Full wwPDB EM Validation Report

Sep 25, 2024 – 04:15 PM EDT

PDB ID	:	9C3E
EMDB ID	:	EMD-45166
Title	:	TCR - CD3 complex bound to HLA
Authors	:	Notti, R.Q.; Walz, T.
Deposited on	:	2024-05-31
Resolution	:	3.50 Å(reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (1)) were used in the production of this report:

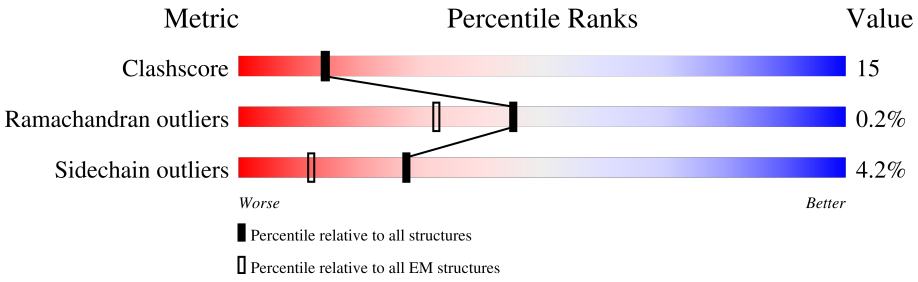
EMDB validation analysis	:	0.0.1.dev112
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.38.3

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 3.50 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	272	64% 27% • 7%
2	B	557	37% 13% • 50%
3	D	125	44% 38% • 17%
4	E	207	• 39% 16% • 44%
4	F	207	33% 20% • 45%
5	G	194	• 39% 18% • 43%
6	X	164	• 10% 7% • 83%
6	Y	164	10% 5% • 84%

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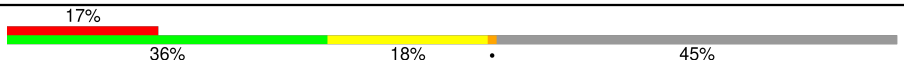
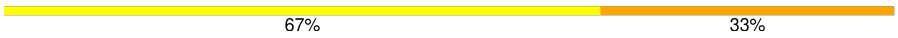
Mol	Chain	Length	Quality of chain
7	H	593	
8	N	3	

2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 10619 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 TCRa.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	252	Total	C	N	O	S	0	0
			1931	1221	323	379	8		

- Molecule 2 is a protein called TCRb (EGFP fusion).

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	281	Total	C	N	O	S	0	0
			2187	1386	371	419	11		

- Molecule 3 is a protein called T-cell surface glycoprotein CD3 delta chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	D	104	Total	C	N	O	S	0	0
			804	513	133	152	6		

- Molecule 4 is a protein called T-cell surface glycoprotein CD3 epsilon chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	E	115	Total	C	N	O	S	0	0
			853	548	140	157	8		
4	F	114	Total	C	N	O	S	0	0
			859	558	135	158	8		

- Molecule 5 is a protein called T-cell surface glycoprotein CD3 gamma chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	G	111	Total	C	N	O	S	0	0
			830	538	139	146	7		

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	183	VAL	-	expression tag	UNP P09693

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Chain	Residue	Modelled	Actual	Comment	Reference
G	184	GLU	-	expression tag	UNP P09693
G	185	HIS	-	expression tag	UNP P09693
G	186	HIS	-	expression tag	UNP P09693
G	187	HIS	-	expression tag	UNP P09693
G	188	HIS	-	expression tag	UNP P09693
G	189	HIS	-	expression tag	UNP P09693
G	190	HIS	-	expression tag	UNP P09693
G	191	HIS	-	expression tag	UNP P09693
G	192	HIS	-	expression tag	UNP P09693
G	193	VAL	-	expression tag	UNP P09693
G	194	ASP	-	expression tag	UNP P09693

- Molecule 6 is a protein called T-cell surface glycoprotein CD3 zeta chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	X	28	Total	C	N	O	S	0	0
			218	150	30	37	1		
6	Y	27	Total	C	N	O	S	0	0
			199	136	28	34	1		

- Molecule 7 is a protein called Cancer/testis antigen 1,Beta-2-microglobulin,MHC class I antigen.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	H	324	Total	C	N	O	S	0	0
			2531	1609	459	453	10		

There are 219 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	9	VAL	CYS	engineered mutation	UNP P78358
H	11	UNK	-	linker	UNP P78358
H	12	UNK	-	linker	UNP P78358
H	13	UNK	-	linker	UNP P78358
H	14	UNK	-	linker	UNP P78358
H	15	UNK	-	linker	UNP P78358
H	16	UNK	-	linker	UNP P78358
H	17	UNK	-	linker	UNP P78358
H	18	UNK	-	linker	UNP P78358
H	19	UNK	-	linker	UNP P78358
H	20	UNK	-	linker	UNP P78358
H	21	UNK	-	linker	UNP P78358

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Chain	Residue	Modelled	Actual	Comment	Reference
H	22	UNK	-	linker	UNP P78358
H	23	UNK	-	linker	UNP P78358
H	24	UNK	-	linker	UNP P78358
H	25	UNK	-	linker	UNP P78358
H	26	UNK	-	linker	UNP P78358
H	27	UNK	-	linker	UNP P78358
H	28	UNK	-	linker	UNP P78358
H	29	UNK	-	linker	UNP P78358
H	30	UNK	-	linker	UNP P78358
H	31	UNK	-	linker	UNP P78358
H	32	UNK	-	linker	UNP P78358
H	33	UNK	-	linker	UNP P78358
H	34	UNK	-	linker	UNP P78358
H	35	UNK	-	linker	UNP P78358
H	36	UNK	-	linker	UNP P78358
H	37	UNK	-	linker	UNP P78358
H	38	UNK	-	linker	UNP P78358
H	39	UNK	-	linker	UNP P78358
H	40	UNK	-	linker	UNP P78358
H	41	UNK	-	linker	UNP P78358
H	42	UNK	-	linker	UNP P78358
H	43	UNK	-	linker	UNP P78358
H	44	UNK	-	linker	UNP P78358
H	45	UNK	-	linker	UNP P78358
H	46	UNK	-	linker	UNP P78358
H	47	UNK	-	linker	UNP P78358
H	48	UNK	-	linker	UNP P78358
H	49	UNK	-	linker	UNP P78358
H	50	UNK	-	linker	UNP P78358
H	51	UNK	-	linker	UNP P78358
H	52	UNK	-	linker	UNP P78358
H	53	UNK	-	linker	UNP P78358
H	54	UNK	-	linker	UNP P78358
H	55	UNK	-	linker	UNP P78358
H	56	UNK	-	linker	UNP P78358
H	57	UNK	-	linker	UNP P78358
H	58	UNK	-	linker	UNP P78358
H	59	UNK	-	linker	UNP P78358
H	60	UNK	-	linker	UNP P78358
H	61	UNK	-	linker	UNP P78358
H	62	UNK	-	linker	UNP P78358
H	63	UNK	-	linker	UNP P78358

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Chain	Residue	Modelled	Actual	Comment	Reference
H	64	UNK	-	linker	UNP P78358
H	65	UNK	-	linker	UNP P78358
H	66	UNK	-	linker	UNP P78358
H	67	UNK	-	linker	UNP P78358
H	68	UNK	-	linker	UNP P78358
H	69	UNK	-	linker	UNP P78358
H	70	UNK	-	linker	UNP P78358
H	71	UNK	-	linker	UNP P78358
H	72	UNK	-	linker	UNP P78358
H	73	UNK	-	linker	UNP P78358
H	74	UNK	-	linker	UNP P78358
H	75	UNK	-	linker	UNP P78358
H	76	UNK	-	linker	UNP P78358
H	77	UNK	-	linker	UNP P78358
H	78	UNK	-	linker	UNP P78358
H	79	UNK	-	linker	UNP P78358
H	80	UNK	-	linker	UNP P78358
H	81	UNK	-	linker	UNP P78358
H	82	UNK	-	linker	UNP P78358
H	83	UNK	-	linker	UNP P78358
H	84	UNK	-	linker	UNP P78358
H	85	UNK	-	linker	UNP P78358
H	86	UNK	-	linker	UNP P78358
H	87	UNK	-	linker	UNP P78358
H	88	UNK	-	linker	UNP P78358
H	89	UNK	-	linker	UNP P78358
H	90	UNK	-	linker	UNP P78358
H	91	UNK	-	linker	UNP P78358
H	92	UNK	-	linker	UNP P78358
H	93	UNK	-	linker	UNP P78358
H	94	UNK	-	linker	UNP P78358
H	95	UNK	-	linker	UNP P78358
H	96	UNK	-	linker	UNP P78358
H	97	UNK	-	linker	UNP P78358
H	98	UNK	-	linker	UNP P78358
H	99	UNK	-	linker	UNP P78358
H	100	UNK	-	linker	UNP P78358
H	101	UNK	-	linker	UNP P78358
H	102	UNK	-	linker	UNP P78358
H	103	UNK	-	linker	UNP P78358
H	104	UNK	-	linker	UNP P78358
H	105	UNK	-	linker	UNP P78358

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Chain	Residue	Modelled	Actual	Comment	Reference
H	106	UNK	-	linker	UNP P78358
H	107	UNK	-	linker	UNP P78358
H	108	UNK	-	linker	UNP P78358
H	109	UNK	-	linker	UNP P78358
H	110	UNK	-	linker	UNP P78358
H	111	UNK	-	linker	UNP P78358
H	112	UNK	-	linker	UNP P78358
H	113	UNK	-	linker	UNP P78358
H	114	UNK	-	linker	UNP P78358
H	115	UNK	-	linker	UNP P78358
H	116	UNK	-	linker	UNP P78358
H	117	UNK	-	linker	UNP P78358
H	118	UNK	-	linker	UNP P78358
H	119	UNK	-	linker	UNP P78358
H	120	UNK	-	linker	UNP P78358
H	218A	UNK	-	linker	UNP P61769
H	218B	UNK	-	linker	UNP P61769
H	218C	UNK	-	linker	UNP P61769
H	218D	UNK	-	linker	UNP P61769
H	218E	UNK	-	linker	UNP P61769
H	218F	UNK	-	linker	UNP P61769
H	218G	UNK	-	linker	UNP P61769
H	218H	UNK	-	linker	UNP P61769
H	218I	UNK	-	linker	UNP P61769
H	218J	UNK	-	linker	UNP P61769
H	218K	UNK	-	linker	UNP P61769
H	218L	UNK	-	linker	UNP P61769
H	218M	UNK	-	linker	UNP P61769
H	218N	UNK	-	linker	UNP P61769
H	218O	UNK	-	linker	UNP P61769
H	218P	UNK	-	linker	UNP P61769
H	218Q	UNK	-	linker	UNP P61769
H	218R	UNK	-	linker	UNP P61769
H	218S	UNK	-	linker	UNP P61769
H	218T	UNK	-	linker	UNP P61769
H	218U	UNK	-	linker	UNP P61769
H	218V	UNK	-	linker	UNP P61769
H	218W	UNK	-	linker	UNP P61769
H	218X	UNK	-	linker	UNP P61769
H	218Y	UNK	-	linker	UNP P61769
H	218Z	UNK	-	linker	UNP P61769
H	219A	UNK	-	linker	UNP P61769

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Chain	Residue	Modelled	Actual	Comment	Reference
H	219B	UNK	-	linker	UNP P61769
H	219C	UNK	-	linker	UNP P61769
H	219D	UNK	-	linker	UNP P61769
H	219E	UNK	-	linker	UNP P61769
H	219F	UNK	-	linker	UNP P61769
H	219G	UNK	-	linker	UNP P61769
H	219H	UNK	-	linker	UNP P61769
H	219I	UNK	-	linker	UNP P61769
H	219J	UNK	-	linker	UNP P61769
H	219K	UNK	-	linker	UNP P61769
H	219L	UNK	-	linker	UNP P61769
H	219M	UNK	-	linker	UNP P61769
H	219N	UNK	-	linker	UNP P61769
H	219O	UNK	-	linker	UNP P61769
H	219P	UNK	-	linker	UNP P61769
H	219Q	UNK	-	linker	UNP P61769
H	219R	UNK	-	linker	UNP P61769
H	219S	UNK	-	linker	UNP P61769
H	219T	UNK	-	linker	UNP P61769
H	219U	UNK	-	linker	UNP P61769
H	219V	UNK	-	linker	UNP P61769
H	219W	UNK	-	linker	UNP P61769
H	219X	UNK	-	linker	UNP P61769
H	219Y	UNK	-	linker	UNP P61769
H	219Z	UNK	-	linker	UNP P61769
H	220A	UNK	-	linker	UNP P61769
H	220B	UNK	-	linker	UNP P61769
H	220C	UNK	-	linker	UNP P61769
H	220D	UNK	-	linker	UNP P61769
H	220E	UNK	-	linker	UNP P61769
H	220F	UNK	-	linker	UNP P61769
H	220G	UNK	-	linker	UNP P61769
H	220H	UNK	-	linker	UNP P61769
H	220I	UNK	-	linker	UNP P61769
H	220J	UNK	-	linker	UNP P61769
H	220K	UNK	-	linker	UNP P61769
H	220L	UNK	-	linker	UNP P61769
H	220M	UNK	-	linker	UNP P61769
H	220N	UNK	-	linker	UNP P61769
H	220O	UNK	-	linker	UNP P61769
H	220P	UNK	-	linker	UNP P61769
H	220Q	UNK	-	linker	UNP P61769

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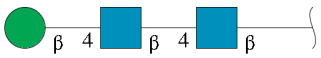
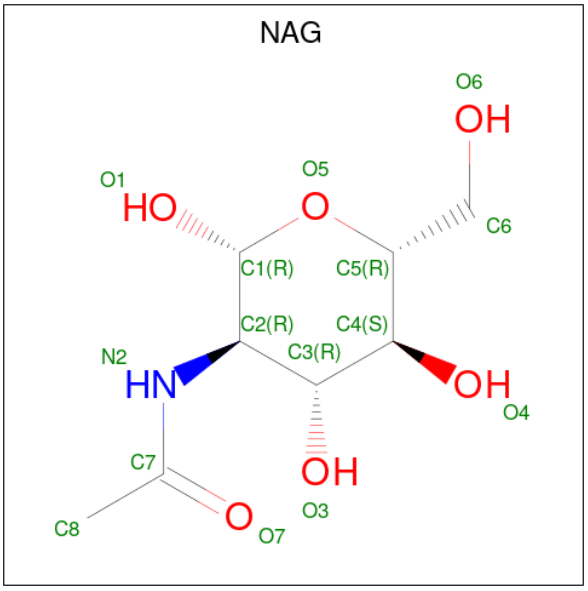
Chain	Residue	Modelled	Actual	Comment	Reference
H	220R	UNK	-	linker	UNP P61769
H	220S	UNK	-	linker	UNP P61769
H	220T	UNK	-	linker	UNP P61769
H	220U	UNK	-	linker	UNP P61769
H	220V	UNK	-	linker	UNP P61769
H	220W	UNK	-	linker	UNP P61769
H	220X	UNK	-	linker	UNP P61769
H	220Y	UNK	-	linker	UNP P61769
H	220Z	UNK	-	linker	UNP P61769
H	221A	UNK	-	linker	UNP P61769
H	221B	UNK	-	linker	UNP P61769
H	221C	UNK	-	linker	UNP P61769
H	221D	UNK	-	linker	UNP P61769
H	221E	UNK	-	linker	UNP P61769
H	221F	UNK	-	linker	UNP P61769
H	221G	UNK	-	linker	UNP P61769
H	221H	UNK	-	linker	UNP P61769
H	221I	UNK	-	linker	UNP P61769
H	221J	UNK	-	linker	UNP P61769
H	221K	UNK	-	linker	UNP P61769
H	221L	UNK	-	linker	UNP P61769
H	221M	UNK	-	linker	UNP P61769
H	221N	UNK	-	linker	UNP P61769
H	221O	UNK	-	linker	UNP P61769
H	221P	UNK	-	linker	UNP P61769
H	221Q	UNK	-	linker	UNP P61769
H	221R	UNK	-	linker	UNP P61769
H	221S	UNK	-	linker	UNP P61769
H	221T	UNK	-	linker	UNP P61769
H	221U	UNK	-	linker	UNP P61769
H	221V	UNK	-	linker	UNP P61769
H	221W	UNK	-	linker	UNP P61769
H	221X	UNK	-	linker	UNP P61769
H	221Y	UNK	-	linker	UNP P61769
H	221Z	UNK	-	linker	UNP P61769
H	222A	UNK	-	linker	UNP P61769
H	222B	UNK	-	linker	UNP P61769
H	222C	UNK	-	linker	UNP P61769
H	222D	UNK	-	linker	UNP P61769

- Molecule 8 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



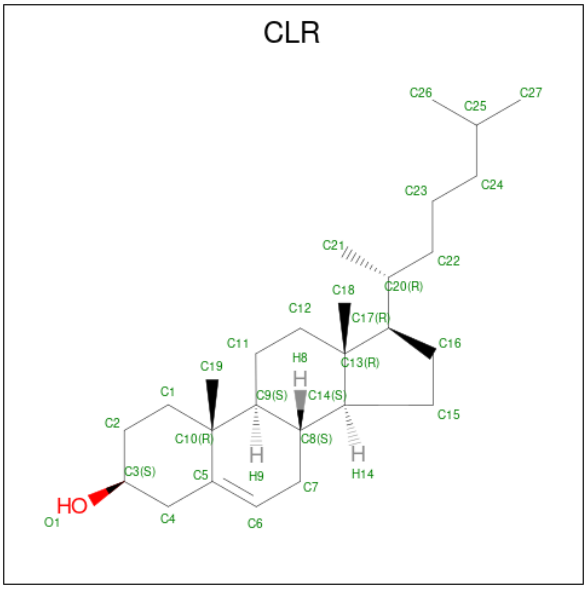
Mol	Chain	Residues	Atoms				AltConf	Trace
8	N	3	Total	C	N	O	0	0
			39	22	2	15		

- Molecule 9 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



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

- Molecule 10 is CHOLESTEROL (three-letter code: CLR) (formula: $C_{27}H_{46}O$) (labeled as "Ligand of Interest" by depositor).



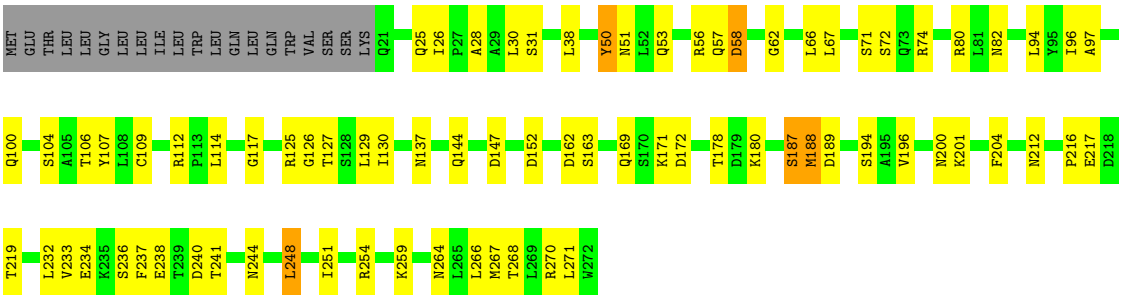
Mol	Chain	Residues	Atoms	AltConf
10	G	1	Total C O 28 27 1	0
10	Y	1	Total C O 28 27 1	0

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.

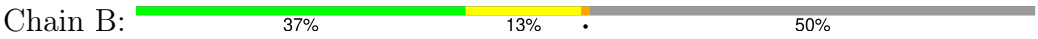
- Molecule 1: TCRa

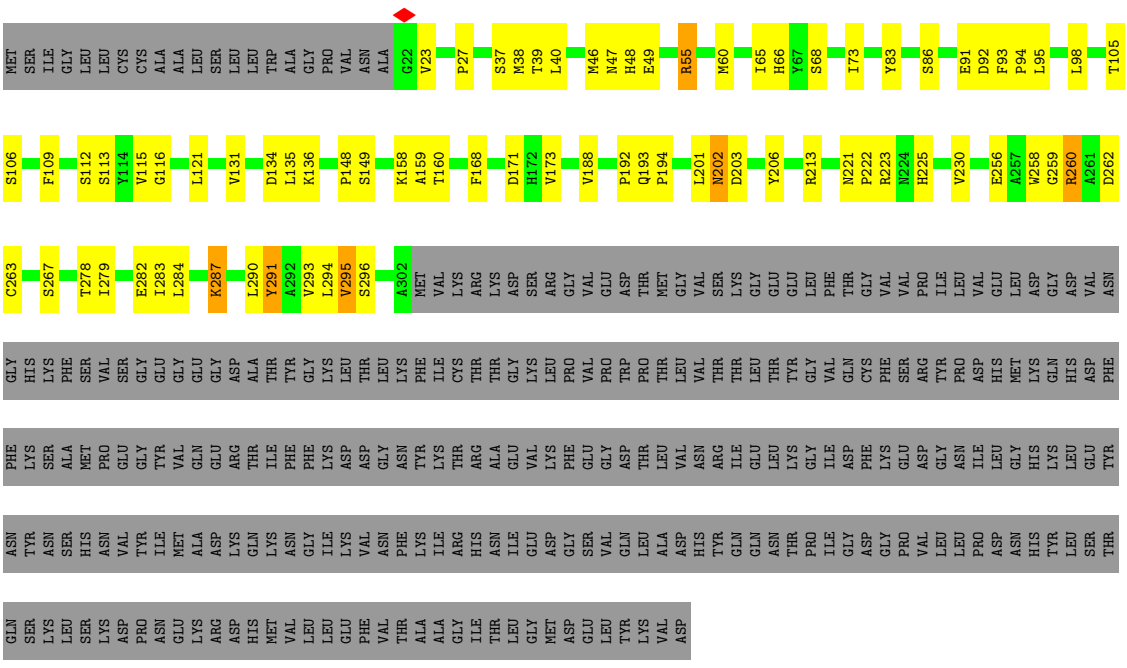
Chain A:



- Molecule 2: TCRb (EGFP fusion)

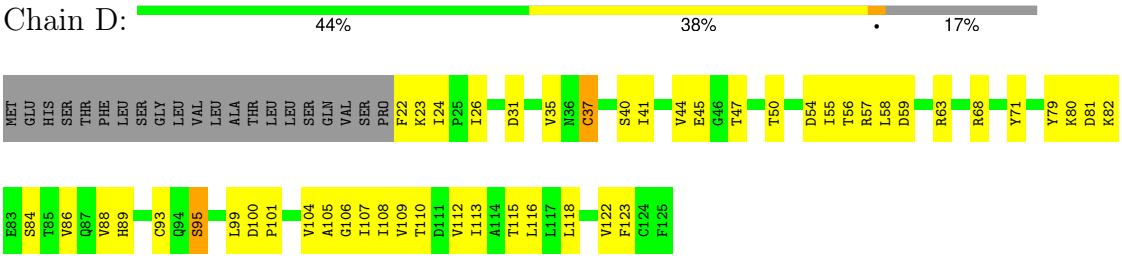
Chain B:





- Molecule 3: T-cell surface glycoprotein CD3 delta chain

Chain D:

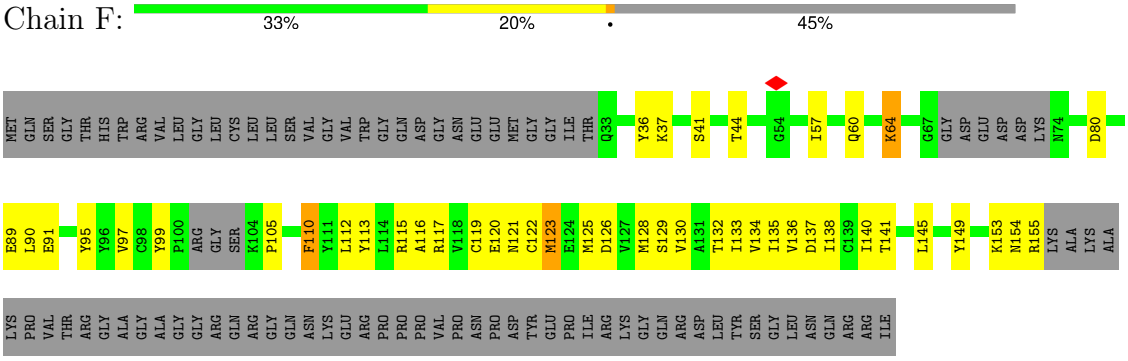


• Molecule 4: T-cell surface glycoprotein CD3 epsilon chain

Chain E:

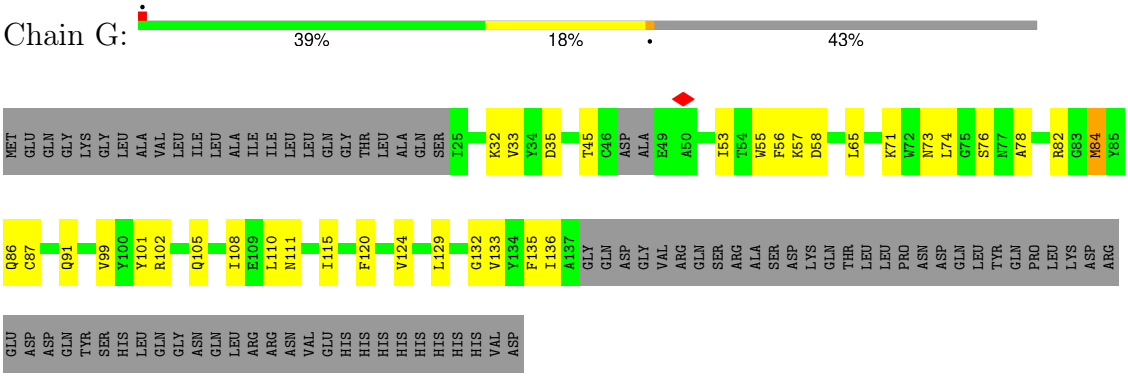
• Molecule 4: T-cell surface glycoprotein CD3 epsilon chain

Chain F:



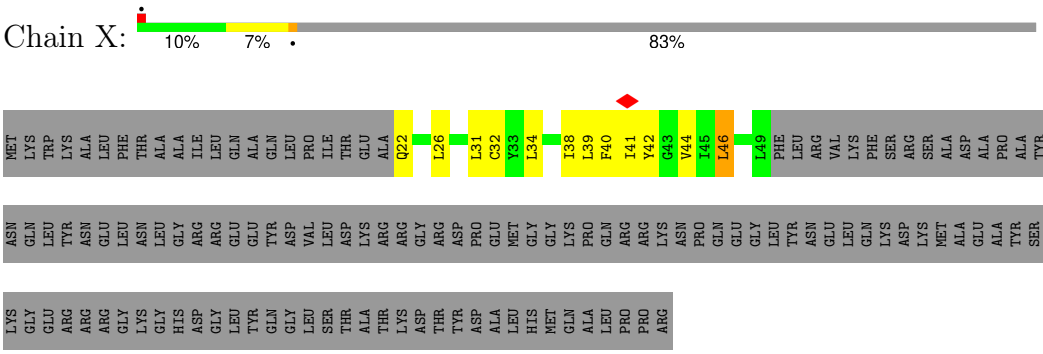
• Molecule 5: T-cell surface glycoprotein CD3 gamma chain

Chain G:



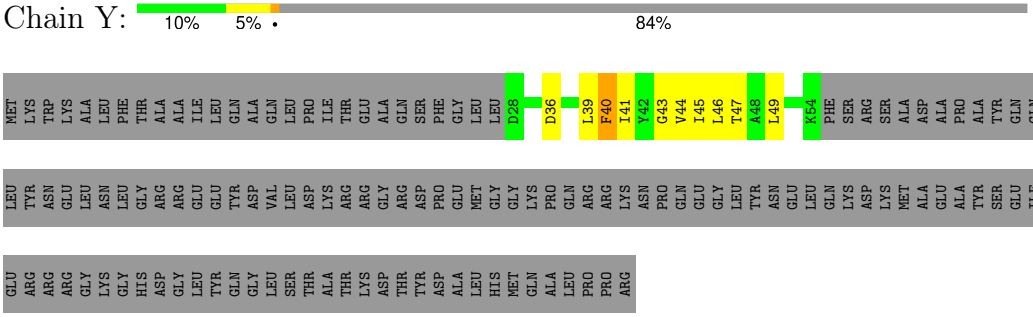
• Molecule 6: T-cell surface glycoprotein CD3 zeta chain

Chain X:



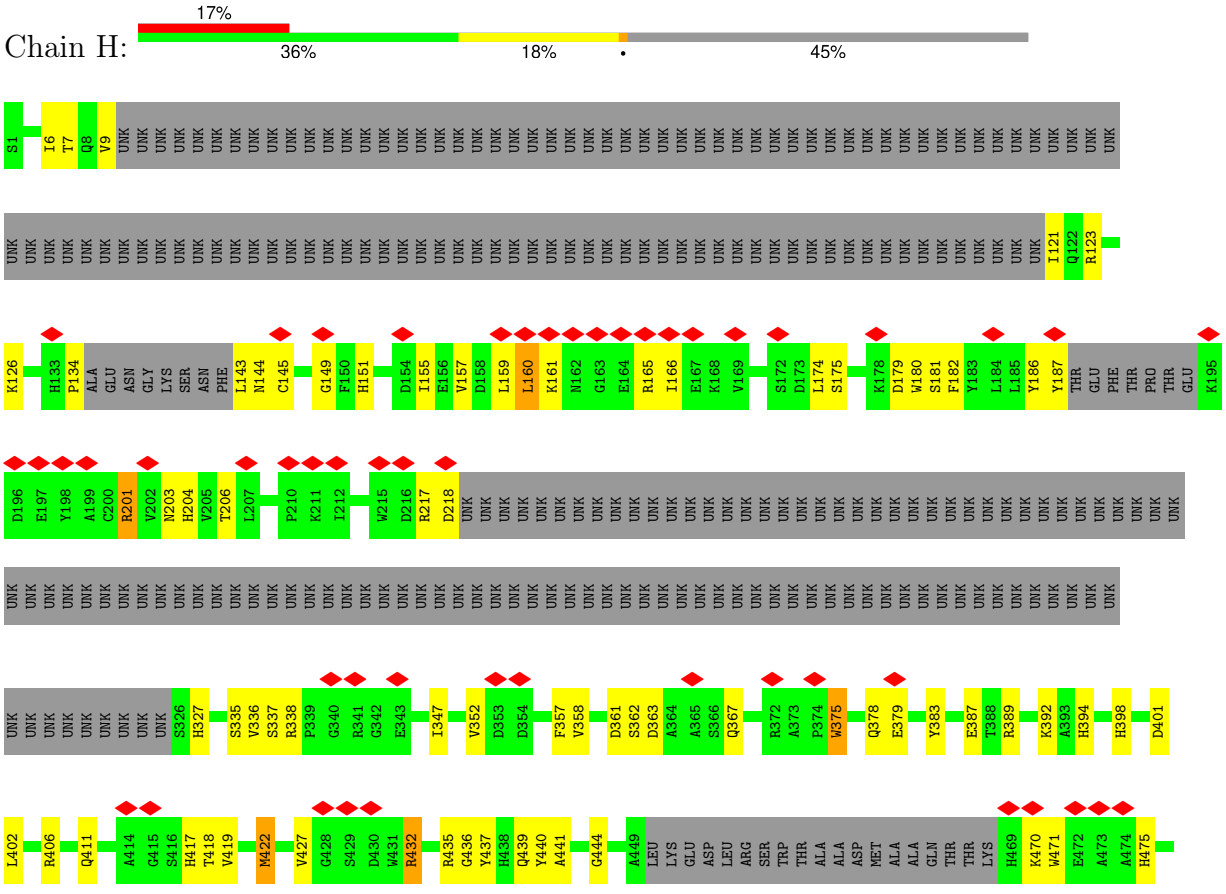
• Molecule 6: T-cell surface glycoprotein CD3 zeta chain

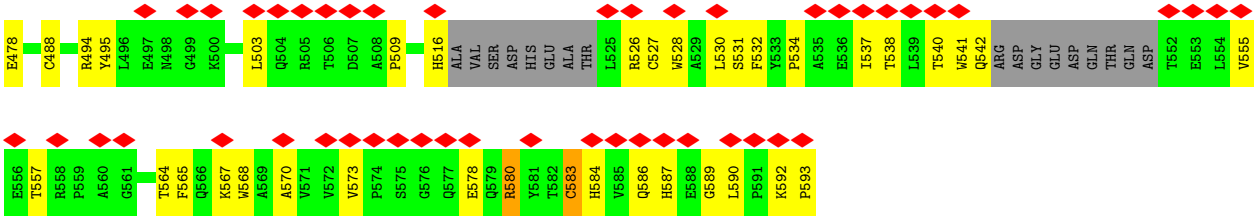
Chain Y:



• Molecule 7: Cancer/testis antigen 1,Beta-2-microglobulin,MHC class I antigen

Chain H:





• Molecule 8: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	155000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	51	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	64000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	1.829	Depositor
Minimum map value	-0.817	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.030	Depositor
Recommended contour level	0.3	Depositor
Map size (Å)	432.00003, 432.00003, 432.00003	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.08, 1.08, 1.08	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, CLR, BMA

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	0.33	0/1971	0.56	0/2683
2	B	0.35	0/2242	0.53	0/3055
3	D	0.31	0/816	0.63	1/1111 (0.1%)
4	E	0.33	0/870	0.56	1/1186 (0.1%)
4	F	0.31	0/878	0.62	0/1199
5	G	0.33	0/847	0.59	0/1148
6	X	0.30	0/222	0.63	1/301 (0.3%)
6	Y	0.30	0/202	0.62	0/276
7	H	0.32	0/2603	0.65	1/3538 (0.0%)
All	All	0.33	0/10651	0.59	4/14497 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
7	H	0	1
All	All	0	2

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	H	488	CYS	CA-CB-SG	14.02	139.23	114.00
6	X	46	LEU	CA-CB-CG	6.32	129.83	115.30
3	D	31	ASP	CB-CG-OD1	5.29	123.06	118.30
4	E	137	ASP	CB-CG-OD1	5.10	122.89	118.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	200	ASN	Peptide
7	H	161	LYS	Peptide

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	1931	0	1860	61	0
2	B	2187	0	2099	66	0
3	D	804	0	806	35	0
4	E	853	0	810	29	0
4	F	859	0	802	37	0
5	G	830	0	782	26	0
6	X	218	0	231	13	0
6	Y	199	0	201	10	0
7	H	2531	0	2295	82	0
8	N	39	0	34	2	0
9	A	70	0	65	1	0
9	B	14	0	13	1	0
9	D	14	0	13	0	0
9	G	14	0	13	0	0
10	G	28	0	46	2	0
10	Y	28	0	46	4	0
All	All	10619	0	10116	317	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 15.

All (317) 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)
4:E:60:GLN:HE21	4:E:63:ASP:HA	1.27	0.96
1:A:51:ASN:HD22	1:A:112:ARG:HG3	1.44	0.83
1:A:80:ARG:NH2	1:A:100:GLN:OE1	2.15	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:89:GLU:OE1	4:F:117:ARG:HD3	1.82	0.78
4:F:135:ILE:HA	4:F:138:ILE:HD12	1.67	0.77
7:H:531:SER:HA	7:H:564:THR:HB	1.67	0.77
7:H:542:GLN:OE1	7:H:580:ARG:NH2	2.19	0.76
7:H:537:ILE:HD12	7:H:587:HIS:HD1	1.50	0.76
5:G:56:PHE:HB2	5:G:86:GLN:HG3	1.68	0.75
7:H:587:HIS:HB3	7:H:590:LEU:HD13	1.71	0.73
4:F:91:GLU:N	4:F:91:GLU:OE2	2.20	0.72
7:H:160:LEU:HD21	7:H:201:ARG:HE	1.55	0.72
1:A:201:LYS:HB3	1:A:204:PHE:HB2	1.71	0.72
2:B:83:TYR:HD2	2:B:95:LEU:HD11	1.56	0.71
4:E:91:GLU:N	4:E:91:GLU:OE1	2.23	0.71
1:A:254:ARG:NH1	6:Y:36:ASP:OD2	2.22	0.71
10:Y:201:CLR:H162	10:Y:201:CLR:H262	1.72	0.71
7:H:121:ILE:O	7:H:123:ARG:NH1	2.25	0.69
7:H:509:PRO:HD2	7:H:590:LEU:HD11	1.74	0.69
3:D:23:LYS:HE2	4:E:111:TYR:HE2	1.57	0.68
4:F:130:VAL:O	4:F:134:VAL:HG22	1.93	0.67
1:A:80:ARG:NH2	1:A:100:GLN:CD	2.48	0.67
7:H:540:THR:O	7:H:583:CYS:HA	1.95	0.66
7:H:568:TRP:HZ3	7:H:570:ALA:HB2	1.59	0.66
4:F:89:GLU:OE2	4:F:115:ARG:NH1	2.27	0.66
1:A:238:GLU:N	1:A:238:GLU:OE2	2.29	0.66
1:A:38:LEU:HB2	1:A:96:ILE:HB	1.76	0.66
2:B:65:ILE:HG22	2:B:66:HIS:H	1.60	0.65
3:D:26:ILE:HG22	3:D:35:VAL:HA	1.78	0.65
7:H:337:SER:HB3	7:H:402:LEU:HD21	1.79	0.65
4:F:60:GLN:HB2	4:F:97:VAL:HG12	1.77	0.64
6:X:31:LEU:O	6:X:34:LEU:HB3	1.97	0.64
7:H:347:ILE:HG22	7:H:361:ASP:HA	1.79	0.64
1:A:169:GLN:O	1:A:212:ASN:ND2	2.30	0.64
4:F:89:GLU:HB2	4:F:117:ARG:HB3	1.78	0.64
3:D:37:CYS:O	3:D:56:THR:OG1	2.16	0.64
4:E:60:GLN:NE2	4:E:63:ASP:HA	2.08	0.63
2:B:202:ASN:CG	2:B:203:ASP:H	2.02	0.62
1:A:234:GLU:O	6:X:22:GLN:NE2	2.32	0.62
2:B:46:MET:SD	2:B:48:HIS:NE2	2.72	0.62
5:G:91:GLN:N	5:G:91:GLN:OE1	2.32	0.62
1:A:233:VAL:HG21	2:B:263:CYS:HB3	1.81	0.62
7:H:509:PRO:HB3	7:H:532:PHE:HD1	1.65	0.62
4:E:140:ILE:O	4:E:144:LEU:HG	2.00	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:254:ARG:NH2	6:X:32:CYS:SG	2.73	0.62
2:B:291:TYR:CG	5:G:129:LEU:HD11	2.34	0.62
4:F:128:MET:O	4:F:132:THR:HG23	2.00	0.61
2:B:225:HIS:NE2	2:B:256:GLU:OE1	2.24	0.61
7:H:160:LEU:HD21	7:H:201:ARG:NE	2.15	0.61
4:E:130:VAL:HG11	6:X:31:LEU:HD21	1.82	0.61
2:B:290:LEU:HD12	4:F:138:ILE:HG23	1.82	0.60
1:A:104:SER:HA	1:A:129:LEU:O	2.01	0.60
2:B:158:LYS:HB2	2:B:213:ARG:HH21	1.67	0.60
3:D:22:PHE:HE1	8:N:1:NAG:H81	1.66	0.60
5:G:82:ARG:HA	5:G:99:VAL:O	2.01	0.60
2:B:92:ASP:OD1	2:B:93:PHE:N	2.34	0.60
4:E:56:GLU:O	4:E:100:PRO:HB2	2.02	0.60
3:D:22:PHE:CD2	3:D:84:SER:HB2	2.36	0.60
2:B:284:LEU:HG	10:G:202:CLR:H261	1.84	0.60
3:D:95:SER:OG	3:D:95:SER:O	2.18	0.59
5:G:53:ILE:HB	5:G:65:LEU:HB3	1.83	0.59
1:A:56:ARG:HG3	1:A:66:LEU:HD11	1.83	0.59
1:A:152:ASP:OD1	1:A:152:ASP:N	2.33	0.59
10:G:202:CLR:H71	6:Y:44:VAL:HG23	1.82	0.59
7:H:217:ARG:O	7:H:217:ARG:NE	2.35	0.58
7:H:557:THR:OG1	7:H:567:LYS:NZ	2.29	0.58
1:A:58:ASP:OD1	1:A:58:ASP:N	2.14	0.58
7:H:6:ILE:HD11	7:H:394:HIS:CE1	2.39	0.58
2:B:258:TRP:CD1	4:F:90:LEU:HD21	2.38	0.57
7:H:361:ASP:OD1	7:H:363:ASP:N	2.38	0.57
7:H:527:CYS:HB2	7:H:541:TRP:CZ2	2.39	0.57
2:B:134:ASP:OD1	2:B:136:LYS:N	2.35	0.57
2:B:173:VAL:HG13	2:B:230:VAL:HG13	1.86	0.57
7:H:375:TRP:HZ3	7:H:495:TYR:HB3	1.70	0.57
3:D:104:VAL:O	3:D:108:ILE:HG22	2.05	0.56
7:H:9:VAL:HG21	7:H:440:TYR:CE2	2.40	0.56
2:B:68:SER:HB3	2:B:93:PHE:HE2	1.69	0.56
2:B:134:ASP:OD1	2:B:135:LEU:N	2.39	0.56
7:H:534:PRO:HG2	7:H:587:HIS:NE2	2.21	0.56
7:H:584:HIS:HB3	7:H:593:PRO:HB2	1.87	0.56
2:B:37:SER:OG	2:B:98:LEU:O	2.18	0.56
2:B:134:ASP:OD1	2:B:136:LYS:HG3	2.06	0.56
7:H:379:GLU:OE1	7:H:494:ARG:NH2	2.39	0.56
3:D:104:VAL:HA	3:D:107:ILE:HD12	1.86	0.56
2:B:47:ASN:ND2	2:B:47:ASN:O	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:38:MET:SD	2:B:39:THR:N	2.79	0.55
1:A:50:TYR:HB3	1:A:114:LEU:HD13	1.88	0.55
3:D:68:ARG:HA	3:D:88:VAL:O	2.07	0.55
7:H:509:PRO:HA	7:H:530:LEU:O	2.05	0.55
2:B:105:THR:HG22	2:B:131:VAL:H	1.70	0.55
1:A:178:THR:HG22	1:A:196:VAL:H	1.71	0.55
3:D:26:ILE:HD11	4:E:113:TYR:CG	2.41	0.55
1:A:217:GLU:OE1	1:A:217:GLU:N	2.40	0.55
7:H:179:ASP:OD1	7:H:181:SER:OG	2.20	0.55
4:E:144:LEU:O	4:E:148:VAL:HG12	2.07	0.54
6:Y:43:GLY:O	6:Y:47:THR:HG23	2.07	0.54
4:E:132:THR:O	4:E:136:VAL:HG12	2.07	0.54
1:A:147:ASP:OD1	1:A:147:ASP:N	2.40	0.54
7:H:406:ARG:NH1	7:H:411:GLN:O	2.41	0.54
4:F:141:THR:O	4:F:145:LEU:HB2	2.07	0.54
2:B:113:SER:HB2	2:B:121:LEU:HD23	1.90	0.54
2:B:294:LEU:HD23	2:B:295:VAL:HB	1.89	0.54
4:F:57:ILE:HD11	4:F:80:ASP:HA	1.90	0.54
6:X:46:LEU:HG	6:Y:46:LEU:HB3	1.89	0.54
1:A:117:GLY:O	7:H:389:ARG:HD2	2.08	0.53
4:E:52:TYR:CE1	4:E:100:PRO:HB3	2.44	0.53
7:H:336:VAL:HG13	7:H:418:THR:OG1	2.09	0.53
1:A:125:ARG:NH2	2:B:60:MET:O	2.41	0.53
2:B:148:PRO:HB3	2:B:160:THR:H	1.73	0.53
7:H:592:LYS:HD2	7:H:593:PRO:N	2.23	0.53
7:H:509:PRO:CD	7:H:590:LEU:HD11	2.39	0.53
2:B:260:ARG:HD3	2:B:262:ASP:HB2	1.91	0.53
2:B:294:LEU:O	2:B:295:VAL:HG12	2.09	0.53
4:E:60:GLN:HB3	4:E:97:VAL:HG13	1.91	0.52
6:X:38:ILE:HG13	6:X:39:LEU:N	2.23	0.52
7:H:587:HIS:CB	7:H:590:LEU:HD13	2.37	0.52
1:A:238:GLU:OE1	2:B:223:ARG:NH1	2.42	0.52
1:A:237:PHE:HE1	2:B:267:SER:HA	1.73	0.52
2:B:283:ILE:HG23	4:F:137:ASP:OD2	2.09	0.52
3:D:47:THR:O	3:D:71:TYR:OH	2.19	0.52
1:A:266:LEU:HD11	3:D:122:VAL:HA	1.92	0.52
1:A:240:ASP:O	1:A:244:ASN:ND2	2.43	0.51
3:D:44:VAL:HG12	3:D:45:GLU:H	1.74	0.51
7:H:383:TYR:O	7:H:387:GLU:HG2	2.10	0.51
4:F:153:LYS:O	4:F:155:ARG:N	2.44	0.51
4:F:129:SER:O	4:F:133:ILE:HG22	2.09	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:136:VAL:O	4:F:140:ILE:HG23	2.11	0.51
1:A:264:ASN:HD21	2:B:291:TYR:HD1	1.57	0.51
4:F:132:THR:O	4:F:136:VAL:HG12	2.11	0.51
7:H:174:LEU:HB3	7:H:347:ILE:HD11	1.92	0.51
1:A:189:ASP:OD1	3:D:57:ARG:NH2	2.45	0.50
4:E:136:VAL:O	4:E:140:ILE:HG22	2.10	0.50
4:F:123:MET:HE1	4:F:125:MET:HB3	1.94	0.50
4:F:140:ILE:HG13	4:F:141:THR:N	2.25	0.50
7:H:584:HIS:ND1	7:H:593:PRO:O	2.42	0.50
1:A:271:LEU:HD22	5:G:136:ILE:HG23	1.93	0.50
7:H:475:HIS:CE1	7:H:478:GLU:HB3	2.46	0.50
2:B:192:PRO:O	2:B:193:GLN:NE2	2.45	0.50
4:F:64:LYS:HD2	4:F:64:LYS:C	2.31	0.50
5:G:55:TRP:CZ3	5:G:87:CYS:HB3	2.46	0.50
3:D:24:ILE:HG21	3:D:86:VAL:HG11	1.94	0.50
7:H:218:ASP:OD1	7:H:516:HIS:ND1	2.45	0.50
1:A:216:PRO:O	1:A:219:THR:OG1	2.26	0.50
3:D:109:VAL:HG22	3:D:113:ILE:HD11	1.93	0.50
1:A:248:LEU:O	1:A:251:ILE:HG22	2.12	0.50
2:B:68:SER:OG	2:B:73:ILE:O	2.20	0.49
7:H:538:THR:HB	7:H:586:GLN:HB2	1.93	0.49
1:A:30:LEU:HD23	1:A:129:LEU:HD13	1.94	0.49
5:G:120:PHE:O	5:G:124:VAL:HG22	2.12	0.49
7:H:362:SER:O	7:H:367:GLN:NE2	2.45	0.49
7:H:435:ARG:NH1	7:H:436:GLY:H	2.10	0.49
4:E:75:ILE:HG23	4:E:84:LEU:HD23	1.94	0.49
3:D:112:VAL:O	3:D:116:LEU:HD23	2.13	0.49
5:G:45:THR:HG22	5:G:71:LYS:HE2	1.95	0.49
7:H:475:HIS:O	7:H:475:HIS:ND1	2.46	0.49
4:E:67:GLY:O	4:E:77:SER:OG	2.21	0.48
1:A:62:GLY:HA2	2:B:109:PHE:CE1	2.48	0.48
4:E:36:TYR:CG	4:E:112:LEU:HD12	2.49	0.48
6:X:46:LEU:O	6:X:46:LEU:HD12	2.12	0.48
7:H:475:HIS:HE1	7:H:478:GLU:HB3	1.78	0.48
3:D:23:LYS:HE2	4:E:111:TYR:CE2	2.42	0.48
1:A:53:GLN:NE2	1:A:67:LEU:O	2.46	0.48
6:Y:40:PHE:CD2	10:Y:201:CLR:H25	2.48	0.48
2:B:202:ASN:CG	2:B:203:ASP:N	2.66	0.48
4:F:126:ASP:O	4:F:129:SER:OG	2.26	0.48
5:G:111:ASN:O	5:G:115:ILE:HG22	2.14	0.48
7:H:398:HIS:HA	7:H:401:ASP:OD1	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:526:ARG:HG3	7:H:568:TRP:CE3	2.49	0.48
7:H:9:VAL:HG22	7:H:471:TRP:HZ2	1.79	0.47
1:A:238:GLU:OE1	2:B:223:ARG:HD3	2.14	0.47
6:X:41:ILE:O	6:X:44:VAL:HG12	2.14	0.47
7:H:375:TRP:CZ2	7:H:503:LEU:HD21	2.48	0.47
2:B:49:GLU:HB3	2:B:115:VAL:HG23	1.96	0.47
2:B:171:ASP:OD1	2:B:171:ASP:N	2.43	0.47
6:Y:40:PHE:O	6:Y:44:VAL:HG12	2.15	0.47
2:B:279:ILE:HD12	5:G:108:ILE:HD11	1.96	0.47
3:D:54:ASP:OD1	3:D:54:ASP:N	2.40	0.47
3:D:89:HIS:CD2	4:E:38:VAL:HG11	2.49	0.47
4:E:126:ASP:OD1	4:E:129:SER:N	2.38	0.47
7:H:567:LYS:HG2	7:H:568:TRP:H	1.79	0.47
2:B:148:PRO:HG3	2:B:159:ALA:HB1	1.96	0.47
2:B:168:PHE:HE1	2:B:171:ASP:HA	1.79	0.47
6:X:39:LEU:O	6:Y:39:LEU:HD21	2.14	0.47
2:B:91:GLU:N	2:B:91:GLU:OE1	2.47	0.47
2:B:27:PRO:HD2	2:B:40:LEU:HD22	1.96	0.47
3:D:26:ILE:HD11	4:E:113:TYR:CD2	2.50	0.47
1:A:72:SER:HG	7:H:475:HIS:CE1	2.33	0.47
4:F:36:TYR:CD2	4:F:112:LEU:HB2	2.50	0.47
1:A:31:SER:HA	1:A:130:ILE:HG13	1.97	0.46
2:B:201:LEU:HD23	2:B:201:LEU:H	1.79	0.46
2:B:202:ASN:OD1	2:B:203:ASP:N	2.48	0.46
5:G:78:ALA:HB1	5:G:105:GLN:HG3	1.97	0.46
5:G:135:PHE:O	5:G:135:PHE:CD1	2.68	0.46
2:B:284:LEU:HD21	10:Y:201:CLR:H242	1.96	0.46
4:E:126:ASP:O	4:E:129:SER:OG	2.27	0.46
2:B:23:VAL:HG21	2:B:112:SER:HB3	1.96	0.46
3:D:79:TYR:O	3:D:82:LYS:HG2	2.16	0.46
7:H:532:PHE:HB2	7:H:587:HIS:CE1	2.50	0.46
7:H:123:ARG:HH22	7:H:444:GLY:HA3	1.81	0.46
7:H:352:VAL:HG23	7:H:357:PHE:CE1	2.51	0.46
2:B:194:PRO:HB2	2:B:206:TYR:HB3	1.98	0.46
4:F:119:CYS:HB3	4:F:122:CYS:HB2	1.50	0.46
1:A:162:ASP:OD1	1:A:163:SER:N	2.49	0.46
6:Y:40:PHE:HD2	10:Y:201:CLR:H25	1.81	0.46
7:H:573:VAL:HG21	7:H:578:GLU:HA	1.97	0.46
1:A:171:LYS:N	1:A:212:ASN:HD21	2.14	0.46
2:B:73:ILE:HG21	7:H:392:LYS:HD3	1.98	0.46
7:H:435:ARG:HH11	7:H:436:GLY:H	1.64	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:528:TRP:HD1	7:H:567:LYS:O	1.99	0.46
2:B:294:LEU:HD23	2:B:295:VAL:N	2.31	0.45
5:G:73:ASN:OD1	5:G:74:LEU:N	2.50	0.45
4:E:130:VAL:O	4:E:133:ILE:HG22	2.17	0.45
7:H:126:LYS:NZ	7:H:149:GLY:HA3	2.31	0.45
7:H:204:HIS:ND1	7:H:206:THR:HG23	2.31	0.45
1:A:57:GLN:HB3	1:A:106:THR:OG1	2.17	0.45
1:A:80:ARG:HD3	1:A:97:ALA:O	2.16	0.45
1:A:107:TYR:O	1:A:126:GLY:HA2	2.17	0.45
2:B:294:LEU:C	2:B:296:SER:H	2.20	0.45
5:G:35:ASP:OD2	5:G:101:TYR:OH	2.27	0.45
1:A:236:SER:O	2:B:221:ASN:ND2	2.49	0.45
3:D:22:PHE:CE1	8:N:1:NAG:H81	2.49	0.45
7:H:145:CYS:HB2	7:H:159:LEU:HD21	1.98	0.45
5:G:45:THR:HB	5:G:71:LYS:NZ	2.32	0.45
2:B:55:ARG:HG2	2:B:65:ILE:HD11	1.98	0.45
4:F:134:VAL:O	4:F:138:ILE:HG13	2.16	0.45
4:F:116:ALA:HB1	5:G:102:ARG:HB3	2.00	0.45
7:H:180:TRP:CE2	7:H:441:ALA:HB2	2.51	0.45
3:D:80:LYS:HA	3:D:81:ASP:HA	1.53	0.44
1:A:240:ASP:OD2	2:B:223:ARG:NH2	2.49	0.44
2:B:116:GLY:HA3	7:H:6:ILE:H	1.82	0.44
7:H:378:GLN:H	7:H:378:GLN:CD	2.18	0.44
4:E:100:PRO:O	4:E:103:SER:OG	2.26	0.44
1:A:180:LYS:HA	1:A:194:SER:O	2.17	0.44
4:F:145:LEU:CD1	5:G:133:VAL:HG11	2.47	0.44
7:H:427:VAL:HG12	7:H:432:ARG:C	2.38	0.44
4:F:37:LYS:HB2	4:F:37:LYS:HE3	1.66	0.44
1:A:25:GLN:OE1	1:A:109:CYS:N	2.51	0.44
7:H:155:ILE:HD13	7:H:204:HIS:HD2	1.83	0.44
7:H:526:ARG:NH1	7:H:528:TRP:HB2	2.33	0.43
1:A:50:TYR:CG	1:A:50:TYR:O	2.71	0.43
1:A:264:ASN:OD1	2:B:291:TYR:HE1	2.00	0.43
3:D:41:ILE:HG21	3:D:58:LEU:HD12	1.99	0.43
7:H:555:VAL:HG21	7:H:568:TRP:CD1	2.53	0.43
4:F:120:GLU:O	4:F:121:ASN:HB3	2.18	0.43
4:F:128:MET:SD	4:F:129:SER:N	2.91	0.43
7:H:338:ARG:NH1	7:H:363:ASP:OD2	2.51	0.43
2:B:55:ARG:HH21	2:B:106:SER:HB2	1.83	0.43
4:E:43:THR:HG22	4:E:87:PHE:N	2.33	0.43
4:E:58:LEU:HD21	4:E:99:TYR:CD2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:H:357:PHE:CD2	7:H:358:VAL:HG13	2.52	0.43
2:B:222:PRO:HA	2:B:259:GLY:O	2.19	0.43
4:F:99:TYR:CG	4:F:105:PRO:HG3	2.54	0.43
7:H:327:HIS:HB2	7:H:427:VAL:HG23	1.99	0.43
1:A:28:ALA:HA	1:A:127:THR:HA	2.01	0.43
3:D:109:VAL:O	3:D:112:VAL:HG12	2.19	0.43
4:F:41:SER:O	4:F:44:THR:OG1	2.31	0.43
4:F:123:MET:CE	4:F:125:MET:HB3	2.48	0.43
7:H:155:ILE:HD12	7:H:155:ILE:HA	1.85	0.43
4:E:95:TYR:HA	4:E:112:LEU:O	2.19	0.43
1:A:259:LYS:NZ	3:D:115:THR:OG1	2.51	0.43
3:D:106:GLY:O	3:D:110:THR:OG1	2.33	0.43
7:H:159:LEU:O	7:H:166:ILE:HG12	2.19	0.43
1:A:71:SER:O	1:A:74:ARG:NH2	2.52	0.42
1:A:264:ASN:O	1:A:268:THR:OG1	2.31	0.42
9:A:305:NAG:O7	9:A:305:NAG:O3	2.32	0.42
3:D:50:THR:HG23	3:D:59:ASP:HB3	2.02	0.42
6:X:26:LEU:H	6:X:26:LEU:HD23	1.83	0.42
7:H:422:MET:HE3	7:H:439:GLN:HB2	2.01	0.42
1:A:232:LEU:HD12	1:A:232:LEU:HA	1.79	0.42
9:B:601:NAG:O7	9:B:601:NAG:O3	2.29	0.42
4:F:135:ILE:HD13	4:F:138:ILE:HD12	2.02	0.42
7:H:587:HIS:CD2	7:H:589:GLY:H	2.38	0.42
1:A:267:MET:HE3	1:A:267:MET:HA	2.01	0.42
2:B:291:TYR:CB	5:G:129:LEU:HD11	2.50	0.42
5:G:58:ASP:OD1	5:G:84:MET:HB2	2.20	0.42
2:B:86:SER:O	2:B:94:PRO:HD2	2.20	0.42
3:D:100:ASP:HA	4:E:121:ASN:HD22	1.84	0.42
7:H:157:VAL:HB	7:H:186:TYR:CE1	2.55	0.42
1:A:25:GLN:O	1:A:26:ILE:HD13	2.19	0.42
4:F:97:VAL:HG23	4:F:110:PHE:O	2.20	0.41
4:F:113:TYR:CD2	5:G:33:VAL:HG11	2.55	0.41
5:G:132:GLY:O	5:G:136:ILE:HG12	2.20	0.41
3:D:79:TYR:HA	3:D:82:LYS:NZ	2.34	0.41
1:A:30:LEU:HD12	1:A:30:LEU:HA	1.85	0.41
2:B:168:PHE:CE1	2:B:171:ASP:HA	2.56	0.41
4:E:138:ILE:HD11	6:X:38:ILE:HD13	2.02	0.41
7:H:134:PRO:HG3	7:H:528:TRP:HH2	1.84	0.41
1:A:82:ASN:O	1:A:94:LEU:HD12	2.20	0.41
6:Y:41:ILE:O	6:Y:45:ILE:HG12	2.20	0.41
4:F:145:LEU:HD11	5:G:133:VAL:HG11	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:X:39:LEU:HD22	6:Y:39:LEU:HD22	2.03	0.41
7:H:537:ILE:HD12	7:H:587:HIS:ND1	2.27	0.41
1:A:172:ASP:OD1	1:A:172:ASP:N	2.53	0.41
2:B:278:THR:O	2:B:282:GLU:HG2	2.20	0.41
7:H:143:LEU:HG	7:H:159:LEU:HD13	2.02	0.41
3:D:40:SER:OG	3:D:55:ILE:HD11	2.20	0.41
6:X:34:LEU:HD12	6:X:34:LEU:O	2.20	0.41
7:H:335:SER:HB3	7:H:419:VAL:HG12	2.02	0.41
1:A:50:TYR:HA	1:A:71:SER:OG	2.20	0.41
1:A:144:GLN:O	2:B:149:SER:HB2	2.20	0.41
2:B:290:LEU:O	2:B:293:VAL:HB	2.21	0.41
3:D:100:ASP:HB2	3:D:101:PRO:HD2	2.03	0.41
5:G:110:LEU:HD13	5:G:110:LEU:HA	1.95	0.41
7:H:7:THR:HG22	7:H:470:LYS:HE2	2.03	0.41
7:H:151:HIS:ND1	7:H:182:PHE:HE1	2.18	0.41
1:A:187:SER:OG	1:A:188:MET:HG2	2.20	0.41
4:F:95:TYR:OH	5:G:32:LYS:HG3	2.21	0.41
5:G:129:LEU:HA	5:G:129:LEU:HD12	1.66	0.41
7:H:580:ARG:NE	7:H:580:ARG:O	2.54	0.40
2:B:116:GLY:HA3	7:H:6:ILE:N	2.36	0.40
3:D:105:ALA:O	3:D:109:VAL:HG12	2.21	0.40
7:H:531:SER:N	7:H:565:PHE:O	2.55	0.40
4:E:43:THR:HG22	4:E:87:PHE:H	1.86	0.40
1:A:241:THR:HA	1:A:244:ASN:HD22	1.86	0.40
3:D:118:LEU:O	3:D:122:VAL:HG12	2.22	0.40
7:H:165:ARG:HG2	7:H:166:ILE:N	2.36	0.40
2:B:287:LYS:HB2	2:B:287:LYS:HE3	1.73	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	250/272 (92%)	244 (98%)	6 (2%)	0	100 100
2	B	279/557 (50%)	264 (95%)	14 (5%)	1 (0%)	30 64
3	D	102/125 (82%)	95 (93%)	7 (7%)	0	100 100
4	E	111/207 (54%)	107 (96%)	4 (4%)	0	100 100
4	F	108/207 (52%)	104 (96%)	3 (3%)	1 (1%)	14 49
5	G	107/194 (55%)	104 (97%)	3 (3%)	0	100 100
6	X	26/164 (16%)	25 (96%)	1 (4%)	0	100 100
6	Y	25/164 (15%)	25 (100%)	0	0	100 100
7	H	308/593 (52%)	291 (94%)	17 (6%)	0	100 100
All	All	1316/2483 (53%)	1259 (96%)	55 (4%)	2 (0%)	45 75

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	F	154	ASN
2	B	295	VAL

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	216/244 (88%)	209 (97%)	7 (3%)	34 62
2	B	238/480 (50%)	232 (98%)	6 (2%)	42 67
3	D	91/112 (81%)	85 (93%)	6 (7%)	14 41
4	E	89/177 (50%)	86 (97%)	3 (3%)	32 60
4	F	89/177 (50%)	85 (96%)	4 (4%)	23 53
5	G	81/167 (48%)	78 (96%)	3 (4%)	29 58
6	X	24/135 (18%)	22 (92%)	2 (8%)	9 32
6	Y	20/135 (15%)	18 (90%)	2 (10%)	6 26
7	H	246/327 (75%)	233 (95%)	13 (5%)	19 46

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	1094/1954 (56%)	1048 (96%)	46 (4%)	27 54

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	50	TYR
1	A	58	ASP
1	A	137	ASN
1	A	187	SER
1	A	188	MET
1	A	248	LEU
1	A	270	ARG
2	B	55	ARG
2	B	188	VAL
2	B	202	ASN
2	B	260	ARG
2	B	287	LYS
2	B	291	TYR
3	D	37	CYS
3	D	63	ARG
3	D	93	CYS
3	D	95	SER
3	D	99	LEU
3	D	123	PHE
4	E	52	TYR
4	E	58	LEU
4	E	119	CYS
4	F	64	LYS
4	F	110	PHE
4	F	123	MET
4	F	149	TYR
5	G	57	LYS
5	G	76	SER
5	G	84	MET
6	X	40	PHE
6	X	42	TYR
6	Y	40	PHE
6	Y	49	LEU
7	H	144	ASN
7	H	160	LEU
7	H	175	SER
7	H	187	TYR

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Mol	Chain	Res	Type
7	H	201	ARG
7	H	203	ASN
7	H	375	TRP
7	H	417	HIS
7	H	422	MET
7	H	432	ARG
7	H	437	TYR
7	H	580	ARG
7	H	583	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	51	ASN
1	A	244	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)

3 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	$\#\|Z\| > 2$
8	NAG	N	1	3,8	14,14,15	0.79	0	17,19,21	1.01	2 (11%)
8	NAG	N	2	8	14,14,15	0.69	0	17,19,21	0.80	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
8	BMA	N	3	8	11,11,12	0.81	0	15,15,17	2.12	3 (20%)

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	N	1	3,8	-	0/6/23/26	0/1/1/1
8	NAG	N	2	8	-	0/6/23/26	0/1/1/1
8	BMA	N	3	8	-	0/2/19/22	0/1/1/1

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
8	N	3	BMA	C1-O5-C5	6.49	120.88	112.19
8	N	3	BMA	C3-C4-C5	2.43	114.64	110.23
8	N	2	NAG	O5-C1-C2	-2.19	107.91	111.29
8	N	3	BMA	C2-C3-C4	2.16	114.66	110.86
8	N	1	NAG	O5-C1-C2	-2.11	108.03	111.29
8	N	1	NAG	O4-C4-C3	-2.01	105.63	110.38

There are no chirality outliers.

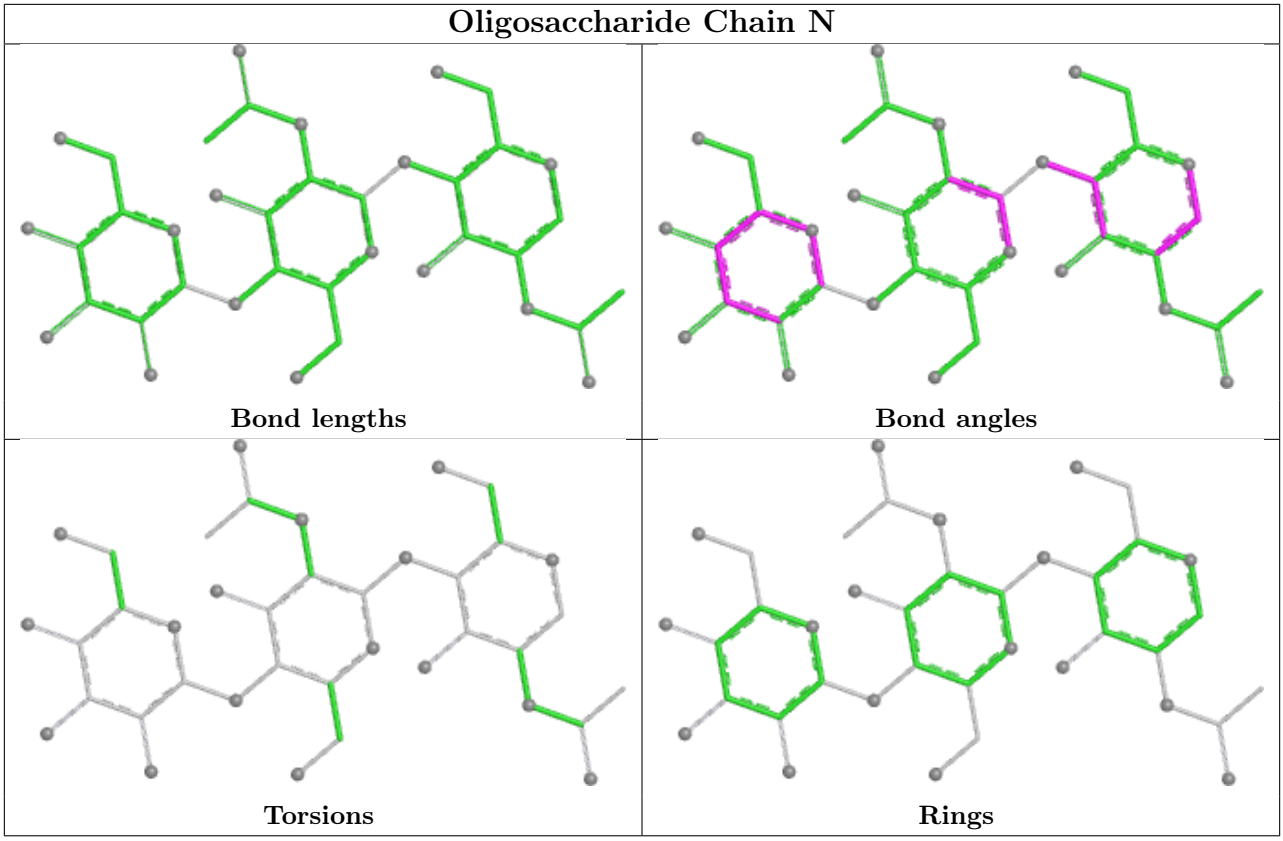
There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	N	1	NAG	2	0

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)

10 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	$\#\|Z\| > 2$
9	NAG	A	301	1	14,14,15	0.75	0	17,19,21	0.79	0
9	NAG	A	302	1	14,14,15	0.74	0	17,19,21	0.84	0
10	CLR	G	202	-	31,31,31	0.42	0	48,48,48	0.62	0
9	NAG	G	201	5	14,14,15	0.72	0	17,19,21	0.77	0
9	NAG	A	305	1	14,14,15	0.83	0	17,19,21	1.32	4 (23%)
9	NAG	D	201	3	14,14,15	0.72	0	17,19,21	0.79	0
10	CLR	Y	201	-	31,31,31	0.45	0	48,48,48	0.65	0
9	NAG	A	303	1	14,14,15	0.76	0	17,19,21	0.88	0
9	NAG	B	601	2	14,14,15	1.03	2 (14%)	17,19,21	1.94	4 (23%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
9	NAG	A	304	1	14,14,15	0.75	0	17,19,21	2.07	4 (23%)

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
9	NAG	A	301	1	-	1/6/23/26	0/1/1/1
9	NAG	A	302	1	-	0/6/23/26	0/1/1/1
10	CLR	G	202	-	-	2/10/68/68	0/4/4/4
9	NAG	G	201	5	-	0/6/23/26	0/1/1/1
9	NAG	A	305	1	-	2/6/23/26	0/1/1/1
9	NAG	D	201	3	-	0/6/23/26	0/1/1/1
10	CLR	Y	201	-	-	5/10/68/68	0/4/4/4
9	NAG	A	303	1	-	2/6/23/26	0/1/1/1
9	NAG	B	601	2	-	3/6/23/26	0/1/1/1
9	NAG	A	304	1	-	4/6/23/26	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
9	B	601	NAG	O5-C1	-2.45	1.39	1.43
9	B	601	NAG	O5-C5	-2.18	1.39	1.43

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	B	601	NAG	C2-N2-C7	5.66	130.48	122.90
9	A	304	NAG	C4-C3-C2	-4.23	104.81	111.02
9	A	304	NAG	C2-N2-C7	4.02	128.28	122.90
9	A	304	NAG	O5-C1-C2	-3.67	105.62	111.29
9	A	304	NAG	C1-O5-C5	-3.23	107.86	112.19
9	B	601	NAG	O5-C5-C4	-2.68	104.30	110.83
9	B	601	NAG	O5-C1-C2	-2.61	107.26	111.29
9	B	601	NAG	C4-C3-C2	2.60	114.83	111.02
9	A	305	NAG	O5-C1-C2	-2.46	107.49	111.29
9	A	305	NAG	C1-O5-C5	2.31	115.28	112.19
9	A	305	NAG	C4-C3-C2	2.26	114.33	111.02
9	A	305	NAG	C2-N2-C7	2.20	125.86	122.90

There are no chirality outliers.

All (19) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	B	601	NAG	C3-C2-N2-C7
9	A	304	NAG	C4-C5-C6-O6
10	Y	201	CLR	C17-C20-C22-C23
9	A	303	NAG	C4-C5-C6-O6
9	A	304	NAG	O5-C5-C6-O6
10	Y	201	CLR	C21-C20-C22-C23
9	A	303	NAG	O5-C5-C6-O6
10	Y	201	CLR	C22-C23-C24-C25
10	Y	201	CLR	C20-C22-C23-C24
10	G	202	CLR	C20-C22-C23-C24
10	G	202	CLR	C22-C23-C24-C25
9	A	301	NAG	O5-C5-C6-O6
9	B	601	NAG	O5-C5-C6-O6
9	B	601	NAG	C4-C5-C6-O6
9	A	304	NAG	C3-C2-N2-C7
9	A	305	NAG	C3-C2-N2-C7
10	Y	201	CLR	C23-C24-C25-C26
9	A	304	NAG	C1-C2-N2-C7
9	A	305	NAG	C1-C2-N2-C7

There are no ring outliers.

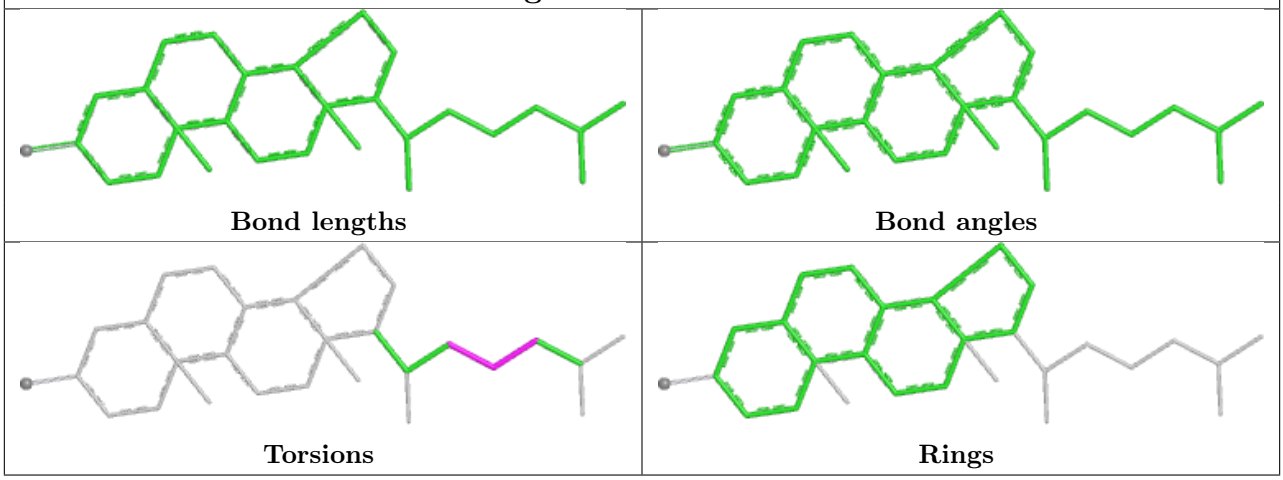
4 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
10	G	202	CLR	2	0
9	A	305	NAG	1	0
10	Y	201	CLR	4	0
9	B	601	NAG	1	0

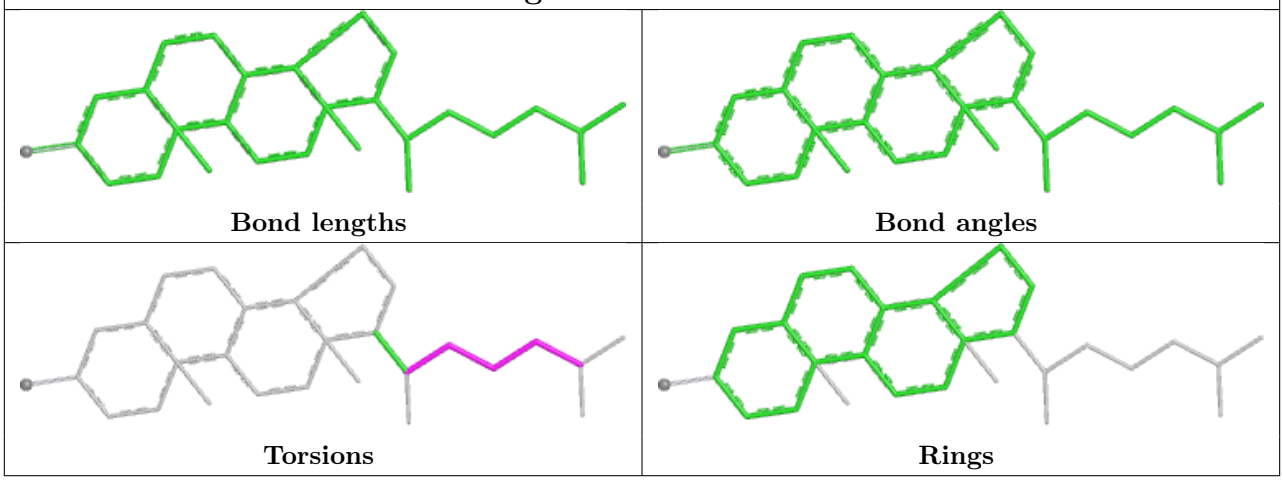
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient

equivalents in the CSD to analyse the geometry.

Ligand CLR G 202



Ligand CLR Y 201



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.

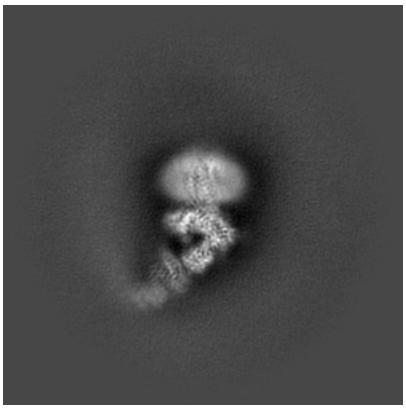
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-45166. These allow visual inspection of the internal detail of the map and identification of artifacts.

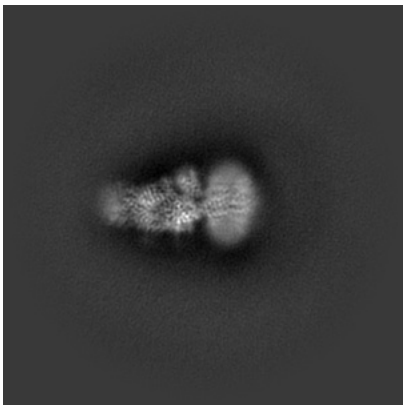
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

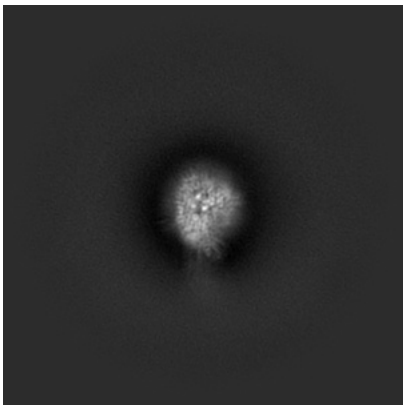
6.1.1 Primary map



X

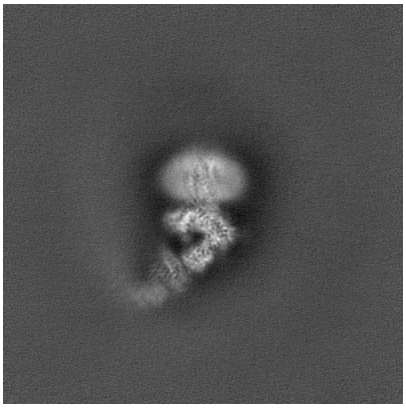


Y

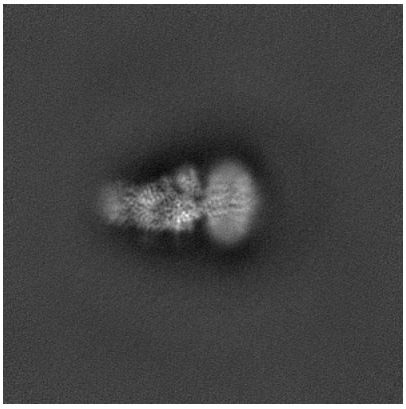


Z

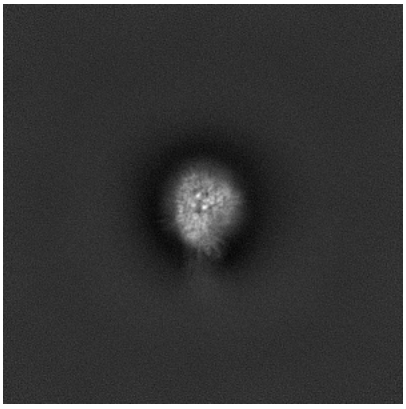
6.1.2 Raw map



X



Y

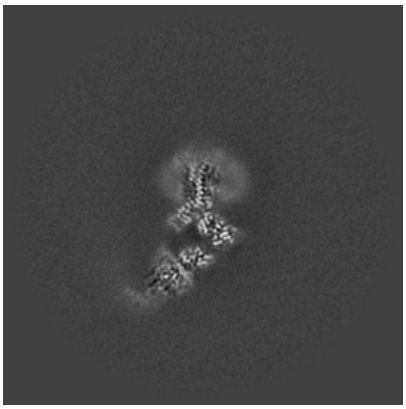


Z

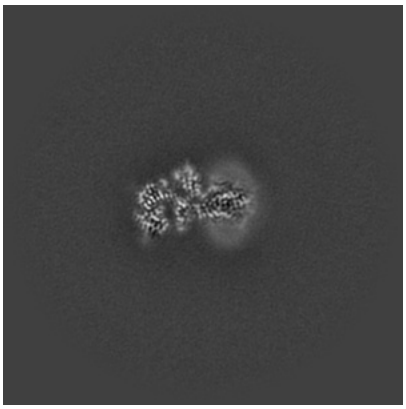
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

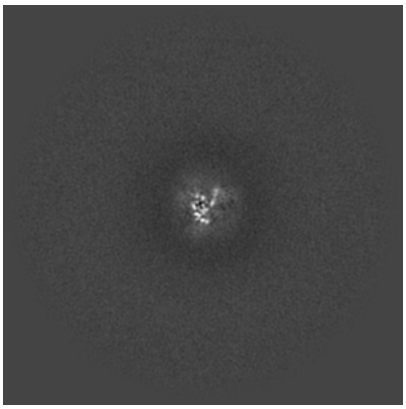
6.2.1 Primary map



X Index: 200

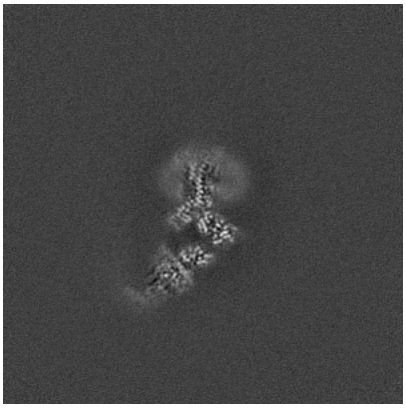


Y Index: 200

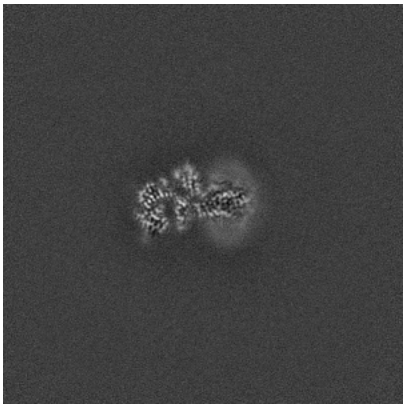


Z Index: 200

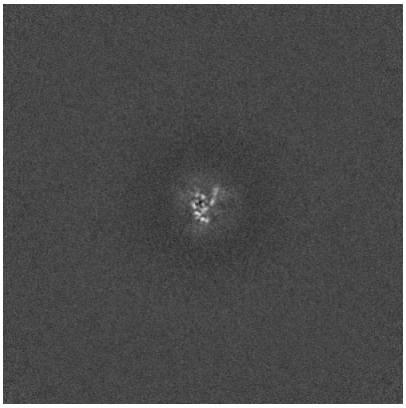
6.2.2 Raw map



X Index: 200



Y Index: 200

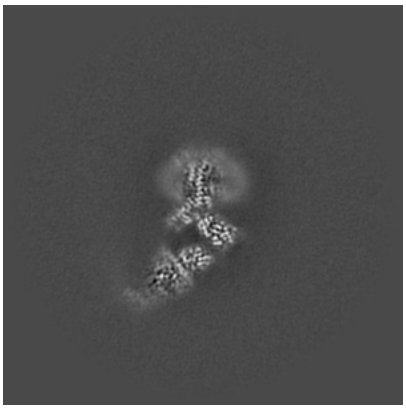


Z Index: 200

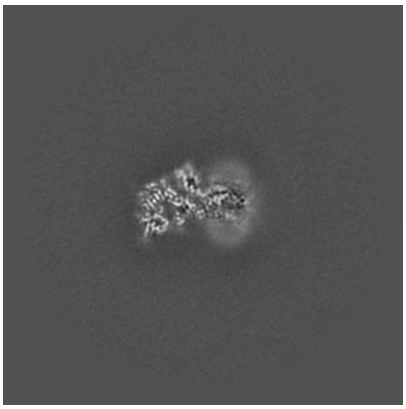
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

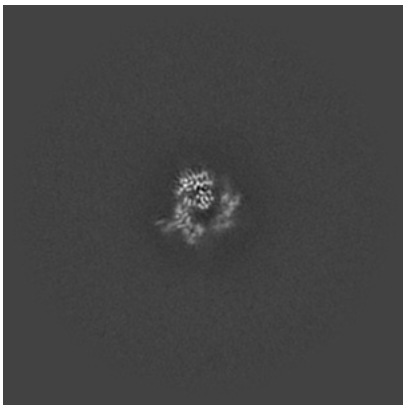
6.3.1 Primary map



X Index: 201

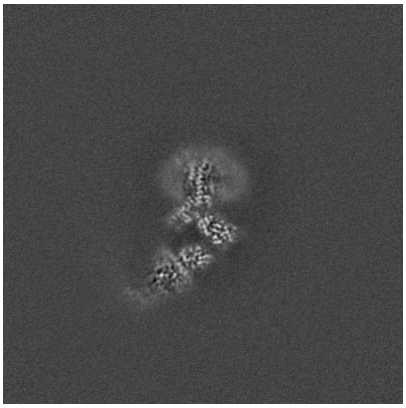


Y Index: 202

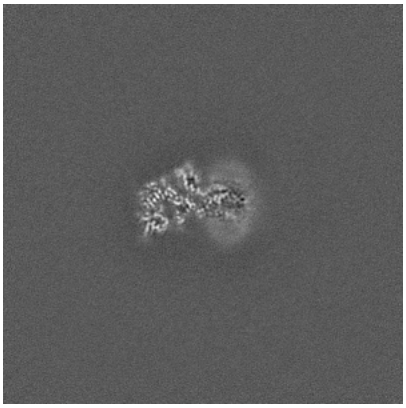


Z Index: 175

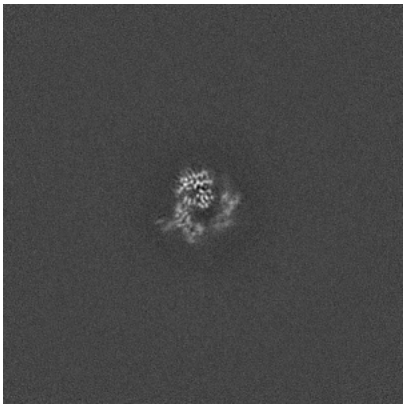
6.3.2 Raw map



X Index: 201



Y Index: 202

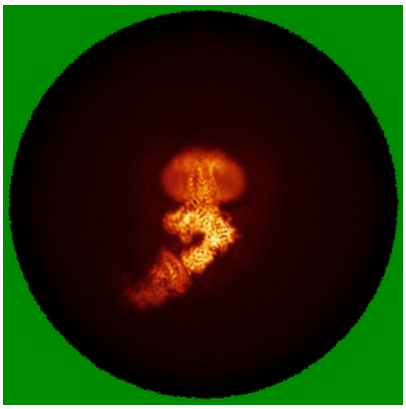


Z Index: 175

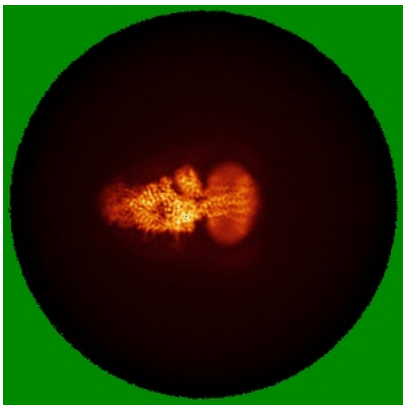
The images above show the largest variance slices of the map in three orthogonal directions.

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

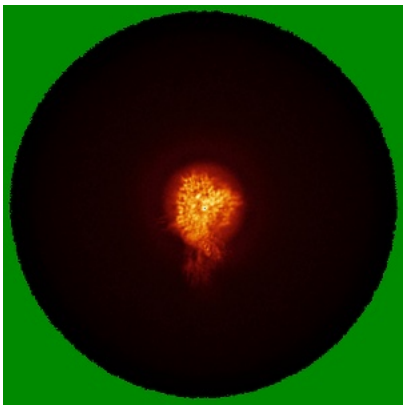
6.4.1 Primary map



X

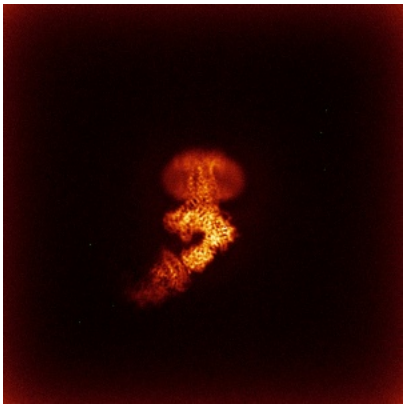


Y

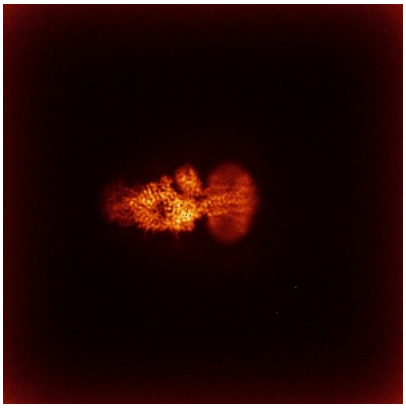


Z

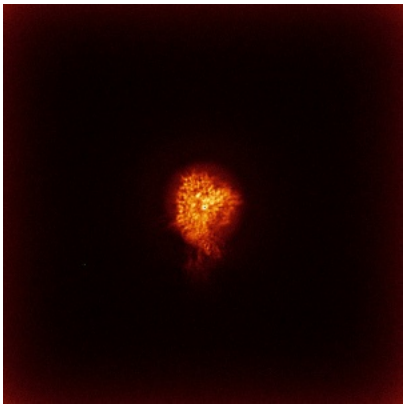
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

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

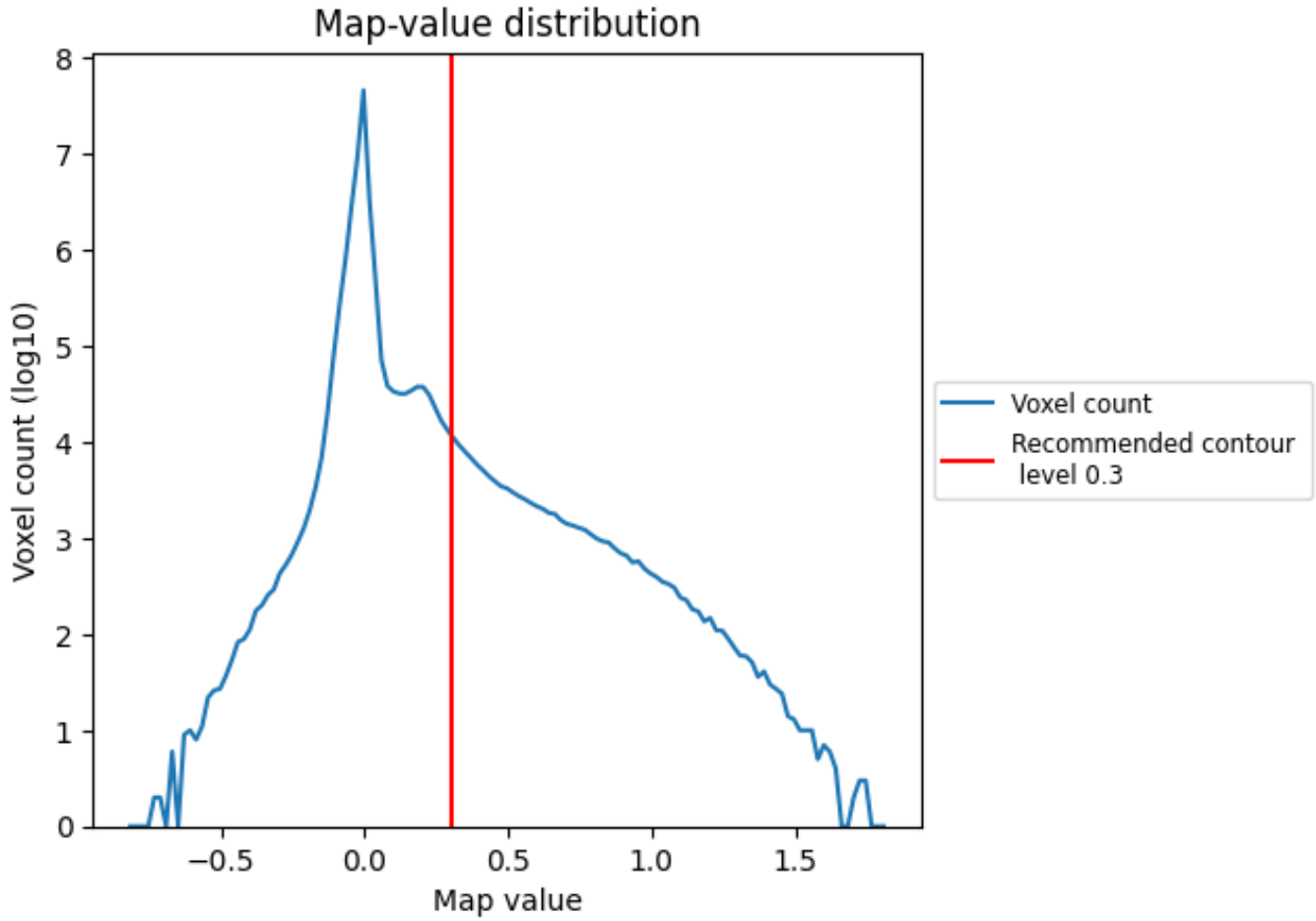
6.6 Mask visualisation (i)

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

7 Map analysis

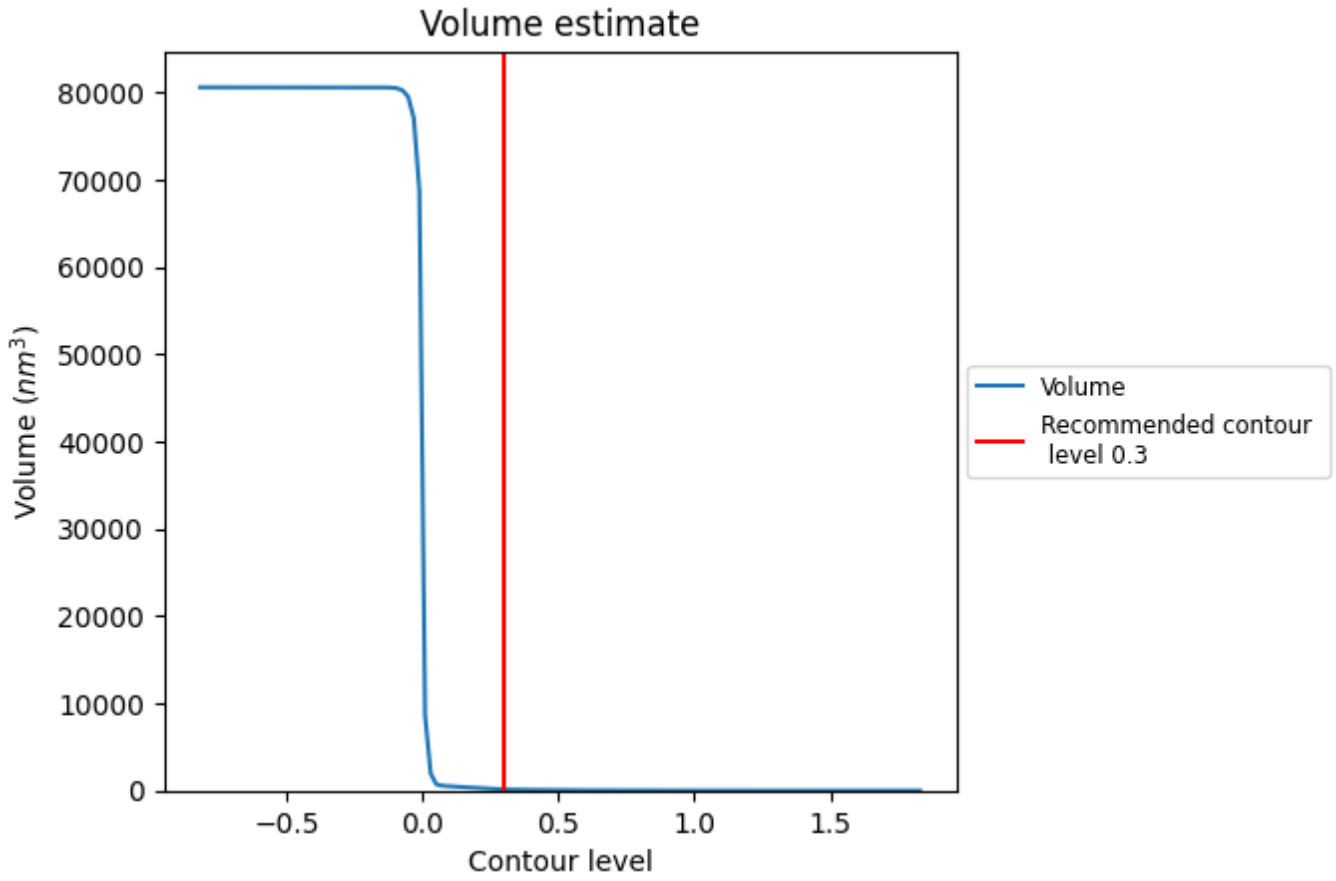
This section contains the results of statistical analysis of the map.

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.

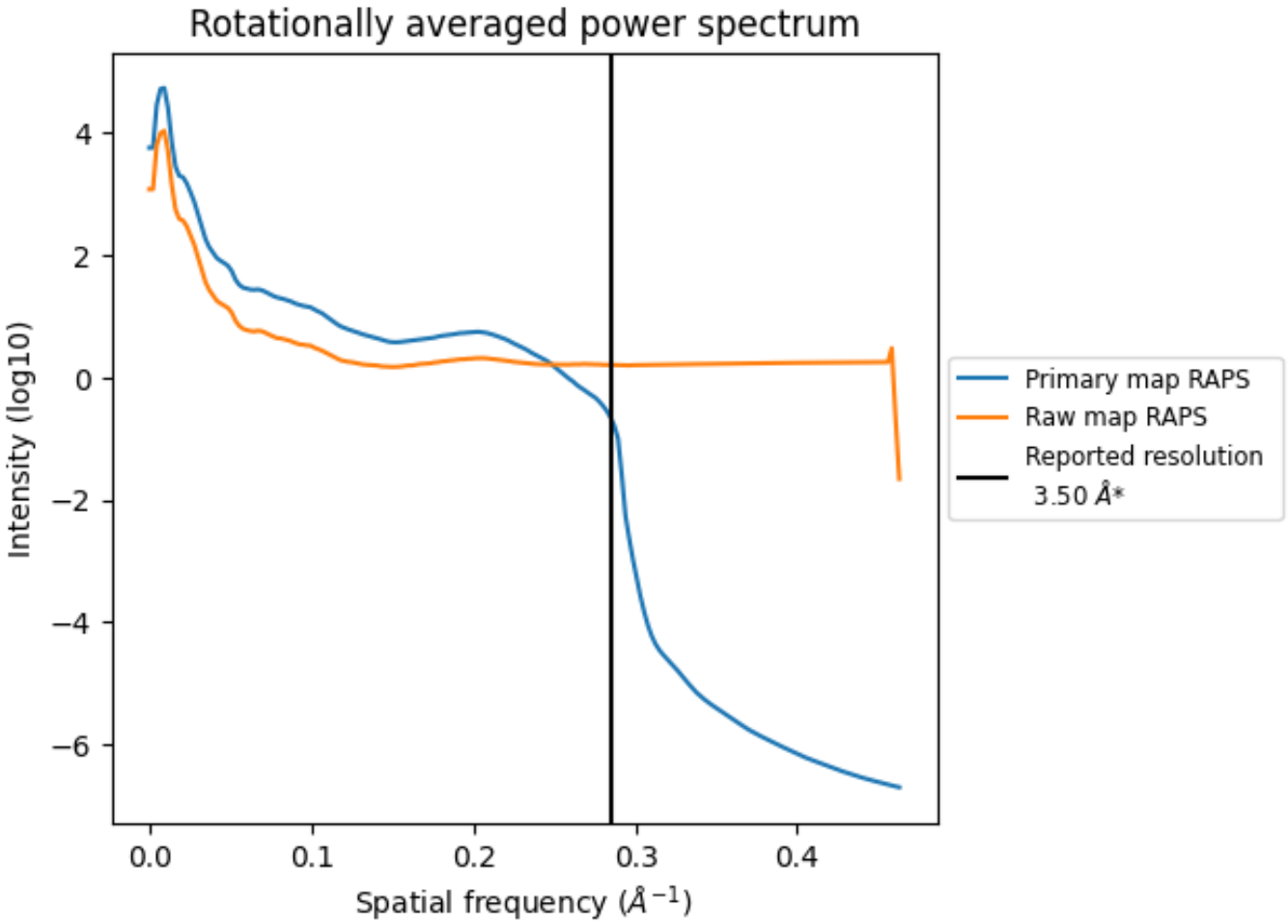
7.2 Volume estimate



The volume at the recommended contour level is 130 nm^3; this corresponds to an approximate mass of 117 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)

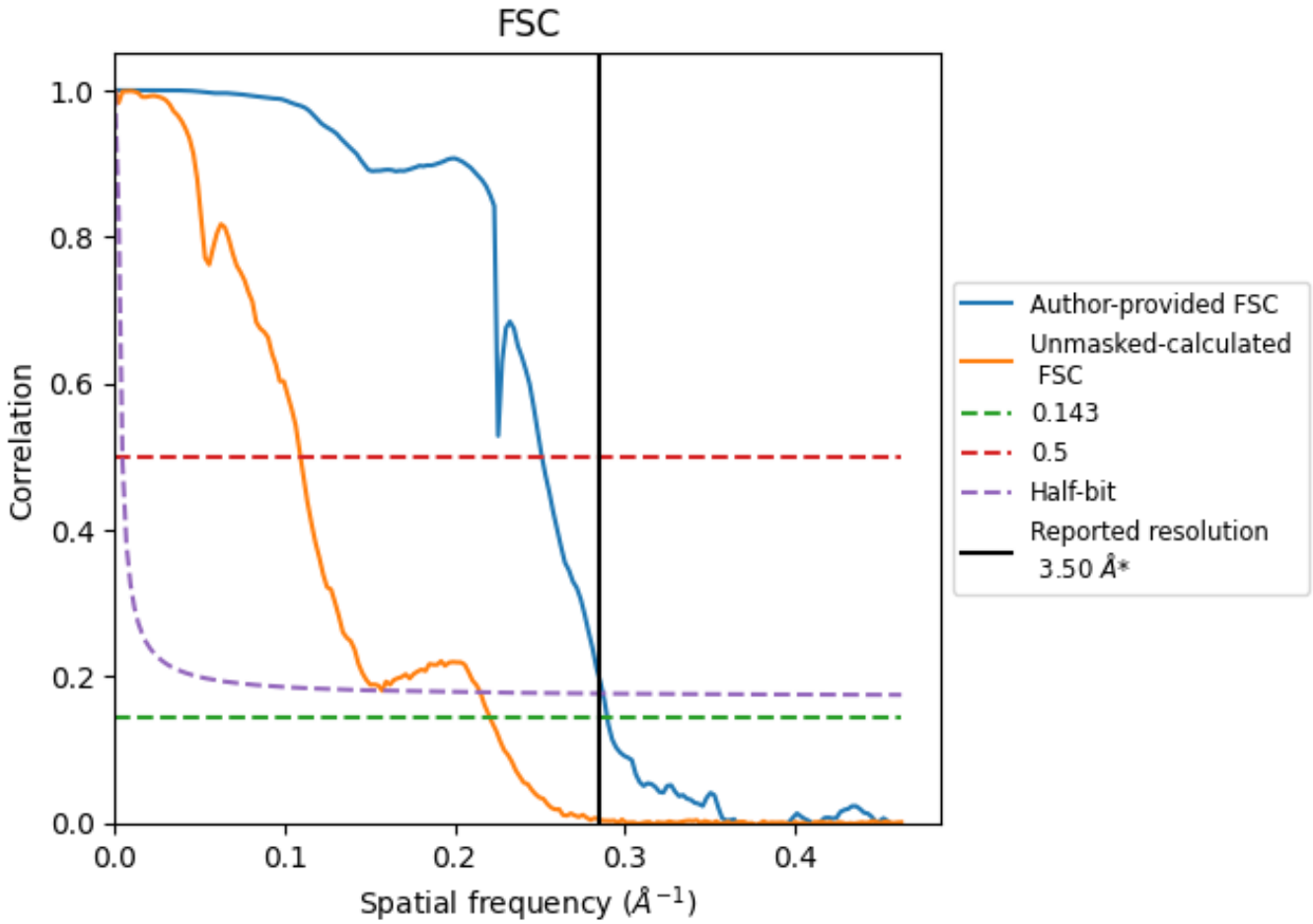


*Reported resolution corresponds to spatial frequency of 0.286 $Å^{-1}$

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 0.286 Å^{-1}

8.2 Resolution estimates (i)

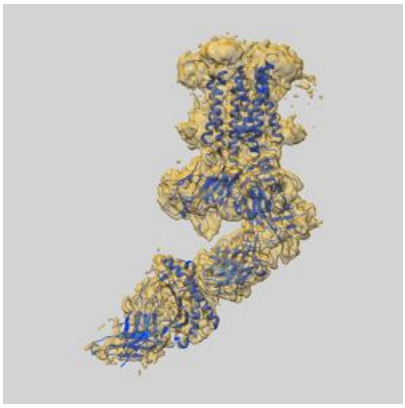
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.50	-	-
Author-provided FSC curve	3.45	3.98	3.48
Unmasked-calculated*	4.52	9.15	6.35

*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 4.52 differs from the reported value 3.5 by more than 10 %

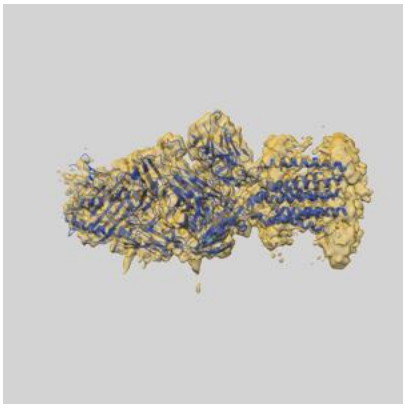
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-45166 and PDB model 9C3E. Per-residue inclusion information can be found in section 3 on page 13.

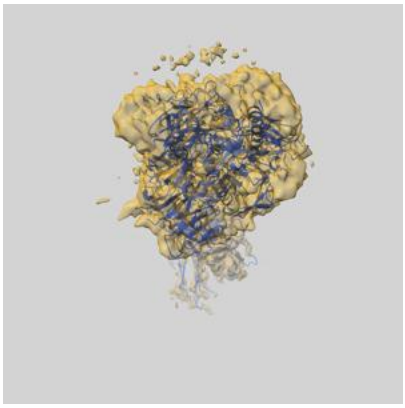
9.1 Map-model overlay



X



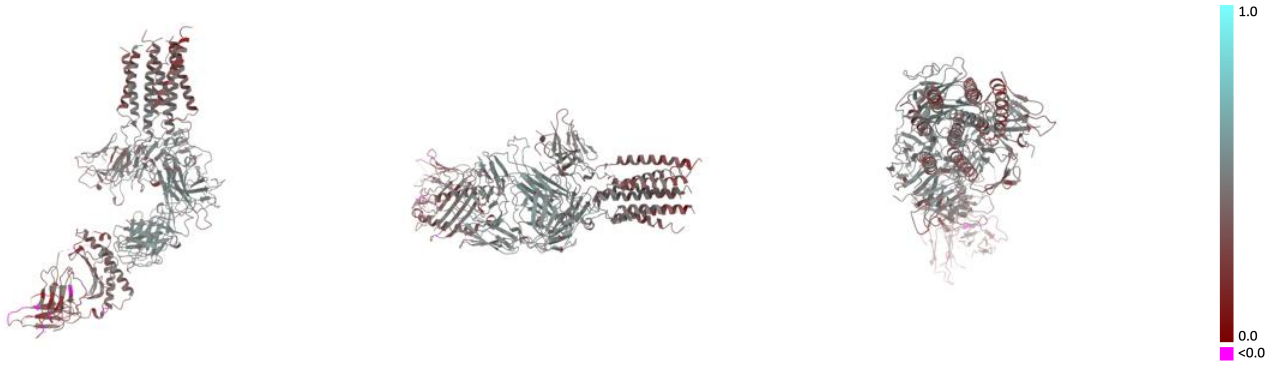
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.3 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.

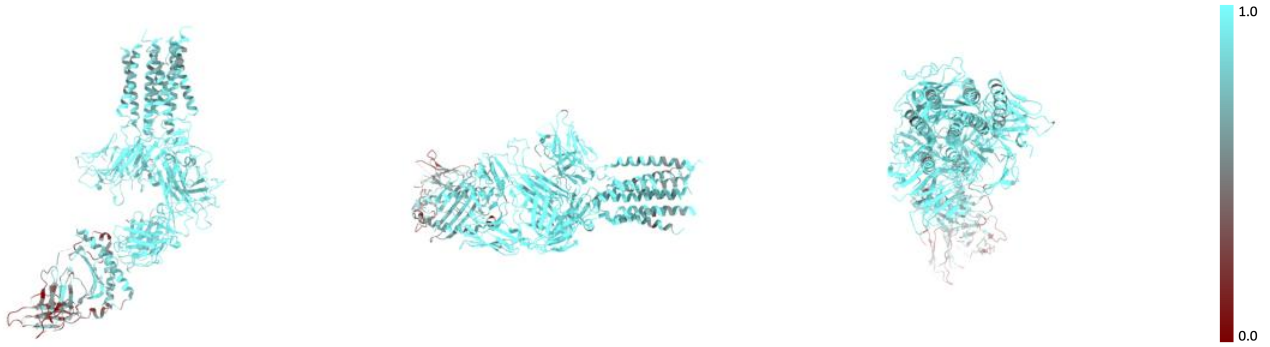
9.2 Q-score mapped to coordinate model



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.

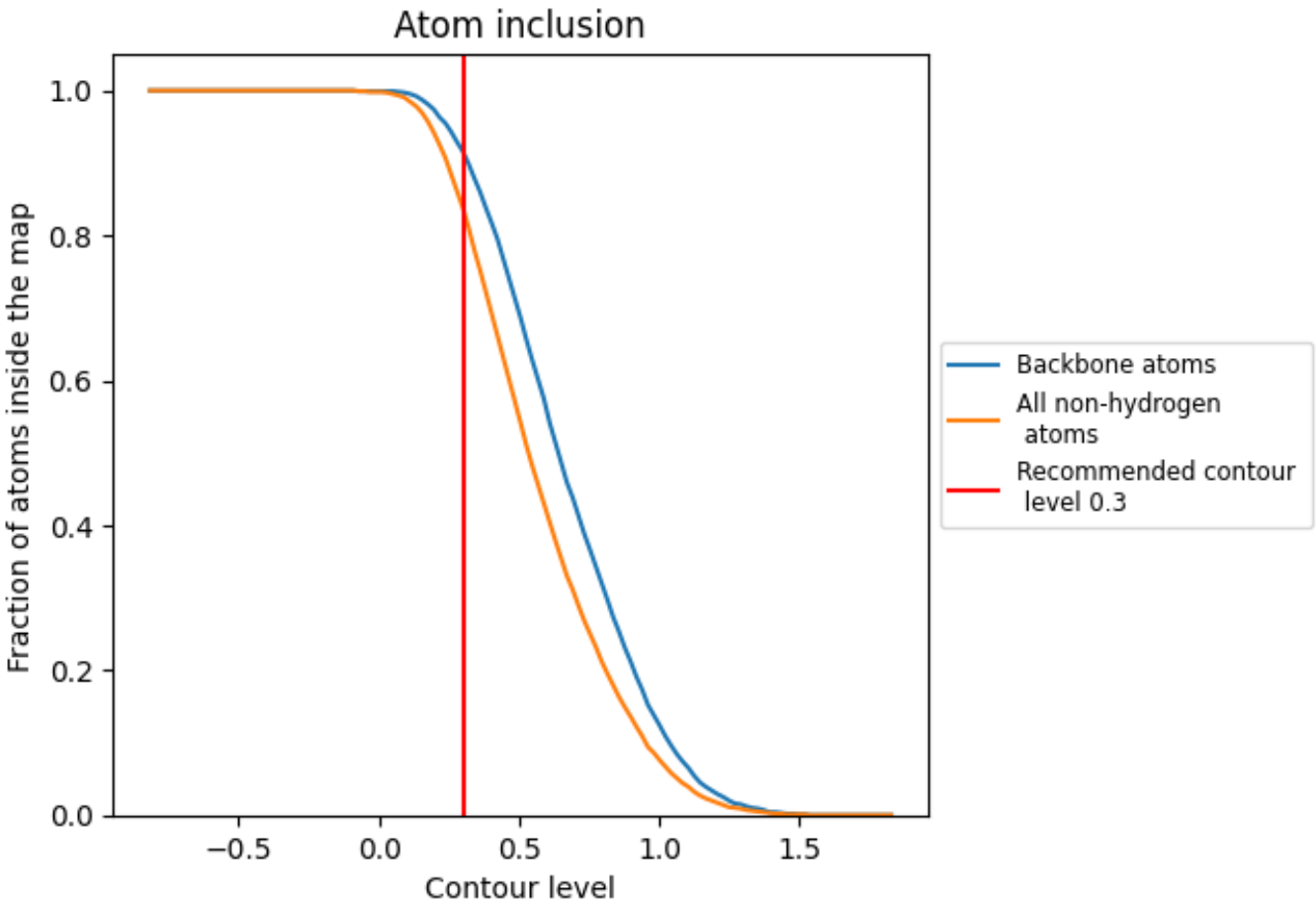
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.3).

9.4 Atom inclusion (i)



At the recommended contour level, 92% of all backbone atoms, 84% 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 (0.3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8380	0.4200
A	0.9370	0.4750
B	0.9340	0.4860
D	0.9340	0.4520
E	0.9190	0.4300
F	0.9050	0.3970
G	0.8720	0.4050
H	0.5870	0.3260
N	0.7440	0.3780
X	0.8190	0.4000
Y	0.8000	0.3750