



Full wwPDB EM Validation Report ⓘ

Oct 6, 2024 – 10:05 AM JST

PDB ID : 7WOA
EMDB ID : EMD-32646
Title : SARS-CoV-2 Spike in complex with IgG 553-60 (1-up trimer)
Authors : Zhan, W.Q.; Zhang, X.; Chen, Z.G.; Sun, L.
Deposited on : 2022-01-21
Resolution : 3.25 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:

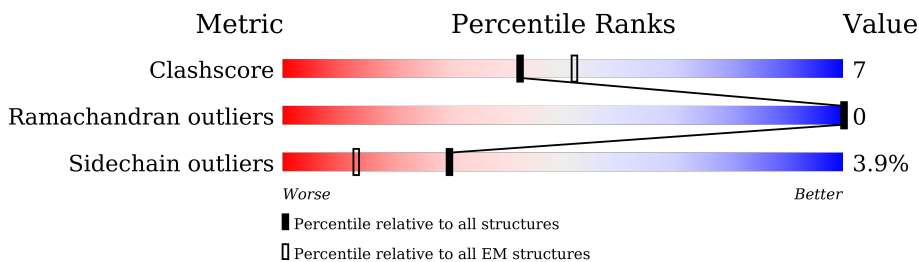
EMDB validation analysis : 0.0.1.dev113
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

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 3.25 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)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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 $\leq 5\%$. 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	1288	
1	C	1288	
1	E	1288	
2	D	226	
2	F	226	
3	B	215	
3	G	215	

2 Entry composition i

There are 4 unique types of molecules in this entry. The entry contains 31952 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 Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1076	8338	5318	1396	1586	38	0	0
1	C	1076	8338	5318	1396	1586	38	0	0
1	E	1076	8338	5318	1396	1586	38	0	0

There are 258 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	614	GLY	ASP	variant	UNP P0DTC2
A	682	GLY	ARG	conflict	UNP P0DTC2
A	683	SER	ARG	conflict	UNP P0DTC2
A	685	SER	ARG	conflict	UNP P0DTC2
A	986	PRO	LYS	conflict	UNP P0DTC2
A	987	PRO	VAL	conflict	UNP P0DTC2
A	1209	GLY	-	expression tag	UNP P0DTC2
A	1210	SER	-	expression tag	UNP P0DTC2
A	1211	GLY	-	expression tag	UNP P0DTC2
A	1212	TYR	-	expression tag	UNP P0DTC2
A	1213	ILE	-	expression tag	UNP P0DTC2
A	1214	PRO	-	expression tag	UNP P0DTC2
A	1215	GLU	-	expression tag	UNP P0DTC2
A	1216	ALA	-	expression tag	UNP P0DTC2
A	1217	PRO	-	expression tag	UNP P0DTC2
A	1218	ARG	-	expression tag	UNP P0DTC2
A	1219	ASP	-	expression tag	UNP P0DTC2
A	1220	GLY	-	expression tag	UNP P0DTC2
A	1221	GLN	-	expression tag	UNP P0DTC2
A	1222	ALA	-	expression tag	UNP P0DTC2
A	1223	TYR	-	expression tag	UNP P0DTC2
A	1224	VAL	-	expression tag	UNP P0DTC2
A	1225	ARG	-	expression tag	UNP P0DTC2
A	1226	LYS	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1227	ASP	-	expression tag	UNP P0DTC2
A	1228	GLY	-	expression tag	UNP P0DTC2
A	1229	GLU	-	expression tag	UNP P0DTC2
A	1230	TRP	-	expression tag	UNP P0DTC2
A	1231	VAL	-	expression tag	UNP P0DTC2
A	1232	PHE	-	expression tag	UNP P0DTC2
A	1233	LEU	-	expression tag	UNP P0DTC2
A	1234	SER	-	expression tag	UNP P0DTC2
A	1235	THR	-	expression tag	UNP P0DTC2
A	1236	PHE	-	expression tag	UNP P0DTC2
A	1237	LEU	-	expression tag	UNP P0DTC2
A	1238	SER	-	expression tag	UNP P0DTC2
A	1239	GLY	-	expression tag	UNP P0DTC2
A	1240	LEU	-	expression tag	UNP P0DTC2
A	1241	GLU	-	expression tag	UNP P0DTC2
A	1242	VAL	-	expression tag	UNP P0DTC2
A	1243	LEU	-	expression tag	UNP P0DTC2
A	1244	PHE	-	expression tag	UNP P0DTC2
A	1245	GLN	-	expression tag	UNP P0DTC2
A	1246	GLY	-	expression tag	UNP P0DTC2
A	1247	PRO	-	expression tag	UNP P0DTC2
A	1248	GLY	-	expression tag	UNP P0DTC2
A	1249	GLY	-	expression tag	UNP P0DTC2
A	1250	TRP	-	expression tag	UNP P0DTC2
A	1251	SER	-	expression tag	UNP P0DTC2
A	1252	HIS	-	expression tag	UNP P0DTC2
A	1253	PRO	-	expression tag	UNP P0DTC2
A	1254	GLN	-	expression tag	UNP P0DTC2
A	1255	PHE	-	expression tag	UNP P0DTC2
A	1256	GLU	-	expression tag	UNP P0DTC2
A	1257	LYS	-	expression tag	UNP P0DTC2
A	1258	GLY	-	expression tag	UNP P0DTC2
A	1259	GLY	-	expression tag	UNP P0DTC2
A	1260	GLY	-	expression tag	UNP P0DTC2
A	1261	SER	-	expression tag	UNP P0DTC2
A	1262	GLY	-	expression tag	UNP P0DTC2
A	1263	GLY	-	expression tag	UNP P0DTC2
A	1264	GLY	-	expression tag	UNP P0DTC2
A	1265	SER	-	expression tag	UNP P0DTC2
A	1266	GLY	-	expression tag	UNP P0DTC2
A	1267	GLY	-	expression tag	UNP P0DTC2
A	1268	SER	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1269	ALA	-	expression tag	UNP P0DTC2
A	1270	TRP	-	expression tag	UNP P0DTC2
A	1271	SER	-	expression tag	UNP P0DTC2
A	1272	HIS	-	expression tag	UNP P0DTC2
A	1273	PRO	-	expression tag	UNP P0DTC2
A	1274	GLN	-	expression tag	UNP P0DTC2
A	1275	PHE	-	expression tag	UNP P0DTC2
A	1276	GLU	-	expression tag	UNP P0DTC2
A	1277	LYS	-	expression tag	UNP P0DTC2
A	1278	GLY	-	expression tag	UNP P0DTC2
A	1279	GLY	-	expression tag	UNP P0DTC2
A	1280	SER	-	expression tag	UNP P0DTC2
A	1281	HIS	-	expression tag	UNP P0DTC2
A	1282	HIS	-	expression tag	UNP P0DTC2
A	1283	HIS	-	expression tag	UNP P0DTC2
A	1284	HIS	-	expression tag	UNP P0DTC2
A	1285	HIS	-	expression tag	UNP P0DTC2
A	1286	HIS	-	expression tag	UNP P0DTC2
A	1287	HIS	-	expression tag	UNP P0DTC2
A	1288	HIS	-	expression tag	UNP P0DTC2
C	614	GLY	ASP	variant	UNP P0DTC2
C	682	GLY	ARG	conflict	UNP P0DTC2
C	683	SER	ARG	conflict	UNP P0DTC2
C	685	SER	ARG	conflict	UNP P0DTC2
C	986	PRO	LYS	conflict	UNP P0DTC2
C	987	PRO	VAL	conflict	UNP P0DTC2
C	1209	GLY	-	expression tag	UNP P0DTC2
C	1210	SER	-	expression tag	UNP P0DTC2
C	1211	GLY	-	expression tag	UNP P0DTC2
C	1212	TYR	-	expression tag	UNP P0DTC2
C	1213	ILE	-	expression tag	UNP P0DTC2
C	1214	PRO	-	expression tag	UNP P0DTC2
C	1215	GLU	-	expression tag	UNP P0DTC2
C	1216	ALA	-	expression tag	UNP P0DTC2
C	1217	PRO	-	expression tag	UNP P0DTC2
C	1218	ARG	-	expression tag	UNP P0DTC2
C	1219	ASP	-	expression tag	UNP P0DTC2
C	1220	GLY	-	expression tag	UNP P0DTC2
C	1221	GLN	-	expression tag	UNP P0DTC2
C	1222	ALA	-	expression tag	UNP P0DTC2
C	1223	TYR	-	expression tag	UNP P0DTC2
C	1224	VAL	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1225	ARG	-	expression tag	UNP P0DTC2
C	1226	LYS	-	expression tag	UNP P0DTC2
C	1227	ASP	-	expression tag	UNP P0DTC2
C	1228	GLY	-	expression tag	UNP P0DTC2
C	1229	GLU	-	expression tag	UNP P0DTC2
C	1230	TRP	-	expression tag	UNP P0DTC2
C	1231	VAL	-	expression tag	UNP P0DTC2
C	1232	PHE	-	expression tag	UNP P0DTC2
C	1233	LEU	-	expression tag	UNP P0DTC2
C	1234	SER	-	expression tag	UNP P0DTC2
C	1235	THR	-	expression tag	UNP P0DTC2
C	1236	PHE	-	expression tag	UNP P0DTC2
C	1237	LEU	-	expression tag	UNP P0DTC2
C	1238	SER	-	expression tag	UNP P0DTC2
C	1239	GLY	-	expression tag	UNP P0DTC2
C	1240	LEU	-	expression tag	UNP P0DTC2
C	1241	GLU	-	expression tag	UNP P0DTC2
C	1242	VAL	-	expression tag	UNP P0DTC2
C	1243	LEU	-	expression tag	UNP P0DTC2
C	1244	PHE	-	expression tag	UNP P0DTC2
C	1245	GLN	-	expression tag	UNP P0DTC2
C	1246	GLY	-	expression tag	UNP P0DTC2
C	1247	PRO	-	expression tag	UNP P0DTC2
C	1248	GLY	-	expression tag	UNP P0DTC2
C	1249	GLY	-	expression tag	UNP P0DTC2
C	1250	TRP	-	expression tag	UNP P0DTC2
C	1251	SER	-	expression tag	UNP P0DTC2
C	1252	HIS	-	expression tag	UNP P0DTC2
C	1253	PRO	-	expression tag	UNP P0DTC2
C	1254	GLN	-	expression tag	UNP P0DTC2
C	1255	PHE	-	expression tag	UNP P0DTC2
C	1256	GLU	-	expression tag	UNP P0DTC2
C	1257	LYS	-	expression tag	UNP P0DTC2
C	1258	GLY	-	expression tag	UNP P0DTC2
C	1259	GLY	-	expression tag	UNP P0DTC2
C	1260	GLY	-	expression tag	UNP P0DTC2
C	1261	SER	-	expression tag	UNP P0DTC2
C	1262	GLY	-	expression tag	UNP P0DTC2
C	1263	GLY	-	expression tag	UNP P0DTC2
C	1264	GLY	-	expression tag	UNP P0DTC2
C	1265	SER	-	expression tag	UNP P0DTC2
C	1266	GLY	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1267	GLY	-	expression tag	UNP P0DTC2
C	1268	SER	-	expression tag	UNP P0DTC2
C	1269	ALA	-	expression tag	UNP P0DTC2
C	1270	TRP	-	expression tag	UNP P0DTC2
C	1271	SER	-	expression tag	UNP P0DTC2
C	1272	HIS	-	expression tag	UNP P0DTC2
C	1273	PRO	-	expression tag	UNP P0DTC2
C	1274	GLN	-	expression tag	UNP P0DTC2
C	1275	PHE	-	expression tag	UNP P0DTC2
C	1276	GLU	-	expression tag	UNP P0DTC2
C	1277	LYS	-	expression tag	UNP P0DTC2
C	1278	GLY	-	expression tag	UNP P0DTC2
C	1279	GLY	-	expression tag	UNP P0DTC2
C	1280	SER	-	expression tag	UNP P0DTC2
C	1281	HIS	-	expression tag	UNP P0DTC2
C	1282	HIS	-	expression tag	UNP P0DTC2
C	1283	HIS	-	expression tag	UNP P0DTC2
C	1284	HIS	-	expression tag	UNP P0DTC2
C	1285	HIS	-	expression tag	UNP P0DTC2
C	1286	HIS	-	expression tag	UNP P0DTC2
C	1287	HIS	-	expression tag	UNP P0DTC2
C	1288	HIS	-	expression tag	UNP P0DTC2
E	614	GLY	ASP	variant	UNP P0DTC2
E	682	GLY	ARG	conflict	UNP P0DTC2
E	683	SER	ARG	conflict	UNP P0DTC2
E	685	SER	ARG	conflict	UNP P0DTC2
E	986	PRO	LYS	conflict	UNP P0DTC2
E	987	PRO	VAL	conflict	UNP P0DTC2
E	1209	GLY	-	expression tag	UNP P0DTC2
E	1210	SER	-	expression tag	UNP P0DTC2
E	1211	GLY	-	expression tag	UNP P0DTC2
E	1212	TYR	-	expression tag	UNP P0DTC2
E	1213	ILE	-	expression tag	UNP P0DTC2
E	1214	PRO	-	expression tag	UNP P0DTC2
E	1215	GLU	-	expression tag	UNP P0DTC2
E	1216	ALA	-	expression tag	UNP P0DTC2
E	1217	PRO	-	expression tag	UNP P0DTC2
E	1218	ARG	-	expression tag	UNP P0DTC2
E	1219	ASP	-	expression tag	UNP P0DTC2
E	1220	GLY	-	expression tag	UNP P0DTC2
E	1221	GLN	-	expression tag	UNP P0DTC2
E	1222	ALA	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
E	1223	TYR	-	expression tag	UNP P0DTC2
E	1224	VAL	-	expression tag	UNP P0DTC2
E	1225	ARG	-	expression tag	UNP P0DTC2
E	1226	LYS	-	expression tag	UNP P0DTC2
E	1227	ASP	-	expression tag	UNP P0DTC2
E	1228	GLY	-	expression tag	UNP P0DTC2
E	1229	GLU	-	expression tag	UNP P0DTC2
E	1230	TRP	-	expression tag	UNP P0DTC2
E	1231	VAL	-	expression tag	UNP P0DTC2
E	1232	PHE	-	expression tag	UNP P0DTC2
E	1233	LEU	-	expression tag	UNP P0DTC2
E	1234	SER	-	expression tag	UNP P0DTC2
E	1235	THR	-	expression tag	UNP P0DTC2
E	1236	PHE	-	expression tag	UNP P0DTC2
E	1237	LEU	-	expression tag	UNP P0DTC2
E	1238	SER	-	expression tag	UNP P0DTC2
E	1239	GLY	-	expression tag	UNP P0DTC2
E	1240	LEU	-	expression tag	UNP P0DTC2
E	1241	GLU	-	expression tag	UNP P0DTC2
E	1242	VAL	-	expression tag	UNP P0DTC2
E	1243	LEU	-	expression tag	UNP P0DTC2
E	1244	PHE	-	expression tag	UNP P0DTC2
E	1245	GLN	-	expression tag	UNP P0DTC2
E	1246	GLY	-	expression tag	UNP P0DTC2
E	1247	PRO	-	expression tag	UNP P0DTC2
E	1248	GLY	-	expression tag	UNP P0DTC2
E	1249	GLY	-	expression tag	UNP P0DTC2
E	1250	TRP	-	expression tag	UNP P0DTC2
E	1251	SER	-	expression tag	UNP P0DTC2
E	1252	HIS	-	expression tag	UNP P0DTC2
E	1253	PRO	-	expression tag	UNP P0DTC2
E	1254	GLN	-	expression tag	UNP P0DTC2
E	1255	PHE	-	expression tag	UNP P0DTC2
E	1256	GLU	-	expression tag	UNP P0DTC2
E	1257	LYS	-	expression tag	UNP P0DTC2
E	1258	GLY	-	expression tag	UNP P0DTC2
E	1259	GLY	-	expression tag	UNP P0DTC2
E	1260	GLY	-	expression tag	UNP P0DTC2
E	1261	SER	-	expression tag	UNP P0DTC2
E	1262	GLY	-	expression tag	UNP P0DTC2
E	1263	GLY	-	expression tag	UNP P0DTC2
E	1264	GLY	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
E	1265	SER	-	expression tag	UNP P0DTC2
E	1266	GLY	-	expression tag	UNP P0DTC2
E	1267	GLY	-	expression tag	UNP P0DTC2
E	1268	SER	-	expression tag	UNP P0DTC2
E	1269	ALA	-	expression tag	UNP P0DTC2
E	1270	TRP	-	expression tag	UNP P0DTC2
E	1271	SER	-	expression tag	UNP P0DTC2
E	1272	HIS	-	expression tag	UNP P0DTC2
E	1273	PRO	-	expression tag	UNP P0DTC2
E	1274	GLN	-	expression tag	UNP P0DTC2
E	1275	PHE	-	expression tag	UNP P0DTC2
E	1276	GLU	-	expression tag	UNP P0DTC2
E	1277	LYS	-	expression tag	UNP P0DTC2
E	1278	GLY	-	expression tag	UNP P0DTC2
E	1279	GLY	-	expression tag	UNP P0DTC2
E	1280	SER	-	expression tag	UNP P0DTC2
E	1281	HIS	-	expression tag	UNP P0DTC2
E	1282	HIS	-	expression tag	UNP P0DTC2
E	1283	HIS	-	expression tag	UNP P0DTC2
E	1284	HIS	-	expression tag	UNP P0DTC2
E	1285	HIS	-	expression tag	UNP P0DTC2
E	1286	HIS	-	expression tag	UNP P0DTC2
E	1287	HIS	-	expression tag	UNP P0DTC2
E	1288	HIS	-	expression tag	UNP P0DTC2

- Molecule 2 is a protein called mAb60 VH.

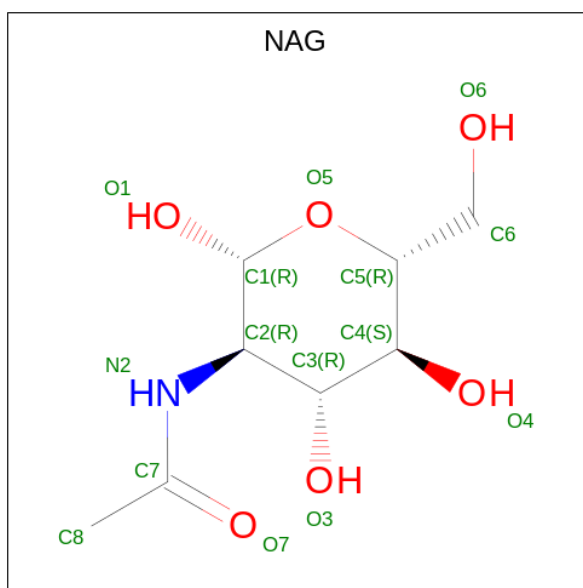
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	D	204	Total	C	N	O	S	0	0
			1560	997	262	295	6		
2	F	204	Total	C	N	O	S	0	0
			1560	997	262	295	6		

- Molecule 3 is a protein called mAb60 VL.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	B	212	Total	C	N	O	S	0	0
			1636	1022	285	325	4		
3	G	212	Total	C	N	O	S	0	0
			1636	1022	285	325	4		

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:

C₈H₁₅NO₆).



Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0
4	A	1	Total 14	8	1	5	0

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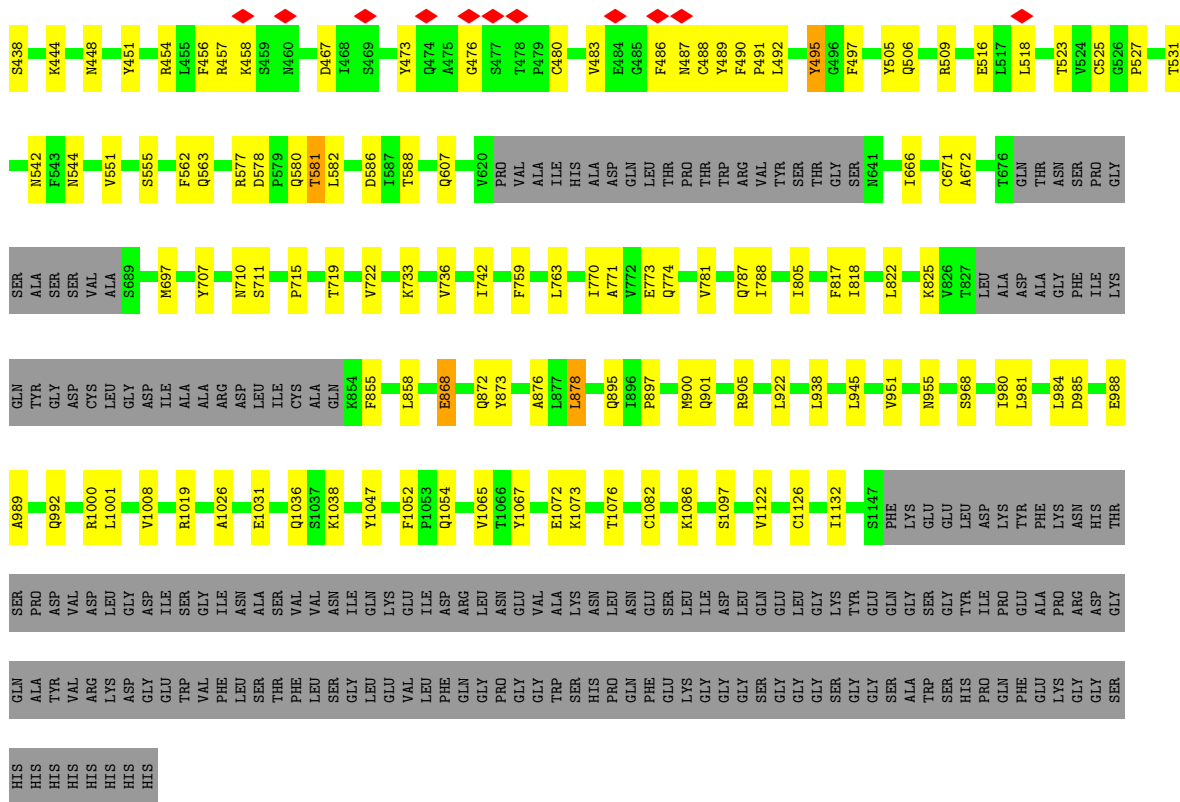
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Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	C	1	Total 14	C 8	N 1	O 5	0
4	E	1	Total 14	C 8	N 1	O 5	0
4	E	1	Total 14	C 8	N 1	O 5	0
4	E	1	Total 14	C 8	N 1	O 5	0
4	E	1	Total 14	C 8	N 1	O 5	0
4	E	1	Total 14	C 8	N 1	O 5	0
4	E	1	Total 14	C 8	N 1	O 5	0
4	E	1	Total 14	C 8	N 1	O 5	0
4	E	1	Total 14	C 8	N 1	O 5	0

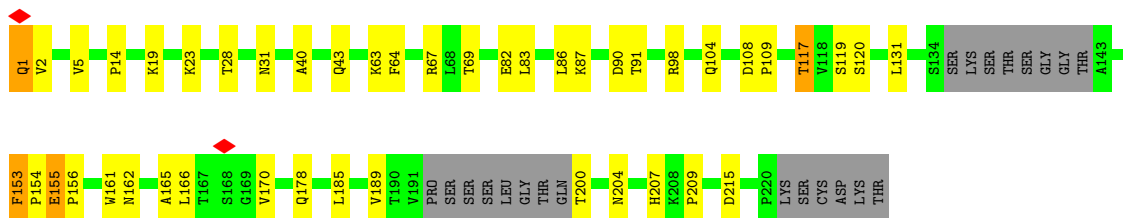
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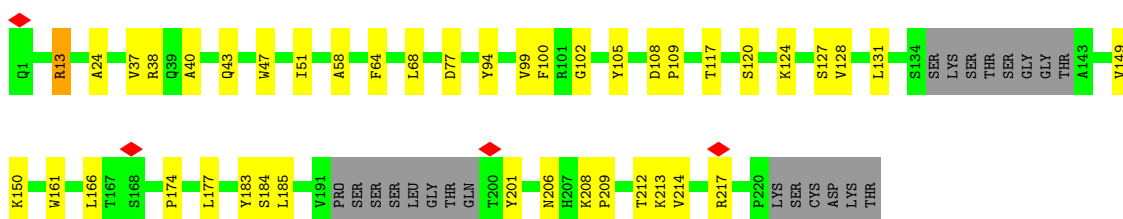
Mol	Chain	Residues	Atoms				AltConf
4	E	1	Total	C	N	O	0
			14	8	1	5	
4	E	1	Total	C	N	O	0
			14	8	1	5	
4	E	1	Total	C	N	O	0
			14	8	1	5	
4	E	1	Total	C	N	O	0
			14	8	1	5	
4	E	1	Total	C	N	O	0
			14	8	1	5	



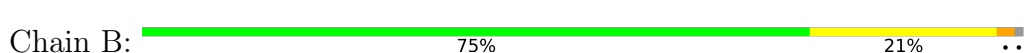
• Molecule 2: mAb60 VH

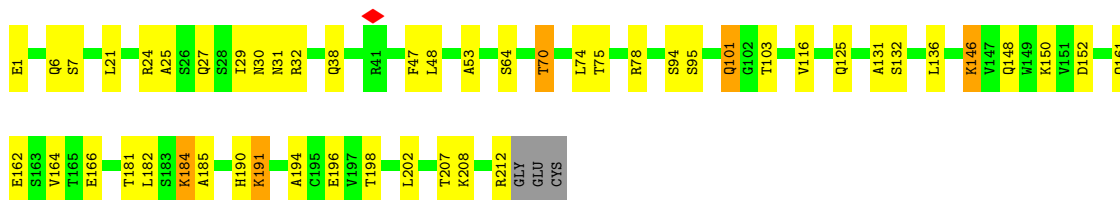


• Molecule 2: mAb60 VH

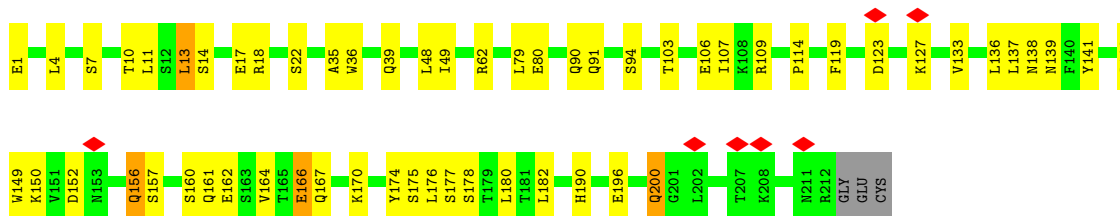


• Molecule 3: mAb60 VL





• Molecule 3: mAb60 VL



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	88701	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 ($e^-/\text{\AA}^2$)	61	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.069	Depositor
Minimum map value	-0.004	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.004	Depositor
Map size (Å)	314.88, 314.88, 314.88	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.82, 0.82, 0.82	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: NAG

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	0.24	0/8534	0.41	0/11626
1	C	0.24	0/8534	0.41	0/11626
1	E	0.24	0/8534	0.41	0/11626
2	D	0.25	0/1599	0.45	0/2178
2	F	0.25	0/1599	0.43	0/2178
3	B	0.25	0/1672	0.45	0/2269
3	G	0.25	0/1672	0.45	0/2269
All	All	0.24	0/32144	0.42	0/43772

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 [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8338	0	8067	117	0
1	C	8338	0	8067	100	0
1	E	8338	0	8067	114	0
2	D	1560	0	1538	24	0
2	F	1560	0	1538	24	0
3	B	1636	0	1591	23	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	G	1636	0	1591	29	0
4	A	182	0	169	1	0
4	C	182	0	169	0	0
4	E	182	0	169	4	0
All	All	31952	0	30966	410	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (410) 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:D:98:ARG:HB3	2:D:109:PRO:HG2	1.66	0.76
1:E:421:TYR:HB3	1:E:454:ARG:HD3	1.69	0.74
1:A:555:SER:HB3	1:A:586:ASP:HB2	1.70	0.73
1:E:422:ASN:HD21	1:E:454:ARG:H	1.35	0.73
3:G:109:ARG:HB3	3:G:141:TYR:HB2	1.72	0.71
1:A:64:TRP:HE1	1:A:264:ALA:HB1	1.58	0.68
3:B:125:GLN:HB3	3:B:131:ALA:HA	1.77	0.67
3:G:148:GLN:HG3	3:G:196:GLU:HG3	1.75	0.67
1:A:115:GLN:HA	1:A:132:GLU:HB3	1.77	0.66
3:G:164:VAL:HG12	3:G:177:SER:H	1.61	0.65
1:E:328:ARG:NH1	1:E:580:GLN:OE1	2.30	0.65
1:C:409:GLN:HB3	1:C:419:ALA:HB2	1.77	0.65
1:A:326:ILE:HG12	1:A:541:PHE:HA	1.78	0.65
1:C:132:GLU:HB2	1:C:164:ASN:HB2	1.80	0.64
1:E:1047:TYR:HB2	1:E:1067:TYR:HB3	1.80	0.64
1:A:931:ILE:HG22	1:A:935:GLN:HE21	1.63	0.63
1:E:106:PHE:HB2	1:E:117:LEU:HB3	1.79	0.63
1:C:18:LEU:HD23	1:C:21:ARG:HH21	1.64	0.62
1:C:555:SER:HB2	1:C:586:ASP:HB2	1.81	0.62
1:C:615:VAL:HG12	1:C:617:CYS:H	1.64	0.62
1:A:897:PRO:HD2	1:A:900:MET:HE2	1.80	0.62
1:E:763:LEU:HD22	1:E:1008:VAL:HG21	1.82	0.62
1:A:617:CYS:N	1:A:649:CYS:SG	2.73	0.62
1:C:108:THR:HB	1:C:114:THR:HG21	1.80	0.61
1:C:448:ASN:HB3	1:C:497:PHE:HB2	1.82	0.61
3:G:133:VAL:HB	3:G:180:LEU:HD13	1.81	0.61
2:F:128:VAL:HG22	2:F:149:VAL:HG22	1.82	0.61
1:A:365:TYR:HB2	1:A:387:LEU:HD13	1.82	0.61
1:A:981:LEU:HD21	1:A:993:ILE:HD11	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:742:ILE:O	1:E:1000:ARG:NH1	2.33	0.61
1:A:21:ARG:NH1	1:A:79:PHE:O	2.33	0.61
1:E:421:TYR:O	1:E:457:ARG:NH1	2.34	0.61
1:A:792:PRO:HG3	1:E:707:TYR:HB3	1.83	0.60
1:C:346:ARG:HH12	1:C:450:ASN:HB3	1.65	0.60
1:A:407:VAL:HB	1:A:408:ARG:HH11	1.66	0.60
1:C:763:LEU:HD22	1:C:1008:VAL:HG21	1.84	0.60
1:C:805:ILE:HG23	1:C:1054:GLN:HE22	1.66	0.60
1:A:742:ILE:O	1:A:1000:ARG:NH1	2.35	0.60
1:A:245:HIS:HB2	1:A:259:THR:HB	1.84	0.59
1:E:1126:CYS:HB2	1:E:1132:ILE:HG12	1.85	0.59
3:B:152:ASP:OD1	3:B:191:LYS:NZ	2.35	0.59
1:A:736:VAL:H	1:A:767:LEU:HD13	1.67	0.59
1:E:18:LEU:HD23	1:E:21:ARG:HH21	1.68	0.59
3:G:150:LYS:NZ	3:G:196:GLU:OE2	2.36	0.59
1:C:971:GLY:O	1:C:995:ARG:NH2	2.33	0.58
1:E:125:ASN:HB3	1:E:174:PRO:HA	1.85	0.58
2:F:13:ARG:HB3	2:F:120:SER:HB3	1.84	0.58
1:E:897:PRO:HD2	1:E:900:MET:HE2	1.85	0.58
1:A:126:VAL:HG23	1:A:174:PRO:HA	1.85	0.58
1:E:119:ILE:HG12	1:E:128:ILE:HG23	1.85	0.58
1:A:335:LEU:HD22	1:A:362:VAL:HG13	1.86	0.57
1:C:216:LEU:HD12	1:C:217:PRO:HD2	1.84	0.57
1:C:752:LEU:HD21	1:C:990:GLU:HG3	1.84	0.57
1:E:473:TYR:HB2	1:E:491:PRO:HG3	1.86	0.57
1:C:365:TYR:HB2	1:C:387:LEU:HD13	1.86	0.57
3:B:116:VAL:HB	3:B:207:THR:HB	1.86	0.57
1:A:149:ASN:ND2	1:A:151:SER:OG	2.38	0.57
1:A:332:ILE:HD13	1:A:362:VAL:HB	1.87	0.57
1:A:34:ARG:NH1	1:A:217:PRO:O	2.38	0.56
1:E:438:SER:HB3	1:E:509:ARG:HB2	1.87	0.56
1:E:360:ASN:H	1:E:523:THR:HB	1.70	0.56
1:A:401:VAL:HG22	1:A:509:ARG:HG2	1.87	0.56
1:C:108:THR:O	1:C:237:ARG:NH1	2.39	0.56
1:A:329:PHE:O	1:A:580:GLN:NE2	2.37	0.56
1:E:271:GLN:OE1	1:E:273:ARG:NH1	2.39	0.56
3:G:106:GLU:OE1	3:G:174:TYR:OH	2.23	0.56
2:D:161:TRP:HB3	2:D:166:LEU:HB2	1.88	0.56
3:G:162:GLU:HB3	3:G:178:SER:HA	1.88	0.56
1:C:1047:TYR:HB2	1:C:1067:TYR:HB3	1.88	0.55
1:E:825:LYS:NZ	1:E:938:LEU:O	2.36	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:501:ASN:HB3	1:A:505:TYR:HB2	1.88	0.55
3:B:1:GLU:HG2	3:B:29:ILE:HD13	1.88	0.55
2:F:37:VAL:HG12	2:F:47:TRP:HA	1.88	0.55
1:C:1086:LYS:HD3	1:C:1122:VAL:HG21	1.89	0.55
1:E:216:LEU:HD12	1:E:217:PRO:HD2	1.89	0.55
1:E:406:GLU:OE1	1:E:495:TYR:OH	2.24	0.55
1:E:868:GLU:OE2	1:E:872:GLN:NE2	2.40	0.55
1:A:69:HIS:HB2	1:A:260:ALA:HB3	1.89	0.54
1:A:1047:TYR:HB2	1:A:1067:TYR:HB3	1.88	0.54
1:C:742:ILE:O	1:C:1000:ARG:NH1	2.39	0.54
1:E:276:LEU:HD22	1:E:301:CYS:HA	1.88	0.54
1:A:206:LYS:HB2	1:A:223:LEU:HA	1.90	0.54
1:A:1091:ARG:NH1	1:A:1118:ASP:O	2.40	0.54
1:E:364:ASP:HB3	1:E:527:PRO:HG3	1.90	0.54
1:C:317:ASN:HA	1:C:594:GLY:HA2	1.88	0.54
2:F:161:TRP:HB3	2:F:166:LEU:HB3	1.90	0.54
1:A:392:PHE:N	1:A:524:VAL:O	2.40	0.54
3:G:160:SER:OG	3:G:161:GLN:NE2	2.40	0.54
3:B:7:SER:OG	3:B:24:ARG:NH2	2.41	0.53
1:A:177:MET:HG3	1:A:179:LEU:HG	1.89	0.53
1:A:1073:LYS:HA	4:A:1311:NAG:H82	1.89	0.53
1:C:147:LYS:HE2	1:C:249:LEU:HD23	1.90	0.53
1:E:349:SER:HB3	1:E:352:ALA:HB3	1.89	0.53
1:C:815:ARG:HB3	1:C:819:GLU:HB2	1.90	0.53
1:C:1032:CYS:SG	1:C:1048:HIS:NE2	2.82	0.53
1:E:715:PRO:HA	1:E:1072:GLU:HA	1.89	0.53
1:A:973:ILE:HD12	1:A:984:LEU:HD11	1.89	0.53
1:E:448:ASN:HD21	1:E:451:TYR:HD1	1.57	0.53
1:E:480:CYS:N	1:E:488:CYS:SG	2.82	0.53
1:A:422:ASN:OD1	1:A:454:ARG:N	2.40	0.53
1:C:39:PRO:HG3	1:C:55:PHE:HZ	1.74	0.53
1:E:119:ILE:HG23	1:E:128:ILE:HG12	1.90	0.53
1:E:551:VAL:HB	1:E:588:THR:HB	1.90	0.53
1:A:763:LEU:HD22	1:A:1008:VAL:HG21	1.91	0.53
3:B:146:LYS:NZ	3:B:198:THR:O	2.42	0.52
1:A:737:ASP:OD2	1:E:319:ARG:NH2	2.43	0.52
2:D:108:ASP:HB3	2:D:109:PRO:HD3	1.90	0.52
1:A:483:VAL:HG12	2:D:104:GLN:HB2	1.91	0.52
1:A:735:SER:OG	1:A:859:THR:OG1	2.27	0.52
1:A:980:ILE:HG23	1:A:984:LEU:HD12	1.90	0.52
1:E:722:VAL:HG22	1:E:1065:VAL:HG22	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:726:ILE:HG12	1:A:1061:VAL:HG22	1.90	0.52
1:E:105:ILE:HG23	1:E:241:LEU:HD11	1.92	0.52
3:G:166:GLU:HB2	3:G:174:TYR:HB3	1.91	0.52
2:F:124:LYS:NZ	2:F:127:SER:OG	2.43	0.52
1:E:448:ASN:HB3	1:E:497:PHE:HB2	1.92	0.52
1:C:355:ARG:HG2	1:C:466:ARG:HH12	1.75	0.52
1:C:193:VAL:HG23	1:C:223:LEU:HD22	1.92	0.52
1:E:1076:THR:HB	1:E:1097:SER:HB3	1.92	0.51
1:A:707:TYR:HB3	1:C:792:PRO:HG3	1.91	0.51
1:E:81:ASN:ND2	1:E:138:ASP:OD1	2.36	0.51
1:E:83:VAL:HG21	1:E:237:ARG:HH21	1.75	0.51
1:E:773:GLU:OE2	1:E:1019:ARG:NE	2.43	0.51
1:A:69:HIS:HD2	1:A:259:THR:HG23	1.75	0.51
1:A:216:LEU:HD12	1:A:217:PRO:HD2	1.92	0.51
1:A:715:PRO:HA	1:A:1072:GLU:HA	1.92	0.51
1:A:379:CYS:HA	1:A:432:CYS:HA	1.93	0.51
1:C:815:ARG:HG3	1:C:871:ALA:HB2	1.92	0.51
1:E:108:THR:OG1	1:E:234:ASN:O	2.27	0.51
1:E:1082:CYS:HB2	1:E:1132:ILE:HD11	1.93	0.51
3:G:7:SER:HB3	3:G:22:SER:HB3	1.93	0.51
1:A:287:ASP:OD1	1:A:288:ALA:N	2.44	0.51
1:A:607:GLN:HE22	1:A:691:SER:HA	1.75	0.51
2:F:24:ALA:HB3	2:F:77:ASP:HB3	1.92	0.51
1:A:102:ARG:HH11	1:A:179:LEU:HD22	1.76	0.51
2:F:206:ASN:OD1	2:F:213:LYS:NZ	2.40	0.51
1:C:711:SER:OG	1:E:895:GLN:NE2	2.45	0.50
1:E:409:GLN:O	1:E:414:GLN:NE2	2.44	0.50
1:E:490:PHE:HE2	1:E:492:LEU:HD12	1.76	0.50
2:D:154:PRO:HB2	2:D:156:PRO:HD3	1.92	0.50
3:B:30:ASN:OD1	3:B:31:ASN:ND2	2.43	0.50
1:E:1073:LYS:HA	4:E:1311:NAG:H82	1.92	0.50
2:F:38:ARG:NH2	2:F:94:TYR:OH	2.45	0.50
1:A:895:GLN:NE2	1:E:711:SER:OG	2.44	0.50
1:A:118:LEU:HD13	1:A:135:PHE:HE2	1.76	0.50
1:A:185:ASN:HD21	1:A:213:VAL:HG22	1.77	0.50
2:F:150:LYS:HG2	2:F:184:SER:HA	1.94	0.50
1:A:132:GLU:HG3	1:A:164:ASN:HB2	1.94	0.50
1:A:947:LYS:H	1:A:947:LYS:HD2	1.76	0.50
1:A:825:LYS:HD2	1:A:942:ALA:HB2	1.93	0.49
1:C:417:LYS:O	1:C:422:ASN:ND2	2.41	0.49
1:C:715:PRO:HA	1:C:1072:GLU:HA	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:134:GLN:O	1:A:134:GLN:NE2	2.45	0.49
1:E:770:ILE:O	1:E:774:GLN:HG2	2.12	0.49
2:D:63:LYS:O	2:D:67:ARG:NH2	2.41	0.49
2:F:108:ASP:HB3	2:F:109:PRO:HD3	1.94	0.49
3:G:35:ALA:HB3	3:G:90:GLN:HB3	1.94	0.49
1:E:24:LEU:HD21	1:E:78:ARG:HD2	1.94	0.49
1:E:454:ARG:HH11	1:E:457:ARG:HG3	1.77	0.49
2:F:174:PRO:HG3	3:G:167:GLN:HE21	1.78	0.49
1:C:326:ILE:HD12	1:C:534:VAL:H	1.78	0.49
1:E:21:ARG:NH2	1:E:138:ASP:OD2	2.40	0.49
1:E:580:GLN:HG3	1:E:581:THR:H	1.77	0.49
2:D:204:ASN:ND2	2:D:215:ASP:OD1	2.45	0.49
3:G:123:ASP:O	3:G:127:LYS:NZ	2.39	0.49
1:A:314:GLN:NE2	1:A:316:SER:O	2.46	0.49
1:A:596:SER:OG	1:A:613:GLN:NE2	2.44	0.49
1:A:788:ILE:HG23	1:A:876:ALA:HB2	1.95	0.49
1:C:484:GLU:HB3	2:F:100:PHE:HB3	1.94	0.49
1:E:666:ILE:HD11	1:E:672:ALA:HB2	1.94	0.49
1:E:788:ILE:HG23	1:E:876:ALA:HB2	1.95	0.49
2:F:208:LYS:HB3	2:F:209:PRO:HD3	1.95	0.49
1:A:770:ILE:O	1:A:774:GLN:HG2	2.13	0.49
1:E:1086:LYS:HD3	1:E:1122:VAL:HG21	1.94	0.49
1:A:448:ASN:OD1	1:A:450:ASN:ND2	2.35	0.49
1:A:919:ASN:HB3	1:A:922:LEU:HB3	1.95	0.49
1:C:408:ARG:HD2	1:C:408:ARG:H	1.78	0.49
1:E:577:ARG:HD3	1:E:582:LEU:HD22	1.95	0.48
1:E:94:SER:HB2	1:E:190:ARG:HB2	1.94	0.48
1:E:351:TYR:HB2	1:E:467:ASP:HB3	1.95	0.48
2:F:150:LYS:NZ	2:F:184:SER:OG	2.40	0.48
1:A:378:LYS:HG3	1:A:433:VAL:HB	1.96	0.48
1:C:244:LEU:HD22	1:C:258:TRP:HB2	1.96	0.48
1:C:738:CYS:SG	1:C:739:THR:N	2.87	0.48
1:E:951:VAL:O	1:E:955:ASN:ND2	2.38	0.48
3:B:207:THR:HG22	3:B:208:LYS:HG2	1.94	0.48
1:C:130:VAL:HB	1:C:168:PHE:HB3	1.95	0.48
1:E:190:ARG:HG2	1:E:207:HIS:HD2	1.77	0.48
1:E:905:ARG:HH11	1:E:1036:GLN:HB2	1.78	0.48
2:F:131:LEU:HB3	3:G:119:PHE:HB3	1.96	0.48
3:B:21:LEU:HD12	3:B:74:LEU:HD23	1.96	0.48
1:A:457:ARG:NH2	1:A:467:ASP:OD2	2.47	0.48
3:G:138:ASN:OD1	3:G:139:ASN:N	2.47	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:462:LYS:HB2	1:C:465:GLU:HG3	1.95	0.48
1:E:90:VAL:HG13	1:E:267:VAL:HG13	1.95	0.48
3:G:11:LEU:HD13	3:G:103:THR:HG21	1.96	0.48
3:G:149:TRP:CD1	3:G:160:SER:HB2	2.49	0.48
1:A:195:LYS:HG3	1:A:202:LYS:HB2	1.96	0.48
3:G:156:GLN:NE2	3:G:157:SER:H	2.12	0.48
2:F:64:PHE:HB3	2:F:68:LEU:HD13	1.96	0.47
1:C:901:GLN:O	1:C:905:ARG:HG2	2.13	0.47
3:G:4:LEU:HD11	3:G:91:GLN:HG2	1.95	0.47
1:A:39:PRO:HG3	1:A:55:PHE:HZ	1.78	0.47
1:C:120:VAL:HG23	1:C:127:VAL:HB	1.96	0.47
3:B:150:LYS:HB3	3:B:194:ALA:HB3	1.96	0.47
3:G:1:GLU:HB3	3:G:94:SER:HB3	1.95	0.47
1:C:886:TRP:HB3	1:C:1035:GLY:HA2	1.97	0.47
1:A:391:CYS:HA	1:A:525:CYS:HA	1.95	0.47
1:C:567:ARG:HA	1:C:573:THR:HA	1.97	0.47
1:C:1126:CYS:HB2	1:C:1132:ILE:HD13	1.95	0.47
1:E:878:LEU:HD21	1:E:1052:PHE:HB3	1.97	0.47
2:D:162:ASN:HB2	2:D:165:ALA:HB3	1.95	0.47
1:E:981:LEU:HD23	1:E:989:ALA:HB1	1.97	0.47
2:D:83:LEU:HB3	2:D:86:LEU:HD21	1.95	0.47
2:F:40:ALA:HB3	2:F:43:GLN:HB2	1.97	0.47
1:C:559:PHE:HB2	1:C:577:ARG:HH21	1.79	0.47
1:C:788:ILE:HG23	1:C:876:ALA:HB2	1.96	0.47
1:E:415:THR:HA	1:E:420:ASP:HB2	1.97	0.47
1:A:1040:VAL:HG21	1:C:1035:GLY:HA3	1.96	0.47
1:E:855:PHE:HB2	1:E:858:LEU:HB2	1.96	0.47
1:E:901:GLN:O	1:E:905:ARG:HG2	2.15	0.47
1:A:24:LEU:HD23	1:A:78:ARG:HH11	1.80	0.47
1:E:276:LEU:HB3	1:E:289:VAL:HB	1.96	0.47
1:E:379:CYS:HA	1:E:432:CYS:HA	1.96	0.47
1:E:822:LEU:HD22	1:E:945:LEU:HD11	1.96	0.47
3:B:1:GLU:HB3	3:B:94:SER:HB2	1.97	0.47
1:A:193:VAL:HG23	1:A:223:LEU:HD22	1.97	0.47
1:C:905:ARG:HH11	1:C:1036:GLN:HB2	1.80	0.47
1:A:131:CYS:HB3	1:A:133:PHE:CE2	2.50	0.46
1:A:418:ILE:HA	1:A:422:ASN:HD22	1.80	0.46
1:C:393:THR:O	1:C:523:THR:OG1	2.33	0.46
1:C:442:ASP:O	1:C:448:ASN:ND2	2.48	0.46
1:C:878:LEU:HD21	1:C:1052:PHE:HB3	1.97	0.46
1:C:1054:GLN:HB2	1:C:1061:VAL:HB	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:866:THR:H	1:A:869:MET:HE3	1.80	0.46
1:A:886:TRP:HB3	1:A:1035:GLY:HA2	1.97	0.46
1:E:733:LYS:HD2	1:E:771:ALA:HB1	1.98	0.46
3:B:6:GLN:N	3:B:101:GLN:OE1	2.45	0.46
3:G:62:ARG:NH1	3:G:80:GLU:OE1	2.45	0.46
1:C:791:THR:HG21	1:C:806:LEU:HD13	1.98	0.46
1:C:78:ARG:NH1	1:C:80:ASP:OD1	2.48	0.46
2:D:207:HIS:CD2	2:D:209:PRO:HD2	2.50	0.46
1:C:250:THR:OG1	1:C:259:THR:OG1	2.32	0.46
3:G:13:LEU:HD12	3:G:14:SER:H	1.80	0.46
1:A:90:VAL:HG13	1:A:267:VAL:HG13	1.96	0.46
1:A:398:ASP:HB2	1:A:512:VAL:HG23	1.96	0.46
1:C:725:GLU:OE2	1:C:1028:LYS:NZ	2.48	0.46
1:C:858:LEU:HD21	1:C:962:LEU:HD23	1.97	0.46
1:A:731:MET:SD	1:A:1011:GLN:NE2	2.89	0.46
1:C:100:ILE:HD12	1:C:263:ALA:HB2	1.97	0.46
1:C:1054:GLN:N	1:C:1061:VAL:O	2.48	0.46
1:A:412:PRO:HG3	1:A:429:PHE:HB3	1.97	0.46
1:C:148:ASN:ND2	1:C:149:ASN:OD1	2.48	0.46
1:C:149:ASN:ND2	1:C:151:SER:OG	2.48	0.46
1:C:533:LEU:HD11	1:C:585:LEU:HD21	1.97	0.46
2:D:170:VAL:HG23	2:D:189:VAL:HB	1.98	0.46
3:B:191:LYS:HZ3	3:B:191:LYS:HB2	1.80	0.46
1:C:616:ASN:HB3	1:C:618:THR:HG22	1.97	0.46
1:A:294:ASP:OD1	1:A:294:ASP:N	2.50	0.45
1:C:118:LEU:HG	1:C:120:VAL:HG22	1.98	0.45
1:C:908:GLY:O	1:C:1038:LYS:NZ	2.43	0.45
1:C:277:LEU:HD22	1:C:285:ILE:HD13	1.98	0.45
2:D:69:THR:HB	2:D:82:GLU:HB3	1.98	0.45
1:A:195:LYS:O	1:A:202:LYS:N	2.48	0.45
2:D:155:GLU:N	2:D:156:PRO:HD3	2.32	0.45
1:E:391:CYS:HB3	1:E:544:ASN:HB2	1.98	0.45
3:G:48:LEU:HG	3:G:49:ILE:HG12	1.99	0.45
3:G:136:LEU:HD23	3:G:136:LEU:H	1.80	0.45
1:A:988:GLU:O	1:A:992:GLN:HG2	2.17	0.45
1:E:77:LYS:NZ	1:E:258:TRP:O	2.41	0.45
1:E:239:GLN:HG2	1:E:240:THR:H	1.81	0.45
3:B:32:ARG:HH11	3:B:53:ALA:HB2	1.82	0.45
2:F:166:LEU:HD22	2:F:201:TYR:HB3	1.99	0.45
1:C:1039:ARG:NE	1:E:1031:GLU:OE2	2.47	0.45
1:C:736:VAL:HG22	1:C:858:LEU:HG	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:822:LEU:HD22	1:C:945:LEU:HD21	1.98	0.45
1:E:985:ASP:OD1	1:E:985:ASP:N	2.46	0.45
2:F:51:ILE:HA	2:F:58:ALA:HA	1.98	0.45
1:C:430:THR:HG23	1:C:515:PHE:HB2	1.99	0.45
1:E:28:TYR:HB2	4:E:1301:NAG:H4	1.98	0.45
1:E:44:ARG:HD2	1:E:47:VAL:HG11	1.99	0.45
1:E:480:CYS:HB2	1:E:483:VAL:HB	1.98	0.45
1:A:428:ASP:OD1	1:A:428:ASP:N	2.40	0.44
1:A:722:VAL:HG22	1:A:1065:VAL:HG22	1.99	0.44
1:A:546:LEU:HD21	1:A:573:THR:HG21	1.98	0.44
1:E:326:ILE:O	1:E:542:ASN:N	2.48	0.44
2:D:2:VAL:HG11	2:D:98:ARG:HD3	1.98	0.44
1:A:86:PHE:H	1:A:237:ARG:HA	1.82	0.44
1:C:294:ASP:OD1	1:C:294:ASP:N	2.50	0.44
1:C:1116:THR:HG22	1:C:1138:TYR:HD2	1.82	0.44
3:B:148:GLN:HB2	3:B:196:GLU:HG3	1.98	0.44
1:A:129:LYS:HE2	1:A:169:GLU:HG3	1.99	0.44
1:A:1041:ASP:HB2	1:C:1030:SER:HB3	1.99	0.44
1:E:516:GLU:HG2	1:E:518:LEU:HG	1.99	0.44
1:A:901:GLN:HE21	1:A:905:ARG:HE	1.66	0.44
1:C:125:ASN:ND2	1:C:172:SER:O	2.47	0.44
1:A:916:LEU:HD12	1:A:923:ILE:HD12	2.00	0.44
1:E:671:CYS:SG	1:E:697:MET:HB3	2.57	0.44
3:B:38:GLN:HB2	3:B:48:LEU:HD11	1.99	0.44
3:G:152:ASP:HB2	3:G:190:HIS:HB3	1.99	0.44
1:E:18:LEU:HD12	1:E:255:SER:HA	1.99	0.44
1:E:476:GLY:HA3	1:E:487:ASN:HB3	1.99	0.44
1:E:736:VAL:HG23	1:E:858:LEU:HD23	1.98	0.44
1:E:326:ILE:HA	1:E:531:THR:HB	1.99	0.43
3:B:25:ALA:HB3	3:B:70:THR:HA	1.99	0.43
1:A:200:TYR:OH	1:E:357:ARG:NH1	2.51	0.43
1:A:666:ILE:HD11	1:A:672:ALA:HB2	1.99	0.43
1:A:85:PRO:HA	1:A:237:ARG:HA	2.00	0.43
1:E:128:ILE:HB	1:E:170:TYR:HB3	2.00	0.43
1:E:381:GLY:HA3	1:E:430:THR:HA	2.00	0.43
2:D:14:PRO:HG3	2:D:119:SER:HA	2.00	0.43
3:G:138:ASN:HA	3:G:175:SER:HB3	2.01	0.43
1:A:374:PHE:HA	1:A:436:TRP:HB3	2.00	0.43
1:A:351:TYR:HE1	1:A:452:LEU:HB2	1.84	0.43
1:C:534:VAL:HG11	1:C:539:VAL:HG11	2.00	0.43
1:E:417:LYS:HA	1:E:421:TYR:HD2	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:5:VAL:O	2:D:23:LYS:N	2.50	0.43
1:A:225:PRO:HD2	1:E:562:PHE:CZ	2.53	0.43
1:C:206:LYS:HB2	1:C:223:LEU:HA	2.00	0.43
1:E:193:VAL:HG23	1:E:223:LEU:HD22	2.01	0.43
1:E:781:VAL:HG22	1:E:1026:ALA:HB2	2.01	0.43
1:E:89:GLY:HA3	1:E:270:LEU:HD12	2.01	0.43
1:E:259:THR:HG22	1:E:261:GLY:H	1.84	0.43
2:D:91:THR:HG23	2:D:117:THR:HA	2.00	0.43
2:F:208:LYS:HB3	2:F:208:LYS:HE3	1.91	0.43
1:A:1127:ASP:N	1:A:1127:ASP:OD1	2.52	0.43
1:C:701:ALA:HB3	1:E:787:GLN:HG2	2.01	0.43
1:C:195:LYS:HG3	1:C:202:LYS:HB2	2.01	0.42
1:A:347:PHE:HB2	1:A:401:VAL:HG23	2.01	0.42
1:E:314:GLN:NE2	1:E:316:SER:O	2.52	0.42
1:A:798:GLY:O	1:A:920:GLN:NE2	2.52	0.42
1:C:472:ILE:HD11	2:F:102:GLY:HA3	2.01	0.42
1:E:83:VAL:HG21	1:E:237:ARG:HE	1.84	0.42
1:E:805:ILE:HG22	1:E:818:ILE:HD12	2.02	0.42
3:B:162:GLU:H	3:B:162:GLU:HG3	1.66	0.42
1:C:81:ASN:O	1:C:239:GLN:NE2	2.50	0.42
1:E:206:LYS:HB2	1:E:223:LEU:HA	2.01	0.42
2:D:87:LYS:N	2:D:90:ASP:OD2	2.52	0.42
1:C:671:CYS:SG	1:C:697:MET:HB3	2.59	0.42
1:C:798:GLY:O	1:C:920:GLN:NE2	2.52	0.42
1:C:981:LEU:HD21	1:C:993:ILE:HD11	2.00	0.42
1:A:41:LYS:HB3	1:E:563:GLN:HA	2.01	0.42
1:A:258:TRP:HZ3	1:A:260:ALA:HB2	1.85	0.42
1:C:101:ILE:H	1:C:101:ILE:HG13	1.49	0.42
1:C:454:ARG:HH12	1:C:467:ASP:HB2	1.85	0.42
1:C:773:GLU:HA	1:C:776:LYS:HG2	2.02	0.42
2:F:177:LEU:HA	2:F:183:TYR:HE1	1.85	0.42
2:D:120:SER:HA	2:D:153:PHE:CE1	2.55	0.42
3:B:1:GLU:H3	3:B:27:GLN:HB2	1.84	0.42
1:A:1111:GLU:OE2	1:A:1113:GLN:NE2	2.53	0.42
1:E:759:PHE:HD2	1:E:1001:LEU:HD21	1.85	0.42
1:A:409:GLN:HB3	1:A:419:ALA:HB2	2.01	0.42
1:A:755:GLN:O	1:E:968:SER:OG	2.38	0.42
1:A:770:ILE:HD11	1:A:1012:LEU:HD23	2.01	0.42
1:C:356:LYS:HE3	1:C:356:LYS:HB3	1.92	0.42
1:E:710:ASN:HD21	4:E:1308:NAG:H82	1.85	0.42
3:B:64:SER:O	3:B:75:THR:N	2.51	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:99:VAL:HB	2:F:105:TYR:HB2	2.01	0.42
1:A:319:ARG:NH1	1:C:745:ASP:OD1	2.53	0.41
1:A:574:ASP:O	1:A:587:ILE:N	2.53	0.41
1:E:922:LEU:HD21	4:E:1309:NAG:H5	2.02	0.41
3:B:184:LYS:HD2	3:B:185:ALA:N	2.35	0.41
1:A:245:HIS:N	1:A:259:THR:O	2.52	0.41
1:A:253:ASP:OD1	1:A:254:SER:N	2.46	0.41
1:E:988:GLU:O	1:E:992:GLN:HG2	2.19	0.41
1:A:19:THR:HG22	1:A:20:THR:H	1.85	0.41
1:A:498:GLN:HG3	1:A:500:THR:H	1.84	0.41
1:A:726:ILE:HB	1:A:947:LYS:HD3	2.00	0.41
1:C:353:TRP:HZ3	1:C:355:ARG:HE	1.68	0.41
1:E:265:TYR:HD2	1:E:267:VAL:HG23	1.84	0.41
1:E:555:SER:HB2	1:E:586:ASP:HB2	2.03	0.41
1:C:142:GLY:HA3	1:C:156:GLU:HB2	2.01	0.41
1:C:393:THR:HA	1:C:522:ALA:HA	2.02	0.41
1:E:421:TYR:CE2	1:E:456:PHE:HA	2.56	0.41
3:G:200:GLN:HE21	3:G:200:GLN:HB3	1.65	0.41
1:A:947:LYS:HE2	1:A:947:LYS:HB3	1.88	0.41
2:D:40:ALA:HB3	2:D:43:GLN:HB2	2.03	0.41
3:G:114:PRO:HB2	3:G:137:LEU:HD12	2.02	0.41
1:C:546:LEU:HD22	1:C:573:THR:HG21	2.03	0.41
1:A:152:TRP:CD1	1:A:180:GLU:HB2	2.56	0.41
1:E:144:TYR:HB2	1:E:155:SER:HB3	2.03	0.41
2:D:63:LYS:HG3	2:D:64:PHE:CD2	2.55	0.41
1:A:296:LEU:HB2	1:A:608:VAL:HG11	2.02	0.41
1:C:770:ILE:O	1:C:774:GLN:HG2	2.20	0.41
2:D:28:THR:OG1	2:D:31:ASN:ND2	2.53	0.41
1:A:30:ASN:HD21	1:A:59:PHE:HD1	1.69	0.41
1:C:54:LEU:HD23	1:C:88:ASP:HB3	2.02	0.41
1:C:408:ARG:HH22	2:D:1:GLN:HG3	1.85	0.41
1:C:441:LEU:HD23	1:C:441:LEU:H	1.85	0.41
1:E:328:ARG:NE	1:E:531:THR:O	2.54	0.41
1:E:444:LYS:HB3	1:E:448:ASN:HB2	2.03	0.41
3:B:21:LEU:HD22	3:B:103:THR:HG21	2.02	0.41
3:G:36:TRP:CD1	3:G:49:ILE:HB	2.56	0.41
1:A:69:HIS:CD2	1:A:259:THR:HG23	2.55	0.41
1:C:976:VAL:HB	1:C:979:ASP:HB2	2.02	0.41
1:C:351:TYR:HE1	1:C:452:LEU:HB2	1.85	0.40
1:A:720:ILE:H	1:A:926:GLN:NE2	2.20	0.40
1:E:805:ILE:HB	1:E:1054:GLN:HE22	1.85	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:980:ILE:HG23	1:E:984:LEU:HD12	2.02	0.40
1:A:84:LEU:O	1:A:238:PHE:N	2.51	0.40
1:C:469:SER:HB2	1:C:471:GLU:OE1	2.20	0.40
1:E:578:ASP:HB3	1:E:581:THR:O	2.21	0.40
1:A:976:VAL:HG12	1:A:979:ASP:H	1.86	0.40
1:C:25:PRO:HA	1:C:26:PRO:HD3	1.93	0.40
2:D:131:LEU:HD21	3:B:132:SER:HB2	2.03	0.40
1:A:358:ILE:HG13	1:A:395:VAL:HG23	2.03	0.40
1:C:212:LEU:HD23	1:C:217:PRO:HD3	2.04	0.40
1:C:598:ILE:HG23	1:C:664:ILE:HG21	2.03	0.40
1:E:97:LYS:O	1:E:182:LYS:NZ	2.39	0.40
2:F:212:THR:HG22	2:F:214:VAL:HG13	2.04	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	1068/1288 (83%)	1026 (96%)	42 (4%)	0	100	100
1	C	1068/1288 (83%)	1038 (97%)	30 (3%)	0	100	100
1	E	1068/1288 (83%)	1037 (97%)	31 (3%)	0	100	100
2	D	198/226 (88%)	192 (97%)	6 (3%)	0	100	100
2	F	198/226 (88%)	191 (96%)	7 (4%)	0	100	100
3	B	210/215 (98%)	194 (92%)	16 (8%)	0	100	100
3	G	210/215 (98%)	189 (90%)	21 (10%)	0	100	100
All	All	4020/4746 (85%)	3867 (96%)	153 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	922/1111 (83%)	886 (96%)	36 (4%)	27	53
1	C	922/1111 (83%)	897 (97%)	25 (3%)	40	63
1	E	922/1111 (83%)	889 (96%)	33 (4%)	30	55
2	D	173/192 (90%)	165 (95%)	8 (5%)	23	50
2	F	173/192 (90%)	169 (98%)	4 (2%)	45	67
3	B	182/185 (98%)	165 (91%)	17 (9%)	7	25
3	G	182/185 (98%)	169 (93%)	13 (7%)	12	36
All	All	3476/4087 (85%)	3340 (96%)	136 (4%)	30	53

All (136) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	19	THR
1	A	23	GLN
1	A	79	PHE
1	A	97	LYS
1	A	101	ILE
1	A	109	THR
1	A	117	LEU
1	A	120	VAL
1	A	121	ASN
1	A	134	GLN
1	A	145	TYR
1	A	146	HIS
1	A	157	PHE
1	A	170	TYR
1	A	214	ARG
1	A	238	PHE
1	A	242	LEU
1	A	249	LEU
1	A	335	LEU
1	A	336	CYS

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Mol	Chain	Res	Type
1	A	345	THR
1	A	362	VAL
1	A	369	TYR
1	A	387	LEU
1	A	408	ARG
1	A	430	THR
1	A	512	VAL
1	A	719	THR
1	A	738	CYS
1	A	740	MET
1	A	820	ASP
1	A	855	PHE
1	A	866	THR
1	A	873	TYR
1	A	947	LYS
1	A	1001	LEU
1	C	70	VAL
1	C	76	THR
1	C	101	ILE
1	C	117	LEU
1	C	165	ASN
1	C	180	GLU
1	C	214	ARG
1	C	244	LEU
1	C	277	LEU
1	C	307	THR
1	C	335	LEU
1	C	336	CYS
1	C	387	LEU
1	C	449	TYR
1	C	495	TYR
1	C	525	CYS
1	C	617	CYS
1	C	740	MET
1	C	760	CYS
1	C	804	GLN
1	C	815	ARG
1	C	820	ASP
1	C	855	PHE
1	C	873	TYR
1	C	878	LEU
1	E	14	GLN

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Mol	Chain	Res	Type
1	E	24	LEU
1	E	113	LYS
1	E	115	GLN
1	E	131	CYS
1	E	170	TYR
1	E	214	ARG
1	E	231	ILE
1	E	244	LEU
1	E	249	LEU
1	E	301	CYS
1	E	307	THR
1	E	336	CYS
1	E	364	ASP
1	E	377	PHE
1	E	387	LEU
1	E	424	LYS
1	E	430	THR
1	E	458	LYS
1	E	486	PHE
1	E	489	TYR
1	E	495	TYR
1	E	505	TYR
1	E	506	GLN
1	E	525	CYS
1	E	581	THR
1	E	607	GLN
1	E	719	THR
1	E	817	PHE
1	E	868	GLU
1	E	873	TYR
1	E	878	LEU
1	E	1038	LYS
2	D	1	GLN
2	D	19	LYS
2	D	117	THR
2	D	153	PHE
2	D	155	GLU
2	D	178	GLN
2	D	185	LEU
2	D	200	THR
3	B	47	PHE
3	B	70	THR

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Mol	Chain	Res	Type
3	B	78	ARG
3	B	95	SER
3	B	101	GLN
3	B	136	LEU
3	B	146	LYS
3	B	161	GLN
3	B	164	VAL
3	B	166	GLU
3	B	181	THR
3	B	182	LEU
3	B	184	LYS
3	B	190	HIS
3	B	191	LYS
3	B	202	LEU
3	B	212	ARG
2	F	13	ARG
2	F	117	THR
2	F	185	LEU
2	F	217	ARG
3	G	10	THR
3	G	13	LEU
3	G	17	GLU
3	G	18	ARG
3	G	39	GLN
3	G	79	LEU
3	G	107	ILE
3	G	156	GLN
3	G	166	GLU
3	G	170	LYS
3	G	176	LEU
3	G	182	LEU
3	G	200	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (94) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	23	GLN
1	A	49	HIS
1	A	69	HIS
1	A	134	GLN
1	A	137	ASN
1	A	149	ASN

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Mol	Chain	Res	Type
1	A	173	GLN
1	A	218	GLN
1	A	439	ASN
1	A	493	GLN
1	A	498	GLN
1	A	607	GLN
1	A	613	GLN
1	A	675	GLN
1	A	779	GLN
1	A	784	GLN
1	A	804	GLN
1	A	872	GLN
1	A	895	GLN
1	A	901	GLN
1	A	907	ASN
1	A	926	GLN
1	A	935	GLN
1	A	954	GLN
1	A	969	ASN
1	A	1005	GLN
1	A	1048	HIS
1	A	1119	ASN
1	C	23	GLN
1	C	49	HIS
1	C	148	ASN
1	C	149	ASN
1	C	188	ASN
1	C	211	ASN
1	C	218	GLN
1	C	360	ASN
1	C	394	ASN
1	C	414	GLN
1	C	439	ASN
1	C	460	ASN
1	C	493	GLN
1	C	498	GLN
1	C	641	ASN
1	C	675	GLN
1	C	804	GLN
1	C	913	GLN
1	C	954	GLN
1	C	957	GLN

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Mol	Chain	Res	Type
1	C	1054	GLN
1	C	1083	HIS
1	E	23	GLN
1	E	207	HIS
1	E	218	GLN
1	E	245	HIS
1	E	414	GLN
1	E	422	ASN
1	E	437	ASN
1	E	448	ASN
1	E	460	ASN
1	E	474	GLN
1	E	493	GLN
1	E	498	GLN
1	E	506	GLN
1	E	542	ASN
1	E	641	ASN
1	E	690	GLN
1	E	710	ASN
1	E	755	GLN
1	E	762	GLN
1	E	784	GLN
1	E	856	ASN
1	E	895	GLN
1	E	954	GLN
1	E	1002	GLN
1	E	1011	GLN
1	E	1054	GLN
2	D	1	GLN
2	D	31	ASN
2	D	39	GLN
2	D	65	GLN
2	D	178	GLN
3	B	27	GLN
3	B	30	ASN
3	B	31	ASN
3	B	138	ASN
3	B	200	GLN
2	F	3	GLN
2	F	65	GLN
3	G	43	GLN
3	G	148	GLN

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Mol	Chain	Res	Type
3	G	156	GLN
3	G	161	GLN
3	G	199	HIS
3	G	200	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

39 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
4	NAG	E	1304	1	14,14,15	0.22	0	17,19,21	0.41	0
4	NAG	C	1312	1	14,14,15	0.21	0	17,19,21	0.42	0
4	NAG	E	1307	1	14,14,15	0.23	0	17,19,21	0.41	0
4	NAG	A	1312	1	14,14,15	0.23	0	17,19,21	0.42	0
4	NAG	C	1306	1	14,14,15	0.26	0	17,19,21	0.54	0
4	NAG	E	1310	1	14,14,15	0.22	0	17,19,21	0.43	0
4	NAG	A	1307	1	14,14,15	0.26	0	17,19,21	0.52	0
4	NAG	E	1301	1	14,14,15	0.26	0	17,19,21	0.52	0
4	NAG	A	1311	1	14,14,15	0.23	0	17,19,21	0.42	0
4	NAG	E	1312	1	14,14,15	0.22	0	17,19,21	0.42	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	NAG	C	1304	1	14,14,15	0.22	0	17,19,21	0.42	0
4	NAG	E	1302	1	14,14,15	0.26	0	17,19,21	0.41	0
4	NAG	A	1305	1	14,14,15	0.26	0	17,19,21	0.52	0
4	NAG	E	1311	1	14,14,15	0.22	0	17,19,21	0.43	0
4	NAG	A	1309	1	14,14,15	0.22	0	17,19,21	0.42	0
4	NAG	C	1310	1	14,14,15	0.22	0	17,19,21	0.43	0
4	NAG	C	1308	1	14,14,15	0.22	0	17,19,21	0.42	0
4	NAG	A	1310	1	14,14,15	0.23	0	17,19,21	0.43	0
4	NAG	C	1311	1	14,14,15	0.23	0	17,19,21	0.41	0
4	NAG	A	1302	1	14,14,15	0.26	0	17,19,21	0.45	0
4	NAG	E	1308	1	14,14,15	0.21	0	17,19,21	0.42	0
4	NAG	E	1313	1	14,14,15	0.24	0	17,19,21	0.41	0
4	NAG	C	1303	1	14,14,15	0.28	0	17,19,21	0.53	0
4	NAG	E	1305	1	14,14,15	0.26	0	17,19,21	0.51	0
4	NAG	C	1302	1	14,14,15	0.25	0	17,19,21	0.52	0
4	NAG	E	1309	1	14,14,15	0.26	0	17,19,21	0.54	0
4	NAG	C	1301	1	14,14,15	0.20	0	17,19,21	0.43	0
4	NAG	A	1303	1	14,14,15	0.21	0	17,19,21	0.41	0
4	NAG	A	1304	1	14,14,15	0.24	0	17,19,21	0.43	0
4	NAG	A	1301	1	14,14,15	0.26	0	17,19,21	0.52	0
4	NAG	A	1313	1	14,14,15	0.23	0	17,19,21	0.43	0
4	NAG	E	1306	1	14,14,15	0.22	0	17,19,21	0.42	0
4	NAG	C	1309	1	14,14,15	0.22	0	17,19,21	0.42	0
4	NAG	E	1303	1	14,14,15	0.23	0	17,19,21	0.41	0
4	NAG	C	1305	1	14,14,15	0.23	0	17,19,21	0.42	0
4	NAG	A	1308	1	14,14,15	0.21	0	17,19,21	0.42	0
4	NAG	C	1313	1	14,14,15	0.24	0	17,19,21	0.45	0
4	NAG	C	1307	1	14,14,15	0.22	0	17,19,21	0.41	0
4	NAG	A	1306	1	14,14,15	0.26	0	17,19,21	0.52	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	E	1304	1	-	2/6/23/26	0/1/1/1
4	NAG	C	1312	1	-	2/6/23/26	0/1/1/1
4	NAG	E	1307	1	-	2/6/23/26	0/1/1/1
4	NAG	A	1312	1	-	0/6/23/26	0/1/1/1
4	NAG	C	1306	1	-	3/6/23/26	0/1/1/1
4	NAG	E	1310	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	A	1307	1	-	3/6/23/26	0/1/1/1
4	NAG	E	1301	1	-	3/6/23/26	0/1/1/1
4	NAG	A	1311	1	-	2/6/23/26	0/1/1/1
4	NAG	E	1312	1	-	1/6/23/26	0/1/1/1
4	NAG	C	1304	1	-	4/6/23/26	0/1/1/1
4	NAG	E	1302	1	-	2/6/23/26	0/1/1/1
4	NAG	A	1305	1	-	2/6/23/26	0/1/1/1
4	NAG	E	1311	1	-	2/6/23/26	0/1/1/1
4	NAG	A	1309	1	-	0/6/23/26	0/1/1/1
4	NAG	C	1310	1	-	2/6/23/26	0/1/1/1
4	NAG	C	1308	1	-	0/6/23/26	0/1/1/1
4	NAG	A	1310	1	-	2/6/23/26	0/1/1/1
4	NAG	C	1311	1	-	0/6/23/26	0/1/1/1
4	NAG	A	1302	1	-	2/6/23/26	0/1/1/1
4	NAG	E	1308	1	-	1/6/23/26	0/1/1/1
4	NAG	E	1313	1	-	2/6/23/26	0/1/1/1
4	NAG	C	1303	1	-	3/6/23/26	0/1/1/1
4	NAG	E	1305	1	-	3/6/23/26	0/1/1/1
4	NAG	C	1302	1	-	3/6/23/26	0/1/1/1
4	NAG	E	1309	1	-	3/6/23/26	0/1/1/1
4	NAG	C	1301	1	-	0/6/23/26	0/1/1/1
4	NAG	A	1303	1	-	0/6/23/26	0/1/1/1
4	NAG	A	1304	1	-	2/6/23/26	0/1/1/1
4	NAG	A	1301	1	-	3/6/23/26	0/1/1/1
4	NAG	A	1313	1	-	2/6/23/26	0/1/1/1
4	NAG	E	1306	1	-	2/6/23/26	0/1/1/1
4	NAG	C	1309	1	-	1/6/23/26	0/1/1/1
4	NAG	E	1303	1	-	2/6/23/26	0/1/1/1
4	NAG	C	1305	1	-	2/6/23/26	0/1/1/1
4	NAG	A	1308	1	-	0/6/23/26	0/1/1/1
4	NAG	C	1313	1	-	0/6/23/26	0/1/1/1
4	NAG	C	1307	1	-	2/6/23/26	0/1/1/1
4	NAG	A	1306	1	-	3/6/23/26	0/1/1/1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (70) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	E	1304	NAG	O5-C5-C6-O6
4	C	1306	NAG	O5-C5-C6-O6
4	E	1307	NAG	O5-C5-C6-O6
4	E	1313	NAG	O5-C5-C6-O6
4	A	1307	NAG	C4-C5-C6-O6
4	C	1310	NAG	O5-C5-C6-O6
4	E	1302	NAG	C4-C5-C6-O6
4	A	1306	NAG	O5-C5-C6-O6
4	A	1304	NAG	O5-C5-C6-O6
4	A	1307	NAG	O5-C5-C6-O6
4	A	1310	NAG	O5-C5-C6-O6
4	C	1312	NAG	O5-C5-C6-O6
4	A	1311	NAG	O5-C5-C6-O6
4	C	1307	NAG	O5-C5-C6-O6
4	E	1302	NAG	O5-C5-C6-O6
4	E	1311	NAG	O5-C5-C6-O6
4	A	1306	NAG	C4-C5-C6-O6
4	A	1310	NAG	C4-C5-C6-O6
4	C	1310	NAG	C4-C5-C6-O6
4	E	1301	NAG	C4-C5-C6-O6
4	E	1304	NAG	C4-C5-C6-O6
4	C	1302	NAG	O5-C5-C6-O6
4	C	1305	NAG	O5-C5-C6-O6
4	E	1301	NAG	O5-C5-C6-O6
4	E	1309	NAG	O5-C5-C6-O6
4	C	1306	NAG	C4-C5-C6-O6
4	E	1307	NAG	C4-C5-C6-O6
4	A	1313	NAG	O5-C5-C6-O6
4	E	1313	NAG	C4-C5-C6-O6
4	E	1309	NAG	C4-C5-C6-O6
4	A	1301	NAG	O5-C5-C6-O6
4	C	1304	NAG	O5-C5-C6-O6
4	A	1304	NAG	C4-C5-C6-O6
4	C	1305	NAG	C4-C5-C6-O6
4	C	1312	NAG	C4-C5-C6-O6
4	C	1304	NAG	C8-C7-N2-C2
4	C	1304	NAG	O7-C7-N2-C2
4	C	1302	NAG	C4-C5-C6-O6
4	C	1307	NAG	C4-C5-C6-O6
4	E	1311	NAG	C4-C5-C6-O6
4	A	1311	NAG	C4-C5-C6-O6
4	E	1303	NAG	O5-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
4	A	1301	NAG	C4-C5-C6-O6
4	C	1304	NAG	C4-C5-C6-O6
4	E	1305	NAG	O5-C5-C6-O6
4	A	1302	NAG	C4-C5-C6-O6
4	A	1302	NAG	O5-C5-C6-O6
4	C	1303	NAG	C4-C5-C6-O6
4	E	1310	NAG	C4-C5-C6-O6
4	C	1303	NAG	O5-C5-C6-O6
4	E	1312	NAG	O5-C5-C6-O6
4	E	1303	NAG	C4-C5-C6-O6
4	E	1306	NAG	C4-C5-C6-O6
4	E	1310	NAG	O5-C5-C6-O6
4	E	1306	NAG	O5-C5-C6-O6
4	A	1313	NAG	C4-C5-C6-O6
4	A	1301	NAG	C3-C2-N2-C7
4	A	1305	NAG	C3-C2-N2-C7
4	A	1306	NAG	C3-C2-N2-C7
4	A	1307	NAG	C3-C2-N2-C7
4	C	1302	NAG	C3-C2-N2-C7
4	C	1303	NAG	C3-C2-N2-C7
4	C	1306	NAG	C3-C2-N2-C7
4	E	1301	NAG	C3-C2-N2-C7
4	E	1305	NAG	C3-C2-N2-C7
4	E	1309	NAG	C3-C2-N2-C7
4	E	1305	NAG	C4-C5-C6-O6
4	E	1308	NAG	C4-C5-C6-O6
4	A	1305	NAG	O5-C5-C6-O6
4	C	1309	NAG	C4-C5-C6-O6

There are no ring outliers.

5 monomers are involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	E	1301	NAG	1	0
4	A	1311	NAG	1	0
4	E	1311	NAG	1	0
4	E	1308	NAG	1	0
4	E	1309	NAG	1	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

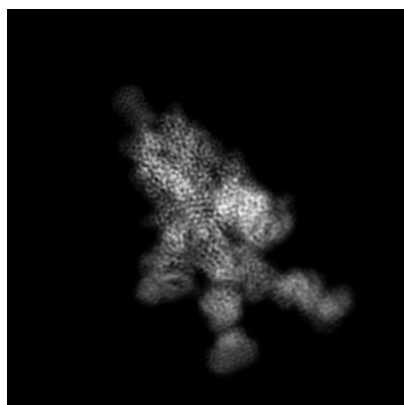
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-32646. These allow visual inspection of the internal detail of the map and identification of artifacts.

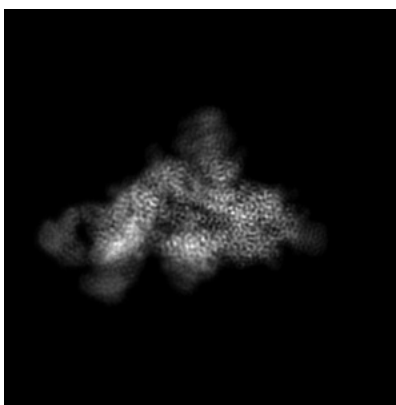
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

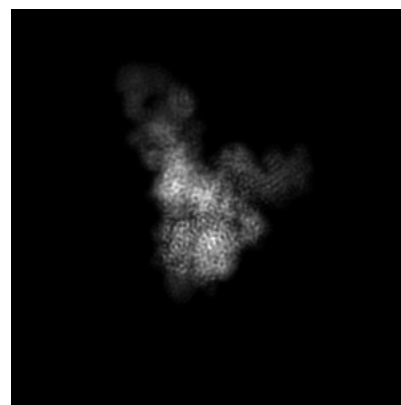
6.1.1 Primary map



X



Y



Z

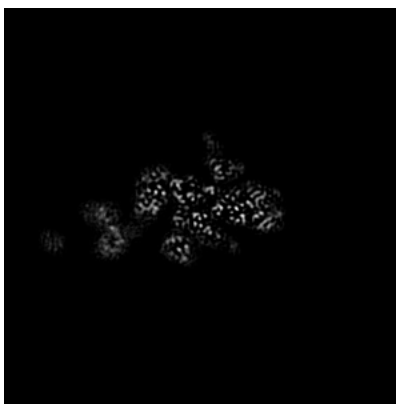
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 192



Y Index: 192

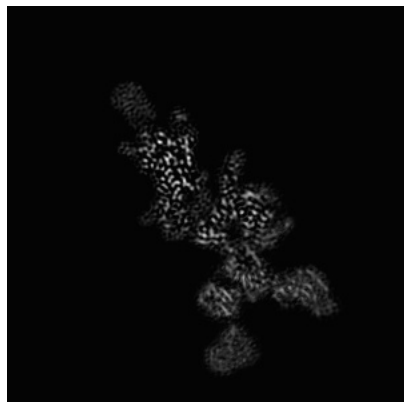


Z Index: 192

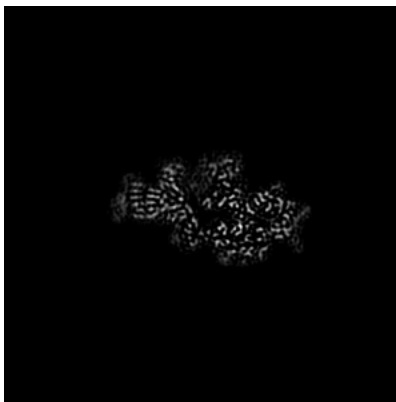
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [\(i\)](#)

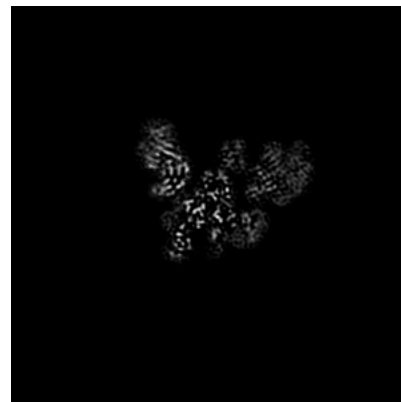
6.3.1 Primary map



X Index: 158



Y Index: 162

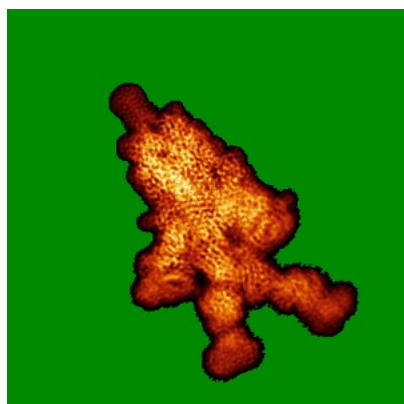


Z Index: 192

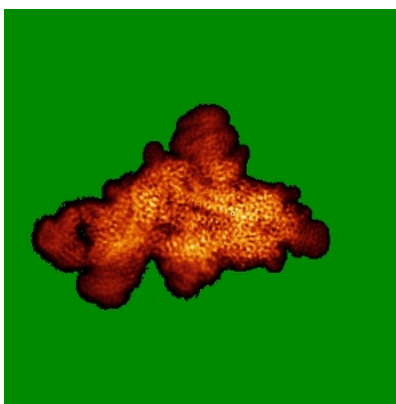
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [\(i\)](#)

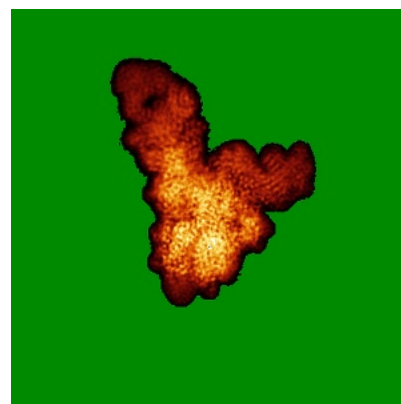
6.4.1 Primary map



X



Y

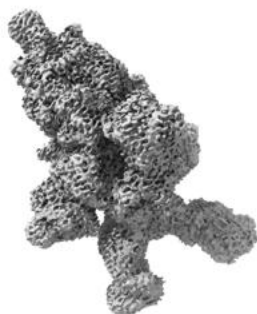


Z

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 0.004. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

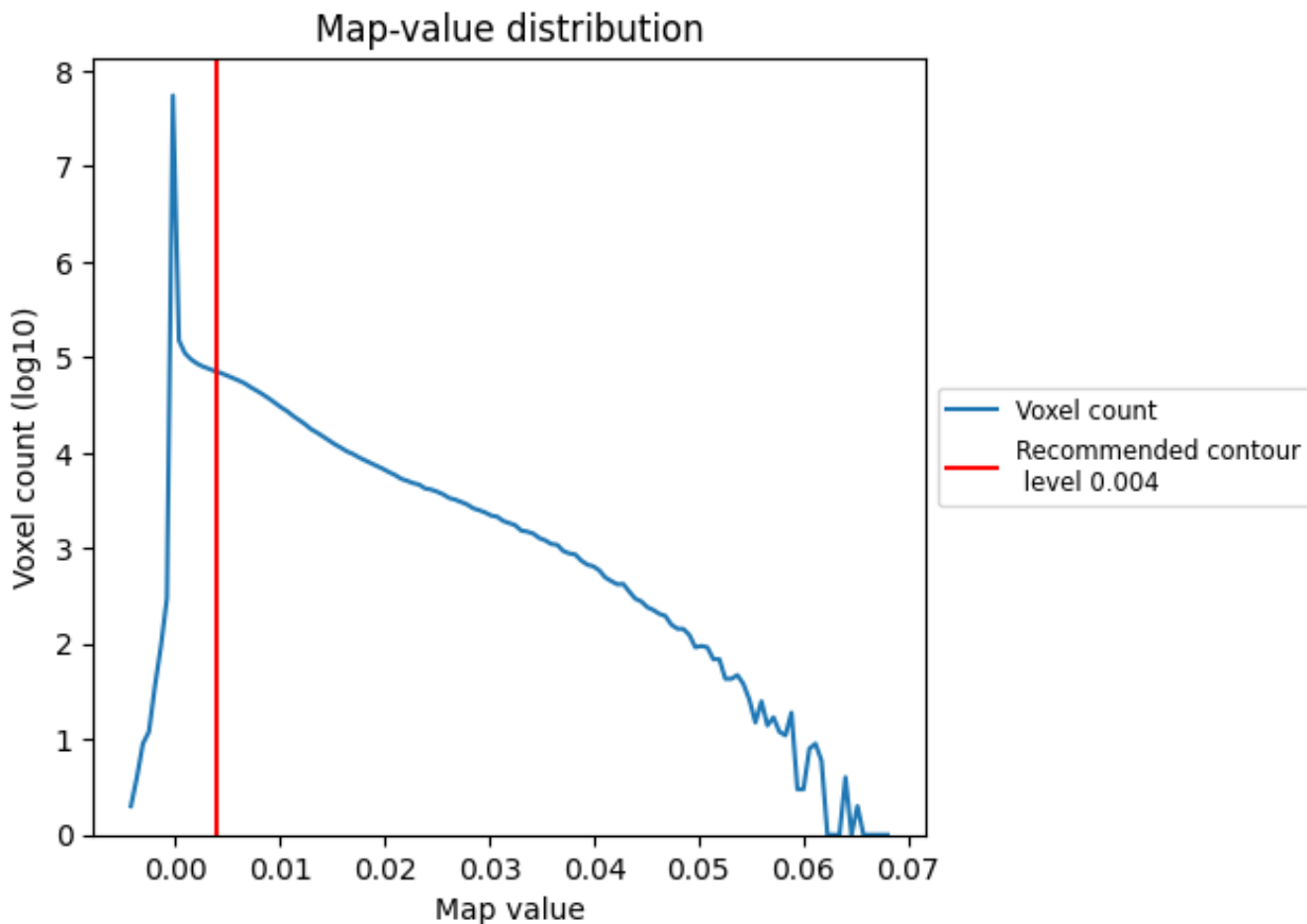
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

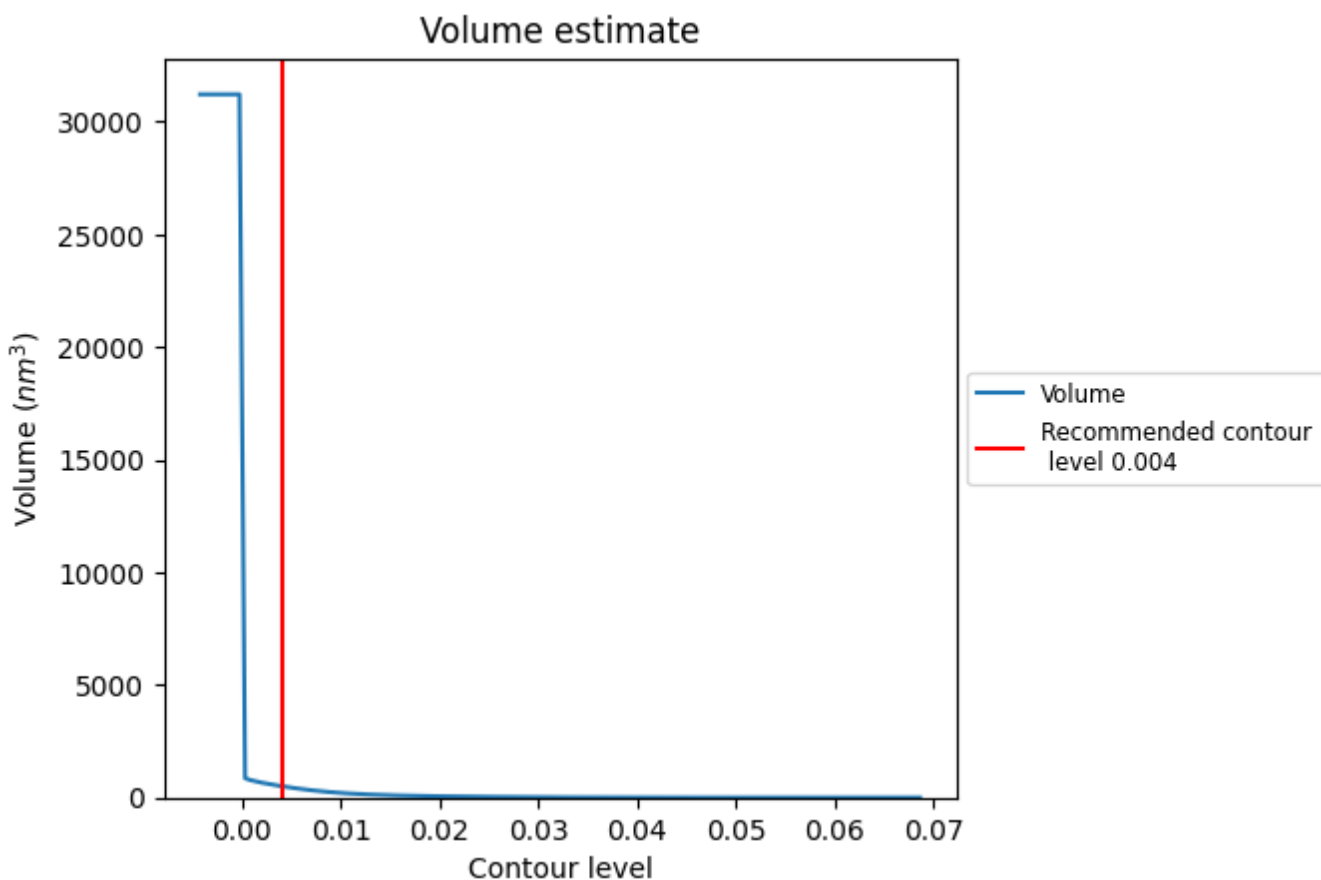
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

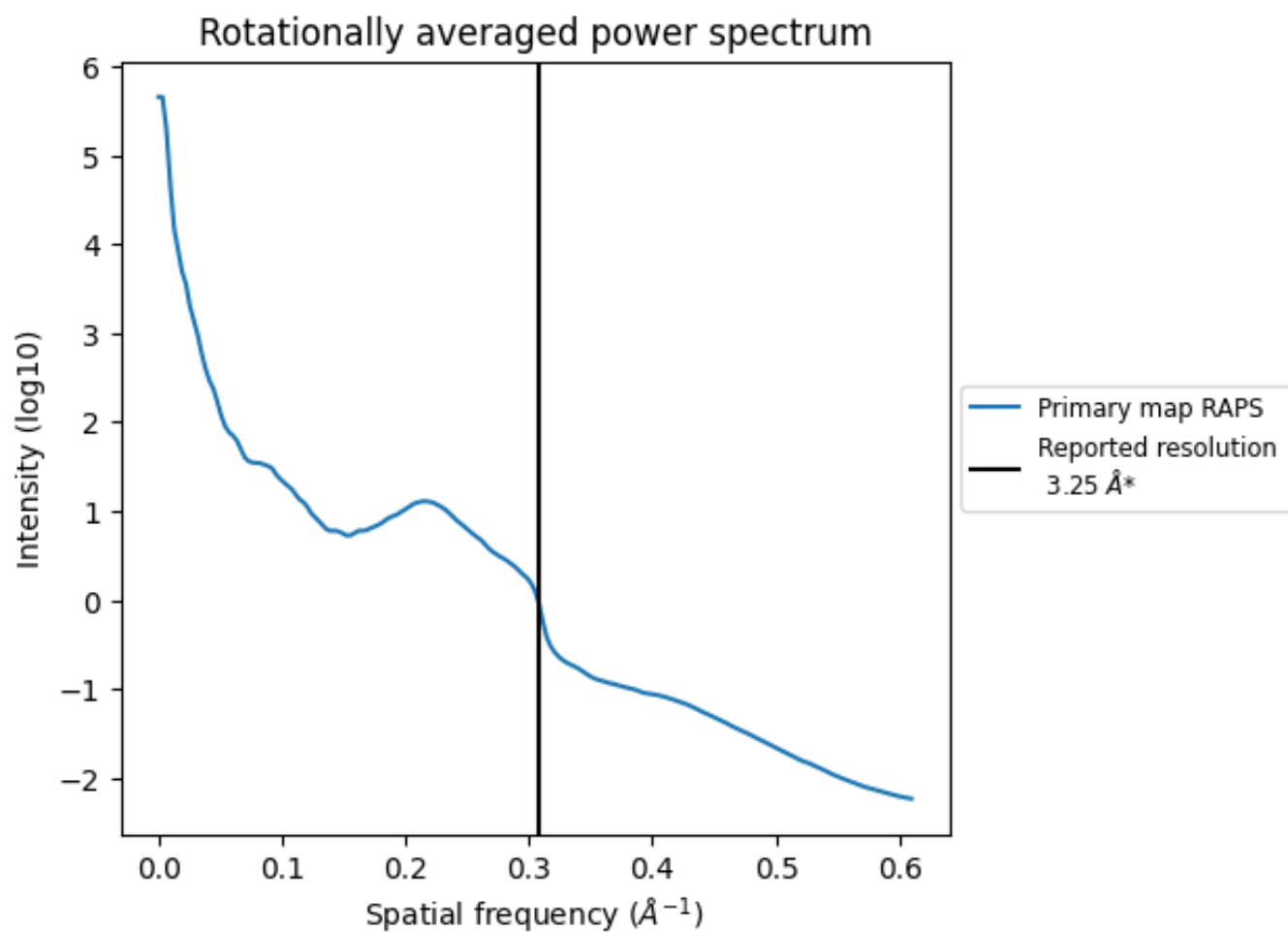
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 507 nm^3 ; this corresponds to an approximate mass of 458 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 0.308\AA^{-1}

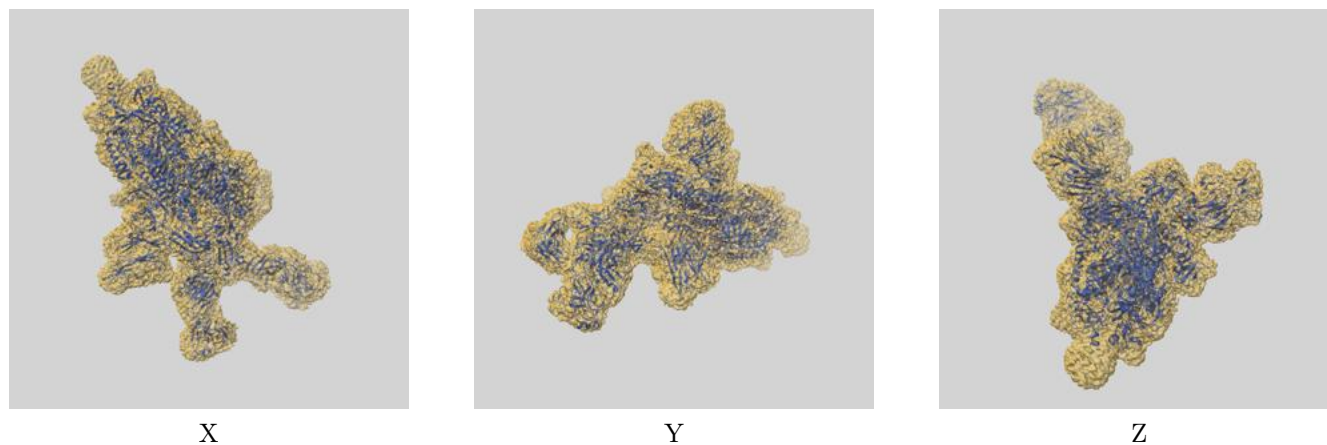
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

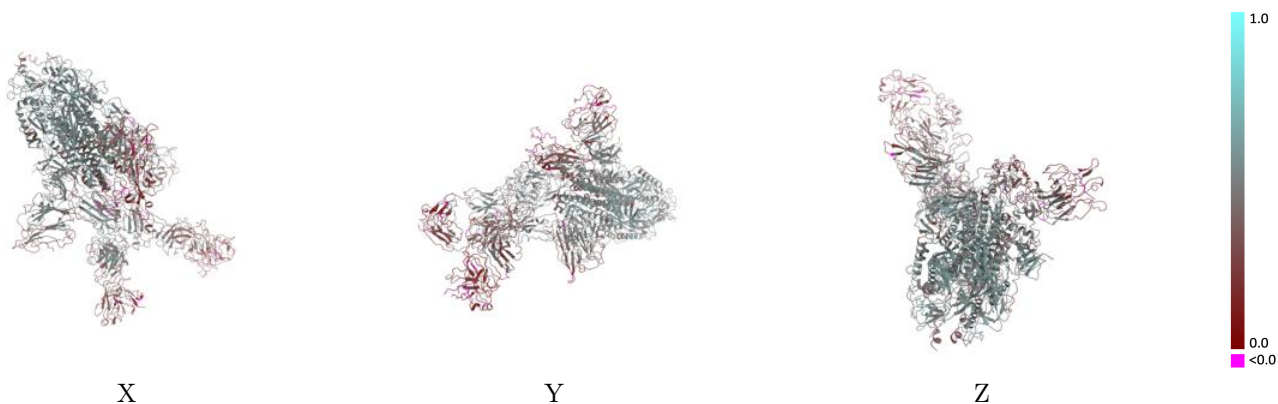
This section contains information regarding the fit between EMDB map EMD-32646 and PDB model 7WOA. Per-residue inclusion information can be found in section 3 on page 13.

9.1 Map-model overlay [i](#)



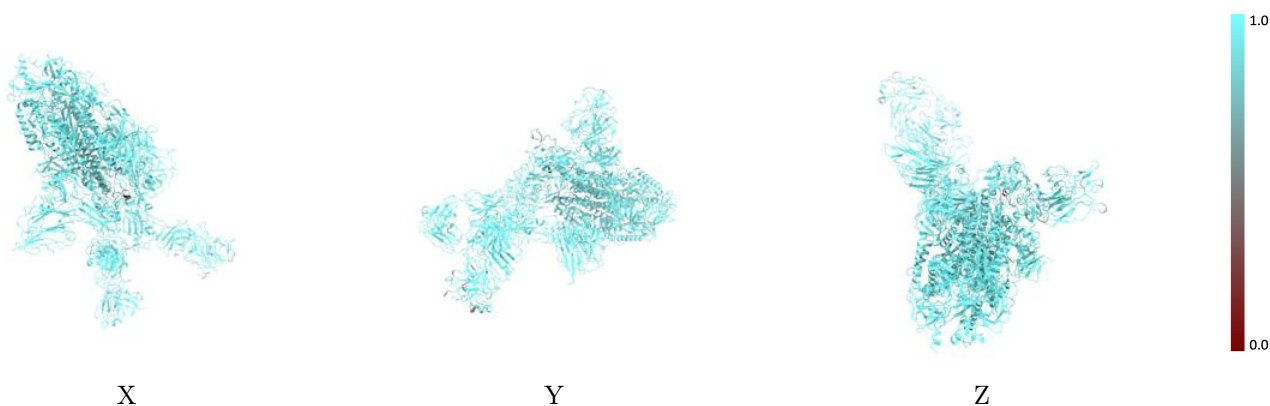
The images above show the 3D surface view of the map at the recommended contour level 0.004 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model [i](#)



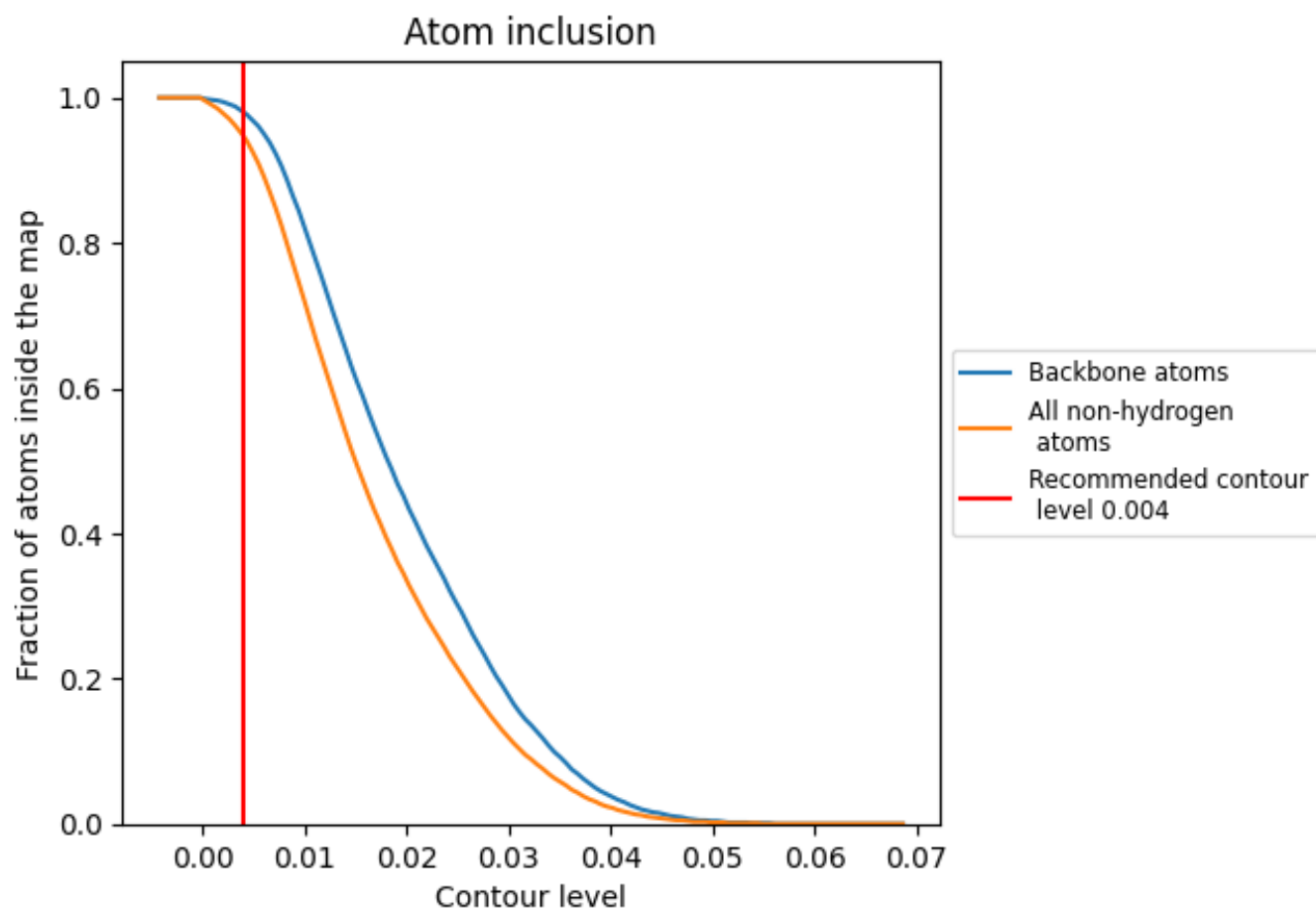
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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](#)



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 (0.004).

















9.4 Atom inclusion [i](#)



At the recommended contour level, 98% of all backbone atoms, 95% 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 (0.004) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9470	 0.4220
A	 0.9500	 0.4500
B	 0.9450	 0.3310
C	 0.9630	 0.4680
D	 0.9680	 0.3740
E	 0.9320	 0.4300
F	 0.9380	 0.3130
G	 0.9090	 0.2460

