wwPDB EM Validation Summary Report

Nov 21, 2022 – 07:52 AM EST

PDB ID	:	7SOB
EMDB ID	:	EMD-25265
Title	:	SARS-CoV-2 S B.1.617.1 kappa variant + S309 + S2L20 Global Refinement
Authors	:	McCallum, M.; Veesler, D.; Seattle Structural Genomics Center for Infectious Disease (SSGCID)
Deposited on	:	2021-10-29
Resolution	:	2.40 Å(reported)

This is a wwPDB EM Validation Summary 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:

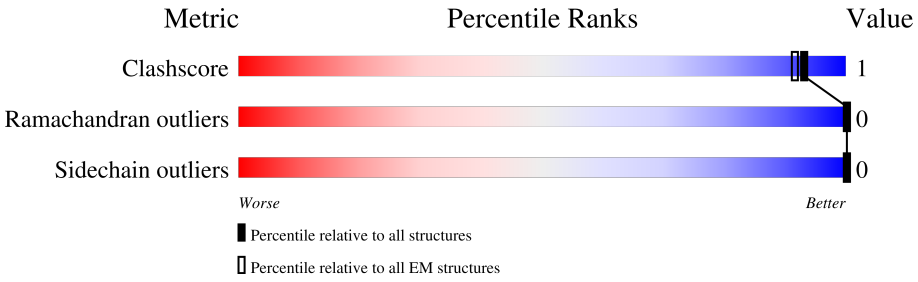
EMDB validation analysis	:	0.0.1.dev43
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.40 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	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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	1277	32% 78% · 20%
1	D	1277	33% 78% · 20%
1	K	1277	33% 78% · 20%
2	B	107	100% 96% ·
2	E	107	100% 98% ·
2	L	107	100% 98% ·
3	C	121	98% 96% ·
3	F	121	98% 97% ·

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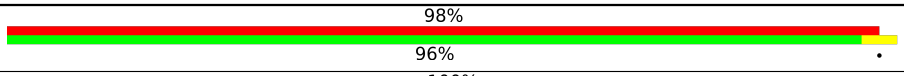
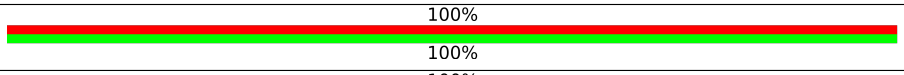
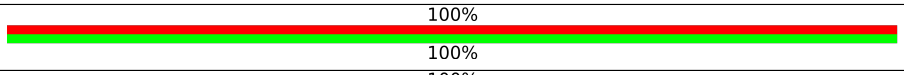
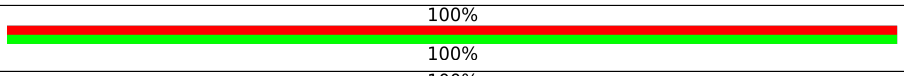
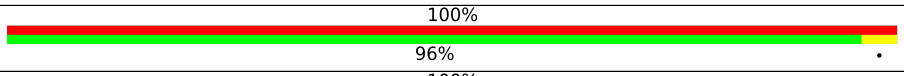
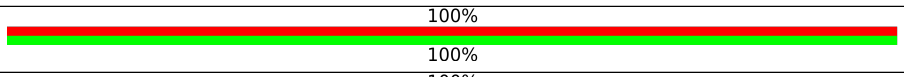
Mol	Chain	Length	Quality of chain
3	M	121	
4	G	128	
4	H	128	
4	N	128	
5	I	100	
5	J	100	
5	O	100	

2 Entry composition (i)

There are 7 unique types of molecules in this entry. The entry contains 30000 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
1	A	1025	Total	C	N	O	S	0	0
			7140	4540	1230	1332	38		
1	D	1025	Total	C	N	O	S	0	0
			7140	4540	1230	1332	38		
1	K	1025	Total	C	N	O	S	0	0
			7140	4540	1230	1332	38		

There are 255 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	95	ILE	THR	variant	UNP P0DTC2
A	142	ASP	GLY	variant	UNP P0DTC2
A	154	LYS	GLU	variant	UNP P0DTC2
A	383	CYS	SER	variant	UNP P0DTC2
A	452	ARG	LEU	variant	UNP P0DTC2
A	484	GLN	GLU	variant	UNP P0DTC2
A	614	GLY	ASP	variant	UNP P0DTC2
A	681	ARG	PRO	variant	UNP P0DTC2
A	817	PRO	PHE	variant	UNP P0DTC2
A	892	PRO	ALA	variant	UNP P0DTC2
A	899	PRO	ALA	variant	UNP P0DTC2
A	942	PRO	ALA	variant	UNP P0DTC2
A	985	CYS	ASP	variant	UNP P0DTC2
A	986	PRO	LYS	variant	UNP P0DTC2
A	987	PRO	VAL	variant	UNP P0DTC2
A	1071	HIS	GLN	variant	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

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Chain	Residue	Modelled	Actual	Comment	Reference
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
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	LEU	-	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	GLY	-	expression tag	UNP P0DTC2
A	1239	ARG	-	expression tag	UNP P0DTC2
A	1240	SER	-	expression tag	UNP P0DTC2
A	1241	LEU	-	expression tag	UNP P0DTC2
A	1242	GLU	-	expression tag	UNP P0DTC2
A	1243	VAL	-	expression tag	UNP P0DTC2
A	1244	LEU	-	expression tag	UNP P0DTC2
A	1245	PHE	-	expression tag	UNP P0DTC2
A	1246	GLN	-	expression tag	UNP P0DTC2
A	1247	GLY	-	expression tag	UNP P0DTC2
A	1248	PRO	-	expression tag	UNP P0DTC2
A	1249	GLY	-	expression tag	UNP P0DTC2
A	1250	SER	-	expression tag	UNP P0DTC2
A	1251	GLY	-	expression tag	UNP P0DTC2
A	1252	GLY	-	expression tag	UNP P0DTC2
A	1253	LEU	-	expression tag	UNP P0DTC2
A	1254	ASN	-	expression tag	UNP P0DTC2
A	1255	ASP	-	expression tag	UNP P0DTC2
A	1256	ILE	-	expression tag	UNP P0DTC2
A	1257	PHE	-	expression tag	UNP P0DTC2
A	1258	GLU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1259	ALA	-	expression tag	UNP P0DTC2
A	1260	GLN	-	expression tag	UNP P0DTC2
A	1261	LYS	-	expression tag	UNP P0DTC2
A	1262	ILE	-	expression tag	UNP P0DTC2
A	1263	GLU	-	expression tag	UNP P0DTC2
A	1264	TRP	-	expression tag	UNP P0DTC2
A	1265	HIS	-	expression tag	UNP P0DTC2
A	1266	GLU	-	expression tag	UNP P0DTC2
A	1267	GLY	-	expression tag	UNP P0DTC2
A	1268	SER	-	expression tag	UNP P0DTC2
A	1269	GLY	-	expression tag	UNP P0DTC2
A	1270	HIS	-	expression tag	UNP P0DTC2
A	1271	HIS	-	expression tag	UNP P0DTC2
A	1272	HIS	-	expression tag	UNP P0DTC2
A	1273	HIS	-	expression tag	UNP P0DTC2
A	1274	HIS	-	expression tag	UNP P0DTC2
A	1275	HIS	-	expression tag	UNP P0DTC2
A	1276	HIS	-	expression tag	UNP P0DTC2
A	1277	HIS	-	expression tag	UNP P0DTC2
D	95	ILE	THR	variant	UNP P0DTC2
D	142	ASP	GLY	variant	UNP P0DTC2
D	154	LYS	GLU	variant	UNP P0DTC2
D	383	CYS	SER	variant	UNP P0DTC2
D	452	ARG	LEU	variant	UNP P0DTC2
D	484	GLN	GLU	variant	UNP P0DTC2
D	614	GLY	ASP	variant	UNP P0DTC2
D	681	ARG	PRO	variant	UNP P0DTC2
D	817	PRO	PHE	variant	UNP P0DTC2
D	892	PRO	ALA	variant	UNP P0DTC2
D	899	PRO	ALA	variant	UNP P0DTC2
D	942	PRO	ALA	variant	UNP P0DTC2
D	985	CYS	ASP	variant	UNP P0DTC2
D	986	PRO	LYS	variant	UNP P0DTC2
D	987	PRO	VAL	variant	UNP P0DTC2
D	1071	HIS	GLN	variant	UNP P0DTC2
D	1209	GLY	-	expression tag	UNP P0DTC2
D	1210	SER	-	expression tag	UNP P0DTC2
D	1211	GLY	-	expression tag	UNP P0DTC2
D	1212	TYR	-	expression tag	UNP P0DTC2
D	1213	ILE	-	expression tag	UNP P0DTC2
D	1214	PRO	-	expression tag	UNP P0DTC2
D	1215	GLU	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
D	1216	ALA	-	expression tag	UNP P0DTC2
D	1217	PRO	-	expression tag	UNP P0DTC2
D	1218	ARG	-	expression tag	UNP P0DTC2
D	1219	ASP	-	expression tag	UNP P0DTC2
D	1220	GLY	-	expression tag	UNP P0DTC2
D	1221	GLN	-	expression tag	UNP P0DTC2
D	1222	ALA	-	expression tag	UNP P0DTC2
D	1223	TYR	-	expression tag	UNP P0DTC2
D	1224	VAL	-	expression tag	UNP P0DTC2
D	1225	ARG	-	expression tag	UNP P0DTC2
D	1226	LYS	-	expression tag	UNP P0DTC2
D	1227	ASP	-	expression tag	UNP P0DTC2
D	1228	GLY	-	expression tag	UNP P0DTC2
D	1229	GLU	-	expression tag	UNP P0DTC2
D	1230	TRP	-	expression tag	UNP P0DTC2
D	1231	VAL	-	expression tag	UNP P0DTC2
D	1232	LEU	-	expression tag	UNP P0DTC2
D	1233	LEU	-	expression tag	UNP P0DTC2
D	1234	SER	-	expression tag	UNP P0DTC2
D	1235	THR	-	expression tag	UNP P0DTC2
D	1236	PHE	-	expression tag	UNP P0DTC2
D	1237	LEU	-	expression tag	UNP P0DTC2
D	1238	GLY	-	expression tag	UNP P0DTC2
D	1239	ARG	-	expression tag	UNP P0DTC2
D	1240	SER	-	expression tag	UNP P0DTC2
D	1241	LEU	-	expression tag	UNP P0DTC2
D	1242	GLU	-	expression tag	UNP P0DTC2
D	1243	VAL	-	expression tag	UNP P0DTC2
D	1244	LEU	-	expression tag	UNP P0DTC2
D	1245	PHE	-	expression tag	UNP P0DTC2
D	1246	GLN	-	expression tag	UNP P0DTC2
D	1247	GLY	-	expression tag	UNP P0DTC2
D	1248	PRO	-	expression tag	UNP P0DTC2
D	1249	GLY	-	expression tag	UNP P0DTC2
D	1250	SER	-	expression tag	UNP P0DTC2
D	1251	GLY	-	expression tag	UNP P0DTC2
D	1252	GLY	-	expression tag	UNP P0DTC2
D	1253	LEU	-	expression tag	UNP P0DTC2
D	1254	ASN	-	expression tag	UNP P0DTC2
D	1255	ASP	-	expression tag	UNP P0DTC2
D	1256	ILE	-	expression tag	UNP P0DTC2
D	1257	PHE	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
D	1258	GLU	-	expression tag	UNP P0DTC2
D	1259	ALA	-	expression tag	UNP P0DTC2
D	1260	GLN	-	expression tag	UNP P0DTC2
D	1261	LYS	-	expression tag	UNP P0DTC2
D	1262	ILE	-	expression tag	UNP P0DTC2
D	1263	GLU	-	expression tag	UNP P0DTC2
D	1264	TRP	-	expression tag	UNP P0DTC2
D	1265	HIS	-	expression tag	UNP P0DTC2
D	1266	GLU	-	expression tag	UNP P0DTC2
D	1267	GLY	-	expression tag	UNP P0DTC2
D	1268	SER	-	expression tag	UNP P0DTC2
D	1269	GLY	-	expression tag	UNP P0DTC2
D	1270	HIS	-	expression tag	UNP P0DTC2
D	1271	HIS	-	expression tag	UNP P0DTC2
D	1272	HIS	-	expression tag	UNP P0DTC2
D	1273	HIS	-	expression tag	UNP P0DTC2
D	1274	HIS	-	expression tag	UNP P0DTC2
D	1275	HIS	-	expression tag	UNP P0DTC2
D	1276	HIS	-	expression tag	UNP P0DTC2
D	1277	HIS	-	expression tag	UNP P0DTC2
K	95	ILE	THR	variant	UNP P0DTC2
K	142	ASP	GLY	variant	UNP P0DTC2
K	154	LYS	GLU	variant	UNP P0DTC2
K	383	CYS	SER	variant	UNP P0DTC2
K	452	ARG	LEU	variant	UNP P0DTC2
K	484	GLN	GLU	variant	UNP P0DTC2
K	614	GLY	ASP	variant	UNP P0DTC2
K	681	ARG	PRO	variant	UNP P0DTC2
K	817	PRO	PHE	variant	UNP P0DTC2
K	892	PRO	ALA	variant	UNP P0DTC2
K	899	PRO	ALA	variant	UNP P0DTC2
K	942	PRO	ALA	variant	UNP P0DTC2
K	985	CYS	ASP	variant	UNP P0DTC2
K	986	PRO	LYS	variant	UNP P0DTC2
K	987	PRO	VAL	variant	UNP P0DTC2
K	1071	HIS	GLN	variant	UNP P0DTC2
K	1209	GLY	-	expression tag	UNP P0DTC2
K	1210	SER	-	expression tag	UNP P0DTC2
K	1211	GLY	-	expression tag	UNP P0DTC2
K	1212	TYR	-	expression tag	UNP P0DTC2
K	1213	ILE	-	expression tag	UNP P0DTC2
K	1214	PRO	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
K	1215	GLU	-	expression tag	UNP P0DTC2
K	1216	ALA	-	expression tag	UNP P0DTC2
K	1217	PRO	-	expression tag	UNP P0DTC2
K	1218	ARG	-	expression tag	UNP P0DTC2
K	1219	ASP	-	expression tag	UNP P0DTC2
K	1220	GLY	-	expression tag	UNP P0DTC2
K	1221	GLN	-	expression tag	UNP P0DTC2
K	1222	ALA	-	expression tag	UNP P0DTC2
K	1223	TYR	-	expression tag	UNP P0DTC2
K	1224	VAL	-	expression tag	UNP P0DTC2
K	1225	ARG	-	expression tag	UNP P0DTC2
K	1226	LYS	-	expression tag	UNP P0DTC2
K	1227	ASP	-	expression tag	UNP P0DTC2
K	1228	GLY	-	expression tag	UNP P0DTC2
K	1229	GLU	-	expression tag	UNP P0DTC2
K	1230	TRP	-	expression tag	UNP P0DTC2
K	1231	VAL	-	expression tag	UNP P0DTC2
K	1232	LEU	-	expression tag	UNP P0DTC2
K	1233	LEU	-	expression tag	UNP P0DTC2
K	1234	SER	-	expression tag	UNP P0DTC2
K	1235	THR	-	expression tag	UNP P0DTC2
K	1236	PHE	-	expression tag	UNP P0DTC2
K	1237	LEU	-	expression tag	UNP P0DTC2
K	1238	GLY	-	expression tag	UNP P0DTC2
K	1239	ARG	-	expression tag	UNP P0DTC2
K	1240	SER	-	expression tag	UNP P0DTC2
K	1241	LEU	-	expression tag	UNP P0DTC2
K	1242	GLU	-	expression tag	UNP P0DTC2
K	1243	VAL	-	expression tag	UNP P0DTC2
K	1244	LEU	-	expression tag	UNP P0DTC2
K	1245	PHE	-	expression tag	UNP P0DTC2
K	1246	GLN	-	expression tag	UNP P0DTC2
K	1247	GLY	-	expression tag	UNP P0DTC2
K	1248	PRO	-	expression tag	UNP P0DTC2
K	1249	GLY	-	expression tag	UNP P0DTC2
K	1250	SER	-	expression tag	UNP P0DTC2
K	1251	GLY	-	expression tag	UNP P0DTC2
K	1252	GLY	-	expression tag	UNP P0DTC2
K	1253	LEU	-	expression tag	UNP P0DTC2
K	1254	ASN	-	expression tag	UNP P0DTC2
K	1255	ASP	-	expression tag	UNP P0DTC2
K	1256	ILE	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
K	1257	PHE	-	expression tag	UNP P0DTC2
K	1258	GLU	-	expression tag	UNP P0DTC2
K	1259	ALA	-	expression tag	UNP P0DTC2
K	1260	GLN	-	expression tag	UNP P0DTC2
K	1261	LYS	-	expression tag	UNP P0DTC2
K	1262	ILE	-	expression tag	UNP P0DTC2
K	1263	GLU	-	expression tag	UNP P0DTC2
K	1264	TRP	-	expression tag	UNP P0DTC2
K	1265	HIS	-	expression tag	UNP P0DTC2
K	1266	GLU	-	expression tag	UNP P0DTC2
K	1267	GLY	-	expression tag	UNP P0DTC2
K	1268	SER	-	expression tag	UNP P0DTC2
K	1269	GLY	-	expression tag	UNP P0DTC2
K	1270	HIS	-	expression tag	UNP P0DTC2
K	1271	HIS	-	expression tag	UNP P0DTC2
K	1272	HIS	-	expression tag	UNP P0DTC2
K	1273	HIS	-	expression tag	UNP P0DTC2
K	1274	HIS	-	expression tag	UNP P0DTC2
K	1275	HIS	-	expression tag	UNP P0DTC2
K	1276	HIS	-	expression tag	UNP P0DTC2
K	1277	HIS	-	expression tag	UNP P0DTC2

- Molecule 2 is a protein called S2L20 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	107	Total	C	N	O	S	0	0
			560	341	108	109	2		
2	E	107	Total	C	N	O	S	0	0
			560	341	108	109	2		
2	L	107	Total	C	N	O	S	0	0
			560	341	108	109	2		

- Molecule 3 is a protein called S2L20 Fab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	121	Total	C	N	O	S	0	0
			787	498	141	144	4		
3	F	121	Total	C	N	O	S	0	0
			787	498	141	144	4		
3	M	121	Total	C	N	O	S	0	0
			787	498	141	144	4		

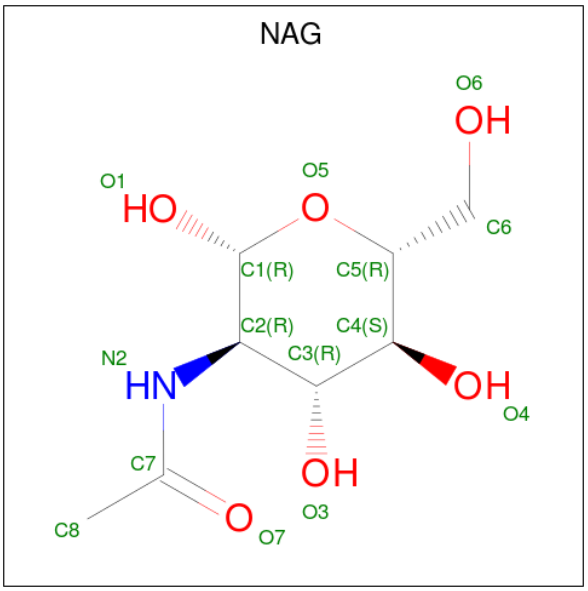
- Molecule 4 is a protein called S309 Fab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	G	128	Total	C	N	O	S	0	0
			632	374	128	128	2		
4	H	128	Total	C	N	O	S	0	0
			632	374	128	128	2		
4	N	128	Total	C	N	O	S	0	0
			632	374	128	128	2		

- Molecule 5 is a protein called S309 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	I	100	Total	C	N	O	S	0	0
			501	299	100	100	2		
5	J	100	Total	C	N	O	S	0	0
			501	299	100	100	2		
5	O	100	Total	C	N	O	S	0	0
			501	299	100	100	2		

- Molecule 6 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms				AltConf
6	A	1	Total	C	N	O	0
			238	136	17	85	
6	A	1	Total	C	N	O	0
			238	136	17	85	

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Mol	Chain	Residues	Atoms				AltConf
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	A	1	Total 238	C 136	N 17	O 85	0
6	D	1	Total 238	C 136	N 17	O 85	0
6	D	1	Total 238	C 136	N 17	O 85	0
6	D	1	Total 238	C 136	N 17	O 85	0
6	D	1	Total 238	C 136	N 17	O 85	0
6	D	1	Total 238	C 136	N 17	O 85	0
6	D	1	Total 238	C 136	N 17	O 85	0

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Mol	Chain	Residues	Atoms	AltConf
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	D	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0
6	K	1	Total C N O 238 136 17 85	0

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Mol	Chain	Residues	Atoms				AltConf
6	K	1	Total 238	C 136	N 17	O 85	0
6	K	1	Total 238	C 136	N 17	O 85	0
6	K	1	Total 238	C 136	N 17	O 85	0
6	K	1	Total 238	C 136	N 17	O 85	0
6	K	1	Total 238	C 136	N 17	O 85	0
6	K	1	Total 238	C 136	N 17	O 85	0
6	K	1	Total 238	C 136	N 17	O 85	0

- Molecule 7 is water.

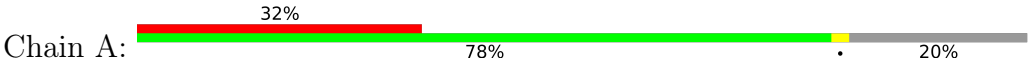
Mol	Chain	Residues	Atoms		AltConf
7	A	142	Total 142	O 142	0
7	D	142	Total 142	O 142	0
7	K	142	Total 142	O 142	0

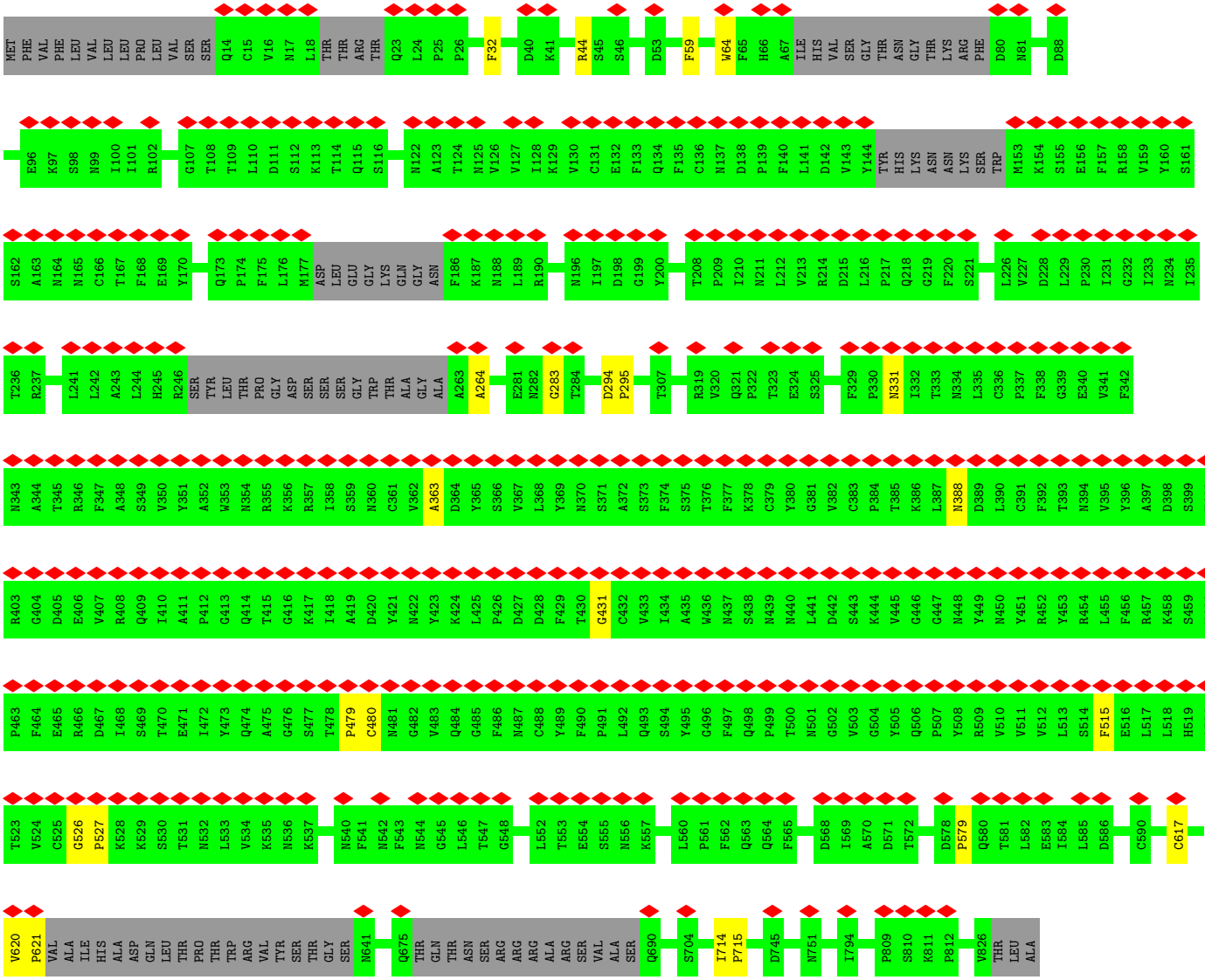
3 Residue-property plots (i)

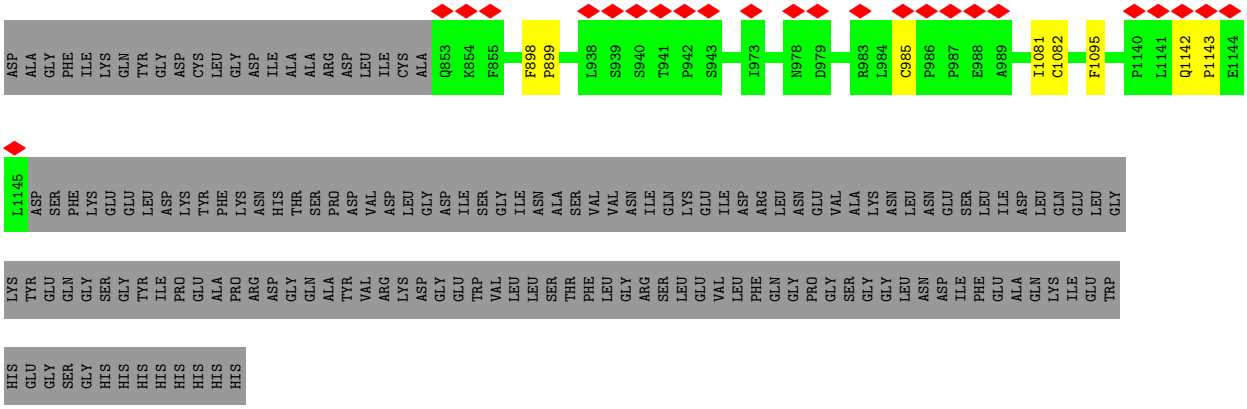
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Spike glycoprotein

Chain A:

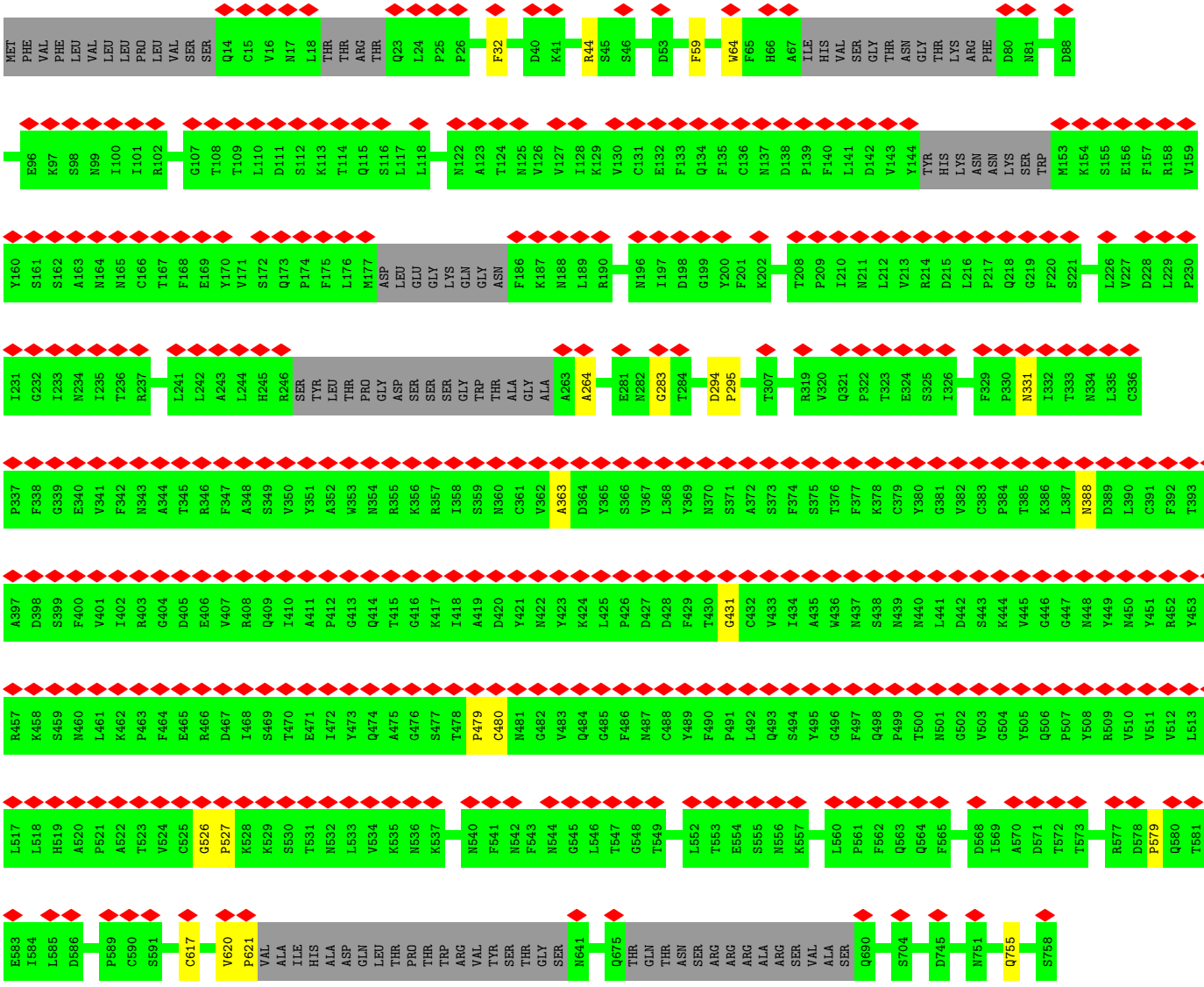


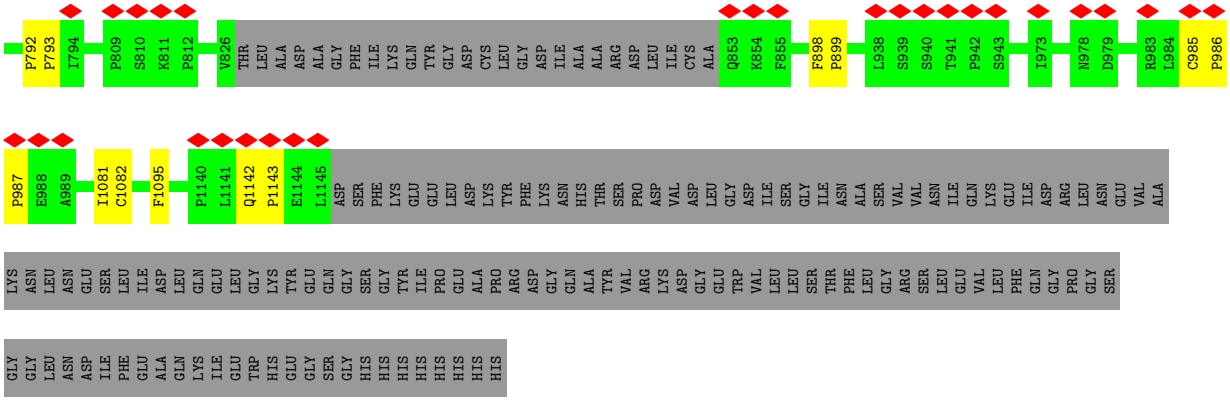




• Molecule 1: Spike glycoprotein

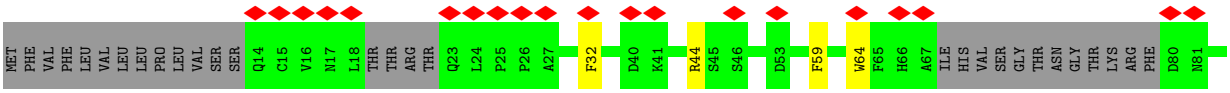
Chain D:

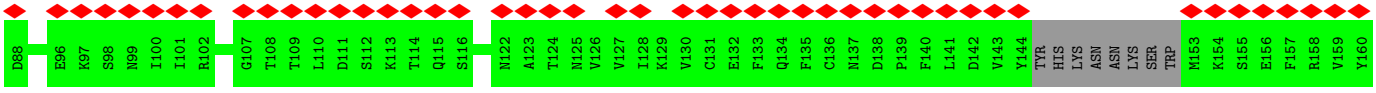


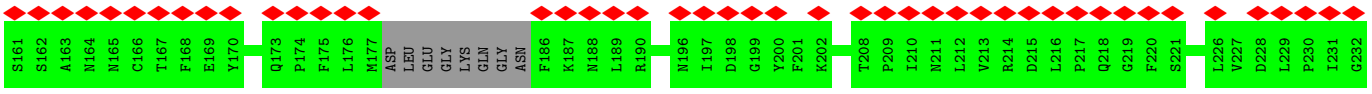


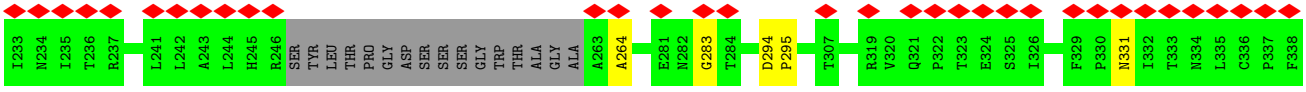
• Molecule 1: Spike glycoprotein

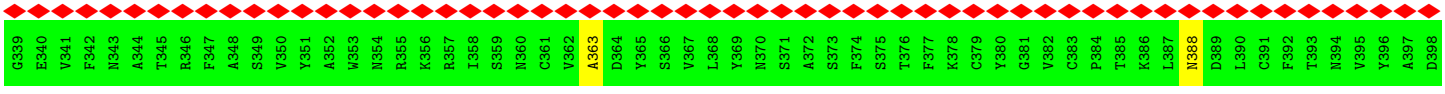
Chain K:

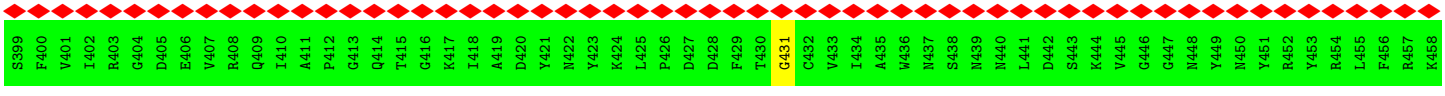


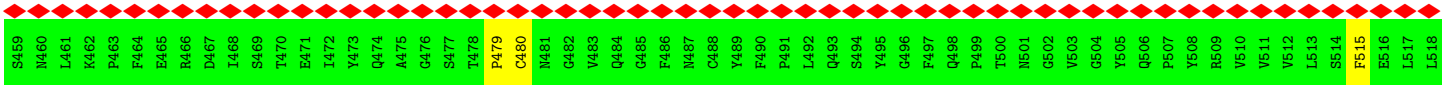


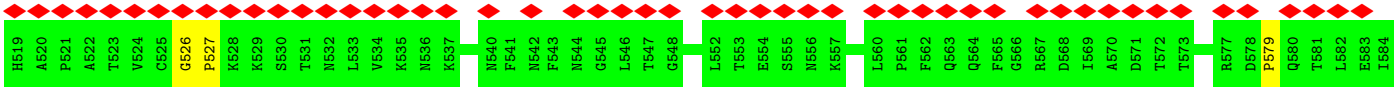


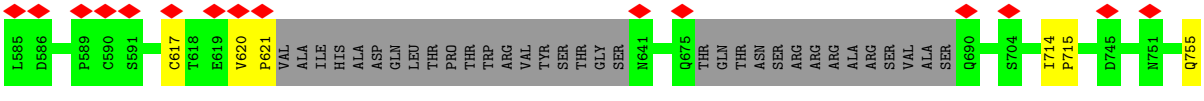


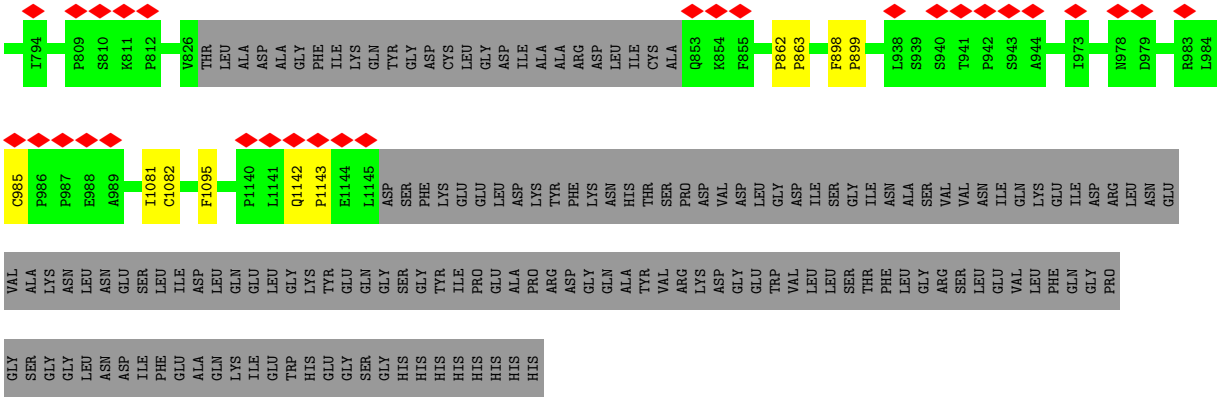






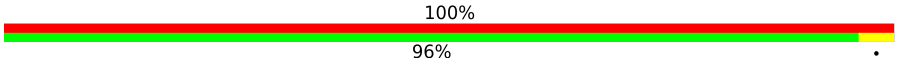


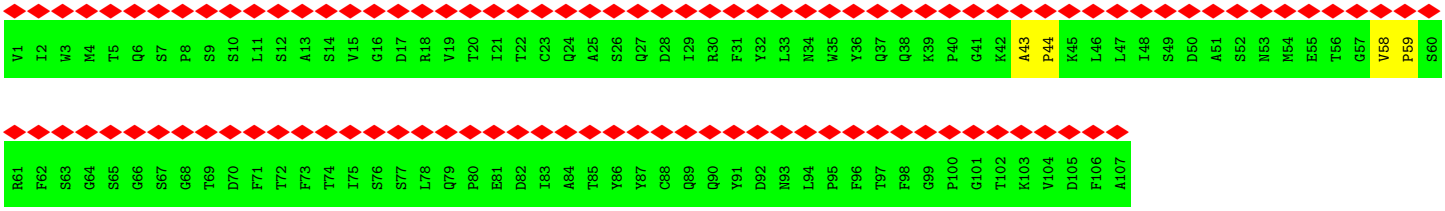




• Molecule 2: S2L20 Fab light chain

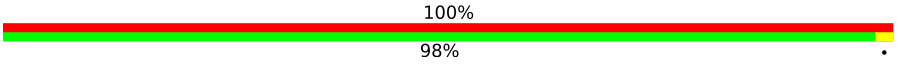
Chain B:





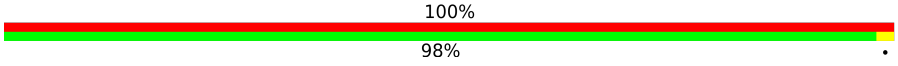
• Molecule 2: S2L20 Fab light chain

Chain E:



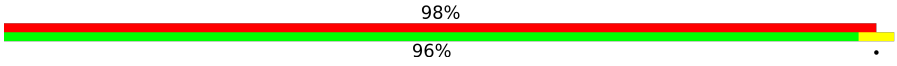
• Molecule 2: S2L20 Fab light chain

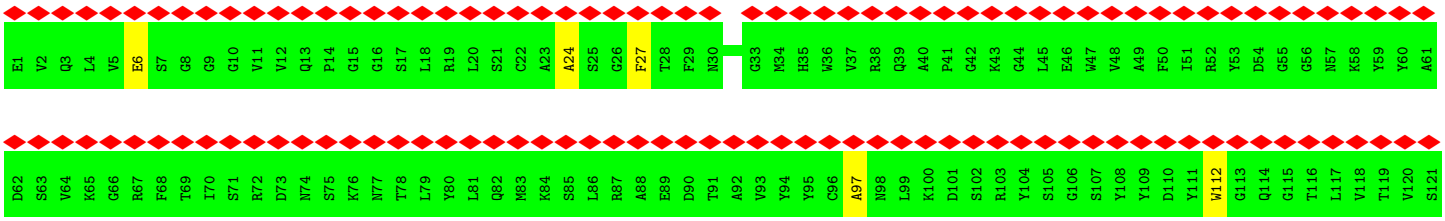
Chain L:



• Molecule 3: S2L20 Fab heavy chain

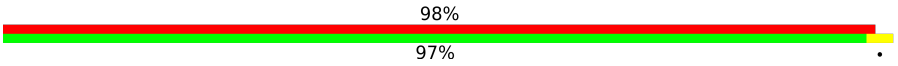
Chain C:

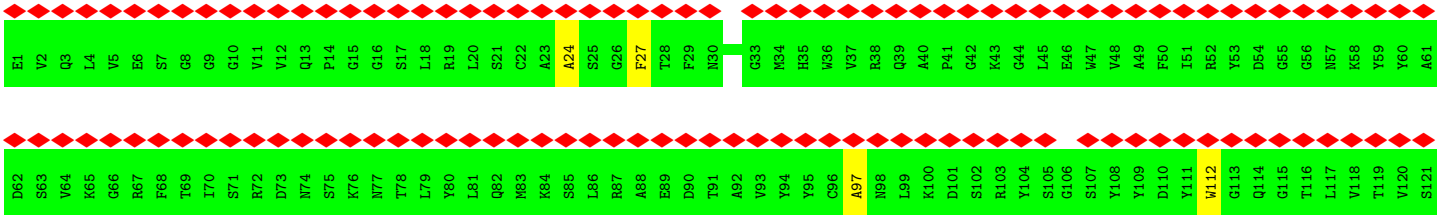




• Molecule 3: S2L20 Fab heavy chain

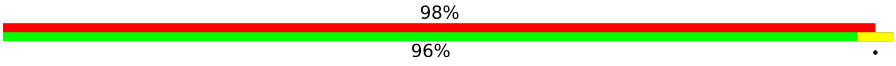
Chain F:

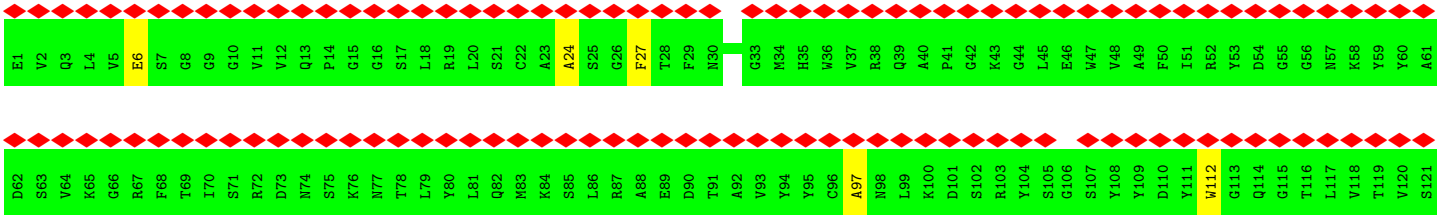




• Molecule 3: S2L20 Fab heavy chain

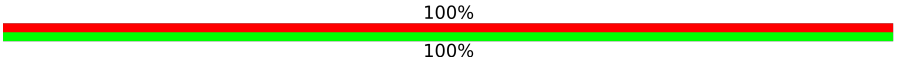
Chain M:

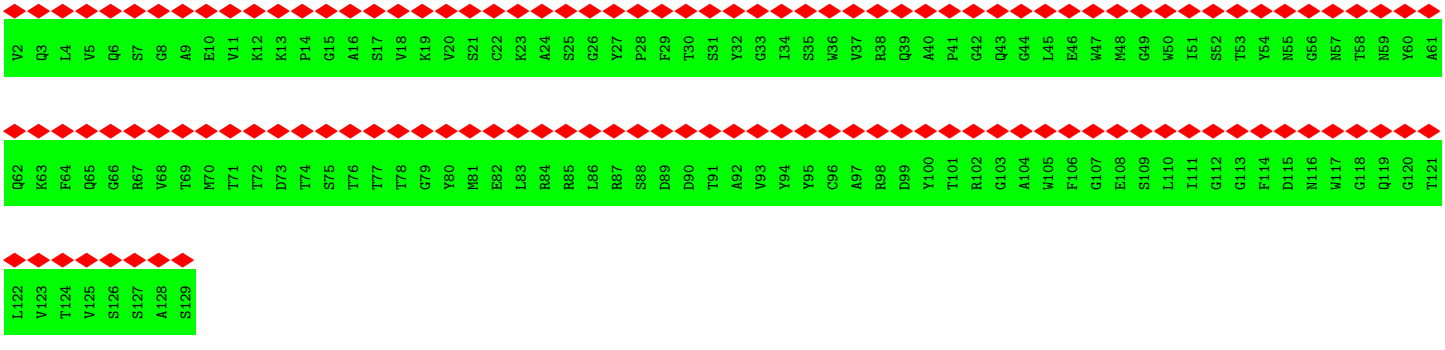




• Molecule 4: S309 Fab heavy chain

Chain G:





• Molecule 4: S309 Fab heavy chain

Chain H:

V2 Q3 L4 V5 Q6 S7 G8 A9 E10 V11 K12 K13 P14 G15 A16 S17 V18 K19 V20 S21 C22 K23 A24 S25 G26 Y27 P28 F29 T30 S31 Y32 G33 I34 S35 W36 V37 R38 Q39 A40 P41 G42 Q43 G44 L45 E46 W47 M48 G49 W50 I51 S52 T53 Y54 N55 G56 N57 T58 N59 Y60 A61

Q62 K63 F64 Q65 G66 R67 V68 T69 M70 T71 T72 D73 T74 S75 T76 T77 T78 G79 Y80 M81 E82 L83 R84 R85 L86 R87 S88 D89 D90 T91 A92 V93 Y94 Y95 C96 A97 R98 D99 Y100 T101 R102 G103 A104 W105 F106 G107 E108 S109 L110 I111 G112 G113 F114 D115 N116 W117 G118 Q119 G120 T121

L122 V123 T124 V125 S126 S127 A128 S129

- Molecule 4: S309 Fab heavy chain

Chain N:

V2 Q3 L4 V5 Q6 S7 G8 A9 E10 V11 K12 K13 P14 G15 A16 S17 V18 K19 V20 S21 C22 K23 A24 S25 G26 Y27 P28 F29 T30 S31 Y32 G33 I34 S35 W36 V37 R38 Q39 A40 P41 G42 Q43 G44 L45 E46 W47 M48 G49 W50 I51 S52 T53 Y54 N55 G56 N57 T58 N59 Y60 A61

Q62 K63 F64 Q65 G66 R67 V68 T69 M70 T71 T72 D73 T74 S75 T76 T77 T78 G79 Y80 M81 E82 L83 R84 R85 L86 R87 S88 D89 D90 T91 A92 V93 Y94 Y95 C96 A97 R98 D99 Y100 T101 R102 G103 A104 W105 F106 G107 E108 S109 L110 I111 G112 G113 F114 D115 N116 W117 G118 Q119 G120 T121

L122 V123 T124 V125 S126 S127 A128 S129

- Molecule 5: S309 Fab light chain

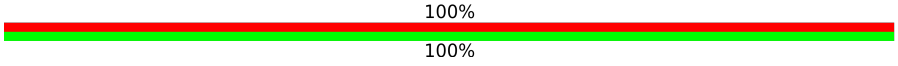
Chain I:

V3 L4 T5 Q6 S7 P8 G9 T10 L11 S12 L13 S14 P15 G16 E17 R18 A19 T20 L21 S22 C23 R24 A25 S26 Q27 T28 V29 S30 S31 T32 S33 L34 A35 W36 Y37 Q38 Q39 K40 P41 G42 Q43 A44 P45 R46 L47 L48 I49 Y50 G51 A52 S53 S54 R55 A56 T57 G58 I59 P60 D61 R62

F63 S64 G65 S66 G67 S68 G69 T70 D71 F72 T73 L74 T75 I76 S77 R78 L79 E80 P81 E82 D83 F84 A85 V86 Y87 Y88 C89 Q90 Q91 H92 D93 T94 S95 L96 T97 F98 G99 G100 G101 T102

- Molecule 5: S309 Fab light chain

Chain J:

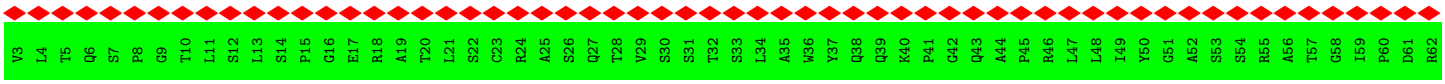


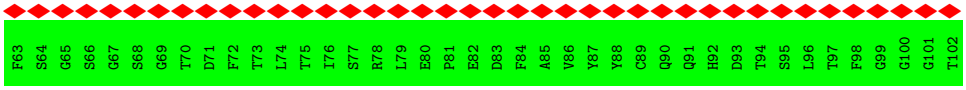
V3 L4 T5 Q6 S7 P8 G9 T10 L11 S12 L13 S14 P15 G16 E17 R18 A19 T20 L21 S22 C23 R24 A25 S26 Q27 T28 V29 S30 S31 T32 S33 L34 A35 W36 Y37 Q38 Q39 K40 P41 G42 Q43 A44 P45 R46 L47 L48 I49 Y50 G51 A52 S53 S54 R55 A56 T57 G58 I59 P60 D61 R62

F63 S64 G65 S66 G67 S68 G69 T70 D71 F72 T73 L74 T75 I76 S77 R78 L79 E80 P81 E82 D83 F84 A85 V86 Y87 Y88 C89 Q90 Q91 H92 D93 T94 S95 L96 T97 F98 G99 G100 G101 T102

- Molecule 5: S309 Fab light chain

Chain O:


V3 L4 T5 Q6 S7 P8 G9 T10 L11 S12 L13 S14 P15 G16 E17 R18 A19 T20 L21 S22 C23 R24 A25 S26 Q27 T28 V29 S30 S31 T32 S33 L34 A35 W36 Y37 Q38 Q39 K40 P41 G42 Q43 A44 P45 R46 L47 L48 I49 Y50 G51 A52 S53 S54 R55 A56 T57 G58 I59 P60 D61 R62


F63 S64 G65 S66 G67 S68 G69 T70 D71 F72 T73 L74 T75 I76 S77 R78 L79 E80 P81 E82 D83 F84 A85 V86 Y87 Y88 C89 Q90 Q91 H92 D93 T94 S95 L96 T97 F98 G99 G100 G101 T102

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	244939	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	63	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	8.672	Depositor
Minimum map value	-6.194	Depositor
Average map value	0.004	Depositor
Map value standard deviation	0.080	Depositor
Recommended contour level	1.0	Depositor
Map size (Å)	431.616, 431.616, 431.616	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.843, 0.843, 0.843	Depositor

5 Model quality

5.1 Standard geometry

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	0.63	6/7288 (0.1%)	0.57	4/9994 (0.0%)
1	D	0.63	6/7288 (0.1%)	0.57	4/9994 (0.0%)
1	K	0.63	6/7288 (0.1%)	0.57	4/9994 (0.0%)
2	B	0.53	0/568	0.50	0/792
2	E	0.53	0/568	0.50	0/792
2	L	0.53	0/568	0.50	0/792
3	C	0.55	0/806	0.53	0/1103
3	F	0.55	0/806	0.54	0/1103
3	M	0.55	0/806	0.53	0/1103
4	G	0.36	0/634	0.43	0/878
4	H	0.37	0/634	0.43	0/878
4	N	0.36	0/634	0.43	0/878
5	I	0.40	0/505	0.47	0/702
5	J	0.40	0/505	0.47	0/702
5	O	0.40	0/505	0.47	0/702
All	All	0.59	18/29403 (0.1%)	0.55	12/40407 (0.0%)

The worst 5 of 18 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	985	CYS	N-CA	10.19	1.66	1.46
1	K	985	CYS	N-CA	10.18	1.66	1.46
1	A	985	CYS	N-CA	10.16	1.66	1.46
1	K	1082	CYS	C-O	8.11	1.38	1.23
1	A	1082	CYS	C-O	8.09	1.38	1.23

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	K	480	CYS	N-CA-CB	-6.81	98.34	110.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	480	CYS	N-CA-CB	-6.81	98.34	110.60
1	D	480	CYS	N-CA-CB	-6.81	98.34	110.60
1	A	479	PRO	N-CA-CB	-6.45	95.51	102.60
1	D	479	PRO	N-CA-CB	-6.43	95.53	102.60

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	7140	0	6279	16	0
1	D	7140	0	6279	18	0
1	K	7140	0	6279	18	0
2	B	560	0	301	2	0
2	E	560	0	301	1	0
2	L	560	0	301	1	0
3	C	787	0	590	3	0
3	F	787	0	590	2	0
3	M	787	0	590	3	0
4	G	632	0	317	0	0
4	H	632	0	317	0	0
4	N	632	0	317	0	0
5	I	501	0	259	2	0
5	J	501	0	259	0	0
5	O	501	0	259	0	0
6	A	238	0	221	1	0
6	D	238	0	221	1	0
6	K	238	0	221	1	0
7	A	142	0	0	0	0
7	D	142	0	0	0	0
7	K	142	0	0	0	0
All	All	30000	0	23901	66	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 1.

The worst 5 of 66 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)
3:F:24:ALA:HB1	3:F:27:PHE:CZ	2.43	0.53
3:M:24:ALA:HB1	3:M:27:PHE:CZ	2.43	0.53
3:C:24:ALA:HB1	3:C:27:PHE:CZ	2.43	0.53
1:A:363:ALA:O	1:A:527:PRO:HD3	2.11	0.51
1:D:363:ALA:O	1:D:527:PRO:HD3	2.11	0.51

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	1007/1277 (79%)	989 (98%)	18 (2%)	0	100	100
1	D	1007/1277 (79%)	989 (98%)	18 (2%)	0	100	100
1	K	1007/1277 (79%)	989 (98%)	18 (2%)	0	100	100
2	B	105/107 (98%)	102 (97%)	3 (3%)	0	100	100
2	E	105/107 (98%)	102 (97%)	3 (3%)	0	100	100
2	L	105/107 (98%)	102 (97%)	3 (3%)	0	100	100
3	C	119/121 (98%)	118 (99%)	1 (1%)	0	100	100
3	F	119/121 (98%)	118 (99%)	1 (1%)	0	100	100
3	M	119/121 (98%)	118 (99%)	1 (1%)	0	100	100
4	G	126/128 (98%)	123 (98%)	3 (2%)	0	100	100
4	H	126/128 (98%)	123 (98%)	3 (2%)	0	100	100
4	N	126/128 (98%)	123 (98%)	3 (2%)	0	100	100
5	I	98/100 (98%)	96 (98%)	2 (2%)	0	100	100
5	J	98/100 (98%)	96 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	O	98/100 (98%)	96 (98%)	2 (2%)	0	100	100
All	All	4365/5199 (84%)	4284 (98%)	81 (2%)	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	651/1112 (58%)	651 (100%)	0	100	100
1	D	651/1112 (58%)	651 (100%)	0	100	100
1	K	651/1112 (58%)	651 (100%)	0	100	100
2	B	12/93 (13%)	12 (100%)	0	100	100
2	E	12/93 (13%)	12 (100%)	0	100	100
2	L	12/93 (13%)	12 (100%)	0	100	100
3	C	47/98 (48%)	47 (100%)	0	100	100
3	F	47/98 (48%)	47 (100%)	0	100	100
3	M	47/98 (48%)	47 (100%)	0	100	100
4	G	5/103 (5%)	5 (100%)	0	100	100
4	H	5/103 (5%)	5 (100%)	0	100	100
4	N	5/103 (5%)	5 (100%)	0	100	100
5	I	7/82 (8%)	7 (100%)	0	100	100
5	J	7/82 (8%)	7 (100%)	0	100	100
5	O	7/82 (8%)	7 (100%)	0	100	100
All	All	2166/4464 (48%)	2166 (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. 5 of 9 such sidechains are listed below:

Mol	Chain	Res	Type
1	K	755	GLN
1	K	1010	GLN
1	D	655	HIS
1	D	755	GLN
1	D	1010	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 monosaccharides in this entry.

5.6 Ligand geometry (i)

51 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	$\#\|Z\| > 2$
6	NAG	D	1308	1	14,14,15	1.43	1 (7%)	17,19,21	1.24	2 (11%)
6	NAG	A	1310	1	14,14,15	1.46	1 (7%)	17,19,21	1.27	2 (11%)
6	NAG	D	1317	1	14,14,15	1.42	1 (7%)	17,19,21	1.38	3 (17%)
6	NAG	A	1314	1	14,14,15	1.60	1 (7%)	17,19,21	1.23	1 (5%)
6	NAG	A	1317	1	14,14,15	1.42	1 (7%)	17,19,21	1.38	3 (17%)
6	NAG	A	1303	1	14,14,15	1.49	1 (7%)	17,19,21	1.15	1 (5%)
6	NAG	D	1309	1	14,14,15	1.39	1 (7%)	17,19,21	1.22	2 (11%)
6	NAG	K	1313	1	14,14,15	1.40	2 (14%)	17,19,21	1.27	3 (17%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	NAG	K	1305	1	14,14,15	1.39	2 (14%)	17,19,21	1.24	3 (17%)
6	NAG	A	1306	1	14,14,15	1.41	1 (7%)	17,19,21	1.20	1 (5%)
6	NAG	D	1310	1	14,14,15	1.46	1 (7%)	17,19,21	1.27	2 (11%)
6	NAG	D	1304	1	14,14,15	1.37	2 (14%)	17,19,21	1.06	2 (11%)
6	NAG	A	1307	1	14,14,15	1.41	1 (7%)	17,19,21	1.24	2 (11%)
6	NAG	D	1306	1	14,14,15	1.41	1 (7%)	17,19,21	1.20	1 (5%)
6	NAG	D	1313	1	14,14,15	1.40	2 (14%)	17,19,21	1.27	3 (17%)
6	NAG	K	1303	1	14,14,15	1.50	1 (7%)	17,19,21	1.15	1 (5%)
6	NAG	D	1314	1	14,14,15	1.59	1 (7%)	17,19,21	1.23	1 (5%)
6	NAG	K	1308	1	14,14,15	1.43	1 (7%)	17,19,21	1.24	2 (11%)
6	NAG	D	1316	1	14,14,15	1.37	2 (14%)	17,19,21	1.26	3 (17%)
6	NAG	A	1309	1	14,14,15	1.40	1 (7%)	17,19,21	1.23	2 (11%)
6	NAG	K	1310	1	14,14,15	1.45	1 (7%)	17,19,21	1.26	2 (11%)
6	NAG	D	1302	1	14,14,15	1.41	1 (7%)	17,19,21	1.14	2 (11%)
6	NAG	K	1307	1	14,14,15	1.41	1 (7%)	17,19,21	1.24	2 (11%)
6	NAG	A	1311	1	14,14,15	1.36	1 (7%)	17,19,21	1.29	3 (17%)
6	NAG	A	1304	1	14,14,15	1.36	2 (14%)	17,19,21	1.05	2 (11%)
6	NAG	D	1312	1	14,14,15	1.43	1 (7%)	17,19,21	1.19	2 (11%)
6	NAG	K	1301	1	14,14,15	1.39	3 (21%)	17,19,21	1.55	3 (17%)
6	NAG	A	1301	1	14,14,15	1.39	3 (21%)	17,19,21	1.56	3 (17%)
6	NAG	D	1305	1	14,14,15	1.39	2 (14%)	17,19,21	1.23	3 (17%)
6	NAG	K	1316	1	14,14,15	1.37	2 (14%)	17,19,21	1.26	3 (17%)
6	NAG	A	1316	1	14,14,15	1.37	2 (14%)	17,19,21	1.26	3 (17%)
6	NAG	K	1304	1	14,14,15	1.37	2 (14%)	17,19,21	1.05	2 (11%)
6	NAG	D	1307	1	14,14,15	1.40	1 (7%)	17,19,21	1.24	2 (11%)
6	NAG	A	1315	1	14,14,15	1.44	1 (7%)	17,19,21	1.18	2 (11%)
6	NAG	A	1302	1	14,14,15	1.40	1 (7%)	17,19,21	1.14	2 (11%)
6	NAG	A	1313	1	14,14,15	1.40	2 (14%)	17,19,21	1.27	3 (17%)
6	NAG	A	1312	1	14,14,15	1.42	1 (7%)	17,19,21	1.19	2 (11%)
6	NAG	K	1309	1	14,14,15	1.40	1 (7%)	17,19,21	1.23	2 (11%)
6	NAG	K	1317	1	14,14,15	1.42	1 (7%)	17,19,21	1.38	3 (17%)
6	NAG	K	1315	1	14,14,15	1.45	1 (7%)	17,19,21	1.17	2 (11%)
6	NAG	K	1306	1	14,14,15	1.41	1 (7%)	17,19,21	1.20	1 (5%)
6	NAG	K	1302	1	14,14,15	1.41	1 (7%)	17,19,21	1.14	2 (11%)
6	NAG	D	1311	1	14,14,15	1.36	1 (7%)	17,19,21	1.29	3 (17%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	NAG	A	1308	1	14,14,15	1.43	1 (7%)	17,19,21	1.24	2 (11%)
6	NAG	D	1315	1	14,14,15	1.44	1 (7%)	17,19,21	1.18	2 (11%)
6	NAG	K	1314	1	14,14,15	1.59	1 (7%)	17,19,21	1.24	1 (5%)
6	NAG	A	1305	1	14,14,15	1.39	2 (14%)	17,19,21	1.24	3 (17%)
6	NAG	D	1303	1	14,14,15	1.50	1 (7%)	17,19,21	1.15	1 (5%)
6	NAG	D	1301	1	14,14,15	1.40	3 (21%)	17,19,21	1.56	3 (17%)
6	NAG	K	1312	1	14,14,15	1.42	1 (7%)	17,19,21	1.19	2 (11%)
6	NAG	K	1311	1	14,14,15	1.37	1 (7%)	17,19,21	1.29	3 (17%)

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
6	NAG	D	1308	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1310	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1317	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1314	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1317	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1303	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1309	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1313	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1305	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1306	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1310	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1304	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1307	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1306	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1313	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1303	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1314	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1308	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1316	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1309	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1310	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1302	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1307	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1311	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1304	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1312	1	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	K	1301	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1301	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1305	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1316	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1316	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1304	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1307	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1315	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1302	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1313	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1312	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1309	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1317	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1315	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1306	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1302	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1311	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1308	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1315	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1314	1	-	0/6/23/26	0/1/1/1
6	NAG	A	1305	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1303	1	-	0/6/23/26	0/1/1/1
6	NAG	D	1301	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1312	1	-	0/6/23/26	0/1/1/1
6	NAG	K	1311	1	-	0/6/23/26	0/1/1/1

The worst 5 of 69 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	A	1314	NAG	C1-C2	5.50	1.60	1.52
6	K	1314	NAG	C1-C2	5.49	1.60	1.52
6	D	1314	NAG	C1-C2	5.48	1.60	1.52
6	D	1310	NAG	C1-C2	5.10	1.60	1.52
6	K	1303	NAG	C1-C2	5.09	1.59	1.52

The worst 5 of 111 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	D	1301	NAG	C1-C2-N2	3.66	116.74	110.49
6	A	1301	NAG	C1-C2-N2	3.65	116.72	110.49
6	K	1301	NAG	C1-C2-N2	3.64	116.70	110.49
6	D	1317	NAG	C8-C7-N2	2.89	120.99	116.10

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	A	1317	NAG	C8-C7-N2	2.88	120.98	116.10

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	K	1301	NAG	1	0
6	A	1301	NAG	1	0
6	D	1301	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.

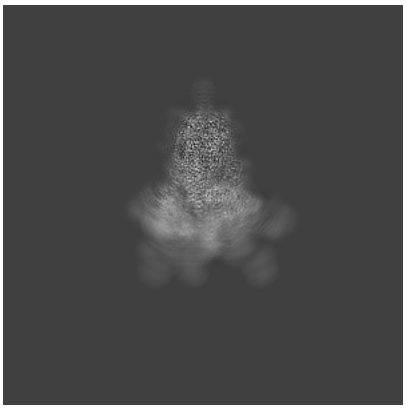
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-25265. These allow visual inspection of the internal detail of the map and identification of artifacts.

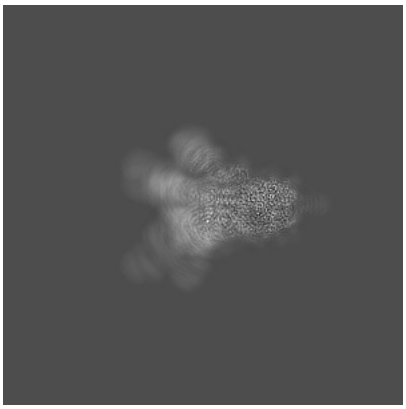
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

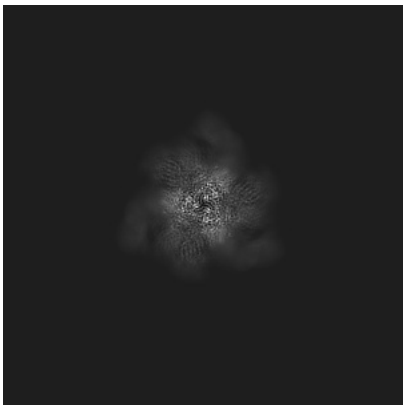
6.1.1 Primary map



X

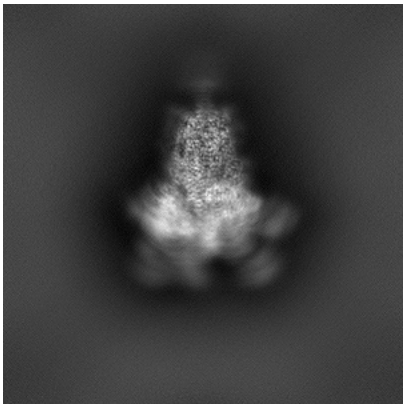


Y

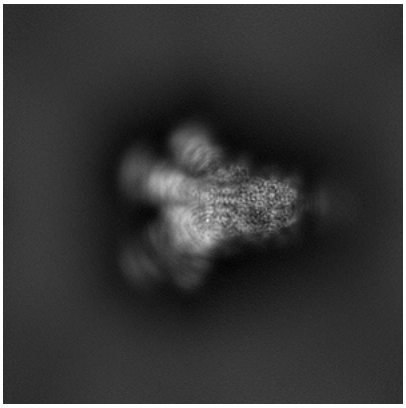


Z

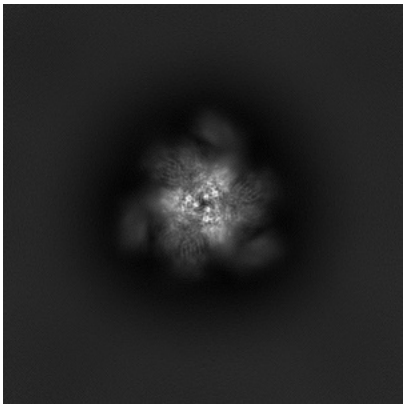
6.1.2 Raw map



X



Y

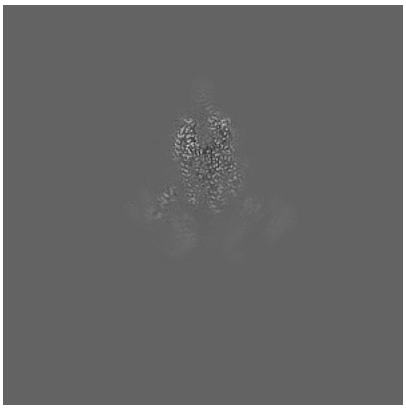


Z

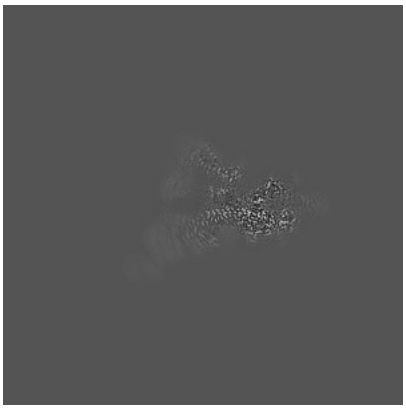
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

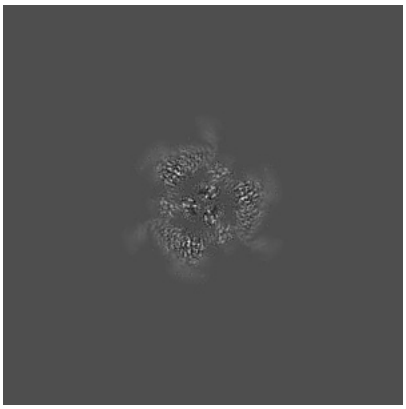
6.2.1 Primary map



X Index: 256

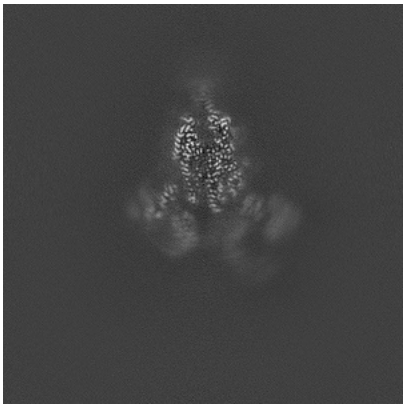


Y Index: 256

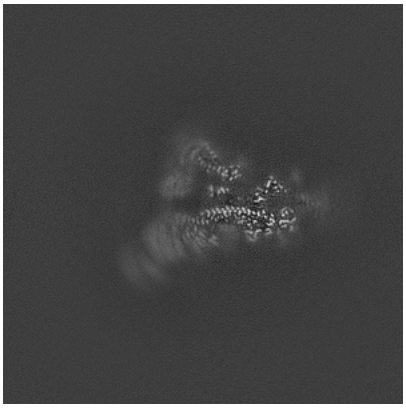


Z Index: 256

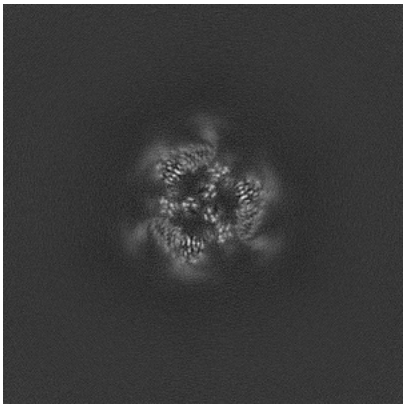
6.2.2 Raw map



X Index: 256



Y Index: 256



Z Index: 256

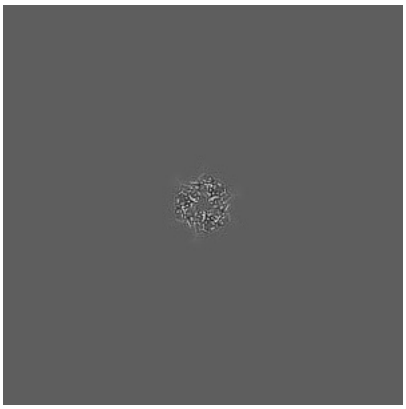
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map

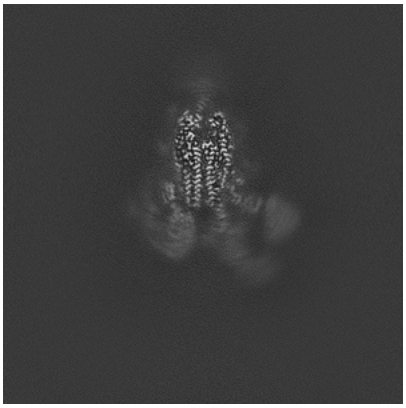
X Index: 262

Y Index: 248

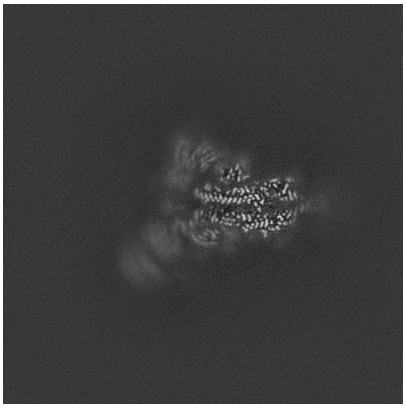


Z Index: 344

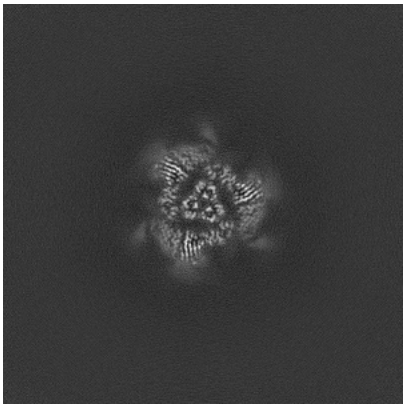
6.3.2 Raw map



X Index: 262



Y Index: 248



Z Index: 261

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 1.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 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.

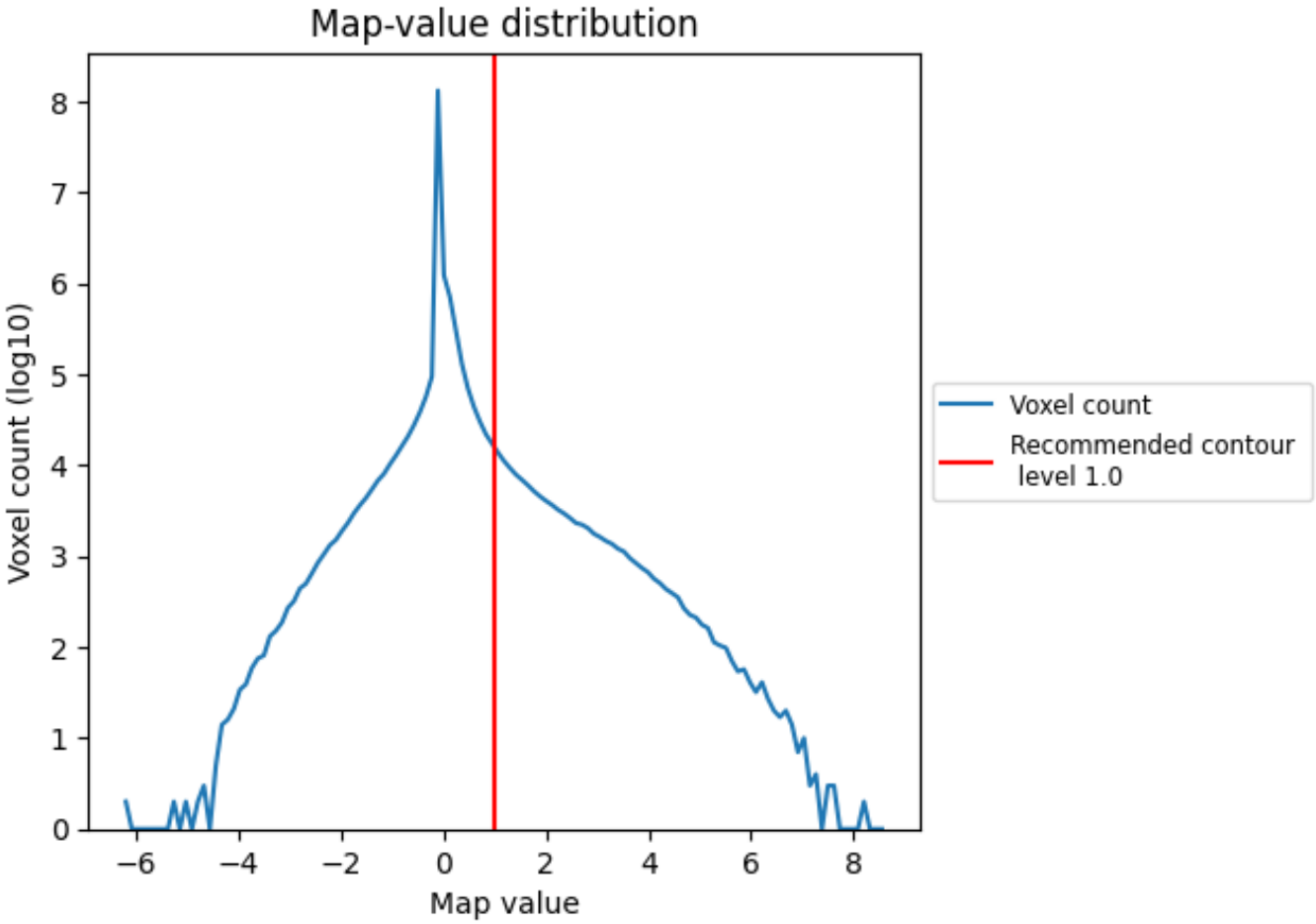
6.5 Mask visualisation (i)

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

7 Map analysis

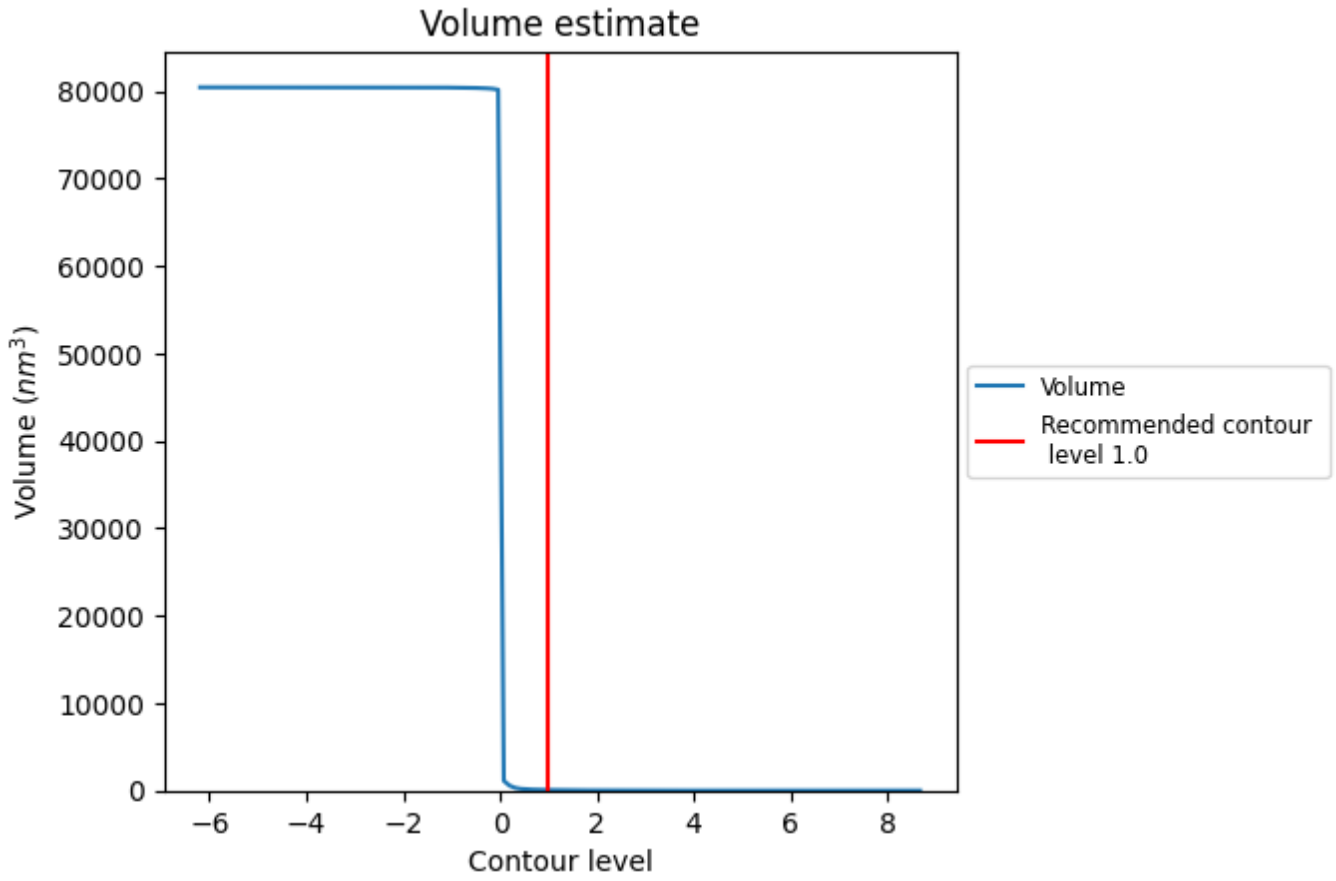
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

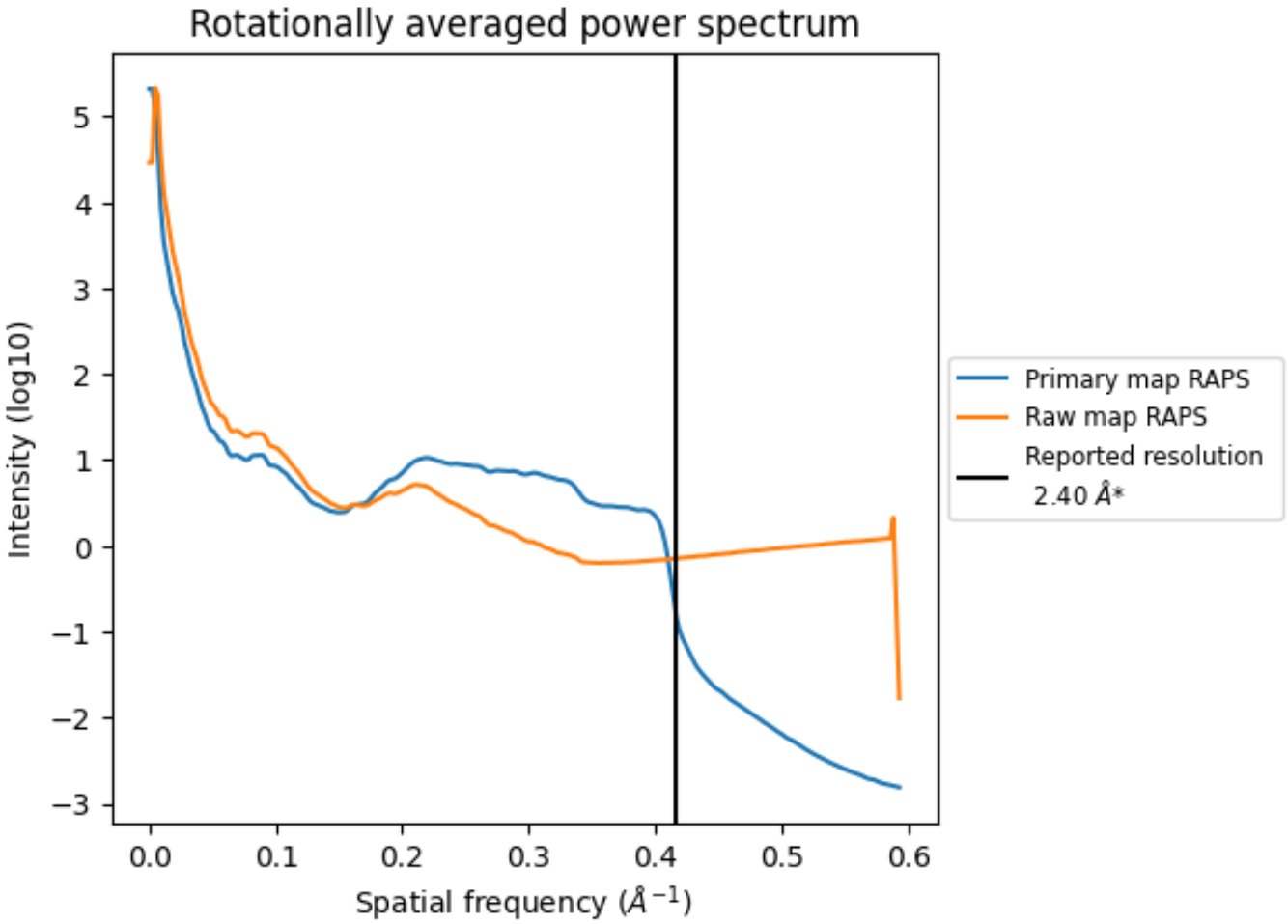
7.2 Volume estimate (i)



The volume at the recommended contour level is 67 nm^3; this corresponds to an approximate mass of 61 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)

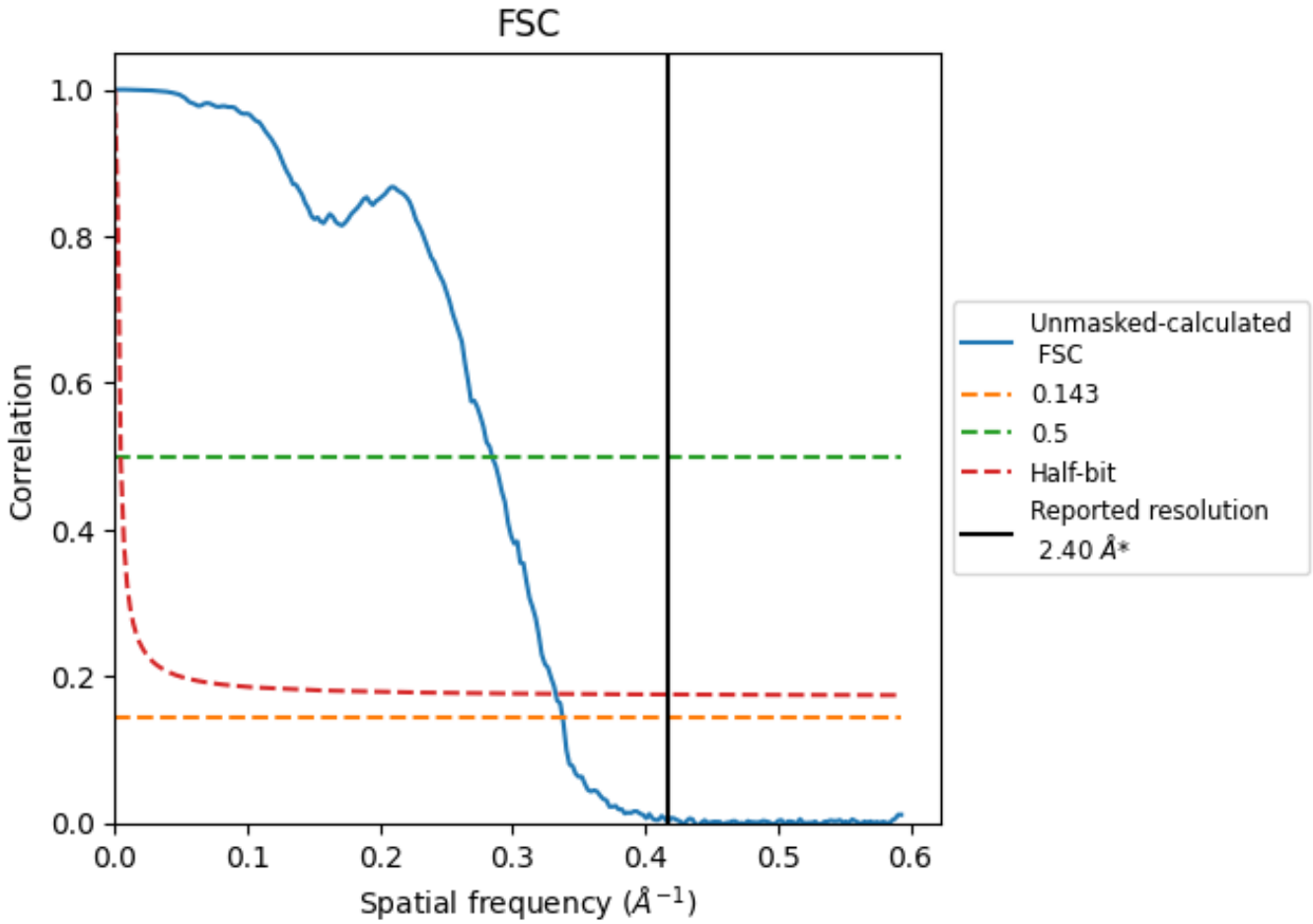


*Reported resolution corresponds to spatial frequency of 0.417 Å^{-1}

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 0.417 Å^{-1}

8.2 Resolution estimates (i)

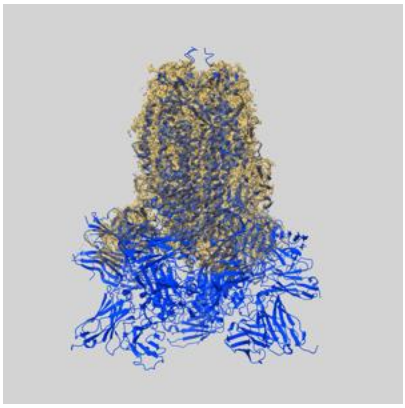
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.40	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	2.96	3.51	3.01

*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 2.96 differs from the reported value 2.4 by more than 10 %

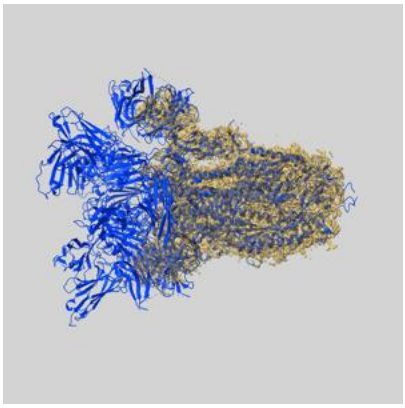
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-25265 and PDB model 7SOB. Per-residue inclusion information can be found in section 3 on page 15.

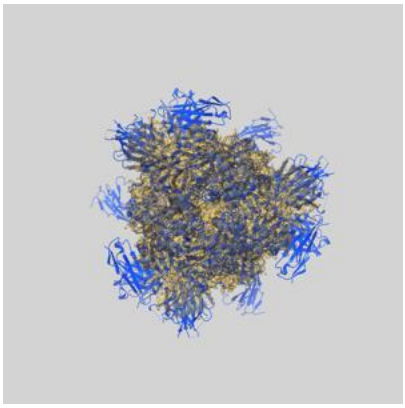
9.1 Map-model overlay



X



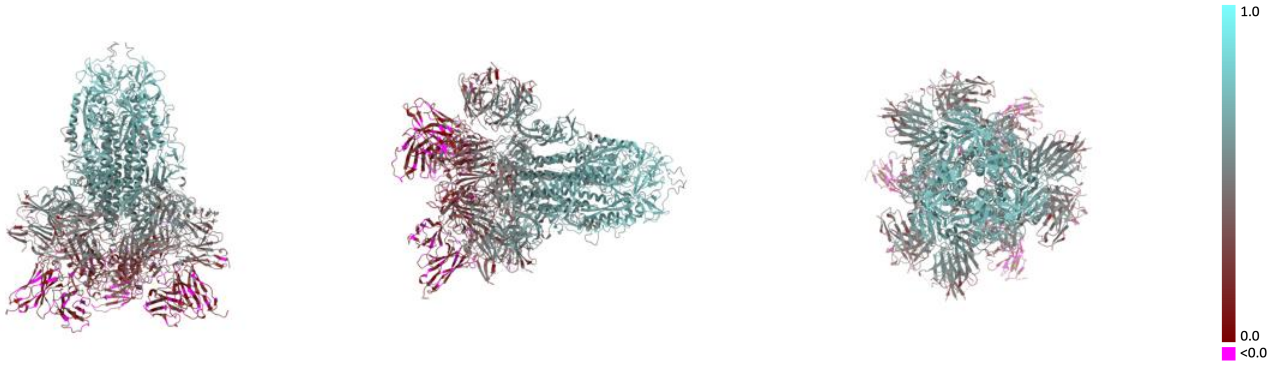
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 1.0 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.

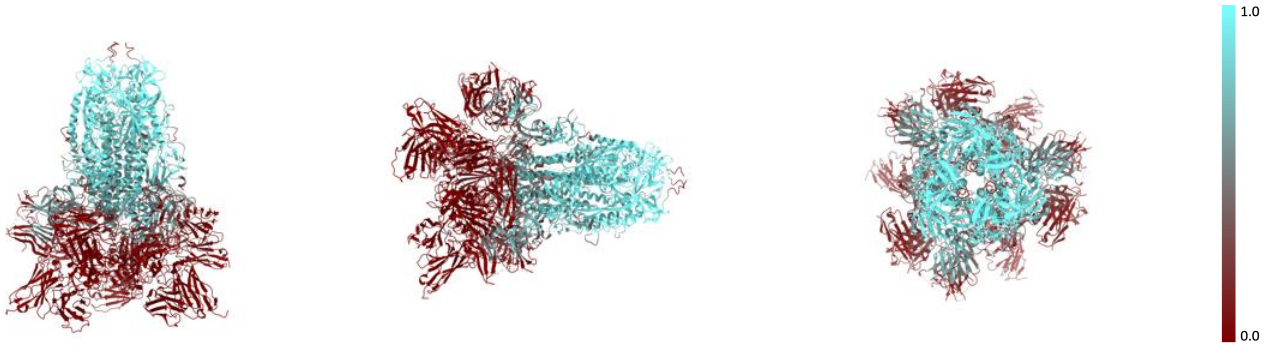
9.2 Q-score mapped to coordinate model (i)



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.

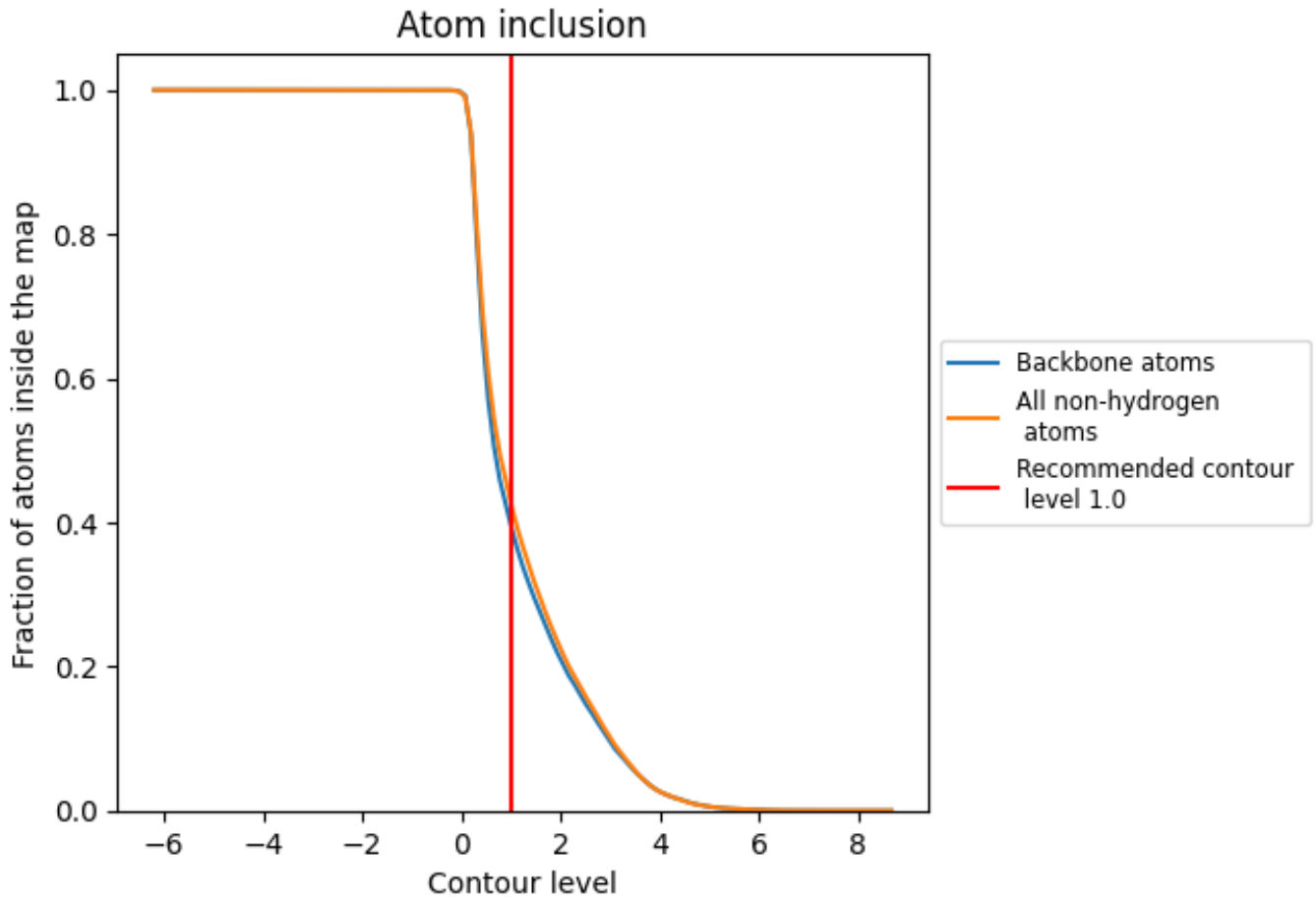
9.3 Atom inclusion mapped to coordinate model (i)



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 (1.0).

9.4 Atom inclusion (i)



At the recommended contour level, 40% of all backbone atoms, 43% 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 (1.0) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4261	0.4830
A	0.5666	0.5490
B	0.0000	0.3530
C	0.0506	0.4350
D	0.5657	0.5490
E	0.0000	0.3490
F	0.0558	0.4310
G	0.0000	0.1570
H	0.0000	0.1540
I	0.0000	0.1370
J	0.0000	0.1420
K	0.5652	0.5500
L	0.0000	0.3510
M	0.0506	0.4350
N	0.0000	0.1510
O	0.0000	0.1370