



# wwPDB EM Validation Summary Report ⓘ

May 19, 2024 – 09:52 AM EDT

PDB ID : 7MF3  
EMDB ID : EMD-23810  
Title : Structure of the autoinhibited state of smooth muscle myosin-2  
Authors : Heissler, S.M.; Arora, A.S.; Billington, N.; Sellers, J.R.; Chinthalapudi, K.  
Deposited on : 2021-04-08  
Resolution : 3.40 Å(reported)  
Based on initial model : 5I4E

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

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

---

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

EMDB validation analysis : 0.0.1.dev92  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

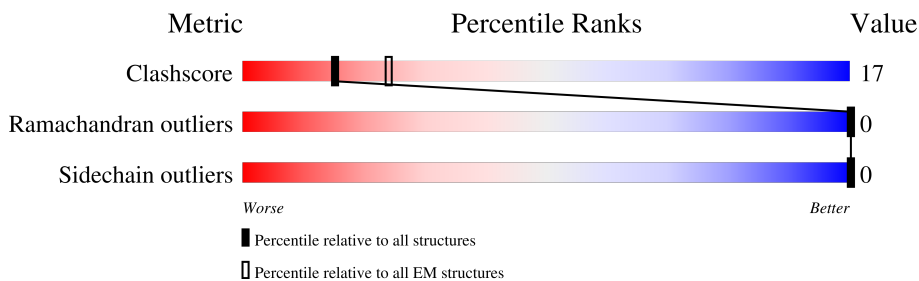
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.40 Å.

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



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

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

Mol	Chain	Length	Quality of chain
1	A	1978	
1	B	1978	
1	G	1978	
1	H	1978	
2	C	150	
2	F	150	
3	D	171	
3	E	171	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

<b>Mol</b>	<b>Type</b>	<b>Chain</b>	<b>Res</b>	<b>Chirality</b>	<b>Geometry</b>	<b>Clashes</b>	<b>Electron density</b>
5	PO4	A	2002	-	-	X	-

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 22938 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 Myosin-11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	890	Total	C	N	O	S	0	0
			7230	4581	1257	1356	36		
1	B	896	Total	C	N	O	S	0	0
			7276	4610	1264	1365	37		
1	G	212	Total	C	N	O	S	0	0
			1742	1055	314	367	6		
1	H	211	Total	C	N	O	S	0	0
			1737	1052	313	366	6		

- Molecule 2 is a protein called Myosin light polypeptide 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	149	Total	C	N	O	S	0	0
			1169	726	194	238	11		
2	F	149	Total	C	N	O	S	0	0
			1169	726	194	238	11		

- Molecule 3 is a protein called Myosin regulatory light chain 2, smooth muscle major isoform.

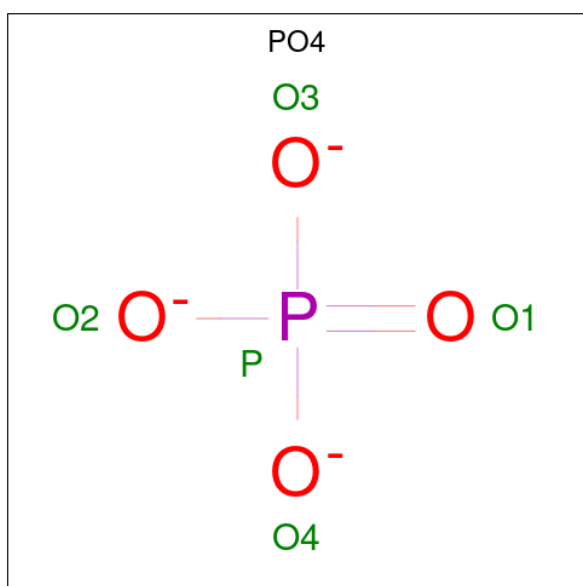
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	158	Total	C	N	O	S	0	0
			1277	797	210	259	11		
3	E	157	Total	C	N	O	S	0	0
			1270	792	209	258	11		

- Molecule 4 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ).



Mol	Chain	Residues	Atoms				AltConf	
4	A	1	Total	C	N	O	P	0
				27	10	5	10	
4	B	1	Total	C	N	O	P	0
				27	10	5	10	

- Molecule 5 is PHOSPHATE ION (three-letter code: PO4) (formula: O<sub>4</sub>P).



Mol	Chain	Residues	Atoms		AltConf	
5	A	1	Total	O	P	0
				5	4	
5	B	1	Total	O	P	0
				5	4	

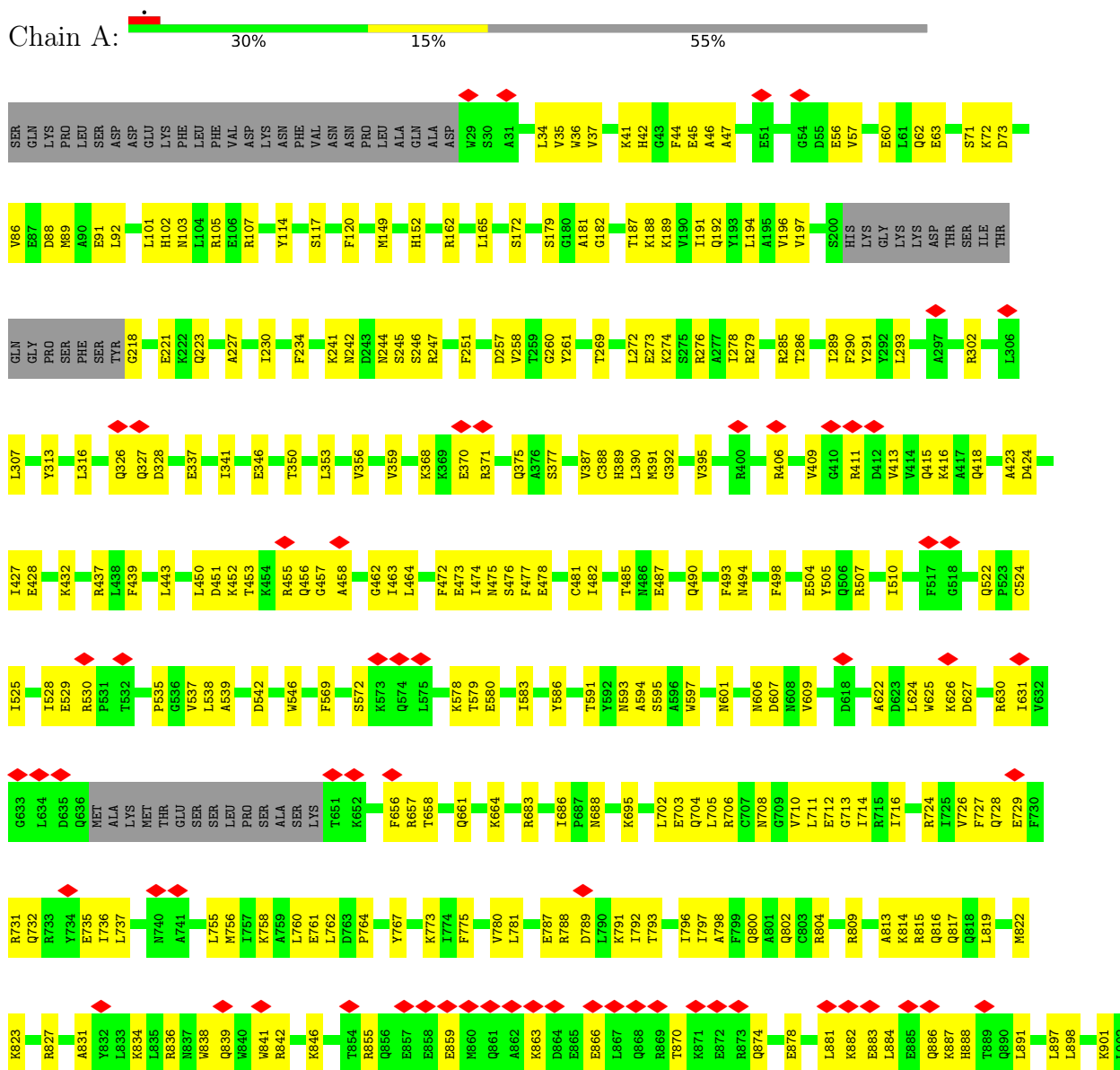
- Molecule 6 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
6	A	1	Total 1	Mg 1	0
6	B	1	Total 1	Mg 1	0
6	D	1	Total 1	Mg 1	0
6	E	1	Total 1	Mg 1	0

### 3 Residue-property plots

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: Myosin-11













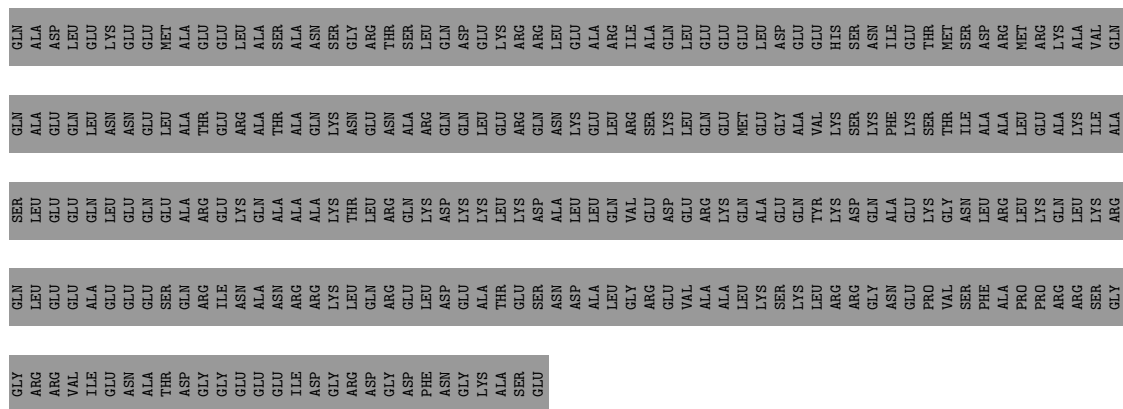
L1508	E1509	H1510	T1511	M1514	L1515	E1518	M1519	E1520	D1521	L1522	W1523	S1524	S1525	R1526	D1527	D1528	H1532	W1533	E1535	L1536	E1537	K1538	S1539	K1540	H1541	Q1545	Q1546	V1547	E1548	E1549	M1550	K1551	T1552	E1556	L1557	E1558	D1559	E1560	L1561	Q1562	A1564	A1567	K1568	L1569	R1570	L1571	E1572	V1573	H1574	M1575	Q1576				
A1577	M1578	K1579	S1580	Q1581	F1582	E1583	R1584	D1585	L1586	Q1587	E1594	R1597	R1598	K1602	Q1603	L1604	H1605	E1606	H1607	E1608	T1609	L1611	R1615	K1616	Q1617	R1618	A1619	L1620	A1621	A1622	A1623	ALA	LYS	LYS	LYS	LEU	LEU	E1556	L1557	E1558	D1559	E1560	L1561	Q1562	A1564	A1567	K1568	L1569	R1570	L1571	E1572	V1573	H1574	M1575	Q1576
GLU	GLU	ALA	ILE	GLN	LYS	LEU	ARG	LYS	ASP	LYS	MET	GLN	ALA	ASP	ASP	ASP	ARG	ARG	ALA	ALA	ARG	GLU	ILE	PHE	ARG	ALA	THR	ARG	ALA	GLY	ALA	ALA	GLN	LYS	GLU	LEU	ASP	GLY	VAL	VAL	ASP	ASP	GLN	GLN	GLU	LEU	ALA	ALA	ALA	ARG	GLU				
ARG	ALA	ARG	LYS	GLN	ALA	ASP	LEU	LEU	GLU	GLU	ALA	ALA	ALA	THR	ALA	ALA	ARG	THR	SER	ALA	ALA	LYS	LYS	ARG	ARG	GLN	ALA	ALA	GLY	GLY	ASP	GLN	ALA	ASP	GLU	ASP	GLY	VAL	VAL	ASP	ASP	GLN	GLN	GLU	LEU	ALA	ALA	ALA	ARG	GLU					
LYS	ALA	VAL	GLN	GLN	ALA	GLU	GLN	LEU	THR	THR	ALA	ALA	ALA	ALA	ALA	ARG	ARG	GLN	ALA	ALA	ARG	GLN	LYS	LYS	LYS	ARG	GLY	VAL	SER	LYS	ASP	GLN	ALA	GLY	GLY	GLY	GLY	ARG	ARG	GLY	GLN	ALA	PHE	ALA	LEU	GLY	LEU	ALA	ARG	GLU					
ALA	LYS	ILE	ALA	SER	LEU	GLU	GLU	GLN	GLU	ARG	ALA	GLN	ALA	THR	ALA	ALA	LYS	ARG	ARG	GLN	GLN	LYS	LYS	LYS	LYS	LEU	VAL	GLY	GLY	GLY	GLY	GLN	ALA	ALA	VAL	VAL	ARG	ARG	GLN	GLN	ALA	ALA	PHE	GLY	LEU	ALA	ARG	LEU	LYS						
GLN	LEU	ARG	GLY	GLN	LEU	GLU	GLU	GLU	GLN	ALA	ASN	ALA	ALA	ASN	ARG	ARG	ASP	GLY	THR	GLU	LEU	THR	GLY	LYS	ASP	SER	ALA	ALA	GLY	GLY	GLY	GLY	LYS	ALA	VAL	VAL	GLY	GLY	ARG	ARG	GLY	ASN	ASN	ALA	PHE	PRO	PRO	PRO							
ARG	ARG	SER	GLY	GLY	ARG	VAL	VAL	ILE	ASP	GLY	THR	GLY	GLU	ILE	ASP	PHE	ASN	ASP	GLY	ASP	PHE	ASN	LYS	ASP	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY						

• Molecule 1: Myosin-11

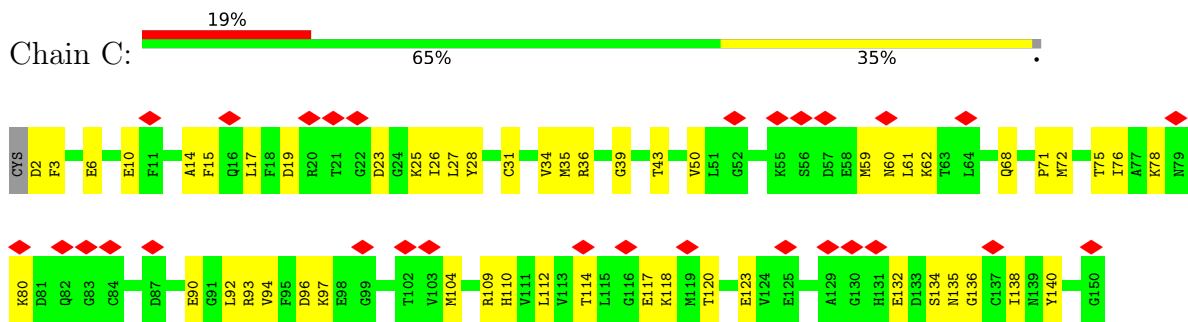


SER	GLN	LYS	PRO	GLY	LEU	ASP	ASP	GLU	GLU	ASP	ASP	LEU	VAL	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLN	GLY	GLY	LYS	VAL	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	
VAL	VAL	ILE	ASN	GLY	LYS	PRO	THR	VAL	THR	GLN	LEU	PRO	SER	THR	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP	ASP
GLY	LYS	THR	GLY	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR		
ASN	ASP	ASN	ASN	LEU	LEU	LEU	LEU	PHE	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY			
ARG	ASN	ASP	LEU	LEU	LEU	LEU	LEU	PHE	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY	GLY			
LEU	GLY	ASN	ILE	VAL	PHE	LYS	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR			
GLN	ALA	ASP	PHE	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA			
ILE	ASN	THR	THR	ASN	GLN	GLN	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR			
ASP	GLY	CYS	TRP	PHE	PRO	LYS	THR	PHE	VAL	LEU	LEU	ILE	GLN	GLY	GLN	TRP	ASN	LYS	ALA	PHE	GLY	ASP	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR	THR		

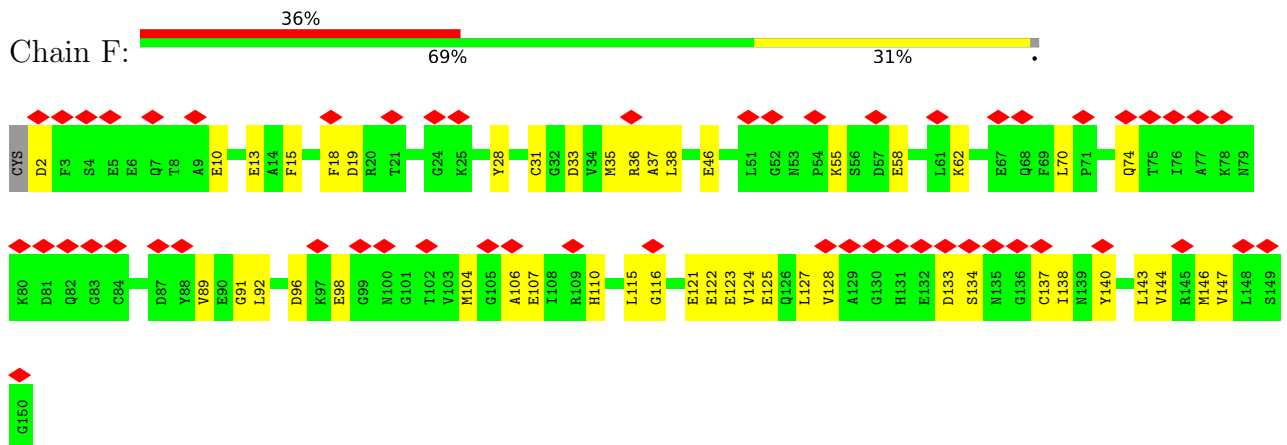




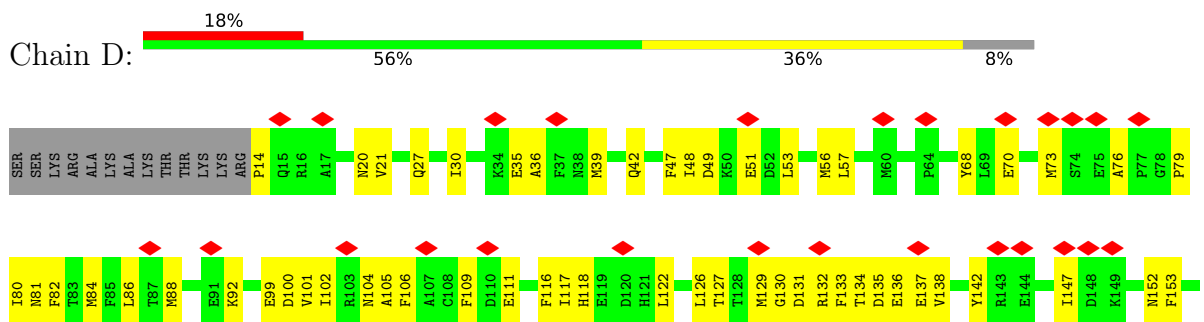
• Molecule 2: Myosin light polypeptide 6

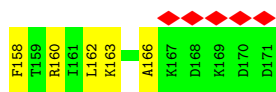


• Molecule 2: Myosin light polypeptide 6

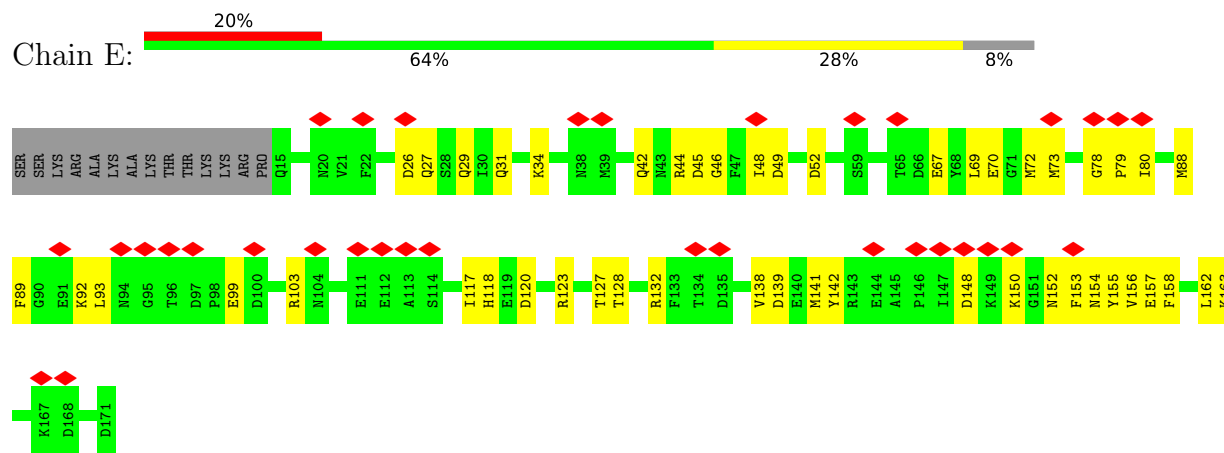


• Molecule 3: Myosin regulatory light chain 2, smooth muscle major isoform





- Molecule 3: Myosin regulatory light chain 2, smooth muscle major isoform



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	234464	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	65	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	81000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.450	Depositor
Minimum map value	-0.262	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.12	Depositor
Map size (Å)	460.288, 460.288, 460.288	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.899, 0.899, 0.899	Depositor



## 5 Model quality [i](#)

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

Bond lengths and bond angles in the following residue types are not validated in this section: PO4, ADP, MG

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	0.25	0/7353	0.50	0/9895
1	B	0.26	0/7400	0.52	0/9957
1	G	0.29	0/1749	0.56	0/2328
1	H	0.24	0/1744	0.53	0/2321
2	C	0.25	0/1184	0.51	0/1586
2	F	0.25	0/1184	0.52	0/1586
3	D	0.26	0/1303	0.54	0/1749
3	E	0.25	0/1295	0.55	0/1738
All	All	0.26	0/23212	0.52	0/31160

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	7230	0	7273	247	0
1	B	7276	0	7320	240	0
1	G	1742	0	1728	84	0
1	H	1737	0	1726	101	0
2	C	1169	0	1130	46	0

*Continued on next page...*

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	F	1169	0	1130	34	0
3	D	1277	0	1185	60	0
3	E	1270	0	1177	38	0
4	A	27	0	12	5	0
4	B	27	0	12	7	0
5	A	5	0	0	2	0
5	B	5	0	0	1	0
6	A	1	0	0	0	0
6	B	1	0	0	0	0
6	D	1	0	0	0	0
6	E	1	0	0	0	0
All	All	22938	0	22693	756	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 17.

The worst 5 of 756 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:A:406:ARG:HD3	1:A:413:VAL:HG13	1.29	1.13
1:A:823:LYS:NZ	3:D:129:MET:HB3	1.62	1.12
1:B:245:SER:HA	5:B:2002:PO4:O2	1.47	1.11
1:A:823:LYS:HZ3	3:D:129:MET:HB3	1.02	1.11
1:A:455:ARG:NH2	1:H:1601:LEU:HD23	1.71	1.04

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	884/1978 (45%)	832 (94%)	52 (6%)	0	<b>100</b> <b>100</b>

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	890/1978 (45%)	815 (92%)	75 (8%)	0	100	100
1	G	210/1978 (11%)	209 (100%)	1 (0%)	0	100	100
1	H	209/1978 (11%)	205 (98%)	4 (2%)	0	100	100
2	C	147/150 (98%)	129 (88%)	18 (12%)	0	100	100
2	F	147/150 (98%)	133 (90%)	14 (10%)	0	100	100
3	D	156/171 (91%)	149 (96%)	7 (4%)	0	100	100
3	E	155/171 (91%)	143 (92%)	12 (8%)	0	100	100
All	All	2798/8554 (33%)	2615 (94%)	183 (6%)	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	783/1744 (45%)	783 (100%)	0	100	100
1	B	788/1744 (45%)	788 (100%)	0	100	100
1	G	188/1744 (11%)	188 (100%)	0	100	100
1	H	188/1744 (11%)	188 (100%)	0	100	100
2	C	128/129 (99%)	128 (100%)	0	100	100
2	F	128/129 (99%)	128 (100%)	0	100	100
3	D	138/149 (93%)	138 (100%)	0	100	100
3	E	137/149 (92%)	137 (100%)	0	100	100
All	All	2478/7532 (33%)	2478 (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 12 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	856	GLN
3	E	118	HIS
1	H	1607	HIS
1	G	1447	GLN
1	A	608	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

Of 8 ligands modelled in this entry, 4 are monoatomic - leaving 4 for Mogul analysis.

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
5	PO4	A	2002	-	4,4,4	0.96	0	6,6,6	0.42	0
5	PO4	B	2002	-	4,4,4	0.93	0	6,6,6	0.43	0
4	ADP	B	2001	6	24,29,29	0.94	1 (4%)	29,45,45	1.47	4 (13%)
4	ADP	A	2001	6	24,29,29	0.96	1 (4%)	29,45,45	1.48	4 (13%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	ADP	B	2001	6	-	0/12/32/32	0/3/3/3
4	ADP	A	2001	6	-	3/12/32/32	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	2001	ADP	C5-C4	2.50	1.47	1.40
4	A	2001	ADP	C5-C4	2.43	1.47	1.40

The worst 5 of 8 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	2001	ADP	PA-O3A-PB	-3.73	120.02	132.83
4	B	2001	ADP	C3'-C2'-C1'	3.62	106.43	100.98
4	B	2001	ADP	PA-O3A-PB	-3.33	121.39	132.83
4	A	2001	ADP	N3-C2-N1	-3.17	123.72	128.68
4	A	2001	ADP	C3'-C2'-C1'	3.14	105.71	100.98

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	2001	ADP	C5'-O5'-PA-O1A
4	A	2001	ADP	C5'-O5'-PA-O2A
4	A	2001	ADP	C5'-O5'-PA-O3A

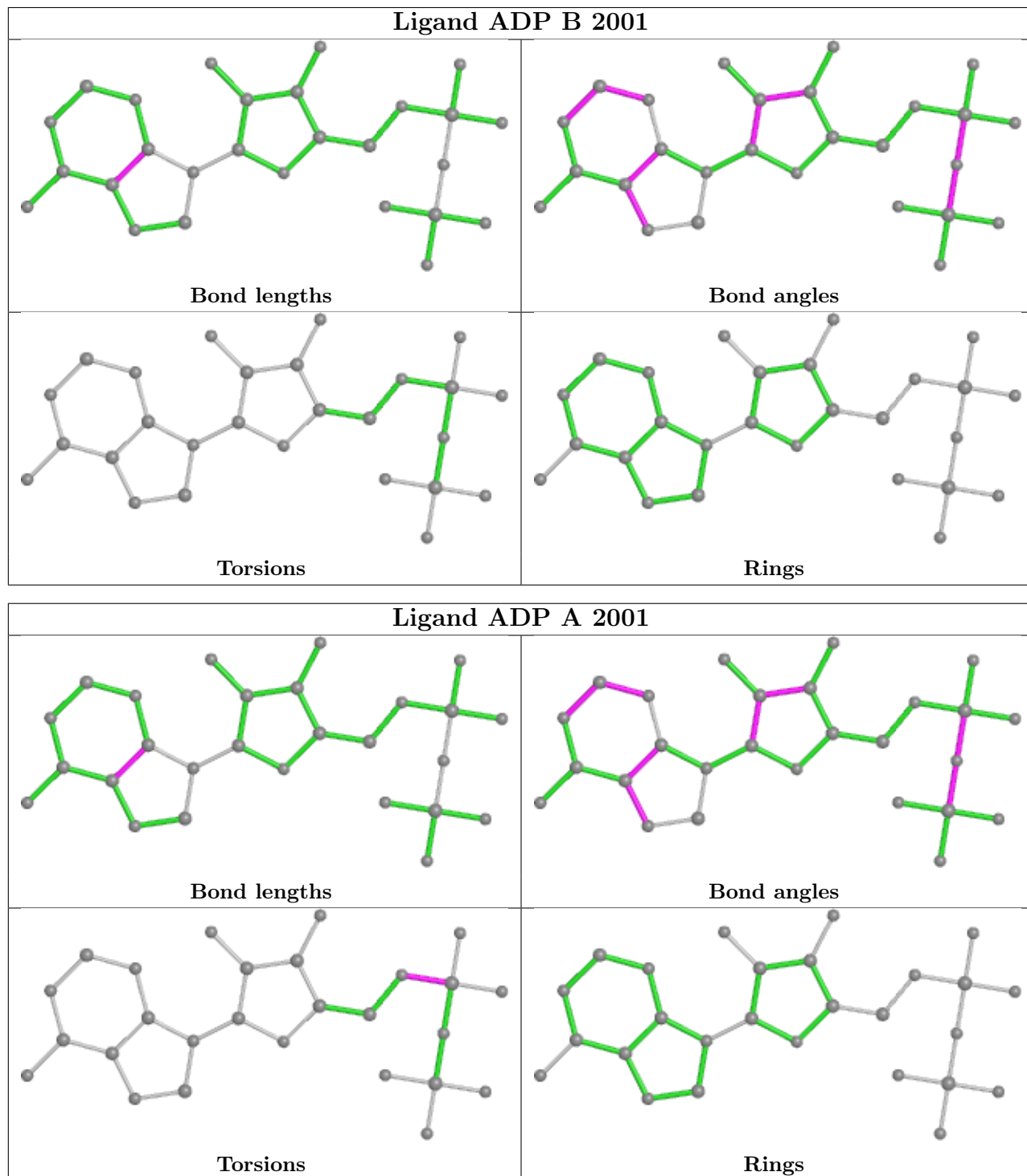
There are no ring outliers.

4 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	2002	PO4	2	0
5	B	2002	PO4	1	0
4	B	2001	ADP	7	0
4	A	2001	ADP	5	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 than 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.



## 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.

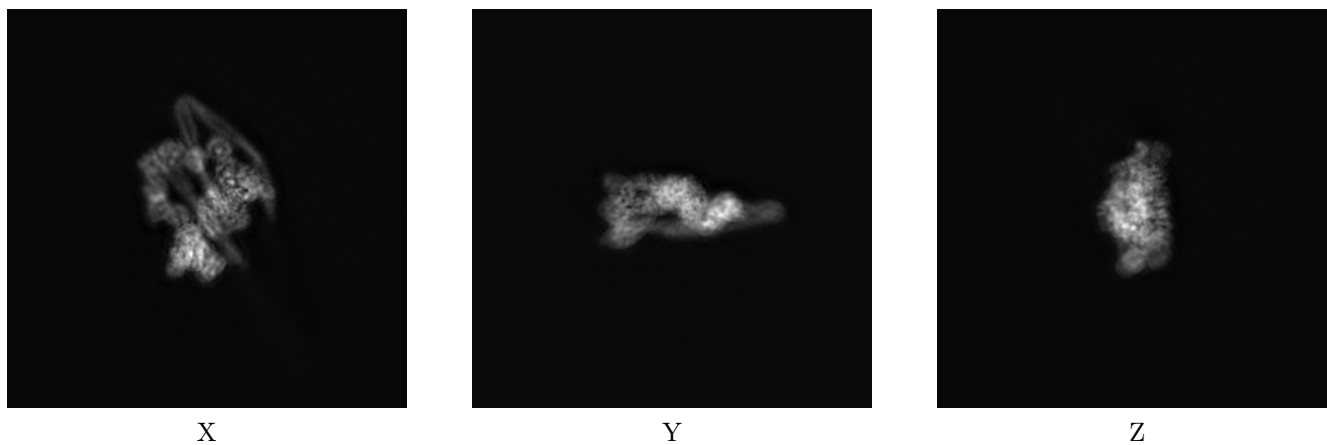
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-23810. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

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

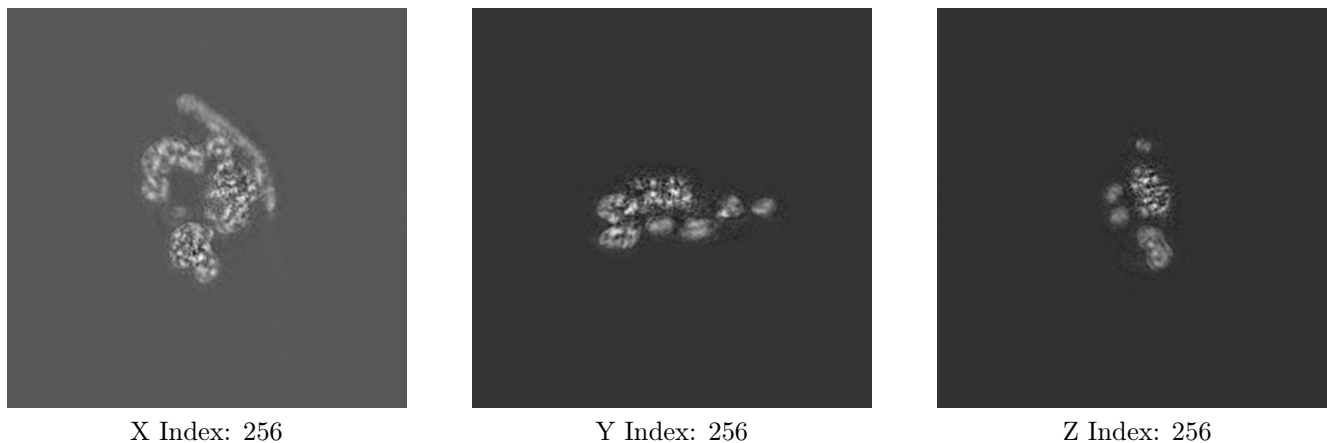
#### 6.1.1 Primary map



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

### 6.2 Central slices [i](#)

#### 6.2.1 Primary map

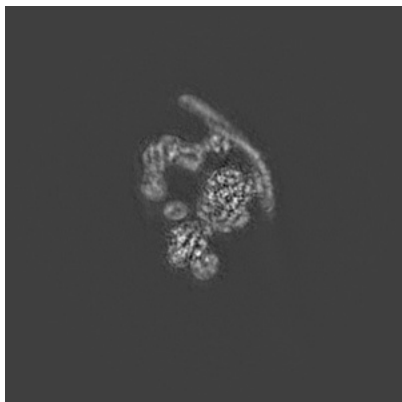




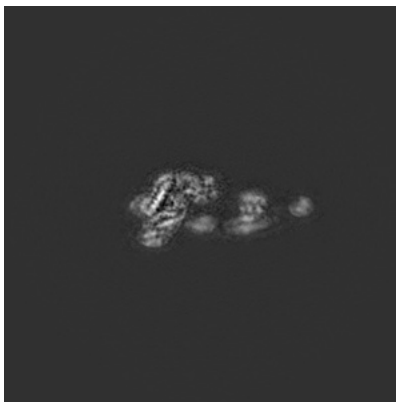
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

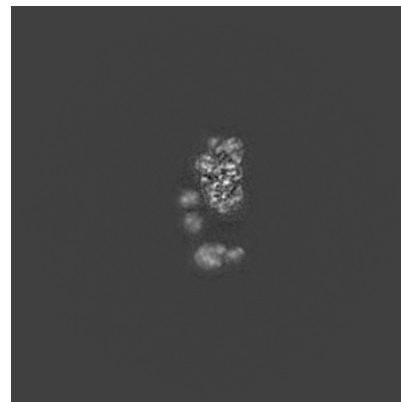
### 6.3.1 Primary map



X Index: 261



Y Index: 247



Z Index: 271

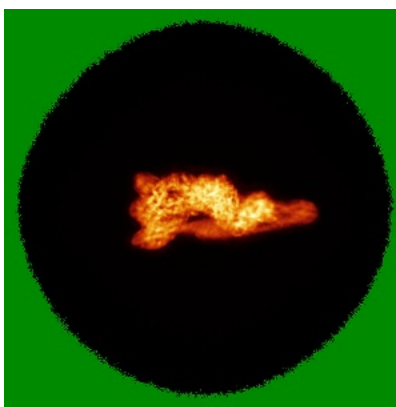
The images above show the largest variance slices of the map in three orthogonal directions.

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

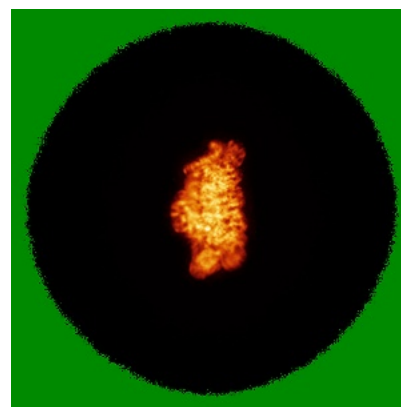
### 6.4.1 Primary map



X



Y



Z

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

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

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.12. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

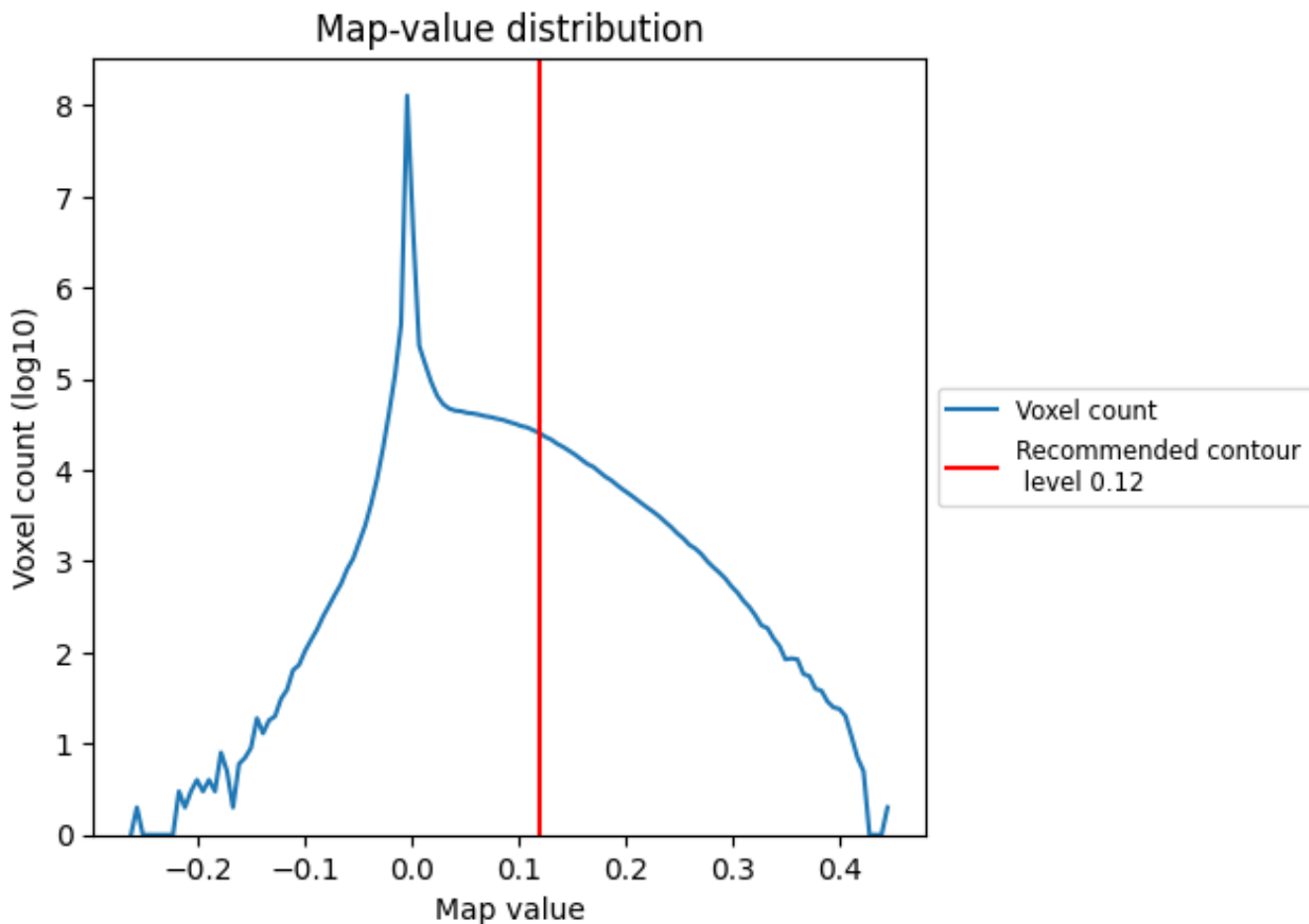
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

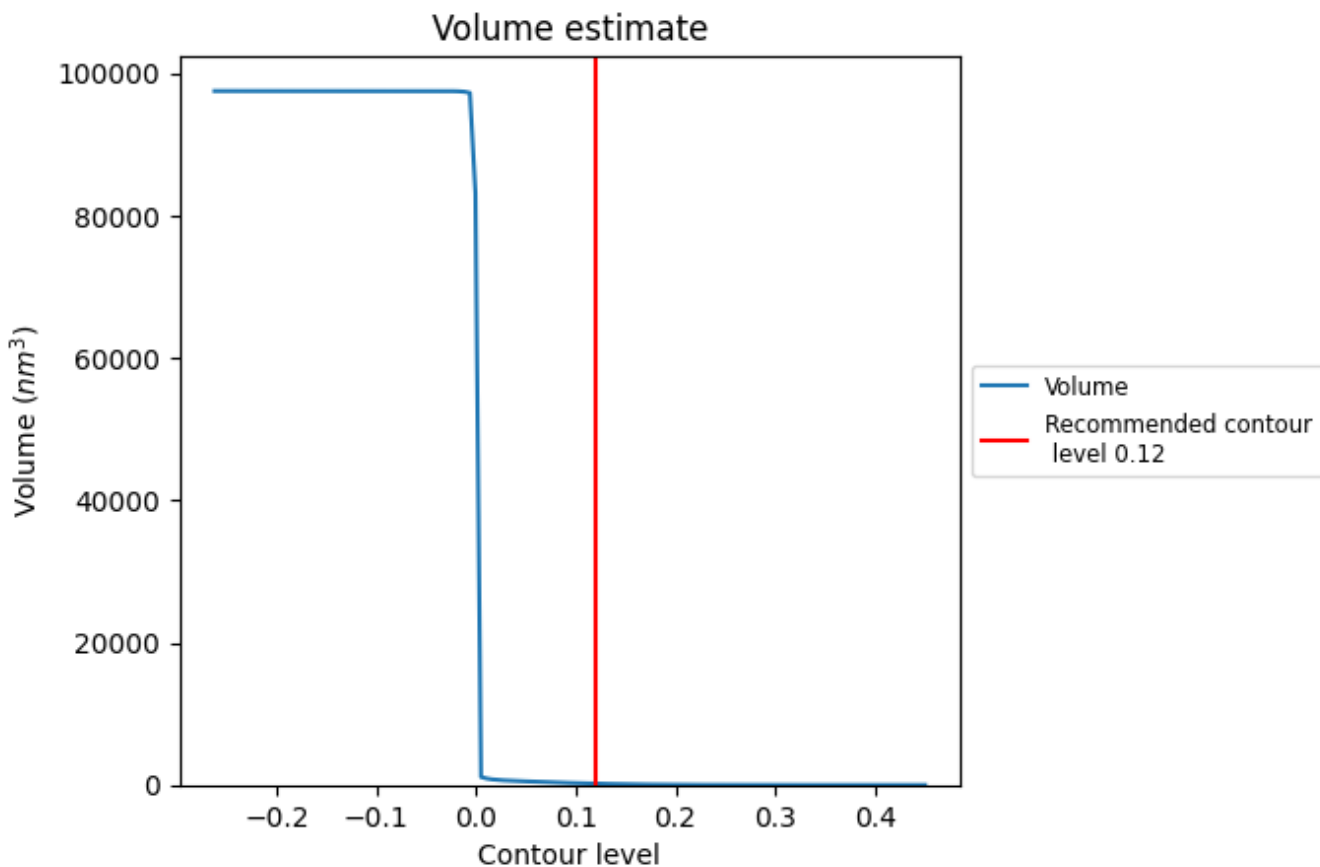
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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

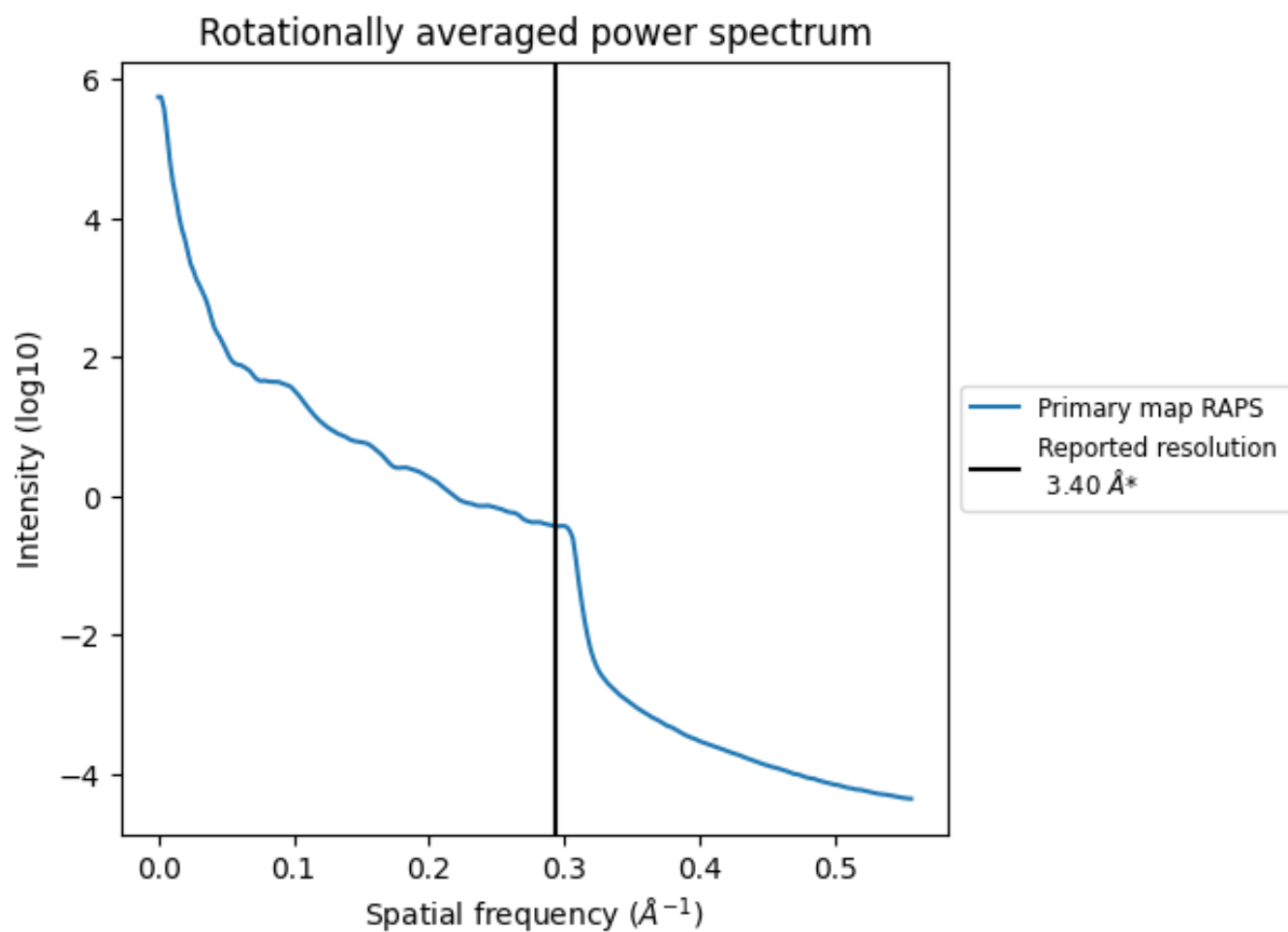
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 185 nm<sup>3</sup>; this corresponds to an approximate mass of 167 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  $0.294 \text{\AA}^{-1}$

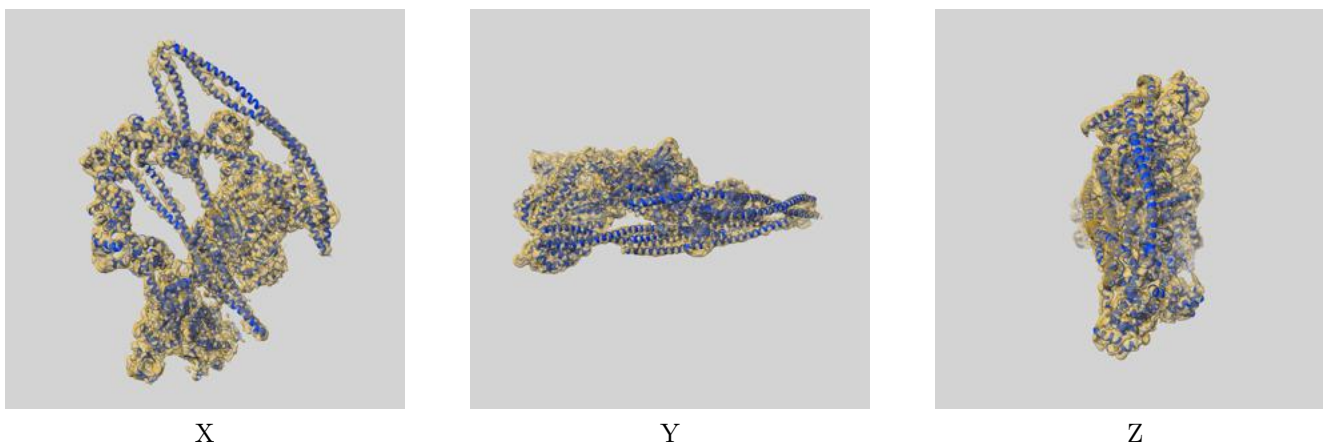
## 8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

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

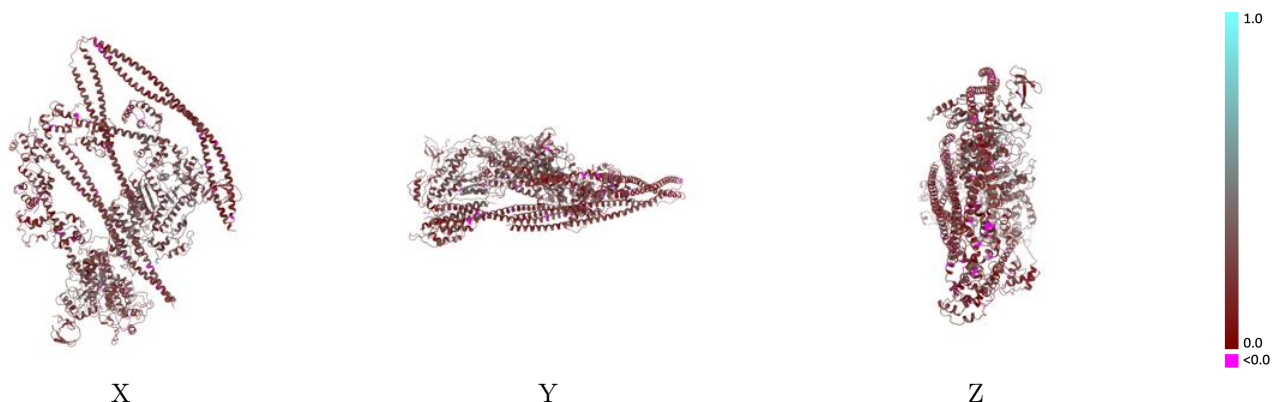
This section contains information regarding the fit between EMDB map EMD-23810 and PDB model 7MF3. Per-residue inclusion information can be found in section 3 on page 7.

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



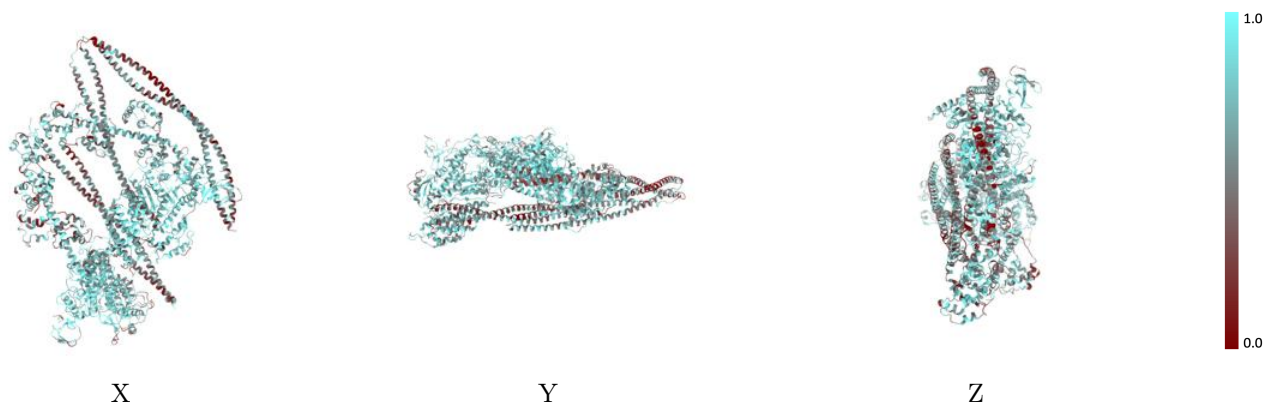
The images above show the 3D surface view of the map at the recommended contour level 0.12 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



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

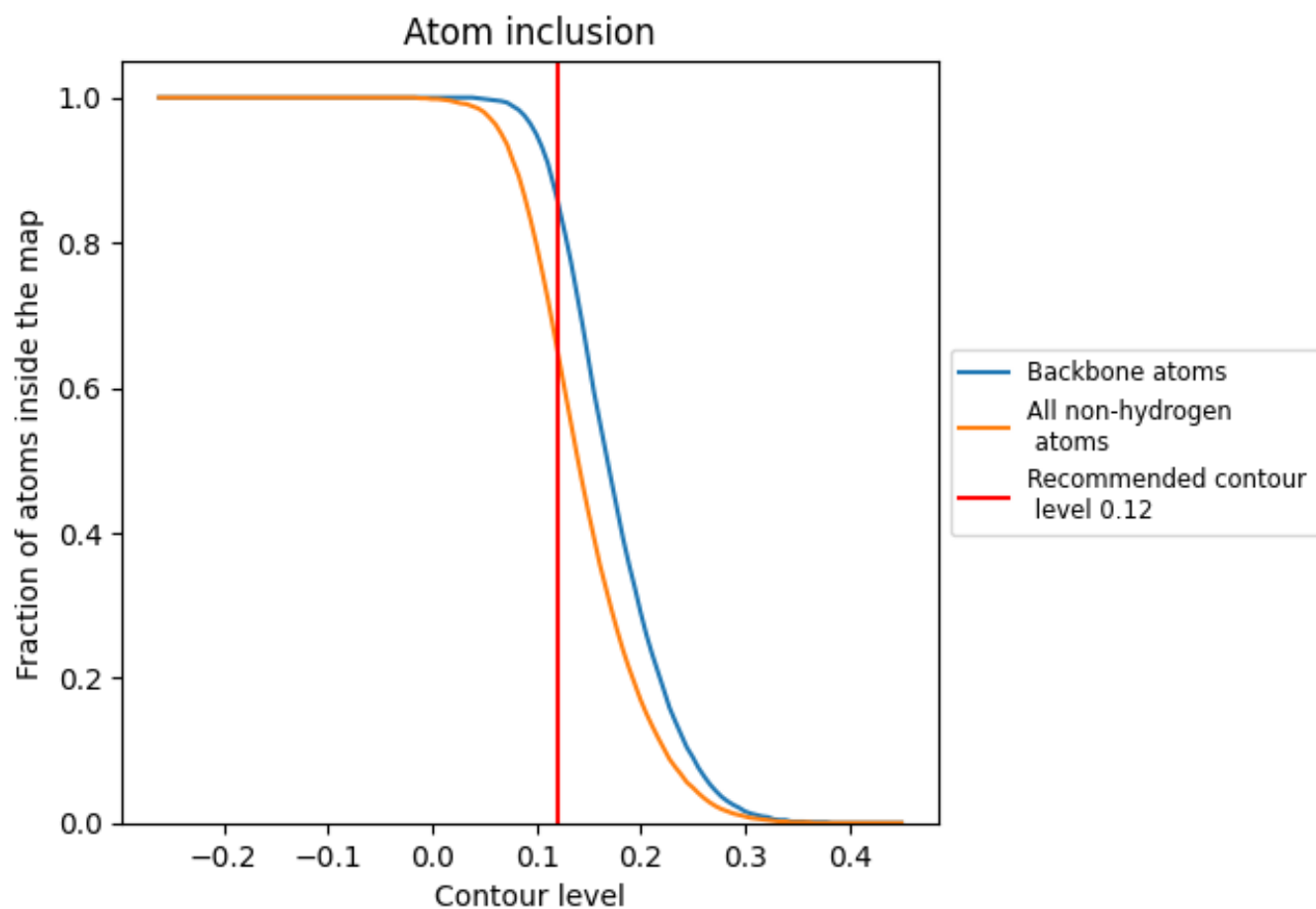
## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.12).





















## 9.4 Atom inclusion [i](#)



At the recommended contour level, 86% of all backbone atoms, 65% 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 (0.12) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6520	 0.2640
A	 0.7220	 0.3110
B	 0.7010	 0.2760
C	 0.6310	 0.2360
D	 0.5950	 0.2380
E	 0.6130	 0.2120
F	 0.5120	 0.2150
G	 0.4980	 0.1940
H	 0.4830	 0.1940

