA3	1.74	0.52
2:B:898:LEU:HD23	2:B:898:LEU:H	1.74	0.52
5:E:126:SER:C	5:E:128:PRO:HD3	2.35	0.52
2:B:586:VAL:HG22	2:B:640:LEU:HD13	1.91	0.52
3:C:331:CYS:SG	11:K:44:ARG:NH1	2.83	0.52
6:F:103:MET:HB2	7:G:51:PRO:HG2	1.91	0.52
1:A:669:LEU:HB3	1:A:673:HIS:HB2	1.91	0.52
2:B:501:ARG:HG3	2:B:544:HIS:HB3	1.91	0.52
1:A:498:PRO:HB3	1:A:612:LYS:HA	1.91	0.52
1:A:753:ASN:N	1:A:767:ASN:O	2.43	0.52
2:B:215:MET:HB2	2:B:235:GLN:O	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:711:GLN:HG2	2:B:713:PRO:HD2	1.92	0.52
1:A:318:THR:O	1:A:320:VAL:N	2.43	0.51
3:C:82:TYR:HD2	3:C:126:PHE:HZ	1.56	0.51
7:G:70:VAL:HG12	7:G:71:MET:HG2	1.92	0.51
11:K:105:ILE:HD11	11:K:116:ALA:HB3	1.93	0.51
1:A:488:PRO:HD2	2:B:781:TYR:CD1	2.45	0.51
1:A:672:ASP:HA	2:B:952:HIS:HE1	1.74	0.51
2:B:203:ILE:HG22	2:B:485:THR:HG22	1.91	0.51
5:E:101:GLN:HE21	5:E:127:ILE:HG13	1.75	0.51
7:G:51:PRO:HA	7:G:54:LEU:HD23	1.91	0.51
7:G:232:THR:N	7:G:248:THR:O	2.43	0.51
8:H:92:ASP:OD2	8:H:145:ARG:NH2	2.44	0.51
14:N:113:SER:OG	14:N:117:GLU:OE2	2.19	0.51
1:A:509:GLU:OE2	1:A:515:ASN:ND2	2.43	0.51
2:B:379:ARG:HG2	2:B:579:ALA:HB1	1.92	0.51
2:B:614:GLU:OE1	2:B:616:LYS:NZ	2.35	0.51
3:C:85:PHE:HE1	3:C:204:LEU:HD22	1.74	0.51
2:B:740:LYS:NZ	2:B:803:MET:SD	2.81	0.51
2:B:985:ILE:O	14:N:157:ARG:NH2	2.42	0.51
2:B:1093:LEU:HD13	2:B:1179:PRO:HG3	1.93	0.51
13:M:41:TYR:HE1	14:N:30:LYS:H	1.57	0.51
1:A:550:SER:HB2	1:A:553:GLN:HE22	1.74	0.51
1:A:1041:ALA:HB1	1:A:1648:ASN:HD21	1.75	0.51
2:B:167:SER:H	2:B:170:CYS:HB3	1.76	0.51
2:B:1065:ARG:O	2:B:1066:HIS:HB2	2.10	0.51
5:E:22:MET:HE1	5:E:26:ARG:HH21	1.75	0.51
1:A:855:ARG:NH1	1:A:867:ASP:O	2.43	0.51
1:A:1617:THR:HG22	1:A:1620:GLN:HB2	1.92	0.51
2:B:782:ASP:N	2:B:782:ASP:OD1	2.44	0.51
6:F:81:THR:OG1	6:F:146:TRP:NE1	2.44	0.51
1:A:1007:ILE:HD11	2:B:518:ARG:HB3	1.92	0.50
1:A:1049:MET:HB3	5:E:208:TYR:HE1	1.75	0.50
3:C:48:ASP:OD1	3:C:49:ALA:N	2.42	0.50
1:A:245:LYS:HA	1:A:251:ILE:HG22	1.92	0.50
1:A:248:PHE:HE1	1:A:442:LYS:NZ	1.92	0.50
1:A:835:LEU:HA	1:A:917:MET:H	1.76	0.50
1:A:426:ALA:HA	1:A:429:THR:HG22	1.93	0.50
1:A:595:LEU:HB3	1:A:1020:GLN:HE22	1.76	0.50
1:A:1018:TYR:CZ	1:A:1227:MET:HE1	2.47	0.50
1:A:1296:PHE:N	1:A:1468:LYS:O	2.35	0.50
3:C:33:VAL:HG21	11:K:126:ASP:HB3	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:64:ILE:HA	6:F:67:LYS:HZ2	1.76	0.50
1:A:1310:LYS:HZ2	1:A:1467:GLY:HA3	1.77	0.50
1:A:1478:ALA:HB1	9:I:21:ASN:HB2	1.93	0.50
1:A:40:ASN:ND2	1:A:41:LEU:H	2.10	0.50
2:B:1140:LYS:HD3	7:G:17:ILE:HD11	1.90	0.50
5:E:143:ASN:HD22	5:E:144:ILE:N	2.09	0.50
1:A:763:GLY:C	1:A:765:LEU:N	2.69	0.50
1:A:855:ARG:HD2	1:A:869:PRO:HA	1.92	0.50
2:B:132:SER:HB2	2:B:134:ARG:HH11	1.76	0.50
2:B:831:GLU:OE1	2:B:868:LYS:NZ	2.43	0.50
2:B:916:LYS:HB3	2:B:916:LYS:HZ3	1.75	0.50
6:F:57:ASP:O	6:F:61:HIS:ND1	2.35	0.50
1:A:1450:ILE:HG23	1:A:1457:ILE:HG21	1.93	0.50
3:C:195:LYS:NZ	10:J:58:GLU:OE2	2.37	0.50
7:G:140:GLN:OE1	7:G:217:TRP:NE1	2.45	0.50
15:S:65:DG:H2"	15:S:66:DA:C8	2.46	0.50
1:A:643:ALA:HB1	2:B:1087:LEU:HD23	1.93	0.50
1:A:1216:THR:HG23	1:A:1221:ARG:HD3	1.94	0.50
2:B:398:GLN:HG3	2:B:399:HIS:ND1	2.27	0.50
15:S:60:DC:H2"	15:S:61:DA:C8	2.47	0.50
1:A:458:GLN:CD	1:A:458:GLN:H	2.19	0.49
2:B:256:GLY:O	2:B:305:ARG:NH2	2.44	0.49
9:I:28:VAL:HG12	9:I:38:PRO:HD3	1.93	0.49
2:B:184:LYS:HE3	2:B:735:HIS:CD2	2.47	0.49
3:C:260:GLU:HG2	3:C:262:SER:H	1.77	0.49
10:J:5:VAL:HG22	10:J:15:GLY:HA3	1.93	0.49
8:H:6:PHE:HB3	8:H:59:ILE:HB	1.93	0.49
12:L:31:CYS:HB3	12:L:34:CYS:SG	2.52	0.49
1:A:538:ASN:OD1	1:A:539:GLU:N	2.45	0.49
1:A:1003:ARG:HH21	2:B:530:PRO:HA	1.78	0.49
1:A:781:LEU:HA	1:A:785:GLN:HG3	1.94	0.49
1:A:1240:LEU:HG	1:A:1536:ILE:HG21	1.95	0.49
5:E:55:ARG:NH1	5:E:137:GLU:OE2	2.45	0.49
7:G:232:THR:O	7:G:248:THR:N	2.43	0.49
8:H:99:GLY:HA3	8:H:118:PHE:HD1	1.77	0.49
8:H:129:TYR:H	8:H:130:ARG:HH11	1.59	0.49
2:B:404:LEU:HD11	2:B:551:ILE:HG21	1.95	0.49
2:B:518:ARG:NH1	2:B:537:SER:O	2.44	0.49
1:A:602:GLY:N	1:A:651:ALA:O	2.46	0.49
1:A:653:THR:OG1	1:A:667:ARG:NH1	2.45	0.49
2:B:1158:ILE:HD11	2:B:1166:LYS:HB3	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:J:64:ASN:HD22	10:J:66:LEU:H	1.61	0.49
1:A:1032:VAL:HG23	1:A:1182:GLY:H	1.77	0.49
3:C:105:PRO:HG2	3:C:187:ALA:HB3	1.93	0.49
3:C:131:THR:HB	3:C:209:ILE:HG22	1.95	0.49
1:A:748:ASN:HB2	1:A:1071:ASP:HB3	1.95	0.49
2:B:367:SER:HA	2:B:370:LYS:HB3	1.95	0.49
2:B:609:ARG:HH12	2:B:664:VAL:HG12	1.77	0.49
2:B:721:MET:HG2	2:B:1036:LEU:HD21	1.94	0.49
2:B:1140:LYS:HD3	7:G:13:THR:CG2	2.43	0.49
15:S:57:DA:H2"	15:S:58:DA:C8	2.47	0.49
1:A:496:GLY:HA3	1:A:615:ARG:HB2	1.94	0.49
1:A:1085:LEU:HD22	6:F:152:ILE:HD13	1.94	0.49
2:B:218:ILE:HD13	2:B:391:PRO:HB3	1.94	0.49
3:C:332:PRO:O	11:K:44:ARG:NH1	2.43	0.49
1:A:4:SER:HB2	1:A:573:LEU:HD13	1.94	0.48
1:A:111:LYS:HG3	1:A:234:ASP:HB3	1.94	0.48
1:A:668:GLY:HA3	1:A:787:GLY:HA2	1.95	0.48
1:A:1006:LEU:HD11	2:B:713:PRO:HB3	1.95	0.48
1:A:1064:THR:HG23	1:A:1143:LYS:HD3	1.94	0.48
1:A:1506:ARG:HB3	1:A:1522:GLU:HB2	1.95	0.48
2:B:175:MET:HE2	2:B:180:LEU:HA	1.94	0.48
10:J:9:SER:HB2	10:J:45:CYS:HB2	1.93	0.48
1:A:248:PHE:HE1	1:A:442:LYS:HZ1	1.52	0.48
1:A:263:ASN:HA	1:A:266:VAL:HG22	1.94	0.48
9:I:111:PHE:HB3	9:I:122:ARG:HH11	1.77	0.48
1:A:446:ARG:N	1:A:446:ARG:NE	2.60	0.48
1:A:1572:ARG:HD3	1:A:1573:TYR:HD1	1.78	0.48
1:A:1655:ASP:OD1	1:A:1656:VAL:N	2.46	0.48
2:B:12:ARG:HG2	2:B:13:THR:HG22	1.93	0.48
2:B:790:ASN:HD22	2:B:791:LYS:N	2.12	0.48
6:F:101:ILE:HA	6:F:105:ALA:HB3	1.95	0.48
1:A:89:LEU:HB3	1:A:1623:THR:HG22	1.94	0.48
1:A:90:PHE:HB3	1:A:93:GLN:HE21	1.78	0.48
2:B:261:ARG:HH21	2:B:270:LEU:HD21	1.78	0.48
3:C:91:VAL:HG11	10:J:60:PHE:HB3	1.94	0.48
4:D:48:GLU:OE2	4:D:90:LYS:NZ	2.46	0.48
1:A:1635:ASP:OD1	1:A:1635:ASP:N	2.47	0.48
2:B:1064:LYS:C	2:B:1066:HIS:H	2.22	0.48
7:G:137:ILE:HG12	7:G:145:ILE:HD11	1.94	0.48
2:B:225:ARG:HH21	2:B:261:ARG:HH12	1.60	0.48
7:G:226:ASP:OD1	7:G:227:GLY:N	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:143:TRP:CG	2:B:446:MET:HE1	2.49	0.48
7:G:49:LEU:HD12	7:G:105:ILE:HG21	1.93	0.48
7:G:219:ASP:OD1	7:G:220:SER:N	2.45	0.48
1:A:1003:ARG:HH12	2:B:533:THR:HG21	1.79	0.48
2:B:1063:ARG:C	2:B:1066:HIS:H	2.22	0.48
3:C:145:ASP:OD1	3:C:146:ALA:N	2.43	0.48
1:A:239:PHE:HD2	1:A:260:GLN:HA	1.79	0.48
1:A:419:ILE:HD12	1:A:422:ARG:HE	1.79	0.48
1:A:1242:ILE:HB	1:A:1517:ARG:HH12	1.78	0.48
1:A:1606:SER:HB3	1:A:1612:LYS:HD3	1.96	0.48
2:B:277:LEU:HD22	2:B:288:ILE:HG13	1.95	0.48
2:B:963:PHE:O	2:B:1027:TYR:OH	2.32	0.48
1:A:1197:SER:HB2	1:A:1219:ILE:HD13	1.96	0.47
1:A:1229:ALA:HB1	1:A:1595:TYR:CE2	2.49	0.47
2:B:853:GLU:HA	2:B:879:PRO:HB3	1.96	0.47
7:G:136:TYR:HD2	7:G:148:LEU:HD13	1.78	0.47
1:A:246:ASP:HB3	1:A:249:THR:O	2.14	0.47
2:B:1107:CYS:HB2	2:B:1130:ARG:HH11	1.79	0.47
7:G:66:LEU:H	7:G:66:LEU:HD23	1.78	0.47
8:H:8:ASP:OD1	8:H:9:ILE:N	2.42	0.47
9:I:109:THR:OG1	9:I:123:THR:O	2.32	0.47
1:A:522:ALA:HA	1:A:532:GLY:HA2	1.97	0.47
1:A:1055:ILE:HD11	1:A:1580:ARG:HH12	1.78	0.47
2:B:280:LEU:O	2:B:323:ARG:NH2	2.48	0.47
7:G:145:ILE:HD12	7:G:217:TRP:HE1	1.79	0.47
1:A:925:MET:HA	1:A:928:MET:HE2	1.97	0.47
1:A:1298:ASP:OD1	1:A:1299:ASN:N	2.46	0.47
7:G:162:ILE:HD13	7:G:217:TRP:CH2	2.49	0.47
14:N:149:ASP:OD2	14:N:151:SER:OG	2.31	0.47
1:A:19:LEU:HD22	2:B:1195:ARG:HB2	1.97	0.47
1:A:601:MET:HE1	1:A:656:GLN:HB3	1.96	0.47
2:B:650:LEU:HD23	2:B:663:ILE:HG21	1.95	0.47
6:F:85:MET:HB2	6:F:151:LEU:HB3	1.97	0.47
12:L:31:CYS:SG	12:L:32:ALA:N	2.87	0.47
13:M:53:LEU:HD23	13:M:96:LEU:HD13	1.96	0.47
1:A:760:TRP:CB	1:A:764:SER:OG	2.58	0.47
1:A:893:ASP:OD2	1:A:956:ARG:N	2.47	0.47
5:E:198:ILE:HB	5:E:210:SER:O	2.15	0.47
13:M:14:SER:OG	13:M:89:GLN:OE1	2.33	0.47
13:M:28:LYS:HG2	14:N:105:SER:HB2	1.95	0.47
1:A:677:GLY:O	1:A:681:THR:OG1	2.26	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:265:ARG:HD3	2:B:473:GLN:HG3	1.97	0.47
2:B:317:TYR:HE1	2:B:320:LEU:HB2	1.79	0.47
2:B:340:ALA:HB1	2:B:344:GLN:HE21	1.78	0.47
2:B:990:ASP:OD1	2:B:990:ASP:N	2.47	0.47
6:F:108:PHE:HB2	6:F:129:LYS:HB3	1.97	0.47
9:I:21:ASN:OD1	9:I:22:ALA:N	2.48	0.47
9:I:62:ALA:HB1	9:I:69:THR:HG21	1.97	0.47
1:A:1277:GLY:HA3	9:I:44:ASN:HA	1.95	0.47
2:B:633:THR:C	2:B:634:ARG:HG3	2.40	0.47
2:B:863:ASP:OD2	2:B:865:THR:OG1	2.22	0.47
2:B:973:ALA:O	10:J:47:ARG:HD2	2.15	0.47
5:E:20:LYS:NZ	5:E:34:GLU:HB3	2.30	0.47
2:B:285:ASP:HA	2:B:288:ILE:HD13	1.97	0.47
2:B:662:ASP:OD1	2:B:663:ILE:N	2.41	0.47
1:A:610:ASN:ND2	11:K:97:SER:OG	2.45	0.47
5:E:127:ILE:N	5:E:128:PRO:HD3	2.30	0.47
2:B:776:ILE:HG12	2:B:1026:ILE:HD12	1.97	0.46
5:E:152:LYS:HG3	5:E:154:ILE:HD11	1.96	0.46
8:H:133:ASN:OD1	8:H:134:ASN:N	2.47	0.46
13:M:60:LEU:HD13	13:M:61:GLU:N	2.30	0.46
5:E:155:ARG:HA	5:E:196:VAL:HG12	1.96	0.46
9:I:88:GLN:OE1	9:I:88:GLN:N	2.47	0.46
1:A:89:LEU:HB2	2:B:1192:MET:HE3	1.98	0.46
1:A:1609:SER:HA	1:A:1612:LYS:HZ2	1.80	0.46
2:B:467:THR:OG1	2:B:469:ASN:OD1	2.34	0.46
2:B:1195:ARG:HH12	2:B:1197:ARG:HH11	1.63	0.46
3:C:84:TYR:HB3	12:L:64:LEU:HD11	1.97	0.46
1:A:1196:PRO:HB3	1:A:1575:ILE:HD13	1.96	0.46
13:M:24:GLY:O	14:N:108:THR:N	2.42	0.46
1:A:95:TYR:CZ	1:A:245:LYS:HB2	2.50	0.46
2:B:532:HIS:HE1	2:B:700:LEU:HD12	1.79	0.46
2:B:1042:ASP:HB2	2:B:1043:LYS:HE2	1.96	0.46
2:B:1080:ILE:HG23	2:B:1088:LEU:HD13	1.98	0.46
2:B:1189:LEU:HB3	2:B:1194:ILE:HG23	1.98	0.46
1:A:209:THR:HG23	1:A:211:THR:H	1.81	0.46
1:A:579:ARG:HH12	1:A:584:ARG:HH21	1.63	0.46
1:A:610:ASN:HD22	2:B:929:ARG:HH22	1.63	0.46
1:A:1549:VAL:HG21	1:A:1561:THR:HG21	1.98	0.46
8:H:53:ASP:OD1	8:H:54:SER:N	2.48	0.46
1:A:696:ILE:HG22	1:A:712:ILE:HD11	1.97	0.46
2:B:358:VAL:O	2:B:370:LYS:NZ	2.48	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:111:THR:HG23	7:G:113:PHE:H	1.80	0.46
11:K:54:THR:HA	11:K:61:ALA:HA	1.98	0.46
1:A:585:ASP:OD1	1:A:586:VAL:N	2.42	0.46
1:A:610:ASN:OD1	1:A:611:GLU:N	2.48	0.46
1:A:772:LYS:HE3	8:H:102:TYR:HA	1.97	0.46
1:A:795:HIS:CE1	1:A:1061:SER:HB2	2.51	0.46
2:B:738:ASP:HB2	2:B:741:LEU:HD11	1.97	0.46
1:A:429:THR:O	1:A:433:ASP:HB2	2.15	0.45
1:A:535:GLN:HE21	1:A:543:LEU:HG	1.81	0.45
1:A:908:VAL:HG11	9:I:82:ILE:HG13	1.98	0.45
1:A:1043:GLY:C	5:E:174:GLN:HE21	2.24	0.45
1:A:1195:GLU:O	1:A:1199:GLN:N	2.42	0.45
2:B:766:PRO:HD2	10:J:56:LEU:HD11	1.98	0.45
3:C:319:ARG:NH2	11:K:132:GLU:OE2	2.49	0.45
7:G:93:ASP:HB3	7:G:104:LEU:HD21	1.98	0.45
8:H:49:VAL:HG11	8:H:55:LEU:HD21	1.97	0.45
1:A:799:GLU:O	1:A:1079:LYS:NZ	2.47	0.45
1:A:1275:THR:HG23	1:A:1289:SER:HB2	1.98	0.45
1:A:1322:ILE:HA	1:A:1325:LEU:HD12	1.98	0.45
1:A:65:CYS:SG	1:A:72:CYS:HB2	2.57	0.45
2:B:145:VAL:HG13	2:B:149:GLU:HG2	1.97	0.45
2:B:1099:THR:HG21	2:B:1180:PHE:HB2	1.98	0.45
2:B:1189:LEU:HD12	2:B:1196:LEU:HD11	1.97	0.45
5:E:54:GLN:HG3	5:E:56:LYS:HG2	1.97	0.45
6:F:92:ARG:HH22	7:G:109:PRO:HB3	1.80	0.45
7:G:110:ASP:OD1	7:G:111:THR:N	2.46	0.45
1:A:248:PHE:HE1	1:A:442:LYS:CE	2.17	0.45
1:A:471:MET:HE2	2:B:1181:VAL:HG22	1.99	0.45
2:B:357:ILE:HG13	2:B:358:VAL:N	2.31	0.45
5:E:149:LEU:H	5:E:149:LEU:HD23	1.82	0.45
8:H:43:ASN:HD21	8:H:46:LEU:HD23	1.81	0.45
1:A:232:LYS:HB2	1:A:239:PHE:HE1	1.82	0.45
1:A:1545:ASP:OD1	1:A:1546:VAL:N	2.49	0.45
1:A:454:PRO:HB3	1:A:458:GLN:HG2	1.97	0.45
1:A:596:HIS:HB3	1:A:1195:GLU:HG2	1.98	0.45
1:A:855:ARG:HA	1:A:974:THR:HG22	1.98	0.45
1:A:1227:MET:HE2	1:A:1227:MET:HB3	1.89	0.45
1:A:1658:ALA:HA	6:F:132:LEU:HD23	1.99	0.45
2:B:723:LYS:HB2	2:B:723:LYS:HZ2	1.81	0.45
2:B:920:ARG:HD3	2:B:1032:TYR:HD2	1.81	0.45
1:A:581:ILE:HD11	1:A:605:VAL:HG21	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:22:ILE:HG23	7:G:76:LYS:HG3	1.98	0.45
4:D:27:LEU:HD23	4:D:27:LEU:H	1.81	0.45
13:M:10:ILE:HD13	13:M:88:ILE:HD11	1.99	0.45
1:A:518:GLU:OE2	1:A:582:LYS:NZ	2.43	0.45
1:A:721:LYS:NZ	8:H:93:TYR:O	2.41	0.45
1:A:764:SER:C	1:A:766:GLU:N	2.57	0.45
2:B:211:ARG:NH2	2:B:243:GLN:OE1	2.36	0.45
4:D:87:SER:OG	4:D:88:GLN:OE1	2.34	0.45
10:J:10:CYS:SG	10:J:11:GLY:N	2.90	0.45
1:A:763:GLY:C	1:A:765:LEU:HD22	2.41	0.45
2:B:885:VAL:HG23	12:L:58:LYS:HB3	1.99	0.45
6:F:86:THR:HG23	6:F:88:TYR:H	1.82	0.45
13:M:39:ASP:O	13:M:53:LEU:HA	2.17	0.45
1:A:481:ARG:HA	1:A:634:ASN:HA	1.98	0.44
2:B:750:PRO:HB2	2:B:753:LYS:HB3	2.00	0.44
2:B:1094:ASN:HA	2:B:1098:TYR:HB2	1.98	0.44
2:B:1202:PRO:HG2	4:D:21:VAL:HG21	1.98	0.44
1:A:242:LYS:H	1:A:242:LYS:HD2	1.83	0.44
1:A:481:ARG:HH22	16:T:23:DA:H5'	1.82	0.44
1:A:1262:LEU:HA	1:A:1497:ILE:HA	1.98	0.44
1:A:1585:ILE:O	1:A:1589:MET:HG2	2.17	0.44
2:B:164:MET:HB2	2:B:194:PHE:HE1	1.81	0.44
2:B:205:MET:SD	2:B:404:LEU:HA	2.57	0.44
2:B:286:ARG:HD2	9:I:14:GLY:HA3	1.98	0.44
8:H:126:GLU:N	8:H:126:GLU:OE1	2.51	0.44
2:B:1118:PRO:HD3	2:B:1125:THR:HG21	1.99	0.44
13:M:60:LEU:HD12	13:M:62:TYR:CZ	2.53	0.44
1:A:241:PRO:HB3	1:A:256:LEU:HD13	1.99	0.44
1:A:947:LEU:HB3	1:A:982:VAL:HG21	1.99	0.44
1:A:1030:VAL:HG23	1:A:1186:GLY:HA3	1.98	0.44
1:A:1246:VAL:HA	1:A:1250:GLN:HE21	1.83	0.44
2:B:167:SER:O	2:B:173:ASN:HB2	2.17	0.44
2:B:1133:MET:SD	2:B:1133:MET:N	2.91	0.44
2:B:1140:LYS:HE2	7:G:17:ILE:HD12	1.75	0.44
8:H:107:VAL:HG12	8:H:108:SER:H	1.82	0.44
14:N:73:ASP:OD1	14:N:74:PHE:N	2.50	0.44
1:A:316:LEU:HD22	1:A:316:LEU:HA	1.87	0.44
1:A:586:VAL:HG22	1:A:644:ARG:HG3	2.00	0.44
1:A:876:LEU:O	1:A:880:GLN:HG2	2.17	0.44
1:A:1441:LYS:HE2	1:A:1441:LYS:HB3	1.88	0.44
2:B:353:VAL:O	2:B:357:ILE:HG12	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:402:VAL:HG21	2:B:545:PHE:HZ	1.83	0.44
2:B:923:GLN:HE21	2:B:959:THR:HG21	1.82	0.44
3:C:254:GLY:N	14:N:179:ASP:OD2	2.50	0.44
5:E:164:LEU:HD21	5:E:175:LEU:HD21	2.00	0.44
1:A:838:GLU:OE2	1:A:842:TRP:NE1	2.50	0.44
1:A:1658:ALA:HB2	7:G:107:ILE:HD11	1.99	0.44
2:B:250:LEU:HD23	2:B:260:PHE:HA	2.00	0.44
2:B:527:PHE:HE2	2:B:666:PRO:HA	1.81	0.44
14:N:33:LYS:HG2	14:N:34:HIS:CD2	2.53	0.44
1:A:467:PHE:HA	1:A:471:MET:HB2	1.99	0.44
1:A:1241:PRO:HD2	1:A:1541:ILE:HG22	2.00	0.44
1:A:1594:THR:HG23	5:E:179:GLN:HG3	1.99	0.44
7:G:51:PRO:HG3	7:G:112:PRO:HB2	2.00	0.44
2:B:117:VAL:HG13	2:B:118:GLU:H	1.82	0.44
13:M:12:ILE:HD12	13:M:88:ILE:HB	1.99	0.44
1:A:587:VAL:HG21	1:A:635:MET:HE3	1.99	0.43
2:B:652:PRO:HA	2:B:662:ASP:O	2.18	0.43
7:G:105:ILE:HG13	7:G:116:THR:HG21	2.00	0.43
13:M:13:GLU:OE2	13:M:87:SER:OG	2.28	0.43
14:N:110:LEU:HB2	14:N:119:LEU:HD13	2.00	0.43
16:T:21:DG:OP2	16:T:21:DG:H3'	2.17	0.43
1:A:621:THR:OG1	1:A:626:ALA:O	2.36	0.43
1:A:1298:ASP:HB3	1:A:1301:GLU:HB2	2.00	0.43
2:B:181:VAL:HG11	10:J:62:ARG:HB3	2.00	0.43
3:C:42:VAL:O	11:K:138:LYS:HE3	2.18	0.43
7:G:45:LEU:H	7:G:45:LEU:HD23	1.83	0.43
11:K:109:GLY:O	11:K:110:GLU:HG2	2.18	0.43
16:T:20:DT:C2'	16:T:21:DG:H5'	2.44	0.43
1:A:65:CYS:SG	1:A:72:CYS:CB	2.95	0.43
8:H:38:LEU:HD12	8:H:125:LEU:HB3	1.99	0.43
1:A:344:ASN:HD22	1:A:346:SER:H	1.67	0.43
1:A:708:THR:HG21	1:A:741:PRO:HA	2.00	0.43
2:B:93:ASN:OD1	2:B:93:ASN:N	2.50	0.43
2:B:94:LYS:HA	2:B:94:LYS:HE2	2.00	0.43
2:B:296:ASP:OD1	2:B:297:VAL:N	2.51	0.43
2:B:104:ILE:HD13	2:B:161:LEU:HD11	2.01	0.43
2:B:562:PRO:HB3	2:B:593:ILE:HD12	2.00	0.43
2:B:586:VAL:HA	2:B:640:LEU:HB2	1.99	0.43
1:A:98:LEU:HD12	1:A:243:PHE:HE2	1.83	0.43
1:A:470:HIS:HB3	2:B:1181:VAL:HG21	1.98	0.43
1:A:1055:ILE:HA	1:A:1178:LEU:HA	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1301:GLU:HG2	9:I:60:LEU:HD21	2.00	0.43
1:A:1482:LYS:HD3	2:B:311:ARG:HH22	1.82	0.43
2:B:328:GLN:OE1	2:B:328:GLN:N	2.45	0.43
2:B:726:MET:HE3	2:B:742:TYR:HB3	2.01	0.43
5:E:180:ARG:HH21	5:E:192:ARG:HH11	1.67	0.43
1:A:945:CYS:SG	1:A:946:LEU:N	2.92	0.43
1:A:1012:LYS:O	1:A:1013:THR:HG23	2.19	0.43
1:A:1561:THR:O	1:A:1565:GLU:HG3	2.19	0.43
2:B:677:THR:O	2:B:679:GLN:N	2.46	0.43
2:B:742:TYR:HE2	2:B:803:MET:HE2	1.82	0.43
9:I:111:PHE:CD1	9:I:122:ARG:HD2	2.53	0.43
1:A:100:ALA:HB1	1:A:227:LEU:HB3	1.99	0.43
1:A:658:LEU:HB2	1:A:1058:THR:HG23	1.99	0.43
2:B:71:LYS:HB3	2:B:425:ILE:HD11	2.00	0.43
2:B:241:PRO:O	2:B:243:GLN:NE2	2.49	0.43
2:B:714:ARG:HH22	2:B:957:ARG:HH11	1.67	0.43
2:B:1014:TYR:OH	3:C:293:ARG:NH1	2.51	0.43
4:D:99:LEU:HD21	7:G:136:TYR:HB2	2.00	0.43
8:H:93:TYR:CD2	8:H:145:ARG:HG3	2.54	0.43
10:J:36:LEU:HG	10:J:51:LEU:HD12	2.01	0.43
1:A:953:GLU:H	1:A:953:GLU:CD	2.27	0.43
2:B:720:GLN:O	2:B:724:GLN:HG2	2.18	0.43
2:B:830:ASP:N	2:B:830:ASP:OD1	2.51	0.43
2:B:970:LYS:HD3	2:B:1000:LEU:HD21	2.01	0.43
3:C:117:ASP:OD1	3:C:118:SER:N	2.50	0.43
3:C:132:ILE:HB	3:C:169:PHE:HE1	1.84	0.43
3:C:333:ILE:H	3:C:333:ILE:HG13	1.70	0.43
4:D:83:SER:HA	4:D:86:ILE:HB	2.00	0.43
1:A:712:ILE:HG22	11:K:106:GLN:NE2	2.34	0.43
1:A:759:TYR:CE1	1:A:913:PRO:HG3	2.54	0.43
1:A:1219:ILE:N	1:A:1220:PRO:HD2	2.33	0.43
10:J:28:ASP:HB3	10:J:30:LEU:HG	2.00	0.43
13:M:82:ASN:OD1	13:M:85:LYS:HG2	2.19	0.43
1:A:173:ILE:C	1:A:173:ILE:CD1	2.92	0.42
1:A:1280:ASN:O	1:A:1281:THR:HG23	2.18	0.42
4:D:29:GLN:HG2	7:G:40:ARG:HB3	2.00	0.42
5:E:180:ARG:HH22	5:E:191:LYS:HA	1.84	0.42
1:A:403:LEU:HD12	1:A:419:ILE:HG13	2.01	0.42
1:A:1613:MET:HB3	1:A:1618:THR:HG23	2.02	0.42
2:B:372:ARG:HA	2:B:375:LEU:HB3	2.01	0.42
2:B:609:ARG:HG2	2:B:626:ILE:HG21	1.99	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:841:ASP:OD1	2:B:841:ASP:N	2.52	0.42
5:E:20:LYS:HZ3	5:E:34:GLU:HB3	1.83	0.42
1:A:316:LEU:HD13	1:A:317:SER:N	2.32	0.42
1:A:491:GLU:O	1:A:493:ASN:N	2.52	0.42
1:A:495:ILE:HG23	1:A:497:VAL:HG13	2.00	0.42
1:A:508:PRO:HB3	1:A:578:TYR:CE1	2.54	0.42
1:A:858:ALA:O	1:A:862:THR:OG1	2.29	0.42
1:A:1558:ALA:HA	1:A:1561:THR:HG22	2.01	0.42
1:A:1589:MET:O	1:A:1596:LEU:N	2.52	0.42
1:A:1660:VAL:HA	1:A:1661:PRO:HD3	1.93	0.42
2:B:206:LEU:HD11	2:B:480:GLN:HG3	2.01	0.42
2:B:676:VAL:HG12	2:B:693:PRO:HB3	2.01	0.42
2:B:886:ASN:HB2	2:B:902:SER:HB3	2.00	0.42
1:A:468:ARG:O	2:B:1070:ARG:NH1	2.52	0.42
1:A:1510:PRO:HG3	1:A:1520:VAL:HG23	2.00	0.42
2:B:181:VAL:HG13	10:J:63:TYR:CE1	2.55	0.42
4:D:99:LEU:HD12	4:D:100:PRO:HD2	2.00	0.42
16:T:22:DA:H2'	16:T:23:DA:H8	1.84	0.42
1:A:511:VAL:HG12	1:A:519:LEU:HD23	2.01	0.42
1:A:650:LEU:HD13	6:F:91:ALA:HB2	2.01	0.42
2:B:27:ASN:HA	10:J:62:ARG:HH12	1.84	0.42
2:B:476:LEU:HD12	2:B:476:LEU:HA	1.89	0.42
2:B:840:LEU:HA	2:B:846:PRO:HA	2.01	0.42
1:A:363:PRO:HG2	1:A:368:ARG:HD3	2.01	0.42
1:A:399:LEU:HD11	1:A:422:ARG:HD2	2.02	0.42
1:A:485:SER:HA	1:A:486:PRO:HD3	1.90	0.42
1:A:627:ASP:OD1	1:A:628:PHE:N	2.47	0.42
1:A:874:GLU:OE2	1:A:878:ARG:NE	2.52	0.42
1:A:1637:PRO:HA	1:A:1640:ARG:HB2	2.01	0.42
2:B:207:ILE:HG22	2:B:505:ARG:HA	2.00	0.42
2:B:882:ILE:HG12	2:B:905:TYR:CE1	2.55	0.42
3:C:80:ALA:O	3:C:218:LYS:NZ	2.36	0.42
8:H:93:TYR:CD2	8:H:143:LEU:HB3	2.54	0.42
11:K:88:PHE:O	11:K:106:GLN:N	2.46	0.42
13:M:21:VAL:HG13	14:N:110:LEU:O	2.19	0.42
1:A:812:VAL:HG22	1:A:815:ARG:HH21	1.85	0.42
1:A:1053:ASP:OD2	1:A:1580:ARG:NH1	2.52	0.42
1:A:1491:GLU:OE2	1:A:1494:ARG:NH2	2.53	0.42
2:B:772:VAL:HA	2:B:1030:VAL:HG12	2.00	0.42
2:B:973:ALA:HB1	10:J:44:TYR:HB2	2.00	0.42
11:K:98:GLU:H	11:K:98:GLU:HG3	1.64	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:T:18:DC:H2"	16:T:19:DA:H3'	2.02	0.42
4:D:35:GLU:N	4:D:35:GLU:OE1	2.53	0.42
1:A:942:GLN:HG2	1:A:947:LEU:HA	2.02	0.42
2:B:1047:ARG:HD2	2:B:1066:HIS:O	2.20	0.42
3:C:139:LYS:HG3	3:C:201:GLU:HG3	2.02	0.42
1:A:486:PRO:HG3	1:A:628:PHE:CG	2.55	0.42
2:B:214:PRO:HB2	2:B:380:LYS:NZ	2.35	0.42
2:B:705:PRO:HG2	2:B:921:HIS:HE2	1.85	0.42
5:E:191:LYS:N	5:E:194:GLU:OE2	2.47	0.42
1:A:1012:LYS:H	1:A:1012:LYS:HD3	1.84	0.41
1:A:1437:ASN:ND2	1:A:1438:ASN:H	2.17	0.41
2:B:46:ILE:O	2:B:50:ASN:HB2	2.20	0.41
2:B:211:ARG:HH12	2:B:646:HIS:HB2	1.85	0.41
2:B:553:THR:O	2:B:646:HIS:ND1	2.52	0.41
5:E:79:TRP:NE1	5:E:81:GLU:OE2	2.49	0.41
13:M:67:ASP:N	13:M:67:ASP:OD1	2.53	0.41
1:A:319:GLU:O	1:A:322:ASN:N	2.53	0.41
1:A:827:THR:HA	2:B:951:PRO:HG3	2.02	0.41
1:A:937:ASN:HA	1:A:940:VAL:HG22	2.02	0.41
1:A:177:LEU:HA	1:A:180:GLU:HG3	2.02	0.41
1:A:1292:ILE:HD13	1:A:1474:LEU:HD13	2.02	0.41
2:B:478:LEU:H	2:B:478:LEU:HD23	1.84	0.41
2:B:629:VAL:HB	2:B:638:PRO:HA	2.02	0.41
2:B:986:PHE:CD2	2:B:992:PRO:HB3	2.55	0.41
3:C:123:ASP:OD1	3:C:123:ASP:N	2.52	0.41
5:E:61:GLN:HB2	5:E:79:TRP:CE3	2.55	0.41
13:M:30:PHE:CE2	13:M:32:ALA:HB2	2.55	0.41
1:A:245:LYS:HG2	1:A:247:GLY:N	2.33	0.41
2:B:74:PHE:CE2	2:B:343:ASP:HB2	2.55	0.41
2:B:588:ILE:HG22	2:B:589:ASP:OD1	2.20	0.41
2:B:654:ARG:HG2	2:B:689:VAL:O	2.19	0.41
6:F:116:ASP:HB3	6:F:119:ARG:HB3	2.01	0.41
15:S:54:DG:H2'	15:S:55:DT:H71	2.02	0.41
1:A:119:ALA:HB2	1:A:334:VAL:HG22	2.02	0.41
1:A:535:GLN:NE2	1:A:543:LEU:HG	2.35	0.41
1:A:844:THR:O	1:A:848:LYS:HG2	2.20	0.41
1:A:1494:ARG:HD2	1:A:1495:LYS:HG3	2.01	0.41
1:A:1582:LEU:HA	1:A:1585:ILE:HG22	2.02	0.41
2:B:140:LYS:HB3	2:B:155:VAL:HG22	2.01	0.41
2:B:752:VAL:HA	2:B:979:GLN:O	2.20	0.41
13:M:11:GLU:HB2	13:M:87:SER:HB3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:36:THR:HB	1:A:45:VAL:HG21	2.03	0.41
1:A:424:MET:O	1:A:428:VAL:HG23	2.21	0.41
1:A:672:ASP:HA	2:B:952:HIS:CE1	2.55	0.41
1:A:706:HIS:CD2	1:A:815:ARG:HH22	2.38	0.41
1:A:1091:VAL:HG13	1:A:1133:LEU:HD22	2.03	0.41
2:B:303:THR:O	2:B:307:GLU:HG3	2.21	0.41
3:C:322:LYS:HA	11:K:125:MET:HE1	2.02	0.41
15:S:67:DA:H2"	15:S:68:DG:C8	2.55	0.41
1:A:86:TYR:H	1:A:431:GLN:HE22	1.67	0.41
5:E:140:LEU:HD13	5:E:140:LEU:O	2.20	0.41
1:A:111:LYS:HB2	1:A:114:GLU:OE1	2.21	0.41
1:A:4:SER:C	1:A:6:PRO:HD3	2.46	0.41
1:A:18:ILE:HG21	1:A:354:SER:HB2	2.02	0.41
1:A:26:ASN:ND2	2:B:1130:ARG:O	2.54	0.41
1:A:318:THR:HB	1:A:319:GLU:H	1.68	0.41
1:A:506:THR:HG21	1:A:578:TYR:HB3	2.03	0.41
1:A:1575:ILE:H	1:A:1575:ILE:HG13	1.55	0.41
2:B:14:ALA:HB3	2:B:980:ASP:HB3	2.03	0.41
2:B:94:LYS:O	2:B:145:VAL:HA	2.21	0.41
2:B:490:LYS:HG3	2:B:729:PRO:HB3	2.01	0.41
2:B:627:GLY:HA2	2:B:668:GLU:OE1	2.20	0.41
2:B:825:PHE:HE2	2:B:899:GLN:HA	1.86	0.41
2:B:1064:LYS:C	2:B:1066:HIS:N	2.78	0.41
2:B:1088:LEU:HG	2:B:1092:LEU:HD13	2.03	0.41
3:C:100:ARG:O	3:C:104:VAL:HG23	2.21	0.41
4:D:29:GLN:OE1	4:D:29:GLN:N	2.54	0.41
11:K:47:ILE:HD11	11:K:63:PHE:HB3	2.03	0.41
14:N:107:MET:SD	14:N:107:MET:N	2.71	0.41
16:T:21:DG:OP2	16:T:22:DA:OP2	2.38	0.41
1:A:597:LYS:NZ	1:A:656:GLN:HE22	2.19	0.41
1:A:880:GLN:HB3	2:B:634:ARG:NH1	2.36	0.41
1:A:985:ARG:HH11	1:A:988:SER:HB3	1.85	0.41
3:C:192:LEU:HD21	3:C:195:LYS:HE3	2.03	0.41
16:T:6:DC:H2"	16:T:7:DA:C8	2.56	0.41
1:A:847:LEU:HD12	1:A:983:LYS:HD2	2.03	0.40
1:A:882:ILE:HD11	9:I:67:VAL:HG11	2.02	0.40
1:A:1556:GLU:HA	1:A:1559:ARG:HB3	2.03	0.40
2:B:709:PHE:CZ	2:B:992:PRO:HG3	2.56	0.40
2:B:773:VAL:HA	2:B:947:ILE:HG23	2.03	0.40
3:C:322:LYS:HG3	11:K:125:MET:SD	2.61	0.40
7:G:17:ILE:O	7:G:21:LYS:HG2	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:239:PHE:CD2	1:A:260:GLN:HA	2.57	0.40
1:A:1032:VAL:HG11	1:A:1179:ILE:HD13	2.02	0.40
1:A:1175:MET:HE3	1:A:1175:MET:HB3	1.89	0.40
2:B:213:HIS:HD2	2:B:214:PRO:HD2	1.85	0.40
3:C:55:ASP:OD1	3:C:271:ARG:NH2	2.54	0.40
9:I:80:ALA:HB1	9:I:96:TYR:CE1	2.56	0.40
1:A:866:LYS:HD2	1:A:868:THR:HG22	2.03	0.40
1:A:1097:TYR:CD2	1:A:1123:VAL:HG12	2.57	0.40
1:A:1502:PRO:O	1:A:1525:ASN:ND2	2.47	0.40
2:B:274:VAL:O	2:B:278:LYS:HG2	2.22	0.40
2:B:862:PHE:HD1	2:B:869:THR:HB	1.86	0.40
3:C:212:ILE:H	3:C:212:ILE:HG13	1.78	0.40
13:M:60:LEU:HD12	13:M:62:TYR:CE1	2.56	0.40
14:N:109:LEU:HB3	14:N:131:LEU:HD21	2.03	0.40
16:T:22:DA:H2'	16:T:23:DA:C8	2.56	0.40
1:A:41:LEU:HG	1:A:43:HIS:HD2	1.87	0.40
1:A:455:GLY:H	1:A:458:GLN:HE21	1.69	0.40
1:A:469:LYS:HG2	1:A:470:HIS:CD2	2.56	0.40
1:A:1022:CYS:SG	1:A:1023:LEU:N	2.94	0.40
1:A:1043:GLY:O	5:E:174:GLN:NE2	2.49	0.40
2:B:768:GLY:N	2:B:1032:TYR:OH	2.55	0.40
5:E:81:GLU:HG3	5:E:96:PHE:CE1	2.56	0.40
1:A:21:ALA:O	1:A:25:ARG:HD2	2.22	0.40
1:A:1242:ILE:HB	1:A:1517:ARG:NH1	2.37	0.40
2:B:827:PHE:CZ	2:B:832:TRP:HB2	2.57	0.40
2:B:1053:ASN:O	2:B:1057:MET:N	2.44	0.40
7:G:80:VAL:HG22	7:G:243:VAL:HG21	2.02	0.40
7:G:131:ASP:O	7:G:233:VAL:HG22	2.21	0.40
10:J:21:TYR:HB2	10:J:39:LEU:HD11	2.03	0.40
14:N:62:VAL:HG22	14:N:66:LYS:HZ1	1.85	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	1479/1664 (89%)	1413 (96%)	62 (4%)	4 (0%)	37	69
2	B	1177/1203 (98%)	1118 (95%)	59 (5%)	0	100	100
3	C	300/335 (90%)	292 (97%)	8 (3%)	0	100	100
4	D	55/137 (40%)	55 (100%)	0	0	100	100
5	E	212/215 (99%)	206 (97%)	6 (3%)	0	100	100
6	F	98/155 (63%)	96 (98%)	2 (2%)	0	100	100
7	G	201/326 (62%)	193 (96%)	8 (4%)	0	100	100
8	H	130/146 (89%)	125 (96%)	5 (4%)	0	100	100
9	I	110/125 (88%)	105 (96%)	5 (4%)	0	100	100
10	J	67/70 (96%)	63 (94%)	4 (6%)	0	100	100
11	K	98/142 (69%)	92 (94%)	6 (6%)	0	100	100
12	L	41/70 (59%)	40 (98%)	1 (2%)	0	100	100
13	M	105/415 (25%)	99 (94%)	5 (5%)	1 (1%)	13	44
14	N	138/233 (59%)	129 (94%)	9 (6%)	0	100	100
All	All	4211/5236 (80%)	4026 (96%)	180 (4%)	5 (0%)	50	79

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	765	LEU
1	A	250	LYS
1	A	319	GLU
13	M	47	GLU
1	A	445	GLY

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1313/1465 (90%)	1295 (99%)	18 (1%)	62	75
2	B	1034/1053 (98%)	1014 (98%)	20 (2%)	52	69
3	C	269/296 (91%)	269 (100%)	0	100	100
4	D	56/116 (48%)	56 (100%)	0	100	100
5	E	196/197 (100%)	194 (99%)	2 (1%)	73	80
6	F	90/137 (66%)	90 (100%)	0	100	100
7	G	183/291 (63%)	181 (99%)	2 (1%)	70	79
8	H	117/128 (91%)	116 (99%)	1 (1%)	75	82
9	I	102/110 (93%)	99 (97%)	3 (3%)	37	58
10	J	64/65 (98%)	62 (97%)	2 (3%)	35	56
11	K	90/130 (69%)	89 (99%)	1 (1%)	70	79
12	L	38/57 (67%)	38 (100%)	0	100	100
13	M	97/371 (26%)	95 (98%)	2 (2%)	48	66
14	N	136/220 (62%)	136 (100%)	0	100	100
All	All	3785/4636 (82%)	3734 (99%)	51 (1%)	64	76

All (51) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	5	LYS
1	A	40	ASN
1	A	217	LYS
1	A	249	THR
1	A	316	LEU
1	A	344	ASN
1	A	390	LEU
1	A	446	ARG
1	A	492	THR
1	A	642	ASN
1	A	727	THR
1	A	862	THR
1	A	930	LEU
1	A	1013	THR
1	A	1281	THR
1	A	1285	ASN
1	A	1575	ILE
1	A	1634	LEU
2	B	37	LEU

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Mol	Chain	Res	Type
2	B	180	LEU
2	B	190	ILE
2	B	196	VAL
2	B	244	THR
2	B	305	ARG
2	B	359	LEU
2	B	384	LEU
2	B	404	LEU
2	B	520	LEU
2	B	543	ASN
2	B	653	VAL
2	B	739	ASN
2	B	752	VAL
2	B	755	ASN
2	B	946	ASP
2	B	1018	THR
2	B	1033	TYR
2	B	1080	ILE
2	B	1133	MET
5	E	140	LEU
5	E	171	LYS
7	G	24	VAL
7	G	32	ASN
8	H	107	VAL
9	I	19	ASN
9	I	24	LEU
9	I	82	ILE
10	J	52	THR
10	J	59	LYS
11	K	66	VAL
13	M	23	VAL
13	M	60	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (78) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	40	ASN
1	A	43	HIS
1	A	93	GLN
1	A	106	HIS
1	A	470	HIS
1	A	535	GLN

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Mol	Chain	Res	Type
1	A	553	GLN
1	A	559	ASN
1	A	571	HIS
1	A	592	GLN
1	A	640	ASN
1	A	642	ASN
1	A	656	GLN
1	A	671	GLN
1	A	673	HIS
1	A	693	GLN
1	A	926	GLN
1	A	1020	GLN
1	A	1036	ASN
1	A	1108	HIS
1	A	1139	ASN
1	A	1141	GLN
1	A	1191	GLN
1	A	1250	GLN
1	A	1285	ASN
1	A	1320	GLN
1	A	1437	ASN
1	A	1447	GLN
1	A	1453	HIS
1	A	1601	GLN
2	B	128	GLN
2	B	146	ASN
2	B	213	HIS
2	B	254	ASN
2	B	282	HIS
2	B	368	GLN
2	B	423	ASN
2	B	427	GLN
2	B	532	HIS
2	B	636	GLN
2	B	688	HIS
2	B	702	ASN
2	B	710	ASN
2	B	715	ASN
2	B	718	GLN
2	B	735	HIS
2	B	739	ASN
2	B	764	ASN

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Mol	Chain	Res	Type
2	B	790	ASN
2	B	823	GLN
2	B	886	ASN
2	B	923	GLN
2	B	944	GLN
2	B	1034	GLN
2	B	1066	HIS
2	B	1115	GLN
3	C	175	GLN
3	C	301	ASN
4	D	38	GLN
4	D	49	ASN
5	E	54	GLN
5	E	101	GLN
5	E	104	ASN
5	E	143	ASN
5	E	179	GLN
7	G	26	ASN
7	G	67	ASN
7	G	126	GLN
7	G	144	HIS
8	H	139	ASN
9	I	19	ASN
10	J	64	ASN
11	K	106	GLN
12	L	53	HIS
13	M	16	GLN
13	M	75	GLN
14	N	34	HIS
14	N	132	GLN

5.3.3　RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 7 ligands modelled in this entry, 7 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6　Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-3446. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1　Orthogonal projections ⓘ

6.1.1　Primary map

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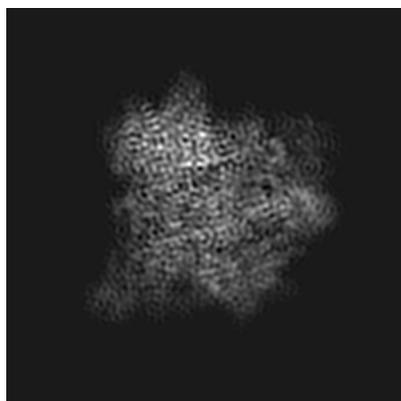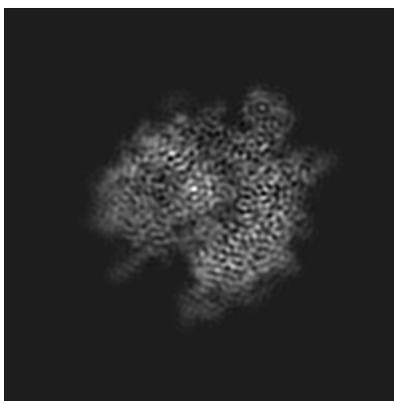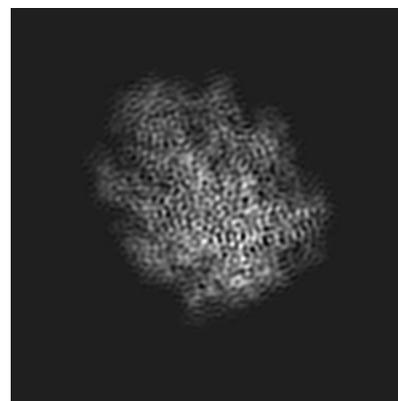
The images above show the map projected in three orthogonal directions.

6.2　Central slices ⓘ
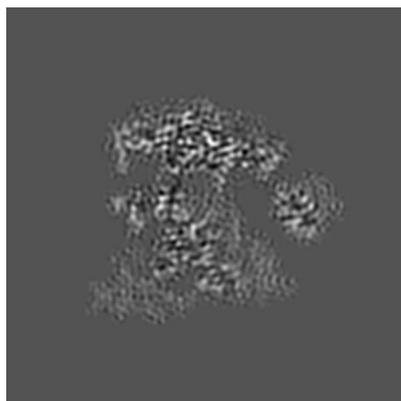
6.2.1　Primary map
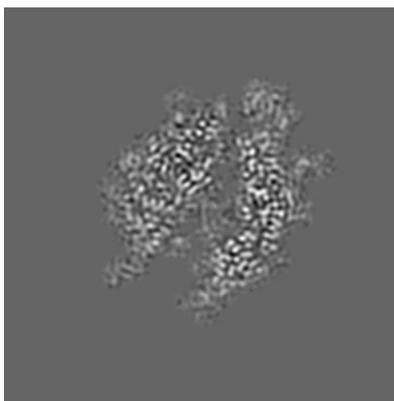
| X Index: 88 | Y Index: 88 | Z Index: 88 |

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

6.3 Largest variance slices ⓘ
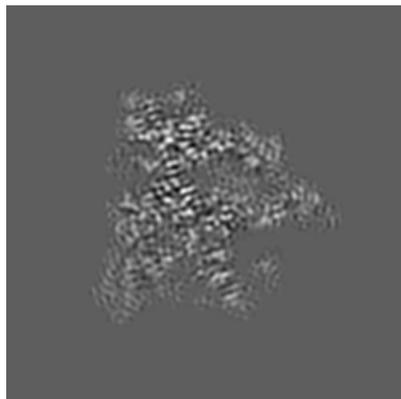
6.3.1 Primary map
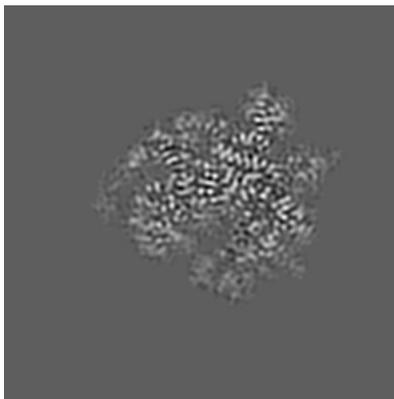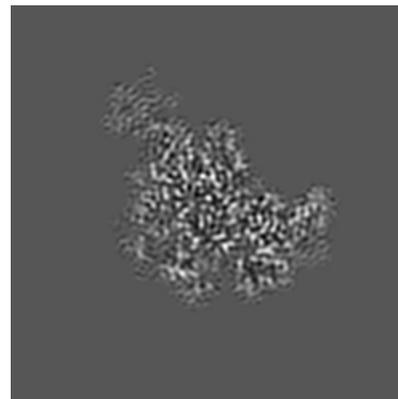
| X Index: 98 | Y Index: 74 | Z Index: 110 |

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

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

6.4.1 Primary map

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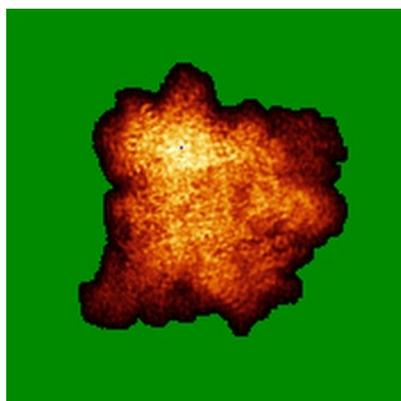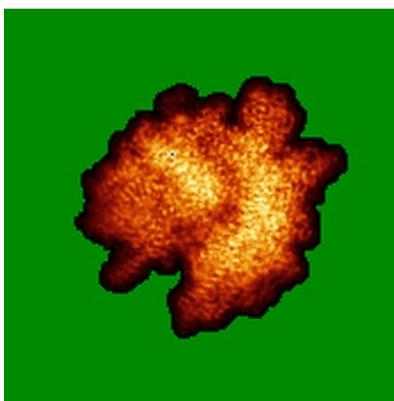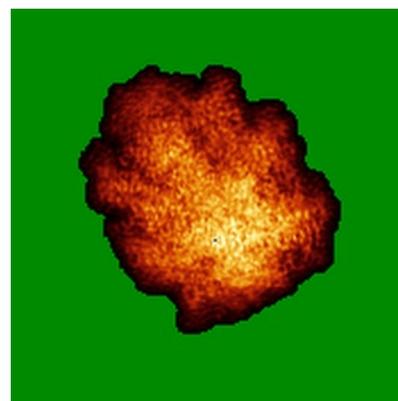
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5　Orthogonal surface views ⓘ
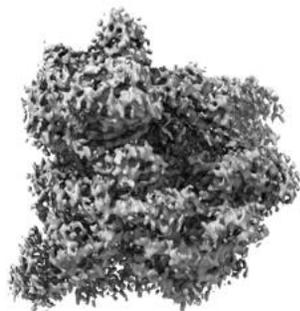
6.5.1　Primary map

X　　　　　　　　　　　　　　　Y　　　　　　　　　　　　　　　Z
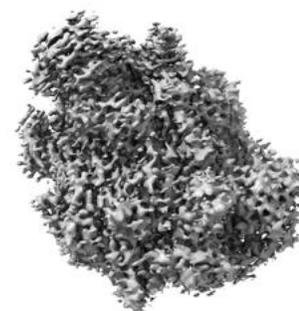
The images above show the 3D surface view of the map at the recommended contour level 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6　Mask visualisation ⓘ

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

7 Map analysis ⓘ

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

7.1 Map-value distribution ⓘ

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

7.2　Volume estimate ⓘ
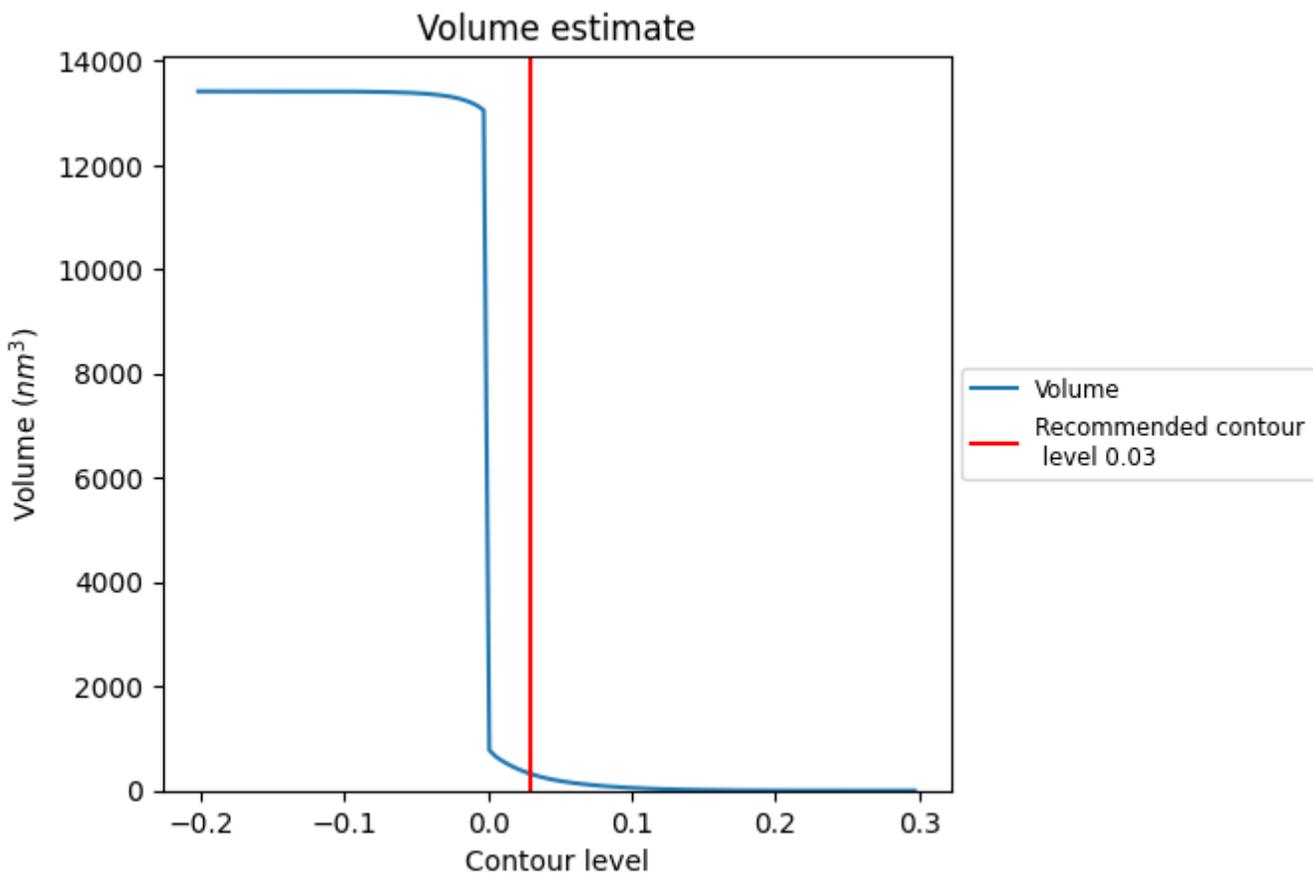
The volume at the recommended contour level is 317 nm^3; this corresponds to an approximate mass of 287 kDa.

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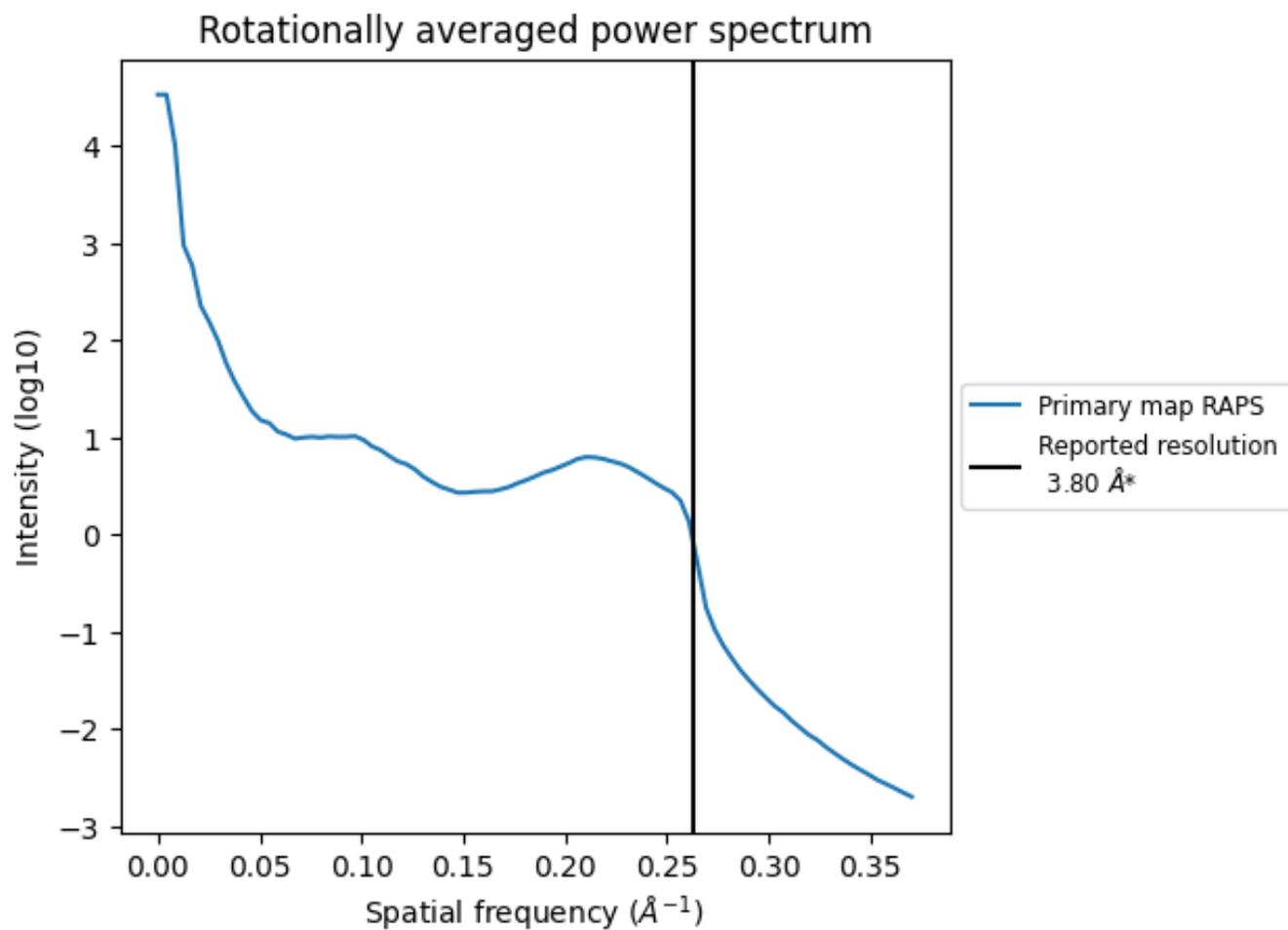
*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

8　Fourier-Shell correlation ⓘ

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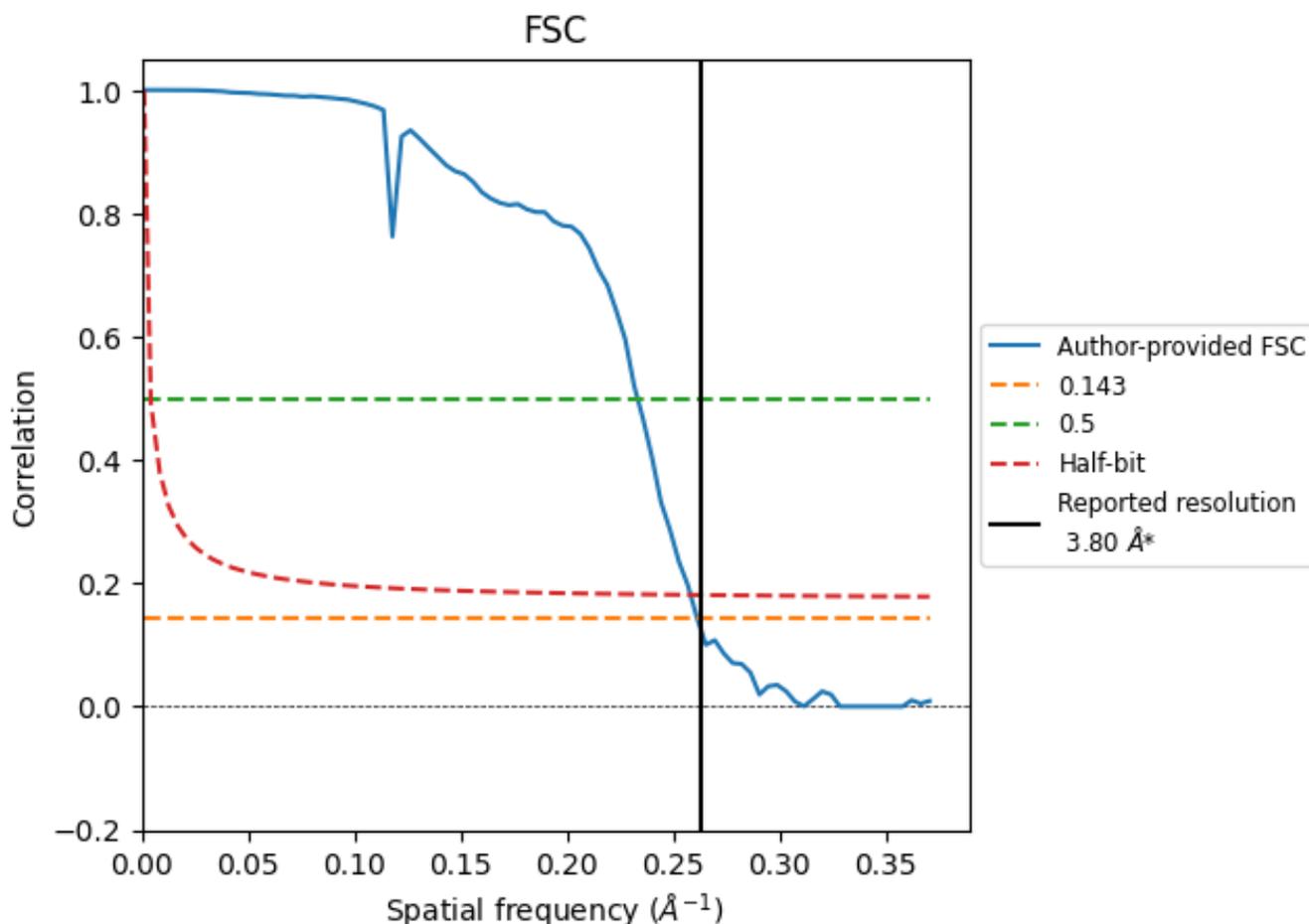
*Reported resolution corresponds to spatial frequency of 0.263 Å^{-1}

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	3.83	4.29	3.88
Unmasked-calculated*	-	-	-

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

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-3446 and PDB model 5M5W. Per-residue inclusion information can be found in section 3 on page 7.

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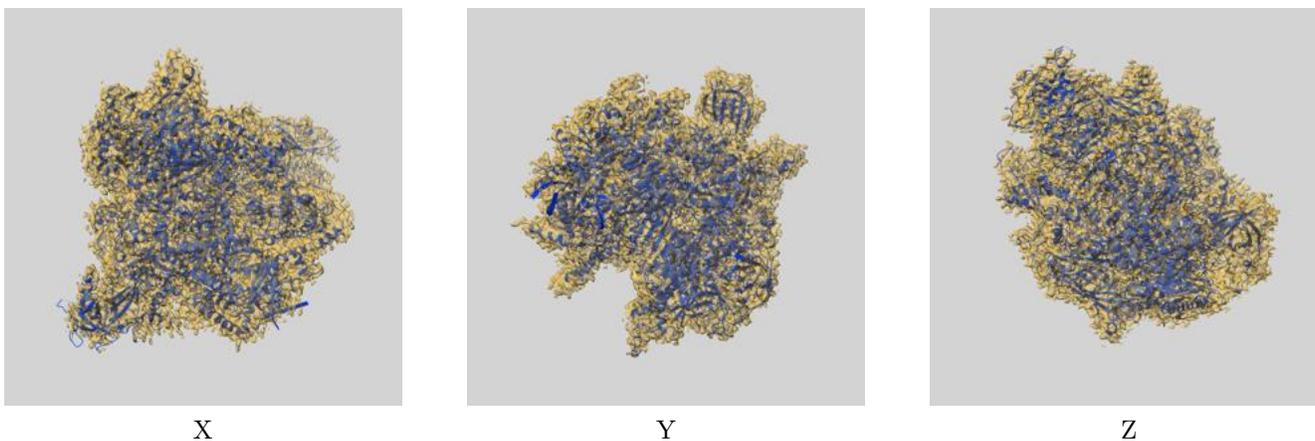
The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2   Q-score mapped to coordinate model ⓘ


X   Y   Z
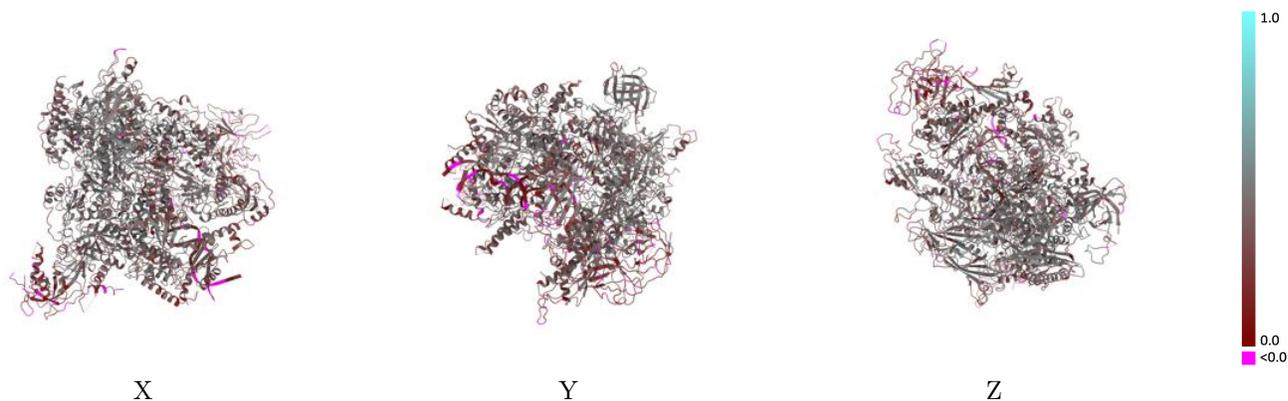
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
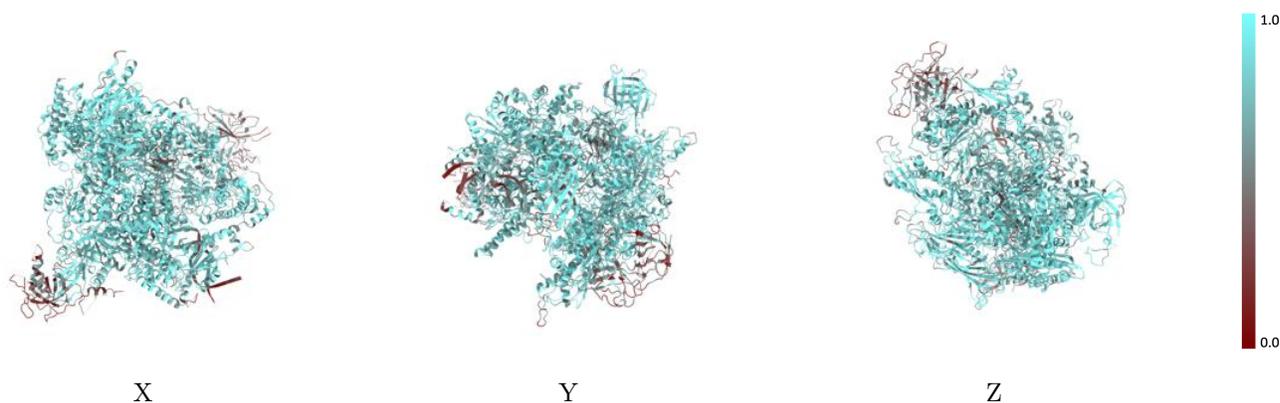
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).

9.4   Atom inclusion ⓘ
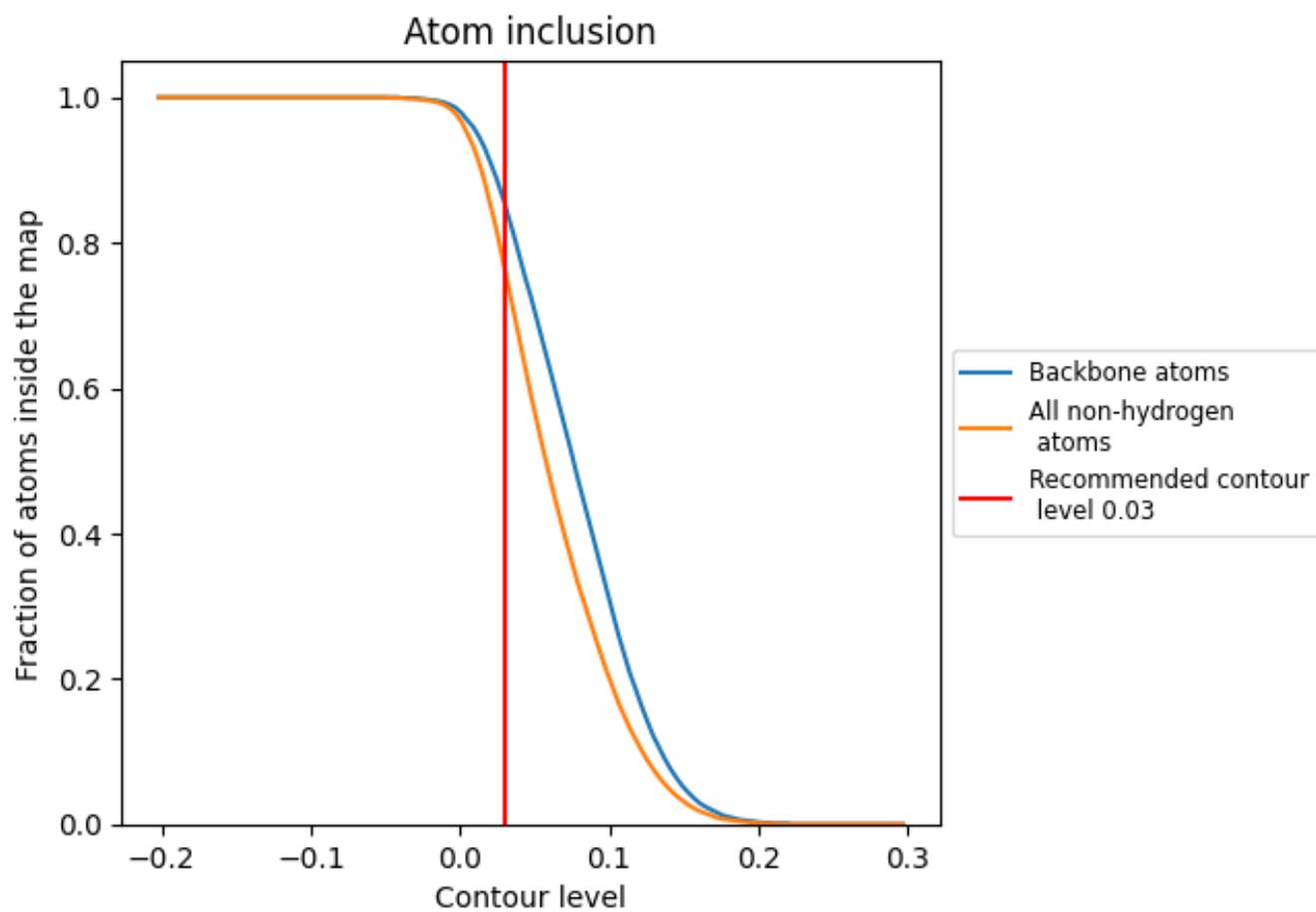
At the recommended contour level, 85% of all backbone atoms, 76% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7640	0.3620
A	0.8140	0.3860
B	0.8090	0.3810
C	0.8510	0.4060
D	0.5230	0.2540
E	0.8290	0.3850
F	0.8410	0.4180
G	0.5050	0.2650
H	0.8420	0.3900
I	0.6110	0.2690
J	0.8750	0.4520
K	0.8440	0.4160
L	0.7860	0.3660
M	0.4610	0.2310
N	0.4070	0.2370
S	0.5160	0.1560
T	0.4280	0.0940

1.0

0.0
<0.0