



Full wwPDB EM Validation Report ⓘ

Mar 9, 2026 – 05:30 PM UTC

PDB ID : 9XOU / pdb_00009xou
EMDB ID : EMD-67094
Title : CryoEM structure of LacY with Trimbody
Authors : Song, J.Y.; Wang, W.
Deposited on : 2025-11-15
Resolution : 2.50 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

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

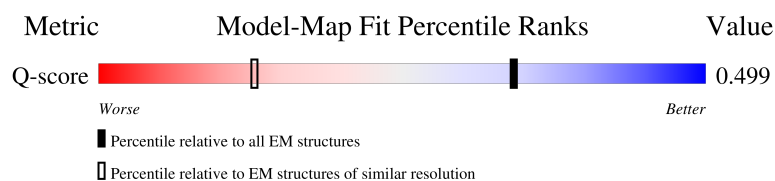
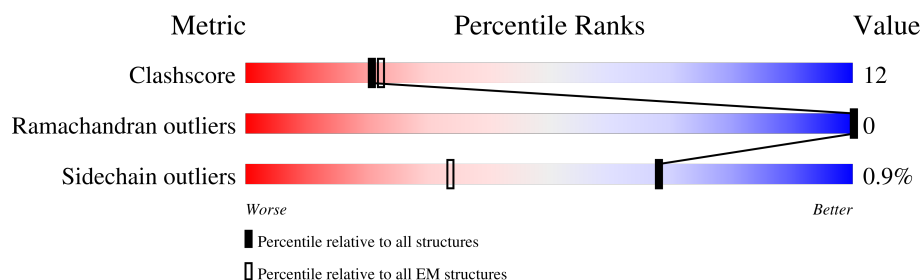
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.50 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	7115 (2.00 - 3.00)

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 ≥ 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	332	
1	B	332	
1	C	332	
2	D	256	

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Mol	Chain	Length	Quality of chain
2	E	256	 76% 21% .
2	F	256	 74% 23% .
3	G	437	 65% 24% 11%
3	H	437	 64% 25% 11%
3	I	437	 64% 25% 11%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 22382 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 H3-PrAC-5350A,2-dehydro-3-deoxyphosphogluconate aldolase/4-hydroxy-2-oxoglutarate aldolase.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	319	Total	C	N	O	S	0	0
			2424	1545	414	455	10		
1	B	318	Total	C	N	O	S	0	0
			2417	1541	413	453	10		
1	C	319	Total	C	N	O	S	0	0
			2424	1545	414	455	10		

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	141	ILE	LYS	conflict	UNP Q9WXS1
A	145	VAL	LEU	conflict	UNP Q9WXS1
A	149	ALA	GLU	conflict	UNP Q9WXS1
A	170	ALA	GLU	conflict	UNP Q9WXS1
A	173	VAL	PHE	conflict	UNP Q9WXS1
A	322	ALA	-	expression tag	UNP Q9WXS1
A	323	ALA	-	expression tag	UNP Q9WXS1
A	324	ALA	-	expression tag	UNP Q9WXS1
A	325	LEU	-	expression tag	UNP Q9WXS1
A	326	GLU	-	expression tag	UNP Q9WXS1
A	327	HIS	-	expression tag	UNP Q9WXS1
A	328	HIS	-	expression tag	UNP Q9WXS1
A	329	HIS	-	expression tag	UNP Q9WXS1
A	330	HIS	-	expression tag	UNP Q9WXS1
A	331	HIS	-	expression tag	UNP Q9WXS1
A	332	HIS	-	expression tag	UNP Q9WXS1
B	141	ILE	LYS	conflict	UNP Q9WXS1
B	145	VAL	LEU	conflict	UNP Q9WXS1
B	149	ALA	GLU	conflict	UNP Q9WXS1
B	170	ALA	GLU	conflict	UNP Q9WXS1
B	173	VAL	PHE	conflict	UNP Q9WXS1
B	322	ALA	-	expression tag	UNP Q9WXS1
B	323	ALA	-	expression tag	UNP Q9WXS1

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Chain	Residue	Modelled	Actual	Comment	Reference
B	324	ALA	-	expression tag	UNP Q9WXS1
B	325	LEU	-	expression tag	UNP Q9WXS1
B	326	GLU	-	expression tag	UNP Q9WXS1
B	327	HIS	-	expression tag	UNP Q9WXS1
B	328	HIS	-	expression tag	UNP Q9WXS1
B	329	HIS	-	expression tag	UNP Q9WXS1
B	330	HIS	-	expression tag	UNP Q9WXS1
B	331	HIS	-	expression tag	UNP Q9WXS1
B	332	HIS	-	expression tag	UNP Q9WXS1
C	141	ILE	LYS	conflict	UNP Q9WXS1
C	145	VAL	LEU	conflict	UNP Q9WXS1
C	149	ALA	GLU	conflict	UNP Q9WXS1
C	170	ALA	GLU	conflict	UNP Q9WXS1
C	173	VAL	PHE	conflict	UNP Q9WXS1
C	322	ALA	-	expression tag	UNP Q9WXS1
C	323	ALA	-	expression tag	UNP Q9WXS1
C	324	ALA	-	expression tag	UNP Q9WXS1
C	325	LEU	-	expression tag	UNP Q9WXS1
C	326	GLU	-	expression tag	UNP Q9WXS1
C	327	HIS	-	expression tag	UNP Q9WXS1
C	328	HIS	-	expression tag	UNP Q9WXS1
C	329	HIS	-	expression tag	UNP Q9WXS1
C	330	HIS	-	expression tag	UNP Q9WXS1
C	331	HIS	-	expression tag	UNP Q9WXS1
C	332	HIS	-	expression tag	UNP Q9WXS1

- Molecule 2 is a protein called LacY-nanobody-TAIL.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	D	248	Total	C	N	O	S	0	0
			1920	1231	321	364	4		
2	E	248	Total	C	N	O	S	0	0
			1920	1231	321	364	4		
2	F	248	Total	C	N	O	S	0	0
			1920	1231	321	364	4		

- Molecule 3 is a protein called Lactose permease.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	G	390	Total	C	N	O	S	0	0
			3119	2129	469	506	15		

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Mol	Chain	Residues	Atoms					AltConf	Trace
3	H	390	Total	C	N	O	S	0	0
			3119	2129	469	506	15		
3	I	390	Total	C	N	O	S	0	0
			3119	2129	469	506	15		

There are 90 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	46	TRP	GLY	conflict	UNP P02920
G	117	SER	CYS	conflict	UNP P02920
G	148	ALA	CYS	conflict	UNP P02920
G	154	VAL	CYS	conflict	UNP P02920
G	176	MET	CYS	conflict	UNP P02920
G	234	SER	CYS	conflict	UNP P02920
G	262	TRP	GLY	conflict	UNP P02920
G	333	SER	CYS	conflict	UNP P02920
G	353	ALA	CYS	conflict	UNP P02920
G	355	ALA	CYS	conflict	UNP P02920
G	418	TRP	-	expression tag	UNP P02920
G	419	SER	-	expression tag	UNP P02920
G	420	HIS	-	expression tag	UNP P02920
G	421	PRO	-	expression tag	UNP P02920
G	422	GLN	-	expression tag	UNP P02920
G	423	PHE	-	expression tag	UNP P02920
G	424	GLU	-	expression tag	UNP P02920
G	425	LYS	-	expression tag	UNP P02920
G	426	GLY	-	expression tag	UNP P02920
G	427	SER	-	expression tag	UNP P02920
G	428	HIS	-	expression tag	UNP P02920
G	429	HIS	-	expression tag	UNP P02920
G	430	HIS	-	expression tag	UNP P02920
G	431	HIS	-	expression tag	UNP P02920
G	432	HIS	-	expression tag	UNP P02920
G	433	HIS	-	expression tag	UNP P02920
G	434	HIS	-	expression tag	UNP P02920
G	435	HIS	-	expression tag	UNP P02920
G	436	HIS	-	expression tag	UNP P02920
G	437	HIS	-	expression tag	UNP P02920
H	46	TRP	GLY	conflict	UNP P02920
H	117	SER	CYS	conflict	UNP P02920
H	148	ALA	CYS	conflict	UNP P02920
H	154	VAL	CYS	conflict	UNP P02920

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Chain	Residue	Modelled	Actual	Comment	Reference
H	176	MET	CYS	conflict	UNP P02920
H	234	SER	CYS	conflict	UNP P02920
H	262	TRP	GLY	conflict	UNP P02920
H	333	SER	CYS	conflict	UNP P02920
H	353	ALA	CYS	conflict	UNP P02920
H	355	ALA	CYS	conflict	UNP P02920
H	418	TRP	-	expression tag	UNP P02920
H	419	SER	-	expression tag	UNP P02920
H	420	HIS	-	expression tag	UNP P02920
H	421	PRO	-	expression tag	UNP P02920
H	422	GLN	-	expression tag	UNP P02920
H	423	PHE	-	expression tag	UNP P02920
H	424	GLU	-	expression tag	UNP P02920
H	425	LYS	-	expression tag	UNP P02920
H	426	GLY	-	expression tag	UNP P02920
H	427	SER	-	expression tag	UNP P02920
H	428	HIS	-	expression tag	UNP P02920
H	429	HIS	-	expression tag	UNP P02920
H	430	HIS	-	expression tag	UNP P02920
H	431	HIS	-	expression tag	UNP P02920
H	432	HIS	-	expression tag	UNP P02920
H	433	HIS	-	expression tag	UNP P02920
H	434	HIS	-	expression tag	UNP P02920
H	435	HIS	-	expression tag	UNP P02920
H	436	HIS	-	expression tag	UNP P02920
H	437	HIS	-	expression tag	UNP P02920
I	46	TRP	GLY	conflict	UNP P02920
I	117	SER	CYS	conflict	UNP P02920
I	148	ALA	CYS	conflict	UNP P02920
I	154	VAL	CYS	conflict	UNP P02920
I	176	MET	CYS	conflict	UNP P02920
I	234	SER	CYS	conflict	UNP P02920
I	262	TRP	GLY	conflict	UNP P02920
I	333	SER	CYS	conflict	UNP P02920
I	353	ALA	CYS	conflict	UNP P02920
I	355	ALA	CYS	conflict	UNP P02920
I	418	TRP	-	expression tag	UNP P02920
I	419	SER	-	expression tag	UNP P02920
I	420	HIS	-	expression tag	UNP P02920
I	421	PRO	-	expression tag	UNP P02920
I	422	GLN	-	expression tag	UNP P02920
I	423	PHE	-	expression tag	UNP P02920

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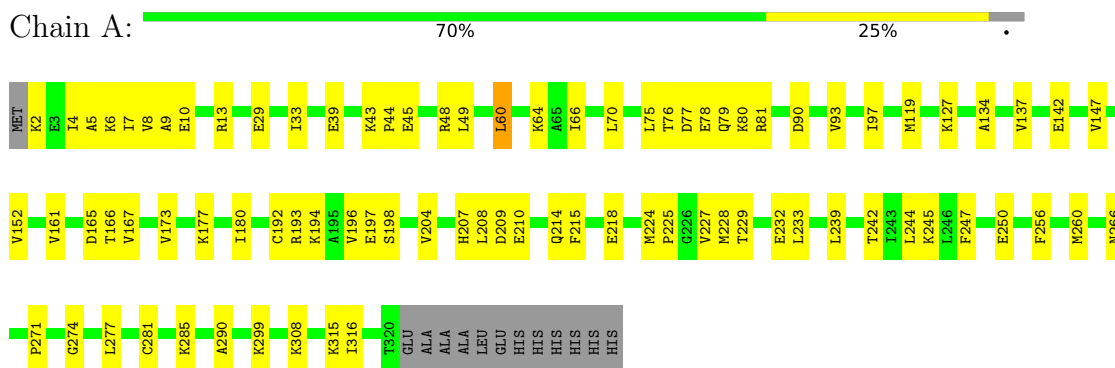
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Chain	Residue	Modelled	Actual	Comment	Reference
I	424	GLU	-	expression tag	UNP P02920
I	425	LYS	-	expression tag	UNP P02920
I	426	GLY	-	expression tag	UNP P02920
I	427	SER	-	expression tag	UNP P02920
I	428	HIS	-	expression tag	UNP P02920
I	429	HIS	-	expression tag	UNP P02920
I	430	HIS	-	expression tag	UNP P02920
I	431	HIS	-	expression tag	UNP P02920
I	432	HIS	-	expression tag	UNP P02920
I	433	HIS	-	expression tag	UNP P02920
I	434	HIS	-	expression tag	UNP P02920
I	435	HIS	-	expression tag	UNP P02920
I	436	HIS	-	expression tag	UNP P02920
I	437	HIS	-	expression tag	UNP P02920

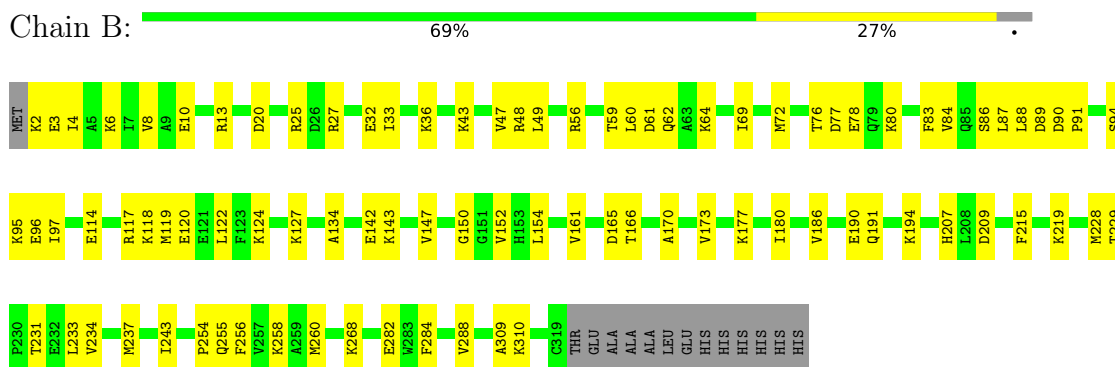
3 Residue-property plots

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.

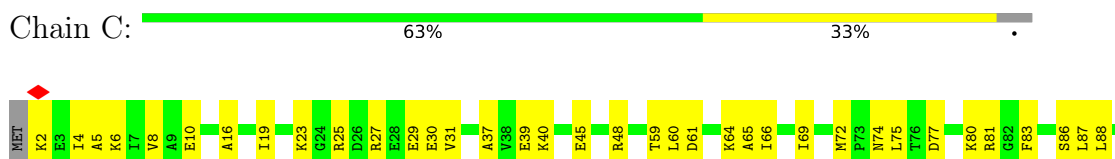
- Molecule 1: H3-PrAC-5350A,2-dehydro-3-deoxyphosphogluconate aldolase/4-hydroxy-2-oxoglutarate aldolase

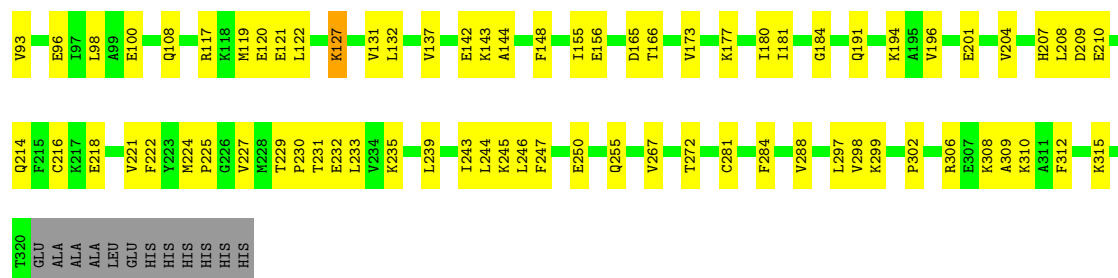


- Molecule 1: H3-PrAC-5350A,2-dehydro-3-deoxyphosphogluconate aldolase/4-hydroxy-2-oxoglutarate aldolase



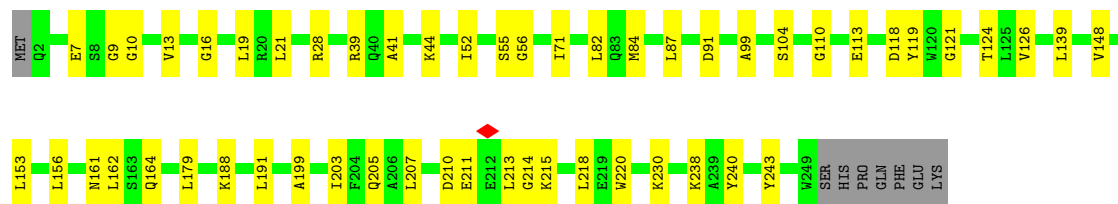
- Molecule 1: H3-PrAC-5350A,2-dehydro-3-deoxyphosphogluconate aldolase/4-hydroxy-2-oxoglutarate aldolase





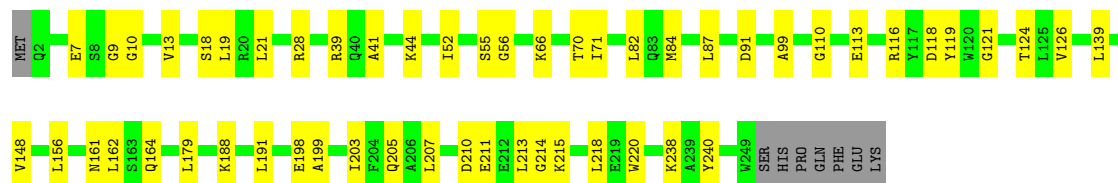
• Molecule 2: LacY-nanobody-TAIL

Chain D: 76% 21% .



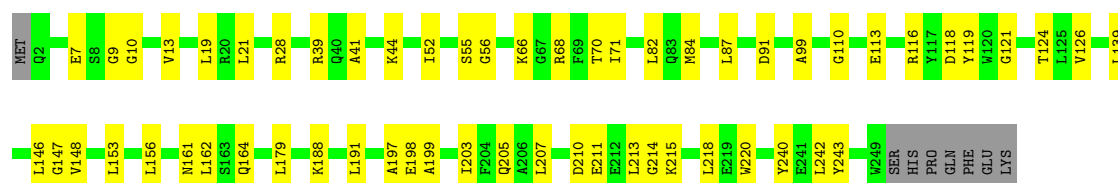
• Molecule 2: LacY-nanobody-TAIL

Chain E: 76% 21% .



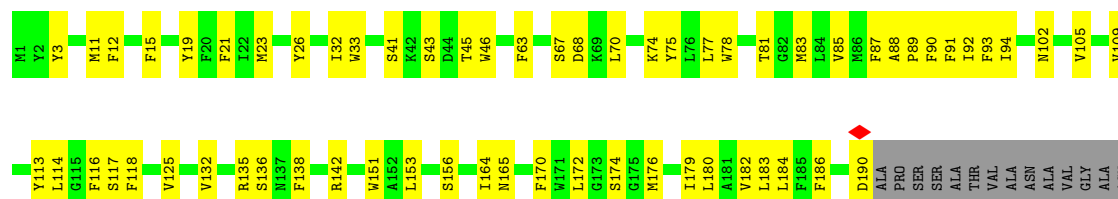
• Molecule 2: LacY-nanobody-TAIL

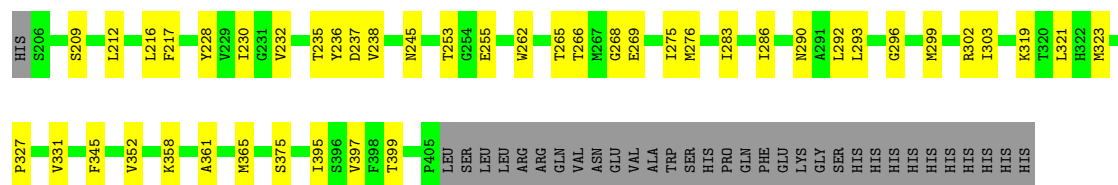
Chain F: 74% 23% .



• Molecule 3: Lactose permease

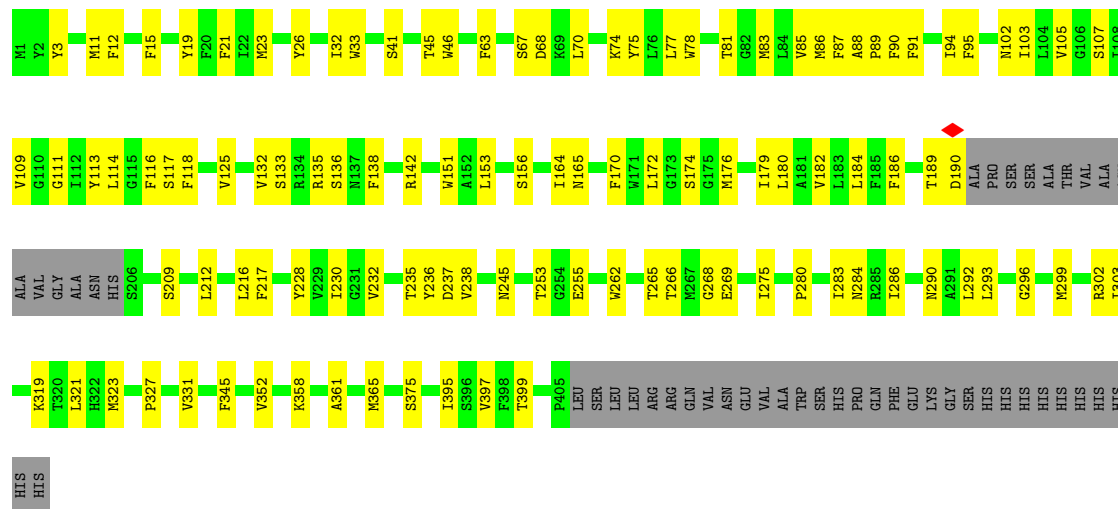
Chain G: 65% 24% 11%





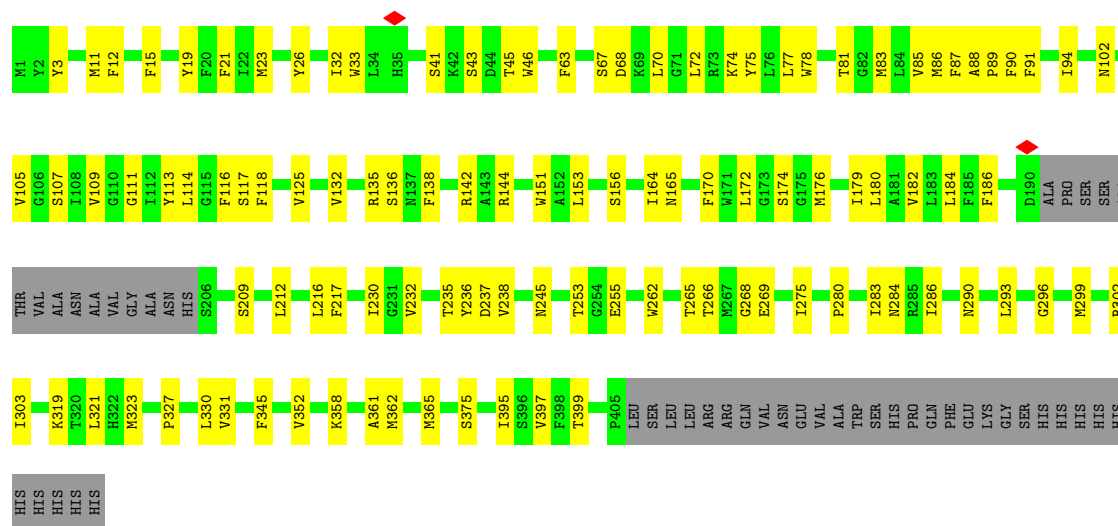
• Molecule 3: Lactose permease

Chain H: 64% 25% 11%



• Molecule 3: Lactose permease

Chain I: 64% 25% 11%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	371100	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	2.186	Depositor
Minimum map value	-0.002	Depositor
Average map value	-0.001	Depositor
Map value standard deviation	0.018	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	418.5, 418.5, 418.5	wwPDB
Map dimensions	450, 450, 450	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.93, 0.93, 0.93	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	0.19	0/2457	0.32	0/3309
1	B	0.19	0/2450	0.34	0/3299
1	C	0.23	0/2457	0.39	0/3309
2	D	0.34	0/1957	0.44	0/2646
2	E	0.34	0/1957	0.44	0/2646
2	F	0.34	0/1957	0.44	0/2646
3	G	0.24	0/3217	0.38	0/4359
3	H	0.25	0/3217	0.38	0/4359
3	I	0.24	0/3217	0.35	0/4359
All	All	0.26	0/22886	0.38	0/30932

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	2424	0	2533	57	0
1	B	2417	0	2526	84	0
1	C	2424	0	2533	98	0
2	D	1920	0	1920	35	0
2	E	1920	0	1920	46	0
2	F	1920	0	1920	49	0
3	G	3119	0	3160	73	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	H	3119	0	3160	76	0
3	I	3119	0	3160	82	0
All	All	22382	0	22832	544	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 12.

All (544) 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:D:104:SER:H	3:G:245:ASN:HD21	1.24	0.84
1:C:100:GLU:HG3	2:F:68:ARG:HG3	1.64	0.80
1:B:170:ALA:O	1:B:173:VAL:HG22	1.84	0.78
1:C:25:ARG:HH21	1:C:27:ARG:NH1	1.84	0.76
1:B:86:SER:HB2	2:E:70:THR:HG21	1.69	0.75
3:I:113:TYR:CD2	3:I:114:LEU:HD13	2.24	0.73
2:D:104:SER:H	3:G:245:ASN:ND2	1.87	0.72
1:B:96:GLU:OE2	2:E:66:LYS:HG2	1.90	0.71
1:C:86:SER:HB2	2:F:70:THR:HG21	1.72	0.71
3:H:113:TYR:CD2	3:H:114:LEU:HD13	2.26	0.71
1:B:60:LEU:HG	1:B:64:LYS:HZ2	1.56	0.71
3:I:164:ILE:HG22	3:I:165:ASN:N	2.06	0.70
1:B:60:LEU:HG	1:B:64:LYS:NZ	2.07	0.69
3:G:113:TYR:CD2	3:G:114:LEU:HD13	2.26	0.69
1:A:44:PRO:HB3	1:C:6:LYS:HB3	1.74	0.69
3:G:164:ILE:HG22	3:G:165:ASN:N	2.06	0.69
1:B:69:ILE:HD13	1:B:83:PHE:HB3	1.76	0.68
3:H:164:ILE:HG22	3:H:165:ASN:N	2.06	0.68
1:C:25:ARG:HH21	1:C:27:ARG:HH11	1.42	0.68
1:B:120:GLU:HG3	1:B:243:ILE:HD11	1.77	0.67
1:C:297:LEU:HD11	1:C:309:ALA:HA	1.75	0.67
2:D:99:ALA:HB3	2:D:119:TYR:HB2	1.77	0.67
2:F:99:ALA:HB3	2:F:119:TYR:HB2	1.77	0.67
3:I:164:ILE:HG22	3:I:165:ASN:H	1.60	0.66
2:E:99:ALA:HB3	2:E:119:TYR:HB2	1.77	0.66
3:G:164:ILE:HG22	3:G:165:ASN:H	1.60	0.66
3:H:164:ILE:HG22	3:H:165:ASN:H	1.60	0.66
3:H:164:ILE:CG2	3:H:165:ASN:H	2.09	0.66
1:A:79:GLN:NE2	2:D:16:GLY:O	2.26	0.65
1:B:78:GLU:OE2	2:E:18:SER:HB2	1.97	0.65
1:B:229:THR:HG22	1:B:231:THR:H	1.63	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:72:MET:O	1:B:80:LYS:NZ	2.28	0.64
3:I:164:ILE:CG2	3:I:165:ASN:H	2.09	0.64
1:B:173:VAL:HG11	2:E:205:GLN:HA	1.80	0.64
3:G:23:MET:HB3	3:G:151:TRP:HZ3	1.63	0.64
3:G:164:ILE:CG2	3:G:165:ASN:H	2.09	0.63
1:A:192:CYS:O	1:A:196:VAL:HG23	1.98	0.63
3:G:286:ILE:O	3:G:290:ASN:ND2	2.31	0.63
3:H:286:ILE:O	3:H:290:ASN:ND2	2.31	0.63
3:I:286:ILE:O	3:I:290:ASN:ND2	2.31	0.63
1:B:96:GLU:OE1	2:E:66:LYS:HE2	1.99	0.63
2:F:116:ARG:NH2	3:I:245:ASN:OD1	2.32	0.63
1:B:96:GLU:OE1	2:E:66:LYS:CE	2.47	0.63
1:A:299:LYS:O	1:A:308:LYS:NZ	2.32	0.63
2:E:116:ARG:NH2	3:H:245:ASN:OD1	2.32	0.63
3:H:23:MET:HB3	3:H:151:TRP:HZ3	1.63	0.63
3:G:253:THR:HG22	3:G:255:GLU:H	1.65	0.62
3:I:253:THR:HG22	3:I:255:GLU:H	1.65	0.62
3:H:253:THR:HG22	3:H:255:GLU:H	1.65	0.62
3:I:70:LEU:HD22	3:I:75:TYR:HD2	1.65	0.62
1:B:243:ILE:HG12	1:B:268:LYS:HE2	1.81	0.61
1:C:72:MET:O	1:C:80:LYS:NZ	2.32	0.61
2:F:139:LEU:HD13	2:F:179:LEU:HD13	1.82	0.61
3:I:23:MET:HB3	3:I:151:TRP:HZ3	1.63	0.61
3:H:70:LEU:HD22	3:H:75:TYR:HD2	1.65	0.61
1:A:142:GLU:OE2	2:D:238:LYS:HE3	2.01	0.61
2:D:139:LEU:HD13	2:D:179:LEU:HD13	1.82	0.61
1:B:255:GLN:HA	1:B:258:LYS:NZ	2.16	0.61
2:E:139:LEU:HD13	2:E:179:LEU:HD13	1.82	0.61
1:C:19:ILE:HG23	1:C:23:LYS:NZ	2.16	0.61
1:B:114:GLU:OE2	1:B:117:ARG:NH1	2.28	0.60
3:H:113:TYR:HD2	3:H:114:LEU:HD13	1.66	0.60
1:B:134:ALA:H	1:B:161:VAL:HG22	1.66	0.60
3:G:164:ILE:CG2	3:G:165:ASN:N	2.65	0.59
1:B:124:LYS:O	1:B:127:LYS:NZ	2.28	0.59
3:G:70:LEU:HD22	3:G:75:TYR:HD2	1.65	0.59
3:H:164:ILE:CG2	3:H:165:ASN:N	2.65	0.59
3:I:87:PHE:CD1	3:I:113:TYR:OH	2.55	0.59
2:E:199:ALA:O	2:E:203:ILE:HG13	2.03	0.59
1:A:193:ARG:HG2	1:A:215:PHE:CZ	2.38	0.58
1:C:45:GLU:OE1	1:C:81:ARG:NH2	2.35	0.58
3:I:164:ILE:CG2	3:I:165:ASN:N	2.65	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:199:ALA:O	2:D:203:ILE:HG13	2.03	0.58
3:I:135:ARG:O	3:I:135:ARG:HG2	2.02	0.58
1:C:69:ILE:HD12	1:C:83:PHE:HB3	1.84	0.58
1:C:74:ASN:O	1:C:108:GLN:NE2	2.36	0.58
3:G:156:SER:HA	3:G:262:TRP:HZ2	1.69	0.58
3:I:113:TYR:HD2	3:I:114:LEU:HD13	1.65	0.58
1:A:70:LEU:HA	1:A:80:LYS:HD3	1.86	0.57
1:B:27:ARG:HG2	1:B:27:ARG:HH11	1.69	0.57
3:I:156:SER:HA	3:I:262:TRP:HZ2	1.69	0.57
1:A:229:THR:OG1	1:A:232:GLU:HG3	2.04	0.57
1:C:25:ARG:NH2	1:C:27:ARG:NH1	2.52	0.57
2:F:199:ALA:O	2:F:203:ILE:HG13	2.03	0.57
3:H:156:SER:HA	3:H:262:TRP:HZ2	1.69	0.57
1:B:142:GLU:OE2	2:E:238:LYS:HE3	2.05	0.57
3:G:135:ARG:O	3:G:135:ARG:HG2	2.03	0.57
3:I:88:ALA:HA	3:I:170:PHE:HB3	1.87	0.56
1:C:81:ARG:NH1	1:C:81:ARG:HG3	2.20	0.56
3:G:113:TYR:HD2	3:G:114:LEU:HD13	1.66	0.56
1:B:165:ASP:OD1	1:B:166:THR:N	2.39	0.56
1:C:142:GLU:HG3	2:F:242:LEU:HD13	1.87	0.56
1:B:89:ASP:OD1	1:B:90:ASP:N	2.38	0.56
3:I:144:ARG:HG3	3:I:330:LEU:HD21	1.87	0.56
1:C:117:ARG:O	1:C:121:GLU:HG2	2.06	0.56
3:I:268:GLY:HA3	3:I:323:MET:HE3	1.87	0.56
1:B:254:PRO:HG3	1:B:282:GLU:OE2	2.06	0.55
2:D:161:ASN:ND2	2:D:164:GLN:OE1	2.40	0.55
2:E:161:ASN:ND2	2:E:164:GLN:OE1	2.40	0.55
3:G:268:GLY:HA3	3:G:323:MET:HE3	1.87	0.55
1:A:45:GLU:HG2	1:A:77:ASP:HB2	1.88	0.55
3:H:268:GLY:HA3	3:H:323:MET:HE3	1.87	0.55
1:A:165:ASP:OD1	1:A:166:THR:N	2.39	0.55
1:C:177:LYS:HE3	2:F:243:TYR:OH	2.07	0.55
3:G:77:LEU:HD11	3:G:125:VAL:HG22	1.89	0.55
2:F:161:ASN:ND2	2:F:164:GLN:OE1	2.40	0.55
3:G:275:ILE:HG23	3:G:327:PRO:HG2	1.88	0.54
1:C:165:ASP:OD1	1:C:166:THR:N	2.40	0.54
1:C:173:VAL:HG11	2:F:205:GLN:HA	1.88	0.54
3:I:275:ILE:HG23	3:I:327:PRO:HG2	1.88	0.54
2:F:214:GLY:O	2:F:218:LEU:HD23	2.08	0.54
3:H:88:ALA:HA	3:H:170:PHE:HB3	1.89	0.54
3:I:144:ARG:NE	3:I:330:LEU:HD11	2.23	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:13:ARG:NE	1:B:32:GLU:OE2	2.41	0.54
1:C:173:VAL:CG1	2:F:205:GLN:HG2	2.38	0.54
1:C:122:LEU:HD13	1:C:180:ILE:HD13	1.88	0.54
3:H:265:THR:O	3:H:269:GLU:HG2	2.07	0.54
3:G:88:ALA:HA	3:G:170:PHE:HB3	1.89	0.54
3:H:275:ILE:HG23	3:H:327:PRO:HG2	1.88	0.54
3:I:265:THR:O	3:I:269:GLU:HG2	2.07	0.54
2:D:214:GLY:O	2:D:218:LEU:HD23	2.08	0.54
2:E:214:GLY:O	2:E:218:LEU:HD23	2.08	0.54
3:I:87:PHE:HD1	3:I:113:TYR:OH	1.91	0.54
1:B:173:VAL:HG13	2:E:205:GLN:HG2	1.90	0.54
3:G:265:THR:O	3:G:269:GLU:HG2	2.07	0.54
1:C:210:GLU:OE1	1:C:210:GLU:N	2.23	0.54
3:G:238:VAL:HG21	3:G:365:MET:HG2	1.90	0.54
3:I:238:VAL:HG21	3:I:365:MET:HG2	1.90	0.54
3:H:77:LEU:HD11	3:H:125:VAL:HG22	1.89	0.53
1:C:245:LYS:HE2	1:C:247:PHE:HB2	1.88	0.53
1:B:215:PHE:O	1:B:219:LYS:HG2	2.09	0.53
3:I:15:PHE:CE2	3:I:184:LEU:HD13	2.44	0.53
3:I:77:LEU:HD11	3:I:125:VAL:HG22	1.89	0.53
1:B:122:LEU:HD13	1:B:180:ILE:HD13	1.90	0.53
2:F:188:LYS:HE2	2:F:220:TRP:CD2	2.44	0.53
1:A:242:THR:OG1	1:A:266:ASN:O	2.27	0.53
1:B:118:LYS:HE2	1:B:122:LEU:HD11	1.90	0.53
2:E:188:LYS:HE2	2:E:220:TRP:CD2	2.44	0.53
3:I:91:PHE:HD2	3:I:170:PHE:CZ	2.27	0.53
1:C:227:VAL:HG21	1:C:244:LEU:HD23	1.91	0.52
1:B:3:GLU:HA	1:B:6:LYS:NZ	2.24	0.52
3:G:15:PHE:CE2	3:G:184:LEU:HD13	2.44	0.52
3:H:15:PHE:CE2	3:H:184:LEU:HD13	2.44	0.52
1:A:10:GLU:OE1	1:B:48:ARG:NH1	2.40	0.52
3:H:87:PHE:CD1	3:H:113:TYR:OH	2.62	0.52
3:H:238:VAL:HG21	3:H:365:MET:HG2	1.90	0.52
3:G:85:VAL:O	3:G:174:SER:OG	2.26	0.52
1:C:29:GLU:OE1	1:C:29:GLU:N	2.37	0.52
3:H:262:TRP:O	3:H:266:THR:HG23	2.11	0.51
2:D:188:LYS:HE2	2:D:220:TRP:CD2	2.44	0.51
1:A:207:HIS:CD2	1:A:209:ASP:OD1	2.62	0.51
3:G:87:PHE:CD1	3:G:113:TYR:OH	2.63	0.51
3:G:262:TRP:O	3:G:266:THR:HG23	2.11	0.51
3:I:262:TRP:O	3:I:266:THR:HG23	2.11	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:229:THR:HG21	1:C:232:GLU:OE2	2.11	0.51
3:H:85:VAL:O	3:H:174:SER:OG	2.26	0.51
3:H:23:MET:HB3	3:H:151:TRP:CZ3	2.45	0.51
1:B:122:LEU:HD22	1:B:180:ILE:HD11	1.92	0.51
1:C:25:ARG:NH2	1:C:27:ARG:HH11	2.07	0.51
3:I:85:VAL:O	3:I:174:SER:OG	2.26	0.51
3:H:91:PHE:HZ	3:H:114:LEU:HD11	1.76	0.51
3:H:172:LEU:O	3:H:176:MET:HG3	2.11	0.51
1:A:277:LEU:O	1:A:315:LYS:NZ	2.44	0.51
1:B:96:GLU:OE1	2:E:66:LYS:HE3	2.11	0.50
3:G:172:LEU:O	3:G:176:MET:HG3	2.11	0.50
3:I:23:MET:HB3	3:I:151:TRP:CZ3	2.45	0.50
1:C:59:THR:HG22	1:C:60:LEU:N	2.26	0.50
1:C:96:GLU:OE1	2:F:66:LYS:HG2	2.10	0.50
1:A:137:VAL:HG13	1:A:167:VAL:HG22	1.93	0.50
1:B:49:LEU:HD13	1:B:84:VAL:HG21	1.94	0.50
2:E:7:GLU:OE1	2:E:121:GLY:HA3	2.12	0.50
2:F:162:LEU:HD23	2:F:191:LEU:HD12	1.94	0.50
3:G:232:VAL:HG13	3:G:299:MET:HG3	1.94	0.50
3:H:21:PHE:HE1	3:H:153:LEU:HB2	1.76	0.50
3:I:21:PHE:HE1	3:I:153:LEU:HB2	1.76	0.50
3:I:232:VAL:HG13	3:I:299:MET:HG3	1.94	0.50
1:A:250:GLU:HB2	1:A:274:GLY:HA3	1.94	0.50
1:C:143:LYS:HD3	1:C:298:VAL:HG13	1.93	0.50
1:C:81:ARG:HG3	1:C:81:ARG:HH11	1.77	0.50
3:G:91:PHE:HZ	3:G:114:LEU:HD11	1.76	0.50
3:G:136:SER:OG	3:G:138:PHE:CE2	2.65	0.50
3:I:235:THR:HG22	3:I:365:MET:SD	2.51	0.50
1:A:194:LYS:O	1:A:198:SER:OG	2.22	0.50
1:C:122:LEU:HD22	1:C:180:ILE:HD11	1.93	0.50
1:A:210:GLU:OE1	1:A:210:GLU:N	2.41	0.49
2:D:7:GLU:OE1	2:D:121:GLY:HA3	2.12	0.49
2:E:162:LEU:HD23	2:E:191:LEU:HD12	1.94	0.49
2:E:207:LEU:HD22	2:E:240:TYR:CD2	2.47	0.49
3:G:296:GLY:O	3:G:299:MET:HB2	2.12	0.49
1:B:284:PHE:HA	1:B:288:VAL:HG22	1.94	0.49
3:G:235:THR:HG22	3:G:365:MET:SD	2.51	0.49
3:H:232:VAL:HG13	3:H:299:MET:HG3	1.94	0.49
2:D:207:LEU:HD22	2:D:240:TYR:CD2	2.47	0.49
2:F:207:LEU:HD22	2:F:240:TYR:CD2	2.47	0.49
3:H:296:GLY:O	3:H:299:MET:HB2	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:136:SER:OG	3:H:138:PHE:CE2	2.65	0.49
1:A:281:CYS:O	1:A:285:LYS:HG3	2.12	0.49
1:B:20:ASP:OD1	1:B:25:ARG:NH1	2.45	0.49
2:D:28:ARG:NH2	3:G:375:SER:O	2.46	0.49
2:D:39:ARG:NH1	2:D:91:ASP:OD1	2.46	0.49
3:G:236:TYR:OH	3:G:302:ARG:NH1	2.44	0.49
3:H:235:THR:HG22	3:H:365:MET:SD	2.51	0.49
3:I:136:SER:OG	3:I:138:PHE:CE2	2.64	0.49
3:I:91:PHE:HZ	3:I:114:LEU:HD11	1.76	0.49
1:A:177:LYS:NZ	2:D:243:TYR:OH	2.46	0.49
2:D:162:LEU:HD23	2:D:191:LEU:HD12	1.94	0.49
3:I:172:LEU:O	3:I:176:MET:HG3	2.11	0.49
1:B:119:MET:HE1	1:B:180:ILE:HG21	1.95	0.49
2:E:21:LEU:HD12	2:E:82:LEU:HD23	1.95	0.49
2:E:28:ARG:NH2	3:H:375:SER:O	2.46	0.49
2:F:28:ARG:NH2	3:I:375:SER:O	2.46	0.49
3:I:296:GLY:O	3:I:299:MET:HB2	2.12	0.49
2:D:41:ALA:HB3	2:D:44:LYS:HG2	1.95	0.49
2:E:39:ARG:NH1	2:E:91:ASP:OD1	2.46	0.49
3:G:21:PHE:HE1	3:G:153:LEU:HB2	1.76	0.49
3:H:299:MET:O	3:H:303:ILE:HG13	2.13	0.48
1:A:49:LEU:HD21	1:A:81:ARG:HG3	1.95	0.48
1:B:10:GLU:CD	1:C:48:ARG:HG3	2.38	0.48
1:B:86:SER:HB2	2:E:70:THR:CG2	2.41	0.48
1:C:69:ILE:HG13	1:C:87:LEU:HD11	1.95	0.48
1:B:147:VAL:HG12	1:B:152:VAL:HB	1.95	0.48
1:C:48:ARG:HD2	1:C:81:ARG:NH2	2.28	0.48
2:F:7:GLU:OE1	2:F:121:GLY:HA3	2.12	0.48
2:F:207:LEU:HG	2:F:214:GLY:HA3	1.95	0.48
1:C:131:VAL:HA	1:C:156:GLU:HB3	1.96	0.48
2:D:55:SER:OG	2:D:56:GLY:N	2.46	0.48
1:A:127:LYS:HB3	1:A:127:LYS:HE2	1.59	0.48
2:E:41:ALA:HB3	2:E:44:LYS:HG2	1.95	0.48
2:F:39:ARG:NH1	2:F:91:ASP:OD1	2.46	0.48
2:F:110:GLY:H	2:F:113:GLU:HG3	1.79	0.48
2:F:21:LEU:HD12	2:F:82:LEU:HD23	1.95	0.48
3:G:23:MET:HB3	3:G:151:TRP:CZ3	2.45	0.48
1:A:29:GLU:OE2	1:A:60:LEU:HG	2.13	0.48
1:A:48:ARG:HB2	1:C:10:GLU:HG3	1.96	0.48
3:G:299:MET:O	3:G:303:ILE:HG13	2.13	0.48
3:I:236:TYR:OH	3:I:302:ARG:NH1	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:258:LYS:NZ	1:B:258:LYS:HB2	2.28	0.48
1:A:6:LYS:O	1:A:10:GLU:HG2	2.13	0.48
1:B:254:PRO:HG3	1:B:282:GLU:CD	2.39	0.48
2:F:55:SER:OG	2:F:56:GLY:N	2.46	0.48
2:D:21:LEU:HD12	2:D:82:LEU:HD23	1.95	0.47
2:F:210:ASP:HB2	2:F:213:LEU:HD12	1.96	0.47
2:F:41:ALA:HB3	2:F:44:LYS:HG2	1.95	0.47
2:F:116:ARG:NH1	3:I:245:ASN:OD1	2.47	0.47
3:G:23:MET:HG3	3:G:118:PHE:HD2	1.79	0.47
1:A:76:THR:HB	1:A:79:GLN:HG3	1.95	0.47
1:C:60:LEU:HD21	1:C:64:LYS:HD2	1.97	0.47
2:E:207:LEU:HG	2:E:214:GLY:HA3	1.96	0.47
3:H:23:MET:HG3	3:H:118:PHE:HD2	1.79	0.47
1:B:255:GLN:HA	1:B:258:LYS:HZ1	1.79	0.47
1:C:19:ILE:HG23	1:C:23:LYS:HZ1	1.77	0.47
3:H:81:THR:O	3:H:85:VAL:HG23	2.15	0.47
3:H:283:ILE:HD12	3:H:331:VAL:HG23	1.97	0.47
3:I:299:MET:O	3:I:303:ILE:HG13	2.13	0.47
1:C:233:LEU:HD11	1:C:267:VAL:HG11	1.96	0.47
1:A:76:THR:HG22	1:A:78:GLU:H	1.80	0.47
2:E:110:GLY:H	2:E:113:GLU:HG3	1.79	0.47
3:I:23:MET:HG3	3:I:118:PHE:HD2	1.79	0.47
3:I:283:ILE:HD12	3:I:331:VAL:HG23	1.97	0.47
1:C:100:GLU:HG3	2:F:68:ARG:CG	2.40	0.47
2:D:13:VAL:HG21	2:D:87:LEU:HD13	1.97	0.47
3:G:283:ILE:HD12	3:G:331:VAL:HG23	1.97	0.47
3:H:90:PHE:HA	3:H:94:ILE:HG22	1.97	0.47
1:C:93:VAL:O	1:C:93:VAL:HG13	2.14	0.47
2:D:110:GLY:H	2:D:113:GLU:HG3	1.79	0.47
2:D:207:LEU:HG	2:D:214:GLY:HA3	1.96	0.47
2:E:116:ARG:NH1	3:H:245:ASN:OD1	2.47	0.47
2:F:9:GLY:O	2:F:124:THR:HG21	2.15	0.47
3:G:395:ILE:O	3:G:399:THR:HG23	2.15	0.47
3:H:395:ILE:O	3:H:399:THR:HG23	2.15	0.47
3:I:81:THR:O	3:I:85:VAL:HG23	2.14	0.47
2:E:9:GLY:O	2:E:124:THR:HG21	2.15	0.47
2:E:55:SER:OG	2:E:56:GLY:N	2.46	0.47
1:A:194:LYS:HA	1:A:197:GLU:HG3	1.96	0.46
1:B:143:LYS:O	1:B:147:VAL:HG23	2.15	0.46
1:C:281:CYS:SG	1:C:315:LYS:HD2	2.55	0.46
2:F:13:VAL:HG21	2:F:87:LEU:HD13	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:81:THR:O	3:G:85:VAL:HG23	2.15	0.46
3:I:395:ILE:O	3:I:399:THR:HG23	2.15	0.46
1:B:150:GLY:HA3	1:B:309:ALA:HB3	1.97	0.46
1:C:191:GLN:HA	1:C:194:LYS:NZ	2.29	0.46
2:E:210:ASP:HB2	2:E:213:LEU:HD12	1.96	0.46
2:F:10:GLY:HA2	2:F:126:VAL:HG22	1.97	0.46
1:B:76:THR:HG22	1:B:78:GLU:H	1.80	0.46
1:B:207:HIS:NE2	1:B:209:ASP:OD1	2.48	0.46
2:D:210:ASP:HB2	2:D:213:LEU:HD12	1.96	0.46
2:E:10:GLY:HA2	2:E:126:VAL:HG22	1.97	0.46
1:A:147:VAL:HG13	1:A:152:VAL:HB	1.96	0.46
1:C:222:PHE:HE2	1:C:224:MET:HE3	1.80	0.46
3:I:365:MET:HE2	3:I:365:MET:HB2	1.77	0.46
1:A:7:ILE:HG21	1:B:8:VAL:HG21	1.96	0.46
1:A:134:ALA:H	1:A:161:VAL:HG22	1.80	0.46
1:A:43:LYS:HA	1:A:43:LYS:HD3	1.79	0.46
1:A:229:THR:HG22	1:B:228:MET:HE2	1.97	0.46
3:G:319:LYS:HA	3:G:319:LYS:HD2	1.71	0.46
3:H:46:TRP:CD1	3:H:46:TRP:H	2.34	0.46
3:I:68:ASP:OD2	3:I:345:PHE:HA	2.16	0.46
1:B:10:GLU:HG2	1:B:13:ARG:NH1	2.30	0.45
3:G:68:ASP:OD2	3:G:345:PHE:HA	2.16	0.45
3:G:90:PHE:HA	3:G:94:ILE:HG22	1.97	0.45
3:H:68:ASP:OD2	3:H:345:PHE:HA	2.16	0.45
2:D:10:GLY:HA2	2:D:126:VAL:HG22	1.97	0.45
2:F:84:MET:HE2	2:F:87:LEU:HD21	1.98	0.45
3:I:90:PHE:HA	3:I:94:ILE:HG22	1.97	0.45
1:C:5:ALA:HB1	1:C:39:GLU:HA	1.99	0.45
2:D:84:MET:HE2	2:D:87:LEU:HD21	1.98	0.45
2:D:156:LEU:O	2:D:156:LEU:HD23	2.17	0.45
3:I:102:ASN:HB2	3:I:105:VAL:HG22	1.99	0.45
1:B:233:LEU:O	1:B:237:MET:HG3	2.16	0.45
2:D:9:GLY:O	2:D:124:THR:HG21	2.15	0.45
2:E:84:MET:HE2	2:E:87:LEU:HD21	1.98	0.45
3:H:327:PRO:O	3:H:331:VAL:HG22	2.17	0.45
1:C:177:LYS:CE	2:F:243:TYR:OH	2.65	0.45
3:G:217:PHE:CZ	3:G:352:VAL:HG11	2.52	0.45
3:G:11:MET:HE1	3:G:186:PHE:C	2.42	0.45
1:A:214:GLN:HE22	1:A:218:GLU:CD	2.25	0.45
2:E:13:VAL:HG21	2:E:87:LEU:HD13	1.97	0.45
3:I:46:TRP:H	3:I:46:TRP:CD1	2.35	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:60:LEU:O	1:B:64:LYS:HG2	2.17	0.45
1:C:4:ILE:O	1:C:8:VAL:HG23	2.17	0.45
2:E:156:LEU:HD23	2:E:156:LEU:O	2.17	0.45
3:G:92:ILE:HG13	3:G:93:PHE:CD1	2.52	0.45
3:G:327:PRO:O	3:G:331:VAL:HG22	2.17	0.45
3:I:209:SER:OG	3:I:212:LEU:HD12	2.17	0.45
3:I:327:PRO:O	3:I:331:VAL:HG22	2.17	0.45
1:A:5:ALA:HB1	1:A:39:GLU:HA	1.99	0.45
1:C:117:ARG:NH1	1:C:121:GLU:OE2	2.50	0.45
1:C:177:LYS:NZ	2:F:243:TYR:OH	2.45	0.45
2:D:211:GLU:O	2:D:215:LYS:HG2	2.17	0.45
2:F:116:ARG:CZ	3:I:245:ASN:OD1	2.64	0.45
3:G:102:ASN:HB2	3:G:105:VAL:HG22	1.99	0.45
3:H:91:PHE:HD2	3:H:170:PHE:CZ	2.35	0.45
3:H:217:PHE:CZ	3:H:352:VAL:HG11	2.52	0.45
3:I:362:MET:HB3	3:I:362:MET:HE2	1.86	0.45
1:B:33:ILE:HD13	1:B:64:LYS:HD3	1.99	0.44
1:B:154:LEU:HD11	1:B:180:ILE:HD12	1.99	0.44
3:G:46:TRP:H	3:G:46:TRP:CD1	2.35	0.44
3:H:209:SER:OG	3:H:212:LEU:HD12	2.17	0.44
1:A:4:ILE:O	1:A:8:VAL:HG23	2.17	0.44
1:B:4:ILE:HD13	1:B:4:ILE:HA	1.75	0.44
3:H:11:MET:HE1	3:H:186:PHE:C	2.42	0.44
3:I:77:LEU:HD12	3:I:77:LEU:HA	1.87	0.44
3:I:11:MET:HE1	3:I:186:PHE:C	2.42	0.44
3:G:90:PHE:HZ	3:G:109:VAL:HG12	1.83	0.44
3:H:15:PHE:CD2	3:H:180:LEU:HD22	2.53	0.44
3:G:228:TYR:OH	3:G:292:LEU:O	2.23	0.44
3:H:90:PHE:HZ	3:H:109:VAL:HG12	1.83	0.44
3:H:102:ASN:HB2	3:H:105:VAL:HG22	1.99	0.44
3:I:72:LEU:CD1	3:I:135:ARG:HD2	2.47	0.44
1:C:37:ALA:HA	1:C:40:LYS:HE2	1.99	0.44
2:E:207:LEU:HD11	2:E:218:LEU:HD21	1.99	0.44
2:F:211:GLU:O	2:F:215:LYS:HG2	2.17	0.44
3:G:91:PHE:HD2	3:G:170:PHE:CZ	2.36	0.44
3:H:19:TYR:OH	3:H:117:SER:O	2.35	0.44
1:A:204:VAL:HG22	1:A:224:MET:HB3	2.00	0.44
1:A:227:VAL:HG21	1:A:233:LEU:HD12	2.00	0.44
1:C:60:LEU:O	1:C:64:LYS:HG3	2.18	0.44
1:C:246:LEU:HD12	1:C:246:LEU:HA	1.88	0.44
2:E:116:ARG:CZ	3:H:245:ASN:OD1	2.65	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:211:GLU:O	2:E:215:LYS:HG2	2.17	0.44
2:F:9:GLY:O	2:F:124:THR:CG2	2.66	0.44
3:G:83:MET:HE1	3:G:116:PHE:HB3	2.00	0.44
3:I:90:PHE:HZ	3:I:109:VAL:HG12	1.83	0.44
1:C:181:ILE:N	1:C:201:GLU:OE1	2.48	0.44
2:F:153:LEU:HD12	2:F:153:LEU:HA	1.81	0.44
3:I:15:PHE:CD2	3:I:180:LEU:HD22	2.53	0.44
1:C:184:GLY:HA2	1:C:204:VAL:HG13	2.00	0.44
1:C:208:LEU:HD23	1:C:225:PRO:HB3	1.99	0.44
2:E:9:GLY:O	2:E:124:THR:CG2	2.66	0.44
3:I:19:TYR:OH	3:I:117:SER:O	2.35	0.44
1:A:173:VAL:HG11	2:D:205:GLN:HA	1.99	0.43
2:D:230:LYS:HE3	2:D:230:LYS:HB3	1.87	0.43
3:G:15:PHE:CD2	3:G:180:LEU:HD22	2.53	0.43
3:I:217:PHE:CZ	3:I:352:VAL:HG11	2.52	0.43
3:H:133:SER:OG	3:H:138:PHE:O	2.27	0.43
1:C:142:GLU:CD	2:F:242:LEU:CD1	2.92	0.43
3:G:209:SER:OG	3:G:212:LEU:HD12	2.17	0.43
3:H:189:THR:O	3:H:190:ASP:C	2.62	0.43
1:B:48:ARG:HG3	1:B:48:ARG:HH11	1.83	0.43
1:B:190:GLU:O	1:B:194:LYS:HG3	2.17	0.43
1:C:86:SER:HB2	2:F:70:THR:CG2	2.44	0.43
2:F:156:LEU:O	2:F:156:LEU:HD23	2.17	0.43
3:G:19:TYR:OH	3:G:117:SER:O	2.35	0.43
3:G:230:ILE:HG12	3:G:361:ALA:HB2	2.01	0.43
1:B:43:LYS:O	1:B:47:VAL:HG23	2.19	0.43
1:B:62:GLN:NE2	1:B:91:PRO:HG3	2.33	0.43
1:C:119:MET:HE1	1:C:180:ILE:HG21	2.00	0.43
2:F:207:LEU:HD11	2:F:218:LEU:HD21	1.99	0.43
3:H:83:MET:HE1	3:H:116:PHE:HB3	2.00	0.43
3:I:83:MET:HE1	3:I:116:PHE:HB3	2.00	0.43
1:B:77:ASP:OD1	1:B:77:ASP:N	2.51	0.43
1:C:66:ILE:HD11	1:C:88:LEU:HD21	2.00	0.43
1:C:75:LEU:HD23	1:C:75:LEU:HA	1.91	0.43
3:I:107:SER:O	3:I:111:GLY:N	2.46	0.43
3:I:144:ARG:HE	3:I:330:LEU:HD11	1.81	0.43
3:I:230:ILE:HG12	3:I:361:ALA:HB2	2.01	0.43
1:C:142:GLU:CG	2:F:242:LEU:HD13	2.48	0.43
3:G:179:ILE:O	3:G:182:VAL:HG12	2.19	0.43
3:H:107:SER:O	3:H:111:GLY:N	2.46	0.43
3:H:230:ILE:HG12	3:H:361:ALA:HB2	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:127:LYS:HG3	1:A:316:ILE:HG21	1.99	0.43
1:C:306:ARG:O	1:C:310:LYS:HG3	2.19	0.43
2:F:113:GLU:H	2:F:113:GLU:HG2	1.60	0.43
3:H:280:PRO:O	3:H:284:ASN:ND2	2.31	0.43
3:I:63:PHE:O	3:I:67:SER:OG	2.28	0.43
1:A:9:ALA:HB1	1:A:13:ARG:HH21	1.84	0.43
2:D:9:GLY:O	2:D:124:THR:CG2	2.66	0.43
2:D:207:LEU:HD11	2:D:218:LEU:HD21	1.99	0.43
3:H:319:LYS:HD2	3:H:319:LYS:HA	1.71	0.43
1:A:2:LYS:HB3	1:A:2:LYS:HE2	1.85	0.43
1:A:208:LEU:HD11	1:A:239:LEU:HD11	1.99	0.43
3:I:91:PHE:HB3	3:I:170:PHE:CE2	2.54	0.43
1:B:78:GLU:OE2	2:E:18:SER:O	2.37	0.42
1:C:132:LEU:HD12	1:C:298:VAL:HG22	2.00	0.42
1:A:119:MET:HE1	1:A:180:ILE:HG21	2.01	0.42
1:C:209:ASP:OD1	1:C:209:ASP:N	2.52	0.42
1:C:229:THR:HG22	1:C:231:THR:H	1.84	0.42
2:F:148:VAL:HG21	2:F:179:LEU:HD11	2.02	0.42
3:G:12:PHE:CD2	3:G:132:VAL:HG11	2.54	0.42
3:H:32:ILE:HG13	3:H:33:TRP:N	2.34	0.42
1:B:69:ILE:HD12	1:B:87:LEU:HD11	2.01	0.42
1:B:78:GLU:CD	2:E:18:SER:HB2	2.44	0.42
3:H:3:TYR:CE2	3:H:142:ARG:HD2	2.55	0.42
1:A:228:MET:CE	1:C:230:PRO:HD2	2.50	0.42
3:H:87:PHE:HD1	3:H:113:TYR:OH	2.00	0.42
3:H:228:TYR:OH	3:H:292:LEU:O	2.23	0.42
3:I:32:ILE:HG13	3:I:33:TRP:N	2.34	0.42
3:I:319:LYS:HA	3:I:319:LYS:HD2	1.71	0.42
1:B:177:LYS:HD2	1:B:177:LYS:HA	1.73	0.42
1:B:255:GLN:HB3	1:C:250:GLU:CD	2.45	0.42
1:C:127:LYS:HZ3	1:C:127:LYS:HG2	1.71	0.42
1:C:132:LEU:HB2	1:C:156:GLU:O	2.19	0.42
1:A:245:LYS:HE2	1:A:247:PHE:HB2	2.02	0.42
2:E:52:ILE:HD12	2:E:71:ILE:HG23	2.02	0.42
3:I:179:ILE:O	3:I:182:VAL:HG12	2.19	0.42
1:A:75:LEU:HD23	1:A:75:LEU:HA	1.87	0.42
1:B:27:ARG:HG2	1:B:27:ARG:NH1	2.35	0.42
1:B:61:ASP:OD1	1:B:62:GLN:N	2.53	0.42
2:D:153:LEU:HD12	2:D:153:LEU:HA	1.81	0.42
3:H:12:PHE:CD2	3:H:132:VAL:HG11	2.54	0.42
3:I:3:TYR:CE2	3:I:142:ARG:HD2	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:I:280:PRO:O	3:I:284:ASN:ND2	2.31	0.42
1:B:83:PHE:O	1:B:86:SER:OG	2.27	0.42
2:F:52:ILE:HD12	2:F:71:ILE:HG23	2.02	0.42
3:H:236:TYR:OH	3:H:302:ARG:NH1	2.44	0.42
1:C:142:GLU:HG3	2:F:242:LEU:CD1	2.50	0.42
1:C:245:LYS:HE3	1:C:272:THR:HB	2.01	0.42
3:H:293:LEU:HD21	3:H:397:VAL:HG22	2.02	0.42
3:I:43:SER:O	3:I:46:TRP:NE1	2.52	0.42
1:A:225:PRO:HD2	1:A:244:LEU:HD23	2.02	0.42
1:B:2:LYS:HE2	1:B:2:LYS:HB3	1.83	0.42
1:C:196:VAL:HG22	1:C:221:VAL:HG21	2.01	0.42
1:C:216:CYS:HB3	1:C:221:VAL:O	2.19	0.42
1:C:235:LYS:O	1:C:239:LEU:HD12	2.20	0.42
2:E:198:GLU:H	2:E:198:GLU:HG3	1.65	0.42
3:G:43:SER:O	3:G:46:TRP:NE1	2.52	0.42
3:H:365:MET:HB2	3:H:365:MET:HE2	1.77	0.42
3:I:12:PHE:CD2	3:I:132:VAL:HG11	2.54	0.42
1:C:65:ALA:HB1	1:C:98:LEU:HD11	2.02	0.41
1:C:229:THR:HB	1:C:232:GLU:HG3	2.01	0.41
3:H:15:PHE:CE2	3:H:180:LEU:HD22	2.55	0.41
3:H:102:ASN:O	3:H:105:VAL:HG22	2.20	0.41
1:B:56:ARG:HD2	1:B:88:LEU:HD22	2.02	0.41
1:B:94:SER:HA	1:B:97:ILE:HD12	2.03	0.41
3:G:3:TYR:CE2	3:G:142:ARG:HD2	2.55	0.41
3:H:41:SER:O	3:H:45:THR:HG23	2.21	0.41
1:C:121:GLU:HG2	1:C:121:GLU:H	1.73	0.41
2:D:52:ILE:HD12	2:D:71:ILE:HG23	2.02	0.41
1:B:186:VAL:HG13	1:B:191:GLN:HB2	2.02	0.41
1:C:142:GLU:HG2	1:C:302:PRO:HG3	2.03	0.41
1:C:214:GLN:O	1:C:218:GLU:HG3	2.20	0.41
3:G:63:PHE:O	3:G:67:SER:OG	2.28	0.41
3:G:102:ASN:O	3:G:105:VAL:HG22	2.20	0.41
3:H:179:ILE:O	3:H:182:VAL:HG12	2.19	0.41
3:I:88:ALA:HB3	3:I:89:PRO:HD3	2.02	0.41
1:A:60:LEU:HD22	1:A:64:LYS:HE2	2.02	0.41
1:B:60:LEU:CG	1:B:64:LYS:NZ	2.79	0.41
1:C:16:ALA:HB1	1:C:31:VAL:HG21	2.03	0.41
1:C:297:LEU:HD13	1:C:312:PHE:CD2	2.55	0.41
2:D:148:VAL:HG21	2:D:179:LEU:HD11	2.02	0.41
2:F:198:GLU:H	2:F:198:GLU:HG3	1.65	0.41
3:I:41:SER:O	3:I:45:THR:HG23	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:I:72:LEU:HD23	3:I:72:LEU:HA	1.87	0.41
3:I:293:LEU:HD21	3:I:397:VAL:HG22	2.02	0.41
1:A:33:ILE:HD13	1:A:64:LYS:HG2	2.02	0.41
1:B:59:THR:OG1	1:B:61:ASP:OD1	2.38	0.41
1:B:142:GLU:OE2	2:E:238:LYS:CE	2.67	0.41
1:B:254:PRO:HG3	1:B:282:GLU:OE1	2.21	0.41
1:C:6:LYS:HG2	1:C:39:GLU:OE2	2.21	0.41
2:E:148:VAL:HG21	2:E:179:LEU:HD11	2.01	0.41
3:I:102:ASN:O	3:I:105:VAL:HG22	2.20	0.41
3:I:136:SER:HG	3:I:138:PHE:HE2	1.59	0.41
3:G:11:MET:O	3:G:183:LEU:HD21	2.21	0.41
3:G:15:PHE:CE2	3:G:180:LEU:HD22	2.55	0.41
3:G:32:ILE:HG13	3:G:33:TRP:N	2.34	0.41
3:G:276:MET:HG3	3:G:327:PRO:HG3	2.02	0.41
3:H:77:LEU:HD12	3:H:77:LEU:HA	1.87	0.41
1:A:90:ASP:OD2	1:A:93:VAL:HG22	2.20	0.41
1:C:120:GLU:OE1	1:C:243:ILE:HD11	2.20	0.41
1:C:232:GLU:HG3	1:C:232:GLU:H	1.57	0.41
1:C:299:LYS:O	1:C:308:LYS:NZ	2.49	0.41
3:G:365:MET:HE2	3:G:365:MET:HB2	1.77	0.41
3:H:86:MET:HE3	3:H:89:PRO:HB2	2.03	0.41
1:A:93:VAL:O	1:A:97:ILE:HG13	2.20	0.41
1:A:228:MET:HE3	1:C:229:THR:HG23	2.03	0.41
1:C:137:VAL:HG21	2:F:197:ALA:HB1	2.02	0.41
1:C:143:LYS:CD	1:C:298:VAL:HG13	2.51	0.41
3:G:41:SER:O	3:G:45:THR:HG23	2.21	0.41
3:H:237:ASP:OD2	3:H:358:LYS:HE2	2.21	0.41
3:I:15:PHE:CE2	3:I:180:LEU:HD22	2.55	0.41
1:A:256:PHE:CE1	1:A:260:MET:HE3	2.55	0.41
1:B:60:LEU:CG	1:B:64:LYS:HZ2	2.30	0.41
1:C:2:LYS:HE2	1:C:2:LYS:HB3	1.83	0.41
1:C:132:LEU:HD21	1:C:144:ALA:HB2	2.03	0.41
3:H:63:PHE:O	3:H:67:SER:OG	2.28	0.41
1:B:95:LYS:HE2	1:B:95:LYS:HB3	1.98	0.40
1:B:310:LYS:HB3	1:B:310:LYS:HE2	1.88	0.40
1:C:27:ARG:HB3	1:C:30:GLU:OE1	2.21	0.40
1:C:143:LYS:HD3	1:C:298:VAL:O	2.21	0.40
2:F:146:LEU:HB3	2:F:147:GLY:H	1.79	0.40
3:G:88:ALA:HB3	3:G:89:PRO:HD3	2.02	0.40
3:I:86:MET:HE3	3:I:89:PRO:HB2	2.03	0.40
1:B:173:VAL:CG1	2:E:205:GLN:HG2	2.50	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:148:PHE:HB2	1:C:155:ILE:HD11	2.03	0.40
1:C:284:PHE:HA	1:C:288:VAL:HG22	2.03	0.40
3:G:74:LYS:O	3:G:78:TRP:HD1	2.04	0.40
3:G:293:LEU:HD21	3:G:397:VAL:HG22	2.02	0.40
3:I:237:ASP:OD2	3:I:358:LYS:HE2	2.21	0.40
1:B:89:ASP:OD1	1:B:89:ASP:C	2.63	0.40
1:B:256:PHE:O	1:B:260:MET:HG2	2.20	0.40
1:C:60:LEU:C	1:C:60:LEU:HD23	2.47	0.40
1:A:250:GLU:OE2	1:C:255:GLN:HB3	2.22	0.40
1:C:45:GLU:HG2	1:C:77:ASP:HB2	2.03	0.40
2:E:113:GLU:H	2:E:113:GLU:HG2	1.61	0.40
3:G:91:PHE:CZ	3:G:114:LEU:HD11	2.56	0.40
3:H:88:ALA:HB3	3:H:89:PRO:HD3	2.02	0.40
3:H:91:PHE:HA	3:H:95:PHE:HB2	2.04	0.40
3:I:74:LYS:O	3:I:78:TRP:HD1	2.04	0.40
1:A:66:ILE:O	1:A:70:LEU:HG	2.21	0.40
1:A:271:PRO:HD2	1:A:290:ALA:O	2.21	0.40
1:B:32:GLU:HG3	1:B:36:LYS:CE	2.51	0.40
1:B:234:VAL:HG11	1:C:207:HIS:CD2	2.57	0.40
3:G:237:ASP:OD2	3:G:358:LYS:HE2	2.21	0.40
3:H:74:LYS:O	3:H:78:TRP:HD1	2.04	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	317/332 (96%)	308 (97%)	9 (3%)	0	100	100
1	B	316/332 (95%)	307 (97%)	9 (3%)	0	100	100
1	C	317/332 (96%)	310 (98%)	7 (2%)	0	100	100
2	D	246/256 (96%)	237 (96%)	9 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	E	246/256 (96%)	237 (96%)	9 (4%)	0	100	100
2	F	246/256 (96%)	237 (96%)	9 (4%)	0	100	100
3	G	386/437 (88%)	378 (98%)	8 (2%)	0	100	100
3	H	386/437 (88%)	378 (98%)	8 (2%)	0	100	100
3	I	386/437 (88%)	378 (98%)	8 (2%)	0	100	100
All	All	2846/3075 (93%)	2770 (97%)	76 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	258/268 (96%)	257 (100%)	1 (0%)	84	93
1	B	257/268 (96%)	257 (100%)	0	100	100
1	C	258/268 (96%)	256 (99%)	2 (1%)	73	88
2	D	190/198 (96%)	188 (99%)	2 (1%)	65	84
2	E	190/198 (96%)	188 (99%)	2 (1%)	65	84
2	F	190/198 (96%)	188 (99%)	2 (1%)	65	84
3	G	325/364 (89%)	321 (99%)	4 (1%)	63	83
3	H	325/364 (89%)	320 (98%)	5 (2%)	57	80
3	I	325/364 (89%)	322 (99%)	3 (1%)	70	87
All	All	2318/2490 (93%)	2297 (99%)	21 (1%)	68	87

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	60	LEU
1	C	61	ASP
1	C	127	LYS
2	D	19	LEU

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Mol	Chain	Res	Type
2	D	118	ASP
2	E	19	LEU
2	E	118	ASP
2	F	19	LEU
2	F	118	ASP
3	G	26	TYR
3	G	190	ASP
3	G	216	LEU
3	G	321	LEU
3	H	26	TYR
3	H	103	ILE
3	H	135	ARG
3	H	216	LEU
3	H	321	LEU
3	I	26	TYR
3	I	216	LEU
3	I	321	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	74	ASN
1	A	108	GLN
1	B	62	GLN
1	B	74	ASN
1	C	62	GLN
2	D	83	GLN
2	D	85	ASN
2	D	144	GLN
2	D	205	GLN
2	E	83	GLN
2	E	85	ASN
2	E	144	GLN
2	F	83	GLN
2	F	85	ASN
2	F	144	GLN
3	G	38	ASN
3	G	242	GLN
3	G	245	ASN
3	H	38	ASN
3	H	137	ASN
3	H	242	GLN

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Mol	Chain	Res	Type
3	I	38	ASN
3	I	242	GLN

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 oligosaccharides 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.

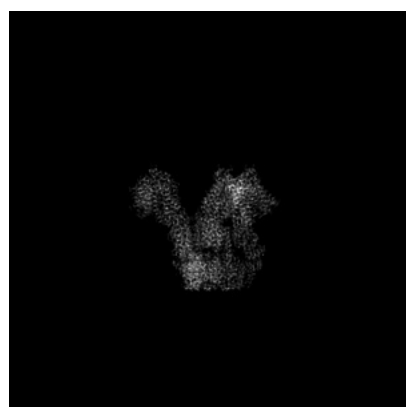
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-67094. These allow visual inspection of the internal detail of the map and identification of artifacts.

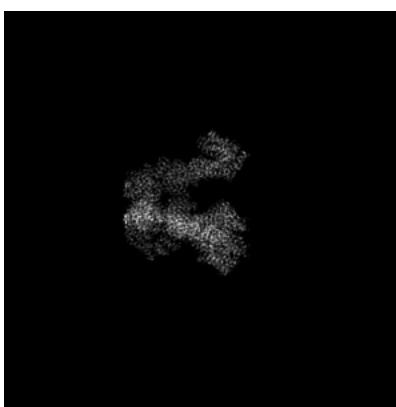
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

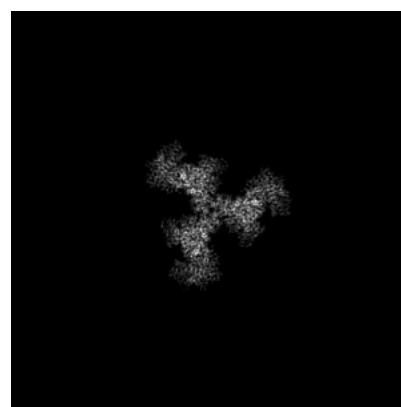
6.1.1 Primary map



X



Y

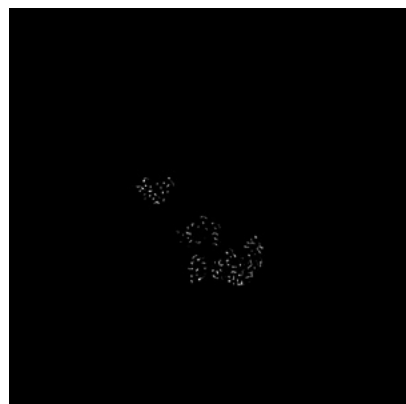


Z

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

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 225



Y Index: 225



Z Index: 225

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

6.3 Largest variance slices [i](#)

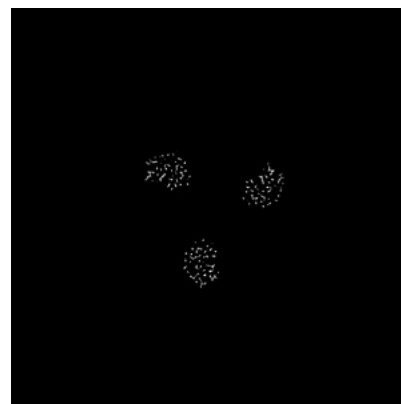
6.3.1 Primary map



X Index: 218



Y Index: 234

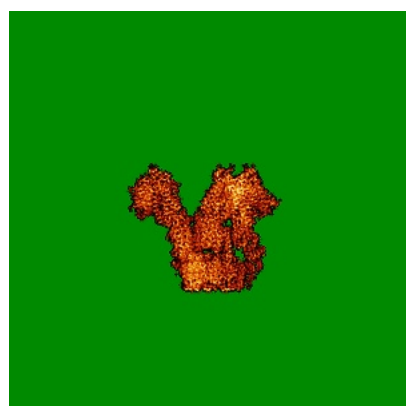


Z Index: 249

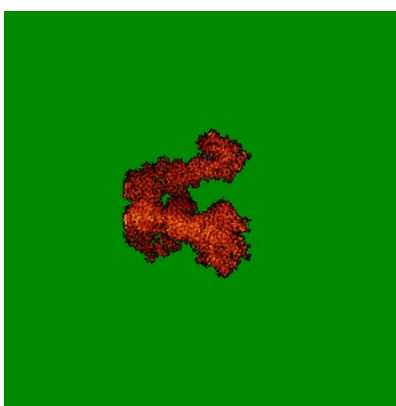
The images above show the largest variance slices of the map in three orthogonal directions.

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

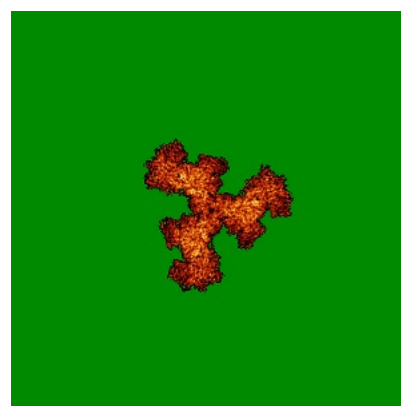
6.4.1 Primary map



X



Y

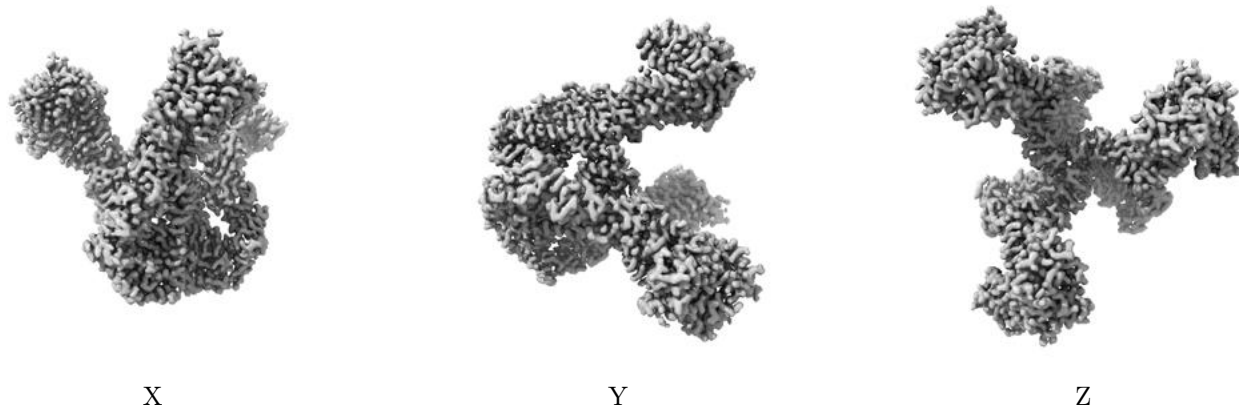


Z

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 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

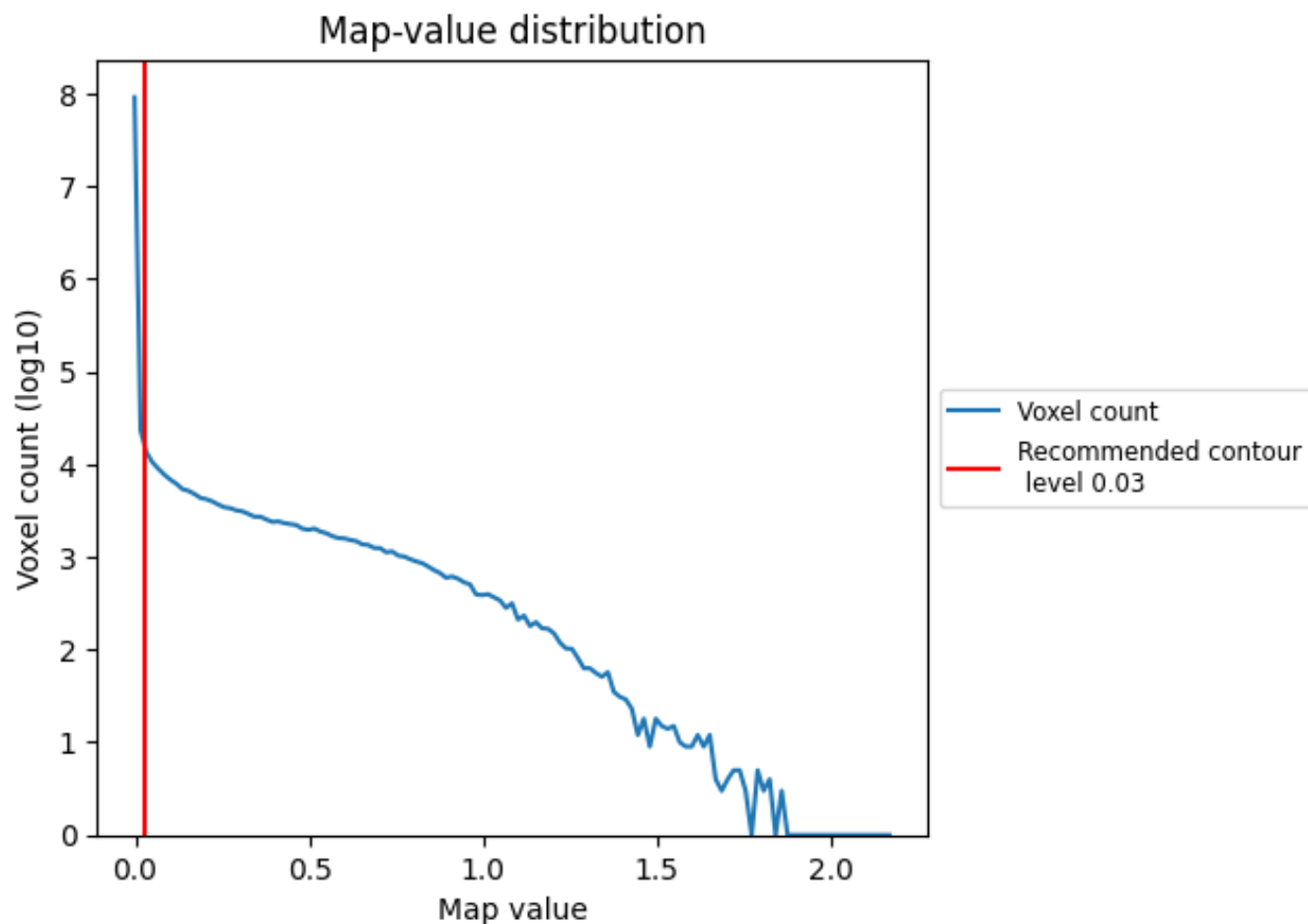
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

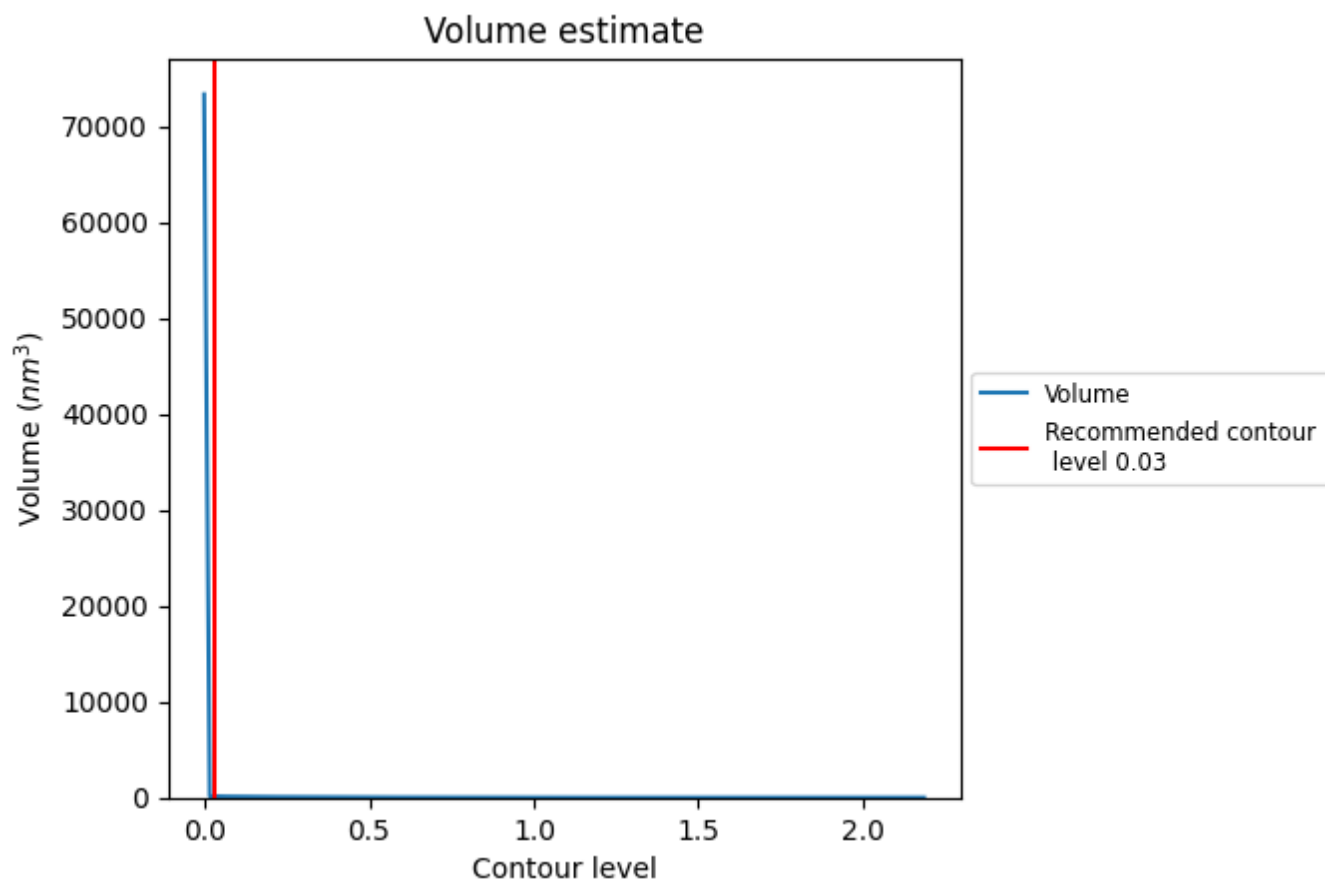
This section contains the results of statistical analysis of the map.

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.

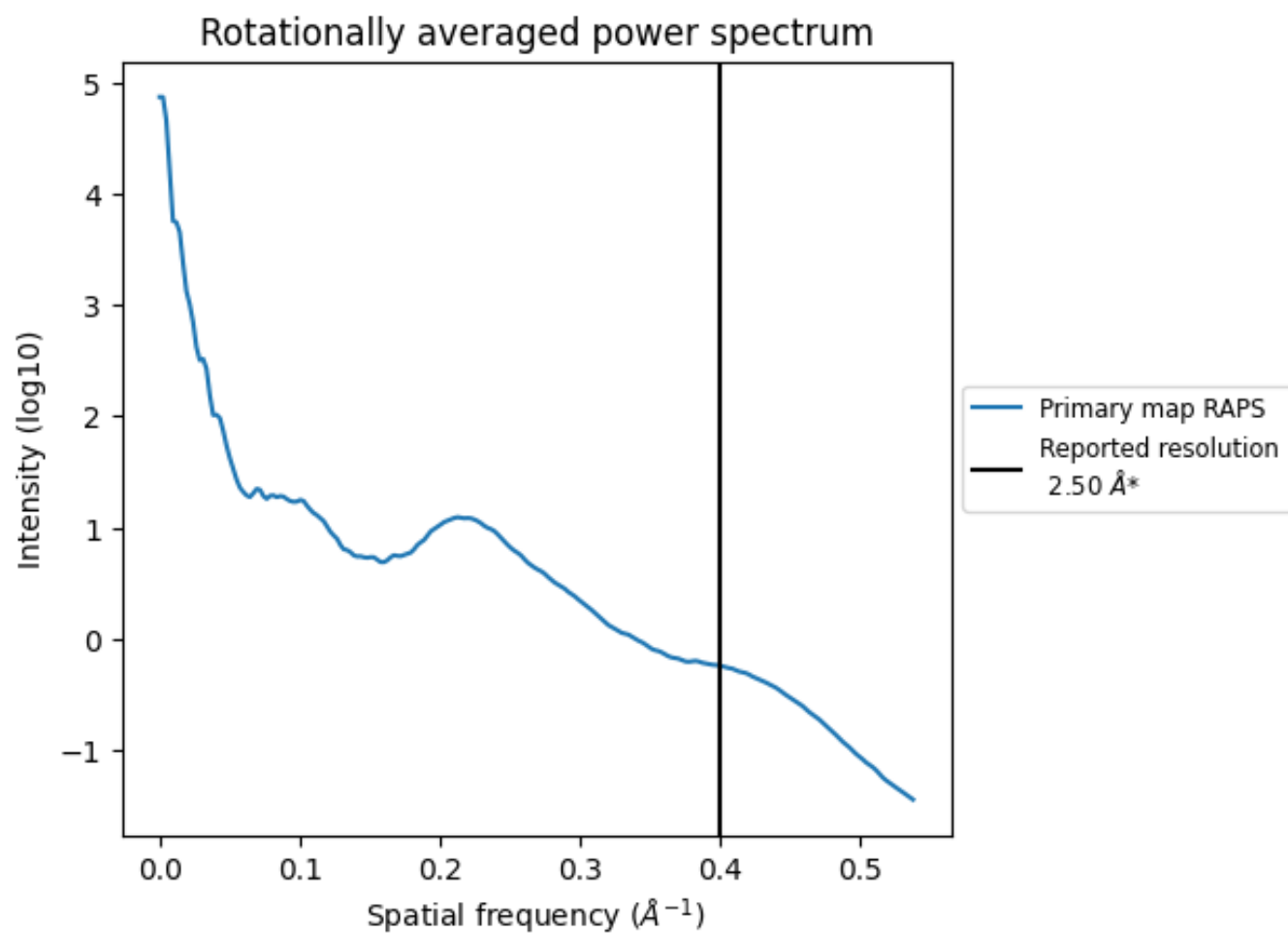
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 131 nm³; this corresponds to an approximate mass of 119 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ



*Reported resolution corresponds to spatial frequency of 0.400 Å⁻¹

8 Fourier-Shell correlation

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

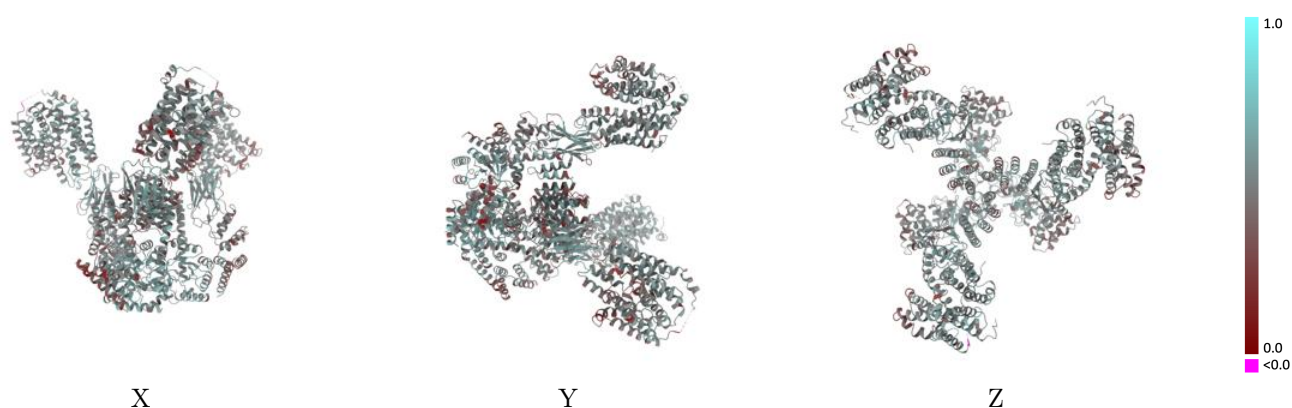
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-67094 and PDB model 9XOU. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay [i](#)

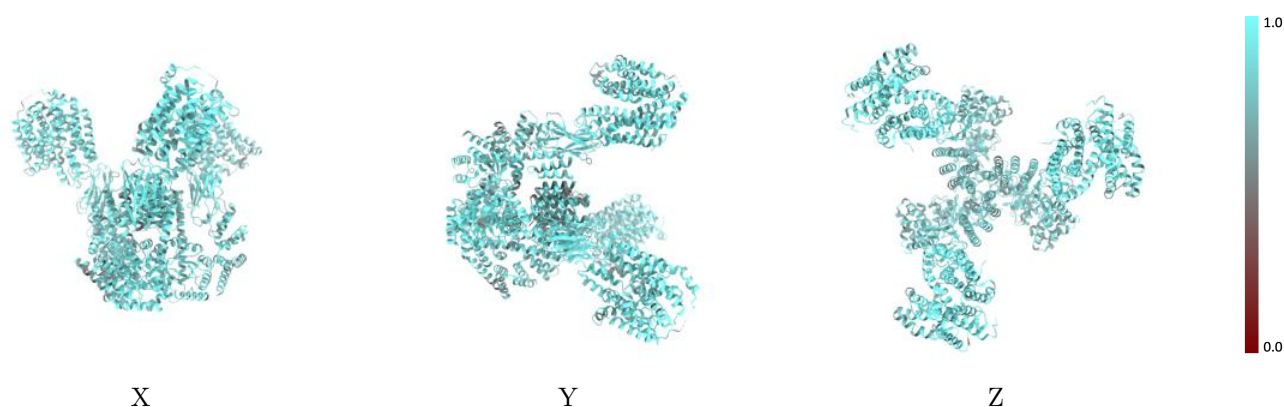
This section was not generated.

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



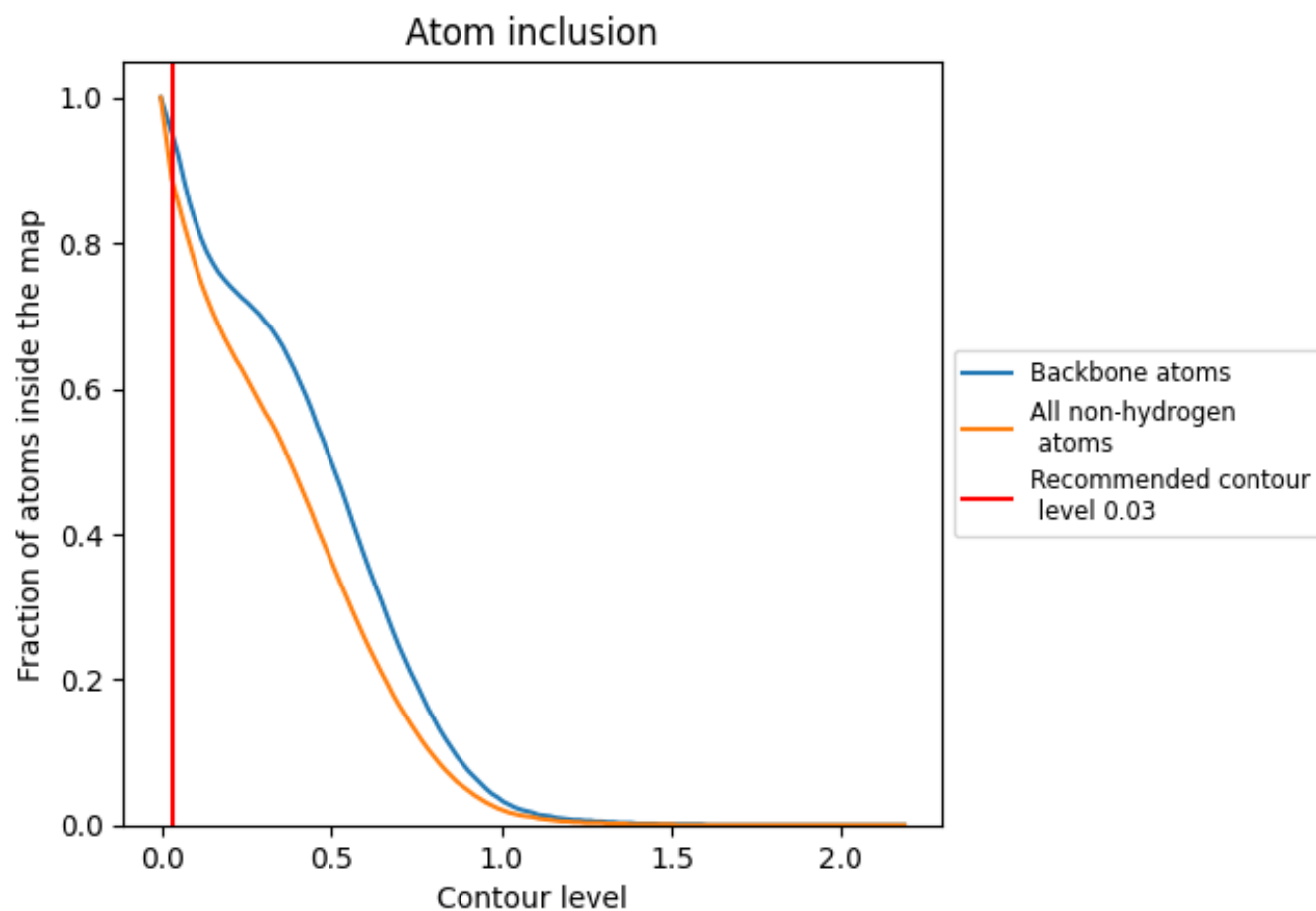
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).

9.4 Atom inclusion [i](#)



At the recommended contour level, 95% of all backbone atoms, 89% 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 (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8890	0.4990
A	0.8840	0.5240
B	0.8900	0.5310
C	0.8870	0.5210
D	0.8790	0.4990
E	0.8720	0.4750
F	0.8760	0.4800
G	0.9060	0.5030
H	0.8940	0.4780
I	0.8960	0.4810

1.0

0.0

<0.0