



wwPDB EM Validation Summary Report ⓘ

Mar 9, 2026 – 11:40 AM UTC

PDB ID : 6PCI / pdb_00006pci
EMDB ID : EMD-20301
Title : EBOV GPdMuc (Makona) in complex with rEBOV-520 and rEBOV-548 Fabs
Authors : Ward, A.B.; Murin, C.D.; Alkutkar, T.
Deposited on : 2019-06-17
Resolution : 4.12 Å(reported)
Based on initial model : 5JQ3

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:

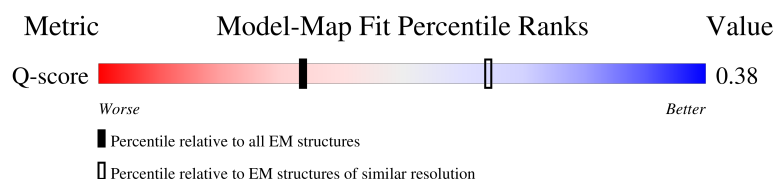
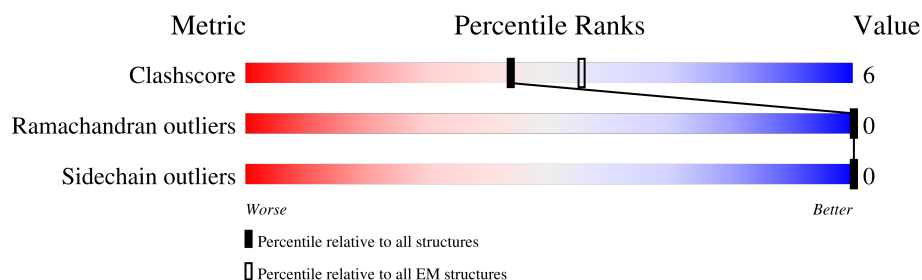
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data in the EMDb archive up until May 2025)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

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 4.12 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	5662 (3.62 - 4.62)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	278	12% 72% 9% 19%
1	B	278	13% 69% 12% 19%
1	C	278	12% 69% 12% 19%
2	H	234	41% 47% 9% 44%

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Mol	Chain	Length	Quality of chain
2	I	234	43% 48% 8% 44%
2	J	234	42% 46% 10% 44%
3	K	214	38% 40% 11% 50%
3	L	214	37% 39% 11% 50%
3	M	214	38% 39% 11% 50%
4	D	203	11% 42% 6% 52%
4	E	203	12% 41% 6% 52%
4	F	203	13% 41% 6% 52%
5	Q	215	25% 42% 8% 50%
5	R	215	25% 42% 8% 50%
5	S	215	25% 43% 7% 50%
6	N	227	21% 44% 10% 45%
6	O	227	21% 44% 11% 45%
6	P	227	20% 45% 9% 45%
7	G	5	60% 20% 80%
7	T	5	60% 20% 80%
7	U	5	60% 20% 80%

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 18828 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 Virion spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	225	Total	C	N	O	S	0	0
			1760	1122	300	333	5		
1	B	225	Total	C	N	O	S	0	0
			1760	1122	300	333	5		
1	C	225	Total	C	N	O	S	0	0
			1760	1122	300	333	5		

- Molecule 2 is a protein called rEBOV-548 Fab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	H	132	Total	C	N	O	S	0	0
			1033	657	174	196	6		
2	I	132	Total	C	N	O	S	0	0
			1033	657	174	196	6		
2	J	132	Total	C	N	O	S	0	0
			1033	657	174	196	6		

- Molecule 3 is a protein called rEBOV-548 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	K	108	Total	C	N	O	S	0	0
			824	516	138	167	3		
3	L	108	Total	C	N	O	S	0	0
			824	516	138	167	3		
3	M	108	Total	C	N	O	S	0	0
			824	516	138	167	3		

- Molecule 4 is a protein called Virion spike glycoprotein, Virion spike glycoprotein, Ebola Virus (Makona) GP2.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	97	Total	C	N	O	S	0	0
			769	493	134	139	3		

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Mol	Chain	Residues	Atoms					AltConf	Trace
4	E	97	Total	C	N	O	S	0	0
			769	493	134	139	3		
4	F	97	Total	C	N	O	S	0	0
			769	493	134	139	3		

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	517	PHE	TYR	conflict	UNP A0A0F6PDW0
E	517	PHE	TYR	conflict	UNP A0A0F6PDW0
F	517	PHE	TYR	conflict	UNP A0A0F6PDW0

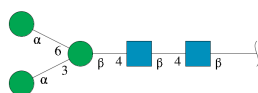
- Molecule 5 is a protein called rBOV-520 Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	Q	108	Total	C	N	O	S	0	0
			824	519	139	164	2		
5	R	108	Total	C	N	O	S	0	0
			824	519	139	164	2		
5	S	108	Total	C	N	O	S	0	0
			824	519	139	164	2		

- Molecule 6 is a protein called rBOV-520 Fab heavy chain.

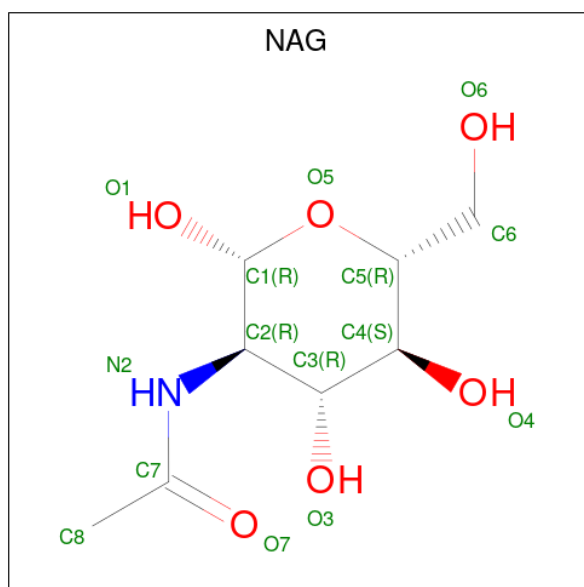
Mol	Chain	Residues	Atoms					AltConf	Trace
6	N	124	Total	C	N	O	S	0	0
			949	602	160	184	3		
6	O	124	Total	C	N	O	S	0	0
			949	602	160	184	3		
6	P	124	Total	C	N	O	S	0	0
			949	602	160	184	3		

- Molecule 7 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



Mol	Chain	Residues	Atoms				AltConf	Trace
7	G	5	Total	C	N	O	0	0
			61	34	2	25		
7	T	5	Total	C	N	O	0	0
			61	34	2	25		
7	U	5	Total	C	N	O	0	0
			61	34	2	25		

- Molecule 8 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



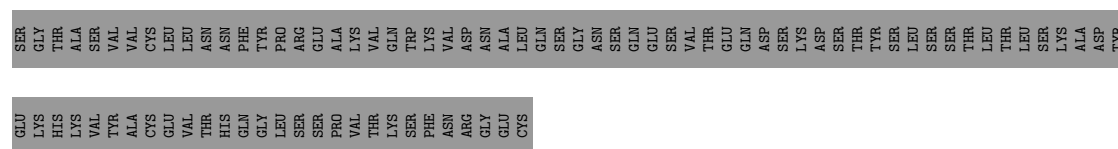
Mol	Chain	Residues	Atoms				AltConf
8	A	1	Total	C	N	O	0
			14	8	1	5	
8	A	1	Total	C	N	O	0
			14	8	1	5	
8	A	1	Total	C	N	O	0
			14	8	1	5	
8	A	1	Total	C	N	O	0
			14	8	1	5	
8	B	1	Total	C	N	O	0
			14	8	1	5	
8	B	1	Total	C	N	O	0
			14	8	1	5	
8	B	1	Total	C	N	O	0
			14	8	1	5	
8	B	1	Total	C	N	O	0
			14	8	1	5	

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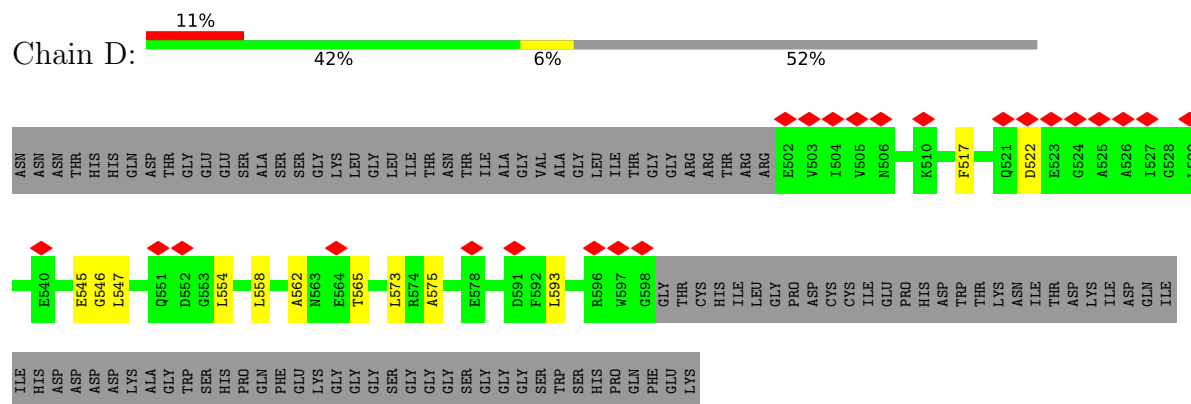
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Mol	Chain	Residues	Atoms				AltConf
8	C	1	Total	C	N	O	0
			14	8	1	5	
8	C	1	Total	C	N	O	0
			14	8	1	5	
8	C	1	Total	C	N	O	0
			14	8	1	5	
8	C	1	Total	C	N	O	0
			14	8	1	5	

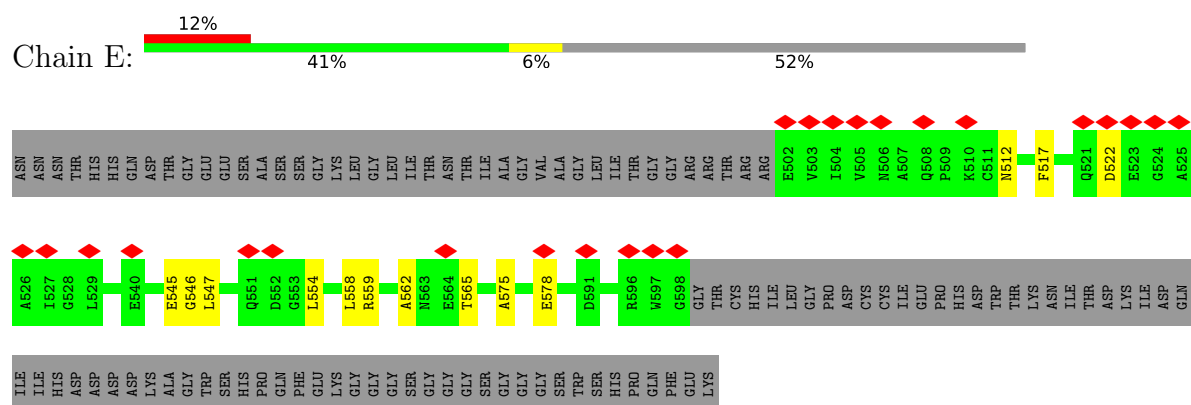
K65	G66	R67	F68	T69	I70	S71	R72	D73	N74	S75	K76	N77	L78	L79	F80	L81	Q82	M83	N84	S85	L86	R87	A88	E89	D90	T91	A92	L93	Y94	Y95	C96	A97	K98	E99	L100	L101	Q102	S106	A107	W108	G109	E110	G111	H112	S113	Y114	Y115	Y116	A117	L118	D119	S120	W121	G122	L123	G124	T125	A126
Q1	V2	Q3	E4	E5	E6	S7	G8	G9	G10	V11	V12	Q13	P14	G15	G16	S17	L18	R19	C22	A23	A24	S25	G26	F27	M28	F29	Y32	G33	M34	H35	W36	V37	R38	Q39	A40	P41	G42	K43	G44	L45	E46	A49	F50	I51	R52	Y53	D54	D55	S56	K57	G58	F59	D62	S63				



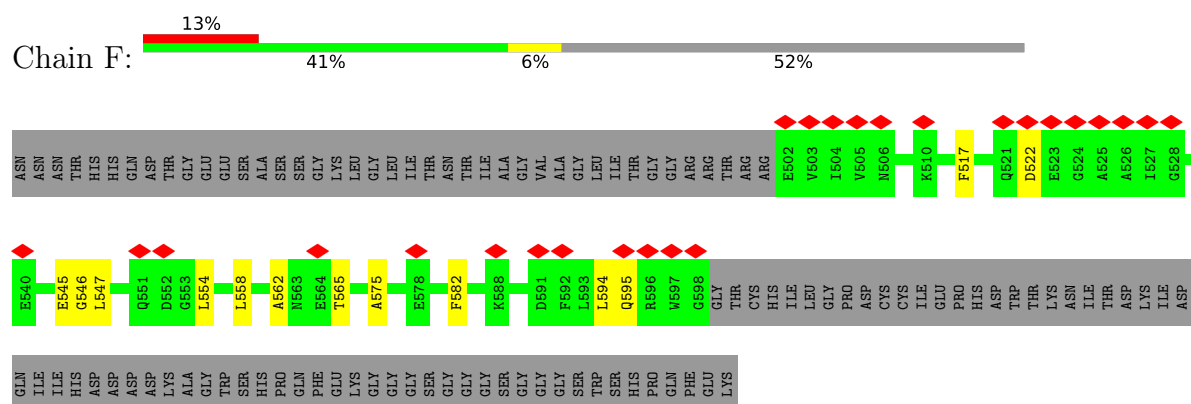
- Molecule 4: Virion spike glycoprotein, Virion spike glycoprotein, Ebola Virus (Makona) GP2



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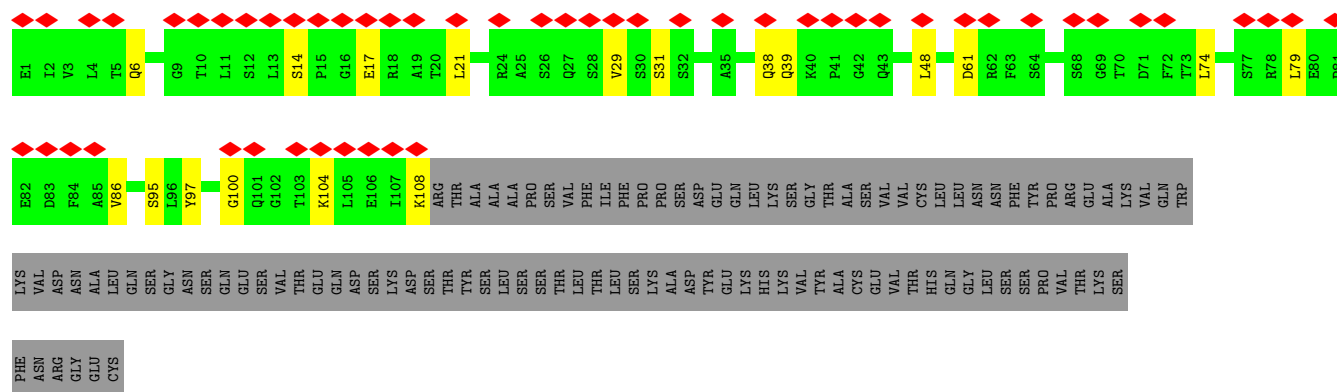


- Molecule 4: Virion spike glycoprotein, Virion spike glycoprotein, Ebola Virus (Makona) GP2

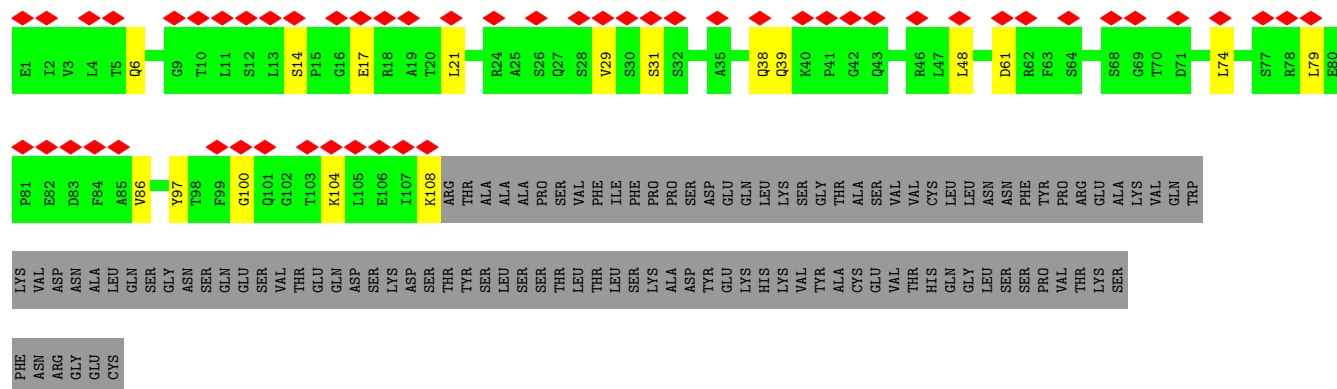
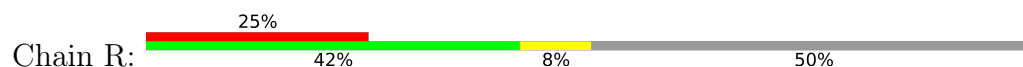


- Molecule 5: rBOV-520 Fab light chain

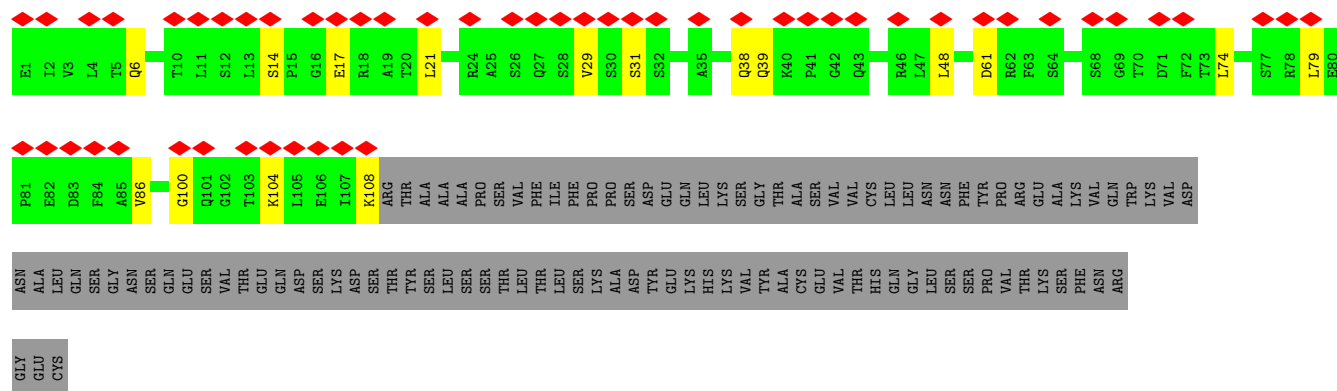
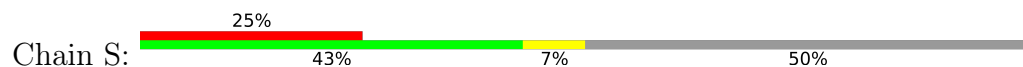




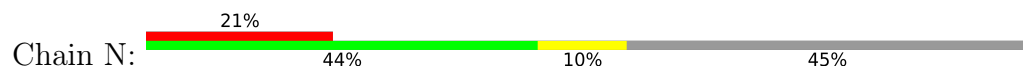
• Molecule 5: rEBOV-520 Fab light chain



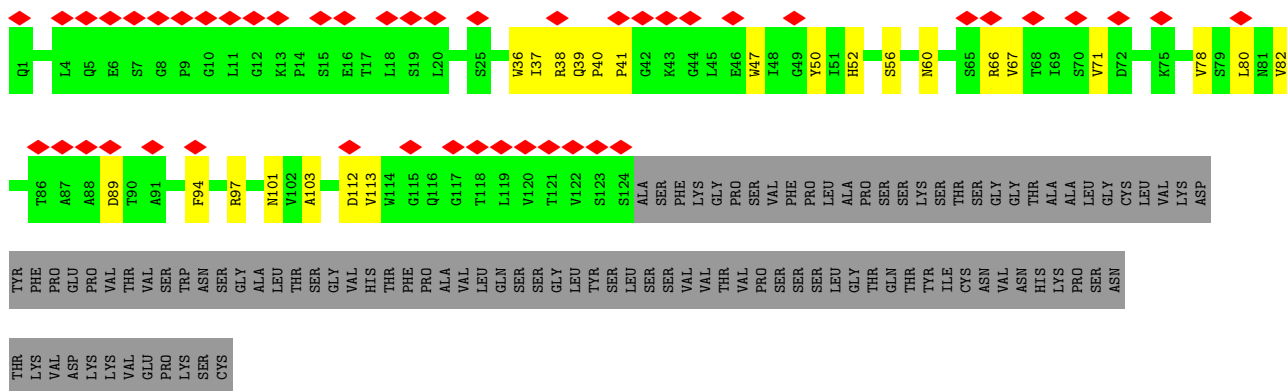
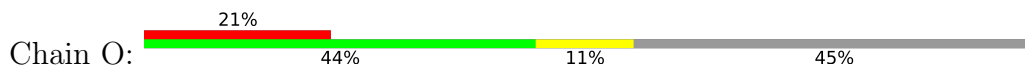
• Molecule 5: rEBOV-520 Fab light chain



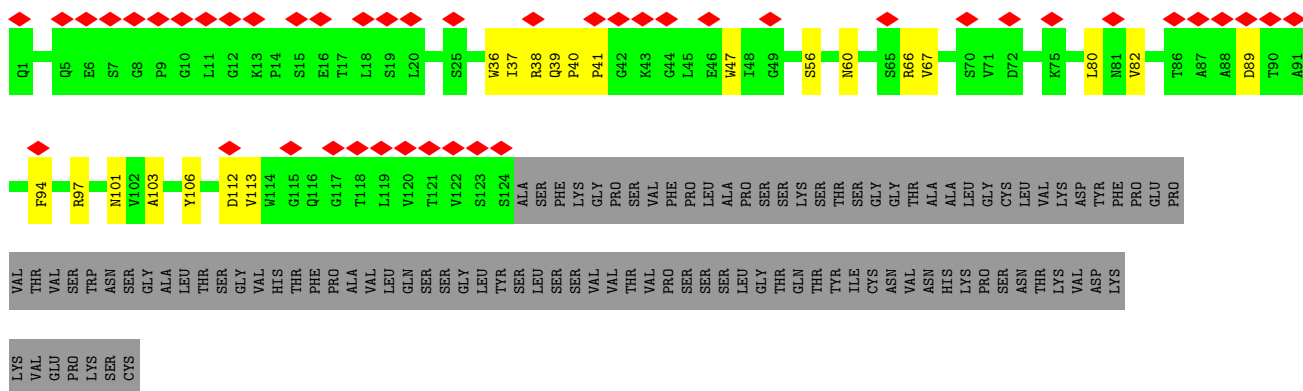
• Molecule 6: rEBOV-520 Fab heavy chain



- Molecule 6: rEBOV-520 Fab heavy chain

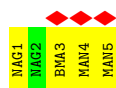


- Molecule 6: rEBOV-520 Fab heavy chain

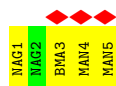


- Molecule 7: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

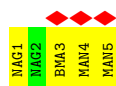




- Molecule 7: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



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4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C3	Depositor
Number of particles used	13114	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 ($e^-/\text{\AA}^2$)	51.85	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	29000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.100	Depositor
Minimum map value	-0.055	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.0276	Depositor
Map size (Å)	296.63998, 296.63998, 296.63998	wwPDB
Map dimensions	288, 288, 288	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.03, 1.03, 1.03	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: MAN, BMA, 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	0.51	0/1801	0.63	0/2447
1	B	0.51	0/1801	0.63	0/2447
1	C	0.51	0/1801	0.63	0/2447
2	H	0.31	0/1059	0.57	0/1432
2	I	0.31	0/1059	0.57	0/1432
2	J	0.31	0/1059	0.57	0/1432
3	K	0.32	0/841	0.58	0/1140
3	L	0.32	0/841	0.58	0/1140
3	M	0.32	0/841	0.58	0/1140
4	D	0.55	0/787	0.64	0/1071
4	E	0.55	0/787	0.64	0/1071
4	F	0.55	0/787	0.65	0/1071
5	Q	0.38	0/843	0.62	0/1143
5	R	0.38	0/843	0.62	0/1143
5	S	0.38	0/843	0.62	0/1143
6	N	0.39	0/974	0.58	0/1332
6	O	0.39	0/974	0.58	0/1332
6	P	0.39	0/974	0.58	0/1332
All	All	0.43	0/18915	0.61	0/25695

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1760	0	1722	16	0
1	B	1760	0	1722	20	0
1	C	1760	0	1722	22	0
2	H	1033	0	984	12	0
2	I	1033	0	984	10	0
2	J	1033	0	984	14	0
3	K	824	0	803	19	0
3	L	824	0	803	18	0
3	M	824	0	803	18	0
4	D	769	0	754	14	0
4	E	769	0	754	15	0
4	F	769	0	754	15	0
5	Q	824	0	802	11	0
5	R	824	0	802	10	0
5	S	824	0	802	9	0
6	N	949	0	916	16	0
6	O	949	0	916	17	0
6	P	949	0	916	15	0
7	G	61	0	52	0	0
7	T	61	0	52	0	0
7	U	61	0	52	0	0
8	A	56	0	52	0	0
8	B	56	0	52	0	0
8	C	56	0	52	0	0
All	All	18828	0	18255	239	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 239 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:K:94:PHE:HE1	3:K:96:TYR:CE2	1.70	1.09
3:K:94:PHE:CE1	3:K:96:TYR:CE2	2.40	1.09
3:M:94:PHE:CE1	3:M:96:TYR:CE2	2.43	1.06
3:L:94:PHE:CE1	3:L:96:TYR:CE2	2.45	1.04
3:L:94:PHE:HE1	3:L:96:TYR:CE2	1.76	1.03

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	221/278 (80%)	209 (95%)	12 (5%)	0	100	100
1	B	221/278 (80%)	209 (95%)	12 (5%)	0	100	100
1	C	221/278 (80%)	209 (95%)	12 (5%)	0	100	100
2	H	130/234 (56%)	122 (94%)	8 (6%)	0	100	100
2	I	130/234 (56%)	122 (94%)	8 (6%)	0	100	100
2	J	130/234 (56%)	122 (94%)	8 (6%)	0	100	100
3	K	106/214 (50%)	99 (93%)	7 (7%)	0	100	100
3	L	106/214 (50%)	99 (93%)	7 (7%)	0	100	100
3	M	106/214 (50%)	99 (93%)	7 (7%)	0	100	100
4	D	95/203 (47%)	86 (90%)	9 (10%)	0	100	100
4	E	95/203 (47%)	86 (90%)	9 (10%)	0	100	100
4	F	95/203 (47%)	86 (90%)	9 (10%)	0	100	100
5	Q	106/215 (49%)	94 (89%)	12 (11%)	0	100	100
5	R	106/215 (49%)	94 (89%)	12 (11%)	0	100	100
5	S	106/215 (49%)	94 (89%)	12 (11%)	0	100	100
6	N	122/227 (54%)	117 (96%)	5 (4%)	0	100	100
6	O	122/227 (54%)	117 (96%)	5 (4%)	0	100	100
6	P	122/227 (54%)	117 (96%)	5 (4%)	0	100	100
All	All	2340/4113 (57%)	2181 (93%)	159 (7%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	192/240 (80%)	192 (100%)	0	100	100
1	B	192/240 (80%)	192 (100%)	0	100	100
1	C	192/240 (80%)	192 (100%)	0	100	100
2	H	106/195 (54%)	106 (100%)	0	100	100
2	I	106/195 (54%)	106 (100%)	0	100	100
2	J	106/195 (54%)	106 (100%)	0	100	100
3	K	93/187 (50%)	93 (100%)	0	100	100
3	L	93/187 (50%)	93 (100%)	0	100	100
3	M	93/187 (50%)	93 (100%)	0	100	100
4	D	79/162 (49%)	79 (100%)	0	100	100
4	E	79/162 (49%)	79 (100%)	0	100	100
4	F	79/162 (49%)	79 (100%)	0	100	100
5	Q	91/186 (49%)	91 (100%)	0	100	100
5	R	91/186 (49%)	91 (100%)	0	100	100
5	S	91/186 (49%)	91 (100%)	0	100	100
6	N	104/193 (54%)	104 (100%)	0	100	100
6	O	104/193 (54%)	104 (100%)	0	100	100
6	P	104/193 (54%)	104 (100%)	0	100	100
All	All	1995/3489 (57%)	1995 (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 19 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	188	GLN
4	F	508	GLN
5	S	39	GLN
3	M	55	GLN
3	L	55	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

15 monosaccharides 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
7	NAG	G	1	4,7	14,14,15	0.87	1 (7%)	17,19,21	1.13	2 (11%)
7	NAG	G	2	7	14,14,15	0.24	0	17,19,21	0.50	0
7	BMA	G	3	7	11,11,12	0.68	0	15,15,17	1.00	1 (6%)
7	MAN	G	4	7	11,11,12	0.67	0	15,15,17	1.11	2 (13%)
7	MAN	G	5	7	11,11,12	0.58	0	15,15,17	1.16	2 (13%)
7	NAG	T	1	4,7	14,14,15	0.87	1 (7%)	17,19,21	1.13	2 (11%)
7	NAG	T	2	7	14,14,15	0.23	0	17,19,21	0.50	0
7	BMA	T	3	7	11,11,12	0.68	0	15,15,17	1.00	1 (6%)
7	MAN	T	4	7	11,11,12	0.67	0	15,15,17	1.11	2 (13%)
7	MAN	T	5	7	11,11,12	0.58	0	15,15,17	1.17	2 (13%)
7	NAG	U	1	4,7	14,14,15	0.88	1 (7%)	17,19,21	1.13	2 (11%)
7	NAG	U	2	7	14,14,15	0.23	0	17,19,21	0.50	0
7	BMA	U	3	7	11,11,12	0.67	0	15,15,17	1.00	1 (6%)
7	MAN	U	4	7	11,11,12	0.67	0	15,15,17	1.11	2 (13%)
7	MAN	U	5	7	11,11,12	0.58	0	15,15,17	1.17	2 (13%)

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
7	NAG	G	1	4,7	-	1/6/23/26	0/1/1/1
7	NAG	G	2	7	-	2/6/23/26	0/1/1/1
7	BMA	G	3	7	-	2/2/19/22	0/1/1/1
7	MAN	G	4	7	-	2/2/19/22	0/1/1/1
7	MAN	G	5	7	-	1/2/19/22	0/1/1/1
7	NAG	T	1	4,7	-	1/6/23/26	0/1/1/1
7	NAG	T	2	7	-	2/6/23/26	0/1/1/1
7	BMA	T	3	7	-	2/2/19/22	0/1/1/1
7	MAN	T	4	7	-	2/2/19/22	0/1/1/1
7	MAN	T	5	7	-	1/2/19/22	0/1/1/1
7	NAG	U	1	4,7	-	1/6/23/26	0/1/1/1
7	NAG	U	2	7	-	2/6/23/26	0/1/1/1
7	BMA	U	3	7	-	2/2/19/22	0/1/1/1
7	MAN	U	4	7	-	2/2/19/22	0/1/1/1
7	MAN	U	5	7	-	1/2/19/22	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	U	1	NAG	O5-C1	-3.09	1.38	1.43
7	T	1	NAG	O5-C1	-3.09	1.38	1.43
7	G	1	NAG	O5-C1	-3.07	1.38	1.43

The worst 5 of 21 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	U	5	MAN	C1-O5-C5	2.97	116.17	112.19
7	G	5	MAN	C1-O5-C5	2.97	116.16	112.19
7	T	5	MAN	C1-O5-C5	2.96	116.15	112.19
7	T	1	NAG	O3-C3-C2	-2.84	103.50	109.40
7	G	1	NAG	O3-C3-C2	-2.83	103.51	109.40

There are no chirality outliers.

5 of 24 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	G	2	NAG	O5-C5-C6-O6
7	T	2	NAG	O5-C5-C6-O6
7	U	2	NAG	O5-C5-C6-O6

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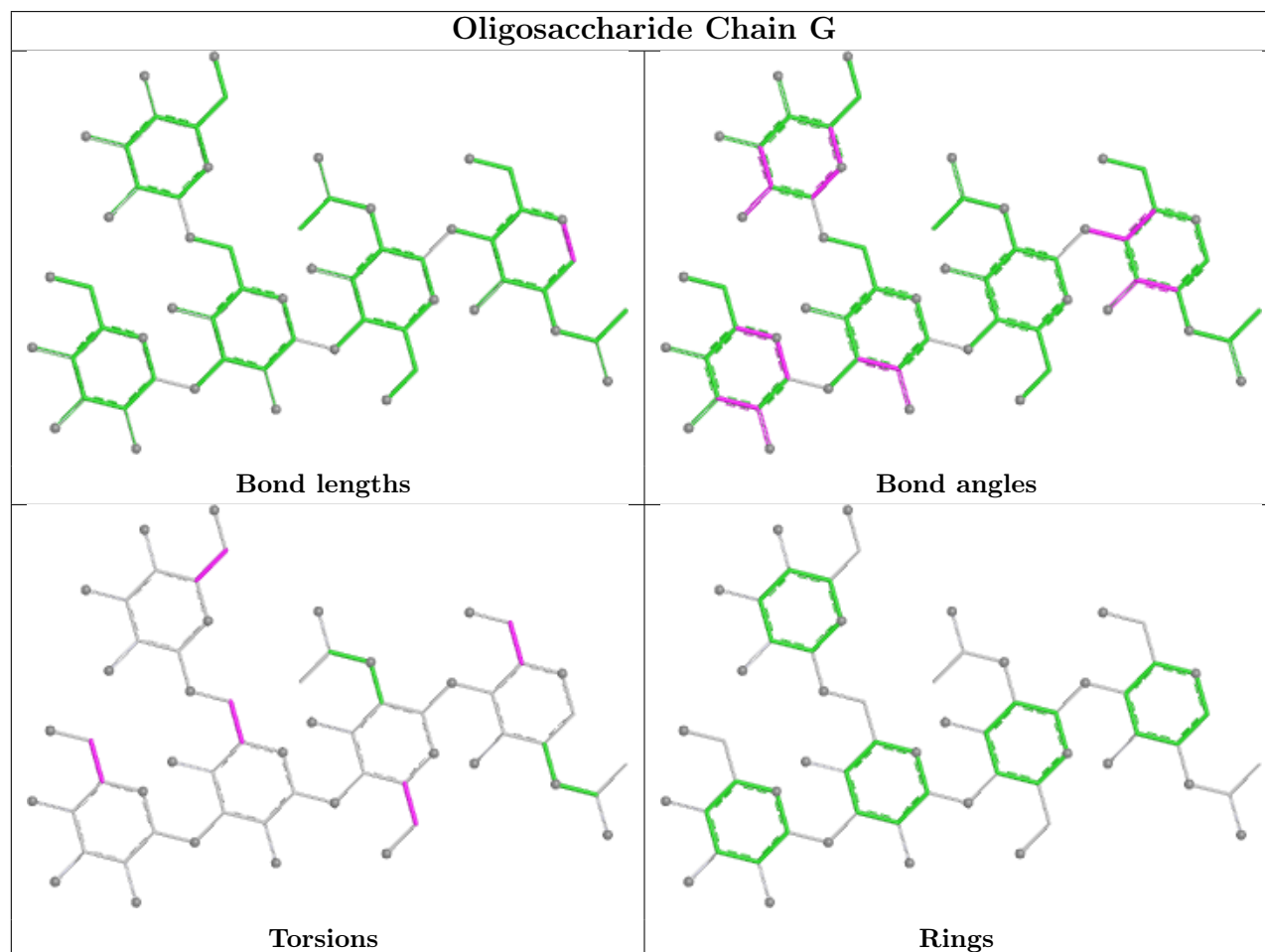
Continued from previous page...

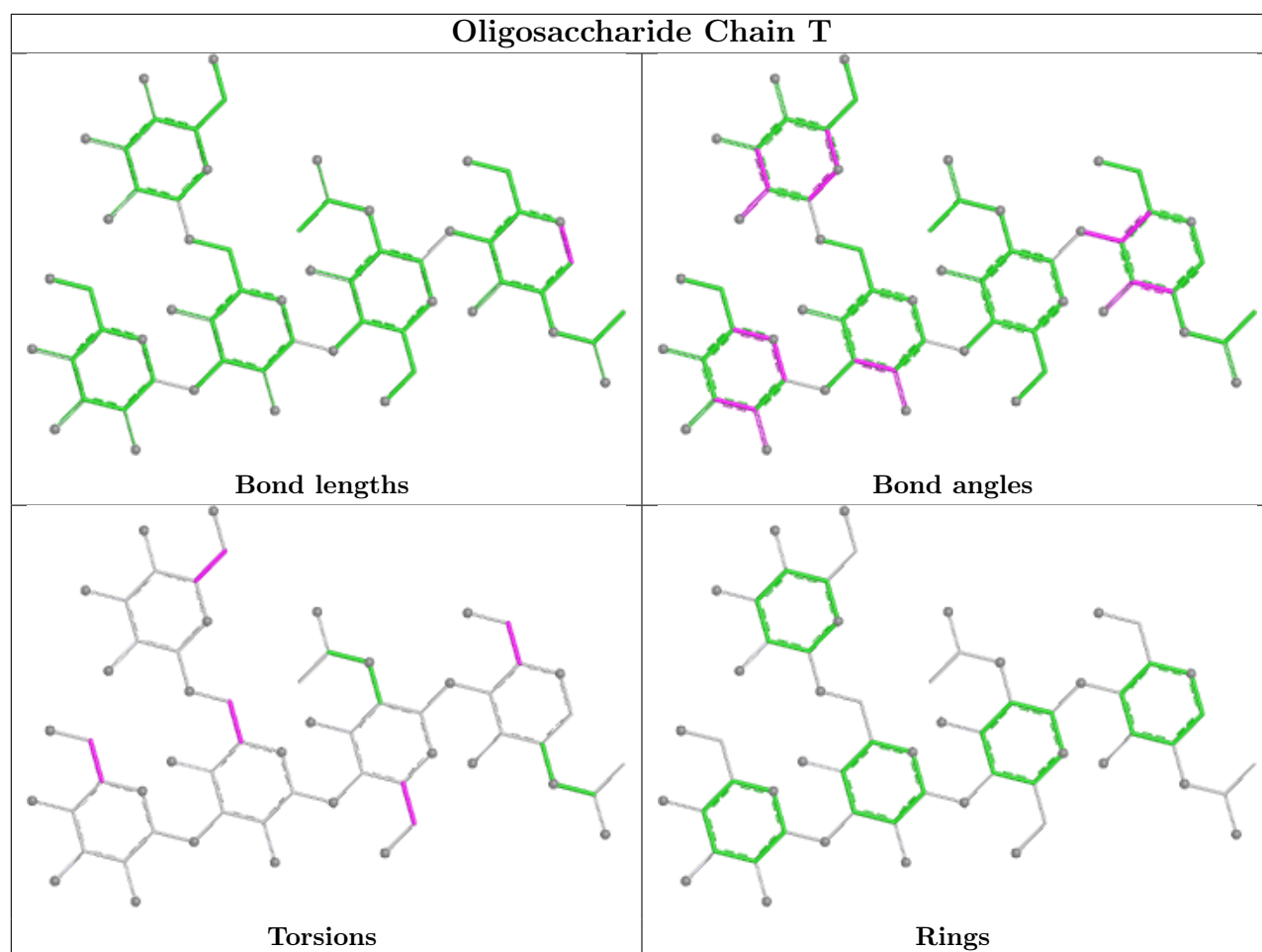
Mol	Chain	Res	Type	Atoms
7	G	4	MAN	O5-C5-C6-O6
7	T	4	MAN	O5-C5-C6-O6

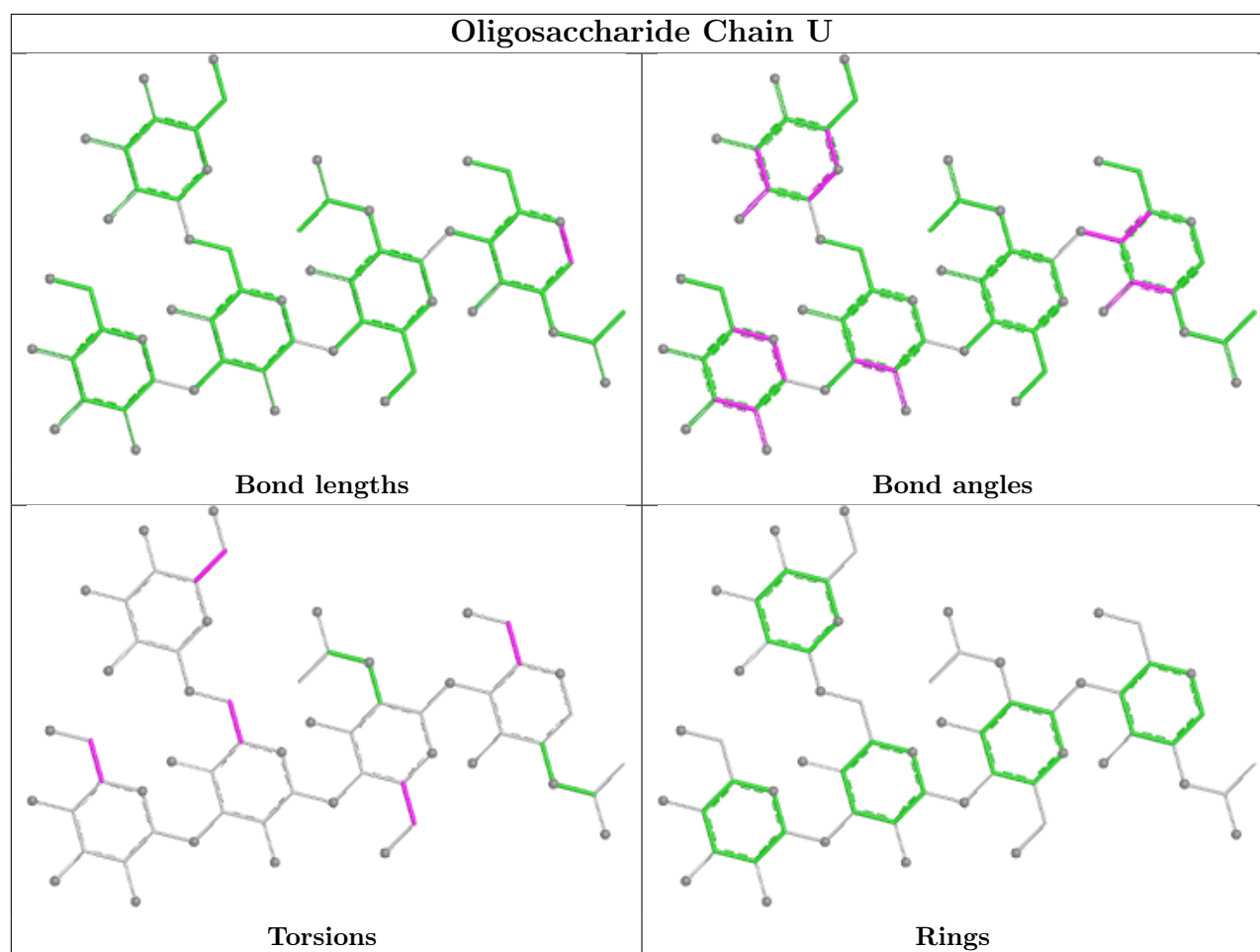
There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.







5.6 Ligand geometry [i](#)

12 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	$\# Z > 2$
8	NAG	A	403	1	14,14,15	0.38	0	17,19,21	0.40	0
8	NAG	C	402	1	14,14,15	0.33	0	17,19,21	0.59	0
8	NAG	B	401	1	14,14,15	0.58	0	17,19,21	1.22	1 (5%)
8	NAG	C	403	1	14,14,15	0.38	0	17,19,21	0.39	0
8	NAG	B	404	1	14,14,15	0.35	0	17,19,21	0.63	0
8	NAG	A	401	1	14,14,15	0.59	0	17,19,21	1.20	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
8	NAG	C	401	1	14,14,15	0.58	0	17,19,21	1.21	1 (5%)
8	NAG	C	404	1	14,14,15	0.35	0	17,19,21	0.62	0
8	NAG	A	404	1	14,14,15	0.35	0	17,19,21	0.63	0
8	NAG	A	402	1	14,14,15	0.33	0	17,19,21	0.60	0
8	NAG	B	402	1	14,14,15	0.33	0	17,19,21	0.60	0
8	NAG	B	403	1	14,14,15	0.37	0	17,19,21	0.40	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
8	NAG	A	403	1	-	2/6/23/26	0/1/1/1
8	NAG	C	402	1	-	2/6/23/26	0/1/1/1
8	NAG	B	401	1	-	1/6/23/26	0/1/1/1
8	NAG	C	403	1	-	2/6/23/26	0/1/1/1
8	NAG	B	404	1	-	0/6/23/26	0/1/1/1
8	NAG	A	401	1	-	1/6/23/26	0/1/1/1
8	NAG	C	401	1	-	1/6/23/26	0/1/1/1
8	NAG	C	404	1	-	0/6/23/26	0/1/1/1
8	NAG	A	404	1	-	0/6/23/26	0/1/1/1
8	NAG	A	402	1	-	2/6/23/26	0/1/1/1
8	NAG	B	402	1	-	2/6/23/26	0/1/1/1
8	NAG	B	403	1	-	2/6/23/26	0/1/1/1

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
8	B	401	NAG	C1-O5-C5	3.87	117.38	112.19
8	C	401	NAG	C1-O5-C5	3.85	117.35	112.19
8	A	401	NAG	C1-O5-C5	3.80	117.27	112.19

There are no chirality outliers.

5 of 15 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
8	A	402	NAG	C4-C5-C6-O6
8	B	402	NAG	C4-C5-C6-O6

Continued on next page...

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Mol	Chain	Res	Type	Atoms
8	C	402	NAG	C4-C5-C6-O6
8	A	403	NAG	C4-C5-C6-O6
8	B	403	NAG	C4-C5-C6-O6

There are no ring outliers.

No monomer is involved in short contacts.

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.

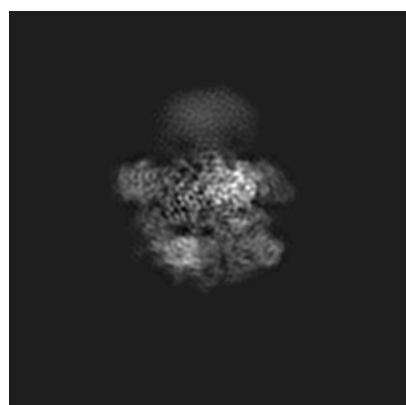
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-20301. These allow visual inspection of the internal detail of the map and identification of artifacts.

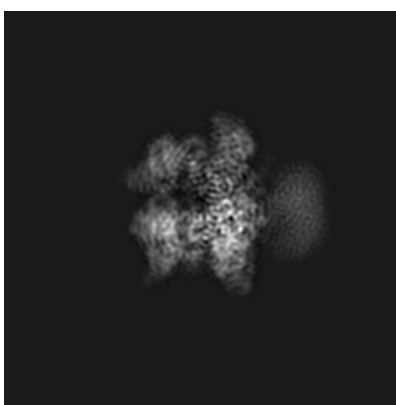
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

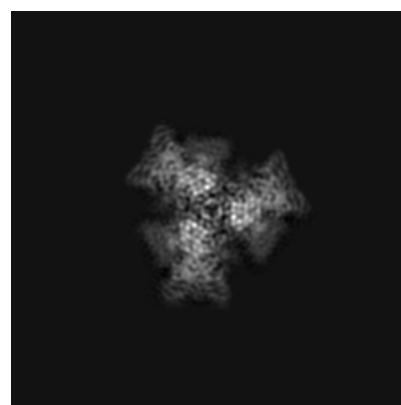
6.1.1 Primary map



X



Y



Z

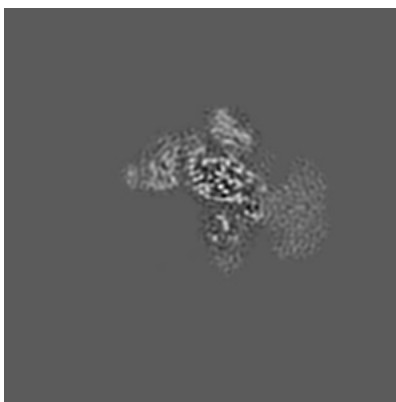
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 144



Y Index: 144

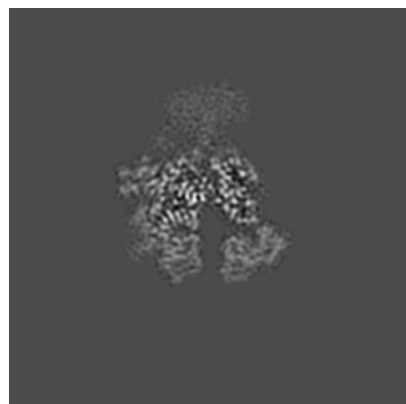


Z Index: 144

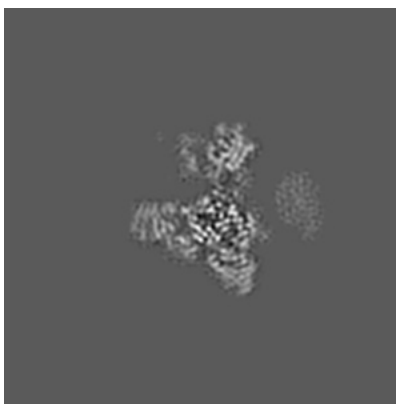
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

6.3.1 Primary map



X Index: 132



Y Index: 165

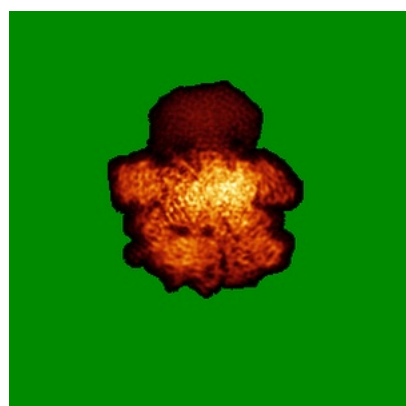


Z Index: 160

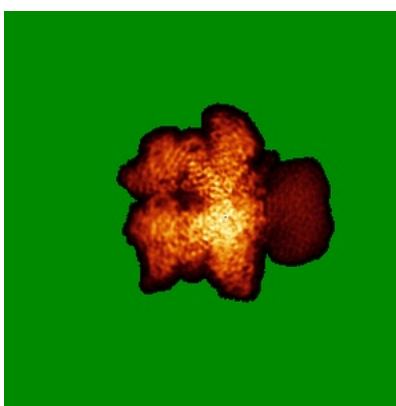
The images above show the largest variance slices of the map in three orthogonal directions.

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

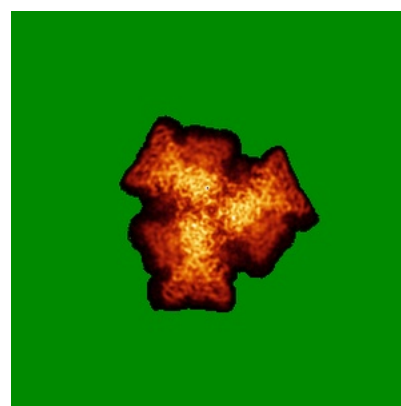
6.4.1 Primary map



X



Y

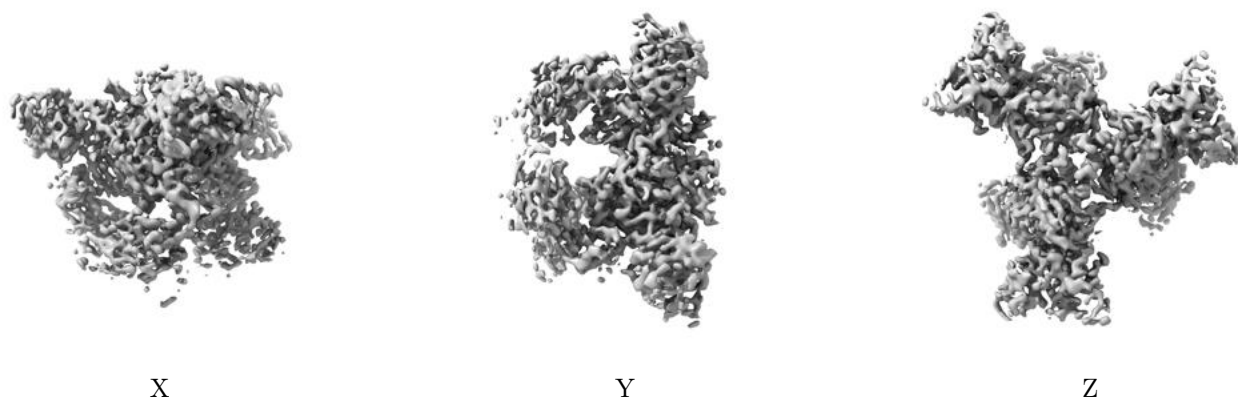


Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0276. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

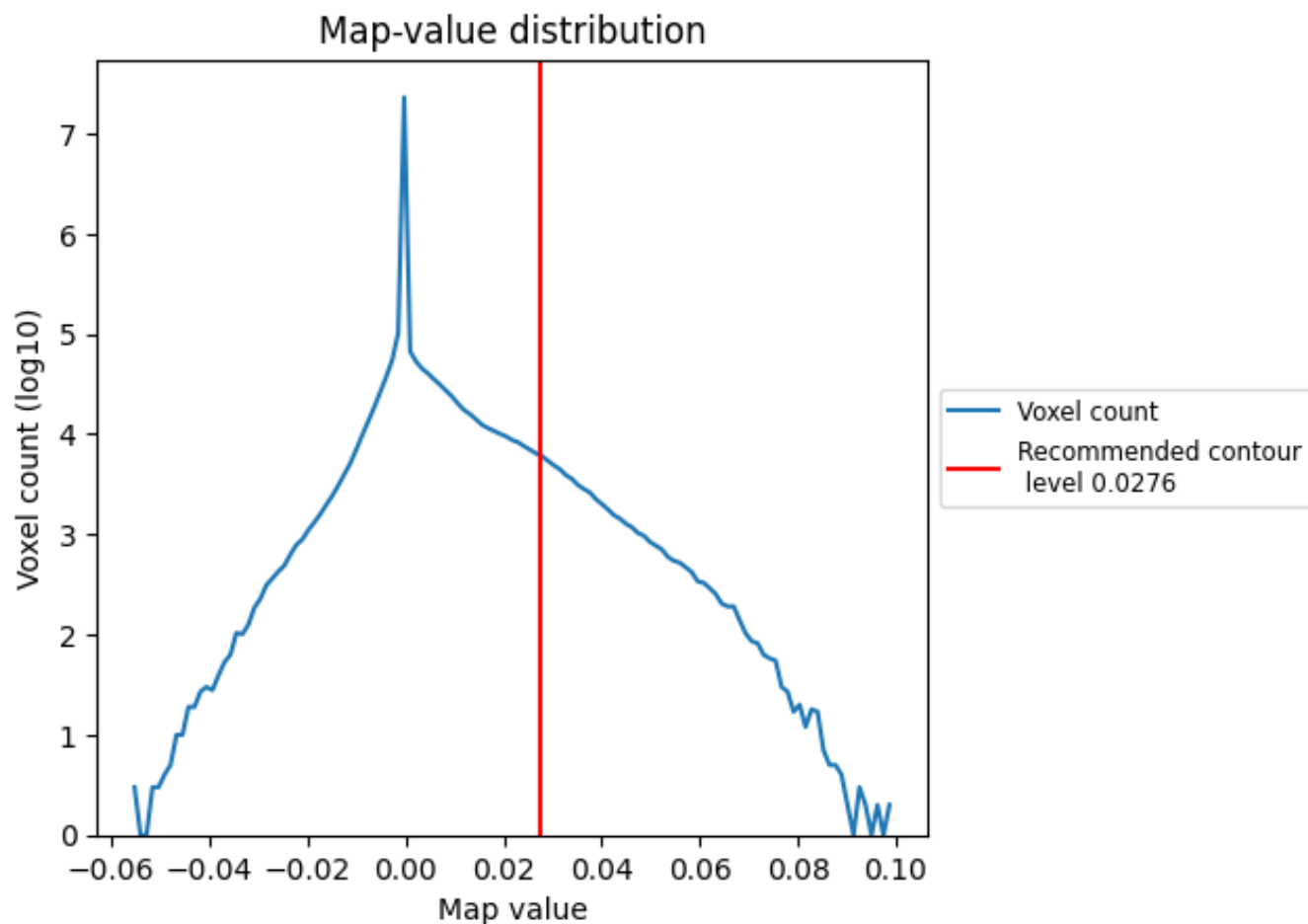
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

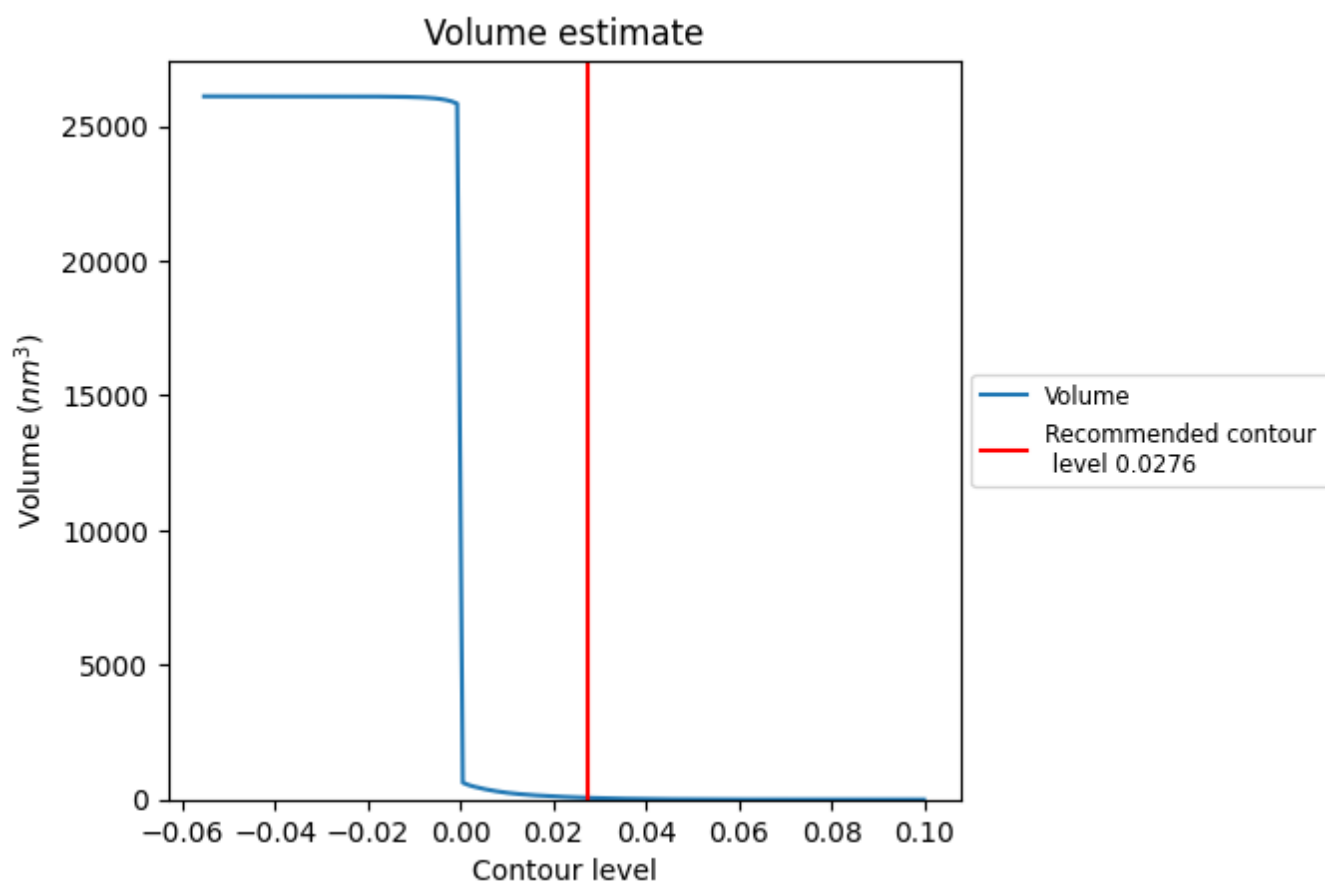
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

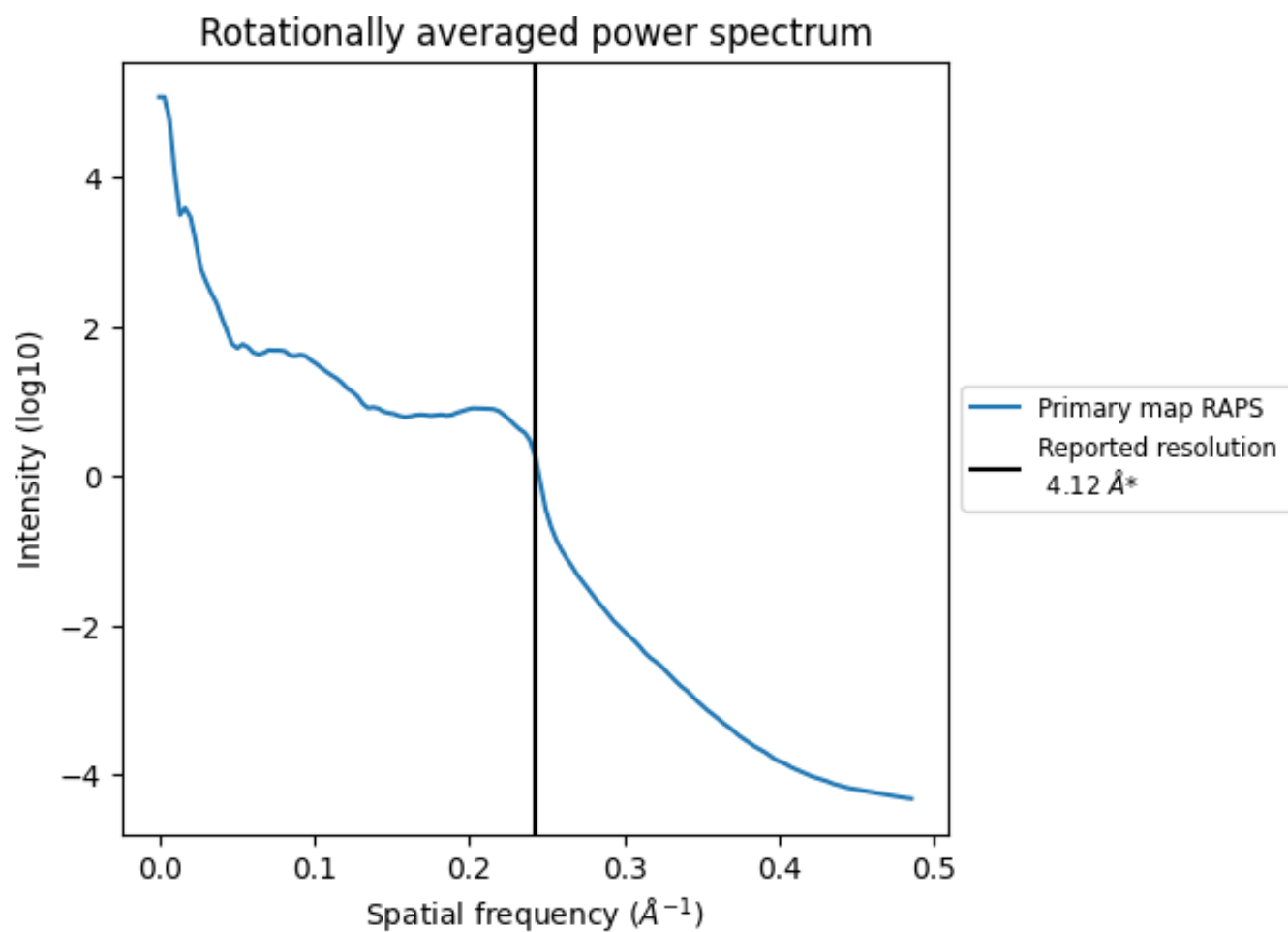
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 65 nm³; this corresponds to an approximate mass of 58 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

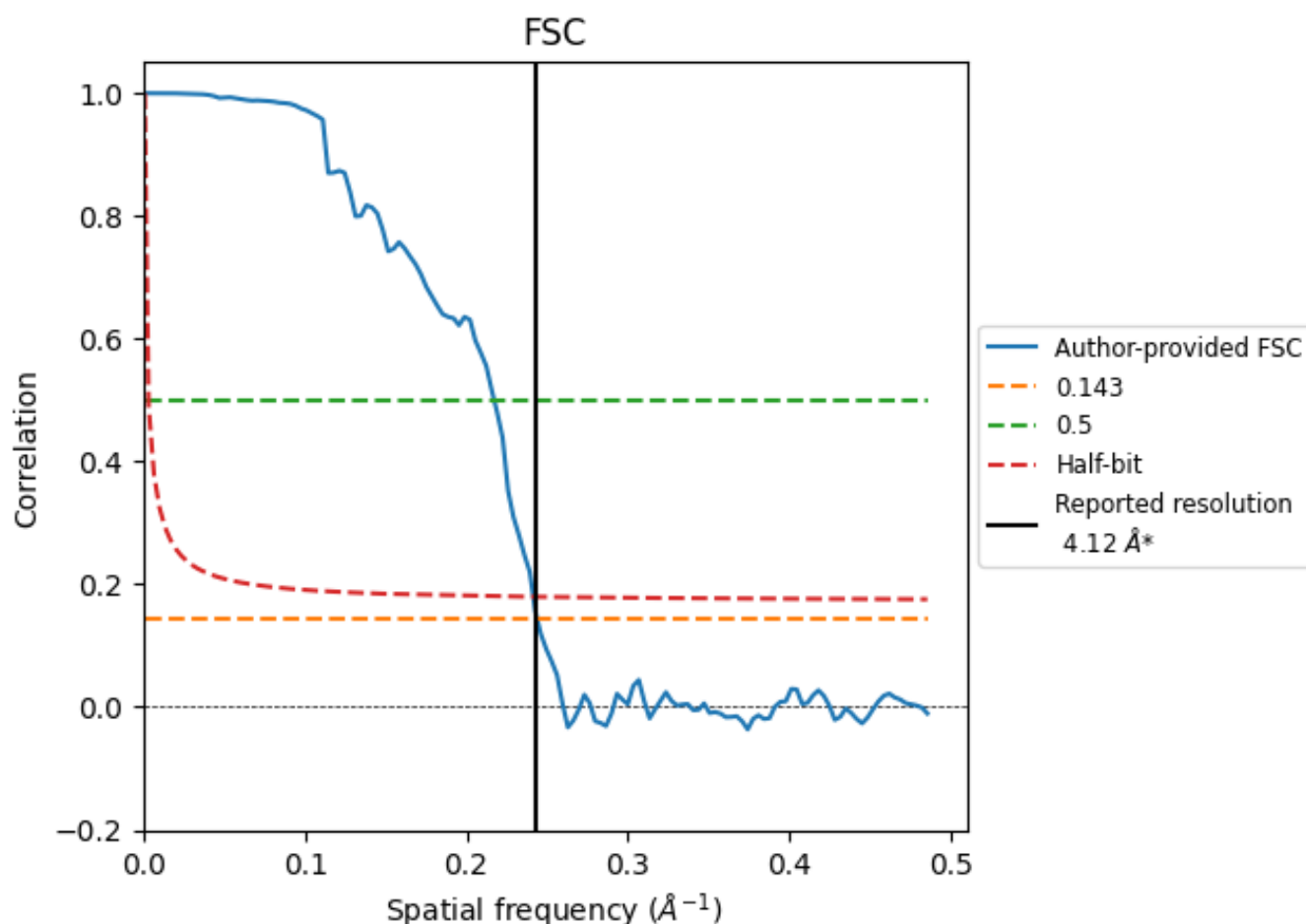


*Reported resolution corresponds to spatial frequency of 0.243 Å⁻¹

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 0.243 Å⁻¹

8.2 Resolution estimates [i](#)

Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.12	-	-
Author-provided FSC curve	4.10	4.60	4.14
Unmasked-calculated*	-	-	-

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

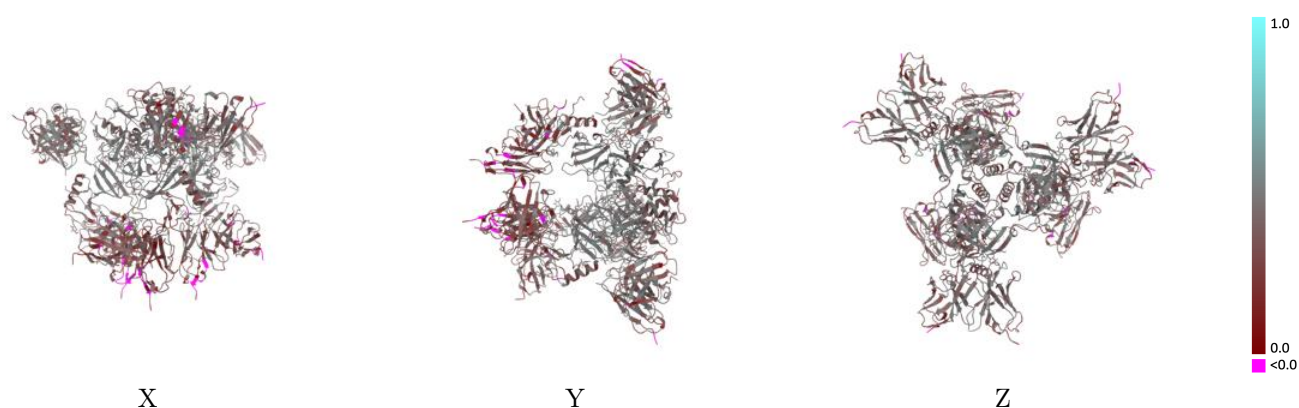
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-20301 and PDB model 6PCI. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay [i](#)

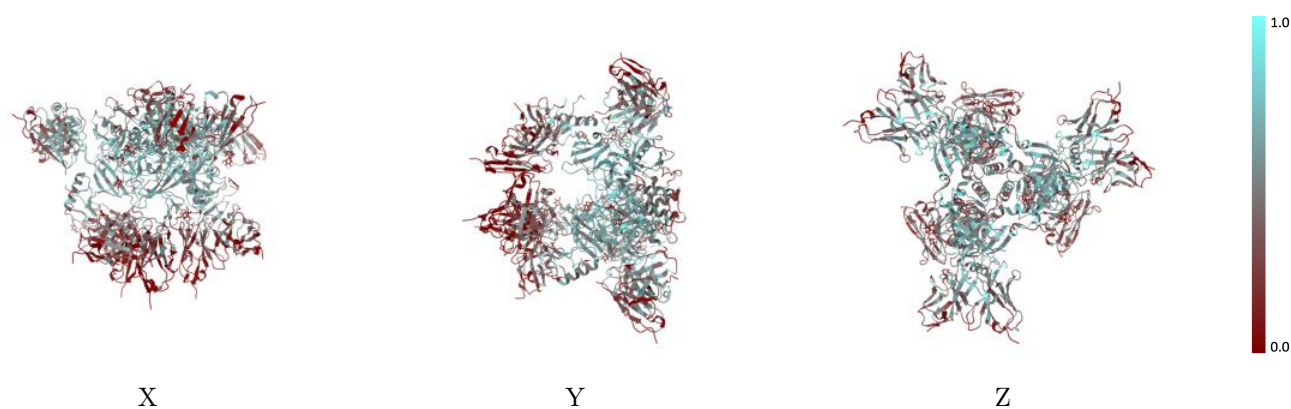
This section was not generated.

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



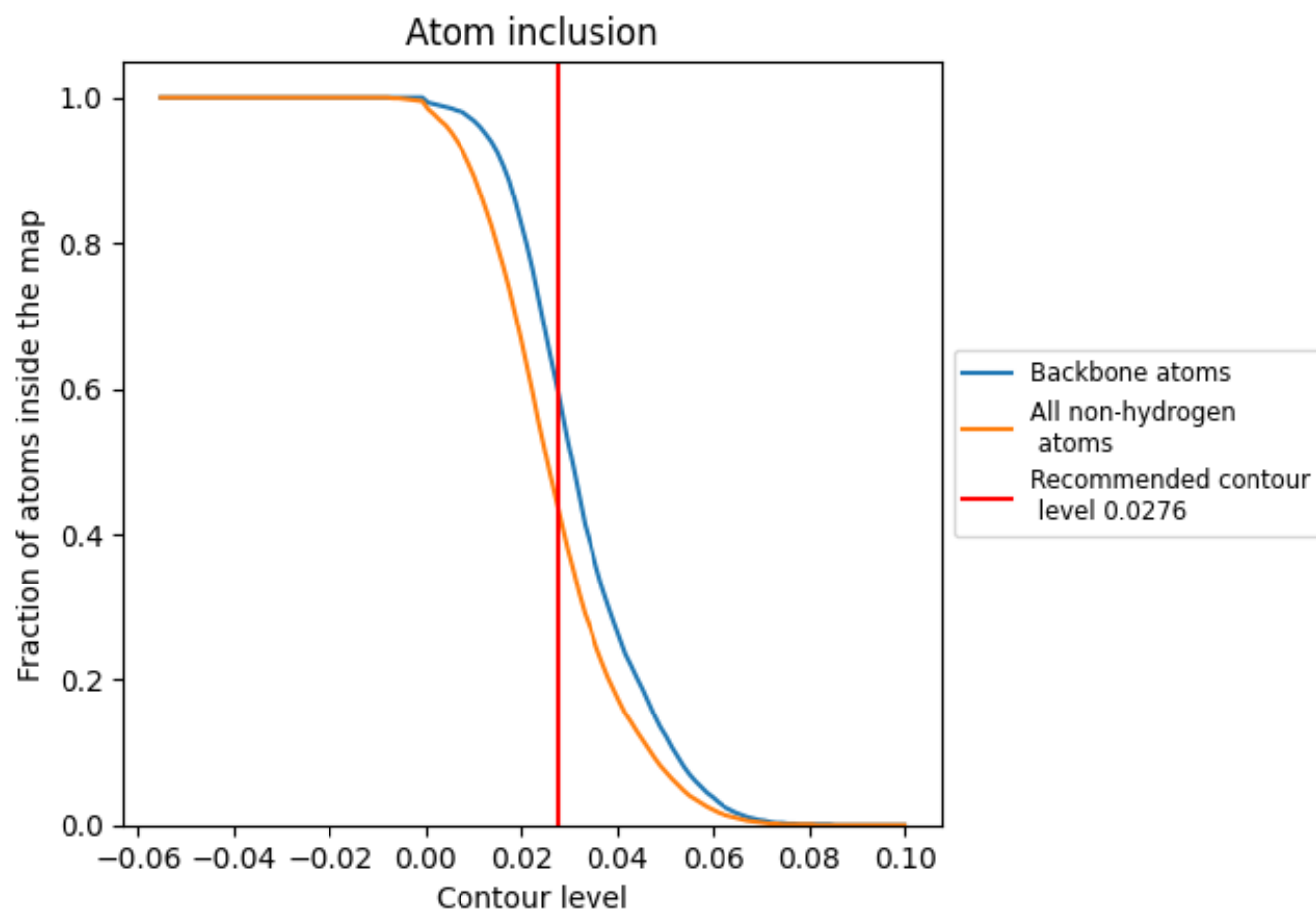
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0276).

9.4 Atom inclusion [i](#)



At the recommended contour level, 60% of all backbone atoms, 44% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.0276) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.4370	 0.3800
A	 0.5760	 0.4390
B	 0.5720	 0.4380
C	 0.5720	 0.4380
D	 0.5500	 0.4150
E	 0.5490	 0.4140
F	 0.5540	 0.4130
G	 0.2790	 0.4170
H	 0.2930	 0.3170
I	 0.2800	 0.3160
J	 0.2890	 0.3130
K	 0.2260	 0.2960
L	 0.2190	 0.2620
M	 0.2130	 0.2800
N	 0.4750	 0.4010
O	 0.4890	 0.4170
P	 0.4840	 0.4060
Q	 0.3750	 0.3580
R	 0.4030	 0.3760
S	 0.3950	 0.3720
T	 0.2790	 0.4090
U	 0.2790	 0.4170

