



Full wwPDB EM Validation Report ⓘ

Jul 14, 2024 – 05:29 am BST

PDB ID : 8C5I
EMDB ID : EMD-16437
Title : Cyanide dihydratase from *Bacillus pumilus* C1 variant - Q86R,H305K,H308K,H323K
Authors : Mulelu, A.E.; Reitz, J.; van Rooyen, J.; Scheffer, M.; Frangakis, A.S.; Dlamini, L.S.; Woodward, J.D.; Benedik, M.J.; Sewell, B.T.
Deposited on : 2023-01-09
Resolution : 3.15 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.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

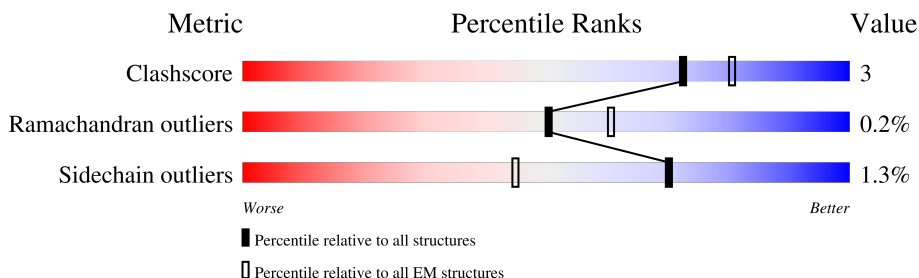
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.15 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	330	
1	B	330	
1	C	330	
1	E	330	
1	F	330	
1	G	330	
1	H	330	
1	I	330	

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Mol	Chain	Length	Quality of chain
1	J	330	<p>8% 89% 7% .</p>
1	K	330	<p>6% 85% 10% . .</p>
1	L	330	<p>6% 89% 7% . .</p>
1	M	330	<p>9% 88% 8% .</p>
1	N	330	<p>6% 87% 9% . .</p>
1	O	330	<p>5% 88% 8% .</p>
1	P	330	<p>8% 86% 10% .</p>
1	Q	330	<p>8% 90% 6% .</p>
1	R	330	<p>8% 88% 8% .</p>
1	S	330	<p>6% 87% 9% .</p>

2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 89156 atoms, of which 43742 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 Cyanide dihydratase.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
1	A	317	4953	1615	2430	410	481	17	0	0
1	B	317	4953	1615	2430	410	481	17	0	0
1	C	317	4953	1615	2430	410	481	17	0	0
1	E	317	4954	1615	2431	410	481	17	0	0
1	F	317	4954	1615	2431	410	481	17	0	0
1	G	317	4952	1615	2429	410	481	17	0	0
1	H	317	4954	1615	2431	410	481	17	0	0
1	I	317	4951	1615	2428	410	481	17	0	0
1	J	317	4953	1615	2430	410	481	17	0	0
1	K	317	4953	1615	2430	410	481	17	0	0
1	L	317	4954	1615	2431	410	481	17	0	0
1	M	317	4953	1615	2430	410	481	17	0	0
1	N	317	4955	1615	2432	410	481	17	0	0
1	O	317	4953	1615	2430	410	481	17	0	0
1	P	317	4952	1615	2429	410	481	17	0	0
1	Q	317	4954	1615	2431	410	481	17	0	0
1	R	317	4952	1615	2429	410	481	17	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
1	S	317	4953	1615	2430	410	481	17	0	0

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	86	ARG	GLN	engineered mutation	UNP Q8GGL4
A	305	LYS	HIS	engineered mutation	UNP Q8GGL4
A	308	LYS	HIS	engineered mutation	UNP Q8GGL4
A	323	LYS	HIS	engineered mutation	UNP Q8GGL4
B	86	ARG	GLN	engineered mutation	UNP Q8GGL4
B	305	LYS	HIS	engineered mutation	UNP Q8GGL4
B	308	LYS	HIS	engineered mutation	UNP Q8GGL4
B	323	LYS	HIS	engineered mutation	UNP Q8GGL4
C	86	ARG	GLN	engineered mutation	UNP Q8GGL4
C	305	LYS	HIS	engineered mutation	UNP Q8GGL4
C	308	LYS	HIS	engineered mutation	UNP Q8GGL4
C	323	LYS	HIS	engineered mutation	UNP Q8GGL4
E	86	ARG	GLN	engineered mutation	UNP Q8GGL4
E	305	LYS	HIS	engineered mutation	UNP Q8GGL4
E	308	LYS	HIS	engineered mutation	UNP Q8GGL4
E	323	LYS	HIS	engineered mutation	UNP Q8GGL4
F	86	ARG	GLN	engineered mutation	UNP Q8GGL4
F	305	LYS	HIS	engineered mutation	UNP Q8GGL4
F	308	LYS	HIS	engineered mutation	UNP Q8GGL4
F	323	LYS	HIS	engineered mutation	UNP Q8GGL4
G	86	ARG	GLN	engineered mutation	UNP Q8GGL4
G	305	LYS	HIS	engineered mutation	UNP Q8GGL4
G	308	LYS	HIS	engineered mutation	UNP Q8GGL4
G	323	LYS	HIS	engineered mutation	UNP Q8GGL4
H	86	ARG	GLN	engineered mutation	UNP Q8GGL4
H	305	LYS	HIS	engineered mutation	UNP Q8GGL4
H	308	LYS	HIS	engineered mutation	UNP Q8GGL4
H	323	LYS	HIS	engineered mutation	UNP Q8GGL4
I	86	ARG	GLN	engineered mutation	UNP Q8GGL4
I	305	LYS	HIS	engineered mutation	UNP Q8GGL4
I	308	LYS	HIS	engineered mutation	UNP Q8GGL4
I	323	LYS	HIS	engineered mutation	UNP Q8GGL4
J	86	ARG	GLN	engineered mutation	UNP Q8GGL4
J	305	LYS	HIS	engineered mutation	UNP Q8GGL4
J	308	LYS	HIS	engineered mutation	UNP Q8GGL4
J	323	LYS	HIS	engineered mutation	UNP Q8GGL4

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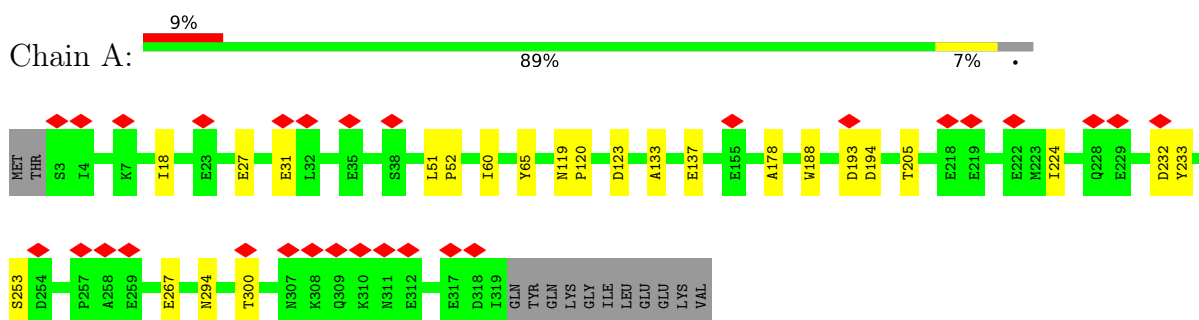
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Chain	Residue	Modelled	Actual	Comment	Reference
K	86	ARG	GLN	engineered mutation	UNP Q8GGL4
K	305	LYS	HIS	engineered mutation	UNP Q8GGL4
K	308	LYS	HIS	engineered mutation	UNP Q8GGL4
K	323	LYS	HIS	engineered mutation	UNP Q8GGL4
L	86	ARG	GLN	engineered mutation	UNP Q8GGL4
L	305	LYS	HIS	engineered mutation	UNP Q8GGL4
L	308	LYS	HIS	engineered mutation	UNP Q8GGL4
L	323	LYS	HIS	engineered mutation	UNP Q8GGL4
M	86	ARG	GLN	engineered mutation	UNP Q8GGL4
M	305	LYS	HIS	engineered mutation	UNP Q8GGL4
M	308	LYS	HIS	engineered mutation	UNP Q8GGL4
M	323	LYS	HIS	engineered mutation	UNP Q8GGL4
N	86	ARG	GLN	engineered mutation	UNP Q8GGL4
N	305	LYS	HIS	engineered mutation	UNP Q8GGL4
N	308	LYS	HIS	engineered mutation	UNP Q8GGL4
N	323	LYS	HIS	engineered mutation	UNP Q8GGL4
O	86	ARG	GLN	engineered mutation	UNP Q8GGL4
O	305	LYS	HIS	engineered mutation	UNP Q8GGL4
O	308	LYS	HIS	engineered mutation	UNP Q8GGL4
O	323	LYS	HIS	engineered mutation	UNP Q8GGL4
P	86	ARG	GLN	engineered mutation	UNP Q8GGL4
P	305	LYS	HIS	engineered mutation	UNP Q8GGL4
P	308	LYS	HIS	engineered mutation	UNP Q8GGL4
P	323	LYS	HIS	engineered mutation	UNP Q8GGL4
Q	86	ARG	GLN	engineered mutation	UNP Q8GGL4
Q	305	LYS	HIS	engineered mutation	UNP Q8GGL4
Q	308	LYS	HIS	engineered mutation	UNP Q8GGL4
Q	323	LYS	HIS	engineered mutation	UNP Q8GGL4
R	86	ARG	GLN	engineered mutation	UNP Q8GGL4
R	305	LYS	HIS	engineered mutation	UNP Q8GGL4
R	308	LYS	HIS	engineered mutation	UNP Q8GGL4
R	323	LYS	HIS	engineered mutation	UNP Q8GGL4
S	86	ARG	GLN	engineered mutation	UNP Q8GGL4
S	305	LYS	HIS	engineered mutation	UNP Q8GGL4
S	308	LYS	HIS	engineered mutation	UNP Q8GGL4
S	323	LYS	HIS	engineered mutation	UNP Q8GGL4

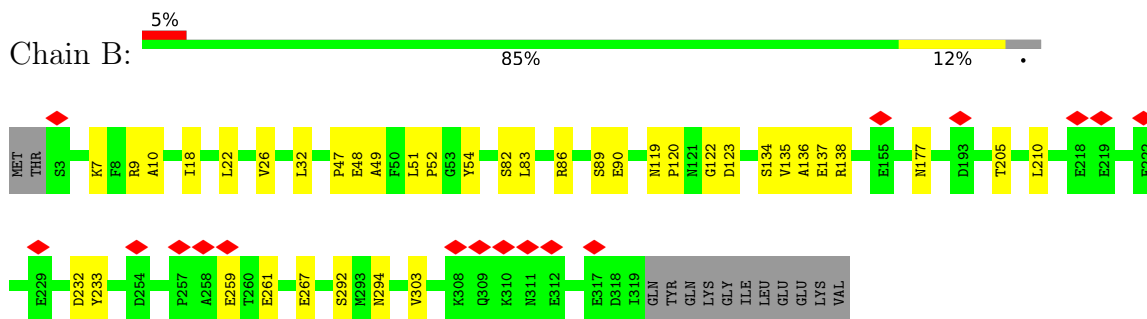
3 Residue-property plots [i](#)

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.

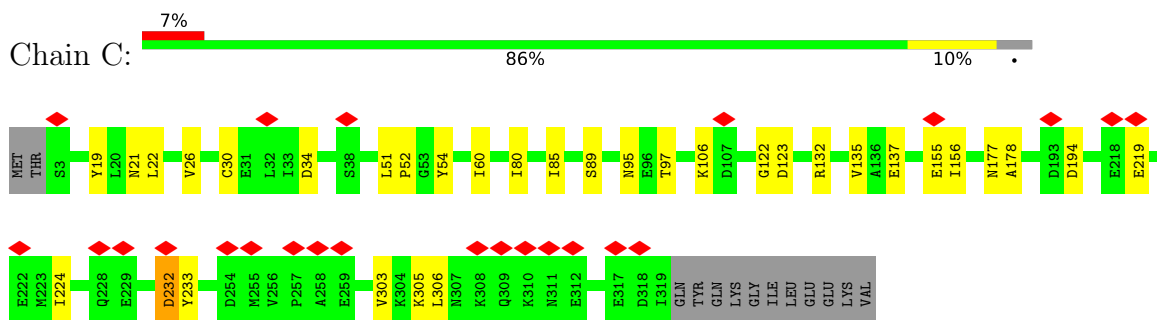
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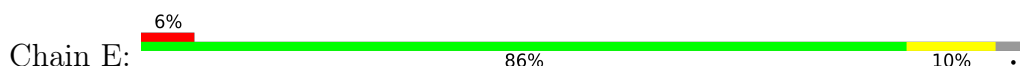
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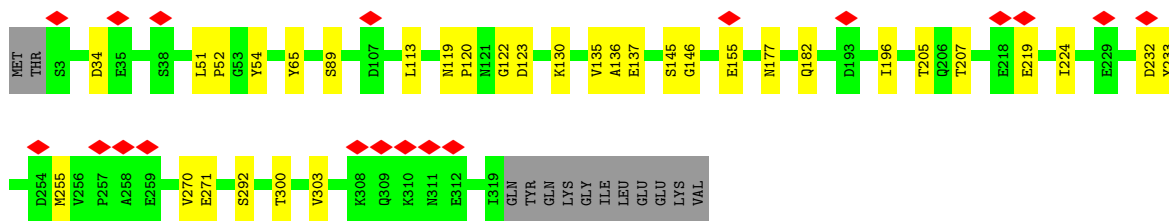


- Molecule 1: Cyanide dihydratase

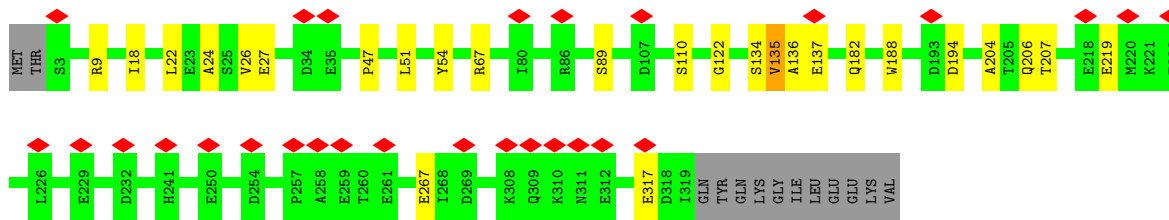
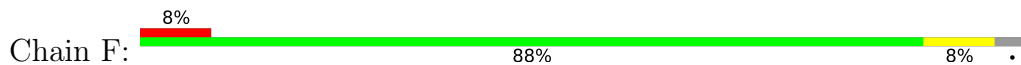


- Molecule 1: Cyanide dihydratase

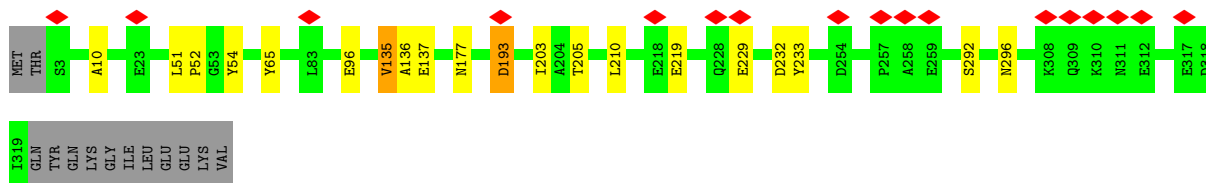
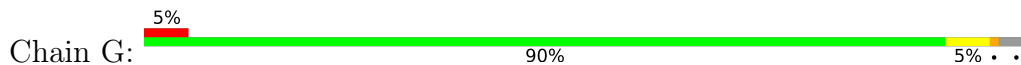




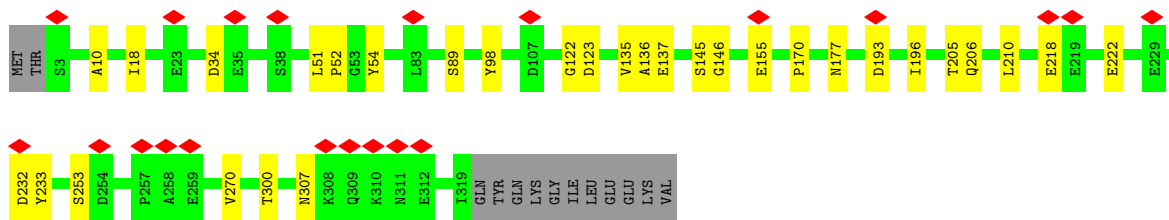
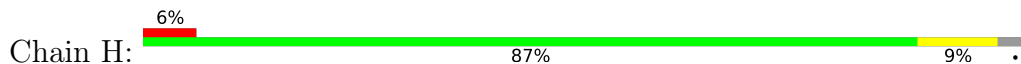
• Molecule 1: Cyanide dihydratase



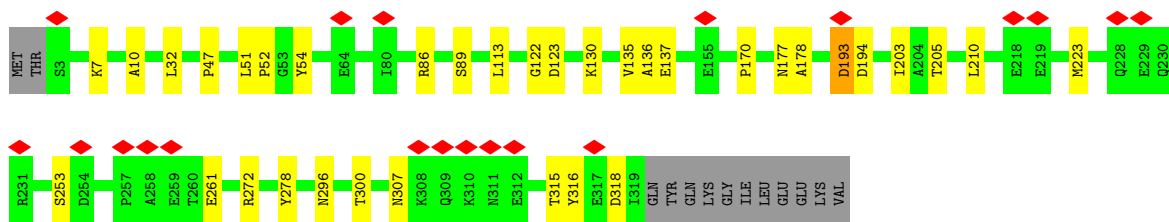
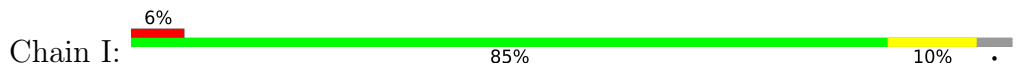
• Molecule 1: Cyanide dihydratase



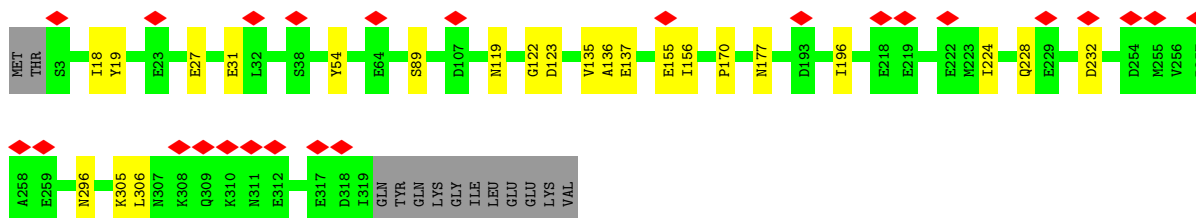
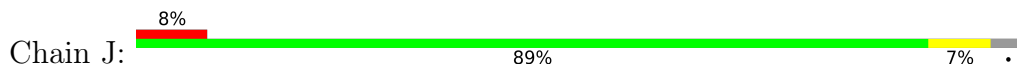
• Molecule 1: Cyanide dihydratase



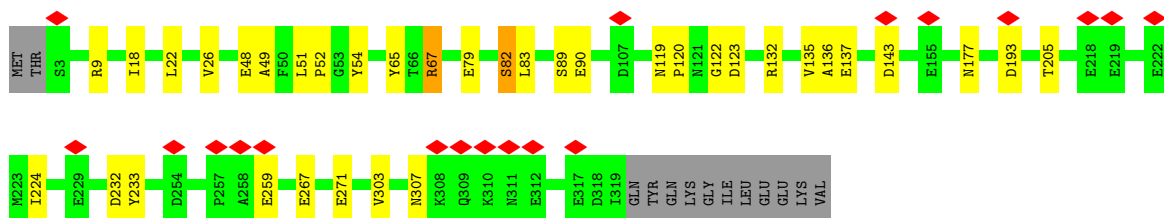
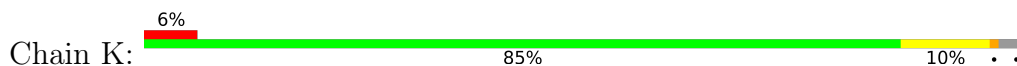
• Molecule 1: Cyanide dihydratase



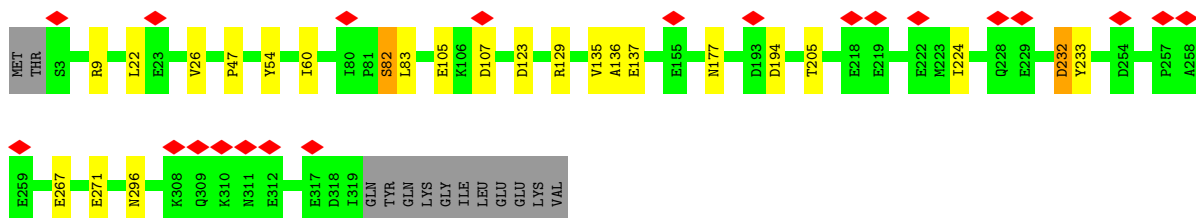
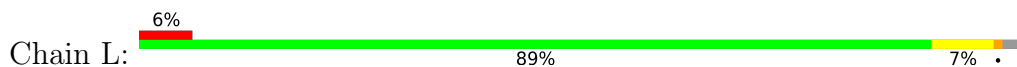
• Molecule 1: Cyanide dihydratase



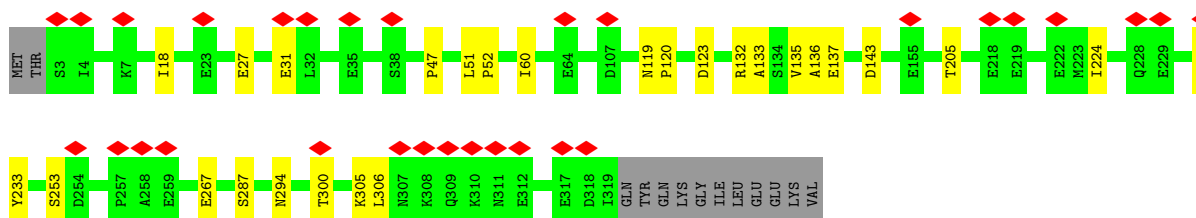
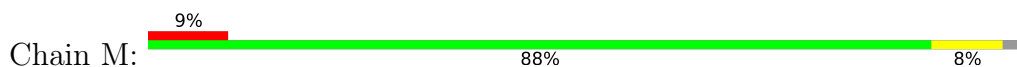
• Molecule 1: Cyanide dihydratase



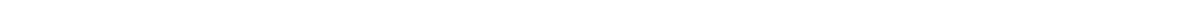
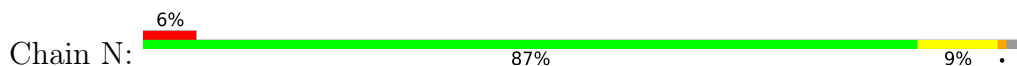
• Molecule 1: Cyanide dihydratase

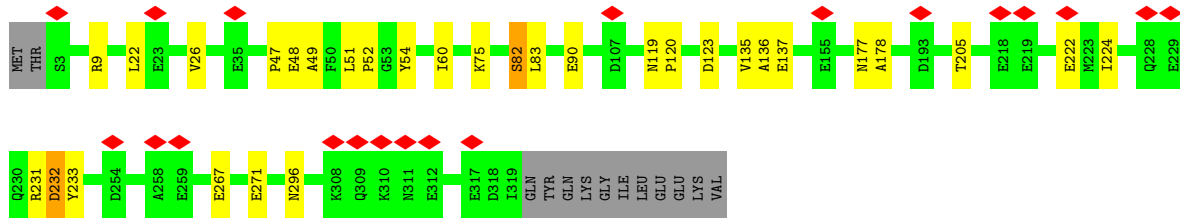


• Molecule 1: Cyanide dihydratase

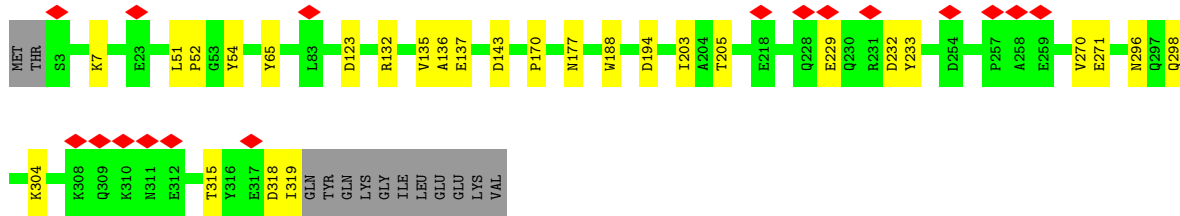
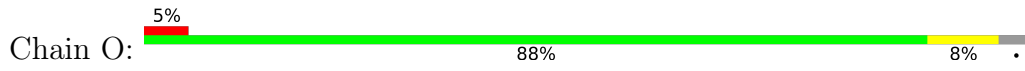


• Molecule 1: Cyanide dihydratase

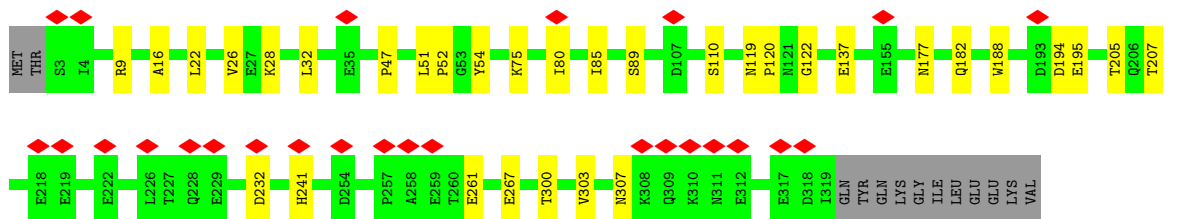
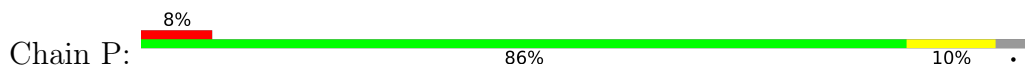




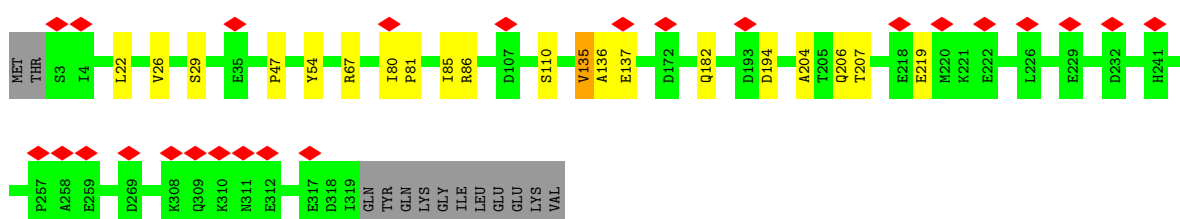
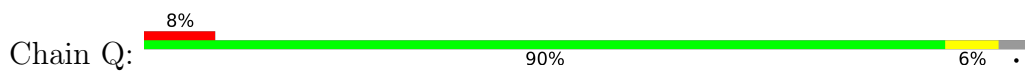
• Molecule 1: Cyanide dihydratase



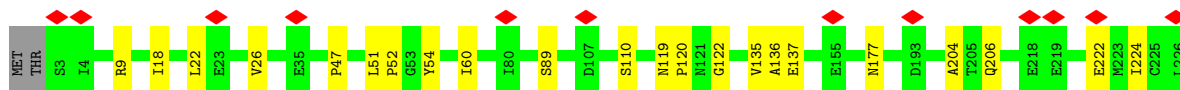
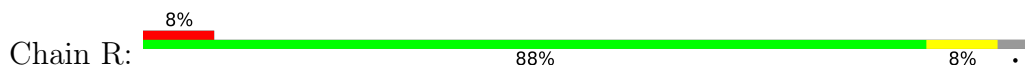
• Molecule 1: Cyanide dihydratase

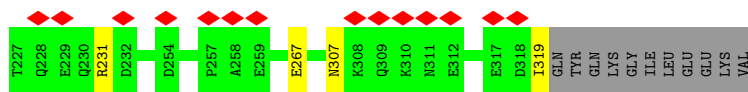


• Molecule 1: Cyanide dihydratase



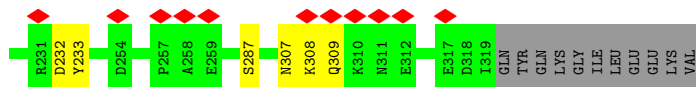
• Molecule 1: Cyanide dihydratase





- Molecule 1: Cyanide dihydratase

Chain S: 6% 87% 9%



4 Experimental information

Property	Value	Source
EM reconstruction method	HELICAL	Depositor
Imposed symmetry	HELICAL, twist=-77°, rise=16.7 Å, axial sym=C2	Depositor
Number of segments used	103000	Depositor
Resolution determination method	FSC 0.5 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{Å}^2$)	54	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	130000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.122	Depositor
Minimum map value	-0.074	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.006	Depositor
Recommended contour level	0.0248	Depositor
Map size (Å)	315.0, 315.0, 315.0	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	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	0.29	0/2590	0.47	0/3514
1	B	0.29	0/2590	0.46	0/3514
1	C	0.29	0/2590	0.47	0/3514
1	E	0.29	0/2590	0.46	0/3514
1	F	0.28	0/2590	0.46	0/3514
1	G	0.29	0/2590	0.47	0/3514
1	H	0.29	0/2590	0.47	0/3514
1	I	0.29	0/2590	0.47	0/3514
1	J	0.29	0/2590	0.47	0/3514
1	K	0.29	0/2590	0.46	0/3514
1	L	0.29	0/2590	0.47	0/3514
1	M	0.29	0/2590	0.46	0/3514
1	N	0.29	0/2590	0.47	0/3514
1	O	0.29	0/2590	0.47	0/3514
1	P	0.29	0/2590	0.46	0/3514
1	Q	0.28	0/2590	0.46	0/3514
1	R	0.29	0/2590	0.47	0/3514
1	S	0.29	0/2590	0.46	0/3514
All	All	0.29	0/46620	0.47	0/63252

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	2523	2430	2424	14	0
1	B	2523	2430	2424	22	0
1	C	2523	2430	2424	20	0
1	E	2523	2431	2424	18	0
1	F	2523	2431	2424	16	0
1	G	2523	2429	2424	12	0
1	H	2523	2431	2424	18	0
1	I	2523	2428	2424	24	0
1	J	2523	2430	2424	15	0
1	K	2523	2430	2424	27	0
1	L	2523	2431	2424	14	0
1	M	2523	2430	2424	16	0
1	N	2523	2432	2424	23	0
1	O	2523	2430	2424	19	0
1	P	2523	2429	2424	23	0
1	Q	2523	2431	2424	12	0
1	R	2523	2429	2424	16	0
1	S	2523	2430	2424	23	0
All	All	45414	43742	43632	300	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.

All (300) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:86:ARG:NH2	1:R:319:ILE:O	2.05	0.90
1:F:54:TYR:OH	1:F:137:GLU:OE2	1.94	0.84
1:I:54:TYR:OH	1:I:137:GLU:OE2	1.94	0.84
1:B:54:TYR:OH	1:B:137:GLU:OE2	1.95	0.83
1:H:54:TYR:OH	1:H:137:GLU:OE2	1.97	0.82
1:S:54:TYR:OH	1:S:137:GLU:OE2	1.98	0.81
1:B:86:ARG:NH1	1:K:90:GLU:OE2	2.14	0.81
1:Q:54:TYR:OH	1:Q:137:GLU:OE2	1.98	0.80
1:K:54:TYR:OH	1:K:137:GLU:OE2	1.99	0.80
1:O:319:ILE:O	1:Q:86:ARG:NH2	2.14	0.80
1:G:54:TYR:OH	1:G:137:GLU:OE2	1.99	0.79
1:E:54:TYR:OH	1:E:137:GLU:OE2	2.01	0.79
1:I:316:TYR:N	1:O:123:ASP:OD1	2.16	0.78
1:P:89:SER:OG	1:P:122:GLY:O	2.01	0.78
1:K:132:ARG:NH1	1:M:287:SER:O	2.17	0.77
1:K:132:ARG:NH2	1:K:143:ASP:OD1	2.18	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:O:54:TYR:OH	1:O:137:GLU:OE2	2.02	0.76
1:L:54:TYR:OH	1:L:137:GLU:OE2	2.03	0.76
1:C:54:TYR:OH	1:C:137:GLU:OE2	2.04	0.75
1:J:54:TYR:OH	1:J:137:GLU:OE2	2.04	0.74
1:R:54:TYR:OH	1:R:137:GLU:OE2	2.06	0.74
1:S:135:VAL:HG13	1:S:136:ALA:H	1.56	0.70
1:O:7:LYS:NZ	1:O:271:GLU:OE1	2.25	0.70
1:P:54:TYR:OH	1:P:137:GLU:OE2	2.07	0.70
1:L:107:ASP:OD2	1:L:129:ARG:NH2	2.24	0.69
1:N:54:TYR:OH	1:N:137:GLU:OE2	2.04	0.69
1:B:86:ARG:NH2	1:B:90:GLU:OE2	2.26	0.69
1:C:232:ASP:OD1	1:C:233:TYR:N	2.27	0.67
1:I:178:ALA:HB1	1:K:303:VAL:HG21	1.76	0.67
1:B:32:LEU:HD21	1:B:261:GLU:OE2	1.94	0.66
1:P:9:ARG:NH1	1:P:267:GLU:OE1	2.29	0.65
1:R:222:GLU:OE2	1:R:231:ARG:NH2	2.30	0.64
1:I:296:ASN:OD1	1:K:307:ASN:ND2	2.31	0.63
1:I:178:ALA:CB	1:K:303:VAL:HG21	2.28	0.63
1:G:135:VAL:HG13	1:G:136:ALA:H	1.64	0.62
1:I:300:THR:O	1:I:300:THR:HG22	1.98	0.62
1:G:296:ASN:OD1	1:S:307:ASN:ND2	2.33	0.62
1:I:89:SER:OG	1:I:122:GLY:O	2.11	0.61
1:R:89:SER:OG	1:R:122:GLY:O	2.17	0.61
1:F:135:VAL:HG22	1:F:136:ALA:N	2.18	0.59
1:P:182:GLN:HA	1:P:207:THR:HG22	1.84	0.58
1:N:178:ALA:CB	1:P:303:VAL:HG21	2.34	0.58
1:Q:135:VAL:HG22	1:Q:136:ALA:N	2.18	0.58
1:P:32:LEU:HD11	1:P:261:GLU:OE2	2.04	0.58
1:A:300:THR:HG22	1:A:300:THR:O	2.05	0.57
1:M:300:THR:HG22	1:M:300:THR:O	2.05	0.57
1:N:178:ALA:HB1	1:P:303:VAL:HG21	1.86	0.57
1:H:232:ASP:OD1	1:H:233:TYR:N	2.37	0.57
1:E:232:ASP:OD2	1:E:233:TYR:N	2.37	0.56
1:G:135:VAL:HG22	1:G:136:ALA:N	2.20	0.56
1:H:135:VAL:HG13	1:H:136:ALA:H	1.71	0.56
1:K:89:SER:OG	1:K:122:GLY:O	2.20	0.56
1:A:232:ASP:OD1	1:A:233:TYR:N	2.38	0.56
1:I:307:ASN:ND2	1:O:296:ASN:OD1	2.39	0.56
1:M:232:ASP:OD1	1:M:233:TYR:N	2.38	0.56
1:P:119:ASN:OD1	1:P:120:PRO:HD2	2.04	0.56
1:M:132:ARG:NH2	1:M:143:ASP:OD2	2.39	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:R:119:ASN:OD1	1:R:120:PRO:HD2	2.04	0.56
1:F:135:VAL:HG13	1:F:136:ALA:H	1.71	0.56
1:R:22:LEU:O	1:R:26:VAL:HG23	2.06	0.56
1:E:300:THR:HG23	1:E:300:THR:O	2.06	0.56
1:K:232:ASP:OD1	1:K:233:TYR:N	2.38	0.56
1:F:317:GLU:N	1:F:317:GLU:OE1	2.38	0.55
1:C:194:ASP:OD1	1:C:194:ASP:N	2.39	0.55
1:F:22:LEU:O	1:F:26:VAL:HG23	2.07	0.55
1:P:300:THR:HG23	1:P:300:THR:O	2.06	0.55
1:S:232:ASP:OD1	1:S:233:TYR:N	2.39	0.55
1:F:194:ASP:N	1:F:194:ASP:OD1	2.38	0.55
1:Q:204:ALA:O	1:Q:206:GLN:NE2	2.41	0.54
1:K:135:VAL:HG13	1:K:136:ALA:H	1.73	0.54
1:N:119:ASN:OD1	1:N:120:PRO:HD2	2.07	0.54
1:S:10:ALA:HB1	1:S:210:LEU:HD21	1.89	0.54
1:L:194:ASP:OD1	1:L:194:ASP:N	2.41	0.53
1:G:51:LEU:HB2	1:G:52:PRO:HD3	1.90	0.53
1:J:155:GLU:HG3	1:J:156:ILE:HG23	1.90	0.53
1:B:9:ARG:NH1	1:B:267:GLU:OE1	2.42	0.53
1:C:30:CYS:O	1:C:34:ASP:OD1	2.25	0.53
1:I:51:LEU:HB2	1:I:52:PRO:HD3	1.90	0.53
1:P:195:GLU:OE1	1:P:241:HIS:ND1	2.41	0.53
1:N:90:GLU:OE2	1:S:86:ARG:NE	2.40	0.53
1:N:123:ASP:OD1	1:N:123:ASP:N	2.42	0.53
1:K:82:SER:OG	1:K:83:LEU:N	2.42	0.52
1:N:82:SER:OG	1:N:83:LEU:N	2.42	0.52
1:O:51:LEU:HB2	1:O:52:PRO:HD3	1.91	0.52
1:K:22:LEU:O	1:K:26:VAL:HG23	2.08	0.52
1:B:89:SER:OG	1:B:122:GLY:O	2.19	0.52
1:C:51:LEU:HB2	1:C:52:PRO:HD3	1.92	0.52
1:B:22:LEU:O	1:B:26:VAL:HG23	2.09	0.52
1:Q:135:VAL:HG13	1:Q:136:ALA:H	1.75	0.52
1:N:51:LEU:HB2	1:N:52:PRO:HD3	1.91	0.51
1:Q:194:ASP:OD1	1:Q:194:ASP:N	2.42	0.51
1:C:155:GLU:HG3	1:C:156:ILE:HG23	1.92	0.51
1:N:271:GLU:OE2	1:P:75:LYS:NZ	2.39	0.51
1:E:135:VAL:HG13	1:E:136:ALA:N	2.25	0.51
1:I:123:ASP:OD1	1:I:123:ASP:N	2.39	0.51
1:B:232:ASP:OD1	1:B:233:TYR:N	2.43	0.51
1:B:135:VAL:HG13	1:B:136:ALA:N	2.26	0.51
1:K:135:VAL:HG13	1:K:136:ALA:N	2.25	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:135:VAL:HG13	1:H:136:ALA:N	2.26	0.50
1:A:27:GLU:O	1:A:31:GLU:HG3	2.12	0.50
1:O:135:VAL:HG13	1:O:136:ALA:N	2.27	0.50
1:S:135:VAL:HG22	1:S:136:ALA:N	2.26	0.50
1:C:123:ASP:OD1	1:C:123:ASP:N	2.40	0.50
1:R:9:ARG:NH1	1:R:267:GLU:OE1	2.44	0.50
1:B:205:THR:HG22	1:B:205:THR:O	2.11	0.50
1:N:22:LEU:O	1:N:26:VAL:HG23	2.12	0.50
1:P:16:ALA:O	1:P:28:LYS:NZ	2.45	0.49
1:B:51:LEU:HB2	1:B:52:PRO:HD3	1.94	0.49
1:E:51:LEU:HB2	1:E:52:PRO:HD3	1.94	0.49
1:H:51:LEU:HB2	1:H:52:PRO:HD3	1.94	0.49
1:J:135:VAL:HG13	1:J:136:ALA:N	2.26	0.49
1:L:82:SER:OG	1:L:83:LEU:N	2.46	0.49
1:R:51:LEU:HB2	1:R:52:PRO:HD3	1.94	0.49
1:E:89:SER:OG	1:E:122:GLY:O	2.14	0.49
1:F:204:ALA:O	1:F:206:GLN:NE2	2.46	0.49
1:S:51:LEU:HB3	1:S:52:PRO:HD3	1.94	0.49
1:K:205:THR:HG22	1:K:205:THR:O	2.12	0.49
1:I:135:VAL:HG13	1:I:136:ALA:N	2.28	0.49
1:I:205:THR:HG22	1:I:205:THR:O	2.12	0.49
1:L:123:ASP:OD1	1:L:123:ASP:N	2.46	0.49
1:H:145:SER:OG	1:H:146:GLY:N	2.44	0.49
1:R:60:ILE:HD11	1:R:224:ILE:HG22	1.95	0.48
1:M:51:LEU:HB2	1:M:52:PRO:HD3	1.94	0.48
1:E:135:VAL:HG13	1:E:136:ALA:H	1.76	0.48
1:I:194:ASP:OD1	1:I:194:ASP:N	2.47	0.48
1:J:135:VAL:HG13	1:J:136:ALA:H	1.79	0.48
1:F:182:GLN:HA	1:F:207:THR:HG22	1.95	0.48
1:B:135:VAL:HG13	1:B:136:ALA:H	1.79	0.48
1:J:305:LYS:C	1:J:306:LEU:HD12	2.35	0.48
1:L:9:ARG:NH1	1:L:267:GLU:OE2	2.47	0.48
1:F:9:ARG:NH1	1:F:267:GLU:OE1	2.47	0.48
1:L:296:ASN:OD1	1:R:307:ASN:ND2	2.46	0.48
1:M:119:ASN:OD1	1:M:120:PRO:HD2	2.14	0.48
1:J:27:GLU:O	1:J:31:GLU:HG3	2.14	0.47
1:P:51:LEU:HB2	1:P:52:PRO:HD3	1.96	0.47
1:C:80:ILE:O	1:C:85:ILE:HD12	2.14	0.47
1:A:205:THR:HG22	1:A:205:THR:O	2.14	0.47
1:H:205:THR:O	1:H:205:THR:HG22	2.14	0.47
1:K:51:LEU:HB2	1:K:52:PRO:HD3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:Q:135:VAL:HG22	1:Q:136:ALA:H	1.78	0.47
1:P:80:ILE:O	1:P:85:ILE:HD13	2.15	0.47
1:N:205:THR:HG22	1:N:205:THR:O	2.14	0.47
1:L:135:VAL:HG13	1:L:136:ALA:N	2.29	0.47
1:L:205:THR:HG22	1:L:205:THR:O	2.14	0.47
1:C:89:SER:OG	1:C:122:GLY:O	2.18	0.47
1:M:205:THR:O	1:M:205:THR:HG22	2.14	0.47
1:N:222:GLU:OE2	1:N:231:ARG:NH2	2.47	0.47
1:E:123:ASP:OD1	1:E:123:ASP:N	2.47	0.47
1:S:65:TYR:OH	1:S:224:ILE:O	2.33	0.47
1:I:32:LEU:HD11	1:I:261:GLU:OE2	2.15	0.46
1:M:123:ASP:OD1	1:M:123:ASP:N	2.48	0.46
1:N:9:ARG:NH1	1:N:267:GLU:OE2	2.48	0.46
1:A:133:ALA:HB1	1:A:137:GLU:HB2	1.98	0.46
1:M:135:VAL:HG13	1:M:136:ALA:N	2.29	0.46
1:B:119:ASN:OD1	1:B:120:PRO:HD2	2.15	0.46
1:G:193:ASP:N	1:G:193:ASP:OD1	2.49	0.46
1:S:51:LEU:HD13	1:S:101:ILE:HD11	1.97	0.46
1:N:135:VAL:HG13	1:N:136:ALA:N	2.30	0.46
1:A:51:LEU:HB2	1:A:52:PRO:HD3	1.98	0.46
1:H:89:SER:OG	1:H:122:GLY:O	2.25	0.46
1:R:135:VAL:HG13	1:R:136:ALA:N	2.31	0.46
1:M:27:GLU:O	1:M:31:GLU:HG3	2.15	0.46
1:G:205:THR:HG22	1:G:205:THR:O	2.16	0.46
1:S:308:LYS:NZ	1:S:309:GLN:O	2.50	0.46
1:A:123:ASP:OD1	1:A:123:ASP:N	2.48	0.45
1:K:119:ASN:OD1	1:K:120:PRO:HD2	2.16	0.45
1:S:181:GLU:OE2	1:S:184:HIS:ND1	2.44	0.45
1:C:60:ILE:HD11	1:C:224:ILE:HG22	1.98	0.45
1:H:307:ASN:ND2	1:J:296:ASN:OD1	2.49	0.45
1:I:113:LEU:HD23	1:I:130:LYS:HD2	1.98	0.45
1:A:18:ILE:N	1:A:18:ILE:HD12	2.31	0.45
1:H:98:TYR:OH	1:H:155:GLU:OE1	2.34	0.45
1:H:300:THR:O	1:H:300:THR:HG23	2.16	0.45
1:K:123:ASP:OD1	1:K:123:ASP:N	2.48	0.45
1:S:60:ILE:HD11	1:S:224:ILE:HG22	1.98	0.45
1:M:135:VAL:HG13	1:M:136:ALA:H	1.81	0.45
1:A:119:ASN:OD1	1:A:120:PRO:HD2	2.16	0.45
1:K:271:GLU:OE2	1:N:75:LYS:NZ	2.42	0.45
1:S:205:THR:O	1:S:205:THR:HG22	2.15	0.45
1:A:294:ASN:OD1	1:B:294:ASN:ND2	2.50	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:10:ALA:HB1	1:H:210:LEU:HD21	1.98	0.45
1:I:10:ALA:HB1	1:I:210:LEU:HD21	1.99	0.45
1:E:270:VAL:HG12	1:E:270:VAL:O	2.16	0.45
1:J:228:GLN:NE2	1:J:232:ASP:OD1	2.44	0.45
1:O:135:VAL:HG13	1:O:136:ALA:H	1.82	0.45
1:Q:182:GLN:HA	1:Q:207:THR:HG22	1.99	0.45
1:M:18:ILE:N	1:M:18:ILE:HD12	2.32	0.45
1:N:296:ASN:OD1	1:P:307:ASN:ND2	2.50	0.45
1:O:132:ARG:NH2	1:O:143:ASP:OD1	2.50	0.44
1:P:205:THR:HG22	1:P:205:THR:O	2.16	0.44
1:P:22:LEU:O	1:P:26:VAL:HG23	2.17	0.44
1:S:98:TYR:OH	1:S:155:GLU:OE2	2.26	0.44
1:S:123:ASP:OD1	1:S:123:ASP:N	2.41	0.44
1:P:51:LEU:CB	1:P:52:PRO:HD3	2.47	0.44
1:I:315:THR:HG23	1:I:318:ASP:H	1.83	0.44
1:E:145:SER:OG	1:E:146:GLY:N	2.50	0.44
1:E:292:SER:OG	1:O:304:LYS:NZ	2.38	0.44
1:F:18:ILE:N	1:F:18:ILE:HD12	2.33	0.44
1:N:90:GLU:OE2	1:S:86:ARG:NH2	2.50	0.44
1:R:204:ALA:O	1:R:206:GLN:NE2	2.51	0.44
1:C:51:LEU:CB	1:C:52:PRO:HD3	2.48	0.43
1:O:270:VAL:HG12	1:O:270:VAL:O	2.18	0.43
1:E:182:GLN:HA	1:E:207:THR:HG22	2.00	0.43
1:N:60:ILE:HD11	1:N:224:ILE:HG22	2.01	0.43
1:Q:80:ILE:O	1:Q:85:ILE:HD12	2.18	0.43
1:E:196:ILE:HG21	1:G:203:ILE:CD1	2.47	0.43
1:G:10:ALA:HB1	1:G:210:LEU:HD21	1.99	0.43
1:J:89:SER:OG	1:J:122:GLY:O	2.22	0.43
1:N:119:ASN:HB3	1:N:123:ASP:OD1	2.19	0.43
1:C:232:ASP:OD1	1:C:232:ASP:C	2.57	0.43
1:H:123:ASP:OD1	1:H:123:ASP:N	2.51	0.43
1:K:259:GLU:CG	1:K:259:GLU:O	2.67	0.43
1:L:60:ILE:HD11	1:L:224:ILE:HG22	2.01	0.43
1:S:135:VAL:HG13	1:S:136:ALA:N	2.30	0.43
1:B:119:ASN:ND2	1:B:123:ASP:OD1	2.51	0.43
1:F:26:VAL:HG22	1:F:51:LEU:HD22	2.01	0.43
1:P:194:ASP:N	1:P:194:ASP:OD1	2.52	0.43
1:O:232:ASP:OD1	1:O:233:TYR:N	2.51	0.43
1:Q:22:LEU:O	1:Q:26:VAL:HG23	2.19	0.43
1:B:134:SER:O	1:B:138:ARG:HG3	2.19	0.42
1:C:22:LEU:O	1:C:26:VAL:HG23	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:205:THR:HG22	1:E:205:THR:O	2.19	0.42
1:G:232:ASP:OD1	1:G:233:TYR:N	2.51	0.42
1:N:232:ASP:OD1	1:N:233:TYR:N	2.52	0.42
1:B:82:SER:OG	1:B:83:LEU:N	2.53	0.42
1:H:196:ILE:HG21	1:O:203:ILE:CD1	2.49	0.42
1:S:91:ALA:O	1:S:95:ASN:ND2	2.50	0.42
1:F:219:GLU:OE1	1:F:219:GLU:N	2.46	0.42
1:I:135:VAL:HG13	1:I:136:ALA:H	1.85	0.42
1:M:305:LYS:C	1:M:306:LEU:HD12	2.40	0.42
1:S:60:ILE:HD11	1:S:224:ILE:CG2	2.49	0.42
1:B:18:ILE:HD12	1:B:18:ILE:N	2.34	0.42
1:M:133:ALA:HB1	1:M:137:GLU:HB2	2.01	0.42
1:O:315:THR:HG23	1:O:318:ASP:H	1.83	0.42
1:N:48:GLU:O	1:N:49:ALA:C	2.58	0.42
1:P:51:LEU:HD23	1:P:51:LEU:HA	1.94	0.42
1:P:232:ASP:OD2	1:P:232:ASP:C	2.57	0.42
1:B:303:VAL:HG11	1:S:178:ALA:CB	2.49	0.42
1:K:79:GLU:O	1:K:82:SER:HB3	2.19	0.42
1:A:65:TYR:OH	1:A:224:ILE:O	2.38	0.42
1:Q:80:ILE:HB	1:Q:81:PRO:CD	2.49	0.42
1:C:19:TYR:HE2	1:C:224:ILE:HD11	1.84	0.42
1:K:18:ILE:HD12	1:K:18:ILE:N	2.34	0.42
1:O:188:TRP:CD2	1:O:194:ASP:HB3	2.55	0.42
1:I:203:ILE:CD1	1:J:196:ILE:HG21	2.49	0.42
1:L:135:VAL:HG13	1:L:136:ALA:H	1.85	0.42
1:Q:219:GLU:OE1	1:Q:219:GLU:N	2.46	0.42
1:A:60:ILE:HD11	1:A:224:ILE:CG2	2.50	0.42
1:C:21:ASN:O	1:C:22:LEU:C	2.59	0.41
1:K:9:ARG:NH1	1:K:267:GLU:OE1	2.53	0.41
1:O:205:THR:O	1:O:205:THR:HG22	2.20	0.41
1:K:232:ASP:OD1	1:K:232:ASP:C	2.58	0.41
1:J:19:TYR:HE2	1:J:224:ILE:HD11	1.86	0.41
1:C:95:ASN:O	1:C:97:THR:HG23	2.21	0.41
1:N:60:ILE:HD11	1:N:224:ILE:CG2	2.51	0.41
1:P:188:TRP:CD2	1:P:194:ASP:HB3	2.55	0.41
1:F:89:SER:OG	1:F:122:GLY:O	2.23	0.41
1:S:113:LEU:HD23	1:S:130:LYS:HD2	2.03	0.41
1:C:305:LYS:C	1:C:306:LEU:HD12	2.41	0.41
1:E:113:LEU:HD23	1:E:130:LYS:HD2	2.02	0.41
1:H:218:GLU:O	1:H:222:GLU:HG2	2.21	0.41
1:I:170:PRO:HB3	1:J:170:PRO:HB3	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:278:TYR:CD2	1:K:67:ARG:HG2	2.56	0.41
1:M:306:LEU:HD12	1:M:306:LEU:N	2.35	0.41
1:E:65:TYR:OH	1:E:224:ILE:O	2.37	0.41
1:I:193:ASP:OD2	1:I:193:ASP:N	2.54	0.41
1:B:48:GLU:O	1:B:49:ALA:C	2.59	0.41
1:G:229:GLU:O	1:G:232:ASP:OD1	2.38	0.41
1:H:18:ILE:N	1:H:18:ILE:HD12	2.35	0.41
1:M:60:ILE:HD11	1:M:224:ILE:CG2	2.50	0.41
1:A:178:ALA:HB2	1:C:303:VAL:HG21	2.02	0.41
1:A:188:TRP:CD2	1:A:194:ASP:HB3	2.56	0.41
1:E:119:ASN:OD1	1:E:120:PRO:HD2	2.20	0.41
1:F:24:ALA:O	1:F:27:GLU:HG2	2.21	0.41
1:F:134:SER:O	1:F:137:GLU:N	2.49	0.41
1:H:170:PRO:HB3	1:O:170:PRO:HB3	2.02	0.41
1:K:48:GLU:O	1:K:49:ALA:C	2.59	0.41
1:O:229:GLU:O	1:O:232:ASP:OD1	2.39	0.41
1:R:60:ILE:HD11	1:R:224:ILE:CG2	2.50	0.41
1:J:119:ASN:HB2	1:J:123:ASP:OD1	2.21	0.41
1:L:22:LEU:O	1:L:26:VAL:HG23	2.20	0.41
1:N:178:ALA:HB2	1:P:303:VAL:HG21	2.03	0.41
1:R:18:ILE:HD12	1:R:18:ILE:N	2.36	0.41
1:B:10:ALA:HB1	1:B:210:LEU:HD21	2.01	0.40
1:B:232:ASP:OD1	1:B:232:ASP:C	2.59	0.40
1:C:178:ALA:CB	1:E:303:VAL:HG21	2.51	0.40
1:H:270:VAL:O	1:H:270:VAL:HG12	2.21	0.40
1:I:300:THR:O	1:I:300:THR:CG2	2.69	0.40
1:K:65:TYR:OH	1:K:224:ILE:O	2.39	0.40
1:L:60:ILE:HD11	1:L:224:ILE:CG2	2.52	0.40
1:C:132:ARG:NH2	1:S:287:SER:O	2.53	0.40
1:F:188:TRP:CD2	1:F:194:ASP:HB3	2.56	0.40
1:L:232:ASP:OD1	1:L:233:TYR:N	2.54	0.40
1:G:96:GLU:O	1:G:96:GLU:HG3	2.21	0.40
1:K:259:GLU:O	1:K:259:GLU:HG2	2.21	0.40
1:O:51:LEU:CB	1:O:52:PRO:HD3	2.51	0.40
1:R:135:VAL:HG13	1:R:136:ALA:H	1.86	0.40
1:J:18:ILE:N	1:J:18:ILE:HD12	2.36	0.40
1:R:51:LEU:HD23	1:R:51:LEU:HA	1.97	0.40
1:J:123:ASP:OD1	1:J:123:ASP:N	2.50	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	315/330 (96%)	300 (95%)	15 (5%)	0	100	100
1	B	315/330 (96%)	297 (94%)	17 (5%)	1 (0%)	41	73
1	C	315/330 (96%)	298 (95%)	16 (5%)	1 (0%)	41	73
1	E	315/330 (96%)	297 (94%)	18 (6%)	0	100	100
1	F	315/330 (96%)	299 (95%)	14 (4%)	2 (1%)	25	62
1	G	315/330 (96%)	301 (96%)	13 (4%)	1 (0%)	41	73
1	H	315/330 (96%)	296 (94%)	19 (6%)	0	100	100
1	I	315/330 (96%)	299 (95%)	15 (5%)	1 (0%)	41	73
1	J	315/330 (96%)	298 (95%)	17 (5%)	0	100	100
1	K	315/330 (96%)	297 (94%)	18 (6%)	0	100	100
1	L	315/330 (96%)	299 (95%)	15 (5%)	1 (0%)	41	73
1	M	315/330 (96%)	299 (95%)	15 (5%)	1 (0%)	41	73
1	N	315/330 (96%)	299 (95%)	15 (5%)	1 (0%)	41	73
1	O	315/330 (96%)	298 (95%)	17 (5%)	0	100	100
1	P	315/330 (96%)	293 (93%)	21 (7%)	1 (0%)	41	73
1	Q	315/330 (96%)	299 (95%)	14 (4%)	2 (1%)	25	62
1	R	315/330 (96%)	299 (95%)	15 (5%)	1 (0%)	41	73
1	S	315/330 (96%)	301 (96%)	13 (4%)	1 (0%)	41	73
All	All	5670/5940 (96%)	5369 (95%)	287 (5%)	14 (0%)	50	78

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	135	VAL
1	G	135	VAL
1	S	135	VAL
1	Q	135	VAL

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Mol	Chain	Res	Type
1	C	135	VAL
1	I	47	PRO
1	P	47	PRO
1	F	47	PRO
1	L	47	PRO
1	M	47	PRO
1	Q	47	PRO
1	R	47	PRO
1	B	47	PRO
1	N	47	PRO

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	269/282 (95%)	266 (99%)	3 (1%)	73 88
1	B	269/282 (95%)	265 (98%)	4 (2%)	65 84
1	C	269/282 (95%)	265 (98%)	4 (2%)	65 84
1	E	269/282 (95%)	263 (98%)	6 (2%)	52 77
1	F	269/282 (95%)	267 (99%)	2 (1%)	84 93
1	G	269/282 (95%)	264 (98%)	5 (2%)	57 80
1	H	269/282 (95%)	264 (98%)	5 (2%)	57 80
1	I	269/282 (95%)	263 (98%)	6 (2%)	52 77
1	J	269/282 (95%)	268 (100%)	1 (0%)	91 96
1	K	269/282 (95%)	265 (98%)	4 (2%)	65 84
1	L	269/282 (95%)	264 (98%)	5 (2%)	57 80
1	M	269/282 (95%)	266 (99%)	3 (1%)	73 88
1	N	269/282 (95%)	266 (99%)	3 (1%)	73 88
1	O	269/282 (95%)	266 (99%)	3 (1%)	73 88
1	P	269/282 (95%)	267 (99%)	2 (1%)	84 93
1	Q	269/282 (95%)	266 (99%)	3 (1%)	73 88

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	R	269/282 (95%)	267 (99%)	2 (1%)	84	93
1	S	269/282 (95%)	268 (100%)	1 (0%)	91	96
All	All	4842/5076 (95%)	4780 (99%)	62 (1%)	70	86

All (62) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	193	ASP
1	A	253	SER
1	A	267	GLU
1	B	7	LYS
1	B	177	ASN
1	B	259	GLU
1	B	292	SER
1	C	106	LYS
1	C	177	ASN
1	C	219	GLU
1	C	232	ASP
1	E	34	ASP
1	E	155	GLU
1	E	177	ASN
1	E	219	GLU
1	E	255	MET
1	E	271	GLU
1	F	67	ARG
1	F	110	SER
1	G	65	TYR
1	G	177	ASN
1	G	193	ASP
1	G	219	GLU
1	G	292	SER
1	H	34	ASP
1	H	177	ASN
1	H	193	ASP
1	H	206	GLN
1	H	253	SER
1	I	7	LYS
1	I	177	ASN
1	I	193	ASP
1	I	223	MET
1	I	253	SER

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Mol	Chain	Res	Type
1	I	272	ARG
1	J	177	ASN
1	K	67	ARG
1	K	82	SER
1	K	177	ASN
1	K	193	ASP
1	L	82	SER
1	L	105	GLU
1	L	177	ASN
1	L	232	ASP
1	L	271	GLU
1	M	253	SER
1	M	267	GLU
1	M	294	ASN
1	N	82	SER
1	N	177	ASN
1	N	232	ASP
1	O	65	TYR
1	O	177	ASN
1	O	298	GLN
1	P	110	SER
1	P	177	ASN
1	Q	29	SER
1	Q	67	ARG
1	Q	110	SER
1	R	110	SER
1	R	177	ASN
1	S	193	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	I	184	HIS
1	P	307	ASN
1	R	184	HIS
1	R	307	ASN
1	S	241	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

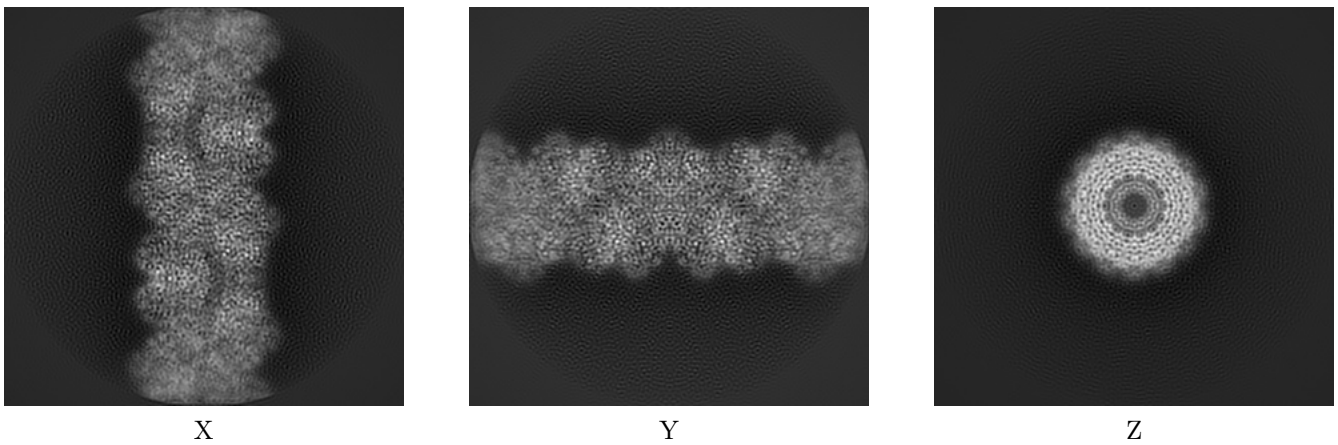
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-16437. 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](#)

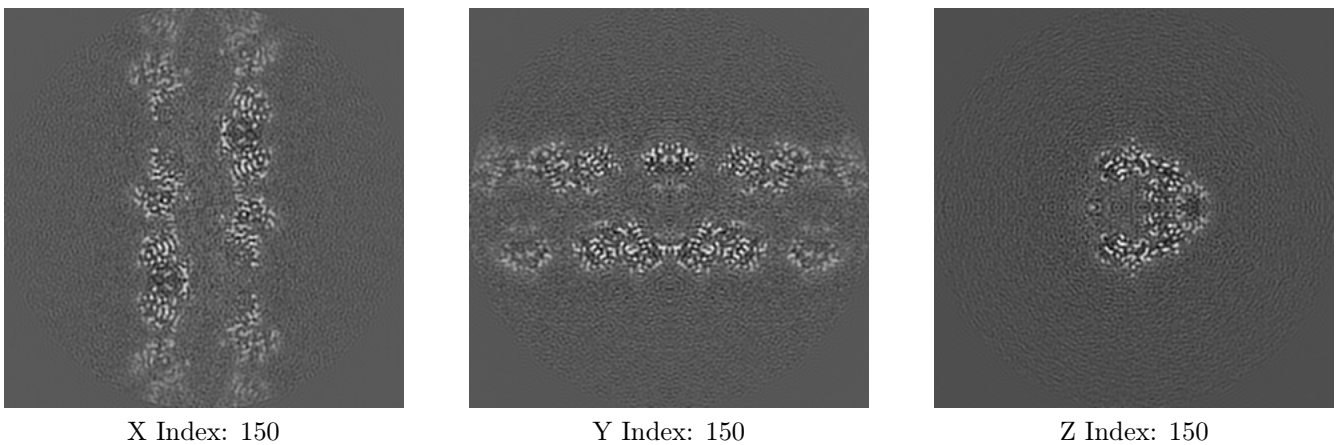
6.1.1 Primary map



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

6.2 Central slices [i](#)

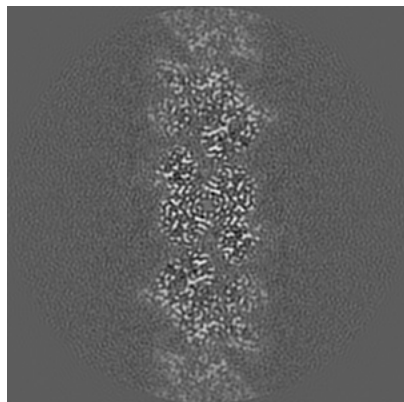
6.2.1 Primary map



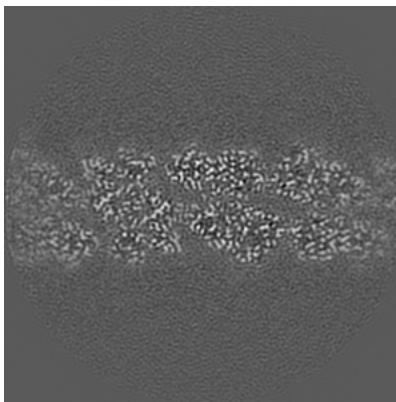
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

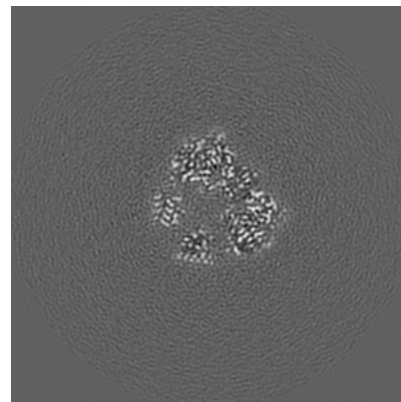
6.3.1 Primary map



X Index: 179



Y Index: 126

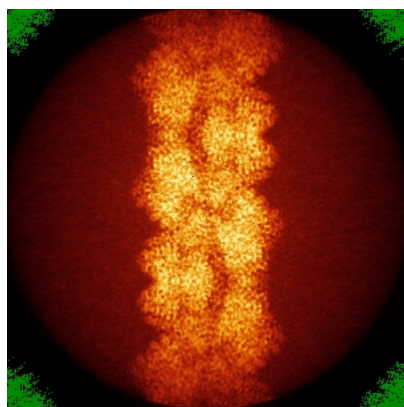


Z Index: 143

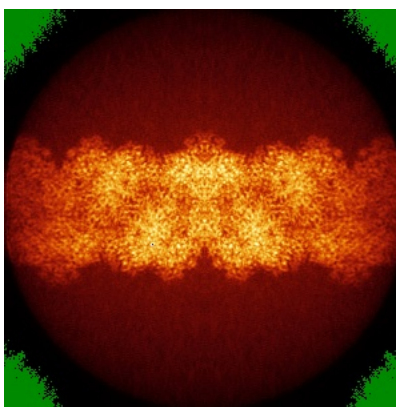
The images above show the largest variance slices of the map in three orthogonal directions.

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

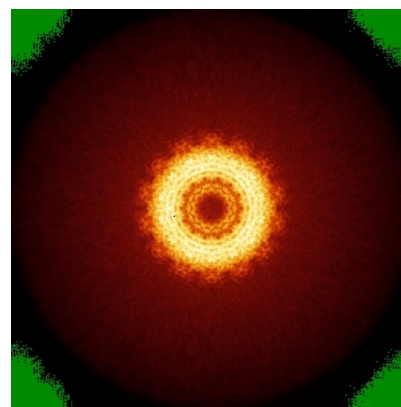
6.4.1 Primary map



X



Y

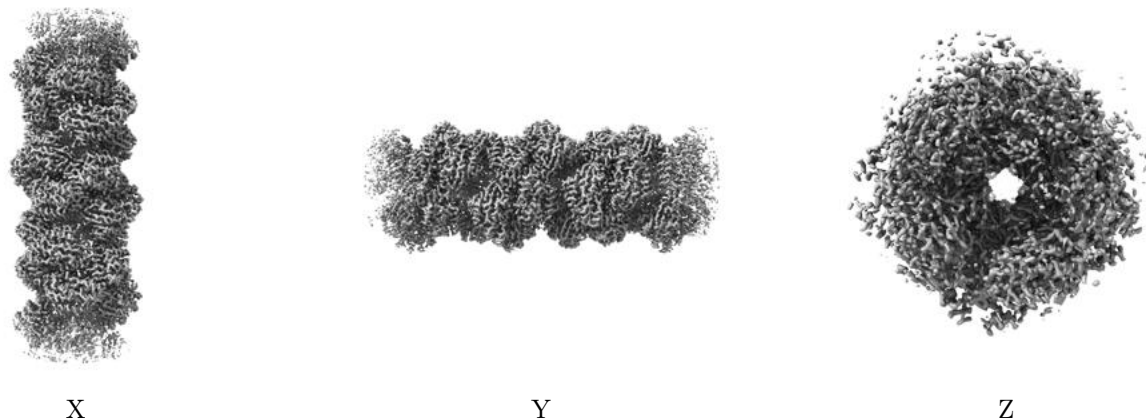


Z

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 0.0248. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

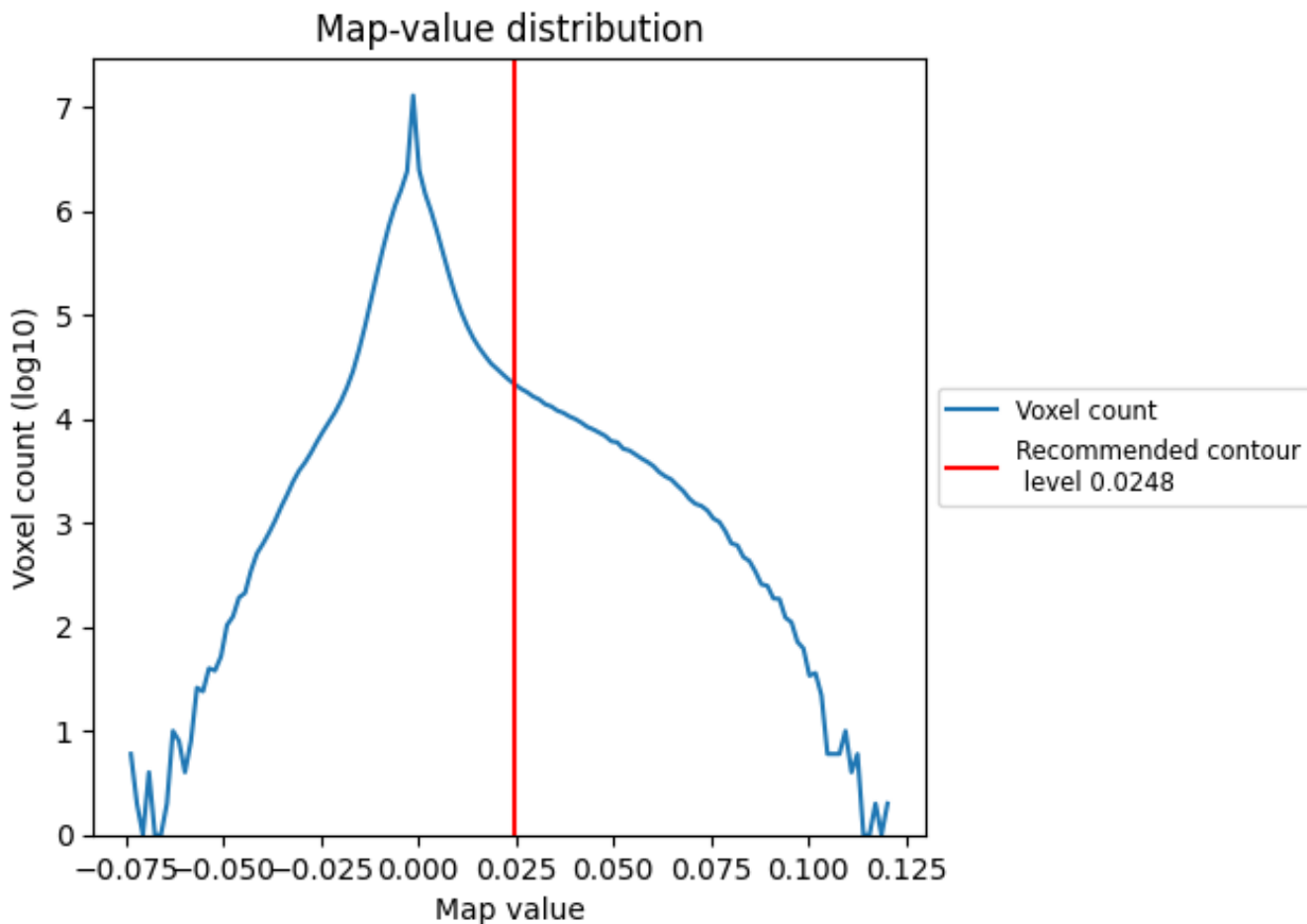
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

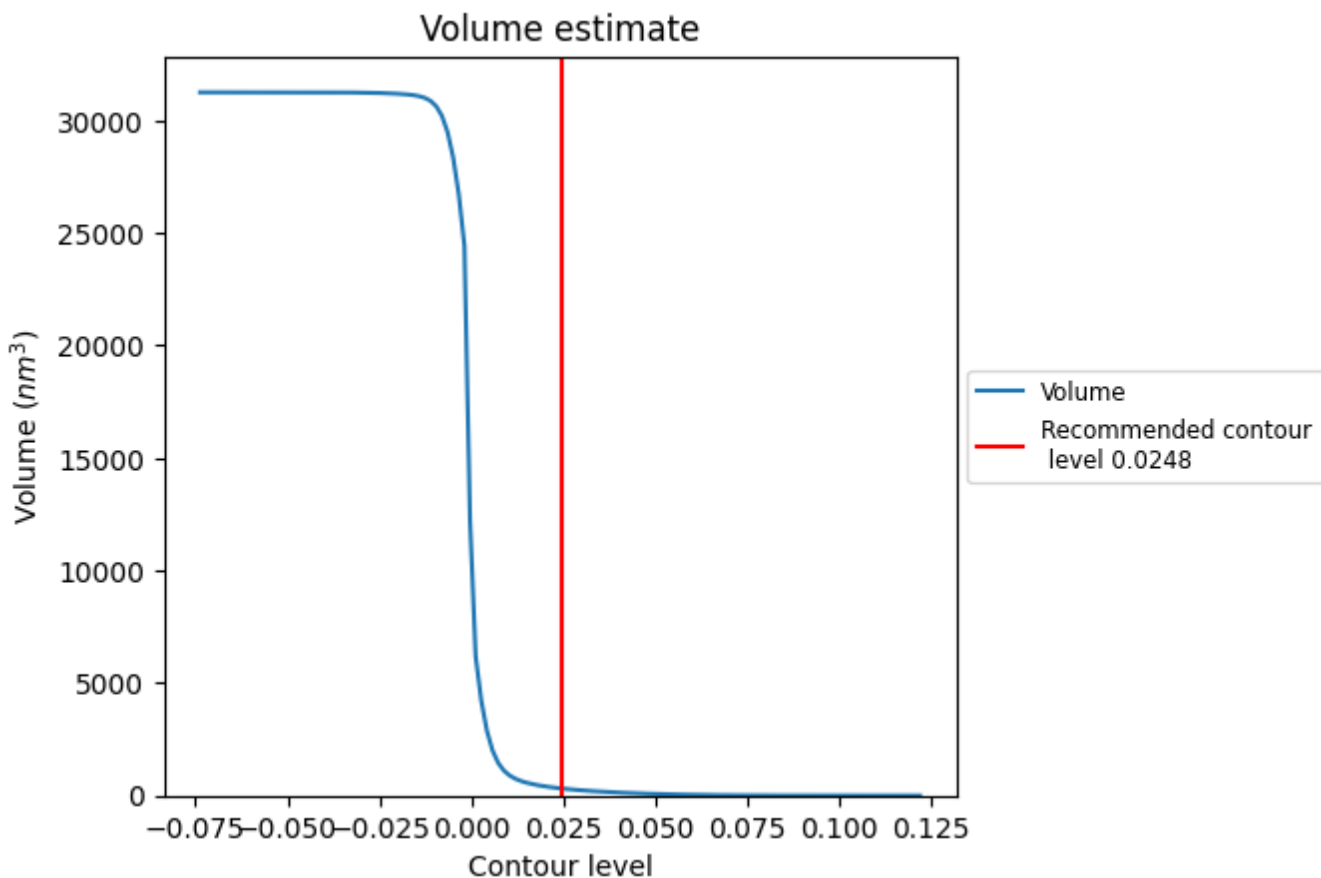
This section contains the results of statistical analysis of the map.

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.

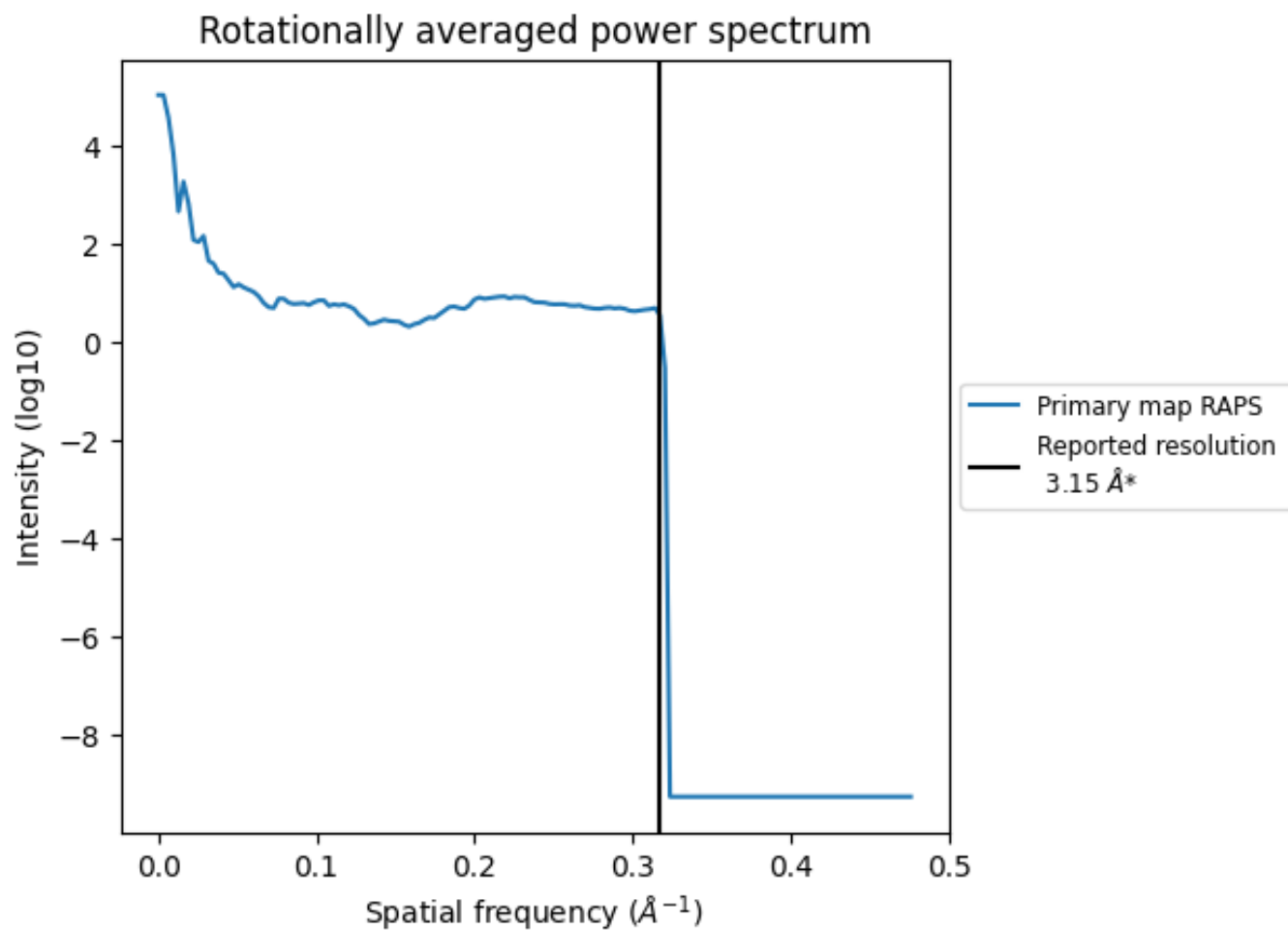
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 310 nm³; this corresponds to an approximate mass of 280 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 0.317 Å⁻¹

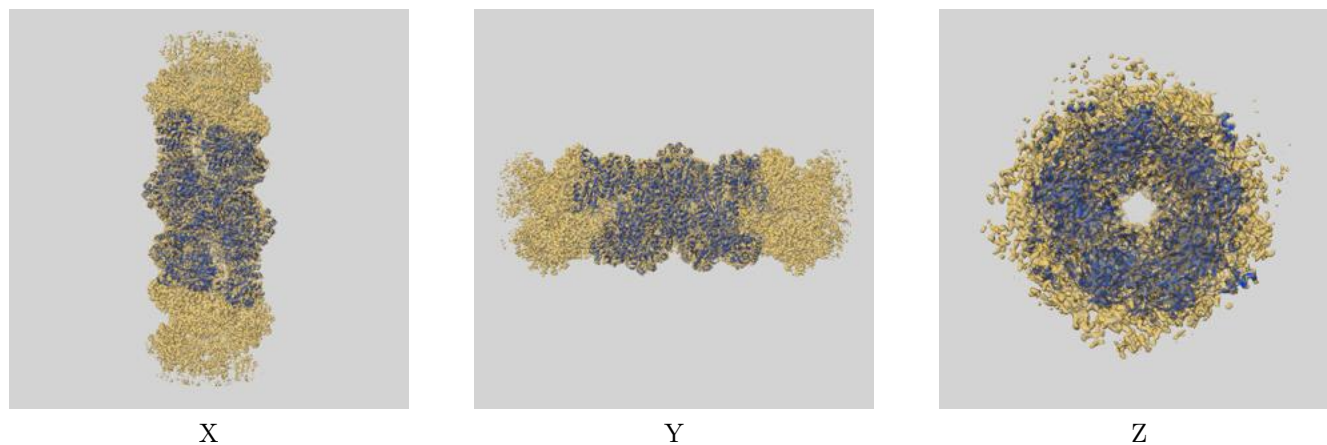
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

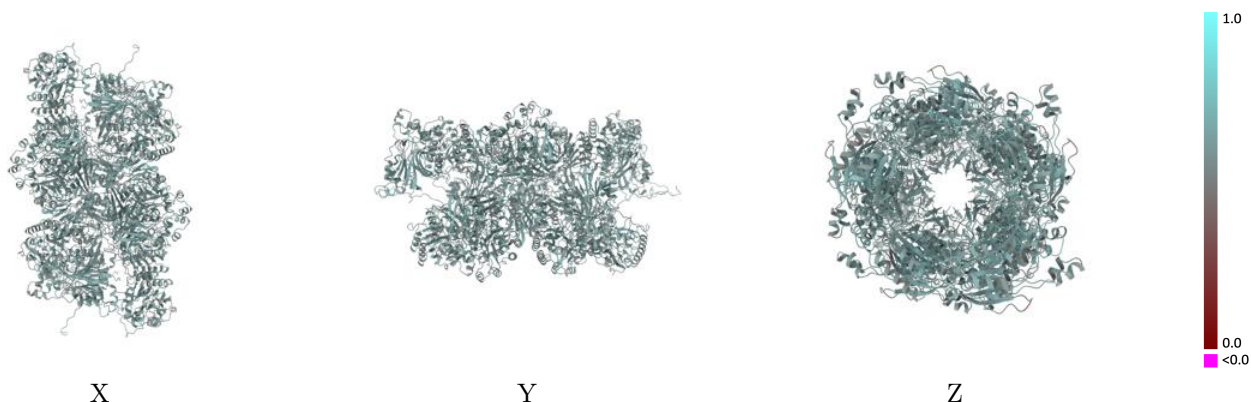
This section contains information regarding the fit between EMDB map EMD-16437 and PDB model 8C5I. Per-residue inclusion information can be found in section 3 on page 7.

9.1 Map-model overlay [i](#)



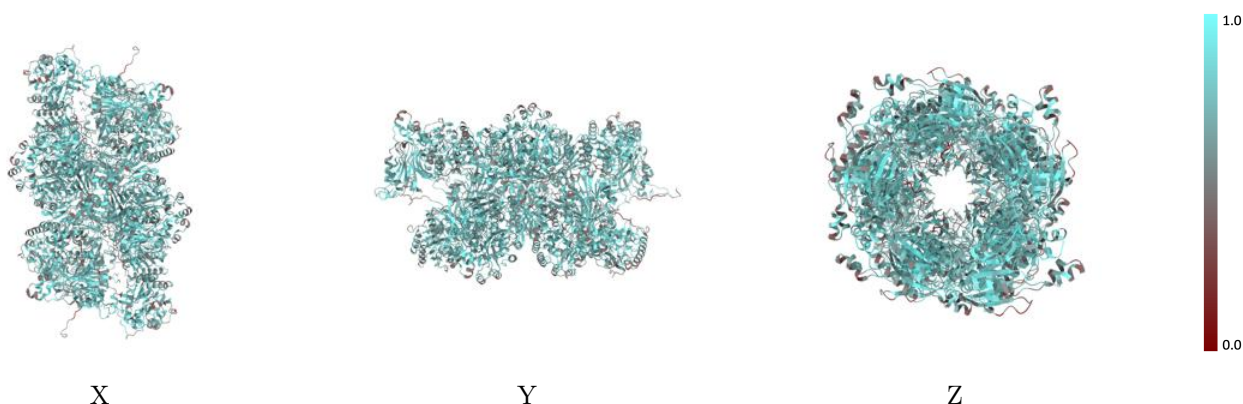
The images above show the 3D surface view of the map at the recommended contour level 0.0248 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



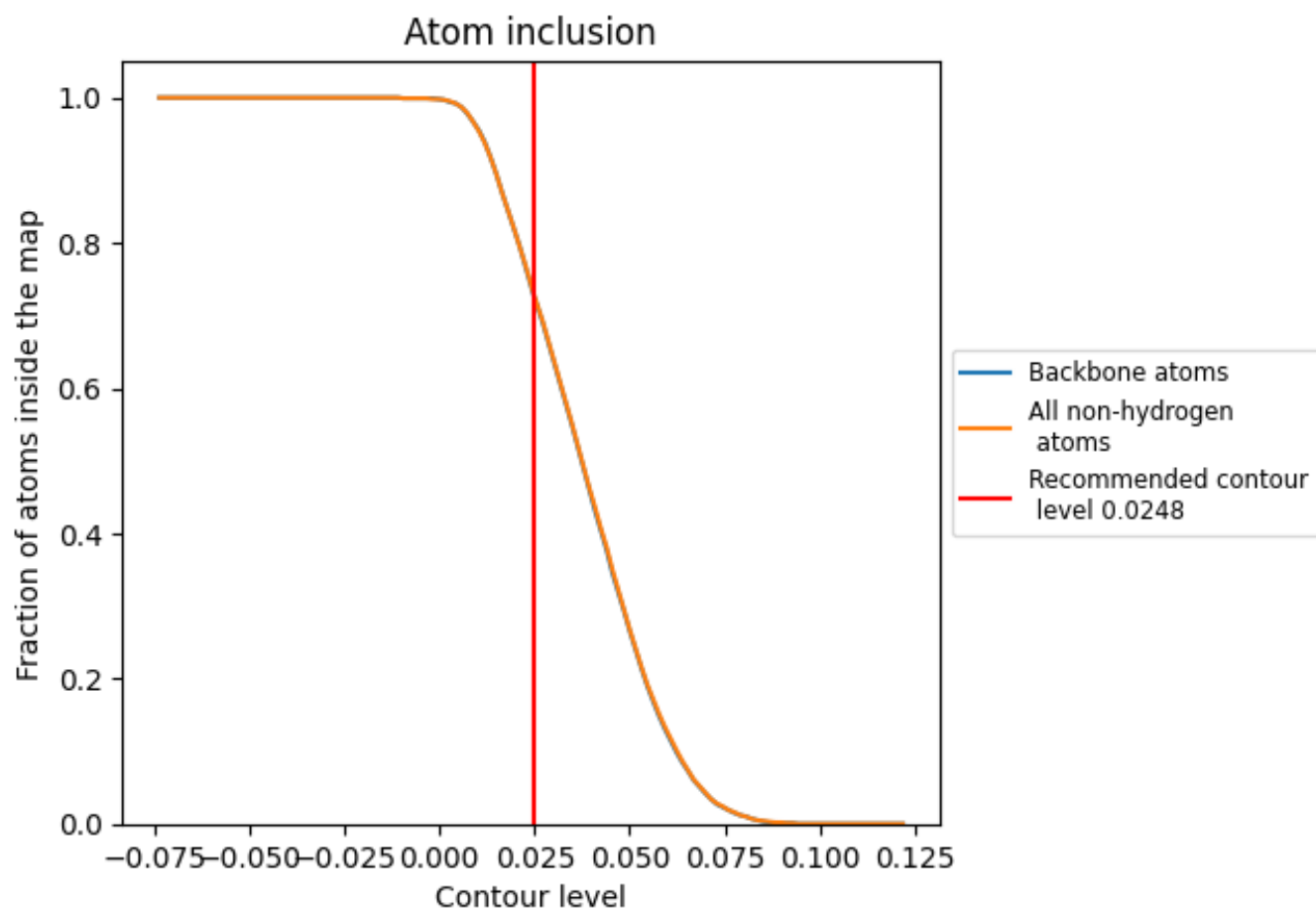
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0248).







































9.4 Atom inclusion [i](#)



At the recommended contour level, 73% of all backbone atoms, 73% 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 (0.0248) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7290	 0.5800
A	 0.7220	 0.5780
B	 0.7530	 0.5810
C	 0.7410	 0.5820
E	 0.7540	 0.5830
F	 0.7020	 0.5700
G	 0.7510	 0.5860
H	 0.7510	 0.5840
I	 0.7550	 0.5830
J	 0.7430	 0.5830
K	 0.7510	 0.5820
L	 0.7430	 0.5810
M	 0.7220	 0.5780
N	 0.7410	 0.5810
O	 0.7520	 0.5860
P	 0.7240	 0.5770
Q	 0.7020	 0.5700
R	 0.7250	 0.5770
S	 0.7520	 0.5860

