Full wwPDB EM Validation Report ⓘ

Nov 18, 2026 – 07:05 PM JST

PDB ID	:	23ST / pdb_000023st
EMDB ID	:	EMD-69222
Title	:	The tail fiber structure of F-pyocin
Authors	:	Zhang, Z.L.; Yang, F.L.; Lei, D.S.; He, Y.X.
Deposited on	:	2026-02-16
Resolution	:	3.00 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:

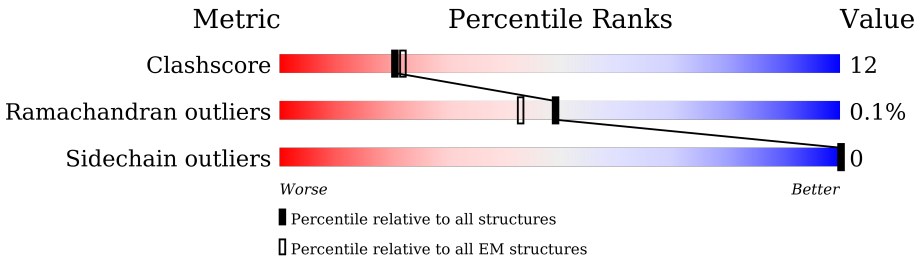
EMDB validation analysis	:	0.0.1.dev133
MolProbity	:	4-5-2 with Phenix2.2
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.51

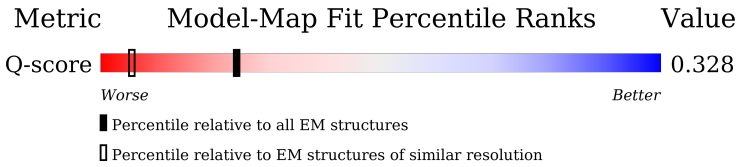
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.00 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	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	14081 (2.50 - 3.50)

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	350	23% 71% 29%
1	C	350	23% 68% 32%
1	E	350	24% 70% 30%
1	F	350	20% 75% 25%

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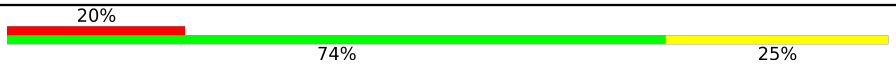
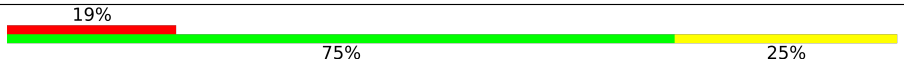
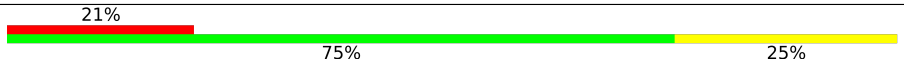
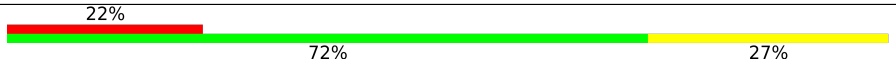
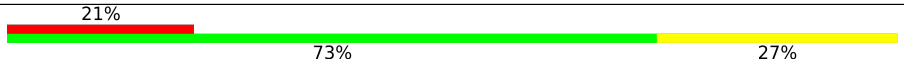
Mol	Chain	Length	Quality of chain
1	G	350	
1	H	350	
1	I	350	
1	J	350	
1	K	350	
2	B	1204	
2	D	1204	
2	M	1204	

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 29919 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 Tail fiber.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	349	Total	C	N	O	S	0	0
			2594	1630	451	504	9		
1	C	349	Total	C	N	O	S	0	0
			2594	1630	451	504	9		
1	E	349	Total	C	N	O	S	0	0
			2594	1630	451	504	9		
1	F	349	Total	C	N	O	S	0	0
			2594	1630	451	504	9		
1	G	349	Total	C	N	O	S	0	0
			2594	1630	451	504	9		
1	H	349	Total	C	N	O	S	0	0
			2594	1630	451	504	9		
1	I	349	Total	C	N	O	S	0	0
			2594	1630	451	504	9		
1	J	349	Total	C	N	O	S	0	0
			2594	1630	451	504	9		
1	K	349	Total	C	N	O	S	0	0
			2594	1630	451	504	9		

- Molecule 2 is a protein called Probable bacteriophage protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	298	Total	C	N	O	S	0	0
			2191	1320	406	458	7		
2	D	298	Total	C	N	O	S	0	0
			2191	1320	406	458	7		
2	M	298	Total	C	N	O	S	0	0
			2191	1320	406	458	7		

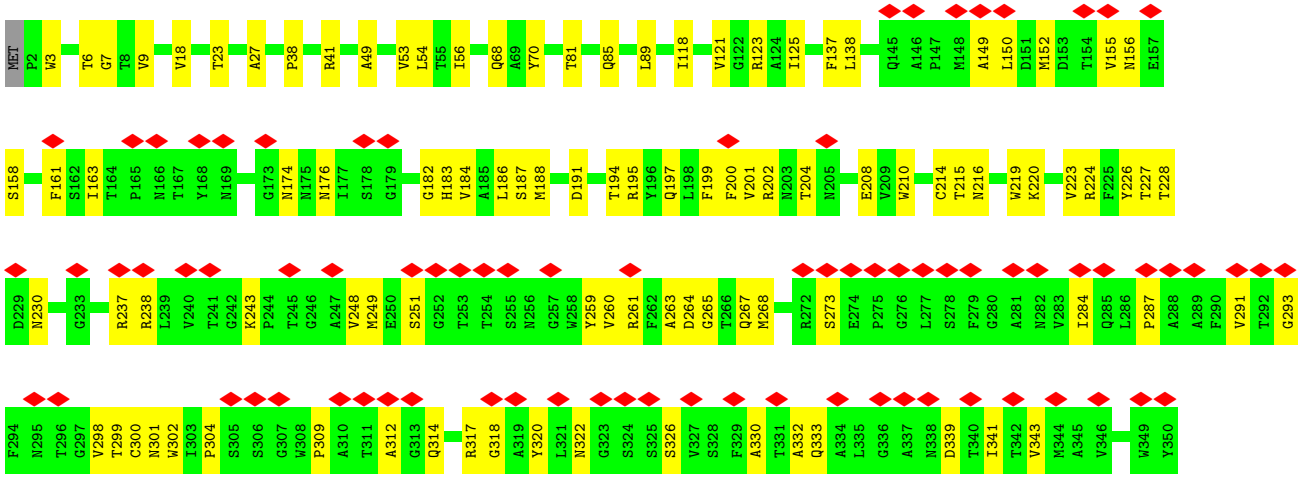
3 Residue-property plots (i)

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: Tail fiber

Chain A:

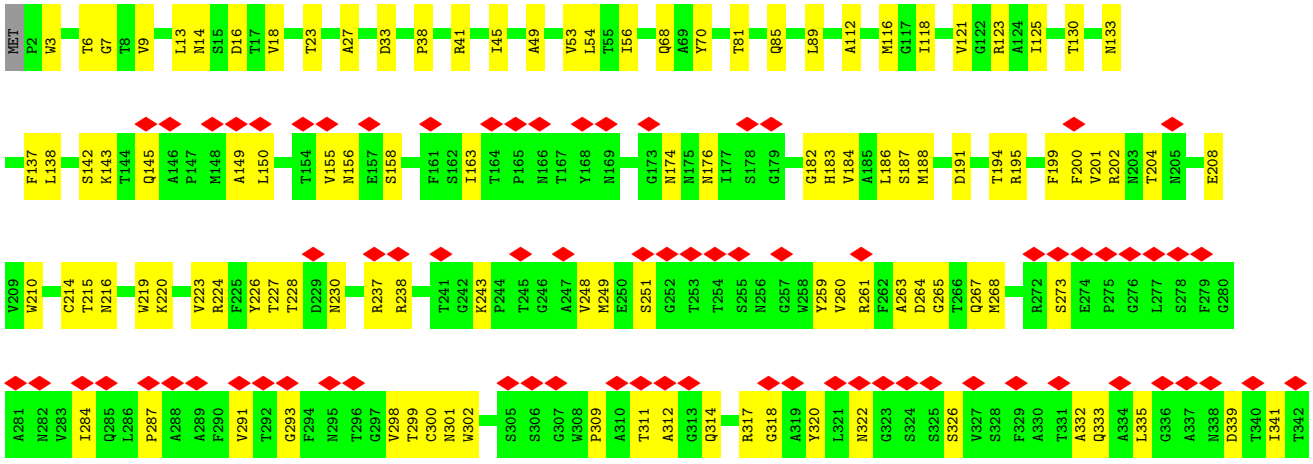


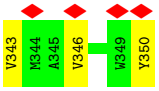


• Molecule 1: Tail fiber

Chain C:



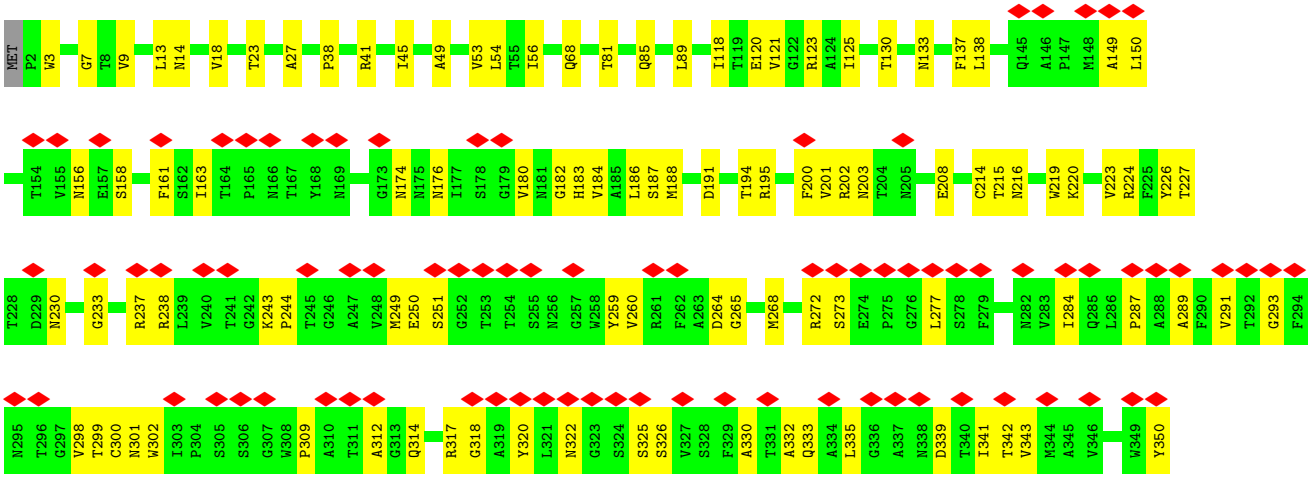




• Molecule 1: Tail fiber

Chain E:

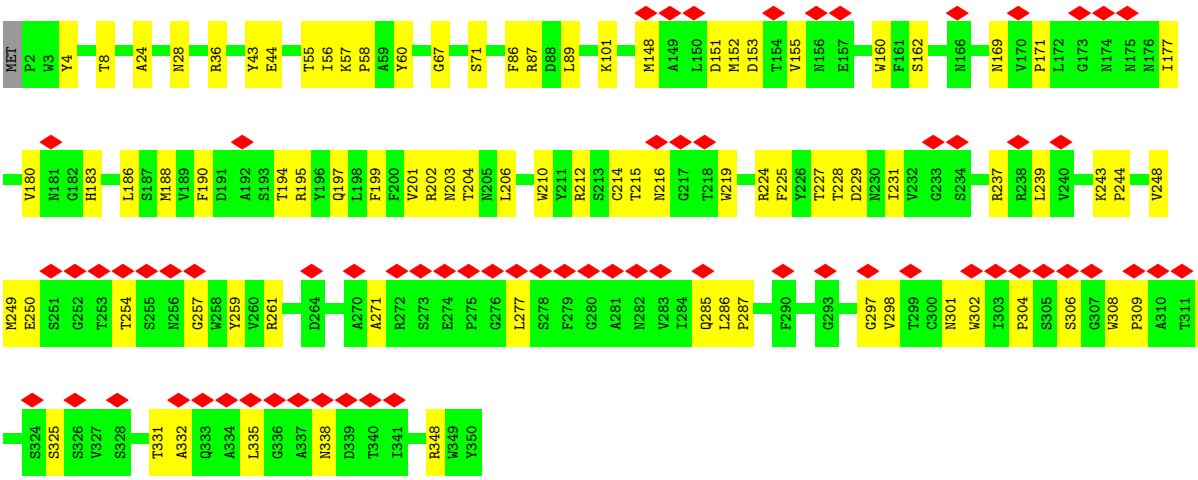




• Molecule 1: Tail fiber

Chain F:

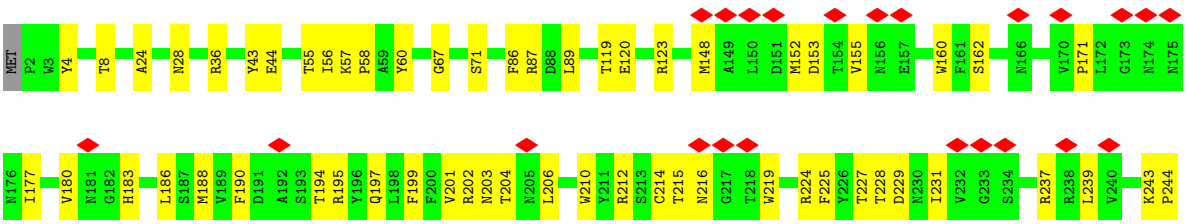


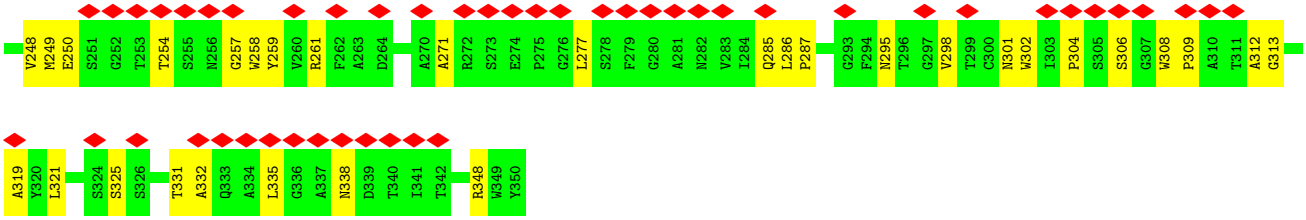


• Molecule 1: Tail fiber

Chain G:



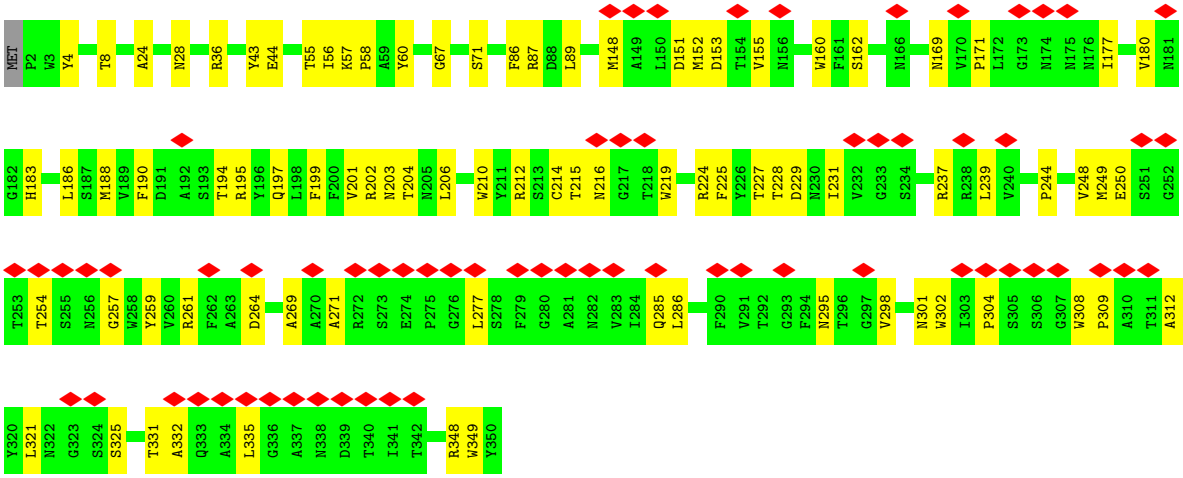




• Molecule 1: Tail fiber

Chain H:

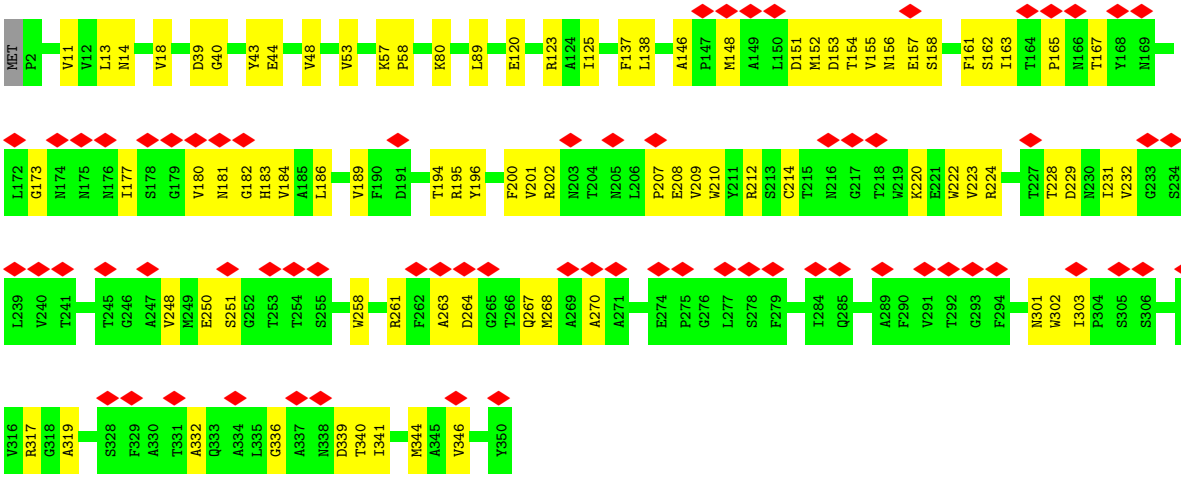




• Molecule 1: Tail fiber

Chain I:

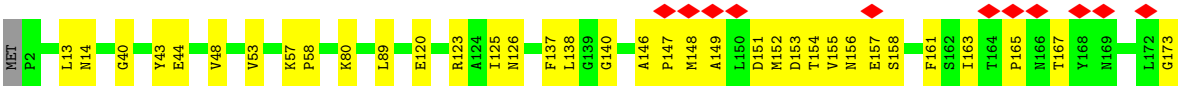


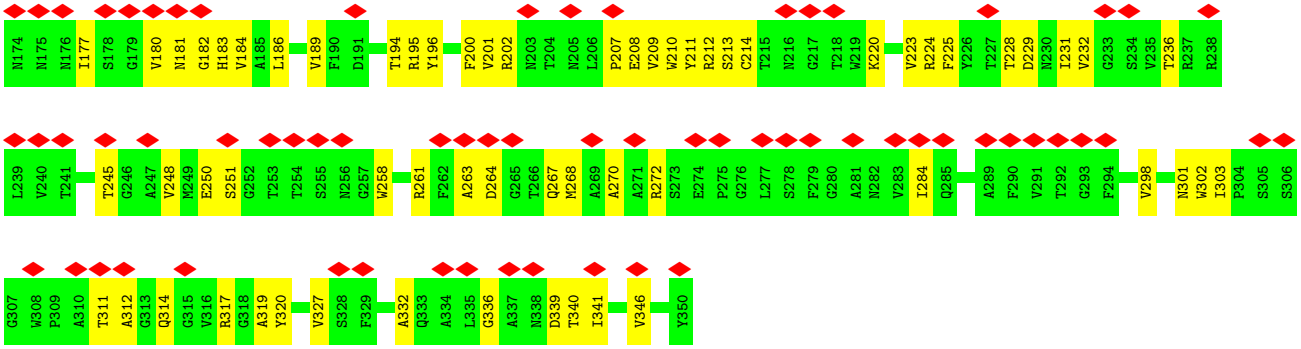


• Molecule 1: Tail fiber

Chain J:



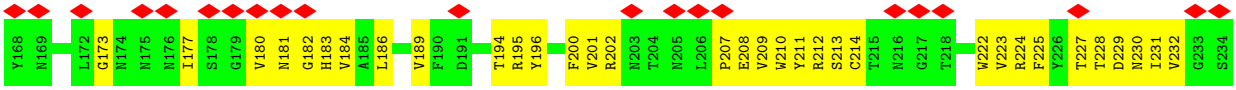


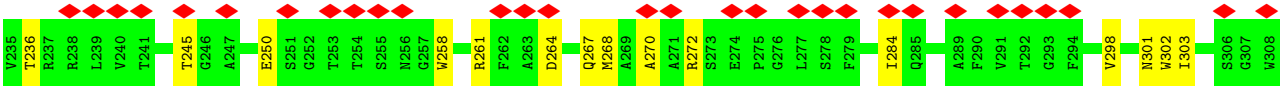


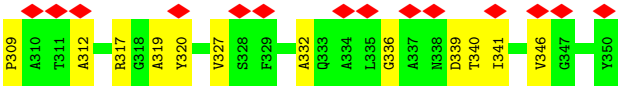
• Molecule 1: Tail fiber





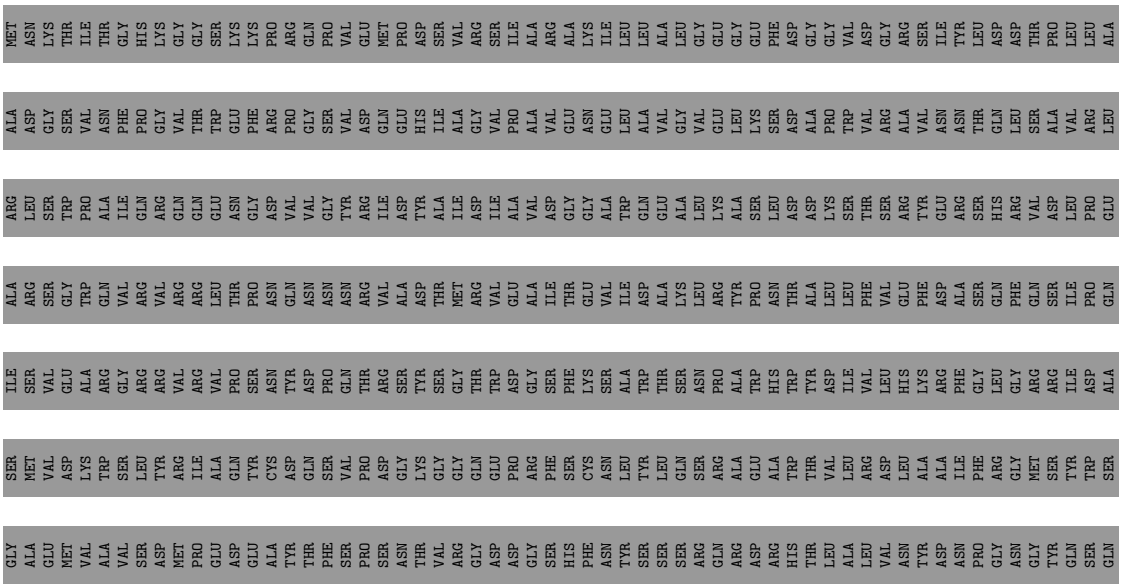


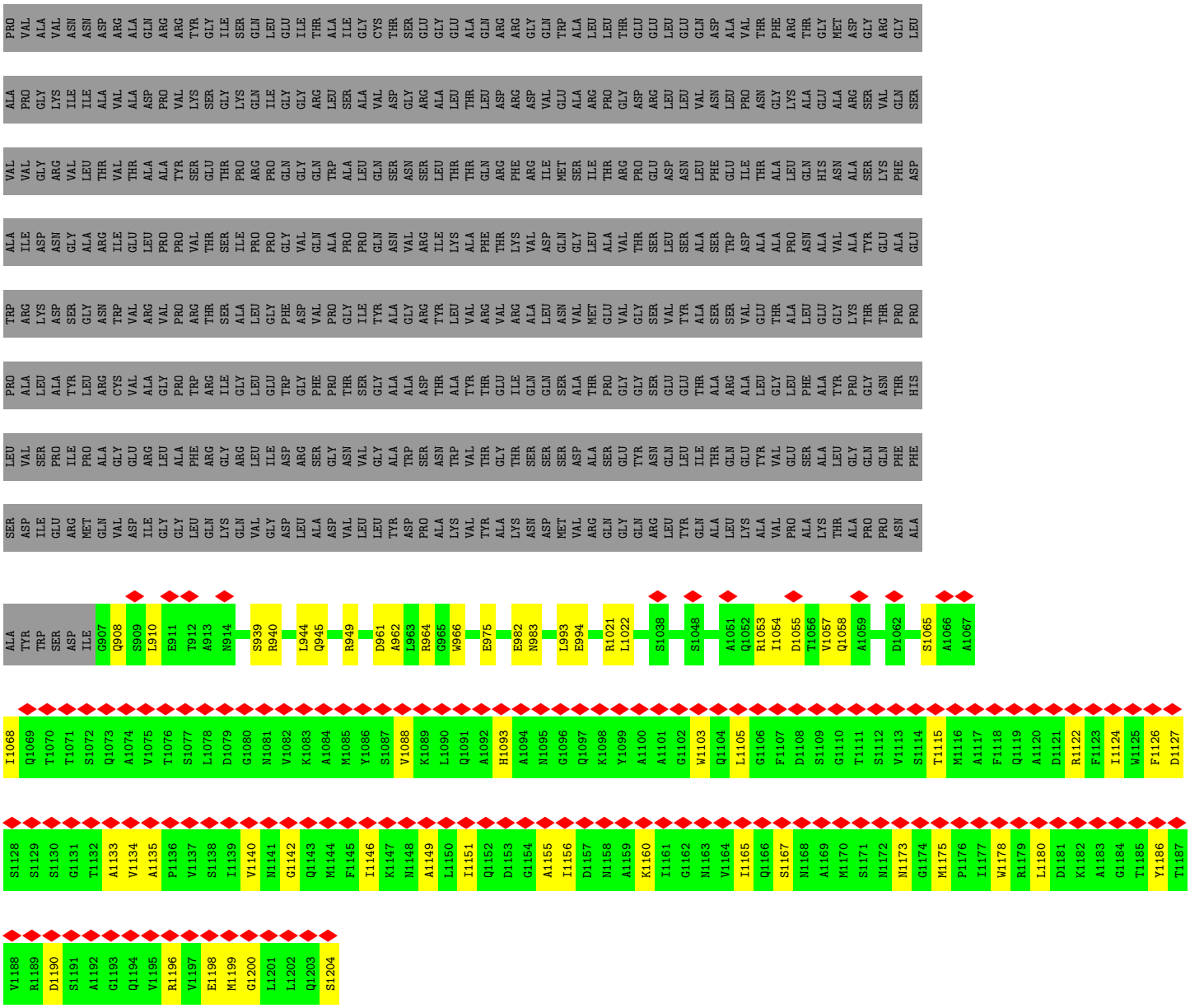




• Molecule 2: Probable bacteriophage protein



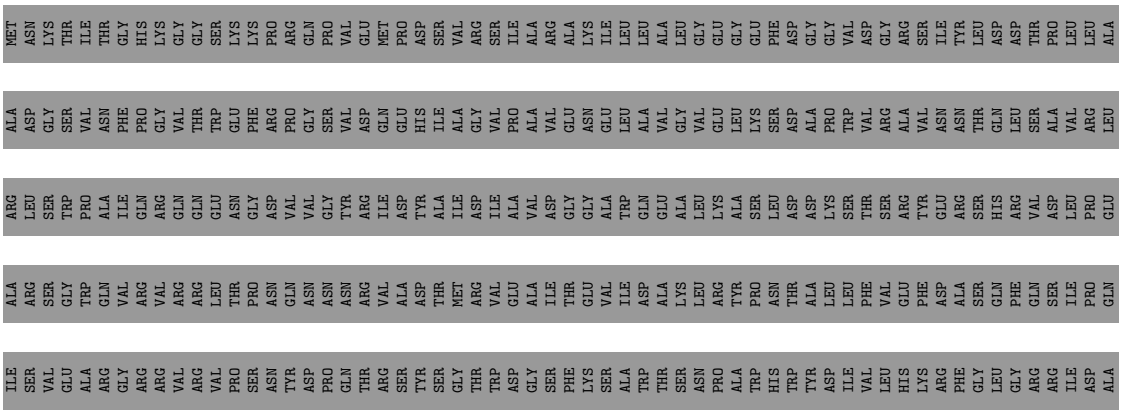


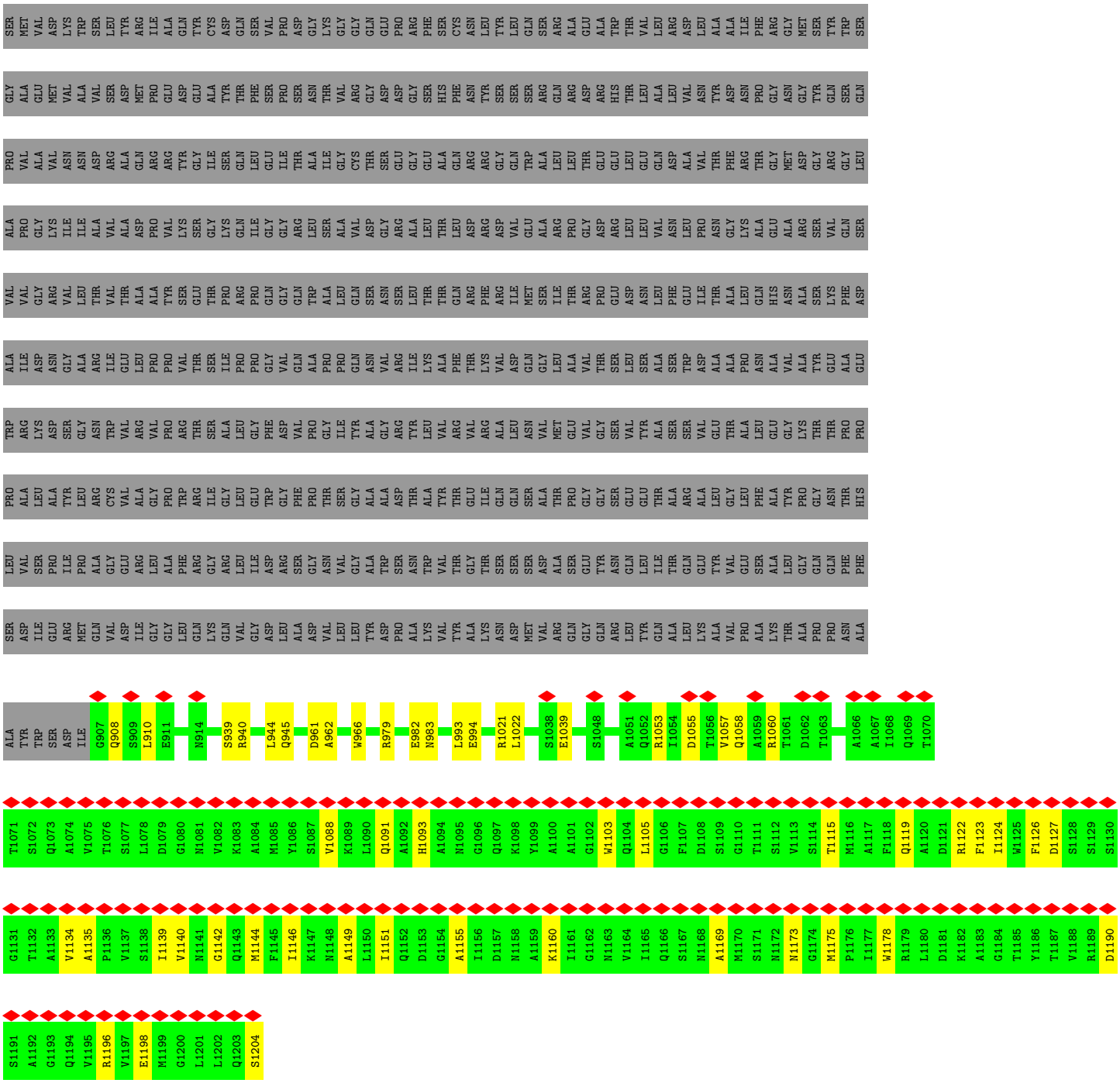


• Molecule 2: Probable bacteriophage protein

Chain D:



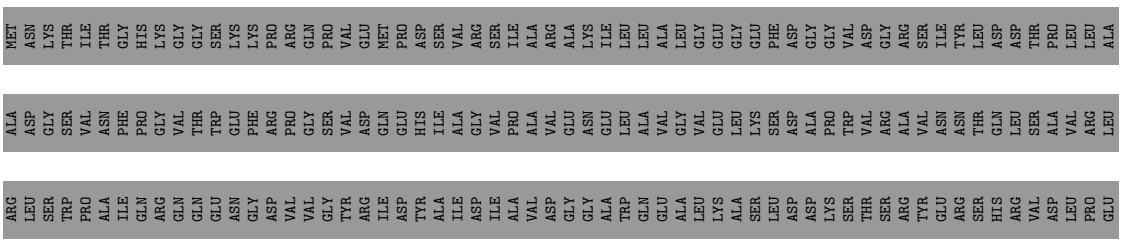


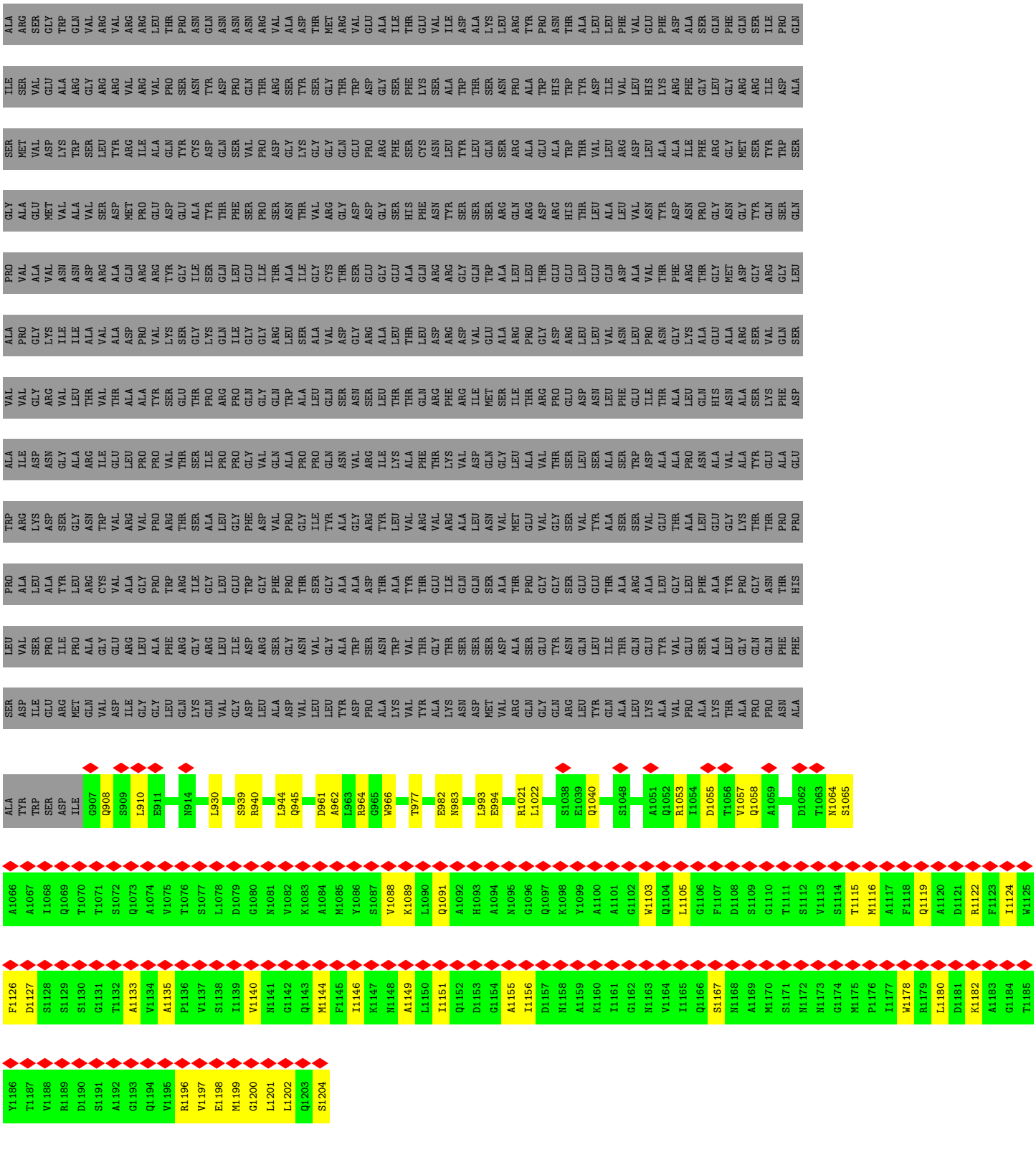


• Molecule 2: Probable bacteriophage protein

Chain M:






ALA ARG SER GLY TRP GLN VAL ARG VAL ARG ARG LEU THR PRO ASN GLN ASN ASN ASN ARG VAL ALA ASP THR MET ARG VAL GLU ALA ILE THR GLU VAL ILE ASP ALA LYS LEU ARG TYR PRO ASN THR ALA LEU LEU PHE VAL GLU PHE ASP ALA SER GLN PHE GLN SER ILE PRO GLN
ILE SER VAL GLU ALA ARG GLY ARG ARG VAL ARG ARG VAL PRO SER ASN TYR ASP PRO GLN THR ARG SER TYR SER GLY THR TRP ASP GLY SER PHE LYS SER ALA TRP THR SER ASN PRO ALA TRP HIS TRP TYR ASP ILE VAL LEU HIS LYS ARG PHE GLY LEU GLY ARG ARG ILE ALA
SER MET VAL ASP LYS TRP SER LEU TYR ARG ILE ALA GLN TYR CYS ASP GLN SER VAL PRO ASP GLY LYS GLY GLY GLN GLU PRO ARG PHE SER CYS ASN LEU TYR LEU GLN SER ARG ALA GLU ALA TRP THR HIS ASN LEU ALA ALA ILE PHE ARG GLY MET SER TYR TRP SER
GLY ALA GLU MET VAL ALA VAL SER ASP MET PRO GLU ASP GLU ALA TYR THR PHE SER PRO SER ASN THR VAL ARG GLY ASP ASP GLY SER HIS PHE ASN TYR SER SER SER ARG GLN ARG ASP ARG HIS THR LEU ALA LEU VAL ASN TYR ASP ASN PRO GLY ASN GLY GLN
PRO VAL ALA VAL ASN ASN ASP ARG ALA ARG TYR GLY ILE SER GLN LEU GLU ILE THR ALA ILE GLY CYS THR SER GLU GLY GLU ALA GLN ARG ARG GLY GLN TRP ALA LEU LEU THR GLU GLU LEU GLU GLN ASP ALA VAL THR PHE ARG THR GLY MET ASP GLY LEU
ALA PRO GLY LYS ILE ALA ILE GLY GLY ARG LEU SER LYS GLN ILE GLY VAL ASP ARG ALA LEU THR LEU LEU ASP ARG ASP VAL GLU ALA ARG PRO GLY ASP ARG LEU LEU VAL ASN LEU PRO ASN GLY LYS ALA GLU ARG SER VAL GLN SER
VAL VAL GLY ARG VAL LEU THR VAL THR ALA ASP PRO VAL LYS SER GLU THR PRO ARG PRO GLN GLY GLN TRP ALA LEU GLN SER ASN SER LEU THR THR GLN ARG PHE ARG ILE MET SER ILE THR ARG PRO GLU ASP ASN LEU PHE GLU ILE THR ASN ALA SER LYS PHE ASP
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TRP ARG LYS ASP SER GLY ASN TRP VAL ARG VAL PRO ARG THR SER ALA LEU GLY PHE ASP VAL PRO GLY ILE TYR ALA GLY ARG TYR LEU VAL ARG ALA LEU ASN VAL MET GLU VAL GLY SER VAL TYR ALA SER SER VAL GLU THR GLY GLU LYS THR THR PRO PRO
PRO ALA LEU ALA TYR LEU ARG CYS VAL ALA ALA GLY GLY PRO TRP ARG ILE GLY LEU GLU TRP GLY PHE PRO THR SER GLY ALA ASP THR ALA TYR THR GLN GLN GLN SER ALA THR PRO GLY GLY SER GLU GLU THR ALA ARG ALA LEU GLU ALA ALA LEU ALA PRO ALA ALA
LEU VAL SER PRO ILE PRO ALA GLY GLU ARG LEU ILE ASP ARG SER GLY ASN VAL GLY ALA TRP SER ASN TRP VAL THR GLY THR SER SER SER ASP ALA SER GLU GLY TYR ASN GLN LEU ILE THR GLN GLU TYR VAL GLU SER ALA LEU GLY GLN GLN PHE PHE
SER ASP ILE GLU ARG MET GLN VAL ASP ILE GLY GLY LEU GLN LYS GLN VAL GLY ASP LEU ALA ASP VAL LEU LEU TYR ASP PRO ALA LYS VAL TYR ALA LYS ASN ASP MET VAL ARG GLN GLY GLN ARG LEU TYR GLN LEU ALA LEU LYS ALA VAL PRO ALA LYS THR ALA PRO PRO ASN ALA
ALA TYR TRP SER ILE GLU LEU ALA PHE ARG GLY ARG LEU ILE ASP ARG SER GLY ASN VAL GLY ALA TRP SER ASN TRP VAL THR GLY THR SER SER SER ASP ALA SER GLU GLY TYR ASN GLN LEU ILE THR GLN GLU TYR VAL GLU SER ALA LEU GLY GLN GLN PHE PHE
G907 Q908 S909 L910 E911 N914 L930 S939 R940 L944 Q945 D961 A962 L963 R964 G965 W966 T977 E982 N983 L993 E994 R1021 L1022 S1038 E1039 Q1040 S1048 A1051 Q1052 R1053 I1054 D1055 T1056 V1057 Q1058 A1059 D1062 T1063 N1064 S1065
A1066 A1067 I1068 Q1069 T1070 T1071 S1072 Q1073 A1074 V1075 T1076 S1077 L1078 D1079 G1080 N1081 V1082 K1083 A1084 M1085 Y1086 S1087 V1088 K1089 L1090 Q1091 A1092 H1093 A1094 N1095 G1096 Q1097 K1098 Y1099 A1100 A1101 G1102 W1103 Q1104 L1105 G1106 F1107 D1108 S1109 G1110 T1111 S1112 V1113 S1114 T1115 M1116 A1117 F1118 Q1119 A1120 D1121 R1122 F1123 I1124 W1125
F1126 D1127 S1128 S1129 S1130 G1131 T1132 A1133 V1134 A1135 P1136 V1137 S1138 I1139 V1140 N1141 G1142 Q1143 M1144 F1145 I1146 K1147 N1148 A1149 L1150 I1151 Q1152 D1153 G1154 A1155 I1156 D1157 N1158 A1159 K1160 I1161 G1162 N1163 V1164 I1165 Q1166 S1167 N1168 A1169 M1170 S1171 N1172 N1173 G1174 M1175 P1176 I1177 W1178 R1179 L1180 D1181 K1182 A1183 G1184 T1185
Y1186 T1187 V1188 R1189 D1190 S1191 A1192 G1193 Q1194 V1195 R1196 V1197 E1198 M1199 G1200 L1201 L1202 Q1203 S1204

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	35179	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	60.0	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	10500	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	2.852	Depositor
Minimum map value	-1.327	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.050	Depositor
Recommended contour level	0.272	Depositor
Map size (Å)	498.60004, 498.60004, 498.60004	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.03875, 1.03875, 1.03875	Depositor

5 Model quality

5.1 Standard geometry

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	0.13	0/2658	0.34	0/3633
1	C	0.13	0/2658	0.34	0/3633
1	E	0.13	0/2658	0.35	0/3633
1	F	0.13	0/2658	0.29	0/3633
1	G	0.13	0/2658	0.29	0/3633
1	H	0.13	0/2658	0.30	0/3633
1	I	0.12	0/2658	0.31	0/3633
1	J	0.13	0/2658	0.30	0/3633
1	K	0.12	0/2658	0.31	0/3633
2	B	0.11	0/2210	0.24	0/2994
2	D	0.11	0/2210	0.21	0/2994
2	M	0.11	0/2210	0.24	0/2994
All	All	0.13	0/30552	0.30	0/41679

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2594	0	2487	81	0
1	C	2594	0	2487	91	0
1	E	2594	0	2487	88	0
1	F	2594	0	2487	88	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	G	2594	0	2487	84	0
1	H	2594	0	2487	91	0
1	I	2594	0	2487	78	0
1	J	2594	0	2487	76	0
1	K	2594	0	2487	81	0
2	B	2191	0	2136	63	0
2	D	2191	0	2136	59	0
2	M	2191	0	2136	61	0
All	All	29919	0	28791	712	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 (712) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:190:PHE:HB3	1:K:184:VAL:HG22	1.56	0.86
1:C:309:PRO:HB3	1:C:333:GLN:HE22	1.44	0.82
1:A:309:PRO:HB3	1:A:333:GLN:HE22	1.44	0.80
1:E:309:PRO:HB3	1:E:333:GLN:HE22	1.43	0.80
1:C:249:MET:HB3	1:J:264:ASP:HB3	1.67	0.75
1:A:191:ASP:HB3	1:A:194:THR:HB	1.68	0.75
2:D:1124:ILE:HD11	2:D:1135:ALA:HB1	1.67	0.74
1:C:191:ASP:HB3	1:C:194:THR:HB	1.69	0.74
1:A:249:MET:HB3	1:I:264:ASP:HB3	1.69	0.74
1:E:249:MET:HB3	1:K:264:ASP:HB3	1.70	0.73
1:K:43:TYR:HA	1:K:57:LYS:HD3	1.71	0.73
1:E:191:ASP:HB3	1:E:194:THR:HB	1.69	0.73
1:A:291:VAL:HG12	1:A:293:GLY:H	1.54	0.72
2:B:1146:ILE:HG21	2:B:1149:ALA:HB2	1.72	0.72
2:B:910:LEU:HD11	2:M:908:GLN:HG2	1.71	0.71
1:C:188:MET:HG3	1:G:160:TRP:HD1	1.55	0.71
1:I:43:TYR:HA	1:I:57:LYS:HD3	1.72	0.71
1:G:190:PHE:HB3	1:J:184:VAL:HG22	1.71	0.71
2:B:1186:TYR:HB3	2:B:1199:MET:HE1	1.71	0.71
1:C:291:VAL:HG12	1:C:293:GLY:H	1.56	0.71
1:I:181:ASN:O	1:I:202:ARG:NH1	2.21	0.70
1:I:189:VAL:HG22	1:I:195:ARG:HA	1.73	0.70
1:J:181:ASN:O	1:J:202:ARG:NH1	2.22	0.70
1:F:190:PHE:HB3	1:I:184:VAL:HG22	1.73	0.70
1:C:18:VAL:HB	1:C:54:LEU:HB3	1.72	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:1146:ILE:HG21	2:M:1149:ALA:HB2	1.73	0.70
1:K:181:ASN:O	1:K:202:ARG:NH1	2.22	0.70
2:B:983:ASN:ND2	2:M:982:GLU:OE1	2.26	0.68
1:H:152:MET:HB3	1:H:212:ARG:HH21	1.58	0.68
1:H:254:THR:OG1	1:H:257:GLY:O	2.10	0.68
1:E:317:ARG:HD3	1:H:312:ALA:HA	1.75	0.68
1:J:43:TYR:HA	1:J:57:LYS:HD3	1.75	0.68
1:A:188:MET:HG3	1:F:160:TRP:HD1	1.59	0.68
1:E:291:VAL:HG12	1:E:293:GLY:H	1.59	0.67
1:C:9:VAL:HG13	1:C:18:VAL:HG13	1.77	0.67
1:I:207:PRO:O	1:I:224:ARG:NH2	2.27	0.67
2:B:908:GLN:HG2	2:D:910:LEU:HD11	1.75	0.67
1:A:317:ARG:HD3	1:F:312:ALA:HA	1.76	0.67
2:B:982:GLU:OE1	2:D:983:ASN:ND2	2.27	0.67
1:K:189:VAL:HG22	1:K:195:ARG:HA	1.75	0.67
1:C:317:ARG:HD3	1:G:312:ALA:HA	1.78	0.66
1:E:18:VAL:HB	1:E:54:LEU:HB3	1.77	0.66
1:F:254:THR:OG1	1:F:257:GLY:O	2.13	0.66
2:D:982:GLU:OE1	2:M:983:ASN:ND2	2.27	0.66
1:K:207:PRO:O	1:K:224:ARG:NH2	2.28	0.66
1:G:152:MET:HB3	1:G:212:ARG:HH21	1.61	0.65
1:F:152:MET:HB3	1:F:212:ARG:HH21	1.60	0.65
1:G:254:THR:OG1	1:G:257:GLY:O	2.14	0.65
1:H:194:THR:HG23	1:H:215:THR:HA	1.78	0.65
1:E:298:VAL:O	1:H:301:ASN:ND2	2.30	0.65
1:A:298:VAL:O	1:F:301:ASN:ND2	2.28	0.64
1:I:303:ILE:HD12	1:I:340:THR:HB	1.79	0.64
1:K:146:ALA:HB3	1:K:161:PHE:HE1	1.62	0.64
1:A:9:VAL:HG13	1:A:18:VAL:HG13	1.78	0.63
1:C:264:ASP:HB3	1:G:249:MET:HE1	1.81	0.63
1:E:317:ARG:NH1	1:H:309:PRO:O	2.31	0.63
1:E:9:VAL:HG13	1:E:18:VAL:HG13	1.78	0.63
1:F:56:ILE:HD11	1:F:60:TYR:HB2	1.80	0.63
1:K:303:ILE:HD12	1:K:340:THR:HB	1.79	0.63
2:D:940:ARG:NH2	2:M:945:GLN:OE1	2.32	0.63
1:C:298:VAL:O	1:G:301:ASN:ND2	2.29	0.63
1:J:303:ILE:HD12	1:J:340:THR:HB	1.80	0.63
1:A:318:GLY:HA2	1:F:302:TRP:H	1.63	0.63
1:C:322:ASN:N	1:C:326:SER:O	2.27	0.62
1:E:318:GLY:HA2	1:H:302:TRP:H	1.64	0.62
1:C:318:GLY:HA2	1:G:302:TRP:H	1.65	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:207:PRO:O	1:J:224:ARG:NH2	2.31	0.62
1:I:48:VAL:HG12	1:I:53:VAL:HG22	1.82	0.62
1:C:6:THR:O	1:C:70:TYR:OH	2.15	0.62
2:D:1196:ARG:HG3	2:M:1200:GLY:HA2	1.81	0.61
1:E:264:ASP:HB3	1:H:249:MET:HE1	1.82	0.61
1:A:317:ARG:NH1	1:F:309:PRO:O	2.32	0.61
1:H:180:VAL:O	1:H:183:HIS:ND1	2.33	0.61
1:G:180:VAL:O	1:G:183:HIS:ND1	2.33	0.61
2:B:940:ARG:NH2	2:D:945:GLN:OE1	2.33	0.61
1:A:264:ASP:HB3	1:F:249:MET:HE1	1.81	0.61
1:A:332:ALA:HB2	1:F:312:ALA:HB3	1.82	0.61
1:I:152:MET:O	1:I:212:ARG:NH2	2.34	0.61
1:A:188:MET:HG3	1:F:160:TRP:CD1	2.35	0.61
1:G:194:THR:HG23	1:G:215:THR:HA	1.83	0.61
1:C:201:VAL:HG11	1:C:208:GLU:HB2	1.81	0.61
1:E:226:TYR:HE2	1:H:231:ILE:HG13	1.64	0.61
1:E:332:ALA:HB2	1:H:312:ALA:HB3	1.80	0.61
1:E:188:MET:HG3	1:H:160:TRP:CD1	2.35	0.60
2:D:1146:ILE:HG21	2:D:1149:ALA:HB2	1.83	0.60
1:J:189:VAL:HG22	1:J:195:ARG:HA	1.81	0.60
1:F:180:VAL:O	1:F:183:HIS:ND1	2.33	0.60
1:J:48:VAL:HG12	1:J:53:VAL:HG22	1.83	0.60
1:C:332:ALA:HB2	1:G:312:ALA:HB3	1.82	0.60
1:C:188:MET:HG3	1:G:160:TRP:CD1	2.35	0.60
1:I:250:GLU:HB2	1:I:261:ARG:HB2	1.84	0.60
1:E:259:TYR:HB3	1:E:287:PRO:HG2	1.84	0.60
1:A:322:ASN:N	1:A:326:SER:O	2.26	0.60
1:H:188:MET:HG2	1:K:184:VAL:HG12	1.84	0.60
1:F:194:THR:HG23	1:F:215:THR:HA	1.83	0.59
1:C:18:VAL:HG23	1:C:56:ILE:HD11	1.84	0.59
1:E:314:GLN:HA	1:H:313:GLY:HA3	1.83	0.59
1:E:186:LEU:HD21	1:H:186:LEU:HD13	1.83	0.59
1:F:188:MET:HE2	1:I:186:LEU:HD11	1.84	0.59
1:A:18:VAL:HB	1:A:54:LEU:HB3	1.84	0.59
1:A:182:GLY:O	1:I:196:TYR:OH	2.18	0.59
2:B:975:GLU:OE2	2:D:979:ARG:NE	2.36	0.59
1:K:152:MET:O	1:K:212:ARG:NH2	2.34	0.59
1:A:201:VAL:HG11	1:A:208:GLU:HB2	1.84	0.59
1:A:226:TYR:HE2	1:F:231:ILE:HG13	1.67	0.59
1:K:48:VAL:HG12	1:K:53:VAL:HG22	1.85	0.59
1:C:259:TYR:HB3	1:C:287:PRO:HG2	1.85	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1124:ILE:HD11	2:B:1135:ALA:HB1	1.85	0.58
1:C:317:ARG:NH1	1:G:309:PRO:O	2.36	0.58
1:E:188:MET:HG3	1:H:160:TRP:HD1	1.67	0.58
1:I:158:SER:HB2	1:I:189:VAL:HB	1.85	0.58
2:B:1200:GLY:HA2	2:M:1196:ARG:HG3	1.85	0.58
1:A:259:TYR:HB3	1:A:287:PRO:HG2	1.85	0.58
1:C:156:ASN:OD1	1:C:195:ARG:NE	2.32	0.58
1:C:174:ASN:OD1	1:C:176:ASN:ND2	2.32	0.58
1:G:4:TYR:OH	1:G:24:ALA:N	2.35	0.58
1:J:151:ASP:OD1	1:J:152:MET:N	2.36	0.58
2:B:1065:SER:HA	2:B:1068:ILE:HD12	1.85	0.58
1:F:4:TYR:OH	1:F:24:ALA:N	2.35	0.58
2:M:1124:ILE:HD11	2:M:1135:ALA:HB1	1.86	0.58
1:E:201:VAL:HG11	1:E:208:GLU:HB2	1.86	0.58
1:I:231:ILE:HG23	1:I:232:VAL:HG23	1.86	0.58
1:A:149:ALA:O	1:A:150:LEU:HG	2.04	0.57
1:C:226:TYR:HE2	1:G:231:ILE:HG13	1.68	0.57
1:A:125:ILE:HD11	1:A:138:LEU:HD21	1.86	0.57
1:C:149:ALA:O	1:C:150:LEU:HG	2.05	0.57
1:J:153:ASP:O	1:J:195:ARG:NH1	2.34	0.57
2:B:964:ARG:NH2	2:D:962:ALA:O	2.38	0.57
1:C:186:LEU:HD21	1:G:186:LEU:HD13	1.86	0.57
1:H:36:ARG:NH1	1:H:71:SER:OG	2.38	0.57
1:H:56:ILE:HD11	1:H:60:TYR:HB2	1.85	0.57
2:D:1190:ASP:OD2	2:D:1196:ARG:NH2	2.37	0.57
1:K:151:ASP:OD1	1:K:152:MET:N	2.38	0.57
2:B:962:ALA:O	2:M:964:ARG:NH2	2.38	0.57
2:B:1190:ASP:OD2	2:B:1196:ARG:NH2	2.37	0.57
1:E:156:ASN:OD1	1:E:195:ARG:NE	2.33	0.57
1:E:149:ALA:O	1:E:150:LEU:HG	2.05	0.57
1:F:36:ARG:NH1	1:F:71:SER:OG	2.38	0.57
1:I:151:ASP:OD1	1:I:152:MET:N	2.38	0.57
2:D:908:GLN:HA	2:M:910:LEU:HD21	1.86	0.56
1:A:224:ARG:NH2	1:A:230:ASN:O	2.37	0.56
2:B:945:GLN:OE1	2:M:940:ARG:NH2	2.38	0.56
1:G:210:TRP:HA	1:G:224:ARG:HA	1.86	0.56
1:H:4:TYR:OH	1:H:24:ALA:N	2.35	0.56
1:I:146:ALA:HB3	1:I:161:PHE:HE1	1.71	0.56
1:K:158:SER:HB2	1:K:189:VAL:HB	1.85	0.56
1:C:182:GLY:O	1:J:196:TYR:OH	2.17	0.56
2:D:908:GLN:HG2	2:M:910:LEU:HD11	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:163:ILE:HG21	1:E:183:HIS:CD2	2.41	0.56
1:E:118:ILE:O	1:E:123:ARG:NH1	2.39	0.56
1:J:152:MET:O	1:J:212:ARG:NH2	2.39	0.56
1:J:231:ILE:HG23	1:J:232:VAL:HG23	1.87	0.56
1:A:163:ILE:HG21	1:A:183:HIS:CD2	2.40	0.56
1:J:250:GLU:HB2	1:J:261:ARG:HB2	1.88	0.56
1:E:182:GLY:O	1:K:196:TYR:OH	2.19	0.56
1:H:89:LEU:HD21	1:K:89:LEU:HD22	1.87	0.56
1:G:56:ILE:HD11	1:G:60:TYR:HB2	1.87	0.56
1:A:174:ASN:OD1	1:A:176:ASN:ND2	2.32	0.56
1:A:186:LEU:HD21	1:F:186:LEU:HD13	1.86	0.56
1:E:215:THR:OG1	1:E:220:LYS:NZ	2.39	0.56
1:G:188:MET:HE2	1:J:186:LEU:HD11	1.87	0.55
1:A:314:GLN:HA	1:F:313:GLY:HA3	1.89	0.55
1:G:285:GLN:OE1	1:G:325:SER:OG	2.25	0.55
1:K:250:GLU:HB2	1:K:261:ARG:HB2	1.88	0.55
1:C:118:ILE:O	1:C:123:ARG:NH1	2.40	0.55
1:E:224:ARG:NH2	1:E:230:ASN:O	2.35	0.55
1:G:250:GLU:O	1:G:261:ARG:N	2.38	0.55
1:J:151:ASP:HA	1:J:167:THR:HG23	1.88	0.55
1:E:125:ILE:HD11	1:E:138:LEU:HD21	1.87	0.55
1:H:177:ILE:HD13	1:H:210:TRP:HZ2	1.72	0.55
2:B:1053:ARG:NH1	2:D:1055:ASP:OD1	2.29	0.55
1:E:301:ASN:ND2	1:K:319:ALA:O	2.40	0.54
1:F:285:GLN:OE1	1:F:325:SER:OG	2.25	0.54
1:H:250:GLU:O	1:H:261:ARG:N	2.37	0.54
1:A:302:TRP:HA	1:A:341:ILE:HD13	1.90	0.54
1:E:174:ASN:OD1	1:E:176:ASN:ND2	2.33	0.54
1:F:250:GLU:O	1:F:261:ARG:N	2.37	0.54
1:C:163:ILE:HG21	1:C:183:HIS:CD2	2.42	0.54
1:C:163:ILE:HG22	1:C:183:HIS:H	1.73	0.54
2:D:1021:ARG:NH1	2:M:1022:LEU:HB3	2.22	0.54
1:J:200:PHE:HE1	1:J:209:VAL:HG13	1.73	0.54
1:F:210:TRP:HA	1:F:224:ARG:HA	1.89	0.54
1:H:212:ARG:HG3	1:H:219:TRP:HZ3	1.72	0.54
1:J:120:GLU:OE1	1:J:123:ARG:NH2	2.41	0.54
1:C:38:PRO:HB3	1:C:68:GLN:HB3	1.90	0.54
2:D:1053:ARG:NH1	2:M:1055:ASP:OD1	2.29	0.54
1:K:231:ILE:HG23	1:K:232:VAL:HG23	1.89	0.54
1:A:156:ASN:OD1	1:A:195:ARG:NE	2.33	0.54
1:F:204:THR:OG1	1:F:206:LEU:O	2.22	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:212:ARG:HG3	1:F:219:TRP:HZ3	1.72	0.54
1:H:331:THR:HG21	1:H:335:LEU:HD11	1.89	0.54
1:I:200:PHE:HE1	1:I:209:VAL:HG13	1.72	0.54
2:B:1088:VAL:HG13	2:D:1105:LEU:HB2	1.90	0.54
2:D:1123:PHE:HD2	2:D:1139:ILE:HB	1.73	0.54
1:K:163:ILE:HB	1:K:183:HIS:HB2	1.90	0.54
2:B:1068:ILE:HD11	2:M:1064:ASN:OD1	2.08	0.53
1:C:314:GLN:HA	1:G:313:GLY:HA3	1.89	0.53
1:E:302:TRP:HA	1:E:341:ILE:HD13	1.90	0.53
1:A:118:ILE:O	1:A:123:ARG:NH1	2.40	0.53
2:B:1155:ALA:O	2:D:1151:ILE:N	2.39	0.53
1:C:302:TRP:HA	1:C:341:ILE:HD13	1.90	0.53
1:G:36:ARG:NH1	1:G:71:SER:OG	2.41	0.53
2:M:1199:MET:HE2	2:M:1202:LEU:HD12	1.90	0.53
1:F:183:HIS:NE2	1:F:201:VAL:HG13	2.24	0.53
2:B:1055:ASP:OD1	2:M:1053:ARG:NH1	2.28	0.53
1:J:156:ASN:OD1	1:J:189:VAL:HG11	2.08	0.53
1:C:238:ARG:HD2	1:C:243:LYS:HB3	1.91	0.53
1:H:285:GLN:OE1	1:H:325:SER:OG	2.24	0.53
1:A:38:PRO:HB3	1:A:68:GLN:HB3	1.91	0.53
1:C:121:VAL:HG23	1:C:137:PHE:HE2	1.73	0.53
1:F:244:PRO:HD2	1:I:229:ASP:HA	1.91	0.53
1:A:301:ASN:ND2	1:I:319:ALA:O	2.42	0.53
2:B:1053:ARG:NH2	2:D:1058:GLN:OE1	2.41	0.53
1:I:163:ILE:HB	1:I:183:HIS:HB2	1.91	0.53
2:B:1105:LEU:HB2	2:M:1088:VAL:HG13	1.90	0.53
1:F:89:LEU:HD21	1:I:89:LEU:HD22	1.90	0.53
1:G:183:HIS:NE2	1:G:201:VAL:HG13	2.23	0.53
1:I:155:VAL:HG13	1:I:161:PHE:HD2	1.74	0.53
1:C:215:THR:OG1	1:C:220:LYS:NZ	2.42	0.52
1:G:212:ARG:HG3	1:G:219:TRP:HZ3	1.73	0.52
1:G:250:GLU:OE2	1:G:259:TYR:OH	2.24	0.52
1:E:322:ASN:N	1:E:326:SER:O	2.30	0.52
2:D:1088:VAL:HG13	2:M:1105:LEU:HB2	1.90	0.52
1:F:183:HIS:HD2	1:F:199:PHE:HE1	1.57	0.52
1:H:250:GLU:OE2	1:H:259:TYR:OH	2.26	0.52
1:J:158:SER:HB2	1:J:189:VAL:HB	1.92	0.52
1:A:121:VAL:HG23	1:A:137:PHE:HE2	1.74	0.52
2:B:1021:ARG:NH1	2:D:1022:LEU:HB3	2.24	0.52
1:G:57:LYS:HE3	2:M:939:SER:OG	2.10	0.52
1:G:177:ILE:HD13	1:G:210:TRP:HZ2	1.75	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:336:GLY:H	1:I:339:ASP:HB2	1.73	0.52
2:B:1199:MET:HA	2:M:1197:VAL:HG22	1.92	0.52
1:E:238:ARG:HD2	1:E:243:LYS:HB3	1.92	0.52
1:A:214:CYS:HB2	1:A:219:TRP:CD2	2.45	0.52
2:B:1088:VAL:HG21	2:D:1103:TRP:CD1	2.45	0.52
1:E:214:CYS:HB2	1:E:219:TRP:CD2	2.45	0.52
1:H:183:HIS:HD2	1:H:199:PHE:HE1	1.56	0.52
1:K:155:VAL:HG13	1:K:161:PHE:HD2	1.74	0.52
1:E:121:VAL:HG23	1:E:137:PHE:HE2	1.74	0.52
1:E:317:ARG:HB3	1:H:313:GLY:H	1.75	0.52
1:F:250:GLU:OE2	1:F:259:TYR:OH	2.26	0.52
1:K:157:GLU:H	1:K:161:PHE:HZ	1.57	0.52
1:C:224:ARG:NH2	1:C:230:ASN:O	2.40	0.51
1:G:89:LEU:HD21	1:J:89:LEU:HD22	1.91	0.51
1:H:153:ASP:O	1:H:195:ARG:NE	2.26	0.51
1:J:336:GLY:H	1:J:339:ASP:HB2	1.74	0.51
1:A:215:THR:OG1	1:A:220:LYS:NZ	2.43	0.51
2:B:1022:LEU:HB3	2:M:1021:ARG:NH1	2.25	0.51
1:H:244:PRO:HD2	1:K:229:ASP:HA	1.92	0.51
1:I:120:GLU:OE1	1:I:123:ARG:NH2	2.43	0.51
1:I:268:MET:HG3	1:I:346:VAL:HA	1.92	0.51
1:C:301:ASN:ND2	1:J:319:ALA:O	2.44	0.51
1:F:331:THR:HG21	1:F:335:LEU:HD11	1.91	0.51
1:G:332:ALA:HB2	1:J:312:ALA:HB2	1.92	0.51
1:H:210:TRP:HA	1:H:224:ARG:HA	1.93	0.51
1:K:120:GLU:OE1	1:K:123:ARG:NH2	2.44	0.51
1:G:177:ILE:HA	1:G:201:VAL:HG11	1.93	0.51
1:I:157:GLU:H	1:I:161:PHE:HZ	1.58	0.51
1:G:204:THR:OG1	1:G:206:LEU:O	2.22	0.51
1:G:331:THR:HG21	1:G:335:LEU:HD11	1.92	0.51
1:E:3:TRP:CD2	1:H:44:GLU:HB2	2.46	0.51
1:E:163:ILE:HG22	1:E:183:HIS:H	1.76	0.51
1:K:208:GLU:HB3	1:K:210:TRP:HE1	1.76	0.51
2:B:1126:PHE:HA	2:B:1135:ALA:HA	1.91	0.51
1:F:177:ILE:HD13	1:F:210:TRP:HZ2	1.76	0.51
1:F:286:LEU:HB2	1:F:325:SER:HB2	1.93	0.51
1:I:155:VAL:HG13	1:I:161:PHE:CD2	2.45	0.51
1:K:336:GLY:H	1:K:339:ASP:HB2	1.75	0.51
1:C:125:ILE:HD11	1:C:138:LEU:HD21	1.93	0.51
1:C:214:CYS:HB2	1:C:219:TRP:CD2	2.46	0.51
1:F:151:ASP:OD1	1:F:169:ASN:ND2	2.37	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:153:ASP:O	1:F:195:ARG:NE	2.25	0.51
2:B:1103:TRP:CD1	2:M:1088:VAL:HG21	2.46	0.50
1:A:163:ILE:HG22	1:A:183:HIS:H	1.76	0.50
1:H:151:ASP:OD1	1:H:169:ASN:ND2	2.40	0.50
1:J:163:ILE:HB	1:J:183:HIS:HB2	1.92	0.50
1:K:57:LYS:HG3	1:K:58:PRO:HD2	1.94	0.50
1:K:200:PHE:HE1	1:K:209:VAL:HG13	1.75	0.50
1:A:317:ARG:HB3	1:F:313:GLY:H	1.77	0.50
2:D:1053:ARG:NH2	2:M:1058:GLN:OE1	2.44	0.50
1:H:204:THR:OG1	1:H:206:LEU:O	2.20	0.50
1:J:268:MET:HG3	1:J:346:VAL:HA	1.93	0.50
1:A:184:VAL:H	1:I:196:TYR:HE2	1.58	0.50
1:A:204:THR:OG1	1:I:220:LYS:NZ	2.36	0.50
1:E:38:PRO:HB3	1:E:68:GLN:HB3	1.93	0.50
1:G:237:ARG:HH12	1:G:239:LEU:HD22	1.77	0.50
1:H:183:HIS:NE2	1:H:201:VAL:HG13	2.25	0.50
1:F:237:ARG:HH12	1:F:239:LEU:HD22	1.77	0.50
1:G:244:PRO:HD2	1:J:229:ASP:HA	1.93	0.50
1:H:153:ASP:OD1	1:H:212:ARG:NH2	2.29	0.50
1:J:149:ALA:HB2	1:J:161:PHE:HD2	1.76	0.50
1:E:184:VAL:H	1:K:196:TYR:HE2	1.59	0.50
1:E:302:TRP:HE1	1:E:339:ASP:HB3	1.77	0.50
1:J:208:GLU:HB3	1:J:210:TRP:HE1	1.76	0.50
1:K:268:MET:HG3	1:K:346:VAL:HA	1.93	0.50
1:I:151:ASP:HA	1:I:167:THR:HG23	1.93	0.50
1:C:187:SER:O	1:G:160:TRP:NE1	2.38	0.49
1:F:177:ILE:HA	1:F:201:VAL:HG11	1.93	0.49
1:F:332:ALA:HB2	1:I:312:ALA:HB2	1.93	0.49
1:H:286:LEU:HB2	1:H:325:SER:HB2	1.94	0.49
1:K:13:LEU:HD23	1:K:14:ASN:HB2	1.94	0.49
1:C:3:TRP:CD2	1:G:44:GLU:HB2	2.47	0.49
1:C:261:ARG:NE	1:C:267:GLN:OE1	2.36	0.49
2:D:1173:ASN:HD21	2:D:1175:MET:HE2	1.76	0.49
2:B:945:GLN:HB2	2:M:944:LEU:HD11	1.95	0.49
1:H:319:ALA:HB3	1:K:301:ASN:HD21	1.77	0.49
1:E:264:ASP:OD1	1:E:265:GLY:N	2.44	0.49
1:H:237:ARG:HH12	1:H:239:LEU:HD22	1.77	0.49
1:A:227:THR:HB	1:I:223:VAL:HB	1.94	0.49
1:F:225:PHE:HE2	1:I:209:VAL:HG11	1.77	0.49
1:A:3:TRP:CD2	1:F:44:GLU:HB2	2.48	0.49
1:A:261:ARG:NE	1:A:267:GLN:OE1	2.36	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:216:ASN:OD1	1:I:202:ARG:NH2	2.46	0.49
1:C:184:VAL:H	1:J:196:TYR:HE2	1.60	0.49
1:G:286:LEU:HB2	1:G:325:SER:HB2	1.95	0.49
1:I:208:GLU:HB3	1:I:210:TRP:HE1	1.76	0.49
1:K:156:ASN:OD1	1:K:189:VAL:HG11	2.13	0.49
1:H:28:ASN:O	1:K:80:LYS:NZ	2.44	0.49
2:B:994:GLU:HG2	2:M:993:LEU:HD13	1.95	0.49
1:I:258:TRP:H	1:I:270:ALA:HB3	1.78	0.49
1:G:183:HIS:HD2	1:G:199:PHE:HE1	1.59	0.48
1:I:156:ASN:OD1	1:I:189:VAL:HG11	2.14	0.48
1:J:146:ALA:HB1	1:J:157:GLU:HB3	1.96	0.48
1:A:223:VAL:HB	1:F:227:THR:HB	1.95	0.48
1:C:223:VAL:HB	1:G:227:THR:HB	1.94	0.48
2:D:1127:ASP:N	2:D:1134:VAL:O	2.46	0.48
1:G:298:VAL:HG21	1:G:321:LEU:HB2	1.95	0.48
1:H:188:MET:HG2	1:K:184:VAL:CG1	2.43	0.48
1:E:223:VAL:HB	1:H:227:THR:HB	1.95	0.48
1:H:298:VAL:HG21	1:H:321:LEU:HB2	1.95	0.48
1:J:258:TRP:H	1:J:270:ALA:HB3	1.78	0.48
2:B:1156:ILE:HG12	2:D:1151:ILE:HD12	1.94	0.48
1:E:227:THR:HB	1:K:223:VAL:HB	1.95	0.48
1:A:6:THR:O	1:A:70:TYR:OH	2.31	0.48
2:D:1088:VAL:HG21	2:M:1103:TRP:CD1	2.48	0.48
1:E:49:ALA:HB3	1:E:53:VAL:HB	1.96	0.48
1:J:13:LEU:HD23	1:J:14:ASN:HB2	1.95	0.48
1:K:151:ASP:HA	1:K:167:THR:HG23	1.95	0.48
1:G:28:ASN:O	1:J:80:LYS:NZ	2.44	0.47
1:H:190:PHE:CG	1:H:190:PHE:O	2.66	0.47
1:H:298:VAL:O	1:K:301:ASN:ND2	2.31	0.47
1:H:332:ALA:HB2	1:K:312:ALA:HB2	1.95	0.47
1:C:317:ARG:HB3	1:G:313:GLY:H	1.79	0.47
1:I:261:ARG:NE	1:I:267:GLN:OE1	2.47	0.47
1:I:302:TRP:CE3	1:I:341:ILE:HD11	2.49	0.47
1:C:41:ARG:HG3	1:J:40:GLY:HA3	1.94	0.47
1:E:7:GLY:HA3	1:E:23:THR:HG22	1.95	0.47
1:E:318:GLY:HA3	1:H:302:TRP:HB3	1.96	0.47
1:A:18:VAL:HG23	1:A:56:ILE:HD11	1.96	0.47
1:H:264:ASP:O	1:H:348:ARG:NH2	2.47	0.47
1:K:298:VAL:HG11	1:K:320:TYR:HA	1.96	0.47
1:A:216:ASN:OD1	1:F:202:ARG:NH2	2.47	0.47
1:C:248:VAL:HA	1:C:263:ALA:HB2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:153:ASP:OD1	1:F:212:ARG:NH2	2.30	0.47
1:K:146:ALA:HB3	1:K:161:PHE:CE1	2.47	0.47
2:B:961:ASP:OD2	1:H:87:ARG:NE	2.48	0.47
1:C:158:SER:HA	1:C:187:SER:HB3	1.96	0.47
2:D:1126:PHE:HA	2:D:1135:ALA:HA	1.96	0.47
1:F:306:SER:HB3	1:F:338:ASN:HB2	1.97	0.47
1:I:157:GLU:N	1:I:161:PHE:HZ	2.12	0.47
1:J:157:GLU:N	1:J:161:PHE:HZ	2.12	0.47
1:K:151:ASP:H	1:K:154:THR:HG1	1.62	0.47
1:K:155:VAL:HG13	1:K:161:PHE:CD2	2.49	0.47
2:B:1093:HIS:CE1	2:M:1133:ALA:HB3	2.49	0.47
1:E:320:TYR:CD1	1:H:304:PRO:HD2	2.50	0.47
1:G:153:ASP:O	1:G:195:ARG:NE	2.23	0.47
1:I:153:ASP:O	1:I:195:ARG:NH1	2.43	0.47
1:J:149:ALA:HB2	1:J:161:PHE:CD2	2.49	0.47
2:B:1058:GLN:OE1	2:M:1053:ARG:NH2	2.48	0.47
1:E:216:ASN:OD1	1:H:202:ARG:NH2	2.48	0.47
1:F:277:LEU:HB2	1:F:335:LEU:HD22	1.96	0.47
1:F:298:VAL:HG21	1:F:321:LEU:HB2	1.97	0.47
1:K:212:ARG:HD3	1:K:222:TRP:CD1	2.50	0.47
1:C:130:THR:OG1	1:C:133:ASN:OD1	2.28	0.47
1:C:264:ASP:OD1	1:C:265:GLY:N	2.47	0.47
1:I:212:ARG:HD3	1:I:222:TRP:CD1	2.50	0.47
1:K:302:TRP:CE3	1:K:341:ILE:HD11	2.49	0.47
2:B:1160:LYS:HD2	2:D:1155:ALA:HB2	1.96	0.46
2:B:1167:SER:HB3	2:B:1178:TRP:NE1	2.30	0.46
1:C:260:VAL:HG12	1:C:268:MET:HB2	1.97	0.46
1:G:153:ASP:OD1	1:G:212:ARG:NH2	2.33	0.46
1:A:158:SER:HA	1:A:187:SER:HB3	1.97	0.46
1:G:87:ARG:NE	2:M:961:ASP:OD2	2.48	0.46
2:B:1127:ASP:N	2:B:1134:VAL:O	2.47	0.46
2:D:1155:ALA:O	2:M:1151:ILE:N	2.40	0.46
1:E:27:ALA:HB2	1:F:55:THR:HG21	1.96	0.46
1:E:41:ARG:HG3	1:K:40:GLY:HA3	1.97	0.46
1:F:298:VAL:O	1:I:301:ASN:ND2	2.33	0.46
1:G:277:LEU:HB2	1:G:335:LEU:HD22	1.97	0.46
1:G:306:SER:HB3	1:G:338:ASN:HB2	1.96	0.46
1:A:260:VAL:HG12	1:A:268:MET:HB2	1.98	0.46
2:B:962:ALA:HB1	1:G:86:PHE:CD2	2.51	0.46
1:C:16:ASP:HA	1:C:56:ILE:HB	1.96	0.46
2:D:1122:ARG:HD3	2:D:1140:VAL:HG22	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:202:ARG:NH1	1:F:203:ASN:OD1	2.49	0.46
1:F:319:ALA:HB3	1:I:301:ASN:HD21	1.79	0.46
1:A:238:ARG:HD2	1:A:243:LYS:HB3	1.96	0.46
1:J:302:TRP:CE3	1:J:341:ILE:HD11	2.51	0.46
1:A:264:ASP:OD1	1:A:265:GLY:N	2.49	0.46
1:G:190:PHE:CG	1:G:190:PHE:O	2.68	0.46
1:H:216:ASN:OD1	1:K:202:ARG:NH2	2.45	0.46
1:H:277:LEU:HB2	1:H:335:LEU:HD22	1.98	0.46
1:I:57:LYS:HG3	1:I:58:PRO:HD2	1.97	0.46
1:A:7:GLY:HA3	1:A:23:THR:HG22	1.96	0.46
1:A:300:CYS:HA	1:A:343:VAL:HG12	1.97	0.46
1:C:27:ALA:HB2	1:H:55:THR:HG21	1.98	0.46
1:C:302:TRP:HE1	1:C:339:ASP:HB3	1.79	0.46
1:F:190:PHE:CG	1:F:190:PHE:O	2.69	0.46
1:G:216:ASN:OD1	1:J:202:ARG:NH2	2.48	0.46
1:J:181:ASN:OD1	1:J:182:GLY:N	2.47	0.46
1:K:153:ASP:O	1:K:195:ARG:NH1	2.46	0.46
1:C:155:VAL:HG23	1:C:195:ARG:HB2	1.98	0.46
2:D:1160:LYS:HD2	2:M:1155:ALA:HB2	1.98	0.46
1:E:223:VAL:HG11	1:H:229:ASP:HB2	1.98	0.46
1:H:202:ARG:NH1	1:H:203:ASN:OD1	2.48	0.46
1:J:177:ILE:HA	1:J:201:VAL:HG13	1.97	0.46
1:G:8:THR:HB	1:G:67:GLY:HA2	1.97	0.46
1:H:177:ILE:HA	1:H:201:VAL:HG11	1.97	0.46
1:H:225:PHE:HE2	1:K:209:VAL:HG11	1.81	0.46
1:K:125:ILE:HD11	1:K:138:LEU:HD11	1.96	0.46
2:B:949:ARG:NH2	1:C:33:ASP:OD1	2.42	0.46
1:C:204:THR:OG1	1:J:220:LYS:NZ	2.37	0.46
1:C:226:TYR:CZ	1:G:228:THR:HG22	2.51	0.46
1:C:227:THR:HB	1:J:223:VAL:HB	1.98	0.46
1:F:148:MET:HG3	1:F:162:SER:HB2	1.96	0.46
1:H:43:TYR:HB3	1:H:58:PRO:HD2	1.98	0.46
2:B:1151:ILE:N	2:M:1155:ALA:O	2.38	0.45
1:G:231:ILE:HD12	1:G:248:VAL:HG22	1.98	0.45
1:E:226:TYR:CE2	1:H:231:ILE:HG13	2.48	0.45
1:G:155:VAL:O	1:G:195:ARG:HD2	2.17	0.45
1:K:261:ARG:NE	1:K:267:GLN:OE1	2.48	0.45
2:M:1053:ARG:O	2:M:1057:VAL:HG23	2.17	0.45
1:C:227:THR:HG22	1:J:225:PHE:HA	1.98	0.45
1:C:251:SER:HB3	1:C:260:VAL:HG23	1.98	0.45
1:F:155:VAL:O	1:F:195:ARG:HD2	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:202:ARG:NH1	1:G:203:ASN:OD1	2.50	0.45
1:J:248:VAL:HA	1:J:263:ALA:HB2	1.98	0.45
1:K:173:GLY:HA3	1:K:210:TRP:HH2	1.82	0.45
1:A:302:TRP:HE1	1:A:339:ASP:HB3	1.81	0.45
2:B:964:ARG:HH21	2:D:966:TRP:N	2.15	0.45
2:B:1173:ASN:HD21	2:B:1175:MET:HE2	1.81	0.45
1:E:273:SER:HB3	1:E:284:ILE:HD11	1.99	0.45
1:H:295:ASN:HA	1:K:272:ARG:HD2	1.98	0.45
1:J:57:LYS:HG3	1:J:58:PRO:HD2	1.98	0.45
1:A:49:ALA:HB3	1:A:53:VAL:HB	1.98	0.45
2:B:1053:ARG:O	2:B:1057:VAL:HG23	2.17	0.45
2:B:1127:ASP:OD2	2:D:1142:GLY:N	2.50	0.45
1:E:237:ARG:HG2	1:E:350:TYR:CE2	2.52	0.45
1:E:300:CYS:HA	1:E:343:VAL:HG12	1.99	0.45
1:E:163:ILE:HD13	1:E:183:HIS:HD2	1.82	0.45
1:F:214:CYS:HB2	1:F:219:TRP:CZ2	2.52	0.45
1:H:188:MET:HE2	1:K:186:LEU:HD11	1.99	0.45
1:K:211:TYR:OH	1:K:213:SER:HB3	2.17	0.45
1:E:317:ARG:HE	1:E:330:ALA:HB3	1.82	0.45
1:G:225:PHE:HE2	1:J:209:VAL:HG11	1.81	0.45
1:H:8:THR:HB	1:H:67:GLY:HA2	1.99	0.45
1:K:180:VAL:HG23	1:K:183:HIS:NE2	2.32	0.45
1:C:226:TYR:CE2	1:G:231:ILE:HG13	2.49	0.45
1:E:81:THR:O	1:E:85:GLN:HG3	2.17	0.45
1:J:151:ASP:HB3	1:J:154:THR:HG23	1.99	0.45
1:K:183:HIS:CE1	1:K:201:VAL:HA	2.52	0.45
1:C:216:ASN:OD1	1:G:202:ARG:NH2	2.49	0.44
1:C:300:CYS:HA	1:C:343:VAL:HG12	1.98	0.44
1:J:261:ARG:NE	1:J:267:GLN:OE1	2.48	0.44
1:E:183:HIS:CE1	1:E:202:ARG:H	2.35	0.44
1:I:146:ALA:HB3	1:I:161:PHE:CE1	2.51	0.44
1:J:173:GLY:HA3	1:J:210:TRP:HH2	1.82	0.44
1:A:273:SER:HB3	1:A:284:ILE:HD11	1.99	0.44
2:D:961:ASP:OD2	1:F:87:ARG:NE	2.50	0.44
2:D:1122:ARG:C	2:M:1115:THR:HG23	2.42	0.44
1:H:155:VAL:O	1:H:195:ARG:HD2	2.17	0.44
1:H:190:PHE:CE2	1:K:162:SER:HB3	2.53	0.44
1:I:194:THR:HA	1:I:214:CYS:O	2.17	0.44
1:C:273:SER:HB3	1:C:284:ILE:HD11	1.99	0.44
1:F:36:ARG:NH1	1:I:57:LYS:HE2	2.32	0.44
1:H:304:PRO:HG3	1:H:308:TRP:CE3	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:1126:PHE:HA	2:M:1135:ALA:HA	1.99	0.44
1:C:81:THR:O	1:C:85:GLN:HG3	2.17	0.44
1:E:120:GLU:OE1	1:E:123:ARG:NH2	2.51	0.44
1:E:187:SER:O	1:H:160:TRP:NE1	2.40	0.44
1:G:148:MET:HG3	1:G:162:SER:HB2	2.00	0.44
1:A:226:TYR:CE2	1:F:231:ILE:HG13	2.50	0.44
2:B:1122:ARG:C	2:D:1115:THR:HG23	2.43	0.44
1:F:86:PHE:CD2	2:M:962:ALA:HB1	2.53	0.44
1:I:151:ASP:N	1:I:154:THR:OG1	2.48	0.44
1:J:155:VAL:HG13	1:J:161:PHE:CD2	2.53	0.44
1:K:177:ILE:HA	1:K:201:VAL:HG13	2.00	0.44
1:K:181:ASN:OD1	1:K:182:GLY:N	2.49	0.44
1:A:312:ALA:HB1	1:I:332:ALA:HB2	1.99	0.44
2:D:1204:SER:HB3	2:M:1198:GLU:HG2	1.99	0.44
1:E:183:HIS:HB3	1:E:200:PHE:O	2.17	0.44
1:H:57:LYS:HB3	1:H:58:PRO:HD3	2.00	0.44
1:H:214:CYS:HB2	1:H:219:TRP:CZ2	2.53	0.44
1:A:226:TYR:CZ	1:F:228:THR:HG22	2.52	0.44
1:H:188:MET:SD	1:H:188:MET:N	2.91	0.44
1:H:244:PRO:HG2	1:K:228:THR:O	2.18	0.44
2:D:1139:ILE:HG12	2:D:1144:MET:SD	2.58	0.44
1:E:180:VAL:HG11	1:E:203:ASN:HB2	1.99	0.44
1:E:312:ALA:HA	1:K:317:ARG:HD3	1.99	0.44
1:F:304:PRO:HG3	1:F:308:TRP:CD2	2.53	0.44
1:H:231:ILE:HD12	1:H:248:VAL:HG22	2.00	0.44
1:J:298:VAL:HG11	1:J:320:TYR:HA	2.00	0.44
1:A:312:ALA:HA	1:I:317:ARG:HD3	2.00	0.43
1:K:194:THR:HA	1:K:214:CYS:O	2.17	0.43
1:K:227:THR:H	1:K:230:ASN:HD21	1.66	0.43
1:H:188:MET:CB	1:K:160:TRP:HD1	2.31	0.43
1:J:311:THR:O	1:J:314:GLN:HG2	2.18	0.43
2:B:1122:ARG:HD3	2:B:1140:VAL:HG22	1.99	0.43
1:C:312:ALA:HA	1:J:317:ARG:HD3	2.00	0.43
1:C:318:GLY:HA3	1:G:302:TRP:HB3	2.01	0.43
2:D:1190:ASP:OD1	2:D:1190:ASP:N	2.52	0.43
1:I:165:PRO:HB3	1:I:181:ASN:HA	1.99	0.43
1:A:248:VAL:HA	1:A:263:ALA:HB2	2.00	0.43
1:A:318:GLY:HA3	1:F:302:TRP:HB3	2.00	0.43
2:B:993:LEU:HD13	2:D:994:GLU:HG2	2.01	0.43
2:D:993:LEU:HD13	2:M:994:GLU:HG2	1.99	0.43
2:D:1060:ARG:NH2	2:M:1065:SER:OG	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:147:PRO:HD2	1:J:157:GLU:HG2	2.00	0.43
1:K:165:PRO:HB3	1:K:181:ASN:HA	2.01	0.43
1:C:320:TYR:CD1	1:G:304:PRO:HD2	2.53	0.43
1:E:260:VAL:HG12	1:E:268:MET:HB2	2.00	0.43
1:G:214:CYS:HB2	1:G:219:TRP:CZ2	2.53	0.43
1:K:156:ASN:HB2	1:K:195:ARG:CZ	2.48	0.43
2:B:966:TRP:N	2:M:964:ARG:HH21	2.16	0.43
2:B:1105:LEU:HD22	2:M:1089:LYS:H	1.83	0.43
1:C:237:ARG:O	1:C:237:ARG:HD3	2.18	0.43
1:F:297:GLY:H	1:I:344:MET:HE2	1.83	0.43
2:B:1151:ILE:HD12	2:M:1156:ILE:HG12	2.00	0.43
1:E:299:THR:HA	1:H:301:ASN:HD21	1.83	0.43
1:F:180:VAL:HG11	1:F:203:ASN:HB2	2.01	0.43
1:G:257:GLY:HA2	1:G:271:ALA:HA	2.01	0.43
1:J:137:PHE:HD2	1:J:138:LEU:HD12	1.84	0.43
1:J:180:VAL:HG23	1:J:183:HIS:NE2	2.34	0.43
1:C:199:PHE:CE1	1:C:210:TRP:HB2	2.54	0.43
1:G:348:ARG:HH22	1:J:251:SER:HB2	1.82	0.43
1:I:181:ASN:OD1	1:I:182:GLY:N	2.50	0.43
1:K:258:TRP:H	1:K:270:ALA:HB3	1.83	0.43
1:A:317:ARG:HE	1:A:330:ALA:HB3	1.84	0.43
1:F:244:PRO:HG2	1:I:228:THR:O	2.19	0.43
1:G:36:ARG:NH1	1:J:57:LYS:HE2	2.33	0.43
1:K:151:ASP:HB3	1:K:154:THR:HG23	2.01	0.43
1:C:49:ALA:HB3	1:C:53:VAL:HB	1.99	0.43
1:C:260:VAL:CG1	1:C:268:MET:HB2	2.49	0.43
1:C:299:THR:HA	1:G:301:ASN:HD21	1.84	0.43
2:D:962:ALA:HB1	1:H:86:PHE:CD2	2.54	0.43
1:K:11:VAL:HG12	1:K:18:VAL:HG22	2.01	0.43
1:K:157:GLU:N	1:K:161:PHE:HZ	2.17	0.43
1:A:81:THR:O	1:A:85:GLN:HG3	2.19	0.42
1:A:149:ALA:HB2	1:A:161:PHE:HB2	2.00	0.42
1:A:187:SER:O	1:F:160:TRP:NE1	2.38	0.42
1:A:260:VAL:CG1	1:A:268:MET:HB2	2.49	0.42
2:B:944:LEU:HD11	2:D:945:GLN:HB2	2.00	0.42
2:B:966:TRP:CZ3	1:C:89:LEU:HD21	2.53	0.42
1:E:13:LEU:HD23	1:E:14:ASN:HB2	2.01	0.42
1:E:158:SER:HA	1:E:187:SER:HB3	2.00	0.42
1:F:8:THR:HB	1:F:67:GLY:HA2	2.00	0.42
1:A:41:ARG:HG3	1:I:40:GLY:HA3	2.00	0.42
1:C:7:GLY:HA3	1:C:23:THR:HG22	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:251:SER:HB3	1:E:260:VAL:HG23	2.00	0.42
1:E:260:VAL:CG1	1:E:268:MET:HB2	2.49	0.42
1:I:248:VAL:HA	1:I:263:ALA:HB2	2.02	0.42
1:I:311:THR:O	1:I:314:GLN:HG2	2.19	0.42
1:C:183:HIS:CE1	1:C:202:ARG:H	2.36	0.42
1:C:228:THR:HG23	1:J:224:ARG:HB3	2.01	0.42
2:D:944:LEU:HD11	2:M:945:GLN:HB2	2.00	0.42
2:D:962:ALA:HB1	1:H:86:PHE:HD2	1.84	0.42
2:D:1053:ARG:O	2:D:1057:VAL:HG23	2.19	0.42
1:E:188:MET:HE3	1:E:188:MET:HB2	1.95	0.42
1:I:173:GLY:HA3	1:I:210:TRP:HH2	1.84	0.42
1:A:251:SER:HB3	1:A:260:VAL:HG23	2.01	0.42
2:B:939:SER:OG	1:H:57:LYS:HE3	2.19	0.42
2:B:1190:ASP:OD1	2:B:1190:ASP:N	2.51	0.42
1:C:312:ALA:HB1	1:J:332:ALA:HB2	2.00	0.42
1:I:137:PHE:HD2	1:I:138:LEU:HD12	1.85	0.42
1:J:44:GLU:H	1:J:57:LYS:HB2	1.84	0.42
2:B:1054:ILE:HG21	2:M:1053:ARG:HB3	2.02	0.42
2:B:1204:SER:HB3	2:D:1198:GLU:HG2	2.02	0.42
1:E:45:ILE:HG12	1:E:54:LEU:HD21	2.00	0.42
1:E:237:ARG:O	1:E:237:ARG:HD3	2.20	0.42
1:F:43:TYR:HB3	1:F:58:PRO:HD2	2.00	0.42
1:F:190:PHE:CZ	1:I:162:SER:HB3	2.53	0.42
1:G:43:TYR:HB3	1:G:58:PRO:HD2	2.01	0.42
1:G:319:ALA:HB3	1:J:301:ASN:HD21	1.83	0.42
1:C:143:LYS:NZ	1:J:140:GLY:O	2.37	0.42
1:C:183:HIS:HB3	1:C:200:PHE:O	2.19	0.42
1:F:57:LYS:HB3	1:F:58:PRO:HD3	2.01	0.42
1:F:250:GLU:HB3	1:F:261:ARG:HB2	2.01	0.42
1:G:304:PRO:HG3	1:G:308:TRP:CD2	2.55	0.42
1:I:156:ASN:HB2	1:I:195:ARG:CZ	2.49	0.42
1:K:284:ILE:N	1:K:327:VAL:O	2.47	0.42
2:B:1115:THR:HG23	2:M:1122:ARG:C	2.44	0.42
1:C:13:LEU:HD23	1:C:14:ASN:HB2	2.01	0.42
2:D:1178:TRP:CD2	2:M:1180:LEU:HD21	2.54	0.42
1:F:180:VAL:HB	1:F:183:HIS:HE1	1.85	0.42
1:J:194:THR:HA	1:J:214:CYS:O	2.19	0.42
1:K:4:TYR:OH	1:K:24:ALA:N	2.48	0.42
1:A:155:VAL:HG23	1:A:195:ARG:HB2	2.01	0.42
2:D:1190:ASP:HA	2:M:1201:LEU:HG	2.02	0.42
1:I:11:VAL:HG12	1:I:18:VAL:HG22	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:183:HIS:CE1	1:A:202:ARG:H	2.38	0.42
1:C:214:CYS:HB2	1:C:219:TRP:CE3	2.54	0.42
1:G:212:ARG:HG3	1:G:219:TRP:CZ3	2.55	0.42
1:G:295:ASN:HA	1:J:272:ARG:HD2	2.01	0.42
2:M:1105:LEU:HD12	2:M:1116:MET:HB3	2.02	0.42
1:A:89:LEU:HD21	2:M:966:TRP:CZ3	2.55	0.42
1:A:183:HIS:HB3	1:A:200:PHE:O	2.19	0.42
1:C:142:SER:HB2	1:C:145:GLN:HG2	2.02	0.42
1:C:237:ARG:HG2	1:C:350:TYR:CE2	2.55	0.42
1:E:289:ALA:HA	1:E:325:SER:HB3	2.02	0.42
1:G:180:VAL:HB	1:G:183:HIS:HE1	1.85	0.42
1:G:206:LEU:HD22	1:G:229:ASP:CG	2.45	0.42
1:I:151:ASP:O	1:I:155:VAL:HG23	2.20	0.42
1:J:211:TYR:OH	1:J:213:SER:HB3	2.19	0.42
2:B:1165:ILE:HG23	2:B:1180:LEU:HB3	2.01	0.41
1:E:312:ALA:HB1	1:K:332:ALA:HB2	2.02	0.41
1:F:257:GLY:HA2	1:F:271:ALA:HA	2.02	0.41
1:G:152:MET:HG3	1:G:197:GLN:OE1	2.20	0.41
1:I:177:ILE:HA	1:I:201:VAL:HG13	2.00	0.41
2:B:962:ALA:HA	2:M:964:ARG:HH12	1.84	0.41
1:G:244:PRO:HG2	1:J:228:THR:O	2.19	0.41
2:M:1122:ARG:HD3	2:M:1140:VAL:HG22	2.01	0.41
1:E:227:THR:HG22	1:K:225:PHE:HA	2.02	0.41
1:H:152:MET:HG3	1:H:197:GLN:OE1	2.21	0.41
1:K:258:TRP:CE2	1:K:270:ALA:HB2	2.55	0.41
1:A:27:ALA:HB2	1:G:55:THR:HG21	2.02	0.41
1:A:152:MET:HG3	1:A:197:GLN:HE22	1.84	0.41
1:A:214:CYS:HB2	1:A:219:TRP:CE3	2.55	0.41
1:C:112:ALA:O	1:C:116:MET:HG3	2.21	0.41
2:D:939:SER:OG	1:F:57:LYS:HE3	2.21	0.41
1:E:214:CYS:HB2	1:E:219:TRP:CE3	2.55	0.41
1:E:226:TYR:CZ	1:H:228:THR:HG22	2.56	0.41
1:E:272:ARG:HG3	1:E:342:THR:HG22	2.03	0.41
1:I:13:LEU:HD23	1:I:14:ASN:HB2	2.01	0.41
1:J:125:ILE:HD11	1:J:138:LEU:HD11	2.03	0.41
1:A:163:ILE:HD13	1:A:183:HIS:HD2	1.84	0.41
2:D:1169:ALA:HB2	2:M:1182:LYS:HB2	2.02	0.41
1:F:231:ILE:HD12	1:F:248:VAL:HG22	2.01	0.41
1:G:119:THR:OG1	1:J:126:ASN:O	2.33	0.41
2:M:930:LEU:HD23	2:M:930:LEU:HA	1.91	0.41
1:A:299:THR:HA	1:F:301:ASN:HD21	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1133:ALA:HB3	2:D:1093:HIS:CE1	2.56	0.41
1:C:302:TRP:CZ2	1:C:335:LEU:HA	2.56	0.41
1:E:18:VAL:HG23	1:E:56:ILE:HD11	2.03	0.41
1:H:152:MET:O	1:H:197:GLN:NE2	2.43	0.41
1:H:259:TYR:HA	1:H:269:ALA:HA	2.02	0.41
1:I:125:ILE:HD11	1:I:138:LEU:HD11	2.01	0.41
1:F:152:MET:HG3	1:F:197:GLN:OE1	2.20	0.41
1:H:304:PRO:HG3	1:H:308:TRP:CD2	2.55	0.41
1:H:349:TRP:H	1:H:349:TRP:CD1	2.39	0.41
1:I:180:VAL:HG23	1:I:183:HIS:NE2	2.36	0.41
1:I:258:TRP:CE2	1:I:270:ALA:HB2	2.56	0.41
2:B:966:TRP:CE3	1:C:89:LEU:HD21	2.55	0.41
1:E:244:PRO:HD2	1:H:228:THR:HB	2.02	0.41
1:F:348:ARG:HH22	1:I:251:SER:HB2	1.85	0.41
2:M:1091:GLN:OE1	2:M:1119:GLN:NE2	2.53	0.41
1:A:199:PHE:CE1	1:A:210:TRP:HB2	2.56	0.41
2:B:1142:GLY:N	2:M:1127:ASP:OD2	2.52	0.41
1:C:45:ILE:HG12	1:C:54:LEU:HD21	2.01	0.41
2:D:966:TRP:CZ3	1:E:89:LEU:HD21	2.55	0.41
2:D:1091:GLN:OE1	2:D:1119:GLN:NE2	2.53	0.41
1:E:130:THR:OG1	1:E:133:ASN:OD1	2.28	0.41
1:E:149:ALA:HB2	1:E:161:PHE:HB2	2.02	0.41
1:F:152:MET:O	1:F:197:GLN:NE2	2.41	0.41
1:F:171:PRO:HD3	1:F:199:PHE:CE1	2.56	0.41
1:F:206:LEU:HD22	1:F:229:ASP:CG	2.46	0.41
1:F:259:TYR:HB3	1:F:287:PRO:HG2	2.03	0.41
1:G:250:GLU:HB3	1:G:261:ARG:HB2	2.01	0.41
1:I:57:LYS:O	1:I:58:PRO:C	2.64	0.41
1:I:151:ASP:HB3	1:I:154:THR:HG23	2.03	0.41
1:J:165:PRO:HB3	1:J:181:ASN:HA	2.01	0.41
1:J:236:THR:O	1:J:245:THR:N	2.53	0.41
1:J:258:TRP:CE2	1:J:270:ALA:HB2	2.56	0.41
1:J:284:ILE:N	1:J:327:VAL:O	2.47	0.41
1:K:161:PHE:HB3	1:K:162:SER:H	1.66	0.41
1:C:163:ILE:HD13	1:C:183:HIS:HD2	1.85	0.41
1:E:277:LEU:HB2	1:E:335:LEU:HD22	2.02	0.41
1:F:101:LYS:NZ	2:M:977:THR:OG1	2.38	0.41
1:G:171:PRO:HD3	1:G:199:PHE:CE1	2.56	0.41
1:H:171:PRO:HD3	1:H:199:PHE:CE1	2.56	0.41
1:J:303:ILE:HB	1:J:340:THR:H	1.86	0.41
2:M:1144:MET:HE1	2:M:1146:ILE:HD11	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:M:1167:SER:HB3	2:M:1178:TRP:NE1	2.36	0.41
1:A:228:THR:HG23	1:I:224:ARG:HB3	2.04	0.40
1:I:44:GLU:H	1:I:57:LYS:HB2	1.86	0.40
1:K:137:PHE:HD2	1:K:138:LEU:HD12	1.86	0.40
1:K:177:ILE:HG23	1:K:201:VAL:HG22	2.03	0.40
1:K:236:THR:O	1:K:245:THR:N	2.54	0.40
1:G:259:TYR:HB3	1:G:287:PRO:HG2	2.03	0.40
1:I:200:PHE:CE1	1:I:209:VAL:HG13	2.55	0.40
1:E:233:GLY:O	1:E:250:GLU:HB3	2.21	0.40
1:F:190:PHE:CE2	1:I:162:SER:HB3	2.56	0.40
1:F:239:LEU:HA	1:F:243:LYS:HA	2.03	0.40
1:G:120:GLU:OE1	1:G:123:ARG:NH2	2.55	0.40
1:G:239:LEU:HA	1:G:243:LYS:HA	2.03	0.40
1:H:180:VAL:HG11	1:H:203:ASN:HD22	1.85	0.40
1:J:57:LYS:O	1:J:58:PRO:C	2.64	0.40
1:A:304:PRO:HG3	1:A:309:PRO:HD3	2.04	0.40
1:A:320:TYR:CD1	1:F:304:PRO:HD2	2.56	0.40
1:C:311:THR:CG2	1:C:314:GLN:HB2	2.51	0.40
1:C:346:VAL:HG12	1:G:258:TRP:HZ2	1.87	0.40
2:D:1039:GLU:HB2	2:M:1040:GLN:OE1	2.22	0.40
1:E:302:TRP:CZ2	1:E:335:LEU:HA	2.57	0.40
1:F:28:ASN:O	1:I:80:LYS:NZ	2.49	0.40
1:H:180:VAL:HB	1:H:183:HIS:HE1	1.86	0.40
1:H:257:GLY:HA2	1:H:271:ALA:HA	2.02	0.40
1:H:317:ARG:HD2	1:K:309:PRO:HD2	2.03	0.40
1:A:237:ARG:HD3	1:A:237:ARG:O	2.21	0.40
2:B:1198:GLU:HG2	2:M:1204:SER:HB3	2.02	0.40
2:D:966:TRP:CE3	1:E:89:LEU:HD21	2.56	0.40
1:H:148:MET:HG3	1:H:162:SER:HB2	2.03	0.40
1:I:39:ASP:OD1	1:I:39:ASP:N	2.55	0.40
1:K:303:ILE:HB	1:K:340:THR:H	1.87	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	347/350 (99%)	316 (91%)	31 (9%)	0	100	100
1	C	347/350 (99%)	316 (91%)	31 (9%)	0	100	100
1	E	347/350 (99%)	317 (91%)	30 (9%)	0	100	100
1	F	347/350 (99%)	327 (94%)	20 (6%)	0	100	100
1	G	347/350 (99%)	326 (94%)	21 (6%)	0	100	100
1	H	347/350 (99%)	328 (94%)	19 (6%)	0	100	100
1	I	347/350 (99%)	319 (92%)	27 (8%)	1 (0%)	36	70
1	J	347/350 (99%)	320 (92%)	26 (8%)	1 (0%)	36	70
1	K	347/350 (99%)	317 (91%)	29 (8%)	1 (0%)	36	70
2	B	296/1204 (25%)	290 (98%)	6 (2%)	0	100	100
2	D	296/1204 (25%)	291 (98%)	5 (2%)	0	100	100
2	M	296/1204 (25%)	290 (98%)	6 (2%)	0	100	100
All	All	4011/6762 (59%)	3757 (94%)	251 (6%)	3 (0%)	49	80

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	I	148	MET
1	J	148	MET
1	K	148	MET

5.3.2 Protein sidechains (i)

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	267/268 (100%)	267 (100%)	0	100	100
1	C	267/268 (100%)	267 (100%)	0	100	100
1	E	267/268 (100%)	267 (100%)	0	100	100
1	F	267/268 (100%)	267 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	G	267/268 (100%)	267 (100%)	0	100	100
1	H	267/268 (100%)	267 (100%)	0	100	100
1	I	267/268 (100%)	267 (100%)	0	100	100
1	J	267/268 (100%)	267 (100%)	0	100	100
1	K	267/268 (100%)	267 (100%)	0	100	100
2	B	223/959 (23%)	223 (100%)	0	100	100
2	D	223/959 (23%)	223 (100%)	0	100	100
2	M	223/959 (23%)	223 (100%)	0	100	100
All	All	3072/5289 (58%)	3072 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	183	HIS
1	A	197	GLN
1	A	333	GLN
2	B	937	GLN
2	B	956	ASN
2	B	986	GLN
2	B	1119	GLN
1	C	183	HIS
1	C	197	GLN
1	C	314	GLN
1	C	333	GLN
2	D	937	GLN
2	D	1119	GLN
1	E	183	HIS
1	E	197	GLN
1	E	333	GLN
1	F	111	GLN
1	F	156	ASN
1	G	111	GLN
1	G	156	ASN
1	H	111	GLN
1	H	156	ASN
1	I	314	GLN
1	J	28	ASN

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Mol	Chain	Res	Type
1	J	314	GLN
1	K	133	ASN
2	M	1045	ASN
2	M	1119	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

There are no ligands in this entry.

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.

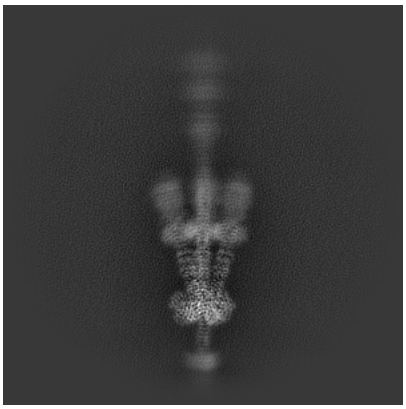
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-69222. These allow visual inspection of the internal detail of the map and identification of artifacts.

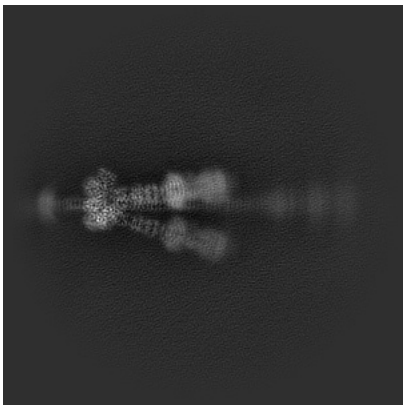
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

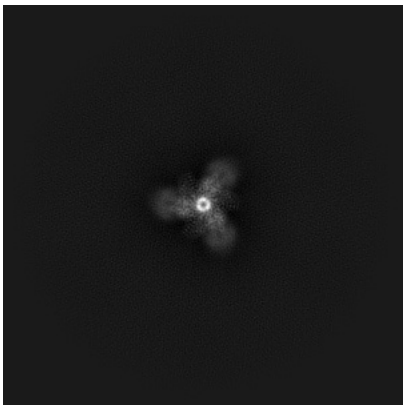
6.1.1 Primary map



X

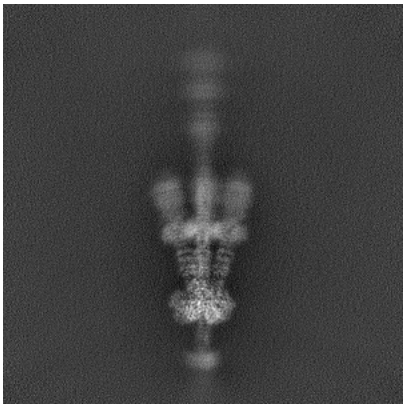


Y

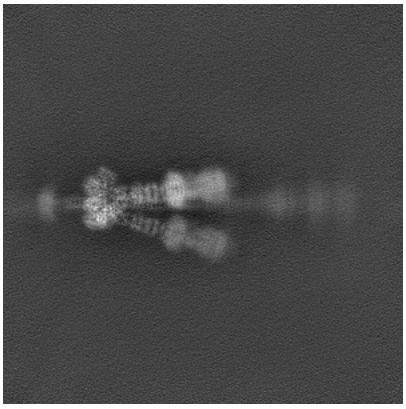


Z

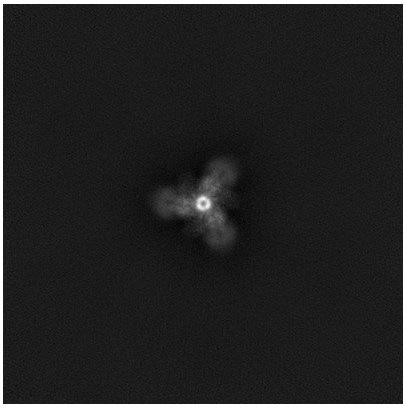
6.1.2 Raw map



X



Y

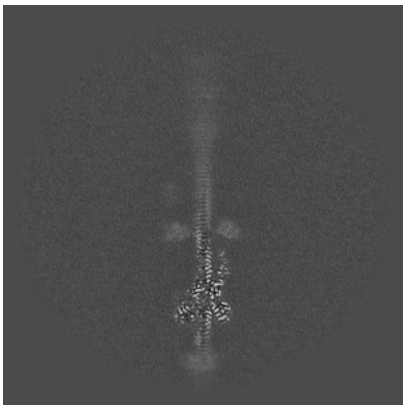


Z

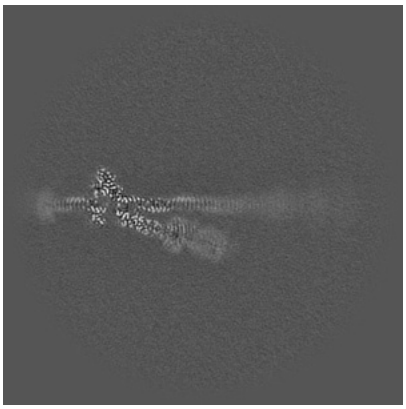
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

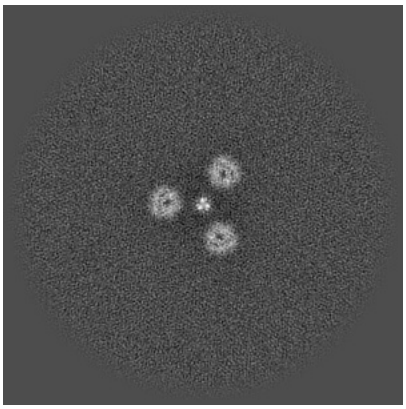
6.2.1 Primary map



X Index: 240

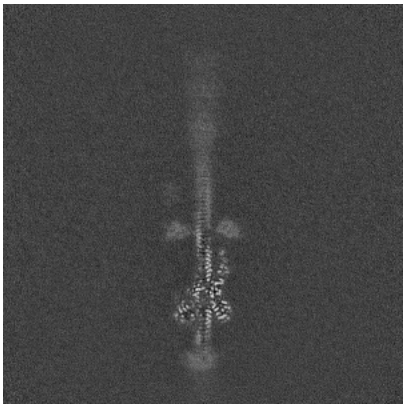


Y Index: 240

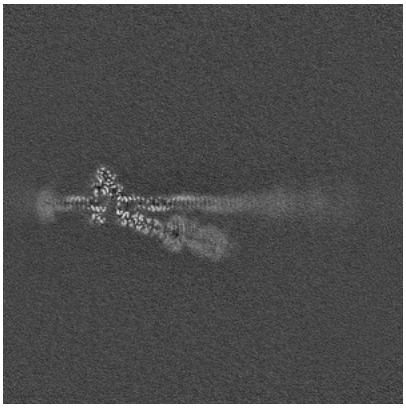


Z Index: 240

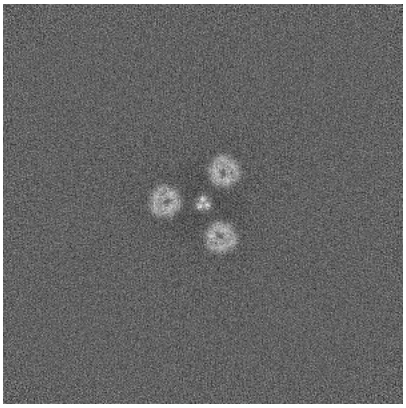
6.2.2 Raw map



X Index: 240



Y Index: 240

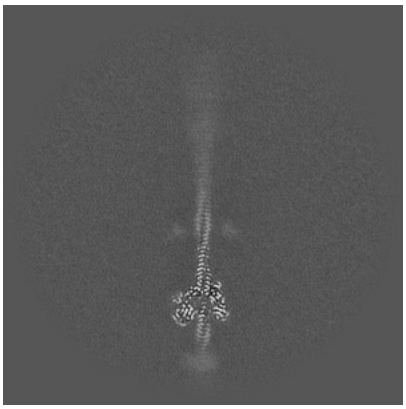


Z Index: 240

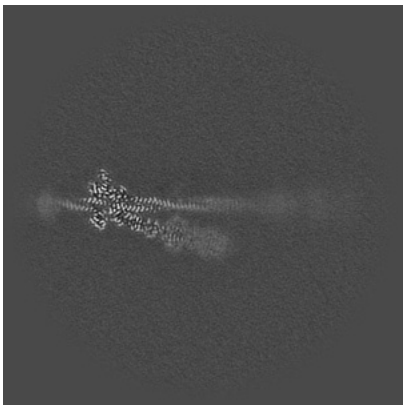
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

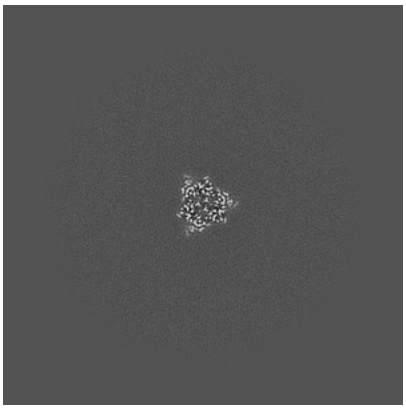
6.3.1 Primary map



X Index: 236

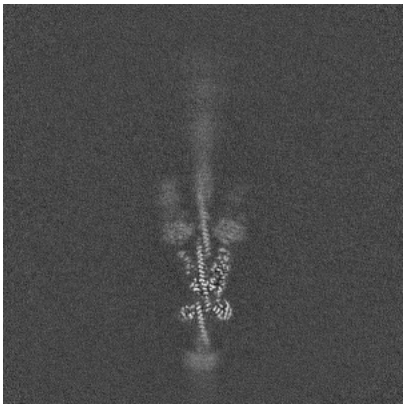


Y Index: 235

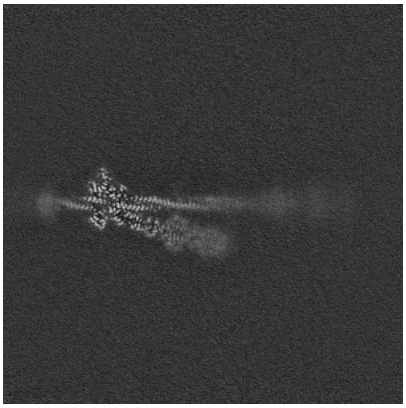


Z Index: 113

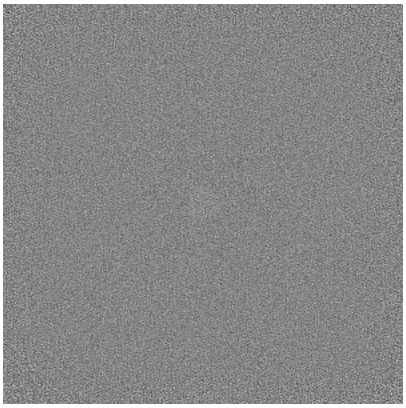
6.3.2 Raw map



X Index: 245



Y Index: 235

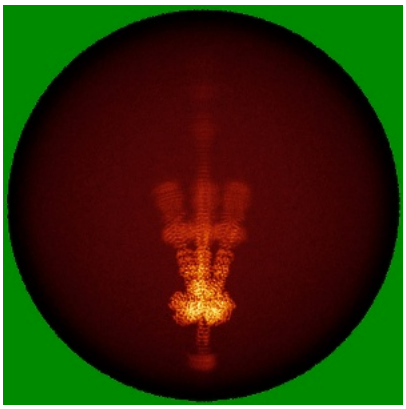


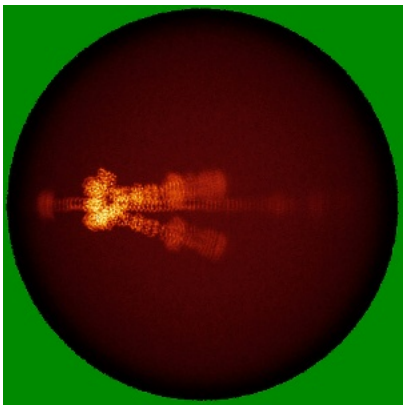
Z Index: 479

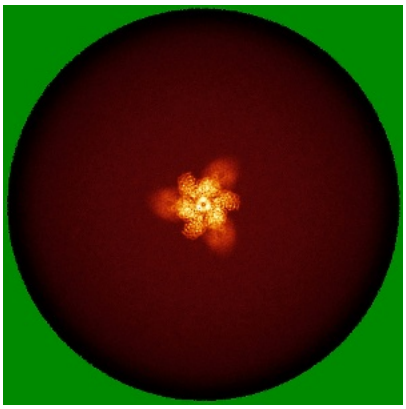
The images above show the largest variance slices of the map in three orthogonal directions.

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

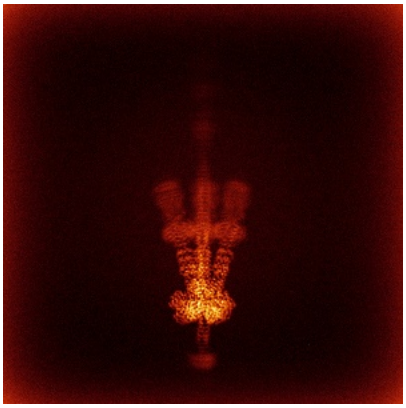
6.4.1 Primary map

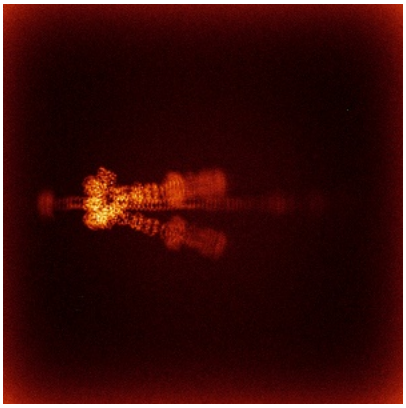

X

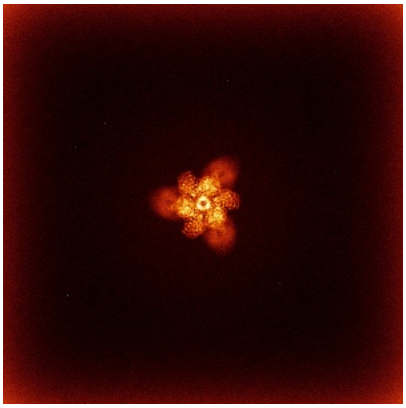

Y


Z

6.4.2 Raw map


X

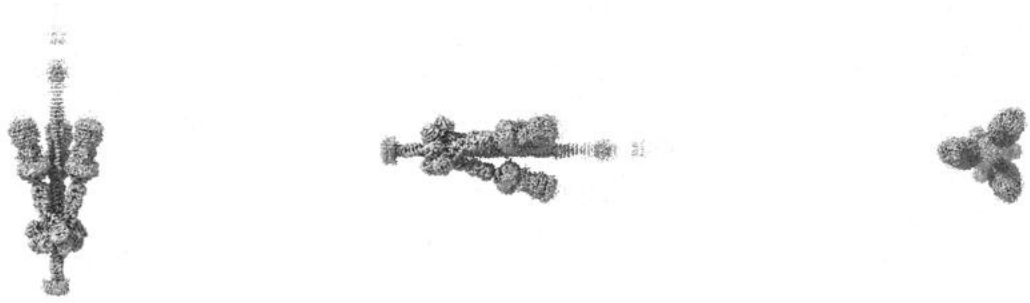

Y


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 (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.272. 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.

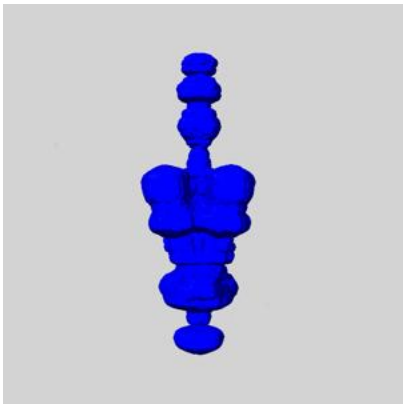
6.6 Mask visualisation (i)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

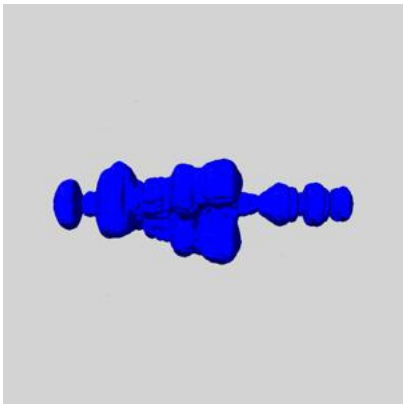
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

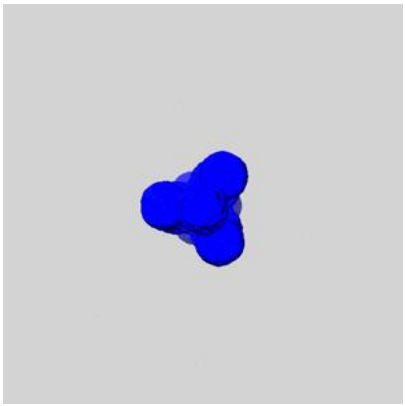
6.6.1 emd_69222_msk_1.map (i)



X



Y

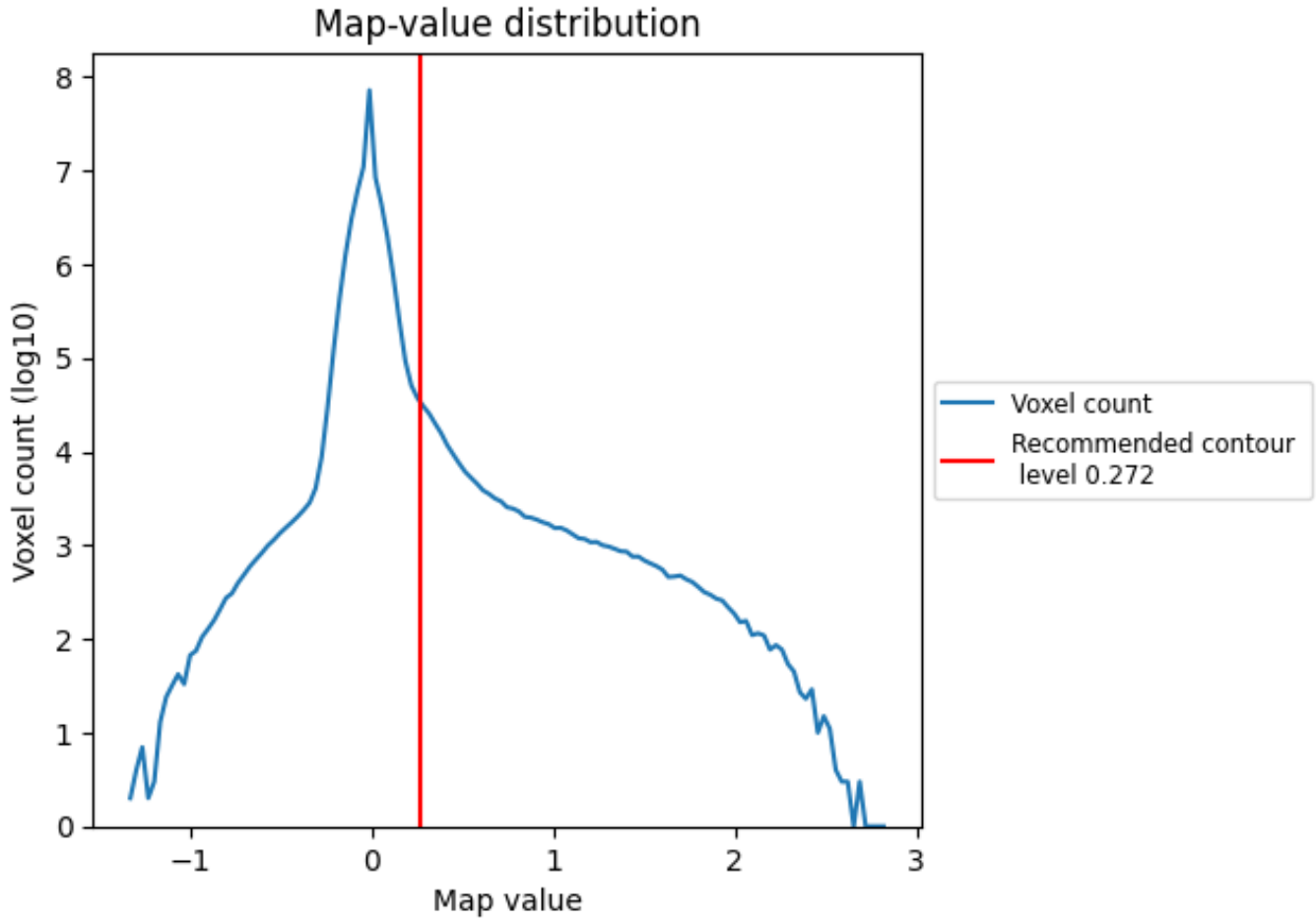


Z

7 Map analysis

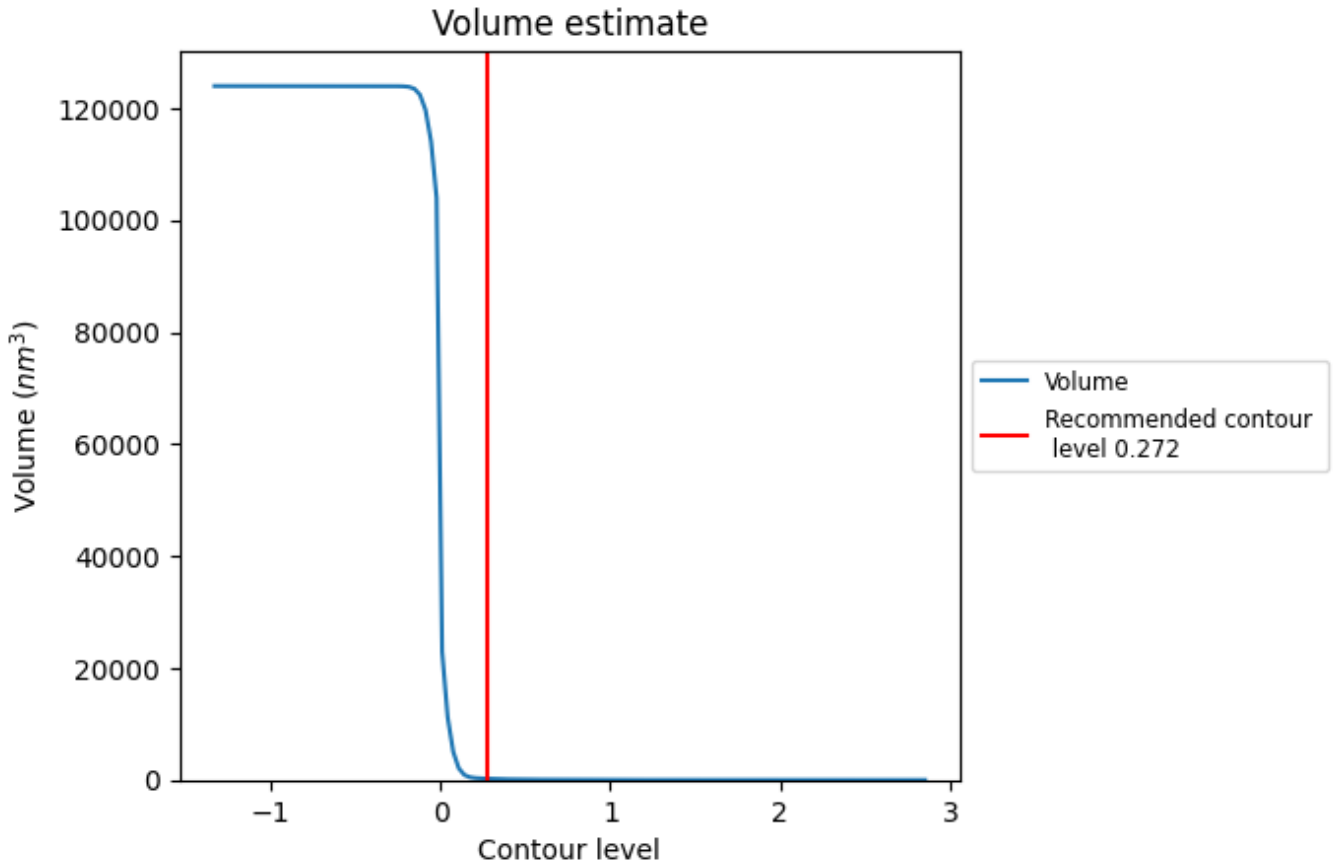
This section contains the results of statistical analysis of the map.

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.

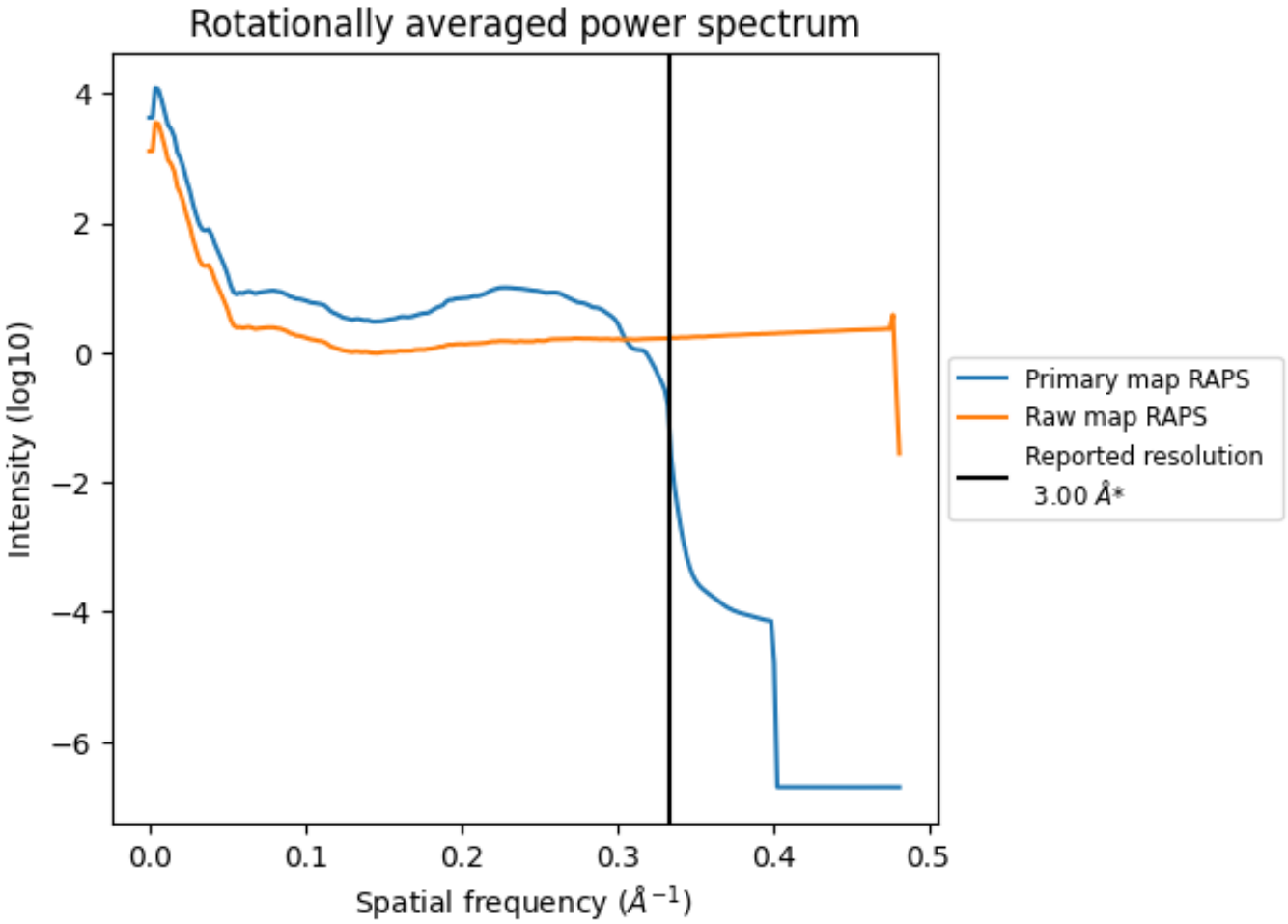
7.2 Volume estimate



The volume at the recommended contour level is 229 nm^3; this corresponds to an approximate mass of 207 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 (i)

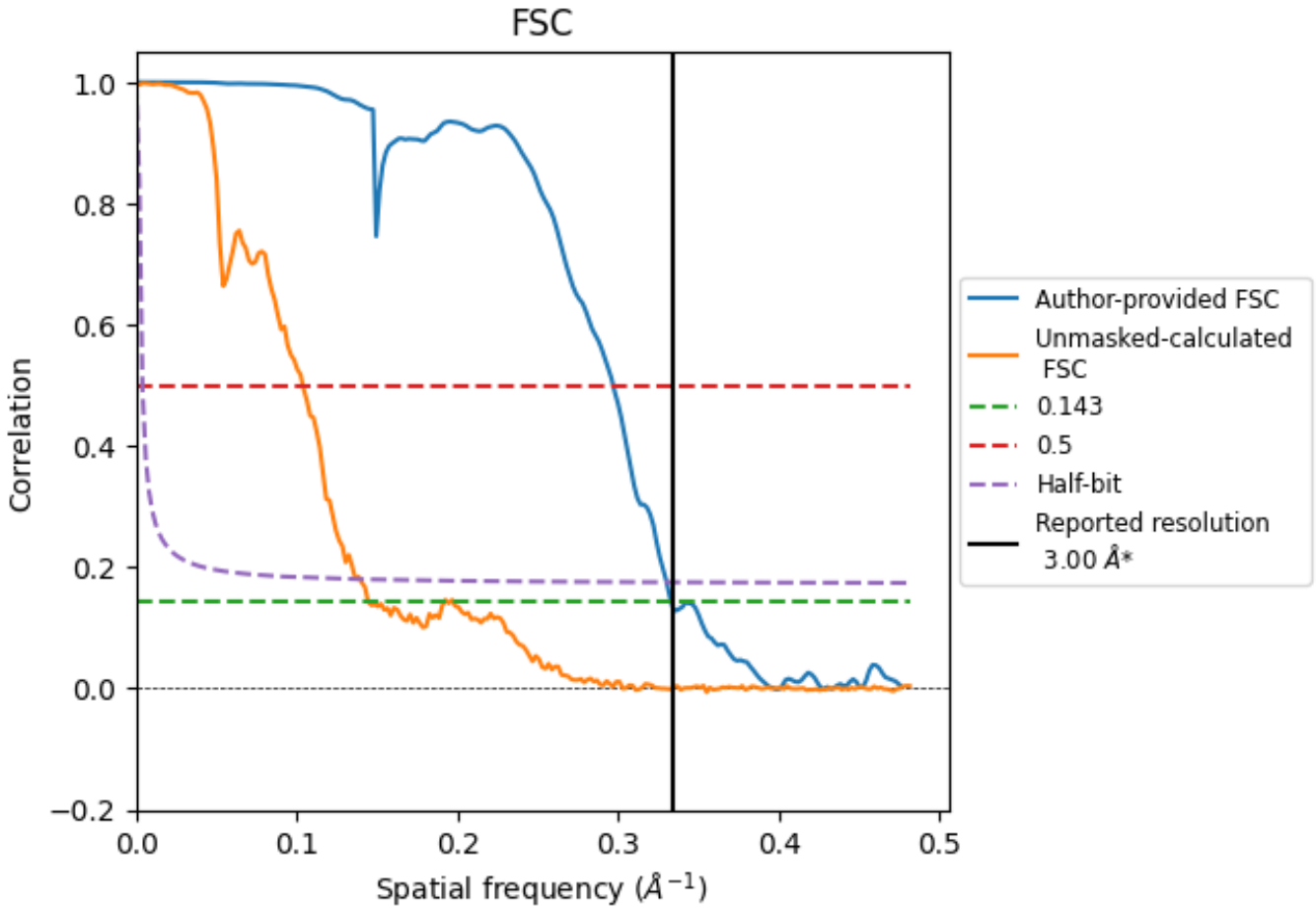


*Reported resolution corresponds to spatial frequency of 0.333 Å^{-1}

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 0.333 Å^{-1}

8.2 Resolution estimates (i)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.00	-	-
Author-provided FSC curve	3.00	3.37	3.03
Unmasked-calculated*	6.93	9.64	7.18

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.93 differs from the reported value 3.0 by more than 10 %

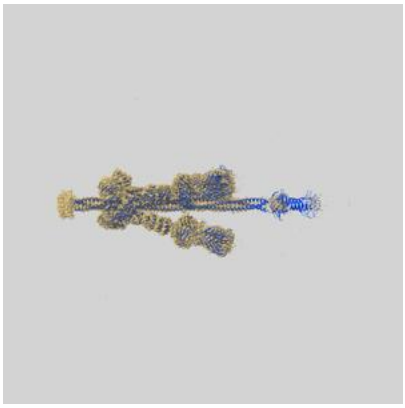
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-69222 and PDB model 23ST. Per-residue inclusion information can be found in section 3 on page 5.

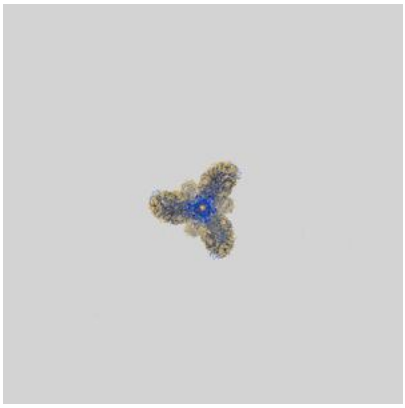
9.1 Map-model overlay



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.272 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

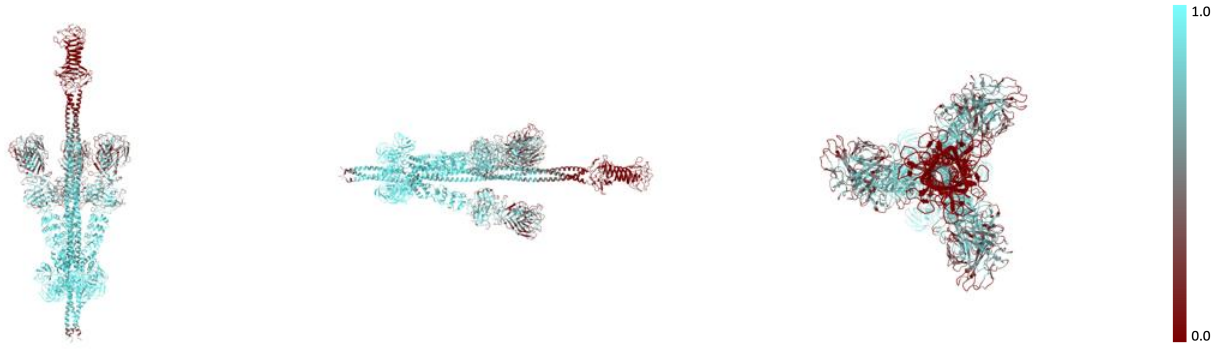
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

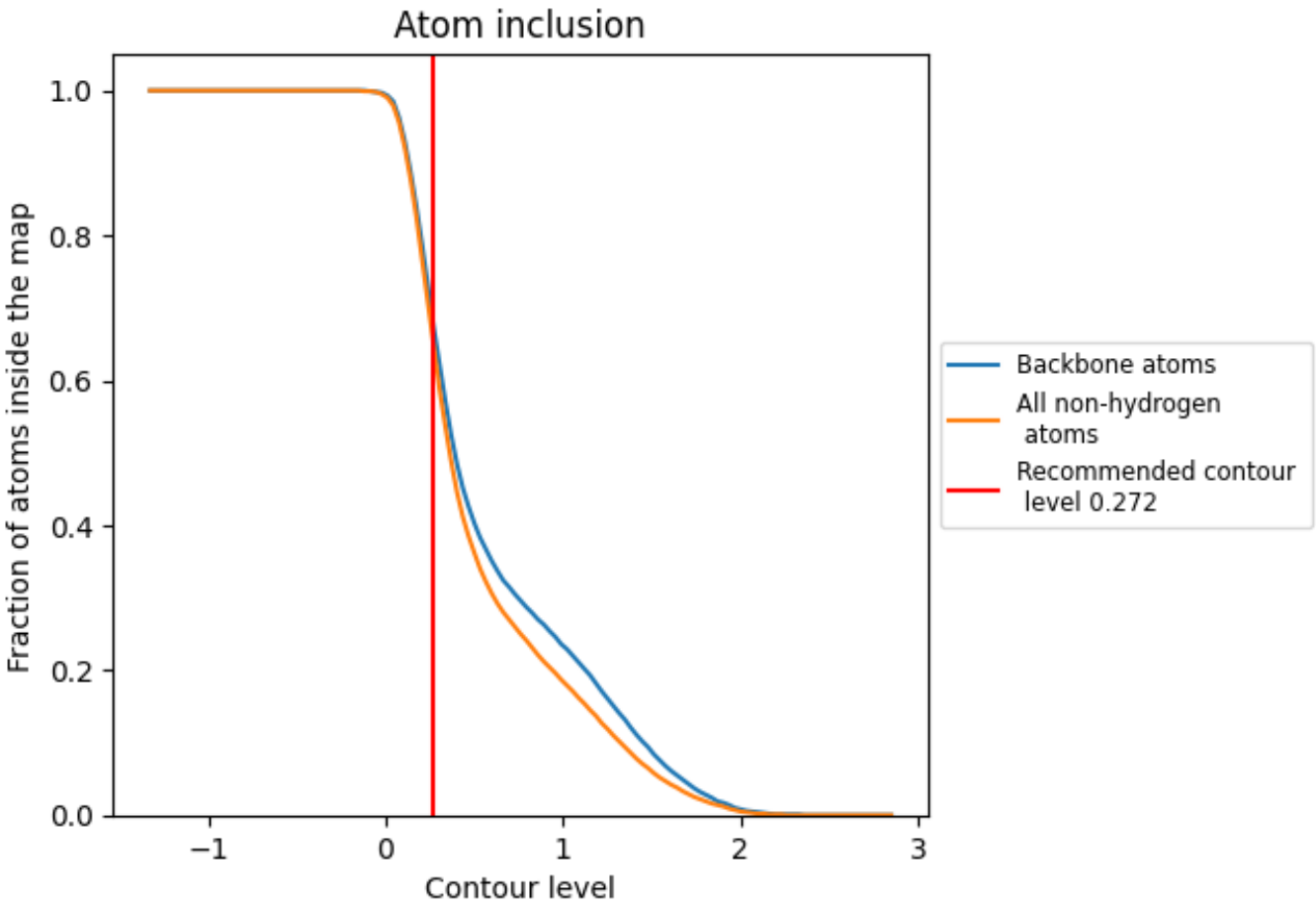
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.272).

9.4 Atom inclusion (i)



At the recommended contour level, 67% of all backbone atoms, 64% 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 (0.272) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6440	0.3280
A	0.6990	0.3320
B	0.4380	0.2730
C	0.7020	0.3340
D	0.4350	0.2720
E	0.6950	0.3300
F	0.7110	0.3590
G	0.7110	0.3580
H	0.7160	0.3580
I	0.6970	0.3420
J	0.6970	0.3420
K	0.6920	0.3380
M	0.4380	0.2750

