



## wwPDB EM Validation Summary Report ⓘ

Mar 23, 2026 – 06:17 PM UTC

PDB ID : 6E39 / pdb\_00006e39  
EMDB ID : EMD-8975  
Title : Capsid protein of PCV2 with 2-O-sulfo-alpha-L-idopyranuronic acid and N,O  
6-DISULFO-GLUCOSAMINE  
Authors : Khayat, R.; Dhindwal, S.  
Deposited on : 2018-07-13  
Resolution : 3.50 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

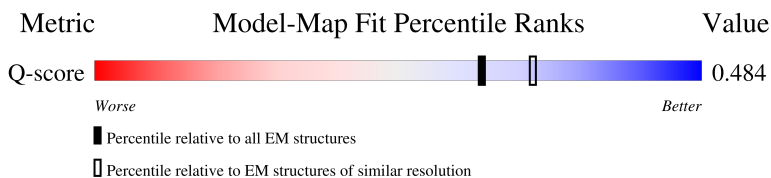
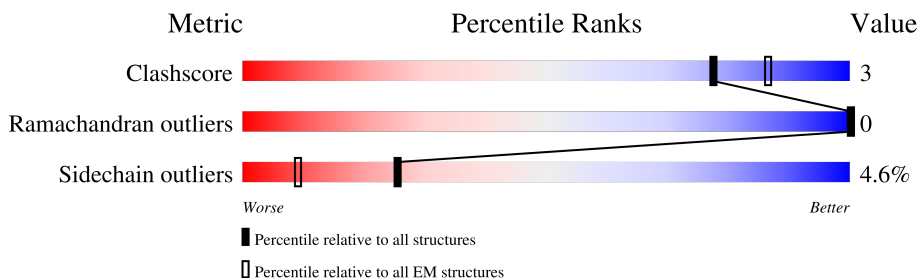
EMDB validation analysis : 0.0.1.dev132  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ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

# 1 Overall quality at a glance 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	13950 ( 3.00 - 4.00 )

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	A1	233	72% 9% 19%
1	A2	233	73% 7% 19%
1	A3	233	73% 7% 19%
1	A4	233	74% 7% 19%












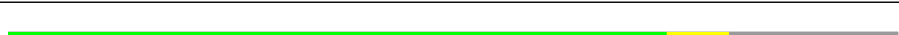

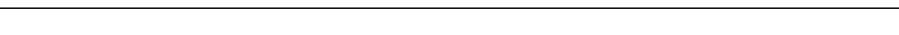
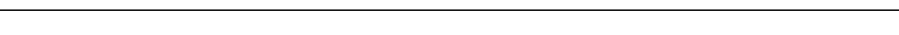
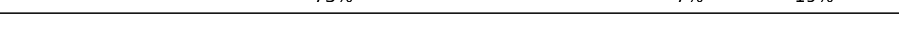

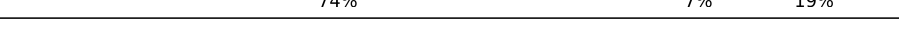







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Mol	Chain	Length	Quality of chain
1	A5	233	 72% 9% 19%
1	A6	233	 73% 7% 19%
1	A7	233	 73% 7% 19%
1	A8	233	 73% 8% 19%
1	A9	233	 73% 7% 19%
1	AA	233	 73% 7% 19%
1	AB	233	 74% 7% 19%
1	AC	233	 73% 7% 19%
1	AD	233	 72% 8% 19%
1	AE	233	 73% 7% 19%
1	AF	233	 74% 6% 19%
1	AG	233	 73% 7% 19%
1	AH	233	 73% 8% 19%
1	AI	233	 71% 9% 19%
1	AJ	233	 72% 9% 19%
1	AK	233	 72% 9% 19%
1	AL	233	 73% 7% 19%
1	AM	233	 73% 7% 19%
1	AN	233	 73% 7% 19%
1	AO	233	 73% 7% 19%
1	AP	233	 73% 7% 19%
1	AQ	233	 73% 7% 19%
1	AR	233	 73% 7% 19%
1	AS	233	 73% 7% 19%
1	AT	233	 73% 7% 19%


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Mol	Chain	Length	Quality of chain
1	AU	233	 73% 7% • 19%
1	AV	233	 73% 7% • 19%
1	AW	233	 73% 7% • 19%
1	AX	233	 73% 7% • 19%
1	AY	233	 73% 7% • 19%
1	AZ	233	 73% 7% • 19%
1	Aa	233	 73% 7% • 19%
1	Ab	233	 73% 7% • 19%
1	Ac	233	 73% 7% • 19%
1	Ad	233	 71% 9% • 19%
1	Ae	233	 73% 8% • 19%
1	Af	233	 74% 7% 19%
1	Ag	233	 73% 7% • 19%
1	Ah	233	 74% 7% 19%
1	Ai	233	 73% 7% • 19%
1	Aj	233	 74% 7% 19%
1	Ak	233	 74% 7% 19%
1	Al	233	 72% 9% • 19%
1	Am	233	 73% 7% • 19%
1	An	233	 73% 7% • 19%
1	Ao	233	 73% 7% • 19%
1	Ap	233	 73% 7% • 19%
1	Aq	233	 72% 9% • 19%
1	Ar	233	 73% 7% 19%
1	As	233	 73% 7% • 19%

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Mol	Chain	Length	Quality of chain
1	At	233	 74% 7% 19%
1	Au	233	 74% 7% 19%
1	Av	233	 72% 9% 19%
1	Aw	233	 73% 6% 19%
1	Ax	233	 73% 7% 19%
1	Ay	233	 72% 8% 19%
2	A	2	 100%

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:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	IDS	A	1	-	-	X	-
2	SGN	A	2	-	-	X	-

## 2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 183216 atoms, of which 90180 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 Capsid protein of PCV2.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
1	A1	189	3053	995	1503	268	283	4	0	0
1	A2	189	3053	995	1503	268	283	4	0	0
1	A3	189	3053	995	1503	268	283	4	0	0
1	A4	189	3053	995	1503	268	283	4	0	0
1	A5	189	3053	995	1503	268	283	4	0	0
1	A6	189	3053	995	1503	268	283	4	0	0
1	A7	189	3053	995	1503	268	283	4	0	0
1	A8	189	3053	995	1503	268	283	4	0	0
1	A9	189	3053	995	1503	268	283	4	0	0
1	AA	189	3053	995	1503	268	283	4	0	0
1	AB	189	3053	995	1503	268	283	4	0	0
1	AC	189	3053	995	1503	268	283	4	0	0
1	AD	189	3053	995	1503	268	283	4	0	0
1	AE	189	3053	995	1503	268	283	4	0	0
1	AF	189	3053	995	1503	268	283	4	0	0
1	AG	189	3053	995	1503	268	283	4	0	0
1	AH	189	3053	995	1503	268	283	4	0	0

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Mol	Chain	Residues	Atoms						AltConf	Trace
1	AI	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AJ	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AK	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AL	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AM	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AN	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AO	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AP	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AQ	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AR	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AS	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AT	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AU	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AV	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AW	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AX	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AY	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	AZ	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	Aa	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	Ab	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0
1	Ac	189	Total 3053	C 995	H 1503	N 268	O 283	S 4	0	0

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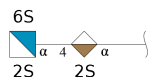
Mol	Chain	Residues	Atoms						AltConf	Trace
1	Ad	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Ae	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Af	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Ag	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Ah	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Ai	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Aj	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Ak	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Al	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Am	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	An	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Ao	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Ap	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Aq	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Ar	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	As	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	At	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Au	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Av	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Aw	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		
1	Ax	189	Total	C	H	N	O	S	0	0
			3053	995	1503	268	283	4		

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Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
1	Ay	189	3053	995	1503	268	283	4	0	0

- Molecule 2 is an oligosaccharide called 2-deoxy-6-O-sulfo-2-(sulfoamino)-alpha-D-glucopyranose-(1-4)-2-O-sulfo-alpha-L-idopyranuronic acid.



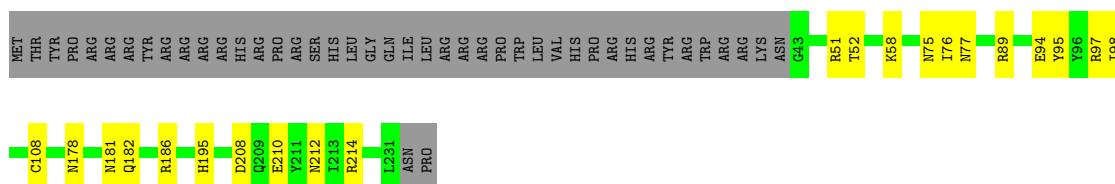
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	A	2	36	12	1	20	3	0	0

### 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.

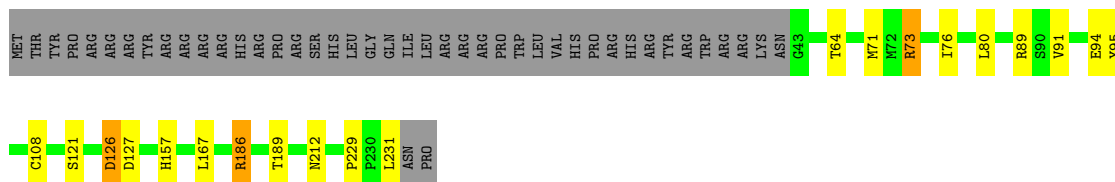
- Molecule 1: Capsid protein of PCV2

Chain A1: 



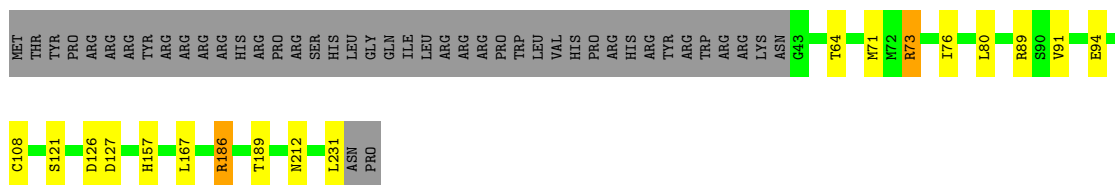
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Chain A2: 



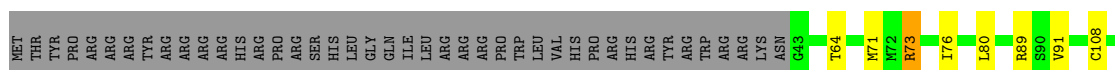
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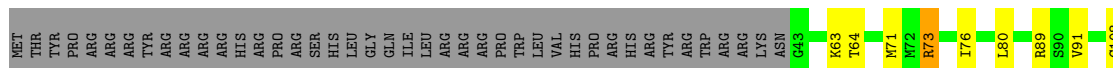
- Molecule 1: Capsid protein of PCV2

Chain A4: 

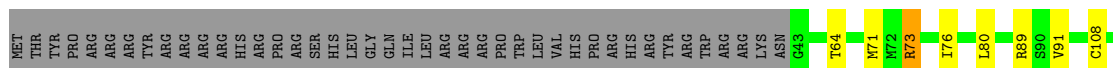
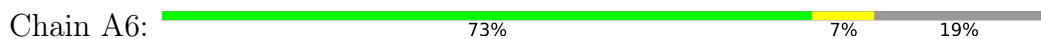




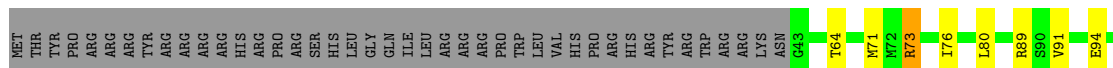
- Molecule 1: Capsid protein of PCV2



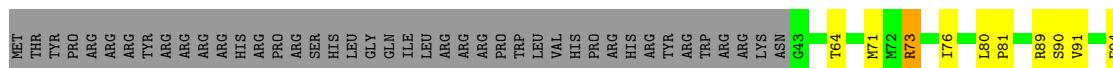
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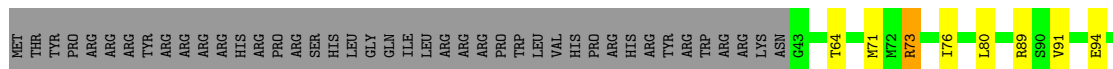
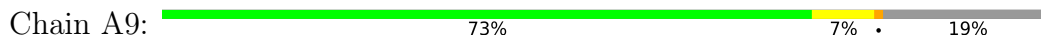
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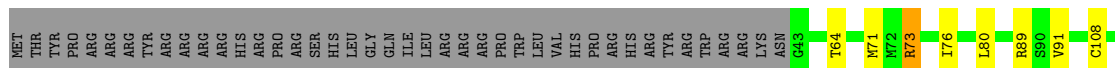
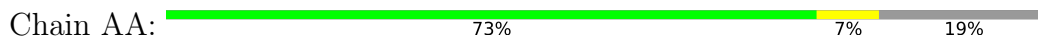


- Molecule 1: Capsid protein of PCV2

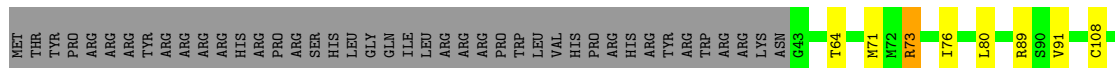




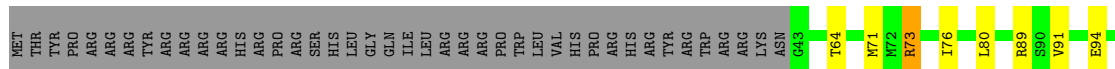
● Molecule 1: Capsid protein of PCV2



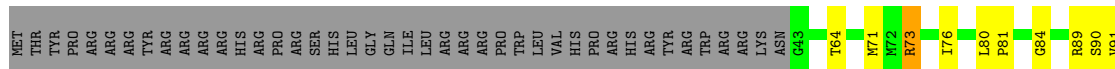
● Molecule 1: Capsid protein of PCV2



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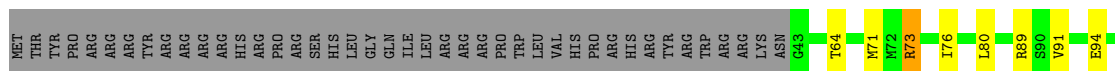


● Molecule 1: Capsid protein of PCV2

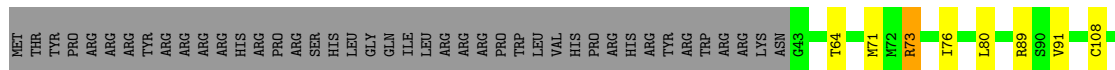
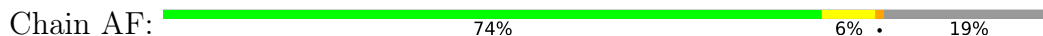


● Molecule 1: Capsid protein of PCV2

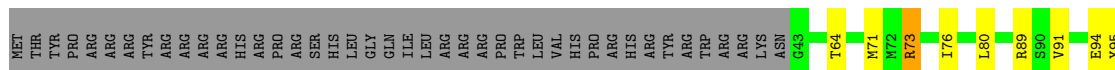




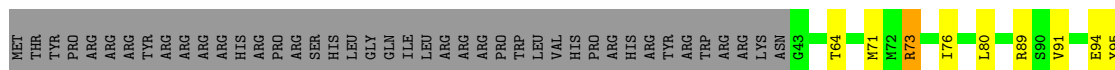
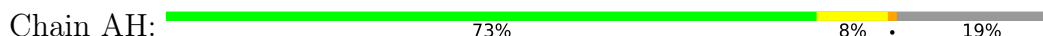
• Molecule 1: Capsid protein of PCV2



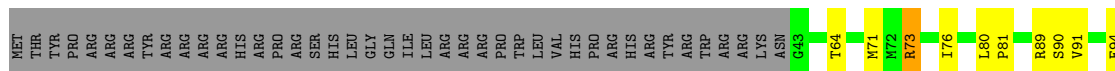
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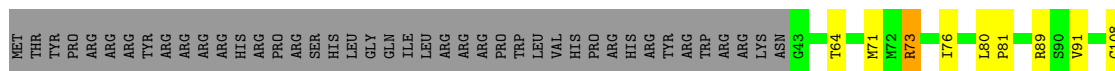


• Molecule 1: Capsid protein of PCV2

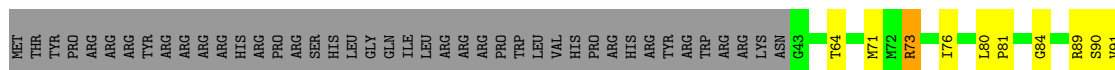


• Molecule 1: Capsid protein of PCV2

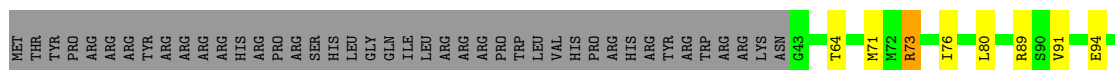




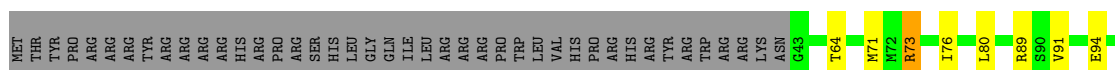
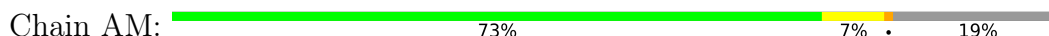
● Molecule 1: Capsid protein of PCV2



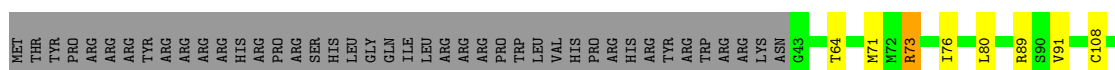
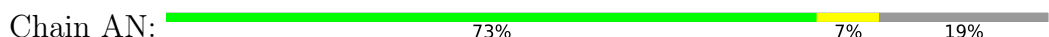
● Molecule 1: Capsid protein of PCV2



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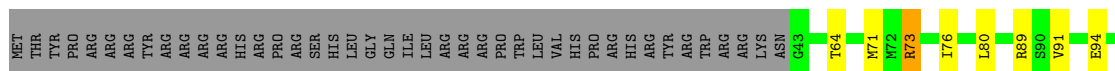
● Molecule 1: Capsid protein of PCV2



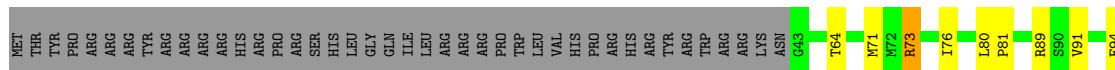
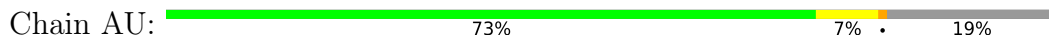
● Molecule 1: Capsid protein of PCV2



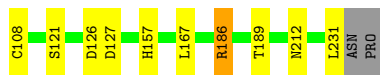
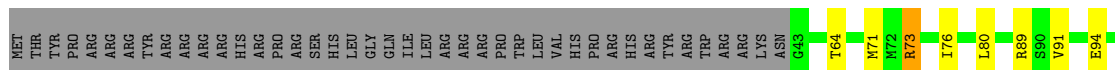




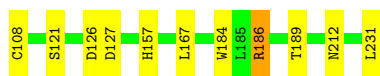
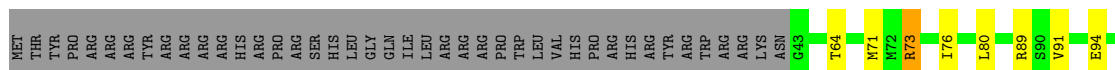
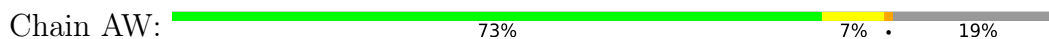
● Molecule 1: Capsid protein of PCV2



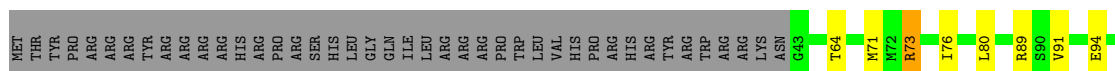
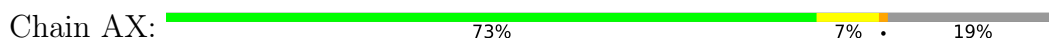
● Molecule 1: Capsid protein of PCV2



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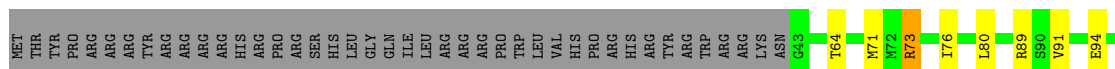


● Molecule 1: Capsid protein of PCV2

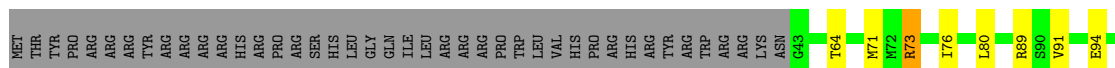


● Molecule 1: Capsid protein of PCV2

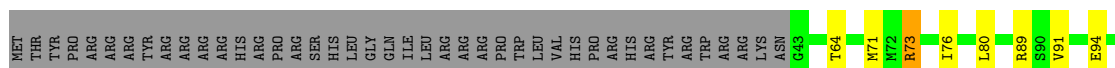
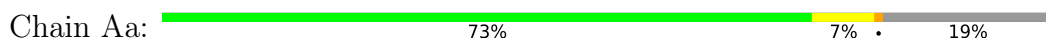




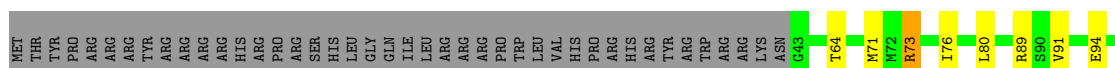
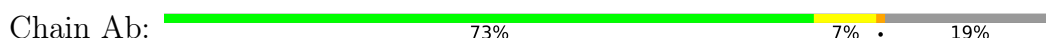
● Molecule 1: Capsid protein of PCV2



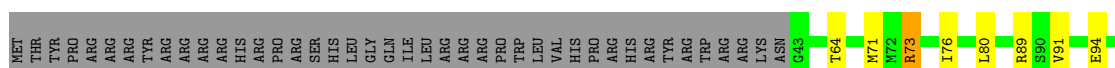
● Molecule 1: Capsid protein of PCV2



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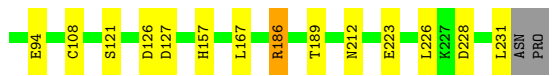
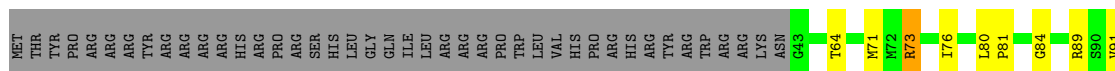


● Molecule 1: Capsid protein of PCV2

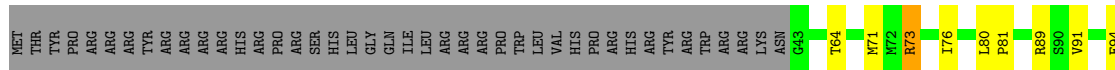


● Molecule 1: Capsid protein of PCV2

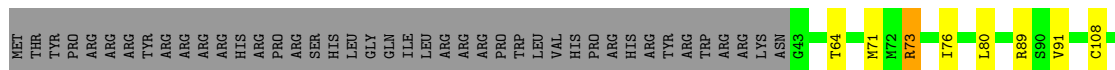




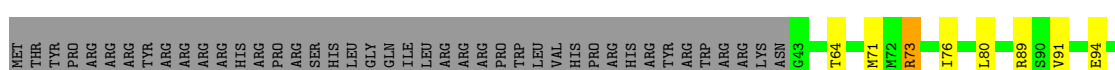
● Molecule 1: Capsid protein of PCV2



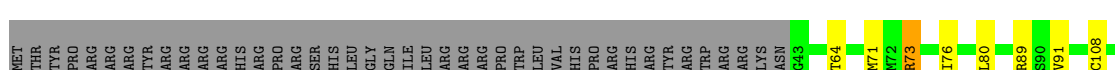
● Molecule 1: Capsid protein of PCV2



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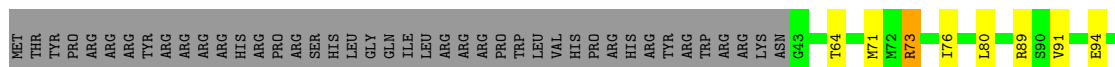


● Molecule 1: Capsid protein of PCV2

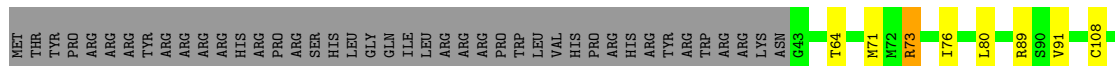
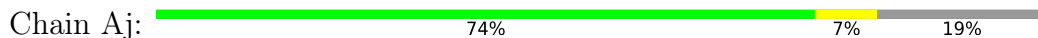


● Molecule 1: Capsid protein of PCV2

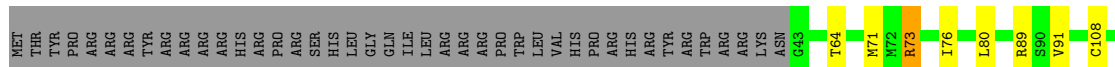
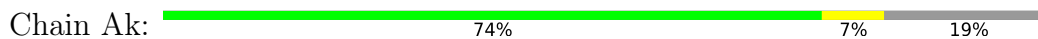




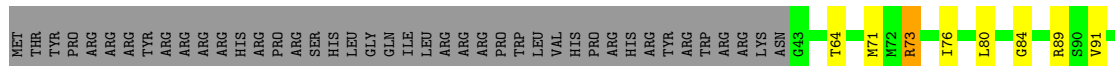
● Molecule 1: Capsid protein of PCV2



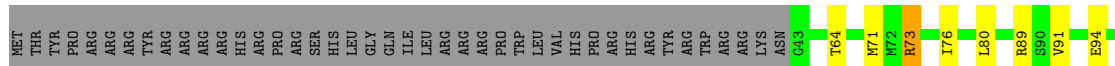
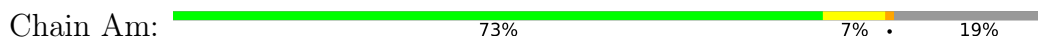
● Molecule 1: Capsid protein of PCV2



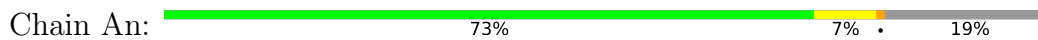
● Molecule 1: Capsid protein of PCV2

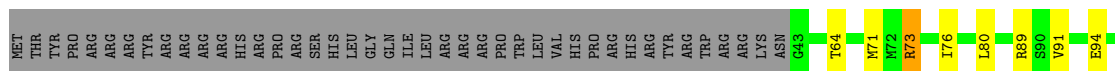


● Molecule 1: Capsid protein of PCV2

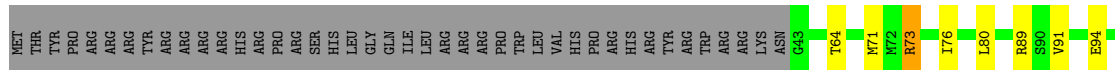


● Molecule 1: Capsid protein of PCV2

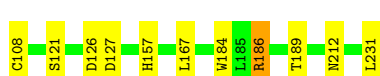
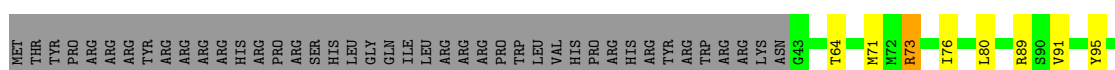
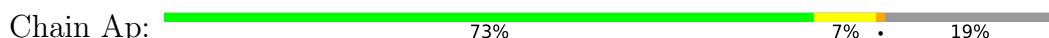




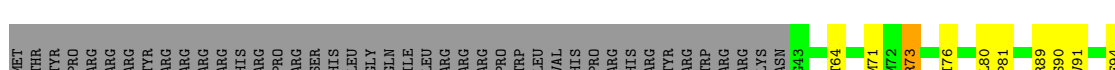
● Molecule 1: Capsid protein of PCV2



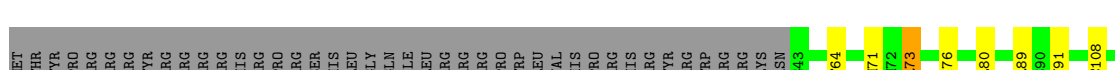
● Molecule 1: Capsid protein of PCV2



● Molecule 1: Capsid protein of PCV2

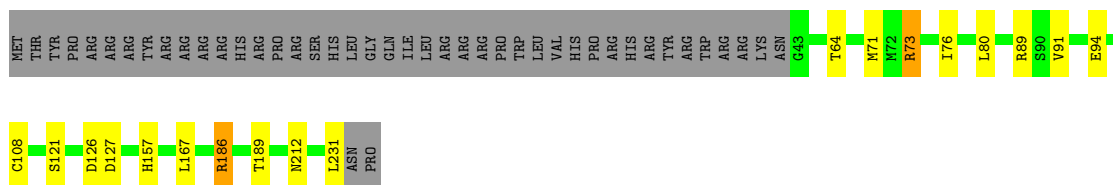


● Molecule 1: Capsid protein of PCV2




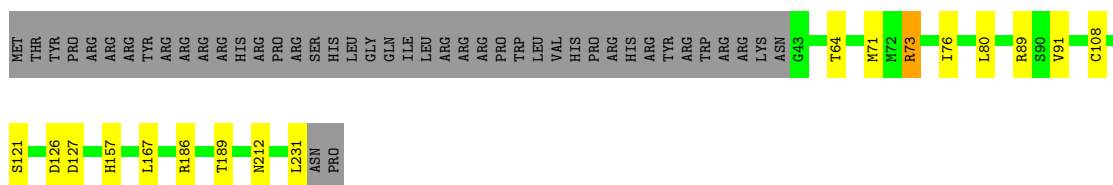
● Molecule 1: Capsid protein of PCV2

Chain As:  73% 7% 19%




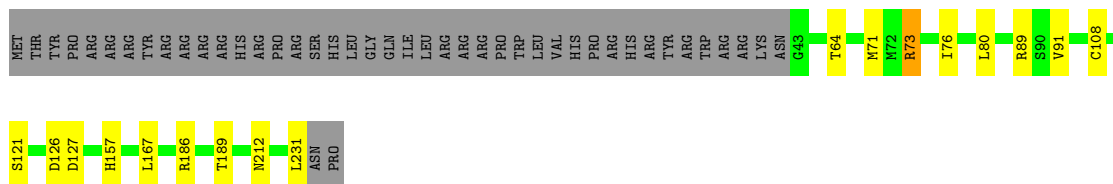
- Molecule 1: Capsid protein of PCV2

Chain At:  74% 7% 19%



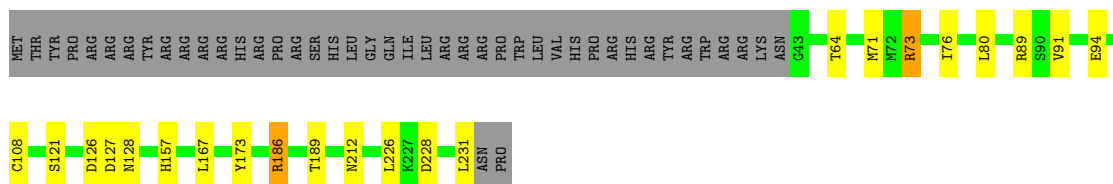
- Molecule 1: Capsid protein of PCV2

Chain Au:  74% 7% 19%




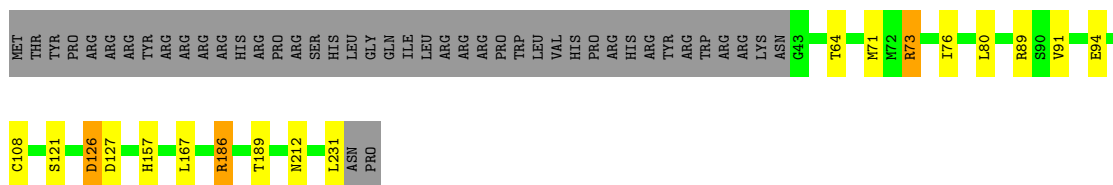
- Molecule 1: Capsid protein of PCV2

Chain Av:  72% 9% 19%



- Molecule 1: Capsid protein of PCV2

Chain Aw:  73% 6% 19%



- Molecule 1: Capsid protein of PCV2



## 4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, I	Depositor
Number of particles used	66701	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION; Per particle estimation	Depositor
Microscope	FEI TITAN	Depositor
Voltage (kV)	300	Depositor
Electron dose ( $e^-/\text{\AA}^2$ )	32	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.079	Depositor
Minimum map value	-0.021	Depositor
Average map value	0.002	Depositor
Map value standard deviation	0.008	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	327.0, 327.0, 327.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.09, 1.09, 1.09	Depositor

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: IDS, SGN

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	A1	0.33	0/1597	0.46	0/2175
1	A2	0.61	0/1597	0.51	0/2175
1	A3	0.61	0/1597	0.51	0/2175
1	A4	0.61	0/1597	0.50	0/2175
1	A5	0.61	0/1597	0.51	0/2175
1	A6	0.61	0/1597	0.51	0/2175
1	A7	0.61	0/1597	0.51	0/2175
1	A8	0.61	0/1597	0.50	0/2175
1	A9	0.61	0/1597	0.50	0/2175
1	AA	0.61	0/1597	0.51	0/2175
1	AB	0.61	0/1597	0.51	0/2175
1	AC	0.61	0/1597	0.51	0/2175
1	AD	0.61	0/1597	0.51	0/2175
1	AE	0.61	0/1597	0.51	0/2175
1	AF	0.60	0/1597	0.51	0/2175
1	AG	0.61	0/1597	0.50	0/2175
1	AH	0.61	0/1597	0.50	0/2175
1	AI	0.61	0/1597	0.51	0/2175
1	AJ	0.61	0/1597	0.51	0/2175
1	AK	0.61	0/1597	0.51	0/2175
1	AL	0.61	0/1597	0.51	0/2175
1	AM	0.61	0/1597	0.51	0/2175
1	AN	0.61	0/1597	0.51	0/2175
1	AO	0.61	0/1597	0.51	0/2175
1	AP	0.60	0/1597	0.50	0/2175
1	AQ	0.61	0/1597	0.51	0/2175
1	AR	0.61	0/1597	0.51	0/2175
1	AS	0.61	0/1597	0.51	0/2175
1	AT	0.61	0/1597	0.51	0/2175
1	AU	0.61	0/1597	0.51	0/2175
1	AV	0.61	0/1597	0.51	0/2175
1	AW	0.61	0/1597	0.50	0/2175

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	AX	0.61	0/1597	0.51	0/2175
1	AY	0.61	0/1597	0.51	0/2175
1	AZ	0.61	0/1597	0.51	0/2175
1	Aa	0.61	0/1597	0.51	0/2175
1	Ab	0.61	0/1597	0.51	0/2175
1	Ac	0.61	0/1597	0.51	0/2175
1	Ad	0.61	0/1597	0.51	0/2175
1	Ae	0.61	0/1597	0.51	0/2175
1	Af	0.61	0/1597	0.51	0/2175
1	Ag	0.61	0/1597	0.51	0/2175
1	Ah	0.61	0/1597	0.50	0/2175
1	Ai	0.60	0/1597	0.51	0/2175
1	Aj	0.61	0/1597	0.51	0/2175
1	Ak	0.61	0/1597	0.51	0/2175
1	Al	0.61	0/1597	0.51	0/2175
1	Am	0.61	0/1597	0.51	0/2175
1	An	0.61	0/1597	0.50	0/2175
1	Ao	0.61	0/1597	0.51	0/2175
1	Ap	0.61	0/1597	0.51	0/2175
1	Aq	0.61	0/1597	0.51	0/2175
1	Ar	0.61	0/1597	0.50	0/2175
1	As	0.61	0/1597	0.50	0/2175
1	At	0.61	0/1597	0.50	0/2175
1	Au	0.61	0/1597	0.51	0/2175
1	Av	0.61	0/1597	0.50	0/2175
1	Aw	0.61	0/1597	0.51	0/2175
1	Ax	0.61	0/1597	0.51	0/2175
1	Ay	0.60	0/1597	0.51	0/2175
All	All	0.60	0/95820	0.50	0/130500

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	AN	0	1

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	AN	186	ARG	Sidechain

## 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	A1	1550	1503	1503	17	0
1	A2	1550	1503	1503	12	0
1	A3	1550	1503	1503	9	0
1	A4	1550	1503	1503	7	0
1	A5	1550	1503	1503	18	0
1	A6	1550	1503	1503	8	0
1	A7	1550	1503	1503	9	0
1	A8	1550	1503	1503	13	0
1	A9	1550	1503	1503	8	0
1	AA	1550	1503	1503	9	0
1	AB	1550	1503	1503	7	0
1	AC	1550	1503	1503	10	0
1	AD	1550	1503	1503	13	0
1	AE	1550	1503	1503	8	0
1	AF	1550	1503	1503	9	0
1	AG	1550	1503	1503	10	0
1	AH	1550	1503	1503	11	0
1	AI	1550	1503	1503	13	0
1	AJ	1550	1503	1503	11	0
1	AK	1550	1503	1503	14	0
1	AL	1550	1503	1503	8	0
1	AM	1550	1503	1503	11	0
1	AN	1550	1503	1503	8	0
1	AO	1550	1503	1503	9	0
1	AP	1550	1503	1503	8	0
1	AQ	1550	1503	1503	8	0
1	AR	1550	1503	1503	12	0
1	AS	1550	1503	1503	8	0
1	AT	1550	1503	1503	8	0
1	AU	1550	1503	1503	9	0
1	AV	1550	1503	1503	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	AW	1550	1503	1503	10	0
1	AX	1550	1503	1503	8	0
1	AY	1550	1503	1503	8	0
1	AZ	1550	1503	1503	8	0
1	Aa	1550	1503	1503	8	0
1	Ab	1550	1503	1503	8	0
1	Ac	1550	1503	1503	8	0
1	Ad	1550	1503	1503	16	0
1	Ae	1550	1503	1503	11	0
1	Af	1550	1503	1503	7	0
1	Ag	1550	1503	1503	9	0
1	Ah	1550	1503	1503	7	0
1	Ai	1550	1503	1503	9	0
1	Aj	1550	1503	1503	7	0
1	Ak	1550	1503	1503	7	0
1	Al	1550	1503	1503	14	0
1	Am	1550	1503	1503	8	0
1	An	1550	1503	1503	8	0
1	Ao	1550	1503	1503	8	0
1	Ap	1550	1503	1503	11	0
1	Aq	1550	1503	1503	12	0
1	Ar	1550	1503	1503	8	0
1	As	1550	1503	1503	8	0
1	At	1550	1503	1503	7	0
1	Au	1550	1503	1503	7	0
1	Av	1550	1503	1503	15	0
1	Aw	1550	1503	1503	9	0
1	Ax	1550	1503	1503	9	0
1	Ay	1550	1503	1503	14	0
2	A	36	0	14	16	0
All	All	93036	90180	90194	538	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 538 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)
2:A:1:IDS:O3	2:A:2:SGN:O3S	1.59	1.19
2:A:1:IDS:O3	2:A:2:SGN:S1	2.06	1.10
2:A:1:IDS:H3	2:A:2:SGN:N2	1.85	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A5:206:ILE:HD11	2:A:2:SGN:H61	1.55	0.89
1:A5:206:ILE:HD11	2:A:2:SGN:C6	2.08	0.84

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	A1	187/233 (80%)	178 (95%)	9 (5%)	0	100	100
1	A2	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	A3	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	A4	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	A5	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	A6	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	A7	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	A8	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	A9	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AA	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AB	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	AC	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AD	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AE	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AF	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AG	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AH	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AI	187/233 (80%)	181 (97%)	6 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	AJ	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AK	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AL	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	AM	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	AN	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AO	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AP	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	AQ	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AR	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	AS	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	AT	187/233 (80%)	179 (96%)	8 (4%)	0	100	100
1	AU	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AV	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AW	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AX	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AY	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	AZ	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Aa	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Ab	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Ac	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Ad	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Ae	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	Af	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	Ag	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	Ah	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Ai	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	Aj	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	Ak	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	Al	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	Am	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	An	187/233 (80%)	181 (97%)	6 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	Ao	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Ap	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	Aq	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Ar	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	As	187/233 (80%)	180 (96%)	7 (4%)	0	100	100
1	At	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Au	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Av	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Aw	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Ax	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
1	Ay	187/233 (80%)	181 (97%)	6 (3%)	0	100	100
All	All	11220/13980 (80%)	10839 (97%)	381 (3%)	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	A1	172/215 (80%)	172 (100%)	0	100	100
1	A2	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	A3	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	A4	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	A5	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	A6	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	A7	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	A8	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	A9	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AA	172/215 (80%)	164 (95%)	8 (5%)	23	49

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	AB	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AC	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AD	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AE	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AF	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AG	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AH	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AI	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AJ	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AK	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AL	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AM	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AN	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AO	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AP	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AQ	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AR	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AS	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AT	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AU	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AV	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AW	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AX	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AY	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	AZ	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Aa	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ab	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ac	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ad	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ae	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Af	172/215 (80%)	164 (95%)	8 (5%)	23	49

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	Ag	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ah	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ai	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Aj	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ak	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Al	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Am	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	An	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ao	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ap	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Aq	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ar	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	As	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	At	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Au	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Av	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Aw	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ax	172/215 (80%)	164 (95%)	8 (5%)	23	49
1	Ay	172/215 (80%)	164 (95%)	8 (5%)	23	49
All	All	10320/12900 (80%)	9848 (95%)	472 (5%)	25	50

5 of 472 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	AU	231	LEU
1	Av	76	ILE
1	Ab	186	ARG
1	Au	186	ARG
1	Ap	231	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 209 such sidechains are listed below:

Mol	Chain	Res	Type
1	AW	212	ASN

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Mol	Chain	Res	Type
1	Ag	77	ASN
1	Aw	128	ASN
1	AY	77	ASN
1	Ab	212	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](#)

2 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$
2	IDS	A	1	2	17,17,17	1.14	2 (11%)	22,26,26	1.34	2 (9%)
2	SGN	A	2	2	19,19,20	1.28	2 (10%)	23,29,31	1.46	4 (17%)

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
2	IDS	A	1	2	-	5/9/29/29	0/1/1/1
2	SGN	A	2	2	-	3/11/28/31	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	2	SGN	S1-N2	3.60	1.64	1.59
2	A	1	IDS	O6B-C6	-2.99	1.21	1.30
2	A	1	IDS	O2-C2	-2.11	1.41	1.46
2	A	2	SGN	O5-C1	-2.11	1.40	1.43

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1	IDS	C2-O2-S	3.89	128.36	119.04
2	A	2	SGN	O1S-S1-O2S	-3.61	112.34	120.36
2	A	2	SGN	O4-C4-C5	-2.98	101.97	109.32
2	A	1	IDS	O6B-C6-O6A	-2.72	117.91	124.08
2	A	2	SGN	O1S-S1-N2	-2.56	104.61	108.88

There are no chirality outliers.

5 of 8 torsion outliers are listed below:

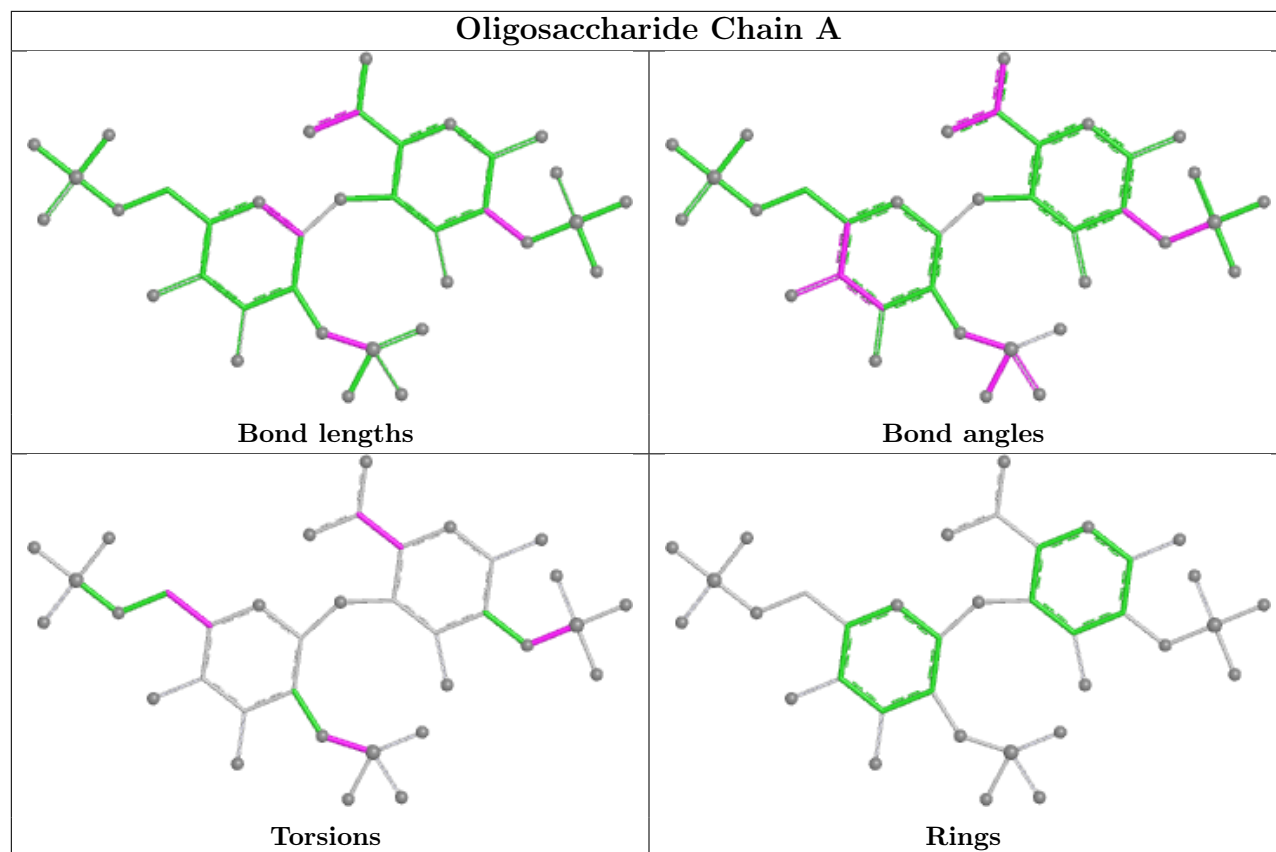
Mol	Chain	Res	Type	Atoms
2	A	1	IDS	C4-C5-C6-O6A
2	A	1	IDS	C4-C5-C6-O6B
2	A	1	IDS	C2-O2-S-O3S
2	A	2	SGN	C4-C5-C6-O6
2	A	2	SGN	O5-C5-C6-O6

There are no ring outliers.

2 monomers are involved in 16 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1	IDS	8	0
2	A	2	SGN	16	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](#)

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.

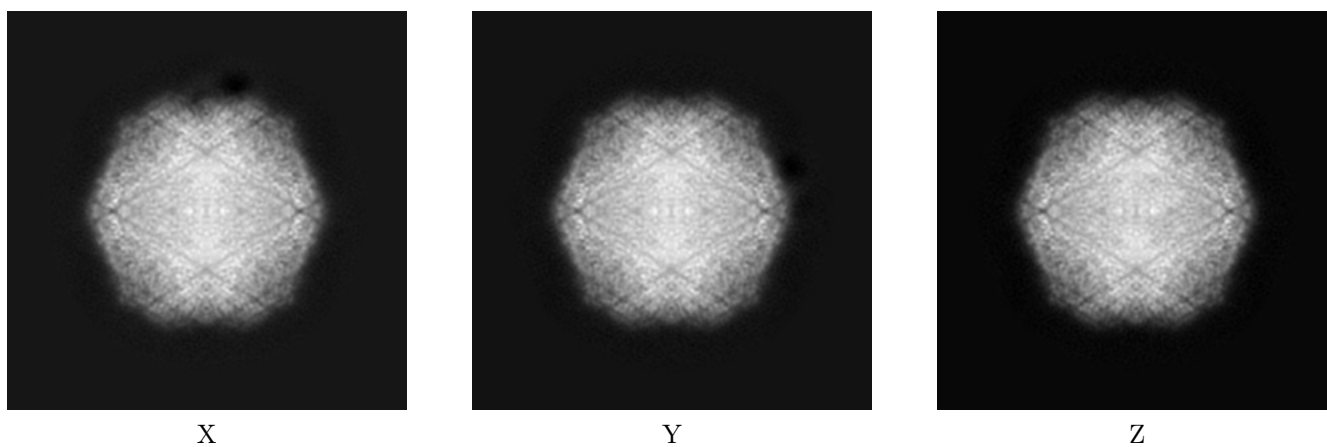
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-8975. 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](#)

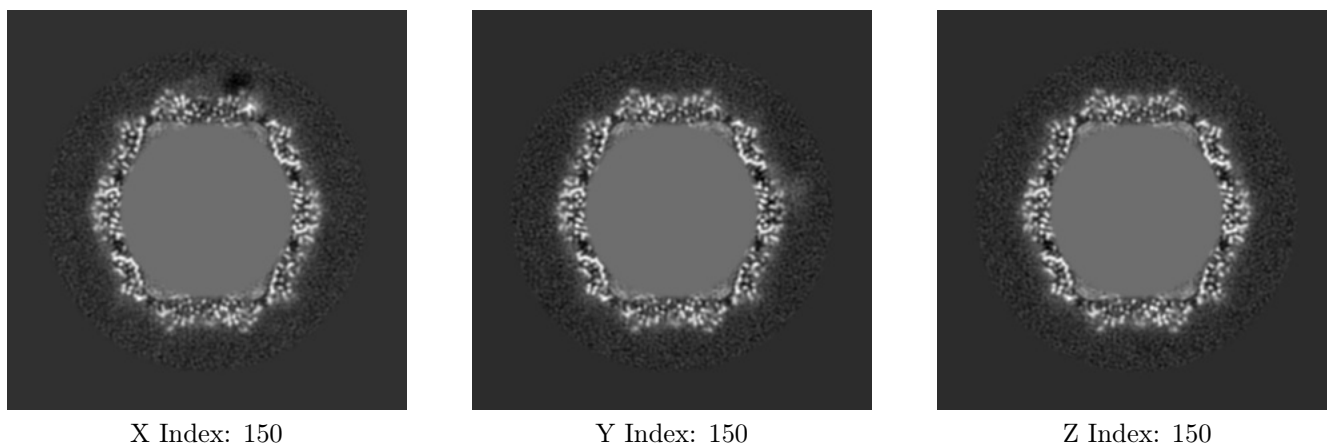
#### 6.1.1 Primary map



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

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

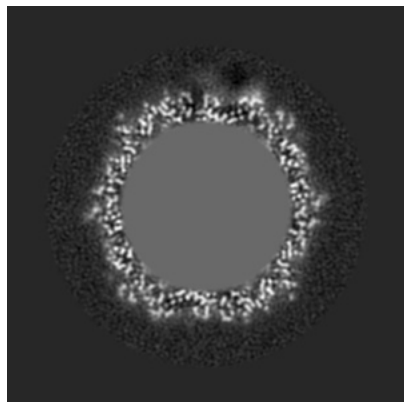
#### 6.2.1 Primary map



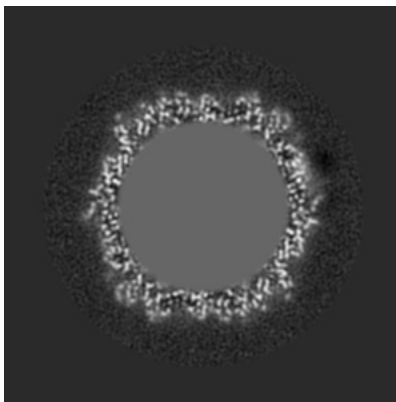
The images above show central slices of the map in three orthogonal directions.

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

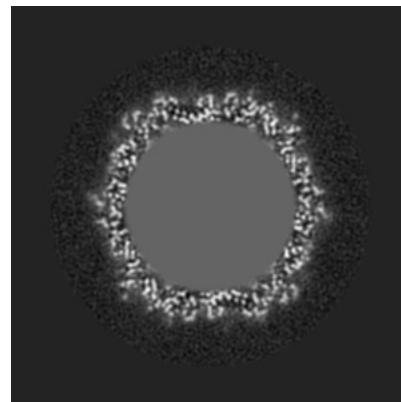
### 6.3.1 Primary map



X Index: 161



Y Index: 162

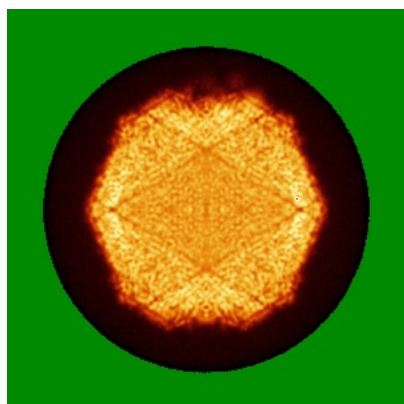


Z Index: 137

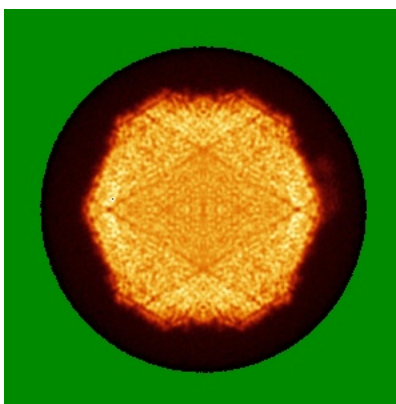
The images above show the largest variance slices of the map in three orthogonal directions.

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

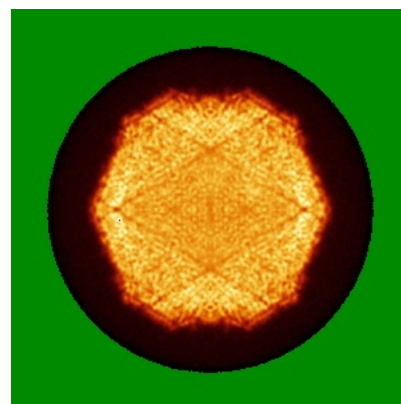
### 6.4.1 Primary map



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](#)

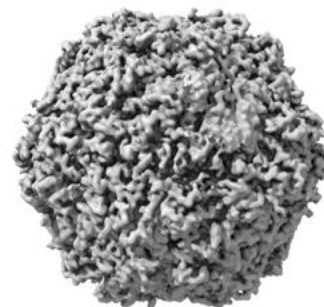
### 6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

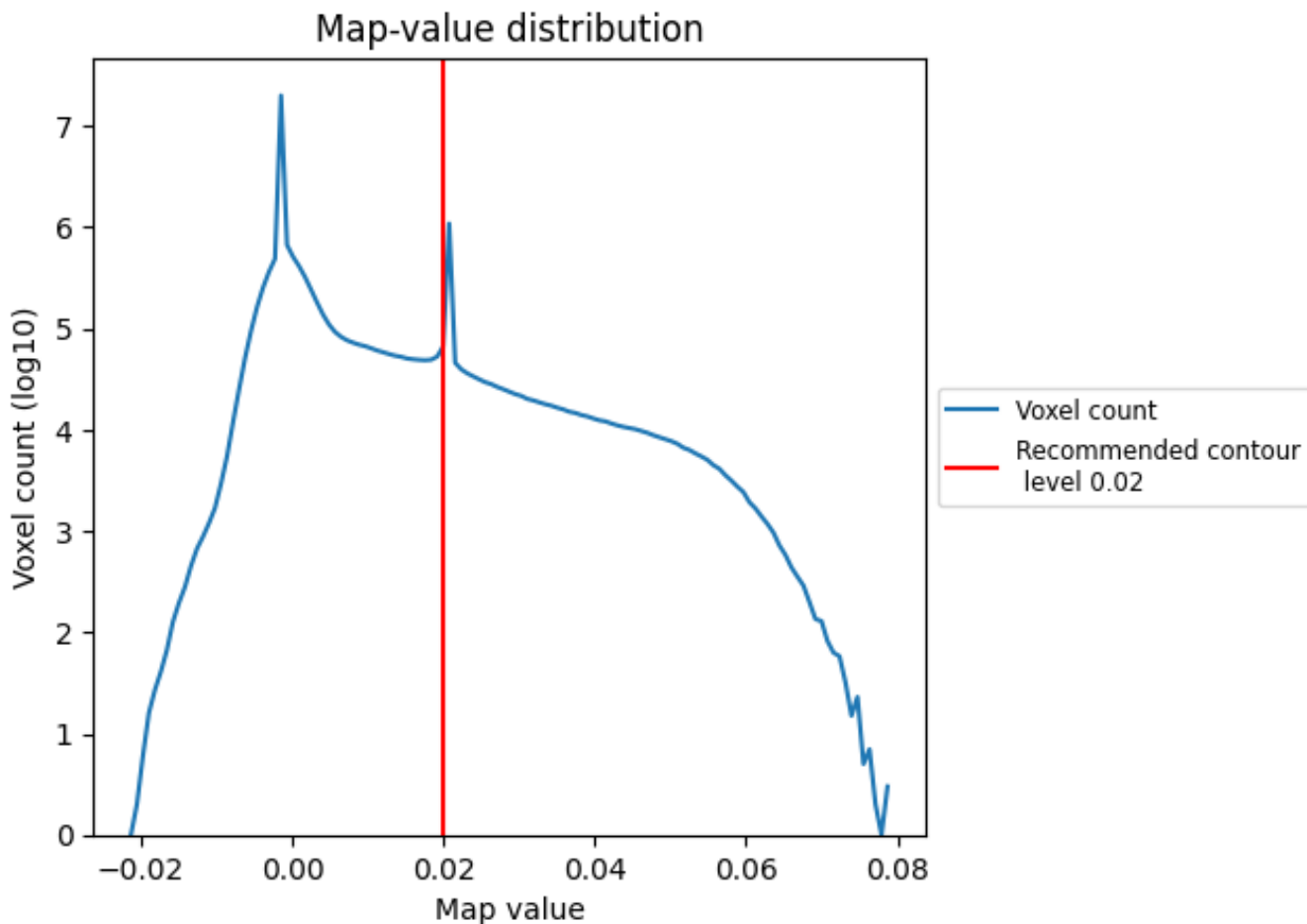
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

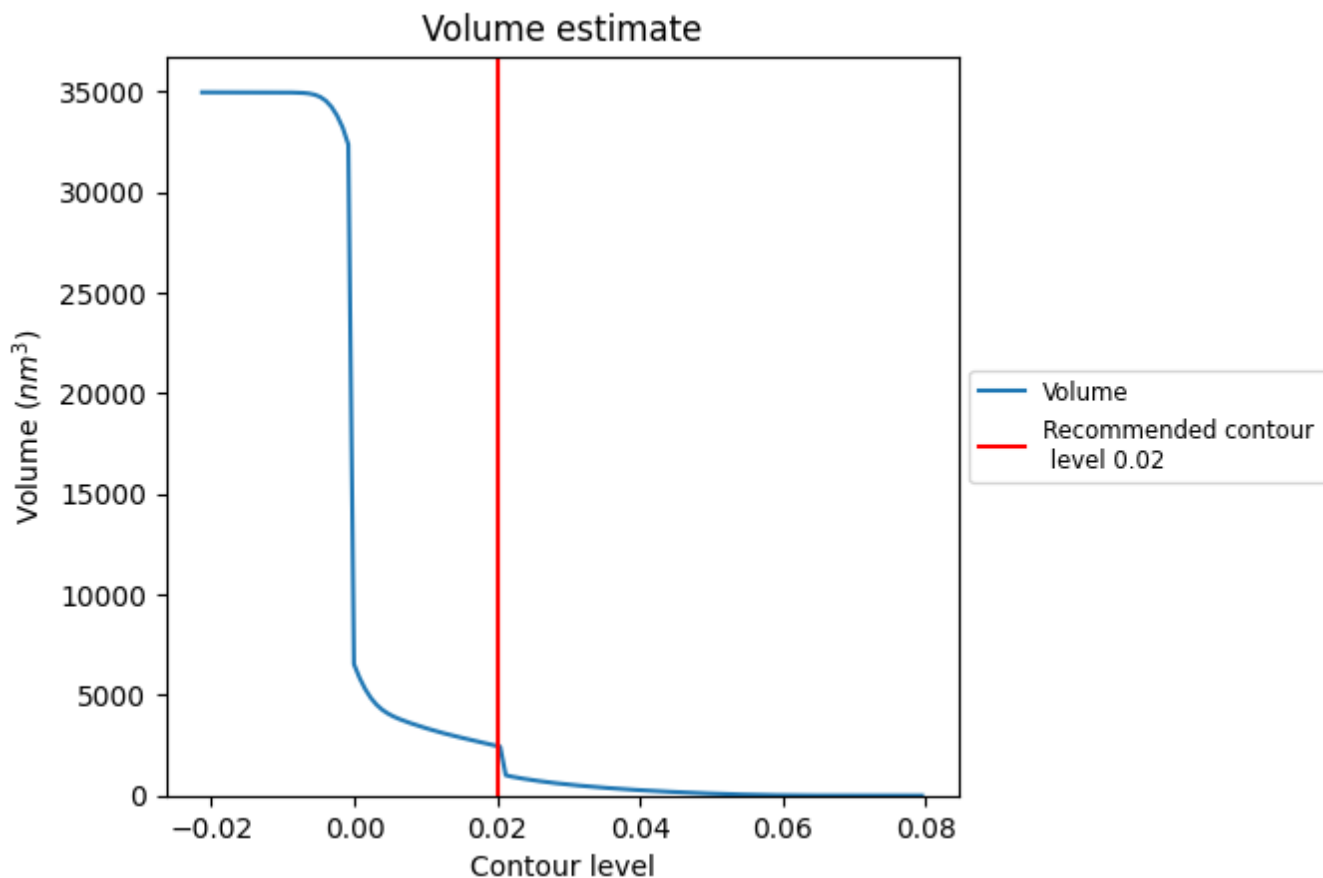
This section contains the results of statistical analysis of the map.

### 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.

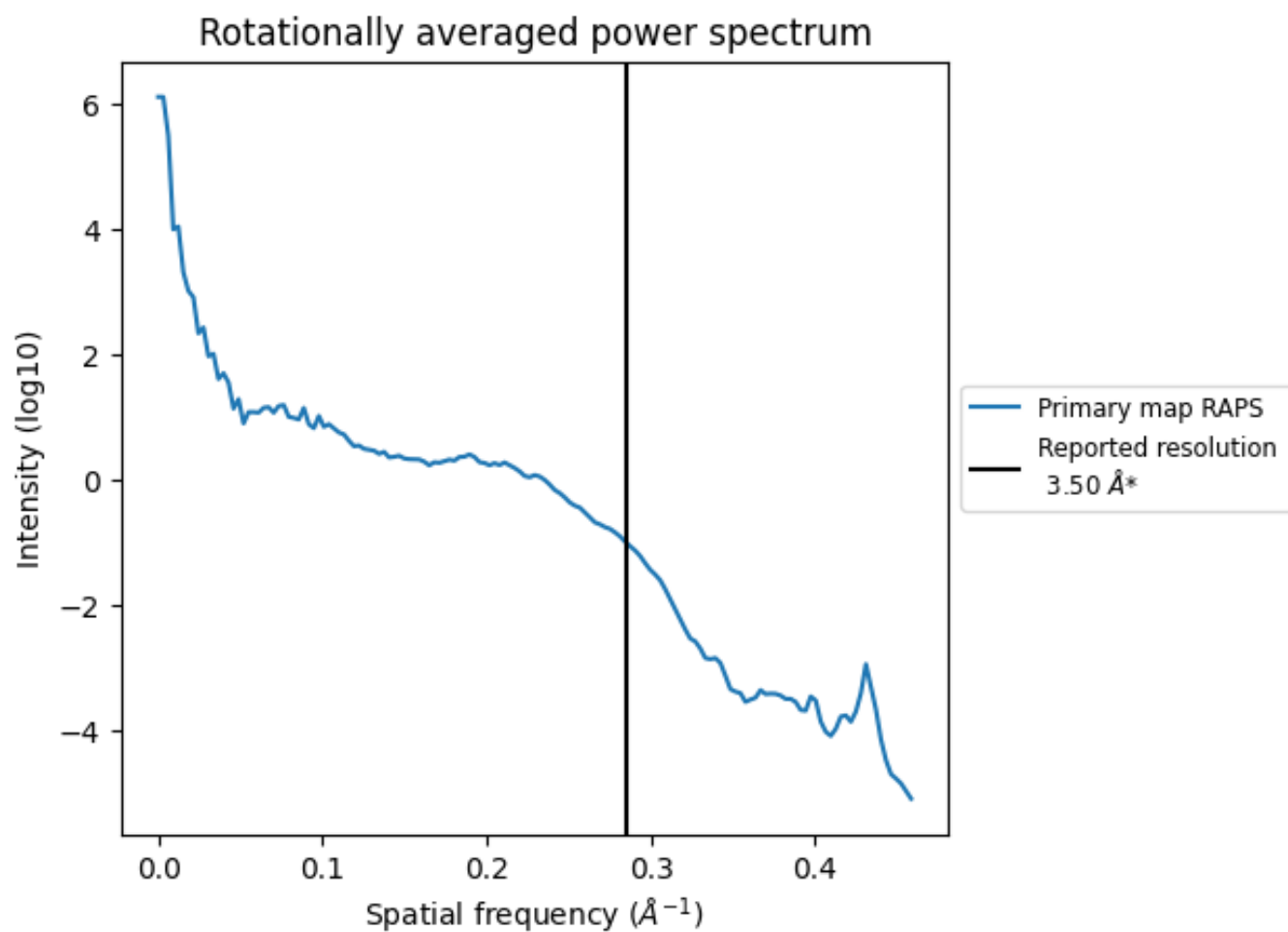
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 2468 nm<sup>3</sup>; this corresponds to an approximate mass of 2229 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<sup>-1</sup>

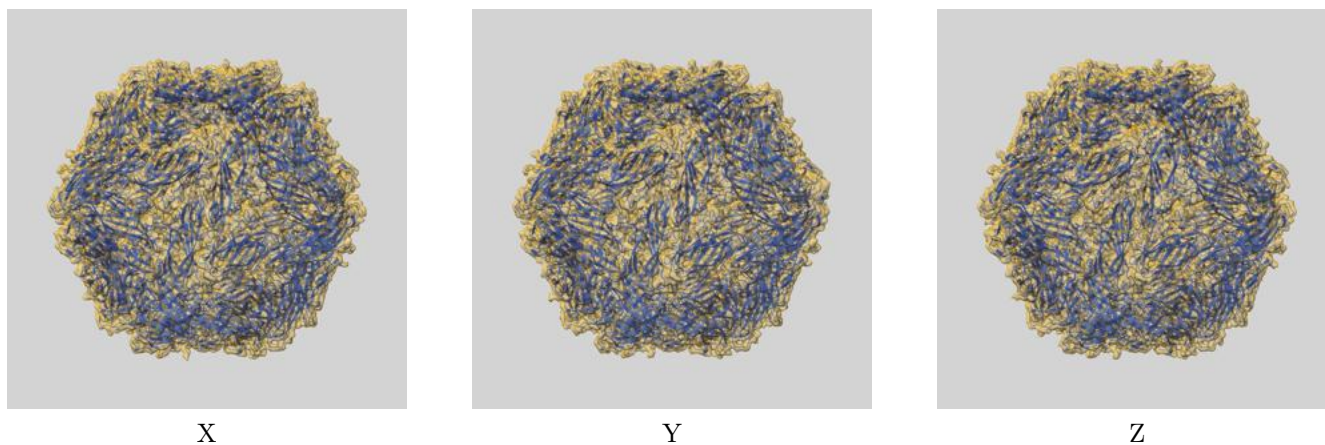
## 8 Fourier-Shell correlation

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

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

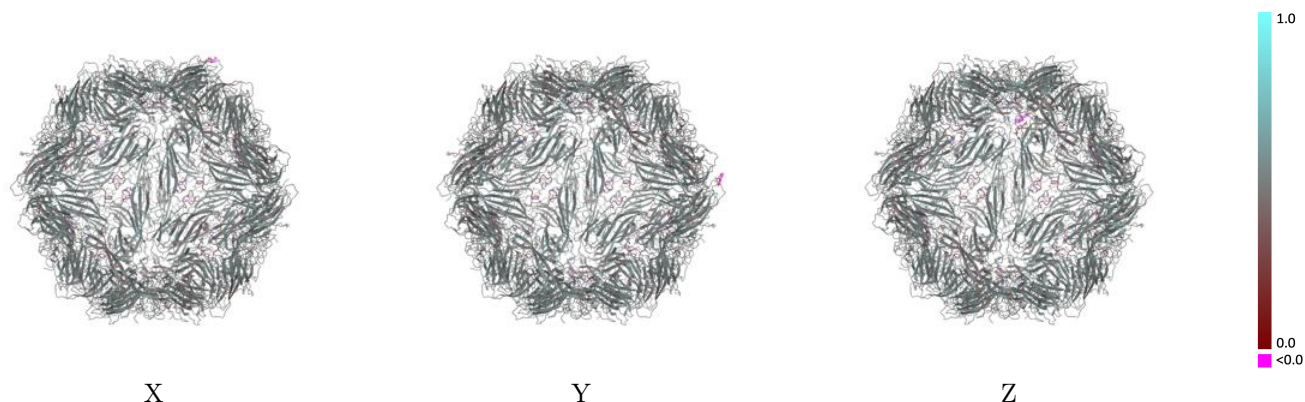
This section contains information regarding the fit between EMDB map EMD-8975 and PDB model 6E39. Per-residue inclusion information can be found in section 3 on page 10.

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



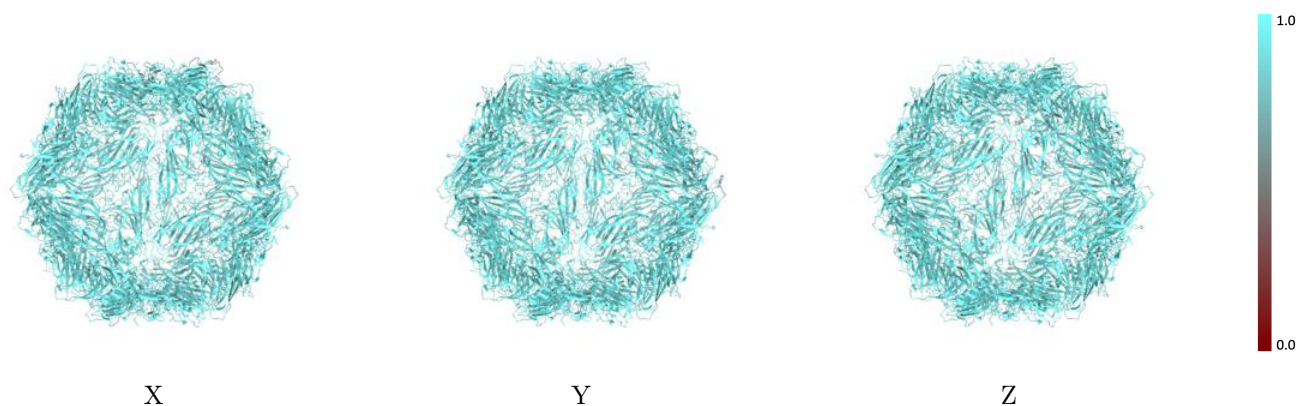
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



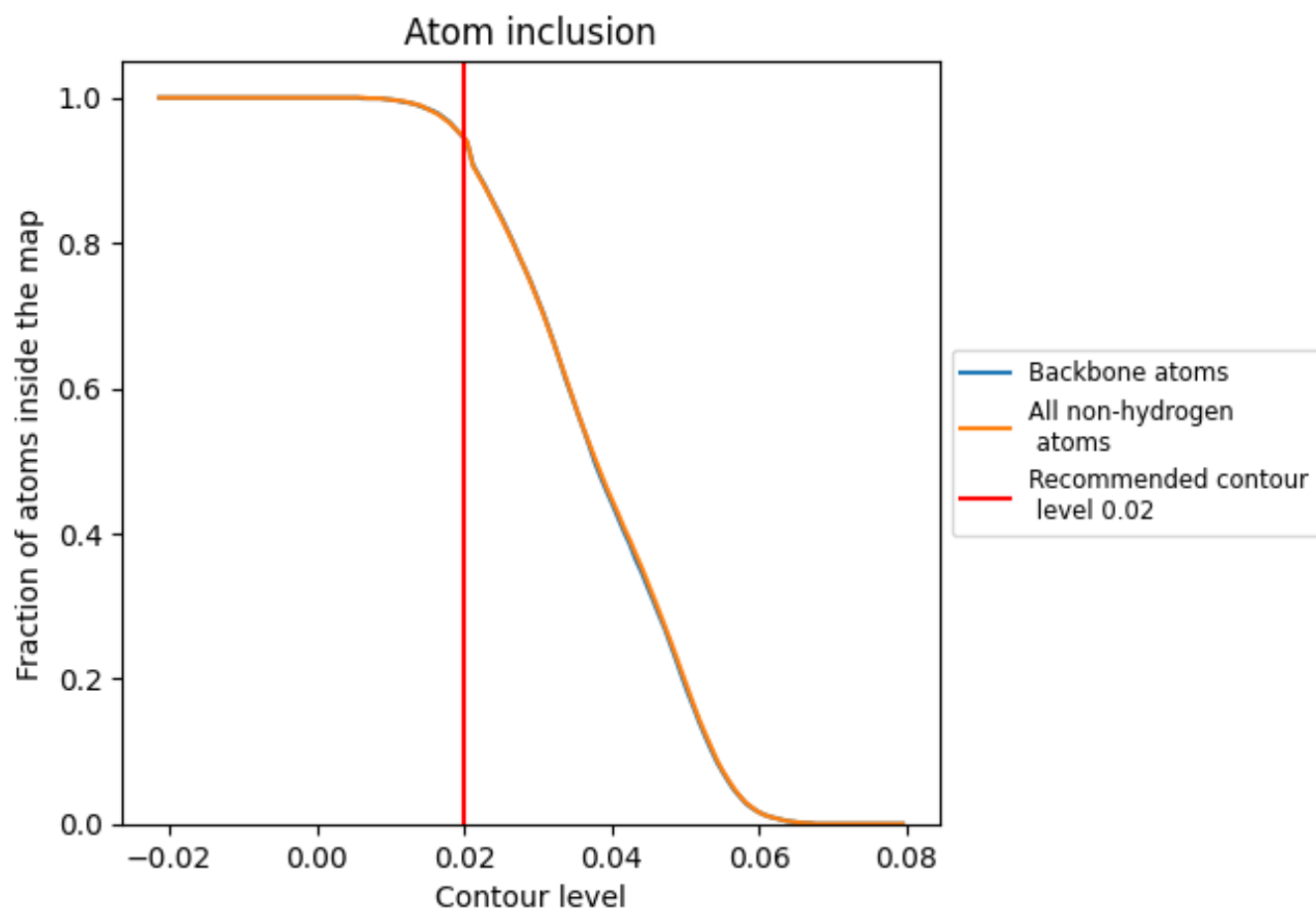
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.02).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 94% of all backbone atoms, 94% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9450	 0.4840
A	 0.6390	 0.0080
A1	 0.9340	 0.4880
A2	 0.9400	 0.4660
A3	 0.9520	 0.4840
A4	 0.9550	 0.4890
A5	 0.9510	 0.4910
A6	 0.9240	 0.4720
A7	 0.9440	 0.4740
A8	 0.9530	 0.4850
A9	 0.9540	 0.4960
AA	 0.9320	 0.4900
AB	 0.9490	 0.4920
AC	 0.9470	 0.4720
AD	 0.9560	 0.4870
AE	 0.9460	 0.4810
AF	 0.9380	 0.4650
AG	 0.9520	 0.4950
AH	 0.9520	 0.4840
AI	 0.9520	 0.4740
AJ	 0.9440	 0.4800
AK	 0.9510	 0.4890
AL	 0.9530	 0.4910
AM	 0.9520	 0.4820
AN	 0.9540	 0.4860
AO	 0.9550	 0.4920
AP	 0.9550	 0.4910
AQ	 0.9580	 0.4940
AR	 0.9440	 0.4720
AS	 0.9490	 0.4840
AT	 0.9420	 0.4690
AU	 0.9410	 0.4630
AV	 0.9560	 0.4950
AW	 0.9410	 0.4780
AX	 0.9540	 0.4910



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Chain	Atom inclusion	Q-score
AY	 0.9500	 0.4770
AZ	 0.9570	 0.4910
Aa	 0.9540	 0.4940
Ab	 0.9500	 0.4800
Ac	 0.9560	 0.4890
Ad	 0.9440	 0.4670
Ae	 0.9440	 0.4680
Af	 0.9570	 0.4940
Ag	 0.9430	 0.4650
Ah	 0.9480	 0.4860
Ai	 0.9540	 0.4910
Aj	 0.9550	 0.4890
Ak	 0.9560	 0.4950
Al	 0.9530	 0.4920
Am	 0.9540	 0.4890
An	 0.9470	 0.4700
Ao	 0.9590	 0.4960
Ap	 0.9550	 0.4930
Aq	 0.9510	 0.4940
Ar	 0.9520	 0.4920
As	 0.9460	 0.4740
At	 0.9510	 0.4920
Au	 0.9570	 0.4940
Av	 0.9510	 0.4820
Aw	 0.9580	 0.4940
Ax	 0.9520	 0.4940
Ay	 0.9320	 0.4380