



## wwPDB EM Validation Summary Report ⓘ

Dec 31, 2024 – 10:04 PM EST

PDB ID : 8Q5Y  
EMDB ID : EMD-18180  
Title : cryoEM structure of SARS-CoV2 Spike trimer in complex with Fab23  
Authors : Hallberg, M.; Das, H.  
Deposited on : 2023-08-10  
Resolution : 2.60 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](mailto: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  
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) : 2.40

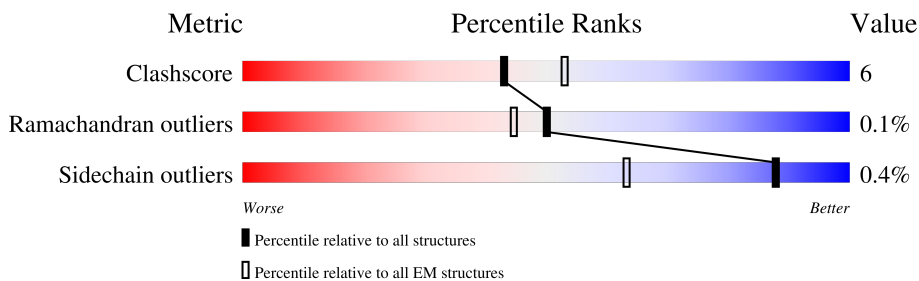
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 2.60 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  $\geq 3$ , 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	214	
1	H	214	
1	L	214	
2	B	447	
2	G	447	
2	R	447	
3	C	1288	
3	D	1288	

Continued on next page...

*Continued from previous page...*

Mol	Chain	Length	Quality of chain
3	E	1288	 <p>72% 67% 10% • 22%</p>

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 28689 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 Monoclonal antibody Mab 23 (Light chain).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	L	106	798	505	133	157	3	0	0
1	H	104	778	491	131	153	3	0	0
1	A	106	798	505	133	157	3	0	0

- Molecule 2 is a protein called Monoclonal antibody Mab 23 (Heavy Chain).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	R	115	896	567	151	174	4	0	0
2	G	115	896	567	151	174	4	0	0
2	B	116	902	570	152	176	4	0	0

- Molecule 3 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	1002	7825	4998	1300	1492	35	0	0
3	E	1001	7818	4993	1299	1491	35	0	0
3	C	1022	7978	5095	1327	1521	35	0	0

There are 267 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	682	GLY	ARG	conflict	UNP P0DTC2
D	683	SER	ARG	conflict	UNP P0DTC2
D	685	SER	ARG	conflict	UNP P0DTC2

*Continued on next page...*

*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
D	817	PRO	PHE	conflict	UNP P0DTC2
D	899	PRO	ALA	conflict	UNP P0DTC2
D	942	PRO	ALA	conflict	UNP P0DTC2
D	944	PRO	ALA	conflict	UNP P0DTC2
D	986	PRO	LYS	conflict	UNP P0DTC2
D	987	PRO	VAL	conflict	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
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

*Continued on next page...*

*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
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	HIS	-	expression tag	UNP P0DTC2
D	1251	HIS	-	expression tag	UNP P0DTC2
D	1252	HIS	-	expression tag	UNP P0DTC2
D	1253	HIS	-	expression tag	UNP P0DTC2
D	1254	HIS	-	expression tag	UNP P0DTC2
D	1255	HIS	-	expression tag	UNP P0DTC2
D	1256	HIS	-	expression tag	UNP P0DTC2
D	1257	HIS	-	expression tag	UNP P0DTC2
D	1258	SER	-	expression tag	UNP P0DTC2
D	1259	ALA	-	expression tag	UNP P0DTC2
D	1260	TRP	-	expression tag	UNP P0DTC2
D	1261	SER	-	expression tag	UNP P0DTC2
D	1262	HIS	-	expression tag	UNP P0DTC2
D	1263	PRO	-	expression tag	UNP P0DTC2
D	1264	GLN	-	expression tag	UNP P0DTC2
D	1265	PHE	-	expression tag	UNP P0DTC2
D	1266	GLU	-	expression tag	UNP P0DTC2
D	1267	LYS	-	expression tag	UNP P0DTC2
D	1268	GLY	-	expression tag	UNP P0DTC2
D	1269	GLY	-	expression tag	UNP P0DTC2
D	1270	GLY	-	expression tag	UNP P0DTC2
D	1271	SER	-	expression tag	UNP P0DTC2
D	1272	GLY	-	expression tag	UNP P0DTC2
D	1273	GLY	-	expression tag	UNP P0DTC2
D	1274	GLY	-	expression tag	UNP P0DTC2
D	1275	GLY	-	expression tag	UNP P0DTC2
D	1276	SER	-	expression tag	UNP P0DTC2
D	1277	GLY	-	expression tag	UNP P0DTC2
D	1278	GLY	-	expression tag	UNP P0DTC2
D	1279	SER	-	expression tag	UNP P0DTC2
D	1280	ALA	-	expression tag	UNP P0DTC2
D	1281	TRP	-	expression tag	UNP P0DTC2
D	1282	SER	-	expression tag	UNP P0DTC2
D	1283	HIS	-	expression tag	UNP P0DTC2
D	1284	PRO	-	expression tag	UNP P0DTC2
D	1285	GLN	-	expression tag	UNP P0DTC2
D	1286	PHE	-	expression tag	UNP P0DTC2

*Continued on next page...*

*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
D	1287	GLU	-	expression tag	UNP P0DTC2
D	1288	LYS	-	expression tag	UNP P0DTC2
E	682	GLY	ARG	conflict	UNP P0DTC2
E	683	SER	ARG	conflict	UNP P0DTC2
E	685	SER	ARG	conflict	UNP P0DTC2
E	817	PRO	PHE	conflict	UNP P0DTC2
E	899	PRO	ALA	conflict	UNP P0DTC2
E	942	PRO	ALA	conflict	UNP P0DTC2
E	944	PRO	ALA	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
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	LEU	-	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	GLY	-	expression tag	UNP P0DTC2
E	1239	ARG	-	expression tag	UNP P0DTC2

*Continued on next page...*

*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
E	1240	SER	-	expression tag	UNP P0DTC2
E	1241	LEU	-	expression tag	UNP P0DTC2
E	1242	GLU	-	expression tag	UNP P0DTC2
E	1243	VAL	-	expression tag	UNP P0DTC2
E	1244	LEU	-	expression tag	UNP P0DTC2
E	1245	PHE	-	expression tag	UNP P0DTC2
E	1246	GLN	-	expression tag	UNP P0DTC2
E	1247	GLY	-	expression tag	UNP P0DTC2
E	1248	PRO	-	expression tag	UNP P0DTC2
E	1249	GLY	-	expression tag	UNP P0DTC2
E	1250	HIS	-	expression tag	UNP P0DTC2
E	1251	HIS	-	expression tag	UNP P0DTC2
E	1252	HIS	-	expression tag	UNP P0DTC2
E	1253	HIS	-	expression tag	UNP P0DTC2
E	1254	HIS	-	expression tag	UNP P0DTC2
E	1255	HIS	-	expression tag	UNP P0DTC2
E	1256	HIS	-	expression tag	UNP P0DTC2
E	1257	HIS	-	expression tag	UNP P0DTC2
E	1258	SER	-	expression tag	UNP P0DTC2
E	1259	ALA	-	expression tag	UNP P0DTC2
E	1260	TRP	-	expression tag	UNP P0DTC2
E	1261	SER	-	expression tag	UNP P0DTC2
E	1262	HIS	-	expression tag	UNP P0DTC2
E	1263	PRO	-	expression tag	UNP P0DTC2
E	1264	GLN	-	expression tag	UNP P0DTC2
E	1265	PHE	-	expression tag	UNP P0DTC2
E	1266	GLU	-	expression tag	UNP P0DTC2
E	1267	LYS	-	expression tag	UNP P0DTC2
E	1268	GLY	-	expression tag	UNP P0DTC2
E	1269	GLY	-	expression tag	UNP P0DTC2
E	1270	GLY	-	expression tag	UNP P0DTC2
E	1271	SER	-	expression tag	UNP P0DTC2
E	1272	GLY	-	expression tag	UNP P0DTC2
E	1273	GLY	-	expression tag	UNP P0DTC2
E	1274	GLY	-	expression tag	UNP P0DTC2
E	1275	GLY	-	expression tag	UNP P0DTC2
E	1276	SER	-	expression tag	UNP P0DTC2
E	1277	GLY	-	expression tag	UNP P0DTC2
E	1278	GLY	-	expression tag	UNP P0DTC2
E	1279	SER	-	expression tag	UNP P0DTC2
E	1280	ALA	-	expression tag	UNP P0DTC2
E	1281	TRP	-	expression tag	UNP P0DTC2

*Continued on next page...*



*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
E	1282	SER	-	expression tag	UNP P0DTC2
E	1283	HIS	-	expression tag	UNP P0DTC2
E	1284	PRO	-	expression tag	UNP P0DTC2
E	1285	GLN	-	expression tag	UNP P0DTC2
E	1286	PHE	-	expression tag	UNP P0DTC2
E	1287	GLU	-	expression tag	UNP P0DTC2
E	1288	LYS	-	expression tag	UNP P0DTC2
C	682	GLY	ARG	conflict	UNP P0DTC2
C	683	SER	ARG	conflict	UNP P0DTC2
C	685	SER	ARG	conflict	UNP P0DTC2
C	817	PRO	PHE	conflict	UNP P0DTC2
C	899	PRO	ALA	conflict	UNP P0DTC2
C	942	PRO	ALA	conflict	UNP P0DTC2
C	944	PRO	ALA	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
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	LEU	-	expression tag	UNP P0DTC2
C	1233	LEU	-	expression tag	UNP P0DTC2
C	1234	SER	-	expression tag	UNP P0DTC2

*Continued on next page...*

*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
C	1235	THR	-	expression tag	UNP P0DTC2
C	1236	PHE	-	expression tag	UNP P0DTC2
C	1237	LEU	-	expression tag	UNP P0DTC2
C	1238	GLY	-	expression tag	UNP P0DTC2
C	1239	ARG	-	expression tag	UNP P0DTC2
C	1240	SER	-	expression tag	UNP P0DTC2
C	1241	LEU	-	expression tag	UNP P0DTC2
C	1242	GLU	-	expression tag	UNP P0DTC2
C	1243	VAL	-	expression tag	UNP P0DTC2
C	1244	LEU	-	expression tag	UNP P0DTC2
C	1245	PHE	-	expression tag	UNP P0DTC2
C	1246	GLN	-	expression tag	UNP P0DTC2
C	1247	GLY	-	expression tag	UNP P0DTC2
C	1248	PRO	-	expression tag	UNP P0DTC2
C	1249	GLY	-	expression tag	UNP P0DTC2
C	1250	HIS	-	expression tag	UNP P0DTC2
C	1251	HIS	-	expression tag	UNP P0DTC2
C	1252	HIS	-	expression tag	UNP P0DTC2
C	1253	HIS	-	expression tag	UNP P0DTC2
C	1254	HIS	-	expression tag	UNP P0DTC2
C	1255	HIS	-	expression tag	UNP P0DTC2
C	1256	HIS	-	expression tag	UNP P0DTC2
C	1257	HIS	-	expression tag	UNP P0DTC2
C	1258	SER	-	expression tag	UNP P0DTC2
C	1259	ALA	-	expression tag	UNP P0DTC2
C	1260	TRP	-	expression tag	UNP P0DTC2
C	1261	SER	-	expression tag	UNP P0DTC2
C	1262	HIS	-	expression tag	UNP P0DTC2
C	1263	PRO	-	expression tag	UNP P0DTC2
C	1264	GLN	-	expression tag	UNP P0DTC2
C	1265	PHE	-	expression tag	UNP P0DTC2
C	1266	GLU	-	expression tag	UNP P0DTC2
C	1267	LYS	-	expression tag	UNP P0DTC2
C	1268	GLY	-	expression tag	UNP P0DTC2
C	1269	GLY	-	expression tag	UNP P0DTC2
C	1270	GLY	-	expression tag	UNP P0DTC2
C	1271	SER	-	expression tag	UNP P0DTC2
C	1272	GLY	-	expression tag	UNP P0DTC2
C	1273	GLY	-	expression tag	UNP P0DTC2
C	1274	GLY	-	expression tag	UNP P0DTC2
C	1275	GLY	-	expression tag	UNP P0DTC2
C	1276	SER	-	expression tag	UNP P0DTC2

*Continued on next page...*

*Continued from previous page...*

Chain	Residue	Modelled	Actual	Comment	Reference
C	1277	GLY	-	expression tag	UNP P0DTC2
C	1278	GLY	-	expression tag	UNP P0DTC2
C	1279	SER	-	expression tag	UNP P0DTC2
C	1280	ALA	-	expression tag	UNP P0DTC2
C	1281	TRP	-	expression tag	UNP P0DTC2
C	1282	SER	-	expression tag	UNP P0DTC2
C	1283	HIS	-	expression tag	UNP P0DTC2
C	1284	PRO	-	expression tag	UNP P0DTC2
C	1285	GLN	-	expression tag	UNP P0DTC2
C	1286	PHE	-	expression tag	UNP P0DTC2
C	1287	GLU	-	expression tag	UNP P0DTC2
C	1288	LYS	-	expression tag	UNP P0DTC2



D1	T2	Q3	H4	L5	T5	Q6	S7	P8	S9	A10	L11	S12	A13	S14	V15	G16	D17	L18	V19	T20	I21	S22	C23	R24	A25	S26	Q27	N28	I29	D30	G31	F32	L33	A34	W35	Y36	Q37	Q38	R39	P40	G41	K42	A43	P44	K45	L46	L47	I48	Y49	A50	A51	S52	H53	L54	Q55	S56	G57	I58	P59	S60	
R61	F62	S63	G64	S65	G66	S67	G68	T69	D70	F71	T72	L73	T74	L75	S76	S77	L78	Q79	P80	E81	S82	D82	F83	A84	A85	Y86	Y87	C88	Q89	Q90	Y91	Y92	S93	A94	P95	L96	T97	F98	G99	G100	G101	T102	K103	V104	E105	F106	LYS	ARG	THR	VAL	ALA	ALA	ALA	PRO	SER	VAL	PHE	ILE	PHE	PRO	PRO
SER	ASP	GLN	GLU	LEU	LEU	GLY	THR	LYS	ALA	SER	VAL	VAL	VAL	CYS	LEU	LEU	LEU	ASN	ASN	ASN	PHE	PHE	GLY	TRP	PRO	ALA	LYS	GLN	GLN	GLY	ASN	SER	GLN	GLU	VAL	THR	GLU	GLN	ASP	LYS	SER	ASP	THR	THR	TYR	GLY	SER	LEU	LEU	LEU	LEU	THR									
LEU	SER	ALA	ASP	TYR	GLU	LYS	HIS	LYS	VAL	VAL	ALA	CYS	VAL	VAL	VAL	THR	SER	SER	PRO	VAL	LYS	TRP	PHE	ASN	VAL	GLY	ALA	LEU	GLN	GLY	ASN	SER	GLN	GLU	VAL	THR	GLU	GLN	ASP	LYS	SER	ASP	THR	THR	TYR	GLY	SER	LEU	LEU	LEU	THR										

• Molecule 2: Monoclonal antibody Mab 23 (Heavy Chain)



E1	V2	Q3	L4	V5	E6	S7	G8	G9	G10	L11	V12	Q13	P14	G15	G16	S17	L18	R19	L20	S21	C22	T23	A24	S25	G26	F27	T28	F29	S30	N31	Y32	G33	F34	H35	W36	V37	R38	Q39	A40	P41	G42	K43	G44	L45	E46	W47	V48	T49	I50	I51	S52	H53	D54	G55	I56	T57	K58	H59	Y60	
A61	D62	S63	V64	K65	D66	R67	F68	T69	V70	S71	R72	D73	M74	S75	K76	T77	M78	V79	Y80	L81	Q82	H83	N84	H85	L86	K87	L88	D89	D90	T91	A92	Y93	Y94	Y95	C96	A97	R98	D99	L100	G101	T102	Y103	D104	D105	S106	W107	G108	Q109	G110	V111	L112	V113	T114	V115	SER	SER	ALA	ALA	SER	THR
LYS	GLY	PRO	SER	VAL	PHE	PRO	LEU	ASP	THR	THR	THR	GLY	GLY	THR	ALA	ALA	LEU	UNK	VAL	LYS	ASP	THR	PHE	VAL	GLY	VAL	THR	UNK	SER	TRP	LYS	ASN	CYS	GLY	ALA	LEU	THR	THR	GLY	VAL	PRO	ALA	VAL	LEU	GLN	SER	GLY	PRO	LEU	VAL	TYR									
SER	LEU	SER	VAL	VAL	THR	VAL	PRO	SER	THR	GLY	THR	THR	THR	ILE	CYS	ASN	VAL	HIS	PRO	SER	ASN	THR	LYS	ASP	ASP	UNK	VAL	THR	GLU	PRO	LYS	SER	ASP	LYS	THR	HIS	CYS	PRO	PRO	ALA	ARG	PRO	GLU	LEU	LEU	GLY	PRO	SER	THR	VAL										
PHE	LEU	PHE	PRO	VAL	PRO	THR	ASP	THR	ILE	SER	ARG	THR	GLU	VAL	THR	CYS	VAL	HIS	VAL	SER	HIS	THR	ASP	GLU	VAL	VAL	LYS	PHE	TRP	TYR	VAL	GLY	VAL	GLU	HIS	ASN	ASN	LYS	THR	PRO	ARG	GLU	THR	GLY	THR	THR	THR	THR	THR	THR	THR									
ARG	VAL	VAL	VAL	THR	VAL	VAL	HIS	THR	ASP	LEU	ASN	LYS	GLU	TYR	LYS	CYS	VAL	VAL	LYS	ALA	PRO	PRO	ALA	ILE	ILE	ALA	ALA	LYS	LYS	ALA	LYS	GLY	GLN	PRO	ARG	GLU	PRO	VAL	THR	THR	LEU	PRO	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	LYS							
ASN	GLN	VAL	SER	THR	CYS	LEU	VAL	GLY	PHE	TYR	PRO	ASP	ALA	VAL	TRP	LEU	SER	ASN	GLN	PRO	GLU	ASN	TYR	THR	THR	THR	PRO	VAL	VAL	ASN	GLY	GLY	THR	TYR	LEU	TYR	LEU	LEU	THR	THR	VAL	VAL	ASP	GLN	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY						
ASN	VAL	PHE	SER	CYS	VAL	VAL	HIS	GLU	ALA	ASN	HIS	TYR	THR	GLN	LYS	SER	LEU	PRO	GLY	PRO	ALA	GLU	ASN	TYR	THR	THR	PRO	PRO	VAL	VAL	ASN	GLY	GLY	GLY	TYR	LEU	TYR	LEU	LEU	THR	THR	VAL	VAL	ASP	GLN	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY					

• Molecule 2: Monoclonal antibody Mab 23 (Heavy Chain)



E1	V2	Q3	L4	V5	E6	S7	G8	G9	G10	L11	V12	Q13	P14	G15	G16	S17	L18	R19	L20	S21	C22	T23	A24	S25	G26	F27	T28	F29	S30	N31	Y32	G33	F34	H35	W36	V37	R38	Q39	A40	P41	G42	K43	G44	L45	E46	W47	V48	T49	I50	I51	S52	H53	D54	G55	I56	T57	K58	H59	Y60	
A61	D62	S63	V64	K65	D66	R67	F68	T69	V70	S71	R72	D73	M74	S75	K76	T77	M78	V79	Y80	L81	Q82	H83	N84	H85	L86	K87	L88	D89	D90	T91	A92	Y93	Y94	Y95	C96	A97	R98	D99	L100	G101	T102	Y103	D104	D105	S106	W107	G108	Q109	G110	V111	L112	V113	T114	V115	SER	SER	ALA	ALA	SER	THR
LYS	GLY	PRO	SER	VAL	PHE	PRO	LEU	ASP	THR	THR	THR	GLY	GLY	THR	ALA	ALA	LEU	UNK	VAL	LYS	ASP	THR	PHE	VAL	GLY	VAL	THR	UNK	SER	TRP	LYS	ASN	CYS	GLY	ALA	LEU	THR	THR	GLY	VAL	PRO	ALA	VAL	LEU	GLN	SER	SER	GLY	PRO	LEU	VAL	TYR								



R905	F906	I909	G910	V911	T912	N914	V915	L916	Y917	E918	N919	Q920	K921	L922	I923	A924	N925	P926	F927	N928	S929	A930	I931	G932	K933	I934	Q935	D936	L938	S939	S940	T941	P942	S943	P944	L945	G946	K947	L948	Q949	D950	V951	V952	N953	Q954	N955	A956	Q957	A958	L959	N960	L962	V963	K964	Q965				
LEU	GLY	ASP	ILE	ALA	ARG	ASP	LEU	ILE	ALA	K854	F855	N856	G857	L858	T859	V860	L861	P862	P863	L864	T865	T866	D867	E868	M869	I870	A871	Q872	S873	L874	L875	L876	L877	L878	I882	G885	W886	T887	F888	G889	A890	G891	A892	A893	L894	Q895	I896	P897	F898	P899	M900	Q901	A902	A903	Y904				
W781	F782	A783	Q784	V785	K786	Q787	L788	W789	K790	T791	F792	F793	L794	K795	D796	F797	G798	G799	F800	N801	F802	S803	Q804	I805	L806	P807	D808	P809	S810	R811	P812	R813	K814	R815	S816	P817	I818	E819	D820	L821	L822	F823	N824	R825	W826	T827	LEU	ALA	ASP	ALA	GLY	PHE	ILE	LYS	GLN	TYR	ASP	GLY	CYS
S722	T723	ALA	W724	E725	L726	L727	F728	W729	S730	W731	T732	K733	T734	S735	V736	D737	C738	T739	W740	Y741	I742	C743	G744	D745	S746	T747	E748	C749	S750	W751	L752	L753	L754	Q755	Y756	G757	S758	F759	C760	T761	Q762	L763	W764	R765	A766	W767	T768	G769	I770	A771	V772	E773	Q774	D775	K776	W777	T778	Q779	E780
E661	C662	D663	T664	P665	L666	S667	A668	S669	L670	S671	A672	S673	Y674	Q675	T676	GLN	THR	ASN	PRO	GLY	SER	VAL	ALA	S689	D690	S691	L692	L693	A694	Y695	T696	D697	L698	L699	G700	A701	E702	W703	S704	W705	A706	Y707	S708	W709	W710	S711	I712	A713	I714	P715	T716	M658	S659	F718	T719	I720			
G601	T602	N603	T604	S605	N606	V608	A609	V610	L611	V612	Q613	D614	V615	N616	C617	T618	E619	L620	P621	F622	Q623	Q624	Y625	Q626	Q627	Y628	Y629	Y630	Y631	Y632	Y633	Y634	Y635	Y636	Y637	Y638	Y639	Y640	Y641	Y642	Y643	Y644	Y645	Y646	Y647	Y648	Y649	Y650	Y651	Y652	Y653	Y654	Y655	Y656	Y657	Y658	Y659	P600	
M481	G482	V483	E484	G485	F486	M487	C488	Y489	F490	P491	L492	Q493	S494	Y495	G496	F497	Q498	F499	T500	N501	G502	V503	G504	Y505	Q506	P507	Y508	R509	W510	D511	V512	L513	S514	F515	E516	L517	L518	H519	A520	P521	A522	T523	V524	G525	C526	P527	K528	K529	S530	T531	N532	L533	G534	K535	N536	V537	V538	V539	N540
M481	G482	V483	E484	G485	F486	M487	C488	Y489	F490	P491	L492	Q493	S494	Y495	G496	F497	Q498	F499	T500	N501	G502	V503	G504	Y505	Q506	P507	Y508	R509	W510	D511	V512	L513	S514	F515	E516	L517	L518	H519	A520	P521	A522	T523	V524	G525	C526	P527	K528	K529	S530	T531	N532	L533	G534	K535	N536	V537	V538	V539	N540
F541	N542	F543	N544	G545	L546	G548	T549	G550	V551	L552	T553	T554	E555	S556	N557	K558	F559	L560	P561	F562	Q563	Q564	F565	G566	R567	D568	L569	A570	D571	T572	T573	D574	A575	V576	R577	D578	P579	Q580	T581	L582	E583	L584	L585	D586	L587	T588	P589	C590	S591	F592	G593	G594	V595	S596	V597	L598	T599	P600	
G601	T602	N603	T604	S605	N606	V608	A609	V610	L611	V612	Q613	D614	V615	N616	C617	T618	E619	L620	P621	F622	Q623	Q624	Y625	Q626	Q627	Y628	Y629	Y630	Y631	Y632	Y633	Y634	Y635	Y636	Y637	Y638	Y639	Y640	Y641	Y642	Y643	Y644	Y645	Y646	Y647	Y648	Y649	Y650	Y651	Y652	Y653	Y654	Y655	Y656	Y657	Y658	Y659	P600	
E661	C662	D663	T664	P665	L666	S667	A668	S669	L670	S671	A672	S673	Y674	Q675	T676	GLN	THR	ASN	PRO	GLY	SER	VAL	ALA	S689	D690	S691	L692	L693	A694	Y695	T696	D697	L698	L699	G700	A701	E702	W703	S704	W705	A706	Y707	S708	W709	W710	S711	I712	A713	I714	P715	T716	M658	S659	F718	T719	I720			
S722	T723	ALA	W724	E725	L726	L727	F728	W729	S730	W731	T732	K733	T734	S735	V736	D737	C738	T739	W740	Y741	I742	C743	G744	D745	S746	T747	E748	C749	S750	W751	L752	L753	L754	Q755	Y756	G757	S758	F759	C760	T761	Q762	L763	W764	R765	A766	W767	T768	G769	I770	A771	V772	E773	Q774	D775	K776	W777	T778	Q779	E780
W781	F782	A783	Q784	V785	K786	Q787	L788	W789	K790	T791	F792	F793	L794	K795	D796	F797	G798	G799	F800	N801	F802	S803	Q804	I805	L806	P807	D808	P809	S810	R811	P812	R813	K814	R815	S816	P817	I818	E819	D820	L821	L822	F823	N824	R825	W826	T827	LEU	ALA	ASP	ALA	GLY	PHE	ILE	LYS	GLN	TYR	ASP	GLY	CYS
LEU	GLY	ASP	ILE	ALA	ARG	ASP	LEU	ILE	ALA	K854	F855	N856	G857	L858	T859	V860	L861	P862	P863	L864	T865	T866	D867	E868	M869	I870	A871	Q872	S873	L874	L875	L876	L877	L878	I882	G885	W886	T887	F888	G889	A890	G891	A892	A893	L894	Q895	I896	P897	F898	P899	M900	Q901	A902	A903	Y904				

L966	S967	S968	R969	F970	G971	A972	I973	S974	S975	S976	L977	R978	D979	I980	L981	S982	R983	L984	D985	P986	E988	A989	E990	V991	Q992	I993	D994	R995	L996	I997	T998	G999	R1000	L1001	Q1002	S1003	L1004	Q1005	T1006	Y1007	V1008	T1009	Q1010	L1012	I1013	R1014	E1017	I1018	L1034	K1038	D1041	F1042								
K1045	G1046	L1049	S1055	A1056	H1058	L1063	H1064	V1065	T1066	Y1067	Y1068	P1069	A1070	Q1071	E1072	K1073	N1074	F1075	T1076	T1077	A1078	P1079	A1080	I1081	C1082	H1083	D1084	G1085	K1086	A1087	H1088	F1089	P1090	R1091	E1092	G1093	V1094	F1095	V1096	S1097	N1098	G1099	T1100	H1101	W1102	F1103	V1104	T1105	Q1106	R1107	N1108	F1109	E1111	P1112						
Q1113	I1114	I1115	T1116	T1117	D1118	M1119	T1120	F1121	V1122	S1123	G1124	M1125	C1126	D1127	V1128	I1129	I1130	G1131	I1132	M1133	M1134	M1135	T1136	V1137	Y1138	D1139	P1140	L1141	Q1142	P1143	E1144	L1145	D1146	S1147	PHE	LYS	GLU	GLN	LEU	ASP	TRP	VAL	TYR	PHE	LYS	ASN	HIS	THR	PRO	THR	VAL	ASP	GLY	ILE	GLY	ILE	GLY	ILE	GLY	ILE
ASN	ALA	SER	VAL	ASN	ILE	GLN	GLU	ILE	ASP	ARG	LEU	ASN	VAL	ALA	LYS	ASN	GLN	SER	LEU	ILE	LEU	GLN	GLY	GLY	TYR	GLY	GLY	GLY	GLY	ILE	GLY	PRO	ALA	PRO	ARG	ASP	ALA	ALA	TRP	VAL	ARG	GLN	LYS	ASP	GLY	ASN	HIS	THR	TRP	VAL	ASP	GLY	ILE	GLY	ILE	GLY	ILE			
LEU	SER	THR	PHE	LEU	GLY	ARG	SER	LEU	VAL	PHE	GLN	GLY	PRO	GLY	HIS	HIS	HIS	HIS	SER	ALA	TRP	SER	HIS	PRO	GLN	GLY	GLY	SER	SER	GLY	ILE	ALA	PRO	GLY	GLY	ALA	PRO	GLY	ARG	ASP	ALA	ALA	TRP	GLN	LYS	ASP	GLY	ASN	HIS	THR	PRO	THR	VAL	ASP	GLY	ILE	GLY	ILE		

• Molecule 3: Spike glycoprotein



MET	PHE	VAL	PHE	VAL	LEU	VAL	LEU	LEU	PRO	LEU	VAL	SER	GLN	CYS	VAL	LEU	THR	THR	THR	THR	PRO	A27	Y28	T29	N30	S31	F32	T33	R34	G35	V36	Y37	Y38	P39	D40	K41	W42	F43	R44	S45	S46	V47	L48	H49	S50	T51	Q52	D53	L54	F55	L56	P57	F58	F59	S60						
N61	V62	T63	W64	F65	H66	A67	I68	H69	VAL	E191	GLY	THR	ASN	THR	LYS	ARG	PHE	D80	N81	W82	L84	P85	F86	N87	D88	G89	V90	Y91	F92	A93	S94	T95	E96	K97	S98	N99	I100	R101	R102	G103	W104	I105	F106	G107	T108	T109	L110	D111	S112	K113	T114	Q115	S116	L117	I119	V120					
N121	N122	A123	T124	N125	V126	V127	I128	K129	V130	C131	E132	F133	Q134	F135	I136	C136	N137	D138	F139	F140	L141	G142	V143	TYR	HIS	LYS	ASN	ASN	LYS	TRP	MET	GLU	SER	GLY	PHE	VAL	TYR	SER	SER	ALA	ASN	N165	C166	T167	F168	E169	Y170	V171	S172	GLN	PRO	PHE	LEU	MET	ASP	LEU	GLU				
GLY	LYS	GLN	GLY	ASN	F186	K187	N188	L189	R190	E191	F192	V193	F194	K195	N196	I197	D198	G199	Y200	F201	K202	I203	Y204	S205	K206	H207	T208	P209	I210	N211	L212	V213	R214	L216	P217	Q218	N281	N282	G283	T284	I285	L286	D287	A288	V289	D290	C291	A292	L293	D294	P295	L296	E297	S298	K300						
L241	L242	A243	L244	H245	ARG	SER	TYR	LEU	THR	PRO	ASP	SER	SER	TRP	THR	ALA	GLY	ALA	A263	A264	Y265	Y266	V267	C268	Y269	L270	Q271	P272	R273	T274	F275	L276	L277	K278	Y279	N280	E281	N282	G283	T284	I285	L286	D287	A288	V289	D290	C291	A292	L293	D294	P295	L296	E297	S298	K300						
C301	T302	L303	K304	S305	F306	T307	V308	E309	K310	G311	I312	S313	Q314	T315	S316	N317	F318	R319	V320	Q321	P322	S323	E324	S325	P326	I326	V327	R328	F329	P330	N331	I332	S333	N334	L335	C336	P337	F338	G339	E340	V341	I342	N343	G344	A345	T345	R346	F347	A348	Q349	V350	Y351	A352	W353	R354	R355	K356	R357	I358	S359	N360
C361	V362	A363	D364	Y365	S366	V367	L368	Y369	N370	S371	A372	S373	F374	S375	T376	F377	K378	C379	Y380	G381	V382	S383	P384	T385	K386	L387	N388	D389	L390	C391	F392	T393	N394	V395	Y396	A397	D398	S399	F400	V401	I402	R403	G404	D405	E406	V407	R408	Q409	I410	A411	P412	G413	Q414	T415	G416	K417	I418	A419	D420		
Y421	N422	Y423	K424	L425	P426	D427	D428	F429	T430	G431	C432	V433	I434	A435	W436	N437	S438	N439	N440	L441	D442	S443	K444	V445	G446	G447	N448	Y449	N450	Y451	L452	Y453	R454	L455	F456	R457	K458	S459	N460	L461	K462	P463	F464	E465	R466	D467	I468	S469	T470	E471	I472	Y473	G474	A475	G476	S477	T478	F479	C480		









## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	135612	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 ( $e^-/\text{\AA}^2$ )	48	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	165000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	4.808	Depositor
Minimum map value	-3.324	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.037	Depositor
Recommended contour level	1.9	Depositor
Map size (Å)	517.12, 517.12, 517.12	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.01, 1.01, 1.01	Depositor

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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	0.31	0/816	0.67	0/1106
1	H	0.38	0/795	0.64	0/1078
1	L	0.35	0/816	0.68	0/1106
2	B	0.31	0/922	0.61	0/1251
2	G	0.31	0/916	0.63	0/1243
2	R	0.30	0/916	0.59	0/1243
3	C	0.35	0/8163	0.65	9/11118 (0.1%)
3	D	0.38	2/8004 (0.0%)	0.63	6/10896 (0.1%)
3	E	0.35	0/7995	0.63	7/10881 (0.1%)
All	All	0.36	2/29343 (0.0%)	0.64	22/39922 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	131	CYS	CB-SG	-5.41	1.73	1.81
3	D	760	CYS	CB-SG	-5.15	1.73	1.81

The worst 5 of 22 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	942	PRO	CA-N-CD	-9.04	98.85	111.50
3	E	944	PRO	CA-N-CD	-9.00	98.90	111.50
3	E	899	PRO	CA-N-CD	-8.98	98.93	111.50
3	E	88	ASP	CB-CG-OD1	8.83	126.24	118.30
3	C	944	PRO	CA-N-CD	-8.81	99.17	111.50

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	798	0	778	9	0
1	H	778	0	763	13	0
1	L	798	0	778	11	0
2	B	902	0	866	10	0
2	G	896	0	861	9	0
2	R	896	0	861	5	0
3	C	7978	0	7788	113	0
3	D	7825	0	7644	98	0
3	E	7818	0	7636	112	0
All	All	28689	0	27975	363	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 6.

The worst 5 of 363 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:E:804:GLN:O	3:E:817:PRO:CD	1.82	1.26
3:C:804:GLN:O	3:C:817:PRO:CD	1.92	1.16
3:C:899:PRO:HD2	3:C:900:MET:H	1.10	1.15
3:D:944:PRO:HD2	3:D:945:LEU:H	1.10	1.15
3:E:899:PRO:HD2	3:E:900:MET:H	1.11	1.15

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	104/214 (49%)	100 (96%)	4 (4%)	0	100	100
1	H	102/214 (48%)	93 (91%)	9 (9%)	0	100	100
1	L	104/214 (49%)	96 (92%)	8 (8%)	0	100	100
2	B	114/447 (26%)	114 (100%)	0	0	100	100
2	G	113/447 (25%)	110 (97%)	3 (3%)	0	100	100
2	R	113/447 (25%)	113 (100%)	0	0	100	100
3	C	1008/1288 (78%)	983 (98%)	25 (2%)	0	100	100
3	D	986/1288 (77%)	964 (98%)	21 (2%)	1 (0%)	48	71
3	E	983/1288 (76%)	962 (98%)	20 (2%)	1 (0%)	48	71
All	All	3627/5847 (62%)	3535 (98%)	90 (2%)	2 (0%)	50	71

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	D	942	PRO
3	E	942	PRO

### 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	86/183 (47%)	86 (100%)	0	100	100
1	H	84/183 (46%)	84 (100%)	0	100	100
1	L	86/183 (47%)	86 (100%)	0	100	100
2	B	98/393 (25%)	98 (100%)	0	100	100
2	G	97/393 (25%)	97 (100%)	0	100	100
2	R	97/393 (25%)	97 (100%)	0	100	100
3	C	895/1116 (80%)	892 (100%)	3 (0%)	91	97
3	D	879/1116 (79%)	876 (100%)	3 (0%)	91	97
3	E	878/1116 (79%)	872 (99%)	6 (1%)	81	93

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	3200/5076 (63%)	3188 (100%)	12 (0%)	88 96

5 of 12 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	E	167	THR
3	E	916	LEU
3	C	1107	ARG
3	C	166	CYS
3	E	102	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	L	89	GLN
3	D	448	ASN
3	D	450	ASN
3	D	498	GLN
3	E	907	ASN

### 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](#)

There are no ligands in this entry.



## 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.

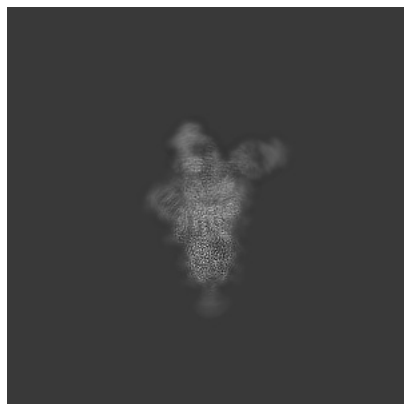
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-18180. These allow visual inspection of the internal detail of the map and identification of artifacts.

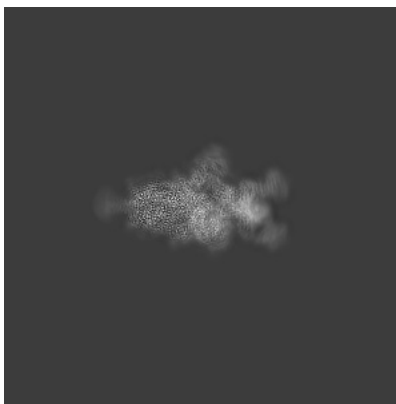
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

#### 6.1.1 Primary map



X

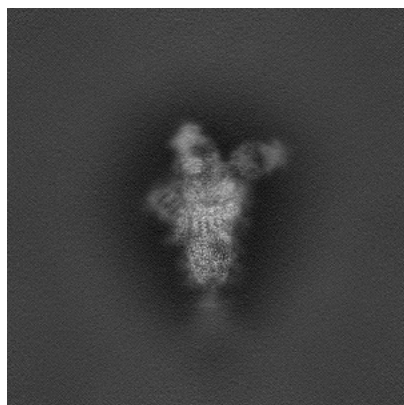


Y

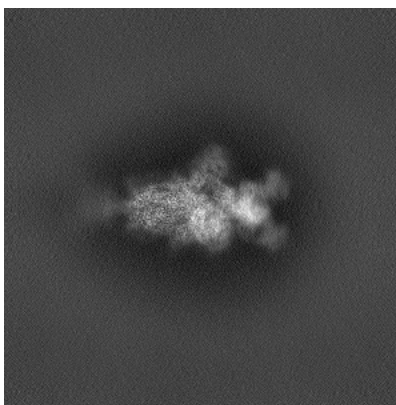


Z

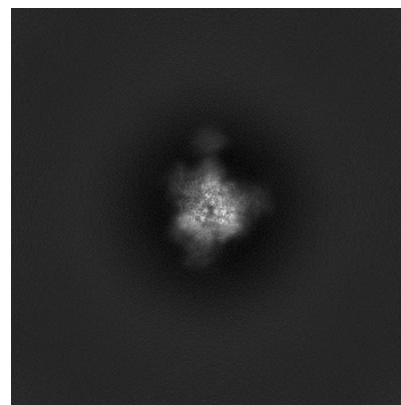
#### 6.1.2 Raw map



X



Y



Z

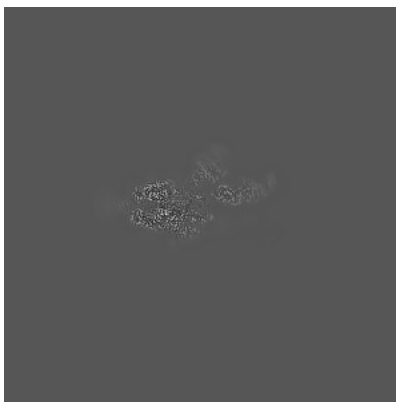
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

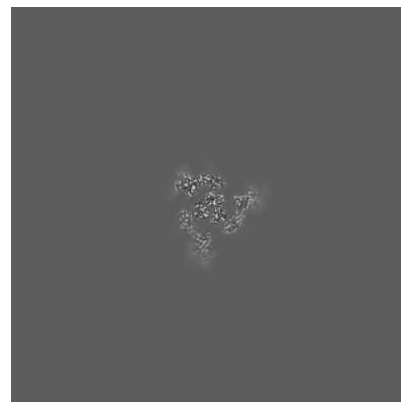
### 6.2.1 Primary map



X Index: 256

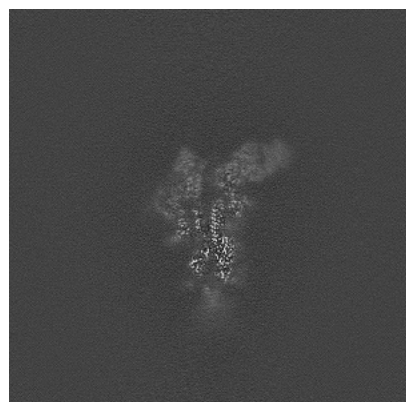


Y Index: 256



Z Index: 256

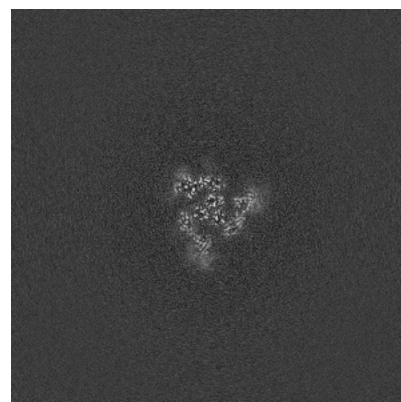
### 6.2.2 Raw map



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](#)

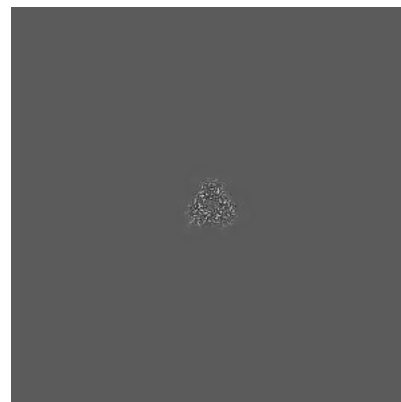
### 6.3.1 Primary map



X Index: 263

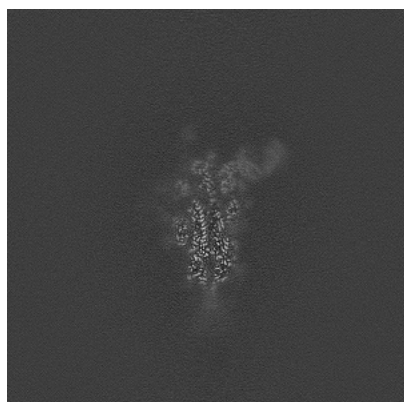


Y Index: 251

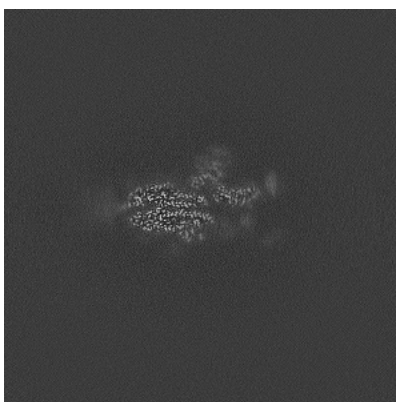


Z Index: 193

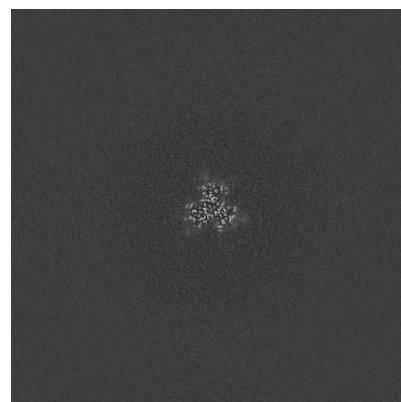
### 6.3.2 Raw map



X Index: 263



Y Index: 252

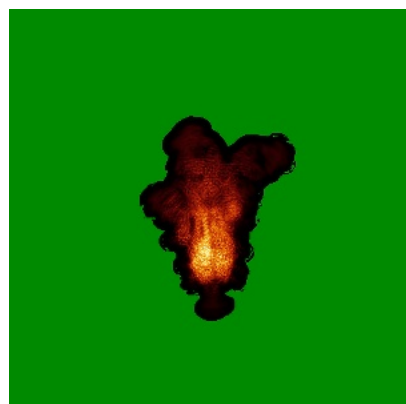


Z Index: 201

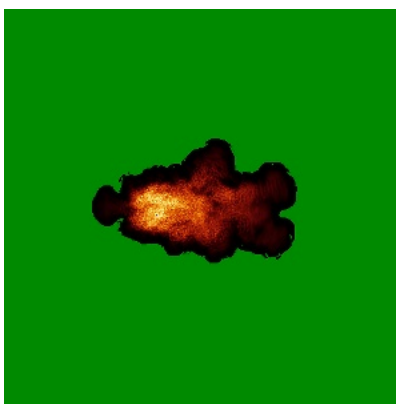
The images above show the largest variance slices of the map in three orthogonal directions.

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

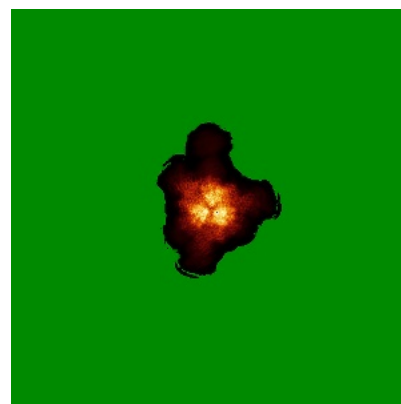
### 6.4.1 Primary map



X

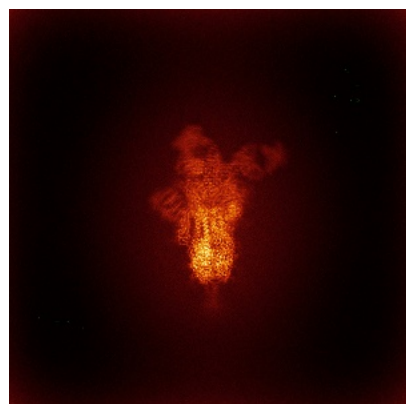


Y

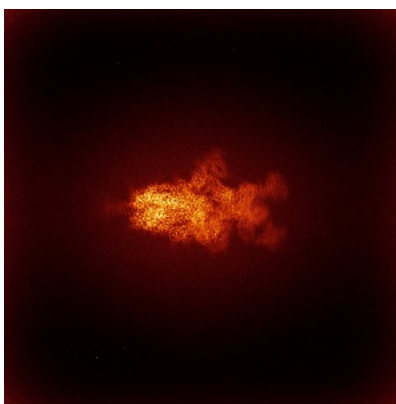


Z

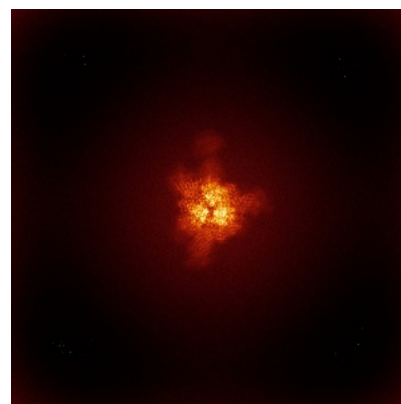
### 6.4.2 Raw map



X



Y

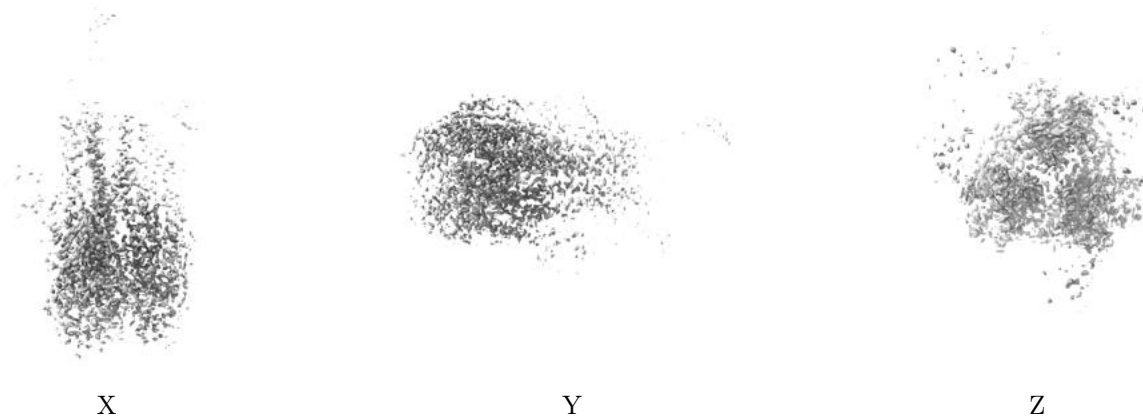


Z

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

## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 1.9. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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

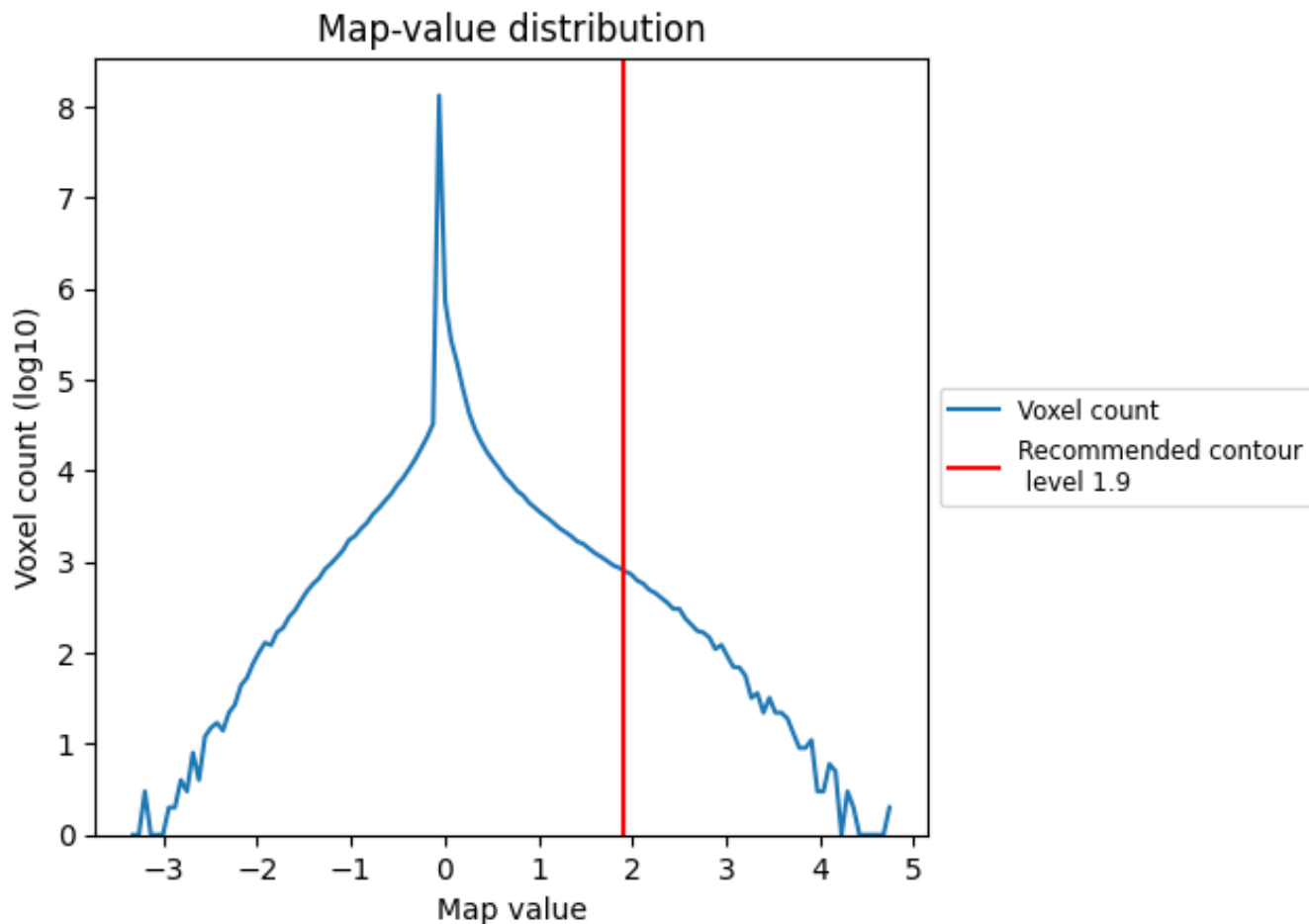
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

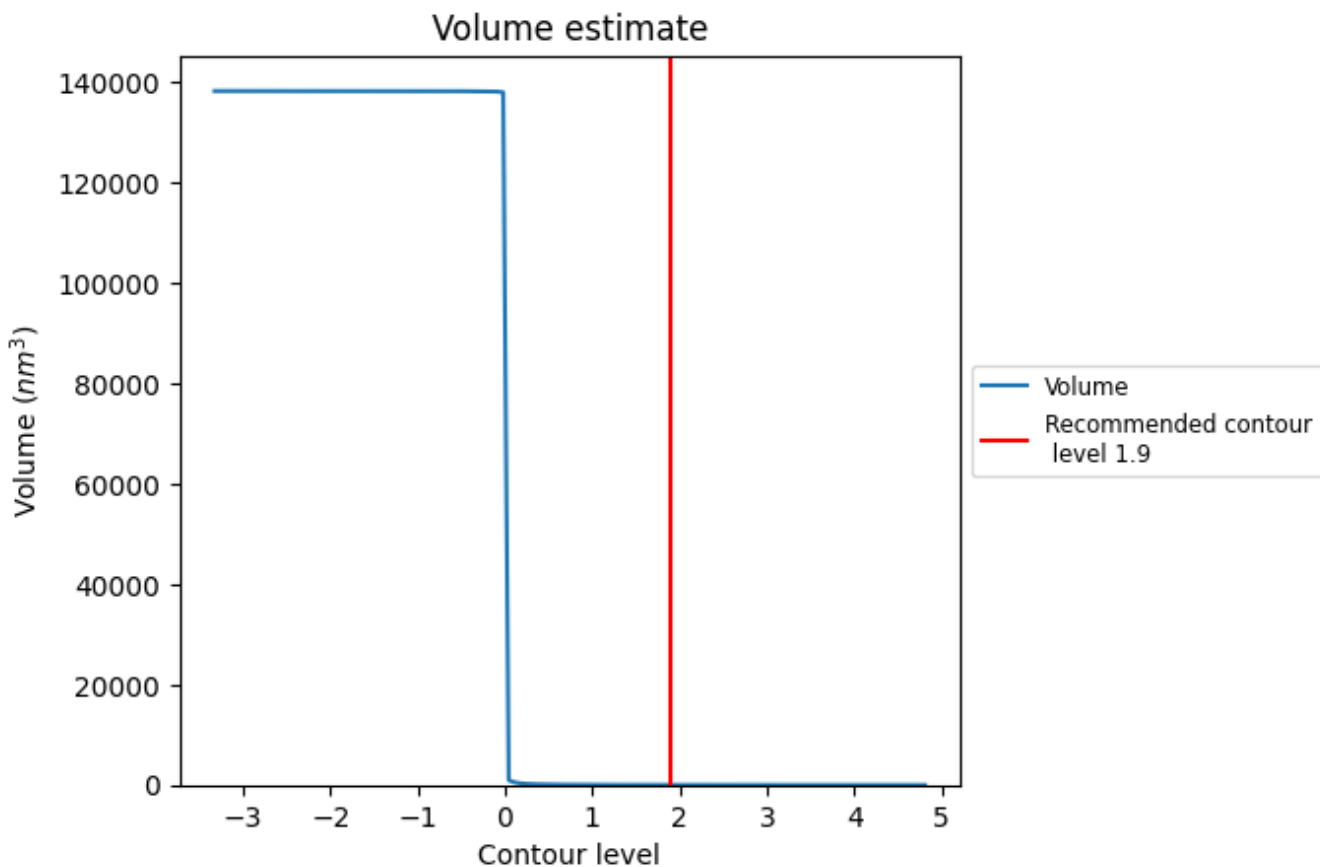
This section contains the results of statistical analysis of the map.

### 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 [\(i\)](#)

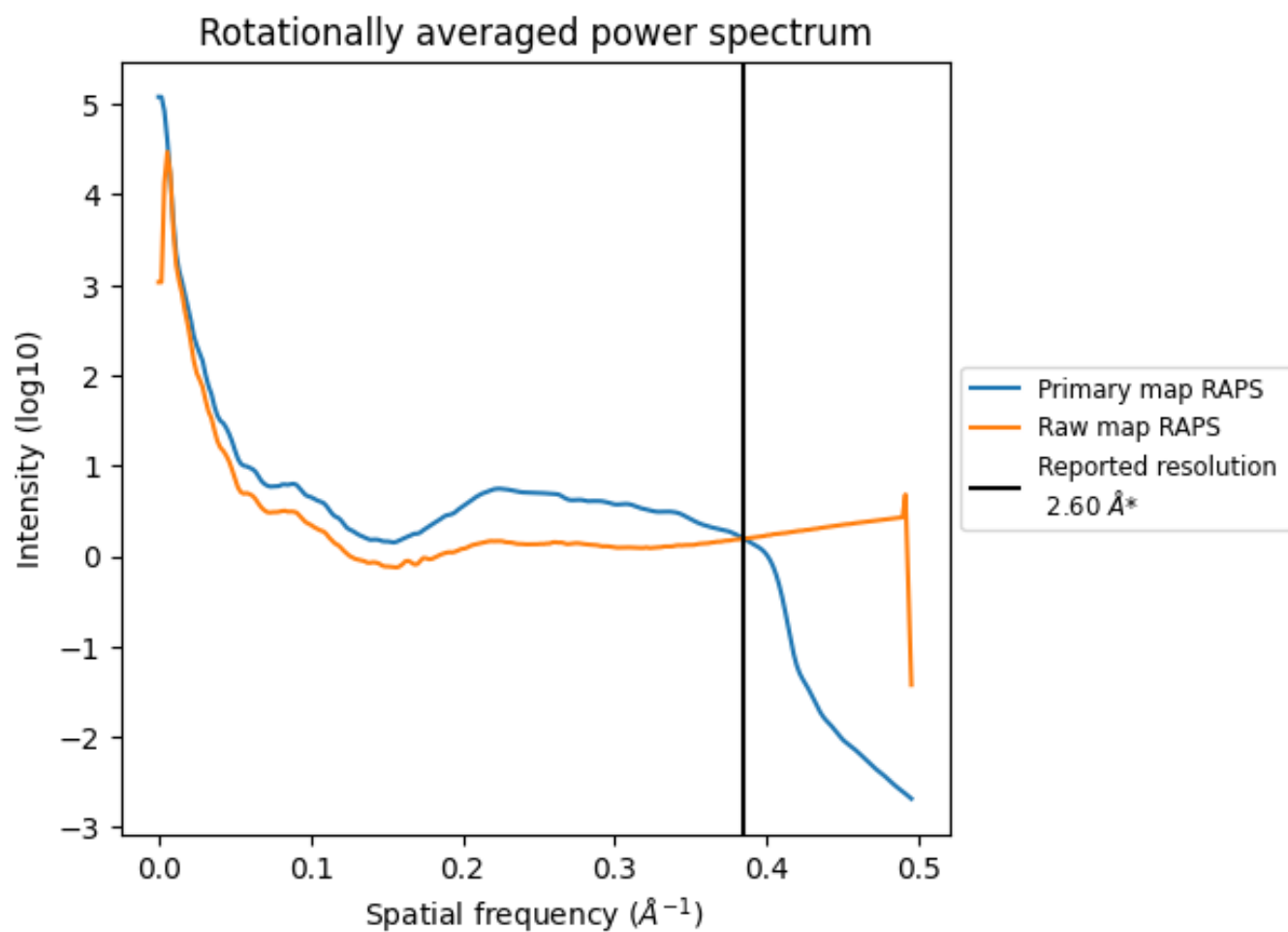


The volume at the recommended contour level is 7 nm<sup>3</sup>; this corresponds to an approximate mass of 7 kDa.

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

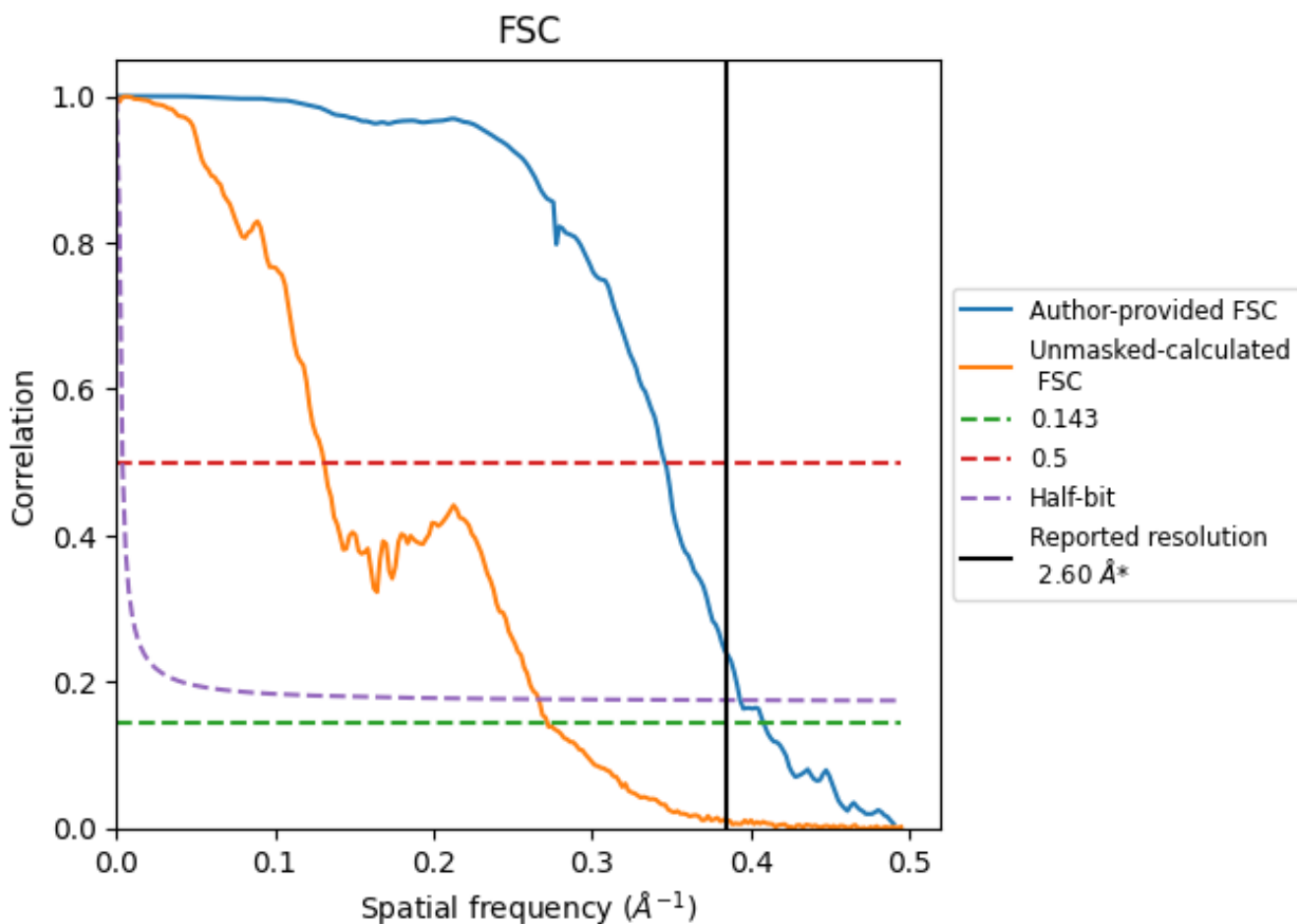


\*Reported resolution corresponds to spatial frequency of  $0.385 \text{ \AA}^{-1}$

## 8 Fourier-Shell correlation [i](#)

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 [i](#)



\*Reported resolution corresponds to spatial frequency of 0.385  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

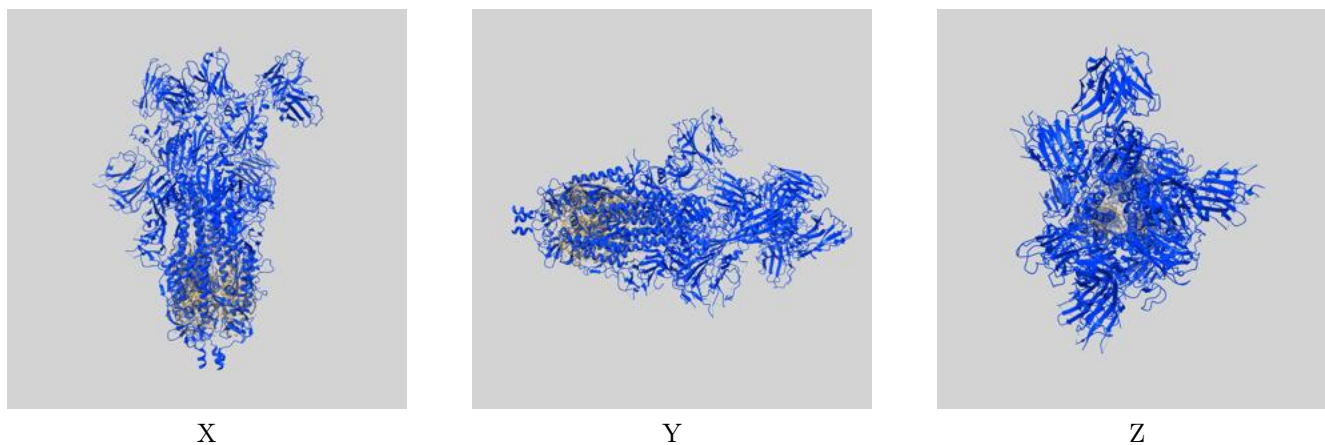
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.60	-	-
Author-provided FSC curve	2.45	2.89	2.54
Unmasked-calculated*	3.68	7.64	3.76

\*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 3.68 differs from the reported value 2.6 by more than 10 %

## 9 Map-model fit [i](#)

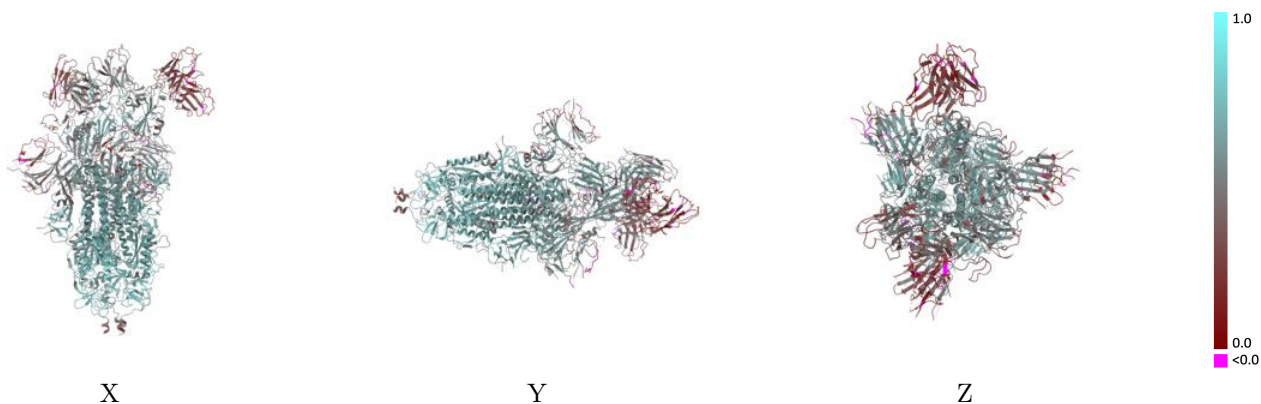
This section contains information regarding the fit between EMDB map EMD-18180 and PDB model 8Q5Y. Per-residue inclusion information can be found in section 3 on page 12.

### 9.1 Map-model overlay [i](#)



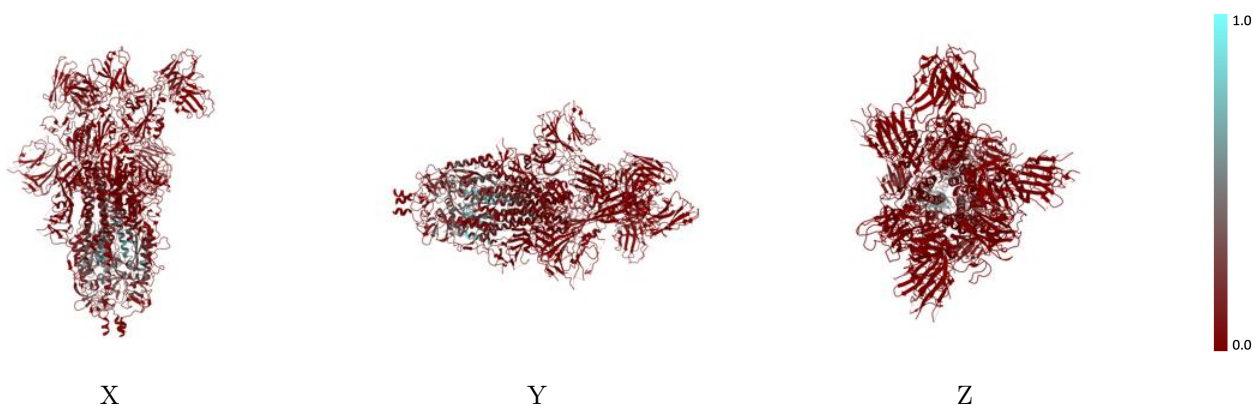
The images above show the 3D surface view of the map at the recommended contour level 1.9 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



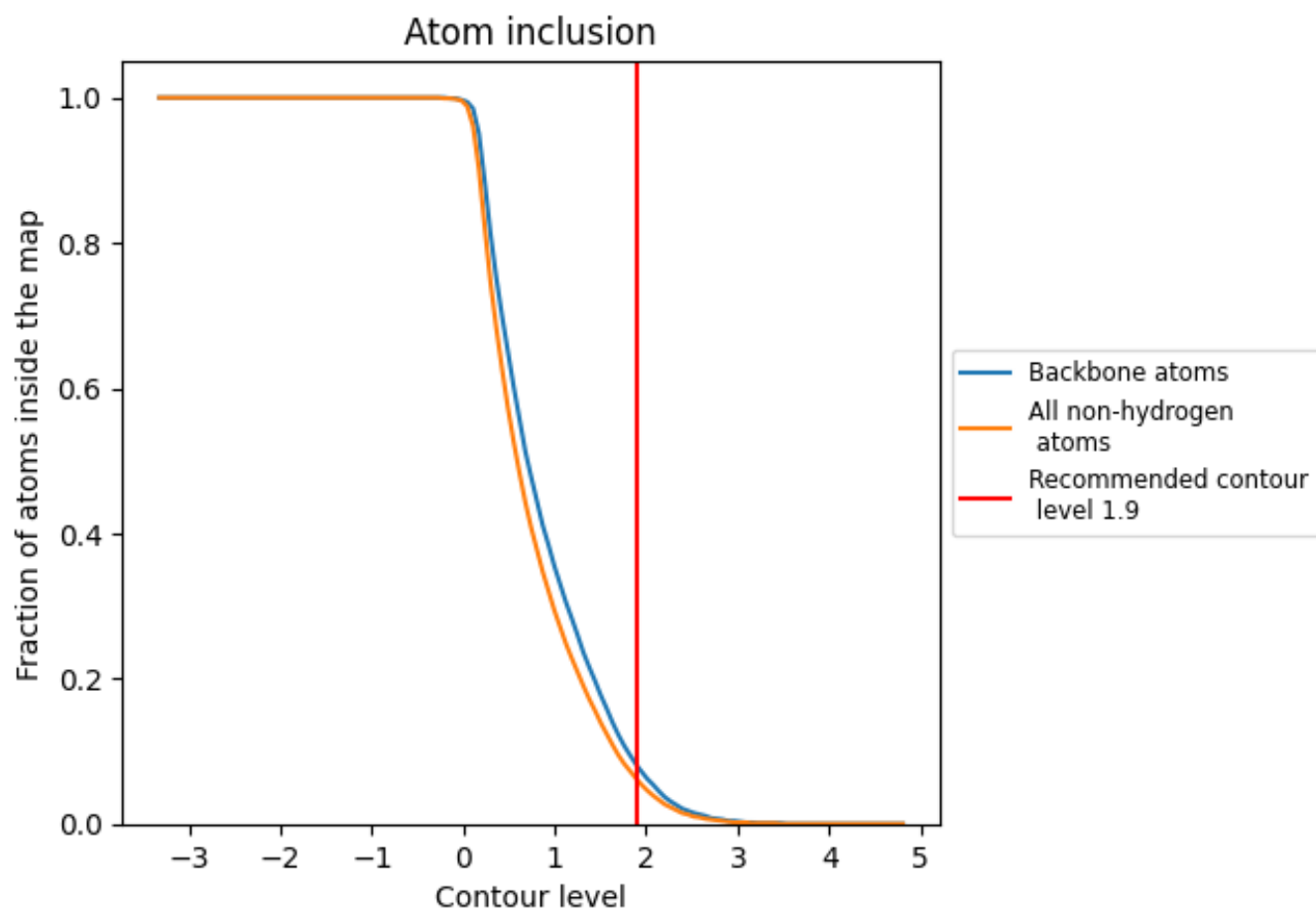
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (1.9).





















## 9.4 Atom inclusion [i](#)



At the recommended contour level, 8% of all backbone atoms, 6% 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 (1.9) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.0610	 0.5160
A	 0.0000	 0.2410
B	 0.0000	 0.2370
C	 0.0730	 0.5490
D	 0.0700	 0.5660
E	 0.0790	 0.5510
G	 0.0000	 0.4750
H	 0.0000	 0.4750
L	 0.0000	 0.3510
R	 0.0000	 0.2370

