wwPDB EM Validation Summary Report (i)

Dec 11, 2022 – 06:26 am GMT

PDB ID	:	6RWX
EMDB ID	:	EMD-10045
Title	:	Periplasmic inner membrane ring of the Shigella type 3 secretion system
Authors	:	Kamprad, A.; Lunelli, M.
Deposited on	:	2019-06-06
Resolution	:	3.55 Å(reported)
Based on initial models	:	3GR0, 2Y9J

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 (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 (i)) were used in the production of this report:

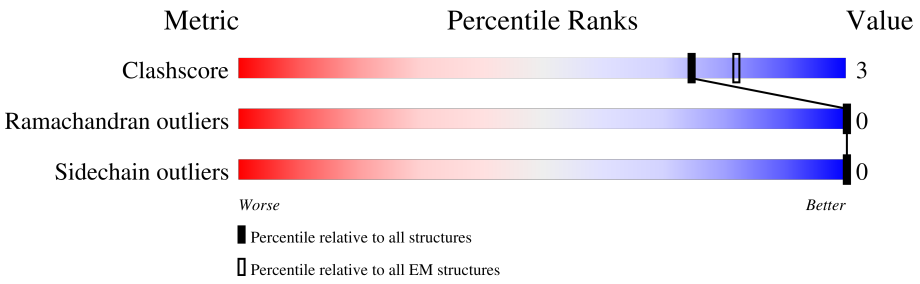
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.3

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.55 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

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

Mol	Chain	Length	Quality of chain
1	A	371	47% · 49%
1	B	371	48% · 49%
1	C	371	48% · 49%
1	D	371	48% · 49%
1	E	371	48% · 49%
1	F	371	48% · 49%
1	G	371	47% · 49%
1	H	371	48% · 49%

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Mol	Chain	Length	Quality of chain
1	I	371	48% · 49%
1	J	371	47% · 49%
1	K	371	48% · 49%
1	L	371	47% · 49%
1	M	371	48% · 49%
1	N	371	47% · 49%
1	O	371	48% · 49%
1	P	371	48% · 49%
1	Q	371	47% · 49%
1	R	371	47% · 49%
1	S	371	47% · 49%
1	T	371	48% · 49%
1	U	371	48% · 49%
1	V	371	48% · 49%
1	W	371	47% · 49%
1	X	371	47% · 49%
2	a	241	73% 27%
2	b	241	73% 27%
2	c	241	73% 27%
2	d	241	73% 27%
2	e	241	73% 27%
2	f	241	73% 27%
2	g	241	73% 27%
2	h	241	73% 27%
2	i	241	73% 27%

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Mol	Chain	Length	Quality of chain
2	j	241	73% 27%
2	k	241	73% 27%
2	l	241	73% 27%
2	m	241	73% 27%
2	n	241	73% 27%
2	o	241	73% 27%
2	p	241	73% 27%
2	q	241	73% 27%
2	r	241	73% 27%
2	s	241	73% 27%
2	t	241	73% 27%
2	u	241	73% 27%
2	v	241	73% 27%
2	w	241	73% 27%
2	x	241	73% 27%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 70968 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 Protein MxiG.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	S	189	1554	994	261	296	3	0	0
1	T	189	1554	994	261	296	3	0	0
1	R	189	1554	994	261	296	3	0	0
1	Q	189	1554	994	261	296	3	0	0
1	P	189	1554	994	261	296	3	0	0
1	O	189	1554	994	261	296	3	0	0
1	N	189	1554	994	261	296	3	0	0
1	M	189	1554	994	261	296	3	0	0
1	L	189	1554	994	261	296	3	0	0
1	K	189	1554	994	261	296	3	0	0
1	J	189	1554	994	261	296	3	0	0
1	I	189	1554	994	261	296	3	0	0
1	H	189	1554	994	261	296	3	0	0
1	G	189	1554	994	261	296	3	0	0
1	F	189	1554	994	261	296	3	0	0
1	E	189	1554	994	261	296	3	0	0
1	D	189	1554	994	261	296	3	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	C	189	1554	994	261	296	3	0	0
1	B	189	1554	994	261	296	3	0	0
1	A	189	1554	994	261	296	3	0	0
1	W	189	1554	994	261	296	3	0	0
1	V	189	1554	994	261	296	3	0	0
1	U	189	1554	994	261	296	3	0	0
1	X	189	1554	994	261	296	3	0	0

- Molecule 2 is a protein called Lipoprotein MxiJ.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	a	177	1403	882	241	276	4	0	0
2	b	177	1403	882	241	276	4	0	0
2	c	177	1403	882	241	276	4	0	0
2	d	177	1403	882	241	276	4	0	0
2	e	177	1403	882	241	276	4	0	0
2	f	177	1403	882	241	276	4	0	0
2	g	177	1403	882	241	276	4	0	0
2	h	177	1403	882	241	276	4	0	0
2	i	177	1403	882	241	276	4	0	0
2	j	177	1403	882	241	276	4	0	0
2	k	177	1403	882	241	276	4	0	0
2	l	177	1403	882	241	276	4	0	0

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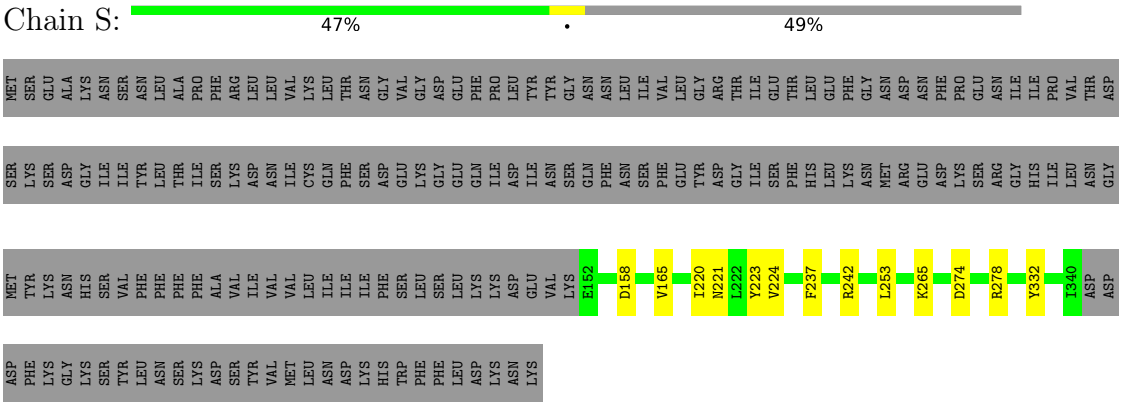
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	m	177	1403	882	241	276	4	0	0
2	n	177	1403	882	241	276	4	0	0
2	o	177	1403	882	241	276	4	0	0
2	p	177	1403	882	241	276	4	0	0
2	q	177	1403	882	241	276	4	0	0
2	r	177	1403	882	241	276	4	0	0
2	s	177	1403	882	241	276	4	0	0
2	t	177	1403	882	241	276	4	0	0
2	u	177	1403	882	241	276	4	0	0
2	v	177	1403	882	241	276	4	0	0
2	w	177	1403	882	241	276	4	0	0
2	x	177	1403	882	241	276	4	0	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.

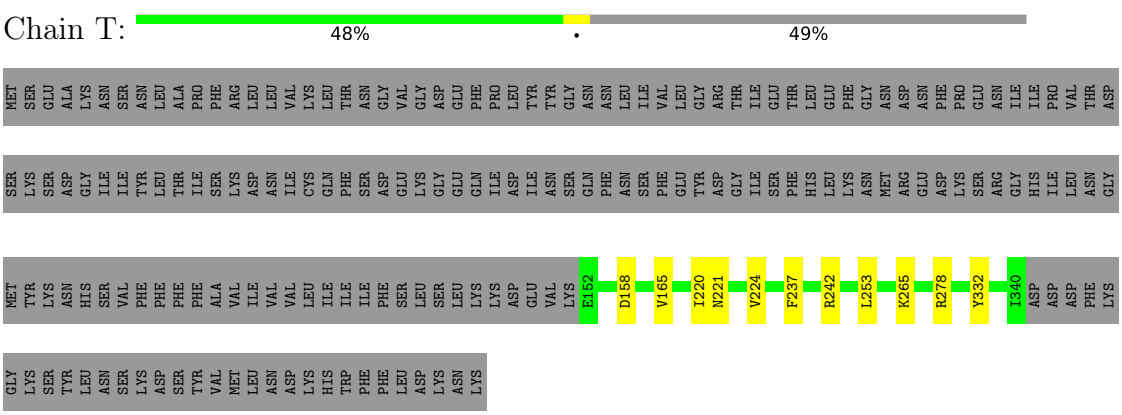
- Molecule 1: Protein MxiG

Chain S:



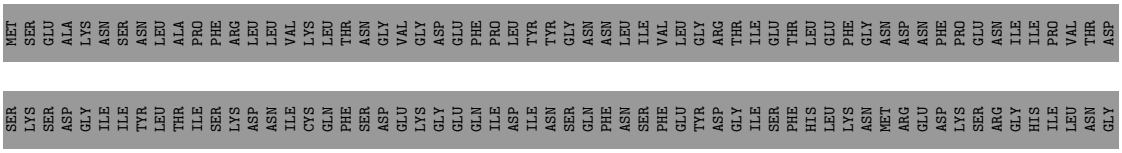
- Molecule 1: Protein MxiG

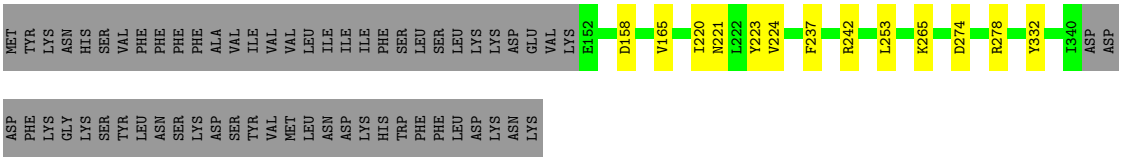
Chain T:



- Molecule 1: Protein MxiG

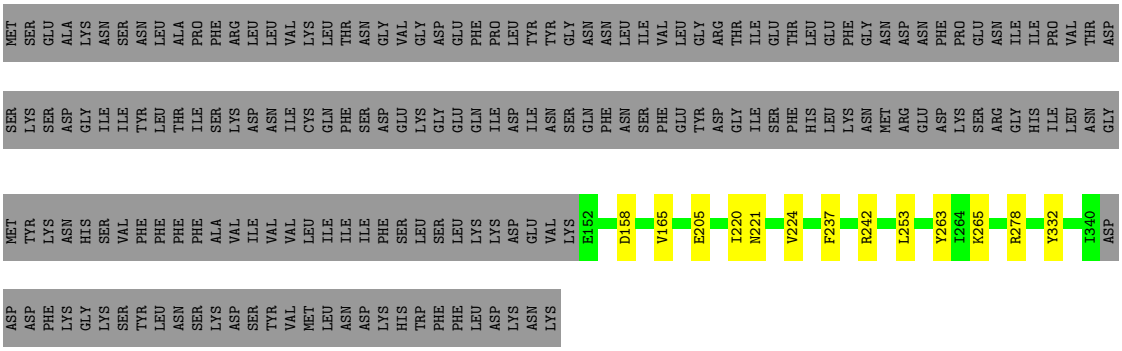
Chain R:





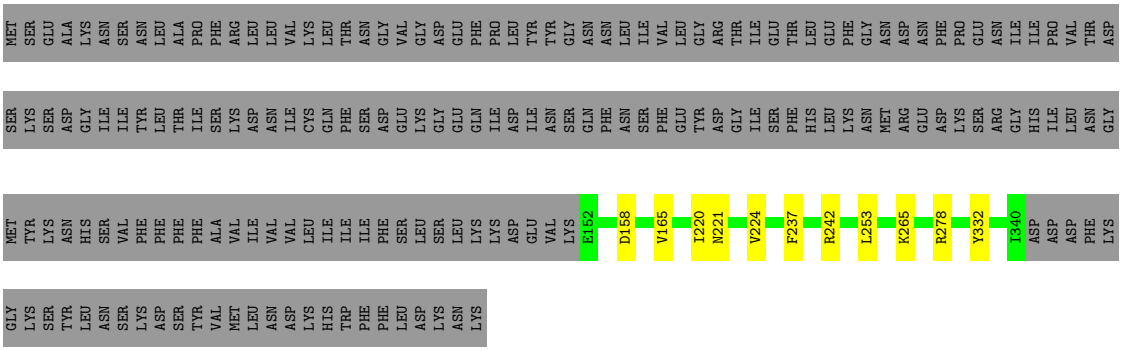
- Molecule 1: Protein MxiG

Chain Q:



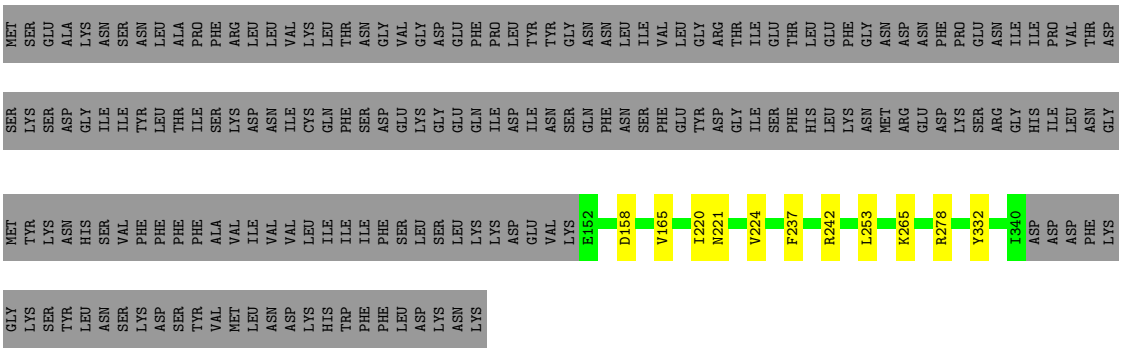
- Molecule 1: Protein MxiG

Chain P:



- Molecule 1: Protein MxiG

Chain O:



- Molecule 1: Protein MxiG

Chain N: 47% • 49%

MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY

MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS E152 D158 V165 E205 I220 N221 V224 F237 R242 L253 Y263 I264 K265 R278 Y332 I340 ASP

ASP ASP PHE LYS GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain M: 48% • 49%

MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY

MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS E152 D158 V165 I220 N221 V224 F237 R242 L253 K265 R278 Y332 I340 ASP ASP ASP PHE LYS

GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain L: 47% • 49%

MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY

MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS E152 D158 V165 E205 I220 N221 V224 F237 R242 L253 Y263 I264 K265 R278 Y332 I340 ASP

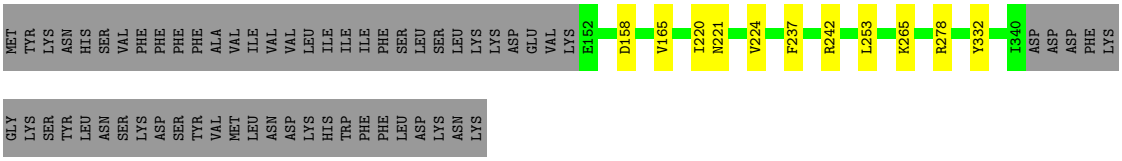
ASP ASP PHE LYS GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain K: 48% • 49%

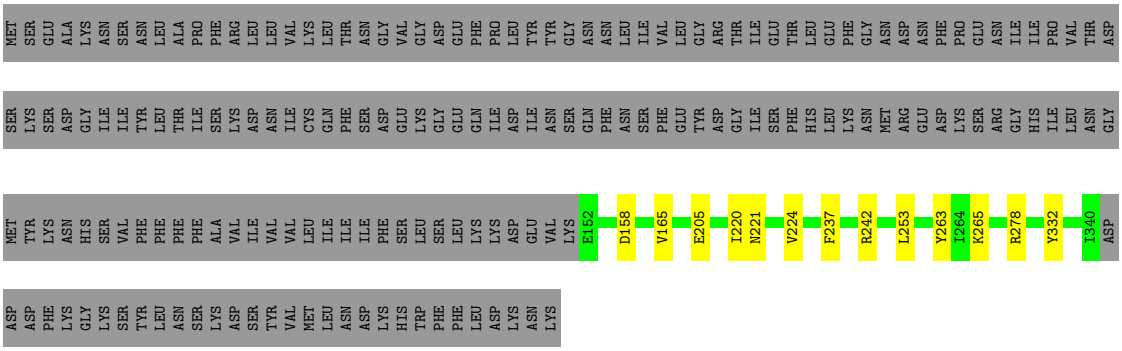
MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY



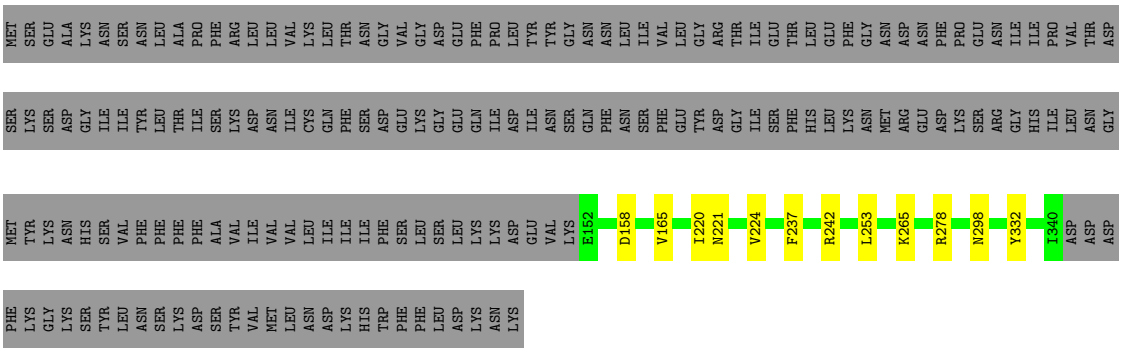
• Molecule 1: Protein MxiG

Chain J:



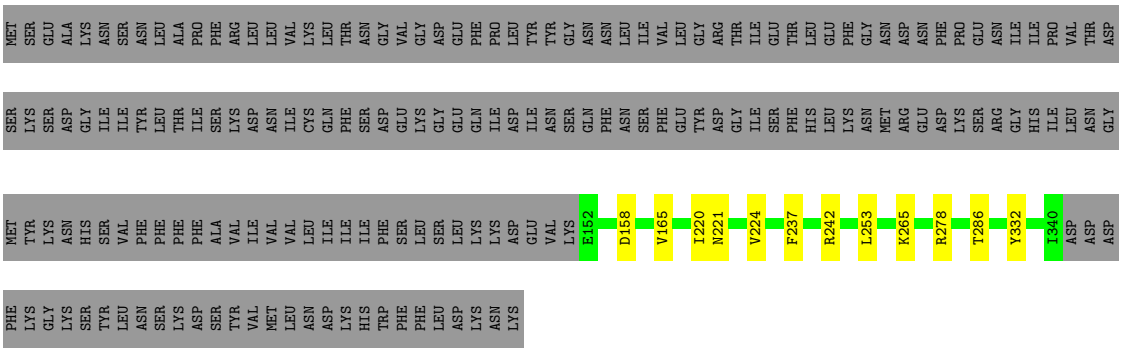
• Molecule 1: Protein MxiG

Chain I:



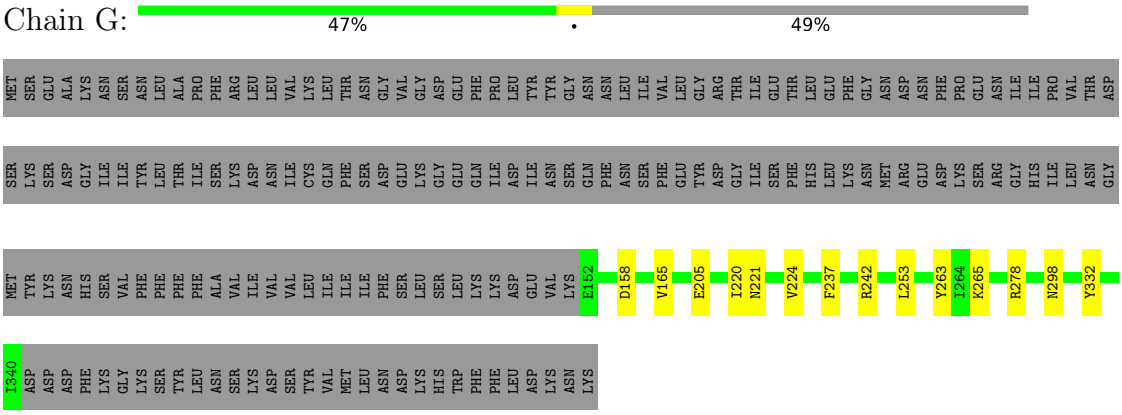
• Molecule 1: Protein MxiG

Chain H:



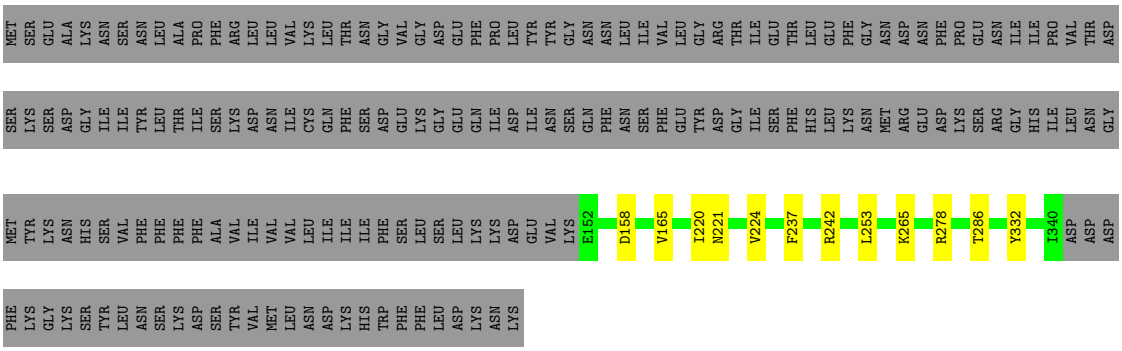
• Molecule 1: Protein MxiG

Chain G:



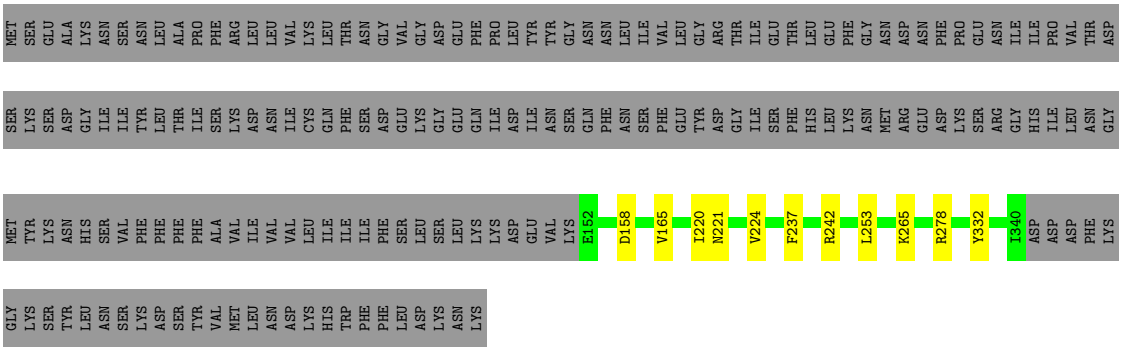
• Molecule 1: Protein MxiG

Chain F:



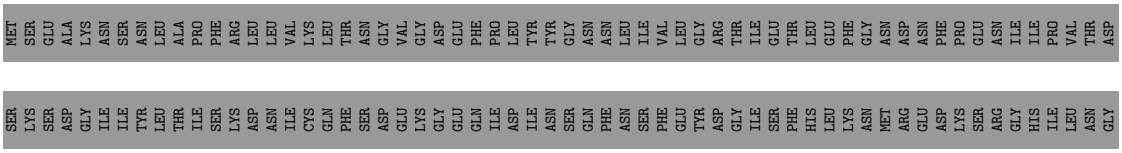
• Molecule 1: Protein MxiG

Chain E:



• Molecule 1: Protein MxiG

Chain D:



MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS **E152** **D158** **V165** **I220** **N221** **V224** **F237** **R242** **L253** **K265** **R278** **Y332** **I340** ASP ASP ASP PHE LYS

GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain C: 48% • 49%

MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY

MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS **E152** **D158** **V165** **I220** **N221** **V224** **F237** **R242** **L253** **K265** **R278** **Y332** **I340** ASP ASP ASP PHE LYS

GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain B: 48% • 49%

MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY

MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS **E152** **D158** **V165** **I220** **N221** **V224** **F237** **R242** **L253** **K265** **R278** **Y332** **I340** ASP ASP ASP PHE LYS

GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain A: 47% • 49%

MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY

MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS **E152** **D158** **V165** **I220** **N221** **L222** **Y223** **V224** **F237** **R242** **L253** **K265** **D274** **R278** **Y332** **I340** ASP ASP

ASP PHE LYS GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain W: 47% • 49%

MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY

MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS E152 D158 V165 I220 N221 L222 Y223 V224 F237 R242 L253 K265 D274 R278 Y332 I340 ASP ASP

ASP PHE LYS GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain V: 48% • 49%

MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY

MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS E152 D158 V165 I220 N221 V224 F237 R242 L253 K265 R278 Y332 I340 ASP ASP ASP PHE LYS

GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain U: 48% • 49%

MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY

MET TYR LYS ASN HIS SER VAL PHE PHE PHE PHE ALA VAL ILE VAL VAL LEU ILE ILE ILE PHE SER LEU SER LEU LYS LYS ASP GLU VAL LYS E152 D158 V165 I220 N221 V224 F237 R242 L253 K265 R278 Y332 I340 ASP ASP ASP PHE LYS

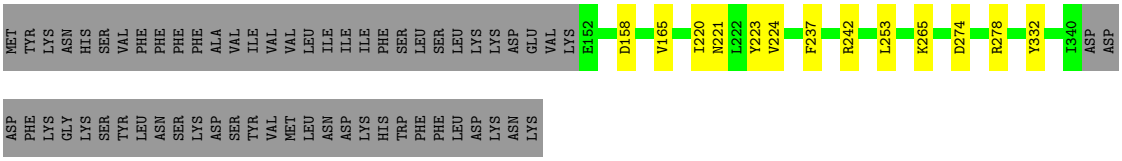
GLY LYS SER TYR LEU ASN SER LYS ASP SER TYR VAL MET LEU ASN ASP LYS HIS TRP PHE PHE LEU ASP LYS ASN LYS

- Molecule 1: Protein MxiG

Chain X: 47% • 49%

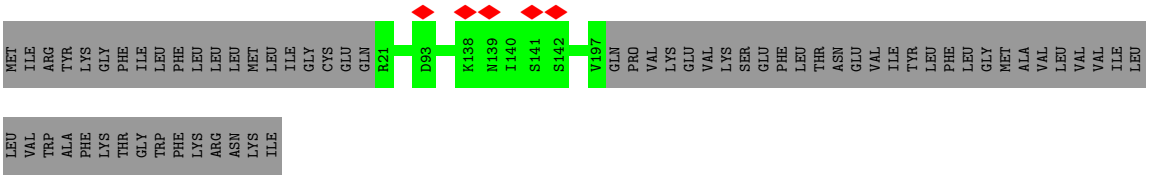
MET SER GLU ALA LYS ASN SER ASN LEU ALA PRO PHE ARG LEU LEU VAL LYS LEU THR ASN GLY VAL GLY ASP GLU PHE PRO LEU TYR TYR GLY ASN ASN LEU ILE VAL LEU GLY ARG THR ILE GLU THR LEU GLU PHE GLY ASN ASP ASN PHE PRO GLU ASN ILE ILE PRO VAL THR ASP

SER LYS SER ASP GLY ILE ILE TYR LEU THR ILE SER LYS ASP ASN ILE CYS GLN PHE SER ASP GLU LYS GLY GLU GLN ILE ASP ILE ASN SER GLN PHE ASN SER PHE GLU TYR ASP GLY ILE SER PHE HIS LEU LYS ASN MET ARG GLU ASP LYS SER ARG GLY HIS ILE LEU ASN GLY



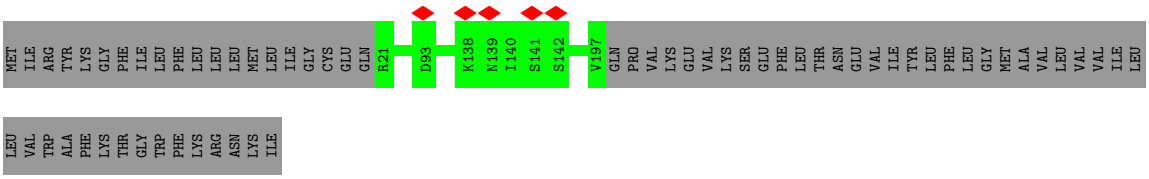
• Molecule 2: Lipoprotein MxiJ

Chain a:



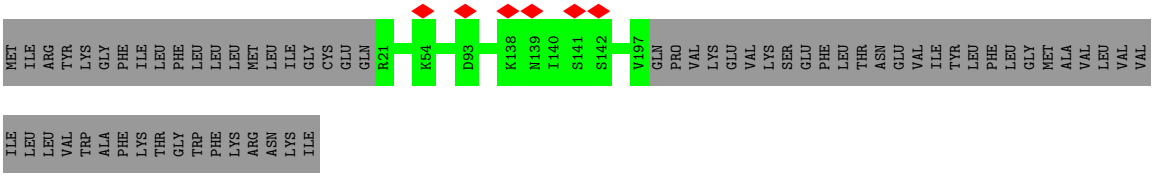
• Molecule 2: Lipoprotein MxiJ

Chain b:



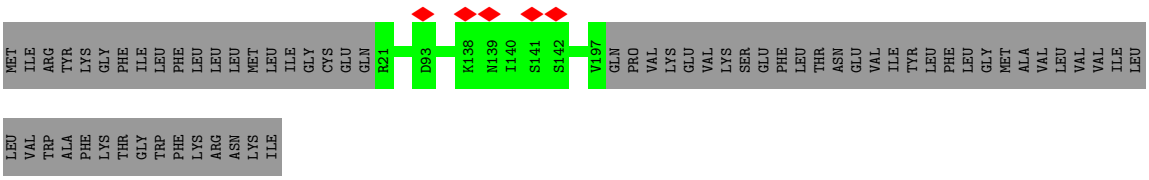
• Molecule 2: Lipoprotein MxiJ

Chain c:



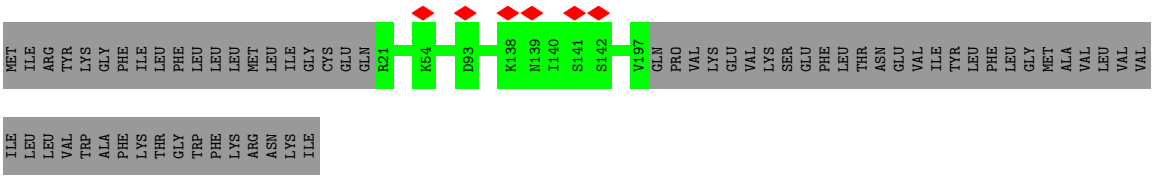
• Molecule 2: Lipoprotein MxiJ

Chain d:



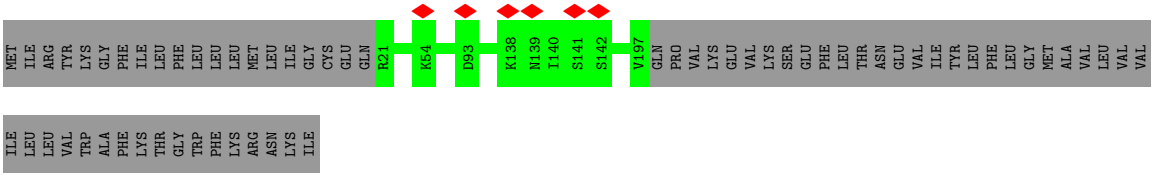
• Molecule 2: Lipoprotein MxiJ

Chain e:



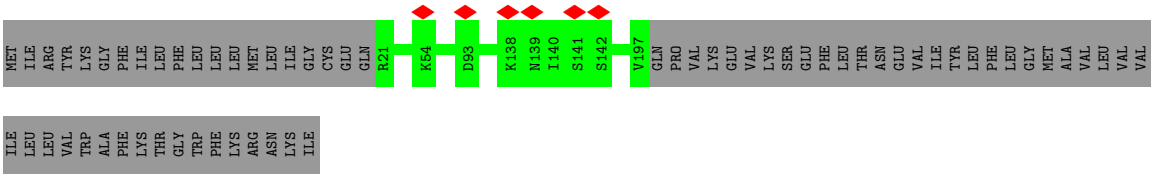
• Molecule 2: Lipoprotein MxiJ

Chain f:



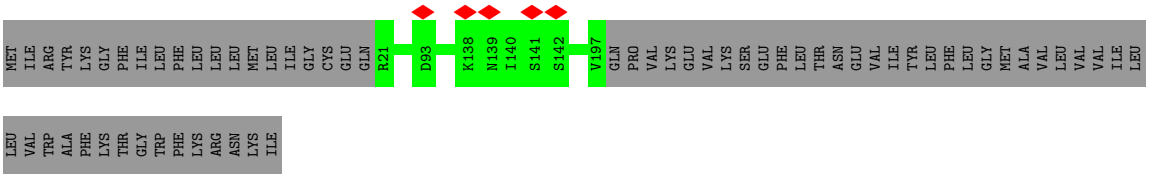
• Molecule 2: Lipoprotein MxiJ

Chain g:



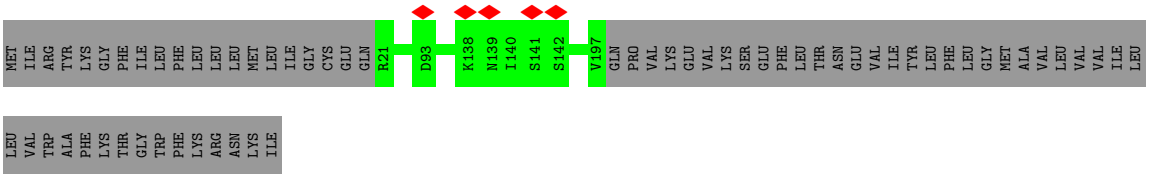
• Molecule 2: Lipoprotein MxiJ

Chain h:



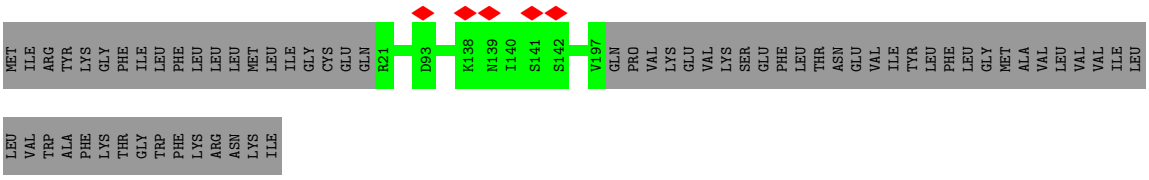
• Molecule 2: Lipoprotein MxiJ

Chain i:



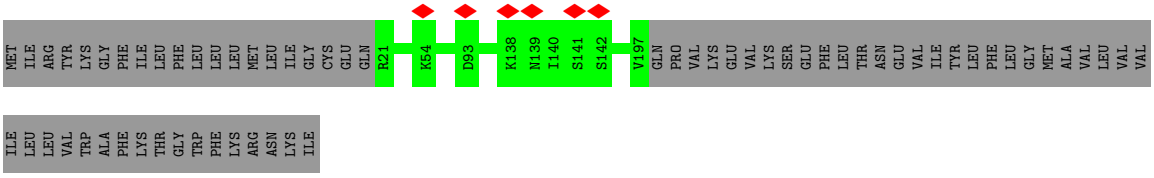
• Molecule 2: Lipoprotein MxiJ

Chain j:



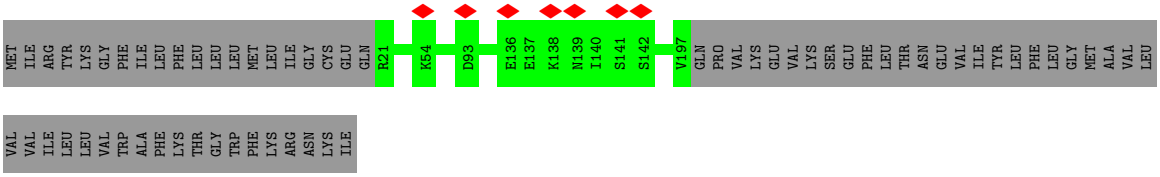
• Molecule 2: Lipoprotein MxiJ

Chain k:



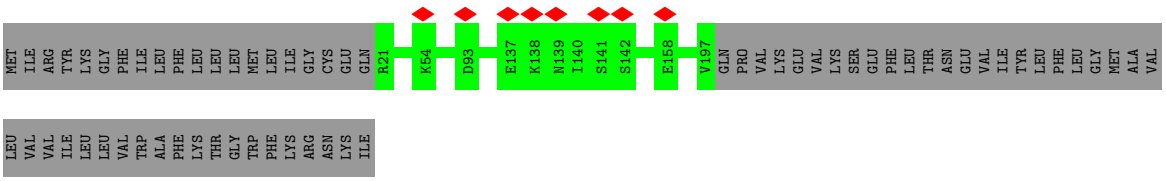
• Molecule 2: Lipoprotein MxiJ

Chain l:



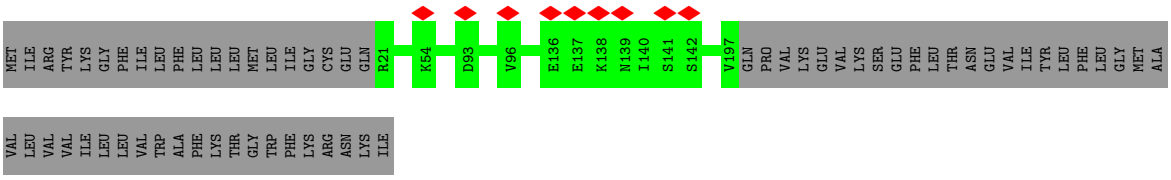
• Molecule 2: Lipoprotein MxiJ

Chain m:



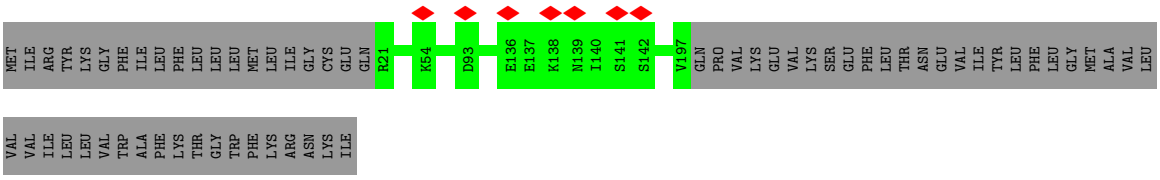
• Molecule 2: Lipoprotein MxiJ

Chain n:



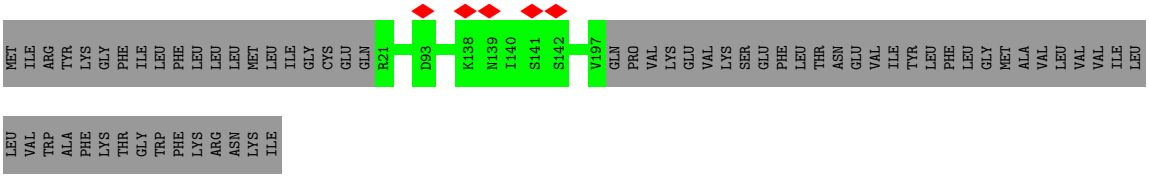
• Molecule 2: Lipoprotein MxiJ

Chain o:



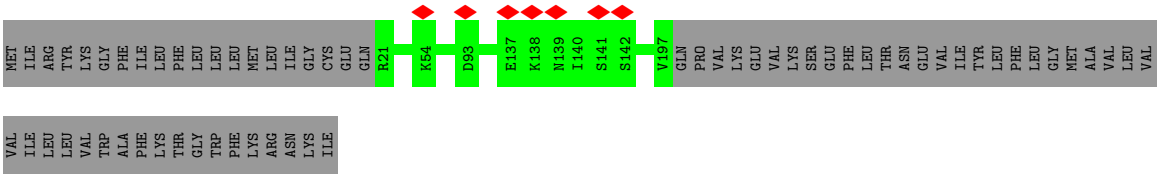
• Molecule 2: Lipoprotein MxiJ

Chain p:



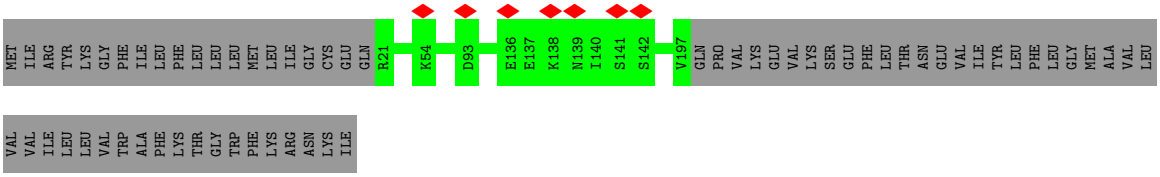
• Molecule 2: Lipoprotein MxiJ

Chain q:



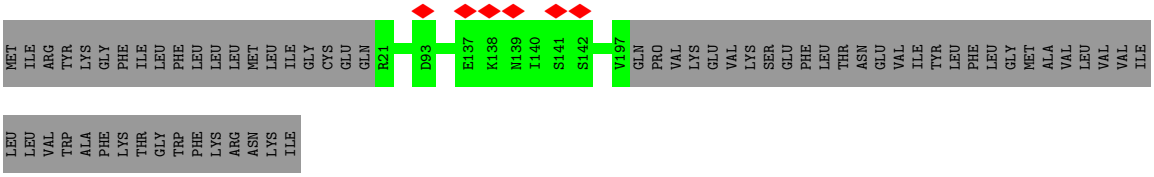
• Molecule 2: Lipoprotein MxiJ

Chain r:



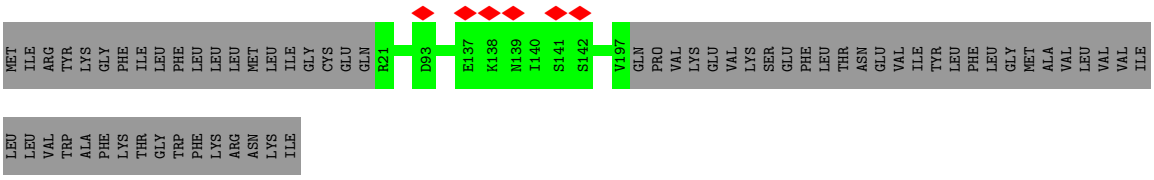
• Molecule 2: Lipoprotein MxiJ

Chain s:



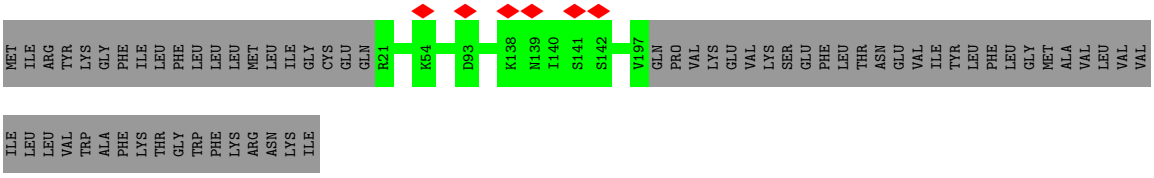
• Molecule 2: Lipoprotein MxiJ

Chain t:



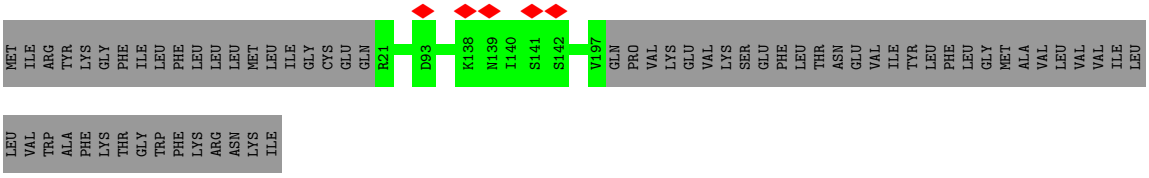
• Molecule 2: Lipoprotein MxiJ

Chain u:



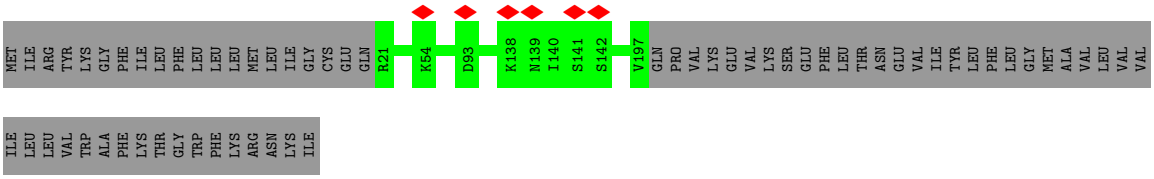
• Molecule 2: Lipoprotein MxiJ

Chain v:



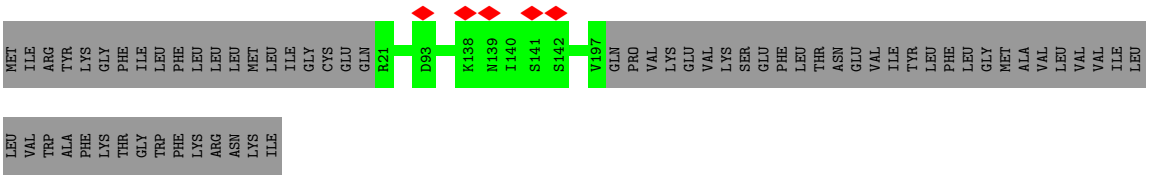
• Molecule 2: Lipoprotein MxiJ

Chain w:



• Molecule 2: Lipoprotein MxiJ

Chain x:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C24	Depositor
Number of particles used	72298	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	25	Depositor
Minimum defocus (nm)	1.5	Depositor
Maximum defocus (nm)	4	Depositor
Magnification	101179	Depositor
Image detector	FEI FALCON II (4k x 4k)	Depositor
Maximum map value	0.635	Depositor
Minimum map value	-0.387	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.012	Depositor
Recommended contour level	0.07	Depositor
Map size (Å)	664.1712, 664.1712, 664.1712	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.38369, 1.38369, 1.38369	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| >5$	RMSZ	$\#\|Z\| >5$
1	A	0.43	0/1578	0.52	0/2130
1	B	0.43	0/1578	0.52	0/2130
1	C	0.43	0/1578	0.52	0/2130
1	D	0.43	0/1578	0.52	0/2130
1	E	0.43	0/1578	0.52	0/2130
1	F	0.43	0/1578	0.52	0/2130
1	G	0.43	0/1578	0.52	0/2130
1	H	0.43	0/1578	0.52	0/2130
1	I	0.43	0/1578	0.52	0/2130
1	J	0.43	0/1578	0.52	0/2130
1	K	0.43	0/1578	0.52	0/2130
1	L	0.43	0/1578	0.52	0/2130
1	M	0.43	0/1578	0.52	0/2130
1	N	0.43	0/1578	0.52	0/2130
1	O	0.43	0/1578	0.52	0/2130
1	P	0.43	0/1578	0.52	0/2130
1	Q	0.43	0/1578	0.52	0/2130
1	R	0.43	0/1578	0.52	0/2130
1	S	0.43	0/1578	0.52	0/2130
1	T	0.43	0/1578	0.52	0/2130
1	U	0.43	0/1578	0.52	0/2130
1	V	0.43	0/1578	0.52	0/2130
1	W	0.43	0/1578	0.52	0/2130
1	X	0.43	0/1578	0.52	0/2130
2	a	0.43	0/1423	0.55	0/1921
2	b	0.43	0/1423	0.55	0/1921
2	c	0.43	0/1423	0.55	0/1921
2	d	0.43	0/1423	0.55	0/1921
2	e	0.43	0/1423	0.55	0/1921
2	f	0.44	0/1423	0.55	0/1921
2	g	0.43	0/1423	0.55	0/1921
2	h	0.43	0/1423	0.55	0/1921
2	i	0.43	0/1423	0.55	0/1921
2	j	0.44	0/1423	0.55	0/1921

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
2	k	0.43	0/1423	0.55	0/1921
2	l	0.43	0/1423	0.55	0/1921
2	m	0.43	0/1423	0.55	0/1921
2	n	0.43	0/1423	0.55	0/1921
2	o	0.43	0/1423	0.55	0/1921
2	p	0.43	0/1423	0.55	0/1921
2	q	0.43	0/1423	0.55	0/1921
2	r	0.44	0/1423	0.55	0/1921
2	s	0.43	0/1423	0.55	0/1921
2	t	0.43	0/1423	0.55	0/1921
2	u	0.43	0/1423	0.55	0/1921
2	v	0.44	0/1423	0.55	0/1921
2	w	0.44	0/1423	0.55	0/1921
2	x	0.44	0/1423	0.55	0/1921
All	All	0.43	0/72024	0.54	0/97224

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	1554	0	1567	7	0
1	B	1554	0	1567	6	0
1	C	1554	0	1567	6	0
1	D	1554	0	1567	6	0
1	E	1554	0	1567	6	0
1	F	1554	0	1567	7	0
1	G	1554	0	1567	8	0
1	H	1554	0	1567	7	0
1	I	1554	0	1567	7	0
1	J	1554	0	1567	7	0
1	K	1554	0	1567	6	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	L	1554	0	1567	7	0
1	M	1554	0	1567	6	0
1	N	1554	0	1567	7	0
1	O	1554	0	1567	6	0
1	P	1554	0	1567	6	0
1	Q	1554	0	1567	7	0
1	R	1554	0	1567	7	0
1	S	1554	0	1567	7	0
1	T	1554	0	1567	6	0
1	U	1554	0	1567	6	0
1	V	1554	0	1567	6	0
1	W	1554	0	1567	7	0
1	X	1554	0	1567	7	0
2	a	1403	0	1428	0	0
2	b	1403	0	1428	0	0
2	c	1403	0	1428	0	0
2	d	1403	0	1428	0	0
2	e	1403	0	1428	0	0
2	f	1403	0	1428	0	0
2	g	1403	0	1428	0	0
2	h	1403	0	1428	0	0
2	i	1403	0	1428	0	0
2	j	1403	0	1428	0	0
2	k	1403	0	1428	0	0
2	l	1403	0	1428	0	0
2	m	1403	0	1428	0	0
2	n	1403	0	1428	0	0
2	o	1403	0	1428	0	0
2	p	1403	0	1428	0	0
2	q	1403	0	1428	0	0
2	r	1403	0	1428	0	0
2	s	1403	0	1428	0	0
2	t	1403	0	1428	0	0
2	u	1403	0	1428	0	0
2	v	1403	0	1428	0	0
2	w	1403	0	1428	0	0
2	x	1403	0	1428	0	0
All	All	70968	0	71880	156	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 3.

The worst 5 of 156 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)
1:G:298:ASN:HB2	1:F:286:THR:HG21	1.84	0.60
1:I:298:ASN:HB2	1:H:286:THR:HG21	1.83	0.60
1:T:278:ARG:NH1	1:T:332:TYR:OH	2.41	0.54
1:S:278:ARG:NH1	1:S:332:TYR:OH	2.41	0.54
1:N:278:ARG:NH1	1:N:332:TYR:OH	2.41	0.54

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	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	B	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	C	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	D	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	E	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	F	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	G	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	H	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	I	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	J	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	K	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	L	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	M	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	N	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	O	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	P	187/371 (50%)	177 (95%)	10 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	Q	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	R	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	S	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	T	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	U	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	V	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	W	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
1	X	187/371 (50%)	177 (95%)	10 (5%)	0	100	100
2	a	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	b	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	c	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	d	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	e	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	f	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	g	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	h	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	i	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	j	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	k	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	l	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	m	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	n	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	o	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	p	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	q	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	r	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	s	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	t	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	u	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	v	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
2	w	175/241 (73%)	155 (89%)	20 (11%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	x	175/241 (73%)	155 (89%)	20 (11%)	0	100	100
All	All	8688/14688 (59%)	7968 (92%)	720 (8%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	174/342 (51%)	174 (100%)	0	100	100
1	B	174/342 (51%)	174 (100%)	0	100	100
1	C	174/342 (51%)	174 (100%)	0	100	100
1	D	174/342 (51%)	174 (100%)	0	100	100
1	E	174/342 (51%)	174 (100%)	0	100	100
1	F	174/342 (51%)	174 (100%)	0	100	100
1	G	174/342 (51%)	174 (100%)	0	100	100
1	H	174/342 (51%)	174 (100%)	0	100	100
1	I	174/342 (51%)	174 (100%)	0	100	100
1	J	174/342 (51%)	174 (100%)	0	100	100
1	K	174/342 (51%)	174 (100%)	0	100	100
1	L	174/342 (51%)	174 (100%)	0	100	100
1	M	174/342 (51%)	174 (100%)	0	100	100
1	N	174/342 (51%)	174 (100%)	0	100	100
1	O	174/342 (51%)	174 (100%)	0	100	100
1	P	174/342 (51%)	174 (100%)	0	100	100
1	Q	174/342 (51%)	174 (100%)	0	100	100
1	R	174/342 (51%)	174 (100%)	0	100	100
1	S	174/342 (51%)	174 (100%)	0	100	100
1	T	174/342 (51%)	174 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	U	174/342 (51%)	174 (100%)	0	100	100
1	V	174/342 (51%)	174 (100%)	0	100	100
1	W	174/342 (51%)	174 (100%)	0	100	100
1	X	174/342 (51%)	174 (100%)	0	100	100
2	a	162/220 (74%)	162 (100%)	0	100	100
2	b	162/220 (74%)	162 (100%)	0	100	100
2	c	162/220 (74%)	162 (100%)	0	100	100
2	d	162/220 (74%)	162 (100%)	0	100	100
2	e	162/220 (74%)	162 (100%)	0	100	100
2	f	162/220 (74%)	162 (100%)	0	100	100
2	g	162/220 (74%)	162 (100%)	0	100	100
2	h	162/220 (74%)	162 (100%)	0	100	100
2	i	162/220 (74%)	162 (100%)	0	100	100
2	j	162/220 (74%)	162 (100%)	0	100	100
2	k	162/220 (74%)	162 (100%)	0	100	100
2	l	162/220 (74%)	162 (100%)	0	100	100
2	m	162/220 (74%)	162 (100%)	0	100	100
2	n	162/220 (74%)	162 (100%)	0	100	100
2	o	162/220 (74%)	162 (100%)	0	100	100
2	p	162/220 (74%)	162 (100%)	0	100	100
2	q	162/220 (74%)	162 (100%)	0	100	100
2	r	162/220 (74%)	162 (100%)	0	100	100
2	s	162/220 (74%)	162 (100%)	0	100	100
2	t	162/220 (74%)	162 (100%)	0	100	100
2	u	162/220 (74%)	162 (100%)	0	100	100
2	v	162/220 (74%)	162 (100%)	0	100	100
2	w	162/220 (74%)	162 (100%)	0	100	100
2	x	162/220 (74%)	162 (100%)	0	100	100
All	All	8064/13488 (60%)	8064 (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 20

such sidechains are listed below:

Mol	Chain	Res	Type
2	t	130	HIS
2	w	34	ASN
2	x	130	HIS
2	w	130	HIS
2	f	130	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Map visualisation (i)

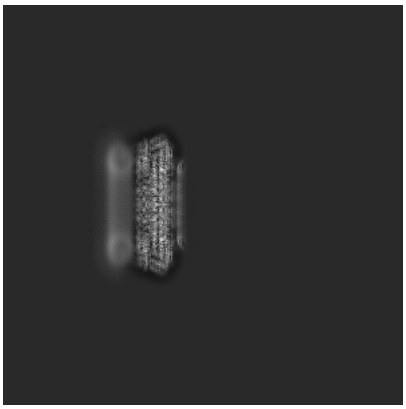
This section contains visualisations of the EMDB entry EMD-10045. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

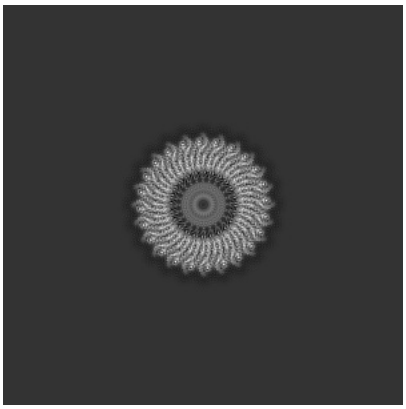
6.1 Orthogonal projections (i)

6.1.1 Primary map

X



Y

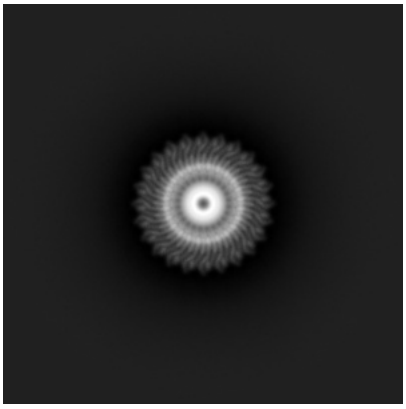


Z

6.1.2 Raw map

X

Y

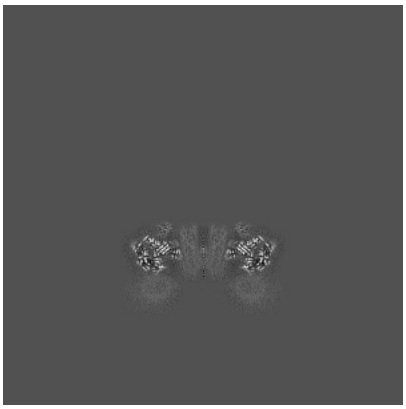


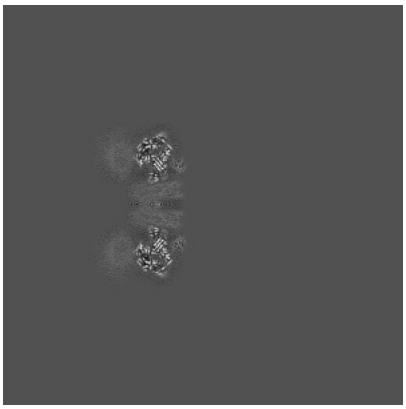
Z

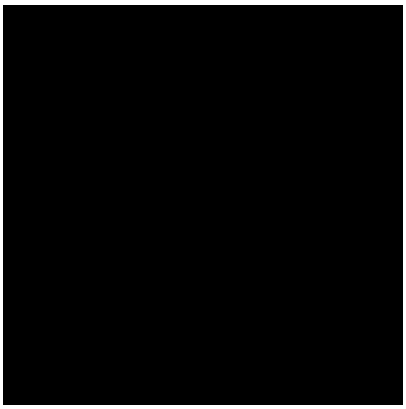
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

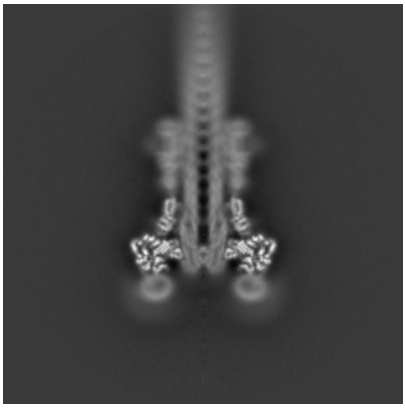
6.2.1 Primary map

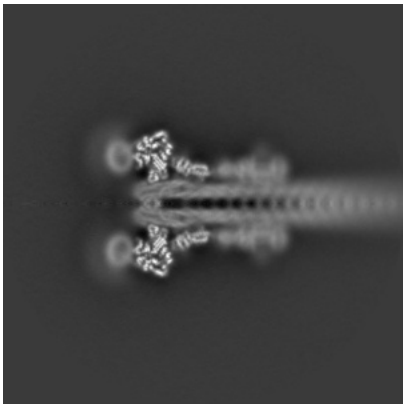

X Index: 240

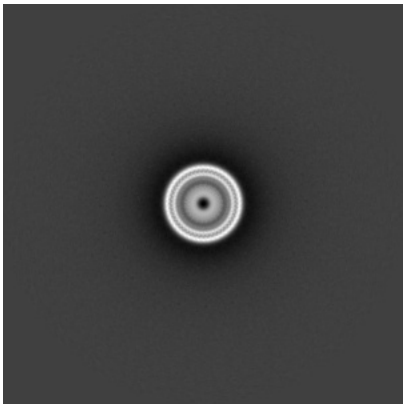

Y Index: 240


Z Index: 240

6.2.2 Raw map


X Index: 240


Y Index: 240

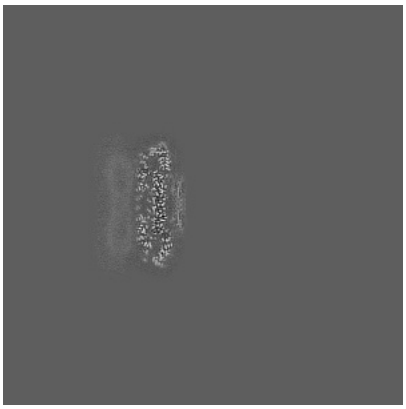

Z Index: 240

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

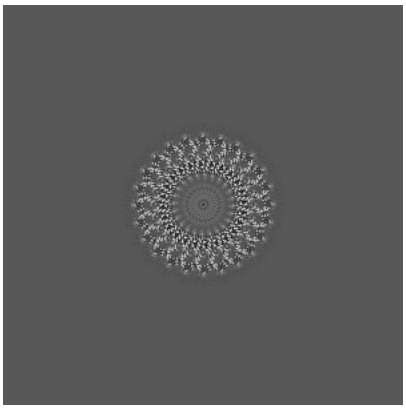
6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 283

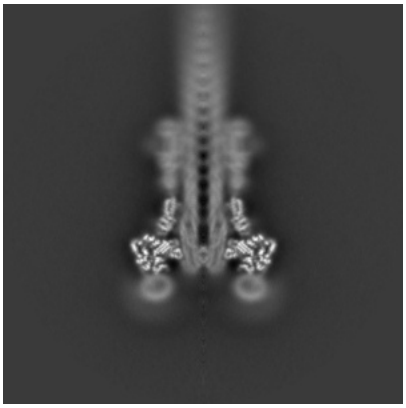


Y Index: 283

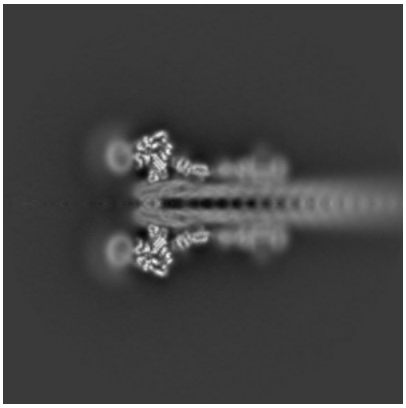


Z Index: 189

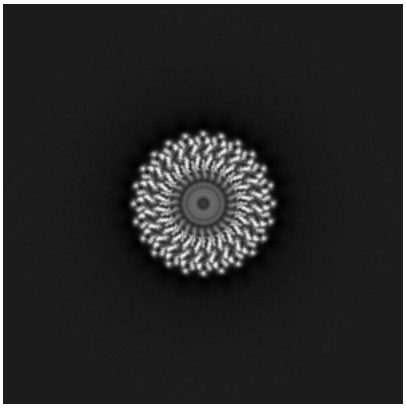
6.3.2 Raw map



X Index: 240



Y Index: 240

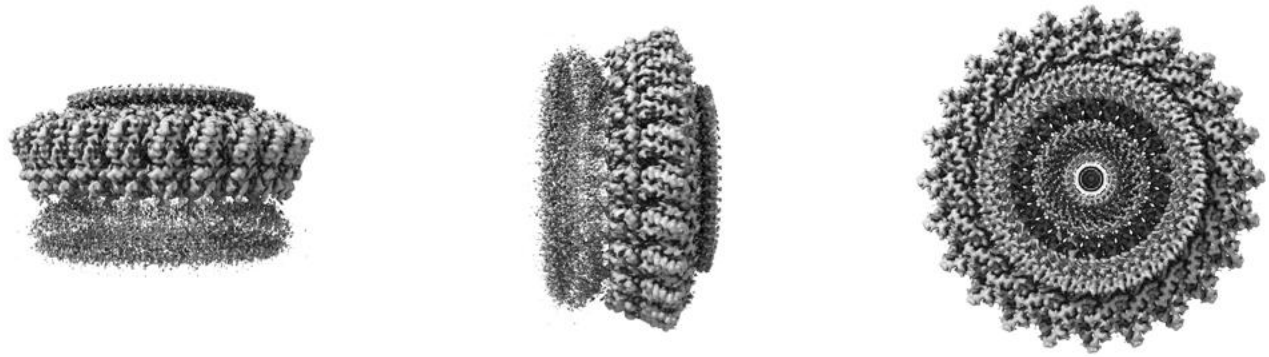


Z Index: 189

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

6.4 Orthogonal surface views (i)

6.4.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.07. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map

X Y Z

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

6.5 Mask visualisation (i)

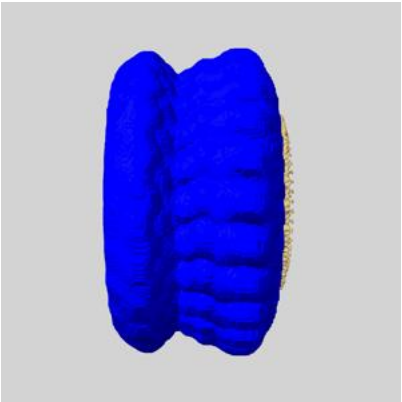
This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

A mask typically either:

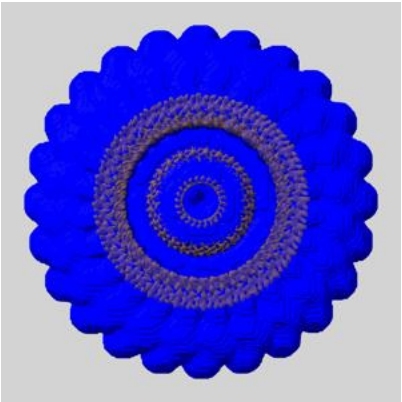
- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

6.5.1 emd_10045_msk_1.map (i)

X



Y

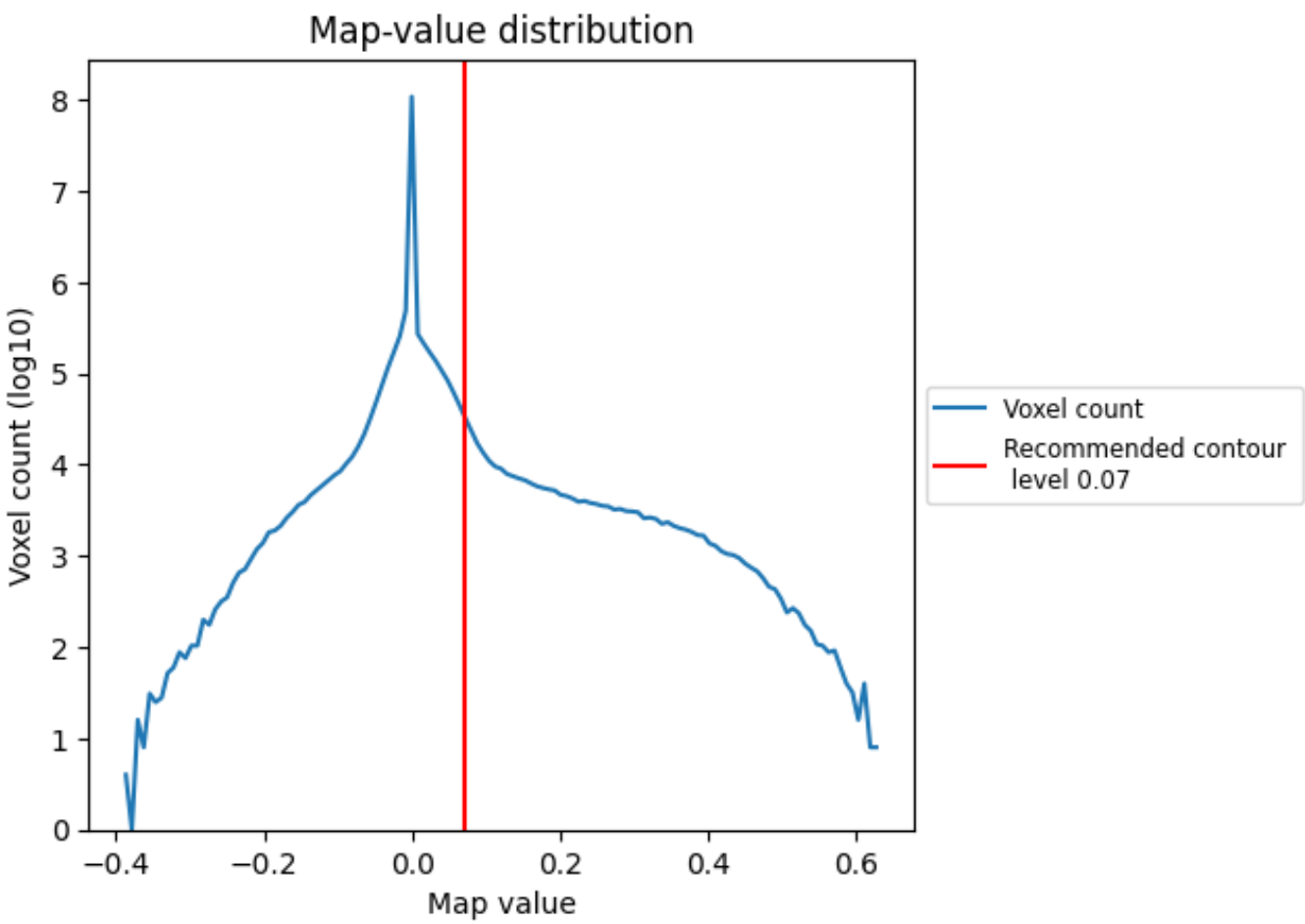


Z

7 Map analysis (i)

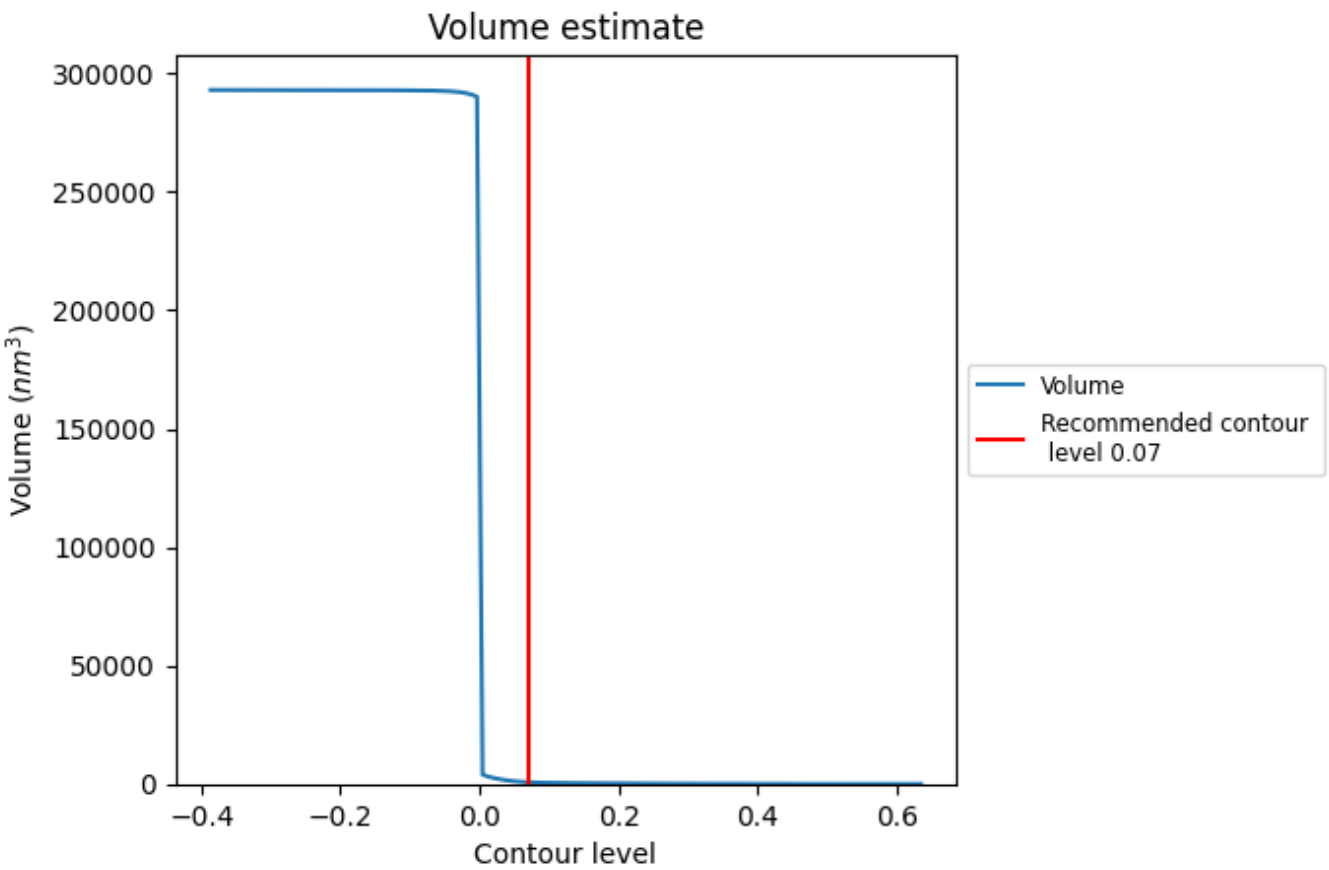
This section contains the results of statistical analysis of the map.

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.

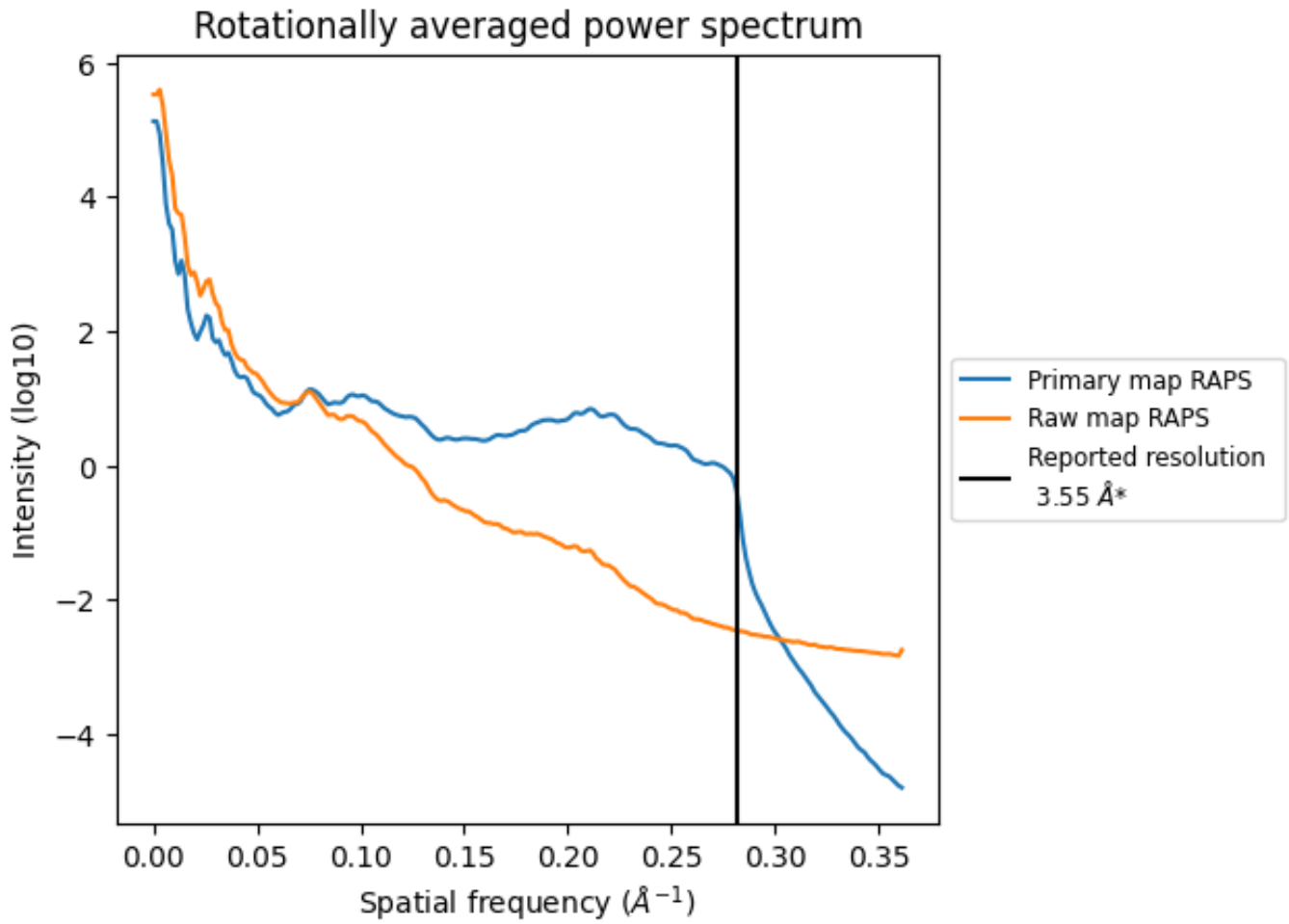
7.2 Volume estimate (i)



The volume at the recommended contour level is 723 nm^3; this corresponds to an approximate mass of 653 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)

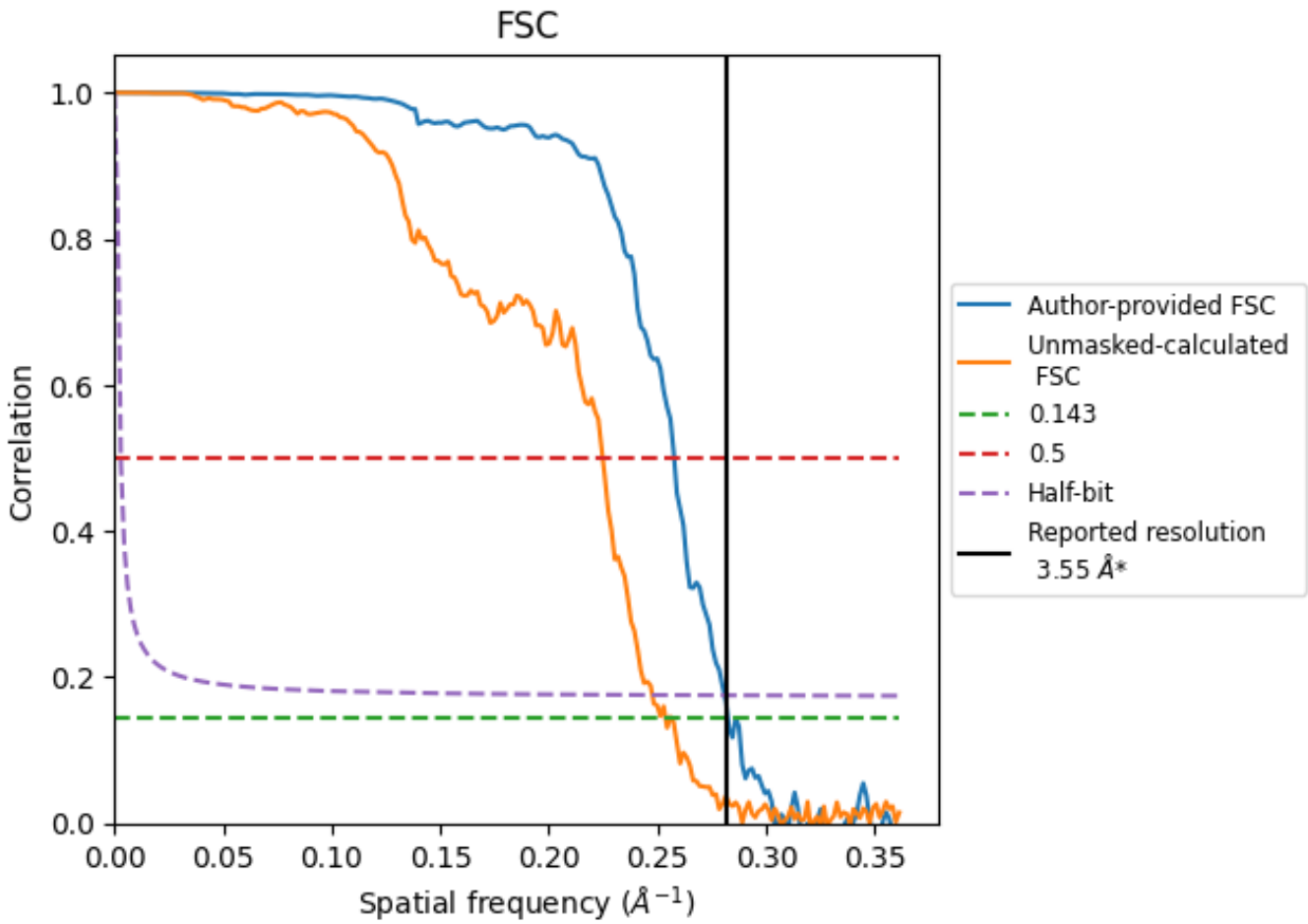


*Reported resolution corresponds to spatial frequency of 0.282 Å^{-1}

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 0.282 Å^{-1}

8.2 Resolution estimates (i)

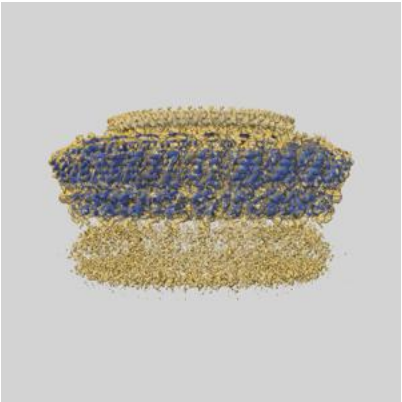
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.55	-	-
Author-provided FSC curve	3.54	3.88	3.56
Unmasked-calculated*	3.94	4.45	4.04

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.94 differs from the reported value 3.55 by more than 10 %

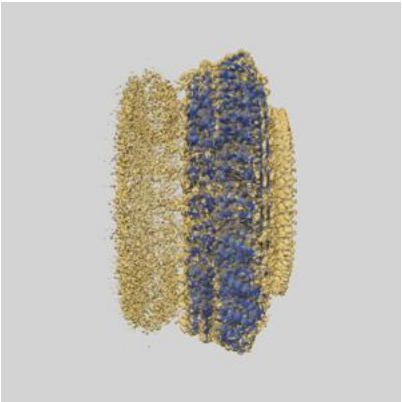
9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-10045 and PDB model 6RWX. Per-residue inclusion information can be found in section 3 on page 8.

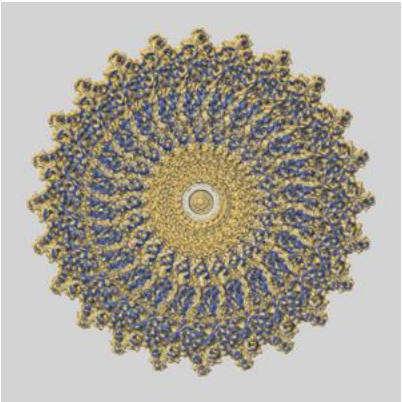
9.1 Map-model overlay (i)



X



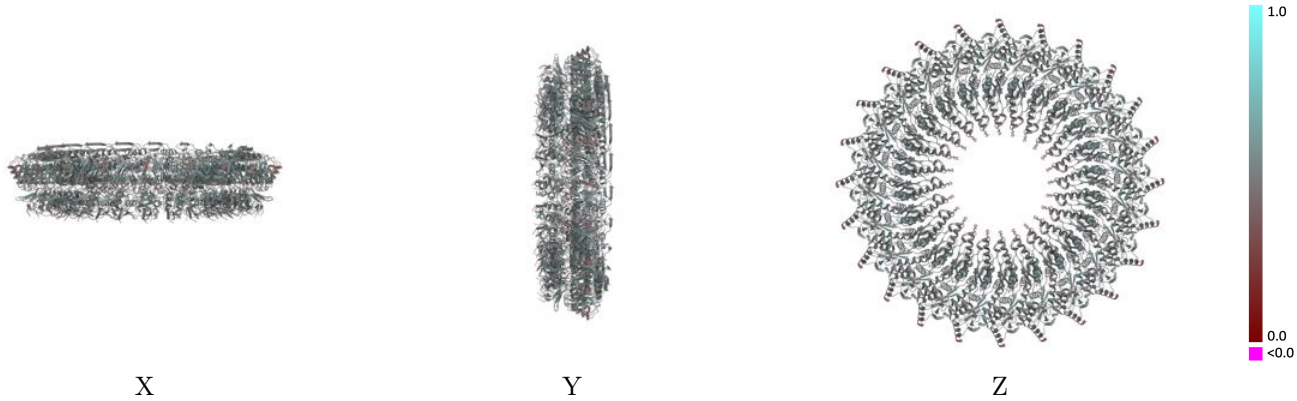
Y



Z

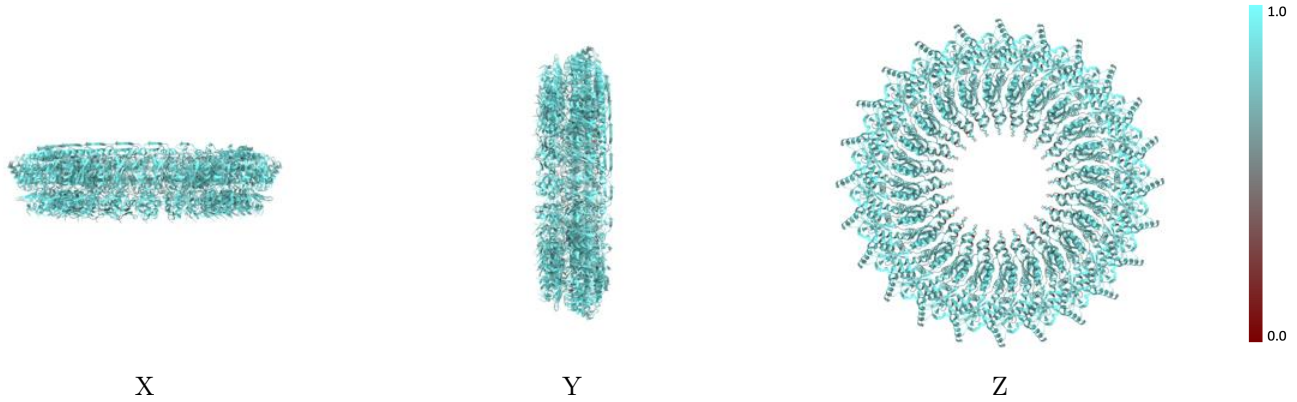
The images above show the 3D surface view of the map at the recommended contour level 0.07 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)



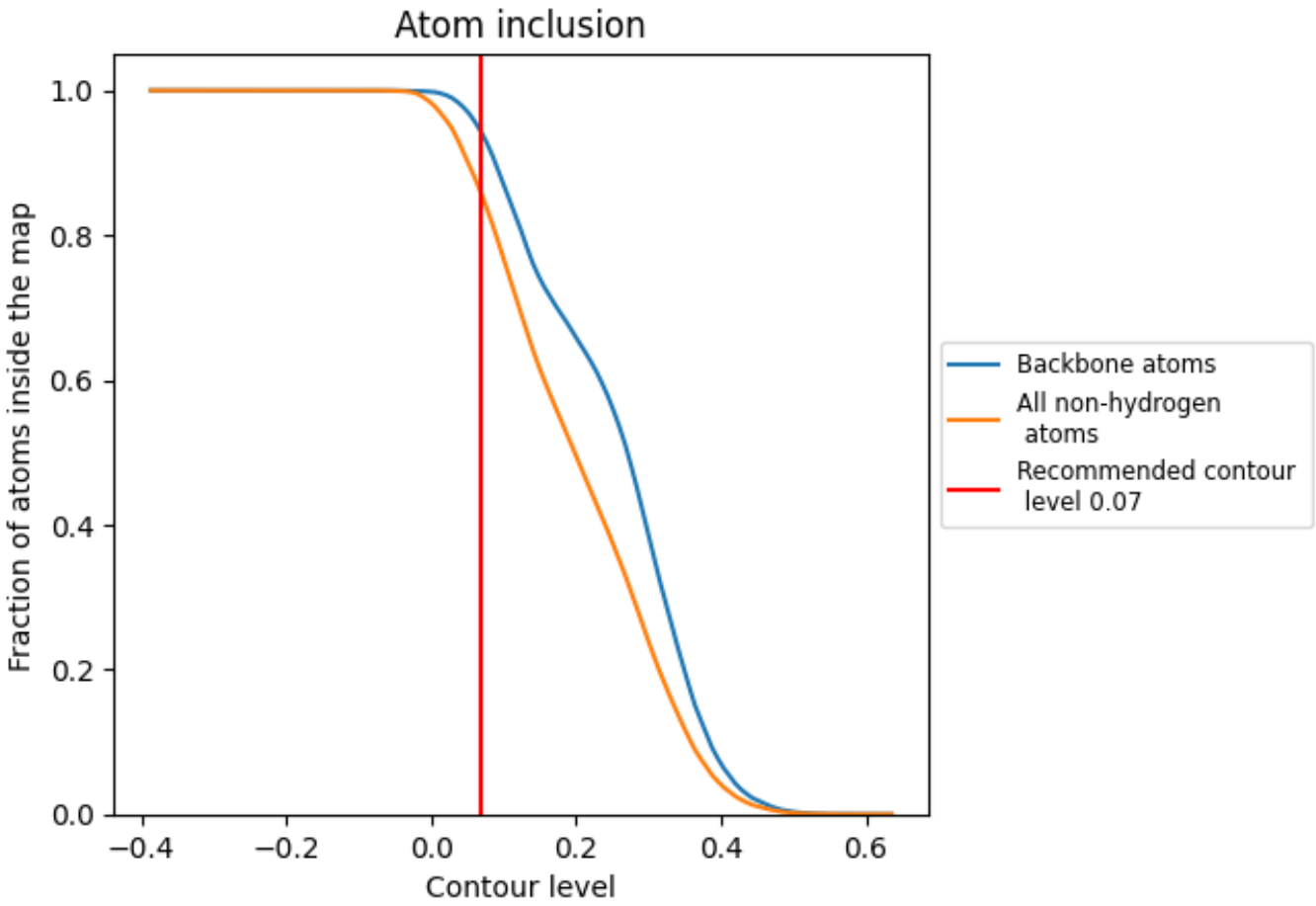
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.07).

9.4 Atom inclusion (i)



At the recommended contour level, 94% of all backbone atoms, 86% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.07) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8555	0.4920
A	0.8807	0.4990
B	0.8807	0.5020
C	0.8860	0.5020
D	0.8683	0.4910
E	0.8729	0.4920
F	0.8735	0.4940
G	0.8663	0.4890
H	0.8722	0.4960
I	0.8689	0.4950
J	0.8781	0.4980
K	0.8775	0.4970
L	0.8840	0.5020
M	0.8788	0.5000
N	0.8775	0.5030
O	0.8827	0.5020
P	0.8820	0.5030
Q	0.8755	0.5010
R	0.8670	0.4930
S	0.8676	0.4940
T	0.8689	0.4940
U	0.8683	0.4960
V	0.8775	0.5030
W	0.8847	0.5020
X	0.8611	0.4920
a	0.8358	0.4870
b	0.8183	0.4760
c	0.8372	0.4860
d	0.8321	0.4750
e	0.8241	0.4780
f	0.8263	0.4840
g	0.8278	0.4850
h	0.8379	0.4870
i	0.8365	0.4900
j	0.8387	0.4850

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Chain	Atom inclusion	Q-score
k	0.8416	0.4900
l	0.8358	0.4870
m	0.8358	0.4850
n	0.8336	0.4870
o	0.8372	0.4890
p	0.8379	0.4860
q	0.8416	0.4910
r	0.8350	0.4920
s	0.8285	0.4810
t	0.8387	0.4860
u	0.8336	0.4900
v	0.8328	0.4840
w	0.8336	0.4810
x	0.8314	0.4850